Essex BF 5400(9)
Regional Concerns Meeting

VT Route 117 – Bridge #2 over Alder Brook

October 3rd, 2016

Accelerated Bridge Program
VTRANS

Introductions

Rob Young, P.E.

VTrans Accelerated Bridge Program
Project Manager

Gary Laroche, P.E.

VTrans Accelerated Bridge Program
Project Engineer

Geoff Dargan

VTrans Accelerated Bridge Program
Project Engineer

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Purpose of Meeting / Overview

- Discuss location of structure in question
- Provide an understanding of the VTrans project development process and our approach to the project
- Discuss state of current structure
- Discuss remedial alternatives to correct the state of the current structure
- Discuss our ultimate recommended alternative
- Provide an opportunity to ask questions and voice concerns

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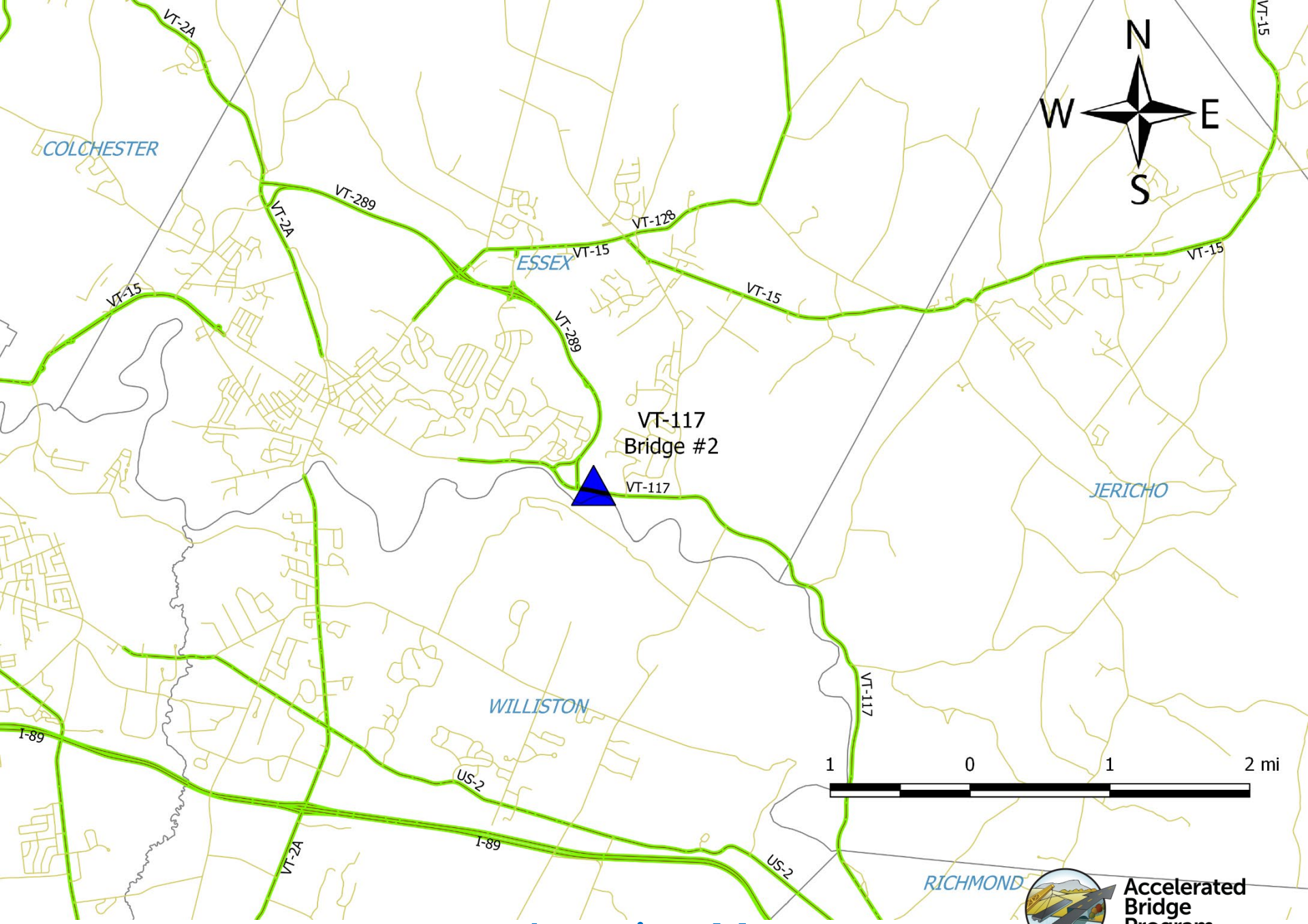

Location Map

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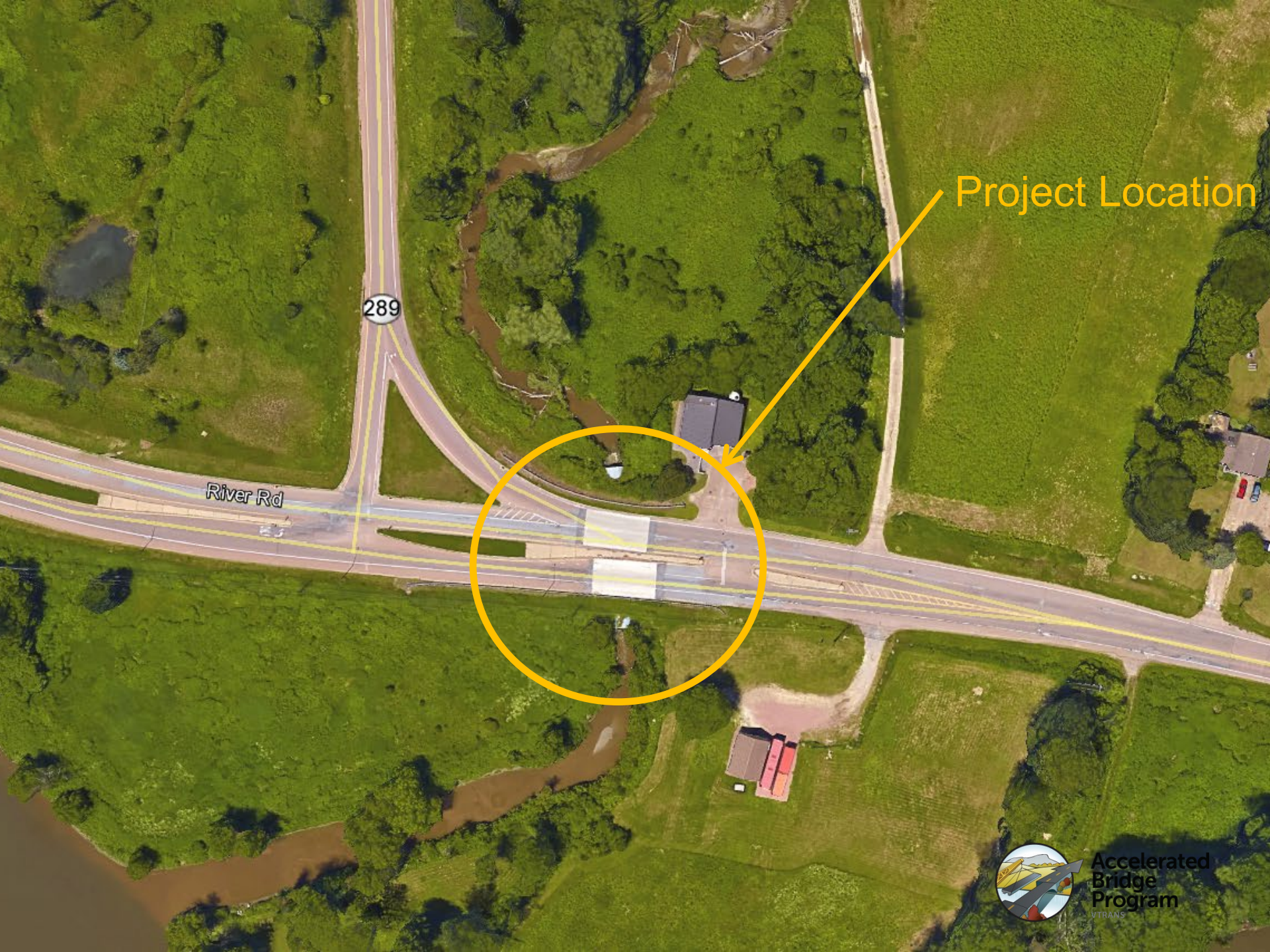
Project Location
289
River Rd
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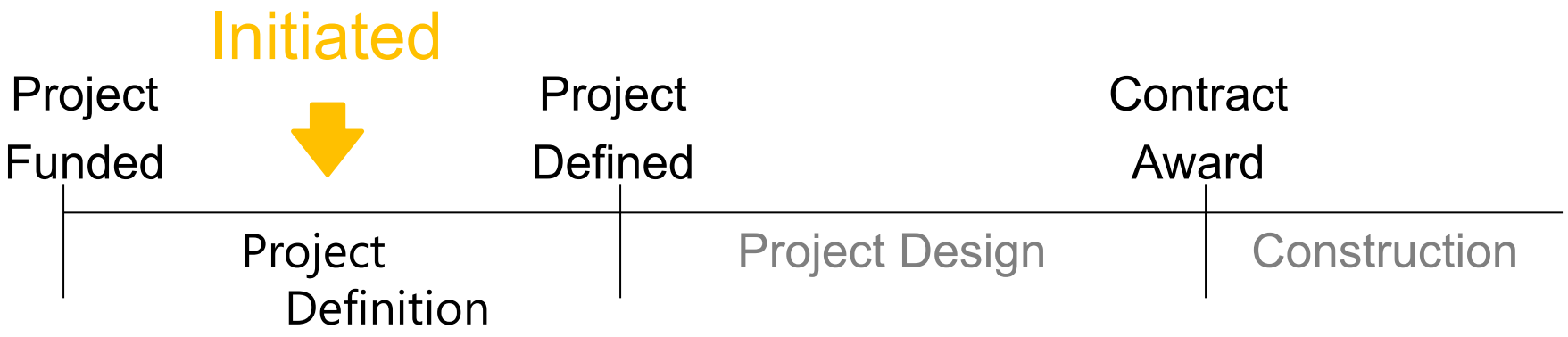
VTrans Project Development Process



- 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)

- Construct the physical structure

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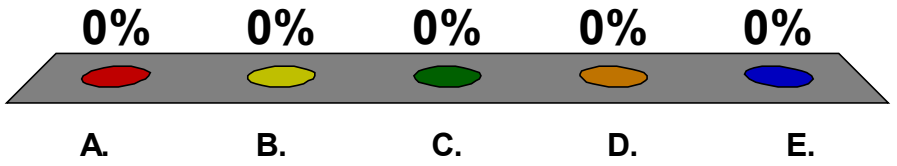
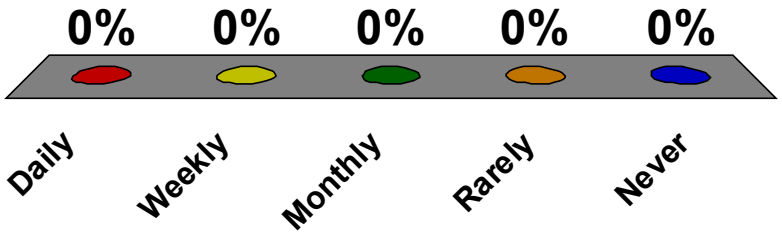
Who are you representing?

A. Municipal official
B. Resident
C. Local business
D. Independent organization
E. Other



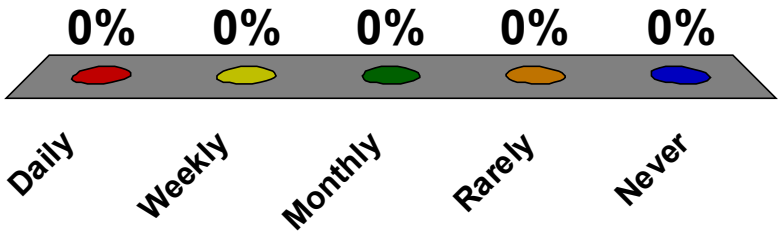
How often do you use this segment of VT 117?

A. Daily
B. Weekly
C. Monthly
D. Rarely
E. Never



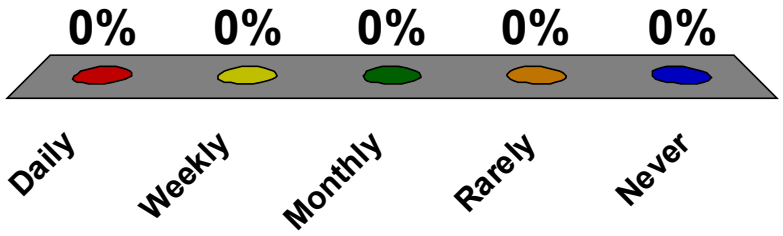
How often do you walk over the bridge?

A. Daily
B. Weekly
C. Monthly
D. Rarely
E. Never



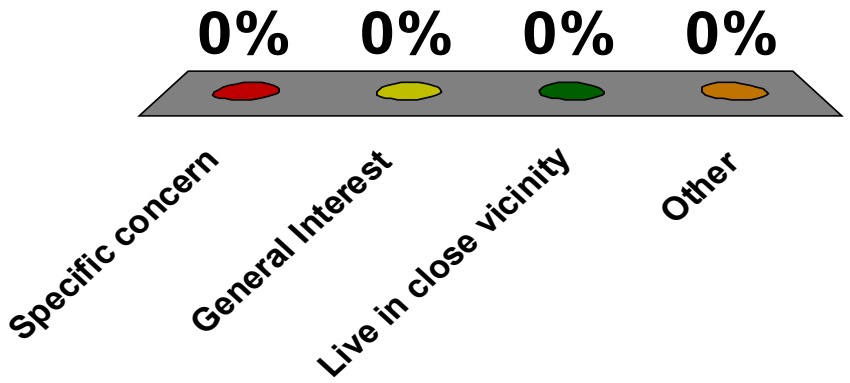
How often do you bike over the bridge?

A. Daily
B. Weekly
C. Monthly
D. Rarely
E. Never

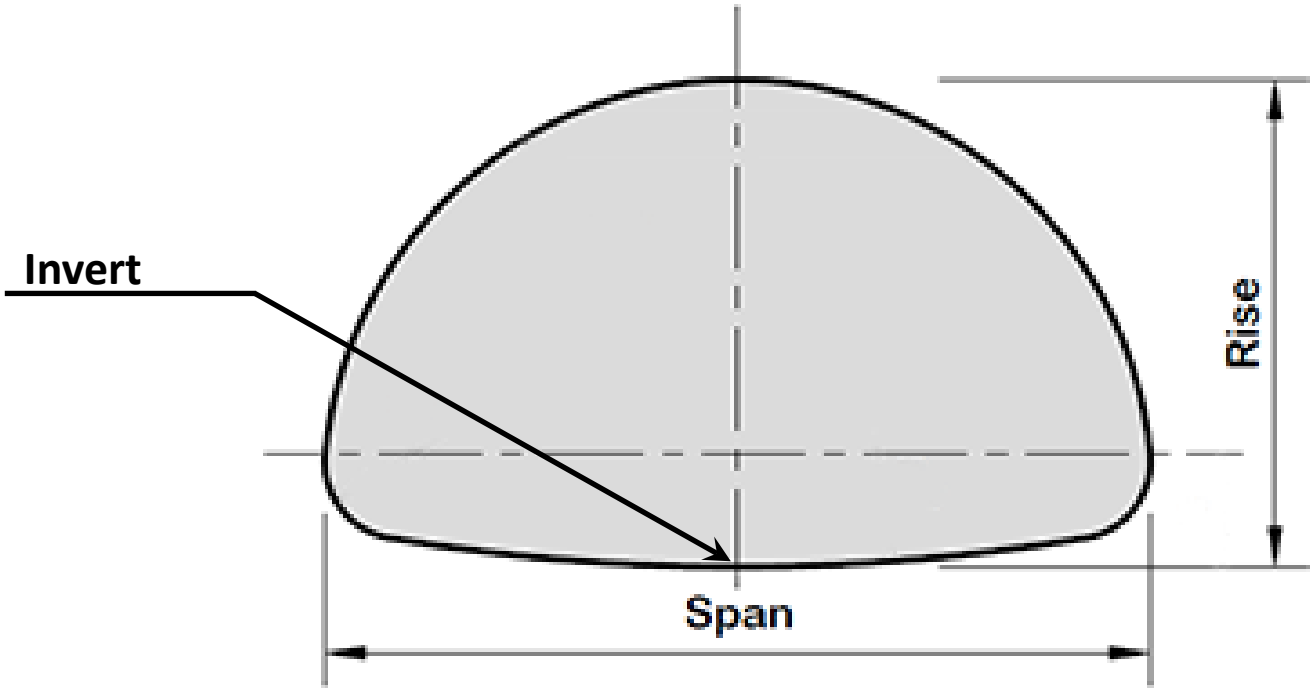


What is your reason for attending this meeting?

A. Specific concern
B. General interest
C. Live in close vicinity
D. Other



Description of Terms Used



Cross Section of a Pipe Arch

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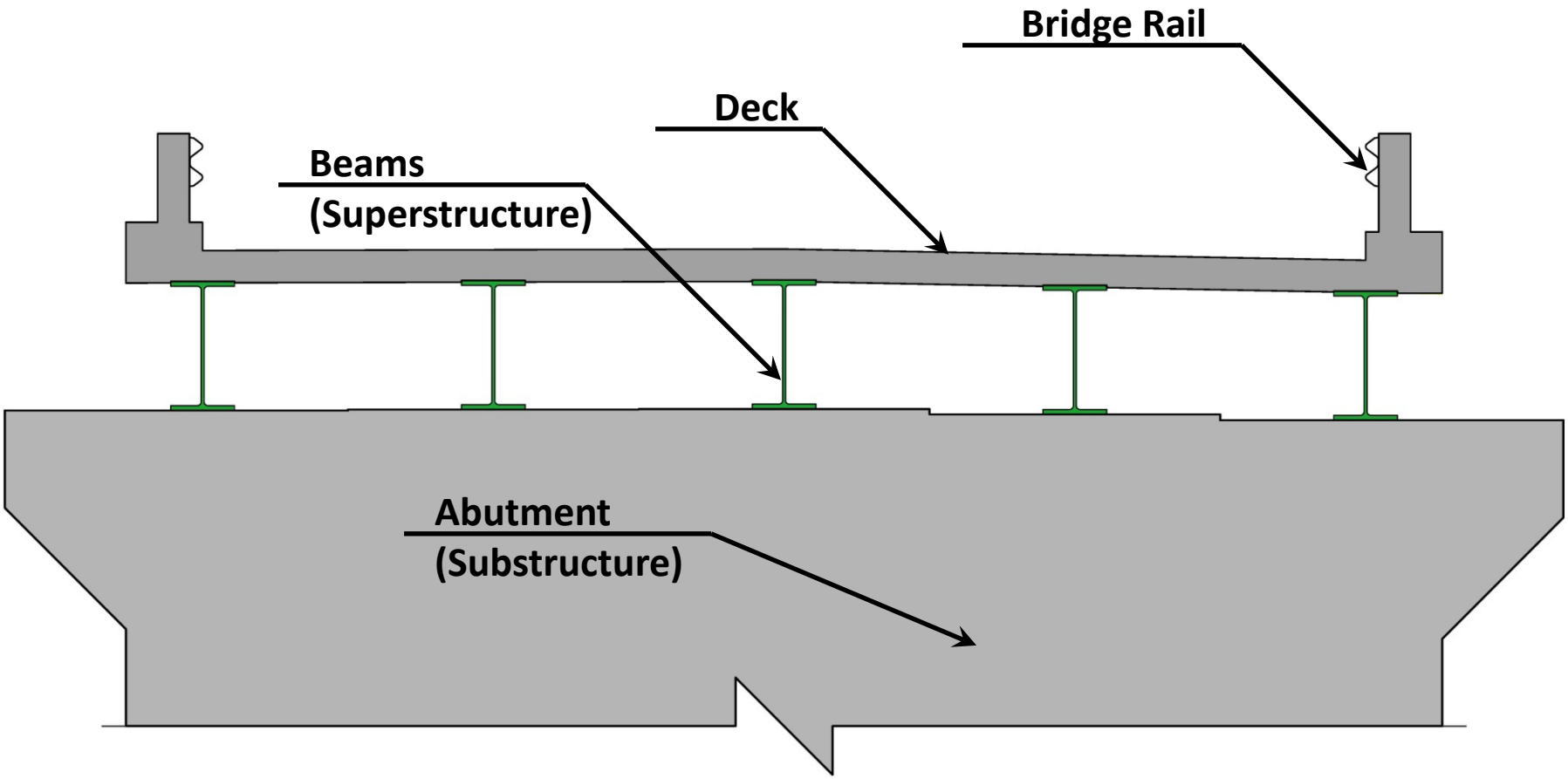
Description of Terms Used (Cont.)



Cross Section of a Bridge

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Existing Conditions – Bridge #2

- Roadway Classification – Principal Arterial
- Bridge Type – 17’ Corrugated Metal Pipe Arch
- Constructed in 1993
- Ownership – State of Vermont

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Existing Conditions – Bridge #2

- Damaged existing culvert
  - Considerable corrosion
  - Invert buckling
- Emergency remedial action: Temporary beams placed over existing culvert – late 2013
- FIS (Flood Insurance Survey) applies
- AOP (Aquatic Organism Passage) applies

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Culvert Invert Deterioration

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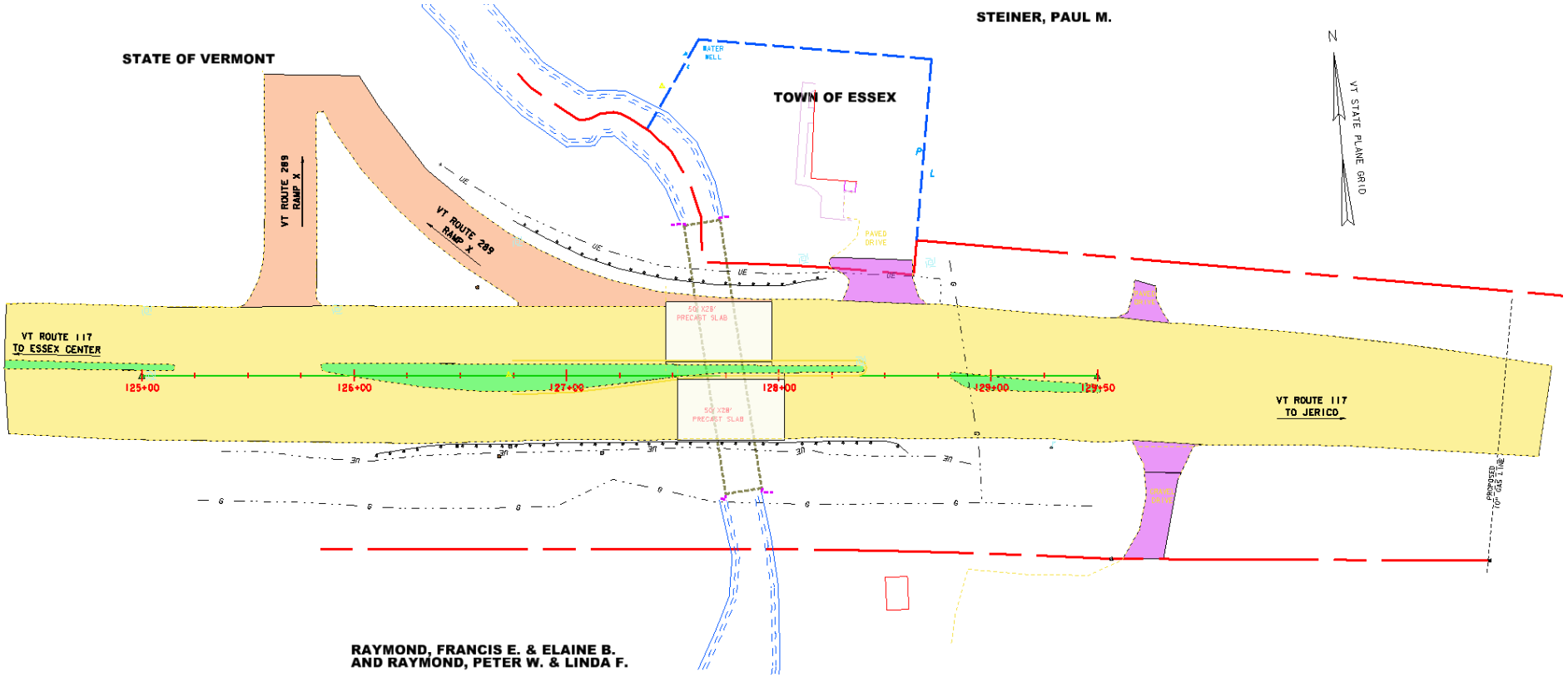
Existing Conditions



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Design Considerations

- High traffic volume:
  - ADT of 9,400
  - DHV of 1,220
- Commuter Route:
  - % Trucks: 4.1
- Design Speed of 40 mph
- Archaeological sensitive areas downstream of existing bridge

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Alternatives Considered

- No Action
- Invert Repair
- Full Structure Replacement on Alignment with new bridge or arch

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Alternative #1 Discussion

Do Nothing – Extend Current Situation

- Bridge not in imminent danger of collapse
- No additional Agency funds required to maintain
- No impact to site
- Scour/erosion issues that could lead to emergencies
- Difficult to quantify these risks
  - Difficulty inspecting
- Emergencies: costly to the Agency and travelling public

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Alternative #2 Discussion

Culvert Rehabilitation

- Low cost solution to solve scour and structural integrity issues
- ~ $750K
- Low impact to site – no impact to traffic
- FIS limits repair options
- AOP complicates repair permitting
- Repair may suffer from similar durability issues
- Remaining repair options considered too risky

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Alternative #3 Discussion

New Open-Bottom Bridge

- Replaces existing situation with a dependable, durable structure
- Several types of structures explored
  - Pre-stressed concrete beam (reuse temporary beams) ~ $2.2M
  - Arch (38’ Span) ~ $2.8M
  - Rigid-frame (30’ Span) ~ $2.4M
- Most expensive alternative

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Alternative #4 Discussion

New Aluminum Structure

- Replaces existing situation with a dependable, durable structure
- Span: 35′
- Rise: 11′ 2″
- Replaces existing structure with a similar structure
  - Greatly increased width provides decreased flow velocities
- Extremely cost-effective ~ $1.8M

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Recommended Scope

- Full bridge replacement with an aluminum buried structure and traffic maintained on existing structure with lane closures.
  - Utility relocation possibly required
  - ROW acquisition unlikely
  - Anticipated construction date – 2021 to 2022
  - Expected construction duration – Three months

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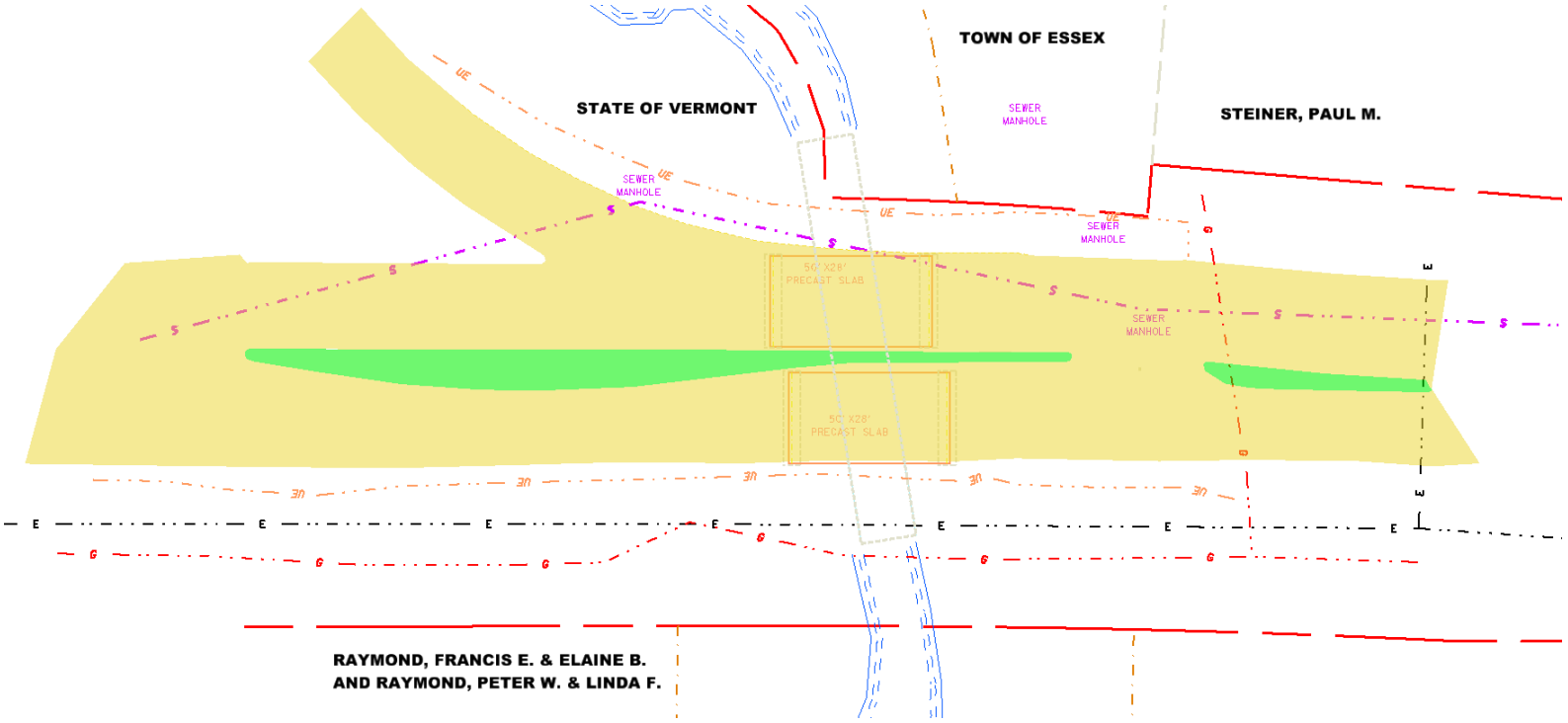
Utility Considerations



- Gas line and overhead utilities should not be affected
- State-owned underground electric line temporarily de-energized
- Possibly sewer line relocation (temporary or permanent)
  - Utility in State ROW

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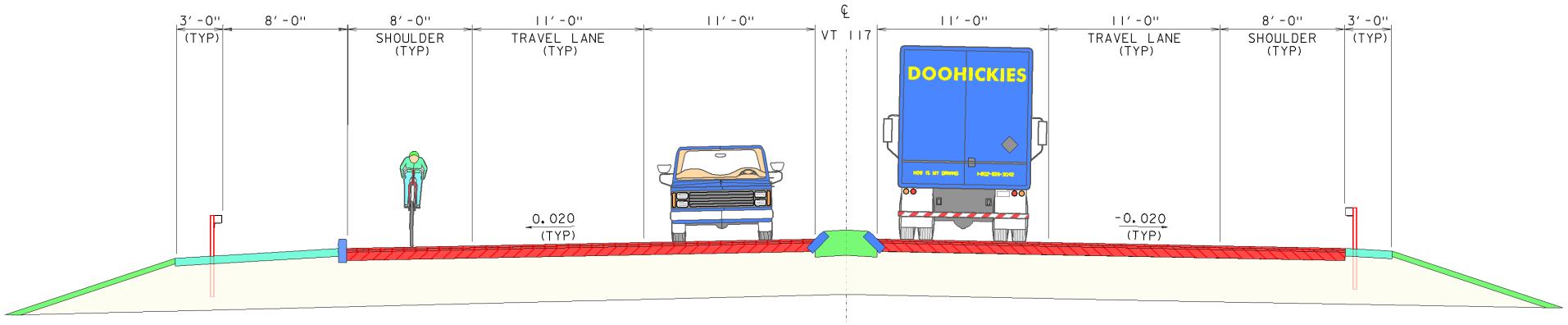
Roadway Typical Section



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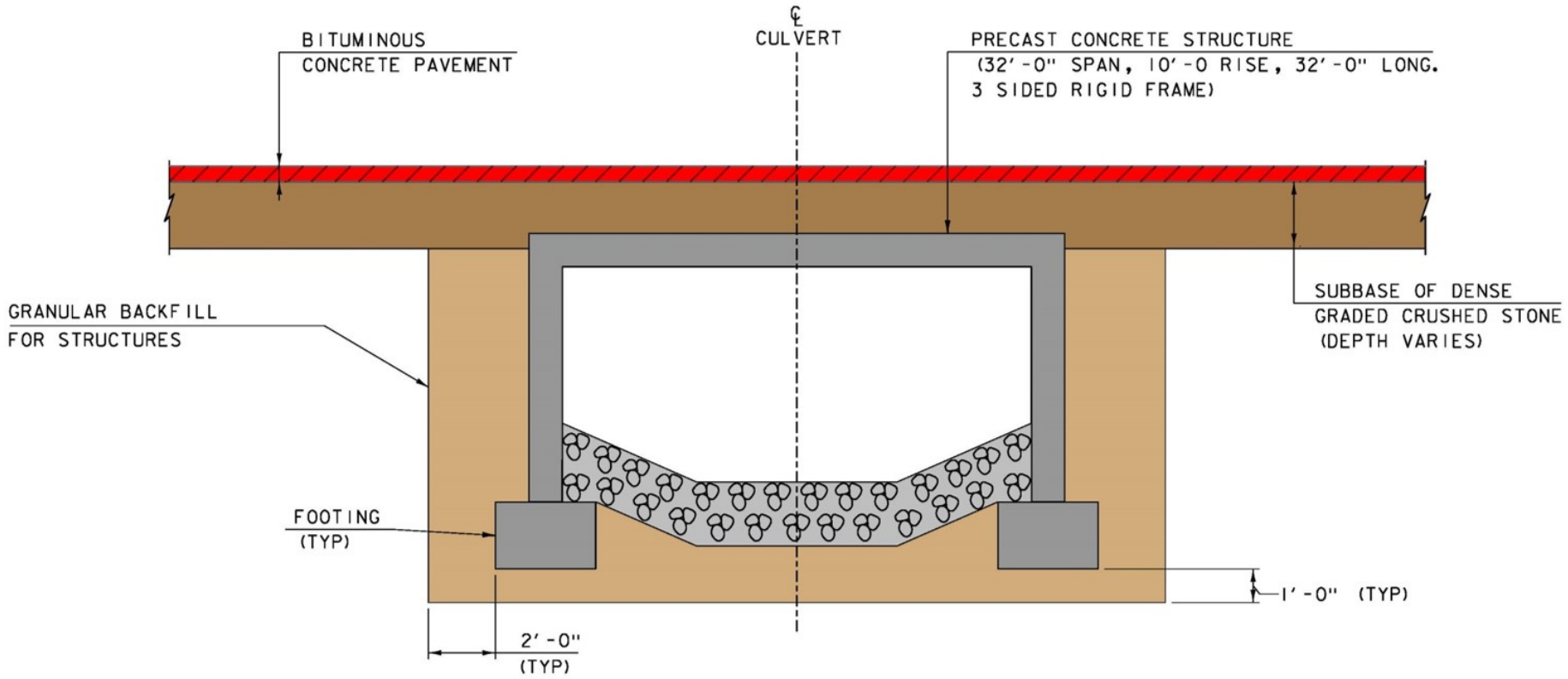
Buried Structure Typical Section



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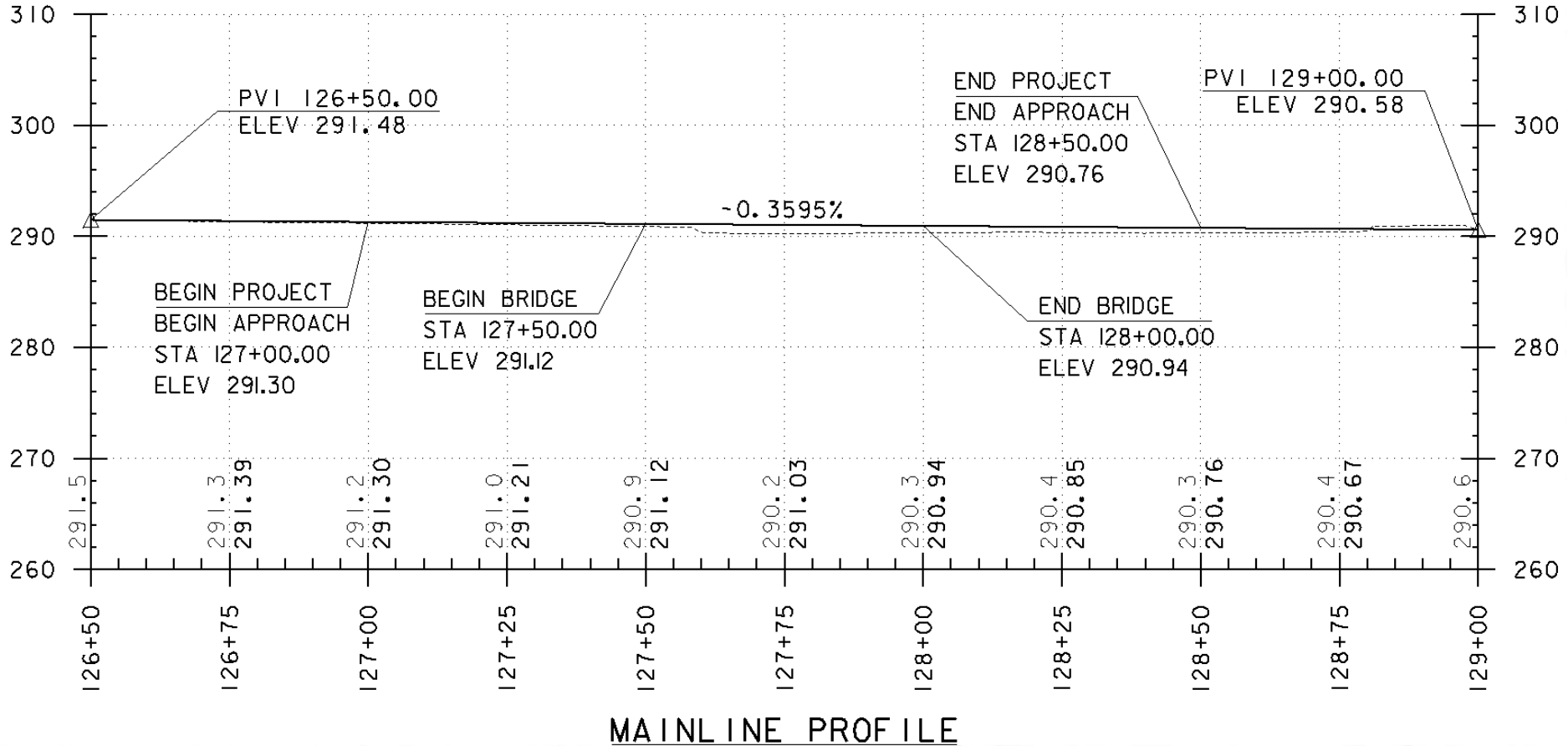
Proposed Profile



MAINLINE PROFILE

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What Will the New Bridge Look Like?

Example of Proposed Structure

- Aluminum Buried Structure
- Box Beam or W-Beam Guardrail

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Maintenance of Traffic Options Considered

- Existing roadway width provides adequate space for a phased project
  - Two, opposing lanes of traffic
- Detour considerations
  - Available detour routes less than optimal
  - High ADT
  - A detour is difficult to justify

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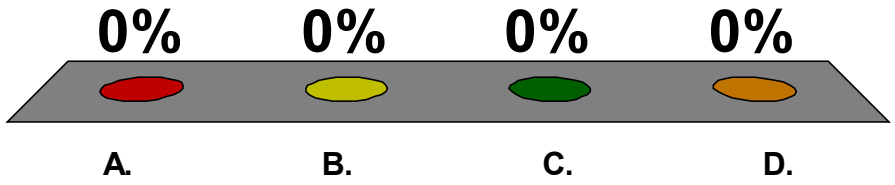
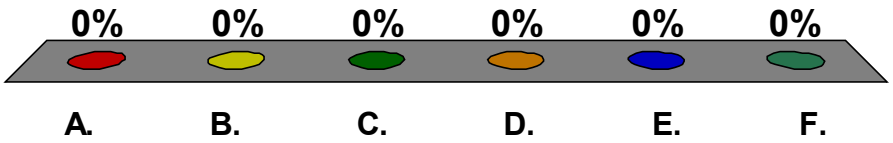
Which time of year would be least acceptable for Bridge #2 to be restricted by lane closures?

A. April/May
B. June/July
C. August/September
D. Other



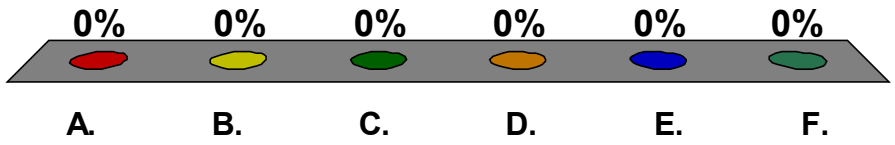
Which would you be most concerned about?

A. Closure Duration
B. Bridge Aesthetics
C. Environmental Impacts
D. Recreational Impacts
E. Other
F. Not really concerned



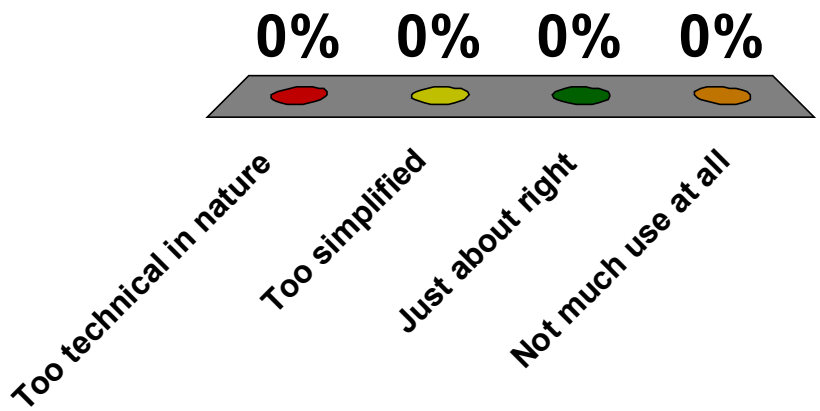
Which design aspect is the most important to you?

A. Shoulder width/bicycle accommodations
B. Aesthetics - Bridge Railing
C. Construction year
D. Construction Duration
E. Cost
F. Other



Did you find this presentation to be?

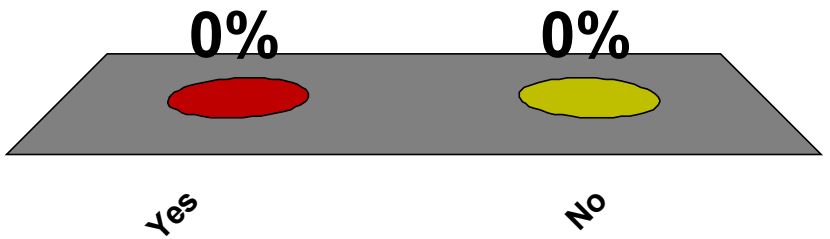
A. Too technical in nature
B. Too simplified
C. Just about right
D. Not much use at all



Do you find the recommended scope of work satisfactory?

A. Yes

B. No



Next Steps – Bridge #2

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

- Develop Conceptual plans and distribute for comment
  - Right-of-Way process (if needed)

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For more information:

- https://outside.vermont.gov/agency/vtrans/external/Projects/Structures/13D654

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Questions & Comments

VT Route 117 – Bridge #2 over Alder Brook

October 3rd, 2016

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