MEETING NOTES – CPR Meeting No. 2

PROJECT	Region of Waterloo – Stage 2 LRT TPA Process
OBJECTIVE	To investigate a potential relationship regarding the Stage 2 ION project. To determine if potential to collaborate exists.
DATE / TIME	March 27, 2017 @ 9:00am
LOCATION	Region of Waterloo – 100 Maple Grove Rd, Kitchener Classroom/Ops
PROJECT No.	161-07859-00

Attendees	**Organization**	**e-mail**
Tom Twigge	Canadian Pacific Railway (CPR)	tom_twigge@cpr.ca
Jennifer Benedict	Canadian Pacific Railway (CPR)	jennifer_benedict@cpr.ca
Paula Sawicki	Region of Waterloo (RMW)	psawicki@regionofwaterloo.ca
Matthew O'Neil	Region of Waterloo (RMW)	moneil@regionofwaterloo.ca
Eric Peissel	WSP	eric.peissel@wsp.com
Denise Morneau	WSP	denise.morneau@wsp.com
Sandy Nairn	WSP	sandy.nairn@wsp.com
Sonya Terek	WSP	sonya.terek@wsp.com

Item:	**Discussion:**	**Action by:**
	The following notes summarize the key discussion items and questions that were raised during the meeting. A copy of the handout from PCC No. 2 was provided, which outlines the alternatives considered, the evaluation process and the preliminary preferred route.	
1.0	**Introductions**	
	1.1 It was agreed that the intent of the meeting is primarily to gather information and discuss project objectives and constraints. CPR noted that the focus of discussion at this meeting is engineering as operations is not represented, however follow up discussions can be facilitated on operational issues as needed. 1.2 RMW and WSP provided a brief overview of recent project activities, feedback from public consultation, and key constraint areas. 1.3 CPR indicated that their primary concern is to avoid disruption to their corridors.	
2.0	**North Cambridge Area (Preston)**	
	2.1 RMW described the feedback from recent public consultation in Preston, which reflected concerns about the potential impacts of the preliminary preferred route on the established residential area. RMW and WSP noted that serving Preston is still the preferred solution however the team will be exploring additional alternatives, and there were numerous queries from the public about why the CPR corridor was not considered a viable alternative. 2.2 The challenges associated with the CPR mainline route between Maple Grove and Eagle Street were discussed, including the need for a separate crossing of Highway 401, the topography and floodplain through the Riverside Park area, the at-grade crossing at the park entrance, and the at-grade crossing of Eagle Street. The limited right-of-way at the Speed River crossing and at the entrance of Riverside Park, and the proximity of high rise buildings and other structures along King Street were noted as the main constraints to positioning the LRT corridor adjacent to the CPR line. The topography and	

Item:	Discussion:	Action by:
	floodplain impacts on the south side of the Speed River would be significant constraints to realignment of the railway. 2.3 WSP identified the CPR spur east of Preston as a potential alignment for LRT to reduce impacts on the eastern segment of Eagle Street. CPR will investigate whether this line is still in service and what operational requirements would need to be considered if LRT was located here. 2.4 RMW and WSP noted that the project team is committed to looking at any reasonable alternatives in this area, notwithstanding that some alternatives (e.g. rail realignment) would be significantly more costly or require extensive mitigation measures.	CPR
3.0	**Kitchener Area (Grand River crossing area)**	
	3.1 WSP described the proposed crossing of the Grand River on a new bridge located between the King Street bridge and the CPR bridge, and the intention to have King Street general traffic and LRT lanes on the new bridge to enable the existing King Street bridge to be converted for exclusive pedestrian and cycling use. 3.2 The extent of reconstruction of King Street north and south of the Grand River was discussed. RMW and WSP described the proposed approach to widening King Street to the west on the north side of the river to avoid impacts to the existing CPR corridor, and the proposed closure of the Riverbank Road intersection with King Street south of the and the intersection with the construction of the future Creekside access road. 3.3 CPR noted their preference that the Creekside access road be grade separated with the railway corridor, and noted that a preliminary alignment had been developed to verify technical feasibility. CPR will provide this preliminary alignment to the RMW for review. 3.4 RMW advised that discussions have been ongoing with the Ministry of Transportation on a potential route adjacent to Highway 8, as an alternative to the preliminary preferred route and crossing of the Grand River described in 3.1 above. If accepted, the reconstruction of King Street described above would not be required.	CPR
4.0	**South Cambridge Area**	
	4.1 The alignment between the Delta and Downtown Cambridge was reviewed. CPR noted that the alignment appeared straightforward and there were no concerns evident, subject to more detailed review.	
5.0	**General**	
	5.1 CPR requested a letter be provided that outlines specific technical inquires and information required in detail, and alternatives that the team would like to consider in each segment, which may include: • Yard track requirements • Separate crossing of Highway 401 • Flood history (the project team will also follow up with GRCA to obtain available information) • Horizontal and vertical alignment requirements, and the existing alignment and profile of the line (especially through Preston) • Cross-section requirements 5.2 CPR requested sketches of the alternatives to accompany the letter. 5.3 CPR noted that having a list of specific issues and options will enable CPR to comment directly on the feasibility and constraints/mitigation that would need to be addressed. 5.4 WSP requested guidance on unit costing for railway realignment to enable high level cost estimating. CPR advised that the cost can vary significantly depending on local constraints, and therefore parametric costs are typically not applied on their facilities. CPR agreed to provide assistance with cost estimating as part of the review of the letter and drawings.	WSP WSP CPR

MEETING NOTES – Ministry of Transportation (MTO)
Meeting No. 4

PROJECT	Region of Waterloo – Stage 2 LRT TPA Process
OBJECTIVE	To present refinements to the proposed new alternative for the Waterloo LRT alignment between River Road and King Street, and receive MTO's feedback
DATE / TIME	September 13, 2017, 10:00 am
LOCATION	Ministry of Transportation, West Region 659 Exeter Road, London
PROJECT No.	161-07859-00

Attendees	Organization	e-mail
Scott Howard	MTO – Planning & Design	scott.howard@ontario.ca
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Sarah Roberts	WSP	sarah.roberts@wspgroup.com
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Item:	**Action by:**
RMW and WSP provided a brief presentation outlining the project status and refinements to the proposed LRT alignment paralleling the west side of Highway 8 between River Road and King St. These notes summarize the discussion points and action items. The presentation slides are appended for reference, although it should be noted that the slides were not presented in their entirety.	
1. Proposed LRT Alignment – West Side of Highway 8	
1.1. WSP presented a comparative assessment of potential LRT alignments on the east side, median and west sides of Highway 8, identifying the west side as the preferred location. A typical cross-section and concept plan were presented for comment.	
1.2. WSP noted that the future cross-section for Highway 8 is in accordance with MTO's direction following Meeting No. 3 on February 28 (3.0 m median shoulder, HOV lanes+buffer, 3-3.75 m through lanes, 3.0 m outside shoulder). MTO advised that the ultimate cross-section will also need to be accommodated. MTO will confirm the ultimate Highway 8 requirements, including whether an additional general traffic lane should be protected,	MTO

Item:	Action by:
based on provisions being made at the River Road structure.	
1.3. MTO noted that for enforcement purposes, the shoulder adjacent to the HOV lane may need to be wider than shown on the typical cross-section. WSP will review.	WSP
1.4. MTO indicated that the large cut slope north of the Grand River may change in the future (e.g. with widening for any additional Highway 8 lanes) and so the LRT corridor should not be dependent on the slope remaining as existing. MTO also noted artesian conditions exist in this area.	
1.5. MTO advised that measures must be in place to contain snow falling from or being cleared from the LRT structure so that it will not impact visibility for traffic on Highway 8.	
1.6. With regard to the offset between Highway 8 and the LRT alignment, MTO indicated that 3m would likely not be wide enough for maintenance purposes. WSP noted that routine regular maintenance could be performed from the top so access from Highway 8 would only be required in the case of major capital repair.	
1.7. MTO stated that space for utilities within the corridor must be maintained, including any clear offsets utility providers may require for maintenance/ access.	
1.8. MTO indicated that they will need more justification as to why the LRT corridor needs to be on MTO ROW before a decision on whether this will be acceptable. MTO noted that LRT encroachment onto the MTO ROW places restrictions on MTO's ability to widen the freeway and potentially for maintenance, and thus a full examination of the implications needs to be conducted before MTO can determine their position.	RMW/WSP
2. North Cambridge (Preston)	
2.1. WSP presented a high level review of potential alignment alternatives in the North Cambridge section, which are being investigated in response to direction from Regional Council following the last round of public consultation. An option paralleling the S-E ramp at the Highway 401/King Street interchange and along the south side of Highway 401 to Fountain Street was discussed.	
2.2. It was confirmed that this alternative would only be feasible following MTO's planned future reconfiguration of the interchange, and that the LRT alignment is consistent with the future ramp locations.	
2.3. WSP and RMW noted that the Region would like to show this as a potential option at upcoming public consultation centres, as a line diagram and without any evaluation or preference stated. MTO indicated agreement with this alignment being shown as a potential option, but requested the opportunity for review and input during the evaluation process.	RMW/WSP
3. Next Steps	
3.1. WSP will investigate three alignment options: LRT corridor at a 14m offset from the MTO ROW, LRT corridor on the outside limit of the ROW, and LRT corridor within ROW. Each option will be compared using criteria such as impacts to property, environment, and constructability of any future Hwy 8 widening/maintenance.	WSP
3.2. To aid in WSP's design and evaluation, MTO will provide the design surface and design cross-sections for Contract 2008-3023.	MTO

Item:	Action by:
3.3. MTO will confirm who owns the property west of the MTO ROW south of the Grand River, it is noted as owned by the Province.	MTO

MEETING NOTES – GRT and City of Cambridge Meeting

PROJECT	Region of Waterloo – Stage 2 LRT Transit Project Assessment
OBJECTIVE	Review of South Cambridge and Terminal Station Options with City of Cambridge and Grand River Transit
DATE / TIME	January 22, 2018 / 10:30 am to Noon
LOCATION	Region of Waterloo 100 Maple Grove - Ops Boardroom
PROJECT No.	161-07859-00

Attendees	**Organization**	**e-mail**
Matthew O'Neil	Region of Waterloo	moneil@regionofwaterloo.ca
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Paul Smithson	City of Cambridge	NoonanS@cambridge.ca
Shannon Noonan	City of Cambridge	SmithsonP@cambridge.ca
Eric Peissel	WSP	eric.peissel@wsp.com
Denise Morneau	WSP	denise.morneau@wsp.com

Item:	**Discussion:**	**Action by:**
1.	WSP provided an overview of the Terminal Station alternatives in Downtown Cambridge (T1, T2, T3), noting that from the perspective of rapid transit, all of the options are technically and operationally feasible. WSP indicated that the key criteria in comparing the options are the interface with local transit and the City's vision for Downtown Cambridge in terms of development and intensification.	
2.	The potential to consider an infill station at Beverly/Dundas was discussed. It was agreed that none of the terminal station options (T1, T2/T3 with an additional station at Wellington/Main), would preclude a station at Beverly/Dundas. GRT noted that most routes would still converge in Downtown Cambridge, so although some integration could occur at this location with service on Dundas, a stop at Beverly/Dundas is not considered a high priority location for route connectivity.	
3.	GRT summarized their feedback on the three terminal station options T1, T2 and T3, with detailed written comments to follow *(Post meeting note: Received, see Attachment 1)*. Key discussion points include:	
	3.1 The T1 option could be improved through potential re-orientation of the LRT platforms and reconfiguration of the bus facilities, parking and access to improve accessibility and integration and maintain some redevelopment potential. A functional redesign of the terminal should be recognized in the evaluation; GRT will provide an estimated cost. It should also be recognized that construction of the LRT and terminal improvements will temporarily impact bus operations.	GRT
	3.2 The T2 option will require a creative design to accommodate the number of bus platforms required; consideration could be given to positioning the platforms along the curbside of Bruce, Ainslie and Water, enabling the compatible redevelopment of the interior of the block. There are concerns that Bruce Street is not sufficiently wide to accommodate bus stops and LRT; this will need further examination to confirm technical feasibility.	WSP
	3.3 The alignment and orientation of the T3 option could be improved in	

Item:	Discussion:	Action by:
	preliminary design over the current concept design to better integrate the LRT station with bus platforms. T3 provides better integration with through-routes on both Concession and Ainslie through a pedestrian connection from the LRT station to Concession.	
	3.4 The T2 and T3 options would require the construction of additional driver facilities in southwest and southeast Galt, which should be recognized in the evaluation. GRT will provide an estimated cost. GRT noted that T2 and T3 appear to be more efficient for cross-town route patterns, with shorter overall route lengths (T3 somewhat improved over T2), and that this could translate into reduced platform requirements compared to the existing Ainslie facility. GRT also noted that the additional stop at Wellington/Main provides good connectivity for pedestrians closer to the downtown core.	GRT
	3.5 GRT noted that overall, T3 appears to be preferred by a small margin over T2, however if the technical challenges with positioning bus platforms could be resolved, T2 and T3 would be comparable. In both cases, the additional stop at Wellington/Main is considered a significant benefit, providing better access to density and redevelopment in the Downtown area.	
	3.6 The number of bus bays required for the Terminal Station area will be established by GRT during preliminary design for the preferred alternative, based on routing needs. Consideration will need to be given to platform needs for other operations (Coach Canada, GO Transit).	
	3.7 All of the options will require funding and sufficient time to complete planning/approvals, design and implementation of the Downtown Cambridge terminal and other facilities in time for the commencement of LRT service.	
	3.8 WSP will prepare the comparative analysis for the criteria related to integration and bus operations and circulate this in draft for GRT review in advance of the next TAC meeting.	WSP
4.	The City of Cambridge advised that the City is currently developing a Secondary Plan for the downtown core; the study had not been contemplating alternative locations for the transit facility and thus does not currently have a position on which option would be preferred. In order to ensure that the broader context of the vision for Downtown is captured, a presentation will be provided to the City's Senior Management Team at their next meeting on January 31. RMW and WSP will provide assistance to the City in compiling material for that meeting, including concept plans and speaking points. (*Post Meeting Note: the City provided feedback on the options on February 2, see Attachment 2)*.	RMW/WSP

Distribution: All attendees

These meeting notes are considered to be accurate summary of the items discussed. Please advise Denise Morneau (denise.morneau@wsp.com) of any discrepancies, errors or omissions, otherwise these meeting notes will be accepted as written.

MEETING NOTES – Ministry of Transportation (MTO)
Meeting No. 5

PROJECT	Region of Waterloo – Stage 2 LRT TPA Process
OBJECTIVE	To confirm the K3b option to be carried forward for evaluation, and to identify MTO policy requirements for North Cambridge Alternative "M"
DATE / TIME	February 5, 2018, 11:00am
LOCATION	Ministry of Transportation, West Region 659 Exeter Road, London
PROJECT No.	161-07859-00

Attendees	**Organization**	**e-mail**
Dan Barber	MTO Corridor Management	Dan.Barber@ontario.ca
Martin Favell	MTO Planning & Design	Martin.Favell@ontario.ca
Martin Haalstra	MTO Structural	Martin.Haalstra@ontario.ca
Scott Howard	MTO Planning & Design	Scott.Howard@ontario.ca
Michael Plant	MTO Program Planning	Michael.Plant@ontario.ca
Scott Reid	MTO Planning & Design	Scott.Reid@ontario.ca
Dave Secord	MTO Corridor Management	David.Secord@ontario.ca
Andrew Turnbull	MTO Structural	Andrew.Turnbull@ontario.ca
Susan Wagter	MTO Environmental	Susan.Wagter@ontario.ca
Roger Ward	MTO Planning & Design	Roger.A.Ward@ontario.ca
Matthew O'Neil	Region of Waterloo	moneil@regionofwaterloo.ca
Denise Morneau	WSP	denise.morneau@wsp.com
Sarah Roberts	WSP	Sarah.Roberts@wsp.com
Maged Ibrahim	WSP	Maged.Ibrahim@wsp.com

Item:	**Discussion:**	**Action by:**
	RMW and WSP provided a brief presentation outlining the project status and proposed refinements to the Stage 2 ION alignment alternative paralleling the west side of Highway 8 between River Road and King St. These notes summarize the discussion points and action items. The presentation slides are appended for reference.	
1.	**Proposed LRT Alignment – West Side of Highway 8 (K3b)**	
1.1.	It was noted that RMW and WSP will be returning on February 21 to brief MTO senior management and seek consensus on an alignment option to be carried forward for evaluation.	
1.2.	The Highway 8 cross-section as presented includes 3 general purpose lanes and 1 HOV lane in each direction. MTO has requested that this be updated to reflect an ultimate cross-section of 4 general purpose lanes and 1 HOV lane in each direction.	RMW/WSP
1.3.	MTO questioned how natural environment impacts were assessed and noted that the physical footprint, at grade, of the LRT structure itself is similar or identical for each alternative through the valley. The project team's natural environment specialist has advised that, even with the same footprint, alignments offset further from the Highway 8 isolate a portion of an environmentally significant area from the larger complex and thus should be considered to be impacted. MTO suggested that temporary	

Item:	Discussion:	Action by:
	(construction) impacts and permanent impacts be considered separately. WSP will seek additional details from the natural environment specialist on the nature of the environmentally significant area and incorporate this into the February 23 presentation.	RMW/WSP
1.4.	WSP confirmed that all alternatives cross into the median of King Street before the Highway 8 SB exit ramp merges with King Street, and thus there are no operational impacts at the ramp.	
1.5.	MTO advised that the wedge-shaped property line adjacent to Hidden Valley Drive does not appear to match MTO's designated right-of-way, but is likely owned by MTO as a remnant of a residential property purchased to widen Highway 8. MTO will review whether there is a highway need for this wedge and, if not required, the alignment for Alternative 1 could be modified to cross this property.	MTO
1.6.	WSP noted that opportunities to reduce property impacts through the use of retaining walls has been explored but will not reduce the number of full buy-outs with Alternative 1.	
1.7.	With Alternative 2, MTO noted that although the LRT infrastructure is outside the Highway 8 ROW, there is grading inside the ROW to match the embankment. WSP clarified that the intention was to accommodate all permanent LRT infrastructure outside the ROW, but enable tying in of the grade on the embankment through a temporary easement. It was agreed that the embankment will be modified with the widening of Highway 8. WSP will project the new embankment slope with the widened Highway 8 cross-section to examine how the grades will match in future. WSP also confirmed that the intention is to manage drainage within the LRT corridor.	WSP
1.8.	MTO asked that any additional clearance requirement of the LRT system, within which there would be constraints on activities or built features due to potential impacts on LRT operations, be shown on the cross-sections. This may include, for example, an offset to adjacent construction that might have a vibration impact or affect LRT power or communications. RMW advised that construction equipment or personnel cannot come within 3.0 m of the overhead catenary system, measured in any direction, including the overhead wires, supporting brackets, and poles. MTO noted that future Highway 8 construction or maintenance operations should not be encumbered due to the presence and proximity of the LRT corridor.	RMW/WSP
1.9.	MTO requested that the ROW identified for LRT include all construction and maintenance purposes, such as regular maintenance and inspection to rehabilitation of the superstructure, including a maintenance road at grade, if needed. WSP noted that regular inspection and maintenance will be carried out from track level, since all of the equipment, conduit, utilities etc. will be located on the structure at track level. WSP indicated that since de-icing chemicals will not be used on the LRT alignment, inspection and maintenance of the underside of the bridge and columns would be required relatively infrequently. WSP and RMW will examine how ground-level access to the corridor would be provided, and show this on the plan.	RMW/WSP
1.10.	For Alternative 3, MTO indicated that the section north of the Grand River should be elevated on a structure instead of a retaining wall, to avoid a potential constructability issue for future highway widening. The possibility of RMW constructing a retaining wall which would accommodate MTO's future widening was discussed; MTO noted that there has not yet been a planning study or EA approval for the ultimate cross-section, therefore MTO may not be able to commit to a location or design. For the purposes of the planning review, it was agreed that a structure will be shown, and MTO will review this further internally.	RMW/WSP MTO

Item:	Discussion:	Action by:
1.11.	With Alternative 3, MTO advised that the alignment at River Road appears to be located too close to the structure and retaining walls at the River Road underpass. WSP will review this in more detail and adjust the alignment.	RMW/WSP
1.12.	It was agreed that the study area includes four distinct sections, and that consideration could be given to a combination of alternatives providing different offsets from Highway 8 within each section: a) north of the Grand River through the embankment area, b) Grand River crossing, c) south of the Grand River through the floodplain, and d) crossing the King Street off-ramp.	
1.13.	WSP will make the following modifications to the summary table comparing the alternatives: • Amend "Property Requirements" to include all land affected (including MTO owned land), and not just privately owned land. • Update "Environmental Impacts" in relation to the effects of isolating a portion of the environmentally sensitive area between the Highway 8 corridor and the LRT corridor from the larger natural feature. • Clarify the descriptions of the three alternatives in the header row.	RMW/WSP
1.14.	WSP requested the design files for the Highway 8/King Street SB exit ramp, in order to verify vertical alignment details.	MTO
2.	**North Cambridge "M" Alternative**	
2.1.	RMW described the on-going process to examine additional route alternatives in the North Cambridge (Preston) area, including Alternative "M" which is located within the MTO right-of-way adjacent to the Highway 401/King Street S-E ramp. RMW requested MTO's feedback on the Alternative M alignment and setback requirements as it relates to MTO's corridor management and future expansion requirements, in order to advance concept design of the alternative.	
2.2.	RMW and WSP described the proposed alignment, located along the property line adjacent to a noise wall separating the residential properties on Hillcrest Road/Kitchener Road from the MTO corridor. It was noted that although the LRT corridor appears to physically fit within the ROW, it provides for minimal separation between the existing and EA approved future S-E ramp. MTO advised that in order to accommodate the future implementation of the ultimate King Street and Highway 8 interchanges, the 14 m corridor management setback from the right-of-way would be applied, and that an enhanced setback may be required. MTO confirmed that at this location, the right-of-way is the limit of MTO's property, which corresponds to the rear lot line of the adjacent residential properties.	
2.3.	RMW and WSP noted that due to the proximity of the existing King Street underpass, it would be necessary for the LRT to cross the S-E ramp at grade, incorporating a gate for traffic control. MTO indicated that an at-grade crossing of the interchange ramp would not be permitted.	
2.4.	WSP will show the EA approved Highway 401/King Street interchange on all display material.	RMW/WSP

Distribution: All attendees

These meeting notes are considered to be accurate summary of the items discussed. Please advise Denise Morneau (denise.morneau@wsp.com) of any discrepancies, errors or omissions, otherwise these meeting notes will be accepted as written.

MEETING NOTES – Ministry of Transportation (MTO)
Meeting No. 6

PROJECT	Region of Waterloo – Stage 2 LRT TPA Process
OBJECTIVE	• To update MTO Senior Management on the status of Stage 2 ION • To review the proposed LRT alignment alternatives along Highway 8 (K3b) • To confirm the K3b option to be carried forward for evaluation
DATE / TIME	February 21, 2018, 10:00 am
LOCATION	Ministry of Transportation, West Region 659 Exeter Road, London
PROJECT No.	161-07859-00

Attendees	**Organization**	**e-mail**
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Michael Plant	MTO – Program Planning	Michael.Plant@ontario.ca
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Denise Morneau	WSP	denise.morneau@wsp.com
Sarah Roberts	WSP	sarah.roberts@wsp.com

Item:	**Discussion:**	**Action by:**
	The Region and WSP provided a brief presentation outlining the proposed alignment for Stage 2 ION along the west side of Highway 8 between River Road and King Street, including the alternatives considered, for consideration by MTO Senior Management. These notes summarize the discussion points and action items. The presentation slides are appended for reference.	
1.	**Proposed LRT Alignment Alternatives – West Side of Highway 8 (K3b)**	
1.1.	The Region and WSP presented an overview of the three alternatives developed for LRT on the west side of Highway 8 using roll plans, profiles and cross-sections: • Alternative 1: LRT outside the Highway 8 ROW, with 14m setback • Alternative 2: LRT adjacent to the Highway 8 ROW • Alternative 3: LRT within the Highway 8 ROW	
1.2.	WSP noted that all alternatives have considered future highway widening needs to an ultimate 10 lane cross-section (4 general traffic lanes + 1 HOV lane in each direction. MTO confirmed that planning and EA work has not yet been undertaken for expansion of this corridor, but that MTO wishes to retain flexibility for future needs. In response to a question, the Region confirmed that the bus bypass shoulder on Highway 8 would no longer be required once LRT is in operation and has not been incorporated into the future cross-sections.	

Item:	Discussion:	Action by:
1.3.	As a follow-up to discussion at the last meeting, the Region and WSP discussed that work on the LRT can be accommodated by de-energizing one line and operating on the other for a limited period of time, thereby reducing the need for a minimum envelope around the LRT corridor or operational constraints that would potentially impact Highway 8. MTO noted that it is preferable to establish an appropriate clearance to avoid impacts to both parties during future widening, maintenance, etc., rather than relying on operational protocols and agreements.	
1.4.	In response to a question, WSP noted that an access road is being considered adjacent to the LRT line for maintenance purposes, which will be further developed in detail design.	
1.5.	WSP reviewed each alternative in detail, describing the potential property, constructability and environmental impacts which are summarized in the presentation slides.	
1.6.	MTO asked that the bridge abutment for the approved Highway 8 underpass at River Road be reviewed further, to ensure that the LRT corridor at Hidden Valley does not conflict. In response to a question, the Region indicated that it is likely that the River Road extension will be constructed in advance of LRT, but will be designed to accommodate LRT when approved and funded.	WSP
1.7.	WSP described the proposed transition back to the King Street median south of the Highway 8 interchange, highlighting that LRT would be elevated over the southbound exit ramp and would not impact traffic operations on the ramp. MTO advised that the widening of Highway 8 would require modifications to this ramp. WSP will develop a concept plan to accommodate this for discussion at the next meeting.	WSP
2.	**Discussion and Consensus**	
2.1.	Given the constraints associated with the high embankment north of the Grand River, MTO suggested that a variation of Alternatives 2 and 3 be considered, which would position the LRT alignment within but immediately adjacent to the MTO ROW, providing sufficient clearance for highway expansion and maintenance and reducing property impacts.	
2.2.	South of the embankment area, where there are fewer constraints, MTO indicated that the LRT should be located a minimum of 14m outside the MTO ROW (Alternative 1), providing the full setback. On the approach to King Street, this setback can be reduced to avoid property acquisition.	
2.3.	WSP will develop an updated plan for discussion with the MTO project team at the next meeting. This will include more refinement and review of grading options north of the Grand River, and the implications of impacts	WSP
2.4.	MTO Senior Management expressed support for the hybrid solution discussed, and asked the Region to continue to work with MTO on the details around the embankment, the River Road connection and operational constraints.	

Distribution: All attendees

These meeting notes are considered to be accurate summary of the items discussed. Please advise Denise Morneau (denise.morneau@wsp.com) of any discrepancies, errors or omissions, otherwise these meeting notes will be accepted as written.

MEETING NOTES – Hespeler Road Right-of-Way Internal Meeting

PROJECT	Region of Waterloo – Stage 2 LRT TPA Process
OBJECTIVE	Determine whether a) Hespeler Road cross-section is to include landscaping, and b) what the right-of-way width should be
DATE / TIME	October 9, 2018, 11:00 am to 12:30 pm
LOCATION	Region of Waterloo, 150 Frederick Street Room 224
PROJECT No.	161-07859-01

Attendees	**Organization**	**e-mail**
Paula Sawicki	Region of Waterloo	psawicki@regionofwaterloo.ca
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Gary MacDonald	Region of Waterloo	gmacdonald@regionofwaterloo.ca
Denise Morneau (phone)	WSP	denise.morneau@wsp.com
Sarah Roberts (phone)	WSP	Sarah.roberts@wsp.com

Item:	**Discussion:**	**Action by:**
	These notes summarize the key discussion items and questions that were raised during the presentation. The presentation slides (cross-sections) are appended for reference.	
1.0		
	• The issue of the Hespeler Road ROW has arisen because landscaping was originally envisioned along this corridor, RT previously requested 45m ROW, Community planning are concerned that 45m was not pedestrian friendly and 38 m might be a more appropriate ROW width. Landscaping cannot be included with a 38m ROW. • The proposed ROPA currently has Hespeler Rd ROW at 38m. There has not yet been a ROP amendment. The plan was to include Hespeler Rd in the same ROP amendment that addresses all of the other road changes resulting from the LRT project • It was agreed that landscaping, if desired, should be planned from the start to avoid future obstacles to implementation. • It was questioned whether Hespeler Road could be "all things to all people". • Rapid Transit noted that the cross-section would need to include LRT tracks and stations, two through lanes in each direction, left turns lanes, and GRT bus shelters. This is similar to Northfield Drive in Waterloo for Stage 1. • Community planning noted their concern that a 4-lane cross-section with a rapidway is very wide, is not pedestrian friendly, will discourage pedestrians from crossing the street, and will not achieve the type of streetscape	

Item:	Discussion:	Action by:
	previously envisioned. It may be more of a challenge to attract development, and may push out the horizon for Hespeler Road to redevelop. • There was discussion of the cross-section at stations and at intersections, particularly at the Cambridge Centre. • J. Hill noted that City of Cambridge was supposed to look at parallel roads and a finer grid pattern that would more effectively attract re-development, taking the pressure off Hespeler Road. • It was noted that Hespeler Road is a heavily used route. It continues north to Guelph, south to Brantford whereas Franklin Boulevard does not. Hespeler Road is also a major destination. • There was some discussion of Highway 7 in the vicinity of Woodbine Avenue being an example of rapid transit implementation with reduced right-of-way. Upon review of Google Maps and Streetview it was considered to be similarly pedestrian unfriendly.	
	Landscaping	
	• How much space is required for landscaping? Community planning noted that min. 3.0m is likely required. • Stage 2 ION project team to investigate potential/feasible widths for landscaping. Specifically, when using soil cells what is the minimum width required for trees. • Since turn lanes, stations, and bus shelters increase the width at intersections, does it make sense to include landscaping only mind-block, between intersections? Possibly. • Soil cells must be kept separate from utilities. Third party utilities do not like to be under/through soil cells, nor are soil cells amenable to exposure and reconstruction after the fact.	
	Utilities	
	• Utilities are a major consideration. • Telecommunications and gas mains can go under the sidewalk, but not under/through soil cells. • Could utilities be installed under bike lanes? This could be considered. • GRT noted that their shelters required some clearance from gas mains • How much space behind the curb is required for poles? Need min. 1.0m, some poles are 600mm dia. • Hydro can be buried, but typically at a significant cost and is often prohibitively expensive. Still need space for street lights and signage.	
	Bike Lanes	
	• The 2014 ATMP recommends separated bike lanes on Hespeler Road within the project area • There was much discussion about whether bike lanes are required along Hespeler Rd, whether they could be constructed on parallel streets, and what the effect of excluding them would be. • G. Keyworth noted that the recommended cycling facility is separated bike lanes, uni-directional, one of each side of the road (much like the recently constructed Manitou Drive separated bike lanes). These are recommended for various reasons. They are less problematic than multi-use trails, which, in the absence of dedicated cycling facilities, result in increased cyclist-pedestrian collisions and cyclist-vehicle collisions at accesses. The proposed bike lanes are less problematic than bi-directional separated bike lanes, which increase collisions at accesses, and are difficult to implement and operate at	

Item:	Discussion:	Action by:
	intersections. • The cross-section will be wide regardless, so there is already an incentive to cycle in the wrong direction.	
	Bus shelters	
	• There are a number of locations along Hespeler Road that will still need bus shelters. They will not be eliminated by Stage 2 ION. • Cannot assume that bus shelters will be cantilevered/canopies only. They may be enclosed, so the bus shelter cannot necessarily be combined with pedestrian facilities.	
	Next steps	
	• RT will investigate minimum feasible landscaping width • RT will illustrate a 45m ROW line to demonstrate impacts and distribute to group for review and discussion. Will a 45m ROW sterilize any properties by virtue of eliminating required parking, for example?	

Attachment: Draft preliminary Hespeler Road typical cross-sections
Distribution:

MEETING NOTES – Ministry of Transportation (MTO)
Meeting No. 7

PROJECT	Region of Waterloo – Stage 2 LRT TPA Process
OBJECTIVE	To update MTO on the progress of preliminary design and discuss issues specific to the segment adjacent to Highway 8 (K3b)
DATE / TIME	November 8, 2018, 10:00 am
LOCATION	Ministry of Transportation, West Region 659 Exeter Road, London Boardroom 4A
PROJECT No.	161-07859-00

Attendees	**Organization**	**e-mail**
Scott Howard	MTO – Planning & Design	Scott.Howard@ontario.ca
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Denise Morneau	WSP	denise.morneau@wsp.com
Sarah Roberts	WSP	sarah.roberts@wsp.com

Item:	**Discussion:**	**Action by:**
	The Region and WSP provided a brief presentation on the current concept plans and cross-sections for the proposed alignment for Stage 2 ION along the west side of Highway 8 between River Road and King Street (K3b segment). These notes summarize the discussion points and action items. The presentation slides are appended for reference.	
1.	**Study Status and Schedule**	
1.1.	WSP provided an overview of activities since the last meeting in February 2018, including additional public consultation in May 2019. WSP advised that the preferred route has been endorsed by Regional Council, except for the section in Preston where refinements will be further examined.	
1.2.	WSP noted that the project team anticipates completing the preliminary design and requesting endorsement from Regional Council to proceed with the TPA process final endorsement	
2.	**Concept Design for Stage 2 ION K3b Segment**	
2.1.	WSP reviewed the design approach and confirmed with MTO that the approach reflects the consensus reached at the MTO Senior Management presentation in February 2018: • Accommodates an ultimate 10 lane cross section for Highway 8 • LRT located as far from Highway 8 as practical from River Road to the north side of the Grand River	

Item:	Discussion:	Action by:
	• LRT located 14m outside the right-of-way over and south of the Grand River to the Highway 8/King Street interchange • LRT accommodates reconstruction of the Highway 8 exit ramp at King Street for the ultimate Highway 8 configuration	
2.2.	MTO asked WSP to reconfirm with the design team undertaking the River Road underpass that the bridge design is the most current to ensure no conflict between the LRT structure at Hidden Valley Road and the wing wall of the River Road bridge; WSP noted that the River Road design has been on hold pending confirmation of the LRT concept but that the team will verify that the plans are the most current available. WSP also indicated that the team is aware of the complexity of the River Road bridge alignment and is not proposing to make any changes to accommodate LRT.	WSP
2.3.	MTO noted that MTO would typically own any structures located within the MTO right-of-way, which in this case would include the LRT bridges at River Road/Hidden Valley, adjacent to Highway 8 north of the Grand River, and over the Highway 8 exit ramp at King Street. The Region suggested that further discussions can be undertaken about legal agreements to address operation and maintenance of the Region's LRT infrastructure within MTO property, similar to what has been provided in similar situations elsewhere.	
2.4.	In response to a question, WSP confirmed that the LRT crossing at River Road/Hidden Valley will be at grade, and controlled by gates for Hidden Valley and River Road eastbound traffic. MTO confirmed that the River Road/Hidden Valley intersection is located within the interchange area so will be owned by MTO.	
2.5.	MTO highlighted an area with rock protection on the embankment just north of the Grand River which is where artesian conditions have been previously identified. MTO will investigate whether there is a Foundation Report for the high embankment which may address this, but noted that it may have been encountered during construction and thus documentation may not be available.	MTO
2.6.	MTO suggested that property requirements for the proposed retaining wall on the embankment include sufficient area for construction and site access.	
2.7.	WSP reviewed the proposed crossing of the Highway 8 exit ramp at King Street, including how the bridge design accommodates staging for the reconstruction of the ramp when Highway 8 is widened. WSP noted that the proposed design avoids impact to the engineered berm adjacent to this ramp.	
2.8.	WSP confirmed that drainage will be managed within the LRT corridor, and is not being directed to the MTO right-of-way.	
2.9.	MTO confirmed that the current right-of-way is sufficient for future expansion, and MTO does not anticipate acquiring additional property in this area.	
3.	**Other Discussions**	
3.1.	WSP confirmed that the preferred route is located in the median of King Street through the Highway 401 interchange, and has been assessed against MTO's future plans for Highway 401 expansion and completion of the Highway 401/Highway 8 interchange. WSP noted that this would be brought back for review with MTO in more detail at the next coordination meeting.	WSP
3.2.	MTO advised that the rehabilitation currently being designed for the Highway 401/King Street overpass will provide 20 additional years of service, at which point the bridge will reach the end of its service life. As such, the timing of LRT construction may coincide with the need to replace the bridge, however the LRT plans should be reviewed with the existing and interim conditions (existing bridge) and ultimate configurations (new bridge) for the interchange.	WSP

Item:	Discussion:	Action by:
3.3.	In response to a question, the Region advised that if funding becomes available, the earliest anticipated construction date for LRT is 2028, with land use planning and other associated projects accommodating and protecting for LRT on the approved corridor until it is built. MTO noted that the timing of the ultimate configuration for this interchange is likely beyond 2028, subject to funding and approvals.	
3.4.	MTO will investigate whether the Highway 401/King Street interchange has been considered for a commuter parking lot. WSP noted that if MTO is amenable, consideration could be given to protecting for a future LRT station at a CPL at this location.	MTO

Distribution: All attendees

These meeting notes are considered to be accurate summary of the items discussed. Please advise Denise Morneau (denise.morneau@wsp.com) of any discrepancies, errors or omissions, otherwise these meeting notes will be accepted as written.

Associated Engineering | GLOBAL PERSPECTIVE. LOCAL FOCUS.

Date:	November 27, 2018	**File:**	5113
Time:	1:30pm	**Page:**	1 of 2
Project:	King Street Improvements		
Subject:	Mtg #11 – LRT Stage 2 Coordination		
Client:	Region of Waterloo		
Location:	AE's Office		
Present:	P. Linn, M. Kroker, P. Sawicki, G. Keyworth, M. O'Neil, D. Lindner		
Distribution:	Those Present		

RECORD OF MEETING

This Record of Meeting is considered to be complete and correct. Please advise the writer within one week of any errors or omissions, otherwise this Record of Meeting will be considered to be an accurate record of the discussions

Action By:	**Discussion:**
	11.1 Update on Project Status
	AE explained that the project has generally been dormant for the past 6 months or so, to let the 'dust settle' on the recent LRT PIC (where the preferred route was confirmed) and the recent municipal elections. The LRT Stage 2 route has been confirmed to run along the centre of the King Street R.O.W. from just south of the Hwy #8 interchange all the way to Shantz Hill. It is now planned to move forward with the detailed design of the King Street project, subject to coordination with the LRT Project team as well as confirmation of the functional design.
	AE provided a brief overview of the proposed (functional) design for the road corridor. In general the existing 4+ lane urban cross section will be maintained throughout, except for the section between Highway #8 and the Grand River, where the road will be reduced to a 2 lane urban section. A new multi-use trail will be installed along north / east side of the road, including a proposed grade separation / tunnel for the trail as it crosses the northbound on ramp at hwy #8.
AE	It has been agreed that AE will pursue a preliminary general arrangement for the structure for presentation and approval in concept by the MTO (who was previously favourable towards the idea.). G. Keyworth noted that the ATMP shows the proposed MUT along King Street, and that a similar analysis regarding traffic at the interchange will likely be required as what was done recently for Franklin Boulevard.
	AE advised of recent discussions with Alex Nichols of the City of Cambridge regarding their north-south collector road project. The City is moving forward with a design assignment with construction tentatively to start in 2019, noting that the King Street intersection is likely further in future due to issues relating to the proposed CP Rail crossing. It was agreed that a meeting
AE	between the City and the King Street project team should be convened in the new year. AE to arrange.

Action By:	Discussion:
G. Keyworth	AE advised that the geotechnical investigation is nearly complete. The traffic study from the Region is still outstanding and this information is needed for Peto MacCallum to complete the pavement design for the corridor. G. Keyworth to provide the draft traffic study for the King Street corridor as soon as possible. P. Sawicki queried if the King Street corridor is part of the hwy #401 EDR. It is understood that once the future Hwy #401 upgrades are complete, traffic along the King Street corridor will be significantly decreased. The Hwy #401 work is tentatively planned for 2031 and ideally should be done simultaneously with the LRT Stage 2 work, but both projects are based on funding and timing is subject to change.
	11.2 LRT & Public Consultation M. O'Neil explained that the preferred LRT route was presented to the public in June 2018 and has been approved by council. A change from the previous details for the route is a staggered
M. O'Neil AE	station layout near Sportsworld Crossing, which could narrow but lengthen the station footprint. M. O'Neil to provide updated CAD linework for the approved LRT alignment. AE to check the proposed linework to confirm that what is proposed to be built in the current assignment will not preclude or impede any future LRT works. Servicing within the LRT zone should be avoided, and service crossings should be installed in sleeves to facilitate future maintenance / repairs.
Region / AE	AE noted a potential idea to eliminate one of the future LRT bridge structures by re-aligning the Hwy #8 off ramp to swing closer to the King Street lanes. Region to investigate. AE to provide CAD drawings (existing conditions and proposed) to P. Sawicki.
AE	A PCC for the King Street project is tentatively planned for late March 2019. AE to update and circulate the PIC displays to include details of the approved LRT route, with messaging to focus on the fact that the current King Street construction will aim to alleviate the future LRT construction impacts.
	11.3 Confirmation of Design / Next Steps It was generally agreed that the proposed functional design is appropriate, subject to confirmation that the proposed LRT works fit within the current design footprint, such that future
AE	works would not require major adjustments to the outer curbs / amenities. AE to confirm with updated LRT linework. AE will proceed in the new year working towards detailed design for the road corridor, with the multi-year construction tentatively planned to commence in the spring of 2021.

MEETING NOTES – Region of Waterloo
GRCA Coordination Meeting No. 2

PROJECT	Region of Waterloo – Stage 2 LRT TPA Process
OBJECTIVE	Grand River Conservation Authority (GRCA) Coordination Meeting No. 2
DATE / TIME	January 21, 2019, 1:30pm
LOCATION	GRCA offices, 400 Clyde Rd, Cambridge, ON
PROJECT No.	161-07859-00

Attendees	**Organization**	**e-mail**
John Brum	GRCA	jbrum@grandriver.ca
Tony Zamit	GRCA	tzamit@grandriver.ca
Janet Engel	GRCA	jengel@grandriver.ca
Matthew O'Neil	Region of Waterloo – Rapid Transit	moneil@regionofwaterloo.ca
Denise Morneau	WSP	denise.morneau@wsp.com
Javeed Khan	WSP	javeed.khan@wsp.com
Nicole Cooke	WSP	nicole.cooke@wsp.com
Sarah Roberts	WSP	sarah.roberts@wsp.com

Item:	**Discussion:**	**Action by:**
	WSP provided a presentation outlining project background and status, overview of the proposed alignment, drainage design criteria and initial modelling results. These notes summarize the discussion points and action items. The presentation slides are appended for reference.	
1.	**Approach to Drainage and Hydrology Assessment**	
1.1.	Navigable status refers to the regulatory Navigation Protection Act status of the watercourse. The Grand River and Speed River are not classified as navigable at the locations where ION will cross, however as per the Region's typical practice, navigable use and access will be maintained during and after construction.	
2.	**Drainage Design Criteria**	
2.1.	GRCA indicated that water quality control criteria depend on the nature of receiving waters. Direct discharges into the wetlands (if cannot be avoided) will require proper erosion and sediment controlling measures and level 1 enhanced quality control (80% TSS removal). Oil and grit separator (OGS) units cannot be considered for 80% TSS removal and a treatment train approach should be considered which may consist of OGS unit plus enhanced swale. For the selection of OGS unit manufacturer, the Environmental Technology Verification (ETV) Canada website (etvcanada.ca) should be consulted.	
2.2.	GRCA informed that the Speed River and Grand River are both warm water habitats. Mill Creek is a cold water habitat.	
2.3.	GRCA indicated that stormwater discharge directly into the Speed and Grand Rivers does not require quantity control.	
2.4.	GRCA indicated that in existing areas of imperviousness, if the opportunity arises to add quality control, it should be taken, even if the area of imperviousness is not increased. If the area of imperviousness is increasing and there is opportunity to	

Item:	Discussion:	Action by:
	control the flow to pre-construction flows, it should be taken. Impacts of any increase in the size and capacity of the existing system and any upsizing requirements would be the subject of a future study; outlet flows will need to be analyzed at the next design phase.	
2.5.	Off-street sections of LRT, where track is ballasted and not impervious, quality control will still be required. This could be accomplished through use of ditches.	
2.6.	WSP and the Region indicated that possible pollutants from the LRT would include brake dust, sand, grease and accidental release of hydraulic fluid. No salt or de-icing agents will be used on the tracks – regular train movements are sufficient to clear snow.	
3.	**Grand River Crossing**	
3.1.	GRCA indicated that the piers of the new LRT structure should align with the existing Hwy 8 structure piers in the flood plain, especially for consideration of ice flows.	WSP
3.2.	There are Species at Risk present in this location and MNRF / DFO will need to be consulted for proper mitigation/protection for aquatic habitat for the proposed construction activities.	WSP
3.3.	The proposed Grand River crossing is located within surface water intake protection zone 2 and may require additional considerations for quality controls. Water intake is governed by the Region, who will be consulted for additional information.	Region
4.	**Speed River Crossing**	
4.1.	There are Species at Risk present in this location and MNRF / DFO will need to be consulted for proper mitigation/protection for aquatic habitat for the proposed construction activities.	WSP
4.2.	GRCA indicated that the mill channel has been filled in.	
4.3.	The presence of a weir/dam downstream of the proposed ION crossing was discussed, it is the intake for the Mannheim water treatment plan (a Region of Waterloo facility).	
4.4.	GRCA indicated that the HEC-2 model (converted to HEC-RAS) should be used for the preliminary assessment. The Wood model was not approved by GRCA as split flow was not applied in the model. If this work is not impacted by the split flow, the Wood model can be used.	
4.5.	The south end of the Speed River crossing structure and the corresponding embankment will impact flows in the floodway. This impact will need to be analyzed.	WSP
4.6.	GRCA indicated that there is an area of wetland on the south shore of the Speed River near the CP Rail tracks that is not shown on the displays and should be confirmed.	WSP
4.7.	WSP noted that there was a butternut tree observed near Shantz Hill Road and Fountain Street, which was retained during recent reconstruction of the intersection.	
4.8.	WSP confirmed that the trail along the south side of the Speed River will be maintained.	
4.9.	The procedures/policy for operating the LRT during times of flooding were discussed. The Region indicated that if the water elevation reaches the tracks (designed to 25-year flood elevation), then the LRT will not operate. Design considerations for station platforms in flood prone areas can be tailored to reduce potential flood damage (e.g. modifications to enclosed spaces to protect from potential damage).	

Item:	Discussion:	Action by:
5.	**Groff Mill Creek and Dumfries Conservation Area**	
5.1.	GRCA noted that the GRCA boundary shown at Groff Mill Creek is incorrect.	WSP
5.2.	GRCA noted that the wetlands at Dumfries Conservation Area are not provincially significant wetlands.	
6.	**Mill Creek**	
6.1.	GRCA indicated that this is currently a one zone flood plain but it is a candidate for a two-zone flood policy analysis. GRCA would typically ask for a two-zone flood policy analysis to be completed. However, for this project, the impact assessment should be completed using the existing model.	WSP
6.2.	WSP noted that the existing model has the pipe portion of the creek modelled as an open channel. GRCA indicated that WSP should model the piped portion separately using other models as a closed conduit and then use the resulting water elevations as a boundary condition for the open channel portion in the HEC-RAS model. The channel cross-section geometry can be kept as currently modelled with updated banks and adjacent LRT alignment based on recent topographic survey.	WSP
6.3.	GRCA indicated that the impact of any additional impervious area and runoff will need to be analyzed.	WSP
6.4.	GRCA noted that they would prefer the LRT alignment to run down Beverly or Wellington Streets. The Region described the alignment options that were considered and how/why the current preferred alignment was chosen. The Region indicated that the route has been endorsed and no further options are being considered at this point.	
6.5.	GRCA indicated that the special policy area for Downtown Cambridge allows filling of this area but any new buildings or structures would need to adhere to the policy requirements to minimize extents of flood damage. WSP/Region indicated that no new buildings are planned for the terminal station at this time; an existing building may be converted into a drivers' facility. GRCA indicated that there would be no impediments to a new building, as long as SPA policies are met.	
7.	**General**	
7.1.	WSP to send GRCA (J. Engel) drainage models for review once complete. HEC-RAS format is expected.	WSP
7.2.	GRCA explained the two-zone flood plain approach: flood fringe will have lower velocity and shallower depths during flood events where the floodway will have higher velocities and deeper depths. The delineation of the two zones is based on flow and currents (not based on water elevation); the delineation is based on the buildings/obstructions that existed at the time of the study. Flood fringe areas can be filled in without impacting the main flow of flood water – the building requirements are more about protecting infrastructure from flood damage than potential impact on the flood plain.	
7.3.	GRCA advised that the wetland boundaries shown on the displays do not fully match the GRCA mapping (for all water crossing locations). GRCA suggested that the limits of the wetlands should be field confirmed during late spring/early summer, with the delineation valid for 5 years. Delineation of wetlands will allow any loss of wetlands to be documented.	Region/WSP
7.4.	GRCA indicated that it would be beneficial to show major outlets on a concept plan with the proposed runoff quality/quantity approach. Outlets located in wetlands are to be avoided.	WSP

Item:	Discussion:	Action by:
7.5.	GRCA indicated that they own property that has the potential to be impacted by the LRT. GRCA will notify their real estate staff and confirm the process required for property sale. GRCA noted that it is a lengthy process that requires sign off from the province.	GRCA
7.6.	GRCA noted that access to their non-publicly accessible properties can be arranged through their permit process. Proof of insurance and a 2-4-week lead time is required.	Region/WSP

Distribution: All attendees
P. Sawicki - Region of Waterloo
S. Nairn, P. Malloy - WSP

These meeting notes are considered to be accurate summary of the items discussed. Please advise Denise Morneau (denise.morneau@wsp.com) of any discrepancies, errors or omissions, otherwise these meeting notes will be accepted as written.

MEETING NOTES – Ministry of Tourism, Culture and Sport (MTCS) Meeting No. 1

PROJECT	Region of Waterloo – Stage 2 LRT TPA Process
OBJECTIVE	To confirm the cultural heritage requirements for the TPA Process
DATE / TIME	February 5, 2019, 10:00 – 10:30 am
LOCATION	Teleconference
PROJECT No.	161-07859-00

Attendees	**Organization**	**e-mail**
Laura Hatcher	MTCS	Laura.Hatcher@ontario.ca
Karla Barboza	MTCS	Karla.Barboza@ontario.ca
Paula Sawicki	Region of Waterloo	PSawicki@regionofwaterloo.ca
Sandy Nairn	WSP	Sandy.Nairn@wsp.com
Nicole Cooke	WSP	Nicole.Cooke@wsp.com
Joel Konrad	WSP	Joel.Konrad@wsp.com
Jennifer Fisher	WSP	Jennifer.Fisher@wsp.com

Item:	**Discussion:**	**Action by:**
1.	**Introductions**	
1.1.	Roundtable introductions.	
2.	**Background – Region of Waterloo ION**	
2.1.	The Region of Waterloo (Region) and WSP provided an overview of the study including Stage 1 which includes LRT from Waterloo to Kitchener and BRT from Kitchener to Cambridge. Stage 1 study started as Individual Environmental Assessment and switched to the Transit Project Assessment Process (TPA Process).	
2.2.	Stage 2 study includes LRT from Kitchener to Cambridge, specifically from Fairway Mall to the Ainslie Street Terminal.	
2.3.	Currently at the pre-consultation stage of the study; TPA Process has not yet been commenced.	
2.4.	The Region and WSP have undertaken four Public Consultation Centres (PCCs) from 2015 to 2018. One or two more PCCs to be held in advance of commencing TPA Process.	
2.5.	WSP acknowledged that in O. Reg. 231/08 and in the TPA Process Guide, built and cultural heritage are identified as matters of provincial importance, however, they are not specific on approach or methodology on how to address cultural heritage within the TPA Process.	
2.6.	WSP noted that to date, cultural heritage existing conditions report has been completed for purposes of evaluating alternatives and selecting a preferred route (which also constitutes a Cultural Heritage Screening Report).	
2.7.	MTCS asked what the schedule was for TPA Process commencement. WSP advised the Notice of Commencement is currently anticipated to be issued in Fall 2019.	

Item:	Discussion:	Action by:
2.8.	WSP noted the intention of call is to get a clear understanding of MTCS expectations before commencing the TPA Process. The project team is looking for MTCS to provide guidance on what is required as part of TPA Process versus what can be included as a commitment for completion during detailed design.	
2.9.	The Region noted they require something in writing from MTCS on cultural heritage requirements for TPA Process in order to get council approval for additional resources for completion of heritage studies.	
3.	**Current TPA Process Requirements – Cultural Heritage**	
3.1.	MTCS advised WSP and the Region that they are currently developing written guidance which will be provided in next few days.	MTCS
3.2.	MTCS walked through requirements for built heritage resources (BHRs) and cultural heritage landscapes (CHLs), noting that reporting needs to cover existing conditions, preliminary impact assessment during pre-planning and inclusion into the Environmental Project Report.	
3.3.	Existing baseline cultural heritage conditions - existing heritage and potential heritage properties must be documented (MTCS checklist to be used) for project footprint and adjacent properties (at minimum). MTCS noted they are open for discussion of area depending on nature of project. MTCS provided an example where MTO has defined area for highway projects / right-of-way buffer (150 m). There is no standard approach for railway corridors or LRT projects; any best practices/methodology for defining study area, MTCS is open to approach.	
3.4.	MTCS also noted that as part of TPA Process, a preliminary impact assessment with mitigation measures must be completed for all heritage properties with a description of anticipated impacts (table format). MTCS advised that they are moving away from using Cultural Heritage Assessment Report (CHAR) terminology, and report is rather a 'CHSR' with summary of potential impacts and proposed mitigation strategies for potential negative effects.	
3.5.	Commitments for more detailed Heritage Impact Assessment(s) (HIA) can be completed at later stage, but to be documented in EPR as future commitment with timeframe for completion.	
3.6.	For properties that are directly impacted (demolition or partially altered), the impact needs to be clear, and a Cultural Heritage Evaluation Report (CHER) or CHERs are required to be completed as part of the TPA Process pre-planning phase to understand whether there is cultural heritage value or not. MTCS noted that grouped CHER can be completed, where feasible, and documentation is required demonstrating that other alternatives were looked at to avoid impact. – MTCS confirmed that CHERs are required for all heritage properties (Designated, Listed, candidate) with direct impacts anticipated.	
3.7.	MTCS advised WSP and the Region to work with municipality for properties that have not been previously assessed.	
3.8.	Joel Konrad (WSP Heritage Specialist) noted that in the past, group CHERs have been methodologically difficult and inquired whether MTCS would be providing guidance on grouped CHERs. – MTCS responded that there would be a joint discussion on case-by-case basis to discuss applicability and approach to grouped CHERs.	
3.9.	WSP asked MTCS for details on timing for additional guidance. MTCS advised that an initial guidance letter is currently being drafted and will be shared with anyone who reaches out to them. MTCS noted that the letter would be available in the next week or so and will include attachment with sample tables and language on recent projects.	

Item:	Discussion:	Action by:
4.	**Current TPA Process Requirements – Archaeology**	
4.1.	WSP advised that a Stage 1 archaeological assessment has been completed for the Stage 2 ION project. Stage 2 archaeological assessment is pending.	
4.2.	MTCS noted their expectation is for Stage 1 and 2 archaeological assessments to be completed for incorporation into Environmental Project Report (pre-TPA Process).	
5.	**Next Steps / Action Items**	
5.1.	MTCS requested WSP to provide Project Information Form number for archaeological assessment to link files with arch unit as Karla/Laura are MTCS one-window contact. *[Post-meeting note: Sandy Nairn provided PIF number to Karla/Laura on February 10, 2019].*	WSP
5.2.	MTCS to provide initial guidance letter on cultural heritage requirements as part of TPA Process.	MTCS

Distribution: All attendees

These meeting notes are considered to be accurate summary of the items discussed. Please advise Sandy Nairn (Sandy.Nairn@wsp.com) of any discrepancies, errors or omissions, otherwise these meeting notes will be accepted as written.

MEETING NOTES
Canadian Pacific (CP) Railway Coordination Meeting No. 3

PROJECT	Region of Waterloo – Stage 2 LRT TPA Process
OBJECTIVE	Canadian Pacific (CP) Railway Coordination Meeting No. 3
DATE / TIME	May 8, 2019, 10:00am
LOCATION	CP offices, 1290 Central Parkway West, Suite 600, Mississauga ON
PROJECT No.	161-07859-00

Attendees	**Organization**	**e-mail**
Tom Twigge	CP	Tom_Twigge@cpr.ca
Brian Costigan	CP	Brian_Costigan@cpr.ca
Matthew O'Neil	Region of Waterloo – Rapid Transit	moneil@regionofwaterloo.ca
Patrick Malloy	WSP	patrick.malloy@wsp.com
Denise Morneau	WSP	denise.morneau@wsp.com

Item:	**Discussion:**	**Action by:**
	WSP provided a presentation outlining project background and status, overview of the preferred route, and design coordination issues at each interface with CP along the route. These notes summarize the discussion points and action items. The presentation slides and sketches are appended for reference.	
1.	**Study Overview and Stage 2 ION Preferred Route**	
1.1.	WSP and the Region provided an overview of study progress since the last CP Coordination Meeting in March 2017. The Region reviewed the timeline for Stage 2 ION, anticipating a design-build delivery model, noting that implementation is tied to receiving funding for the project. The Region confirmed that given the need for funding, additional design and property acquisition, as well as the procurement process, construction is unlikely to commence sooner than 2028.	
1.2.	WSP noted that the outcome of this study will be a functional design which will meet the requirements of the Transit Project Assessment (TPA) process to identify impacts and assess mitigation, with additional preliminary and detail design to be carried out in subsequent phases following completion of the TPA.	
1.3.	WSP reviewed the Stage 2 ION preferred route, highlighting the five locations where ION interfaces with CP: near the Fairway Road/Highway 8 interchange, on Eagle Street in Preston, along a currently unused CP spur between Eagle Street and Highway 401 in Preston, adjacent to the rail corridor between Hespeler Road and Samuelson Street, and at the Grantham Rail Bridge near Samuelson Street.	
2.	**Design Coordination – CP Crossing near Fairway Road**	
2.1.	WSP reviewed the proposed LRT crossing over CP, noting that the piers for the structure are positioned outside the CP right-of-way and highlighting horizontal and vertical clearance.	
2.2.	WSP requested confirmation from CP that any planned expansion would be accommodated within the existing right-of-way and the clearance envelope proposed, as well as any constructability concerns with the proposed crossing.	CP

Item:	Discussion:	Action by:
2.3.	In response to a question, WSP confirmed that the ION route has been modified since the last CP coordination meeting and is now located on the west side of Highway 8, and thus is not located in proximity to CP at the Grand River crossing.	
3.	**Design Coordination – CP Crossing near Eagle Street**	
3.1.	WSP reviewed the proposed crossing at Eagle Street, highlighting the "soccer post" style of the bridge design to address the skew of the crossing and the environmental sensitivities associated with the proximity to the Speed River.	
3.2.	CP advised that there is a runaround track located adjacent to the main track on the river side of the corridor that would need to be accommodated. WSP will review options for the pier layout to maintain the existing track layout, or whether the switch can be relocated. CP advised that an operational analysis would need to be undertaken prior to determining whether this track could be disrupted or relocated, and noted a preference for maintaining the track as is.	WSP
3.3.	The level crossing at Eagle Street was discussed; CP noted that although the proposed ION grade separation does not require realignment of either Eagle Street or the railway, the introduction of the ION bridge may affect sightlines and thus require that the warning system at the Eagle Street level crossing include gates as well as lights and audible signals. This will be noted in the Functional Design Report for review during a future design phase.	WSP
3.4.	In response to a question, CP advised that the existing CP bridge at the Speed River adjacent to King Street is reviewed regularly, but has not been identified as needing improvement.	
4.	**Design Coordination – CP Rail Spur Between Eagle Street and Highway 401**	
4.1.	WSP described the proposed ION alignment utilizing the existing CP spur from Eagle Street to just south of Highway 401, which is currently not being used for railway operations. The Region expressed an interest in acquiring the spur for ION and requested input on how the property acquisition process would be conducted. CP advised that the Region should initiate formal communication to CP as soon as possible to express interest in purchasing the corridor, so that CP's internal real estate review process can commence.	WSP/Region
5.	**Design Coordination – CP Corridor between Hespeler Road and Samuelson Street**	
5.1.	WSP reviewed the proposed ION alignment located between the CP corridor and the residential properties fronting Norfolk Street. CP confirmed that the existing track in this area was relocated to the north side of the corridor as part of the staging for construction of the Hespeler Road grade separation.	
5.2.	WSP reviewed the proposed replacement of the existing retaining wall adjacent to CP near Hespeler Road to reduce property impacts along Norfolk Avenue, noting that significant disruption to CP operations is not anticipated for construction. CP advised that in addition to maintaining sufficient clearance, the team should be aware of the potential need for the retaining wall to be crash rated.	WSP
5.3.	WSP advised that the team is reviewing options to realign the ION corridor where the rail corridor curves away from the residential development, to reduce property impacts.	WSP
6.	**Design Coordination – CP Grantham Rail Bridge (near Samuelson Street)**	
6.1.	WSP reviewed the proposed ION alignment on the former railway corridor crossing beneath the CP line at the Grantham Rail Bridge. WSP advised that the opening below the bridge, which has not been in railway use for many years, has been	

Item:	Discussion:	Action by:
	surveyed to confirm adequate horizontal and vertical clearance to accommodate ION, and no modifications to the bridge would be anticipated.	
6.2.	WSP asked CP for any available information on the bridge and its condition, as the team has not been able to source any drawings or other information.	CP
6.3.	Regarding operational constraints, CP noted that the presence of catenary could impact maintenance operations on the bridge and track corridor, and would require further consideration and discussion. CP confirmed that workers walk within the rail corridor above, and it was agreed that measures would need to be taken to protect the workers and ensure that equipment or debris from above does not fall into the LRT corridor. WSP noted that this would be included in in the Functional Design Report as an issue to be reviewed review during a future design phase.	WSP
7.	**Next Steps**	
7.1.	The Region and WSP will prepare a package for CP including the functional sketches and an accompanying letter describing the proposed work at each interface location and outlining specific information being requested from CP to advance the functional design (e.g. confirmation of design requirements, constructability concerns, potential operations or maintenance concerns, etc.). CP advised that given the current level of design for ION and the anticipated timeline for construction, CP will not be in a position to be definitive about future requirements, but will try to identify any major technical or operational issues that could impact the ION route or functional design.	WSP/Region
7.2.	The Region will also provide a letter to CP expressing interest in acquiring the spur between Eagle Street and Highway 401.	WSP/Region
7.3.	The Region and WSP confirmed that issues identified during this study that cannot be fully addressed at this stage of the study will be documented in the Functional Design Report to addressed in subsequent design phases.	WSP
7.4.	CP discussed some of the challenges with design compliance on recent design-build projects. CP recommended that the Region advance the design to at least 70% at railway interfaces and provide these designs to the proponents at the start of the DB procurement process, to reduce approval and schedule risk.	Region

Distribution: All attendees
P. Sawicki - Region of Waterloo
S. Roberts, S. Khaled, S. Nairn, N. Cooke - WSP

Attachment: Presentation material and sketches

These meeting notes are considered to be accurate summary of the items discussed. Please advise Denise Morneau (denise.morneau@wsp.com) of any discrepancies, errors or omissions, otherwise these meeting notes will be accepted as written.

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Date:	May 24, 2019	**File:**	
Time:	9:00am	**Page:**	1 of 3
Project:	King Street Improvements		
Subject:	Mtg 16 - Centre Median		
Client:	Region of Waterloo		
Location:	RMW HQ Rm 224		
Present:	P. Linn, M. Kroker, M. O'Neil, P.Sawicki, D. Spencer H. Wahib, D. Lindner		
Distribution:	Those Present		

Record of Meeting

Discussion:

16.1 Overview of Updated King Street Design

AE provided a brief overview of the updated design. Per the recent PCC displays boards, the design has been updated to include a wide centre median that will accommodate the future LRT Stage 2 tracks (8m wide). This required widening of the road platform and results in new impacts to utilities (hydro) and adjacent properties. Since the PCC, AE has further refined the design to include a minimum of 1.0m between the back of curb and the proposed sidewalk or Multi-Use-Trail. Refer to the attached drawing.

AE advised that they recently met with KW Hydro about the design. Per an initial meeting with KWH in 2017, the existing pole line between Freeport Bridge and Sportsworld is brand new, but south of Sportsworld is in need of replacement / upgrade. Under the previous design (ie. before accommodating LRT) impacts to the existing pole line north of Sportsworld Drive would have been avoided, but with the new changes there are now significant impacts. Under the standard agreement, the cost for any changes to existing hydro plant that are required by the municipality within 5 years of construction are 100% the responsibility of the municipality. AE has requested that KWH prepare a design and cost estimate for the upgrades based on the new design.

P. Linn advised that a recent meeting was held with S. Van de Keere, B. Henderson, M. Kroker to discuss the staging of the King Street project. The original plan was to start in 2020 with the north section between Freeport Bridge and Sportsworld Drive, but based on several factors, especially the poor condition of the existing pavement and the planned MTO works at Hwy #401, it has been decided to flip the schedule and proceed in 2020 with the south section between Sportsworld Drive and Hwy #401.

16.2 Update on Staging - Region & MTO Projects

MTO is planning to start in July of 2020 with a next phase of Hwy #401 construction, including widening / replacement of the bridge over the Grand River and the existing bridge over King Street. The MTO will be holding a PIC on June 5, after which they will share details of their proposed staging, and in relation to King Street is generally as follows:

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Discussion:

- Stage 1 (2020) – Widening the westbound lanes of the 401 bridge over King Street. This requires the closure of the NB-WB on ramp while the bridge is being widened.
- Stage 2 (2021) – Remove & Rebuild & widen the existing EB bridge over King Street, requiring traffic to be shifted onto the newly constructed north half of the bridge.
- Stage 3 (2022) - Remove & Rebuild the existing WB bridge over King Street, requiring traffic to be shifted onto the newly constructed south half of the bridge.
- Stage 4 (2023) – Final structure works, paving and landscaping.

While this work is ongoing, the work to widen / replace the Grand River bridge will also be underway. Closures of the various on / off ramps will be required intermittently during the 4 year construction window. P. Sawicki will follow up with Scott Howard to get the full picture of the planned MTO work, including potential complicating overlap of planned work at Hwy #24

16.3 Confirmation of King Street Design

Focussing on the new Stage 1 construction area (Sportsworld to Hwy #401), AE presented the proposed design complete with aerial imagery (see attached) to discuss the planned access restrictions that the proposed median creates and to confirm the openings that should be included in the median. Specifically, it was agreed that the following would be included in the design:

- 4438 King Street (Costco) – No break in median, remove 'pork chop'
- Cressman Avenue – include a break in the median w/ full movement stop controlled access, including small amount of storage (2-3 cars) for NB LT traffic.
- 4500 King Street (Williams / Wendy's) – No break in median, remove 'pork chop'
- Tu-lane Drive – full movement, signalized intersection
- 4521 King Street (Embassy Motel) – No break in median (U-turns available at #4553 or at Tu-lane Drive)
- 4553 King Street (Casalife, formerly Structube) – include a break in the median w/ full movement access
- Limerick Drive / Gateway Drive – No break in median (remove pork chop).
- 4574 King Street (Shell Gas Bar) – No break in median
- 4585 King Street (Goemans) – include a break in the median w/ full movement access
- 4592 King Street (Oil Changers) – No break in median
- North of 4607-4611 King Street (Station 4+350) – End of raised median / U-turn accommodation incl. 45m taper + 30m storage

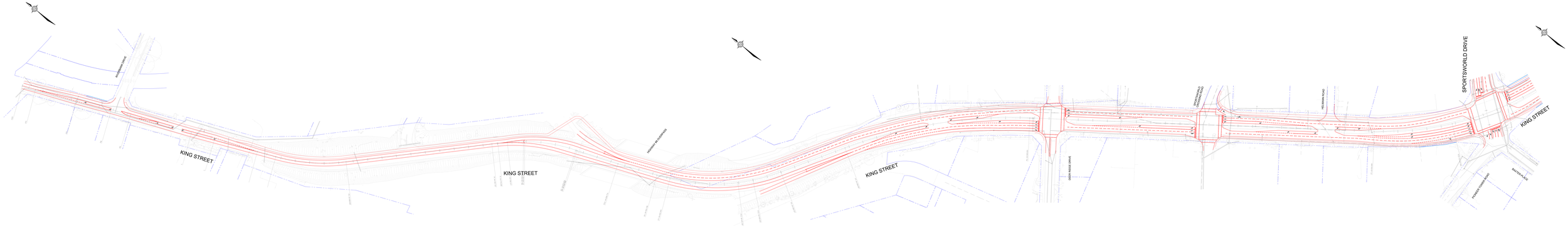
AE

AE is to proceed 'full steam ahead' with the design to be tender ready for stage 1 by January 2020. For the median breaks / U-turns a standard 'cube van' should be used as the design vehicle (not a WB-20). It was agreed that the median treatment would be grass.

Discussion:

P. Sawicki noted caution in the use of language related to access, noting that we are not cutting off or eliminating existing accesses (i.e with the new median). The fronting properties still have access to King Street, it is just being changed for safety and long term operational reasons. Also, the messaging to the public should be clear that the proposed design will make the future LRT construction much faster and less invasive.

AE	It was agreed that the 2020 construction will likely not include the proposed MUT / swk construction to allow the necessary time for the required property acquisitions. AE to prepare property acquisition plans and P. Linn is to initiate the acquisition process with Region legal.
H. Wahib	H. Wahib noted that her team is currently working on updating the traffic modeling for the corridor including turning movement counts and LOS at the intersections and will provide details of her analysis shortly.
AE	M. O'Neill noted that GRT planning staff (Reid Fulton) should be consulted regarding proposed transit stops along the corridor.
AE / P. Linn	AE / P. Linn to contact the City of Kitchener regarding sanitary servicing of the properties adjacent to King Street, noting that that older area is mostly serviced by private septic systems. AE to accommodate a future sanitary sewer in the road design along the south / west side of the road / boulevard.
P. Linn / AE	M. Kroker advised that the Region intends to extend Multi-Use-Trail along Sportsworld Drive / Maple Grove Road all the way to Fountain Street. P. Linn to prepare a terms of reference and AE to provide a fee proposal for including this additional work into the project.
AE	Extension of the proposed Mulit-Use-Trail across the Hwy #401 corridor is also proposed, hopefully to be incorporated into the MTO's bridge work contract. AE to provide a fee proposal for including this additional design scope into the project.
P. Linn	Later in the summer of 2019 and after the MTO has had their PIC, P.Linn will provide an update to the neighbourhoods / project contact list about the revised staging of the project, including the planned MTO staging plans.
P. Linn	P. Linn to prepare a Project approval report including revised staging (Region and MTO) to Regional Council in Fall of 2019 after update to neighbourhoods/project contact list.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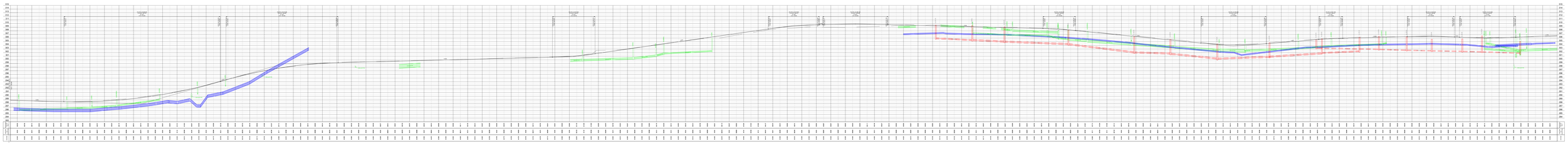

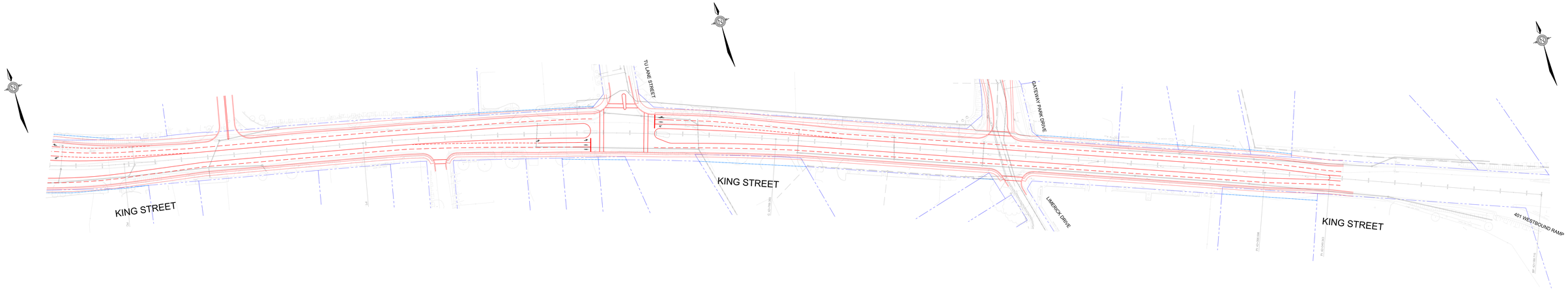
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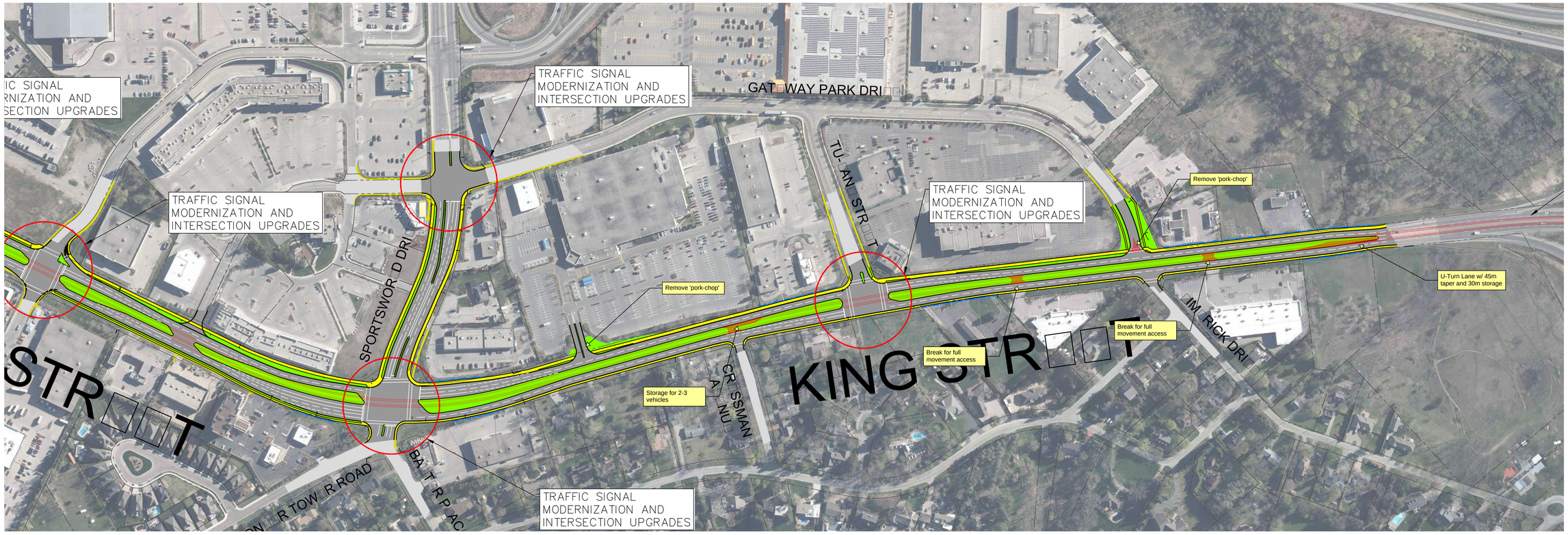
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RECORD OF MEETING

Date:	June 17, 2019	**File No.:**	
Time:	1:30pm	**Location:**	AE's Office – 508 Riverbend Drive, #302
Client:	Region of Waterloo	**Project Name:**	King Street Improvements
Subject:	Mtg 17 - Utilities	**Project No.:**	2017-5113
Present:	S. Ferneyhough, H. Tran, J. Stauffer, J. Cleghorn, T. Howe, M. O'Neil, J. Graham, K. Eitel, D. Lindner	CC:	P. Linn, M. O'Toole

Action **Discussion:**

17.1 Overview of Project – Update

AE provided a brief overview of the updated design. Per the recent PCC displays boards, the design has been updated to include a wide centre median that will accommodate the future LRT Stage 2 tracks (8m wide). This required widening of the road platform and results in new impacts to utilities (hydro) and adjacent properties. Since the PCC, AE has further refined the design to include a minimum of 1.0m between the back of curb and the proposed sidewalk or Multi-Use-Trail. Refer to the attached drawings.

AE also explained the proposed MTO work to widen 401 bridges over King Street and the Grand River that will take place over the next 4 years. There are also plans to extend the MUT south beyond the current limits, crossing under Hwy #401 and connecting to the existing trail near Preston Pkwy, and extending a MUT along Sportsworld Drive / Maple Grove Road to Fountain Street.

Per recent discussions, the Region has decided to change the staging approach for the project to construct the section between Sportsworld Drive and Hwy #401 starting in the spring of 2020. The remaining portions of the work will proceed in following years as appropriate. The focus will be on utility upgrades / relocations, storm sewers and road works. Proposed MUT and/or Sidewalks may need to be deferred until property acquisitions are complete.

AE is currently working to expedite the stage 1 construction design and tender set for tentative spring 2020 construction. It is requested that all utilities work on their designs for the entire corridor, but work to expedite the Stage 1 section to accommodate the aggressive construction schedule.

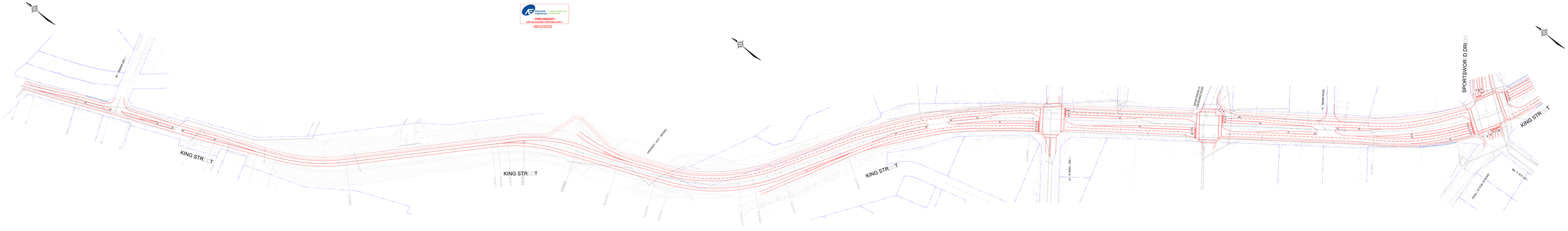
17.2 Utility Upgrades

KW Hydro – S. Ferneyhough presented a rough draft of the new pole layout for the single 3-phase circuit in Stage 1. It was noted that costs to bury the crossings under the LRT may be subject to a different cost sharing arrangement It is generally agreed to include appropriate duct crossings (+/-

June 17, 2019
Region of Waterloo

Action	Discussion:
M. O'Neil	1.7m deep) under the future LRT median now and a decision as to whether to install the buried crossings would be made by the Region. – M. O'Neil to discuss internally and advise.
	AE noted that the sidewalk and MUT design currently shown on the dwgs is subject to change and will require property acquisitions. Utilities should consider the curb locations as fixed, but the SWK / MUT can be adjusted to accommodate the updated utility plant.
KWH AE	Once KWH has their pole locations idenfitied, AE will prepare a new street lighting design and then provide the updated pole locations to the other utilities for their use in completing their designs.
Engbridge / AE	**Enbridge (formerly Union Gas)** – J. Stauffer noted that there are existing crossings that may need to be lowered (+/- 3m) as well as the existing 4" main near Gateway Park Drive that is likely in conflict for the new curb / storm sewers. K. Eitel noted that gas crossings are preferred to be set back from the intersections. At Sportsworld Drive, it may be suitable to install the gas crossing utilizing the large daylight triangle that is available. AE to work with Enbridge to arrange for exposures of the existing gas main so the requirement for relocation can be confirmed.
Bell AE	**Bell** – J. Cleghorn advised that much of the existing buried ductbank will be within the proposed curb lane and will need to be relocated. This will take significant time (+/- 6-8 months) to build the new duct bank and then splice over the wires from the existing. Bell to provide updated CAD details for the existing plant to AE. AE to suggest a proposed running line for the new Bell duct bank for Bell to use for their design.
AE	**Rogers** – No Rogers representatives attended the meeting. AE to follow up with them separately.
	17.3 Next Steps / Other Business…
ALL	It was requested that all utilities work to expedite their design details by late August / early September so that Municipal Consent applications can be made. Once the designs are in place another coordination meeting will be arranged.
M. O'Neil	Region LRT team to review road profile and advise re: coordination required between LRT and proposed road works.

- PRELIMINARY -
FOR DISCUSSION PURPOSES ONLY
06/12/2019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- PRELIMINARY -
FOR DISCUSSION PURPOSES ONLY

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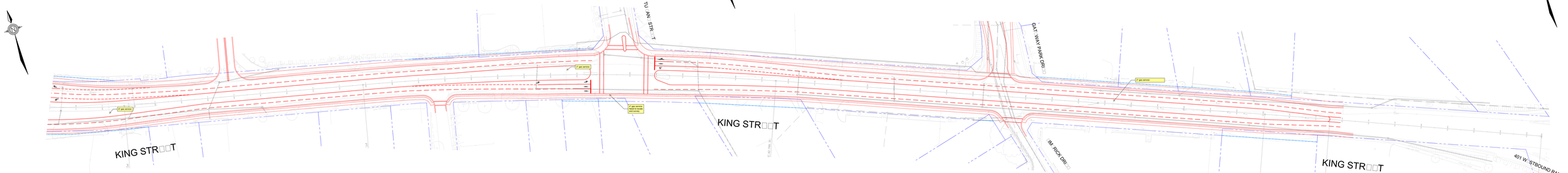
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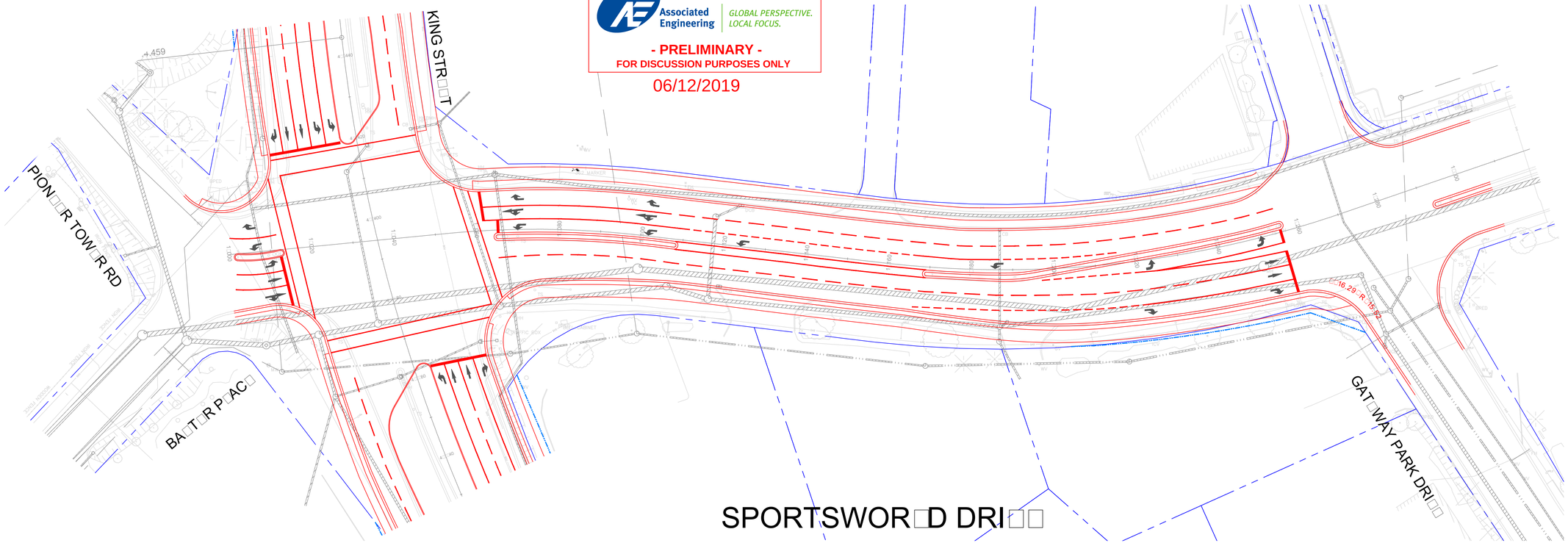
- PRELIMINARY -

FOR DISCUSSION PURPOSES ONLY

06/12/2019



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RECORD OF MEETING

Date:	July 4, 2019	File No.:	
Time:	11:00am	Location:	RMW HQ Rm 218 / Teleconf.
Client:	Region of Waterloo	Project Name:	King Street Improvements
Subject:	Mtg 19 – MUT @ MTO Ramps	Project Number:	2017-5113
Present:	Peter Linn, Paula Sawicki	Scott Howard, Fahmi Choudhury, Terrence Mitchell	Duane Lindner, Nancy Lauricello
Distribution:	Those Present		

This Record of Meeting is considered to be complete and correct. Please advise the writer within one week of any errors or omissions, otherwise this Record of Meeting will be considered to be an accurate record of the discussions.

Action by

Discussion:

19.1 OVERVIEW OF INTERSECTING PROJECTS

AE provided a figure illustrating the over lapping projects, namely King Street Improvements, Hwy #401 upgrades, Hwy #8 and the future Stage 2 LRT. – See Figure 1. It was explained that the intent of the call was to present / discuss the Region's plans to extend Multy-Use Trails (MUTs) along King Street and Sportsworld Drive / Maple Grove Road that will impact the three interchanges identified. It was acknowledged that there have been extensive discussions about the future Stage 2 LRT, but since the timing for its construction is unknown (10 – 20 + years) the focus is on the currently planned King Street Improvement works.

MTO asked if there was additional work ongoing on King Street south of Hwy #401. P. Sawicki advised that the 'Shantz Hill' work was completed last year and no further work south of the interchange was planned.

19.2 KING STREET @ HWY #401 INTERCHANGE – SEE FIGURE 2

AE explained the planned desire to extend a 4.0m wide (min. 3.0m) MUT along the north / east side of King Street from the current road works limit (approx. 340m NW of the Hwy #401 bridge over King Street) to the existing trail connection at Preston Parkway. Ultimately as the developments in this area evolve and the LRT is constructed, a typical 2.1m sidewalk would also be desired along the south / west side of King Street through the interchange. AE had submitted via email a preliminary (Nov 2018) sketch illustrating the future LRT cross section. MTO noted that crossing under the bridge would likely be problematic and would not fit within the available space once the future LRT is constructed under the bridge.

MTO asked if it would be possible for the LRT trains to use a single track across the interchange. P. Sawicki noted that this was considered but determined to be not feasible.

F. Choudhury noted that through WSP's work on the interchange, MTO has done extensive traffic analysis in 2017 to assess the AM and PM peak traffic on King Street at the interchange. MTO to share this analysis with the Region. P. Sawicki noted that the traffic volumes at that

MTO / F. Choudhury

A Carbon Neutral Company

CANADA BEST MANAGED COMPANIES Platinum member

July 4, 2019

Region of Waterloo

Action by	Discussion:
	time were likely influenced by the ongoing construction congestion from the Hwy #401 construction work.
MTO	P. Sawicki noted the importance of incorporating appropriate pedestrian and cyclist facilities along corridors that cross the Hwy interchanges / structures. MTO explained that the current design for the King Street overpass includes additional lanes cantilevered from the existing sub-structure. To accommodate the future LRT and proposed MUT / Swk would require major re-design and lengthening of the bridge span / opening which is not in the current plan. It was agreed that since the LRT timing is unknown, the current work could be adjusted to include the MUT, making use of the additional space that will ultimately be needed for the LRT. MTO to work with its consultant (WSP) to include the MUT in the upcoming construction work. That design is currently at the 60% design stage, with presentation to MTO's executive committee scheduled for November 2019.
MTO / S. Howard	As the addition of the MUT to the interchange work is considered new scope, MTO noted that cost sharing would be applicable. Region staff indicated agreement that cost sharing would be appropriate for this work and its design. MTO to advise re: design costs and cost sharing arrangements.
MTO / F. Choudhury Region / AE	F. Choudhury noted that the planned 2020 construction staging / lane shifts required for the Hwy Bridge work will need to be coordinated with any lane shifts needed for the King Street construction staging. MTO to provide the construction staging details and the Region / AE to use this information to coordinate the King Street staging plans.
	19.3 SPORTSWORLD DRIVE / MAPLE GROVE ROAD @ HWY #8 OFF RAMPS – SEE FIGURE 3
	AE explained the planned desire to extend a 4.0m wide (min. 3.0m) MUT along the east side of Sportsworld Drive / Maple Grove Road from the current road works limit at the Hwy #8 SB ramps to Fountain Street. This requires crossing three ramps and under the Hwy #8 bridge over Sportsworld Drive.
	P. Sawicki asked if it would be possible to grade separate these crossings but it was identified that there is not sufficient grade relief along the trail alignment to accommodate the drainage that would be required for grade separations.
	MTO noted concerns regarding the speed of vehicles on the northbound off ramp and potential for conflicts with MUT users. P. Sawicki reiterated the importance of accommodating active transportation through the interchanges, and noted that being such a long ramp, it would be appropriate to consider some traffic calming measures to slow vehicles on the ramps. It was agreed that further analysis at this location is needed as part of the design.
	MTO had no other concerns on context to the proposed works.

July 4, 2019

Region of Waterloo

Action by	Discussion:
	19.4 KING STREET @ HWY #8 ON RAMP – SEE FIGURE 4 & 5
	AE presented the updated information regarding the proposed grade separation for the MUT crossing at the Hwy #8 on ramp. As was previously discussed and agreed, the proposed design would dramatically improve operational and safety conditions at this location. AE confirmed that drainage for the underpass can be accommodated through the King Street design.
	19.5 OTHER BUSINESS / NEXT STEPS...
MTO / S. Howard	It was agreed that MTO will provide a summary of what will be required to evolve the various design components through the design and approvals process at the Region. Ideally, a single point of contact will be provided through the MTO's corridor management group that can assist in navigating / expediting the design details through the MTO's processes.
AE	Once the MTO design and approval parameters have been received, AE will proceed with a scope of work as approved by the Region.

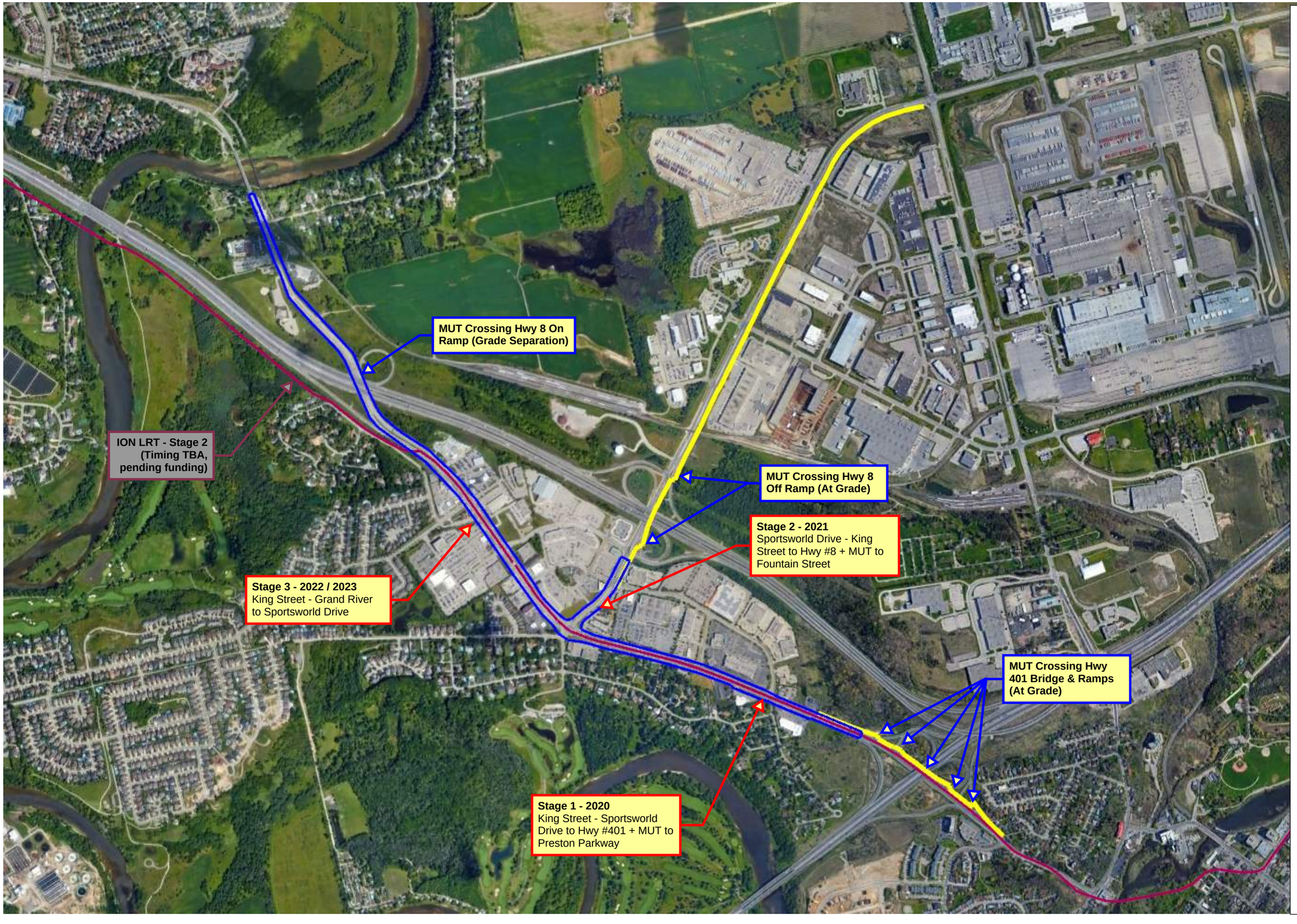


Figure 1 - Overview

Associated Engineering | GLOBAL PERSPECTIVE. LOCAL FOCUS.

- PRELIMINARY -
FOR DISCUSSION PURPOSES ONLY

07/02/2019

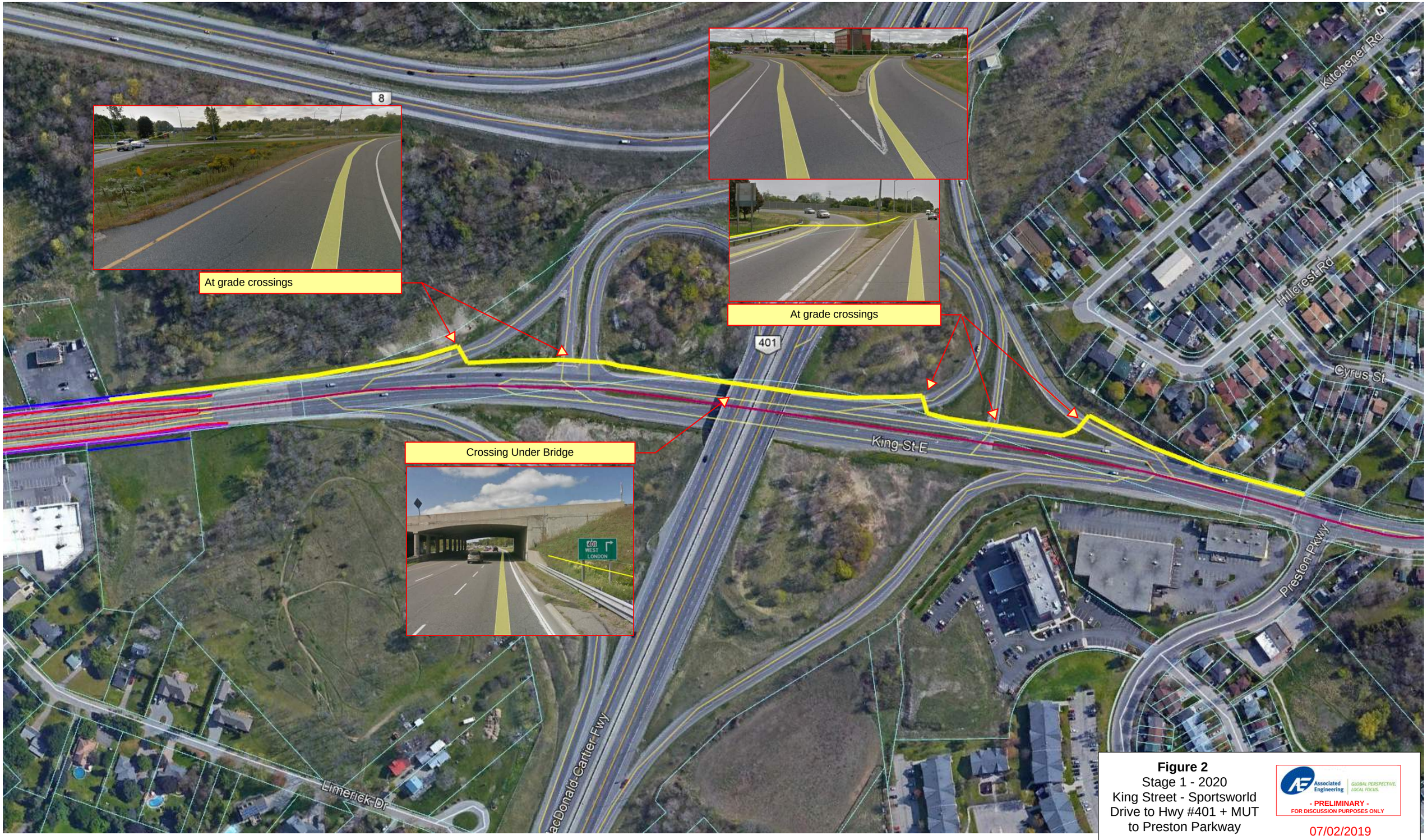


Figure 2
Stage 1 - 2020
King Street - Sportsworld Drive to Hwy #401 + MUT to Preston Parkway

Associated Engineering — GLOBAL PERSPECTIVE. LOCAL FOCUS.

- PRELIMINARY -
FOR DISCUSSION PURPOSES ONLY

07/02/2019

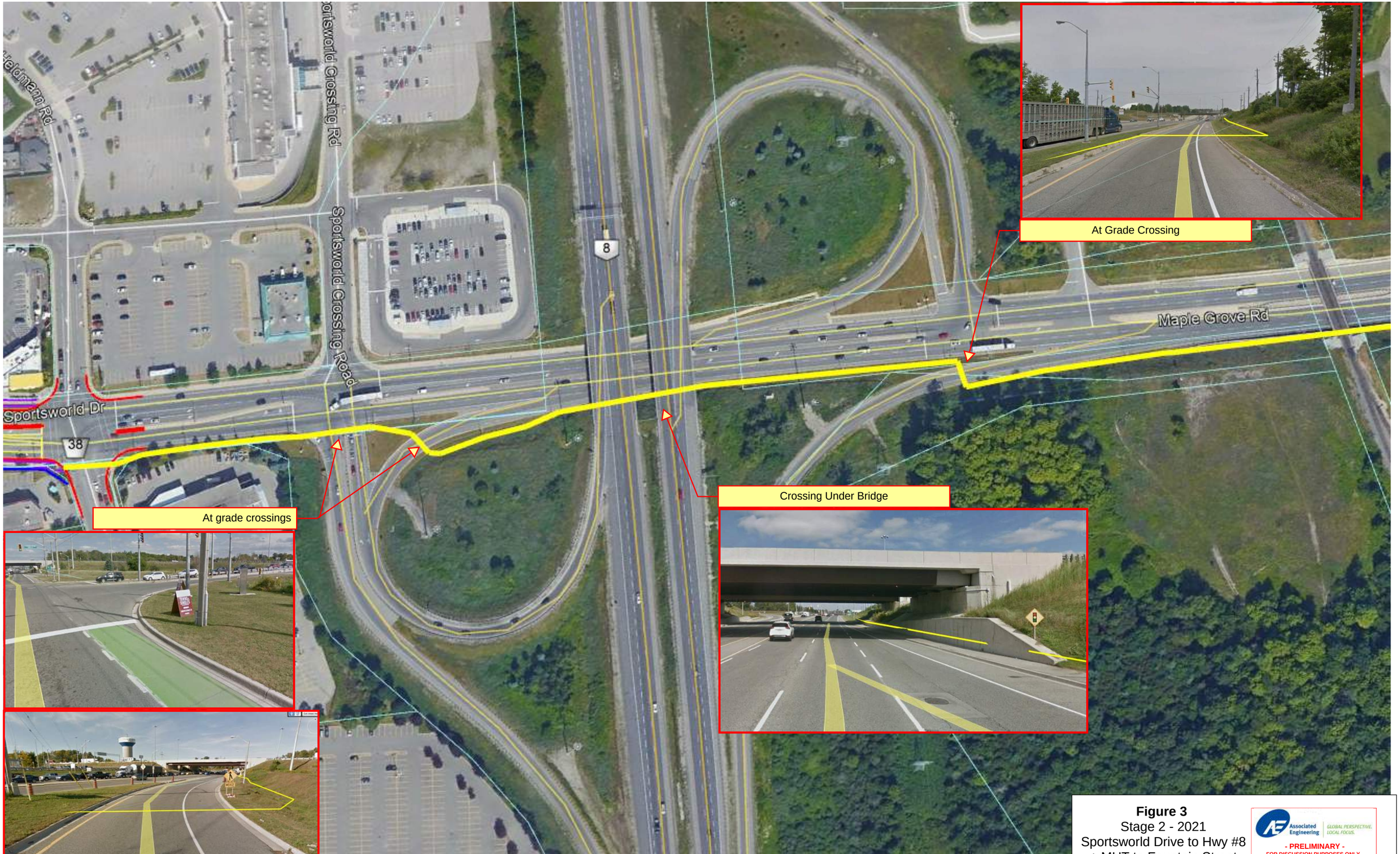


Figure 3
Stage 2 - 2021
Sportsworld Drive to Hwy #8
+ MUT to Fountain Street

Associated Engineering — GLOBAL PERSPECTIVE. LOCAL FOCUS.

- PRELIMINARY -
FOR DISCUSSION PURPOSES ONLY

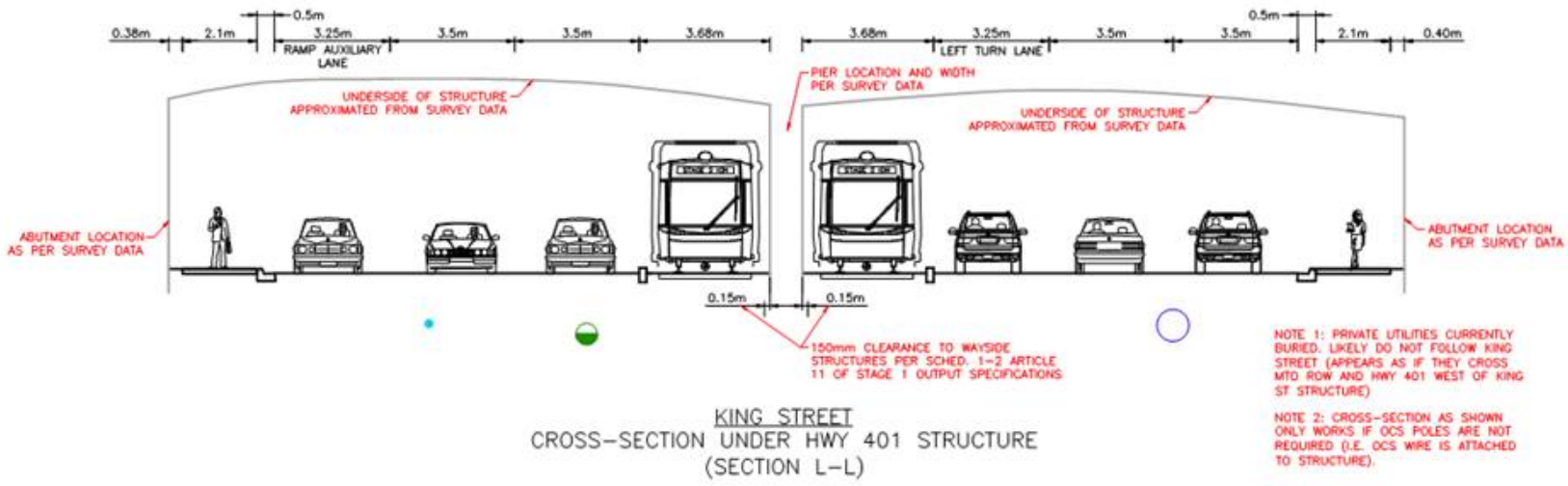
07/02/2019

Duane Lindner

From: Duane Lindner
Sent: Thursday, July 4, 2019 9:39 AM
To: Choudhury, Fahmi (MTO); Mitchell, Terence (MTO); Howard, Scott (MTO)
Cc: Peter Linn; Marcos Kroker; Hochstenbach, Frank (MTO); Matthew O'Neil
Subject: RE: King Street at Hwy #8 & Hwy #401 - Coordination Meeting Needed

Hi Fahmi – I believe this concept sketch applies at the 401 crossing. Obviously something will need to be done to support the cables under the bridge – I had suggested previously they could be on poles positioned between the bridge columns and independent of the bridge structure.

Matt O'Neil – can you please advise if there are any updates on this?



Duane Lindner
226-214-3238

From: Choudhury, Fahmi (MTO) [mailto:Fahmi.Choudhury@ontario.ca]
Sent: Thursday, July 4, 2019 9:29 AM
To: Duane Lindner <lindnerd@ae.ca>; Mitchell, Terence (MTO) <Terence.Mitchell@ontario.ca>; Howard, Scott (MTO) <Scott.Howard@ontario.ca>
Cc: Peter Linn <PLinn@regionofwaterloo.ca>; Marcos Kroker <mkroker@regionofwaterloo.ca>; Hochstenbach, Frank (MTO) <Frank.Hochstenbach@ontario.ca>
Subject: RE: King Street at Hwy #8 & Hwy #401 - Coordination Meeting Needed

Duane, Peter,

It will be helpful if you can send us digital copy of the proposed King Street cross section accommodating LRT lanes? Specially what is the proposed cross section under the King Street Overpass?

Thanks

Fahmi Choudhury, P.Eng., PMP
Senior Project Engineer
Ministry of Transportation
Planning and Design
Provincial Highways Management
659 Exeter Road, 3rd Floor
London, Ontario, N6E 1L3
T: 519-873-4576 | F: 519-873-4600
fahmi.choudhury@ontario.ca

Likely re-alignment of trail to avoid 90 degree bend

Proposed Multi-Use Trail crossing - grade separation (MUT under Ramp - see drawing)

Crossing Under Bridge

Crossing Hwy 8 On-Ramp

King St E

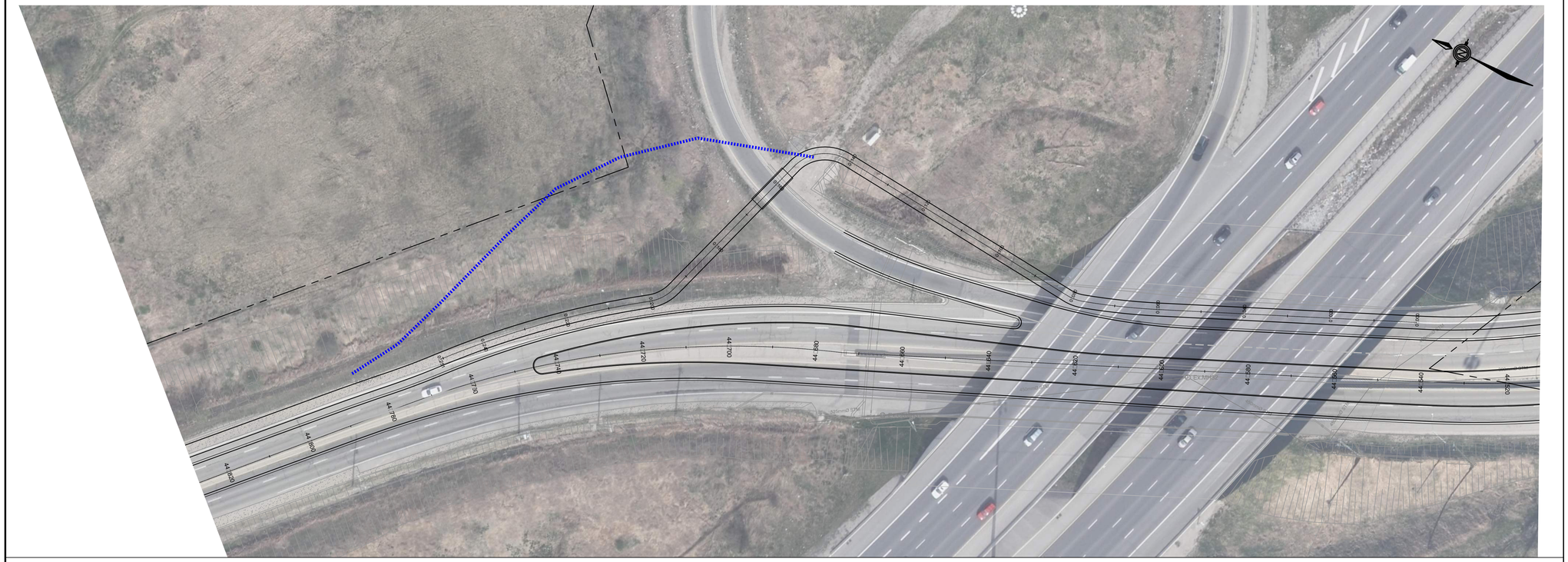
Grand Hill Dr

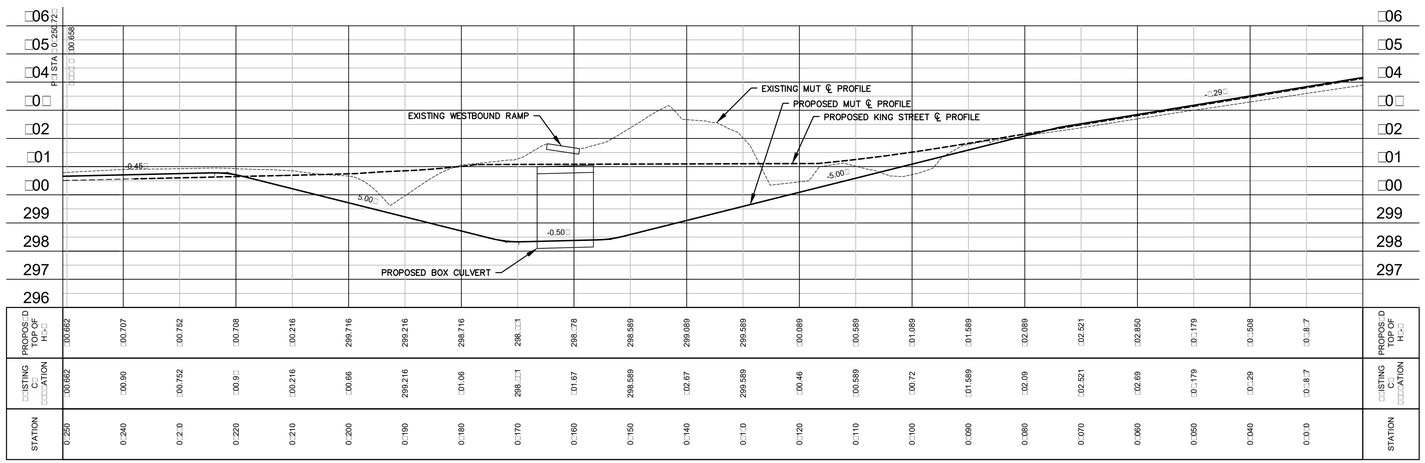
Figure 4
Stage 3 - 2022 / 2023
King Street @ Hwy #8 +
MUT Grade Separation

Associated Engineering — GLOBAL PERSPECTIVE. LOCAL FOCUS.

- PRELIMINARY -
FOR DISCUSSION PURPOSES ONLY

07/02/2019





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0+200	□00.66	299.716
0+190	299.216	299.216
0+180	□01.06	298.716
0+170	298.□□1	298.□□1
0+160	□01.67	298.□76
0+150	298.589	298.589
0+140	□02.67	299.089
0+1□0	299.589	299.589
0+120	□00.46	□00.089
0+110	□00.589	□00.589
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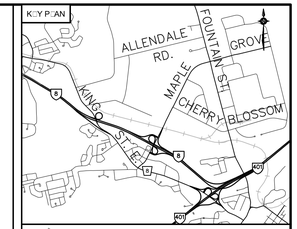

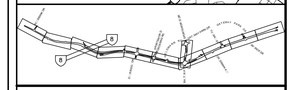

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Associated Engineering

Region of Waterloo

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Figure 5
Stage 3 - 2022 / 2023
King Street @ Hwy #8 + MUT Grade Separation

Associated Engineering | GLEN PERFORMING SOCIAL ISSUE

PRELIMINARY
FOR DISCUSSION PURPOSES ONLY

07/02/2019

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BDW-2015-P.OT.DAT - May 8, 2019

Associated Engineering | GLOBAL PERSPECTIVE. LOCAL FOCUS.

RECORD OF MEETING

Date:	September 3, 2019	**File No.:**	
Time:	1:30pm	**Location:**	AE's Office – 508 Riverbend Dr. (basement)
Client:	Region of Waterloo	**Project Name:**	King Street Improvements
Subject:	Project Tech Review Meeting (#20)	**Project No.:**	2017-5113
Distribution:	**Region** - P. Linn, M. Kroker, P. Sawicki, M. O"Neil, D. Spencer, N. Guagliano	**City of Kitchener** - S. Allen, C. Goulet	AE – D. Lindner, J. Suggett

Discussion:

20.1 OVERVIEW OF PROJECT SCOPE & PROPOSED TIMING

AE provided a high-level overview of the project. Refer to the appended Preliminary Design Report (PDR) for details. The contents of this report, as well as its appendices were provided digitally to all attendees prior to the meeting.

All attendees are asked to review the documents and provide input as appropriate, to help guide the detailed design phase for the project.

20.2 OVERVIEW OF CURRENT STATE OF DESIGN

AE presented (on screen) details of the PDR, including:

- Preliminary Design Report (50%) & Drawings
- Update on Background Studies
  - Geotechnical & Phase 1 ESA
  - Archaeological / Cultural Heritage / Ecology
- Overview of Design Elements

Refer to chapter 2 of the PDR and appendices for details.

20.3 ROAD CORRIDOR GEOMETRIC DESIGN

Refer to Section 3.2 of the PDR.
Median breaks along King Street are to be adjusted per recent discussions. Median treatment will be grass, to be maintained by the City. Existing median material does not need to be salvaged. P. Linn to provide further details / direction.

The future City of Cambridge Access Road is still of no status is not currently being included in the King Street project. Any inclusion will require the City of Cambridge to provide direction and appropriate funding. AE to liaise with Cambridge as necessary.

September 3, 2019
Region of Waterloo

Discussion:

20.4 STAGE 2 ION / LRT DESIGN CONSIDERATIONS

Refer to section 3.3 of the PDR.

M. O'Neill: M. O'Neill noted that the LRT team will not be providing a detailed profile design. LRT has hired a new operations manager (Dave Girodat). M. O'Neill to provide design parameters for AE to provide design details for the future track, including profile adjustments so that the King Street and future LRT work is coordinated.

AE: AE to provide CAD linework for the proposed conditions to the Region's LRT team.

20.5 PAVEMENT REHABILITATION / REPLACEMENT

Refer to section 3.4 of the PDR.

AE noted that due to the widening and buried concrete road base, full depth excavation and replacement is recommended for this project.

M. O'Neill: AE noted that a materials management strategy is required for the road works and could possibly use the 8.0m wide LRT rapidway as a location to place surplus granular material from the existing road base. M. O'Neill to provide specs for the required LRT road base for AE to confirm suitability of material re-use.

20.6 ACTIVE TRANSPORTATION

Refer to section 3.5 of the PDR

20.7 GRAND RIVER TRANSIT

Refer to section 3.6 of the PDR.

20.8 UTILITIES

Refer to Section 3.7 of the PDR.

AE: Critical path for the first phase of construction will be Hydro and Bell relocations. AE to coordinate with utilities as needed.

20.9 DRAINAGE & SWM

Refer to section 3.8 of the PDR.

AE: AE to assess whether LID's are suitable for use, based on soil and groundwater conditions and potential utility conflicts.

20.10 MUNICIPAL SERVICING – WATERMAIN & SANITARY

Refer to section 3.9 of the PDR.

September 3, 2019
Region of Waterloo

Discussion:

AE advised of concurrent study being done (by AE) to look at extending sanitary sewer from Gateway Park Drive to Sportsworld Drive. City of Kitchener confirms that it prefers a standard location in the curb lane for new sewers. City to confirm to the project team if sanitary sewers and/or watermain extensions are required as part of the King Street contract. City to advise if servicing sleeves are needed across the LRT Rapidway for future developments.

City of Kitchener

City of Kitchener

City of Kitchener confirmed that the existing sanitary sewer within the proposed LRT rapdiway between Deer Ridge and Sportsworld Drive should be relocated. AE to advise.

AE

20.11 LANDSCAPING & STREET LIGHTING

Refer to section 3.10 of the PDR

20.12 PROPERTY IMPACTS & ACQUISITIONS

Refer to section 4 of the PDR.
Acquisitions cannot be initiated until project approval is granted by council, tentatively in January 2020. P. Linn to coordinate.

P.Linn

20.13 PRELIMINARY COST ESTIMATE

Refer to section 5 of the PDR.
Current costs for the project are estimated at $19.5M

20.14 PUBLIC CONSULTATION

AE to prepare a newsletter that addresses the various comments from the May 2019 PCC and circulate to stakeholders. P. Linn to confirm mailing list, including any previous contacts with indigenous peoples. P. Linn / AE to prerpare a report to council for project approval, tentatively targeting a January 2020 council meeting.

P. Linn

P. Linn / AE

20.15 SCOPE CHANGES

AE / P.Linn to address budget updates for scope changes including:

- LRT PH2 change to road alignment (horizontal and vertical)
- Extension of MUT to Shantz Hill
- Maple Grove Road MUT
- Pedestrian/cyclist crossing at Highway 8 on-ramp

P. Linn advised that the MTO has refused to include an MUT extension from King Street to Shantz Hill as part of their Hwy #401 / King Street interchange work.

MEETING NOTES – Metrolinx Coordination Meeting No. 1

PROJECT	Region of Waterloo – Stage 2 ION LRT TPA Process
OBJECTIVE	To understand Business Case responsibilities between Metrolinx and Region of Waterloo for Stage 2 ION (S2ION)
DATE / TIME	September 12, 2019, 10:00 am
LOCATION	Metrolinx, 97 Front Street West - CB4G
PROJECT No.	161-07859-00

Attendees	**Organization**	**e-mail**
Joseph Erlich	Metrolinx	joseph.erlich@metrolinx.com
David Phelp	Metrolinx	david.phelp@metrolinx.com
Lee Caragiale	Metrolinx	lee.caragiale@metrolinx.com
Phil Orr	Metrolinx	phil.orr@metrolinx.com
Zul Hamzah	Metrolinx	zul.hamzah@metrolinx.com
Paula Sawicki	Region of Waterloo	psawicki@regionofwaterloo.ca
Denise Morneau	WSP	denise.morneau@wsp.com
Adrian Lightstone	WSP	adrian.lightstone@wsp.com
Salah Koleilat	WSP	salah.koleilat@wsp.com

Item:	**Discussion:**	**Action by:**
	The Region and WSP provided an overview of Waterloo's ION LRT program, highlights of Stage 1 ION which commenced revenue service in June 2019, and the status of the current Transit Project Assessment project for Stage 2 ION from Kitchener to Cambridge. Details are provided in the presentation material attached to these meeting notes. These notes focus on key discussions and action items.	
1.	**Business Case Lifecycle and Methodology**	
1.1.	The Region and WSP noted that the business case for Stage 2 ION at this stage is intended to be used to seek funding for the project. As such, an understanding the roles of Metrolinx and the Region in developing the business case and ensuring that the business case meets requirements and expectations is being sought, to ensure that effort is being properly allocated.	
1.2.	Metrolinx advised that the graphic in the presentation is from an earlier business case guideline. The Metrolinx Business Case Manual describes a progression of business case frameworks including Initial (strategic), Preliminary Design (10% design), Full (30%-100% design) and Post-In-Service. The business case is a living document that is updated and refined at each stage.	
1.3.	Metrolinx noted that the main issue that tends to arise during the business case development is the lack of consideration of alternatives. The Region advised that: • Analysis of technology (BRT vs LRT vs expansion of roads) was undertaken early in the planning for ION, and considered the integration of land use and transportation requirements. A business case was undertaken in 2010-2011 following the Multiple Account Evaluation methodology and supported Rapid Transit as the Region's preferred approach to supporting growth and LRT as the preferred technology. • A detailed route planning process has been undertaken for Stage 2 as part of the current study which included comparative evaluation of potential routes and stations locations for the alignment from Kitchener to Cambridge. This included high level analysis of costs and benefits across approximately 20	

Item:	Discussion:	Action by:
	factors, including ridership potential, travel time, environmental impacts, development opportunity, and capital and O&M costs.	
1.4.	The range of route alternatives evaluated as part of the TPA study was discussed, and Metrolinx inquired about other route options. The Region described the earlier Individual Environmental Assessment that was undertaken for a larger study area that led to the route endorsed by Regional Council in 2011, and the rationale for examination of further alternatives as part of the current TPA study. The Region clarified that the current study is intended to supplement the earlier route evaluation by assessing further options, not replace it.	
1.5.	The methodology for the evaluation of route alternatives was discussed and the Region and WSP provided an overview of the reasons why the preferred route was selected, including existing development areas, intensification plans, key destinations attracting ridership, heritage considerations, and natural environment sensitivities. In response to a question, the Region noted that Stage 1 is seeing good ridership in both directions throughout the operating hours and good connectivity between bus and LRT. Metrolinx commented that understanding the ridership patterns may affect the economic case, in terms of balancing travel time with stations.	
1.6.	Metrolinx suggested that the problem statement be clearly articulated in the business case, including as this is a key "building-block" of the business case.	
1.7.	Based on the overview provided, it was agreed that the project is at the Preliminary Design Business Case level.	
2.	**Business Case Review and Approval Process**	
2.1.	The approach for integrating the previous planning and business case work with the current project was discussed. Metrolinx noted that the process for addressing projects within areas newly added to Metrolinx's planning area through Bill 57 is still being determined, but that municipal stakeholders do have the opportunity to prepare and submit business cases for consideration under the current process.	
2.2.	Metrolinx noted that this meeting represents the start of discussion on this matter and will undertake further discussion internally to confirm their level of involvement, but is generally open to progressing jointly. Metrolinx advised that when a business case is not done internally, Metrolinx undertakes comprehensive due diligence reviews to ensure that requirements of the Metrolinx Business Case Manual have been met.	Metrolinx
2.3.	The Region and WSP will prepare a summary of the work already completed as it relates to the business case lifecycle and the framework of the proposed business case (e.g. benefit types and methodology for quantifying them), and will review the route evaluation methodology and results to assess how to present that within a business case framework.	Region/WSP
2.4.	Metrolinx will discuss internally how the relationship between Metrolinx and the Region will be managed for Stage 2 ION from a planning and funding perspective in light of Bill 57 provisions, and investigate the process to request provincial funding for Stage 2 ION under Bill 57.	Metrolinx
2.5.	WSP will arrange a follow up meeting in late October to review the work completed to date and follow up on the proposed approach to completing the business case. Joseph Erlich will be the point of contact at Metrolinx going forward.	WSP

Distribution: All attendees

These meeting notes are considered to be accurate summary of the items discussed. Please advise Denise Morneau (denise.morneau@wsp.com) of any discrepancies, errors or omissions, otherwise these meeting notes will be accepted as written.

S2ION

Metrolinx Coordination Meeting No. 1

September 12, 2019

Region of Waterloo

Agenda

Meeting Purpose:

- Understand Business Case responsibilities between Metrolinx and Region of Waterloo for S2ION

Agenda:

- Considerations
- About ION
- Stage 2 ION Business Case
  - *Frameworks*
  - *Components*
  - *Business Case Samples*
  - *Benefit Categories*
- Discussion & Next Steps

Region of Waterloo

Considerations

- Business Case
  - *Which agency is responsible for which part of the process?*
- Metrolinx's Role with Project & Region of Waterloo
  - *What's changed due to Bill 57?*
  - *How does ION fit into the Regional Transportation Plan, and what is the process for including new projects?*
  - *What's the process for Metrolinx to accept a Business Case from a Region?*
  - *Is there possibility to develop the Business Case jointly?*

Region of Waterloo

About ION

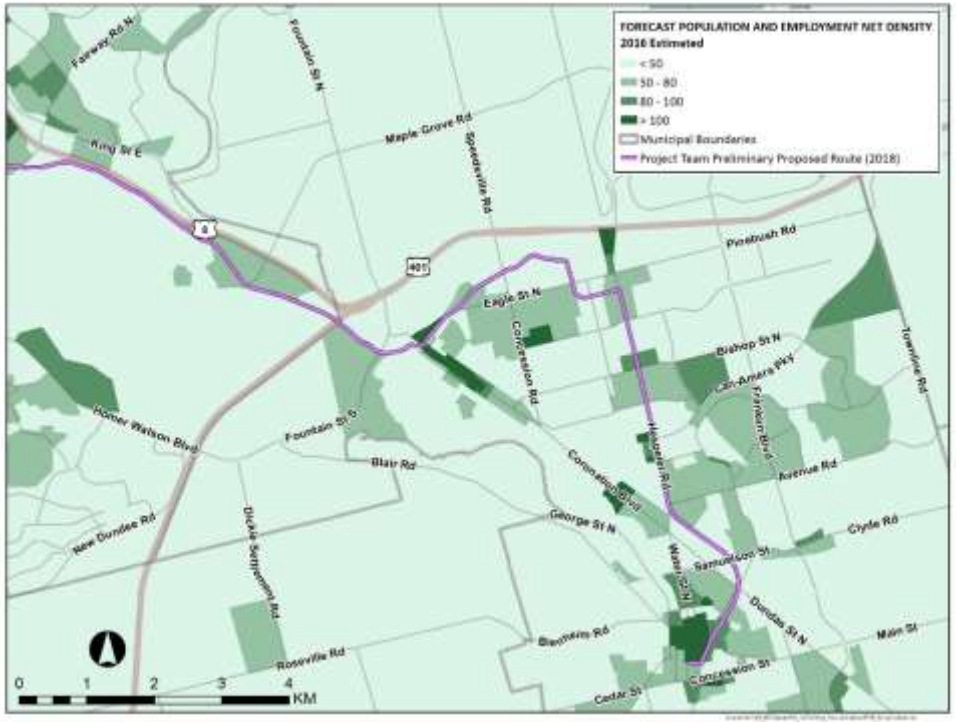
Endorsed by Regional Council in 2011:

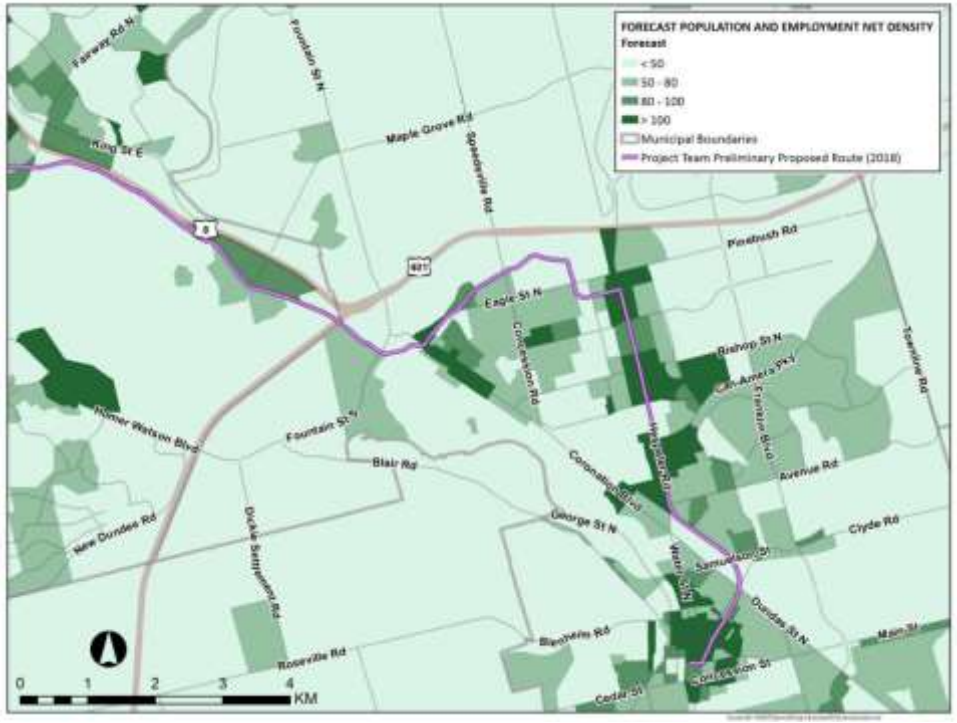
- The Region's planning and transit policies are closely aligned with A Place to Grow and provincial policies
- The Region has 13 years of leadership integrating growth management, transit and land use planning
- LRT supports compact, mixed-use, medium and higher density development; key to accommodating growth while making efficient use of existing infrastructure, preserving natural areas, and protecting farm land and drinking water
- ION is the foundation for the Regional Official Plan objectives:

About ION

Shaping The Community:

- Stage 2 ION will support the concentration of existing and planned residents and jobs.





- The Region has seen over $3 Billion in development in the Central transit corridor directly related to LRT
- ROP review underway to incorporate Stage 2 ION route, station areas and support planning policies

Region of Waterloo

About ION

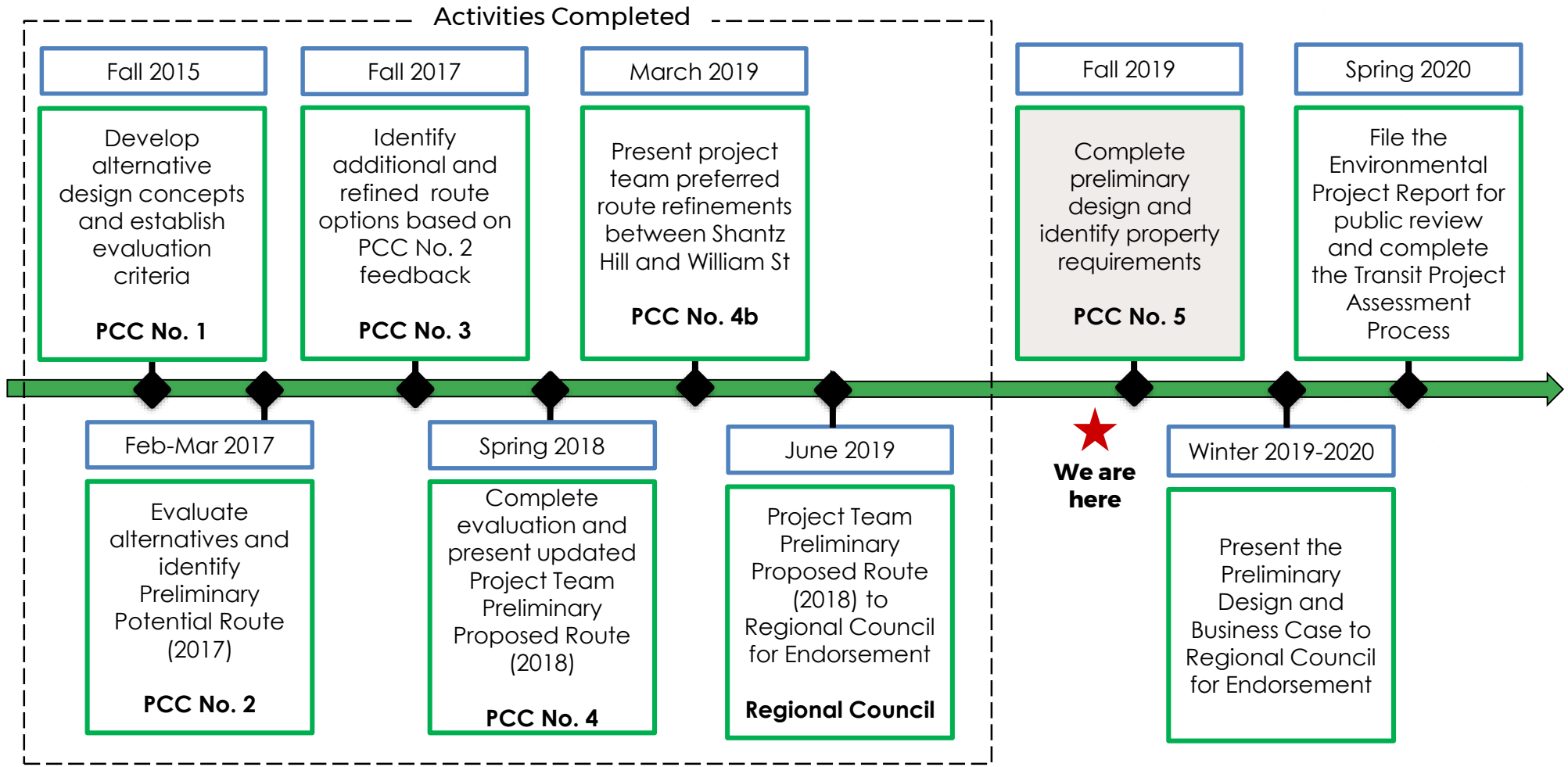
Implementation Phasing:

- Stage 1 LRT from Waterloo to Kitchener commenced Spring 2019; ION Bus from Kitchener to Cambridge commenced 2015
- Stage 2 will complete LRT from Kitchener to Cambridge

Region of Waterloo

Study Timeline:

About ION

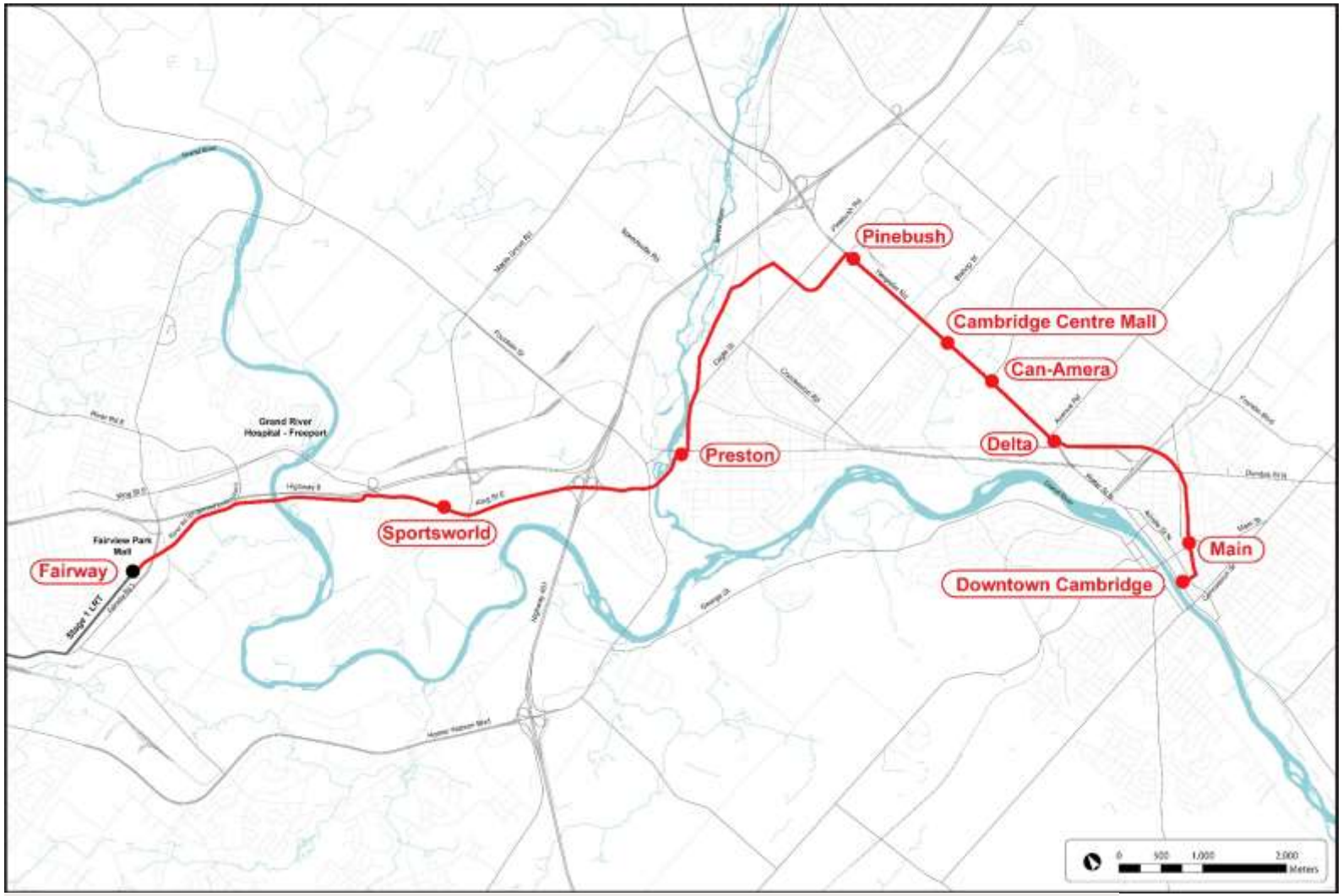


This study is following the Transit Project Assessment (TPA) Process

Region of Waterloo

About ION

Preferred Route:

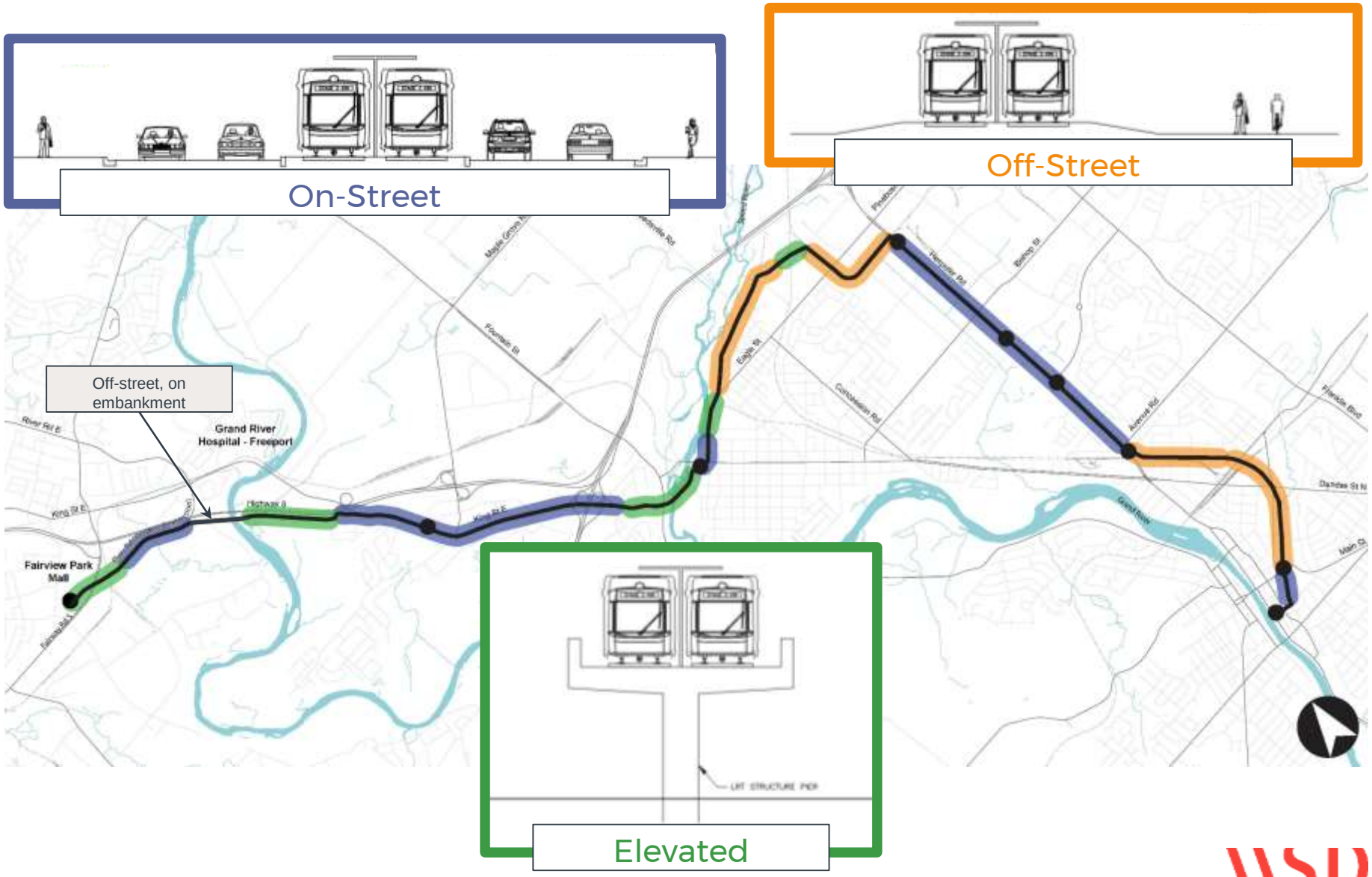


Endorsed by Region of Waterloo Council in June 2019

Region of Waterloo

About ION

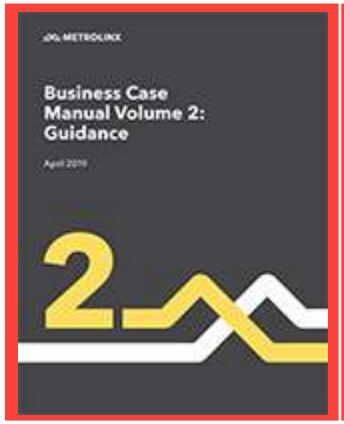
Typical Cross-Sections:



Region of Waterloo

S2ION

Business Case Frameworks

					
Agency	Metrolinx	MTO	Infrastructure Canada/MTO	New Building Canada Fund (NBCF)	Infrastructure Ontario
Document	Business Case Manual Vol. 2: Guidance	MTO – CBA for Transportation Projects	Investing in Canada Infrastructure Program (ICIP) - Public Transit Stream	NBCF Provincial-Territorial Infrastructure Component Business Case Guide	Assessing Value for Money
Business Case Components	• Strategic • Economic • Financial • Deliverability & Operations	• Economic • Financial	• Not Published	• Outcomes & Benefits • Governance • Financial • Risks	• Value for Money
Funding	• Provincial	• Provincial	• Tri-Lateral Cost Sharing	• Federal	• N/A
Notes	Best Canadian Source **Applicability due to Bill 57**	General Approach – No Monetized Values	General Approach - No Monetized Values	General Requirement Guide – No Monetized Values	Procurement & Financing Related

Region of Waterloo

Business Case Components

Strategic Case (G2 Chapter 4)

How does the investment achieve strategic goals and objectives?

- Determines the value of addressing a problem or opportunity based on regional development goals, plans, and policies
- Options are evaluated against objectives that tell a clear narrative of how the investment can address the problem or opportunity along with potential risks to investment performance
- Establishes 'why' an investment should be pursued from a strategic lens

Economic Case (G2 Chapter 5)

What is the investment's overall value to society?

- Assesses the economic costs and benefits of the proposal to individuals and society as a whole, and spans the entire investment's lifecycle
- Uses standard economic analysis to detail the investment's benefits, costs, and risks in economic terms
- Establishes 'what the benefit to society' is in economic terms

Financial Case (G2 Chapter 6)

What are the financial implications of delivering the investment?

- Assesses the overall financial impact of the proposal, its funding arrangements and technical accounting issues, and financial value for money
- Focuses on capital, operating, and revenue impacts and risks directly related to the investment and indirectly resulting from the investment
- Establishes 'how much the investment will cost' in financial terms

Deliverability and Operations Case (G2 Chapter 7)

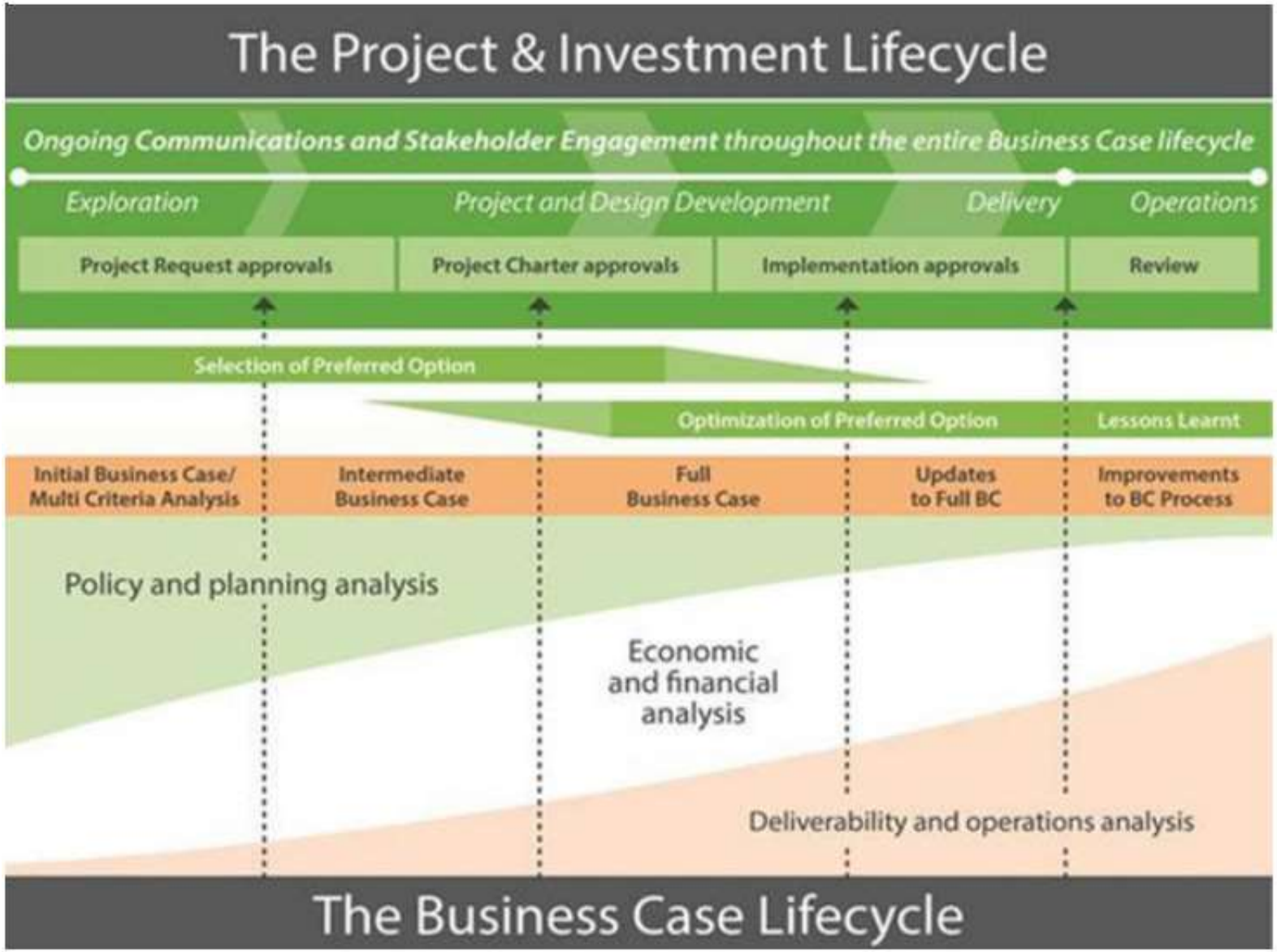
What risks and requirements must be considered for delivering and operating the investment?

- Provides evidence on the overall viability of one or more options for addressing the problem/opportunity
- May consider procurement strategies, deliverability risks, operating plans and risks, or organizational risks
- Establishes 'what is required to deliver and operate' the investment

Metrolinx: Business Case Manual Vol. 2: Guidance

Region of Waterloo

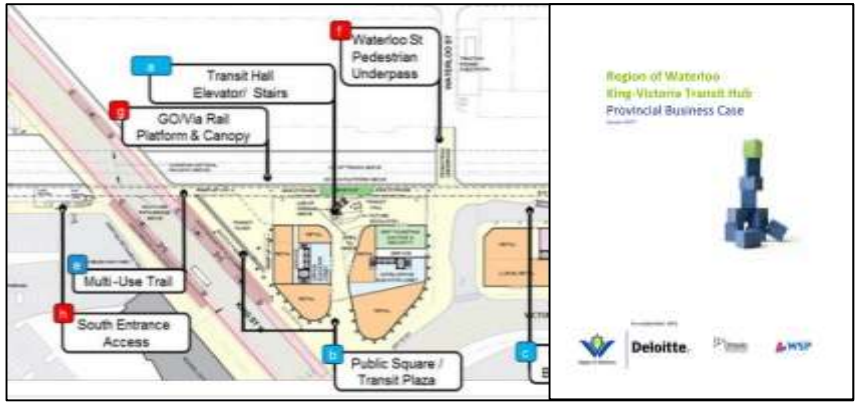
Business Case Components



Metrolinx

Region of Waterloo

Business Case Sample Cases



Region of Waterloo
King-Victoria Transit Hub

Provincial Business Case

- Developed to enable Province of Ontario to complete an internal review for funding approval
- Project Sponsor: MTO
- Complete Business Case that covered:
  - *Strategic Case*
  - *Economic Case*
  - *Financial Case*
  - *Operations & Deliverability Case*

City of Toronto
Enhanced Eglinton West Rapid Transit

Provincial Business Case

- Completed as an options analysis between LRT and Smart Track technologies for Metrolinx
- Project Sponsor: Metrolinx
- Complete Business Case that covered:
  - *Strategic Case*
  - *Economic Case*
  - *Financial Case*
  - *Deliverability & Operations Case*

Region of Waterloo

Benefits Categories / Data Needs

Primary Benefits

Benefit Type	Benefit Category	Description	Beneficiary	Mone-tized	Quantified/ Qualified	Data Needed
User/Direct	Travel Time	Improved transit travel time	Existing Transit User	Yes		• Ridership • PHT
User/Direct	Travel Time	Latent demand to improved transit travel time	New Transit User	Yes		• Mode Shift • PHT
User/Direct	Travel Time Reliability	Reliability time savings / reduced generalized cost	Existing Transit User	Yes		• Existing Travel Time Reliability
General/Indirect	Safety Benefits	Improved safety	General Public	Yes		• Mode Shift/VKT • Accident Data
General/Indirect	Out of Pocket Cost Savings	Savings due to reduced parking, fuel, etc..	New Transit User	Yes		• Mode Shift/VKT
General/Indirect	GHG Reductions	Reduced GHG emission between auto split/base case and LRT	General Public	Yes		• Mode Shift/VKT

Benefits Categories / Data Needs

Secondary Benefits

Benefit Type	Benefit Category	Description	Beneficiary	Mone -tized	Quantified/ Qualified	Data Needed
User /Indirect	Air Quality Benefits	First/last mile and reduced criteria air contaminants	New Transit User		Yes	• Min. Acceptable Walking Distance • Mode Shift/VKT
User/Direct	Quality Benefits	Improved quality / signage	Existing Transit User		Yes	• Technology Description
User/Direct	Comfort Benefits	Improved travel comfort	Existing Transit User		Yes	• Generalized Adjustment Minutes per upgrade/VOT
General/Indirect	Land Value Uplift	Increased value around stations	General Public	Yes		• Property Assessments
External	Employment	Increased 'commute shed'	General Public		Yes	• Area Employment around Stations
External	Economic	Productivity (agglomeration) & competition	General Public		Yes	• Area Employment around Stations • PHT
General/Indirect	Preservation Benefits	Land and water resource preservation from limited sprawl	General Public		Yes	• Land and water loss rates • Value of Land and water
General/Indirect	Capital Program Savings	Benefit of offsetting infrastructure construction programs	General Public		Yes	• Region capital investment program
Const. & Op.	Job Creation	Due to construction & operations	General		Yes	• Capex & Opex
Const. & Op.	GDP	Due to construction & operation	General		Yes	• Capex & Opex

Discussion & Next Steps

- Business Case
  - *Which agency is responsible for which part of the process?*
- Metrolinx's Role with Project & Region of Waterloo
  - *What's changed due to Bill 57?*
  - *How does ION fit into the Regional Transportation Plan, and what is the process for including new projects?*
  - *What's the process for Metrolinx to accept a Business Case?*
  - *Is there possibility to develop the Business Case jointly?*
- Schedule and next steps

MEETING NOTES – Ministry of Transportation (MTO)
Meeting No. 8

PROJECT	Region of Waterloo – Stage 2 LRT TPA Process
OBJECTIVE	To update MTO on the progress of preliminary design and discuss issues specific to the King St / Hwy 401 Interchange
DATE / TIME	October 4, 2019, 10:00 am
LOCATION	Ministry of Transportation, West Region 659 Exeter Road, London
PROJECT No.	161-07859-00

Attendees	**Organization**	**e-mail**
Scott Howard	MTO – Planning & Design	Scott.Howard@ontario.ca
Martin Haalstra	MTO – Structural	Marin.Haalstra@ontario.ca
Carmen De Leon	MTO – Traffic	Carmen.Deleonmonillo@ontario.ca
Geddes Mahabir	MTO – Planning & Design	Geddes.Mahabir@ontario.ca
Paula Sawicki	Region of Waterloo	psawicki@regionofwaterloo.ca
Denise Morneau	WSP	denise.morneau@wsp.com
Sarah Roberts	WSP	sarah.roberts@wsp.com

Item:	**Discussion:**	**Action by:**
	The Region and WSP provided a brief presentation summarizing the current status of the Stage 2 ION study, and the functional design of ION at the Highway 401/King Street interchange and in the segment paralleling Highway 8 between River Road and King Street. These notes summarize the discussion points and action items. The presentation slides are appended for reference.	
1.	**Study Status and Schedule**	
1.1.	WSP noted that the proposed LRT route received Regional Council endorsement in June 2019.	
1.2.	WSP advised that the next round of Public Consultation Centres (PCC #5) is scheduled for November 19, 20, and 21, 2019 and will address the functional design of the preferred route. The Region will send MTO the PCC notice for their information.	Region
2.	**ION at the Highway 401/King Street Interchange**	
2.1.	WSP provided an overview of the proposed addition of ION to the centre of King Street through the Highway 401/King Street interchange area, as outlined in a Technical Memorandum circulated in advance of the meeting. Two scenarios were reviewed: an interim condition which includes MTO's upcoming rehabilitation and minor widening of the King Street overpass, and an ultimate condition which includes more substantial changes to the interchange as a result of the construction of the N-W and W-N ramps at the Highway 401/Highway 8 interchange, including replacement of the King Street overpass.	
2.2.	Regarding the interim condition, the following was discussed: • The bridge substructure will not be widened in the interim condition (the deck will be widened as an overhang) so the vertical clearance under the structure will remain the same as the existing condition. WSP noted that the approach	

Item:	Discussion:	Action by:
	taken, which assumed that there would be cross-fall on the widening that would reduce vertical clearance, results in a more conservative is a conservative approach. • Steel beam guide rail will be added on the north approach to the west abutment which may impact the available width under the structure. A safety shape will also be added at the base of the columns, which will further reduce available width under the structure. WSP will obtain this additional information from the design team and review the cross-sections to assess the impact of these items. • MTO is open to the Region constructing the LRT crash wall adjacent to the columns with the interim configuration construction as part of Stage 2 ION construction. • WSP clarified that the interim condition cross-section with LRT would include sidewalk on both sides of King Street but would not include a multi-use trail in the interim phase. The Region indicated a desire for a multi-use trail as part of the ultimate configuration when the Highway 401 overpass is constructed. MTO indicated that bike facilities would need to be separate from pedestrian facilities through the interchange area in order to comply with the Highway Traffic Act. • The Region noted that turning movements and signal timing at the ramp terminal intersections will be developed in the next stage of design and will ensure priority is given to ramp operations to avoid impacts on Highway 401. MTO indicated that the design of the ramp terminal intersections will likely need to address AODA requirements. • There is an entrance within the limit of the S-W ramp taper that requires further review and accommodation.	WSP WSP
2.3.	For the ultimate configuration, it was clarified that the amount of vertical clearance under the structure would not need to increase to allow for free-standing OCS poles, but the width of the clear spans would need to increase. MTO noted that measures to manage stray current will be a key consideration during design. WSP discussed other options that were investigated to propel the vehicles through the area without needing external infrastructure but noted that these cannot be retrofitted onto the existing fleet. It was agreed that technology is likely to advance by the time Stage 2 ION is constructed and options will be considered closer to the time as part of future design studies or fleet replacement strategies.	Region
2.4.	The Region indicated that the preference would be for the LRT to be constructed with or after the ultimate interchange configuration construction. This would allow construction of the interchange to occur without having to manage impacts to LRT service and would also eliminate throw-away costs.	
2.5.	It was agreed that while there is additional coordination required between the Region and MTO on design and construction elements, sequencing and staging, there is consensus on the proposed Stage 2 ION preliminary design through the Highway 401 interchange area.	Region/MTO
3.	**ION Adjacent to Highway 8 from River Road to King Street**	
3.1.	WSP provided an overview of the LRT corridor on the south side of Highway 8, noting that the functional design has not changed since last presented to MTO in November 2018.	
3.2.	The proximity of the proposed River Road Extension structure over Highway 8 and the adjacent LRT structure at Hidden Valley Road was discussed, and WSP noted that although there is no physical conflict between the two structures, they would likely need to be designed and constructed in coordination.	

Item:	Discussion:	Action by:
4.	**Other Discussion**	
4.1.	MTO confirmed that preliminary Design Criteria in MTO format is not required for the proposed work on King Street at the Highway 401 interchange, but requested that the cross-section details be included in the Environmental Project Report so that lane requirements (number and widths) are documented.	WSP
4.2.	MTO suggested doing a final presentation to senior management after PCC No. 5 and before the draft EPR is prepared.	Region/WSP
4.3.	*Post meeting note: The Technical Memorandum regarding ION at the Highway 401/ King Street Interchange has been updated based on discussion at this meeting and is appended to these meeting notes.*	

Distribution: All attendees

Attachments:

- Presentation Slides
- Revised Technical Memo "Waterloo ION Stage 2 Transit Project Assessment: LRT Cross-Section at Highway 401/King Street Interchange" (November 5, 2019)

These meeting notes are considered to be accurate summary of the items discussed. Please advise Denise Morneau (denise.morneau@wsp.com) of any discrepancies, errors or omissions, otherwise these meeting notes will be accepted as written.

STAGE 2 ION LRT
TRANSIT PROJECT ASSESSMENT

MTO MEETING NO. 8

OCTOBER 4, 2019

MEETING OBJECTIVES

- **Provide an update on the status and anticipated schedule for Stage 2 ION**
- **Review plans and cross-sections for Stage 2 ION for two sections:**
  - **on King Street at the Highway 401 interchange**
  - **Between River Road and King Street on the west side of Highway 8**

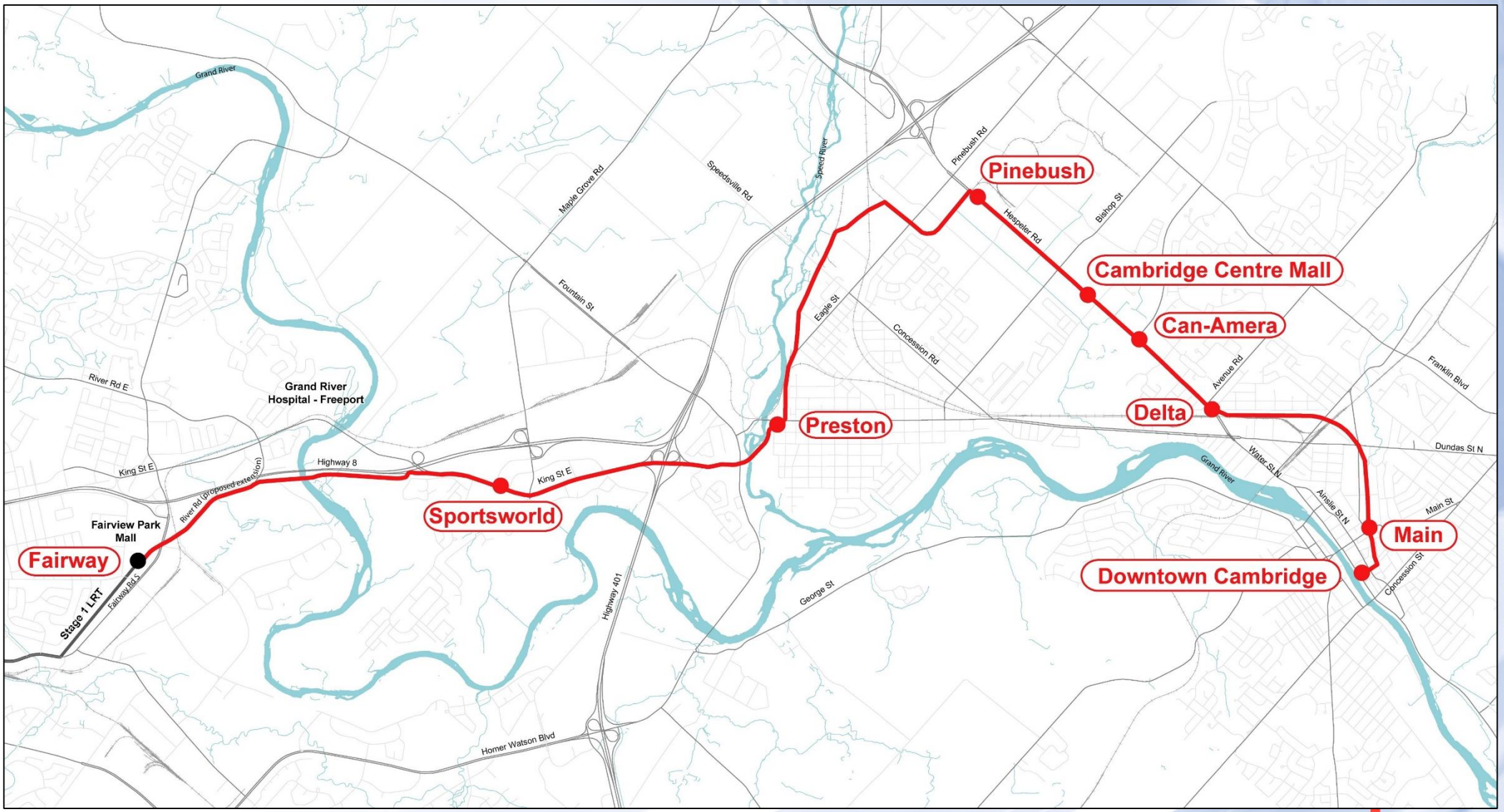
BACKGROUND INFORMATION

The following PDFs are in the package distributed prior to the meeting:

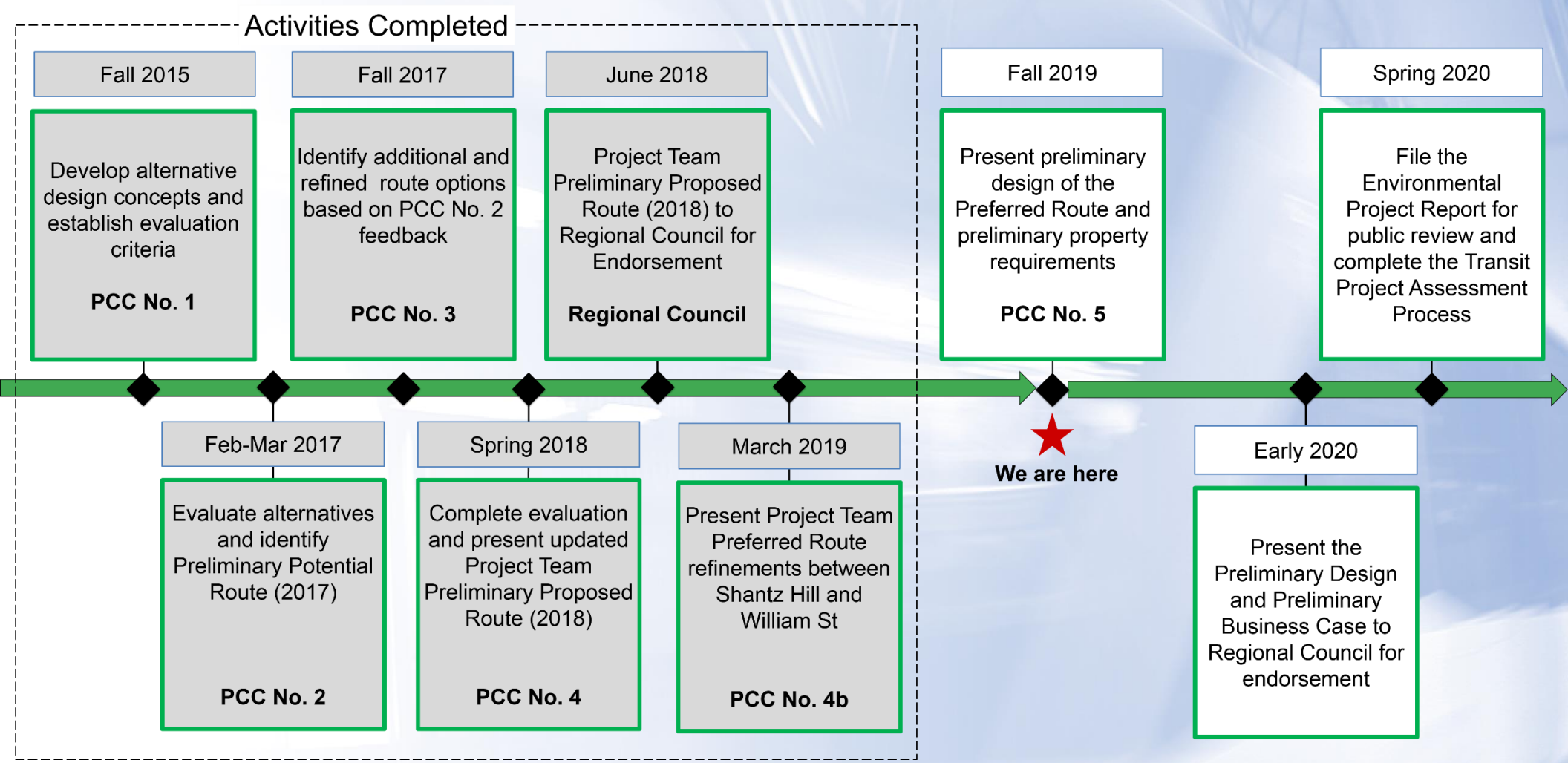
- **ION on King Street at Highway 401:**
  - **S2ION-Hwy 401-King St Interchange Memo 2019-09-20.pdf**
  - **S2ION - Preliminary Design Roll Plans-KING.pdf**
- **ION between River Road and King Street:**
  - **S2ION Preliminary Design Roll Plans-Hwy8.pdf**
  - **S2ION - Cross-Sections River to King Combined.pdf**
  - **S2ION - GAs River Road to King Street Combined.pdf**
  - **S2ION - Hwy 8 King St Exit Ramp Combined.pdf**

STAGE 2 ION - STATUS

Preferred Route endorsed by Regional Council in June 2019



STUDY TIMELINE



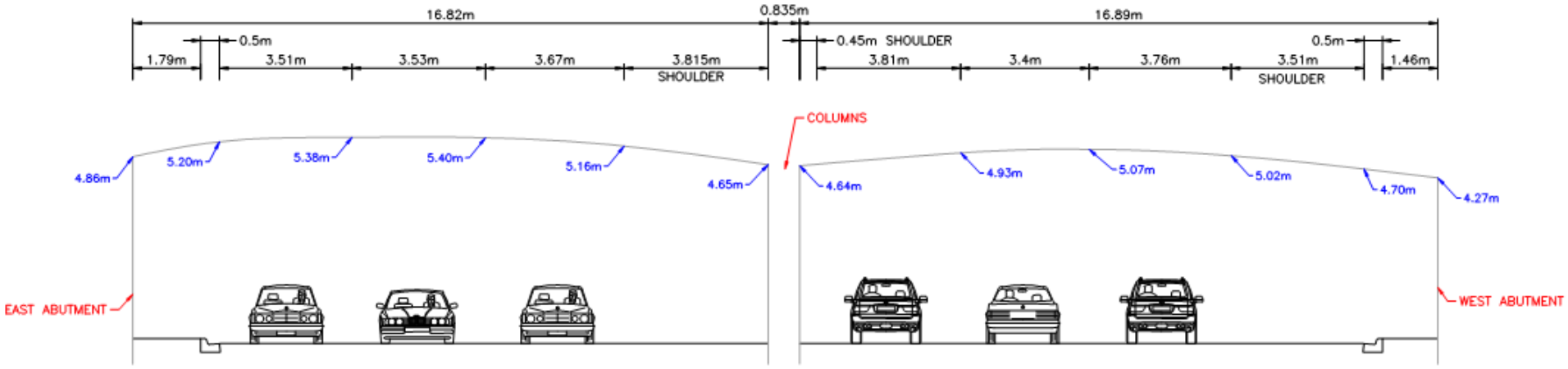
★ PCC No. 5 – November 19, 20 and 21, 2019

ION ON KING STREET AT HIGHWAY 401

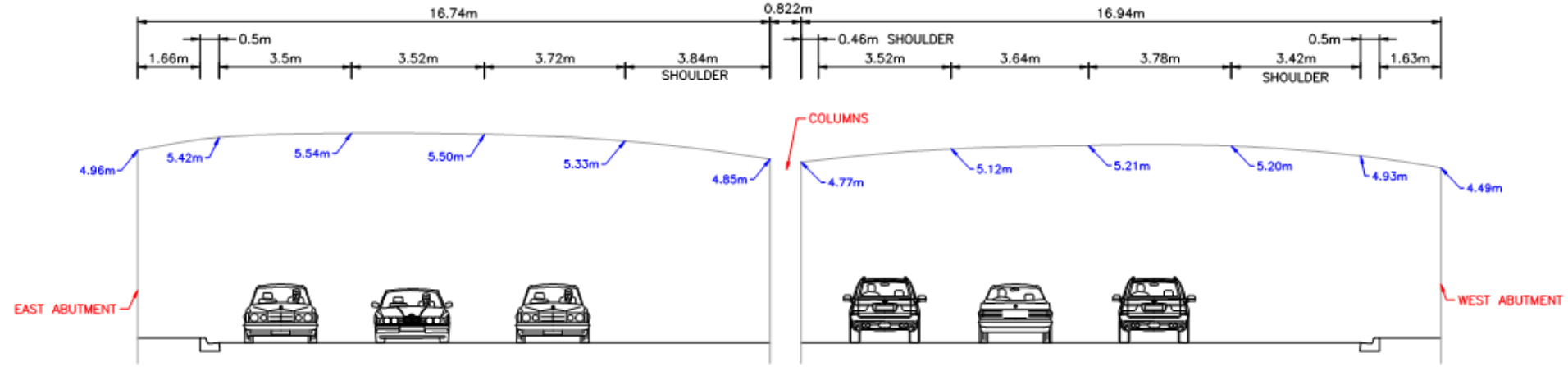
ION ON KING STREET AT HIGHWAY 401

- **Technical Memo (Sept 20, 2019) provides analysis, plans, sections (distributed prior to meeting)**
- **Three scenarios:**
  - **Existing condition**
  - **Interim condition – MTO rehabilitation and widening of King Street overpass**
  - **Ultimate condition – MTO expansion of Highway 8 interchange, reconstruction of King Street interchange, replacement of King Street overpass**
- **Interim condition will be constructed in advance of ION**
- **Two scenarios assessed: interim and ultimate**
- **Consider King Street cross-section, clearances, ramp terminals, auxiliary lanes, constructability**

EXISTING CONDITION



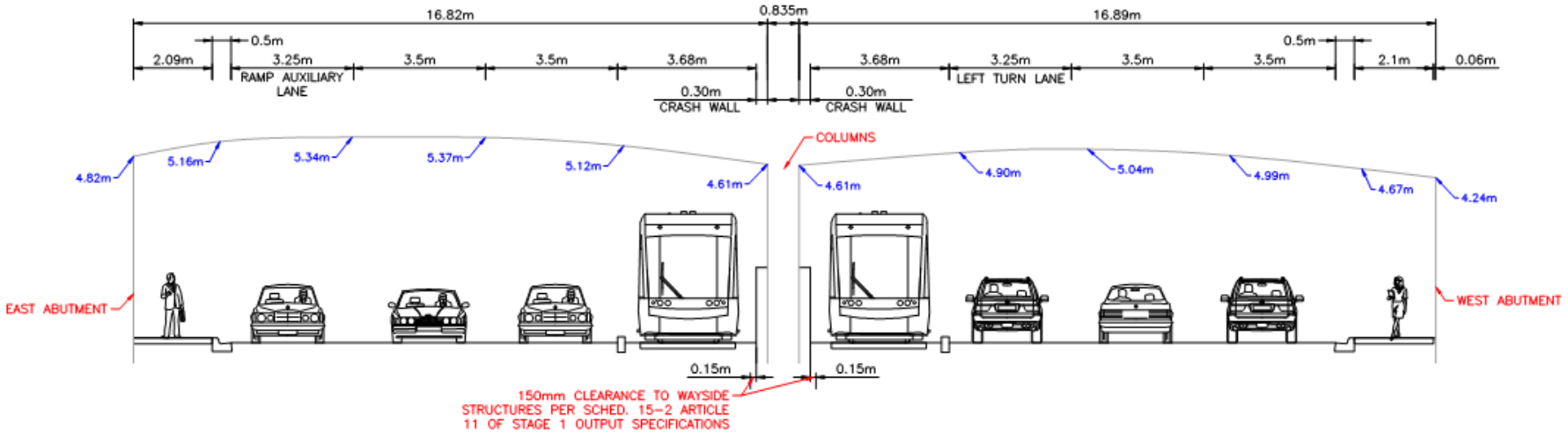
KING STREET
CROSS–SECTION AT NORTH END OF HWY 401 STRUCTURE
EXISTING INTERCHANGE CONFIGURATION



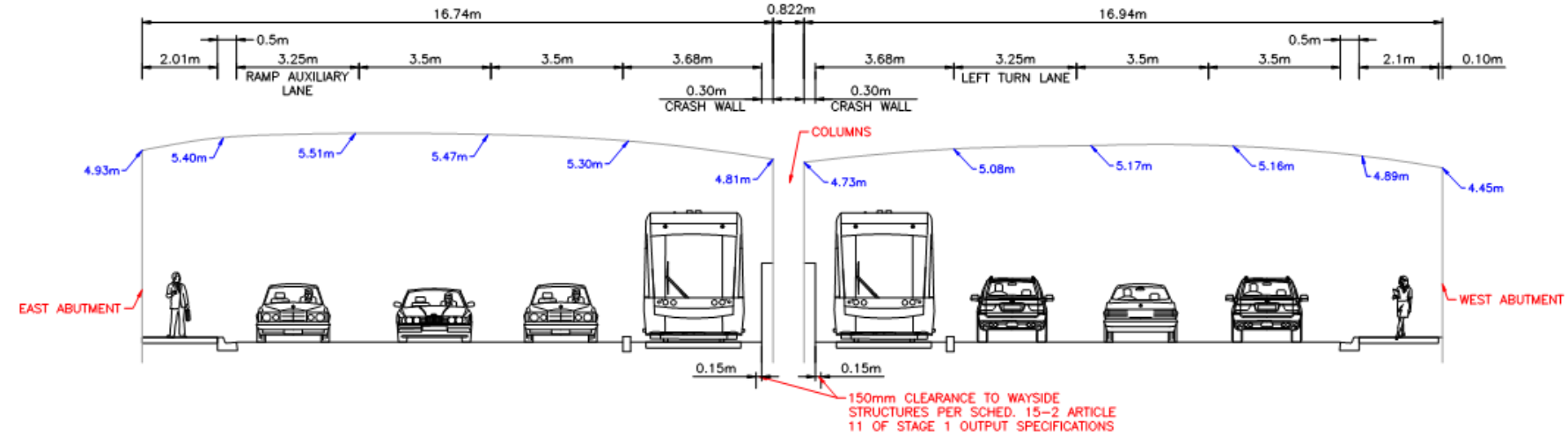
KING STREET
CROSS–SECTION AT SOUTH END OF HWY 401 STRUCTURE
EXISTING INTERCHANGE CONFIGURATION

Note: Plans were distributed with the meeting material

INTERIM CONDITION



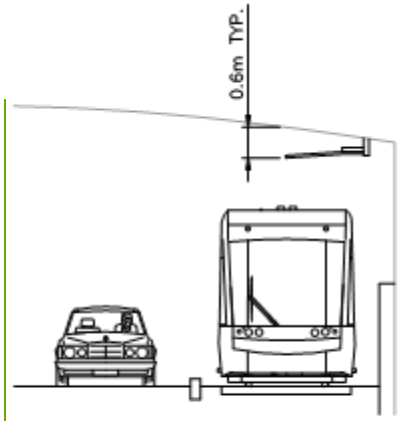
KING STREET
CROSS-SECTION AT NORTH END OF HWY 401 STRUCTURE
INTERIM INTERCHANGE CONFIGURATION WITH LRT



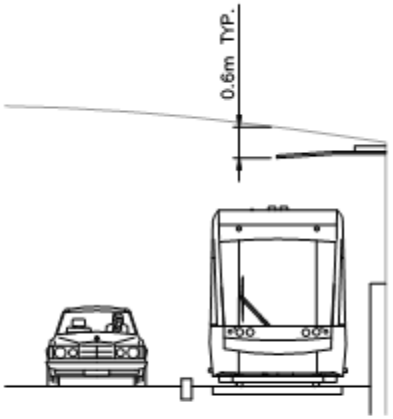
KING STREET
CROSS-SECTION AT SOUTH END OF HWY 401 STRUCTURE
INTERIM INTERCHANGE CONFIGURATION WITH LRT

Note: Plans were distributed with the meeting material

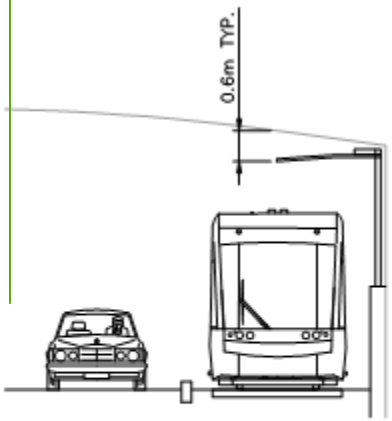
INTERIM CONDITION – OCS MOUNTING



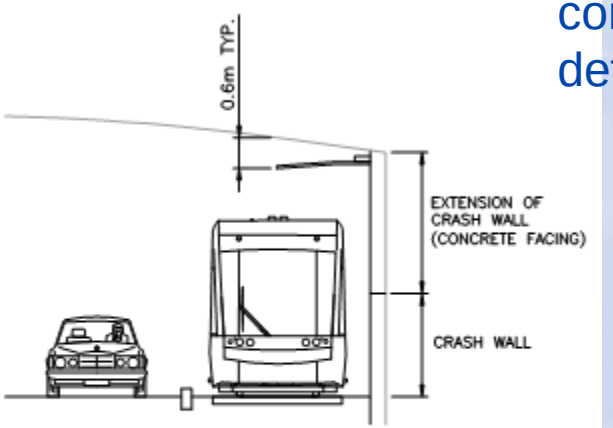
OCS SUPPORT MOUNTED TO UNDERSIDE OF STRUCTURE



OCS SUPPORT MOUNTED TO WALL/COLUMN



OCS SUPPORT MOUNTED ON CRASH WALL

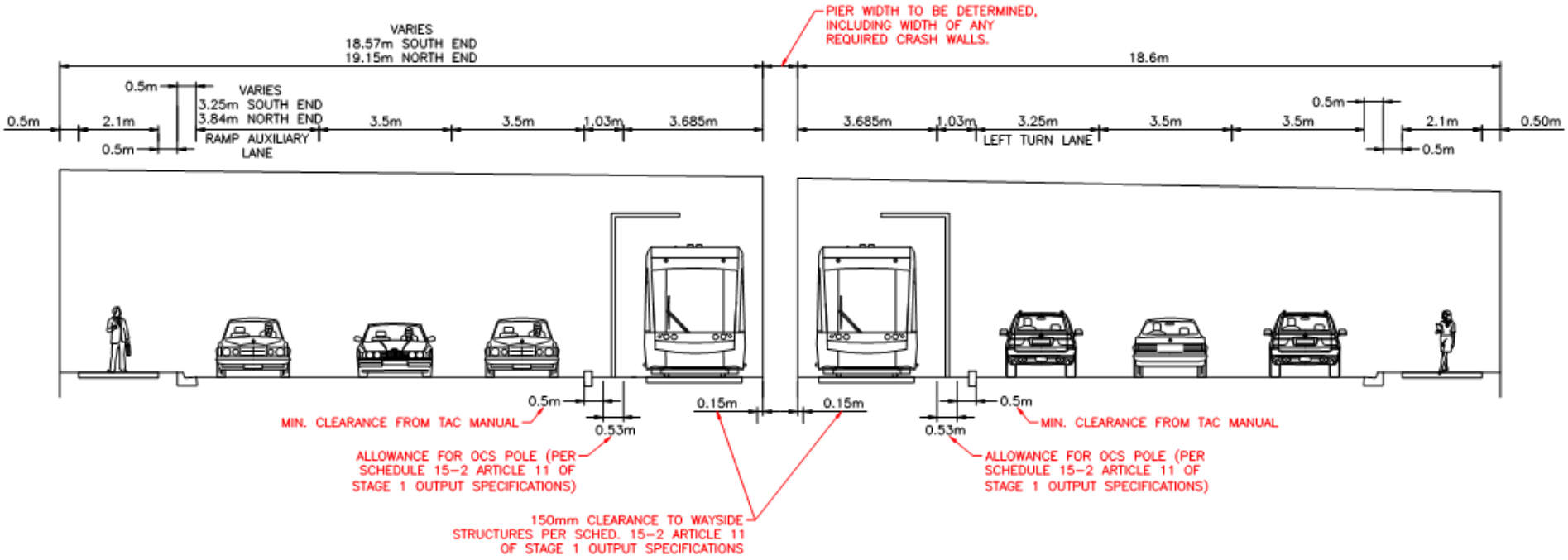


OCS SUPPORT MOUNTED ON EXTENSION OF CRASH WALL

OCS could be wall or ceiling mounted - details for mounting system, grounding, bonding and plate protection to be developed in consultation with MTO during detail design

Note: Plans were distributed with the meeting material

ULTIMATE CONDITION – NEW BRIDGE



KING STREET
ULTIMATE INTERCHANGE CONFIGURATION WITH LRT
(NEW HIGHWAY 401 STRUCTURE)

Note: Plans were distributed with the meeting material

ION ON KING STREET AT HIGHWAY 401 CONSTRUCTABILITY CONSIDERATIONS

- **ION constructed before ultimate interchange:**
  - Coordination of column, pier and foundation details for overpass and ramp structures to avoid/minimize reconstruction of ION
  - ION operations during demolition of existing overpass and construction of new bridges – staging, operating strategies for lane restrictions and/or temporary full closure of King Street

- **ION constructed after ultimate interchange:**
  - Construction of King Street and bridges to accommodate ION (lane width, clearances, crash protection)
  - Accommodation of OCS support on bridges

ION BETWEEN RIVER ROAD AND KING STREET ON THE WEST SIDE OF HIGHWAY 8

ION BETWEEN RIVER ROAD AND KING STREET

- **Review of current plans and profiles distributed ahead of meeting**
- **No change to agreed approach:**
  - **Accommodate ultimate Highway 8 cross-section: 4 lanes + HOV lane**
  - **North of Grand River: LRT alignment as far from Highway 8 as practical**
  - **Over and south of Grand River: LRT alignment minimum 14m beyond ROW**

DISCUSSION

- **Process for finalizing preliminary design / EPR / Functional Design Report**
- **Need for additional presentations to MTO Senior Management**
- **Need for Preliminary Design Criteria for King Street at Highway 401**

REVIEW ACTION ITEMS AND NEXT STEPS

THANK YOU

TECHNICAL MEMO

TO: Matthew O'Neil, Region of Waterloo

FROM: Sarah Roberts and Patrick Malloy

COPIES: Denise Morneau, Sami Khaled, Sandy Nairn, Catherine Gentile, WSP

SUBJECT: **Waterloo ION Stage 2 Transit Project Assessment: LRT Cross-Section at Highway 401/King Street Interchange**

DATE: **September 20, 2019 / Revised November 5, 2019**

INTRODUCTION

The preferred route for the Stage 2 ION LRT alignment in the vicinity of Highway 401 was endorsed by Regional Council in June 2019. The endorsed route travels in the median of King Street from the Highway 8 interchange to Shantz Hill Road. This section includes the interchange of Highway 401 and King Street. The existing cross-section of King Street at the Highway 401 overpass is provided in Appendix A.

At MTO Meeting No. 7 in November 2018, MTO indicated that as a result of the future construction of the missing west-oriented ramps at the Highway 401/Highway 8 interchange (W-N and N-W), the Highway 401/King Street interchange will also require reconstruction. Consistent with the planned sequencing of improvements at Highway 401/Highway 8 interchange, there are interim and ultimate configurations for Highway 401/King Street:

- MTO is currently in detail design for widening of Highway 401 in this area, including rehabilitation and minor widening of the King Street overpass, which reflects the interim condition. In addition, MTO provided further information on the interim improvements at MTO Meeting No. 8 on October 4, 2019 which include application of a safety shape along the King Street median at the base of the overpass columns, and new guiderail on the north approach to the west abutment. This project will be constructed in advance of ION (see Appendix B).

- The ultimate condition will include the construction of the N-W and W-N ramps at the Highway 401/ Highway 8 interchange which includes bridges for these ramps over Highway 401 and King Street, replacement of the King Street overpass (which will be at the end of its service life), and reconstruction of the existing interchange ramps at Highway 401/King Street (see Appendix C). MTO provided a functional plan for the ultimate configuration, which is conceptual and subject to refinement.

ION will need to be compatible with both the interim and ultimate configurations, as the timeline for construction of the Highway 401/Highway 8 interchange is currently unknown. This memo details the integration of the ION functional design with the interim and ultimate configurations of the Highway 401/King Street interchange as well outlining potential physical, scheduling or constructability constraints. This memo will be included in the Functional Design Report for further reference and guidance during the next design stage. MTO has advised that Preliminary Design Criteria in MTO format are not required.

It should also be noted that the Region is currently undertaking detail design for full depth reconstruction of King Street north of Highway 401. This reconstruction will include widening to accommodate LRT in the median, while maintaining two through lanes in each direction with turning lanes where needed. This work also includes utility relocations and

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wsp.com

upgrades, and improvements to the boulevards and pedestrian facilities. This design is being undertaken separately from ION. It is understood that this work matches existing conditions north of the Highway 401/King Street interchange ramps and thus will not affect the functional design analysis presented in this memo.

KING STREET CROSS-SECTION WITH ION

The existing cross-section for King Street at the Highway 401 overpass is provided in Appendix A.

The proposed cross-section for King Street with ION through the Highway 401 interchange area has been developed with consideration of the following:

- the Design Criteria established for ION early in the study, including minimum 1.8 m wide sidewalks on both sides
- providing a minimum lane width of 3.5 m for the general traffic lanes between the ramp terminals, as per MTO requirements
- providing a minimum vertical clearance to the underside of the bridge over the general traffic lanes at least equal to the existing clearance, or 4.9 m (whichever is lower), in accordance with the MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads – June 2017, Section 3.3.5.5 "Existing Structures Over Roadways"

ION FUNCTIONAL DESIGN WITH INTERIM CONDITION

As noted above, MTO will have completed widening of Highway 401, including rehabilitation and minor widening of the overpass at King Street, at the time of ION construction. The most recent design package (60%) for the King Street overpass rehabilitation and widening was obtained from MTO's design team.

In addition to the design files, the information provided by MTO's design team included a more detailed topographic survey of the bridge. As the ION functional design was undertaken primarily on photogrammetric mapping, prior contract drawings for King Street and field survey of vertical clearances at the bridge, this provided an opportunity to update the base mapping and confirm that the proposed ION design can be accommodated through the structure both horizontally and vertically.

As noted previously, MTO also indicated that the interim improvements would include a safety shape at the base of the overpass columns along the King Street median and guiderail on the north approach to the west abutment, which are not currently shown on the 60% design drawings.

Functional plans and cross-sections for the interim condition within the interchange area (including at the Highway 401 overpass) are provided in Appendix B.

Horizontal Clearance

The overpass is a two-span bridge with a line of columns in the median of King Street. The columns and abutments are fixed and will not be modified with the upcoming widening of Highway 401 except for the application of the safety shape along the base of the columns. ION must be accommodated within the existing bridge opening.

As shown in the functional plans in Appendix B, the proposed addition of ION can be accommodated through the existing structure. Sidewalks are proposed under the structure and are shown at 2.0 to 2.1m wide; these may need to be reduced slightly (by 0.1 to 0.2m) under the structure during detail design based on a more detailed survey of the roadway through the structure, however at least the minimum 1.8m width is expected to be achieved. The sections assume that the safety shape applied to the column bases will be replaced with crash protection, which is 300mm on both sides of the columns. OCS poles will be integrated with the crash protection or be supported off the structure.

In order to accommodate ION, the following modifications will be required to the auxiliary ramps associated with the interchange:

- All ramp terminals at King Street will require modification to tie into the widened King Street cross-section.
- The northbound auxiliary lane from the W-N ramp, which currently functions as a speed change lane and terminates south of the S-W ramp, will be reduced from 3.51m to 3.25m wide, meeting MTO design standards. In the ultimate configuration, this condition is eliminated, as the W-N ramp will be removed, and the S-W ramp will be reconfigured with an auxiliary lane and taper design.
- The north ramp terminal intersection will be signalized, as uncontrolled left turns across the LRT corridor will not be permitted. Given the distance to the next signalized intersection to the north at Tu Lane Street (approximately 950m), it is proposed that U-turns be permitted in the southbound direction only at the north ramp terminal intersection.
- The southbound left turn lane to the N-E ramp will be provided with a width of 3.25 m, maintaining its current length.
- It is proposed that the south ramp terminal also be designed to permit U-turns in the northbound direction only, to accommodate changes in access to driveways on Shantz Hill Road immediately south of Preston Parkway.

Vertical Clearance

The rehabilitation and widening of the Highway 401 overpass at King Street will include a 935mm cantilevered section on both sides (north and south) of the existing bridge, with the width of the widening ranging from 1.1 m on the south side to 1.6-1.9 m on the north side (based on the 60% design drawings). With cross-fall, this will slightly reduce minimum vertical clearance at the structure compared to the current conditions.

As shown in the sections in Appendix B, the minimum vertical clearance of 4.9m will be achieved over the general traffic lanes based on the current King Street pavement elevation.

Based on the surveyed clearances provided by the Highway 401 detail design team, there will be adequate space for a wall or ceiling mounted overhead catenary system (OCS), which provides power for LRT propulsion. Preliminary sketches of wall mounted and ceiling mounted configurations at each end of the bridge have been provided in Appendix B; details for the mounting system, grounding, bonding and plate protection will need to be reviewed and developed in consultation with MTO during detail design of ION. Consideration was given to battery systems that can support operating over a short distance without the need for OCS, however these would not be compatible with the ION vehicle currently in service.

A protocol will need to be established between MTO and the Region related to operations and maintenance of the bridge, including halting ION service and potential OCS removal for structure inspections and repair.

ION FUNCTIONAL DESIGN WITH ULTIMATE CONDITION

MTO has indicated that as part of the ultimate construction of the Highway 401/Highway 8 interchange, a new Highway 401 overpass will be required at King Street, as the existing structure will reach the end of its service life by that time. Details of structure type, span lengths and pier/column widths are currently not known, and will be established through a future MTO design project.

The ultimate condition also includes reconfiguration of the interchange ramps at King Street, including:

- Removal of the W-N loop ramp and conversion of the existing W-S direct ramp to a W-N/S ramp
- Reconfiguration of the S-W ramp with a direct taper, including modifications to the northbound auxiliary lane
- Removal of the N-W ramp

Proposed cross-sections for King Street including ION have been developed as input to the future design of the replacement bridge and are shown in Appendix C.

The new N-W and W-N ramps at the Highway 401/Highway 8 interchanges will also cross over King Street and the Highway 401/King Street interchange ramps on structures. Conceptual alignments for these ramps have been provided by

MTO (see Appendix C) but will require further design to confirm bridge types, lengths, elevations and pier locations/ widths. The current conceptual design has piers for these bridges on the centreline of King Street. The proposed cross-sections for King Street and ION would need to be modified to accommodate this configuration, once further details are known. Pier width would need to include any protection requirements. Alternatively, options to place the piers outside of the King Street roadway corridor could be examined to avoid this interface.

CONSTRUCTABILITY CONSIDERATIONS

As discussed previously, the interim configuration for the interchange, including rehabilitation and minor widening of the Highway 401 overpass at King Street, is currently in detail design and will be constructed in advance of ION. This stage does not include any modifications to King Street or the ramp terminals, and therefore neither project is impacted by the other.

The design and construction of the ultimate interchange configuration is not currently on MTO's capital program, and the timeline is unknown. As such, the potential constraints, impacts and constructability issues were explored for two possible scenarios: ION is completed before the ultimate configuration has been constructed; and ION is constructed after the ultimate interchange is in place.

These are constructability considerations if ION is constructed in advance of the ultimate interchange:

- For the future Highway 401/Highway 8 ramp structures (N-W and W-N) it would be preferred to have columns, piers and foundation details developed to a level where the dimensions and locations are defined:
  - This would provide the opportunity for foundations and possibly the lower portion of the piers and columns to be constructed as a part of the ION project, which would reduce disruption to ION while the interchange construction is occurring.
  - Track alignment could be designed around ultimate ramp structures to avoid reconstruction of ION in the ramp area for the ultimate interchange.
  - If the ultimate interchange ramp structures are not sufficiently developed and conflict with the built LRT, then realignment/reconstruction will be required with potential impacts to the Highway 401/King Street interchange ramps, King Street and ION.
- The new Highway 401 structure over King Street can be designed to accommodate all requirements for general traffic lanes, auxiliary lanes, ION and sidewalks. However, staging for demolition of the existing bridge and construction of the new bridge will have a significant impact on King Street, including lane diversions and potential lane closures to provide adequate work zones for median piers and abutments, vertical clearance impacts, and potential full closure during some stages of work. The ability to maintain ION service while the bridge replacement is underway will require more detailed review as part of the staging plans for the bridge work, and alternate operating strategies may be required if ION service needs to be temporarily suspended.

These are constructability considerations if ION is constructed after the ultimate interchange:

- MTO and the Region will need to closely coordinate the designs of the new Highway 401 overpass and associated works and ION. The design for ION will need to be sufficiently advanced to provide input to the design of the new Highway 401 overpass and ramps to ensure that sufficient lane width, horizontal and vertical clearances and crash protection are provided.
- As part of the Highway 401 overpass replacement and ramp reconfiguration, King Street should also be constructed to ultimate conditions, including median width as required for ION, outside curbs, ramp terminal intersections and other associated work. This would minimize impacts to King Street and interchange ramps for track and station construction.

- The new Highway 401 overpass should be designed to accommodate OCS support (wall or ceiling mounted) and crash protection.

SUMMARY AND NEXT STEPS

The functional design for ION on King Street through the Highway 401 interchange area has been assessed to confirm its compatibility with MTO's interim and ultimate requirements:

- ION can be accommodated on King Street with sufficient horizontal and vertical clearance under the planned interim improvements (bridge rehabilitation and outside widening by 1.1m on the south side and 1.6-1.9 m on the north side), which will be constructed in advance of ION. Modifications to the northbound auxiliary lane are proposed as part of the subsequent construction of ION, along with signalization of the north ramp terminal. All cross-section elements meet MTO geometric design criteria.

- The ultimate improvements at the Highway 401/King Street interchange include replacement of the existing overpass, which will be at the end of its service life. MTO's design for the new bridge and the Region's design for ION can be closely coordinated to ensure that sufficient lane width, horizontal and vertical clearances and crash protection are provided. The new overpass should be designed to accommodate OCS support (wall or ceiling mounted).

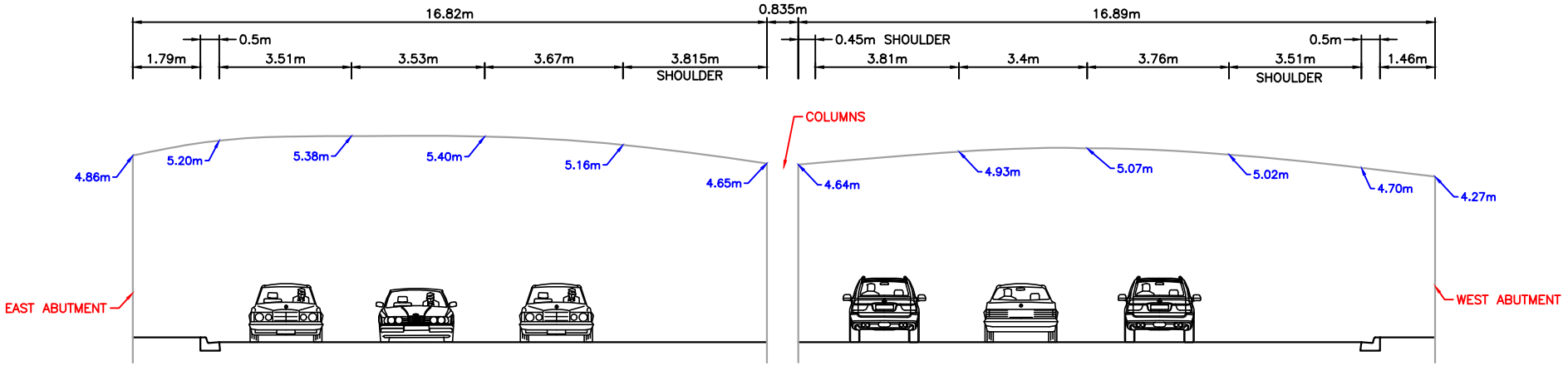
- The ultimate improvements also include new bridges carrying the Highway 401/Highway 8 interchange N-W and W-N ramps over King Street. Conceptual designs for these ramps include piers on the centreline of King Street. The designs for these ramps and ION will need to be closely coordinated to ensure proper alignment, clearance and crash protection.

- If ION is completed prior to construction of the ultimate interchange, staging of the overpass replacement will have a significant impact on King Street and may require temporary suspension of LRT operations. An alternate operating strategy for ION will be required in this case.

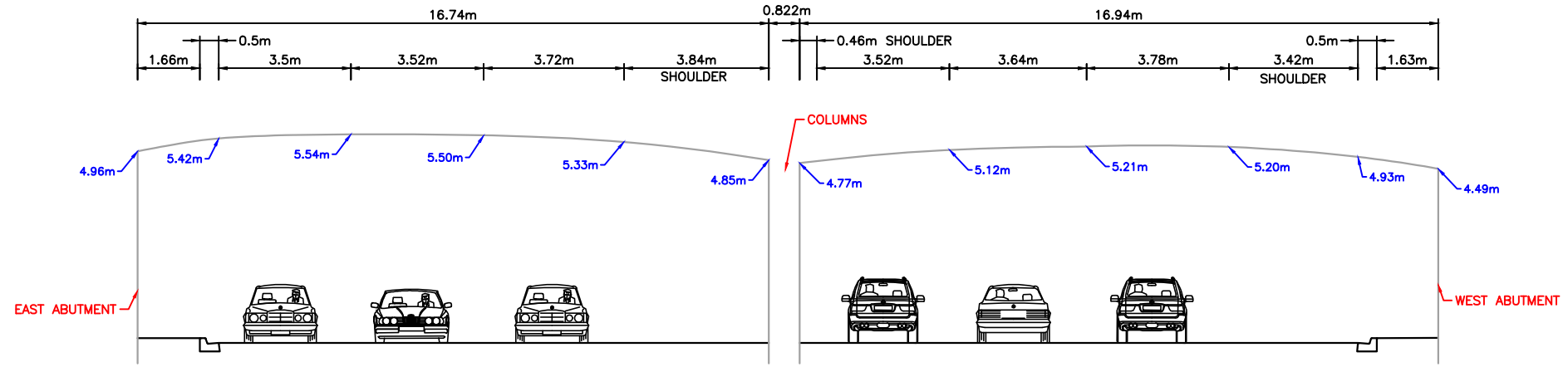
The proposed next steps include preparing the Environmental Project Report (EPR) and Functional Design Report (FDR) for the Stage 2 ION project. This memo will be included in the Functional Design Report for further reference in the next design stage.

APPENDIX A

EXISTING CROSS-SECTION
KING STREET AT HIGHWAY 401 OVERPASS



KING STREET
CROSS–SECTION AT NORTH END OF HWY 401 STRUCTURE
EXISTING INTERCHANGE CONFIGURATION



KING STREET
CROSS–SECTION AT SOUTH END OF HWY 401 STRUCTURE
EXISTING INTERCHANGE CONFIGURATION

LEGEND:

5.37m — VERTICAL CLEARANCE FROM 2016 SURVEY DATA

STAGE 2 ION
LRT CROSS-SECTION AT
HIGHWAY 401/KING STREET INTERCHANGE

APPENDIX A - EXISTING CONDITIONS

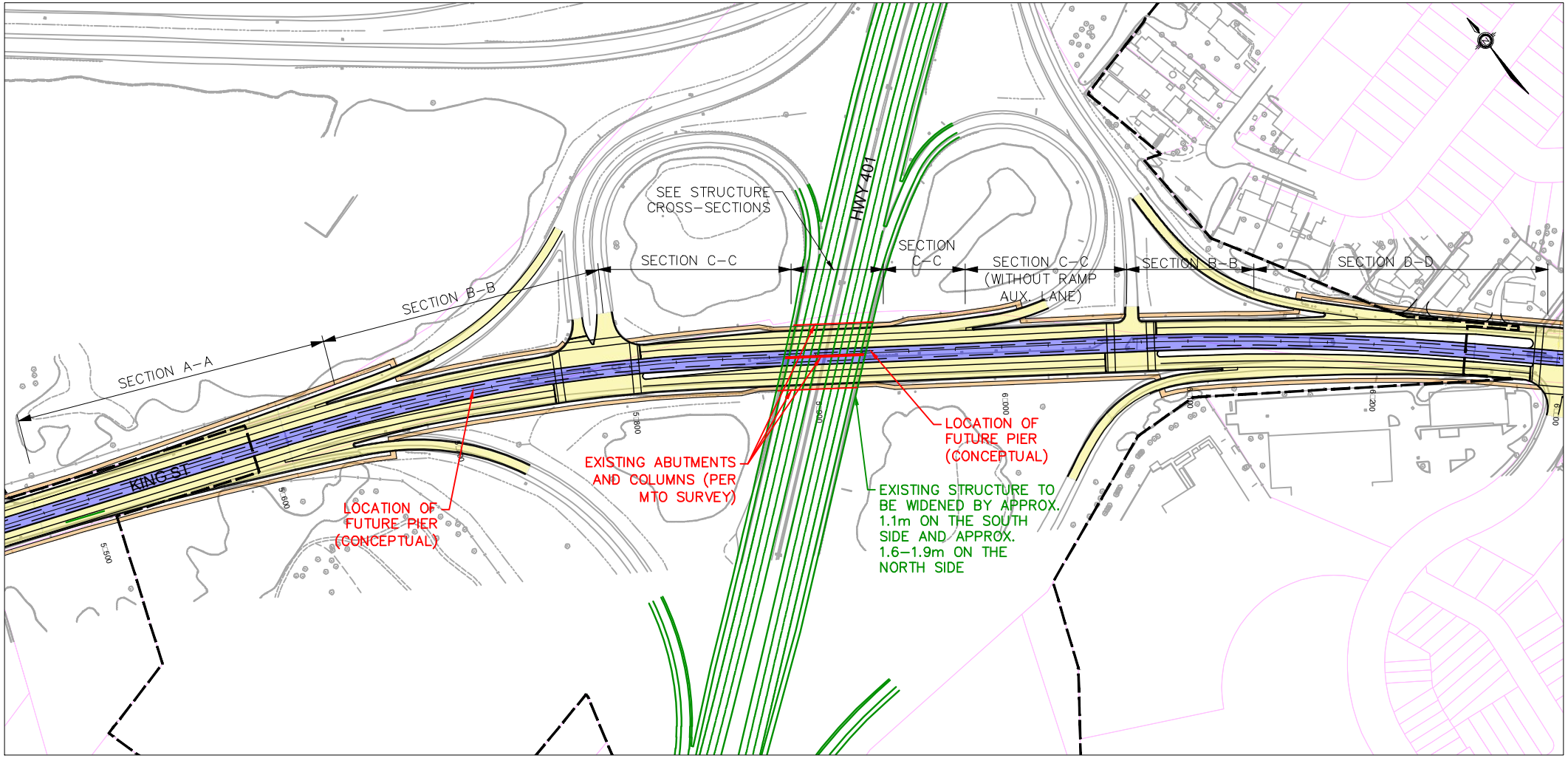
NOTE: COLUMN WIDTH AND LOCATION, ABUTMENT LOCATIONS, AND LANE AND SHOULDER WIDTHS BASED ON MTO WP 3080–12–00 SURVEY DATA.

\\catorfps01.corp.pbwan.net\Projects\IUM\2015\151-07859-00 (ION Stage 2 TPAP)\6.1 Drawings (CADD)\Sketch\Hwy 401-King Memo

APPENDIX B

INTERIM CONFIGURATION

PLAN AND CROSS-SECTIONS
KING STREET AT HIGHWAY 401 INTERCHANGE



LEGEND

- EXISTING MTO ROW
- EXISTING PROPERTY FABRIC
- INTERIM INTERCHANGE CONFIGURATION LINE WORK AS PROVIDED BY MTO
- LRT CORRIDOR

STAGE 2 ION
LRT CROSS-SECTION AT HIGHWAY 401/KING STREET INTERCHANGE

APPENDIX B - INTERIM CONFIGURATION

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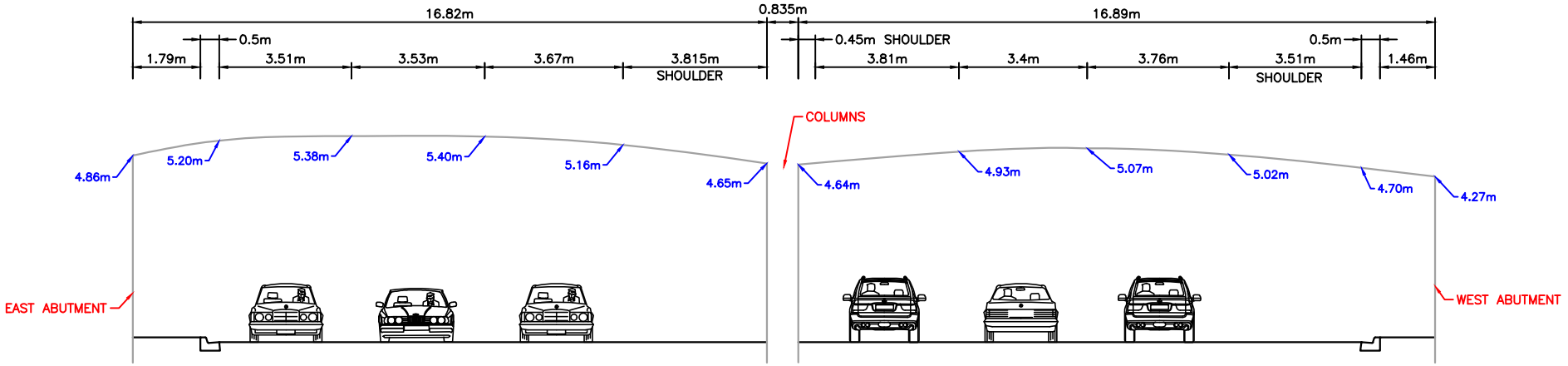
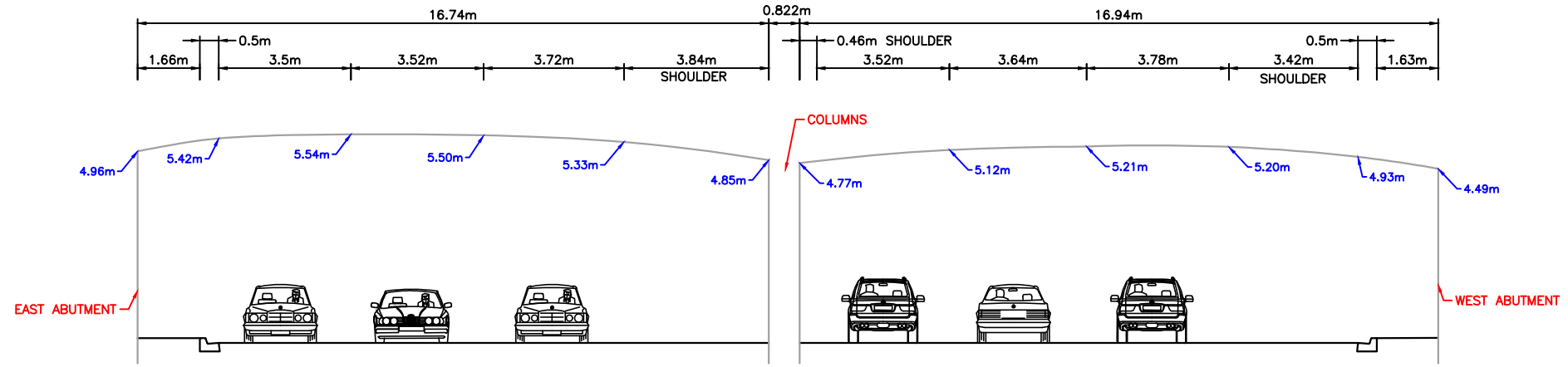


KING STREET
CROSS–SECTION AT NORTH END OF HWY 401 STRUCTURE
EXISTING INTERCHANGE CONFIGURATION



KING STREET
CROSS–SECTION AT SOUTH END OF HWY 401 STRUCTURE
EXISTING INTERCHANGE CONFIGURATION

LEGEND:

5.37m — VERTICAL CLEARANCE FROM 2016 SURVEY DATA

NOTE: COLUMN WIDTH AND LOCATION, ABUTMENT LOCATIONS, AND LANE AND SHOULDER WIDTHS BASED ON MTO WP 3080–12–00 SURVEY DATA.

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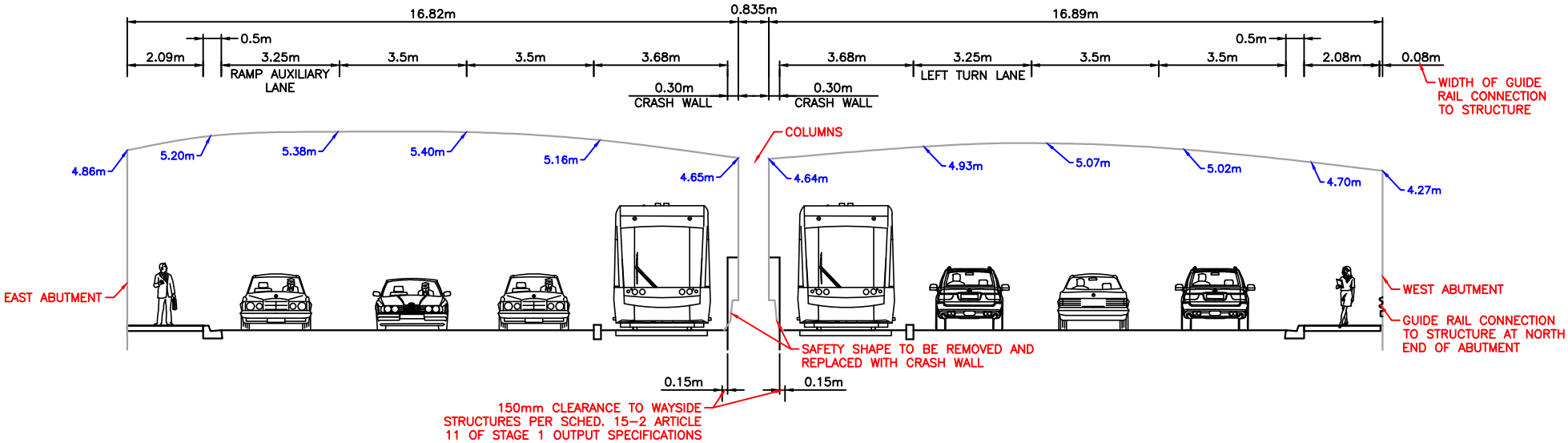
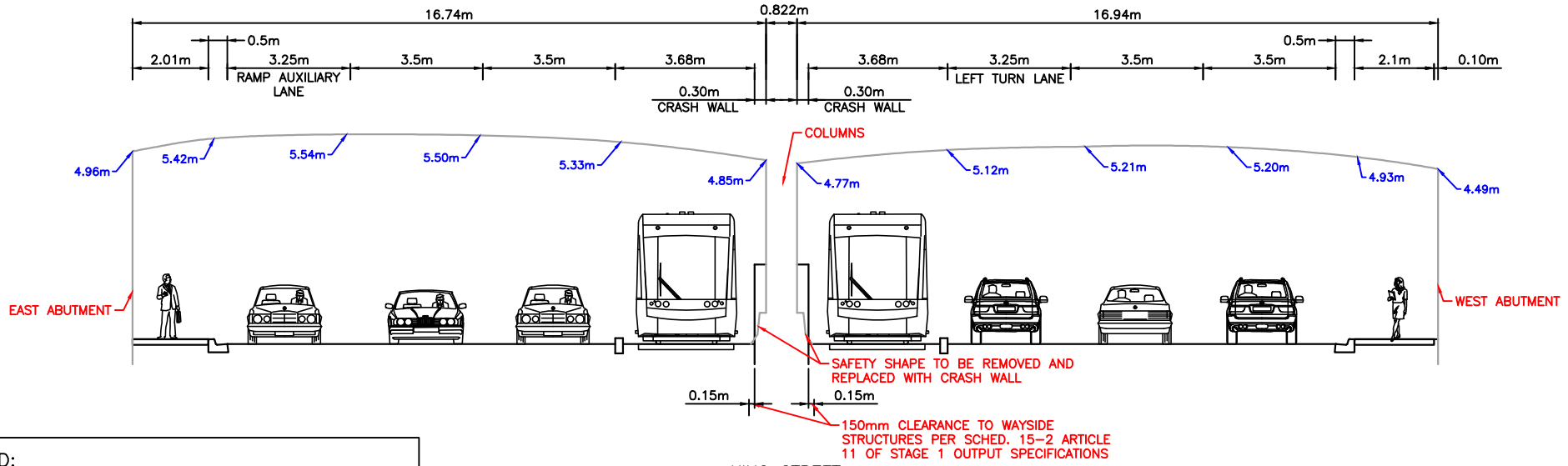


KING STREET
CROSS-SECTION AT NORTH END OF HWY 401 STRUCTURE
INTERIM INTERCHANGE CONFIGURATION WITH LRT



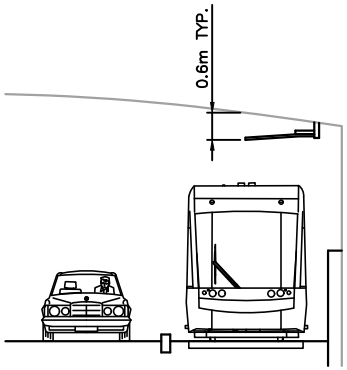
KING STREET
CROSS-SECTION AT SOUTH END OF HWY 401 STRUCTURE
INTERIM INTERCHANGE CONFIGURATION WITH LRT

LEGEND:

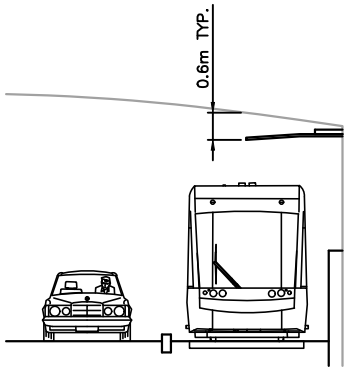
5.37m — VERTICAL CLEARANCE FROM 2016 SURVEY DATA (STRUCTURE WIDENED FOR INTERIM CONDITION BY DECK CANTILEVER – NO CHANGE IN VERTICAL CLEARANCE FROM EXISTING CONDITION)

NOTE: COLUMN WIDTH AND LOCATION, ABUTMENT LOCATIONS, AND LANE AND SHOULDER WIDTHS BASED ON MTO WP 3080-12-00 SURVEY DATA.

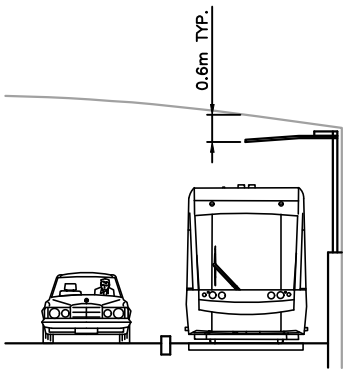
\\catorfps01.corp.pbwan.net\Projects\IUM\2015\151-07859-00 (ION Stage 2 TPAP)\6.1 Drawings (CADD)\Sketch\Hwy 401-King Memo



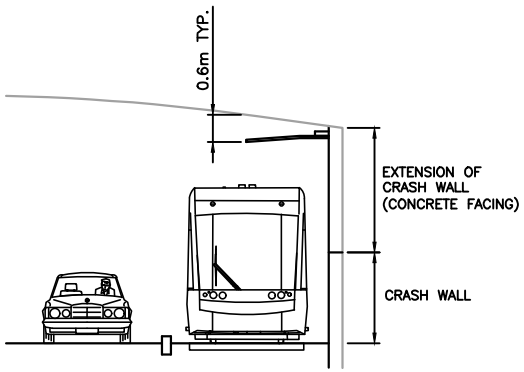
OCS SUPPORT MOUNTED TO
UNDERSIDE OF STRUCTURE



OCS SUPPORT MOUNTED TO
WALL/COLUMN

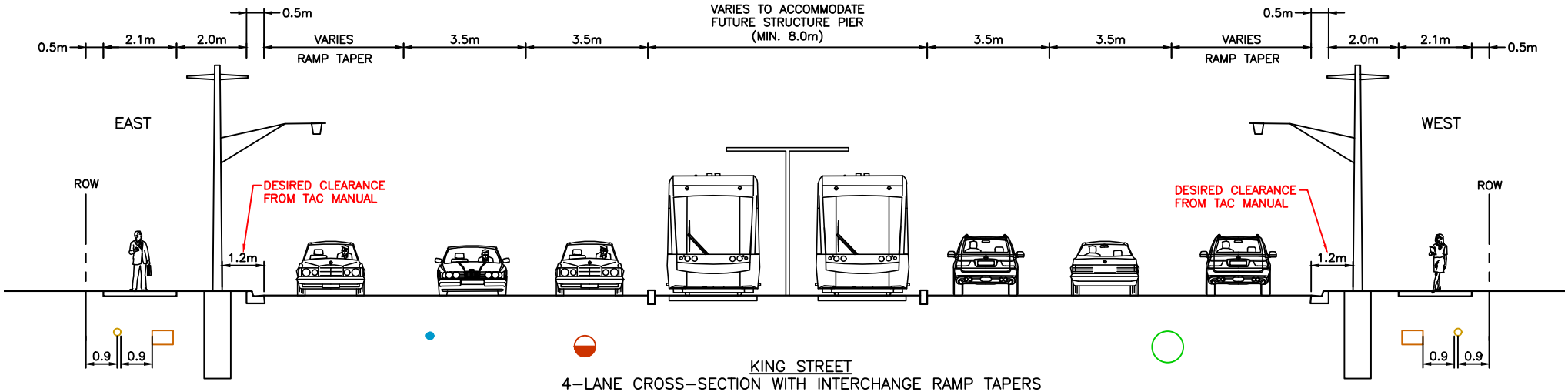


OCS SUPPORT MOUNTED ON
CRASH WALL

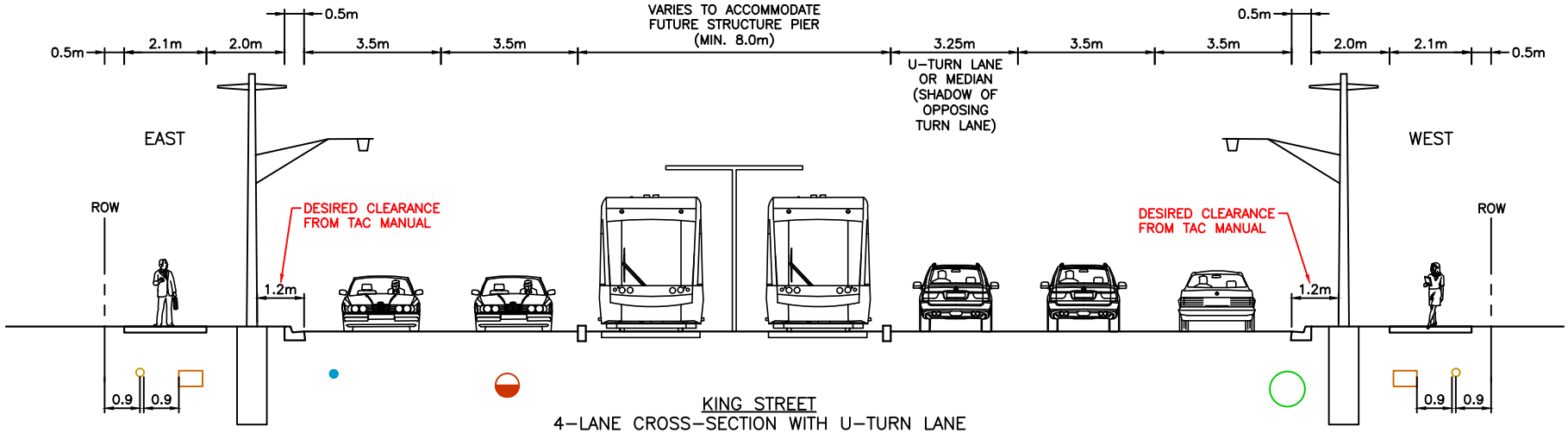


OCS SUPPORT MOUNTED ON
EXTENSION OF CRASH WALL

\\catorfps01.corp.pbwan.net\Projects\IUM\2015\151-07859-00 (ION Stage 2 TPAP)\6.1 Drawings (CADD)\Sketch\Hwy 401-King Memo



KING STREET
4–LANE CROSS–SECTION WITH INTERCHANGE RAMP TAPERS
(SECTION A–A)

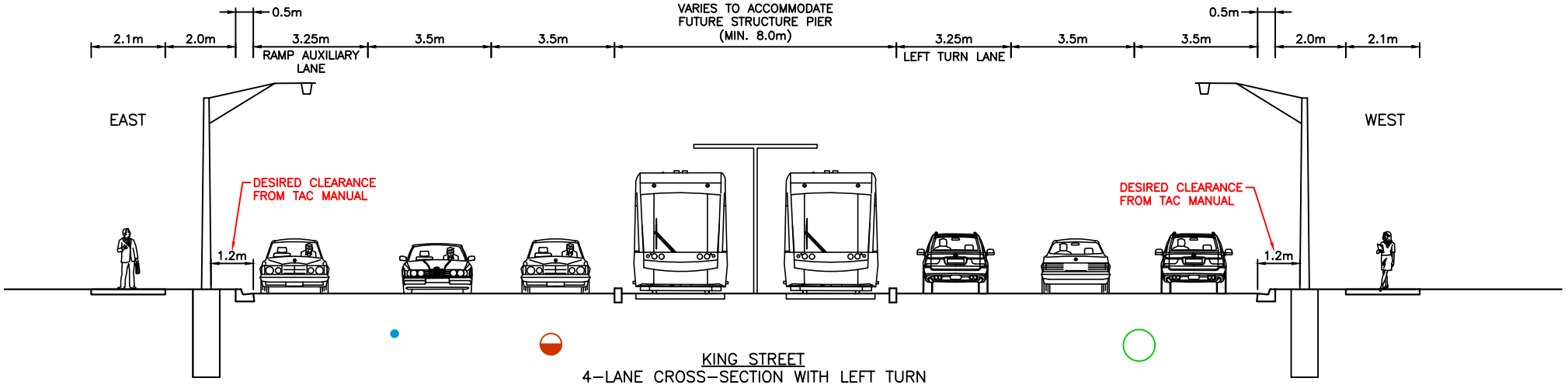


KING STREET
4–LANE CROSS–SECTION WITH U–TURN LANE
(SECTION B–B)

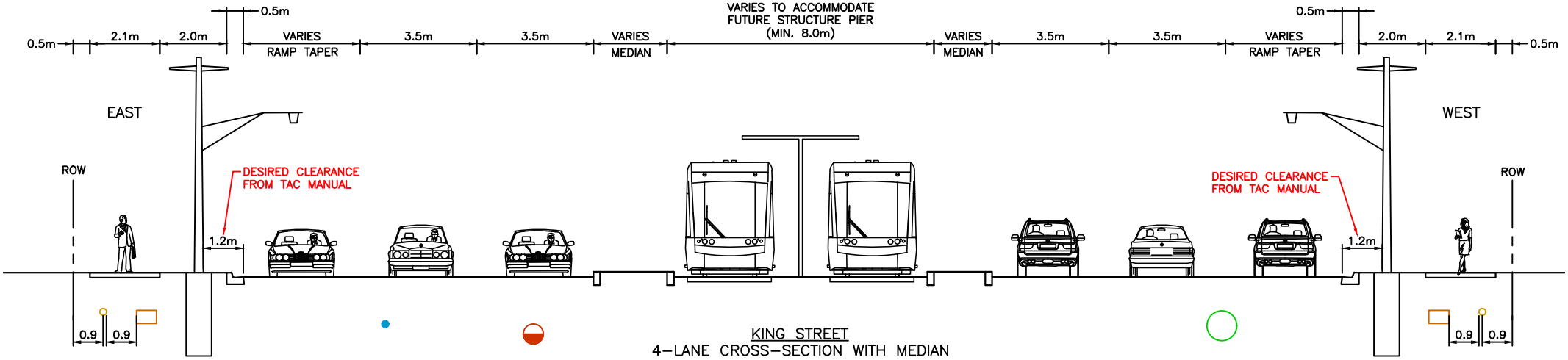
LEGEND:

- GAS
- COMMUNICATIONS TRENCH
- WATERMAIN
- SANITARY SEWER
- STORM SEWER

\\catorfps01.corp.pbwan.net\Projects\IUM\2015\151-07859-00 (ION Stage 2 TPAP)\6.1 Drawings (CADD)\Sketch\Hwy 401-King Memo



KING STREET
4–LANE CROSS–SECTION WITH LEFT TURN LANE AND RAMP AUXILIARY LANE
(SECTION C–C)



KING STREET
4–LANE CROSS–SECTION WITH MEDIAN AND RAMP TAPERS BOTH SIDES
(SECTION D–D)

LEGEND:

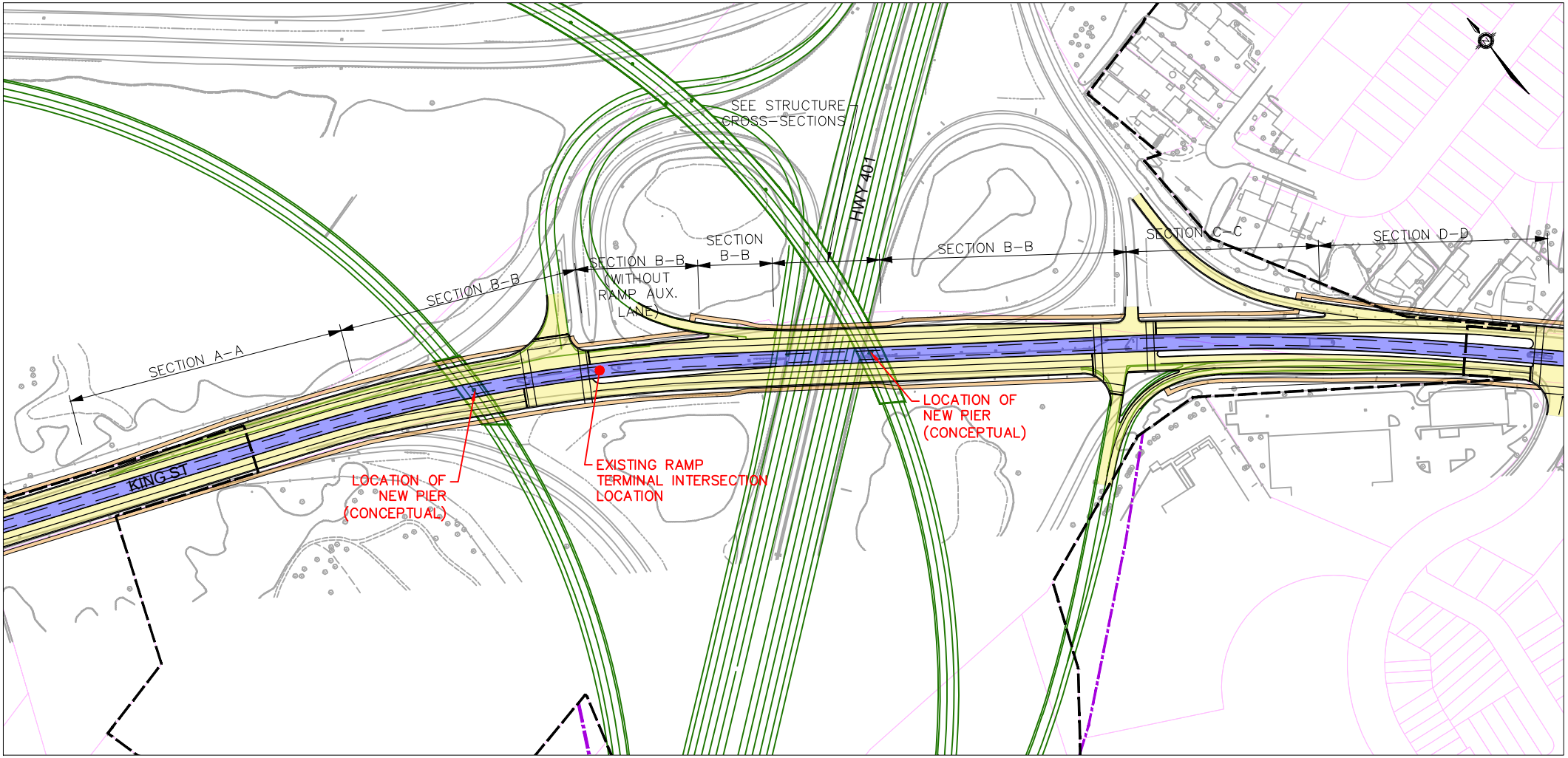
- GAS
- COMMUNICATIONS TRENCH
- WATERMAIN
- SANITARY SEWER
- STORM SEWER

\\catorfps01.corp.pbwan.net\Projects\IUM\2015\151-07859-00 (ION Stage 2 TPAP)\6.1 Drawings (CADD)\Sketch\Hwy 401-King Memo

APPENDIX C

ULTIMATE CONFIGURATION

PLAN AND CROSS-SECTIONS
KING STREET AT HIGHWAY 401 INTERCHANGE



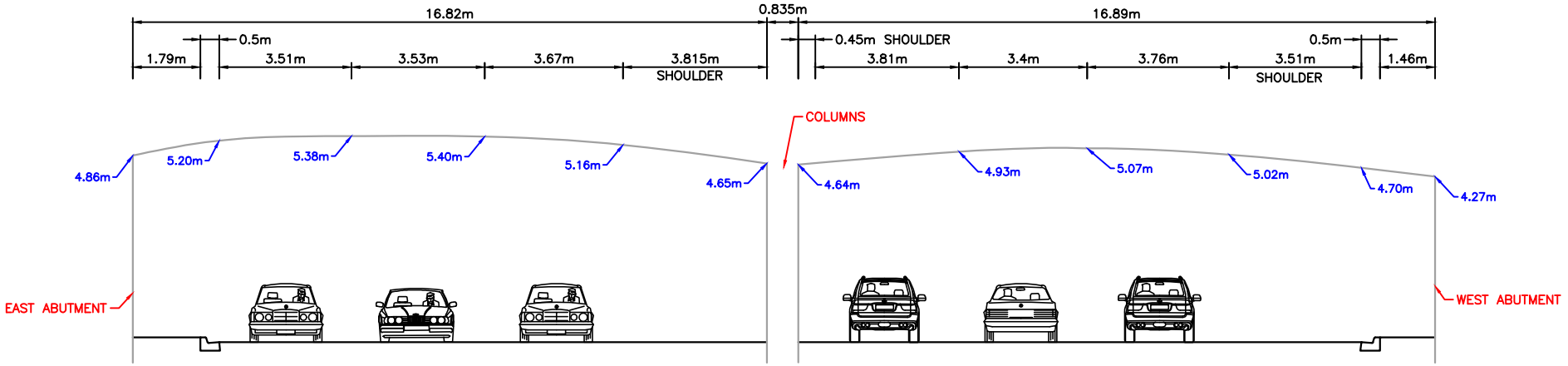
LEGEND

- EXISTING MTO ROW
- EXISTING PROPERTY FABRIC
- ULTIMATE INTERCHANGE CONFIGURATION LINE WORK AS PROVIDED BY MTO (CONCEPTUAL)
- ULTIMATE MTO ROW AS PROVIDED BY MTO (CONCEPTUAL)
- LRT CORRIDOR

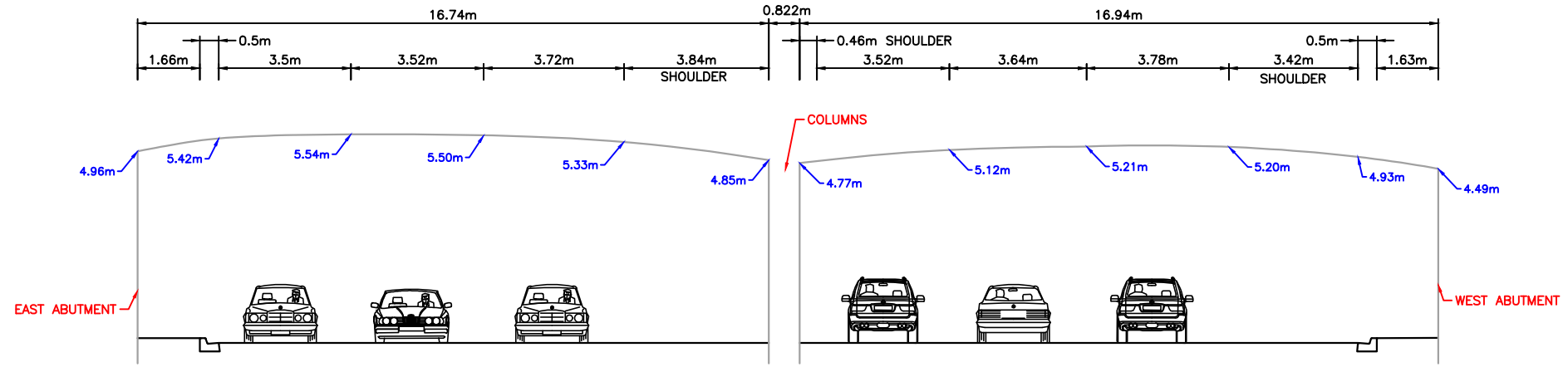
STAGE 2 ION
LRT CROSS-SECTION AT
HIGHWAY 401/KING STREET INTERCHANGE

APPENDIX C - ULTIMATE CONFIGURATION

\\catorfps01.corp.pbwan.net\Projects\UM\2015\151-07869-00 (ION Stage 2 TPAP)\6.1 Drawings (CADD)\Sketch\Hwy 401-King Memo



KING STREET
CROSS–SECTION AT NORTH END OF HWY 401 STRUCTURE
EXISTING INTERCHANGE CONFIGURATION



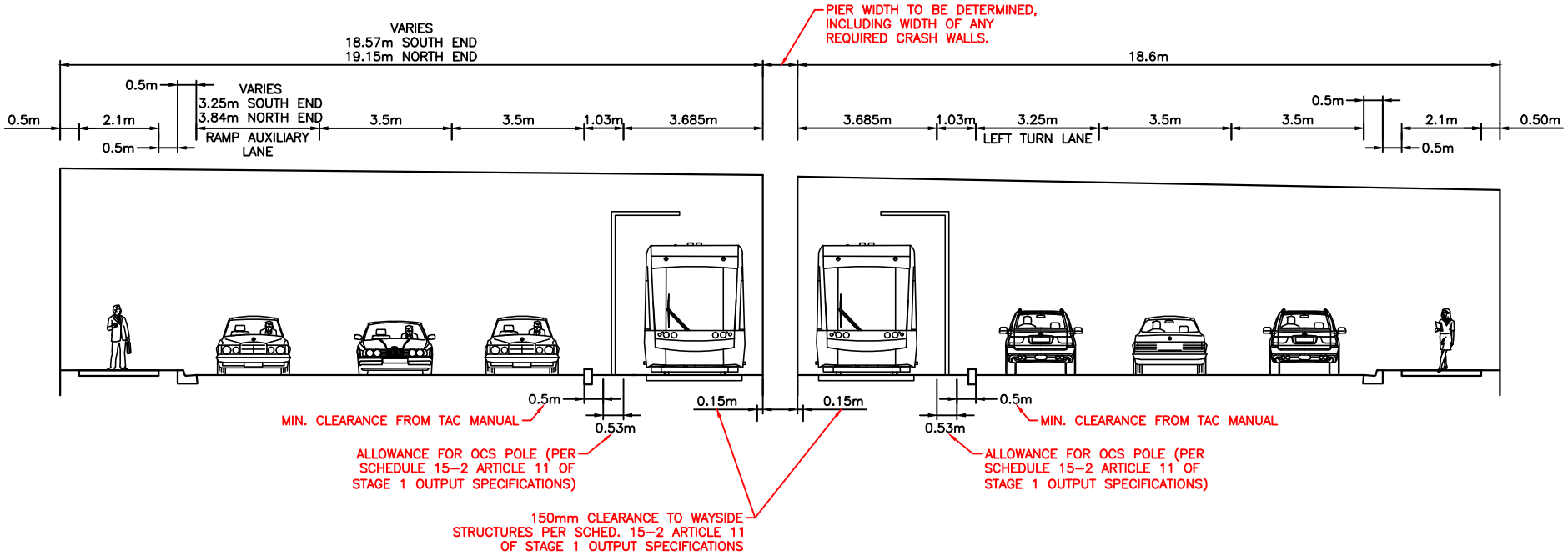
KING STREET
CROSS–SECTION AT SOUTH END OF HWY 401 STRUCTURE
EXISTING INTERCHANGE CONFIGURATION

LEGEND:

5.37m — VERTICAL CLEARANCE FROM 2016 SURVEY DATA

NOTE: COLUMN WIDTH AND LOCATION, ABUTMENT LOCATIONS, AND LANE AND SHOULDER WIDTHS BASED ON MTO WP 3080–12–00 SURVEY DATA.

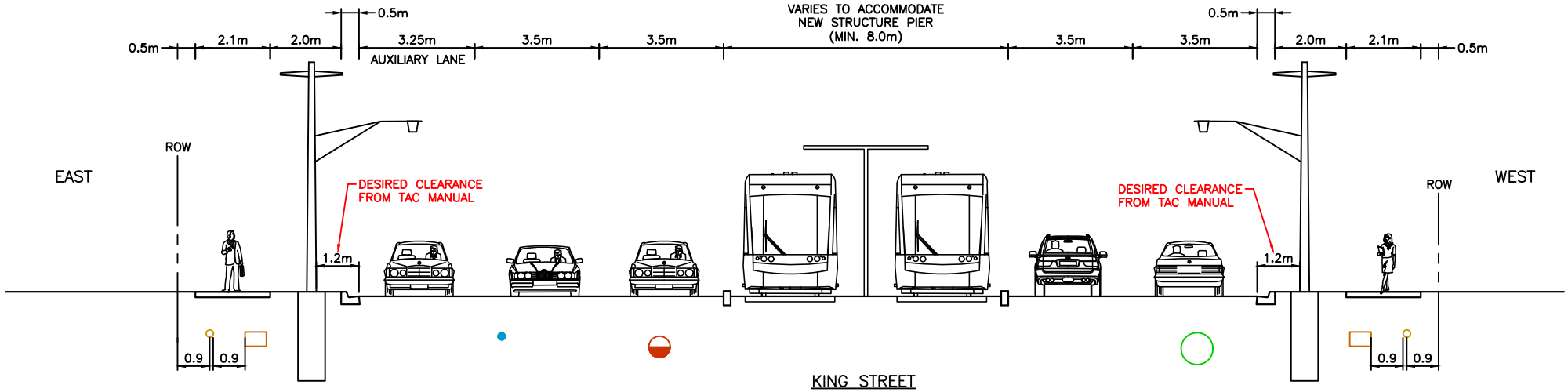
\\catorfps01.corp.pbwan.net\Projects\IUM\2015\151-07859-00 (ION Stage 2 TPAP)\6.1 Drawings (CADD)\Sketch\Hwy 401-King Memo



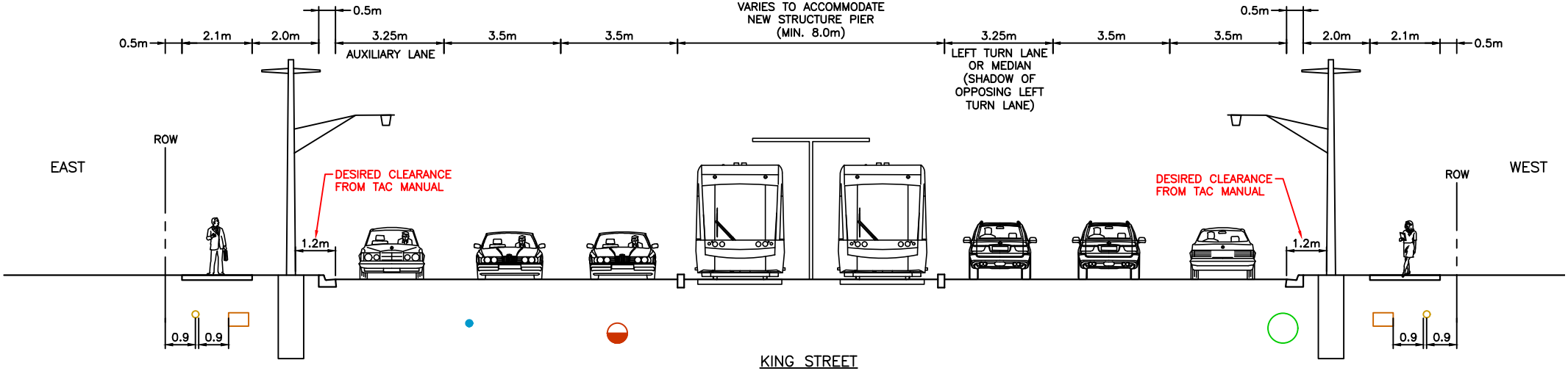
Implementation of multi-use trails on King Street to be confirmed by the Region in detail design

KING STREET
ULTIMATE INTERCHANGE CONFIGURATION WITH LRT
(NEW HIGHWAY 401 STRUCTURE)

\\catorfps01.corp.pbwan.net\Projects\IUM\2015\151-07859-00 (ION Stage 2 TPAP)\6.1 Drawings (CADD)\Sketch\Hwy 401-King Memo



KING STREET
4–LANE CROSS–SECTION WITH AUXILIARY LANE LEFT
(SECTION A–A)



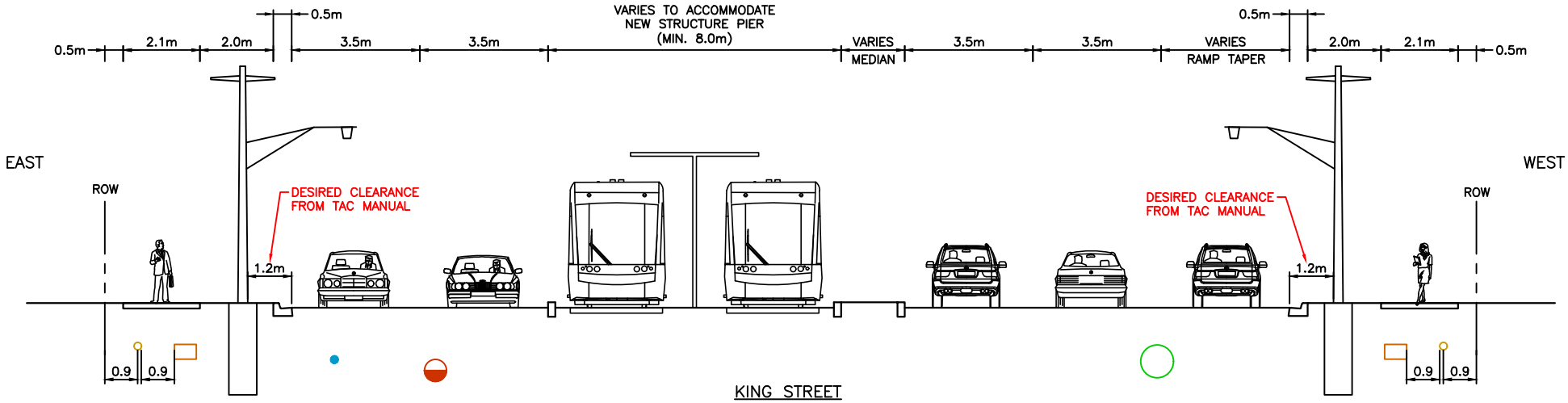
KING STREET
4–LANE CROSS–SECTION WITH LEFT TURN LANE
RIGHT AND AUXILIARY LANE LEFT
(SECTION B–B)

LEGEND:

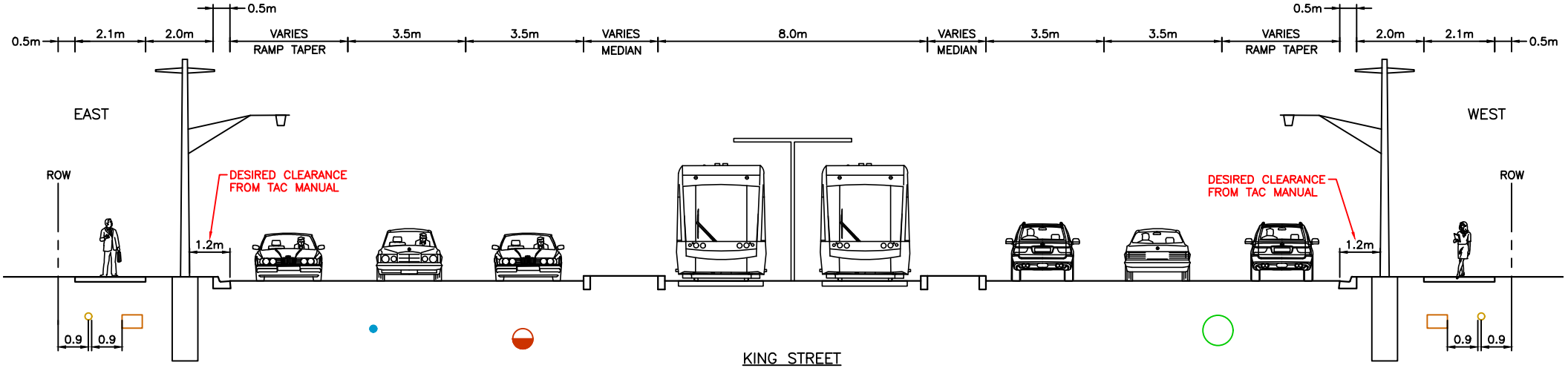
- GAS
- COMMUNICATIONS TRENCH
- WATERMAIN
- SANITARY SEWER
- STORM SEWER

Implementation of multi-use trails on King Street to be confirmed by the Region in detail design

\\catorfps01.corp.pbwan.net\Projects\IUM\2015\151-07859-00 (ION Stage 2 TPAP)\6.1 Drawings (CADD)\Sketch\Hwy 401-King Memo



KING STREET
4–LANE CROSS–SECTION WITH RAMP TAPER RIGHT
(SECTION C–C)



KING STREET
4–LANE CROSS–SECTION WITH MEDIAN
AND RAMP TAPERS BOTH SIDES
(SECTION D–D)

LEGEND:

- GAS
- COMMUNICATIONS TRENCH
- WATERMAIN
- SANITARY SEWER
- STORM SEWER

Implementation of multi-use trails on King Street to be confirmed by the Region in detail design

\\catorfps01.corp.pbwan.net\Projects\IUM\2015\151-07859-00 (ION Stage 2 TPAP)\6.1 Drawings (CADD)\Sketch\Hwy 401-King Memo

Meeting Notes
Hespeler Road Corridor Secondary Plan
Thursday, January 30, 2020
Young Room, 2nd Floor, Cambridge City Hall
2:00 PM

Present: Amanda Kutler, Region of Waterloo, Matthew O'Neil, Region of Waterloo, David Welwood, Region of Waterloo, Shawn Callon, Waterloo Region District School Board, Lauren Agar, Waterloo Region District School Board, Deanne Friess, City of Cambridge, Paul Smithson, City of Cambridge, and Valerie Spring, City of Cambridge (note taker).

Regrets: Leslie Maxwell, Student Transportation Services Waterloo Region and Bryan Cooper, City of Cambridge.

Purpose of the meeting:

Valerie advised the purpose of this meeting was to bring everyone together to talk about the Hespeler Road Corridor Secondary Plan and how it relates to the School Board planning. Valerie asked that two other things other items be added to the agenda for discussion: a possible future school site and possible regulations for family friendly housing within the secondary plan area. She advised she and Amanda will be a meeting with the consultant and can follow up on any matters coming out of this meeting.

Status of the Growth and Intensification Study (G&I):

Valerie advised the G & I study was initiated in 2015 when funding from the Transit Support Strategy was provided to the City to prepare six secondary plans for the city's main intensification areas. Dillon Consulting was hired to prepare the secondary plans one of which is the Hespeler Road corridor. To date, draft secondary plans for the Main and Dundas area and the Hespeler Road Corridor have been prepared.

The draft secondary plan for the Hespeler Road Corridor was presented at a public meeting on June 11, 2019 with a deadline for comments of July 19, 2019. Staff received comments from land owners within the corridor who wish to redevelop their sites. There may be a need to go back out to the community and have another public meeting depending on how significant any revisions are to the Hespeler Road Corridor Secondary Plan as a result of the comments submitted.

Population projections/anticipated timing of build out in study area:

The size of the study area is approximately 212 hectares or 525 acres consisting of mainly commercial uses. Regional Council has approved the preferred route for the Stage 2 ION which identifies Hespeler Road as a major transit corridor, connecting Cambridge to Kitchener and Waterloo by rail.

The City's 2016-2031 housing forecast estimates there will be demand for 16,172 residential units of which 45% are to occur within the built-up area – approximately 7,277 new residential units. The Hespeler Road Corridor is one of the City's main intensification areas and through the draft secondary plan is planned to contribute approximately 18% of the City's total intensification – 1300 units by 2031. The policies in the secondary plan are intended to support an overall density target of least 160 people and jobs per gross hectare within 500 metres of a stop connected to the BRT or Phase 2 ION system. Given the pre-consultation applications which have recently been submitted, the consultant will be asked to revisit these numbers.

In terms of the build out – the secondary plan has a planning horizon of 2031. The build out will depend on property owners'/developers' interest in the lands along the corridor.

Zoning By-law Update:

Paul Smithson gave an update to the Zoning By-law indicating the consultant has received all comments submitted to date and revisions will be made as a result. No date has been set for when the new Zoning By-law report will go to Council. The group discussed the possibility of regulating the size/number of units through the Zoning By-law and concluded this was not an approach the city would take.

Possible School Site/Access to existing public schools/Target demographic:

Commercial lands around the area of Hespeler Road and Pinebush Road will eventually see residential units. There is no concern about zoning these lands to permit high density residential as this zone is not expected to generate a high student population. Students in the area North of Bishop Street, especially east of Hespeler Road could be outside school catchment areas: how will students get to school through Industrial areas and would an increased number of students bring an existing school population higher than the ideal number of 500 students/school? The Board shared mapping and charts indicating students can be accommodated along the corridor everywhere but the area around Hespeler and Pinebush roads. The Board explained land is not proactively purchased in anticipation of residential development. There was a discussion permitting only low to medium density residential which would generate more students in some areas where the schools could accommodate additional students. Consideration needs to be given the compatibility between schools and neighbouring uses (ie commercial uses).

Mid-block Crossings:

The group discussed the need for mid-block crossings in order to get people (not just students) across Hespeler Road safely and from the mixed use corridor through surrounding Industrial areas. There was some discussion regarding the possible crossing of Groff Mill Creek and how important it is to make safe connections. The Region will need to conduct a technical analysis of where the crossings have been proposed and where they are most appropriate. The school board supports a consolidation of entrances as it would reduce the conflicts between cars, cyclists and people. The Board indicated a wish to work with the Region as the Region prepares more detailed plans for the corridor.

Pedestrian realm improvements:

Ideally schools and parks would be developed in conjunction with trails to improve the pedestrian realm. There is a need for a greater width of the sidewalks and consideration given to the design of buildings intersecting public sidewalks.

Next Steps:

Amanda and Valerie are to meet with the consultant in the next couple of weeks to discussion revisions to the work plan. Following that discussion there may be a need to have another draft of the Hespeler Road Secondary Plan prepared and possibility another public meeting depending on the nature of the revisions.

Paul Smithson to send a copy of the D-6 Guidelines analysis for the Hespeler Road Corridor to Shawn Callon which is the basis for the property Hespeler Road mixed-use Office zone.

Notes:

Should you have any concerns about the content of these notes, please notify me, Valerie Spring, so revisions made if necessary.

Stage 2 ION
Light Rail Transit from Kitchener to Cambridge

MEETING NOTES
Ministry of Transportation (Policy and Planning) Meeting No. 1

PROJECT	Region of Waterloo – Stage 2 ION LRT Transit Project Assessment
OBJECTIVE	Introductory meeting to provide an overview of the Stage 2 ION project and discuss the approach to completing the Business Case, the format and submission requirements for the Business Case, and potential funding sources
DATE / TIME	April 29, 2020 / 11:00 am to Noon
LOCATION	Microsoft Teams Virtual Meeting
PROJECT No.	161-07859-01

Attendees	**Organization**	**e-mail**
Amy Leung	MTO, Transit Infrastructure Policy Office	Amy.Leung@ontario.ca
Kathy Ruston	MTO, Transit Infrastructure Policy Office	Kathy.Ruston@ontario.ca
Eric Yerro	MTO, Transit Infrastructure Policy Office	Eric.Yerro@ontario.ca
Amanda Helderman	MTO, Transportation Economics Office	Amanda.Helderman@ontario.ca
Cvetomir Georgiev	MTO, Transportation Economics Office	Cvetomir.Georgiev@ontario.ca
Sina Motamedi	MTO, Transportation Economics Office	Sina.Motamedi@ontario.ca
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Sundar Damodaran	MTO, Systems Analysis and Forecasting Office	Sundar.Damodaran@ontario.ca
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Gord Ryan	Region of Waterloo	gryan@regionofwaterloo.ca
Adrian Lightstone	WSP	adrian.lightstone@wsp.com
Salah Koleilat	WSP	salah.koleilat@wsp.com
Patrick Malloy	WSP	patrick.malloy@wsp.com
Denise Morneau	WSP	denise.morneau@wsp.com

Item:	**Discussion:**	**Action by:**
M. O'Neil (Region) provided an overview of Waterloo's ION LRT program, and a review of the planning studies currently underway for the Stage 2 ION extension from Kitchener to Cambridge under the Transit Project Assessment process. A. Lightstone (WSP) presented the approach for developing the Business Case for the project including an overview of the benefit categories proposed to be assessed, and led discussion about the submission format and anticipated review process. Details are provided in the presentation material attached to these meeting notes. These notes focus on key discussions and action items.		
1.	The Region discussed the implementation of Stage 1 ION, focusing on how LRT has resulted in substantial new development along the corridor and other community and environmental benefits. The Region and WSP reviewed the proposed route and stations for Stage 2 ION, noting how key urban growth areas will be serviced.	
2.	The transition of the aBRT route from Kitchener to Cambridge implemented as part of Stage 1 (now called ION Bus) to the Stage 2 ION LRT route was discussed, and a key plan showing the two corridors was displayed. The Region explained that ION Bus which currently travels on Highway 8 and Highway 401 will be replaced with LRT as part of Stage 2 ION, on the route identified through the planning study. The Region highlighted that a portion of the proposed Stage 2 ION route parallels Highway 8 and crosses Highway 401 at the existing King Street underpass, and that the Stage 2 ION team has been working closely with MTO staff at the West Region office to review options and confirm the functional design.	

Item:	Discussion:	Action by:
3.	WSP discussed the work undertaken to date on the business case and noted that although Stage 2 ION is a municipal transit project, the Project Team met with Metrolinx to introduce them to the project in anticipation of their potential involvement in supporting/advising MTO and to coordinate the business case approach and methods.	
4.	It was agreed that MTO's business case guideline will be used for this study, with reference to Metrolinx's guideline to address any supplemental requirements specific to rapid transit. MTO noted that the guidelines are similar in most respects.	
5.	It was agreed that the primary and secondary benefits will be presented separately in the business case to show clearly how they were applied.	
6.	The use of the Region's travel demand model was discussed: • The modelling should include both 2031 (approximate service commencement) and 2041 horizon years. • If the Region's model is not able to directly output reliability measures, an alternate approach may be required to estimate this. In any case where off-model approaches are required, this will need to be fully documented in the submission. • Forecasting assumptions will need to be clearly stated. • It was agreed that an overview of the Region's model should be provided at the next meeting, focusing on the assumptions and methodologies related to the outputs required to support the business case.	Region/WSP
7.	MTO discussed the process for bringing the business case forward for consideration by the Province under the Investing in Canada Infrastructure Plan. MTO advised that the Province administers the program on behalf of the Federal government, and MTO coordinates intakes and reviews related to transit projects. MTO advised that the timing for the next round of intakes under this program is not currently known, and confirmed that following MTO's business case guideline will produce a submission that is substantially compliant with the Federal program's requirements. MTO noted that the Federal application includes additional templates to be filled out related to consultation, climate change, procurement, etc. which are relatively straightforward and can mostly be completed with information from the business case.	
8.	Two other approaches to initiate funding consideration were discussed: • The Region could write to MTO senior management directly, requesting consideration for funding. If the Region wishes to pursue this, further discussions can be held regarding the process. • The Ministry of Infrastructure (MOI) has a portal for unsolicited proposals; MTO noted that this is intended for projects that are not seeking Provincial funding, e.g. private sector projects, and likely would not apply here.	Region
9.	MTO indicated general support for the approach presented, and suggested continued engagement with the three key MTO teams, noting that these teams would be involved in reviewing any future submissions for the project: • Transit Infrastructure Policy Office (Amy Leung) *[Post-meeting note: MTO requested that the key contact be Cheryl Clarke]* • Transportation Economics Office (Amanda Helderman) • Systems Analysis and Forecasting Office (Cristina Marcelino)	
10.	The topics for discussion at the next coordination meeting in late May/early June were discussed. MTO suggested that a comprehensive background review of the Stage 1 ION project is not required given MTO staff's familiarity with the project through involvement in the business case review and the availability of Region staff reports providing good summaries at each key milestone. It was agreed that the agenda for the next coordination meeting will include: • A more detailed overview of the planning study undertaken for Stage 2 ION, in relation to the strategic goals and objectives of the project.	Region/WSP

Item:	Discussion:	Action by:
	• An overview of the Region's travel demand model, focusing on the forecasting assumptions and model outputs. • Any further questions regarding the MTO guideline and submission requirements.	

Distribution: All attendees
Cheryl Clarke, MTO Transit Infrastructure Policy Office
Cristina Marcelino, MTO Systems Analysis and Forecasting Office
Catherine Gentile, WSP

These meeting notes are considered to be accurate summary of the items discussed. Please advise Denise Morneau (denise.morneau@wsp.com) of any discrepancies, errors or omissions, otherwise these meeting notes will be accepted as written.

Stage 2 ION: Light Rail Transit (LRT) From Kitchener to Cambridge

Business Case Development

Ministry of Transportation Meeting No. 1

April 29, 2020

MEETING AGENDA

1. Introductions
2. The ION Program – Project Information and Status
3. Business Case Framework and Benefit Categories
4. Proposed Engagement with MTO

WHY LRT?

ION is the foundation for the Regional Official Plan objectives:

LRT will:

- Help contain urban sprawl
- Protect environmentally-sensitive areas
- Preserve farmland and the rural lifestyle
- Move people; create transportation choice

ION TIMELINE

2003 Regional Growth Management Strategy outlined plan to focus growth in urban areas, created Central Transit Corridor linking urban centres and initiated rapid transit studies.

2004 Rapid Transit Technical Studies addressed demand forecasting and transit technology review (BRT and LRT). High level benefit cost assessment (TransDec model) completed 2005. Recommended proceeding with Individual EA.

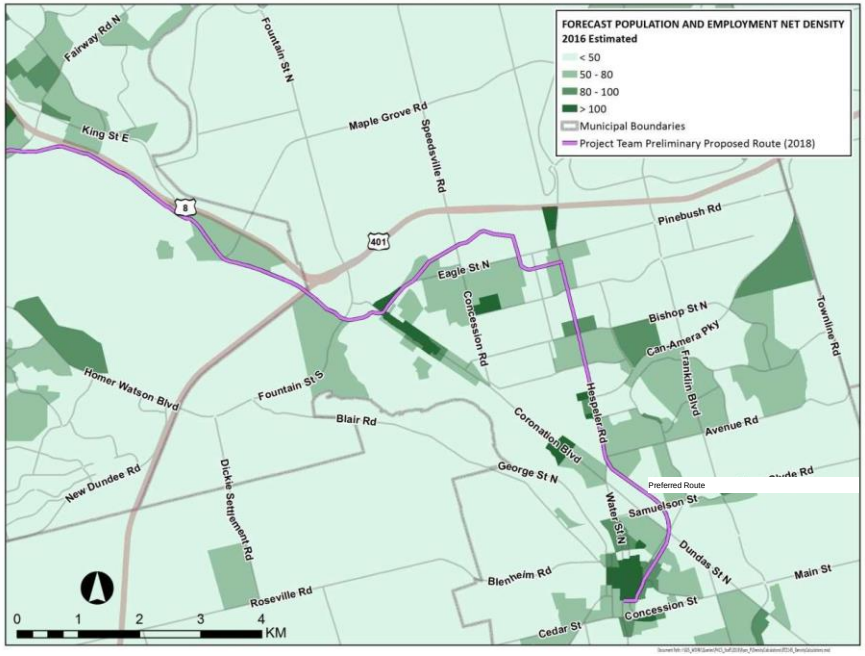
2006 Rapid Transit Individual EA Phases 1 and 2: assessment of alternative strategies recommending Rapid Transit, and assessment of alternative methods recommending LRT. MAE recommended phased implementation approach. Completed 2009.

2008 Transition to the Transit Project Assessment Process. TPA for Stage 1 initiated 2009 and completed 2012. Business Case completed for funding under the Government of Canada Building Canada Fund and by the Province of Ontario.

2015 Pre-planning studies for Stage 2 ION TPA initiated. Preferred route endorsed by Council in June 2019. TPA anticipated to commence Summer 2020.

2019 Stage 1 ION commenced revenue service.

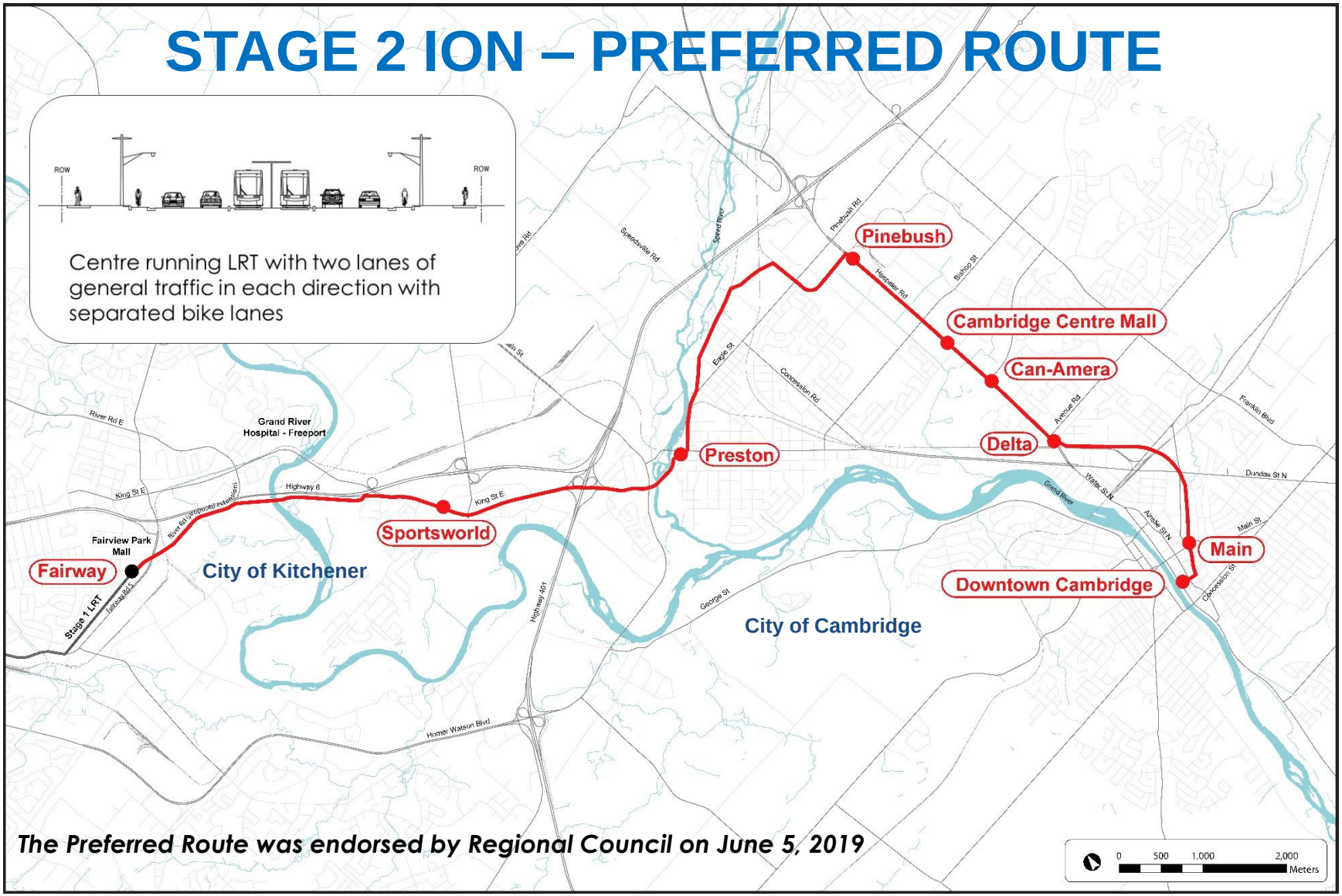
HOW WILL LRT SHAPE OUR COMMUNITY?



STAGE 1 ION – OPENED JUNE 2019

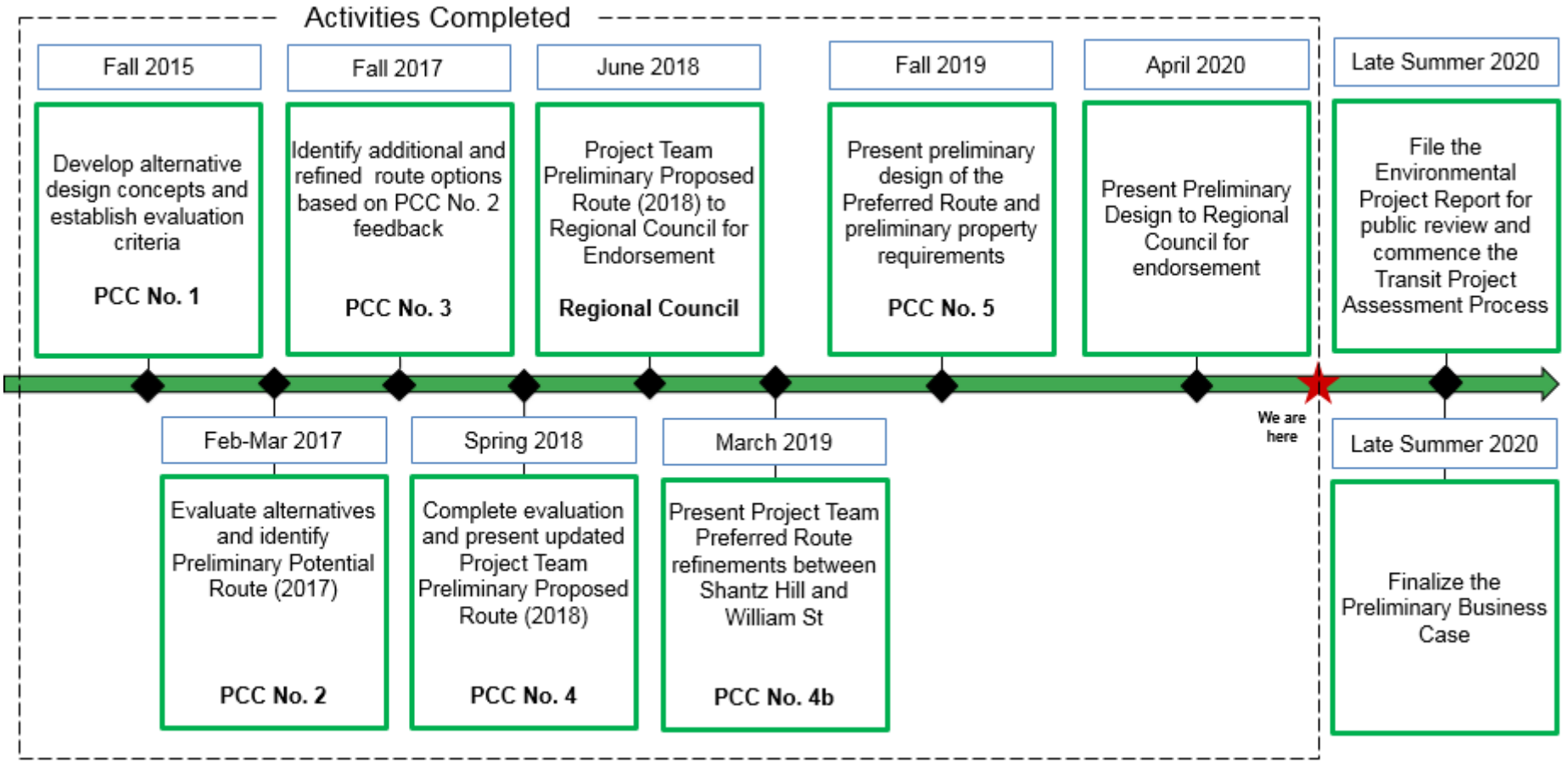
STAGE 2 ION – PREFERRED ROUTE

Centre running LRT with two lanes of general traffic in each direction with separated bike lanes



The Preferred Route was endorsed by Regional Council on June 5, 2019

STAGE 2 ION TIMELINE



The TPA process must be completed within 120 days following the Notice of Commencement

BUSINESS CASE OBJECTIVE

- Preferred Alignment Endorsed by Council – Moving Forward
- Advancing Formal Funding Request at Provincial and Federal Levels

BUSINESS CASE DEVELOPMENT APPROACH

- Region of Waterloo Travel Demand Model
- Business Case Development Guidance/Frameworks
  - MTO Business Case Guidance
  - Metrolinx Business Case Guidance
- Business Case Benefit Categories
  - Primary Benefits (Reflected in key econ. metrics: BCR, NPV,…)
  - Secondary Benefits (Not reflected in key econ. metrics: BCR, NPV,…)
- MTO Submission & Review

PRIMARY BUSINESS CASE BENEFITS

Benefit Type	Benefit Category	Description	Monetized	Quantified/ Qualified
User/Direct	Travel Time – Existing Transit User	Improved transit travel time	Yes	
User/Direct	Travel Time – New Transit User	Latent demand to improved transit travel time	Yes	
User/Direct	Travel Time Reliability – Existing Transit User	Reliability time savings / reduced generalized cost	Yes	
General/Indirect	Safety Benefits	Improved safety	Yes	
General/Indirect	Out of Pocket Cost Savings – New Transit User	Savings due to reduced parking, fuel, etc..	Yes	
General/Indirect	Emission Reductions	Reduced emission between auto split/base case and LRT	Yes	

SECONDARY BUSINESS CASE BENEFITS

Benefit Type	Benefit Category	Description	Monetized	Quantified/ Qualified
User /Indirect	Physical Health Benefits	First/last mile and reduced criteria air contaminants		Yes
User/Direct	Quality Benefits – Existing Transit User	Improved quality / signage / navigation		Yes
User/Direct	Comfort Benefits – Existing Transit User	Improved travel comfort		Yes
General/Indirect	Noise Reduction	Noise pollution reduction		Yes
General/Indirect	Land Value Uplift	Increased value around stations	Yes	
External	Employment	Increased 'commute shed'		Yes
External	Economic	Productivity (agglomeration) & competition		Yes
Const. & Op.	Job Creation	Due to construction & operations		Yes
Const. & Op.	GDP	Due to construction & operation		Yes

PROPOSED ENGAGEMENT WITH MTO

- Introductory meeting: April 29, 2020
- Detailed project review: May/June 2020
  - Full background and project review (Region)
  - Business case submission pathway (MTO)
- Progress review following initial results: June/July 2020
- Presentation of draft Business Case: July/August 2020
- Review of MTO comments on draft report (if needed): August 2020

COMMENTS / QUESTIONS?

Minutes

Community Building Strategy (CBS) Inter-municipal Working Group
June 8, 2016

City of Cambridge:	April Souwand, Valerie Spring, Matthew Sweet, Shane Taylor, Paul Willms
City of Kitchener:	Brian Bennett, Aaron McCrimmon-Jones
City of Waterloo:	Adam Lauder, Janice Mitchell, Scott Nevin, Ryan Mounsey
Region of Waterloo:	Keren Adderley, Julie Belanger, Reid Fulton, Kate Hagerman, Catherine Heal, John Hill, Geoffery Keyworth, Shannon McBride, Matthew O'Neil, David Roewade
Regrets:	Barry Cronkite, James Goodram, Chris Gosselin, Phillip Hewitson, Shannon Noonan, Richard Parent, Justin Readman, Paula Sawicki, Chris Ziemski

Observed opportunities and challenges regarding CBS implementation and station area planning

J. Mitchell, A. McCrimmon-Jones and V. Spring each provided some key observations and updates based on their respective work on station area planning /Growth and Intensification Study.

Common observations:

City of Waterloo Observations

1. The draft station area plan has been released. One-on-one consultation meetings have been held. The City has gathered positive feedback from stakeholders on principles such as mixed use. There is a general sense of optimism among stakeholders coupled with high expectations of the functionality and quality of place in the station areas. Given the limitations in resources, it is necessary to prioritize projects. Communication will be particularly important.
2. The City is working out the amount of residential use that could be incorporated within the Employment Land designation without a comprehensive review and employment land conversion.

3. Private versus public ownership limit what governments could control / implement.
4. Discussions about challenges associated with the LRT construction and future functionality issues tend to dominate discussions and public consultation

City of Kitchener Observations –

5. The first PIC for Midtown/Rockway was held in May 2016.
6. The Mill-Borden station is located in the Schneider Creek Flood Plain, which poses serious constraints on intensification. The two-zone flood designation system is intended to allow more land to be developable and the system's effectiveness is yet to be seen. For Stage 2 of the LRT, it was suggested that more consultation with area municipalities prior to determining LRT station locations might lessen similar challenges. It was pointed out that natural feature/green spaces are encouraged to be part of Major Transit System Areas in MTO's guidelines.
7. There is a common assumption that former manufacturing sites are suitable for residential or commercial redevelopment, not employment uses; however, a note-worthy situation is that some technology oriented manufacturing (employment) uses are located in urban areas. Examples include AirBoss Rubber Manufacturing and the Catalyst 137 Project.
8. Streetscape improvements are often identified through station area planning. There needs to be a mechanism(s) to do streetscape improvements on regional roads in station areas. It was suggested that the cities could provide the specifics in their respective design guidelines or station areas plans, which could be incorporated into the Region's Context Sensitive Corridor Design Guidelines (attached to distribution email). The details might be site specific or described as part of typical cross-sections, as is done in the Region's Corridor Design Guidelines. R. Fulton added that GRT also creates station area profiles for the purpose of transit infrastructure planning. The obvious next step is for appropriate City and Regional (TES, GRT) reps to discuss this coordination issue and potentially develop a joint process.

Action: G. Keyworth to be the Regional lead to set up a meeting among the three Cities and Transportation and Engineering Services.

Action: C. Heal to provide the Region's CTC Monitoring Report and contact (attached to distribution email).

City of Cambridge –

1. City staff likes the flexibility offered by BRT from the perspective of determining a LRT route as bus routes are not fixed like train routes.

2. The City has been working on the Growth and Intensification Study which will result in six secondary plans. The first plan (Main and Dundas) is complete. There was more public participation / input than expected. The second and third plans in progress are Hespeler Road and Coronation Boulevard.
3. Cambridge shares similar challenges in finding the need to create public spaces on private lands and needing to appropriately incorporate non-employment uses into employment areas.

G. Keyworth asked if anyone has heard any updates about the proposed Blue Tooth monitoring of active transportation and no one had.

R. Mounsey pointed out that the demand for employment land, affordability and density are intertwined in the case of Waterloo. The increase in small start-up tech firms means that smaller office floor spaces are easier to lease out, which doesn't encourage construction of large office buildings on larger lots. In addition, the current generation of office users prefer locations that are close to amenities. Meanwhile, condominium prices have increased drastically to $400/ ft^2, and land prices in urban areas in Waterloo are high. Therefore, developers might find it more viable to build taller/higher density office or mixed use buildings in urban areas. Lower parking requirements, employment incentives and generally higher density might help.

There are a number of municipal sites / parking lots available for development.

GRT Business Plan, 2016

R. Fulton gave a presentation on GRT's 2016 Business Plan (attached to distribution email). Key points:

1. There is no significant deviation from the current plan.
2. Ridership dropped in the last 2 years due to a combination of local factors (LRT construction, termination of contract with school boards and fare increase) and macro factors (fuel price and ride shares).
3. GRT will continue to refine routes and service changes to coordinate with and prepare for LRT going live.
4. GRT might revisit the Conestoga College pass in 2017.
5. Ridership needs to increase steadily if growth targets are to be achieved. For example, the 2021 target of 28 M rides requires an annual growth rate of 5.5%.
6. GRT develops station area profiles for the purpose of planning for transit related infrastructure, e.g., road allowance for bus stops and pedestrian crossings.

7. Riders want to know if the connection between GRT buses and the LRT would be efficient.
8. Early information about new developments (transit needs) helps GRT planning

Rapid Transit Update

M. O'Neil gave an update on the key pedestrian / connectivity features of the each LRT station. Streetscaping is challenging because it would often necessitate property acquisition. (For details, please see presentation attached to distribution email.)

A common theme that was evident from the discussions at this meeting was that the public has certain expectations about the operational efficiency of the LRT, connectivity (among different modes, between LRT and GRT stops, and active transportation routes) and streetscaping / quality of places. At this stage of the LRT development, coordination, communication and station area planning are paramount issues.

CTC Investment Strategy, Brownfield Incentive Review and Place Making Initiatives

J. Hill introduced an RFP (draft), initiated by the Region, to investigate the effectiveness of existing Regional financial incentives, corridor greening and public arts along the CTC. As part of the engagement, Area Municipalities will be consulted. The results will inform further planning and staff recommendations. While existing Area Municipal programs might be included in the analysis, the exercise will only result in recommendations of Regional responsibility. The draft RFP could not be widely shared as it is still in the process of internal review.

Financial Incentive Catalogue

This item was deferred. This was to be a demonstration of a new web catalogue consisting of the commonly used development/building incentives offered by the Region and Area Municipalities. The catalogue will be displayed on the Regional web site after a final review by the Area Municipal incentive contacts.

Adjournment

The meeting adjourned at 3:10 pm.

MEETING NOTES – Emergency Services Coordination

PROJECT	Region of Waterloo – Stage 2 ION LRT Transit Project Assessment
OBJECTIVE	To coordinate with Emergency Services and Planning staff at the Region of Waterloo, City of Cambridge, and City of Kitchener to understand requirement for the planning and design of the Stage 2 ION LRT system.
DATE / TIME	December 8, 2017, 10:30am
LOCATION	Board Room, 50 Queen St N, Suite 803, Kitchener

Attendees	Organization	e-mail
Matthew O'Neil	Region of Waterloo – Rapid Transit	moneil@regionofwaterloo.ca
Patrick Smola	Waterloo Regional Police Service	Patrick.smola@wrps.on.ca
James Topham	Region of Waterloo – Paramedic Services	JTopham@regionofwaterloo.ca
Kirsten Commisso	Region of Waterloo – Paramedic Services	KiCommisso@regionofwaterloo.ca
Gina Cliffe	City of Cambridge - Community Emergency Planning	CliffeG@cambridge.ca
Additional Distribution:		
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Cindy Blair	Region of Waterloo – Emergency Management	CBlair@regionofwaterloo.ca
Thomas Berczi	Waterloo Regional Police Service	tom.berczi@wrps.on.ca
Damond Jamieson	Cambridge Fire Department	JamiesonD@cambridge.ca
TBC	City of Kitchener – Emergency Planning	
TBC (Tom Ruggle?)	Kitchener Fire Department	

Item:	**Action by:**
Stage 1 Challenges • Narrow lanes (e.g. King Street from Victoria Street to Allen Street, Charles Street from Benton Street to Borden Avenue) mean that a disabled vehicle blocks the roadway and may necessitate that emergency service vehicles use the rapidway • Currently there is an on-going issue with drivers blocking the Grand River Hospital ambulance entrance/access, at times requiring approx. 8 minutes for supervisors to exit onto King Street	
Stage 2 Improvements/Requests • Use a "rolled" or mountable curb for the centre-running rapidway, much like the Shephard Line in Toronto • Region to consider the impact of climate change to future flooding extent and frequency when evaluating routes in Preston, and through Riverside Park in particular. Region to consult with GRCA.	
Misc. • Fire Department and Paramedic Services to confirm actual vehicle widths • M. O'Neil to distribute previous RESCU coordination meeting information previously documented as part of the Stage 1 LRT project	