

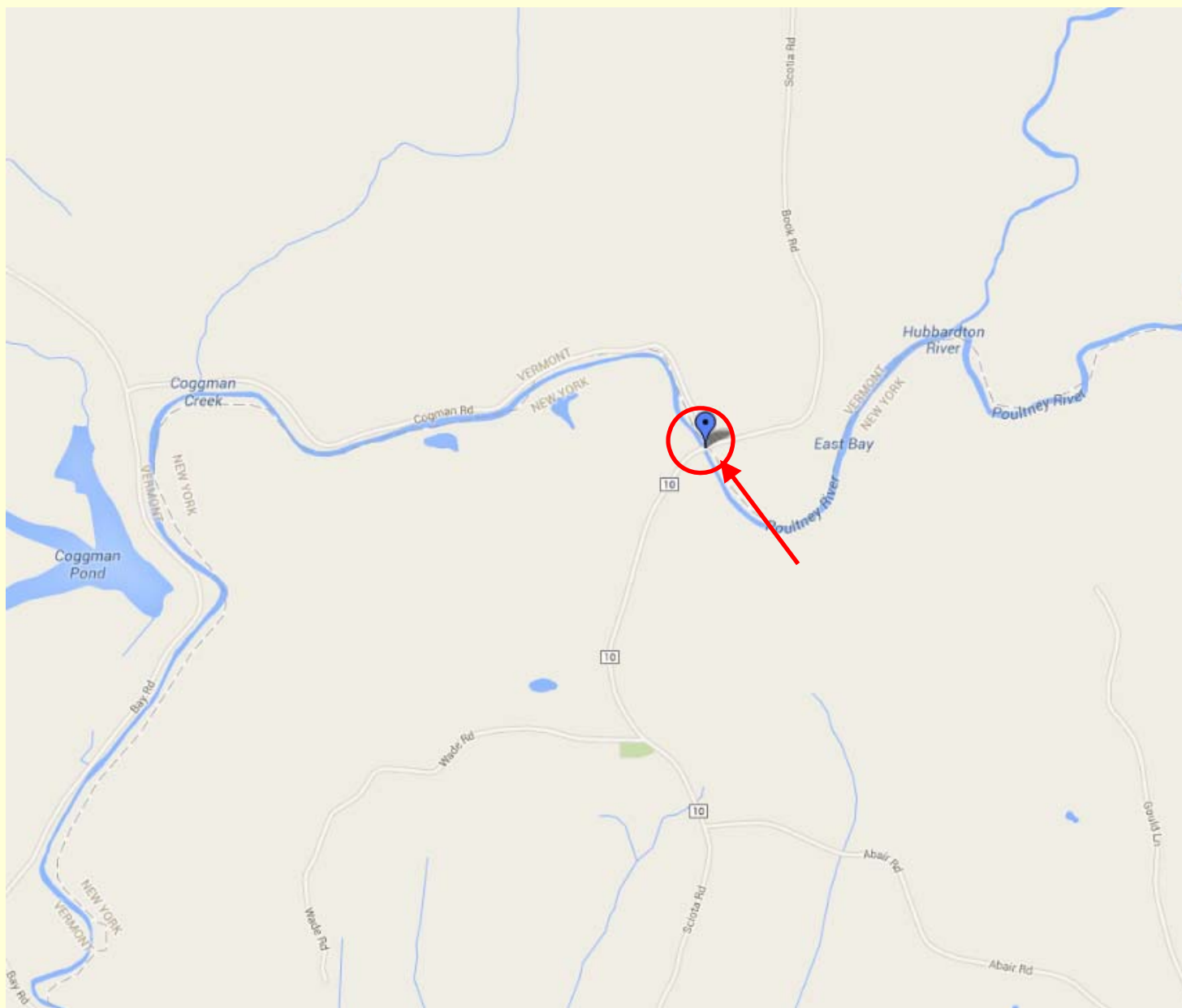
West Haven BO 1443(51) Bridge 10 on Town Highway 3 over the Poultney River Alternatives Presentation Meeting



**Presented by
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Vermont Agency of Transportation
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October 23, 2014

PROJECT LOCATION



Meeting Outline

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

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
- Hear your thoughts on the alternatives presented

Project Background

- The structure is owned and maintained by the Town of West Haven VT and Washington County NY
- Functionally labeled as a Rural Local Road
- Class 2 Town Highway
- Design Speed = 50 mph (30 mph warning sign)
- Existing bridge is a single-span Warren pony truss that has failed and a Mabey temporary bridge added on top
- Bridge span= 83 feet
- Bridge Width = 17 feet +/- between railings
- The bridge was built in 1921 (93 years old)

Traffic Data

	“Current Year” 2016	“Design Year” 2036
Average Annual Daily Traffic	95	100
Design Hourly Volume	25	25
Average Daily Truck Traffic	15	15
% Trucks	31.3	34.7

EXISTING BRIDGE DEFICIENCIES

Inspection Rating Information (Based on a scale of 9)

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

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 too narrow based on the design speed, traffic volume and classification of road
- The westbound approach is overtopped in the Q10 storm even
- The structure does not meet the ANR bankfull width
- The superstructure is rated poor and the substructure is only rated fair
- The horizontal and vertical alignments are substandard

Looking north over Bridge



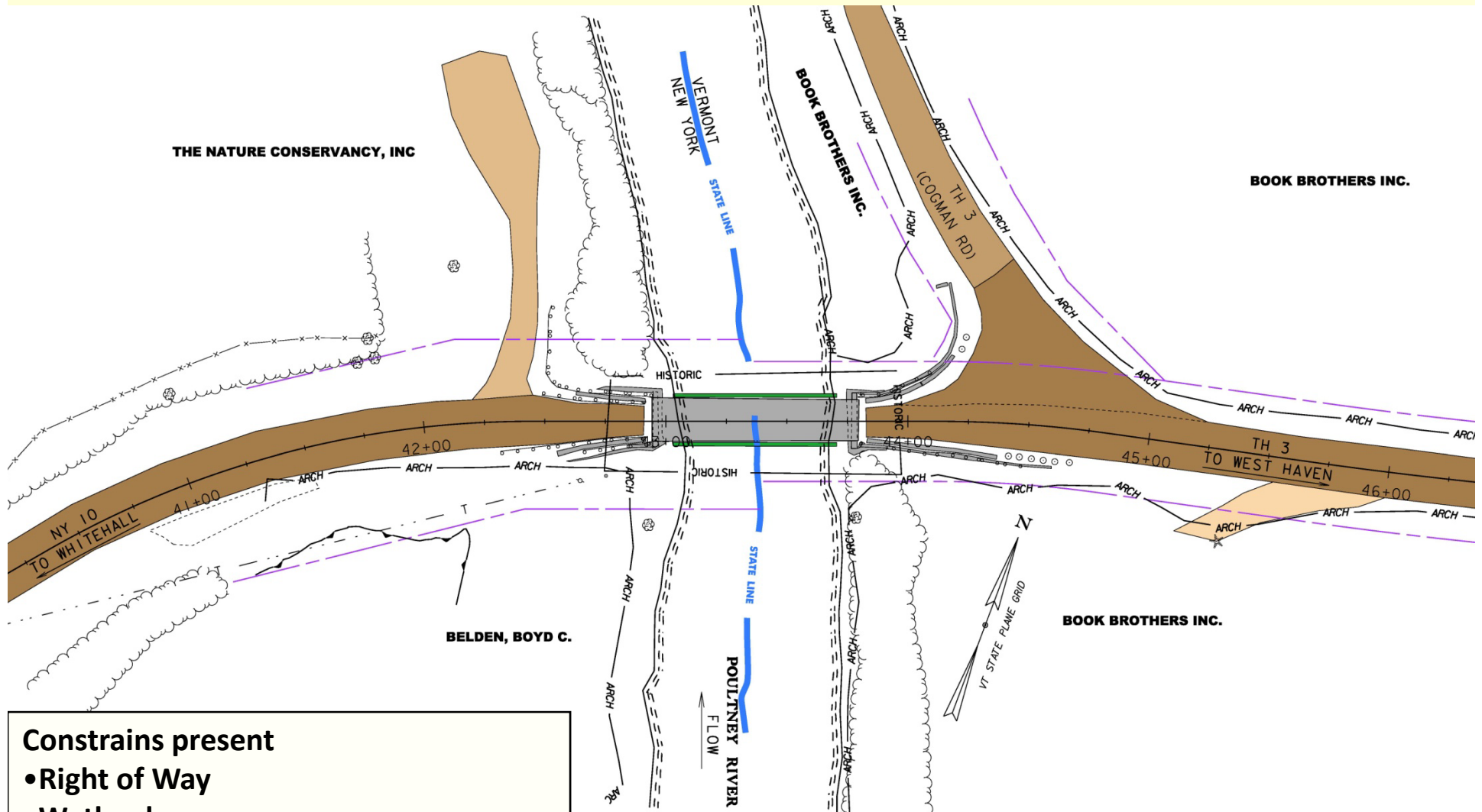
View of Fascia



Abutment



Layout Showing Constraints



Constraints present

- Right of Way
- Wetlands
- Archeological
- Historics

Alternatives Discussion

- Alt 1 - Truss Rehabilitation
- Alt 2 - New 140' span beam bridge
- Alt 3 - New 100' span truss bridge
- Alt 4 - New 83' span beam bridge w/ ornamental fascia
- Alt 5 - New 100' span beam bridge

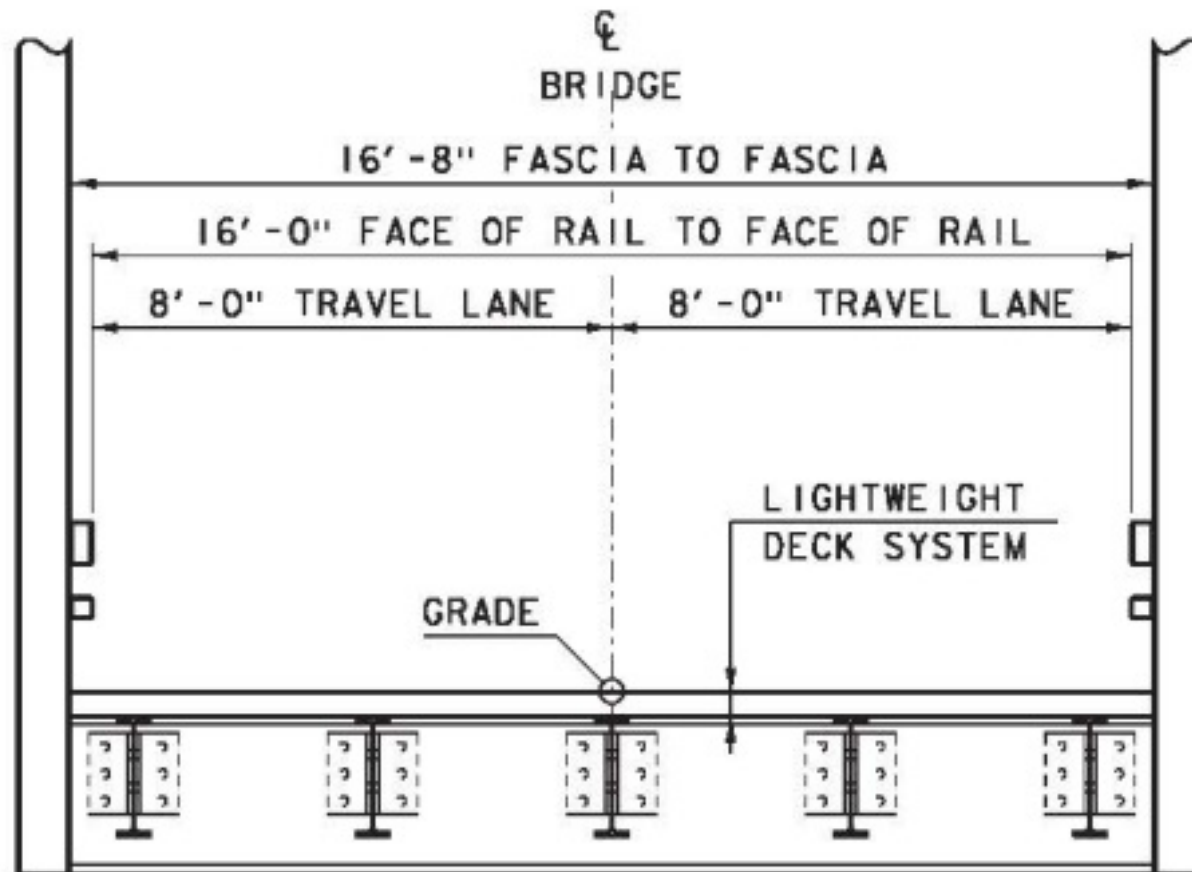
Note: The method to maintain traffic during construction will be considered separately later in the presentation

Alternative 1

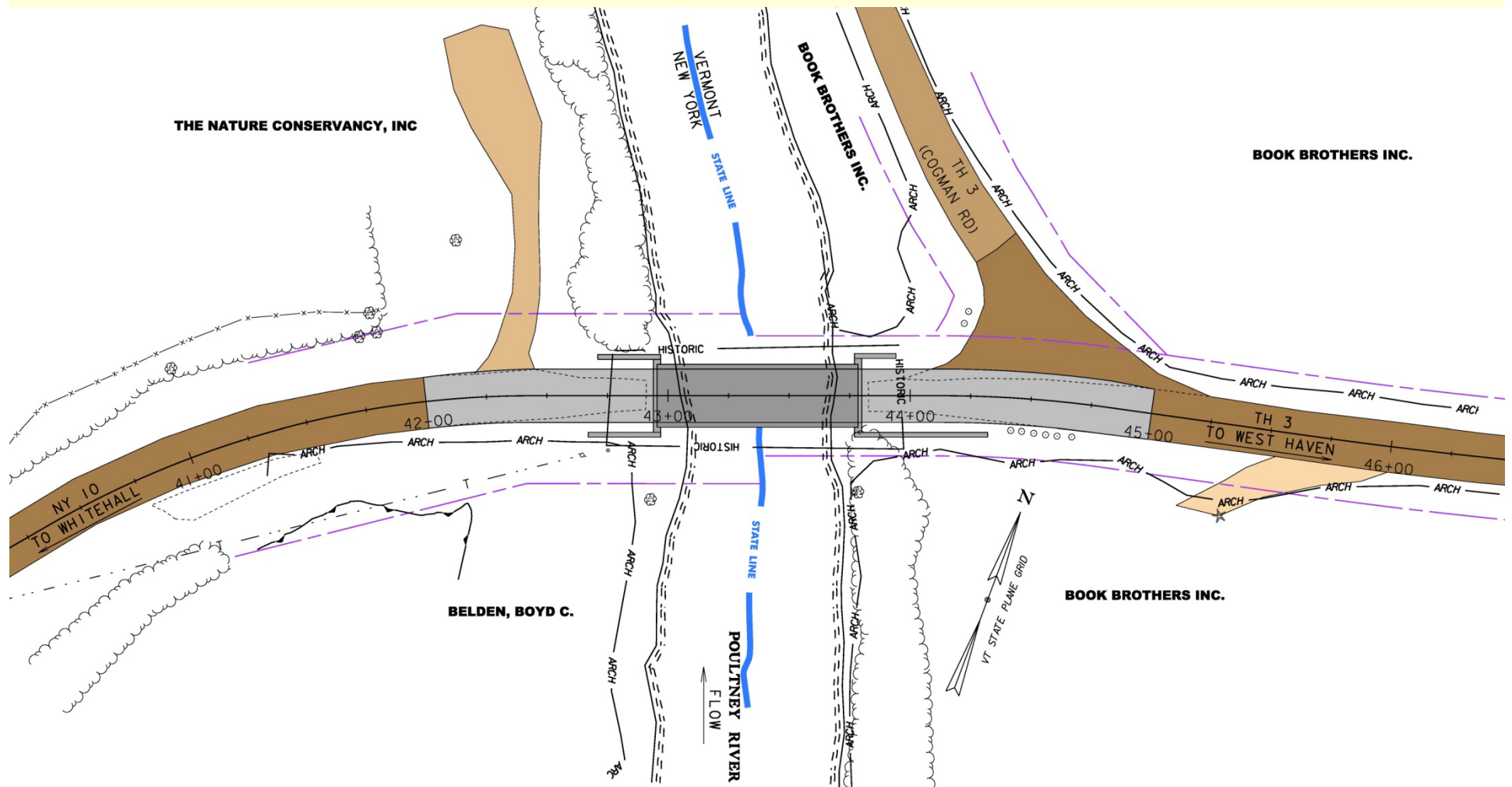
Truss Rehabilitation Details

- New spread footing abutments
- Rehabilitate truss
 - Existing width (16' +/-) would be maintained
 - Half of primary truss members would need to be replaced
 - Reduced load capacity (17 tons on 2 axles)
- Maintain existing centerline of road (horizontal alignment)
- Maintain existing profile of road (vertical alignment)
- The bridge would meet hydraulic standards but would not meet Bank Full Width (BFW) per ANR guidelines
- Long-term (80 year) solution

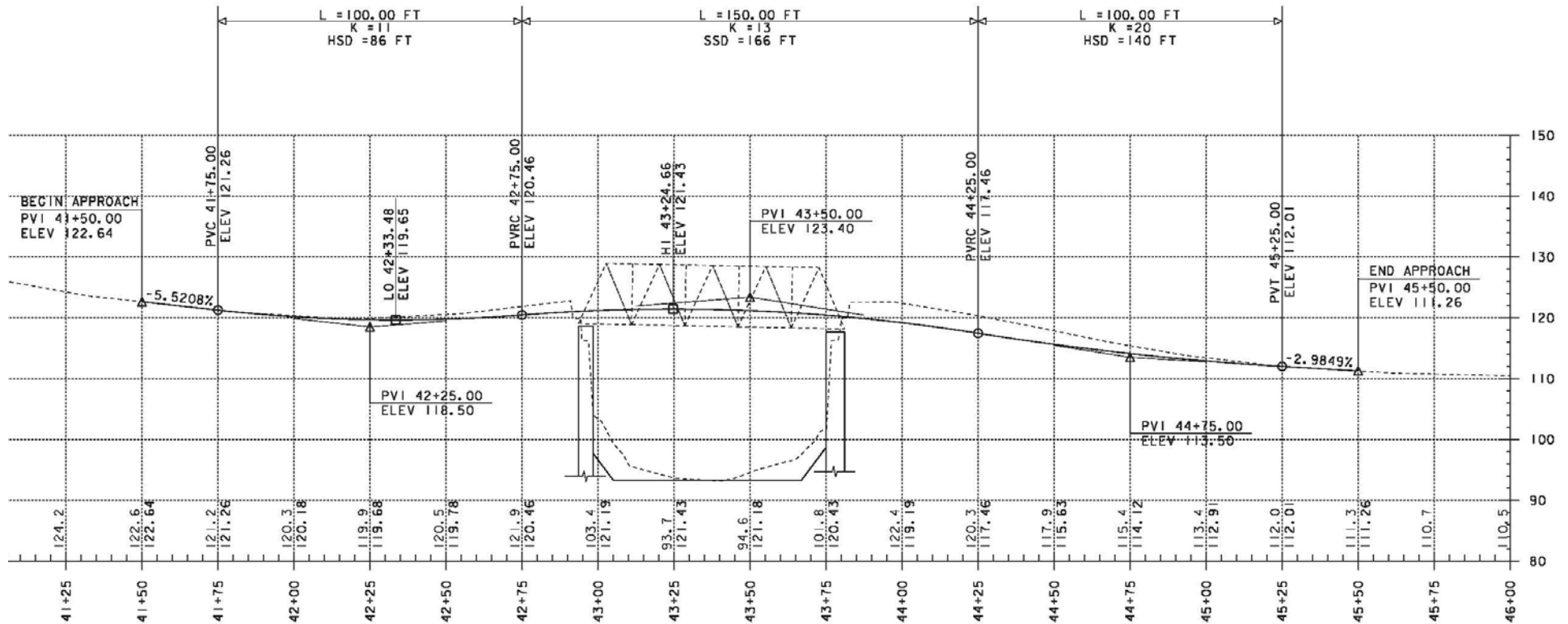
Typical Section - Alternative 1



Layout – Alt 1 Truss Rehabilitation



Profile – Alt 1 Truss Rehabilitation

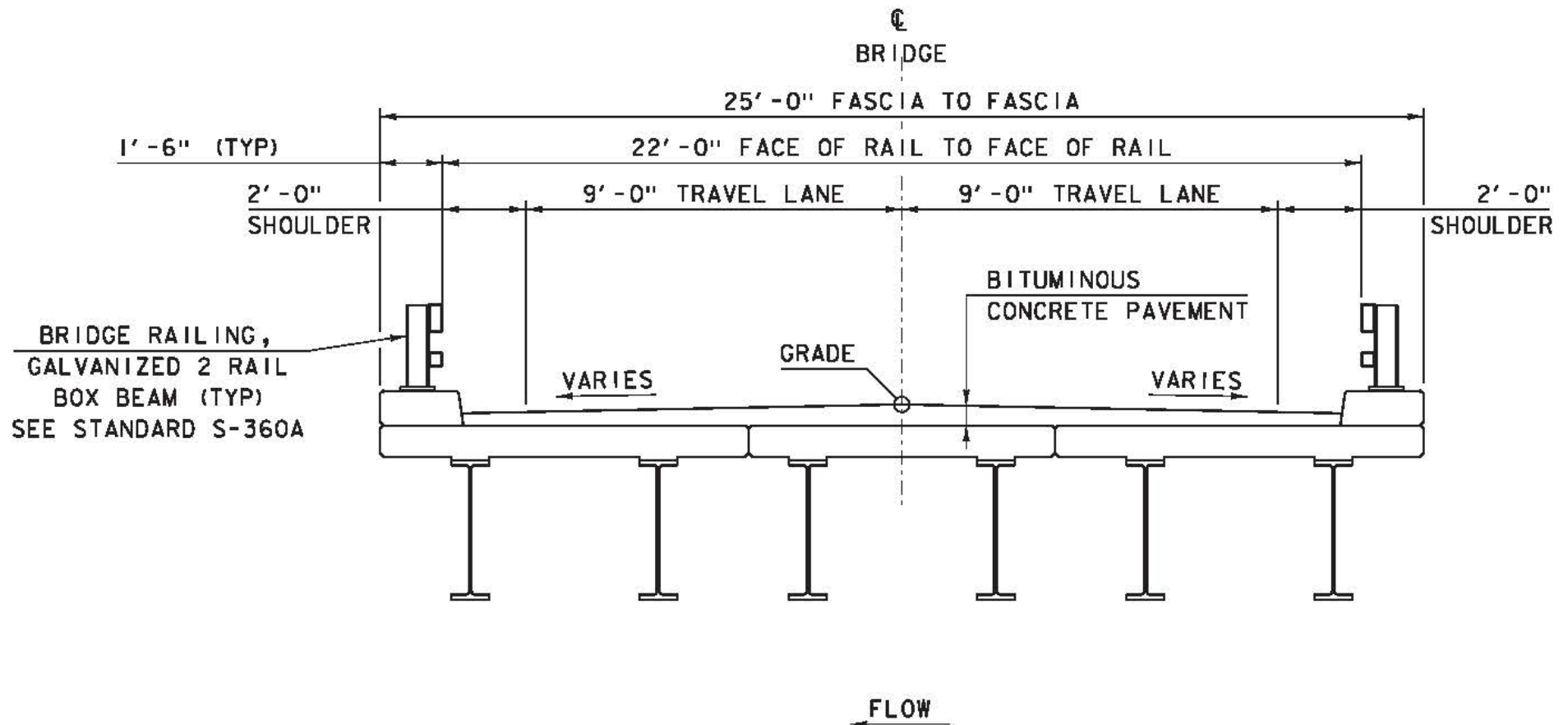


Alternative 2

140' Span Beam Bridge

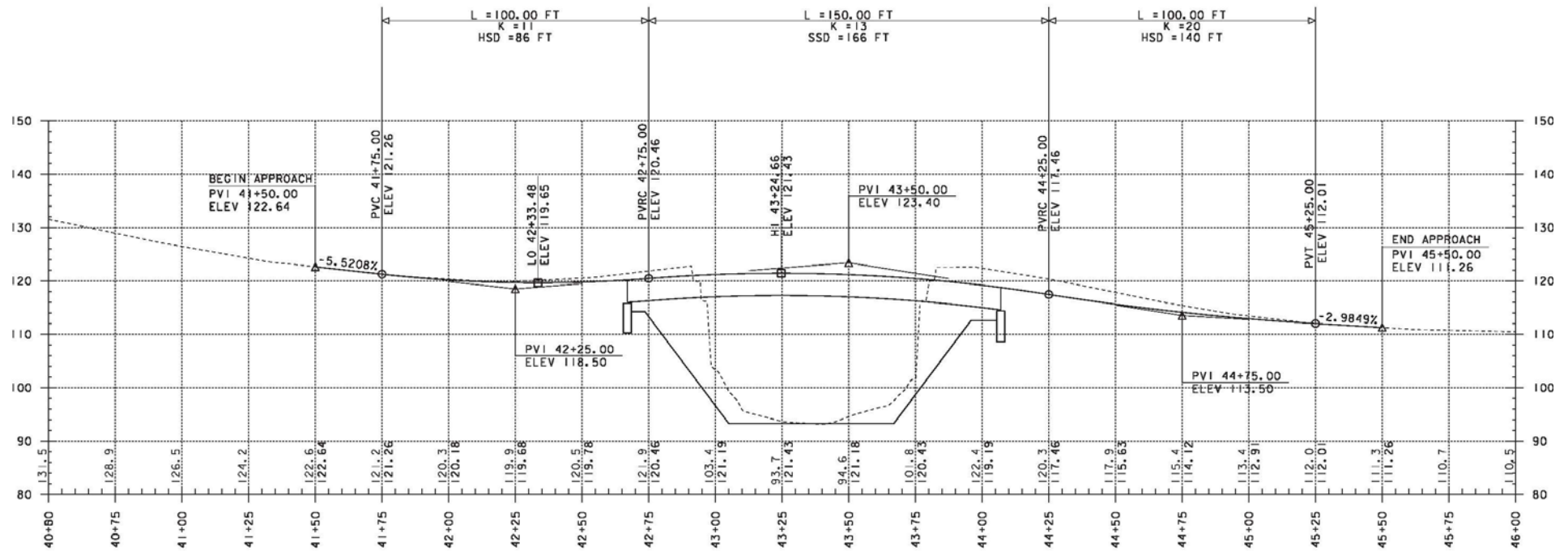
- Replace entire structure
- 22' width between face of railing (2'-9'-9'-2')
- Maintain existing centerline of road
- Maintain existing vertical alignment
- Increase span to 140'
- Superstructure would be steel beams w/ concrete deck
- Abutments would be prefabricated concrete on a single row of steel piles (Integral abutment)
- The bridge would meet hydraulic standards AND would meet Bank Full Width (BFW) per ANR guidelines
- Long term (80 year) solution

Typical Section - Alternative 2



Layout – Alt 2 - 140' Span Beam Bridge

Profile – Alt 2 - 140' Span Beam Bridge

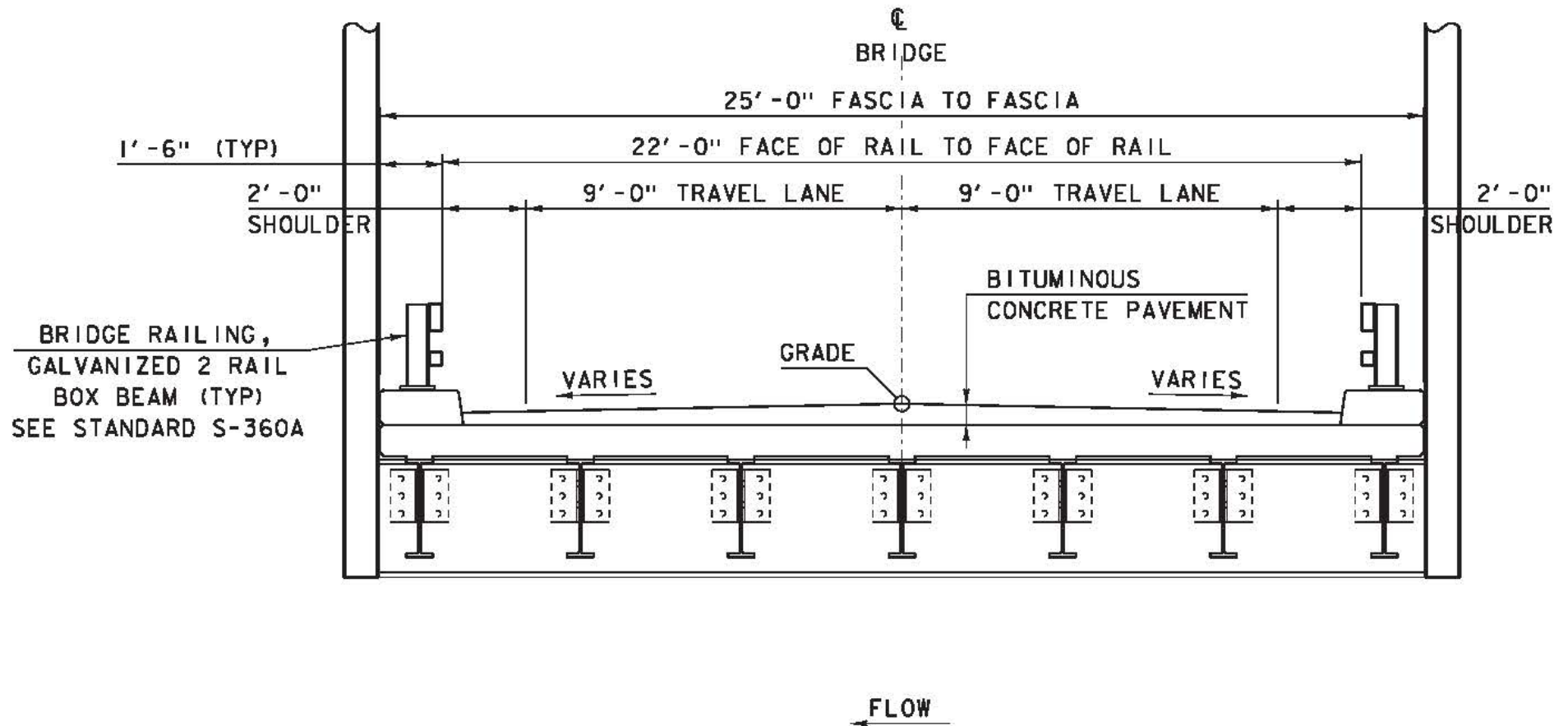


Alternative 3

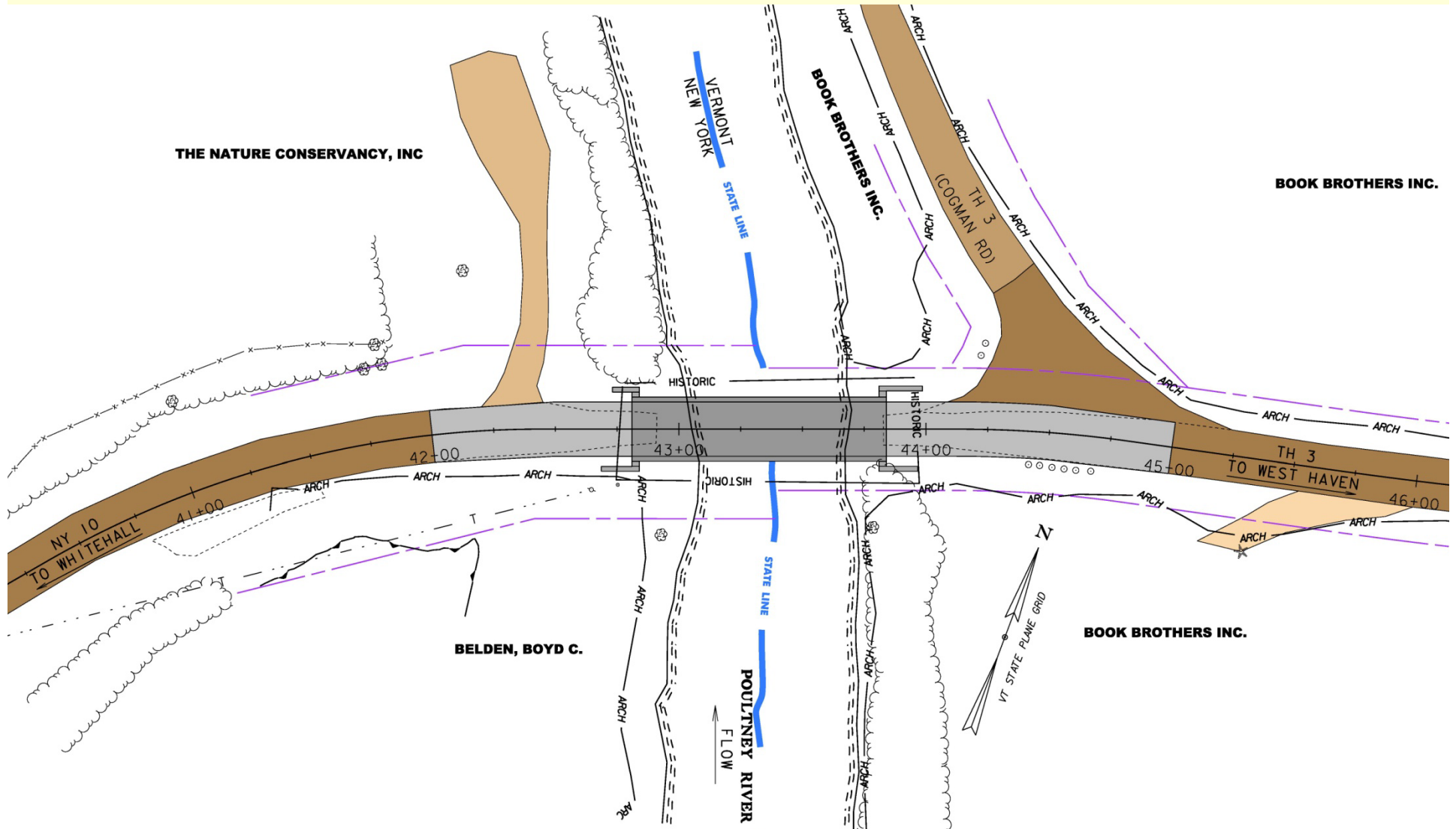
100' Span Truss Bridge

- Replace entire structure
- 22' width between face of railing (2'-9'-9'-2')
- Maintain existing centerline of road
- Maintain existing vertical alignment
- Increase span to 100'
- Superstructure would be Warren pony truss
- Abutments would be spread footings
- The bridge would meet hydraulic standards AND would meet Bank Full Width (BFW) per ANR guidelines
- Long term (80 year) solution

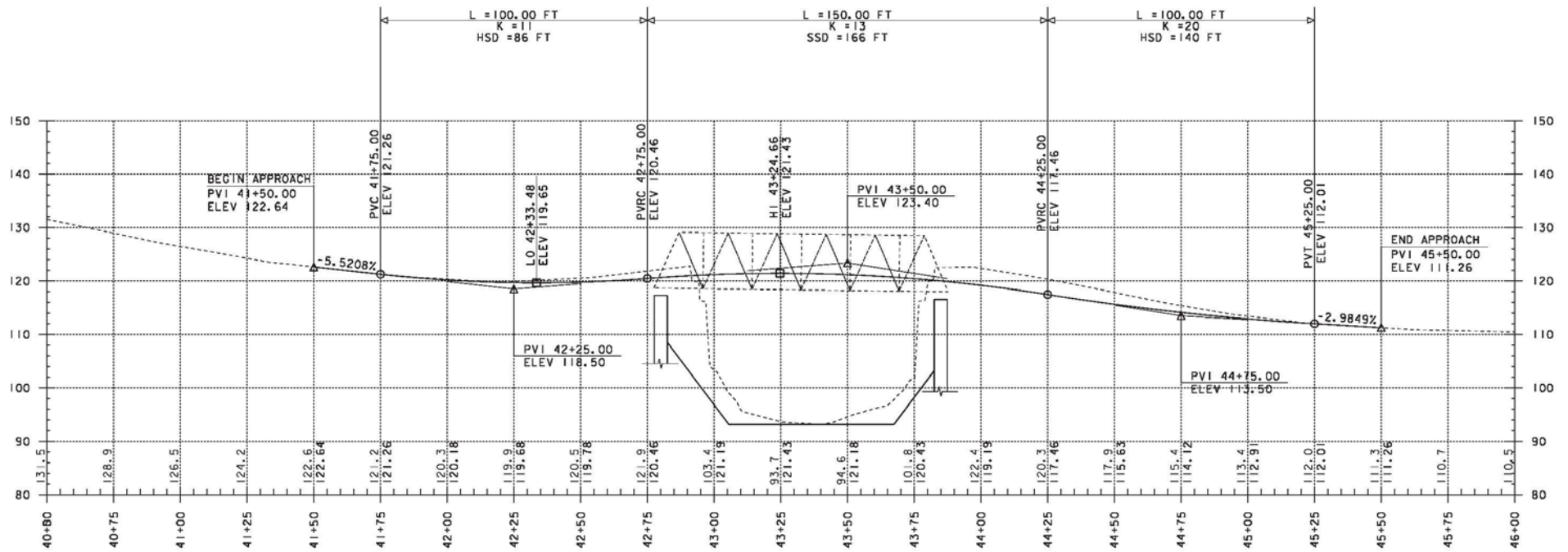
Typical Section - Alternative 3



Layout – Alt 3 - 100' Span Truss Bridge



Profile – Alt 3 - 100' Span Truss Bridge

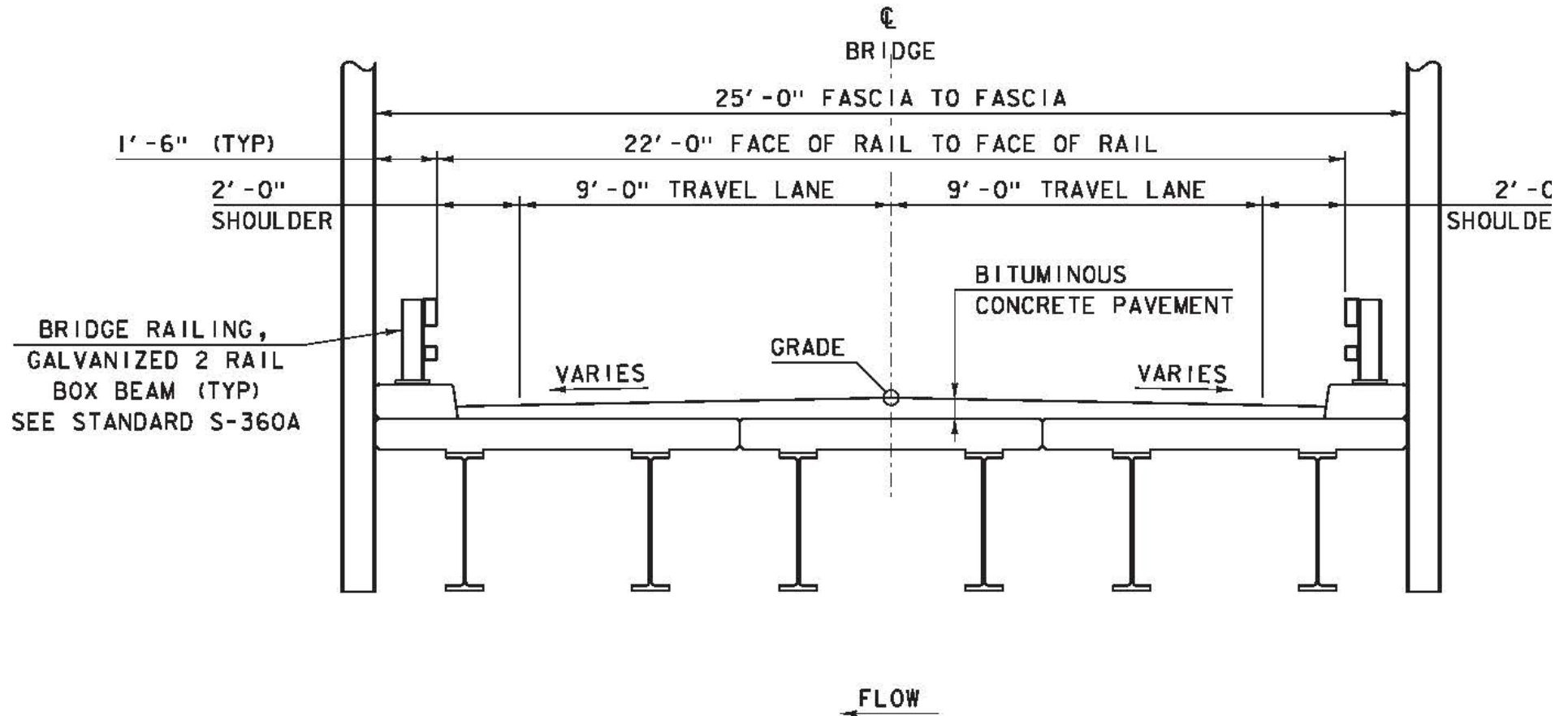


Alternative 4

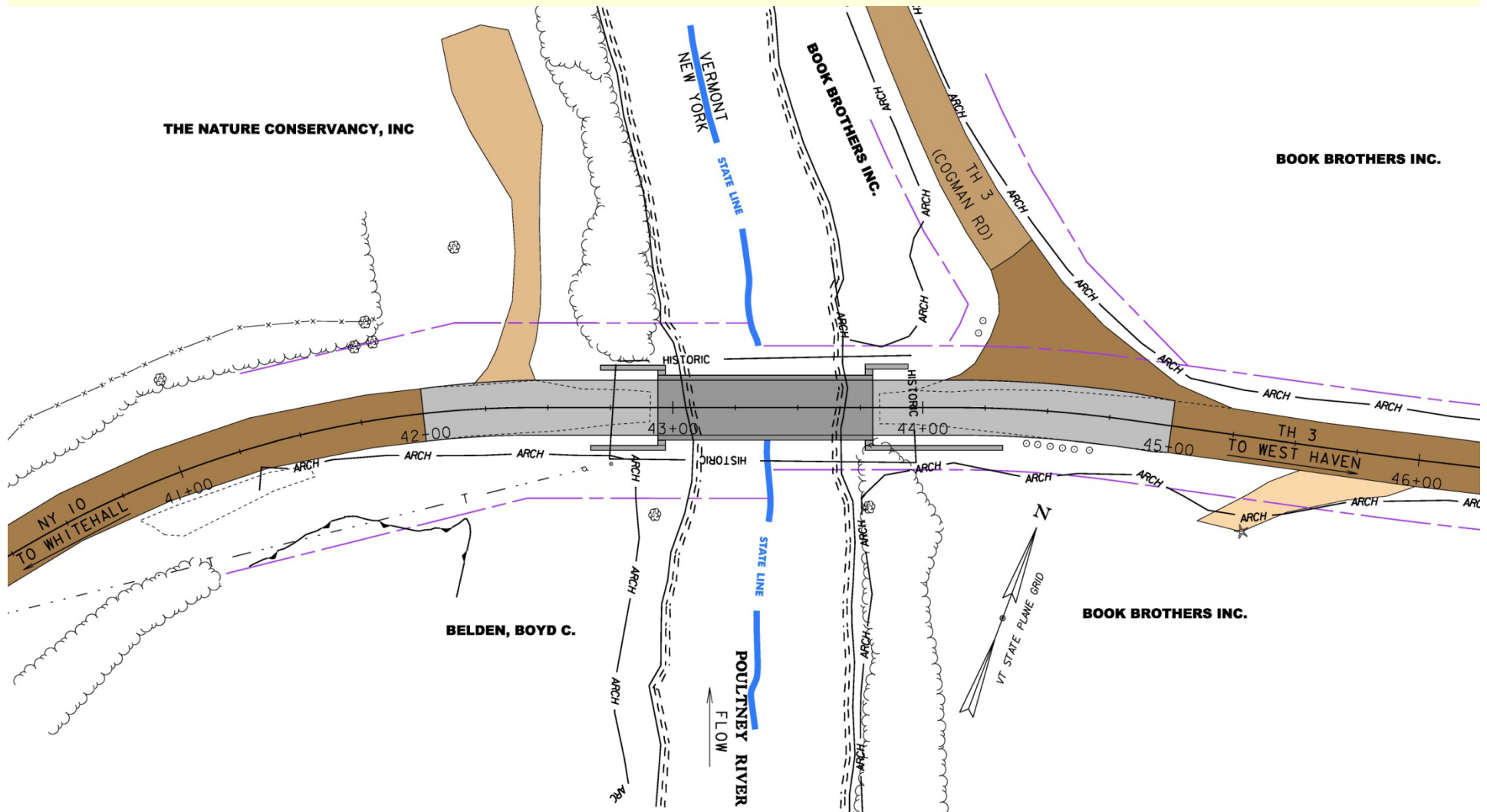
83' Span Beam Bridge (Truss Fascia)

- Replace entire structure
- 22' width between face of railing (2'-9'-9'-2')
- Maintain existing centerline of road
- Maintain existing vertical alignment
- Maintain existing 83' span
- Superstructure would be beam bridge w/ existing trusses used on fascia but would carry no load
- Abutments would be spread footings
- The bridge would meet hydraulic standards but would not meet Bank Full Width (BFW) per ANR guidelines
- Long term (80 year) solution

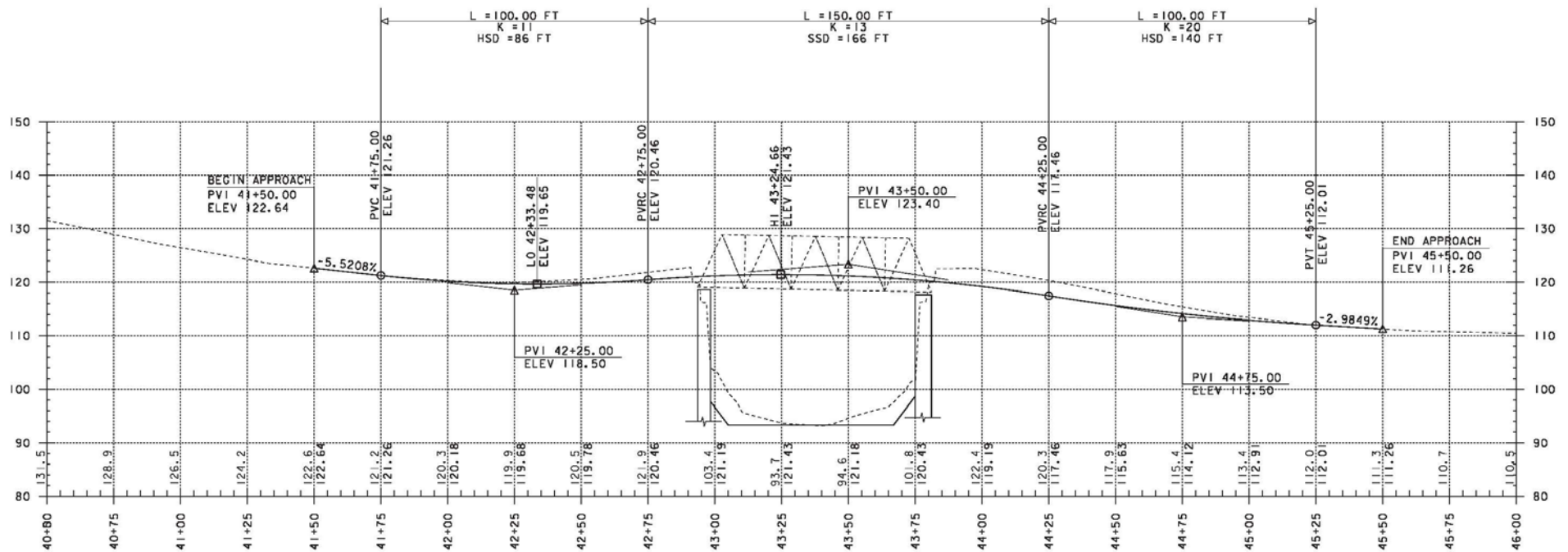
Typical Section - Alternative 4



Layout – Alt 4 - 83' Span Beam Bridge (w/ Truss)



Profile – Alt 4 -83' Span Beam Bridge (w/ Truss)

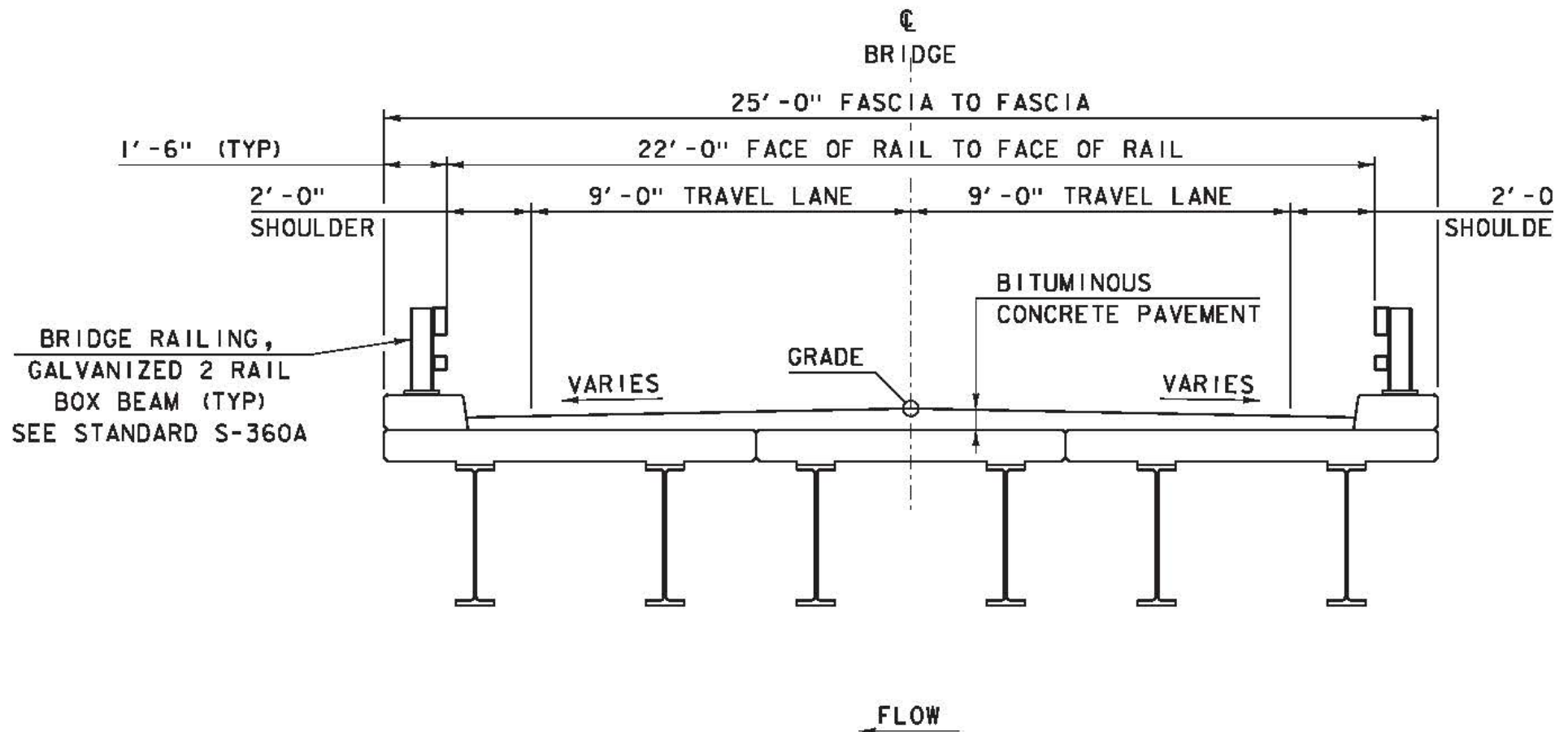


Alternative 5

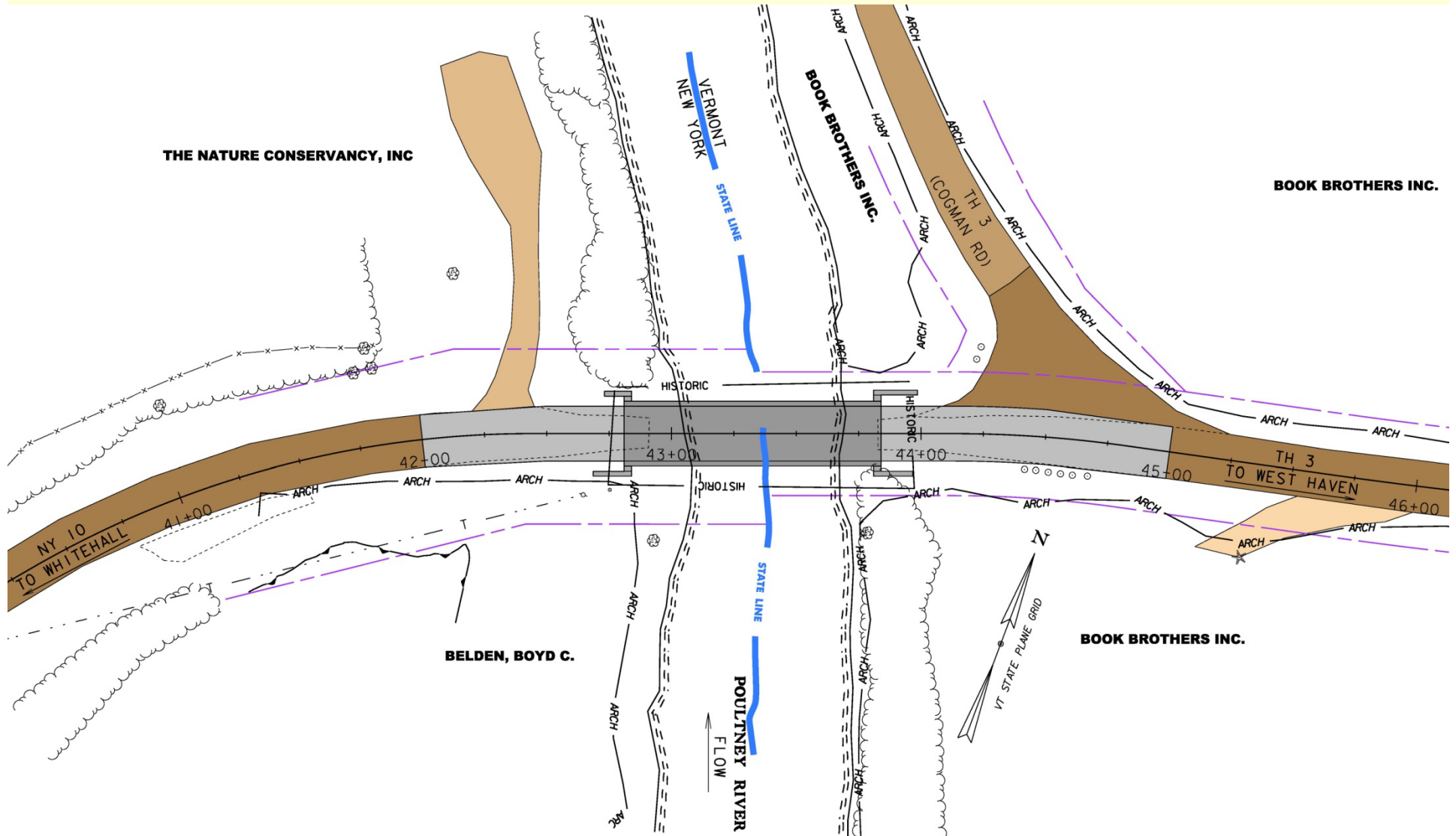
100' Span Beam Bridge

- Replace entire structure
- 22' width between face of railing (2'-9'-9'-2')
- Maintain existing centerline of road
- Maintain existing vertical alignment
- Increase span to 100'
- Superstructure would be steel beams w/ concrete deck
- Abutments would be spread footings
- The bridge would meet hydraulic standards AND would meet Bank Full Width (BFW) per ANR guidelines
- Long term (80 year) solution

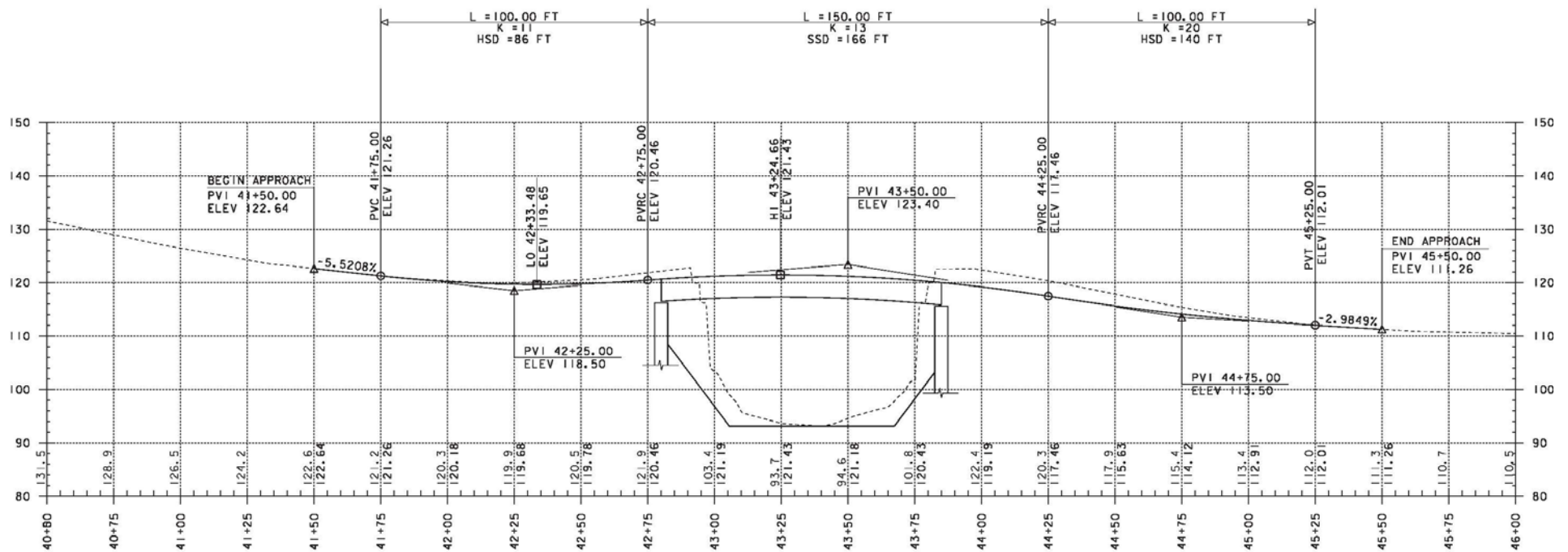
Typical Section - Alternative 5



Layout – Alt 5 - 100' Span Beam Bridge



Profile – Alt 5 - 100' Span Beam Bridge



Methods to Maintain Traffic

Three general methods available:

- Phased Construction
- Temporary Bridge
- Short-term bridge closure w/ off-site detour & ABC

Phased Construction Option

- **Ruled out due to width and type of existing bridge**
- 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 sometimes be done without ROW acquisition

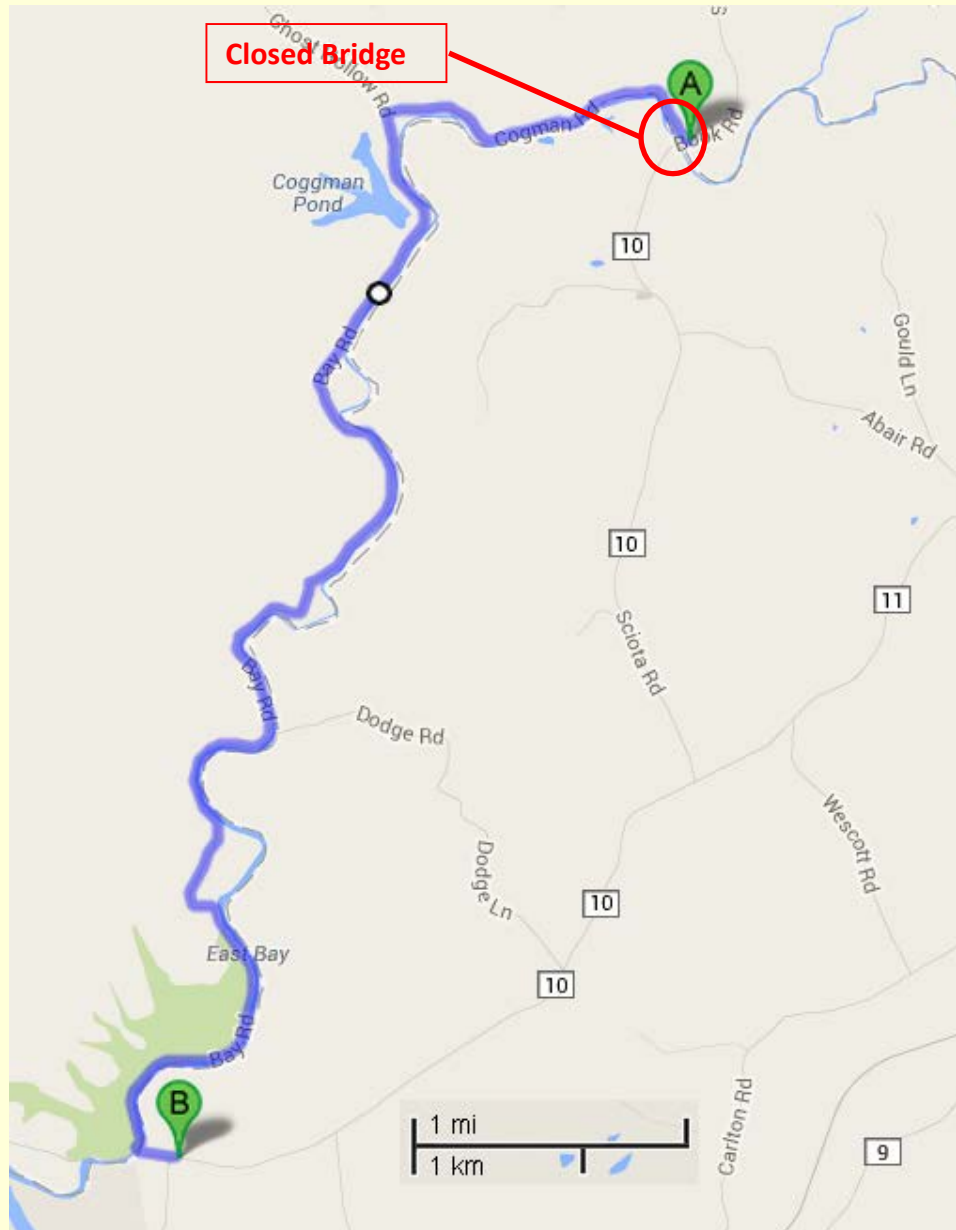
Temporary Bridge Option

- **Ruled out due to impacts to environment, adjacent property owners and increased development time**
- Construct temporary bridge to maintain traffic
- One-lane bridge with traffic signals
- 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 during construction
 - Alternative 2 = 4 weeks
 - All other alternatives = 8 weeks
- 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)
- Town/Washington county will be responsible for detour route

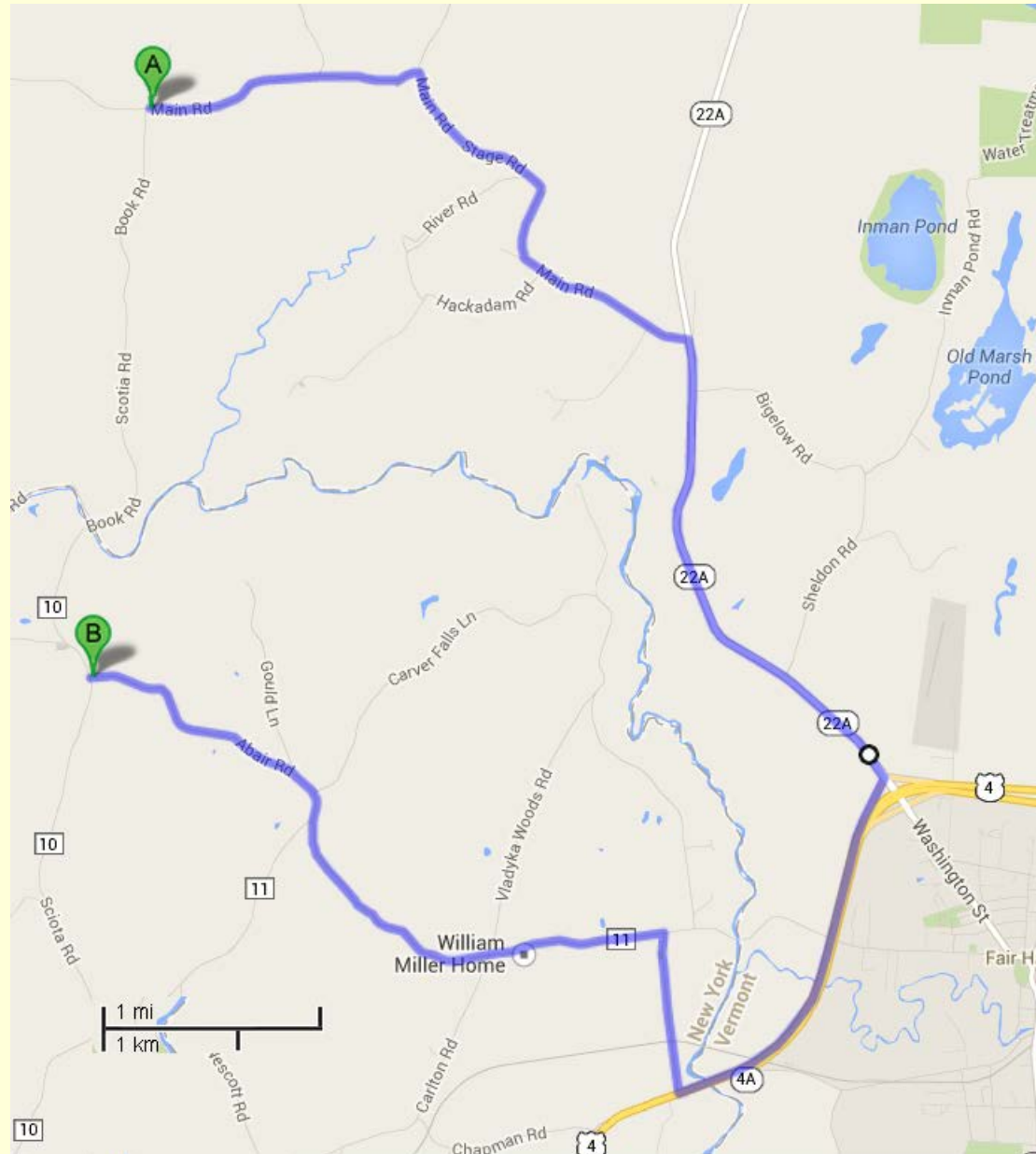
Possible Detour Route



A to B on Thru Route: 5.2 Miles
A to B on Detour Route: 6.5 Miles
Added Miles: 1.3 Miles
End to End Distance: 11.6 Miles

**Book Road to Cogman Road
to Bay Road**

Possible Detour Route



A to B on Thru Route: 2.9 Miles
A to B on Detour Route: 11.7 Miles
Added Miles: 8.8 Miles
End to End Distance: 14.6 Miles

**Book Rd to Main Road to VT 22A
to US 4 to Golf Course Road to Co
Road 11 to Abair Road to Co Road
10**

Alternatives Matrix

	Truss Rehabilitation	140' Span Beam Bridge on Integral Abuts	100' Span Truss Bridge on Spread Footings	83' Span Beam Bridge on Spread Footings	100' Span Beam Bridge On Spread Footings	
	Alternate 1	Alternate 2	Alternate 3	Alternate 4	Alternate 5	
Construction w/ CE + Contingencies	\$2,274,090	\$1,602,380	\$2,287,220	\$2,105,090	\$1,949,220	
Preliminary Engineering	\$433,325	\$308,150	\$351,880	\$323,860	\$299,880	
Right of Way	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000	
Total Project Cost	\$2,756,415	\$1,955,530	\$2,684,100	\$2,473,950	\$2,294,100	
	41% over Base	Base	37% over Base	26% over Base	17% over Base	
Design Life	80 Years	80 Years	80 Years	80 Years	80 Years	
Project Development Duration	4 years	4 years	4 years	4 years	4 years	
Construction Duration	8 months	8 months	8 months	8 months	8 months	
Closure Duration	8 weeks	4 weeks	8 weeks	8 weeks	8 weeks	

Conclusion

We recommend a Full Bridge Replacement using ABC & a short-term closure

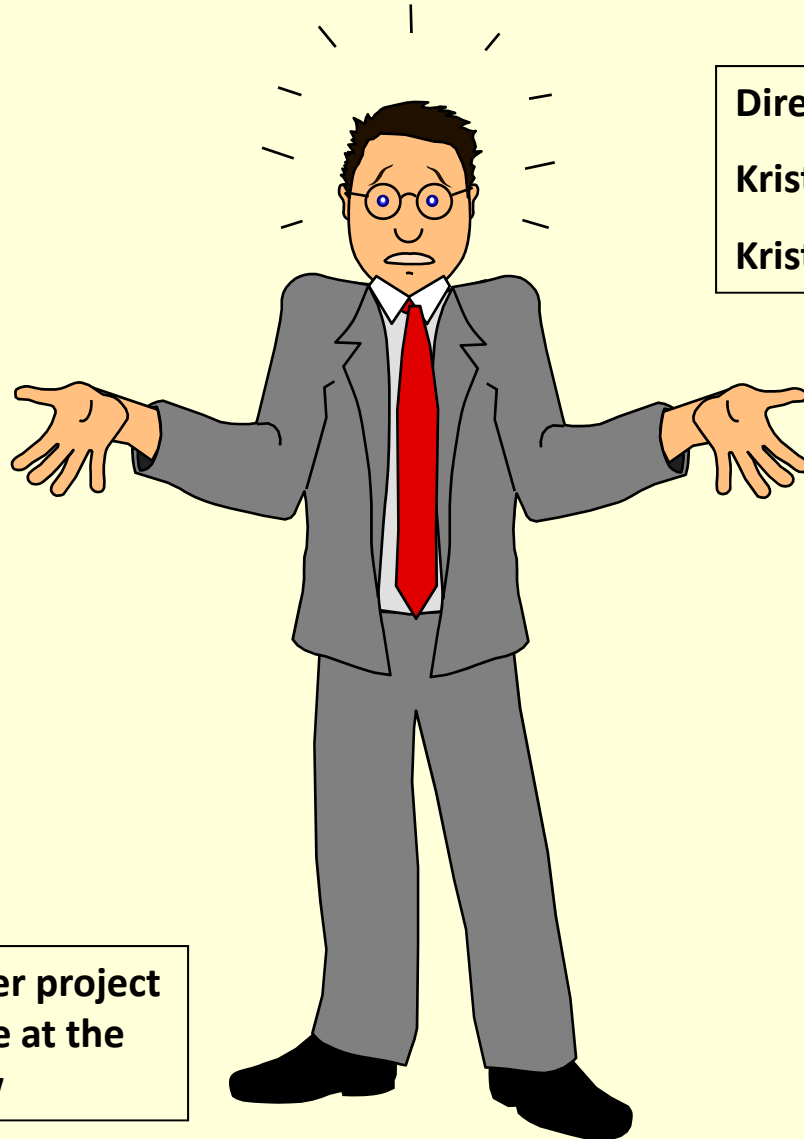
- The type of replacement structure will be decided as we proceed through the necessary historic permitting process
- There are many interested parties that will be involved in deciding the type of replacement structure
- The purpose of this meeting is to hear your comments

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 to hear response from this public meeting
- Proceed with the historic permitting process
- Develop Conceptual Plans
- Request another public meeting (if necessary)
- Environmental process

Questions



Direct any questions to:

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**This presentation and other project
documentation is available at the
web address shown below**

<https://outside.vermont.gov/agency/vtrans/external/Projects/Structures/13J198>