Benefits of Stakeholder Involvement

Canadian Value Symposium

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Ontario Ministry of Transportation

Topic Overview

- Importance of involving key stakeholders – the Owner's perspective
- Bay of Quinte VE – Our experience with stakeholders on a VE team
- Benefits of having them directly involved
- Early meaningful engagement of stakeholders is paramount to long term success
- Review of the VE Study and the outcomes

VE Teams

- Typically made up of subject matter “experts”
  - For MTO: Engineers, Contractors, Estimators,…
- Each project requires a custom configuration of those members to ensure the VE Study is meaningful and the results are credible
- Frequently a valuable resource in the stakeholder is forgotten
- Local Stakeholders can be Municipalities, Businesses, First Nations, and others.

Bay of Quinte VE Study

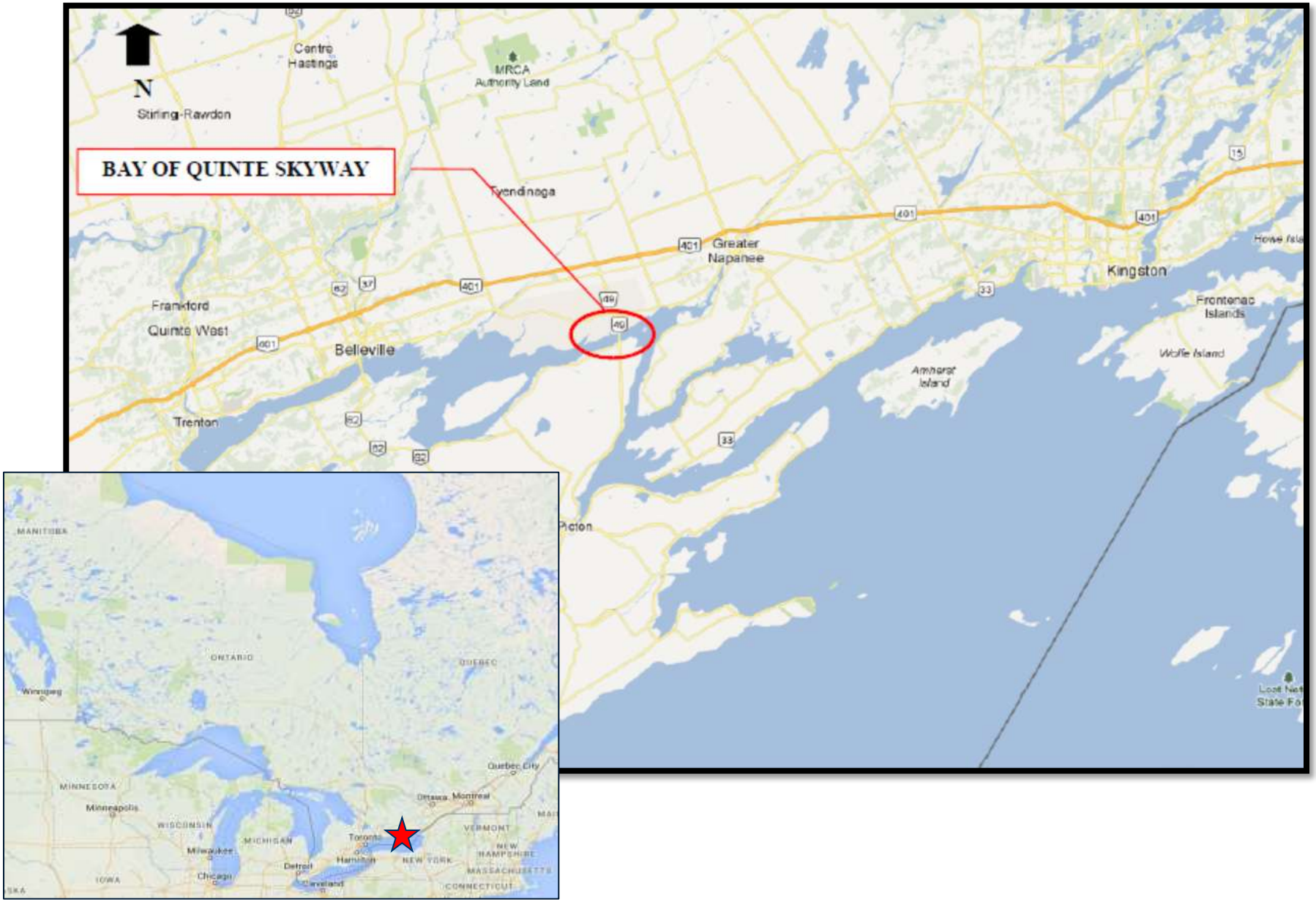
- Undertaken by MTO in Fall of 2012 through the HDR Corporation
- Technical Objectives
  - Optimize:
    - Rehabilitation schedule
    - Staging
    - Construction methodology
    - Use of innovative construction techniques

Bay of Quinte VE Study

- Further Objectives
  - Continue to build the relationships with the Tyendinaga Mohawk Nation through:
    - Participation of members of the Nation in the workshop
    - Inviting the Nation to share with the Value Team their local knowledge
- Consultation is a requirement of MTO's Class EA – Why not make them a part of the Project?

Project Background

Project Location



Project Location

Bay of Quinte Skyway

Importance of the Bay of Quinte Skyway

- This high level 17 span bridge crosses the Tyendinaga Mohawk Territory
- It is a significant landmark to First Nations
- The Bridge serves 1,100 homes on the Tyendinaga Mohawk Territory
- The Bridge connects Belleville to Prince Edward County across the Bay of Quinte
- Closure would require lengthy detours (between 29 and 47km)

VE Study Job Plan

- The First Nation was invited and accepted to attend workshop
- CVS with experience undertaking VE Studies with First Nation's representatives
- Mohawks of the Bay of Quinte Presentation
- Full-time participation by the Mohawks of the Bay of Quinte in the VE Study
- Two representatives
  - Director of Community Infrastructure
  - CAO

Mohawks of the Bay of Quinte

Information Phase

- CVS gave a presentation on the VE Process
- Mohawks of the Bay of Quinte presentation outlining:
  - Their history, community, facilities, territory
  - The Highway 49 corridor
  - Their Highway 49/Skyway bridge concerns
  - Political issues
  - Their collaboration with the MTO
  - Safety concerns with respect to the bridge
    - Speed and signage issues

Mohawks of the Bay of Quinte

- The Mohawk Nation is a member of the Six Nations Confederacy
- The Mohawks are considered the easternmost Nation within the Iroquois/Six Nation Confederacy and are referred to as the “Keepers of Eastern Door”
- The ancestral homeland of the Mohawk Nation is the Mohawk River Valley of present day New York State
- "Mohawks were military allies of the British Crown during the American Revolution”

Mohawks of the Bay of Quinte

- The Six Nations negotiated a Treaty for a tract of land along the Bay of Quinte as compensation for services during the American Revolution

- A deed to this land known as the Simcoe Deed or Treaty 3 ½ was executed on April 1, 1793 by Lieutenant Governor John Graves Simcoe

- The Bay of Quinte area is considered sacred to the Six Nations people as the birthplace of Tekanawita, the Peacemaker who brought the original Five Nations Iroquois Confederacy under a constitution of peace in the 12th century

Mohawks of the Bay of Quinte

- Land area includes approximately 12km of shoreline
- Total Membership – 8,542 status members
- Road Network – 84.77km

Mohawks of the Bay of Quinte
Hwy 49 / Skyway Bridge Concerns

- Speed limit
- Contingency plans
  - Emergencies
  - High Level Rescue
  - Detours if required
- Communication Protocols
  - MTO on site contact
  - Critical MBQ contacts – police/fire
- Proposed Detours
  - Impacts to local roads
  - Volumes increasing on York Road
- Intersection at Bayshore Road/Airport Road/Hwy 49
  - Queued traffic
  - Impacts to local bus routes

Mohawks of the Bay of Quinte

- One of the Mohawk representatives was employed as an iron worker during the original construction
  - His experiences during its construction was a rare opportunity of learning the methods used during the original construction
- Participated fully during all Phase of the VE Job Plan
  - Many of their ideas were carried forward and recommended by the VE Team

The VE Study

Constraints/Opportunities

- No in water work required
- No foundations work
- Focus is on superstructure, girders and deck
- Maintain deck platform width if possible
- Review how the connecting road network interacts with the bridge
- Base Case is a Group “C” environmental undertaking

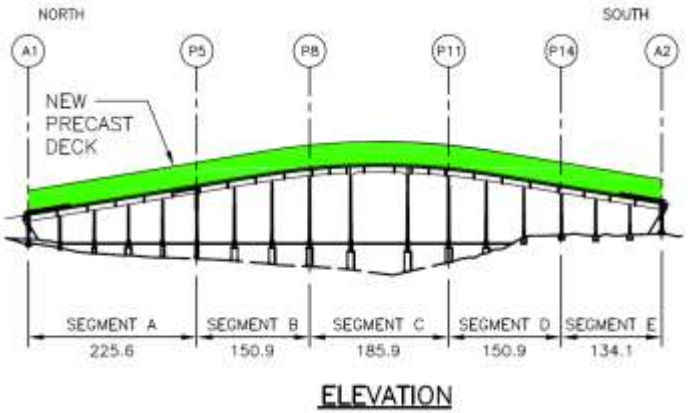
Top Risks

- Schedule (3 to 4 years)
- Traffic Disruption to the Hwy 49 corridor (queues)
- Gas pipe being on the bridge

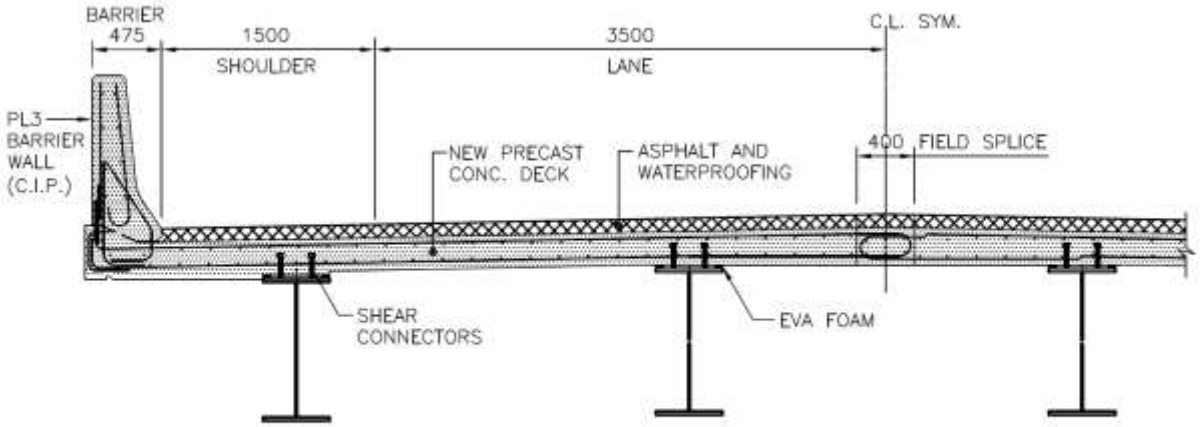
Base Case

Base Case

- **Option E – ‘Half & Half’ Precast Deck**
  - Remove Half the Deck
  - Install Half-Width Precast Concrete Deck Panels
  - Construct PL3 Barrier Wall



ELEVATION



OPTION E – 1/2 WIDTH PRECAST DECK REPLACEMENT WITH PL3 BARRIER WALL

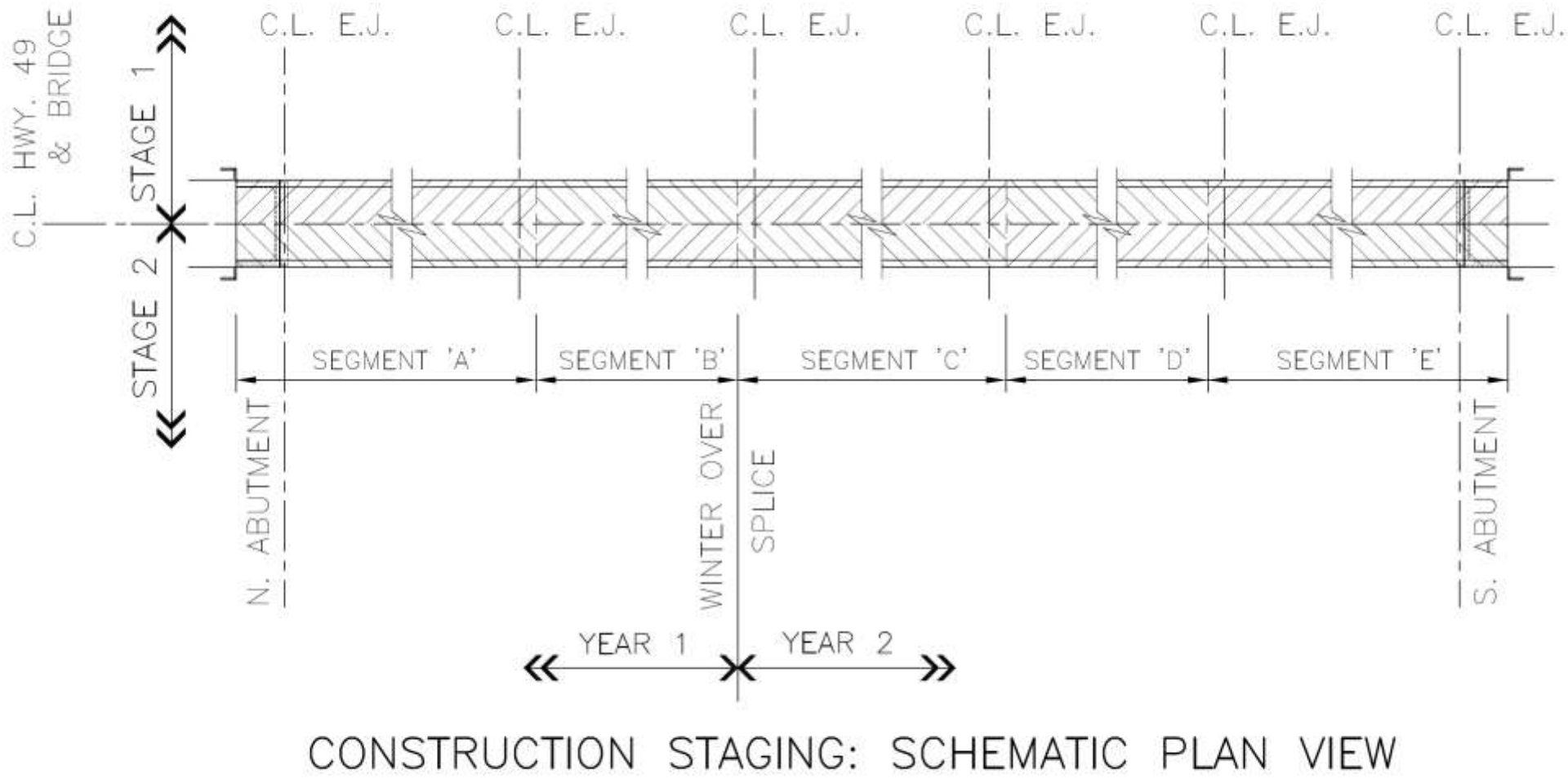
Base Case

Schedule	Costs	Risks & Limitations
TOTAL: **3 Construction Seasons (Based on working days estimate)**	**Estimated Capital Cost (2012) = $25M** Major Cost Assumptions: • Coat all structural steel • Patch, W/P membrane & pave at Year 30	• New deck condition following installation • Upgrades barrier wall safety to 100 km/h design standards • 100 km/h design standard calls for 3.75 m wide lanes • Potential precast unit alignment challenges

Base Case Preferred Staging Option Summary

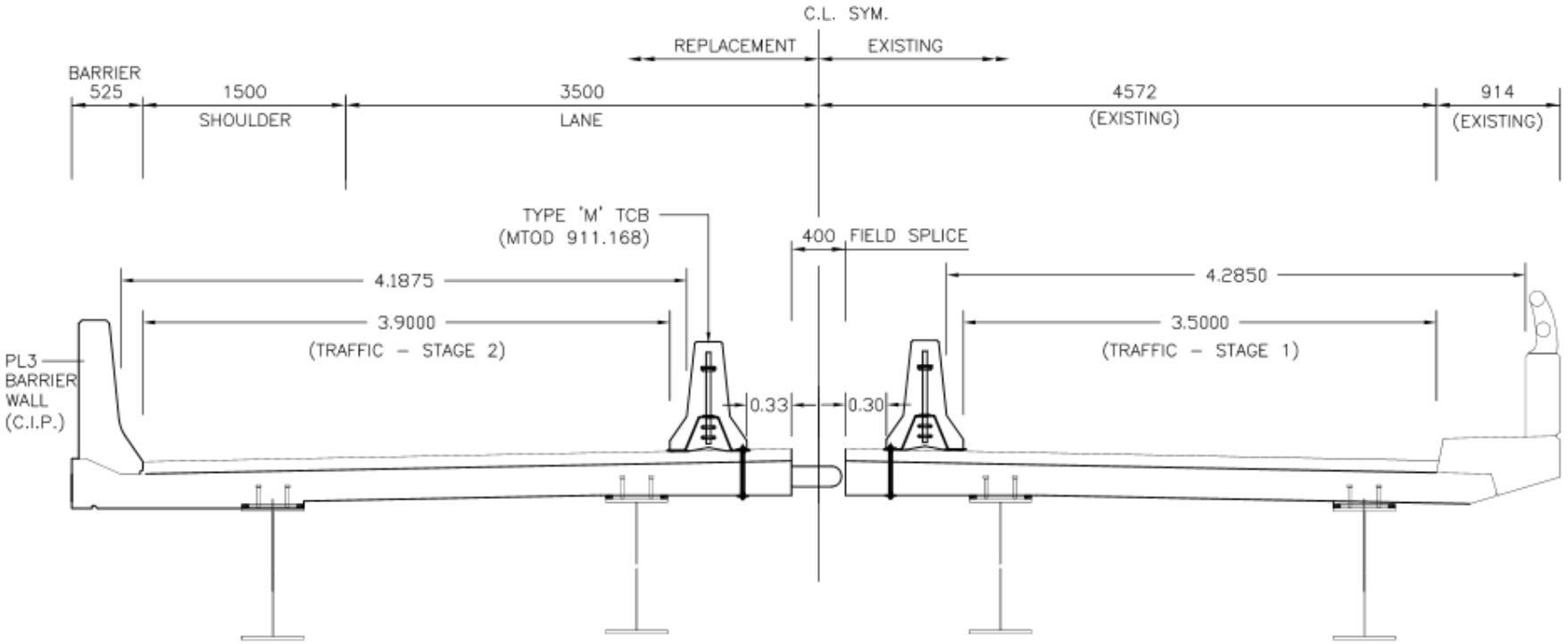
- Single-lane closures with bi-directional traffic managed by temporary traffic signals
- 15-minute full closures
  - restricted to off-peak hours
- Full closures can be accommodated for 11 hours per day
  - During peak hours, alternate methods of delivering precast deck panels must be utilized

Proposed Staging of Construction – Bridge Segments



CONSTRUCTION STAGING: SCHEMATIC PLAN VIEW

Proposed Staging of Construction – Cross-Section



OPTION E – 1/2 WIDTH PRECAST DECK REPLACEMENT WITH PL3 BARRIER WALL

Stakeholder Involvement

- The base case has been established
  - Demonstrates “traditional” approach to the bridge project
  - Shows the complexities of this particular project
- This information would typically be given to the stakeholder at a Public Involvement Centre or a Formal Presentation
- Now, they’re given the opportunity to challenge the work in a formal setting
  - Idea Generation
  - Constructive Dialogue

Value Engineering Study Results

Performance Criteria and Measures

Criteria	Weight
Constructability	16
Long-Term Maintenance	22
Safety	27
Traffic Impact during Construction	19
Community/Social Impact	16

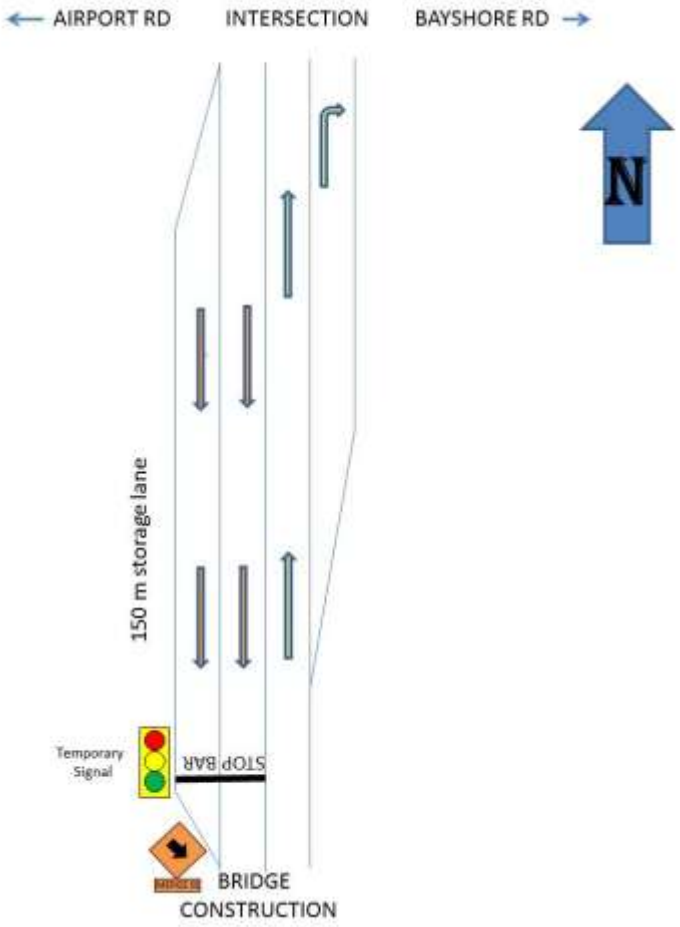
- Common complaint during consultation is weighting of alternatives

Value Engineering Ideas Summary Table

Value Target Areas	No. of Ideas Generated	No. of Ideas Developed	No. of Design Suggestions
Constructability	38	9	10
Coating	11	3	1
Rehabilitate Skyway	27	3	9
Long-Term Traffic Management	25	2	7
Community / Social Impact	18	0	12
Total	**119**	**17**	**39**

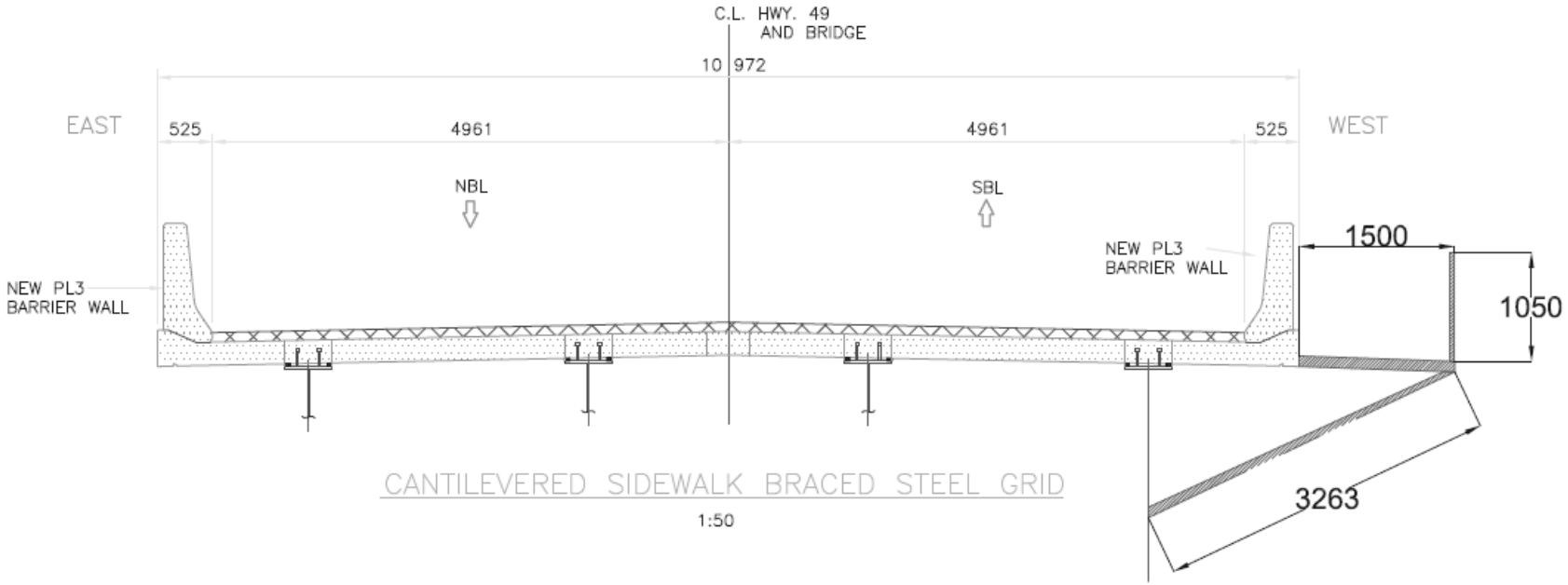
Examples of VE Ideas Carried Forward in Scenarios

C-18: Additional lanes between Airport Rd and the bridge to store vehicles



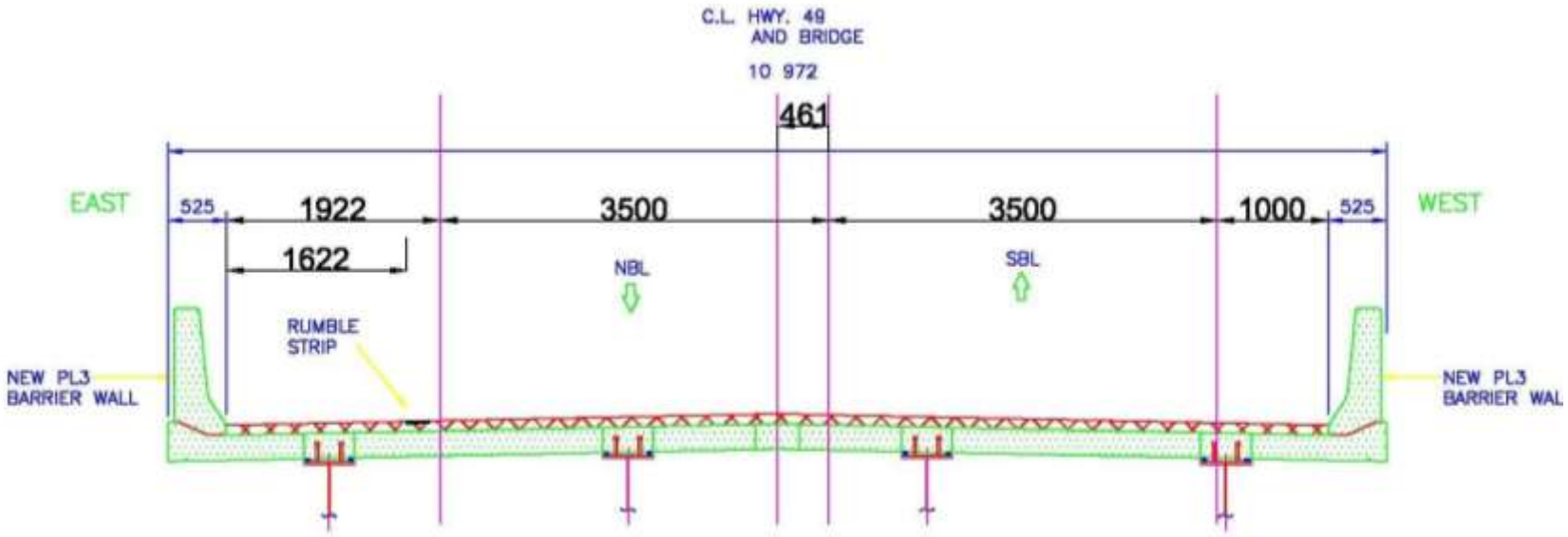
Added Cost of $50,000

LT-20, 21, 24: Cantilever sidewalk, Light weight sidewalk, Cast the precast slab to incorporate the cantilever slab past the barrier



Added Cost of $700,000

LT-22: Offset traffic lanes to accommodate peds and cyclists



Added Cost of $171,000

Scenarios

Scenarios

- Scenario 1: Base Case with Modifications
- Scenario 2: Hydro Demolition with Overlay
- Scenario 3: Two Stage Construction
- Scenario 4: Deferred Deck Replacement
- Scenario 5: ACR Steel

VE Recommendations

- All VE Scenarios have higher P/C than Base Case
- Rehabilitation options (Scenarios 2 and 4)
  - Offer lower initial capital costs using different rehabilitation approaches
- VE challenged the Base Case deck replacement and recommended that Scenario 5 be considered
- Scenario 5
  - Has higher initial Capital Cost ($28M vs. BC of $25M)
  - New superstructure with a 75 year design life
  - Should be considered if capital funding becomes available
- **Scenario 5 ACCEPTED (under design)**

Stakeholder Involvement

- Idea Generation
  - In the long run, less of “Why can’t you do it this way?”
    - Those questions were raised and brainstormed
- Development Phase
  - Good technical knowledge and fully capable of developing ideas
  - Provided local knowledge on ideas to enhance the scenarios

Stakeholder Involvement

- The members' participation was **NOT** an endorsement of the project
- It was a means to actively engage them in the project
- When members of the public ask them, they can answer informatively

Stakeholder Involvement

- The Mohawks of the Bay of Quinte involvement lead to:
  - A full understanding of their issues
  - Better understanding of final solution
  - Building better communication and understanding between them and MTO
  - Collaboration on issues
- Provided the Owner a willing partner to work together and complete the project
- Provided credibility to the level of engagement during consultation

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