

Information Session on Plans to Replace the East Street Bridge



APRIL 11, 2016
BOARD OF SELECTMEN



Types of Accidents



- Head on Collisions caused by striking the Granite Curbing
- Trucks with a height of more than 10'6" will strike the bridge



Video of Head On Accident



Video of Truck Accident



Most Serious Concerns

- Injuries that occur from head on collisions
- Injuries that could occur to a nearby Pedestrian or Cyclist
- Impact on commuter train if truck strikes bridge
- Inability to easily provide emergency service to the residents east of bridge



Most Serious Concerns

- Possibility of chemical spill that would require evacuation
- Tying up emergency resources that can't respond else where in Town
- The Town must order special fire and ambulance equipment



MBTA & MassDOT's Commitment

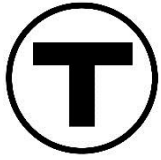


- MBTA's 2012 assessment was that a solution to the problem was very unlikely given limited capital funds and too many projects
- With additional MBTA funding made available in 2014, East Street Bridge was identified for replacement citing safety concerns
- MBTA committed in 2014 to Design and Construction Funding
- VHB was selected in 2015 as the Design Consultant
- 15% Plan prepared and presented to Town

Presentation by Peter Paravalos with the 15% Design Plan



- Peter was recently named Director of Transit-Oriented Development for the MBTA – oversees private development in and around the City of Boston as it relates to current and future MBTA infrastructure.
- Over 20-years as a structural engineer and project management experience prior to the MBTA; has been a PM with the MBTA for almost 3-years.
- Has been Project Manager for East Street Bridge through the 15% design phase; new PM to be named, but Peter will continue to oversee the project since personal interest, resident on number boards and commissions in Town.
- John Schwarz, MBTA Director of Bridge and Tunnel Project, also in attendance this evening, will continue to administer the Project



MBTA Contract No. B92PS26
Bridge No. W-31-002 over East Street
15% Type Study – Selectman's Meeting
Franklin Line
Westwood, MA

April 11, 2016

Project Goals

- Improve Vertical Clearance
 - Maximize Vertical Clearance
 - Combination of
 - Minimizing structure depth
 - Lowering roadway
 - Raising track
- Improve Roadway Width
 - Eliminate narrowing shoulder
 - Straighten roadway alignment
 - 2 – travel lanes with adequate shoulders
 - 2 – sidewalks



Existing Conditions

- Year built: 1911
- Two Track Structure
- Narrow Roadway
 - 19 feet curb to curb
 - One 1.5'- 3' sidewalk
- 10'-6" Vertical Clearance
- 81 accidents reported (2009-2015)
- Utilities
 - Overhead
 - Underground
- Roadway Geometric Challenges

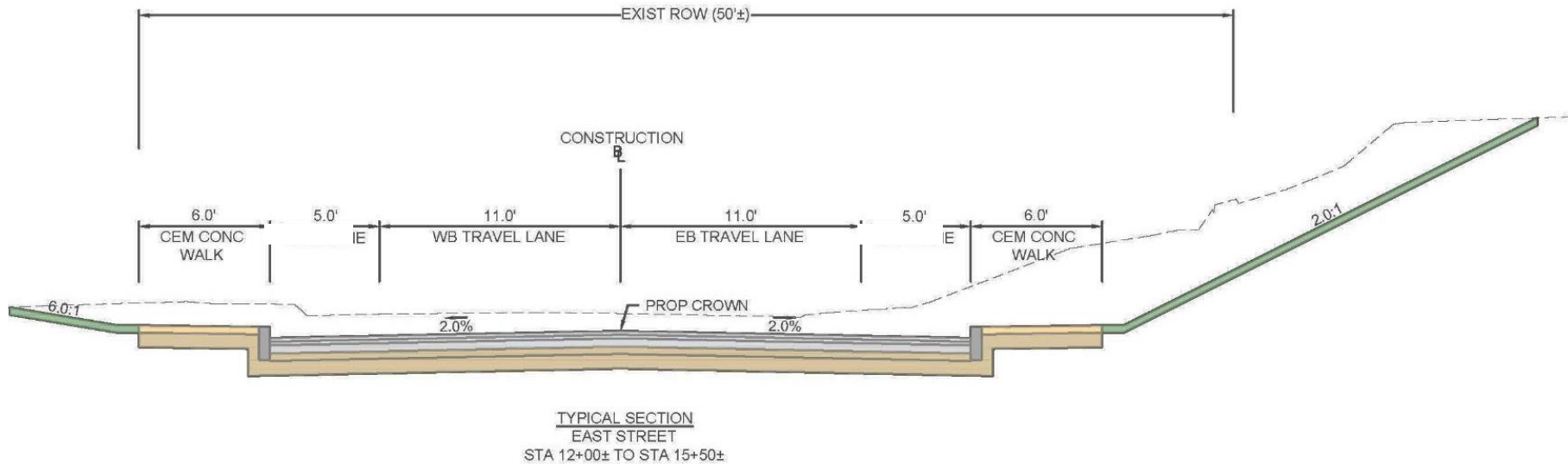


Existing Conditions

- Track Geometric Challenges
 - Curved approach from the north limits lateral alignment
- Profile Constraints
 - Islington Station (700ft +/-) limits profile (raising track height) adjustment to the north
 - Route 1 undergrade bridge (1700ft +/-)
 - Everett Street undergrade bridge (2,400ft +/-) limits work to south.



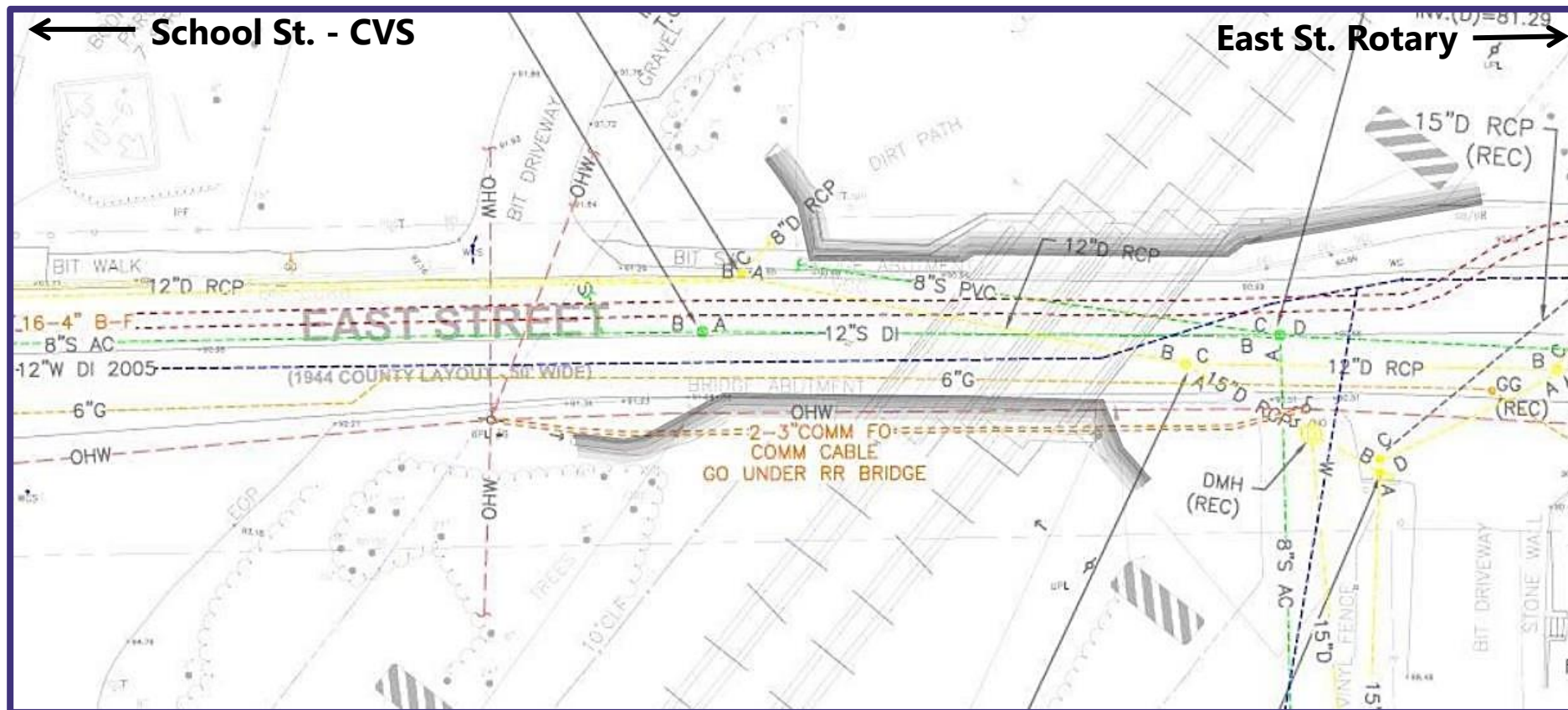
Proposed Roadway Cross-Section



- Proposed bridge layout provides a roadway configuration that meets **MassDOT** Complete Streets design standards

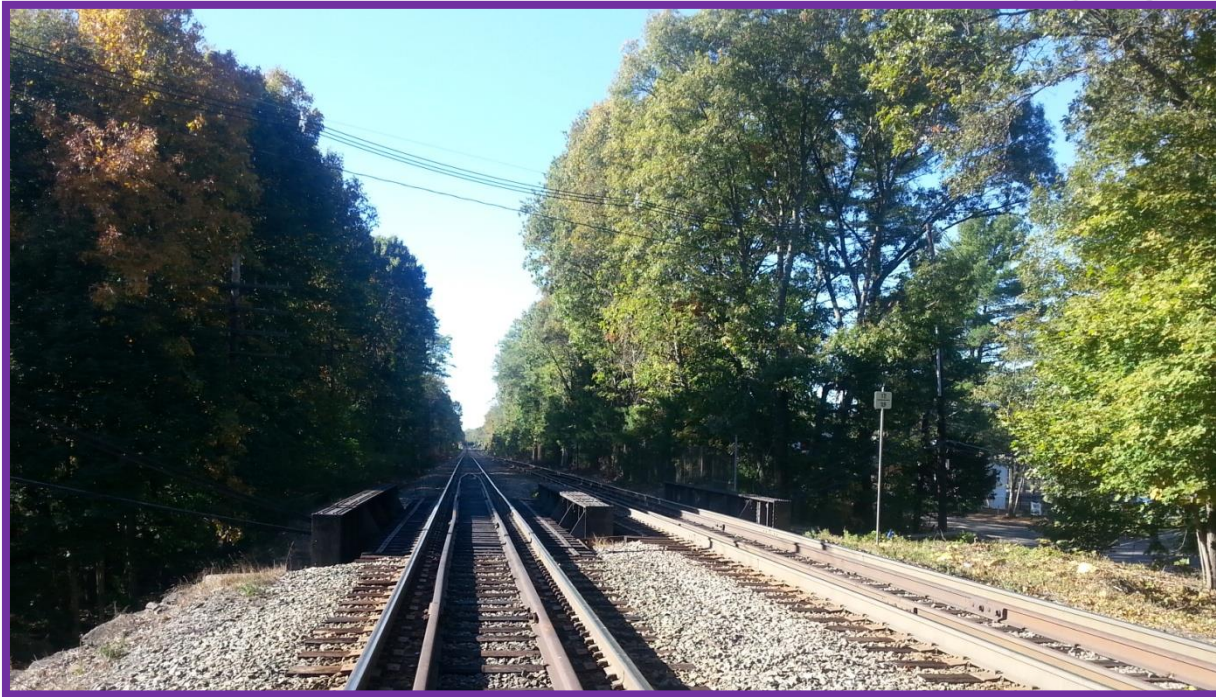
Existing Conditions

- Utility Constraints
 - 6" Gas, 12" Sewer, 8" Sewer, 12" Water, 12" Drainage, Communications Duct Bank
 - Electric Lines (over bridge) Telephone Lines (under bridge)

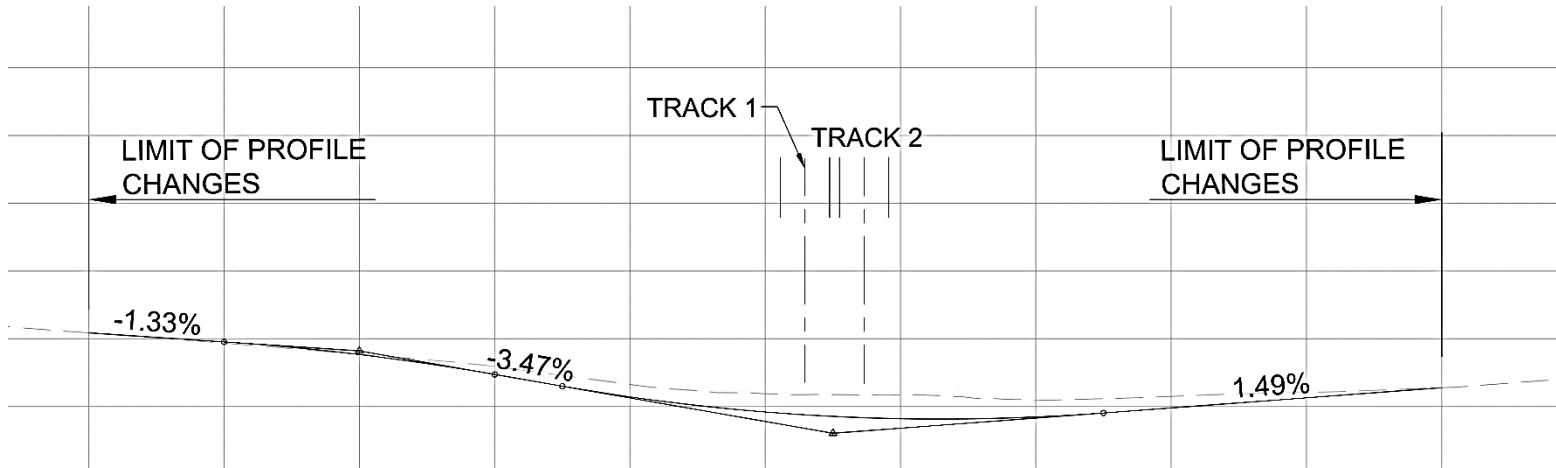
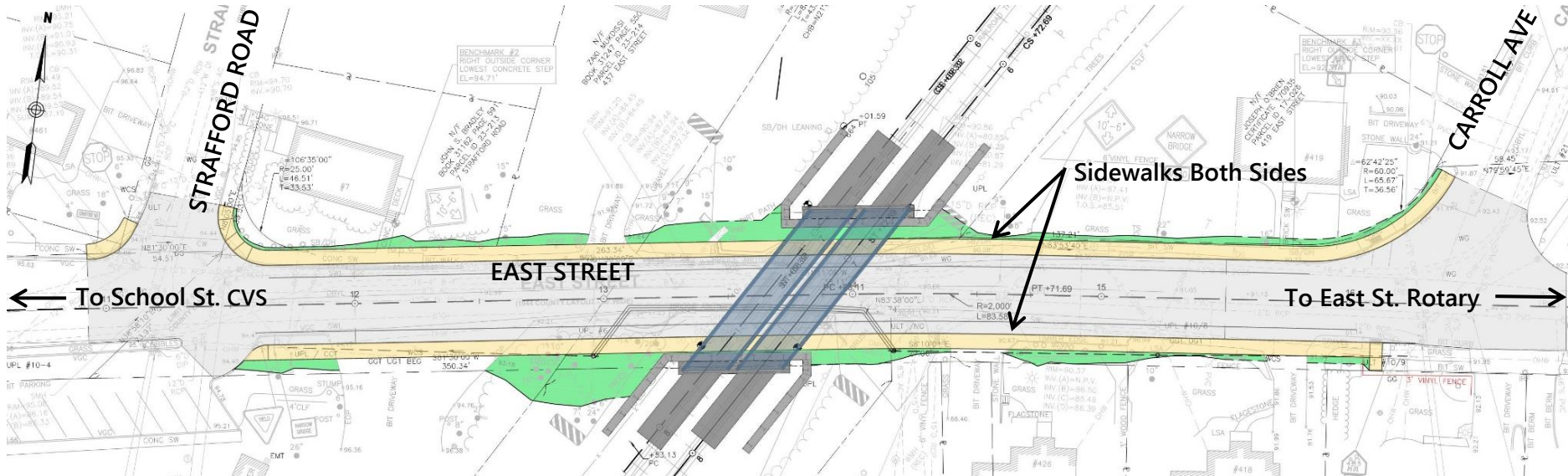


Track and Roadway Profile

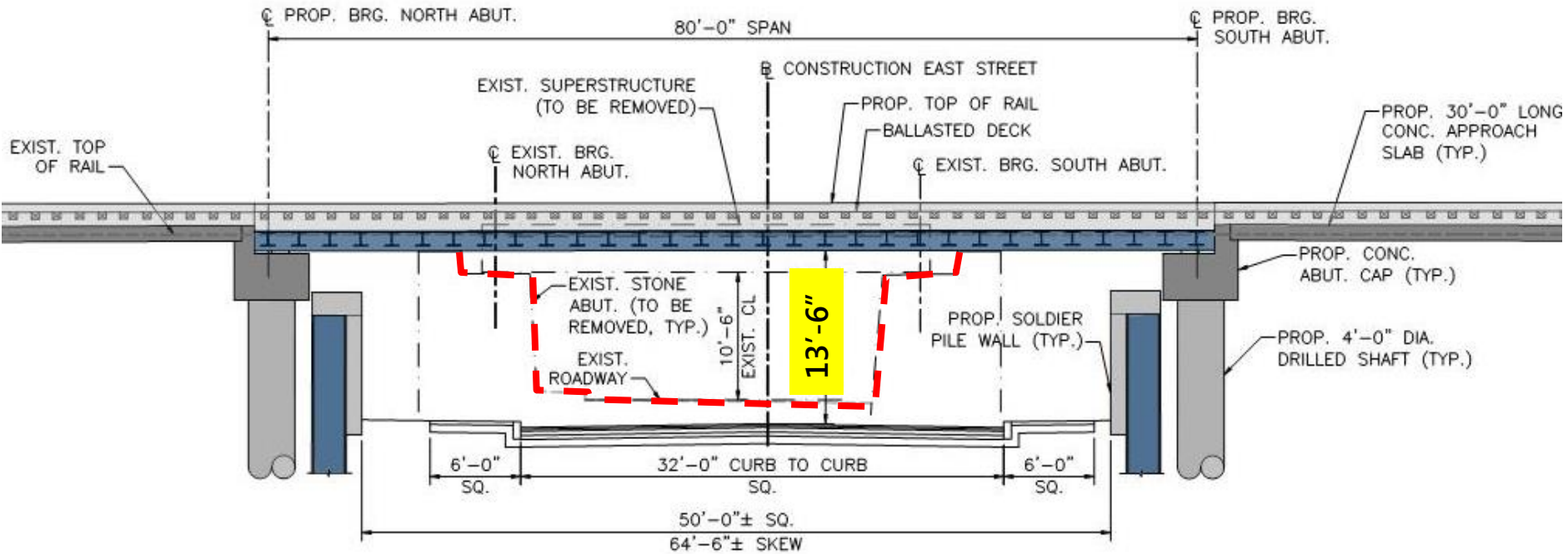
- Priority: Minimize impact to existing rail operations
- Roadway Profile:
 - Drop roadway 16" - 18" = minimal track profile increase (raising track 2.75', 2100' track work), requires utility work and modification to surrounding area (regrading at sidewalks & ends of driveways)



Proposed Roadway Plan & Profile

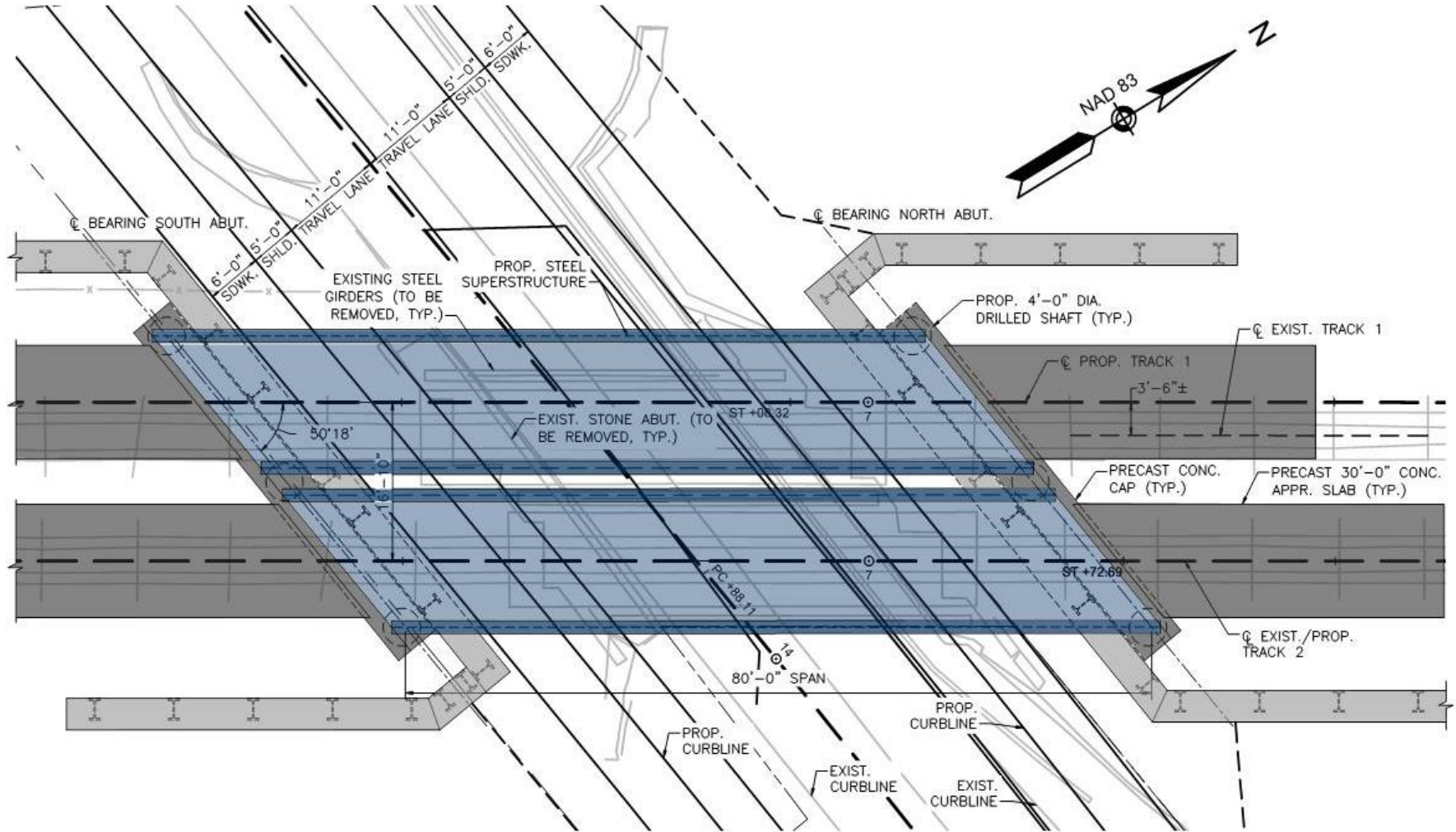


Proposed Structure Geometry



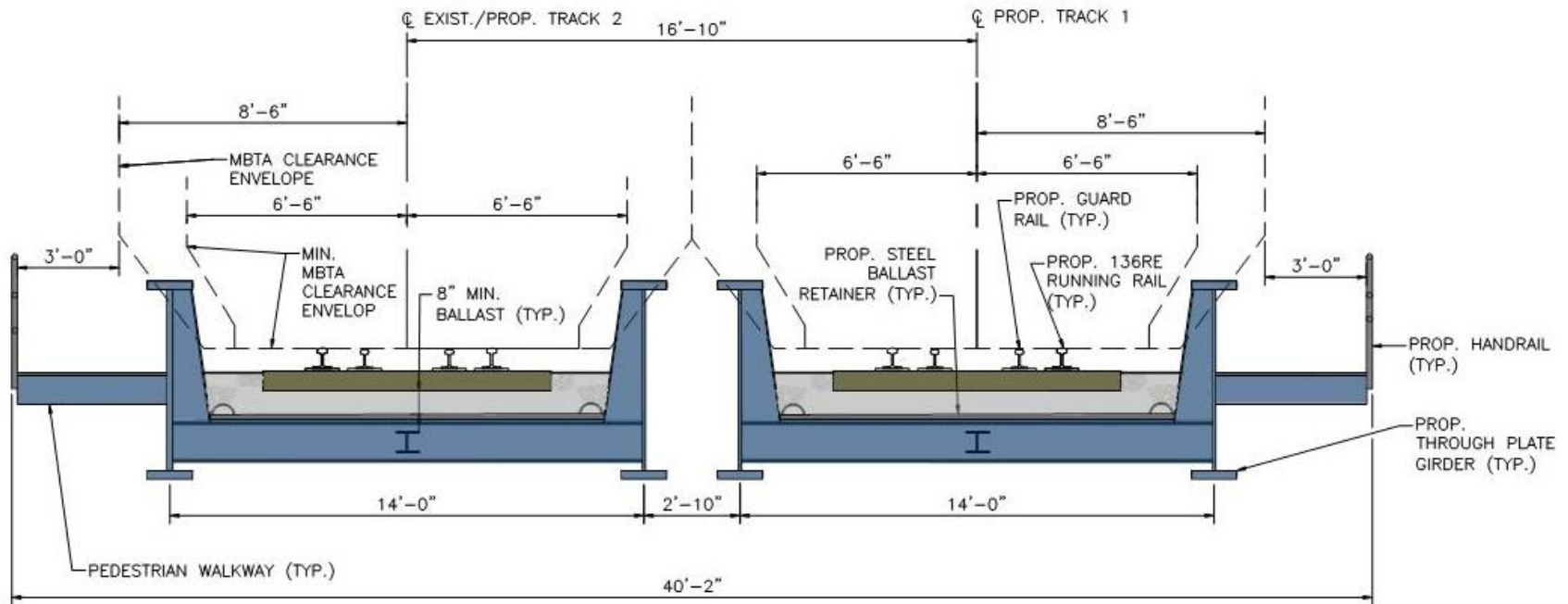
LONGITUDINAL SECTION (ALTERNATIVE A)

Proposed Structure



BRIDGE PLAN

Proposed Structure

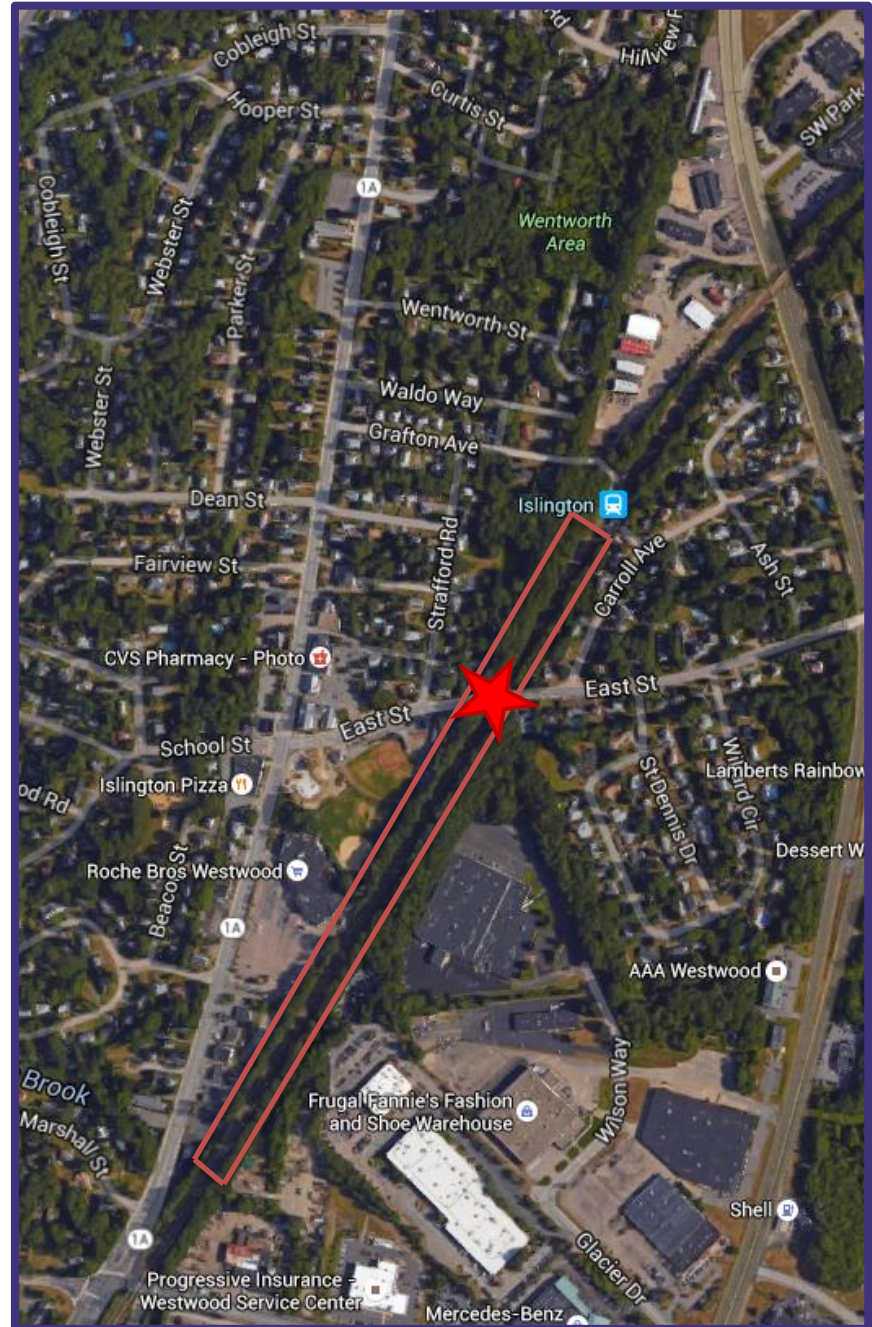


TRANSVERSE SECTION - ALTERNATIVE A

SCALE: 3/16" = 1'-0"

Constructability

- Limits of Track Work (Approx.)
 - Islington Northern Limit
 - Everett Street Southern Limit
 - ROW approx. 40' to west of CL Track 1
 - ROW approx. 40' to east of CL Track 2
 - 2:1 Slopes
 - Limited need for 1.5:1 Slopes



Construction Access



- North Access
 - Preferred access from MassDOT yard from Route 1A.



Construction Access

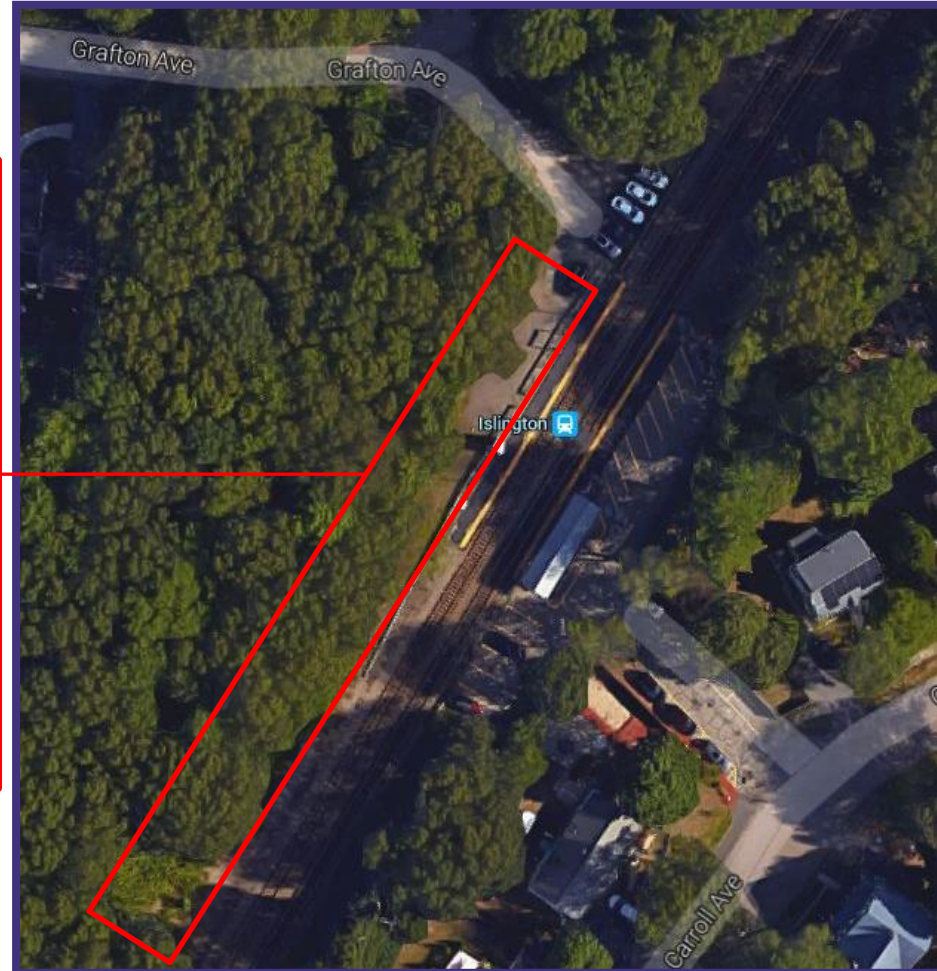
- South Access
 - Town DPW Building from East Street and Route 1A to the west side of track.
- East Street provides access for crane during roadway shutdown.



Construction Laydown

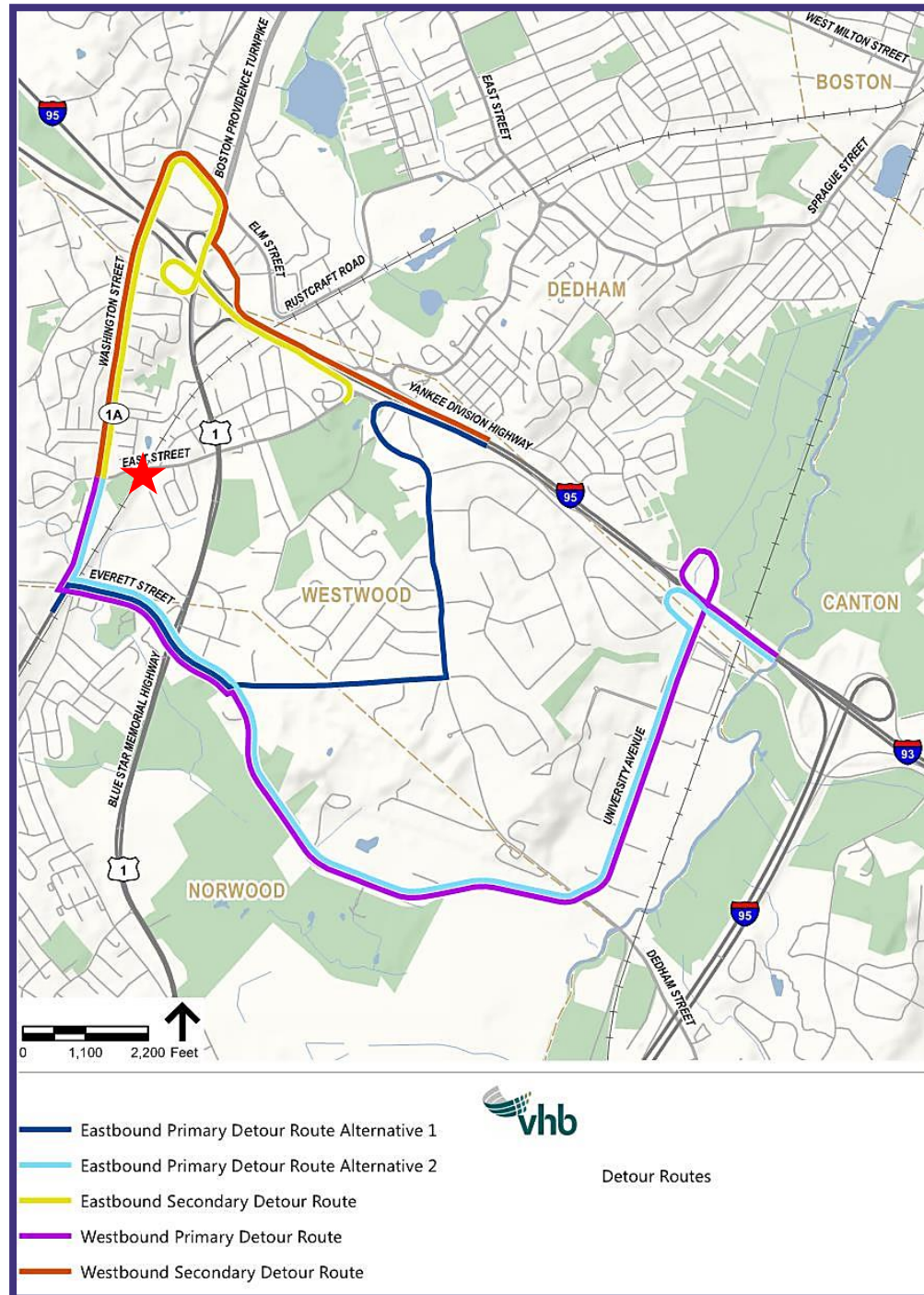
West of track

Islington Station and south



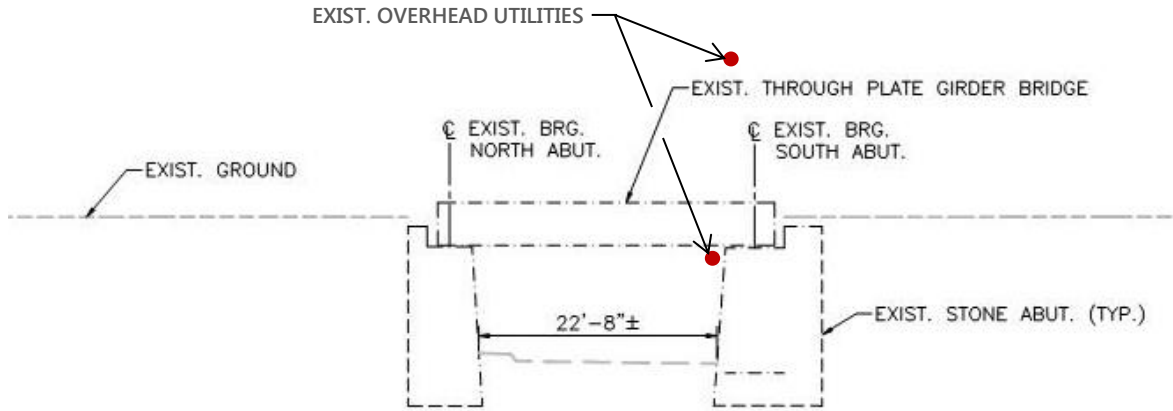
ROADWAY DETOUR ROUTES

- Weekend Closures
 - Full closure of roadway
- Utility relocation
 - East Street remains open
 - Alternating one-way traffic can be utilized



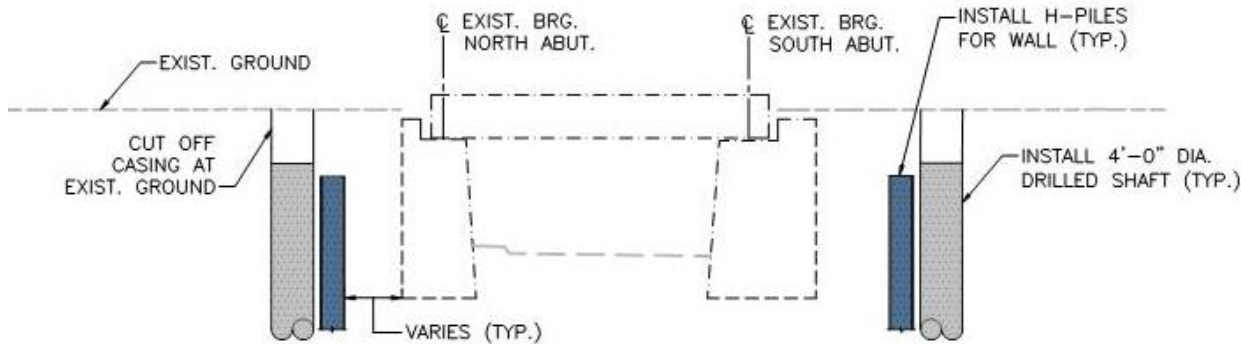
Construction Staging

Track In Service
Roadway Open



EXISTING SQUARE LONGITUDINAL SECTION

NOTE: PRIOR TO STAGE 1 CONSTRUCTION, OVERHEAD UTILITIES MUST BE RELOCATED OUT OF THE WORK ZONE.

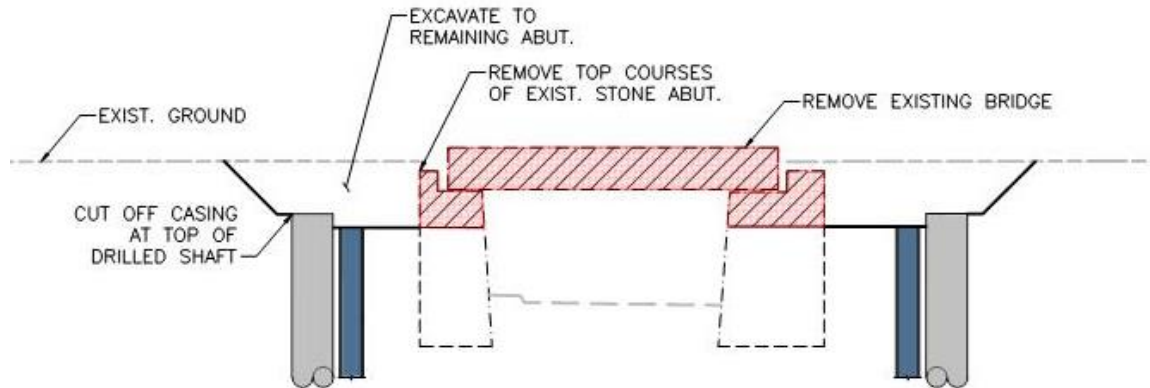


STAGE 1

- STAGE 1—WITH TRACK IN SERVICE
 —BETWEEN TRAINS OR NIGHTTIME CLOSURES:
- INSTALL 4'-0" DIAMETER CASING AND DRILLED SHAFT.
 - CUTOFF CASING AT EXISTING GROUND.
 - INSTALL H-PILES FOR SOLDIER PILE WALL.

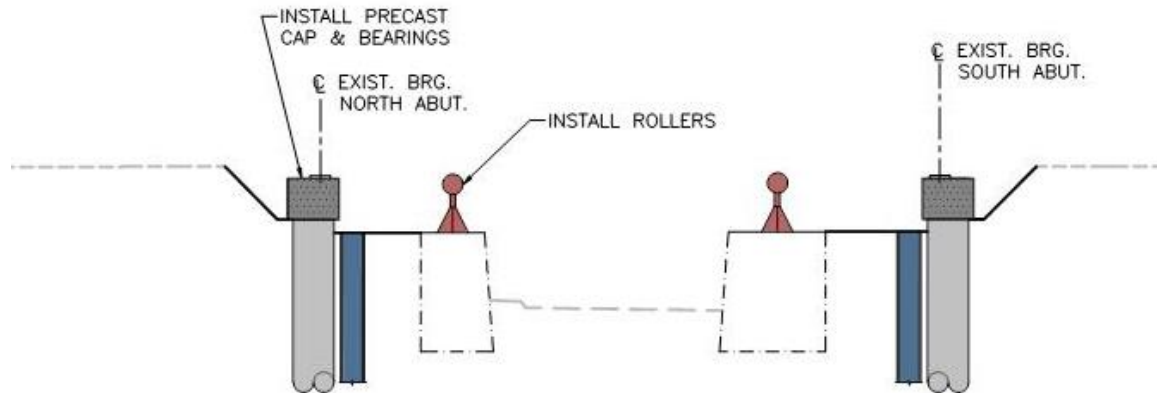
Construction Staging

Track Out Of Service
Roadway Closed
(1st –Weekend shutdown)



STAGE 2

STAGE 2 – 1ST WEEKEND SHUTDOWN – TRACK AND ROADWAY
 –SHUT DOWN BRIDGE TO RAIL TRAFFIC AND ROADWAY TRAFFIC BELOW.
 –REMOVE EXISTING BRIDGE AND TOP COURSES OF EXISTING ABUTMENT.
 –CUTOFF CASING TO TOP OF DRILLED SHAFT.
 –EXCAVATE DOWN TO TOP OF DRILLED SHAFT AND REMAINING ABUTMENT WALL.



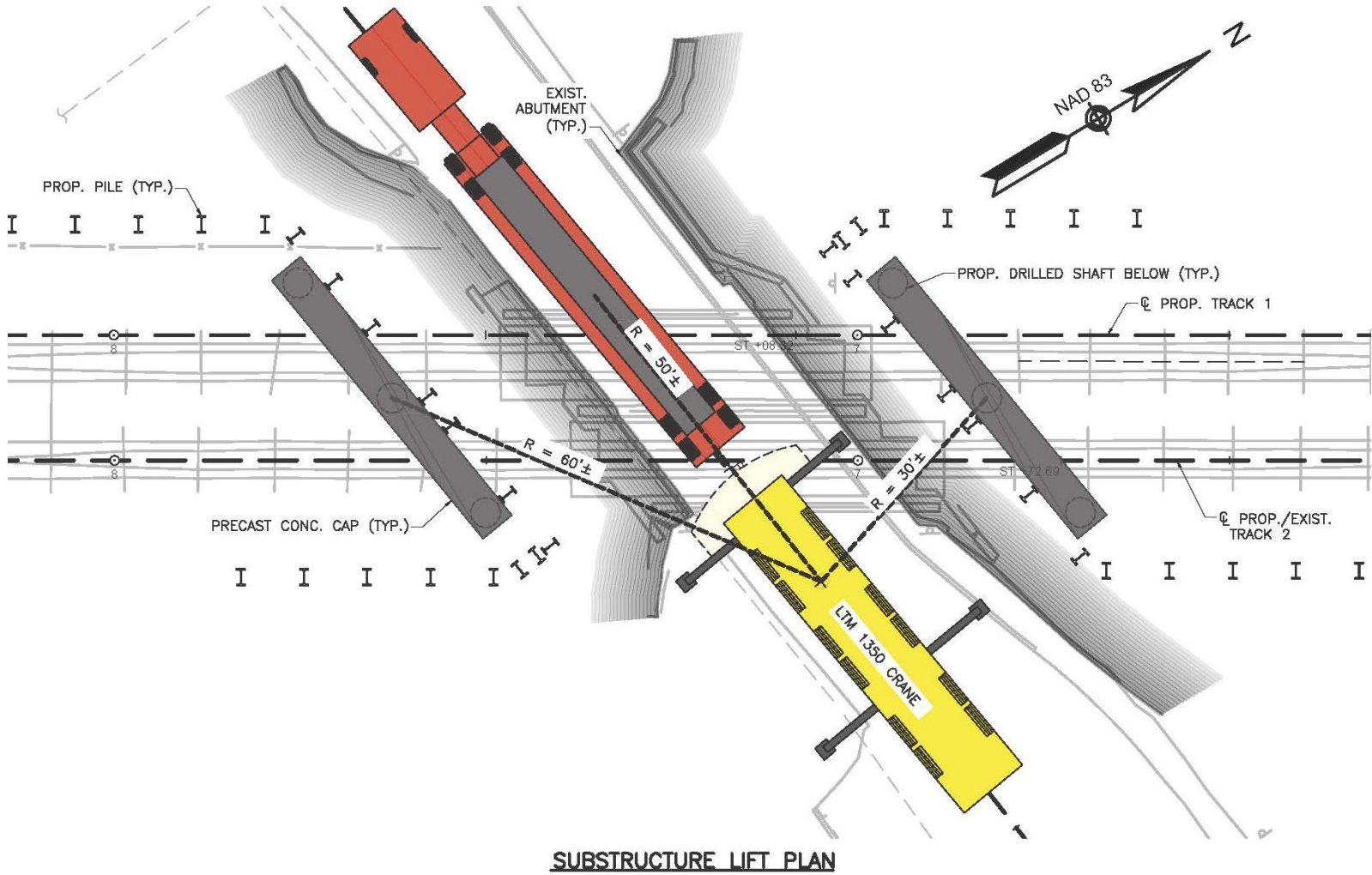
STAGE 3

STAGE 3 – 1ST WEEKEND SHUTDOWN – TRACK AND ROADWAY
 –INSTALL CONNECTION REBAR (DBS) INTO TOP OF DRILLED SHAFTS.
 –INSTALL PRECAST CAP ON DRILLED SHAFTS.
 –GROUT VOIDS FOR CONNECTION REBAR AND SET ANCHOR BOLTS.
 –INSTALL BEARINGS.
 –INSTALL ROLLERS ON EXISTING ABUTMENTS TO ASSIST WITH SUPERSTRUCTURE LAUNCH.

Construction Staging

Bridge Construction Plan – Substructure Installation

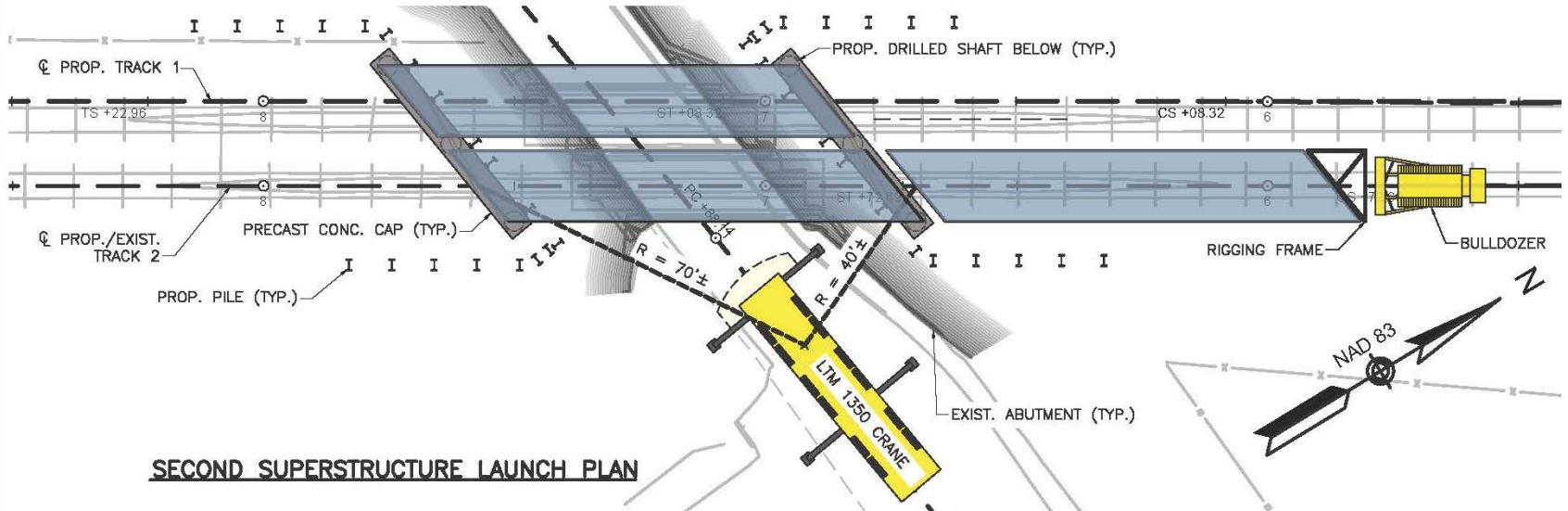
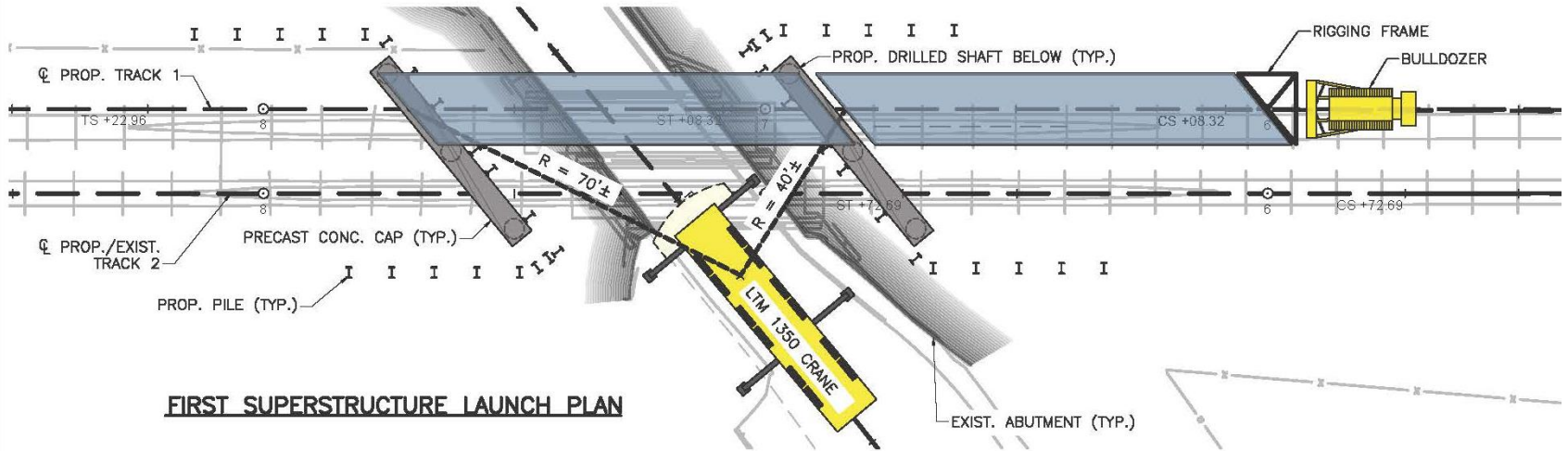
Roadway Closed



Construction Staging

Bridge Construction Plan – Superstructure Installation

Roadway Closed

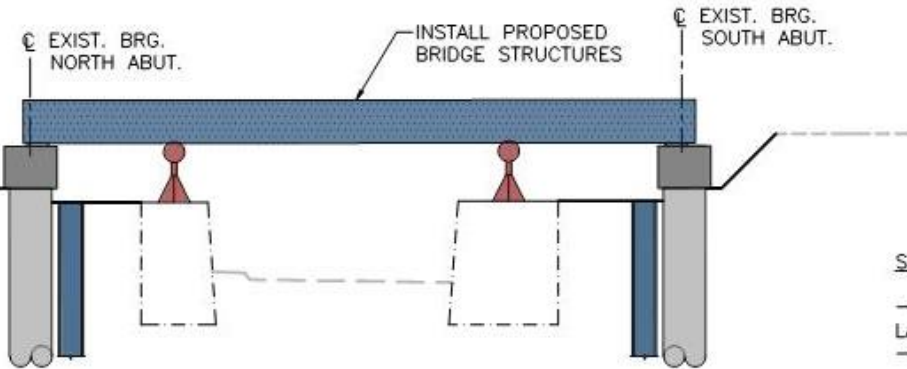


Construction Staging

Track Out Of Service

Roadway Closed

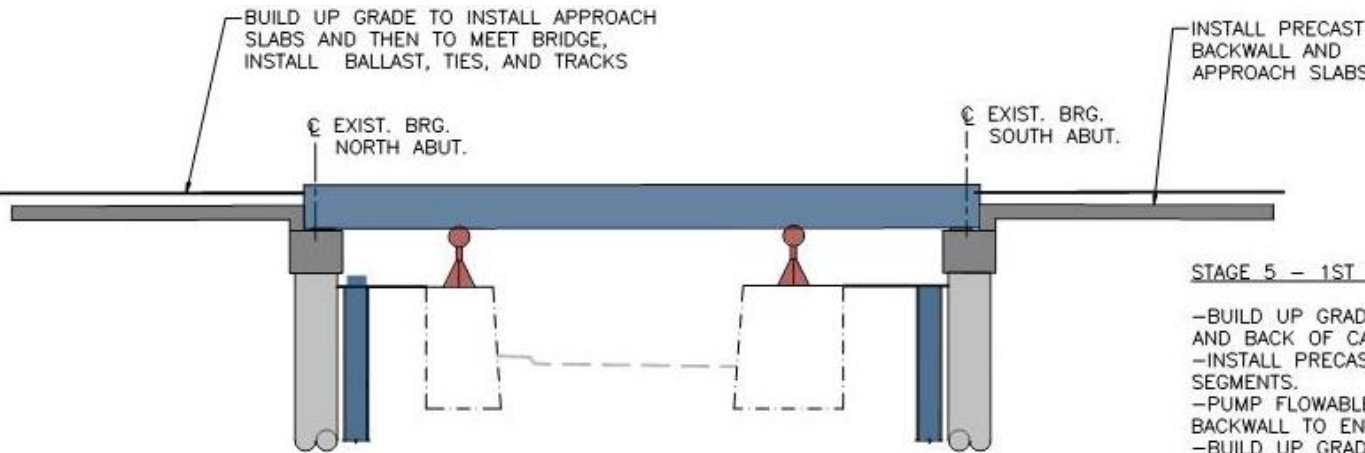
(1st –Weekend shutdown)



STAGE 4 – 1ST WEEKEND SHUTDOWN – TRACK AND ROADWAY

- INSTALL PREASSEMBLED BRIDGE STEEL, WITH CRANE ASSISTED LAUNCH FROM THE NORTH ABUTMENT (TRACK 1 THEN TRACK 2).
- REMOVE ROLLERS.

STAGE 4



STAGE 5 – 1ST WEEKEND SHUTDOWN – TRACK AND ROADWAY

- BUILD UP GRADE TO BOTTOM OF PROPOSED APPROACH SLAB AND BACK OF CAP.
- INSTALL PRECAST APPROACH SLABS AND BACK WALL SEGMENTS.
- PUMP FLOWABLE FILL BENEATH APPROACH SLAB AND BEHIND BACKWALL TO ENSURE NO VOIDS ARE PRESENT.
- BUILD UP GRADE TO CONNECT APPROACH WORK AND BRIDGE AT PROPOSED GRADE.
- INSTALL SUB-BALLAST, BALLAST, TIES, AND TRACKS.
- RE-OPEN BRIDGE TO RAIL AND ROADWAY TRAFFIC.

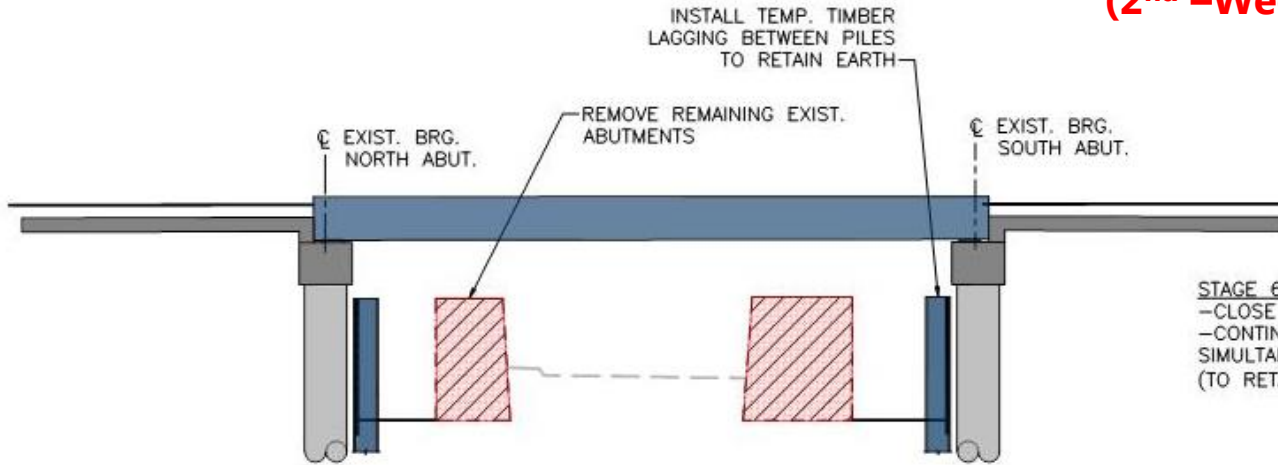
STAGE 5

Construction Staging

Track In Service

Roadway Closed

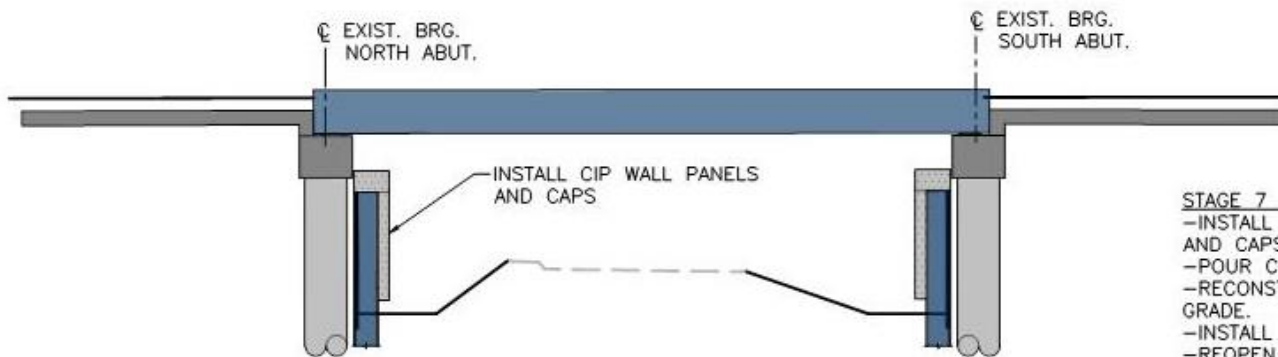
(2nd –Weekend shutdown)



STAGE 6

STAGE 6 – 2ND WEEKEND SHUTDOWN – ROADWAY ONLY
–CLOSE DOWN ROADWAY TO TRAFFIC.
–CONTINUE TO REMOVE EXISTING ABUTMENTS WHILE SIMULTANEOUSLY INSTALLING LAGGING BETWEEN H-PILES (TO RETAIN EARTH BEHIND DRILLED SHAFTS).

NOTE: UNDERGROUND UTILITY RELOCATION TO BE COMPLETED DURING STAGES 6 AND 7.

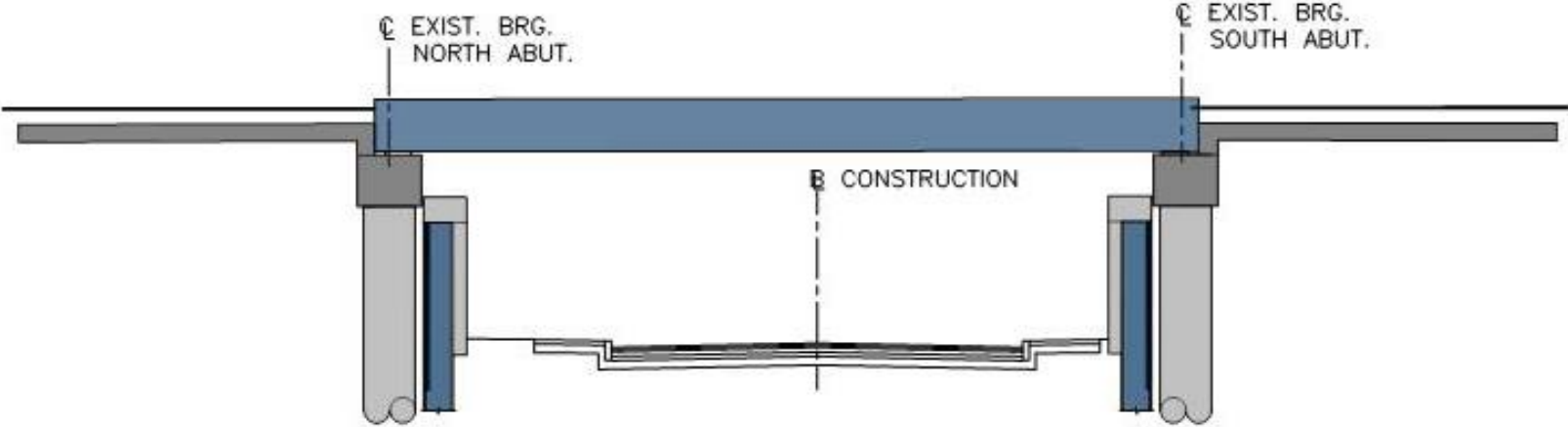


STAGE 7

STAGE 7 – 2ND WEEKEND SHUTDOWN – ROADWAY ONLY
–INSTALL FORMWORK FOR CIP CONCRETE WALL PANELS AND CAPS.
–POUR CONCRETE PANELS AND CAPS.
–RECONSTRUCT ROADWAY TO NEW ROADWAY PROFILE GRADE.
–INSTALL NEW CURBS AND POUR NEW SIDEWALKS.
–REOPEN ROADWAY TO ALL TRAFFIC.

Construction Staging

Track In Service
Roadway Open



PROPOSED SQUARE LONGITUDINAL SECTION

(Facing East Street Rotary)

Next Steps

- Going Forward
 - Design phase through November 2016
 - Construction procurement December 2016 – May 2017
 - Construction start June 2017
 - Bridge installation Spring/Summer 2018

Questions?