

# Regional Concerns Meeting

## Jay BHF 0278(3)

### Bridge 10 on VT 242 over Jay Branch



Presented by  
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# Meeting Outline

- Purpose of the Meeting
- Structures Section re-organization
- Existing bridge deficiencies
- Alternatives considered
- Summary and recommendation-

# Purpose of Meeting

- Present the alternatives that we have considered
- Explain the constraints to the project
- Help you understand our approach 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 -

# Accelerated Bridge Program

- Began in January 2012
- Bridges are deteriorating faster than we can fix them
- Accelerated Bridge Construction (ABC) with short-term closures used when appropriate
- Impacts to property and resources is minimized
- Results in project being delivered faster
- Goal of 25% of projects into Accelerated Bridge Program
- Goal of 2 year design phase for ABP (5 years conventional)
- Visit the website at [acceleratedbridge.vermont.gov](http://acceleratedbridge.vermont.gov)

# Project Initiation & Innovation Team

- Part of re-organization in January 2012
- Currently team of 5
- All projects will begin in the PIIT
- Very efficient process
- Look for innovative solutions whenever possible
- Involved until Project Scope is defined
- Hand off to Design Project Manager to continue Project Design phase -

# Phases of Development

Project  
Funded

Project  
Defined

Contract  
Award

Project Definition

Project Design

Construction

Identify resources &  
constraints

Evaluate alternatives

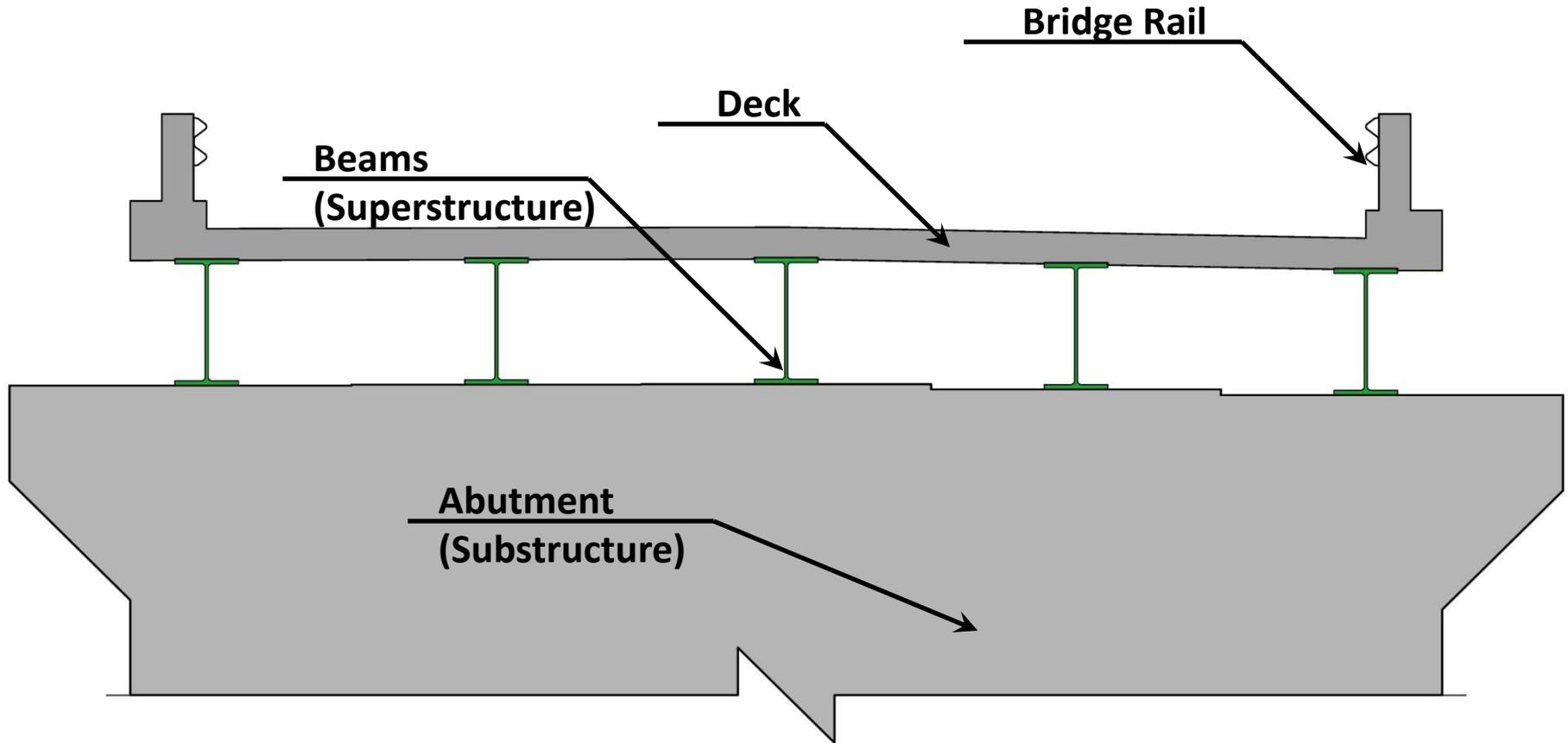
Public Participation

- Quantify areas of  
impact

- Environmental  
permits

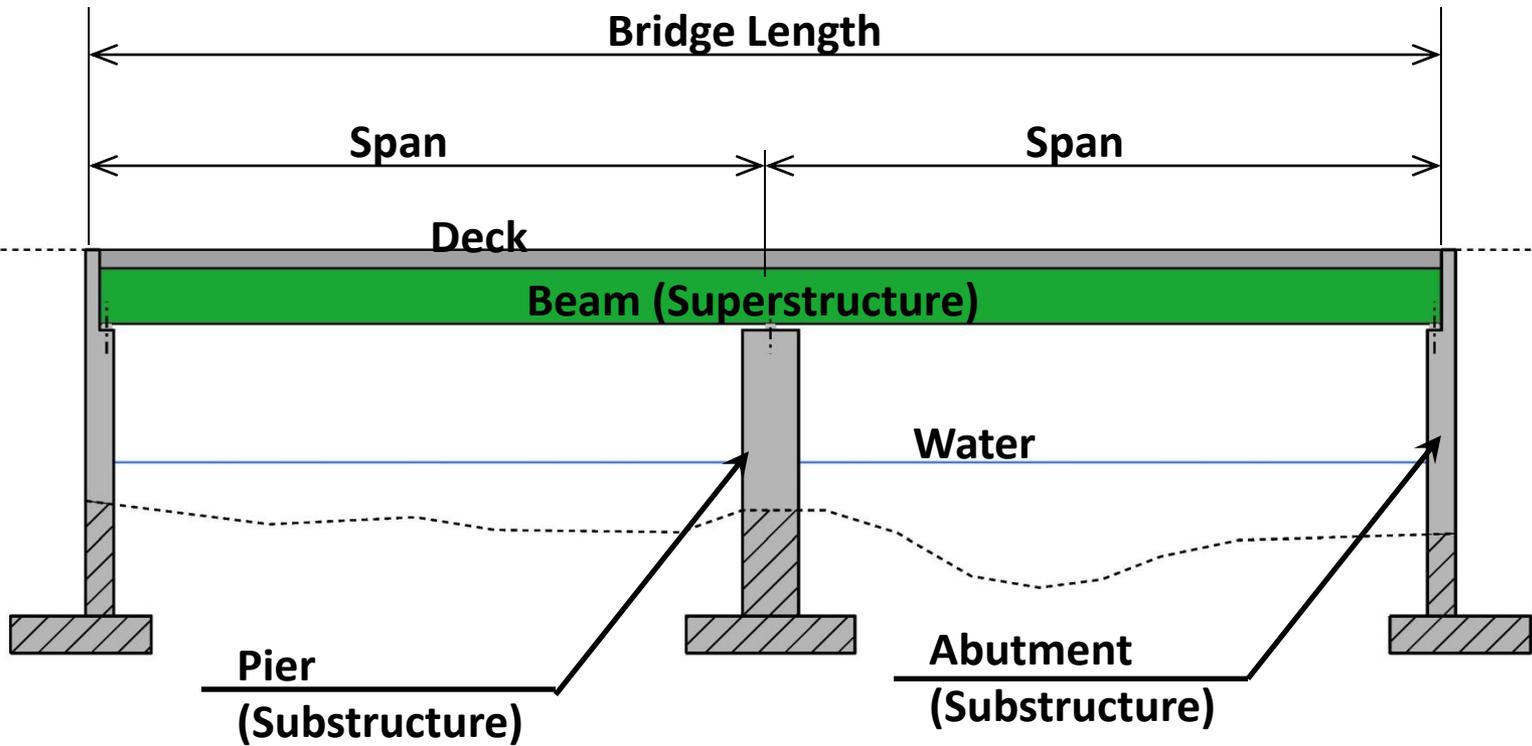
- Develop plans,  
estimate and  
specifications

# Description of Terms Used



**Cross Section of Bridge**

# More Terms Used



**Elevation View of Bridge**

# Project Background

- Existing bridge is a single span concrete T-beam bridge
- Span length = 28'
- Bridge width = 30'
- Built in **1927 (86 years old) – reconstructed in 1964**
- Posted speed limit = 40 mph
- Owned and maintained by the State (no local funds)
- VT 14 functional classification is Rural Major Collector
- **Priority 24** in the State Bridge Program-

# Project Background

- Traffic Data

<b>TRAFFIC DATA</b>	<b>2015</b>	<b>2035</b>
<b>AADT</b>	<b>1,400</b>	<b>1,500</b>
<b>DHV</b>	<b>290</b>	<b>300</b>
<b>ADTT</b>	<b>170</b>	<b>240</b>
<b>%T</b>	<b>11.6</b>	<b>15.6</b>

# EXISTING BRIDGE DEFICIENCIES

## Inspection Report Information (Based on a scale of 9)

Bridge Deck Rating	4 Poor
Superstructure Rating	5 Fair
Substructure Rating	6 Satisfactory

## Deficiencies

- Structural Capacity/Condition of the Bridge Deck and T-beams
- The bridge is undersized hydraulically
- Undermining and scour on the downstream wingwall on the north abut

# Looking North



# Bridge Looking South



# Looking Upstream



# Utility along west side



03.22.2012

# Southeast Wingwall (Utility under bridge)



# Northeast Wingwall



# Southwest Wingwall



# Underside of Deck





# Alternatives Considered

Note that several alternatives were considered in the Scoping Report that did not warrant future consideration so are not included in this presentation

- Superstructure Replacement
- Full Bridge Replacement

Note that the method to maintain traffic will be addressed later

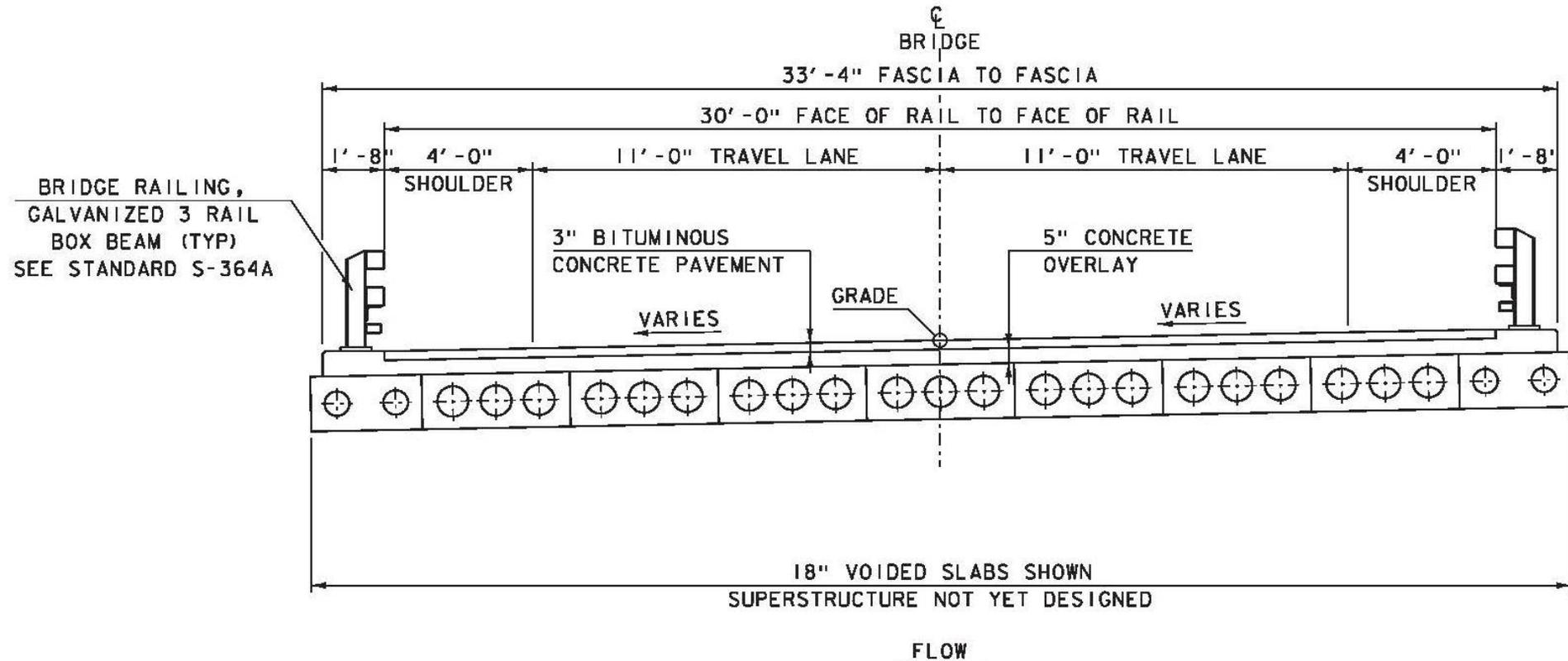
# Superstructure Replacement

- Use 11' lanes and 4' shoulders (30' rail-rail width)
- Keep existing abutments
- Address scour at outlet end
- Maintain existing centerline of road
- Maintain vertical grade of road
- Structural deficiencies would be addressed
- No improvement to hydraulic capacity
- Complicated by the presence of underground utilities
- Predicted 40 year life expectancy-

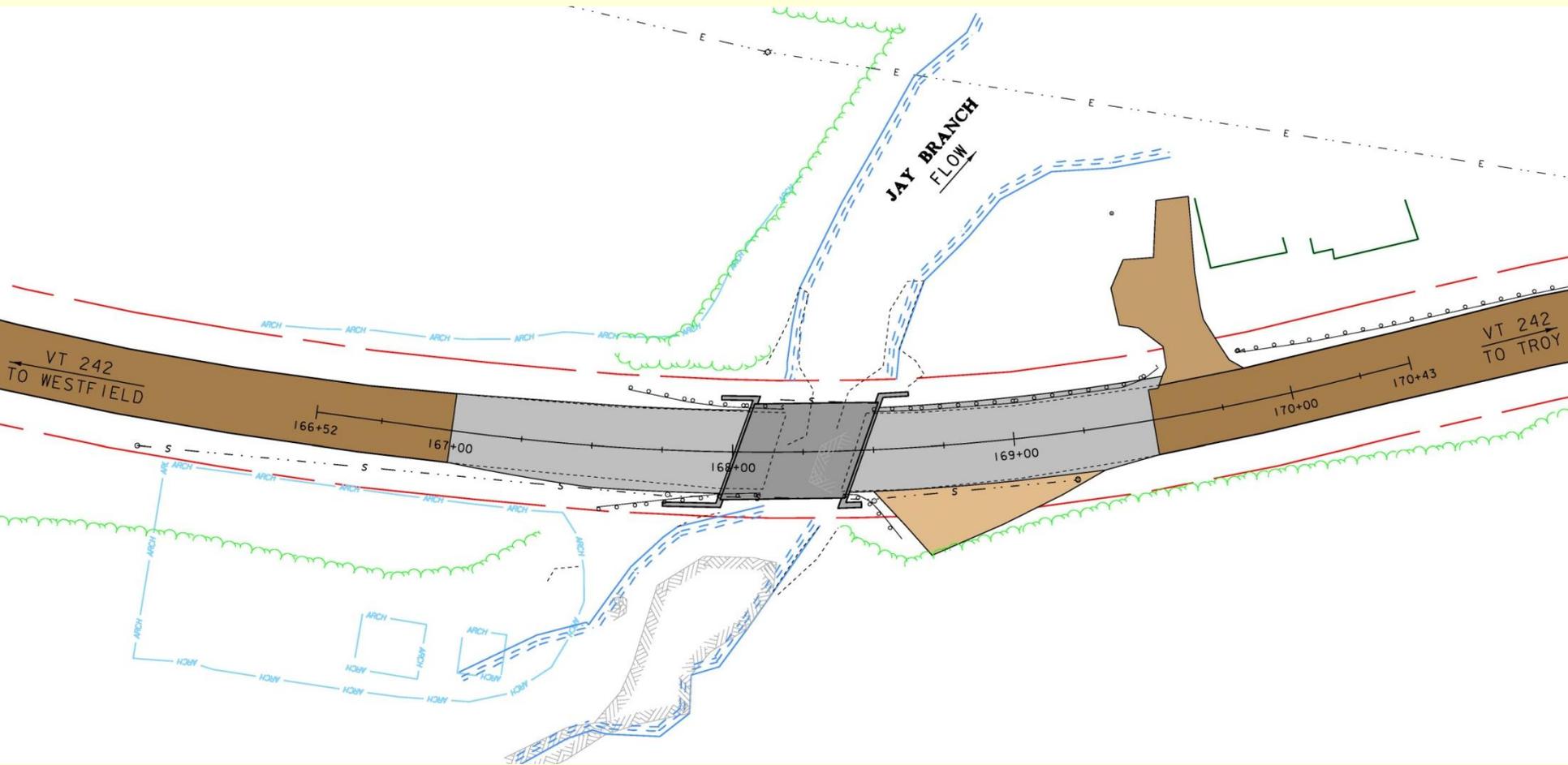
# Full Bridge Replacement

- Use 11' lanes and 4' shoulders (30' rail-rail width)
- Increase span to approximately 48 feet
- Maintain existing centerline of road
- Maintain vertical grade of road
- All design criteria would be met
- Improvement to hydraulic capacity
- Underground utilities would be relocated
- Right-of-Way would be required to remove portion of existing structure
- Predicted 80 year life expectancy-

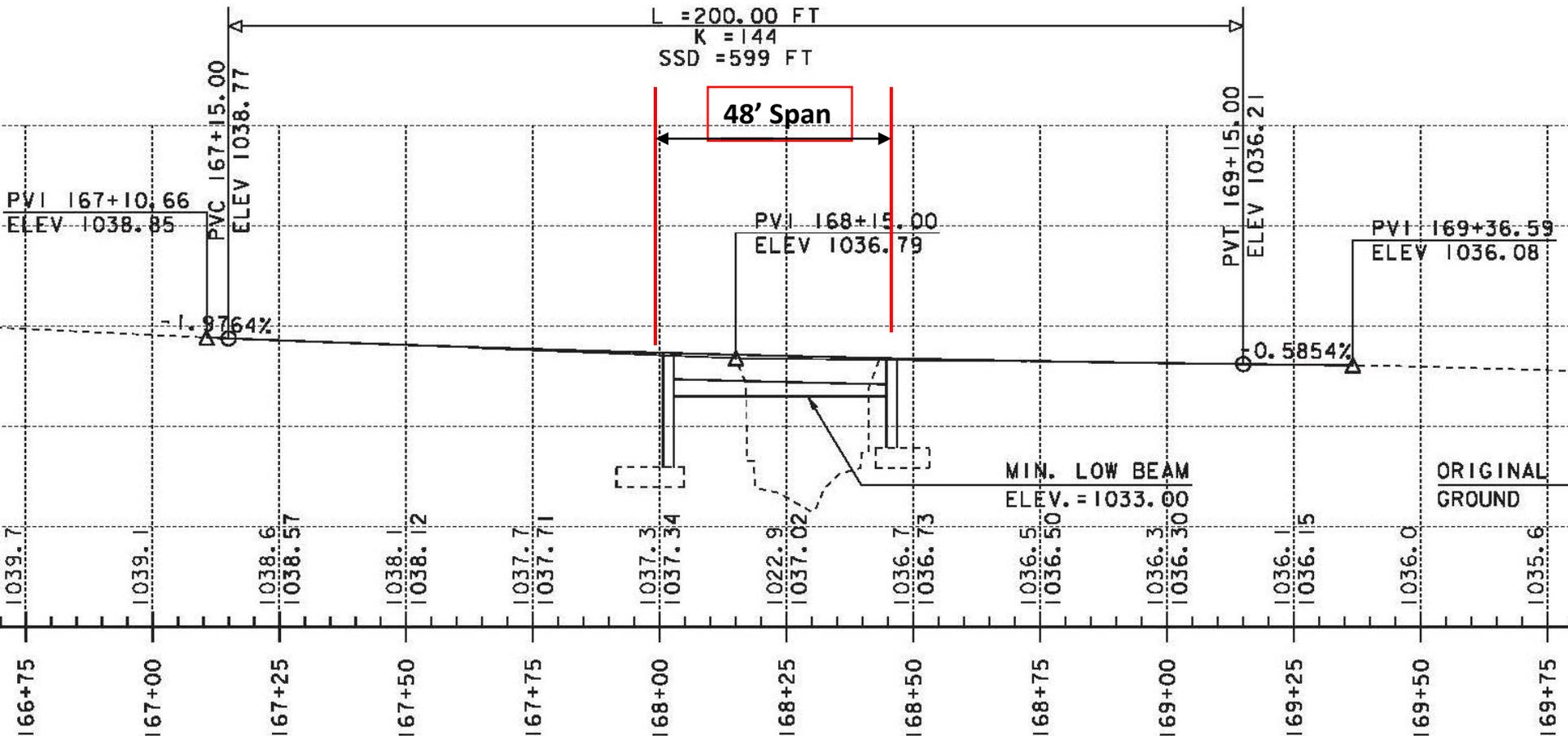
# Proposed Bridge Typical



# Layout – Full Replacement



# Profile – Full Replacement



# Methods to Maintain Traffic

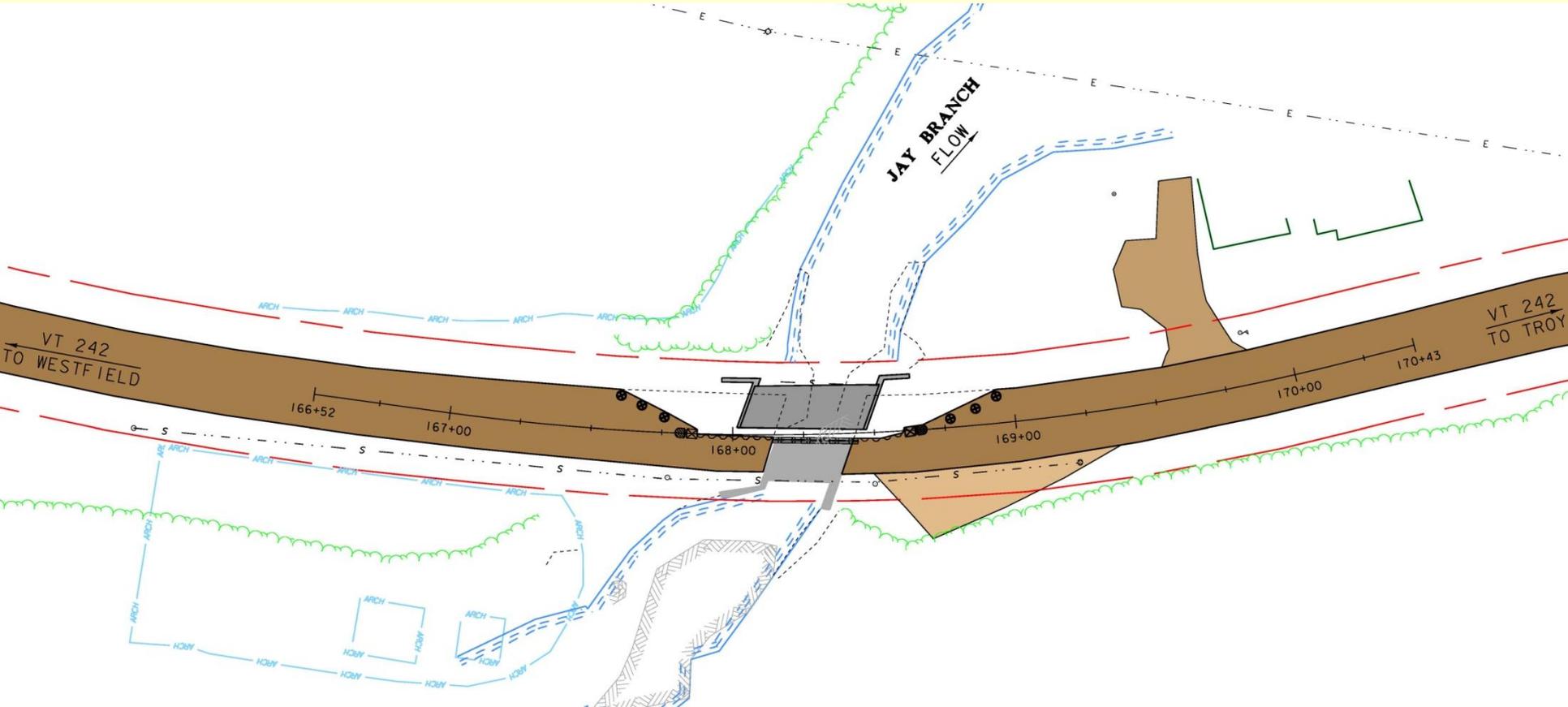
- Off-site Detour
- Phased Construction
- Temporary Bridge



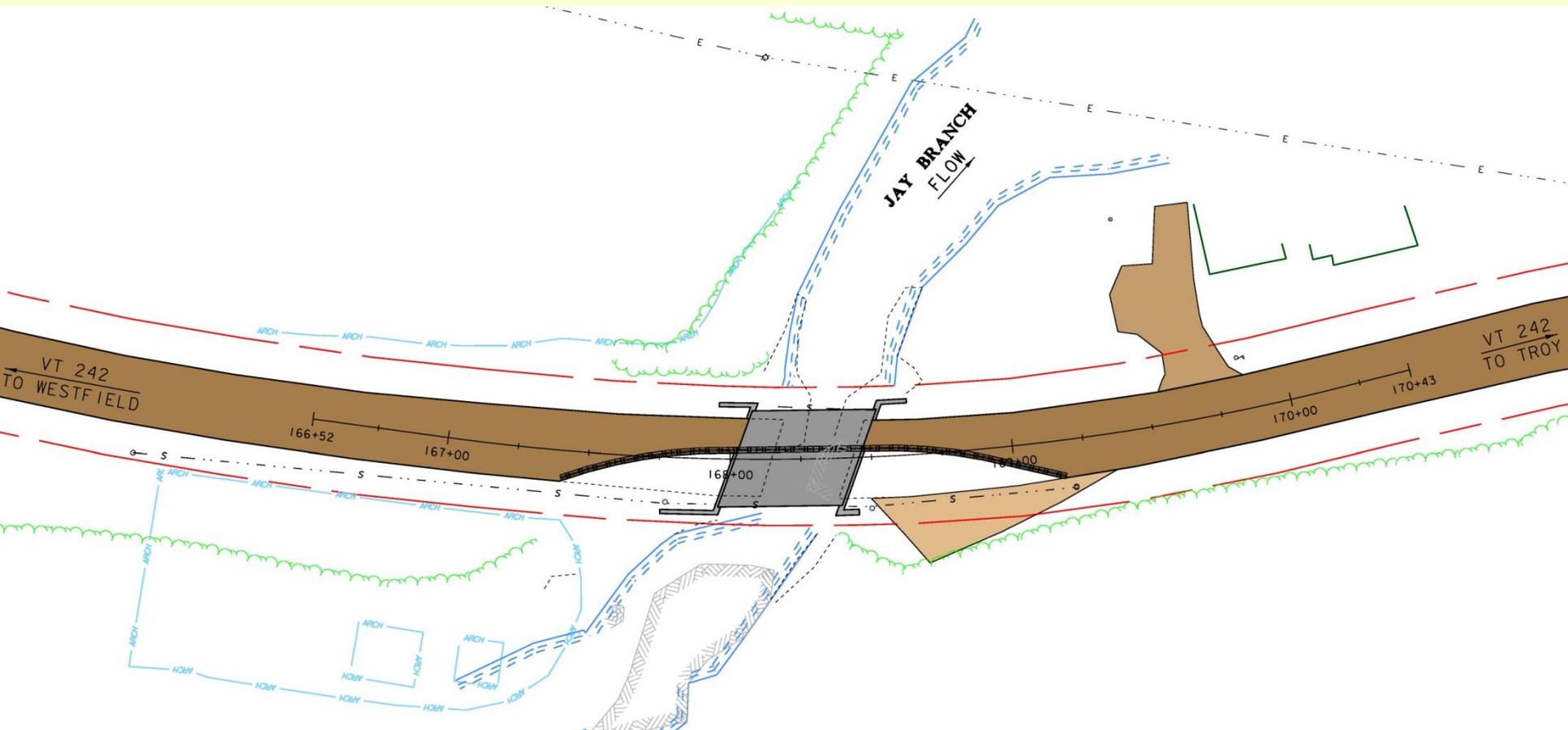
# Phased Construction Option

- Build half new bridge while traffic is on half of old 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
- Can usually be done without ROW acquisition

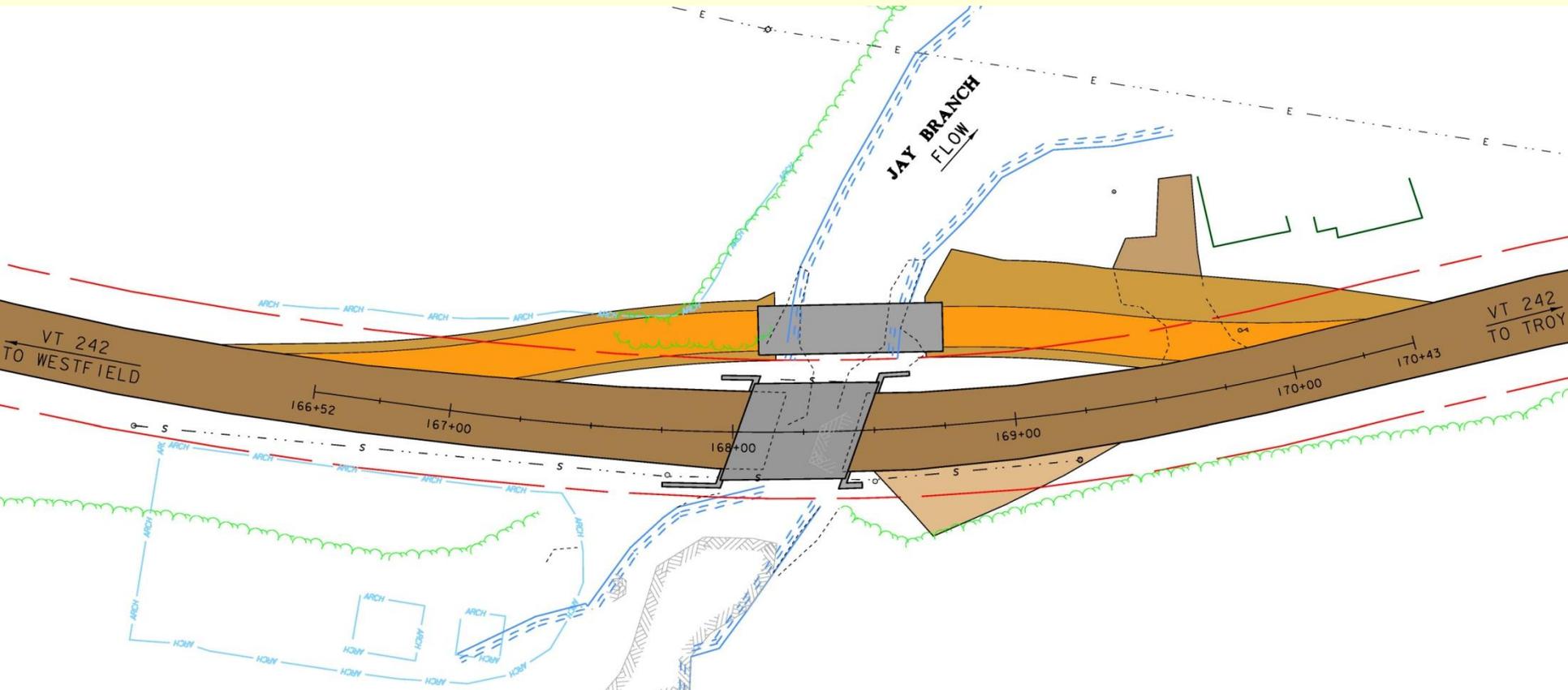
# Phase 1 – Build half of new bridge



# Phase 2 - Build remainder of new bridge



# One-Way Temporary Bridge w/ Lights



# Alternatives Matrix

	Super Replacement w/ Temp Bridge	Super Replacement w/ Phased	Super Replacement w/ Detour	Complete Replacement w/ Temp Bridge	Complete Replacement w/ Phased	Complete Replacement w/ Detour
Maintenance of Traffic	\$100,000	\$40,000	\$15,000	\$100,000	\$40,000	\$15,000
Construction w/ CE + Contingencies	\$673,700	\$621,000	\$527,800	\$870,800	\$835,700	\$717,600
Preliminary Engineering	\$174,700	\$161,000	\$142,100	\$258,000	\$247,600	\$220,800
Right of Way	\$65,000	\$0	\$0	\$65,000	\$40,700	\$40,700
<b>Total Cost</b>	<b>\$913,400</b>	<b>\$782,000</b>	<b>\$669,900</b>	<b>\$1,193,800</b>	<b>\$1,124,000</b>	<b>\$979,100</b>
	<b>36% over Base</b>	<b>17% over Base</b>	<b>Base</b>	<b>22% over Base</b>	<b>15% over Base</b>	<b>Base</b>
Project Development Duration	5 years	3 years	3 years	5 years	4 years	4 years
Construction Duration	18 months	18 months	4 months	18 months	18 months	6 months
Mobility Impacts	32 weeks	8 weeks	3 weeks	32 weeks	12 weeks	6 weeks

# Conclusion and Recommendation

Complete bridge replacement while maintaining traffic using phased construction.

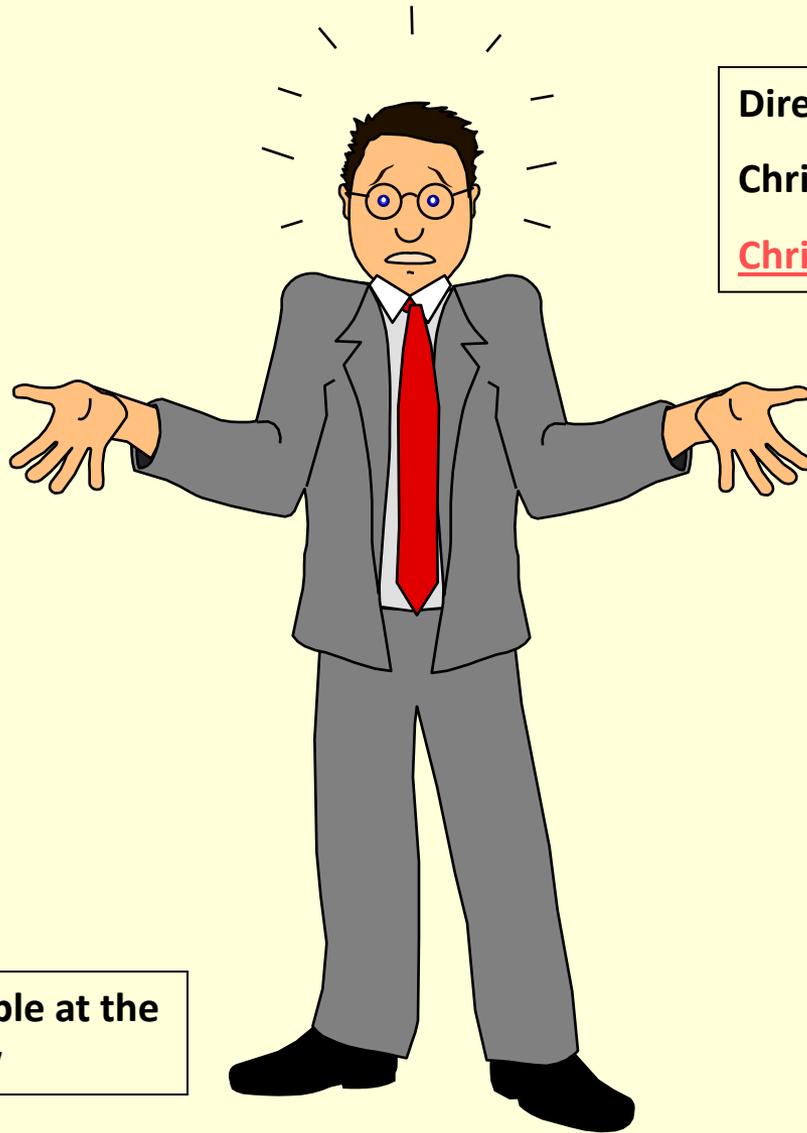
The primary reasons for this recommendation are:

- Improves the hydraulic capacity while balancing the constraints on the project
- Long term (80 year) solution
- Short-term bridge closure can not be justified with the volume of traffic, detour distance and duration
- Underground utilities add complication to design and construction phases so difficult to accelerate
- Temporary bridge can not be justified due to increased impacts and longer project delivery time-

## **A Look Ahead to the Next Steps**

- Evaluate and consider comments received at this meeting
- Proceed based on recommended alternative unless adequate justification for reconsidering alternatives
- Develop Conceptual plans and distribute for comment
- Prepare for Public 502 Hearing to inform public
- Reach Project Defined milestone and begin Design phase

# Questions



Direct any questions to:

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web address shown below

<https://outside.vermont.gov/agency/vtrans/external/Projects/Lists/Vtrans%20Project%20List/AllItems.aspx>