

Criteria for Identification and Evaluation of Alternative Design Concepts

Coleraine Drive Grade Separation Evaluation Criteria

Evaluation Criteria	Measures
Transportation	
Traffic Operations	<ul style="list-style-type: none"> • Peak Hour / Off Peak Performance
Traffic Safety	<ul style="list-style-type: none"> • Potential for collisions
Natural Environment	
Environmentally Sensitive Areas	<ul style="list-style-type: none"> • Significant woodlands, wetlands, protection areas
Slope Stability	<ul style="list-style-type: none"> • Impacts to slope located at southeast corner of King St. and Coleraine Drive intersection.
Tree Impacts	<ul style="list-style-type: none"> • Removal and protection of trees
Stormwater Management	
Stormwater Management	<ul style="list-style-type: none"> • Quality and quantity control
Groundwater	<ul style="list-style-type: none"> • Dewatering for bridge construction
Climate Change	<ul style="list-style-type: none"> • Flooding risks
Healthy Communities	
Active Transportation	<ul style="list-style-type: none"> • Pedestrian and Cyclist infrastructure
Air Quality	<ul style="list-style-type: none"> • Vehicle emissions
Noise	<ul style="list-style-type: none"> • Vehicles, trains
Socio-Economic Environment	
Archaeology	<ul style="list-style-type: none"> • Burial sites or artifacts
Cultural and Built Heritage	<ul style="list-style-type: none"> • Heritage properties or structures
Property Impacts	<ul style="list-style-type: none"> • Property Acquisition
Land Use / Property Access	<ul style="list-style-type: none"> • Road Closures / Realignment
Aesthetics	<ul style="list-style-type: none"> • Streetscaping / Views of residents

Evaluation Criteria	Measures
Constructability / Engineering	
Utilities	<ul style="list-style-type: none"> • Relocations
Geometry	<ul style="list-style-type: none"> • Design Standards
Construction Staging	<ul style="list-style-type: none"> • Detours / Rerouting / Closures
Construction Cost	<ul style="list-style-type: none"> • Dollar Value

Coleraine Drive and King Street/Harvest Moon Drive Intersection Evaluation Criteria

Evaluation Criteria	Measures
Traffic Operations	<ul style="list-style-type: none"> • Peak Hour • Off Peak Performance
Traffic Safety	<ul style="list-style-type: none"> • Potential for collisions
Pedestrian Accommodation	<ul style="list-style-type: none"> • Crossings • Exposure Time
Cyclist Accommodation	<ul style="list-style-type: none"> • Facilities • Crossings • Exposure
Natural Environment	<ul style="list-style-type: none"> • Environmentally Sensitive Areas • Slope Stability
Socio-Economic Environment	<ul style="list-style-type: none"> • Property Impacts • Speed Control • Streetscaping
Constructability/Engineering	<ul style="list-style-type: none"> • Utilities • Geometry • Construction Staging • Cost



Detailed Evaluation of Alternative Design Concepts Coleraine Drive Grade Separation and King Street/Harvest Moon Drive Intersection

1. INTRODUCTION

The purpose of this memo is to summarize the assessment and evaluation of the alternative design concepts identified by the Coleraine Drive Grade Separation EA, undertaken by the Region of Peel.

The study investigated 1) design concepts for the Coleraine Drive / King Street and Harvest Moon Drive intersection, and 2) grade separation concepts for the rail tracks on Coleraine Drive, near Old Ellwood Drive in the Town of Caledon. As the improvement concepts would not influence each-other's design, alternative concepts were generated separately for each.

2. COLERAINE DRIVE AND KING STREET/HARVEST MOON DRIVE INTERSECTION

Two alternatives were identified for the Coleraine Drive / King Street and Harvest Moon Drive intersection:

1. Signalized Intersection with dual left turn lanes on Southbound and Westbound approaches
2. Two-Lane Roundabout

The evaluation criteria used is summarized in **Table 1** and the detailed assessment and evaluation is included in **Table 3**.

Table 1 Coleraine Drive / King Street and Harvest Moon Drive Intersection Evaluation Criteria

Evaluation Criteria	Measures
Traffic Operations	Peak Hour / Off Peak Performance
Traffic Safety	Potential for collisions
Pedestrian Accommodation	Crossings / Exposure Time
Cyclist Accommodation	Facilities / Crossings / Exposure
Natural Environment	Environmentally Sensitive Areas and Slope Stability
Socio-Economic Environment	Property Impacts/ Speed Control / Streetscaping
Constructability/Engineering	Utilities / Geometry / Construction Staging / Cost

As detailed in the table, **Alternative #2 – Roundabout** was identified as the overall preferred alternative.

Coleraine Drive Grade Separation EA - Assessment and Evaluation of Alternative Design Concepts

3. COLERAINE DRIVE GRADE SEPARATION

Two alternatives were identified for the Coleraine Drive grade separation:

1. Road Under Rail
2. Road Over Rail

The evaluation criteria used is summarized in **Table 2** and the detailed assessment and evaluation is included in **Table 4**.

Table 2 Coleraine Drive Grade Separation Evaluation Criteria

Evaluation Criteria	Measures
Transportation	
Traffic Operations	Peak Hour / Off Peak Performance
Traffic Safety	Potential for collisions
Natural Environment	
Environmentally Sensitive Areas	Significant woodlands, wetlands, protection areas
Slope Stability	Impacts to slope located at southeast corner of King St. and Coleraine Drive intersection.
Tree Impacts	Removal and protection of trees
Stormwater Management	
Stormwater Management	Quality and quantity control
Groundwater	Dewatering for bridge construction
Climate Change	Flooding risks
Healthy Communities	
Active Transportation	Pedestrian and Cyclist infrastructure
Air Quality	Vehicle emissions
Noise	Vehicles, trains
Socio-Economic Environment	
Archaeology	Burial sites or artifacts
Cultural and Built Heritage	Heritage properties or structures
Property Impacts	Property Acquisition
Land Use / Property Access	Road Closures / Realignments
Aesthetics	Streetscaping / Views of residents
Constructability / Engineering	
Utilities	Relocations
Geometry	Design Standards
Construction Staging	Detours / Rerouting / Closures
Construction Cost	Dollar Value

As detailed in the table, **Alternative #2 – Road Over Rail** was identified as the overall preferred alternative. Plans of the alternative design concepts are attached to this memo.

Table 4 Coleraine Drive Grade Separation– Detailed Evaluation and Assessment

Criteria	Do Nothing	Alternative 1 - Road Under Rail	Alternative 2 - Road Over Rail
Transportation			
Traffic Operations	<p>With an increase in motor vehicle and train traffic projected for 2041, queues generated at the at-grade crossing are expected to extend beyond the intersection of Coleraine Drive & King Street West/Harvest Moon Drive.</p> <p>This issue is expected to be more intense as the frequency of trains during peak hours increases, particularly due to the planned extension of GO Train service to a new Bolton station.</p> <p>No opportunities to improve traffic operations and eliminate queues generated at the at-grade rail crossing.</p>	<p>No queues generated at the rail crossing. Eliminates the potential for queues backing up to the King Street and Coleraine Drive intersection.</p>	<p>No queues generated at the rail crossing. Eliminates the potential for queues backing up to the King Street and Coleraine Drive intersection.</p>
Traffic Safety - Vehicular	<p>No opportunity to improve traffic safety.</p>	<p>Eliminates potential vehicle conflicts at the Coleraine Drive and Old Ellwood Drive intersection and the Coleraine Drive and Ellwood Drive intersection because Old Ellwood Drive and Ellwood Drive are closed at Coleraine Drive.</p>	<p>Eliminates potential vehicle conflicts at the Coleraine Drive and Old Ellwood Drive intersection and the Coleraine Drive and Ellwood Drive intersection because Old Ellwood Drive and Ellwood Drive are closed at Coleraine Drive.</p>
Transportation Summary	<p>Both Alternatives improve operations to a similar extent, by resulting in no queuing at the rail crossing and eliminates potential of queues backing up to King Street and Coleraine Drive Intersection. Both alternatives have similar safety benefits, in the reduction of intersections resulting in reduction of conflict points. Both alternatives are the same from the Transportation perspective.</p>		
Natural Environment			
Environmentally Sensitive Areas	<p>No impact to the Greenlands System (Natural Areas and Corridors), Woodlands and Vegetation Protection Zone.</p>	<p>Avoids impact to the Greenlands System (Natural Areas and Corridors), Woodlands and Vegetation Protection Zone.</p>	<p>Avoids impact to the Greenlands System (Natural Areas and Corridors), Woodlands and Vegetation Protection Zone.</p>
Slope Stability	<p>No impact to the slope located at the southeast corner of the King Street and Coleraine Drive intersection.</p>	<p>Avoids impact to the slope located at the southeast corner of the King Street and Coleraine Drive intersection.</p>	<p>Avoids impact to the slope located at the southeast corner of the King Street and Coleraine Drive intersection.</p>

Criteria	Do Nothing	Alternative 1 - Road Under Rail	Alternative 2 - Road Over Rail
Tree Impacts	No impact to trees.	Potential impact to trees on the west side of Coleraine Drive north of Grapevine Road and at the relocated Manchester Court. There are similar impacts between each alternative. Construction management measures can be implemented during construction to minimize impacts to trees.	
Natural Environment Summary	Both alternatives impact natural environment resources to a similar extent as there are similar potential impacts to trees, which will be recommended to be mitigated through construction management measures, and similar avoidance to the Greenlands System, Woodlands and Vegetation Protection Zone and natural slopes. Both alternatives are the same from the Natural Environment perspective.		
Stormwater Management			
Stormwater Management	<p>Portions of the existing roadway north of the CP railway currently discharge to the Heritage Hills SWM Pond 5 for both water quality and quantity.</p> <p>Portions of the existing roadway south of the CP railway currently do not provide any stormwater management for quality and quantity.</p> <p>No improvements to stormwater discharge.</p>	<p>More complex option for accommodating stormwater.</p> <p>Minor stormwater flow will change directions from existing southerly direction and to north with the major flow. This will increase the amount of water that needs to be attenuated/treated.</p> <p>Water must be pumped from the underpass to either a discharge point located within the existing pond or an existing storm sewer system. There is likely no opportunity to have the water discharge by gravity. Therefore, a pump house would be required.</p> <p>There is an opportunity to mitigate stormwater impacts by discharging to the existing Heritage Hills SWM Pond 5.</p> <p>The low point in the roadway will change from the stormwater management pond to the CP underpass. Safe pedestrian and vehicle ingress/regress will need to be considered during major storm events should the roadway be overtopped.</p> <p>Stormwater management analysis will need to be performed to assess the capacity of existing stormwater management pond and ensure that there is sufficient capacity to handle any new flows, whether from rerouting or an increase in impervious area, to the stormwater management pond.</p>	<p>Less complex option for accommodating stormwater.</p> <p>Minor storm drainage could remain the same as existing conditions.</p> <p>The new high point in the roadway caused by the roadway/bridge would change major drainage flows.</p> <p>The impact to downstream receiving capacities would need to be mitigated.</p> <p>There is an opportunity to mitigate stormwater impacts by discharging flows to the existing Heritage Hills SWM Pond 5.</p> <p>The low point in the roadway would remain the same, and safe pedestrian and vehicle ingress/regress not a concern in major storm events should the roadway be overtopped.</p> <p>Stormwater management analysis will need to be performed to assess the capacity of existing stormwater management pond and ensure that there is sufficient capacity to handle any new flows, whether from rerouting or an increase in impervious area, to the stormwater management pond.</p> <p>Road over rail (i.e., bridge) is more susceptible to roadway icing and freezing.</p>

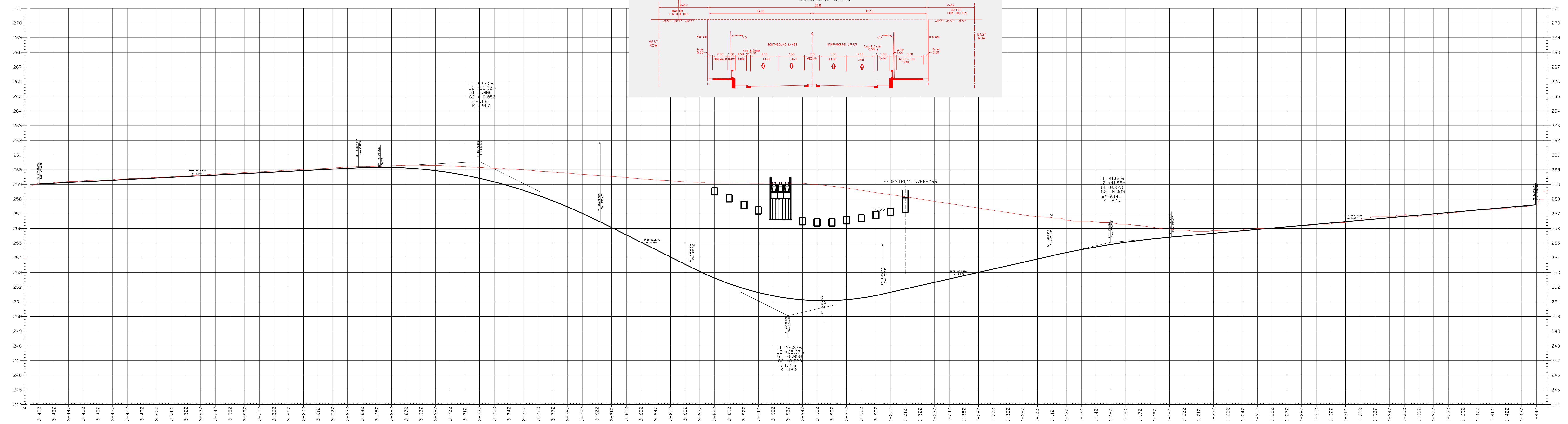
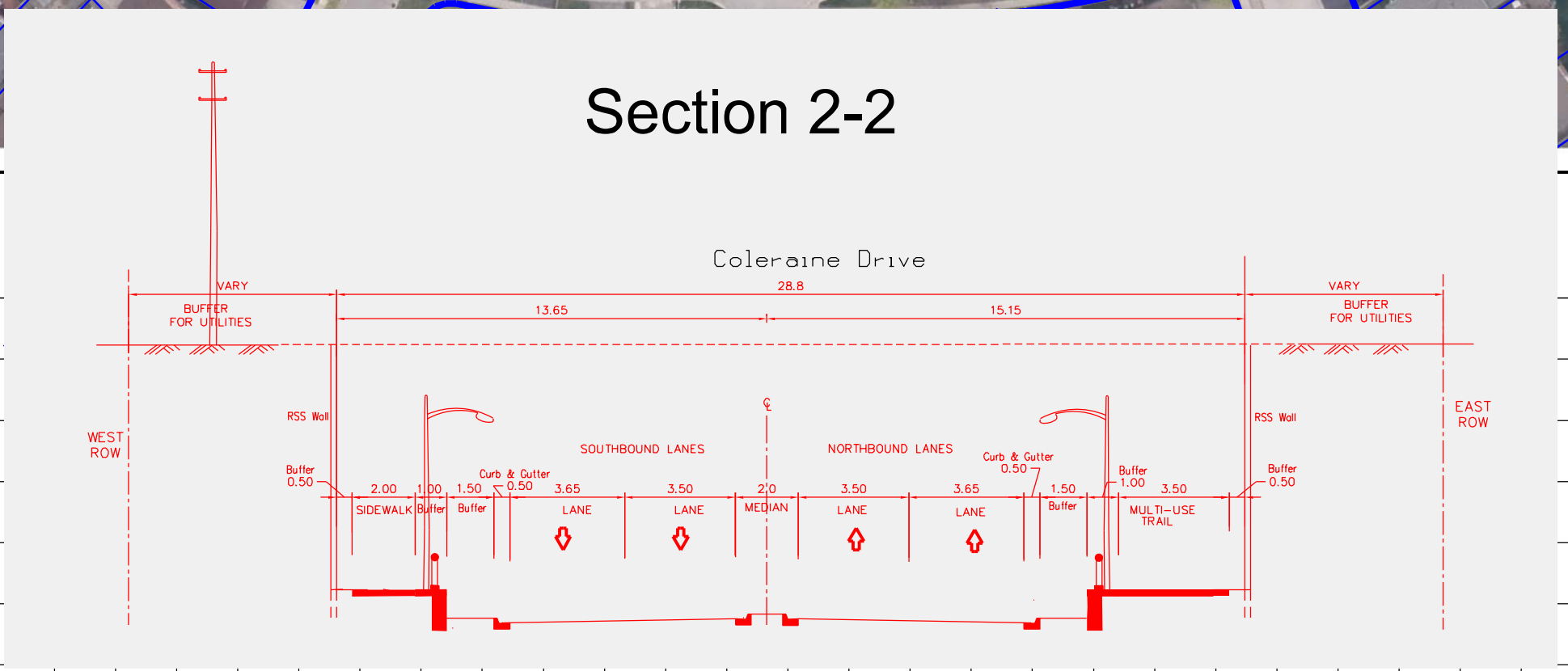
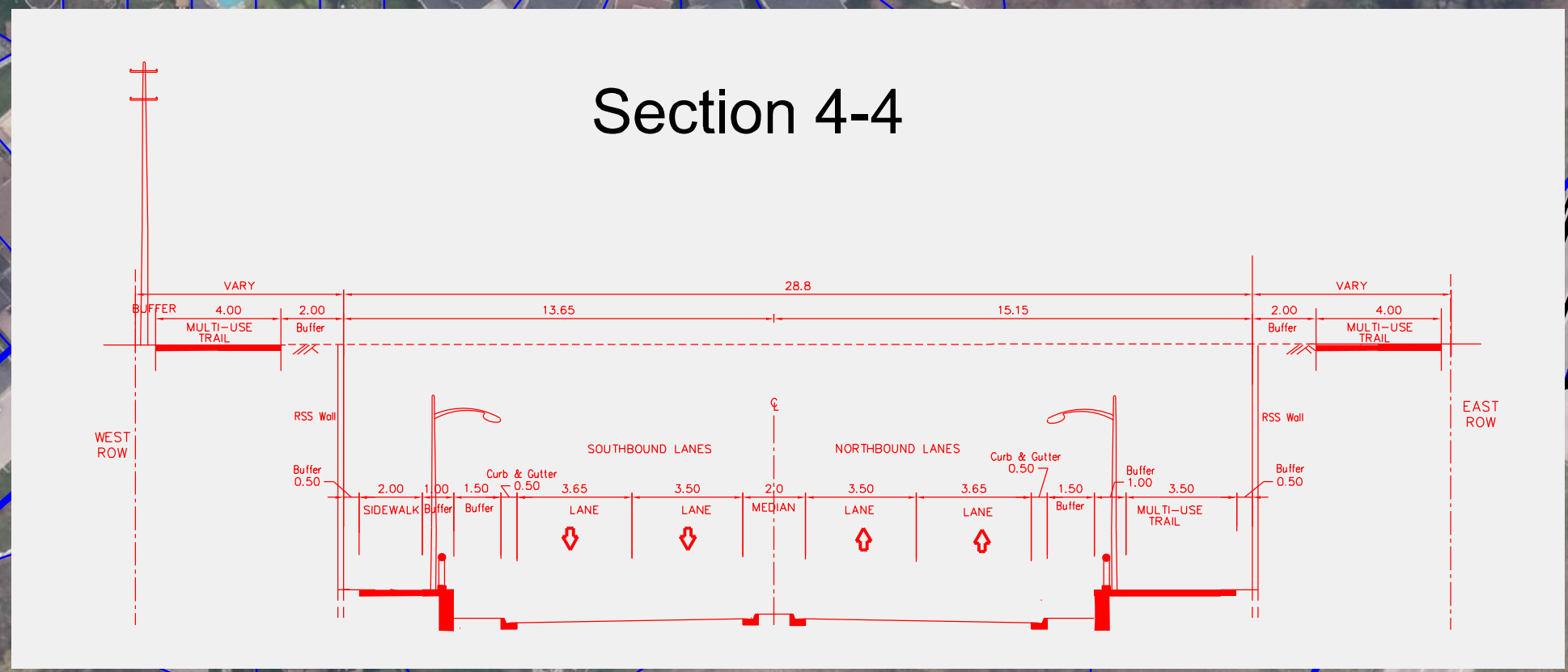
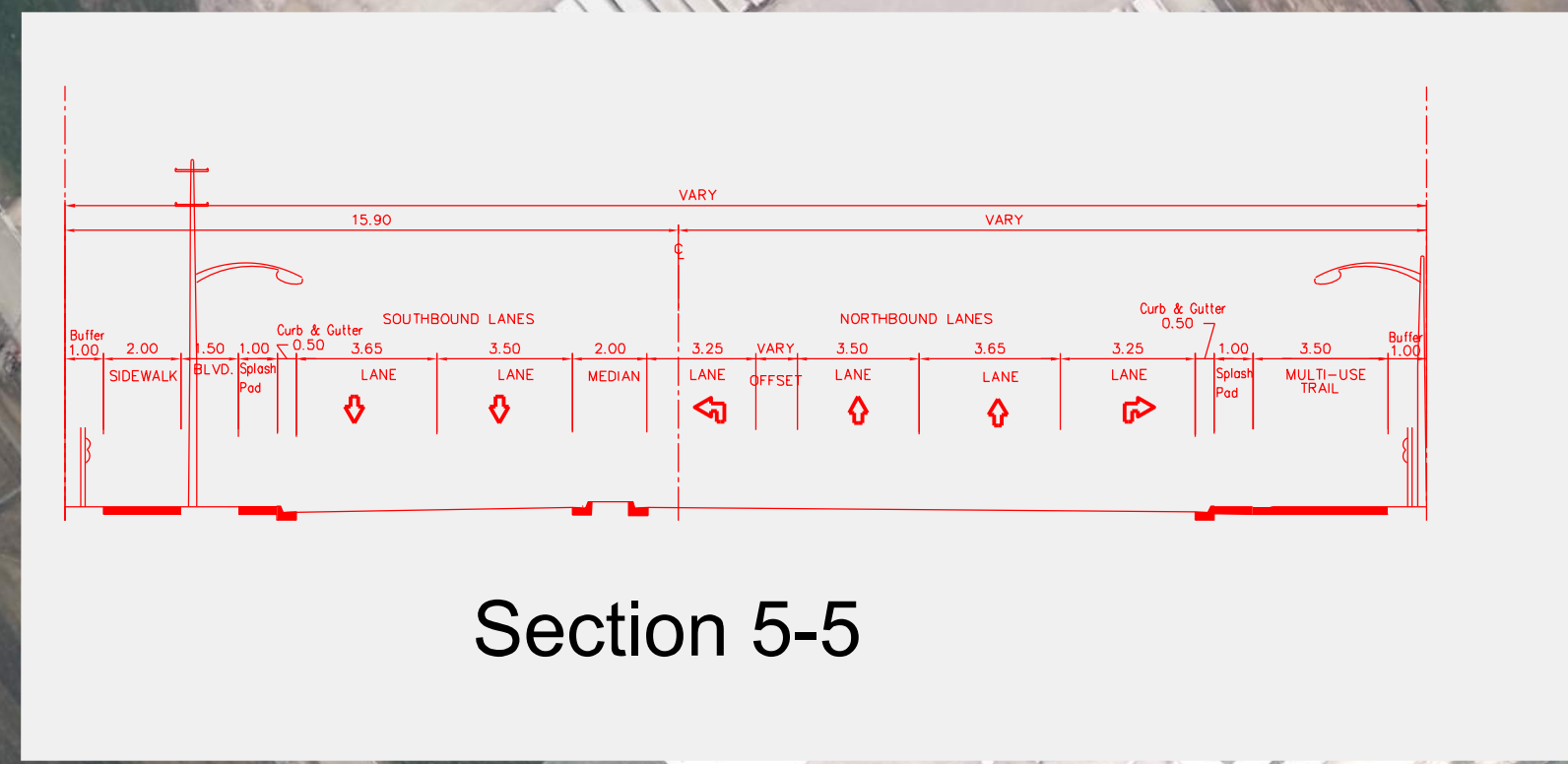
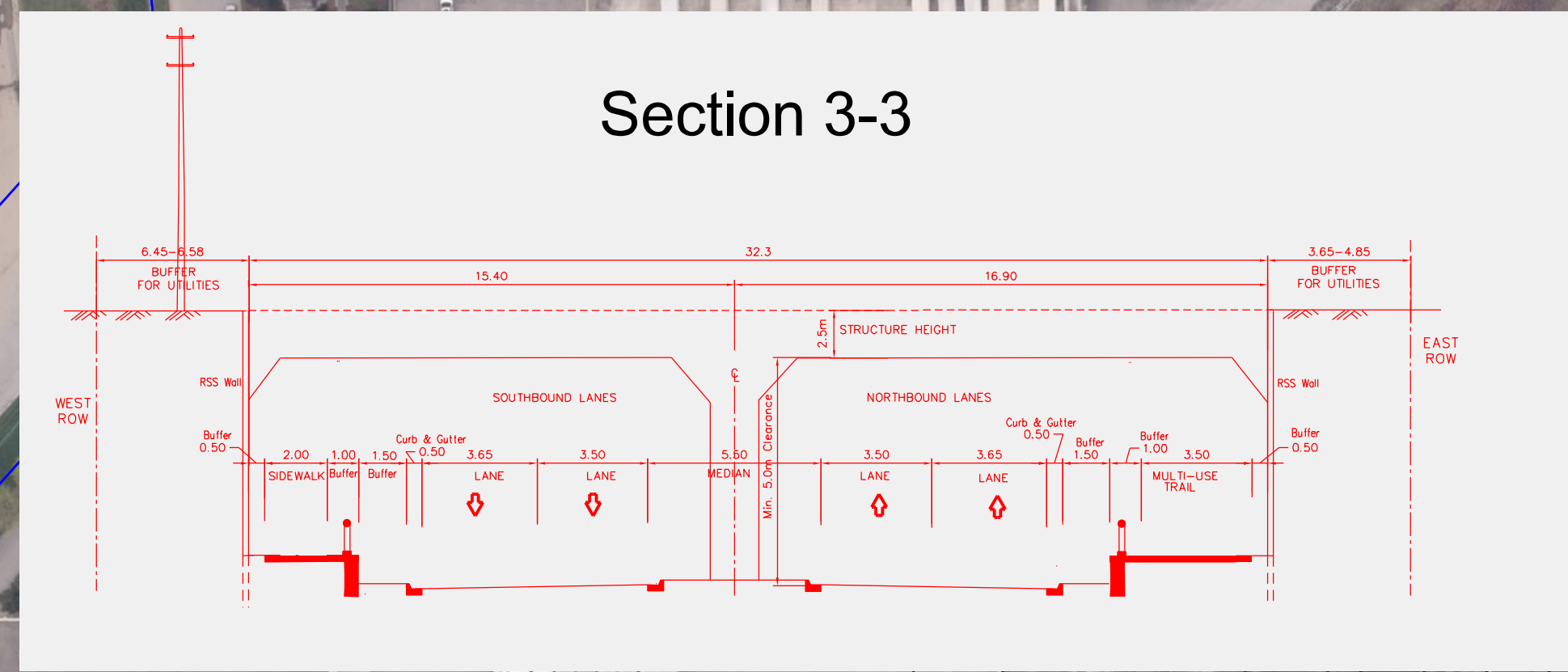
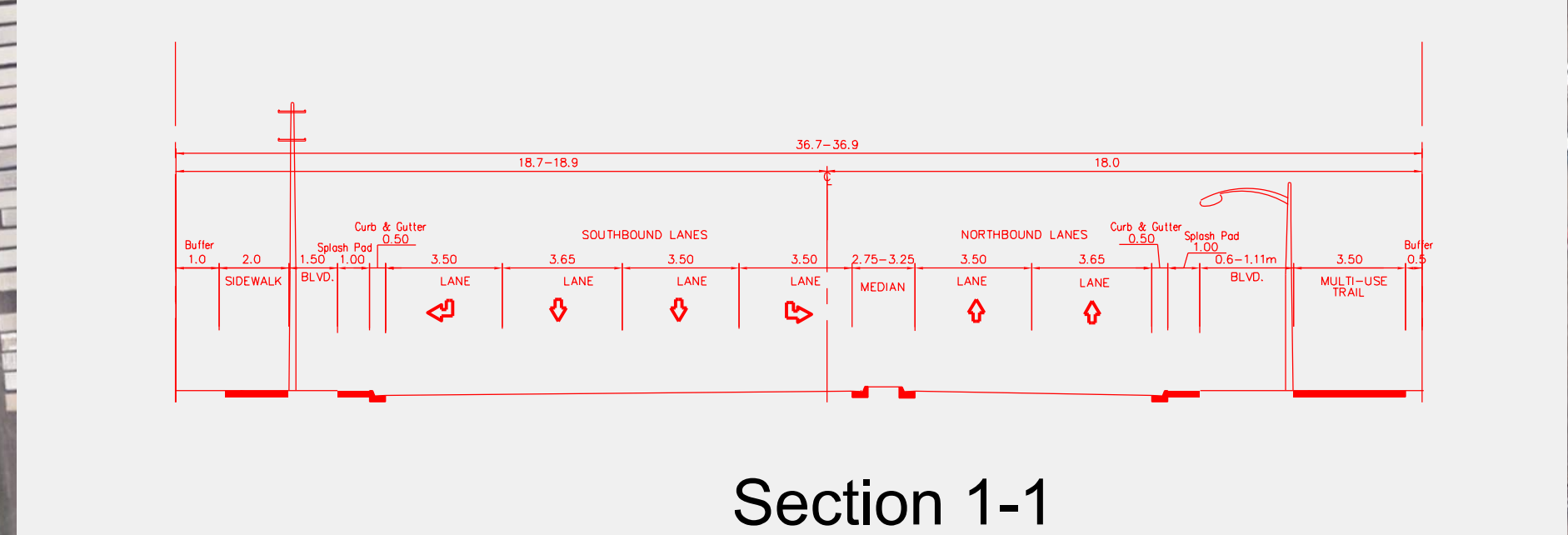
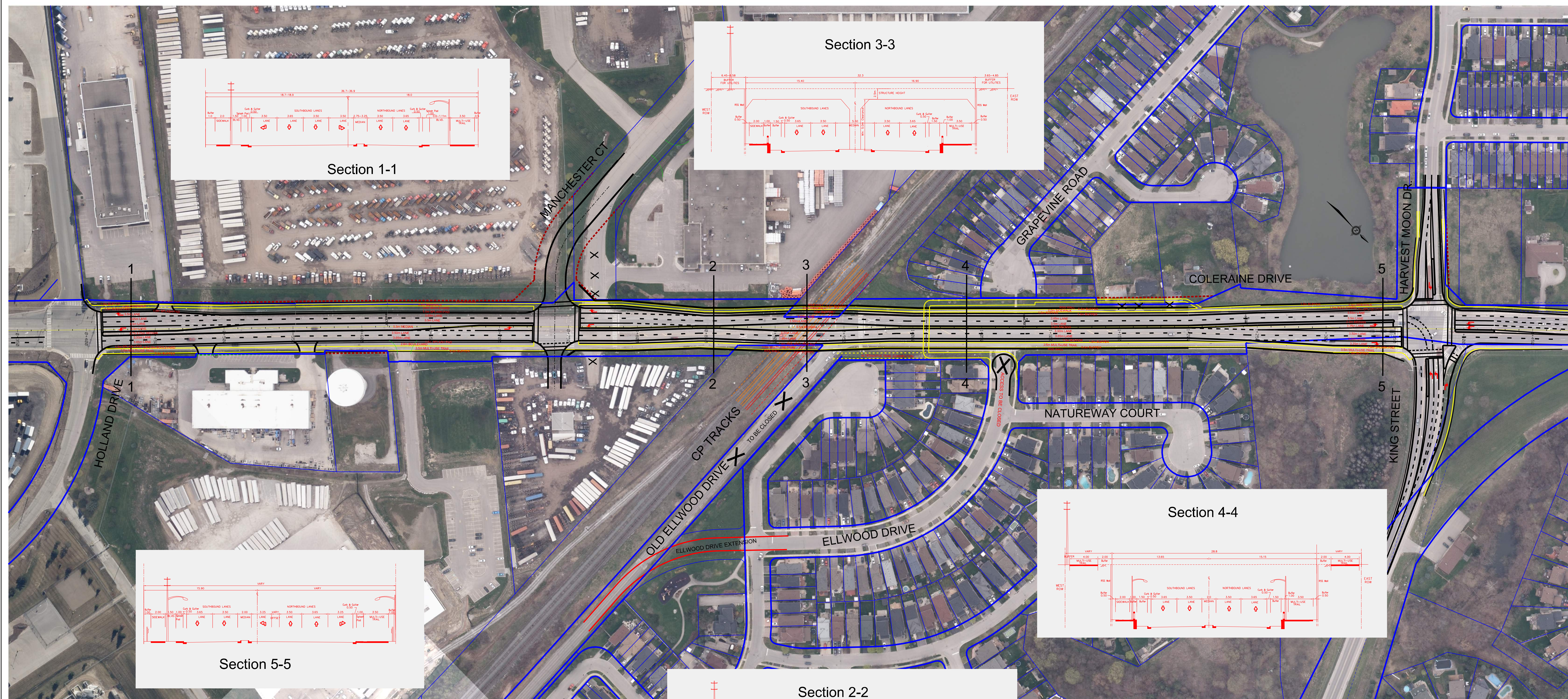
Criteria	Do Nothing	Alternative 1 - Road Under Rail	Alternative 2 - Road Over Rail
Groundwater	No impact.	High potential groundwater impacts due to temporary dewatering during construction. Earth excavation for roadway could permanently lower groundwater table.	Potential groundwater impacts due to temporary dewatering for bridge foundation during construction.
Climate Change	No improvements to stormwater infrastructure to improve resilience.	Alternative more susceptible to flooding.	Opportunity to improve resilience of stormwater infrastructure.
Stormwater Management Summary	Alternative 1 – Road Under Rail is less preferred than Alternative 2 – Road Over Rail, due to the complex stormwater management requirements, including the need for a permanent pumping system, and due to its higher potential of groundwater impacts, as a result of the deep excavations required. Also, Alternative 2 will provide the opportunity to improve the stormwater infrastructure in the area. Due to the significant impacts of Alternative 1, Alternative 2 – Road Over Rail is preferred from the Stormwater Management perspective.		
Healthy Communities			
Active Transportation - Pedestrians and Cyclists	No opportunity to improve pedestrian and cyclist safety. No pedestrian facilities provided south of the rail crossings. No dedicated bicycle facilities provided along Coleraine Drive. No protected pedestrian/cyclist rail crossing.	Provides dedicated pedestrian facilities along the full length of the corridor. Provides shared cycling facilities (multi-use trail) along the full length of the corridor. A grade separated trail crossing is provided across Coleraine Drive. Provides a protected crossing for cyclists and pedestrians.	Provides dedicated pedestrian facilities along the full length of the corridor. Provides shared cycling facilities (multi-use trail) along the full length of the corridor. A trail crossing can be provided across Coleraine Drive by underpass from Old Ellwood Drive. Alternatively, an at-grade crossing between Ellwood Drive and Grapevine Road could be provided by way of the road connection (shared between vehicles and bicycles).
Air Quality	Air quality could decrease over time due to additional vehicle delays and queuing.	The grade separation will act to minimize the air quality impact of increased traffic through improved traffic flows and reduced queuing times at intersections within the local vicinity of the project. As a result, the impact is anticipated to be positive.	
Noise	Noise levels at Outdoor Living Areas (i.e., sensitive receptor locations) will increase as traffic volumes increase.	Predicted noise levels with the road under rail alternative do not exceed the expected future noise levels without the project (i.e., the noise levels will not exceed the future 'Do Nothing' scenario levels). Comparable noise levels are expected at Outdoor Living Areas between the two grade separation alternatives. Mitigation measures will be required to reduce potential 'tunneling effect'.	Predicted noise levels with the road over rail alternative do not exceed the expected future noise levels without the project (i.e., the noise levels will not exceed the future 'Do Nothing' scenario levels). With the consideration of mitigation measures such as a localized barrier, comparable noise levels are expected at Outdoor Living Areas between the two grade separation alternatives.

Criteria	Do Nothing	Alternative 1 - Road Under Rail	Alternative 2 - Road Over Rail
Healthy Communities Summary	Both alternatives will help improve the air quality in the area due to the elimination of vehicles queuing at the rail crossing. The alternatives also provide the opportunity to improve the active transportation infrastructure in the area thus improving the safety of pedestrians/cyclists. Both alternatives will have a similar noise levels which will not exceed the future "Do Nothing" scenario. Both alternatives are the same from the Healthy Communities perspective		
Socio-Economic Environment			
Archaeology	No impact.	Portions of the study area require Stage 2 Archaeological Assessment (south of Holland Drive).	Portions of the study area require Stage 2 Archaeological Assessment (south of Holland Drive).
Cultural and Built Heritage	No impact.	No impact to any heritage properties or properties of cultural heritage value or interest.	No impact to any heritage properties or properties of cultural heritage value or interest.
Property Impacts	No impact to private property.	Property is required at the following locations: <ul style="list-style-type: none"> • Northwest corner of the King Street and Coleraine Drive intersection • West side of Coleraine Drive north of Grapevine Road • Adjacent to Coleraine Drive south of Manchester Court • For the Manchester Court realignment. Property requirements are the same as the road over rail alternative.	Property is required at the following locations: <ul style="list-style-type: none"> • Northwest corner of the King Street and Coleraine Drive intersection • West side of Coleraine Drive north of Grapevine Road • Adjacent to Coleraine Drive south of Manchester Court • For the Manchester Court realignment. Property requirements are the same as the road under rail alternative.
Land Use/ Property Access	No impact to property access.	Residential access will not be permitted onto Coleraine Drive. No potential for a direct connection between Ellwood Drive west and Grapevine Road due to geometric challenges, and so the relatively large subdivision east of Coleraine Road would only have one access (at the Station Road and Wakely Blvd Intersection). Lack of connection would also hamper emergency service response and routing. Access to commercial properties will be maintained. Some accesses will be restricted to right-in-right-out movements only. Old Ellwood Drive will be closed upstream of Coleraine Drive.	Residential access will not be permitted onto Coleraine Drive. Potential for a direct connection between Ellwood Drive west and Grapevine Road – with the existing Ellwood Drive West and Coleraine Road intersection closed, the relatively large subdivision east of Coleraine Road would only have one access (at the Station Road and Wakely Blvd Intersection). Access to commercial properties will be maintained. Some accesses will be restricted to right-in-right-out movements only. Old Ellwood Drive will be closed upstream of Coleraine Drive.

Criteria	Do Nothing	Alternative 1 - Road Under Rail	Alternative 2 - Road Over Rail
		Manchester Court will be realigned to accommodate the grade change of Coleraine Drive (less significant realignment then road over rail alternative).	Manchester Court will be realigned to accommodate the grade change of Coleraine Drive (more significant realignment then road under rail alternative).
Aesthetics	No impact.	More desirable aesthetics as no new bridge structure is required.	Less desirable aesthetics as road over rail option requires a new bridge structure located adjacent to residential properties. The close location will result in shadow impacts to adjacent properties.
Socio-Economic Environment Summary	Both alternatives will require a Stage 2 Archaeology Assessment but will not have any impact on Cultural/Built Heritage properties within the area. Similar property requirements are needed for both alternatives, however Alternative 2 will require a slightly larger requirements due to the larger realignment of Manchester Court. Alternative 1 will have significant impacts to accessibility within the local road network, due to the preclusion of a connection between Ellwood Drive West and Grapevine Road. In terms of aesthetics, Alternative 2 will be much less desirable for residents due to the bridge structure located adjacent to homes and due to shadow impacts. Overall, Alternative 2 – Road Over Rail is preferred from the Socio-Economic perspective.		
Constructability/Engineering			
Utilities	No impact.	Requires relocation of the following utilities: <ul style="list-style-type: none"> Hydro facilities on the west side of Coleraine Drive 1050 watermain 250 PVC sanitary pipeline Offers less available space to accommodate utility relocations. Two stage relocation may be required during construction to protect facilities (i.e., water supply).	Requires relocation of the following utilities: <ul style="list-style-type: none"> Hydro facilities on the west side of Coleraine Drive 1050 watermain 250 PVC sanitary pipeline Offers more available space to accommodate utility relocations.
Geometry (i.e., design speed, minimum radius, maximum grade, etc.)	No impact.	Both alternatives conform to TAC and Municipal Standards, including accommodating trucks and active transportation facilities.	
Construction Staging	No construction staging required.	More complex construction staging compared to road over rail alternative, due to extensive excavation required (9 m depth) Construction staging would require the temporary rerouting of rail tracks.	Less complex construction staging compared to road under rail alternative. Construction staging would not require the temporary rerouting of rail tracks.

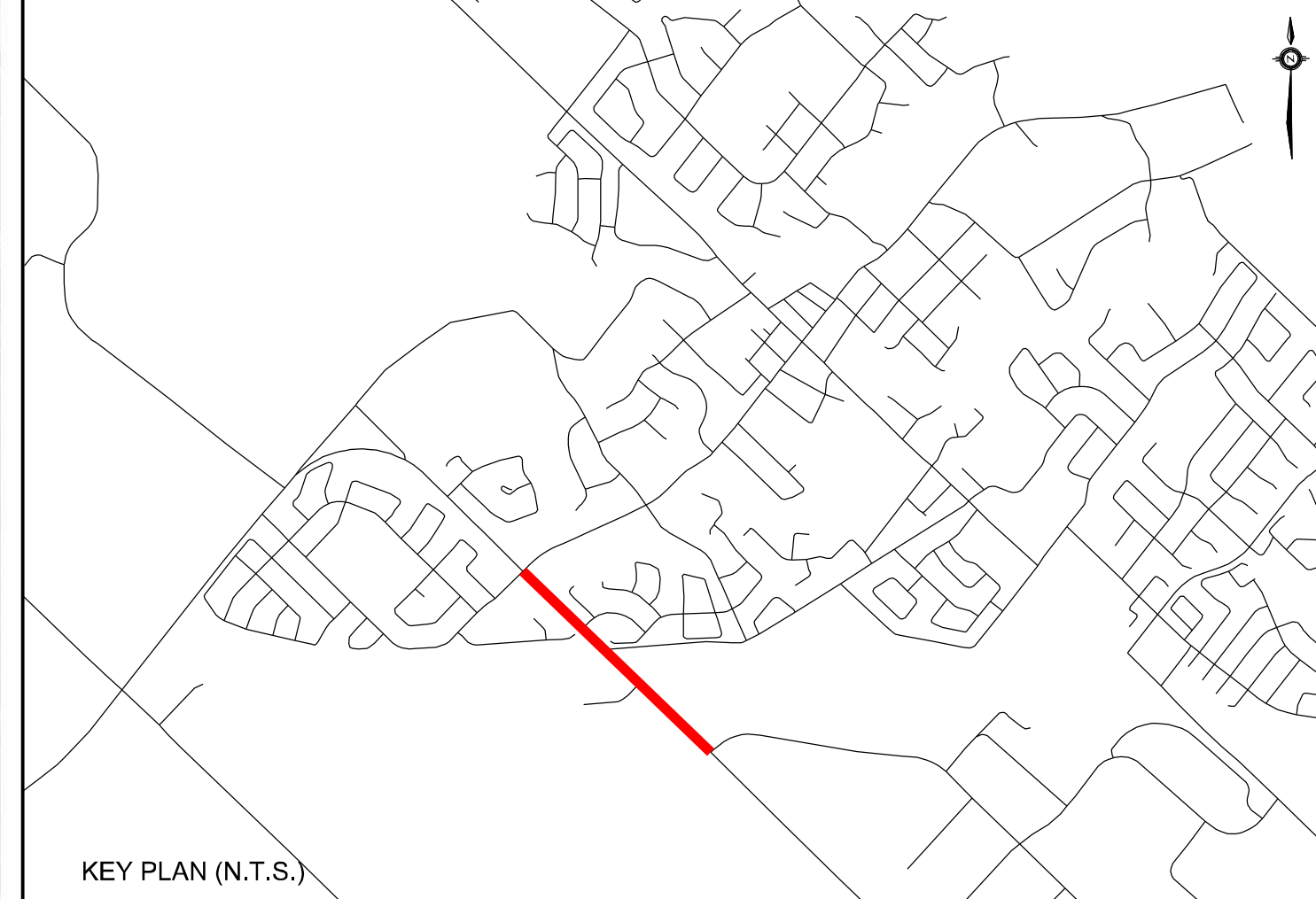
Criteria	Do Nothing	Alternative 1 - Road Under Rail	Alternative 2 - Road Over Rail
Construction Cost	No cost.	Significant construction cost compared to the road over rail alternative - \$56M	Lesser construction cost compared to the road under rail alternative - \$36M
Constructability/Engineering Summary	Alternative 1 – Road Under Rail will be much more complex to design and construct due to the utility relocation challenges and rail rerouting. This will result in a much more expensive construction cost for Alternative 1. Therefore, from a Constructability/Engineering perspective, Alternative 2 – Road Over Rail is preferred.		
Summary of Evaluation			
Overall Summary	<p>Alternative 2 – Road Over Rail is the preferred alternative.</p> <p>Both alternatives have similar impacts regarding mitigating operational issues (Transportation), vegetation and tree impacts (Natural Environment), and noise and air quality impacts (Healthy Communities). While the Road Over Rail is less desirable aesthetically and would result in shadow impacts (Socio-Economic Environment), the Road Under Rail has significant disadvantages by requiring large drainage/stormwater management requirements, including pumping, and groundwater impacts (Stormwater Management), as well as a large construction staging requirement, including temporary tracks. The large construction staging requirements and impacts also result in a significant increased cost for Alternative 1 – Road Under Rail (\$56M) compared to Alternative 2 – Road Over Rail (\$36M).</p>		
Recommendation	Not Recommended	Not Recommended	Recommended

Very Low Impact (Most Positive)	Fairly Low Impact	Medium/Ambivalent Impact	Fairly High Impact	Very High Impact (Least Positive)



SERVICE DATA					
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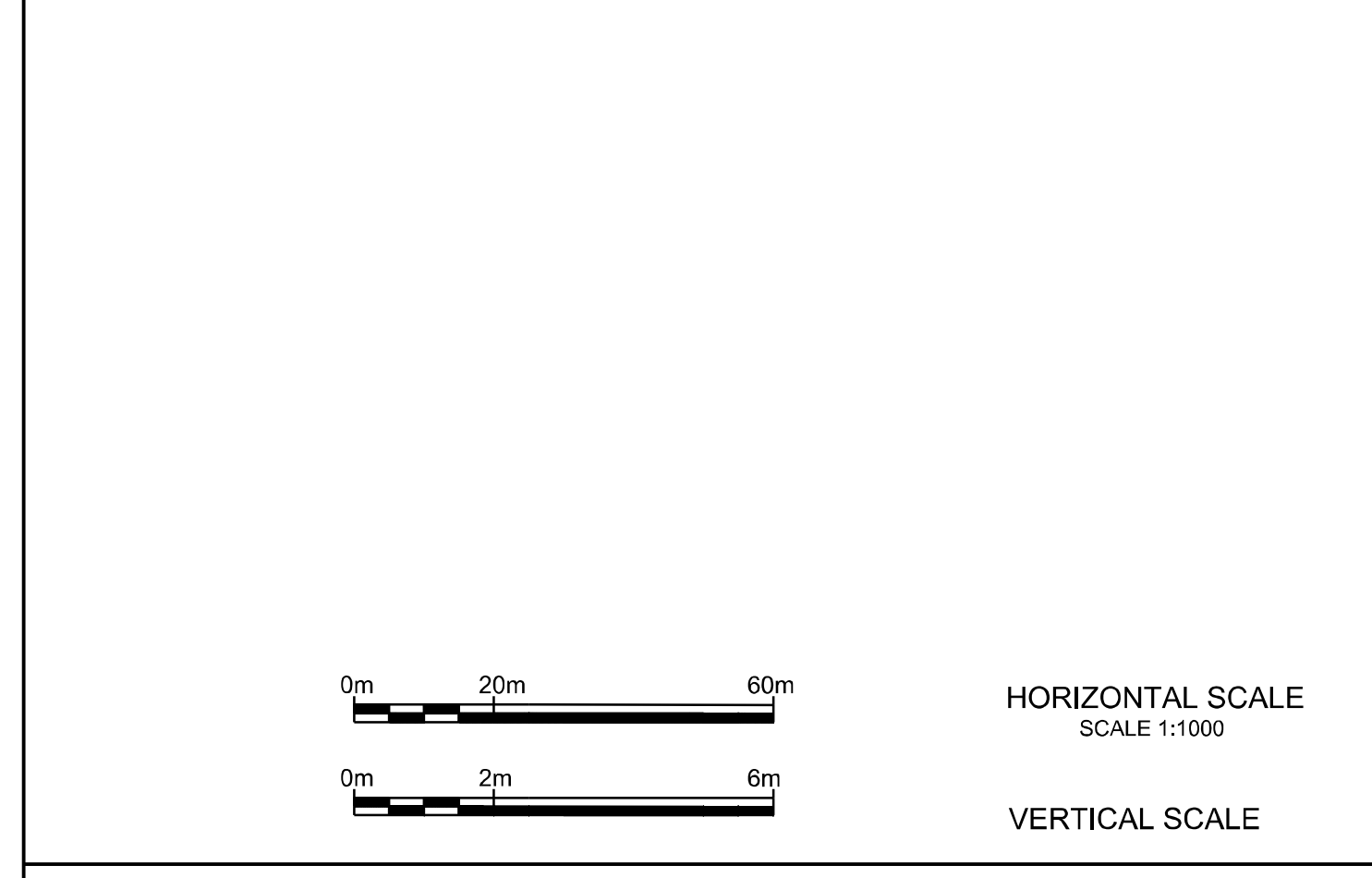
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DATE	DETAILS	INIT.
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June 2020	REVISED FOR REVIEW	S.K.



General Notes

Designed by _____
 Chkd. _____

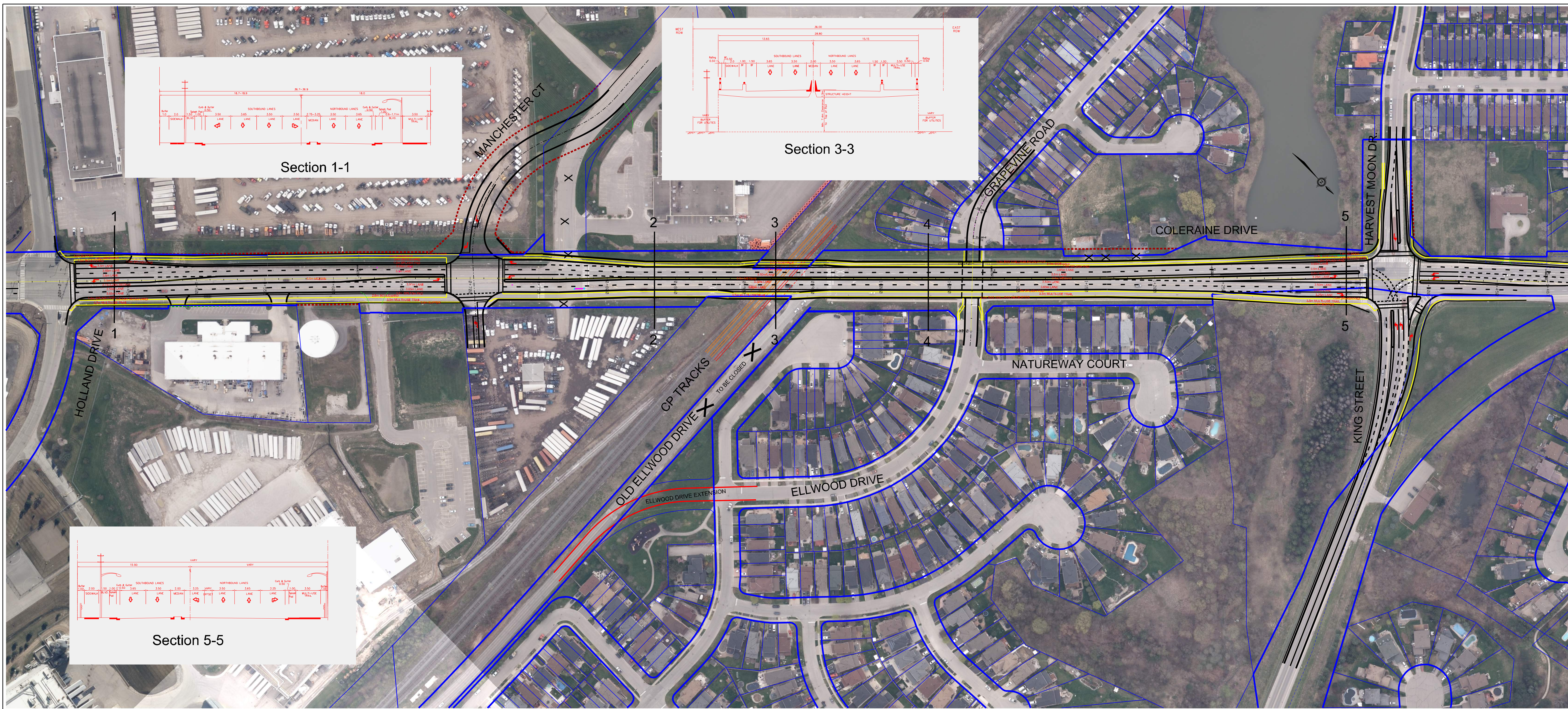
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Region of Peel
Working for you

COLERAINE DRIVE
 (HOLLAND DRIVE TO HARVEST MOON DRIVE)
RAIL OVER ROAD OPTION
PLAN & PROFILE

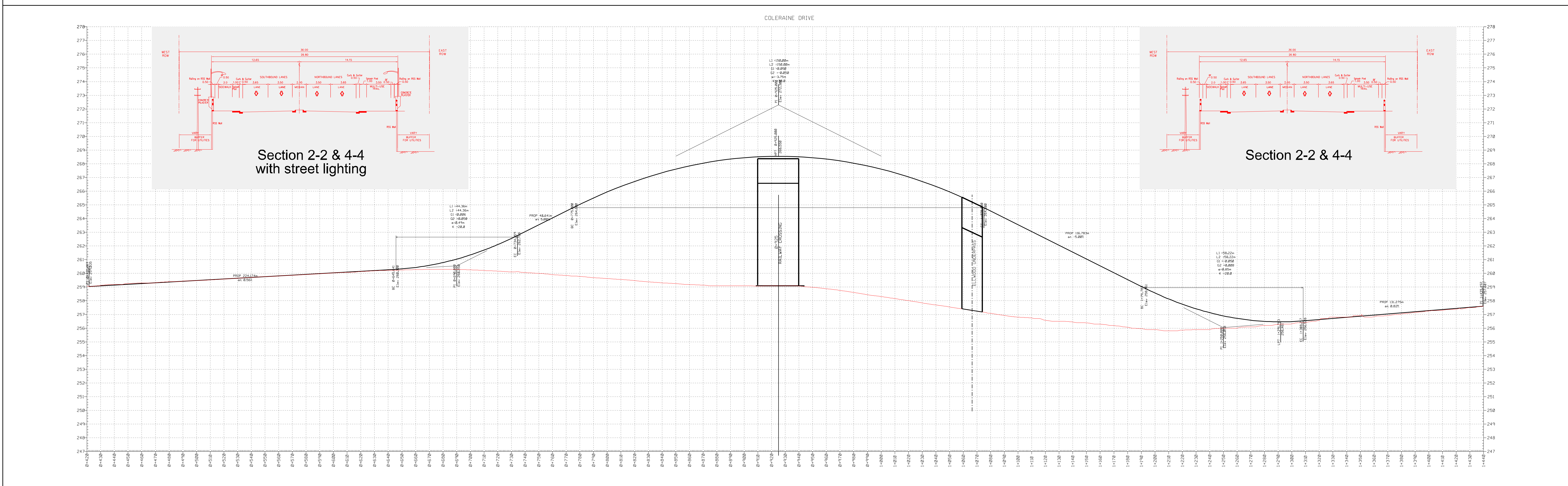
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Checked by	S.K.	Drawn by	H.G.	Plan No.	0004-D
Date	June 2020	Sheet	4 of 8		



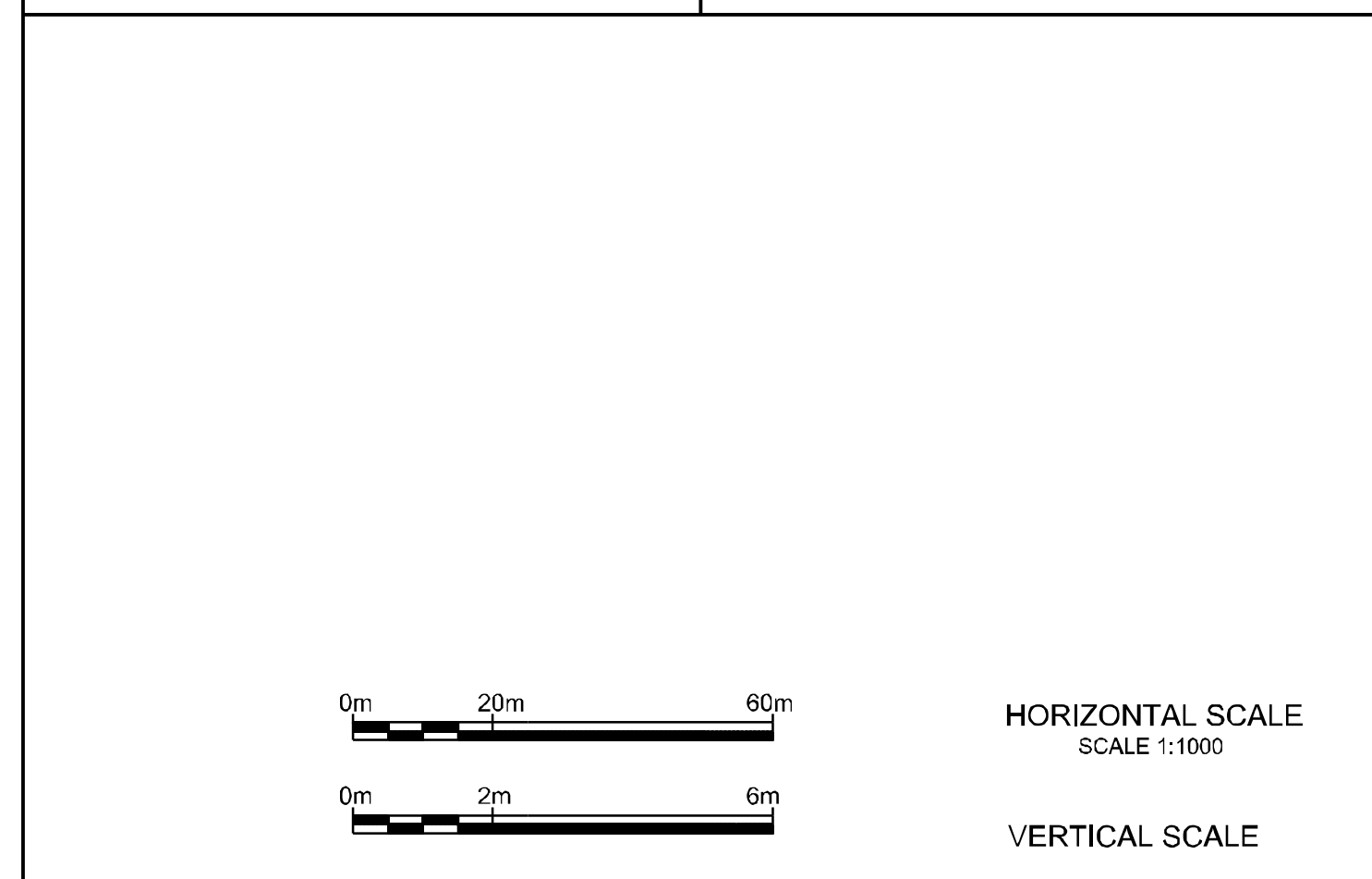
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SERVICE	DATE	INIT.	SERVICE	DATE	INIT.
REVISIONS					
DATE	DETAILS	INIT.			
September 2019	ISSUED FOR REVIEW	S.K.			
June 2020	REVISED FOR REVIEW	S.K.			



General Notes



Designed by _____
 Chkd _____
 Approved by _____



Region of Peel
Working for you

COLERAINE DRIVE
 (HOLLAND DRIVE TO HARVEST MOON DRIVE)
 ROAD OVER RAIL OPTION
 PLAN & PROFILE

STA. 0+400 TO STA. 1+500

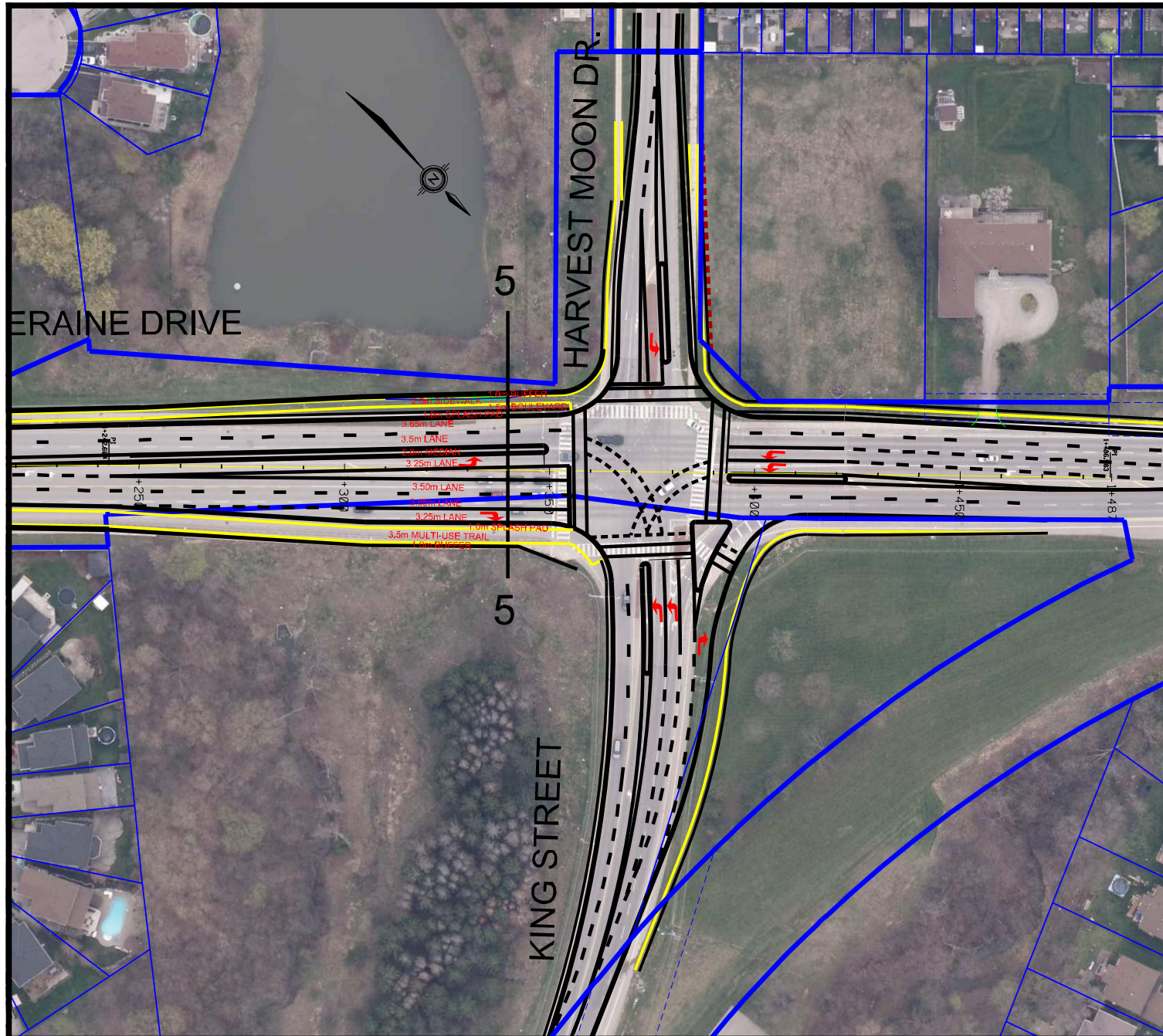
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Date	June 2020	Sheet	2 of 8		

Table 3 Coleraine Drive / King Street and Harvest Moon Drive Intersection – Detailed Evaluation and Assessment

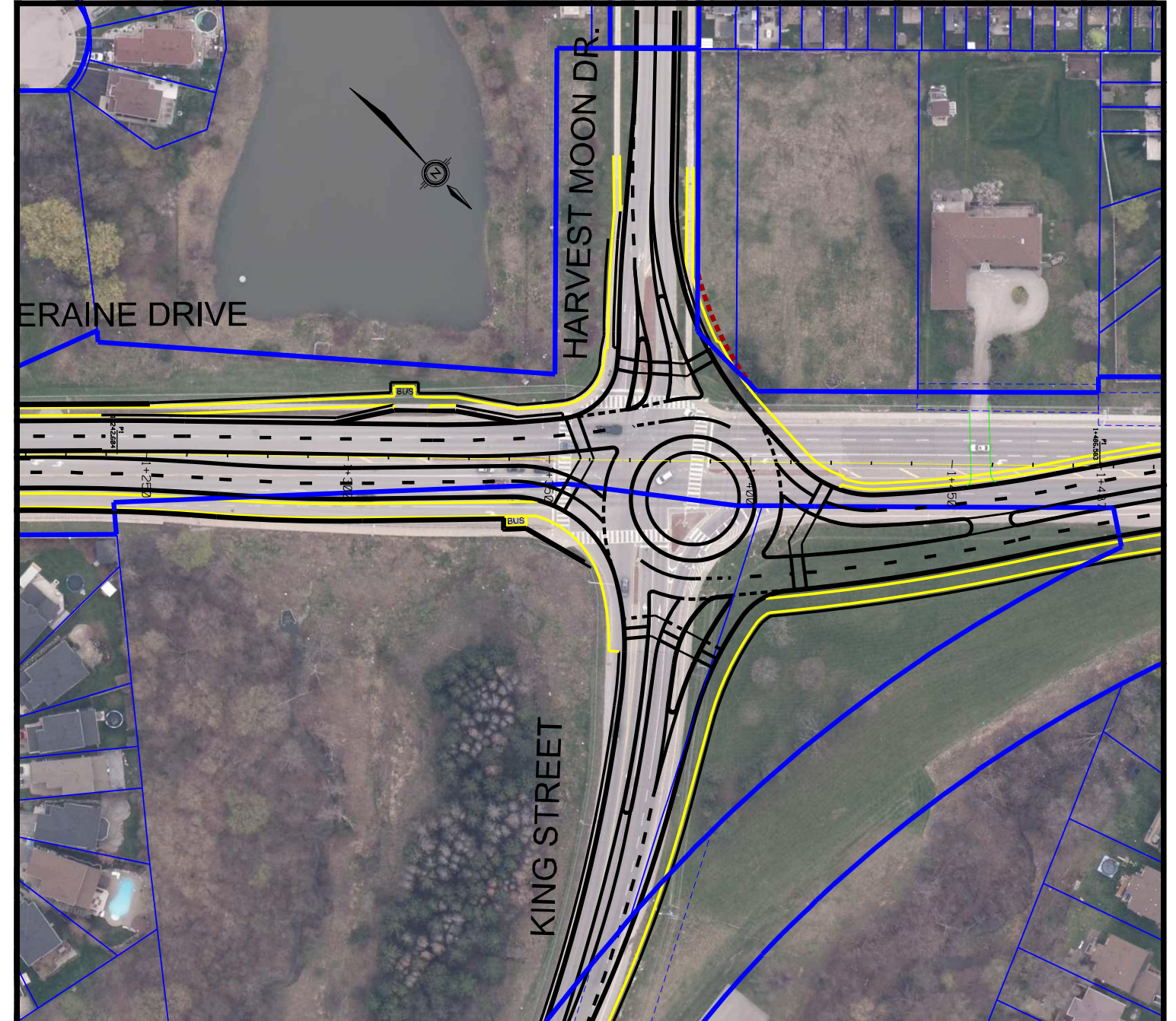
Criteria	Alternative 1 – Signalized Intersection	Alternative 2 – Roundabout
Transportation		
Peak Hour Traffic Operations	Overall level of service D in the AM peak hour, and intersection delay of 53 seconds. Overall level of service D in the PM peak hour, and intersection delay of 50 seconds.	Overall level of service E in the AM peak hour, and intersection delay of 45 seconds. Longer delays possible on Harvest Moon Drive. Overall level of service B in the PM peak hour, and intersection delay of 11 seconds.
Off-Peak Traffic Operations	Moderate wait times for side street traffic.	Low delays for all traffic movements.
Traffic Safety	Potential for high-speed turning movement and angle collisions, increasing severity.	Statistically, roundabouts tend to result in fewer injury collisions than signalized intersections and encourage slower speeds. Roundabouts reduce the severity if collisions, although it may increase non-fatal collisions.
Pedestrian Accommodation	Pedestrians have controlled crossings with audible pedestrian signals, but long exposure times (crossing up to six lanes at a time) to high-speed turning traffic.	Pedestrians have to find or create their own gap in traffic. However, crossing distances are shorter (crossing one or two lanes at a time) and pedestrians only have to look for traffic from one direction at a time.
Cyclist Accommodation	Cyclists on a multi-use path can use cross rides and not have to dismount to cross the intersection but will encounter higher-speed traffic. Cyclists in a bike lane will find left turns challenging. Can tie into the existing multi-use path on Emil Kolb Parkway.	Cyclists can claim the lane and ride with traffic, or dismount and cross at pedestrian crosswalks. If there are bike lanes, then they must terminate before and resume after the roundabout. Can tie into the existing multi-use path on Emil Kolb Parkway.
Natural Environment		
Environmentally Sensitive Areas and Slope Stability	With removal of boulevard, no impact to environmentally sensitive area on east side of Coleraine Drive at the intersection. More impact on west side of Coleraine Drive.	No impact to environmentally sensitive area on east side of Coleraine Drive at the intersection. Less impact on west side of Coleraine Drive than the signalized intersection.
Socio-Economic Environment		
Property Impacts	Property impacts on northwest corner of the intersection: 70 m ² .	Property impacts on northwest corner of the intersection: 320 m ² .
Speed Control	Ability to control vehicle speeds only during red signal indication.	Ability to control vehicle speeds at all times, allowing the area posted speed limits of 60 km/h and 40 km/h to be potentially attained.
Streetscaping Potential	Some potential with decorative concrete in medians.	More potential with decorative concrete in splitter islands and landscaping in central island.
Constructability/Engineering		
Utilities	Both options result in similar impact to underground utilities. Requires the relocation of 6 hydro poles.	Both options result in similar impact to underground utilities. Requires the relocation of 4 hydro poles.

Criteria	Alternative 1 – Signalized Intersection	Alternative 2 – Roundabout
Geometry	Preferred intersection lane configurations (as identified in Traffic Report) can be provided. Geometry can accommodate a WB-20 design vehicle.	Multi-lane roundabout can be provided as per capacity analysis. Geometry can accommodate a WB-20 design vehicle.
Construction Staging	Periodic lane closures will be necessary.	Construction staging will be more difficult than for signalized intersection, and period of construction will be longer.
Construction Cost	Approximately \$2.33M.	Approximately \$2.10M.
Summary		
Summary	A signalized intersection will be easier to stage and construct and will work reasonably well in terms of traffic operations. However, it is expected to be less safe than a roundabout, it will create more off-peak delay, and it will lead to drivers exceeding area posted speed limits.	A roundabout will be more difficult to stage and construct and will result in more property impact at the intersection. However, it will result in less environmental impact, and it will have a number of Transportation and Socio-Economic advantages over a signalized intersection.
Recommendation	Not Recommended	Recommended

Very Low Impact (Most Positive)	Fairly Low Impact	Medium/Ambivalent Impact	Fairly High Impact	Very High Impact (Least Positive)



ALTERNATIVE 1 - Signalized Intersection with dual left-turn lanes on Southbound and Westbound approaches



ALTERNATIVE 2 - Two-Lane Roundabout

COLERAINE DRIVE AND KING STREET/HARVEST MOON DRIVE INTERSECTION
ALTERNATIVE DESIGN OPTIONS