

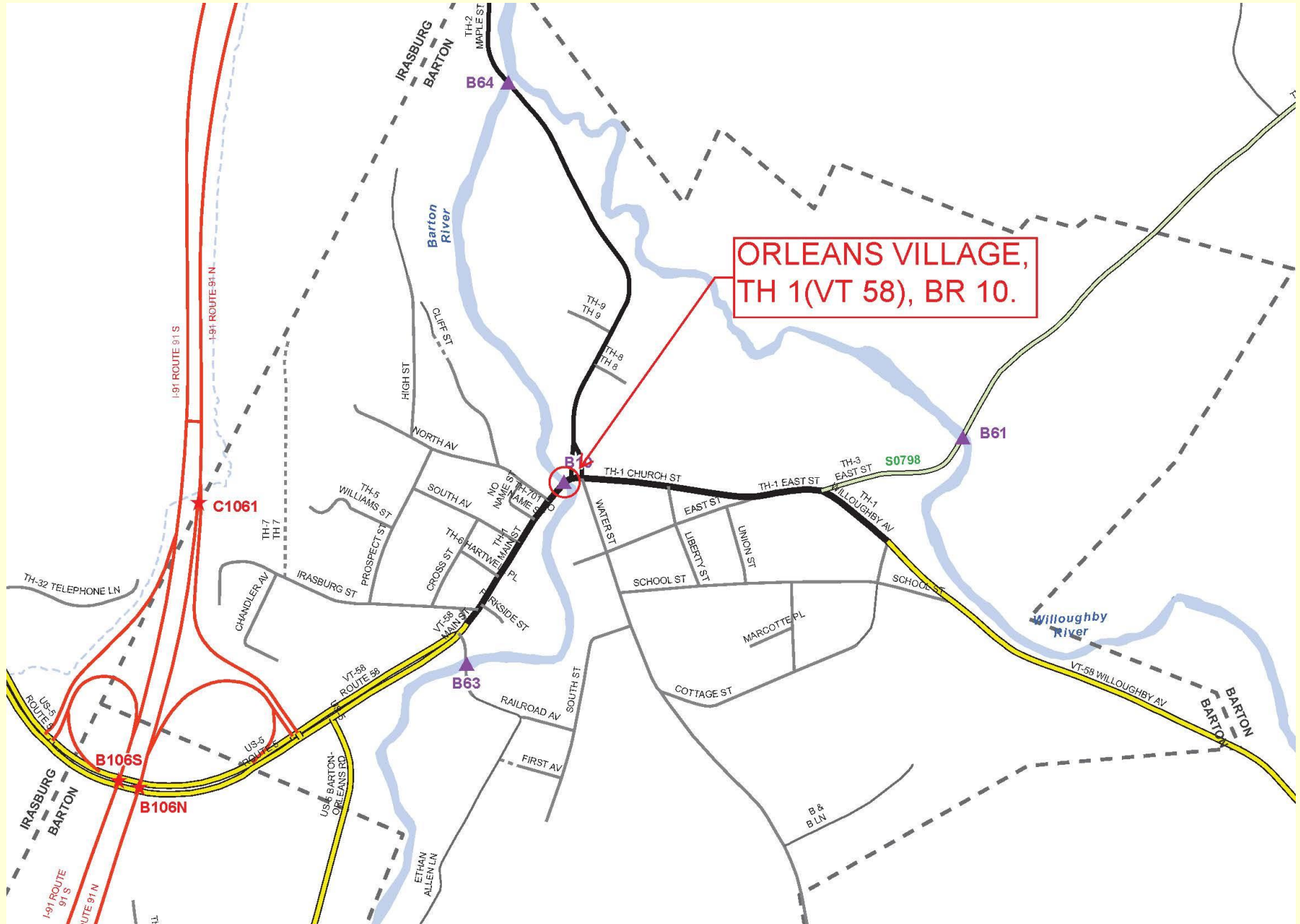
Orleans Village BF 0310(7) Bridge 10 on VT Route 58 over the Barton River Alternatives Presentation Meeting



Presented by
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PROJECT LOCATION



Meeting Outline

- Purpose of the Meeting
- Existing bridge deficiencies
- Alternatives considered
- Summary and recommendation
- Next Steps

Purpose of Meeting

- Present the alternatives that we have considered
- Explain the constraints to the project
- Provide you with the chance to ask questions
- Provide you with the chance to voice concerns
- Build consensus for the recommended alternative-

Project Background

- The structure is owned and maintained by Orleans Village
- Class 1 Town Highway (on VT Route 58)
- Functionally labeled as a Rural Major Collector
- In Village setting but not classified as such functionally
- Funding will be 80 Federal
- State/Local share dependent on alternative selected
- Design Speed = 30 mph (Posted speed)
- Existing bridge is a single-span concrete T-beam
- Bridge length = 46 feet
- Bridge Width = 46 feet (varies)
- The bridge was built in 1933 (81 years old)

Traffic Data

	“Current Year” 2016	“Design Year” 2036
Average Annual Daily Traffic	4,600	4,900
Design Hourly Volume	520	550
Average Daily Truck Traffic	180	300
% Trucks	2.0	3.0

EXISTING BRIDGE DEFICIENCIES

Inspection Rating Information (Based on a scale of 9)

Bridge Deck Rating	4 Poor
Superstructure Rating	6 Satisfactory
Substructure Rating	6 Satisfactory

Rating Definitions

- 9 Excellent**
- 8 Very Good**
- 7 Good**
- 6 Satisfactory**
- 5 Fair**
- 4 Poor**
- 3 Serious**
- 2 Critical**
- 1 Imminent Failure**

Deficiencies

- The bridge is structurally deficient with a Poor deck rating
- The horizontal and vertical alignments are substandard
- The approach rails are substandard



Looking west over Bridge



Looking east over Bridge

Deck Delamination



**Underside of Deck
& Concrete T-Beam**



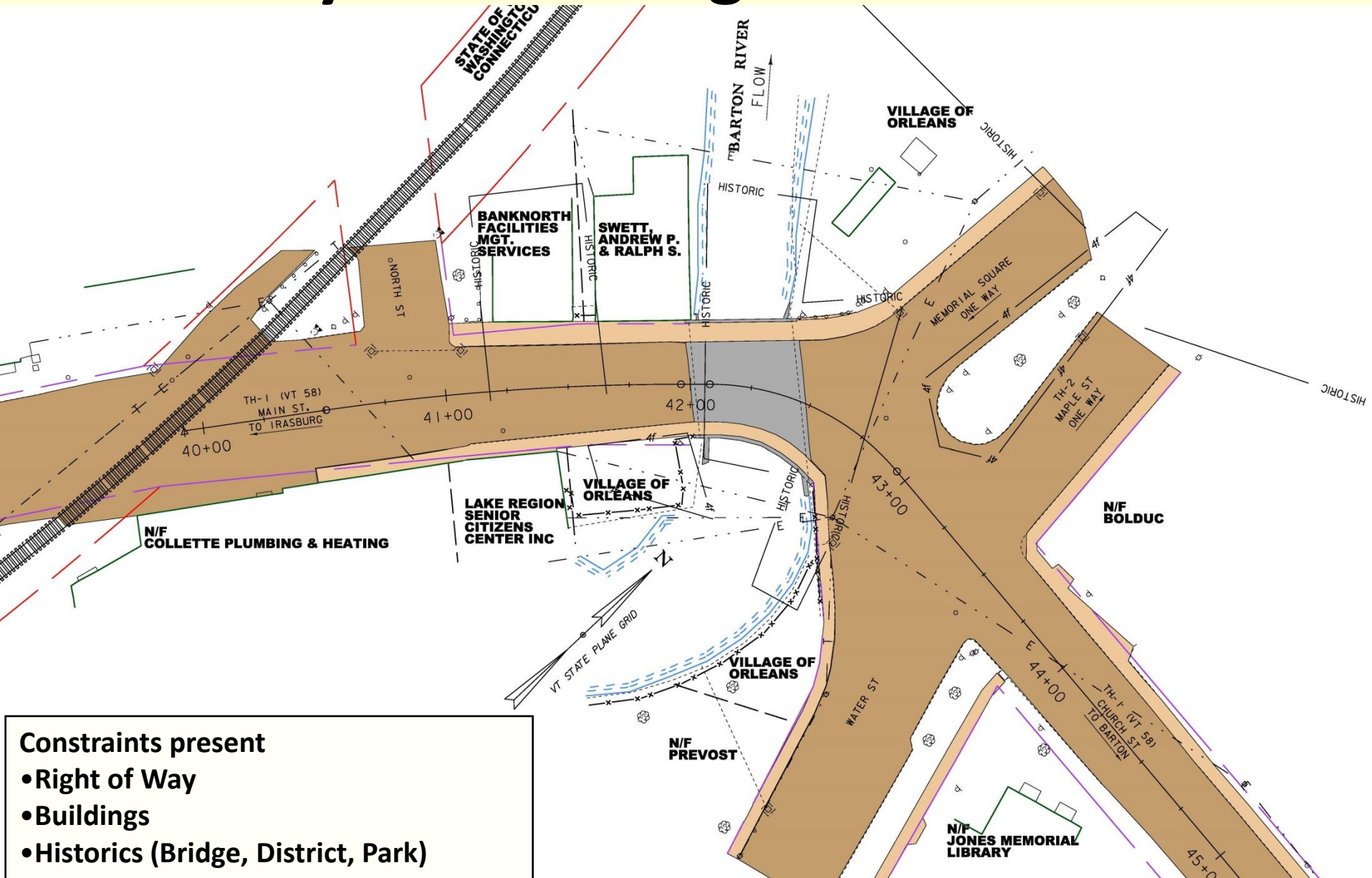


Upstream Fascia

Utilities under bridge



Layout Showing Constraints



Alternatives Discussion

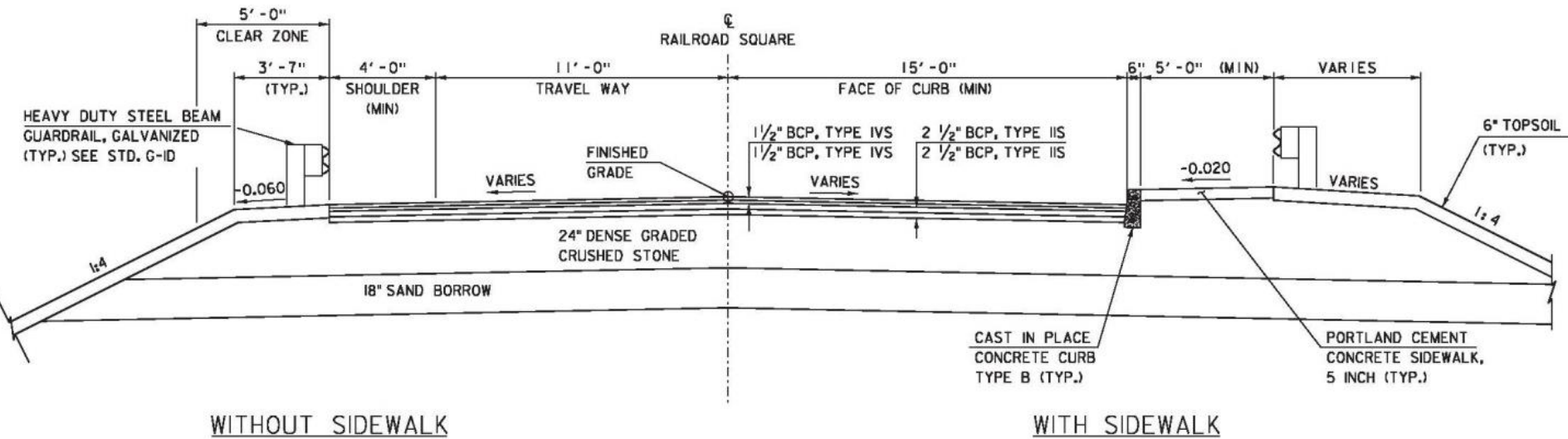
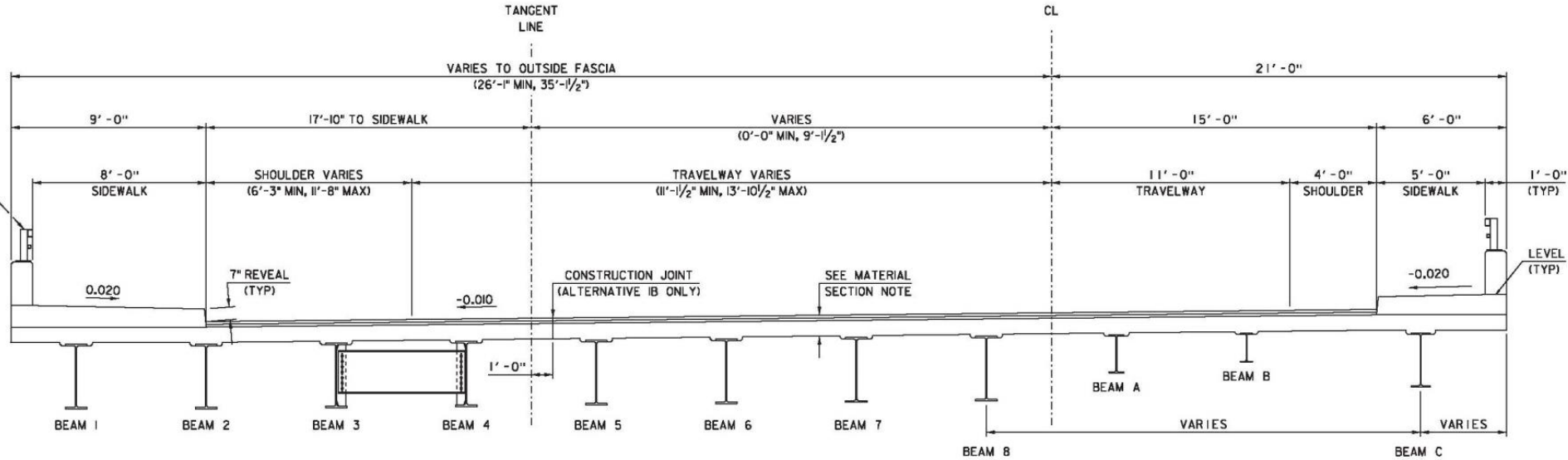
- Superstructure Replacement
- Complete Replacement

Note: The method to maintain traffic during construction will be considered separately later in the presentation

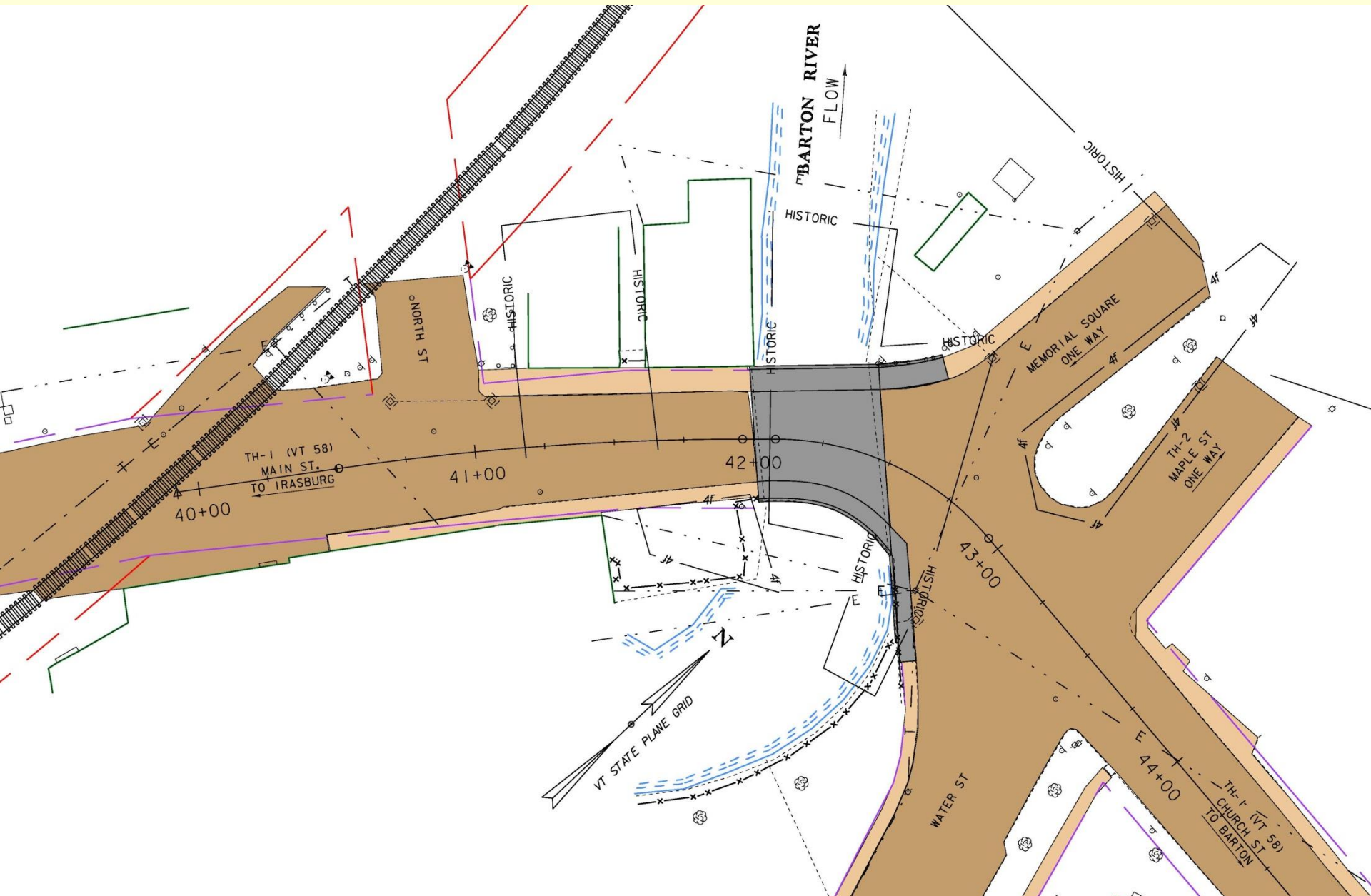
Superstructure Replacement Details

- Replace Superstructure (Beams & Deck)
- Maintain existing footprint of bridge deck
- Consider reconfiguring sidewalks and shoulders to help reduce traffic flow issues
- Keep existing abutments
- Very minimal approach work
- Maintain approximate existing centerline of road
- Maintain approximate grade of road
- Minimal scope to help expedite project delivery
- Moderate-term (40 year) solution

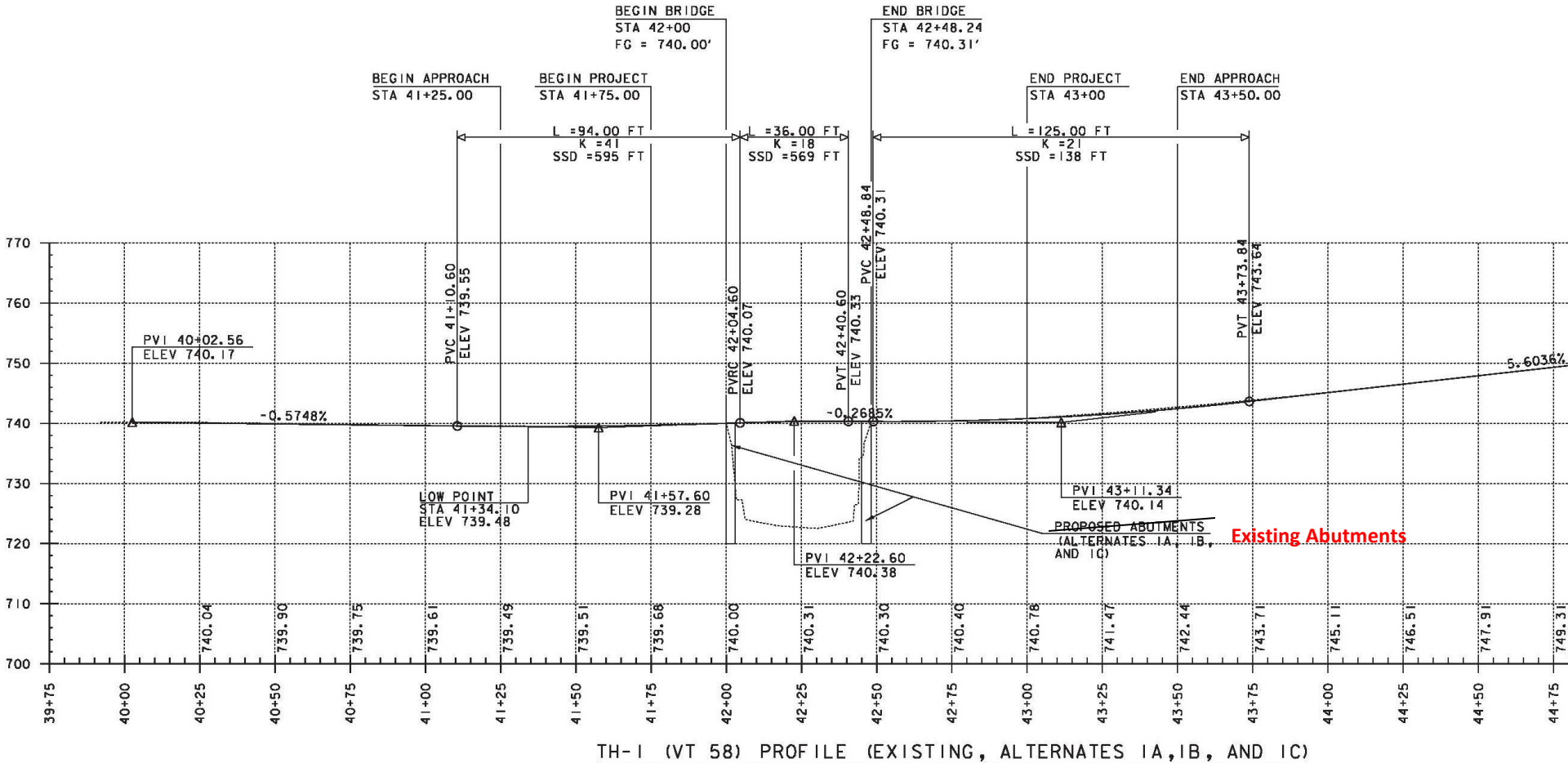
Typical Sections



Layout – Superstructure Replacement



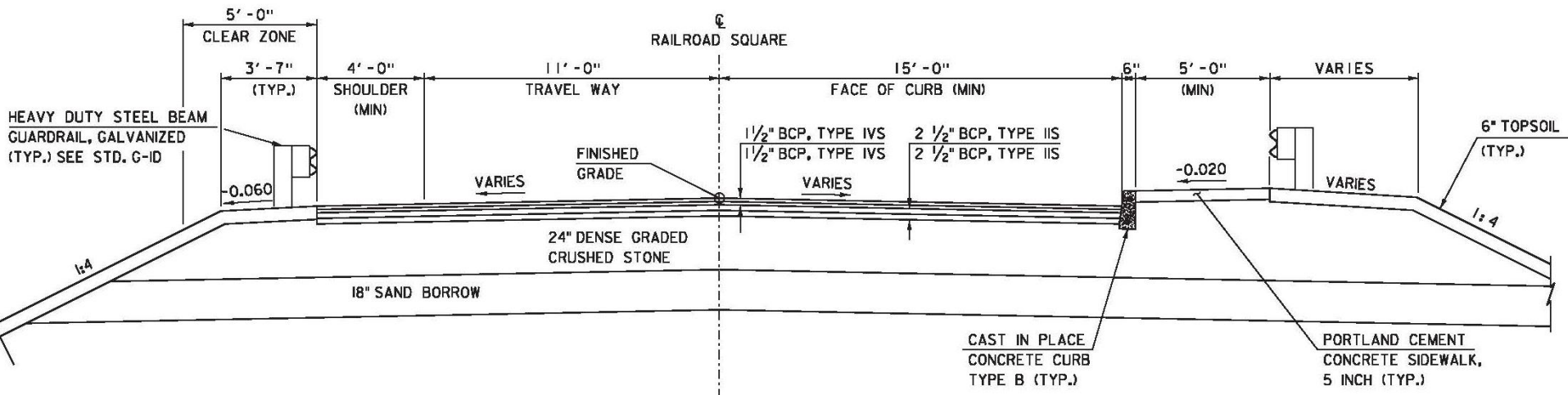
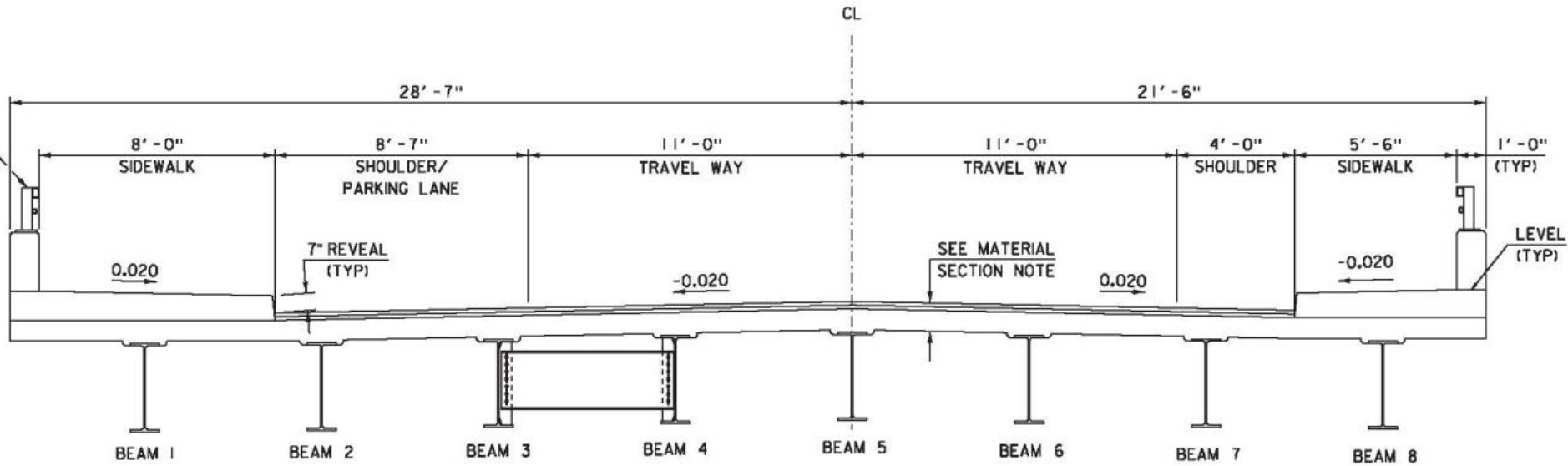
Profile - Superstructure Replacement



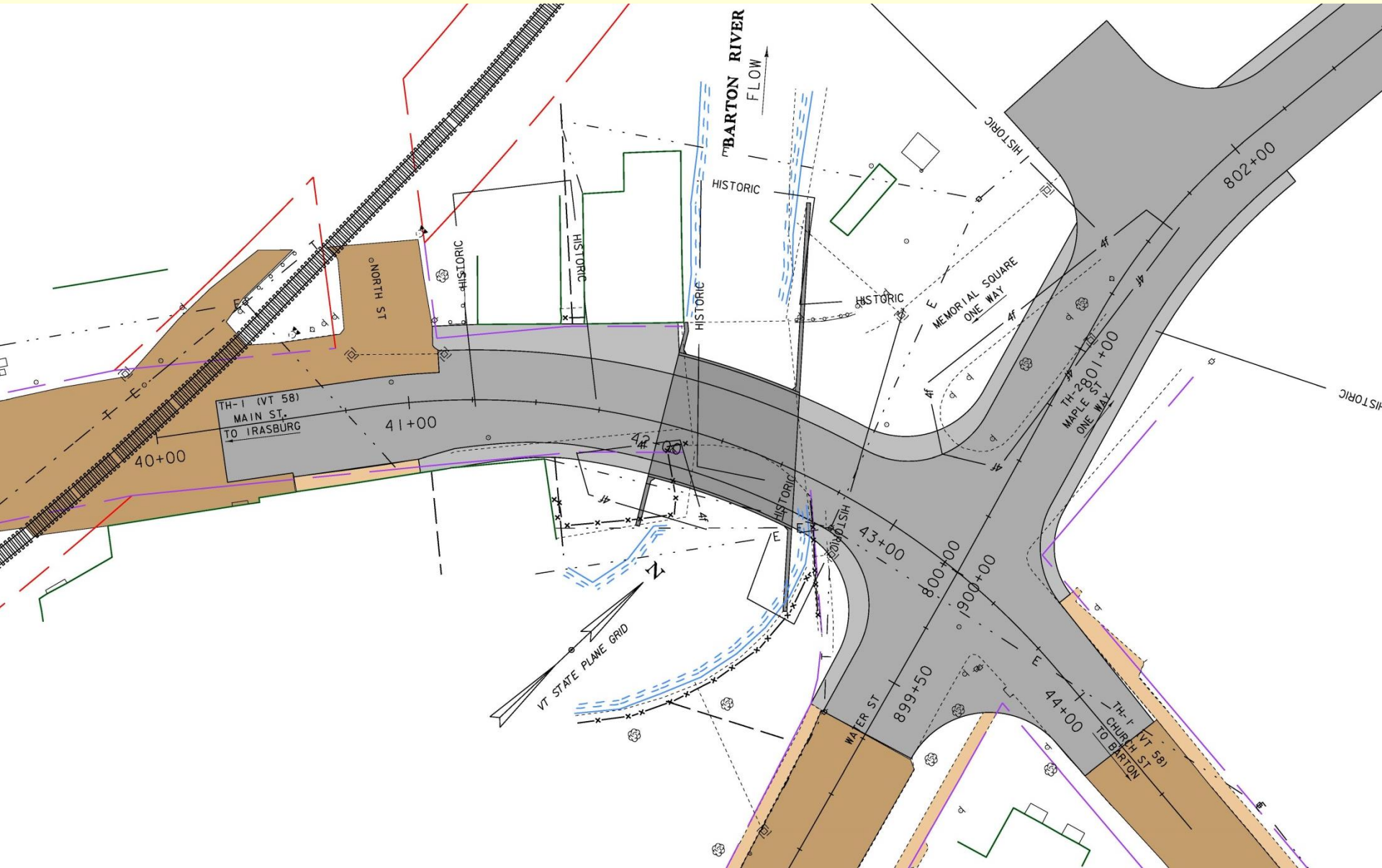
Complete Replacement Details

- Replace entire bridge
- Improve the horizontal and vertical alignments
- Would require reconfiguration of the intersection
- Long project delivery duration with major impacts
- Long-term (80 year) solution

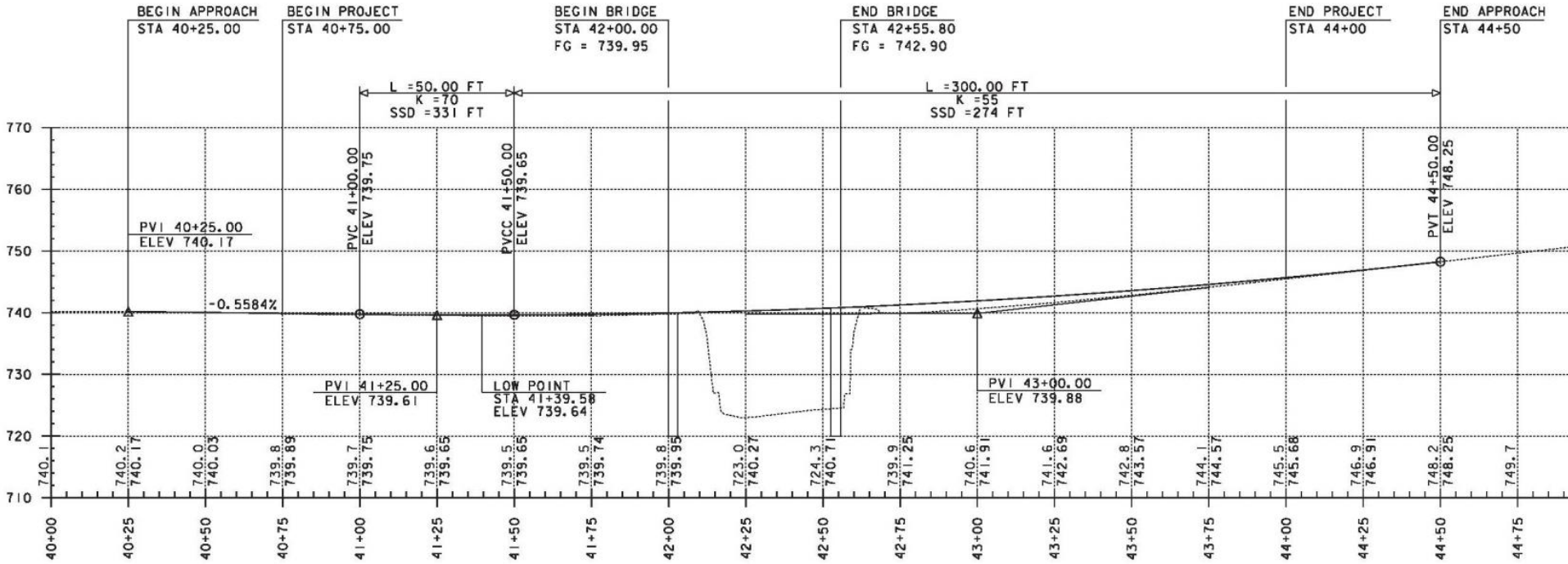
Typical Sections



Layout – Complete Replacement



Profile - Complete Replacement



Recommendation on Alternatives

We recommend Alternative 1 – Superstructure Replacement

- Addresses the serious structural concerns
- Minimal impact to the Village
- Minimal impacts to the historic resources
- Minimal project delivery time
- Good balance of investment versus return

Methods to Maintain Traffic

Three general methods available w/ hybrid combination:

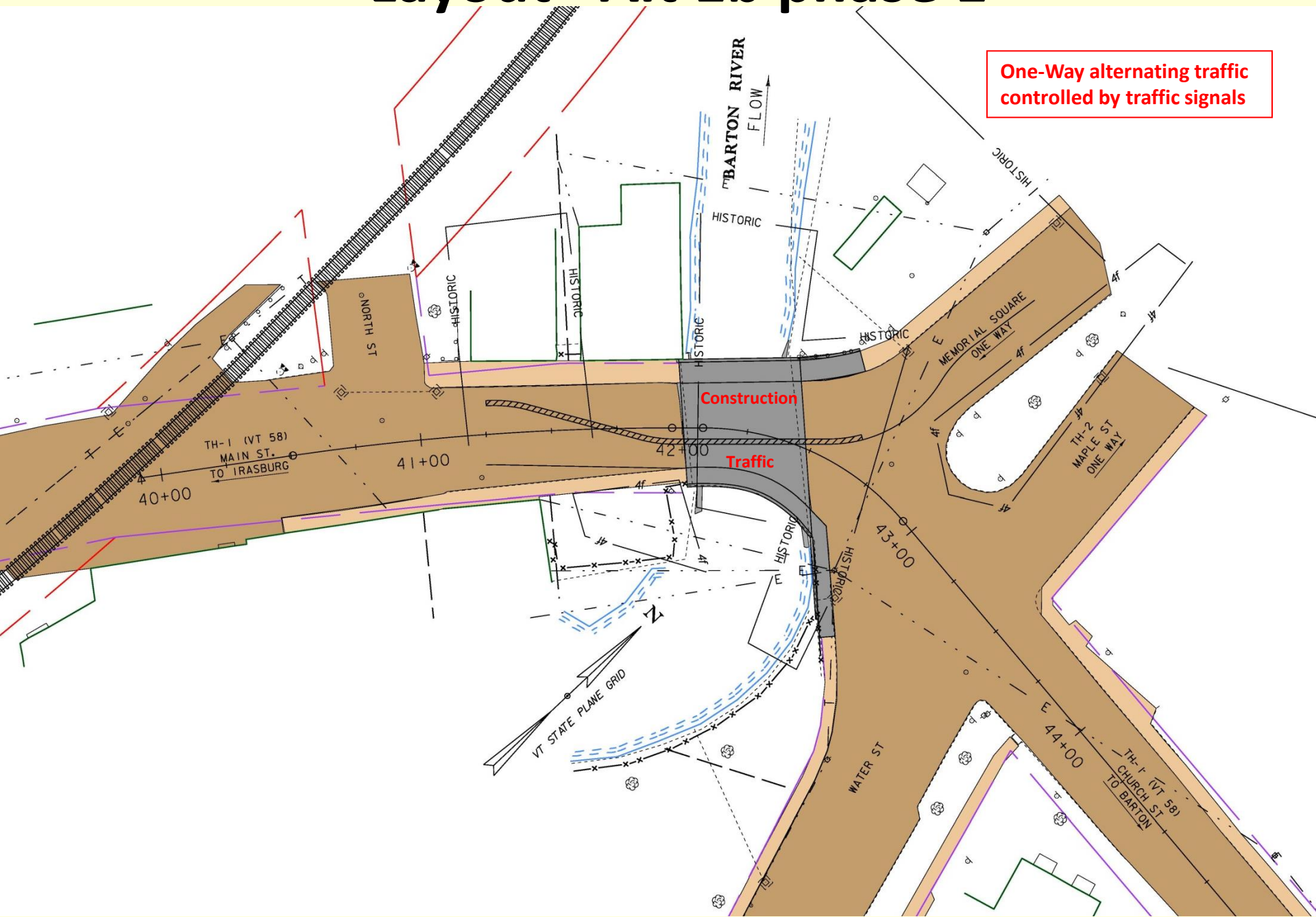
- Phased Construction
- Temporary Bridge
- Short-term bridge closure w/ off-site detour
- Hybrid (Combination of closure & phased)

Phased Construction Option

- Only considered for Superstructure Replacement
- Build half new bridge while traffic is on half of old bridge
- Switch traffic on new bridge portion
- Build remainder of new bridge
- One-Way alternating traffic with lights
- Queue lengths and queue times can be inconvenient
- Access to side drives/buildings needs to be considered
- Relatively long construction duration
- Workers & motorists in close proximity – safety concerns
- Can usually be done without ROW acquisition

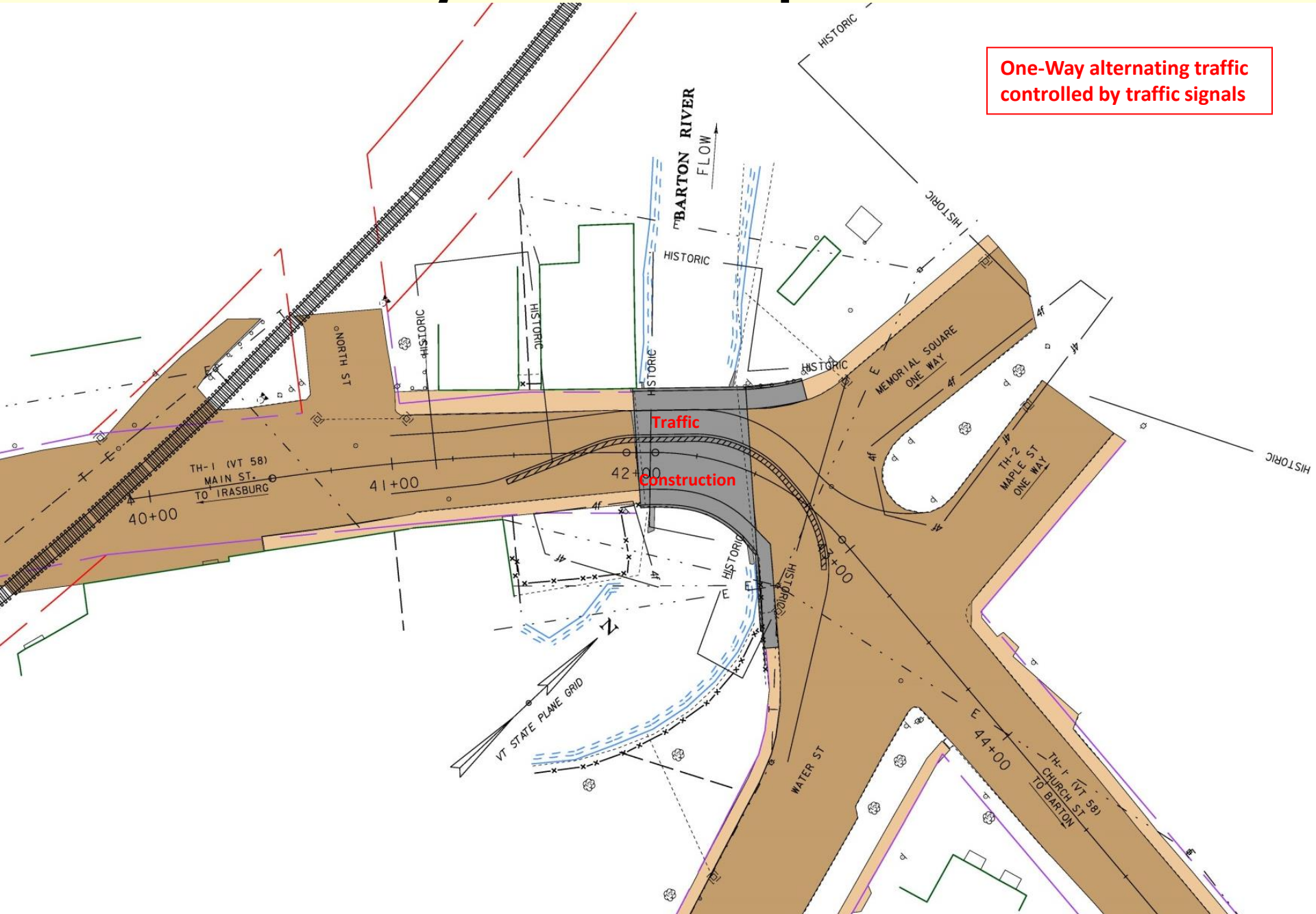
Layout –Alt 1b phase 1

One-Way alternating traffic controlled by traffic signals



Layout –Alt 1b phase 2

One-Way alternating traffic controlled by traffic signals



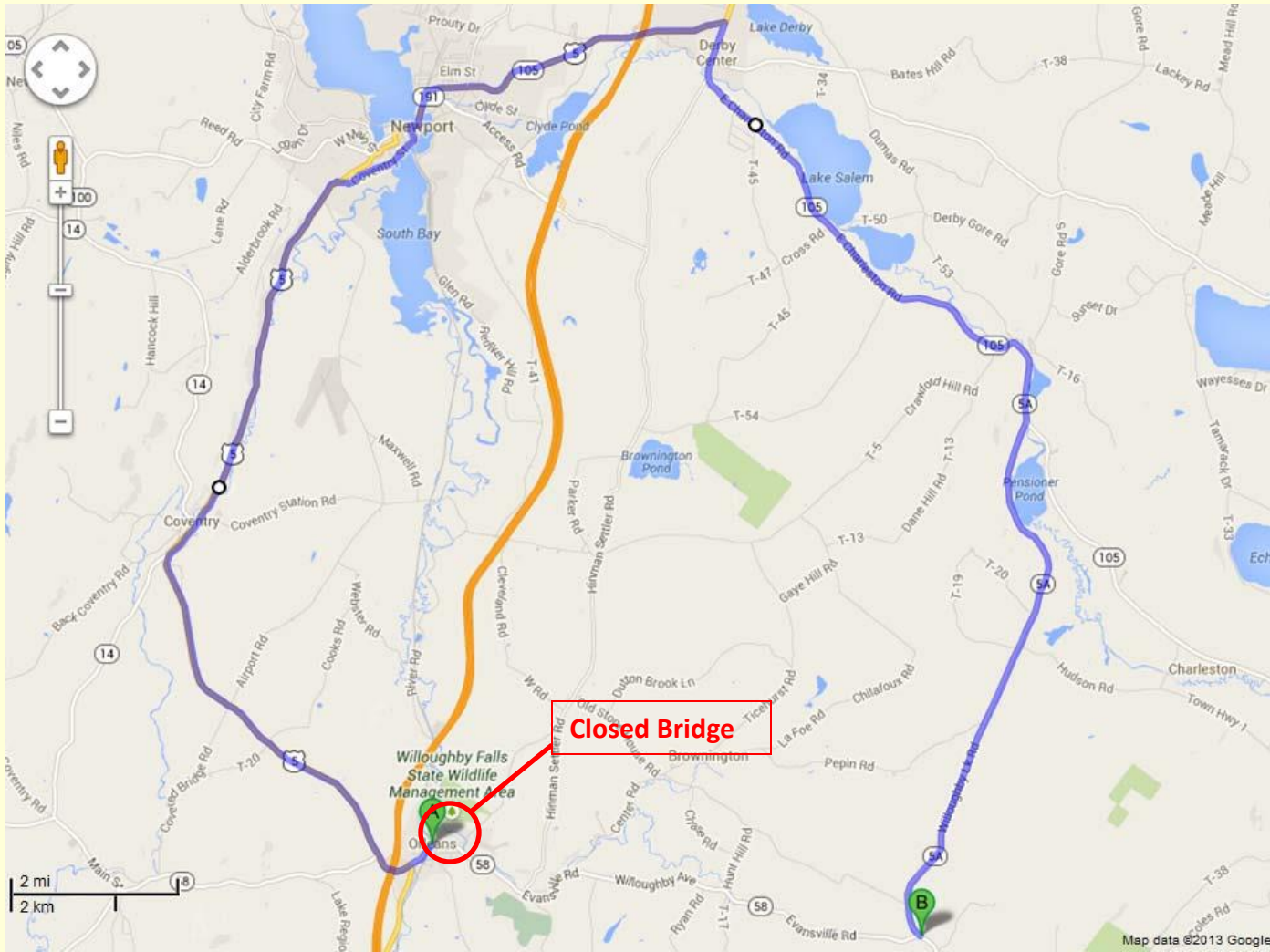
Temporary Bridge Option

- **Ruled out due to site constraints**
- Queue lengths and queue times can be inconvenient
- Access to side drives/buildings needs to be considered
- Very long construction duration
- Right-Of-Way acquisition is necessary
- Environmental impacts are increased
- Property owner impacts are increased
- Project Delivery time increased
- Project Costs increased-

ABC with Bridge Closure Option

- Bridge 10 to be closed for a period of time (see Matrix)
- Allow 24/7 construction during bridge closure
- Contract incentives/dis-incentives to encourage contractor
- Community would have input on time of closure (between June 1 and September 1)
- State would be responsible for signing detour route (Class 1)
- Local share would be cut in half (to 5% or 2.5%)

Bridge Closure Option



A to B on Thru Route: 6.6 Miles

A to B on Detour Route: 30.0 Miles

Added Miles: 23.4 Miles

End to End Distance: 36.6 Miles

Major Factors

Added Miles: 23.4

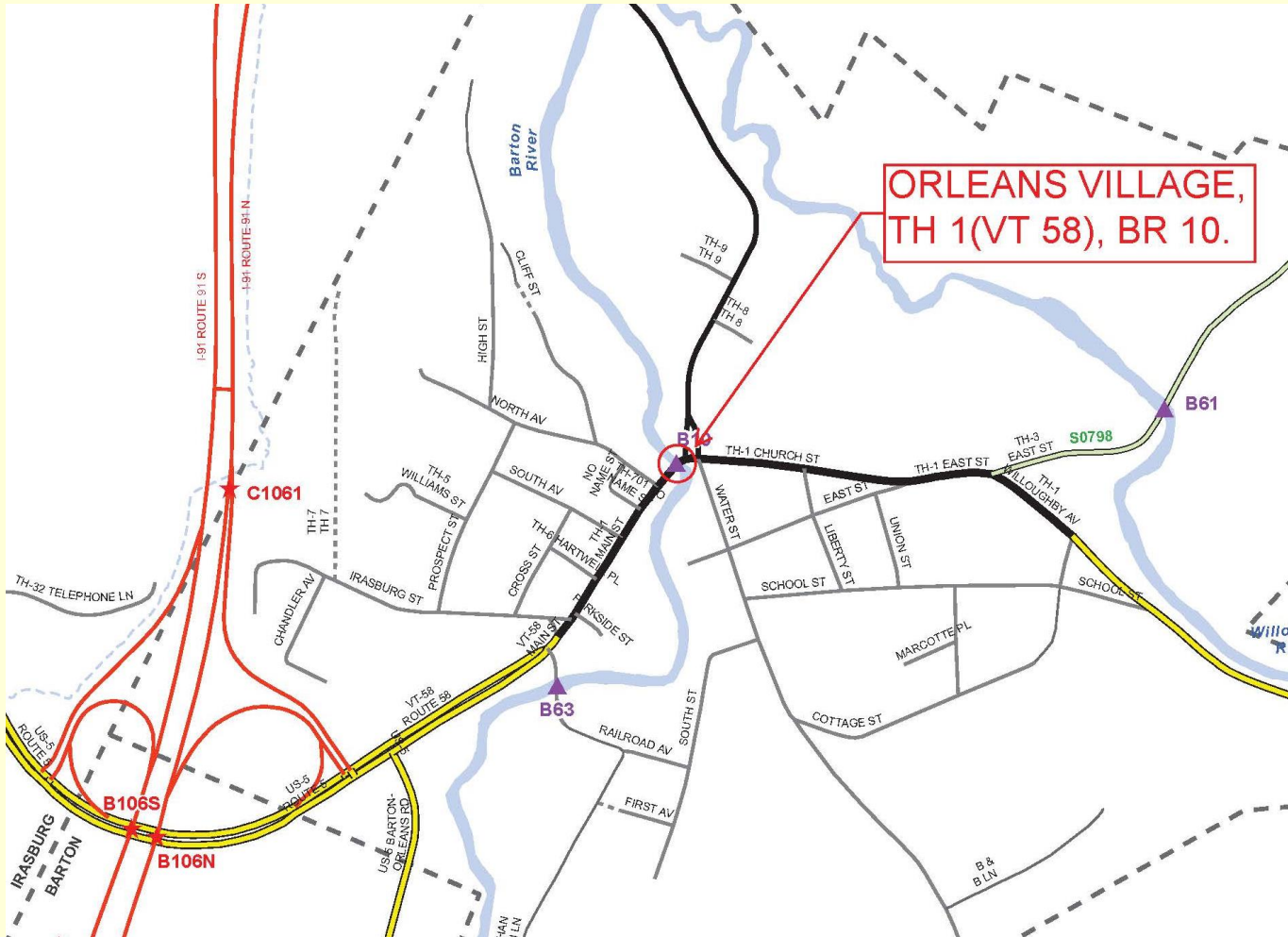
Traffic Volume: 4,600 vpd

Duration: 1 week – 6 mos. (depends on alternative)

Local Bypass Details

- A local bypass route is the most likely route to see an increase in traffic during the bridge closure other than the detour route
- No local routes would be appropriate for the detour route
- Local bypass route would not be considered the detour route
- State would not add signing on any local roads
- Route could be used for emergency response as appropriate

Local Bypass Map



Railroad Ave – South Street – Water Street (End – End distance 0.7 miles)

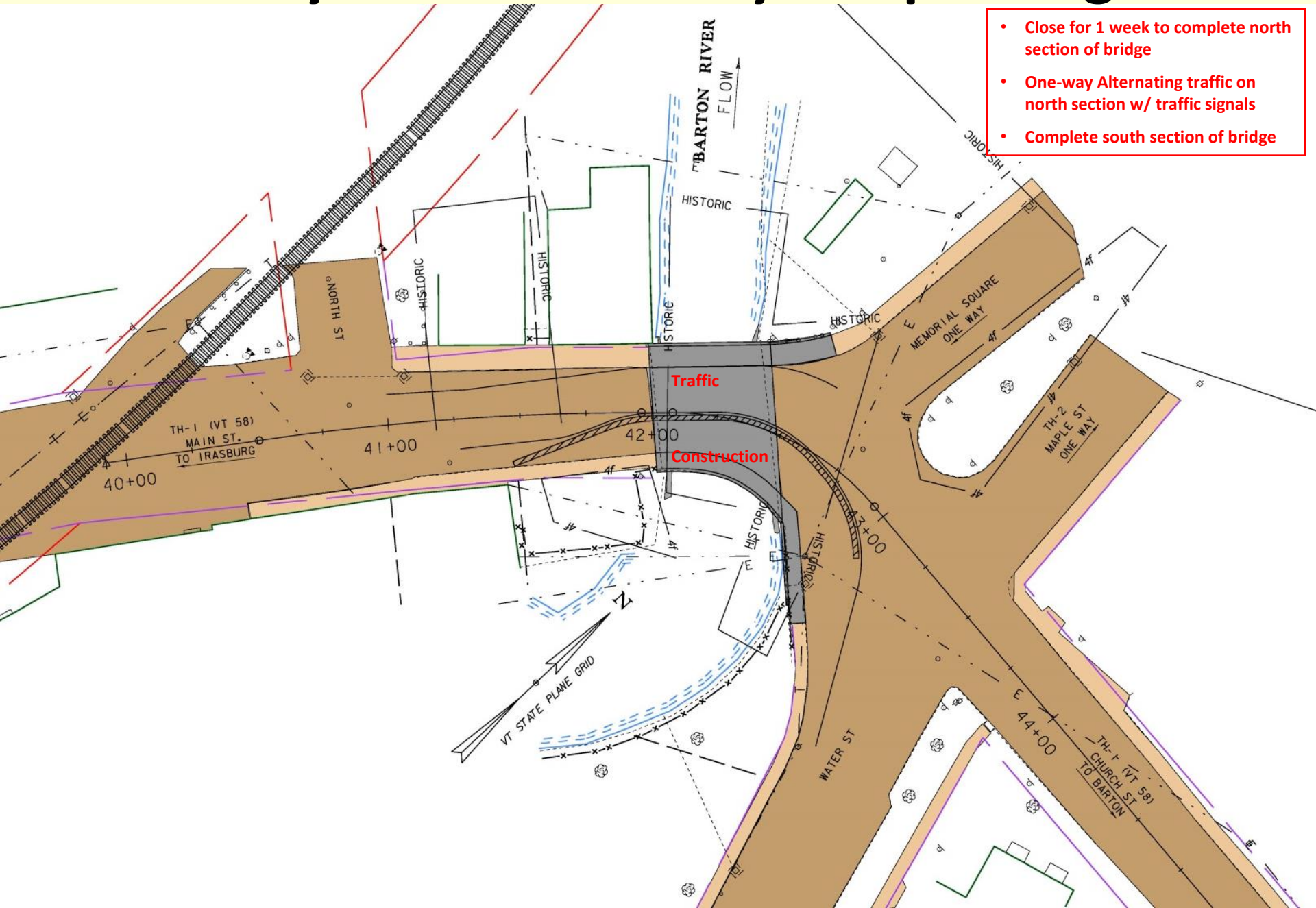
This route could be used by cyclists during a closure or by emergency responders

Phased Construction (Hybrid Approach)

- Combine ultra-short closure with phased construction
- Phase 1 – Close bridge for 7 days and build half of new bridge and channel one lane of traffic onto it
- Eliminates one phase and makes phasing possible
- Significant reduction in mobility impacts
- May reduce construction duration-

Layout – Alt 1c – Hybrid phasing

- Close for 1 week to complete north section of bridge
- One-way Alternating traffic on north section w/ traffic signals
- Complete south section of bridge



Alternatives Matrix

	Super Replacement w/ Detour	Super Replacement w/ Phased	Super Replacement w/ Hybrid	Complete Replacement
Construction w/ CE + Contingencies	\$1,510,600	\$1,705,470	\$1,703,520	\$2,023,840
Preliminary Engineering	\$406,700	\$459,165	\$458,640	\$544,880
Right of Way	\$70,000	\$70,000	\$70,000	\$500,000
Total Project Cost	\$1,987,300	\$2,234,635	\$2,232,160	\$3,068,720
Village Share (%)	\$49,700 (2.5%)	\$111,750 (5%)	\$55,804 (2.5%)	\$153,450 (5%)
Design Life	40 Years	40 Years	40 Years	80 Years
Project Development Duration	4 years	4 years	4 years	8 years
Construction Duration	3 months	6 months	4 months	18 months
Closure Duration	4 weeks	None	1 week	6 months

Conclusion and Recommendation

Superstructure Replacement while maintaining traffic using a combination of closure and phased (hybrid)

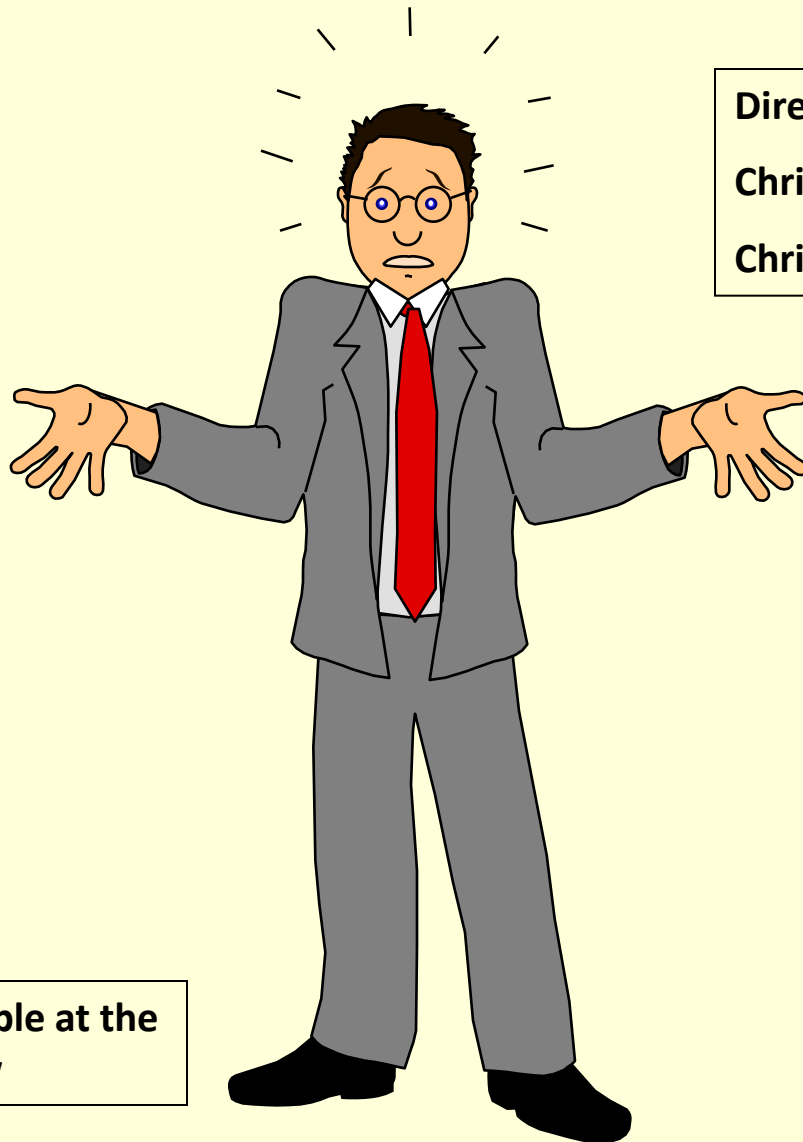
- Best chance to expedite project by minimizing impacts
- Balance of congestion during phasing and inconvenient detour route
- Addresses structural issues but maintains character
- Moderate term (40 year) solution

Next Steps

This is a list of a few important activities expected in the near future and is not a complete list of activities.

- Wait for decision from Village regarding recommendation
- Develop Conceptual Plans
- Historic permitting process
- Hold public meeting to present Conceptual plans
- PROJECT DEFINED milestone
- Develop Preliminary Plans
- Environmental permitting
- Utility relocation
- Right-of-Way process

Questions



Direct any questions to:
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This presentation is available at the
web address shown below

<https://outside.vermont.gov/agency/vtrans/external/Projects/Structures/13J084>