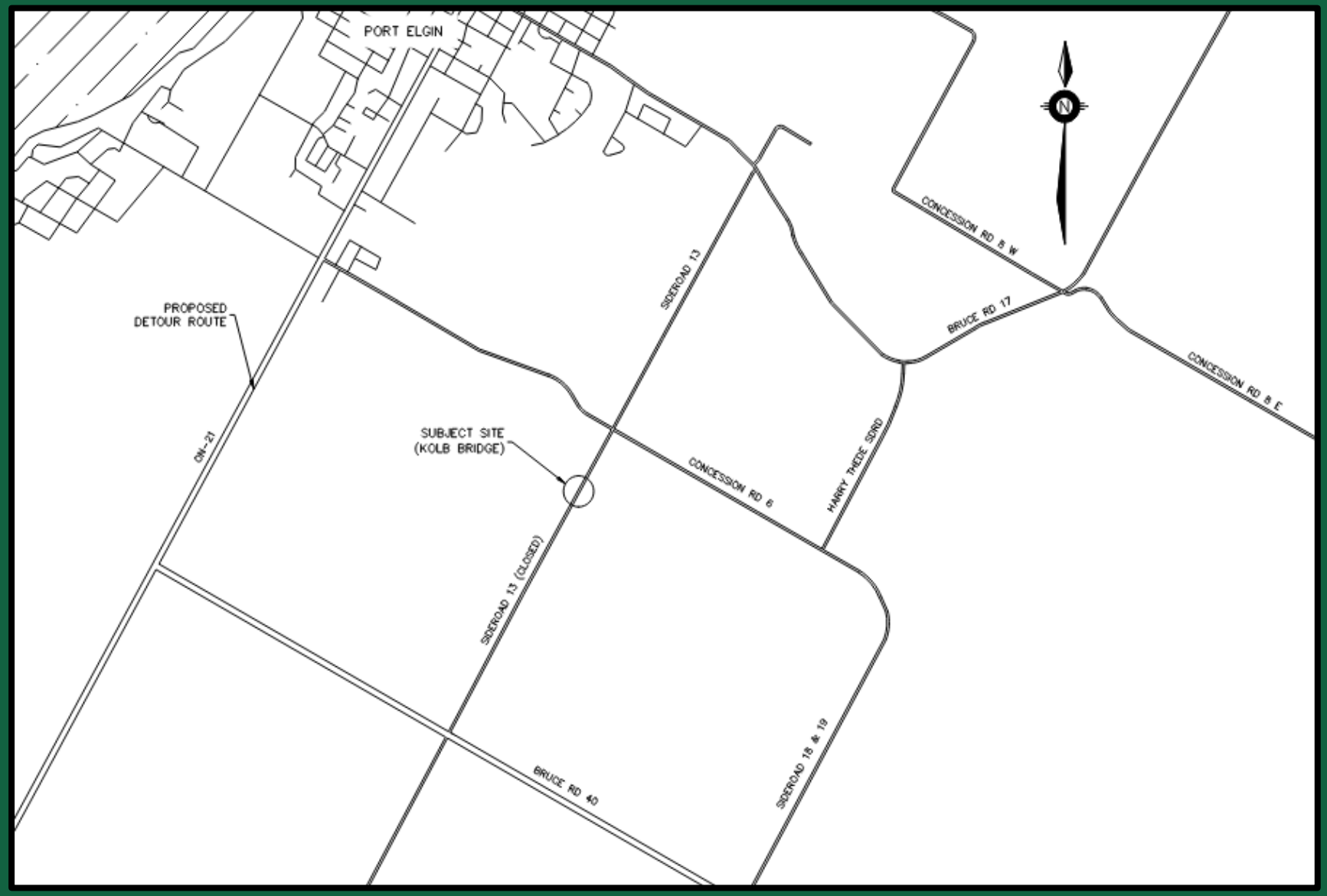
KOLB BRIDGE REPLACEMENT

DESIGN ALTERNATIVE EVALUATION

TOWN OF SAUGEEN SHORES

BRUCE COUNTY



Project Location

The Kolb Bridge is a steel truss bridge located on Sideroad 13/14 in the Town of Saugeen Shores. The bridge is located approximately 375m south of Concession 6 and conveys water flow below the roadway from Mill Creek.

The bridge has an approximate span of 30.9m and an overall roadway width of 5.7m.

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EXISTING CONDITIONS AND HISTORY

STEEL TRUSS BRIDGE WITH CONCRETE DECK

- The structure was constructed in approximately 1931. The bridge is now in overall poor condition.
- The structural integrity has been compromised primarily due to ongoing substructure movement factors including foundation settlement and excessive lateral soil pressure from the roadway.
- This movement has led to overstressing and fatigue damage at bearing connections.
- Due to significant safety concerns, the bridge was closed to both vehicular and pedestrian traffic in 2020.
- A Municipal Class Environmental Assessment (MCEA) was completed in June of 2022 by Planmac Engineering Inc. The preferred design alternative was determined to be single-lane bridge replacement.
- The Kolb Bridge is scheduled to be replaced in 2026 / 2027.
- Pearson Engineering has been retained to complete the detailed design of the new structure in 2025.

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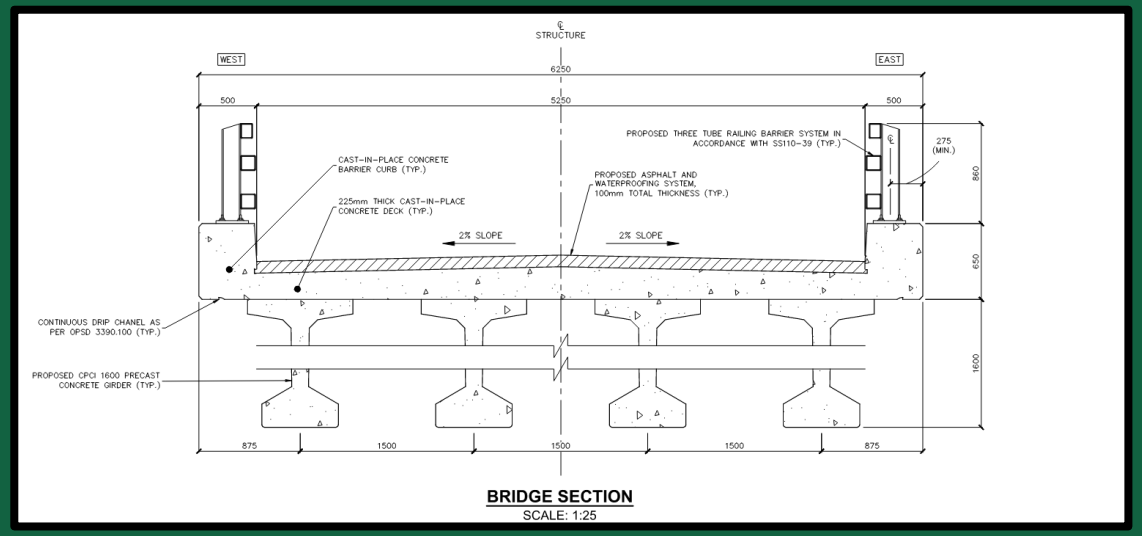
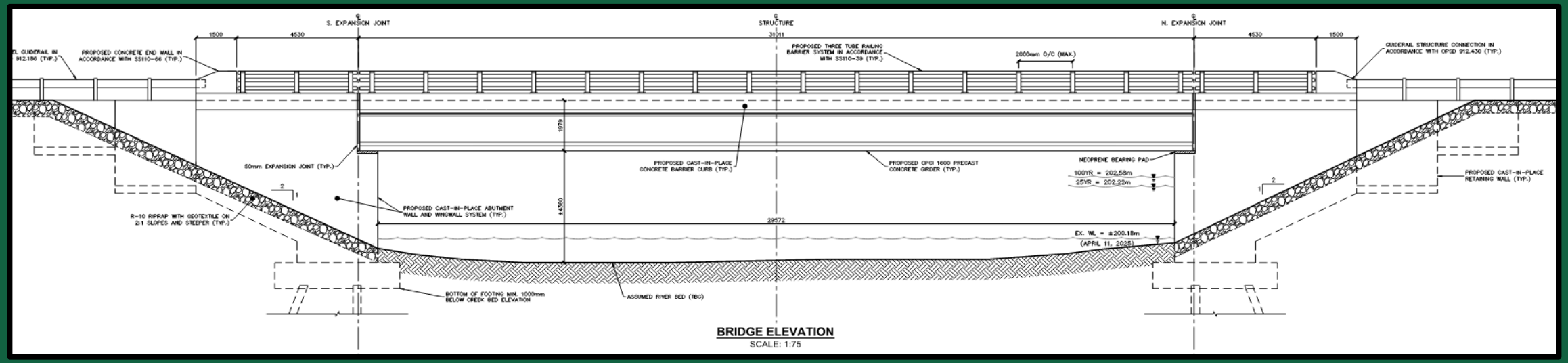
DESIGN ALTERNATIVE 1

PRECAST GIRDER BRIDGE WITH CONCRETE DECK

- Estimated Construction Cost: $3,000,000 (+HST)
- Estimated Service-Life: 80 to 100 years
- Construction Duration: Long (26 to 35 Weeks)
- Difficulty of Construction: Significant
- Difficulty of Maintenance: Minor to Moderate
- 5.25m One-Lane Structure



BRIDGE SECTION
SCALE: 1:25

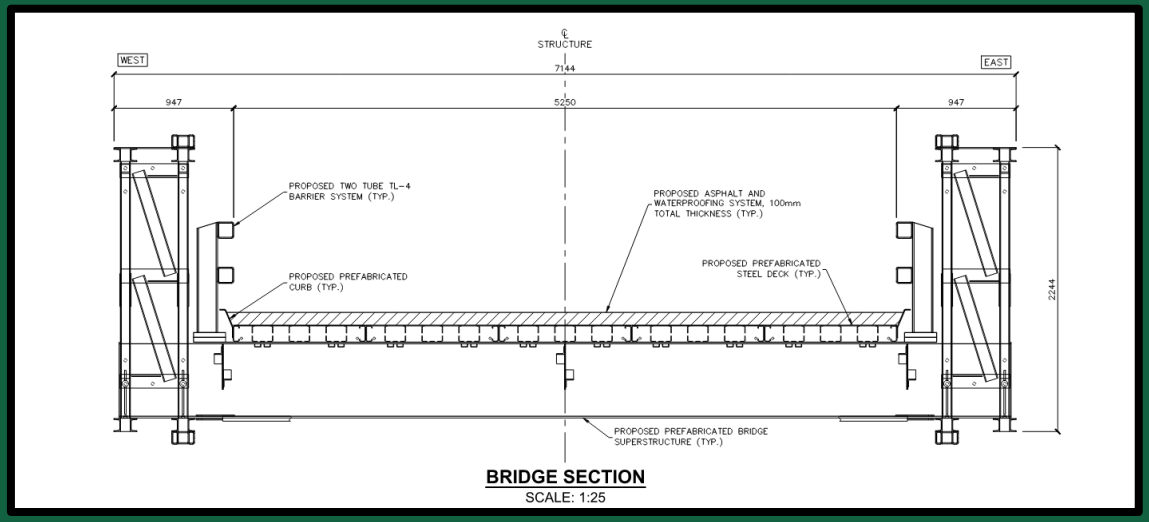


BRIDGE ELEVATION
SCALE: 1:75

DESIGN ALTERNATIVE 2

PREFABRICATED STEEL PANEL BRIDGE WITH STEEL DECK

- Estimated Construction Cost: $2,800,000 (+ HST)
- Estimated Service-Life: 75 to 90 years
- Construction Duration: Moderate (26 to 30 Weeks)
- Difficulty of Construction: Minor to Moderate
- Difficulty of Maintenance: Moderate
- 5.25m One-Lane Structure



BRIDGE SECTION
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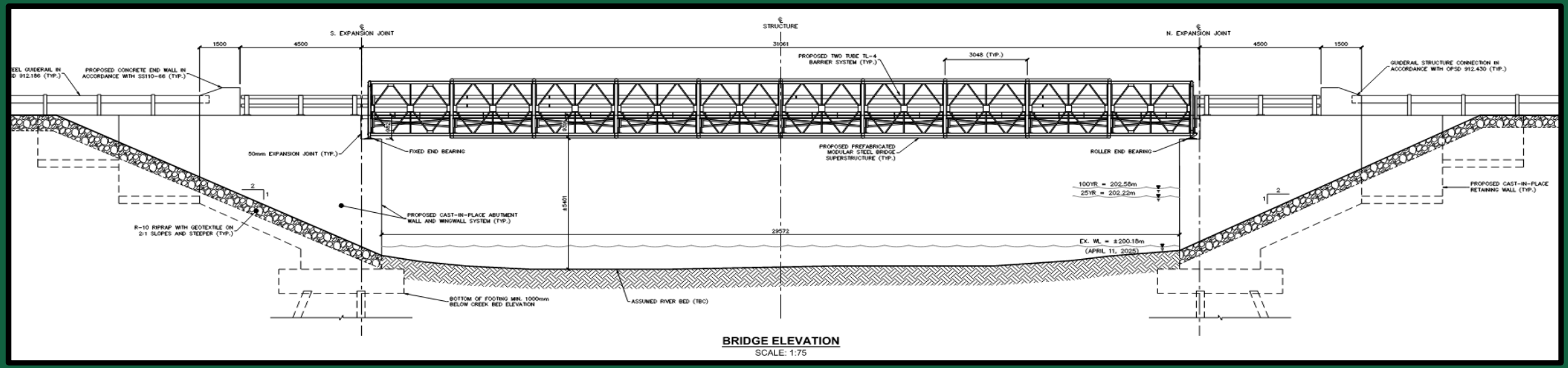
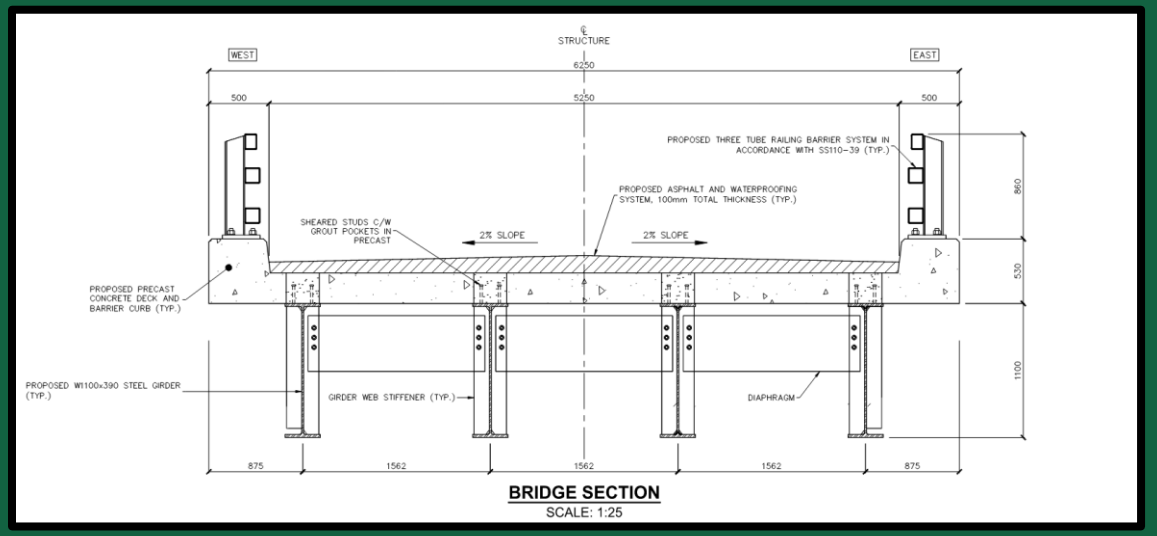


BRIDGE ELEVATION
SCALE: 1:75

DESIGN ALTERNATIVE 3

PREFABRICATED STEEL GIRDER BRIDGE WITH PRECAST DECK

- Estimated Construction Cost: $3,300,000 (+ HST)
- Estimated Service-Life: 75 to 90 years
- Construction Duration: Moderate (26 to 30 Weeks)
- Difficulty of Construction: Minor to Moderate
- Difficulty of Maintenance: Moderate
- 5.25m One-Lane Structure



BRIDGE SECTION
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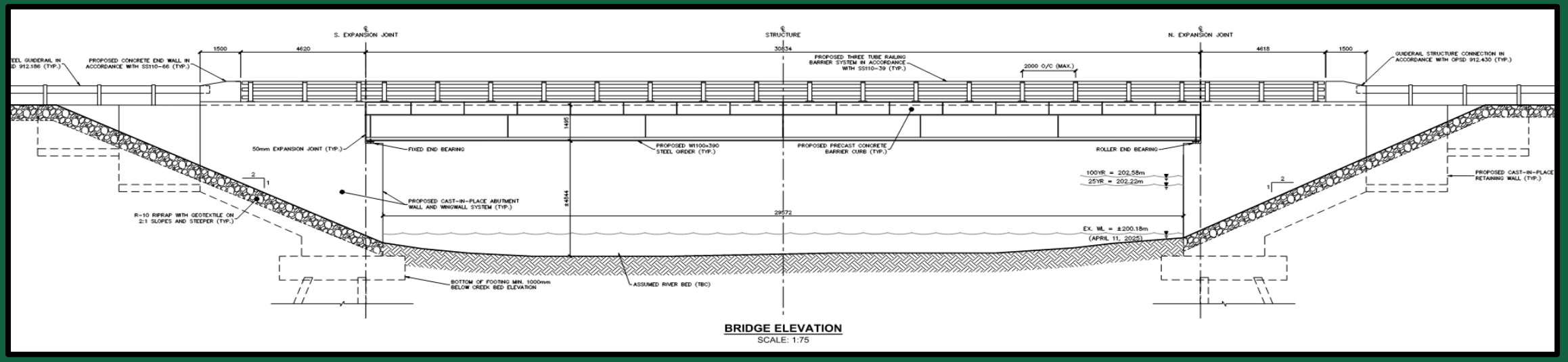
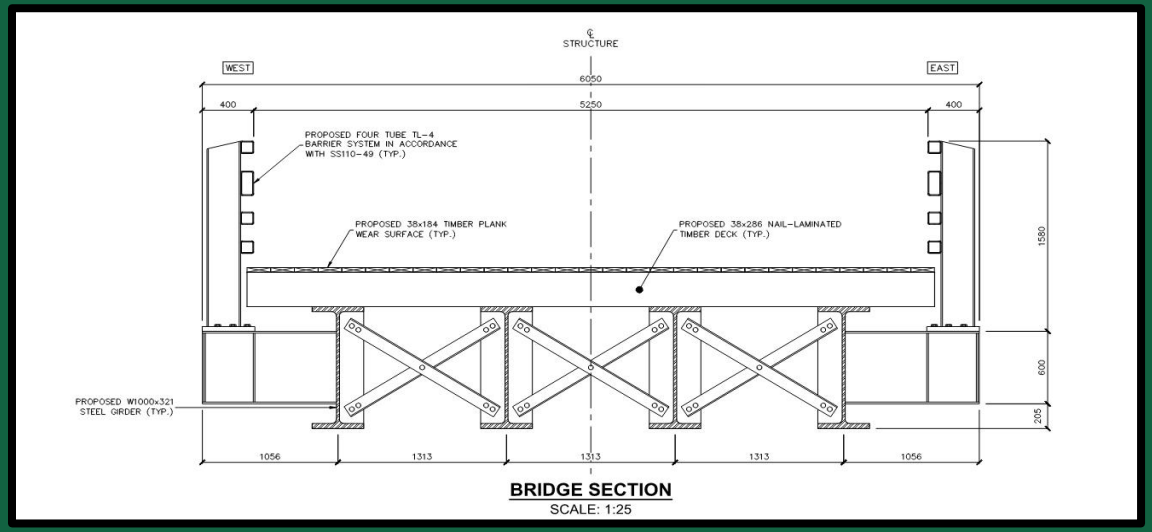


BRIDGE ELEVATION
SCALE: 1:75

DESIGN ALTERNATIVE 4

PREFABRICATED STEEL GIRDER BRIDGE WITH TIMBER DECK

- Estimated Construction Cost: $2,900,000 (+ HST)
- Estimated Service-Life: 75 to 90 years
- Construction Duration: Moderate (22 to 26 Weeks)
- Difficulty of Construction: Minor to Moderate
- Difficulty of Maintenance: Moderate
- 5.25m One-Lane Structure



BRIDGE SECTION
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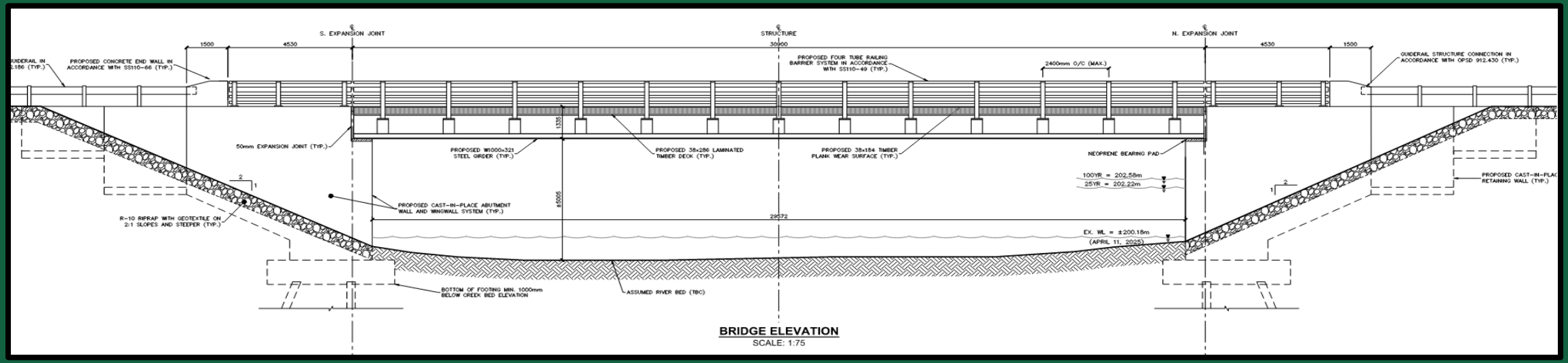

BRIDGE ELEVATION
SCALE: 1:75

PREFERRED DESIGN ALTERNATIVE

PREFABRICATED STEEL PANEL BRIDGE WITH STEEL DECK

Based on the results of the Design Alternative Evaluation, our preliminary recommendation for the preferred replacement option of the Kolb Bridge is “Design Alternative 2”.

Design Alternative 2 recommends that the Kolb Bridge be replaced with a prefabricated steel panel bridge with a steel deck system and an asphalt wearing surface.

Based on the preliminary estimated construction cost analysis and correspondence with local prefabricated bridge manufactures, Design Alternative 2 is expected to have the lowest overall construction cost.

The prefabricated steel panel bridge better commemorates the heritage of the original steel truss structure, while providing minimal effects to the hydraulic capacity.

The construction of the Kolb Bridge Replacement could be scheduled as early as 2026.

Evaluation Criteria	Design Alternative 2
Natural Environment	Temporary impact to fish habitat. Lowest impacts to hydraulic capacity.
Social Environment	Reinstates traffic flow on roadway with increased safety improvements.
Cultural Environment	Supported recommendation by the Heritage Impact Assessment.
Transportation	Re-opening of road for public use. Wide enough for agricultural vehicle use.
Economic Environment	Lowest construction cost. Future maintenance costs anticipated.
Technical	Long-term solution. New code complaint structure. Improved roadway geometry at structure.
Construction Cost	**$2,800,000 (+HST)**

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PREFERRED DESIGN ALTERNATIVE

PREFABRICATED STEEL PANEL BRIDGE WITH STEEL DECK

*Example photos provided by ACROW of a prefabricated steel panel bridge with a steel deck and an asphalt wearing surface.

PEARSON ENGINEERING

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