Salisbury-Cornwall BO 1449(45) Alternatives Presentation Meeting

Town Highway 1/3 – Bridge 8 over Otter Creek

February 26, 2021

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Introductions

Laura Stone, P.E.

VTrans Scoping Engineer

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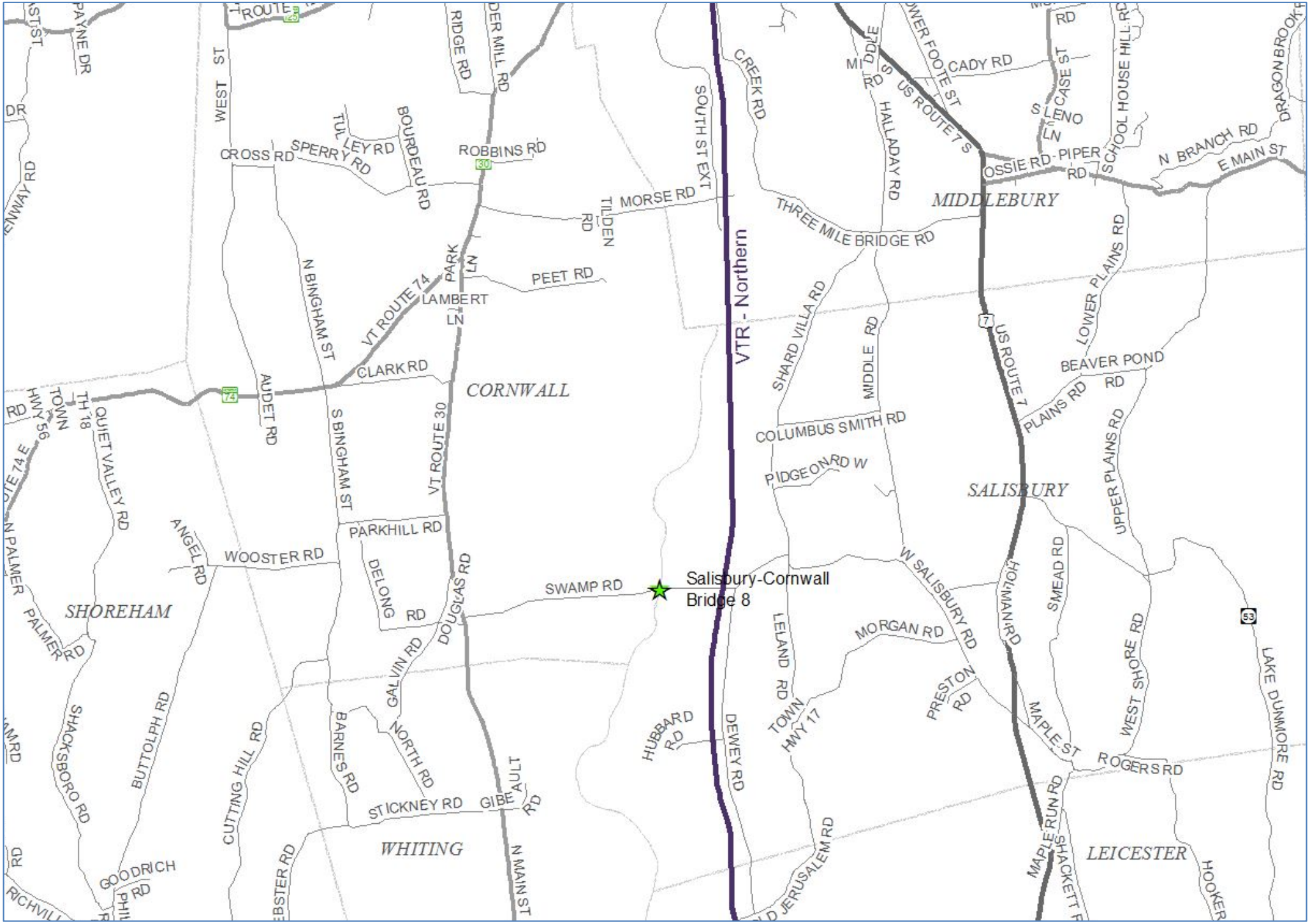
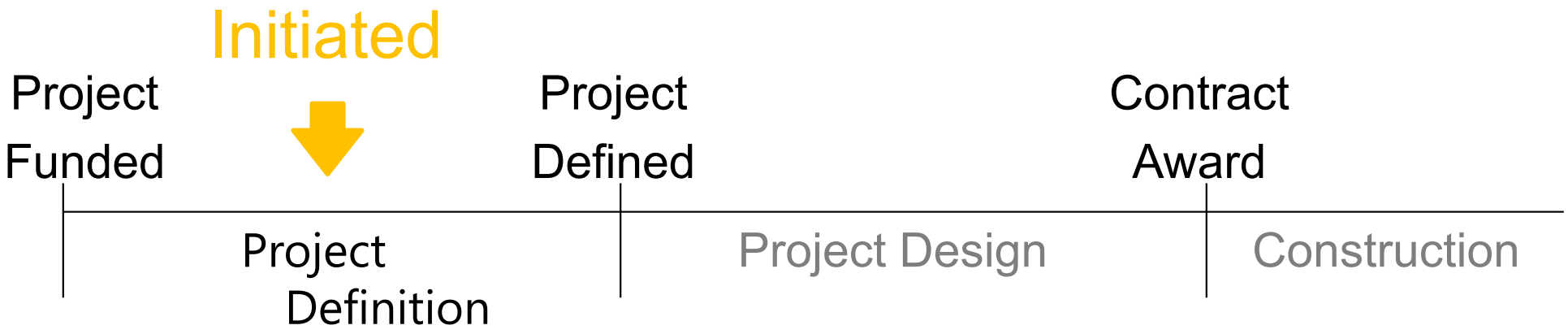


Location Map


Otter Creek
Bridge 8
Project Location

VTrans Project Development Process



- Identify resources & constraints
- Evaluate alternatives
- Public participation
- Build Consensus

- Quantify areas of impact
- Environmental permits
- Develop plans, estimate and specifications
- Right-of-Way process if necessary

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ACT 153 of the 2012 Legislative Session

	Local Share	
	Road Closed During Construction	Road Open During Construction
Rehabilitation	2.5%	5%
Replacement	5%	10%

- Per Act 153, the local share is reduced by 50% for rehabilitating versus replacement
- Per Act 153, the local share is reduced by 50% for closing the road to traffic during construction

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Looking East over Bridge 8

Existing Conditions – Bridge #8

- Roadway Classification – Local Road
- Bridge Type – 154’ Span Town Lattice Covered Bridge
- Ownership – Towns of Salisbury and Cornwall
- Constructed in 1865, Reconstructed in 2008

Looking West over Bridge 8

Existing Conditions – Bridge #8

- Temporary bridge in place

Existing Conditions – Bridge #8

- The structure was destroyed by a fire in 2016 and needs replacing.

- The existing roadway is substandard in width for the speed and traffic volumes present.

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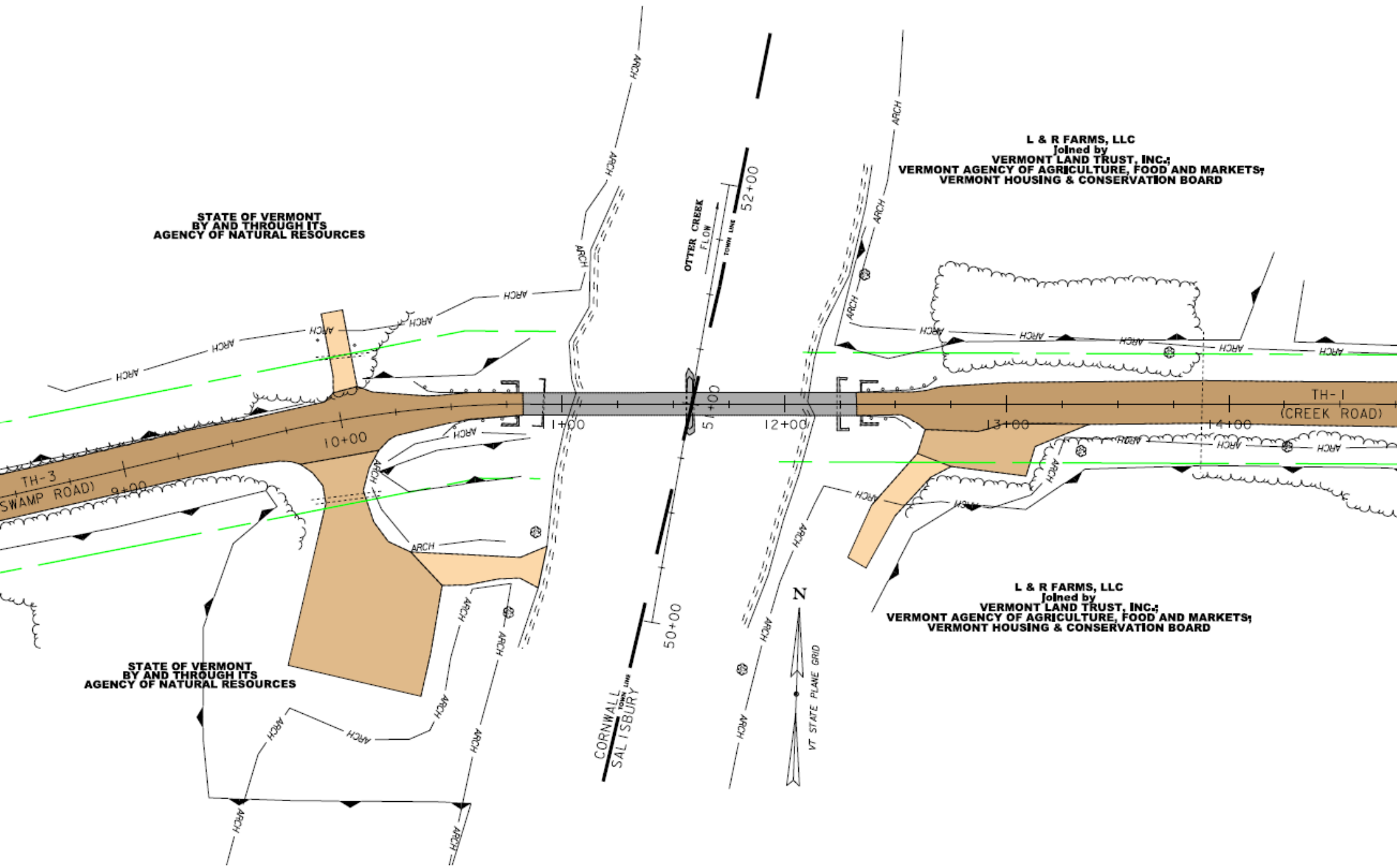
Existing Conditions - Bridge #8

- Deck Rating 0 (Failed)
- Superstructure Rating 0 (Failed)
- Substructure Rating 6 (Satisfactory)

Existing Conditions – Bridge #8

- The Cedar Swamp, a 6,619-acre wetland complex
- Several RTE species
- Wildlife habitat
- Highly archaeologically sensitive areas

Existing Conditions



Design Criteria and Considerations

- Average Daily Traffic
  - 540 vehicles per day
- Design Hourly Volume
  - 85 vehicles per hour
- % Trucks
  - 4.3%

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Alternatives Considered – Bridge #8

- Both Towns have indicated that a covered bridge or a bridge with similar height constraints may be preferred by some citizens. Additionally, Swamp Road on the Cornwall side of Bridge 8 is not designed for heavier truck traffic and Cornwall's current road ordinance prohibits traffic on Swamp Road that is heavier than 12,000 lbs. and/or wider than eight feet.
- Full Bridge Replacement with New Steel Beam Bridge
  - 150' length
  - 1 or 2-lane bridge
  - 75-year design life
- Full Bridge Replacement with New Truss
  - 150' length
  - 1 or 2-lane bridge, minimum 14' width
  - 75-year design life
- Full Bridge Replacement with New Covered Bridge
  - 150' length
  - Single lane bridge, 14' width
  - 75-year design life

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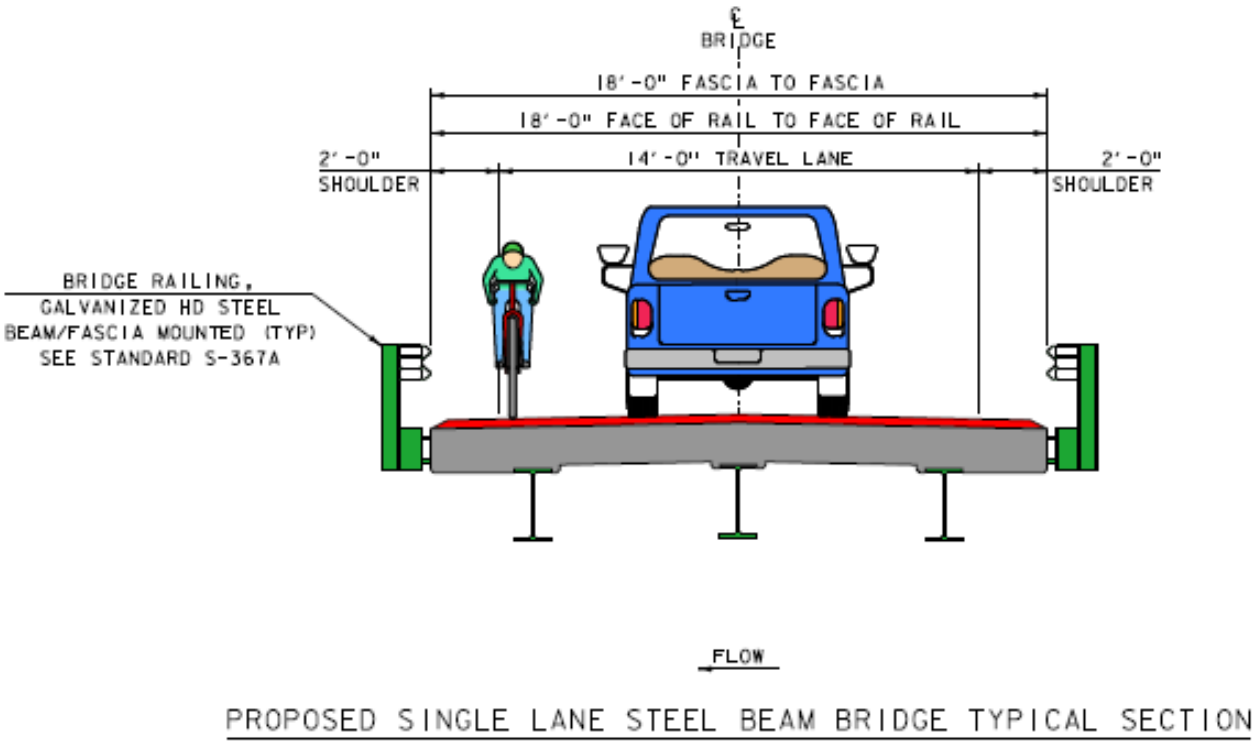
What Will the New Bridge Look Like?

Steel Beam Bridge – Bridge #8

- No Height Restriction
- Striped for one-lane alternating or two-lane traffic pattern
- Most economical

Alternative 1 Typical Section – 1 lane option

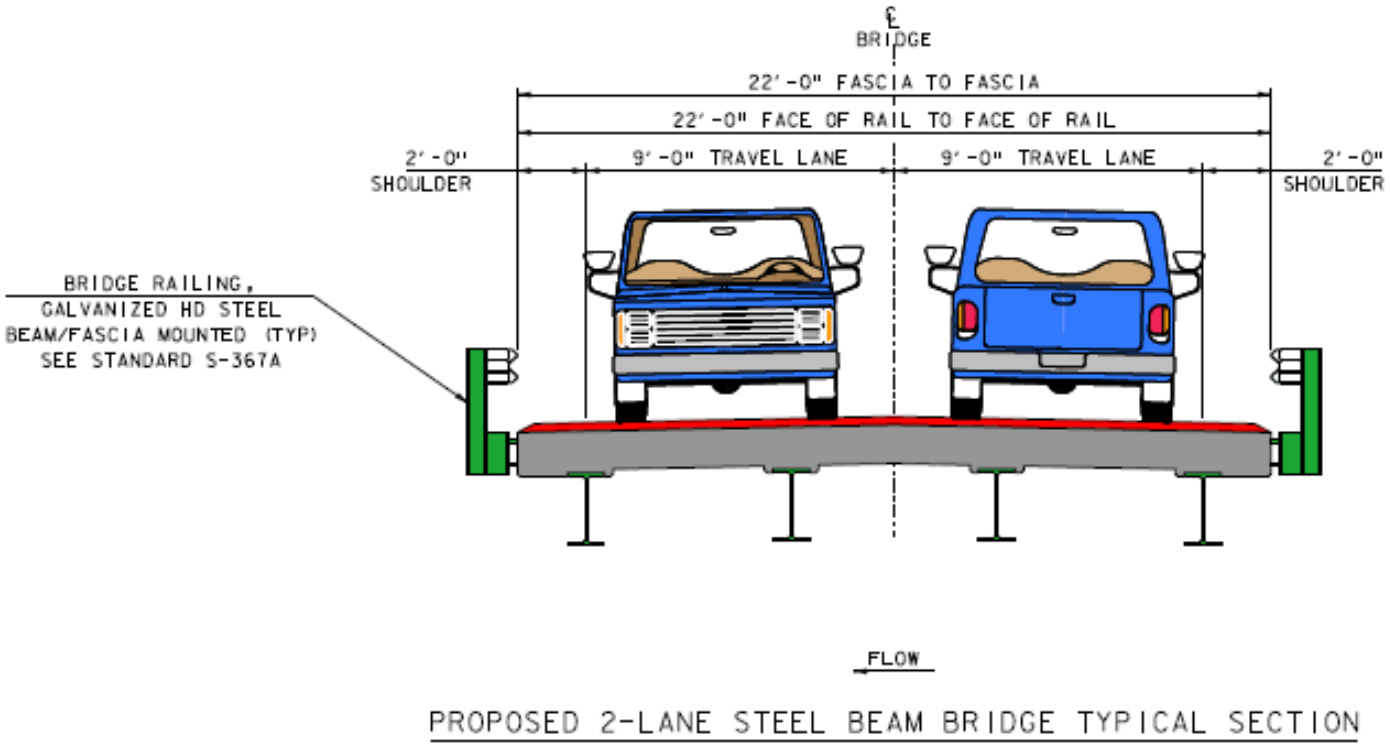


PROPOSED SINGLE LANE STEEL BEAM BRIDGE TYPICAL SECTION

New Steel Beam Bridge - Bridge #8

- 18’ Rail-to-Rail Single Lane Structure
- Height Restriction

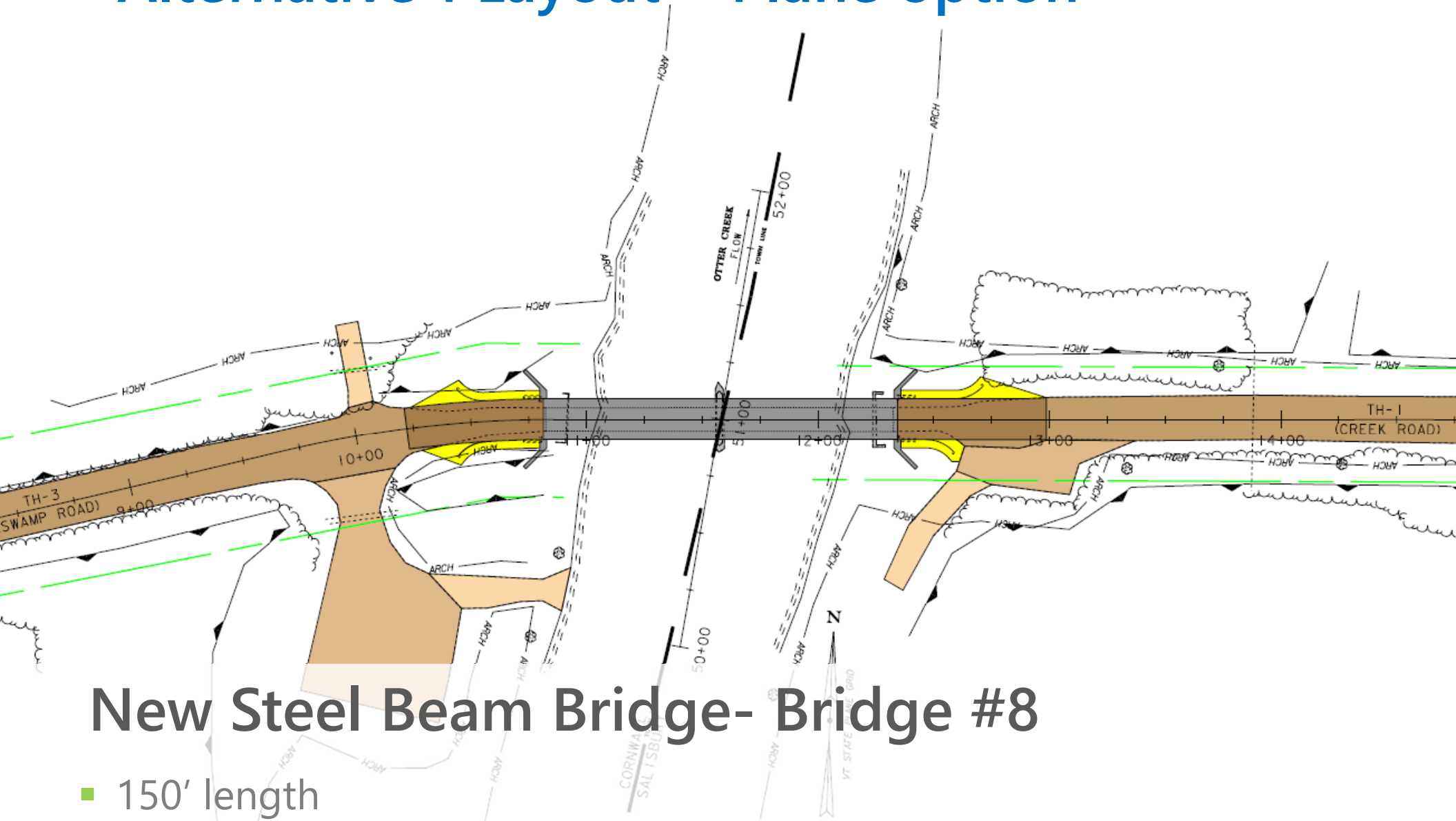
Alternative 1 Typical Section – 2 lane option



New Steel Beam Bridge- Bridge #8

- 22’ Rail-to-Rail 2-Lane Structure
- Height Restriction

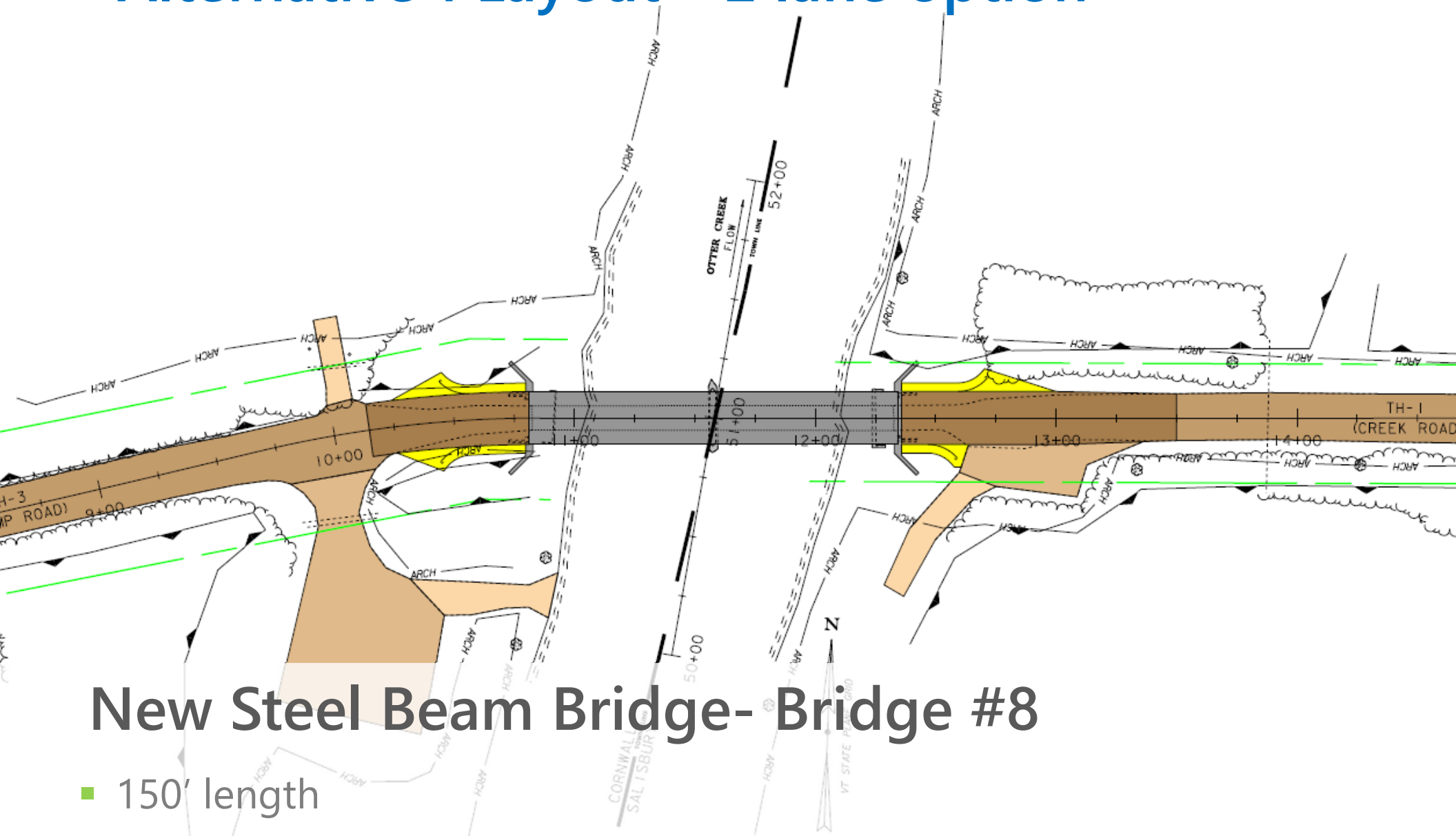
Alternative 1 Layout – 1 lane option



New Steel Beam Bridge- Bridge #8

- 150’ length
- 1 or 2-lane bridge
- 75-year design life

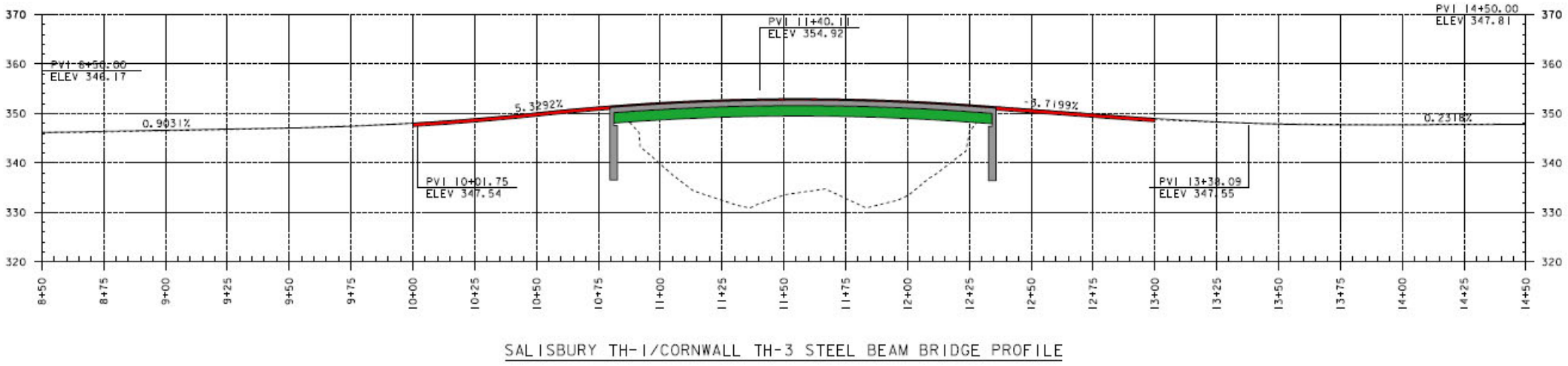
Alternative 1 Layout – 2 lane option



New Steel Beam Bridge- Bridge #8

- 150’ length
- 1 or 2-lane bridge
- 75-year design life

Alternative 1 Profile

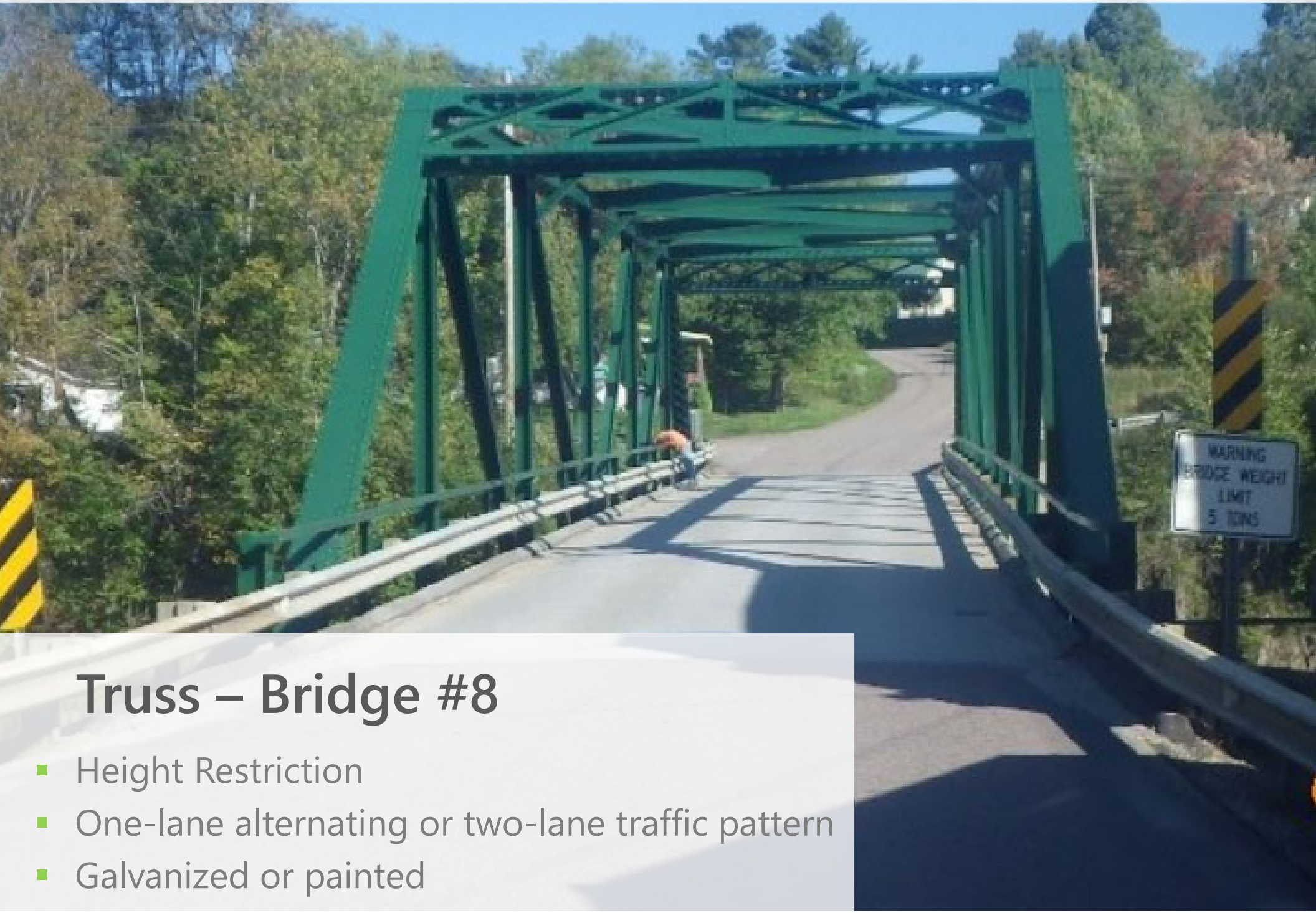


SALISBURY TH-1/CORNWALL TH-3 STEEL BEAM BRIDGE PROFILE

New Steel Beam Bridge - Bridge #8

- Match into existing vertical alignment

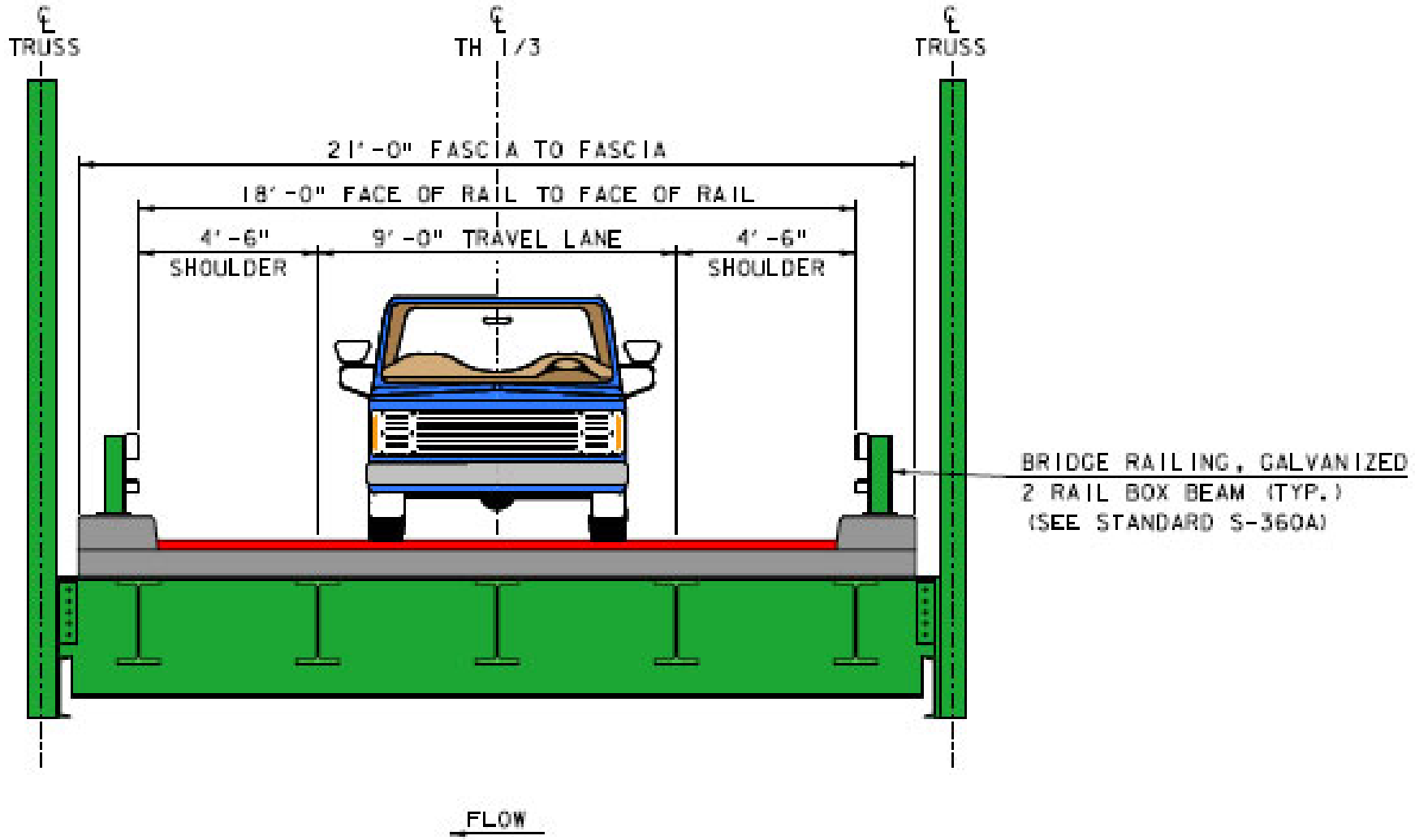
What Will the New Bridge Look Like?



Truss – Bridge #8

- Height Restriction
- One-lane alternating or two-lane traffic pattern
- Galvanized or painted

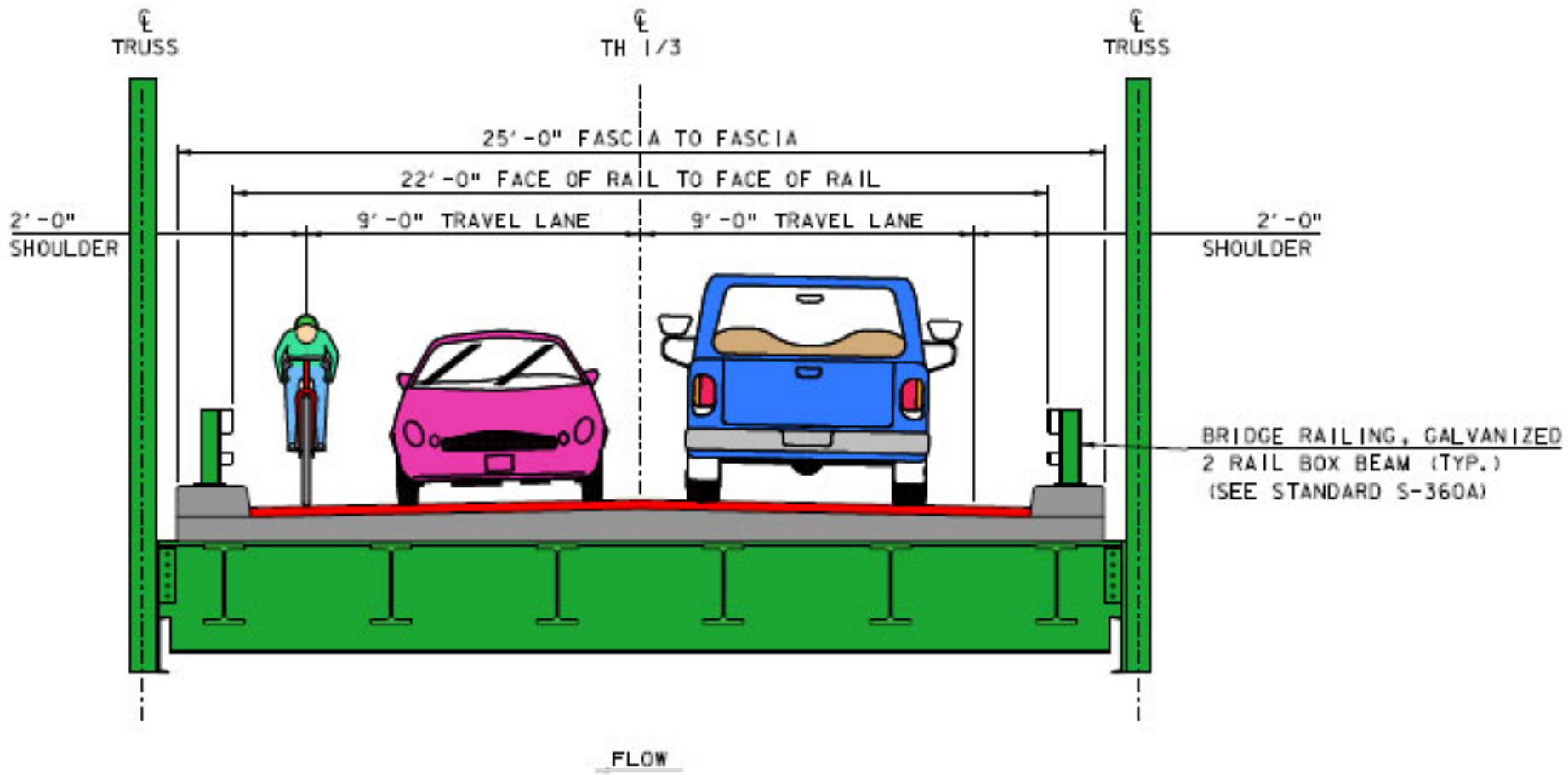
Alternative 2 Typical Section – 1 lane option



New Truss - Bridge #8

- 18’ Rail-to-Rail Single Lane Structure
- Height Restriction

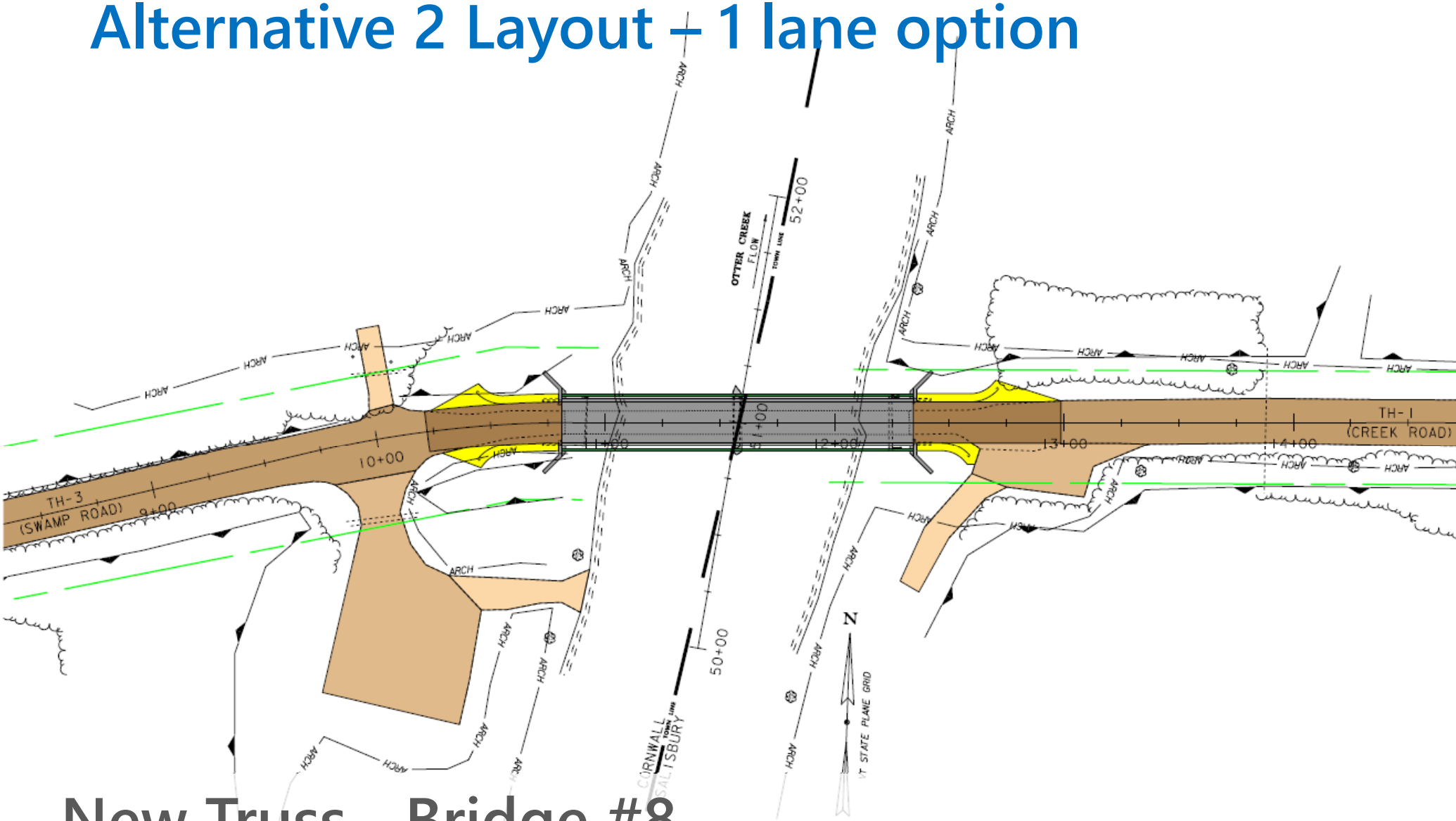
Alternative 2 Typical Section – 2 lane option



New Truss - Bridge #8

- 22′ Rail-to-Rail 2-Lane Structure
- Height Restriction

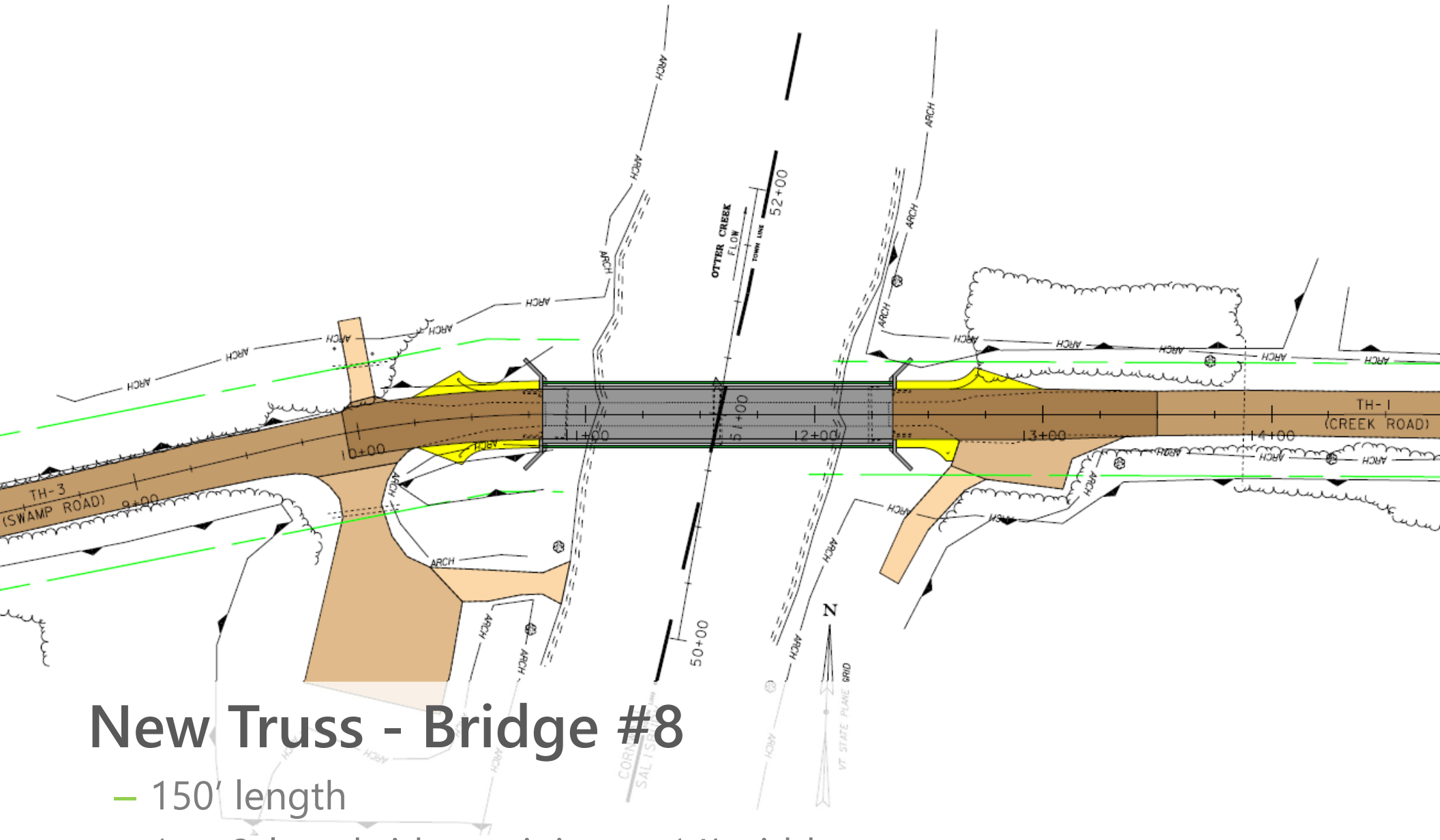
Alternative 2 Layout – 1 lane option



New Truss - Bridge #8

- 150’ length
- 1 or 2-lane bridge, minimum 14’ width
- 75-year design life

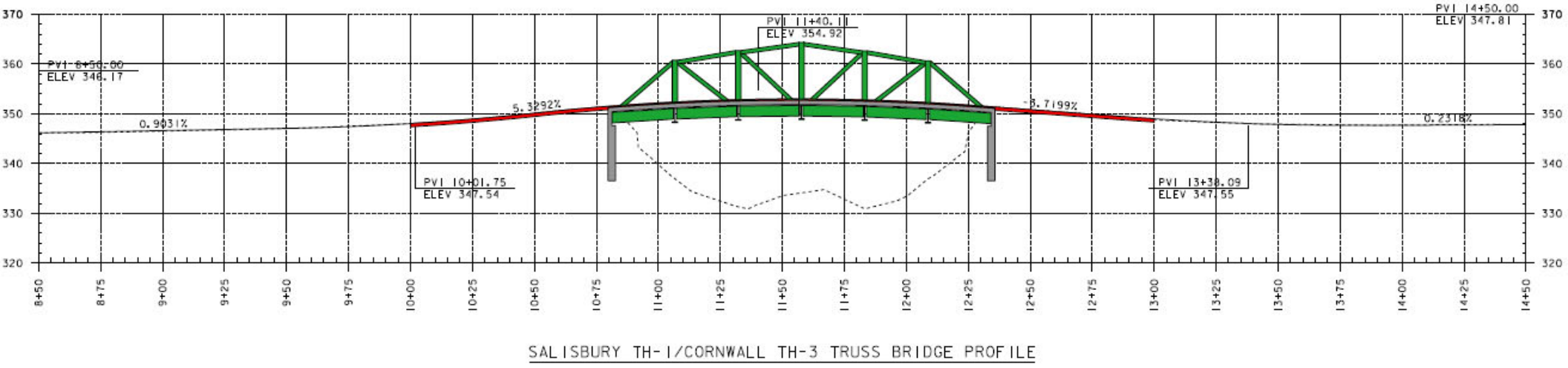
Alternative 2 Layout – 2 lane option



New Truss - Bridge #8

- 150’ length
- 1 or 2-lane bridge, minimum 14’ width
- 75-year design life

Alternative 2 Profile



SALISBURY TH-1/CORNWALL TH-3 TRUSS BRIDGE PROFILE

New Truss - Bridge #8

- Match into existing vertical alignment

What Will the New Bridge Look Like?

Covered Bridge – Bridge #8

- Height Restriction
- Limits truck traffic
- One-lane alternating traffic pattern
- Fire detection and protection system options

Alternative 3 Typical Section

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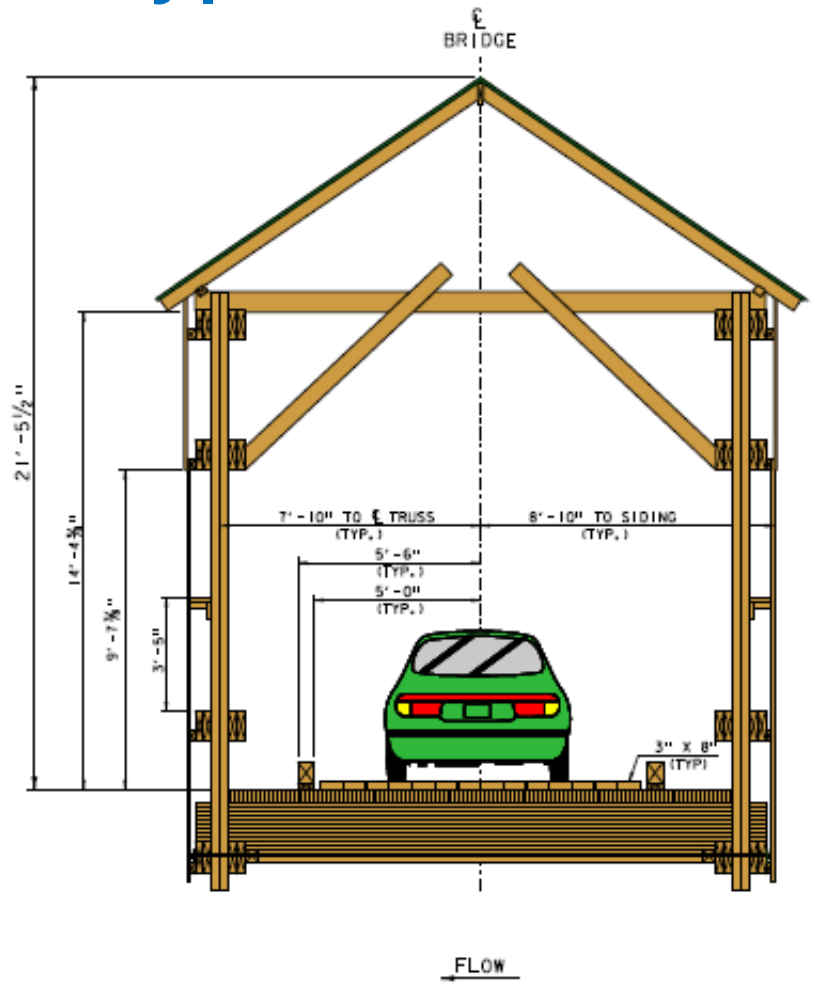

PROPOSED COVERED BRIDGE TYPICAL SECTION

New Covered Bridge - Bridge #8

- 14’ Rail-to-Rail Single Lane Structure
- Height Restriction

Alternative 3 Layout

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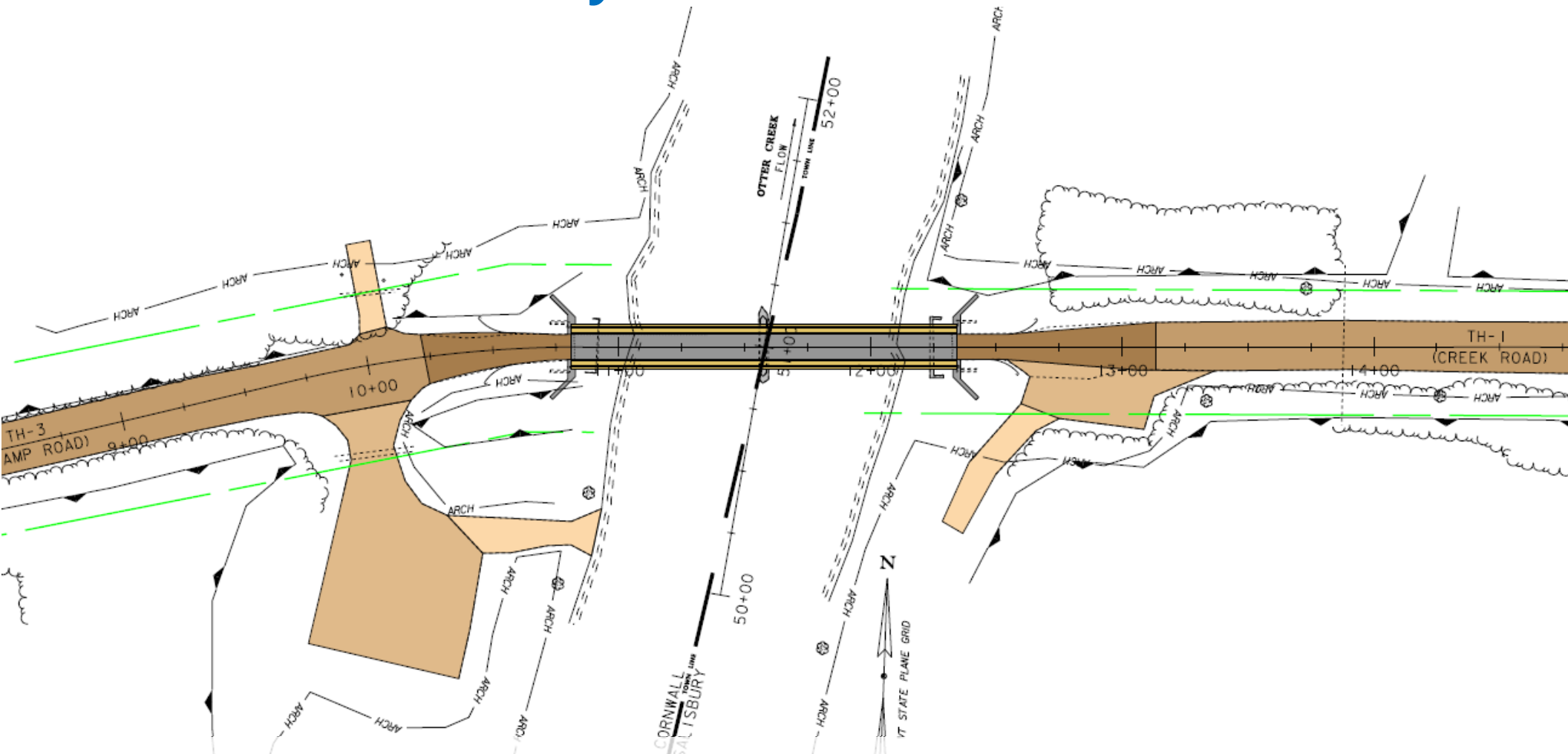

New Covered Bridge - Bridge #8

- 150’ length
- Single lane bridge, 14’ width
- 75-year design life

Alternative 3 Profile

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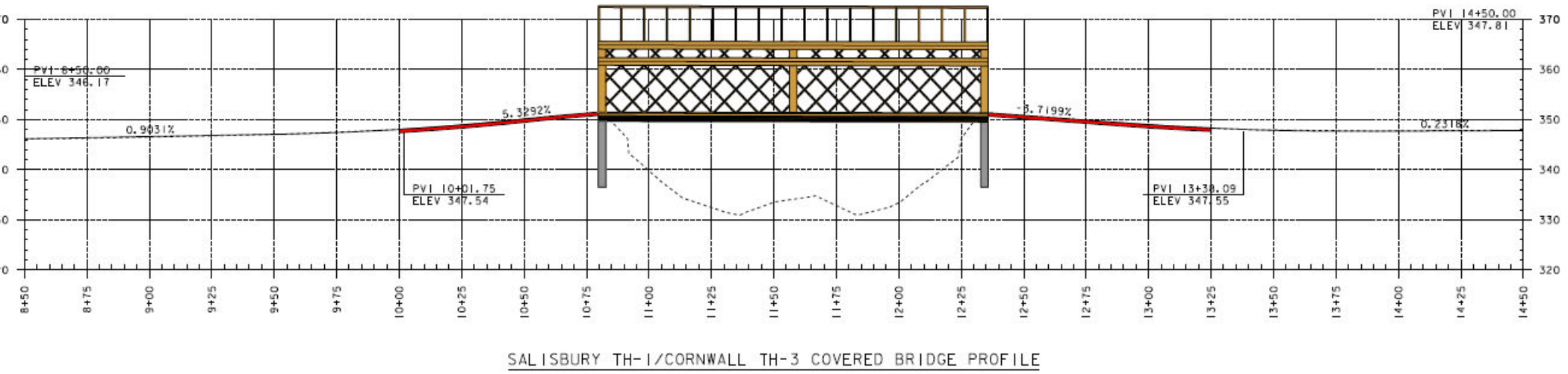

SALISBURY TH-1/CORNWALL TH-3 COVERED BRIDGE PROFILE

New Covered Bridge - Bridge #8

- Match into existing vertical alignment

What Will the New Bridge Look Like?

Covered Bridge

- Height Restriction
- Limits truck traffic
- One-lane alternating traffic pattern
- Fire detection and protection system options

Thru Truss

- Height Restriction
- One-lane alternating or two-lane traffic pattern
- Galvanized or painted

Conventional Steel Beam Bridge

- No Height Restriction
- Striped for one-lane alternating or two-lane traffic pattern
- Most economical

Recommended Alternative - Bridge #8

- Full Bridge Replacement On-Alignment
  - Conventional Steel Beam Bridge, Truss, or Covered Bridge to be chosen by the town
  - New single lane or 2-lane bridge
  - 150’ length single or 2-span bridge to match existing conditions
    - Removal of pier may be desirable due to debris issues
  - 75-year design life

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Maintenance of Traffic Options Considered

- Offsite Detour
- Temporary Bridge

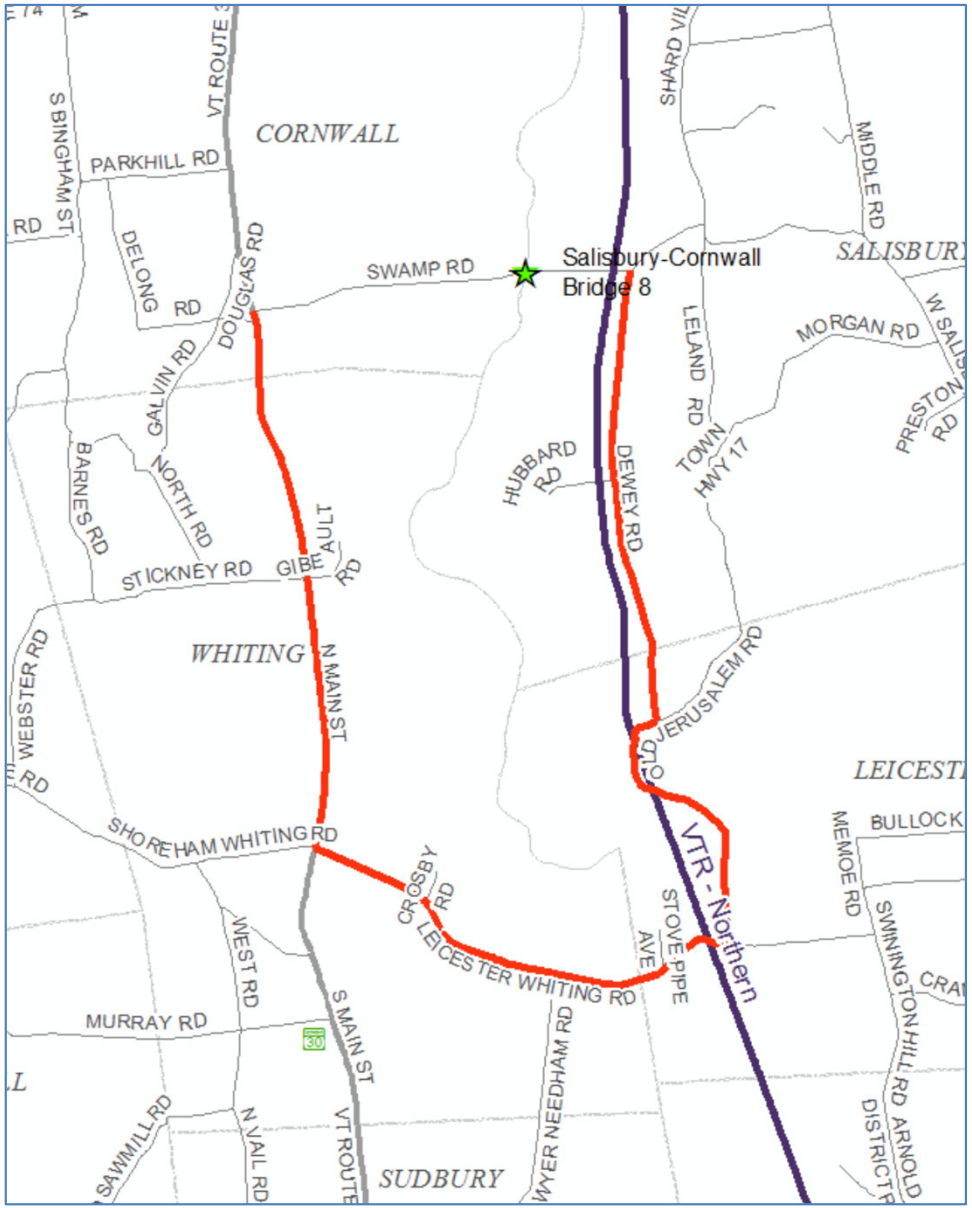
Road Closure

- Detour chosen and signed by Town
- Construction Season duration
- Shortest Detour Route is 13.9 miles end-to-end
- Reduces Town share from 10% to 5%

Traffic Control – Detour 1

- **Local Detour Route:** Creek Road to Dewey Road, Old Jerusalem Road, Leicester Whiting Road, VT-30 North, to Swamp Road

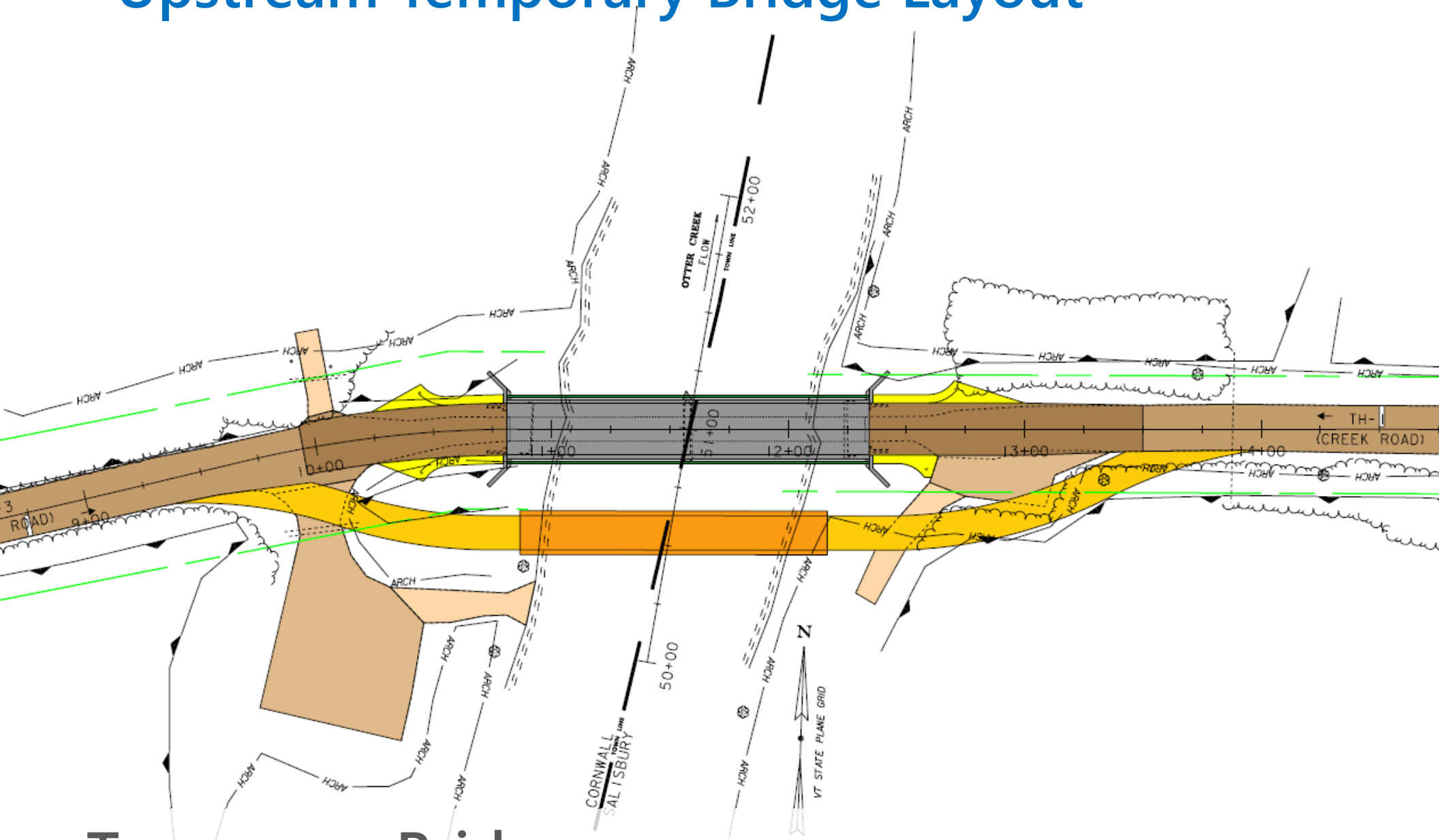
  - Through Route: 2.5 Miles
  - Detour Route: 11.4 Miles
  - Added Distance: 8.9 Miles
  - End-to-End Distance: 13.9 Miles



Temporary Bridge

- One Lane Temporary Bridge constructed either Upstream or Downstream side of Bridge 8

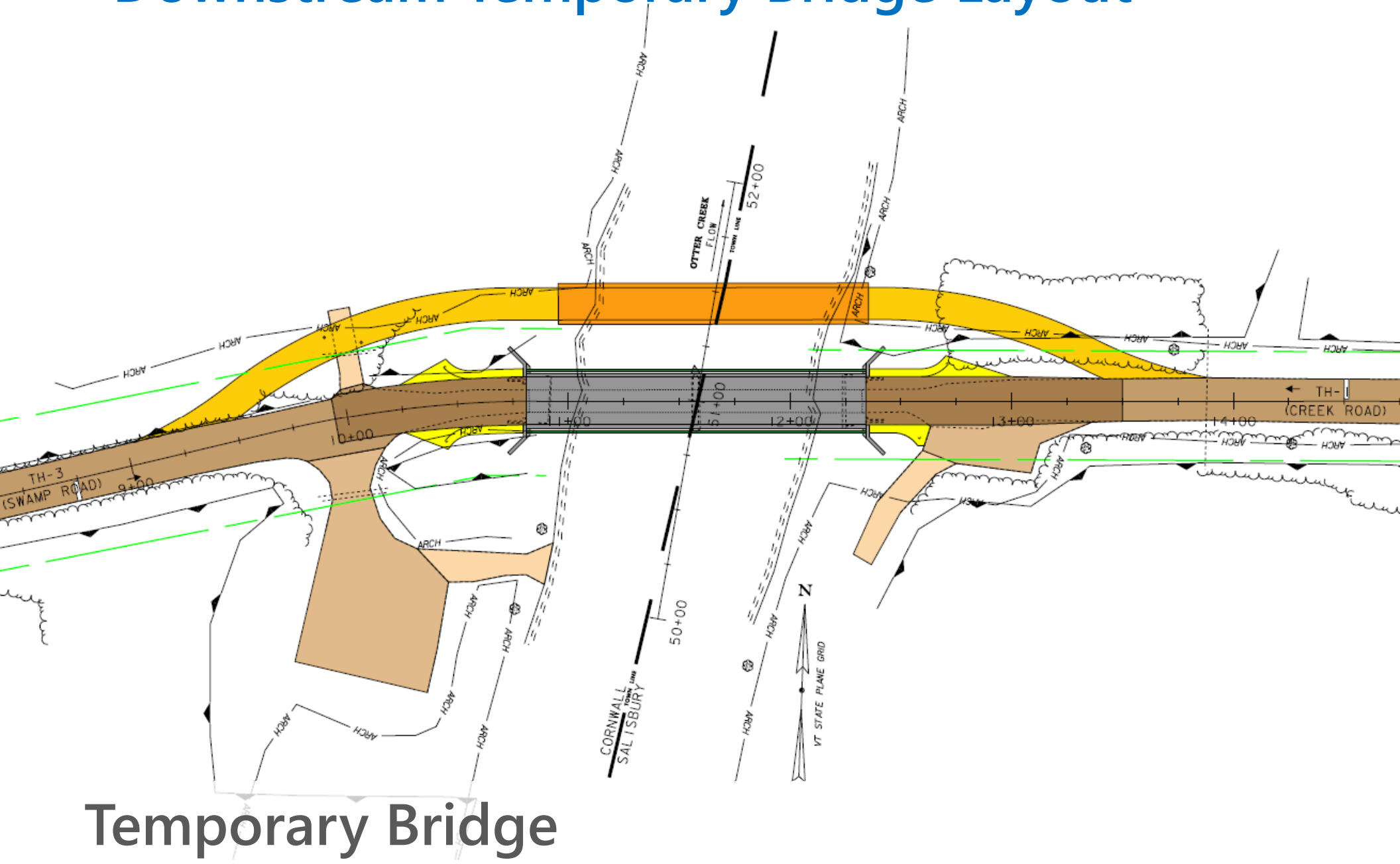
Upstream Temporary Bridge Layout



Temporary Bridge

- Placement of temporary bridge increases Town share from 5% to 10%

Downstream Temporary Bridge Layout



Temporary Bridge

- Placement of temporary bridge increases Town share from 5% to 10%

Recommendation: Bridge 8

- Full Bridge Replacement On-Alignment with Traffic Maintained on and Offsite Detour
  - Closure for a construction duration
  - Conventional Steel Beam Bridge, Truss, or Covered Bridge to be chosen by the town
  - New single lane or 2-lane bridge
  - 150’ length single or 2-span bridge to match existing conditions
  - 75-year design life
  - Right-of-Way likely needed

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Alternatives Matrix

Salisbury-Cornwall 1445(39)	Do Nothing	Alternative 1				Alternative 2				Alternative 3	
		Full Bridge Replacement: Conventional Steel Beam Bridge				Full Bridge Replacement: Truss Bridge				Full Bridge Replacement: Covered Bridge	
		Offsite Detour		Temporary Bridge		Offsite Detour		Temporary Bridge		Offsite Detour	Temporary Bridge
		1a. One Lane	1b. Two Lane	1c. One Lane	1d. Two Lane	2a. One Lane	2b. Two Lane	2c. One Lane	2d. Two Lane	3a. One Lane	3b. One Lane
Total Project Costs	$0	$2,149,212	$2,218,902	$2,793,354	$2,866,579	3,312,446	3,863,066	4,010,339	4,745,748	4,387,004	4,834,698
Annualized Costs	$0	$28,656	$29,585	$37,245	$38,221	$44,166	$51,508	$53,471	$63,277	$58,493	$64,463
TOWN SHARE		**$107,461**	**$110,945**	**$279,335**	**$286,658**	**$165,622**	**$193,153**	**$401,034**	**$474,575**	**$219,350**	**$483,470**
TOWN %		5%	5%	10%	10%	5%	5%	10%	10%	5%	10%
Project Development Duration	NA	2 Years	2 Years	4 Years	4 Years	2 Years	2 Years	4 Years	4 Years	2 Years	4 Years
Construction Duration	NA	8 months	8 months	8 months	8 months	8 months	8 months	8 months	8 months	8 months	8 months
Closure Duration (If Applicable)	NA	Construction Season	Construction Season	NA	NA	Construction Season	Construction Season	NA	NA	Construction Season	NA
Typical Section - Roadway (feet)	18'	18'	22'	18'	22'	18'	22'	18'	22'	18'	18'
Typical Section - Bridge (feet)	10'	2'-14'-2'	2'-9'-9'-2'	2'-14'-2'	2'-9'-9'-2'	2'-14'-2'	2'-9'-9'-2'	2'-14'-2'	2'-9'-9'-2'	14'	14'
Geometric Design Criteria	Substandard Width	Substandard Width	Meets Standard	Substandard Width	Meets Standard	Substandard Width	Meets Standard	Substandard Width	Meets Standard	Substandard Width	Meets Standard
Traffic Safety	No Change	Improved	Improved	Improved	Improved	Improved	Improved	Improved	Improved	Improved	Improved
Alignment Change	No Change	No	No	No	No	No	No	No	No	No	No
Bicycle Access	No Change	Improved	Improved	Improved	Improved	Improved	Improved	Improved	Improved	No Change	No Change
Pedestrian Access	No Change	Improved	Improved	Improved	Improved	Improved	Improved	Improved	Improved	No Change	No Change
Hydraulics	No Change	Meets Standard	Meets Standard	Meets Standard	Meets Standard	Meets Standard	Meets Standard	Meets Standard	Meets Standard	Meets Standard	Meets Standard
Utilities	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change
ROW Acquisition	No Change	Minor	Minor	Yes	Yes	Minor	Minor	Yes	Yes	Minor	Yes
Road Closure	No Change	Yes	Yes	No	No	Yes	Yes	No	No	Yes	No
Design Life (years)	0	75	75	75	75	75	75	75	75	75	75

Preliminary Project Schedule

- Construction Start – 2025

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Next Steps – Bridge #8

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

- Wait for Town response to recommendation on proposed project
  - Develop Conceptual plans and distribute for comment
  - Process local agreements
  - Right-of-Way process
  - Updates on project plans and estimates at each submittal

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Salisbury-Cornwall BO 1449(45) Questions and Comments

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February 26, 2022

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