Huntington BF 0211(32)
Bridge 8 on Main Road (FAS Route 211) over the Huntington River
Regional Concerns Meeting

Presented by
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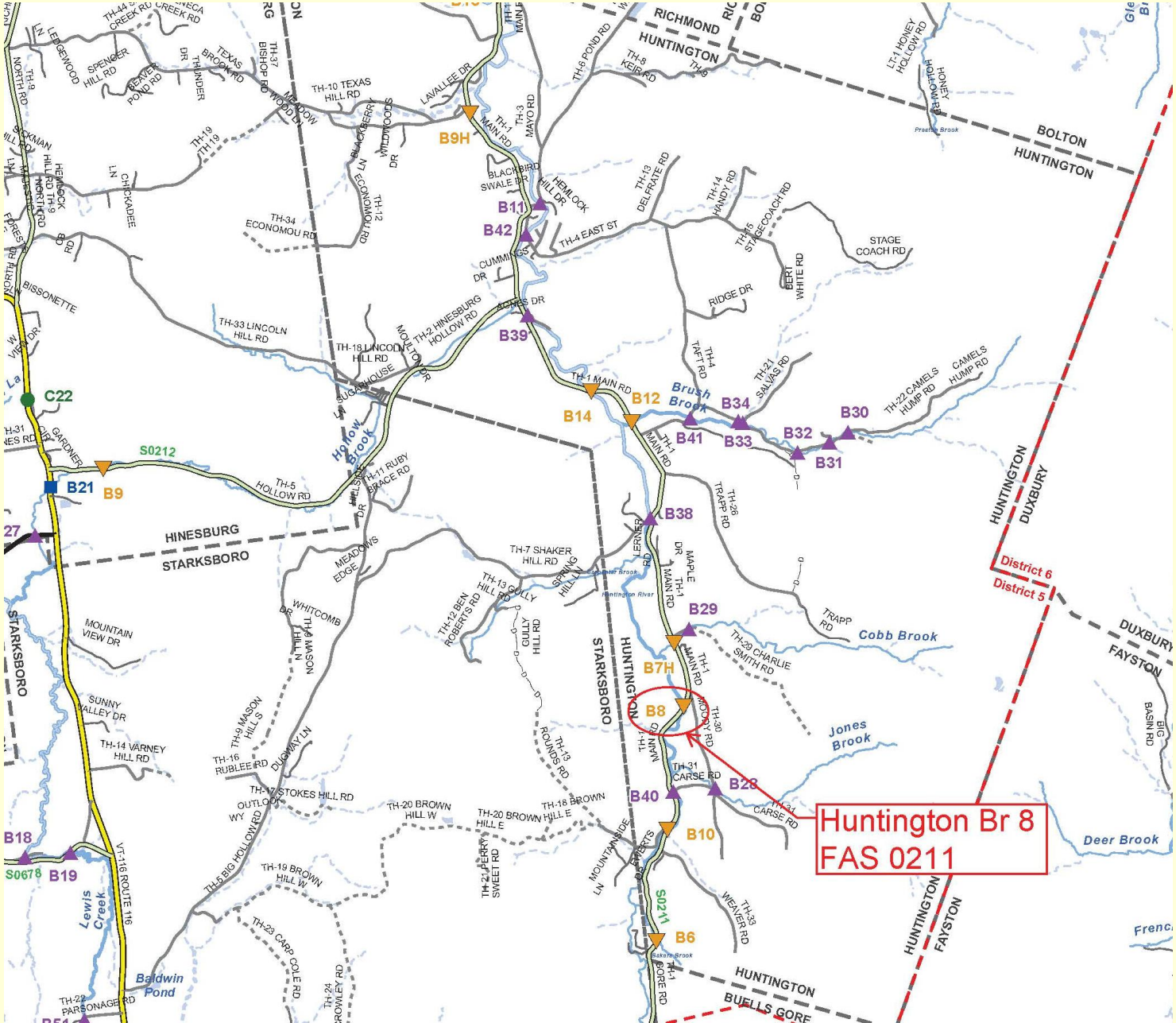
April 7, 2014

PROJECT LOCATION



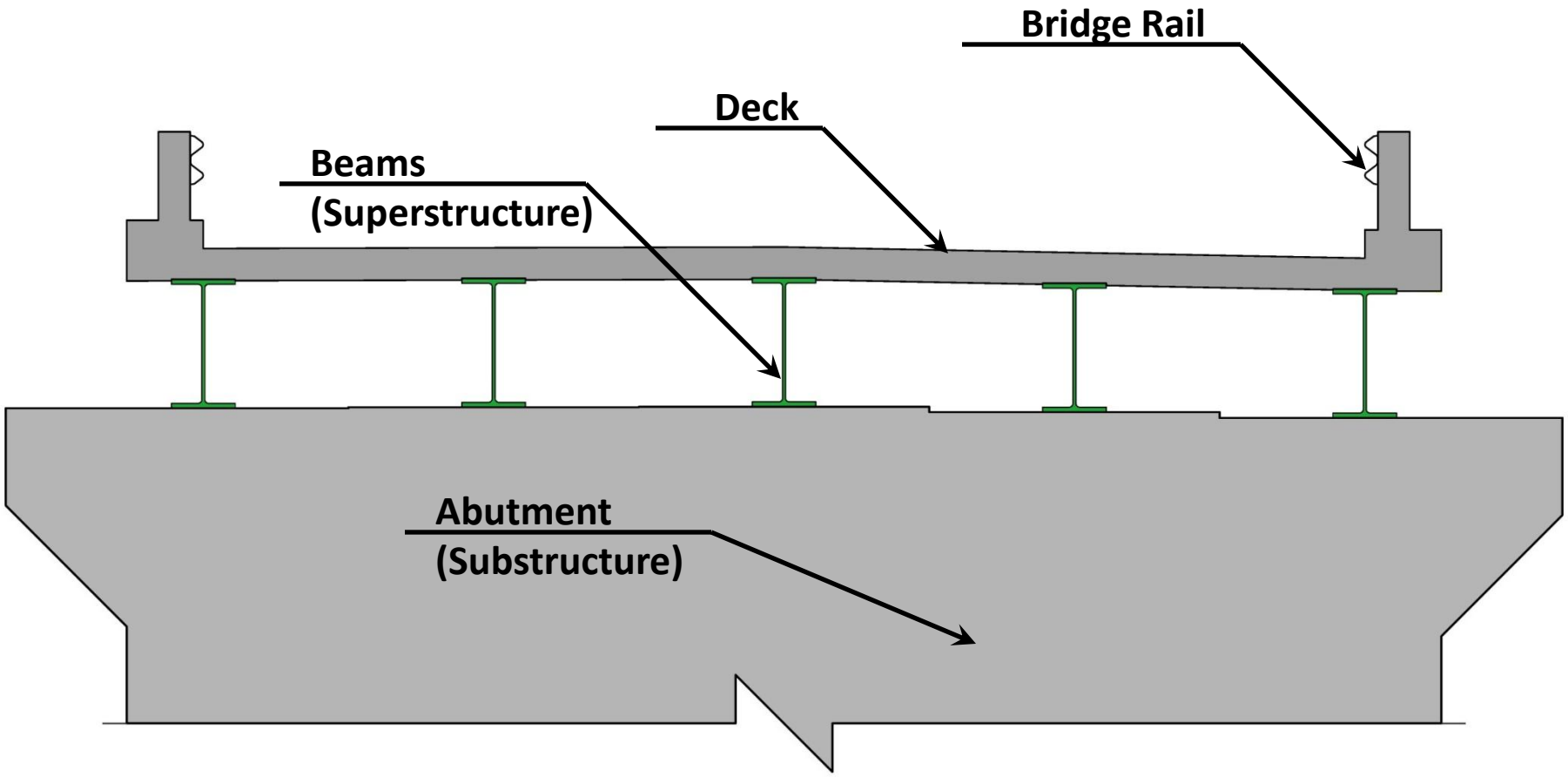
Meeting Outline

- 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
- Help you understand our approach to the project
- Provide you with the chance to ask questions
- Build consensus for the recommended alternative-

Description of Terms Used



Cross Section of Bridge

Project Background

- The structure is owned and maintained by the Town
- Functionally labeled as a Rural Major Collector
- Class 2 Town Highway
- Funding will be 80% Federal
- Local funds will be 2.5% - 10% depending on alternative selected
- Posted Speed = 45 mph (Design Speed)
- Existing bridge is a single-span rolled beam bridge with a concrete deck
- Bridge span= 63 feet
- Bridge Width = 20.5 feet
- The bridge was built in 1934 (80 years old)

Traffic Data

	“Current Year” 2016	“Design Year” 2036
Average Annual Daily Traffic	**1,100**	**1,200**
Design Hourly Volume	**150**	**160**
Average Daily Truck Traffic	**85**	**120**
%Trucks	**9.8**	**12.9**

EXISTING BRIDGE DEFICIENCIES

Inspection Rating Information (Based on a scale of 9)

Bridge Deck Rating	**5 Fair**
Superstructure Rating	**5 Fair**
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 too narrow based on the design speed, traffic volume and classification of road**
- **The deck is only rated fair with significant deterioration at the fascias**
- **The horizontal and vertical alignments are substandard**

Looking north over Bridge

Looking south over Bridge

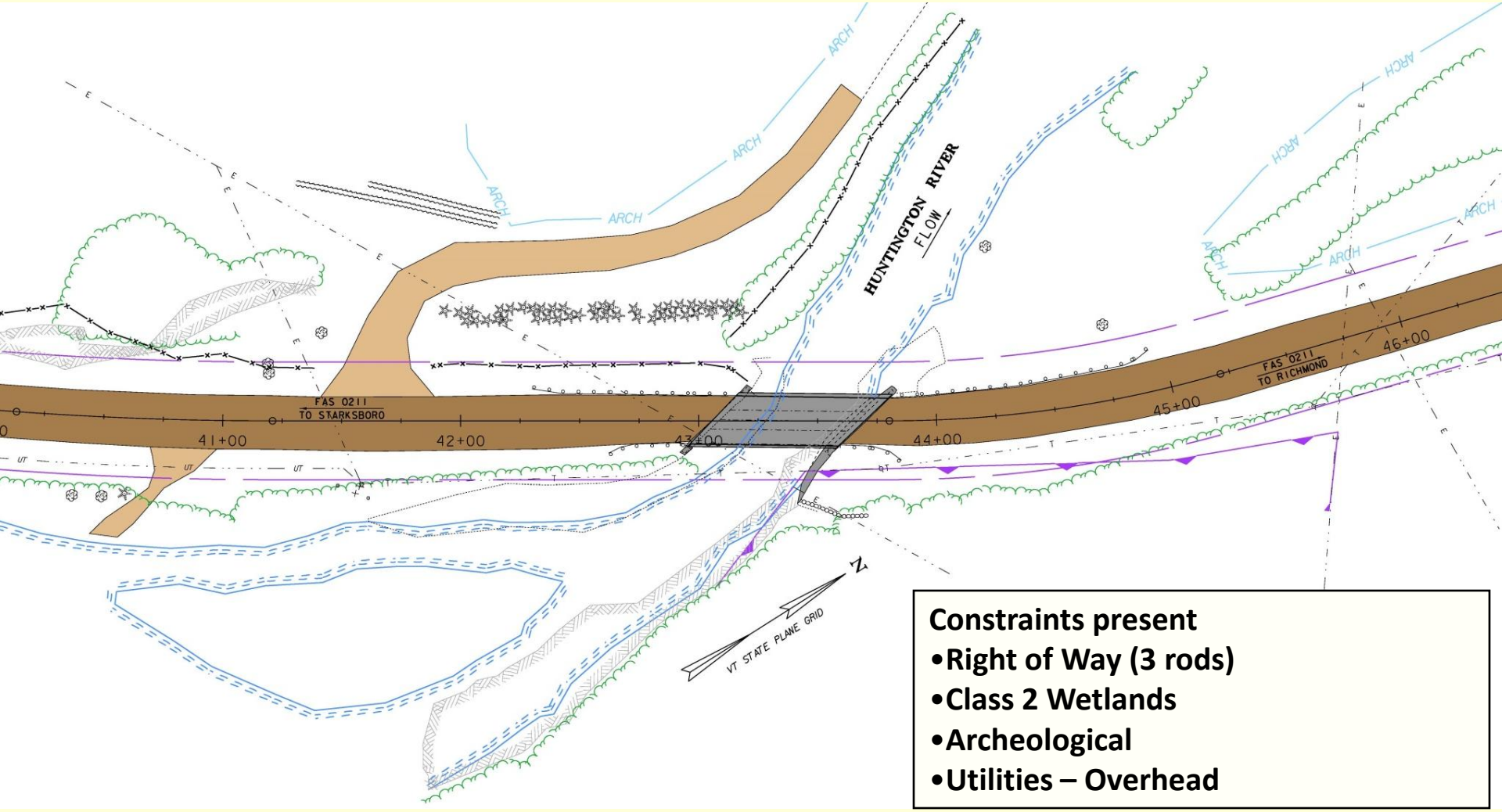
North Abutment

South Abutment

Downstream Fascia

Section Loss in Beams

Layout Showing Constraints



Constraints present

- **Right of Way (3 rods)**
- **Class 2 Wetlands**
- **Archeological**
- **Utilities – Overhead**

Alternatives Discussion

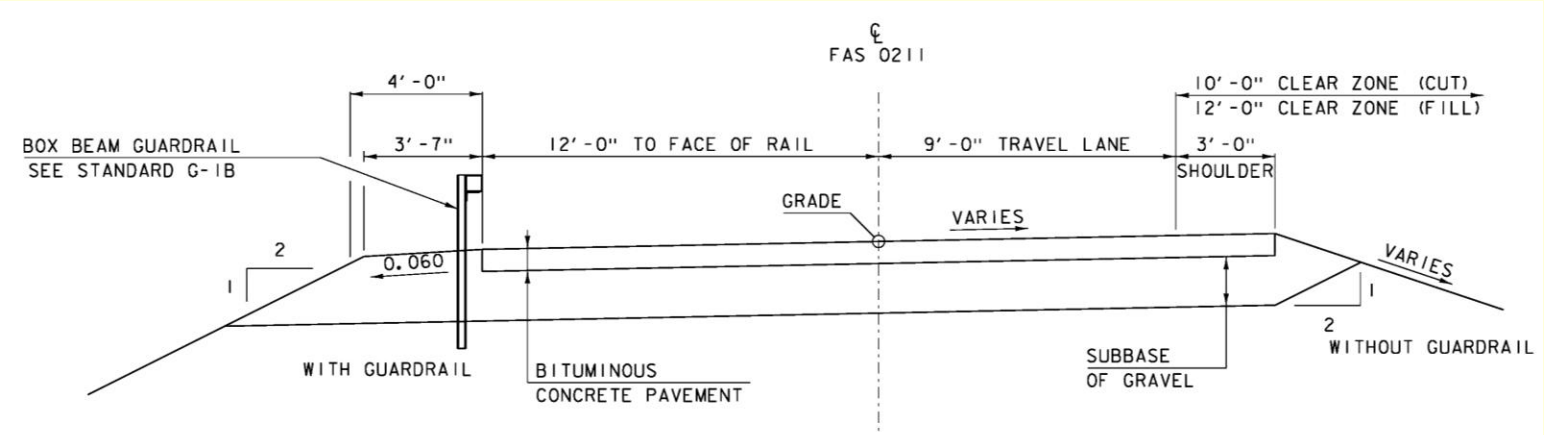
- Alt 1 - Superstructure Replacement
- Alt 2 - Full Bridge Replacement w/ 70’ span bridge
- Alt 3 - Full Bridge Replacement w/ 127’ span bridge
- Alt 4 - Full Bridge Replacement w/ 135’ span bridge

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

Alternative 1
Superstructure Replacement Details

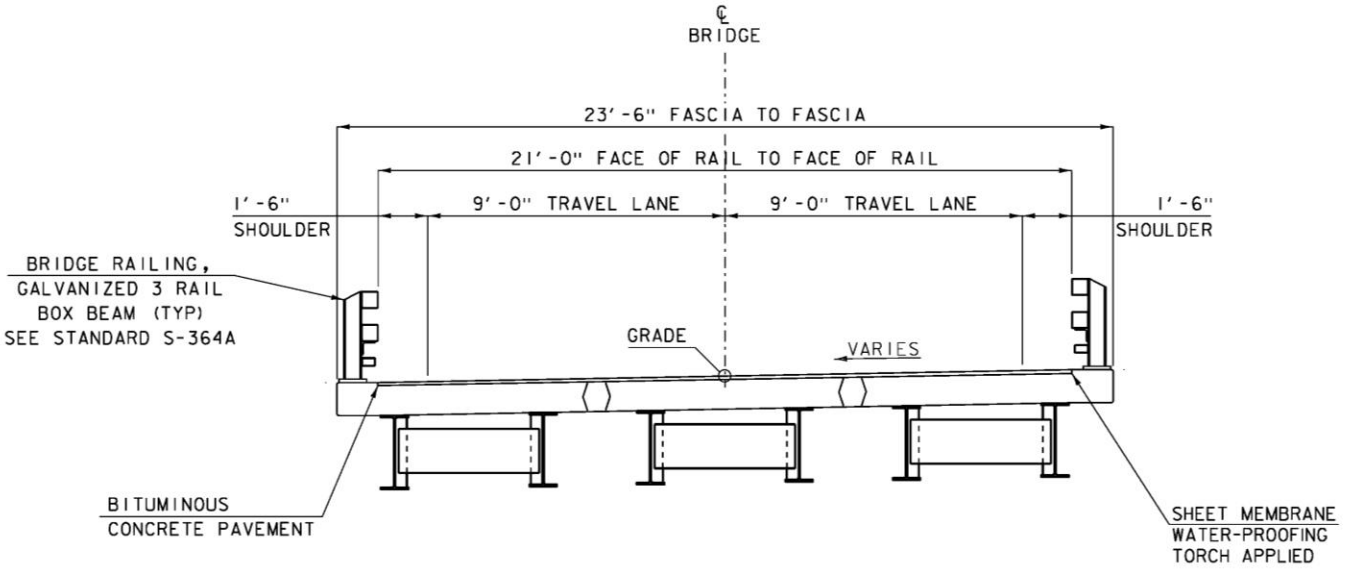
- Increase to 21’ width between face of bridge railing
  - Limited by available width of existing abutments
  - 9 travel lanes and 1.5’ shoulders (less than 24’ width per standards)
- Replace superstructure but substructure would remain
- Patch existing substructures
- Maintain existing centerline of 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
- Mid-term (40 year) solution
- Traffic Control options
  - Bridge closure with off-site detour

Typical Sections - Alternative 1

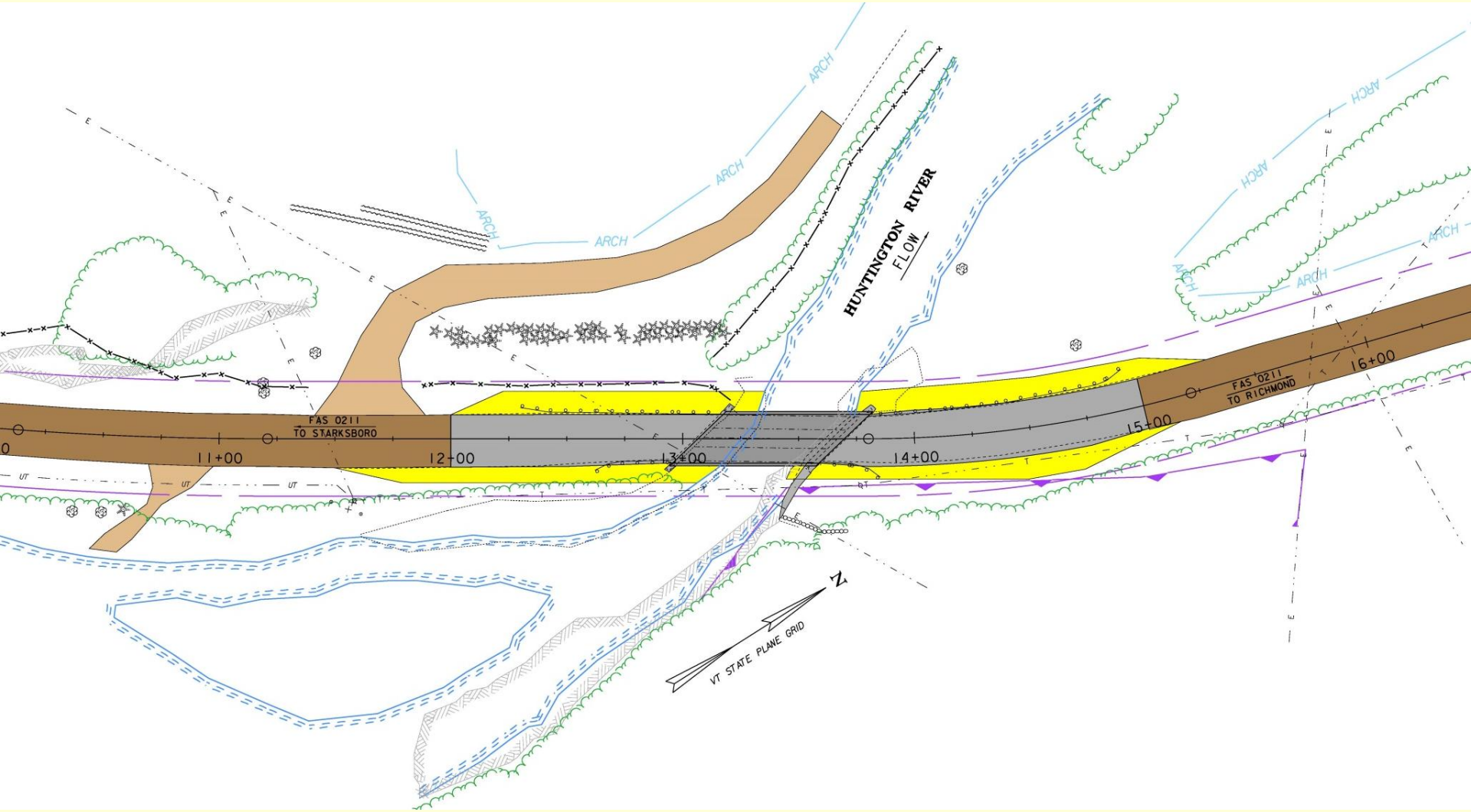


PROPOSED FAS 0211 TYPICAL SECTION

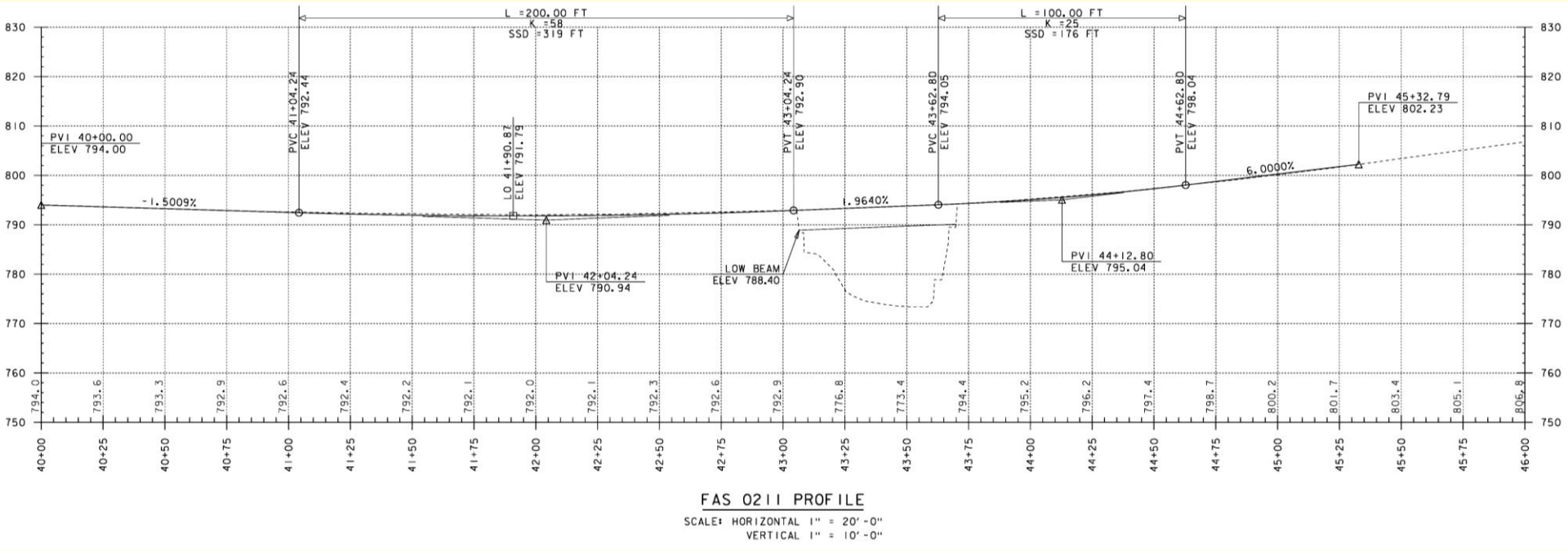
SCALE 3/8" = 1'-0"



Layout – Alt 1 Superstructure Replacement



Profile – Alt 1 Superstructure Replacement



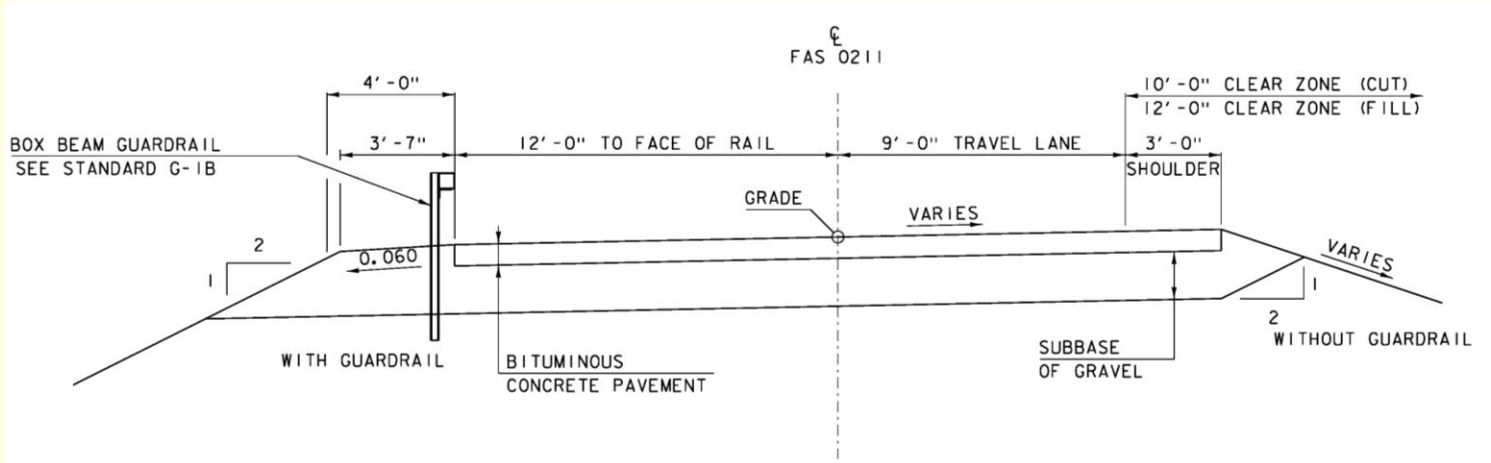
FAS 0211 PROFILE

SCALE: HORIZONTAL 1" = 20'-0"
VERTICAL 1" = 10'-0"

Alternative 2
70’ Span Replacement Details

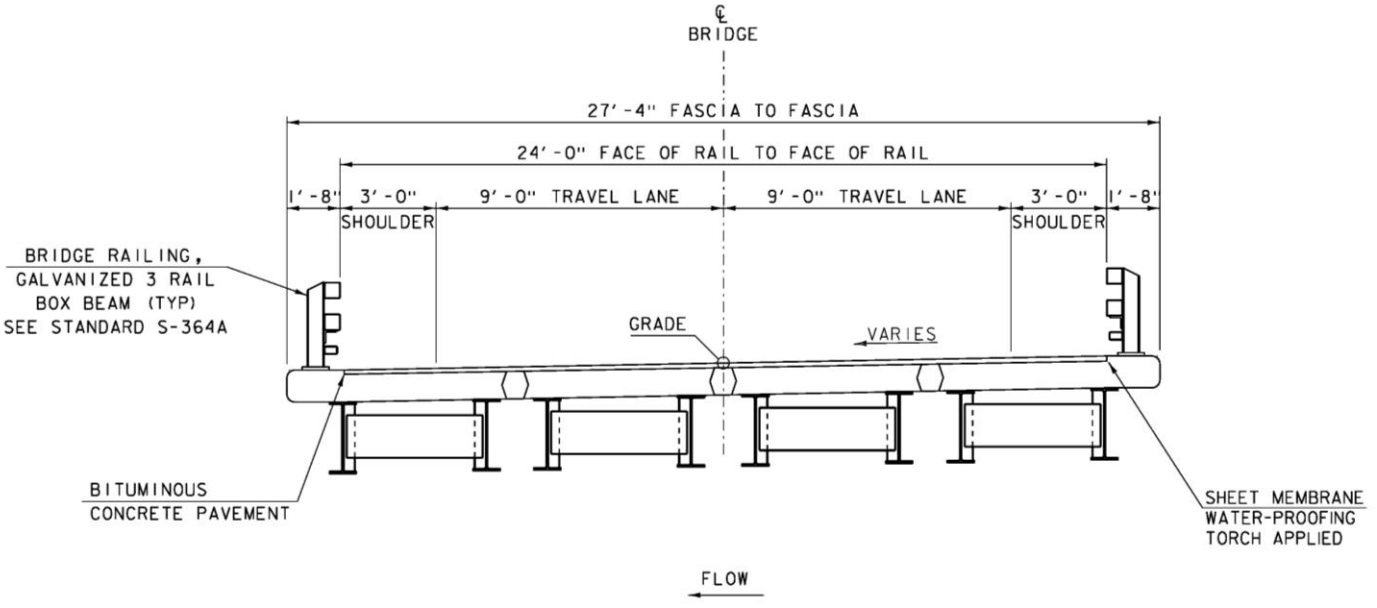
- Replace entire structure
- 24’ width between face of railing (3-9-9-3)
- Increase span to 70’
- Maintain existing centerline of road
  - Improved by providing banking on curve
  - Still would not meet standards
- Maintain existing vertical alignment (remains substandard)
- Superstructure could be prefabricated
- Abutments would be spread footings which require more time
- Long term (80 year) solution
- Traffic Control options
  - Bridge closure with off-site detour
  - Temporary Bridge

Typical Sections - Alternative 2

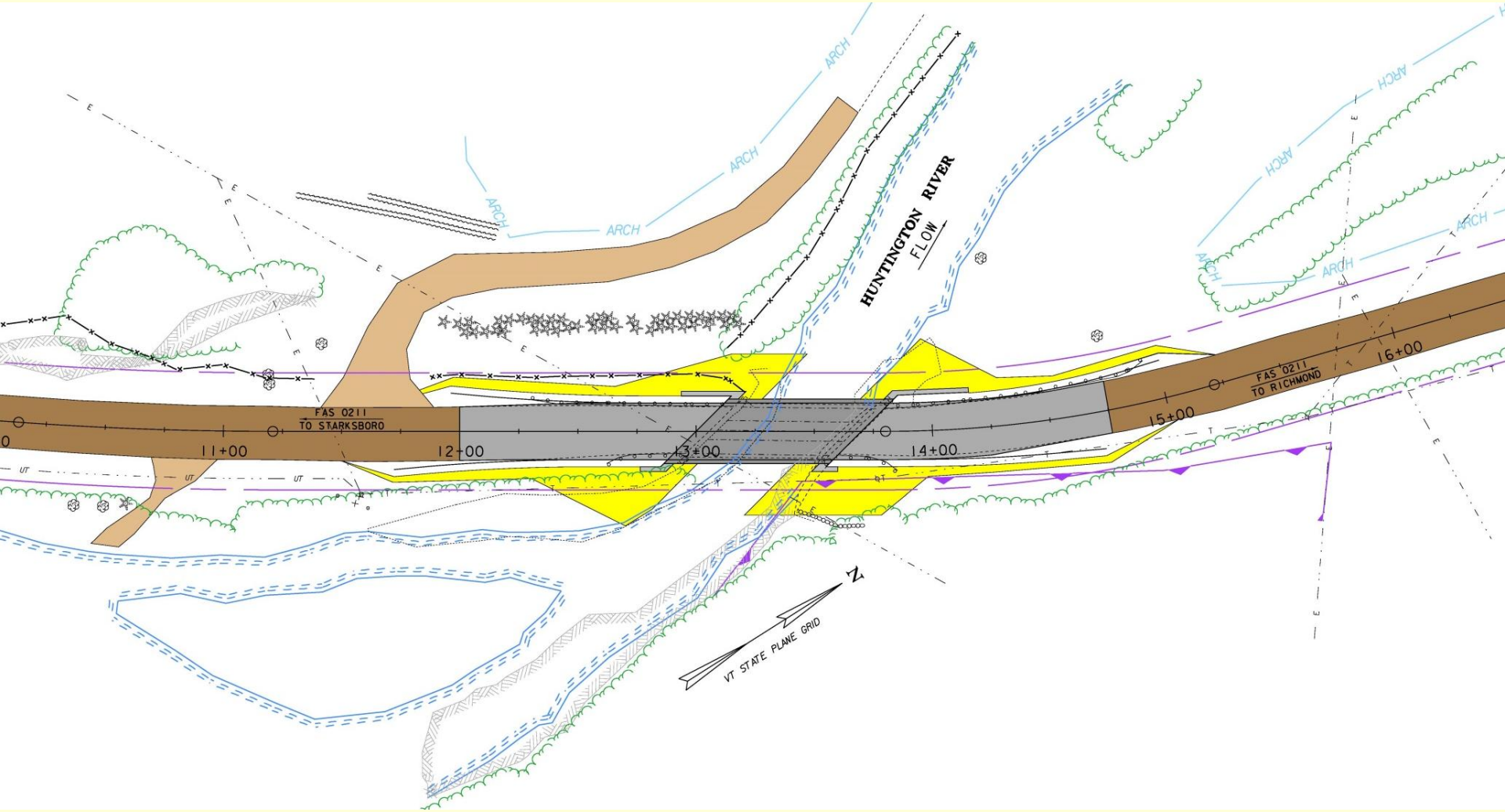


PROPOSED FAS 0211 TYPICAL SECTION

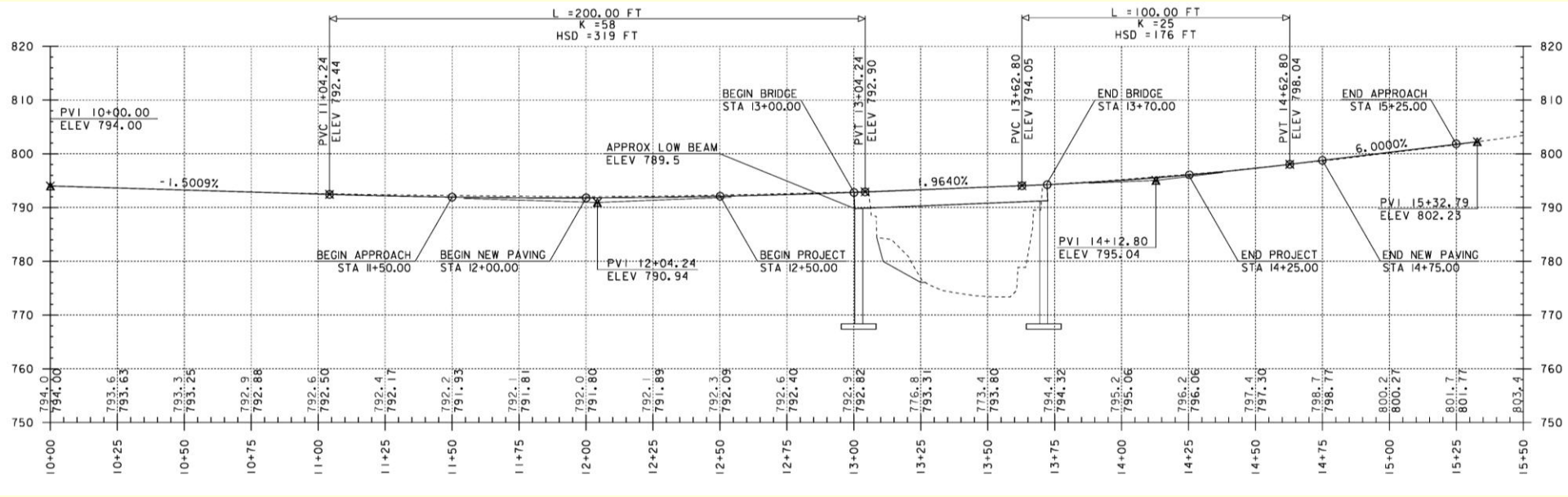
SCALE 3/8" = 1'-0"



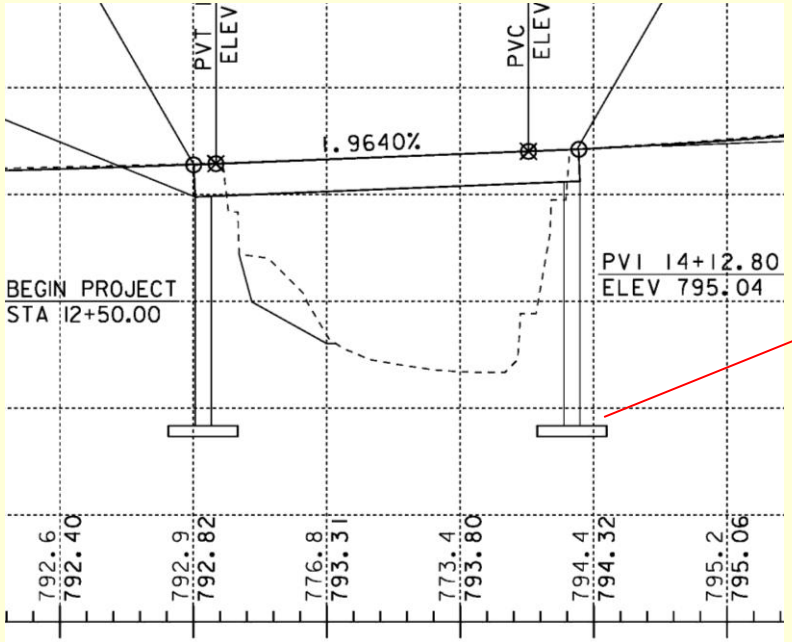
Layout – Alt 2 - 70’ Complete Replacement



Profile Alt 2 - 70’ Span Complete Replacement



Enlarged view of bridge

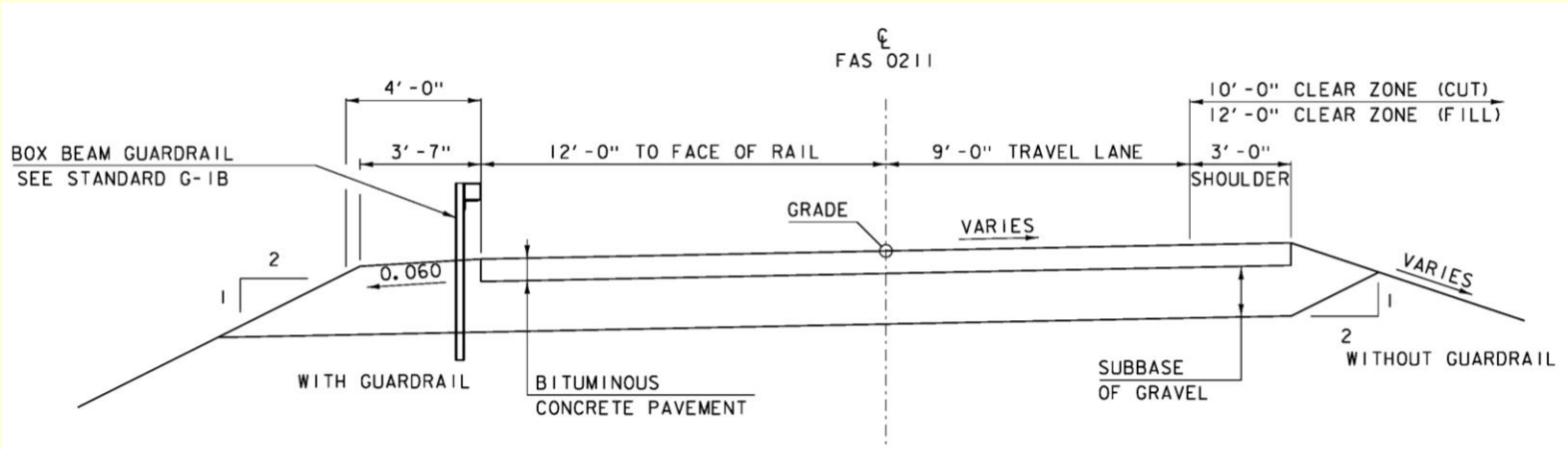


Spread Footings require additional time to excavate

Alternative 3
127’ Span Replacement Details

- Replace entire structure
- 24’ width between face of railing (3-9-9-3)
- Increase span to 127’
- Modify the centerline of road by flattening curve
- Raise grade (elevation) of road to improve vertical alignment
- Superstructure would be cast in place due to curve
- Abutments would be prefabricated concrete on a single row of steel piles (Integral abutment)
- Long term (80 year) solution
- Traffic Control options
  - Bridge closure with off-site detour
  - Temporary Bridge

Typical Sections - Alternative 3



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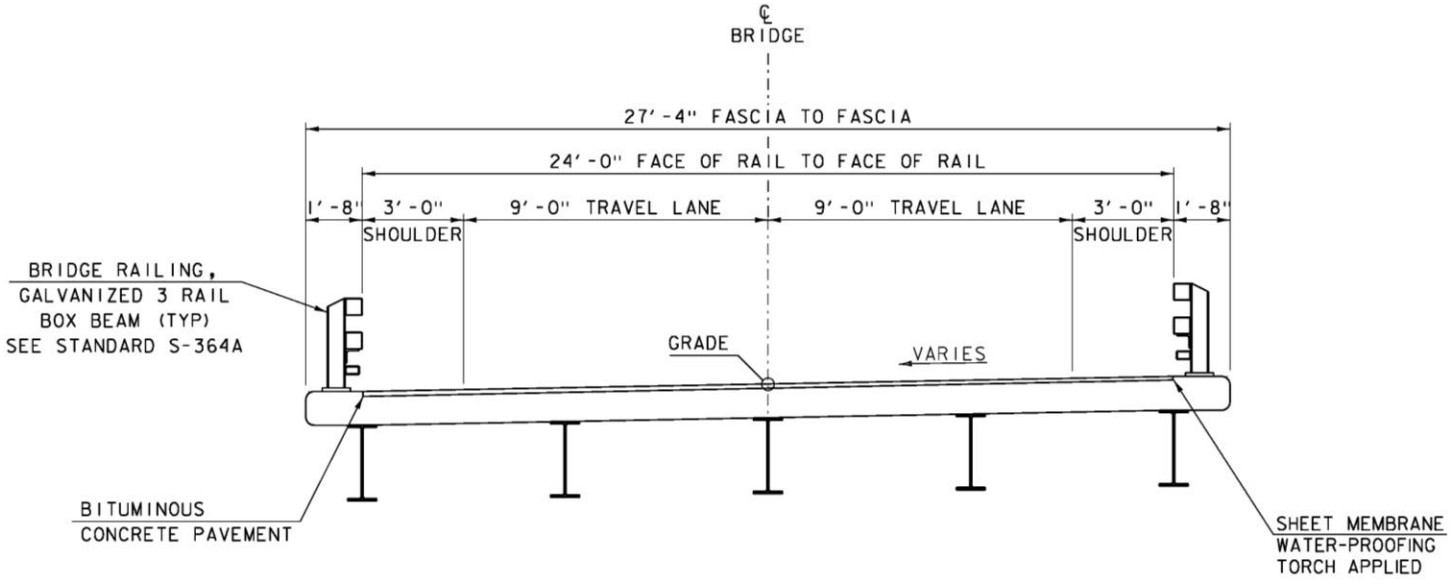
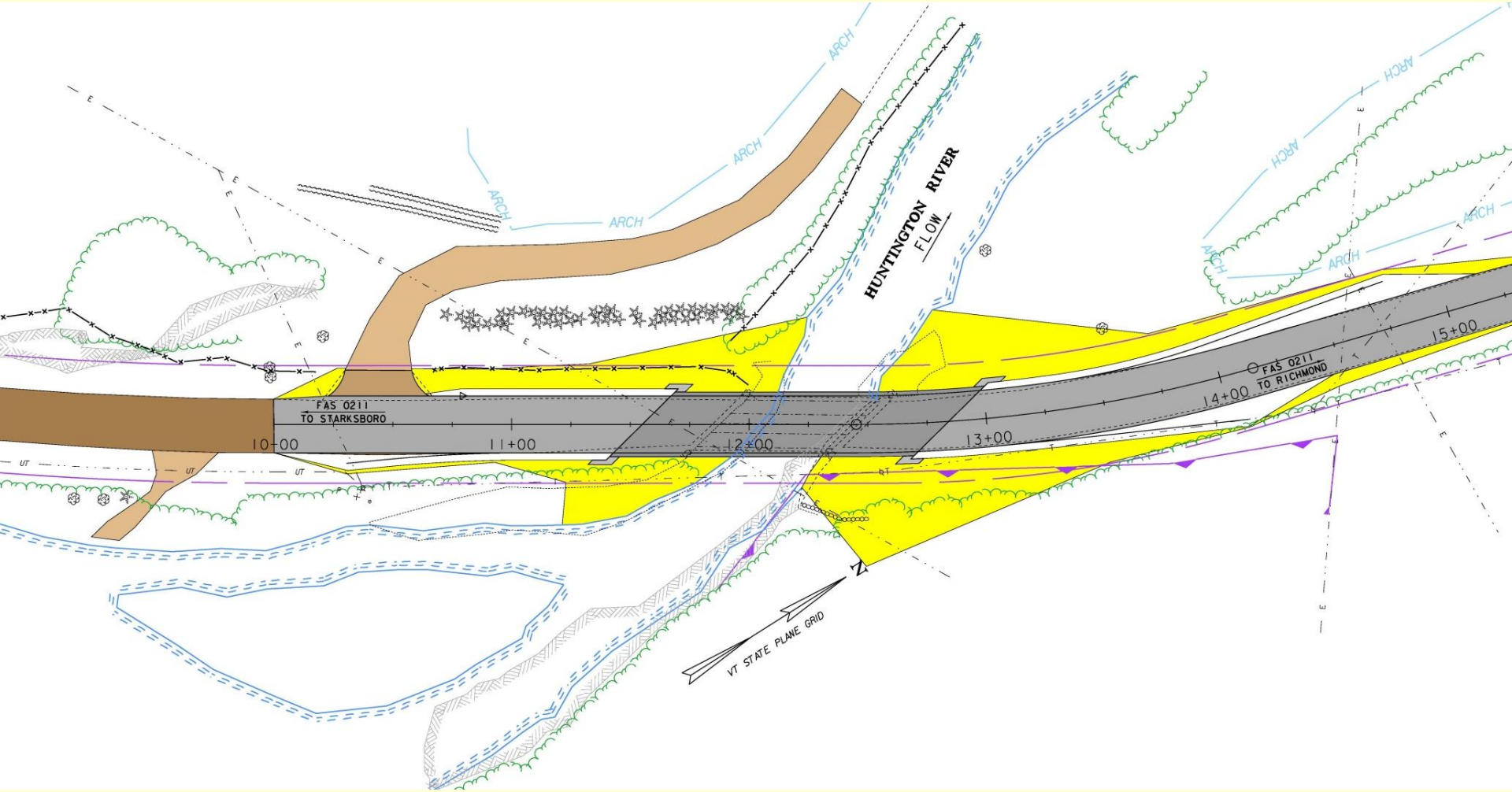
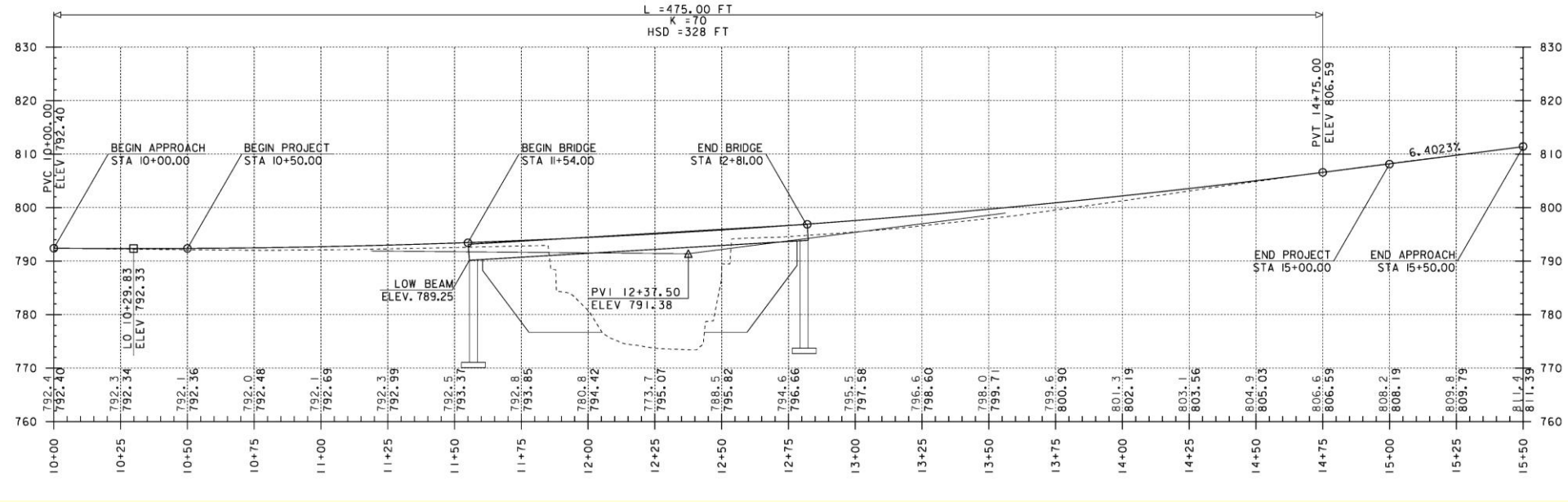


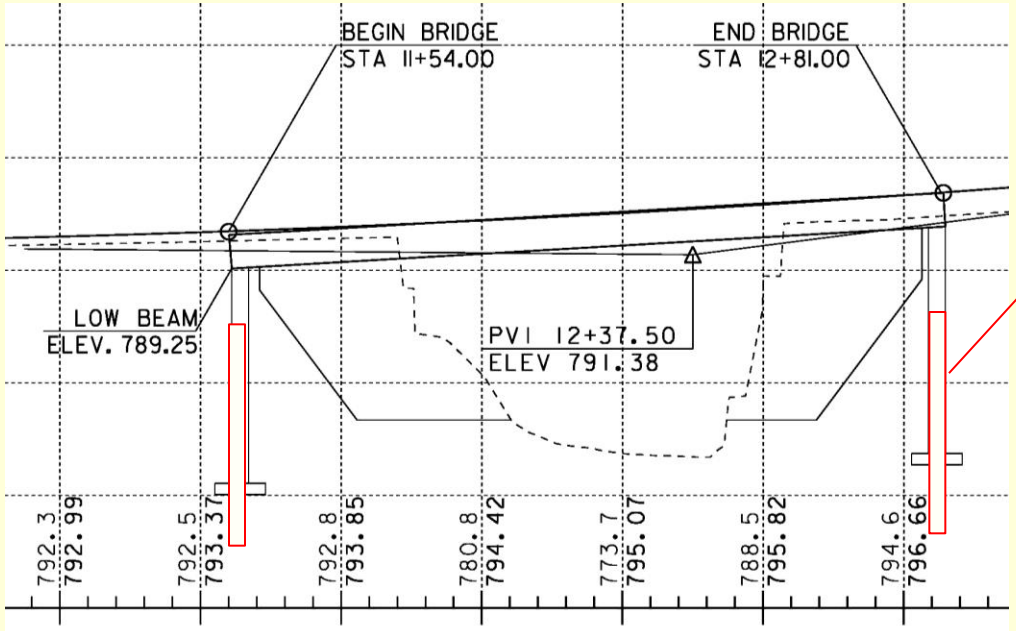
Layout – Alt 3 - 127’ Complete Replacement



Profile -Alt 3 - 127’ Span Complete Replacement



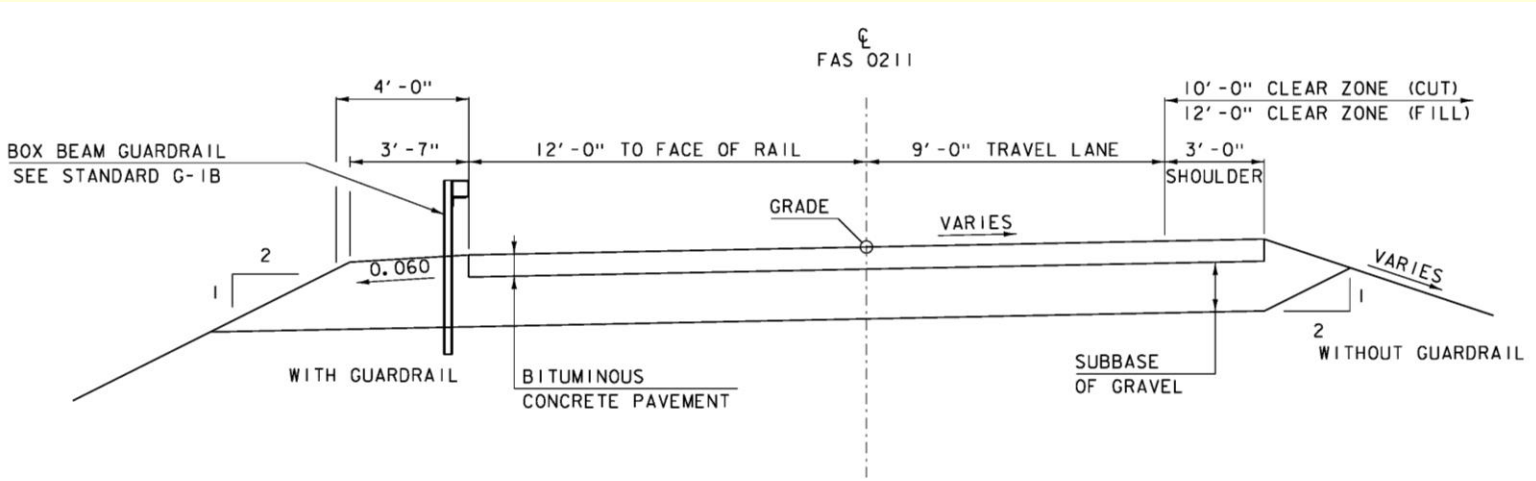
Enlarged view of bridge



Alternative 4
135’ Span Replacement Details

- Replace entire structure
- 24’ width between face of railing (3-9-9-3)
- Increase span to 135’
- Shift the centerline so the existing bridge could used to maintain traffic during construction of the new bridge
- Bridge would be straight with curves on both ends
- Raise grade (elevation) of road to improve vertical alignment
- Superstructure would be prefabricated
- Abutments would be prefabricated concrete on a single row of steel piles (Integral abutment)
- Long term (80 year) solution
- Traffic Control options
  - Maintain traffic on existing bridge (1 lane minimum maybe 2 lanes)

Typical Sections - Alternative 4



PROPOSED FAS 0211 TYPICAL SECTION

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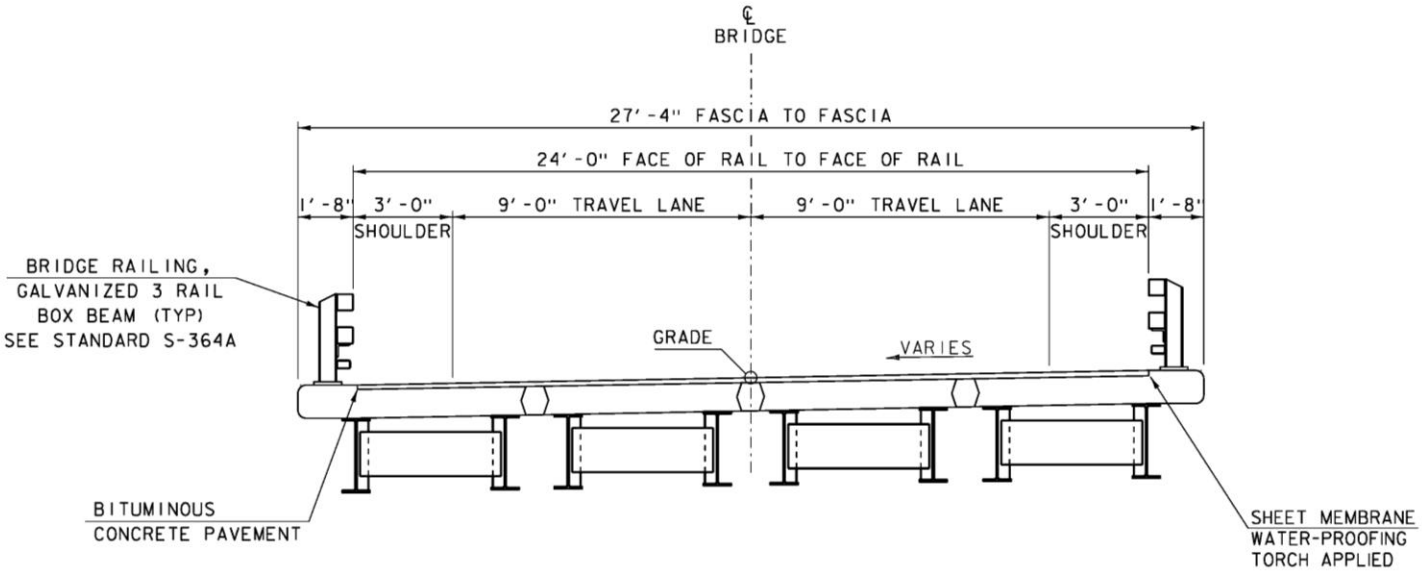
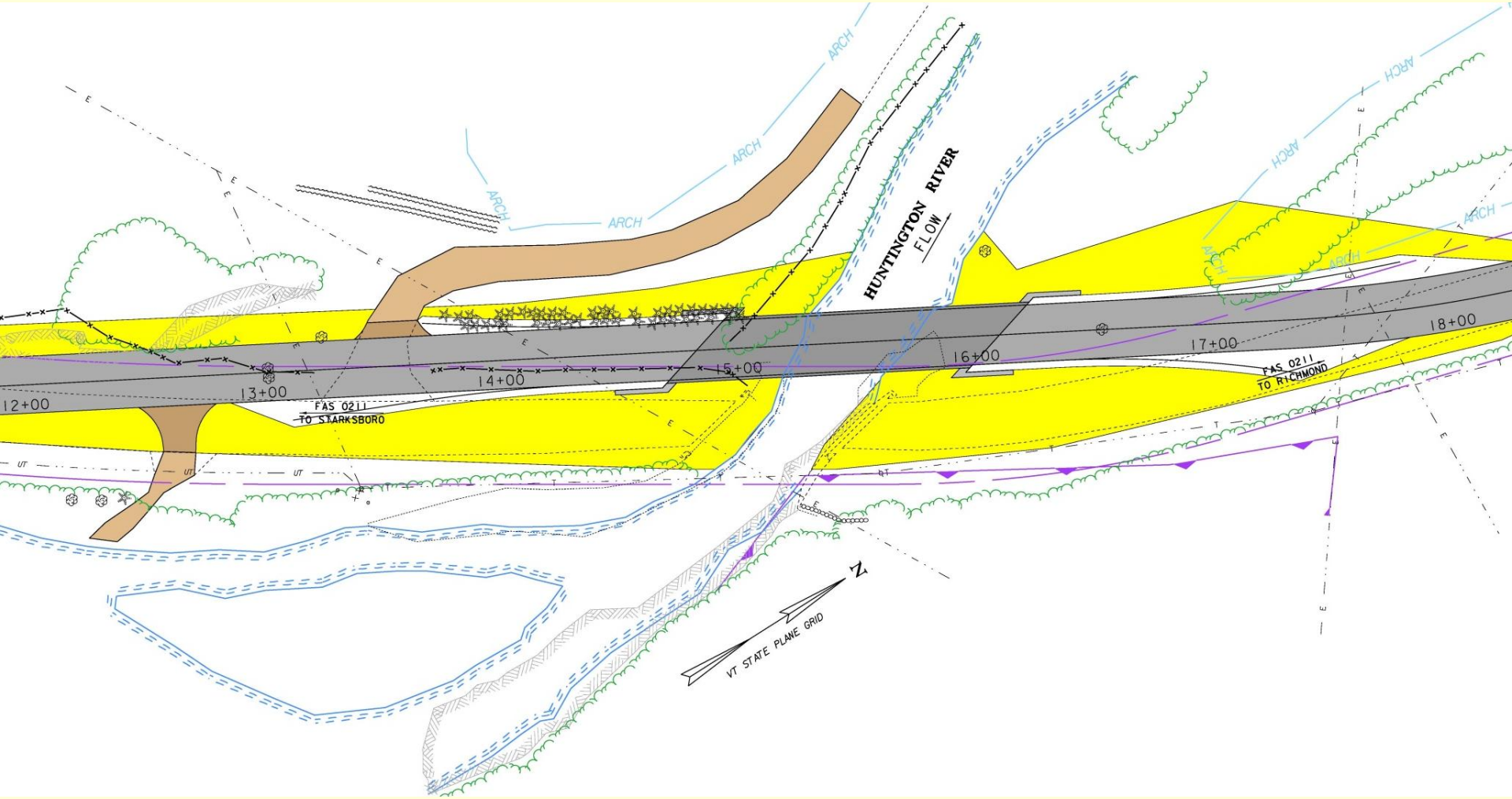
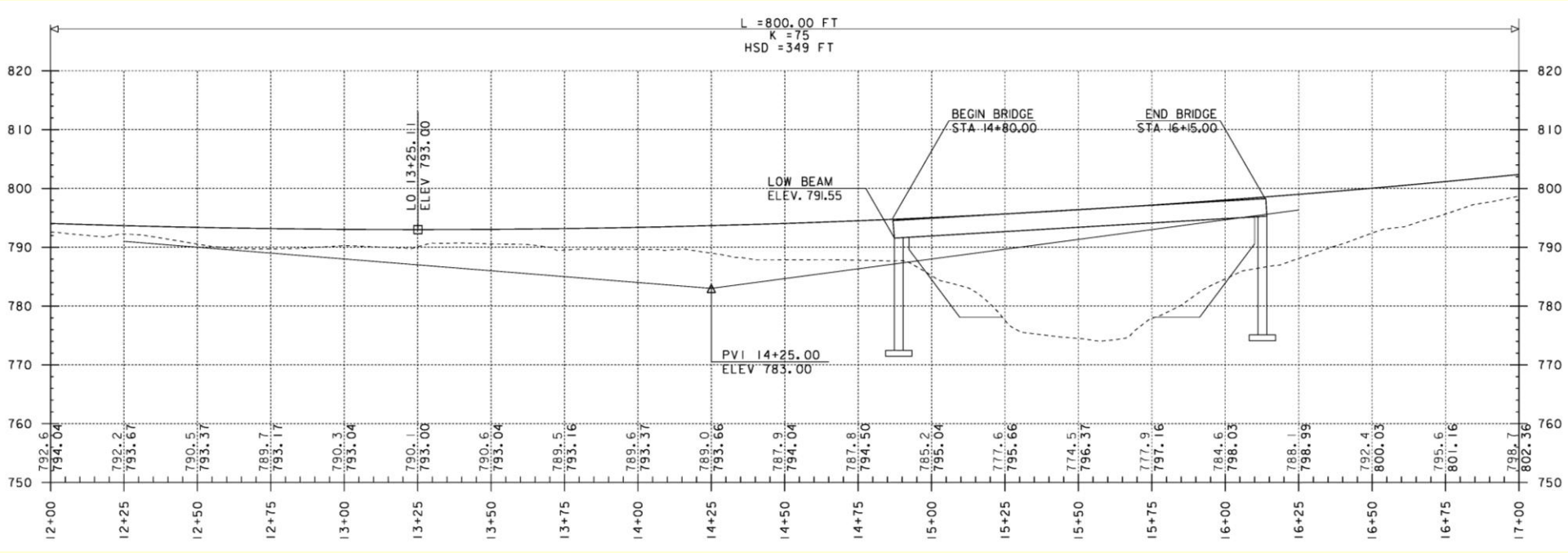


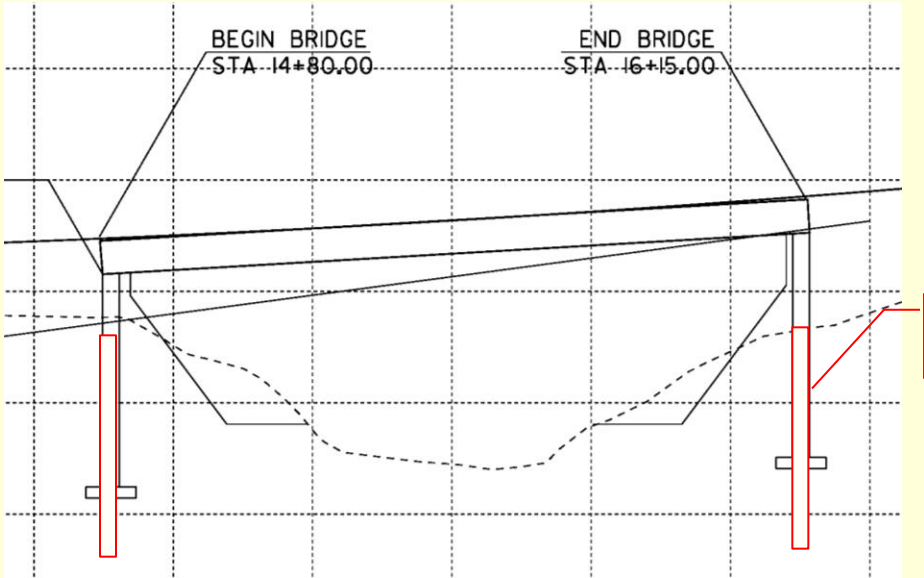
Layout – Alt 4 - 135’ Complete Replacement



Profile – Alt 4 - 135’ Span Complete Replacement



Enlarged view of bridge



Methods to Maintain Traffic

Three general methods available:

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

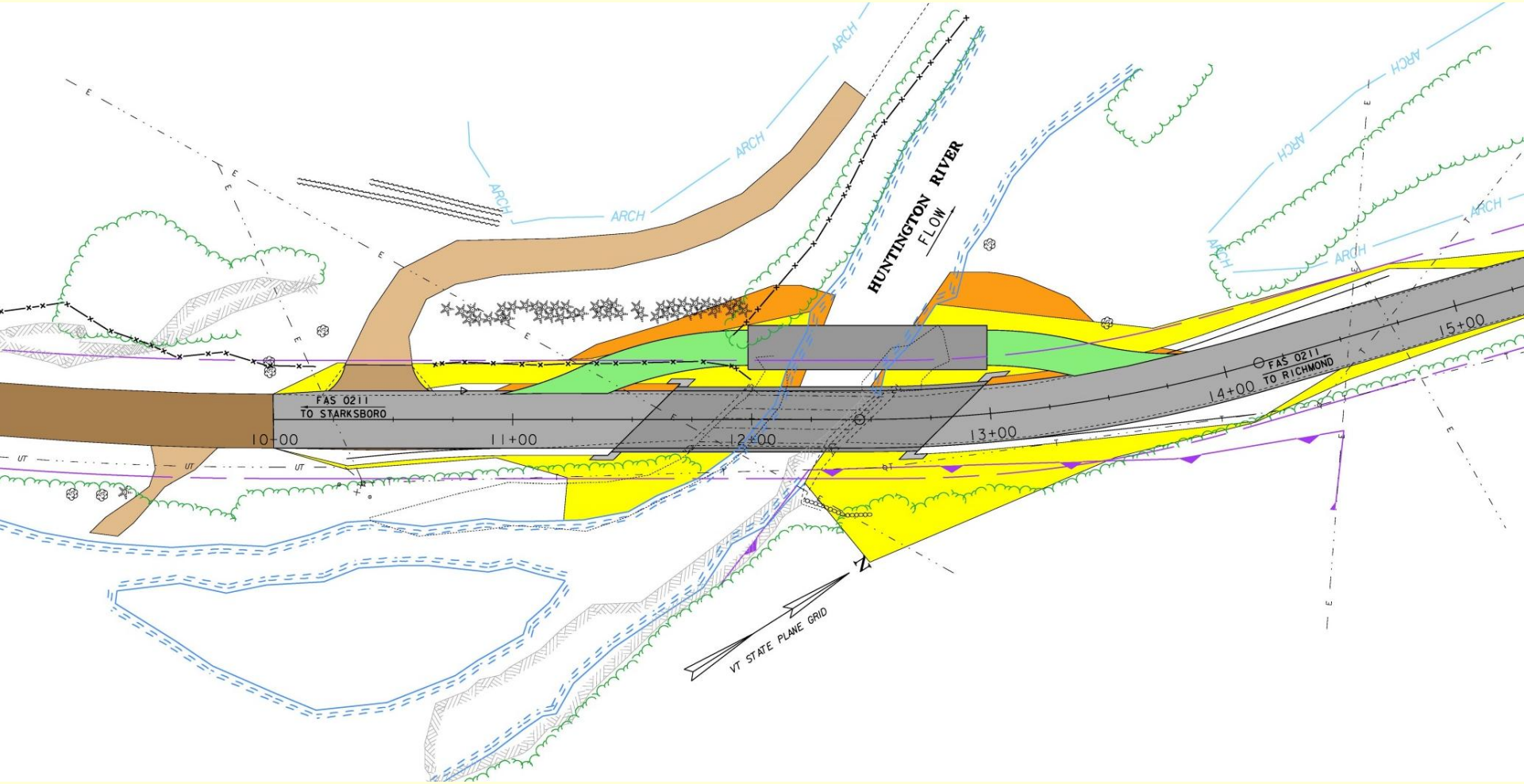
Phased Construction Option

- **Ruled out due to width 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

- 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-

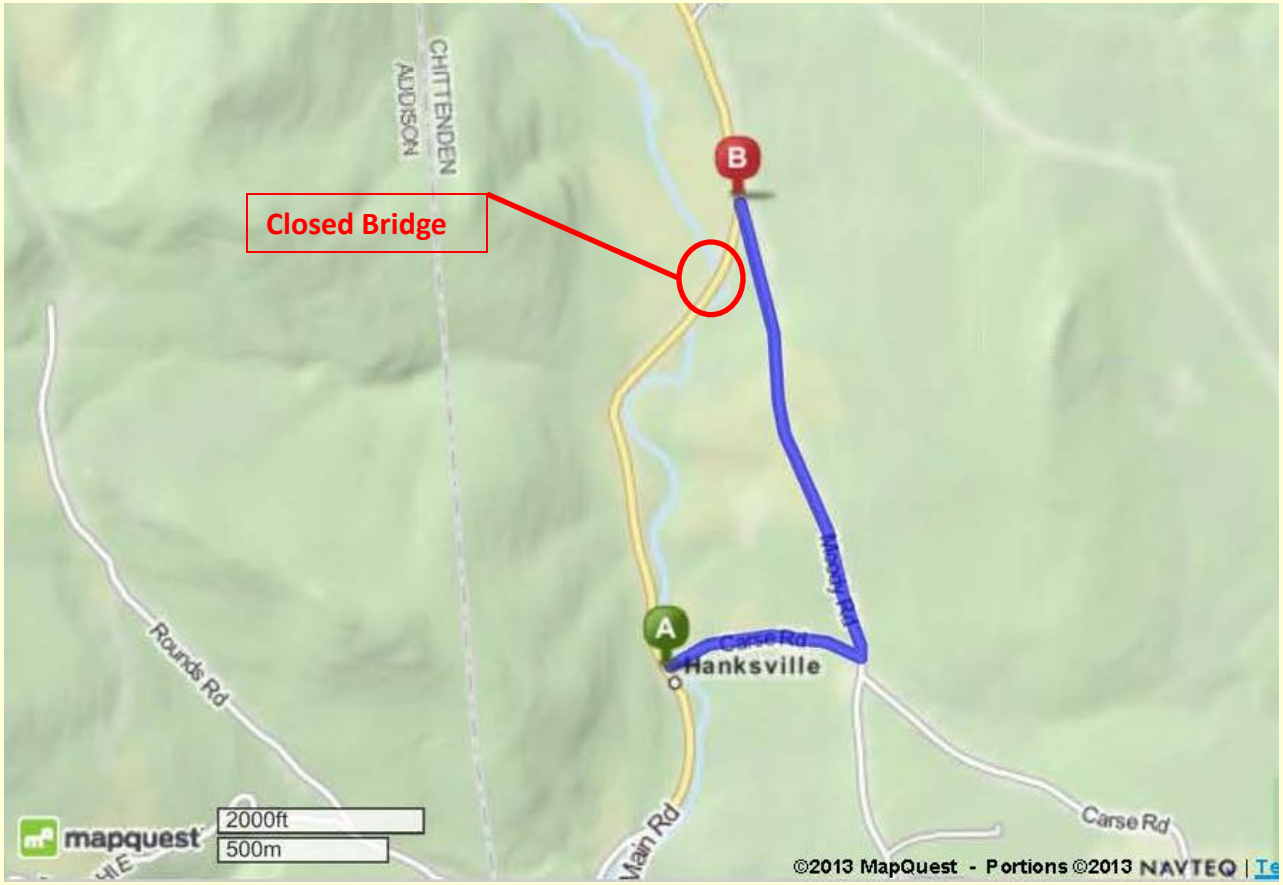
One Lane Temporary Bridge



ABC with Bridge Closure Option

- Bridge 8 to be closed during construction
  - Alternative 1 = 2 weeks
  - Alternative 2 = 16 weeks
  - Alternative 3 = 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 will be responsible for detour route
- Local share will be cut in half (2.5% or 5%)

Possible Detour Route



A to B on Thru Route: 1.0 Miles

A to B on Detour Route: 1.3 Miles

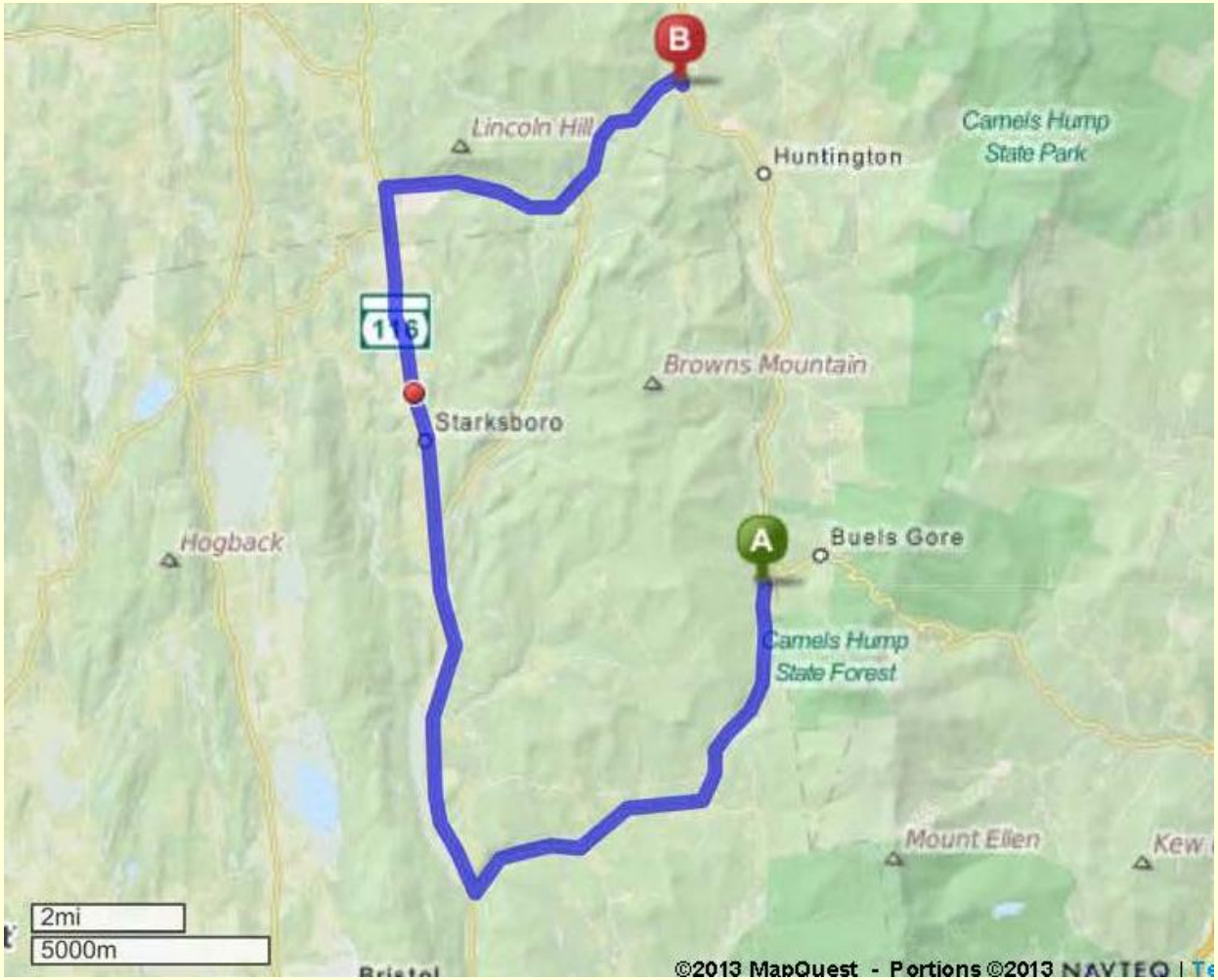
Added Miles: 0.3 Miles

End to End Distance: 2.3 Miles

There are narrow bridges along this detour route

Carse Road to Moody Road

Possible Detour Route



A to B on Thru Route: 8.0 Miles

A to B on Detour Route: 22.0 Miles

Added Miles: 14.0 Miles

End to End Distance: 30.0 Miles

This would require getting agreements from neighboring towns and for any signing along the State-owned routes

VT 17 to VT 116 to Hollow Road

Alternatives Matrix

	Superstruct. Replacement w/ Detour	70' Span Replacement w/ Detour	70' Span Replacement w/ Temp Bridge	127' Span Replacement w/ Detour	127' Span Replacement w/ Temp Bridge	135' Span Replacement w/ Exist Bridge
	Alternate 1	**Alternate 2a**	**Alternate 2b**	**Alternate 3a**	**Alternate 3b**	**Alternate 4**
Construction w/ CE + Contingencies	$487,000	$2,011,000	$2,246,000	$2,487,000	$2,790,000	$2,658,000
Preliminary Engineering	$93,000	$353,000	$396,000	$443,000	$497,000	$474,000
Right of Way	$0	$108,000	$140,000	$135,000	$173,000	$165,000
Total Project Cost	**$580,000**	**$2,472,000**	**$2,782,000**	**$3,065,000**	**$3,460,000**	**$3,297,000**
Town Share	**$14,500 (2.5%)**	**$123,600 (5%)**	**$278,200 (10%)**	**$153,250 (5%)**	**$346,000 (10%)**	**$329,700 (10%)**
Design Life	40 Years	80 Years	80 Years	80 Years	80 Years	80 Years
Project Development Duration	2 years	4 years	4 years	4 years	4 years	4 years
Construction Duration	3 months	8 months	18 months	8 months	18 months	15 months
Closure Duration	2 weeks	16 weeks	None	8 weeks	None	None

Conclusion and Recommendation

We recommend Alternative 3a Full Bridge Replacement on an improved alignment using ABC & short-term closure

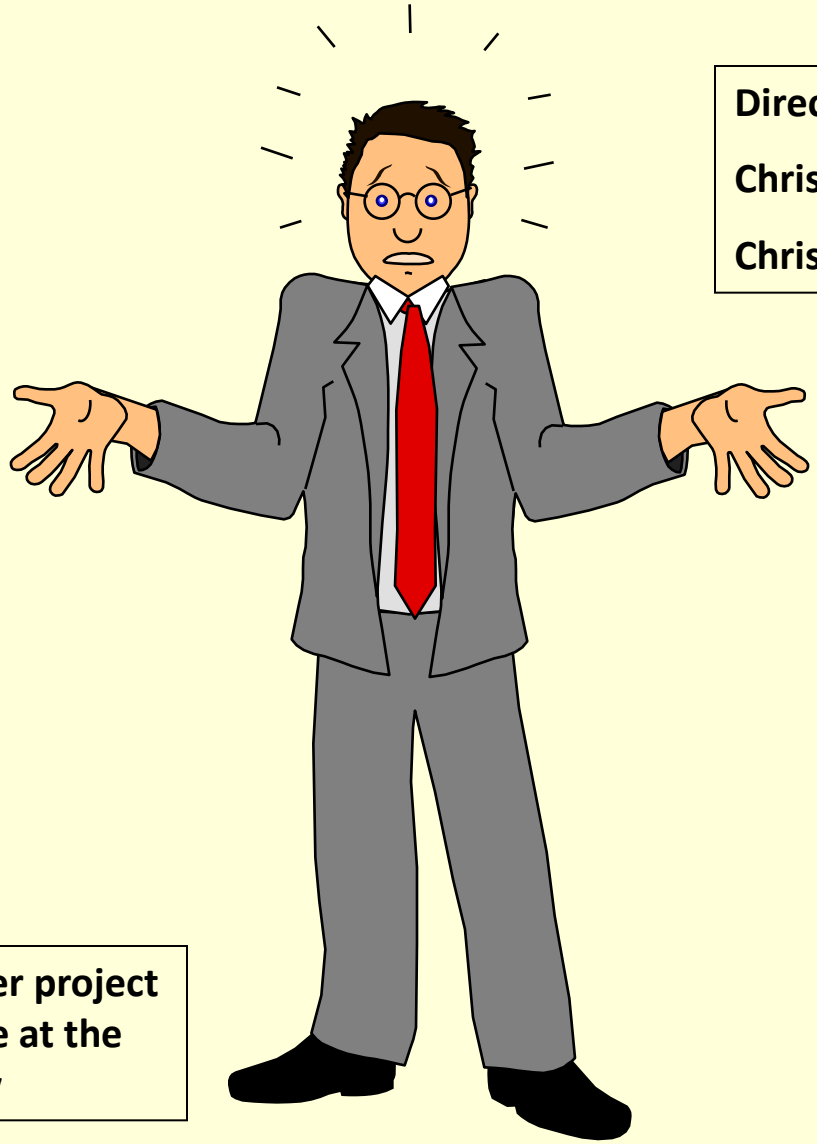
- All structural deficiencies are addressed
- Many sub-standard features are addressed
- Minimal mobility impacts
- Minimal impact to environmental resources
- Minimal impact to adjacent property owners
- Takes advantage of reduced local share for closure
- Long term (80 year) fix

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 Town response to recommendation
- 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/13J080