Hartland IM 091-1(68)
Alternatives Presentation Meeting

Bridge D37 on TH 41 over I-91

August 21, 2017

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Introductions

Jonathan Griffin, PE – VTrans Scoping Engineer

Mahendra Thilliyar – VTrans Project Manager

Purpose of Meeting

- Provide an understanding of our approach to the project
- Provide an overview of project constraints
- Discuss alternatives that we considered
- Discuss our recommended alternative
- Provide an opportunity to ask questions and provide input

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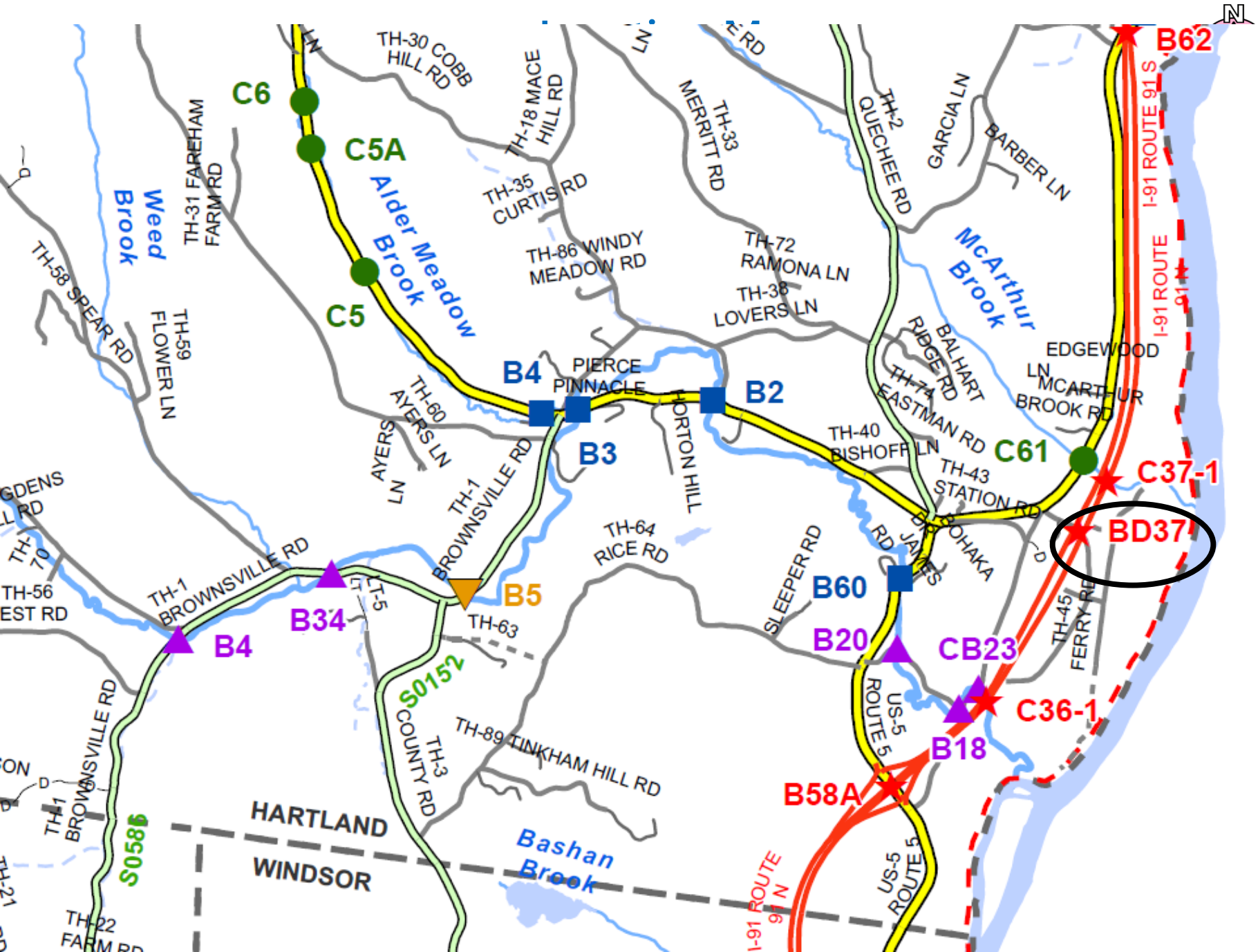
C6
C5A
C5
B4
B3
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B34
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B60
B20
CB23
B18
B58A
B62
C61
C37-1
BD37
C36-1
PIERCE PINNACLE
TH-30 COBB HILL RD
TH-18 MACE HILL RD
TH-35 CURTIS RD
TH-33 MERRITT RD
TH-2 QUECHEE RD
GARCIA LN
BARBER LN
TH-31 FAREHAM FARM RD
Weed Brook
Alder Meadow Brook
TH-58 SPEAR RD
TH-59 FLOWER LN
TH-86 WINDY MEADOW RD
TH-72 RAMONA LN
TH-38 LOVERS LN
McArthur Brook
BALHART RIDGE RD
TH-74 EASTMAN RD
EDGEWOOD LN
MCARTHUR BROOK RD
I-91 ROUTE 91 S
I-91 ROUTE 91 N
TH-60 AYERS LN
AYERS LN
TH-1 BROWNSVILLE RD
TORTON HILL
TH-40 BISHOFF LN
TH-43 STATION RD
TH-64 RICE RD
SLEEPER RD
BROWNSVILLE RD
TH-56 EST RD
TH-63
S0152
TH-3 COUNTY RD
TH-89 TINKHAM HILL RD
US-5 ROUTE 5
TH-45 FERRY RD
HARTLAND
WINDSOR
S0586
Bashan Brook
TH-22 FARM RD
N


Project Location
5
91
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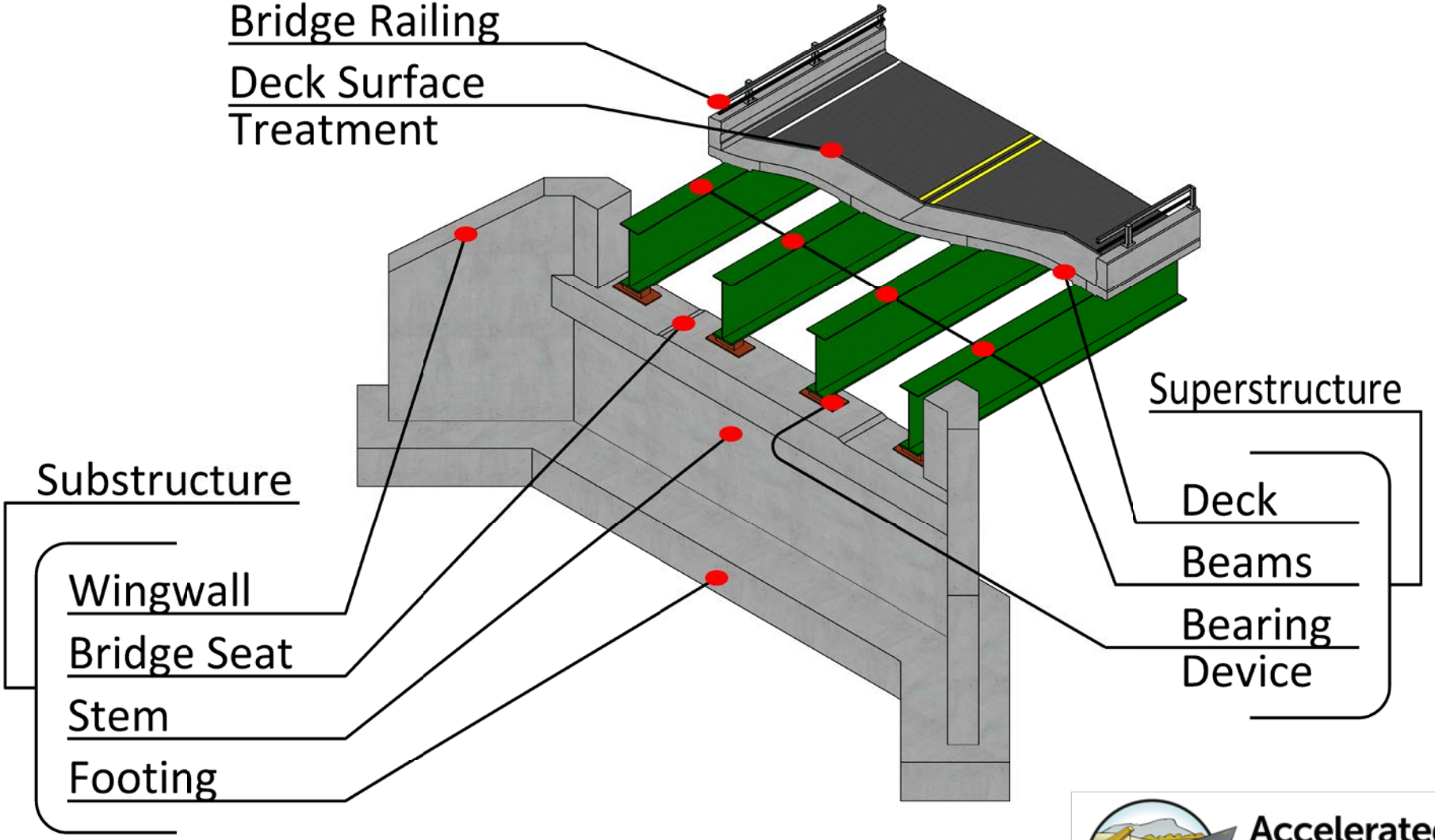
Connecticut River
Google

Description of Terms Used



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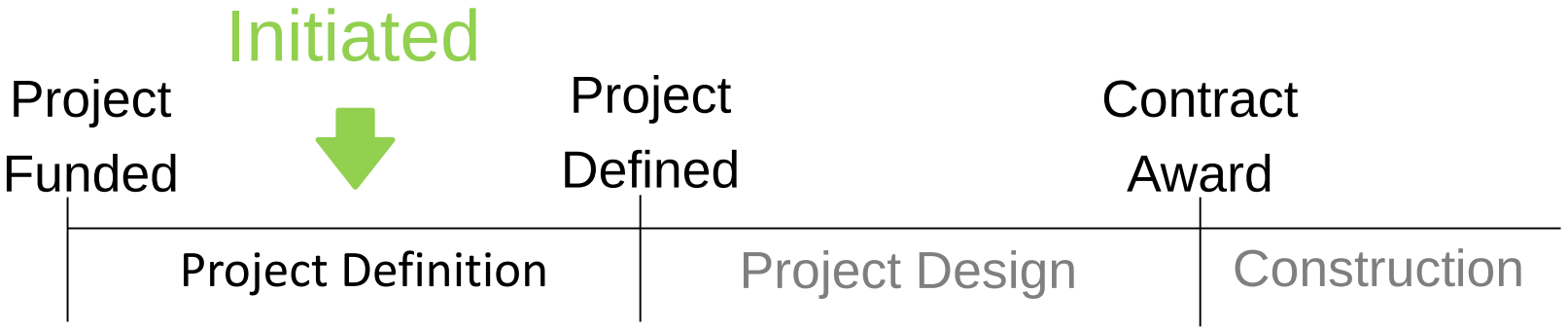
VTrans Project Development Process



- 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 needed)

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Project Overview

- Site Information
- Existing Conditions
- Design Criteria and Conditions
- Alternatives Considered
- Recommended Alternative

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Site Information– Bridge #37

- Roadway Classification
  - I-91 – Rural Principal Arterial
  - TH 41 – Local Road (Class 3 TH)
- Bridge Type –6 Span Rolled Beam
- Constructed in 1965

Existing Conditions – Bridge #37

- Fascia's are spalling and have been repaired
- Significant section loss near joints over piers
- Pier caps showing signs of deterioration
- Deck showing signs of being fully saturated (efflorescence)
- Bridge is to narrow to maintain truck traffic by phasing

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Existing Conditions - Bridge #37

- Deck Rating 4 (Poor)
- Superstructure Rating 7 (Good)
- Substructure Rating 5 (Fair)

Design Criteria and Considerations

Traffic

A traffic study of this site was performed by the Vermont Agency of Transportation. The traffic volumes are projected for the years 2016 and 2036.

APPROACH	TH-41		I-91 NB		I-91 SB	
TRAFFIC DATA	2016	2036	2016	2036	2016	2036
AADT	300	310	8,800	9,700	8,800	9,700
DHV	60	60	1,470	1,620	1,860	2,050
ADTT	30	50				
%T	12.0	19.2				
%D	56	56				

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Alternatives Considered – Bridge #37

- No Action
  - Additional maintenance required within 10 years
- Deck Replacement
  - Substructure repair required
  - Slightly improves width
  - Requires Painting Steel
- Superstructure Replacement
  - Substructure repair required/widening
  - Meets standard width
- Full Bridge Replacement
  - New off alignment steel beam bridge
  - New off alignment buried arch

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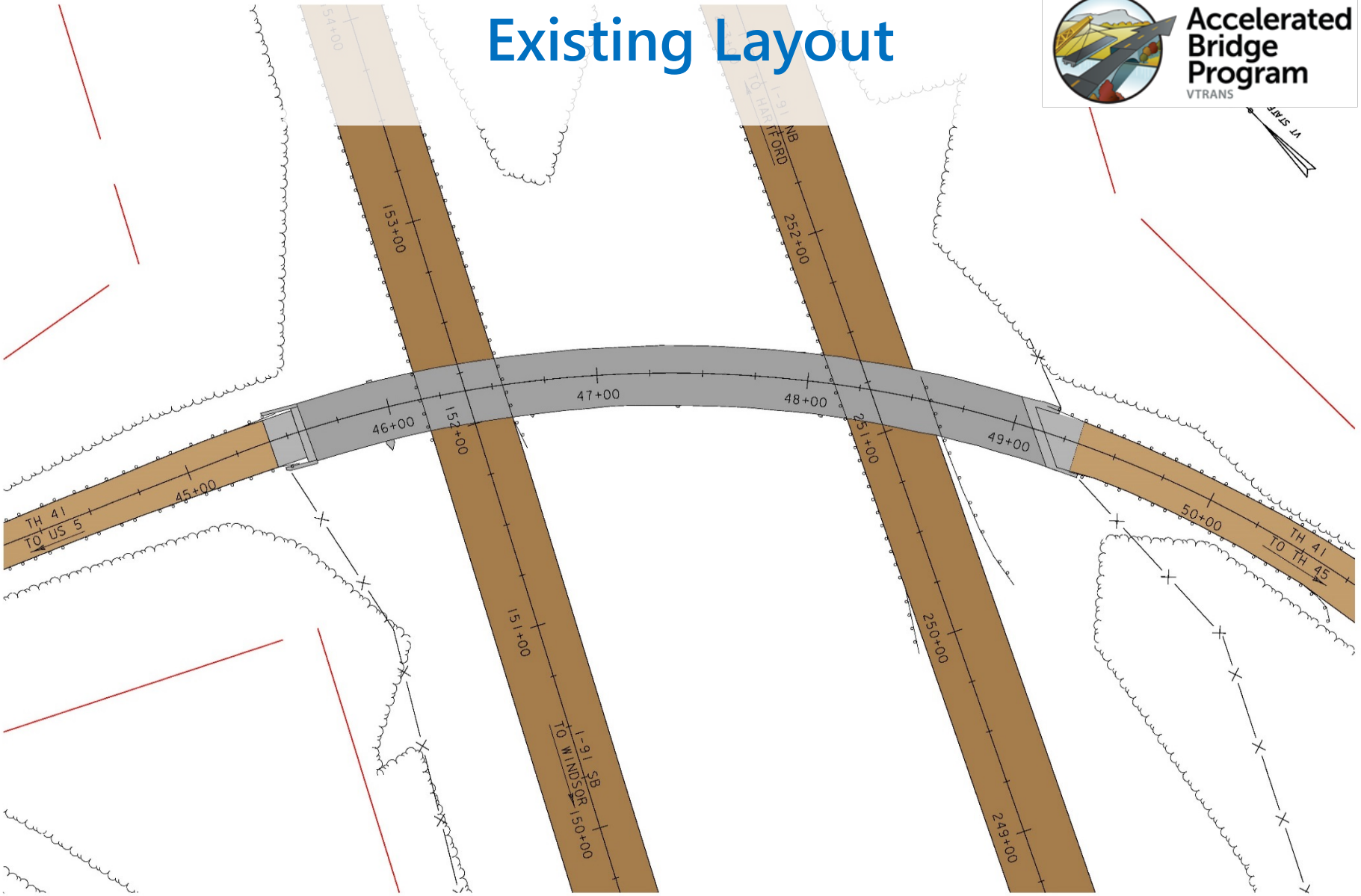
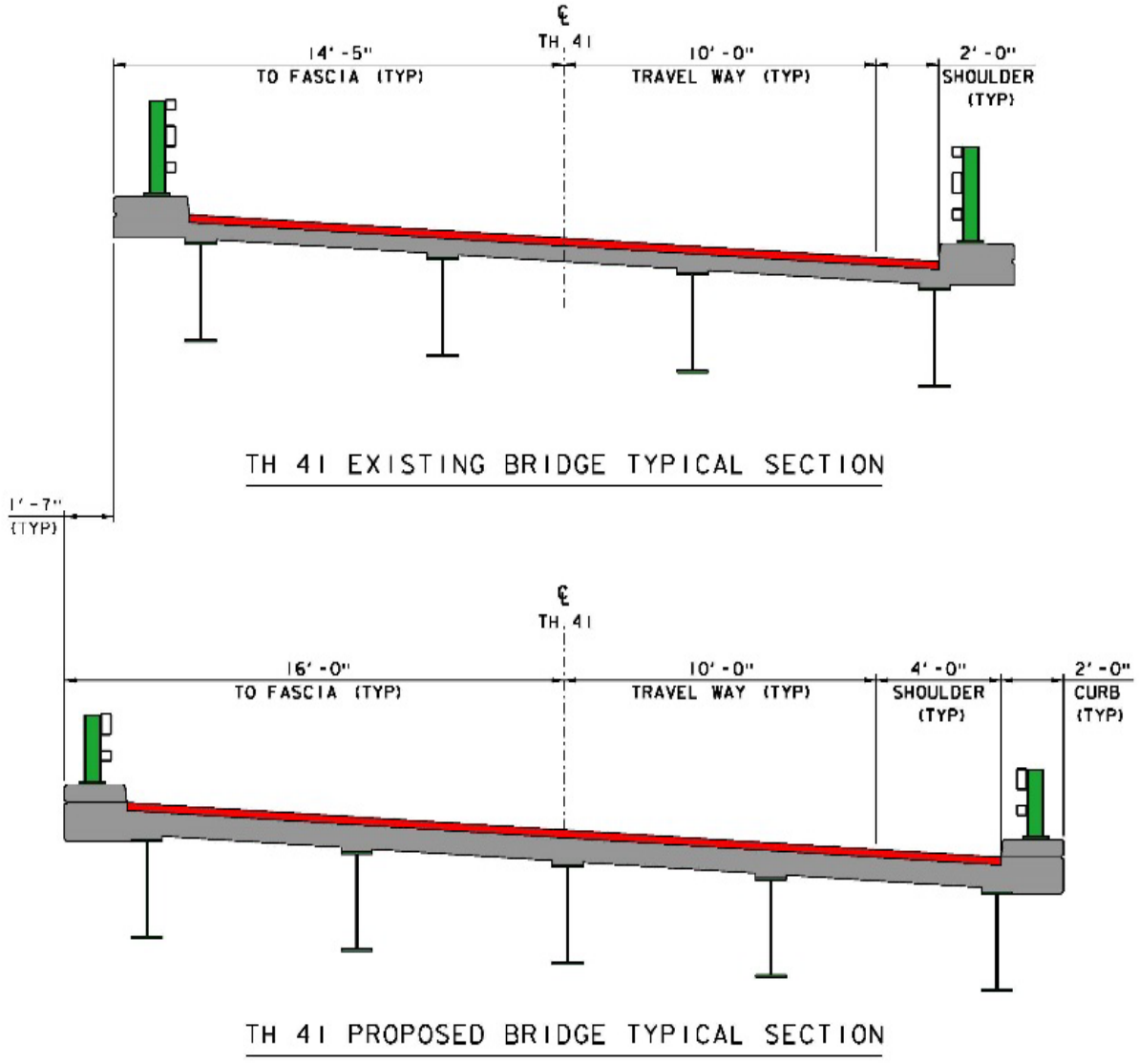
Existing Layout

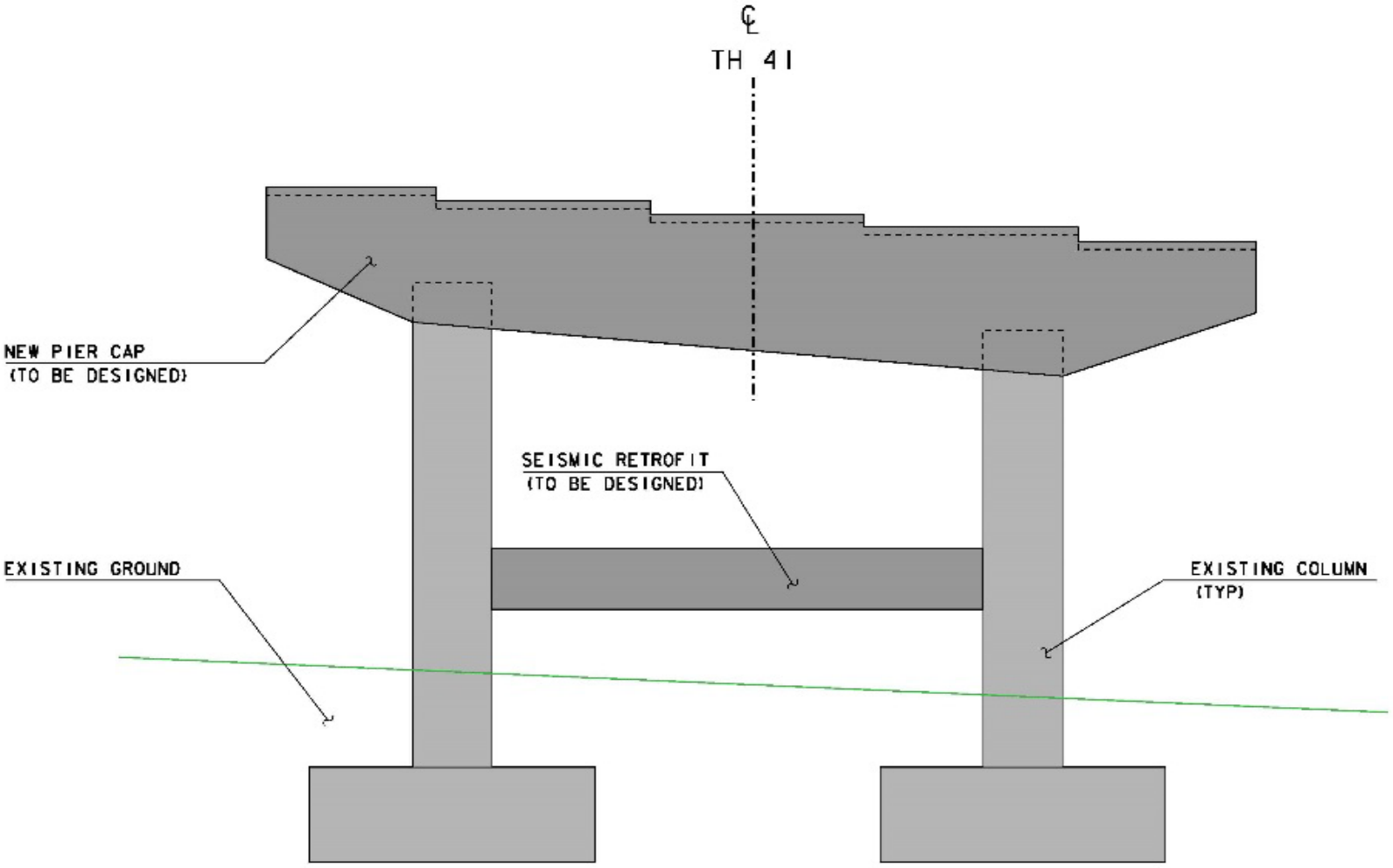


Proposed Typical Section



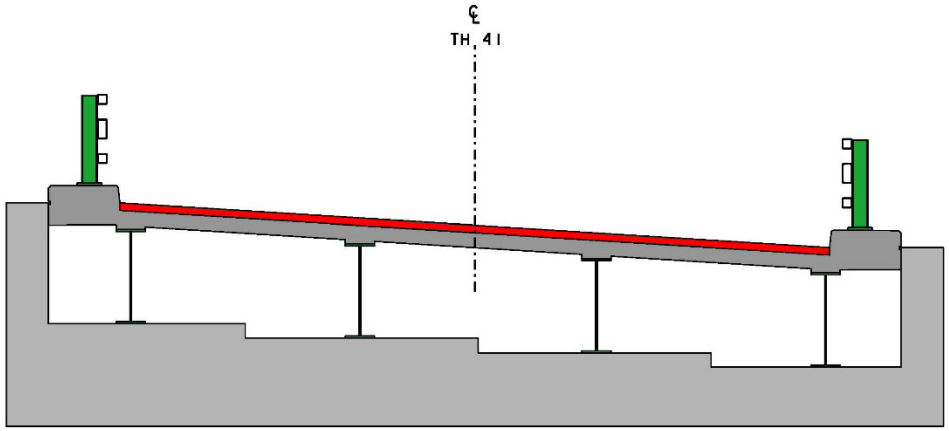
Total proposed increase in width of 3’-2”

Substructure Rehabilitation

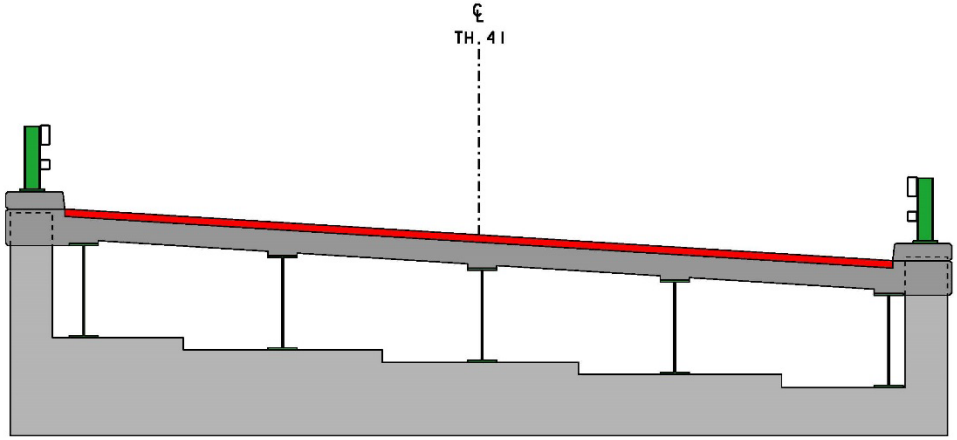


PIER CAP DETAIL

Substructure Rehabilitation



TH 41 EXISTING ABUTMENT SECTION



TH 41 PROPOSED ABUTMENT SECTION

Maintenance of Traffic Options Considered

- Road Closure w/ Offsite Detour
  - Utilize existing privately owned infrastructure to maintain traffic
- Off alignment
  - Construct a new bridge off alignment and maintain traffic on the existing bridge
- Temporary Bridge
  - Construct a temporary bridge beside the existing bridge

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Road Closure

- Minimum of 12 weeks
- Detour route through gravel pit

Proposed Detour

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Connecticut River
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Hartland
Connecticut River

Recommended Alternative - Bridge #37

- Superstructure Replacement with offsite detour
  - New continuous weathering steel beams
  - Improve the existing bridge width as much as possible
  - ROW needed

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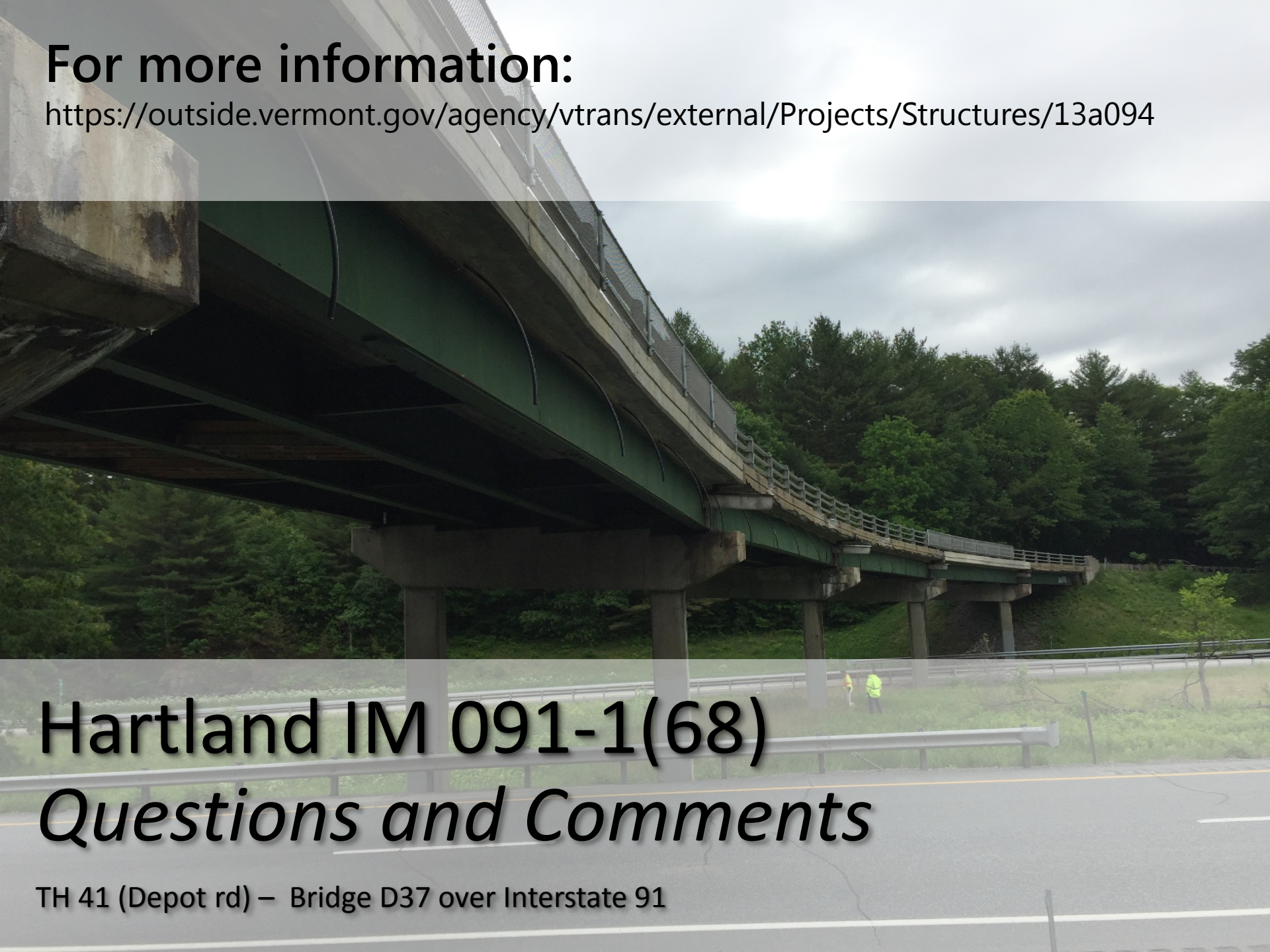
Alternatives Matrix

VI. Cost Matrix

Hartland IM 091-1(68)		Do Nothing	Alt 1 Deck Replacement	Alt 2 Superstructure Replacement
			Bridge Closure	*Bridge Closure*
COST	Bridge Cost	$0	$1,468,700	$1,528,100
	Removal of Structure	$0	$156,200	$156,200
	Roadway	$0	$343,700	$343,700
	Maintenance of Traffic	$0	$32,500	$32,500
	Construction Costs	$0	$2,001,100	$2,060,500
	Construction Engineering + Contingencies	$0	$600,400	$618,200
	Total Construction Costs w CEC	**$0**	**$2,601,500**	**$2,678,700**
	Preliminary Engineering[2]	**$0**	**$600,330**	**$618,150**
	Right of Way	**$0**	**$300,000**	**$300,000**
	Total Project Costs	$0	$3,501,830	$3,596,850
	Annualized Costs	$0	$70,100	$72,000
SCHEDULING	Project Development Duration[3]		4 years	4 years
	Construction Duration		6 months	6 months
	Closure Duration (If Applicable)		16 weeks	16 weeks
ENGINEERING	Typical Section – I-91 Roadway (feet)	38'	38'	38'
	Typical Section – TH 41 Roadway (feet)	24'	2-10-10-2 (24')	2-12-10-2 (24')
	Typical Section – Bridge (feet)	24'	2-10-10-2 (24')	3.33-11-11-3.33 (28'-8")
	Geometric Design Criteria	Substandard radius, width, and vertical curve on TH 4	Substandard width	Substandard road width
	Traffic Safety	No Change	No Change	Improved
	Alignment Change	No	No	No
	Bicycle Access	No Change	No Change	Improved
	Vertical Clearance	Meets Criteria	No Change	Improved
	Pedestrian Access	No Change	No Change	Improved
	Utility	No Change	No Change	No Change
OTHER	ROW Acquisition	No	Yes	Yes
	Road Closure	No	Yes	Yes
	Design Life	<10 years	50 years	50 years

For more information:

https://outside.vermont.gov/agency/vtrans/external/Projects/Structures/13a094



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Questions and Comments

TH 41 (Depot rd) – Bridge D37 over Interstate 91