VERMONT
AGENCY OF TRANSPORTATION

Local Concerns Meeting
Windsor BF 0113(88)

Bridge 55

US 5 over Mill Brook

Town of Windsor, VT

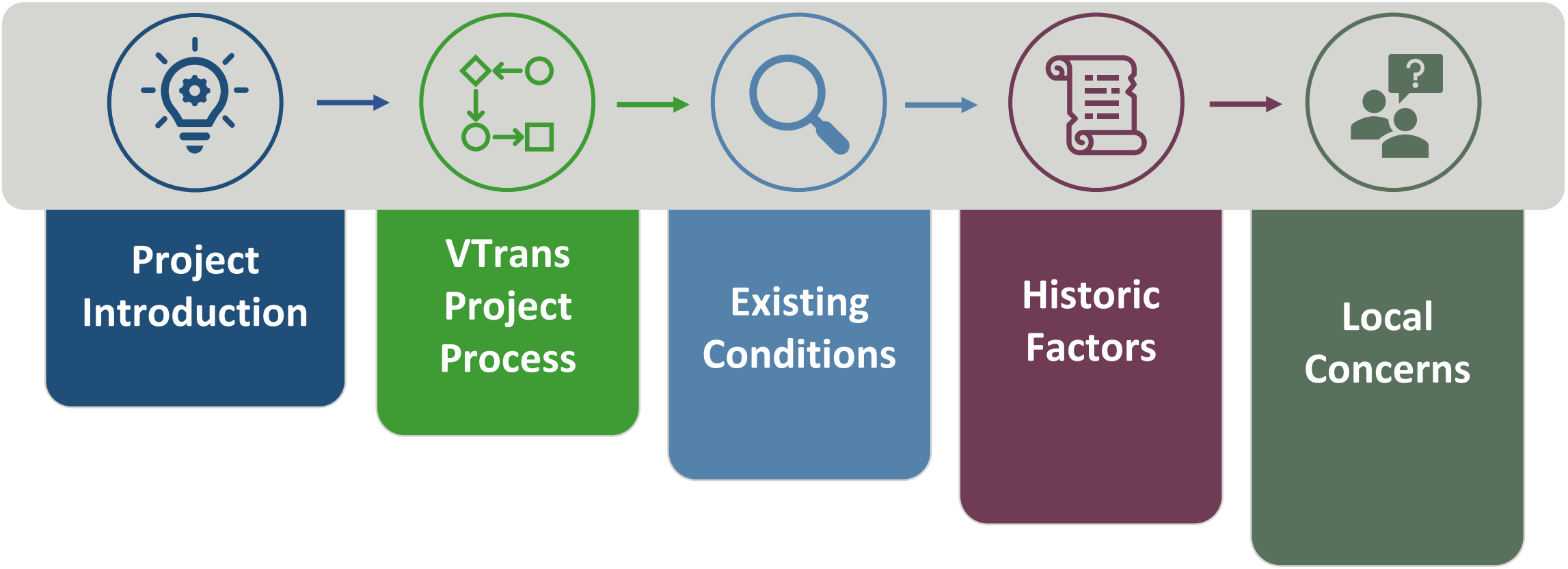
June 24, 2025

HNTB

Who Are We?

- Laura Stone – VTrans Scoping Engineer
- JB McCarthy – VTrans Design Project Manager
- Kyle Obenauer– VTrans Historic Preservation Officer
- Rich Tetreault – HNTB Project Manager
- Angela Kingsley – HNTB Lead Bridge Engineer

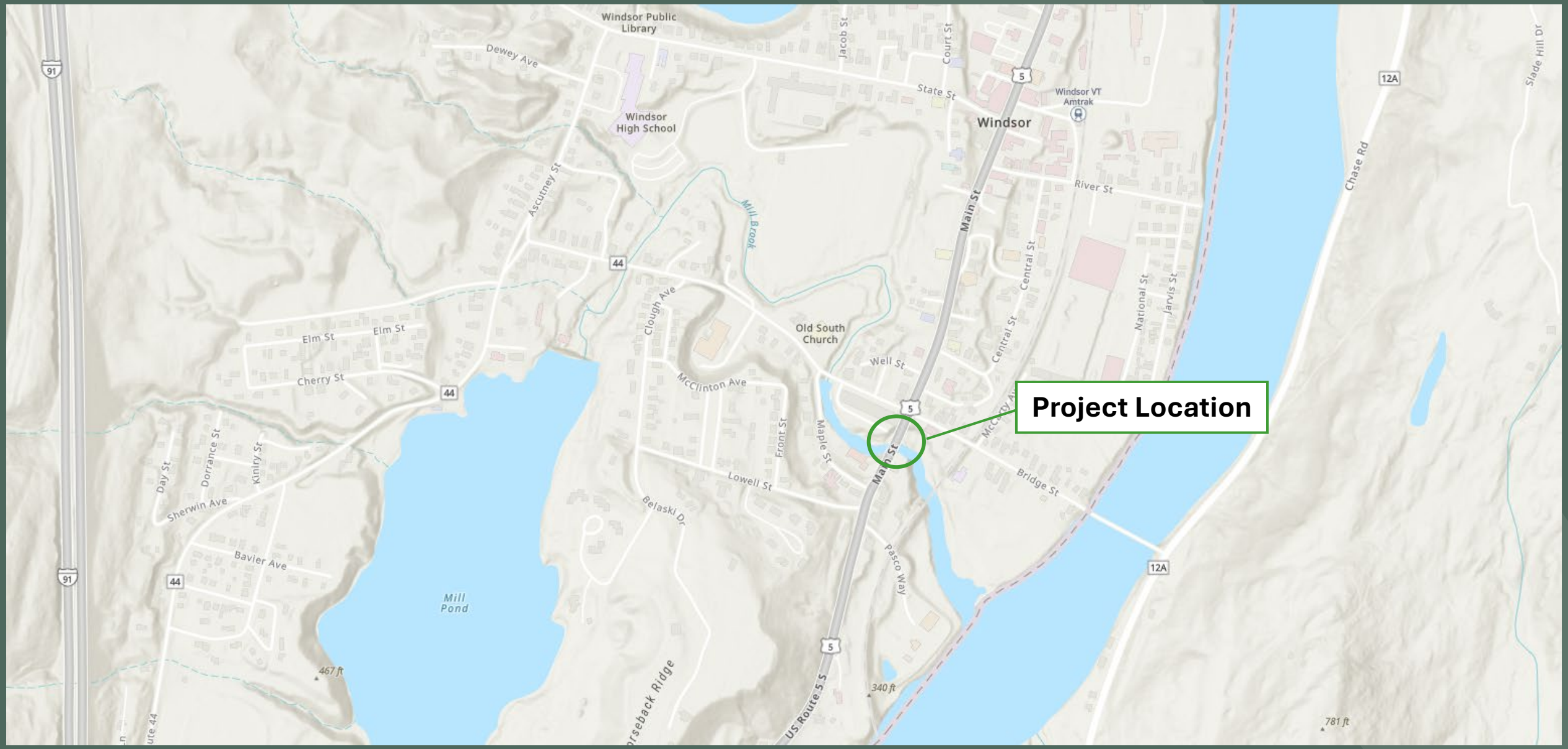
Discussion Outline



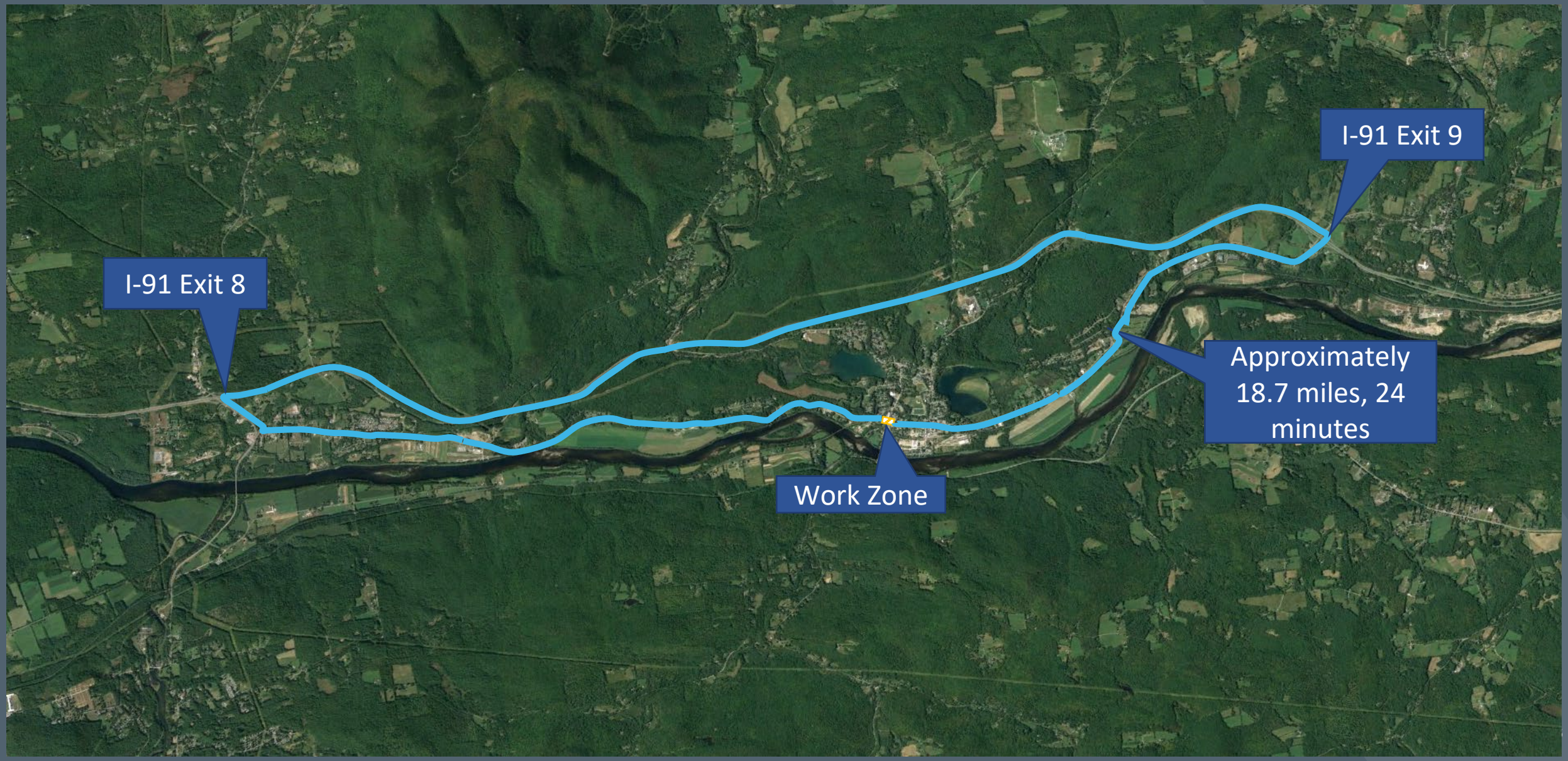
Project Introduction

Why are we here?

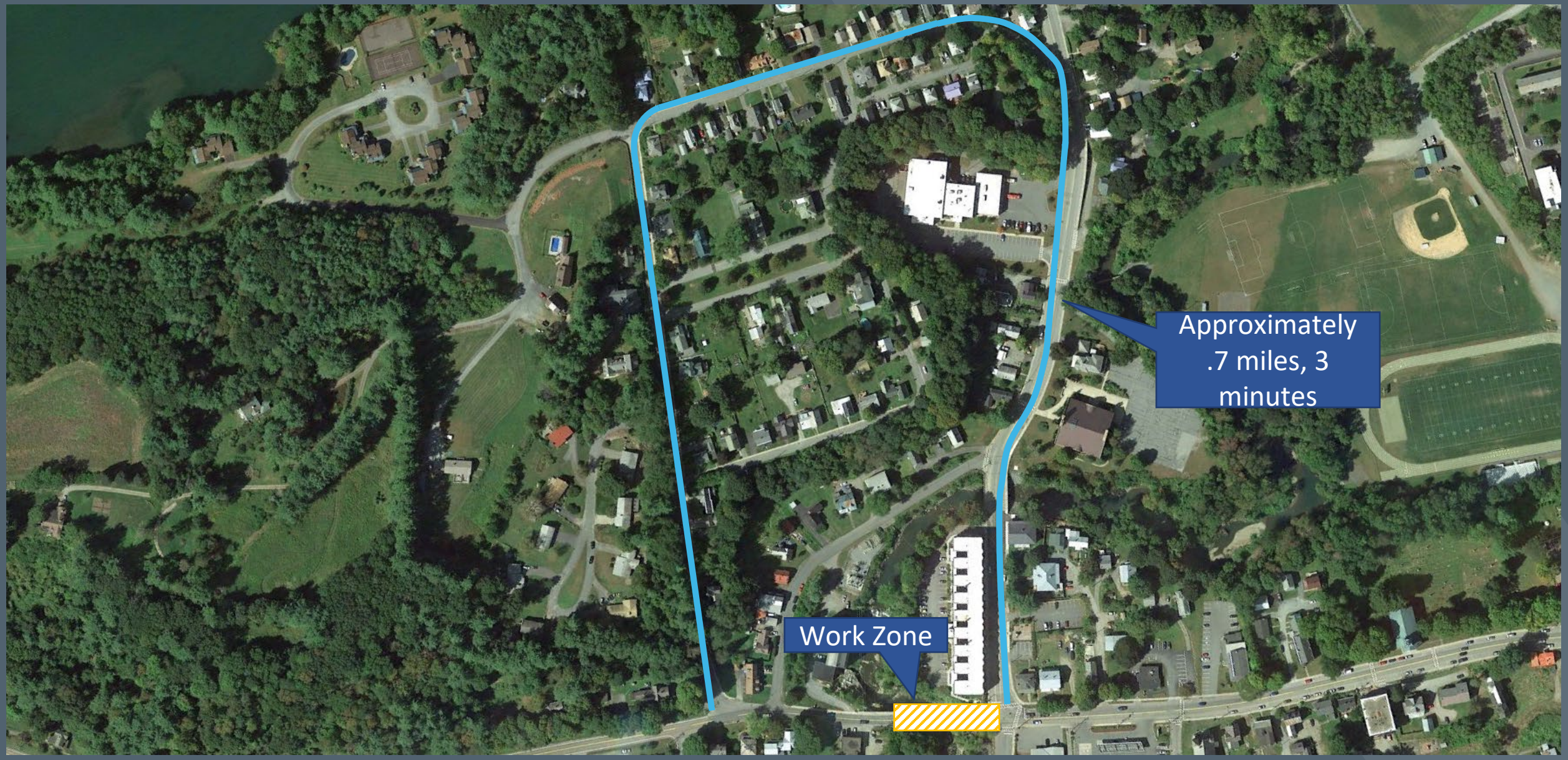
Project Location



Traffic Control – Formal Detour



Traffic Control – Local Detour



Purpose and Need

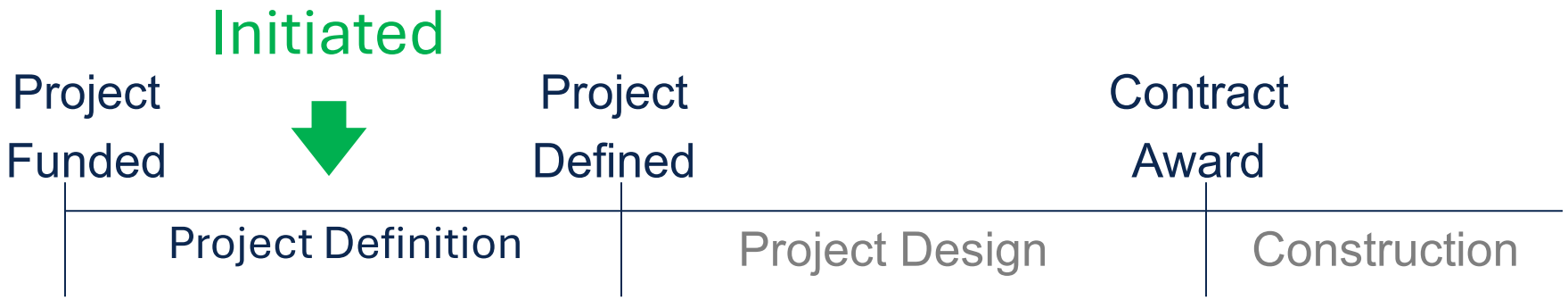
- **Purpose:** The purpose of this project is to provide a safe crossing of Mill Brook for the traveling public, including pedestrians and bicyclists, and to address the current structural deficiencies and ongoing deterioration of the bridge.
- **Need:** Recognizing the importance of historic setting in the community where the bridge is located, focus on options to rehabilitate and extend the useful life of the concrete spandrel arch to the extent practical in concert with providing safe passage to all users.
- Community Needs?

VTrans Asset Management Guiding Principle: "Right investments on the right assets at the right time."

VTrans Process

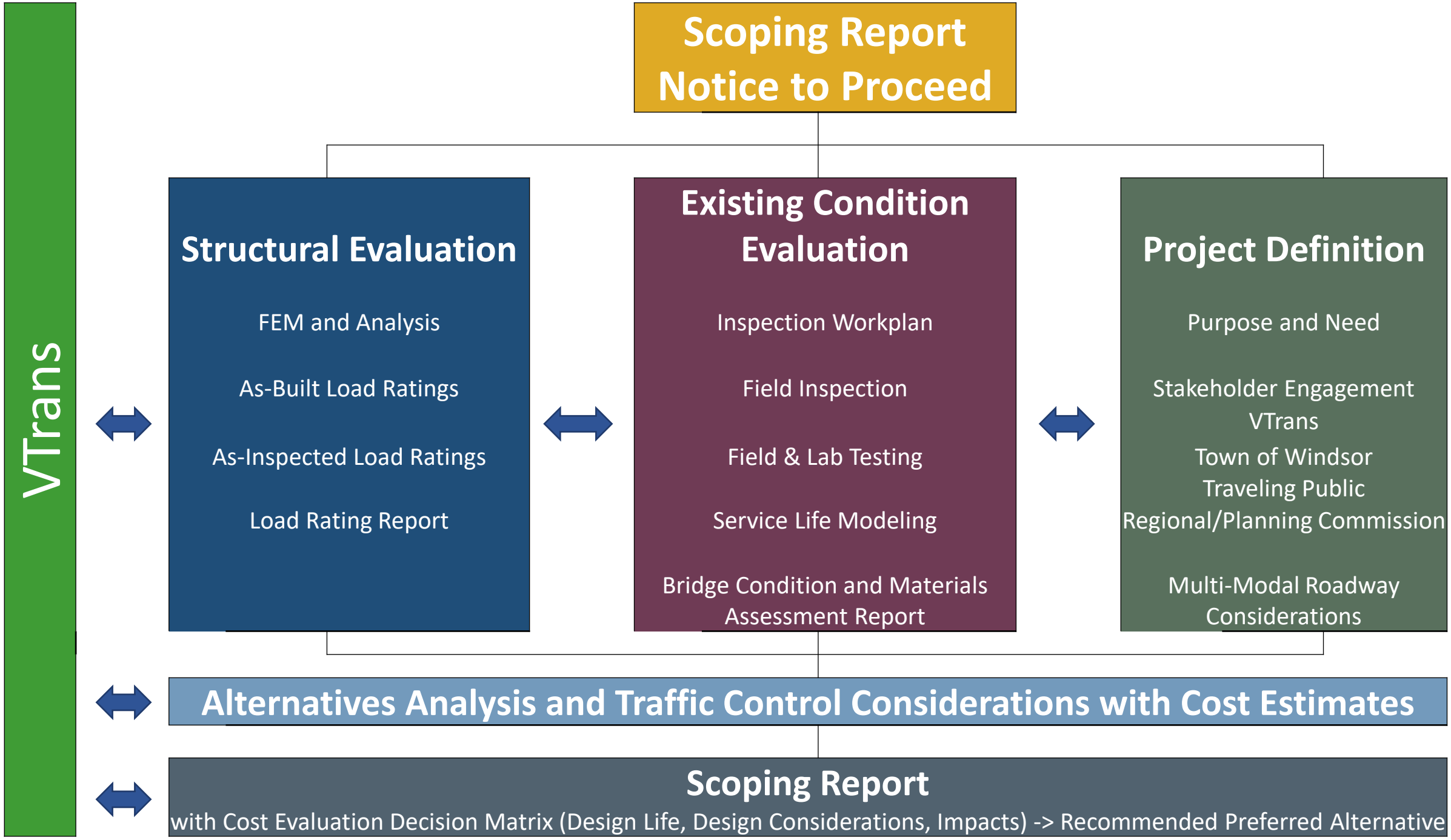
Why are we doing it this way?

VTrans Project Development Process



- Identify resources & constraints
- **Gather Local Concerns and Needs**
- Evaluate alternatives
- Public participation
- Build Consensus

- Quantify areas of impact
- Environmental permits
- Develop plans, estimate and specifications
- Right-of-Way Process (if needed)

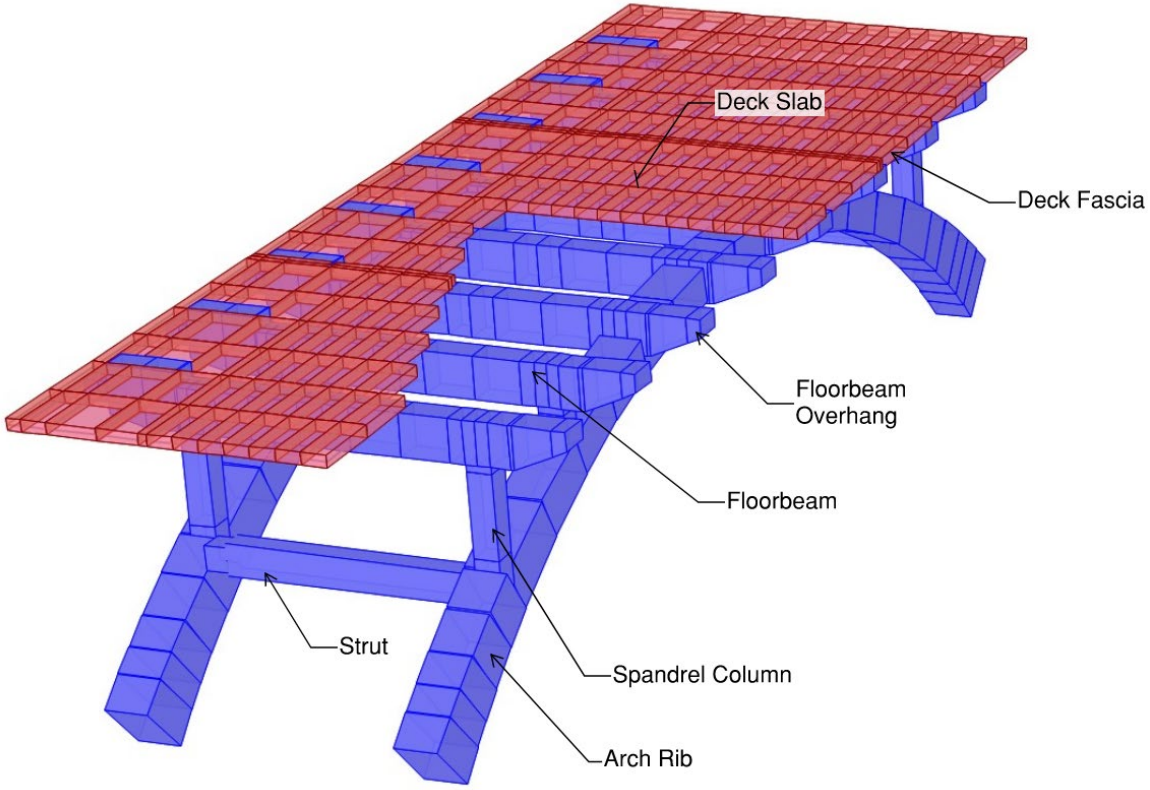

Scoping Report
Notice to Proceed
VTrans
Structural Evaluation
FEM and Analysis
As-Built Load Ratings
As-Inspected Load Ratings
Load Rating Report
Existing Condition Evaluation
Inspection Workplan
Field Inspection
Field & Lab Testing
Service Life Modeling
Bridge Condition and Materials Assessment Report
Project Definition
Purpose and Need
Stakeholder Engagement
VTrans
Town of Windsor
Traveling Public
Regional/Planning Commission
Multi-Modal Roadway Considerations
Alternatives Analysis and Traffic Control Considerations with Cost Estimates
Scoping Report
with Cost Evaluation Decision Matrix (Design Life, Design Considerations, Impacts) -> Recommended Preferred Alternative

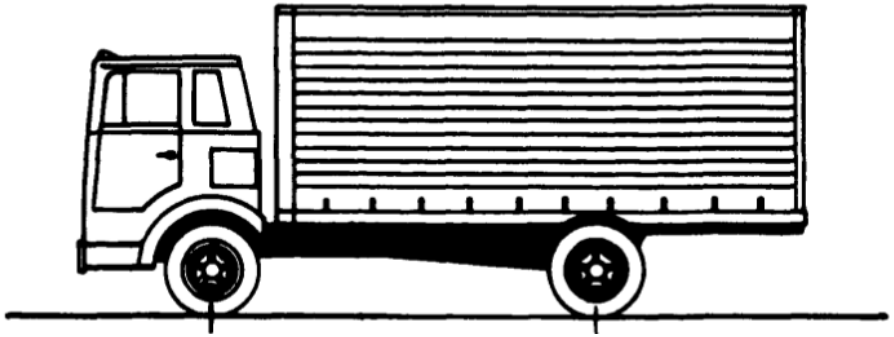
Existing Conditions

Where are we and what needs to be done?

Existing Bridge Information

- Type – Concrete Spandrel Arch
- Constructed in 1930
- Bituminous wearing course in 1943
- Span Length = 88’-0”
- Roadway width = 30’-5”
- Original design load = H15 Trucks





H 15-44 6,000 LBS. 24,000 LBS.

Services Provided

- Open to state legal motor vehicle loads
  - 2000 Annual Average Daily Traffic
  - 6% Truck Traffic
- Pedestrian sidewalk upstream side
- Utilities
  - Abandoned Water Line
  - Utility bank upstream side
    - Consolidated Communications
    - Other (TBD)

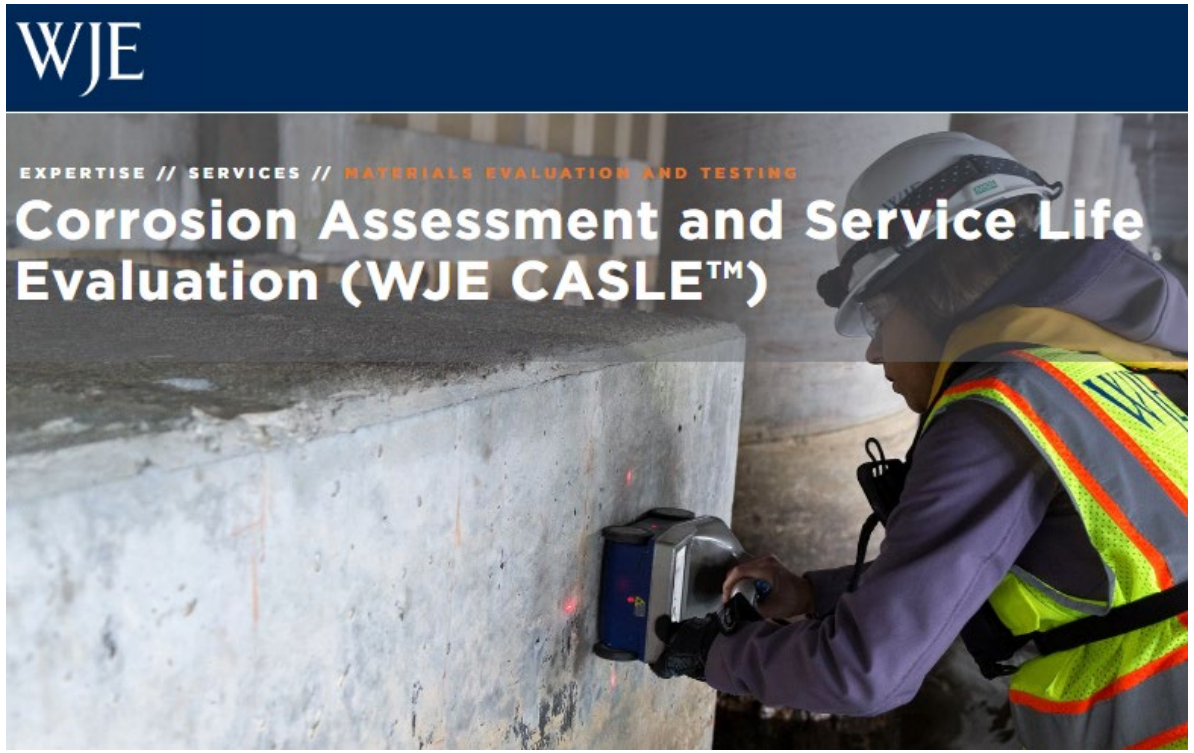
VTrans August 2023 Inspection Results

Component	Condition Rating	Description
Deck	5	Fair
Superstructure	6	Satisfactory
Substructure	6	Satisfactory
Channel	8	Very Good

Component	Appraisal	Description
Railings	0	Does not meet current standard
Approach Guardrail	0	Does not meet current standard
Structure	4	Meets minimum tolerable criteria
Deck Geometry	4	Meets minimum tolerable criteria

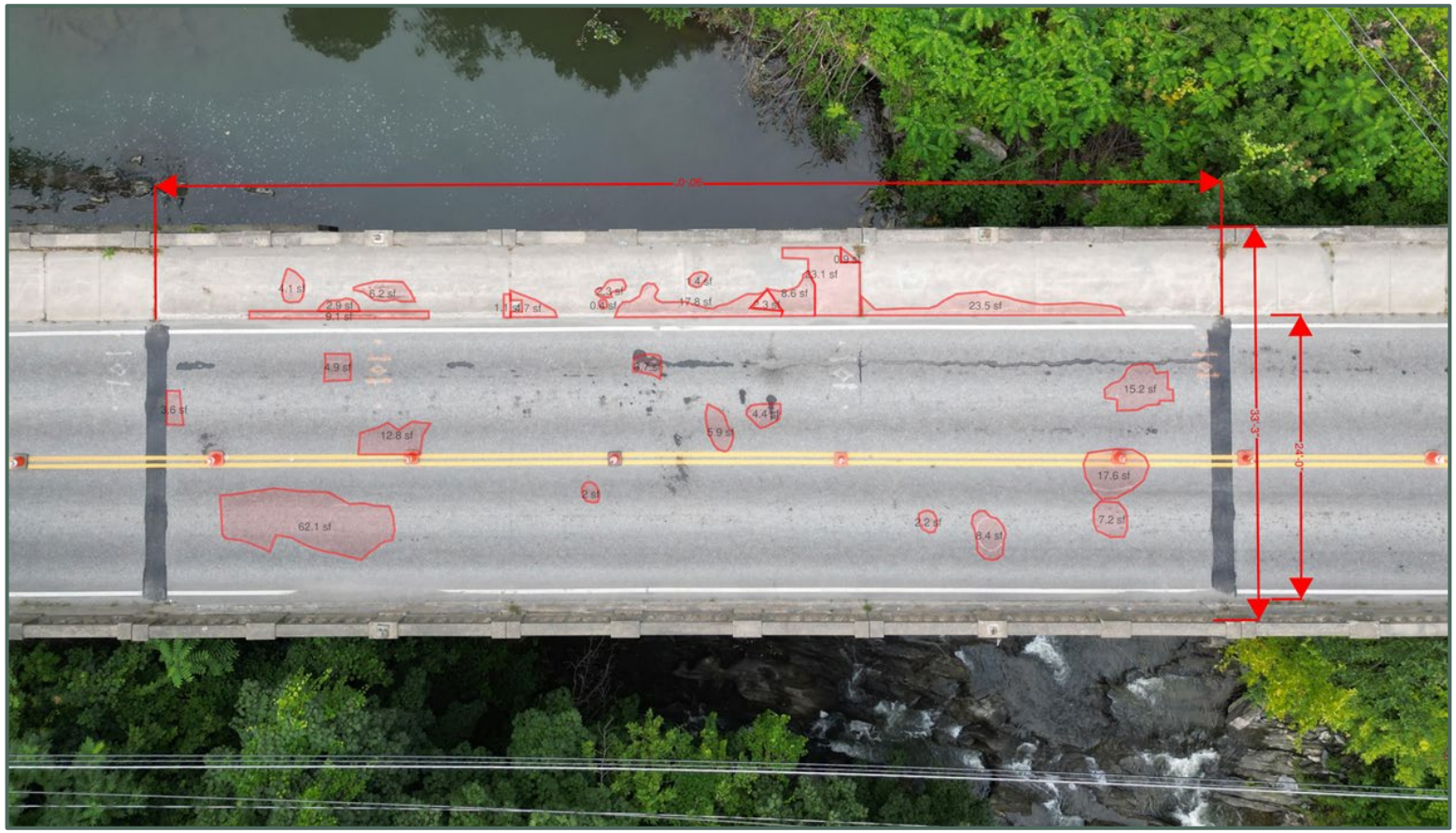
2024 In-depth Condition Assessment

- Chloride diffusion numerical model
- Carbonation propagation numerical model
- Empirical modeling (freeze-thaw, etc.)



Existing Conditions - Roadway Condition

- Top Surface of Deck Soundings



Existing Conditions – Bridge Joints

- Asphaltic Plug Joints Visual Inspection
- Over the years, road salts have been allowed to penetrate concrete elements below

Existing Conditions - Curbs, Sidewalk, and Railing

- Shallow curb/sidewalk with spalling
- The original railing is substandard, with concrete deterioration present

Existing Conditions – Deck (Underside)

- Spalls present, predominately adjacent to deck joints
- Marked deterioration in bridge overhangs
- Heavy chloride content

Existing Conditions – Primary Load Components

- Floor Beams
- Spandrel Columns
- Arch Ribs

Existing Conditions – Floor Beams

Existing Conditions – Spandrel Columns

- Small, localized areas of deterioration
- Low corrosion activity

Existing Conditions – Arch Ribs

- Deteriorated locations in outer thirds of the arch ribs
- Larger areas of delamination on the arch undersides
- Evidence of corrosion and minor freeze-thaw damage

Existing Conditions – Load Carrying Capacity

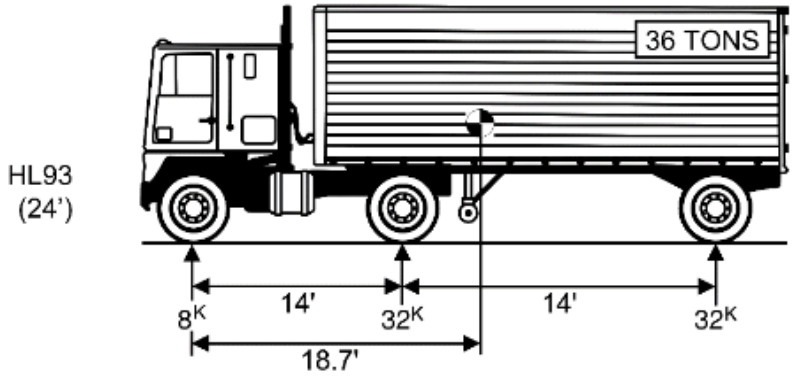
- An evaluation of all members was completed for 3 types of vehicle loading:
  - *HL-93 Design Loading*

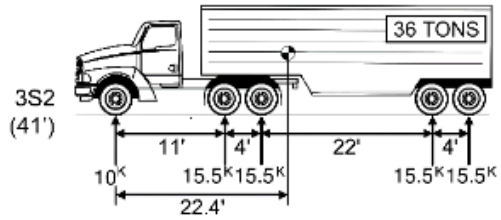
    current design standard for new structures
  - *Legal Loads*

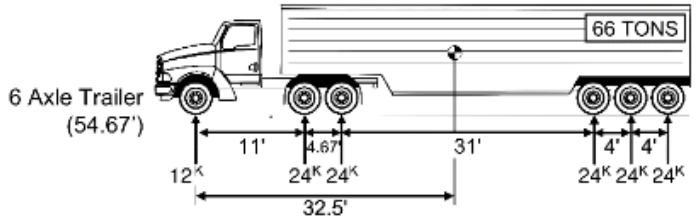
    routine commercial traffic

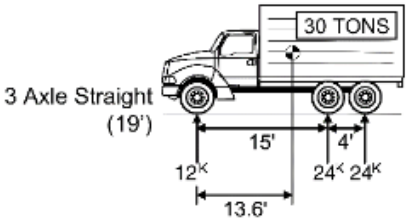
    not requiring overload permits
  - *SHV and EV Loading*

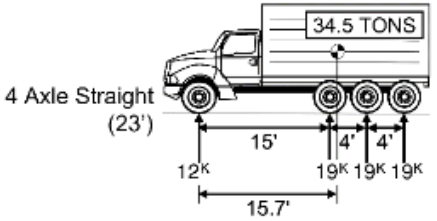
    Specialized Hauling Vehicles (construction, utility) and Emergency Vehicles

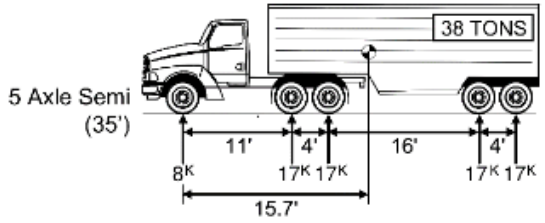












Existing Conditions – Load Carrying Capacity

- Several members do not meet HL-93 Design loading
  - Deck, floorbeams, some locations in the arches
  - Not unexpected for historic bridges

- The deck and some floorbeams do not meet legal, SHV or EV loading
  - These members should be replaced

- Alternatives evaluation will consider the capacity of the existing members that are to remain

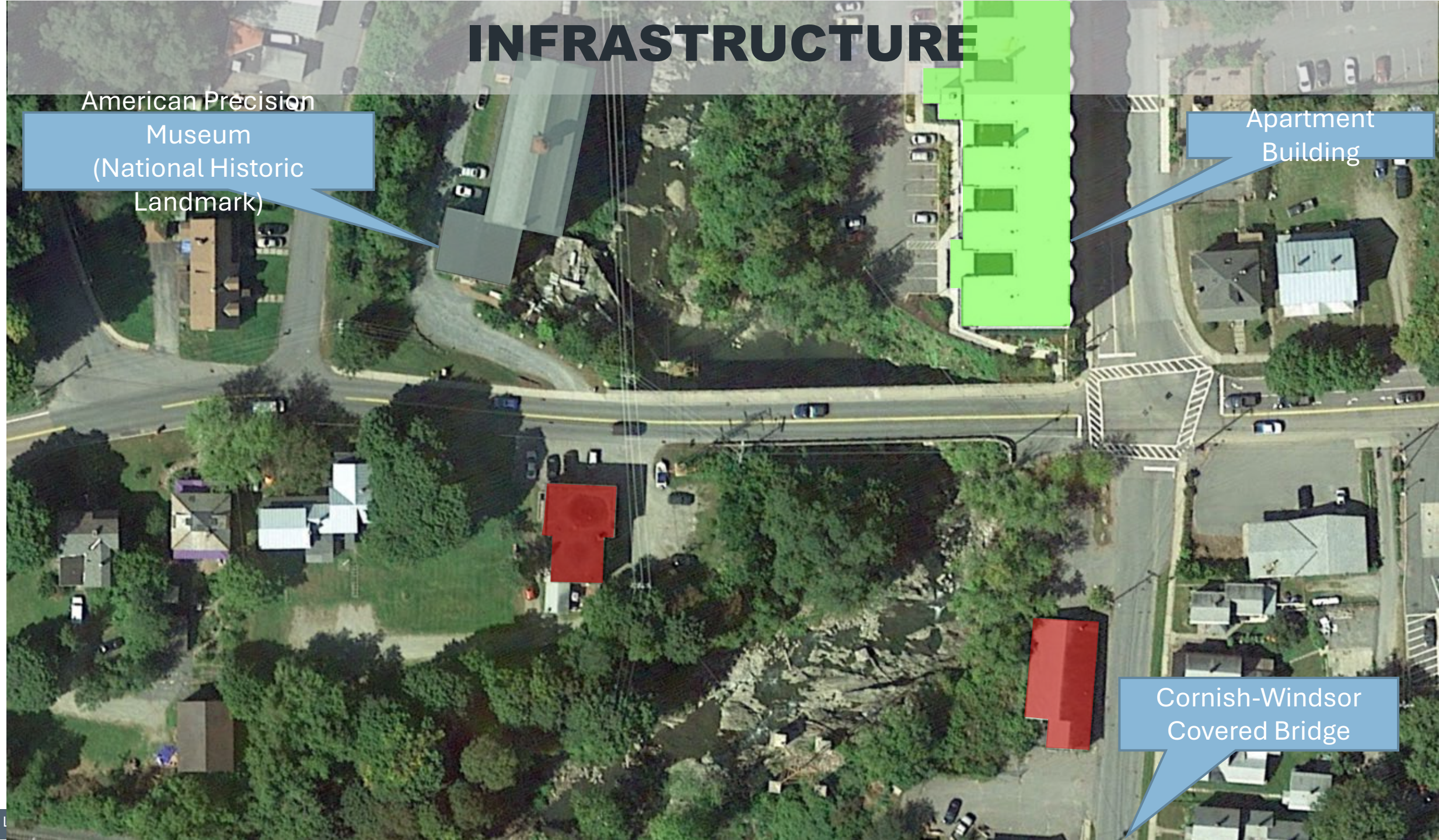
Historic Considerations

What requirements need to be met?

Cultural Resources

- Project must follow Section 106 and Section 4f of the National Historic Preservation Act
  - Requires consideration of cultural resources, including historic buildings, structures, and archaeological deposits
  - American Precision Museum, which is one of only 18 National Historic Landmarks in Vermont.
- Development of alternatives will be coordinated with the State Historic Preservation Office (SHPO)

INFRASTRUCTURE



Your Input is needed – What are your concerns?

Historic Context

Maintenance of Traffic / Detours

Bridge Width and Snow Removal Equipment

Bridge Usage – Pedestrians, Cyclists

Bridge Usage – Cars, Trucks, Emergency/Construction/Utility Vehicles

Local Events and Impacts

Safety Concerns – Intersection Off North End

Other Concerns

For more information:
https://outside.vermont.gov/agency/vtrans/external/Projects/Structures/22J404