Ojibway Parkway Wildlife Crossing – Evaluation of Wildlife Overpass Design Options

Evaluation Criteria	Previous Preferred Design Concept (presented in PIC#2) North Crossing, 4 Span Bridge Only Crossing Ojibway Parkway	Score	Design Option 1 - South Crossing, Single Span over ETR, Four Span over Ojibway, Soil Fill between ETR and Ojibway	Score	Design Option 2 - South Crossing, Single Span over ETR, Single Span over Ojibway, Soil Fill between ETR and Ojibway	Score	Design Option 3 - South Crossing, Three Span Bridge (bridge span over boulevard between ETR and Ojibway)	Score	Design Option 4 - Split Crossing, Single span over Ojibway Parkway (North), Single Span over ETR (South)	Score
Natural Environment										
Wildlife movement deterrent – crossing of ETR tracks	This alternative only provides a crossing of Ojibway Parkway. Wildlife will still have to navigate the ETR tracks before being able to cross.	○	This option crosses both Ojibway Parkway and the ETR tracks, enabling a full connection between the natural areas associated with Black Oak Heritage Park and Ojibway Park.	●	This option crosses both Ojibway Parkway and the ETR tracks, enabling a full connection between the natural areas associated with Black Oak Heritage Park and Ojibway Park.	●	This option crosses both Ojibway Parkway and the ETR tracks, enabling a full connection between the natural areas associated with Black Oak Heritage Park and Ojibway Park.	●	This option crosses both Ojibway Parkway and the ETR tracks, enabling a full connection between the natural areas associated with Black Oak Heritage Park and Ojibway Park.	●
Wildlife movement deterrent – approach grades	The grade for the approach slope on the west end of the crossing will be 21% (slightly steeper than (5H:1V) which is slightly above the design criteria of 20%. This minor increase is anticipated to still be suitable for wildlife.	●	The grades for the approach slopes on both the east and west ends of the crossing will be 20% (5H:1V) which meet the design criteria and will be suitable for wildlife.	●	The grades for the approach slopes on both the east and west ends of the crossing will be 20% (5H:1V) which meet the design criteria and will be suitable for wildlife.	●	The grades for the approach slopes on both the east and west ends of the crossing will be 20% (5H:1V) which meet the design criteria and will be suitable for wildlife.	●	The grades for the approach slopes on both the east and west ends of the crossing, as well as the slopes within the boulevard between Ojibway Parkway and the ETR tracks will be 20% (5H:1V) which meet the design criteria and will be suitable for wildlife.	●
Wildlife movement deterrent – sightlines	The bridge crossing over Ojibway Parkway has a nearly level deck with a minor crest at the center pier which is not anticipated to impede the line of sight for medium sized mammals or white-tailed deer.	●	The single span over the ETR tracks has a slope of 0.5% and the four span crossing over Ojibway Parkway has a slope which varies from 0.5% to 2%. The soil fill joining the two crossings has a slope of 13% which represents about a 3.7 m elevation increase. This elevation increase is expected to impede the line of sight for medium sized mammals as well as white-tailed deer such that they will only be able to see the length of one span of the crossing at a time.	◑	The single span over the ETR tracks has a slope of 0.5% and the single span crossing over Ojibway Parkway has a slope of 2%. The soil fill joining the two crossings has a slope of 5.5% which represents about a 1.6 m elevation increase. This elevation increase is expected to impede the line of sight for medium sized mammals as well as white-tailed deer such that they will only be able to see the length of one span of the crossing at a time.	◑	The single span over the ETR tracks, single span over the boulevard, and single span over Ojibway Parkway have a constant slope of 3%. The slopes across the bridge will not create an impediment to the line of sight for medium sized mammals or white-tailed deer.	●	The single span over the ETR tracks has a slope of 0.5% and the single span crossing over Ojibway Parkway has a slope of 2%. Wildlife using the crossing will have to turn 90° upon reaching the boulevard side of the crossing before descending into the boulevard. This 90° turn will cause the line of sight for both medium sized mammals and white-tailed deer to be impeded at both crossings.	◑
Wildlife movement deterrent – width of crossing	The width of the crossing will be 50 m which meets the design criteria and will be suitable for wildlife crossing.	●	The width of the crossing will be 50 m which meets the design criteria and will be suitable for wildlife crossing.	●	The width of the crossing will be 50 m which meets the design criteria and will be suitable for wildlife crossing.	●	The width of the crossing will be 50 m which meets the design criteria and will be suitable for wildlife crossing.	●	The width of the crossing will be 40 m, as this is the width within the existing boulevard between Ojibway Parkway and the ETR tracks. The 40 m crossing is within the range for the minimal crossing width.	●

Evaluation Criteria	Previous Preferred Design Concept (presented in PIC#2) North Crossing, 4 Span Bridge Only Crossing Ojibway Parkway	Score	Design Option 1 - South Crossing, Single Span over ETR, Four Span over Ojibway, Soil Fill between ETR and Ojibway	Score	Design Option 2 - South Crossing, Single Span over ETR, Single Span over Ojibway, Soil Fill between ETR and Ojibway	Score	Design Option 3 - South Crossing, Three Span Bridge (bridge span over boulevard between ETR and Ojibway)	Score	Design Option 4 - Split Crossing, Single span over Ojibway Parkway (North), Single Span over ETR (South)	Score
Wildlife movement deterrent – length and shape of crossing	The length of the crossing excluding approach slopes is about 40 m; however, it does not span the ETR tracks. The crossing is direct, but wildlife will only be able to cross Ojibway Parkway using the crossing. Neither the length of the crossing, nor the shape / layout of the crossing are expected impact wildlife's ability to navigate it.	●	The length of the crossing, excluding approach slopes, is about 135 m. The crossing is direct and wildlife will be able to cross over both Ojibway Parkway and the ETR tracks once they have climbed the approach slope. Neither the length of the crossing, nor the shape / layout of the crossing are expected impact wildlife's ability to navigate it.	●	The length of the crossing, excluding approach slopes, is about 130 m. The crossing is direct and wildlife will be able to cross over both Ojibway Parkway and the ETR tracks once they have climbed the approach slope. Neither the length of the crossing, nor the shape / layout of the crossing are expected impact wildlife's ability to navigate it.	●	The length of the crossing, excluding approach slopes, is about 130 m. The crossing is direct and wildlife will be able to cross over both Ojibway Parkway and the ETR tracks once they have climbed the approach slope. Neither the length of the crossing, nor the shape / layout of the crossing are expected impact wildlife's ability to navigate it.	●	The length of the crossing, excluding approach slopes, is about 581 m. The crossing involves two 90°, right angle, turns to direct wildlife through the boulevard between the crossing of Ojibway Parkway and the ETR tracks. The length of the crossing as well as the shape of the crossing which will require wildlife to navigate it make it the least desirable of the options. The portion of the crossing along the existing boulevard may be used by certain species for longer periods of time, which would increase the risk of wildlife finding gaps in the exclusion fencing and entering either Ojibway Parkway or the ETR tracks.	◑
Direct impacts on terrestrial species and habitats	No impacts to species at risk or their habitat are anticipated. No impacts to the Black Oak Wetland Complex. Direct footprint impact to approximately 4,900 sq m of terrestrial habitat. Where possible natural vegetation will be transplanted / moved onto the overpass and its approaches.	●	Direct impacts to Willowleaf Aster (species at risk) are anticipated but may be mitigated through species transplanting. Impacts to the habitat of at least one other species at risk is anticipated but can be mitigated through exclusion measures during construction and post-construction restoration activities. Impacts to the Black Oak Wetland Complex are minimized. Direct footprint impact to approximately 11,500 sq m of terrestrial habitat. This includes 7,500 sq m at the approach to the ETR crossing, 2,600 sq m at the approach to the Ojibway Parkway crossing and 1,400 sq m within the boulevard. Where possible natural vegetation will be transplanted / moved onto the overpass and its approaches.	◑	Direct impacts to Willowleaf Aster (species at risk) are anticipated but may be mitigated through species transplanting. Impacts to the habitat of at least one other species at risk is anticipated but can be mitigated through exclusion measures during construction and post-construction restoration activities. Impacts to the Black Oak Wetland Complex are minimized. Direct footprint impact to approximately 14,300 sq m of terrestrial habitat. This includes 7,500 sq m at the approach to the ETR crossing, 5,400 sq m at the approach to the Ojibway Parkway crossing and 1,400 sq m within the boulevard. Where possible natural vegetation will be transplanted / moved onto the overpass and its approaches.	◑	Direct impacts to Willowleaf Aster (species at risk) are anticipated but may be mitigated through species transplanting. Impacts to the habitat of at least one other species at risk is anticipated but can be mitigated through exclusion measures during construction and post-construction restoration activities. Impacts to the Black Oak Wetland Complex are minimized. Direct footprint impact to approximately 14,500 sq m of terrestrial habitat. This includes 9,100 sq m at the approach to the ETR crossing, 5,400 sq m at the approach to the Ojibway Parkway crossing and none within the boulevard. Where possible natural vegetation will be transplanted / moved onto the overpass and its approaches.	◑	No impacts to species at risk or their habitat are anticipated. Impacts to the Black Oak Wetland Complex are minimized. Direct footprint impact to approximately 19,100 sq m of terrestrial habitat. This includes 6,900 sq m at the approach to the ETR crossing, 5,000 sq m at the approach to the Ojibway Parkway crossing and 7,200 sq m within the boulevard. Where possible natural vegetation will be transplanted / moved onto the overpass and its approaches.	●

Evaluation Criteria	Previous Preferred Design Concept (presented in PIC#2) North Crossing, 4 Span Bridge Only Crossing Ojibway Parkway	Score	Design Option 1 - South Crossing, Single Span over ETR, Four Span over Ojibway, Soil Fill between ETR and Ojibway	Score	Design Option 2 - South Crossing, Single Span over ETR, Single Span over Ojibway, Soil Fill between ETR and Ojibway	Score	Design Option 3 - South Crossing, Three Span Bridge (bridge span over boulevard between ETR and Ojibway)	Score	Design Option 4 - Split Crossing, Single span over Ojibway Parkway (North), Single Span over ETR (South)	Score
Social Environment										
Potential impact to community facilities	This alternative will require slight permanent displacement of the existing multi-use trail closer to the road for a length of approximately 50 m, however the trail will still be maintained. The boulevard between Ojibway Parkway and the ETR tracks will no longer be useable as public space because it will be filled at the crossing location (approximately 50m wide) to create the western approach to the crossing. The boulevard between Ojibway Parkway and the ETR tracks will not be useable for potential future road widening (if required).	◑	This alternative will require slight permanent displacement of the existing multi-use trail closer to the road for a length of approximately 50 m, however the trail will still be maintained. The boulevard between Ojibway Parkway and the ETR tracks will no longer be useable as public space because it will be filled at the crossing location (approximately 50m wide) with soil fill behind the reinforced soil slope retaining wall. The boulevard between Ojibway Parkway and the ETR tracks will not be useable for potential future road widening (if required).	◑	This alternative will require slight permanent displacement of the existing multi-use trail closer to the road for a length of approximately 50 m, however the trail will still be maintained. The boulevard between Ojibway Parkway and the ETR tracks will no longer be useable as public space because it will be filled at the crossing location (approximately 50m wide) with soil fill behind the reinforced soil slope retaining wall. The boulevard between Ojibway Parkway and the ETR tracks will not be useable for potential future road widening (if required).	◑	There will be no changes to the existing multiuse trail. The area within the boulevard between Ojibway Parkway and the ETR tracks will remain accessible as the overpass will bridge over it. The open area within the boulevard under the crossing will accommodate future road expansion (if required).	●	This alternative will require permanent displacement of the existing multi-use trail closer to the road for a length of approximately 490 m, however the trail will still be maintained. The boulevard between Ojibway Parkway and the ETR tracks will no longer be useable as public space for a length of approximately 490 m because it will contain retaining walls and approach ramps for the crossing and will be fenced with wildlife exclusion fencing. The boulevard between Ojibway Parkway and the ETR tracks will not be useable for potential future road widening (if required).	○
Safety considerations	The boulevard between Ojibway Parkway and the ETR tracks will have the western approach to the crossing constructed within it. This will reduce visibility depending on the direction of travel along Ojibway Parkway. This will reduce the effectiveness of natural surveillance and thus increase susceptibility to the occurrence of unlawful behaviour without easy detection. The multi-use trail will be shifted closer to Ojibway Parkway for a length of approximately 50 m. The outside row of western piers and the option to install a barrier between the trail and road can minimize the potential for interactions between trail users and vehicles on Ojibway Parkway.	◑	The boulevard between Ojibway Parkway and the ETR tracks will have retaining walls constructed that will reduce visibility depending on the direction of travel along Ojibway Parkway. This will reduce the effectiveness of natural surveillance and thus increase susceptibility to the occurrence of unlawful behaviour without easy detection. The multi-use trail will be shifted closer to Ojibway Parkway for a length of approximately 50 m but will still be separated from it by the piers used to support the bridge. This will minimize the potential for interactions between trail users and vehicles on Ojibway Parkway.	◑	The boulevard between Ojibway Parkway and the ETR tracks will have retaining walls constructed that will reduce visibility depending on the direction of travel along Ojibway Parkway. This will reduce the effectiveness of natural surveillance and thus increase susceptibility to the occurrence of unlawful behaviour without easy detection. The multi-use trail will be shifted closer to Ojibway Parkway for a length of approximately 50 m. A barrier may be installed between the trail and road to minimize the potential for interactions between trail users and vehicles on Ojibway Parkway.	◑	The boulevard beneath the bridge will remain open which will optimize ongoing visibility throughout the area to guard against the prospect of suspicious behaviour/use. The open nature will make ongoing access for monitoring and maintenance activities easier. This will assist the City staff in more easily identifying any unlawful activity that may be occurring – allowing for potential problems to be identified and mitigated more efficiently. The multi-use trail will maintain its current separation distance from Ojibway Parkway, minimizing the potential for interactions between trail users and vehicles on Ojibway Parkway.	●	The boulevard between Ojibway Parkway and the ETR tracks will have retaining walls constructed that will reduce visibility depending on the direction of travel along Ojibway Parkway. This will reduce the effectiveness of natural surveillance and thus increase susceptibility to the occurrence of unlawful behaviour without easy detection. The multi-use trail will be shifted closer to Ojibway Parkway for a length of approximately 490 m. A barrier may be installed between the trail and road to minimize the potential for interactions between trail users and vehicles on Ojibway Parkway; however, the length of the trail realignment does represent an increased risk of interaction between trail users and vehicles compared to the other alternatives.	○

Evaluation Criteria	Previous Preferred Design Concept (presented in PIC#2) North Crossing, 4 Span Bridge Only Crossing Ojibway Parkway	Score	Design Option 1 - South Crossing, Single Span over ETR, Four Span over Ojibway, Soil Fill between ETR and Ojibway	Score	Design Option 2 - South Crossing, Single Span over ETR, Single Span over Ojibway, Soil Fill between ETR and Ojibway	Score	Design Option 3 - South Crossing, Three Span Bridge (bridge span over boulevard between ETR and Ojibway)	Score	Design Option 4 - Split Crossing, Single span over Ojibway Parkway (North), Single Span over ETR (South)	Score
Cultural Environment										
Potential impacts on archaeological resources	Lands on both sides of Ojibway Parkway were assessed as part of Stage 1 Archaeological Assessments and the east side of the Parkway was identified as having archaeological potential. A Stage 2 archaeological assessment will be required during detailed design phase to determine impacts on archaeological resources and potential mitigation measures.	◑	Lands on both sides of Ojibway Parkway and ETR tracks were assessed as part of Stage 1 Archaeological Assessments and were identified to have archaeological potential. A Stage 2 archaeological assessment will be required during detailed design phase to determine impacts on archaeological resources and potential mitigation measures.	◑	Lands on both sides of Ojibway Parkway and ETR tracks were assessed as part of Stage 1 Archaeological Assessments and were identified to have archaeological potential. A Stage 2 archaeological assessment will be required during detailed design phase to determine impacts on archaeological resources and potential mitigation measures.	◑	Lands on both sides of Ojibway Parkway and ETR tracks were assessed as part of Stage 1 Archaeological Assessments and were identified to have archaeological potential. A Stage 2 archaeological assessment will be required during detailed design phase to determine impacts on archaeological resources and potential mitigation measures.	◑	Lands on both sides of Ojibway Parkway and ETR tracks were assessed as part of Stage 1 Archaeological Assessments and were identified to have archaeological potential. A Stage 2 archaeological assessment will be required during detailed design phase to determine impacts on archaeological resources and potential mitigation measures.	◑
Potential impacts on built heritage resources and cultural heritage landscapes	Ojibway Park underwent a cultural heritage screening as part of the City of Windsor's Urban Parks Plan. This screening determined that the park contains, or is part of, a cultural heritage landscape. It is recommended that a Cultural Heritage Evaluation Report (CHER) be completed during the detailed design phase to evaluate the property for Cultural Heritage Value or Interest.	◑	Black Oak Heritage Park and Ojibway Park underwent a cultural heritage screening as part of the City of Windsor's Urban Parks Plan. This screening determined that both parks contain, or are part of, a cultural heritage landscape. It is recommended that a Cultural Heritage Evaluation Report (CHER) be completed during the detailed design phase to evaluate the properties for Cultural Heritage Value or Interest.	◑	Black Oak Heritage Park and Ojibway Park underwent a cultural heritage screening as part of the City of Windsor's Urban Parks Plan. This screening determined that both parks contain, or are part of, a cultural heritage landscape. It is recommended that a Cultural Heritage Evaluation Report (CHER) be completed during the detailed design phase to evaluate the properties for Cultural Heritage Value or Interest.	◑	Black Oak Heritage Park and Ojibway Park underwent a cultural heritage screening as part of the City of Windsor's Urban Parks Plan. This screening determined that both parks contain, or are part of, a cultural heritage landscape. It is recommended that a Cultural Heritage Evaluation Report (CHER) be completed during the detailed design phase to evaluate the properties for Cultural Heritage Value or Interest.	◑	Black Oak Heritage Park and Ojibway Park underwent a cultural heritage screening as part of the City of Windsor's Urban Parks Plan. This screening determined that both parks contain, or are part of, a cultural heritage landscape. It is recommended that a Cultural Heritage Evaluation Report (CHER) be completed during the detailed design phase to evaluate the properties for Cultural Heritage Value or Interest.	◑
Technical Considerations										
Potential drainage and stormwater concerns	This alternative will maintain a minimum 0.5% longitudinal slope along the length of the bridge and will have a 0.5% cross-grade of the proposed surface across the bridge deck. Drainage of the bridge deck is not a concern.	●	This alternative will maintain a minimum 0.5% longitudinal slope along the length of the bridge and will have a 0.5% cross-grade of the proposed surface across the bridge deck. Drainage of the bridge deck is not a concern. The retained soil system walls will require drainage to be incorporated into their design but this is considered to be a straightforward design task.	●	This alternative will maintain a minimum 0.5% longitudinal slope along the length of the bridge and will have a 0.5% cross-grade of the proposed surface across the bridge deck. Drainage of the bridge deck is not a concern. The retained soil system walls will require drainage to be incorporated into their design but this is considered to be a straightforward design task.	●	This alternative will maintain a minimum 3% longitudinal slope along the length of the bridge and will have a 0.5% cross-grade of the proposed surface across the bridge deck. Drainage of the bridge deck is not a concern.	●	This alternative will maintain a minimum 0.5% longitudinal slope along the length of the bridge and will have a 0.5% cross-grade of the proposed surface across the bridge deck. Drainage of the bridge deck is not a concern. The retained soil system walls will require drainage to be incorporated into their design but this is considered to be a straightforward design task. The soil fill areas within the boulevard between Ojibway Parkway and the ETR tracks slopes down into the boulevard increasing runoff in these areas and requiring the design of additional drainage. This is a straightforward design task but does represent one additional consideration beyond those required for the other alternatives.	●

Evaluation Criteria	Previous Preferred Design Concept (presented in PIC#2) North Crossing, 4 Span Bridge Only Crossing Ojibway Parkway	Score	Design Option 1 - South Crossing, Single Span over ETR, Four Span over Ojibway, Soil Fill between ETR and Ojibway	Score	Design Option 2 - South Crossing, Single Span over ETR, Single Span over Ojibway, Soil Fill between ETR and Ojibway	Score	Design Option 3 - South Crossing, Three Span Bridge (bridge span over boulevard between ETR and Ojibway)	Score	Design Option 4 - Split Crossing, Single span over Ojibway Parkway (North), Single Span over ETR (South)	Score
Complexity of construction	Construction sequence includes construction of substructure, placement of bearings and girders, constructing deck and parapet walls, backfilling and grading approach ramps. Girder placement would require heavy-duty cranes and precise bearing placement for both spans. Substructure construction includes abutments and middle pier. Girders will be installed separately for each span, once they are in place, deck topping slab and parapet wall can be constructed in a continuous manner.	●	Construction includes construction of substructure, placement of bearings and girders, constructing deck and parapet walls, backfilling and grading approach ramps, constructing median RSS walls. Settlement monitoring of ETR track will be required throughout construction. This option includes driving inclined H-piles for the Ojibway piers. As there are four short spans over Ojibway, there will be many girders to lift in place, but the shorter length allows a smaller crane to be used. The main girder placement over the ETR ROW requires heavy duty cranes.	◑	Construction includes construction of substructure, placement of bearings and girders, constructing deck and parapet walls, backfilling and grading approach ramps, constructing median RSS walls. Settlement monitoring of ETR track will be required throughout construction. Main girder placement for both the ETR and Ojibway Parkway crossings will require heavy duty cranes.	●	Construction includes construction of substructure, placement of bearings and girders, constructing deck and parapet walls, backfilling and grading approach ramps. This option includes a girder lift over the median. This option includes driving inclined H-piles for piers. Settlement monitoring of ETR track will be required throughout construction. Main girder placement for all three spans will require heavy duty cranes.	●	Construction includes construction of substructure, placement of bearings and girders, constructing deck and parapet walls, backfilling and grading approach ramps, constructing median RSS walls. Settlement monitoring of ETR track will be required throughout construction at both north and south crossing locations. This option includes a very large construction area, and additional grading for ramps down in median as well as approaches. Main girder placement for both the ETR and Ojibway Parkway crossings will require heavy duty cranes.	◑
Potential impacts to Ojibway Parkway traffic from construction	Construction of the bridge structure to be completed in a staged approach. Temporary traffic impacts are anticipated including long term lane closures (resulting in one travel lane in each direction) for construction of center and outside piers. Lane closures are expected to be approximately 12 months in duration. Placement of main span girders is expected to take two weeks (one week for each direction of travel) but could be accomplished with closure of lanes in one direction with temporary traffic diversion using a median crossover.	○	Construction of the bridge structure to be completed in a staged approach. Temporary traffic impacts are anticipated including long term lane closures (resulting in one travel lane in each direction) for construction of center and outside piers. Lane closures are expected to be approximately 12 months in duration. Placement of main span girders is expected to take two weeks (one week for each direction of travel) but could be accomplished with closure of lanes in one direction with temporary traffic diversion using a median crossover.	○	Construction of the bridge structure to be completed in a staged approach. Temporary traffic impacts are anticipated with potential long term shoulder closures and lane shifts for construction of RSS abutments and retaining walls. Shoulder closures and lane shifts are expected to be approximately 18 months in duration. Full roadway closure (northbound and southbound) is required for girder placement for the main single span. Full closure is expected to be one week in duration.	○	Construction of the bridge structure to be completed in a staged approach. Temporary traffic impacts are anticipated with potential long term shoulder closures and lane shifts for construction of RSS abutments and retaining walls. Shoulder closures and lane shifts are expected to be approximately 18 months in duration. Full roadway closure (northbound and southbound) is required for girder placement for the main single span. Full closure is expected to be one week in duration.	○	Construction of the bridge structure to be completed in a staged approach. Temporary traffic impacts are anticipated with potential long term shoulder closures and lane shifts for construction of RSS abutments and retaining walls. Shoulder closures and lane shifts are expected to be approximately 24 months in duration. Construction impacts will be spread out between the north and south crossing portions, with a larger construction footprint. Full roadway closure (northbound and southbound) is required for girder placement for the main single span. Full closure is expected to be one week in duration.	○
Roadside safety	Outside piers placed adjacent to travel lanes will require protection. Minor sight line impacts for turning movements from Broadway Boulevard due to median piers. Sight lines to be reviewed during detailed design. Protection of median pier will be required.	◑	Outside piers placed adjacent to travel lanes will require protection. No sight line impacts for turning movements from Broadway Boulevard are expected (to be confirmed during detailed design) Protection of median pier will be required.	◑	Abutments and retaining walls will be set well back from traffic lanes. No sight line impacts for turning movements from Broadway Boulevard are expected (to be confirmed during detailed design) No median pier required for protection.	●	Abutment and retaining walls, and pier will be set well back from traffic lanes. No sight line impacts for turning movements from Broadway Boulevard are expected (to be confirmed during detailed design) No median pier required for protection.	●	Abutment and retaining walls, and pier will be set well back from traffic lanes. Minor site line impacts for turning movements from Broadway Boulevard are expected due to retaining wall north of the east abutment (to be confirmed during detailed design) No median pier required for protection.	◑

Evaluation Criteria	Previous Preferred Design Concept (presented in PIC#2) North Crossing, 4 Span Bridge Only Crossing Ojibway Parkway	Score	Design Option 1 - South Crossing, Single Span over ETR, Four Span over Ojibway, Soil Fill between ETR and Ojibway	Score	Design Option 2 - South Crossing, Single Span over ETR, Single Span over Ojibway, Soil Fill between ETR and Ojibway	Score	Design Option 3 - South Crossing, Three Span Bridge (bridge span over boulevard between ETR and Ojibway)	Score	Design Option 4 - Split Crossing, Single span over Ojibway Parkway (North), Single Span over ETR (South)	Score
Complexity of geotechnical design considerations	While design and construction of the substructure (deep foundations, temporary shoring and dewatering) is considered generally to be straightforward, some moderately complex settlement mitigation may be required for the embankments, particularly in the median and on the west approach to protect the railway and limit any potential impacts to buried infrastructure along Ojibway Parkway.	◑	While design and construction of the substructure (deep foundations, temporary shoring and dewatering) is considered generally to be straightforward, some moderately complex settlement mitigation may be required for the embankments, particularly in the median and on the west approach to protect the railway and limit any potential impacts to buried infrastructure along Ojibway Parkway.	◑	While design and construction of the substructure (deep foundations, temporary shoring and dewatering) is considered generally to be straightforward, some moderately complex settlement mitigation may be required for the embankments, particularly in the median and on the west approach to protect the railway and limit any potential impacts to buried infrastructure along Ojibway Parkway.	◑	While design and construction of the substructure (deep foundations, temporary shoring and dewatering) is considered generally to be straightforward, some moderately complex settlement mitigation may be required for the embankments, particularly on the west approach to protect the railway and limit any potential impacts to buried infrastructure along Ojibway Parkway.	◑	While design and construction of the substructure (deep foundations, temporary shoring and dewatering) is considered generally to be straightforward, some moderately complex settlement mitigation may be required for the embankments, particularly on the median and west approach to protect the railway and limit any potential impacts to buried infrastructure along Ojibway Parkway.	◑
Economic Environment										
Construction Cost	Initial construction cost is estimated to be $14M. Construction cost is only for a span crossing Ojibway Parkway, no crossing of the ETR tracks is included.	●	Initial construction cost is estimated to be $33M.	○	Initial construction cost is estimated to be $28M.	◑	Initial construction cost is estimated to be $28M.	◑	Initial construction cost is estimated to be $29M.	◑
Maintenance and rehabilitation costs	Minor rehabilitation will be required at 25-year and 75-year points, consisting of concrete patch repair, crack injection, railing repairs. Major rehabilitation will be required at 50-year point with bearing replacement, concrete repairs, railing replacement. Estimated maintenance and rehabilitation cost comparable with most other alternatives for their spans over Ojibway Parkway. Overall maintenance cost will be lower than other alternatives since this alternative only spans Ojibway Parkway resulting in less bridge area requiring maintenance.	●	Minor rehabilitation will be required at 25-year and 75-year points, consisting of concrete patch repair, crack injection, railing repairs, RSS wall repairs. Major rehabilitation will be required at 50-year point with concrete repairs and railing replacement. Estimated maintenance and rehabilitation cost will be higher than some options due to amount of RSS wall within the boulevard.	◑	Minor rehabilitation will be required at 25-year and 75-year points, consisting of concrete patch repair, crack injection, railing repairs, RSS wall repairs Major rehabilitation will be required at 50-year point with concrete repairs railing replacement. Estimated maintenance and rehabilitation cost will be higher than some options due to amount of RSS wall within the boulevard.	◑	Minor rehabilitation will be required at 25-year and 75-year points, consisting of concrete patch repair, crack injection, railing repairs, RSS wall repairs. Major rehabilitation will be required at 50-year point with bearing replacement, concrete repairs, railing replacement. Maintenance and rehabilitation cost estimated to be lower with most other alternatives since the median crossing is a clear span rather than RSS wall embankment.	●	Minor rehabilitation will be required at 25-year and 75-year points, consisting of concrete patch repair, crack injection, railing repairs, RSS wall repairs. Major rehabilitation will be required at 50-year point with bearing replacement, concrete repairs, railing replacement. Maintenance and rehabilitation cost estimated to be higher than other alternatives due to extensive RSS wall to link the split crossings.	○
Recommendation							**Preferred Design**			

	○	◑	●
Scoring Scale	Highest negative impacts or lowest benefits	Moderate negative impacts and benefits	Lowest negative impacts or greatest benefits