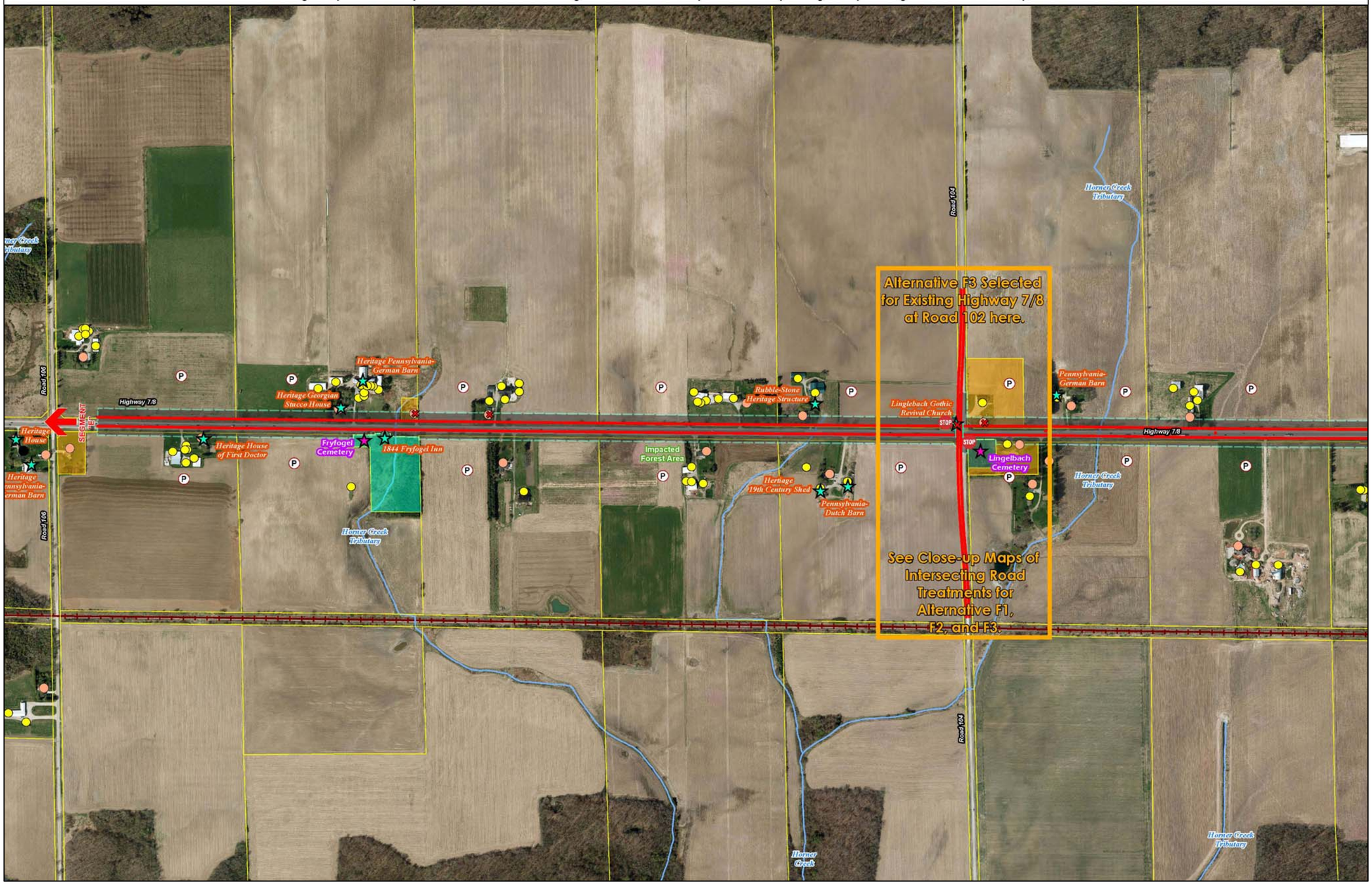
APPENDIX E

Segment F: East of Road 106 to West of Regional Road 1

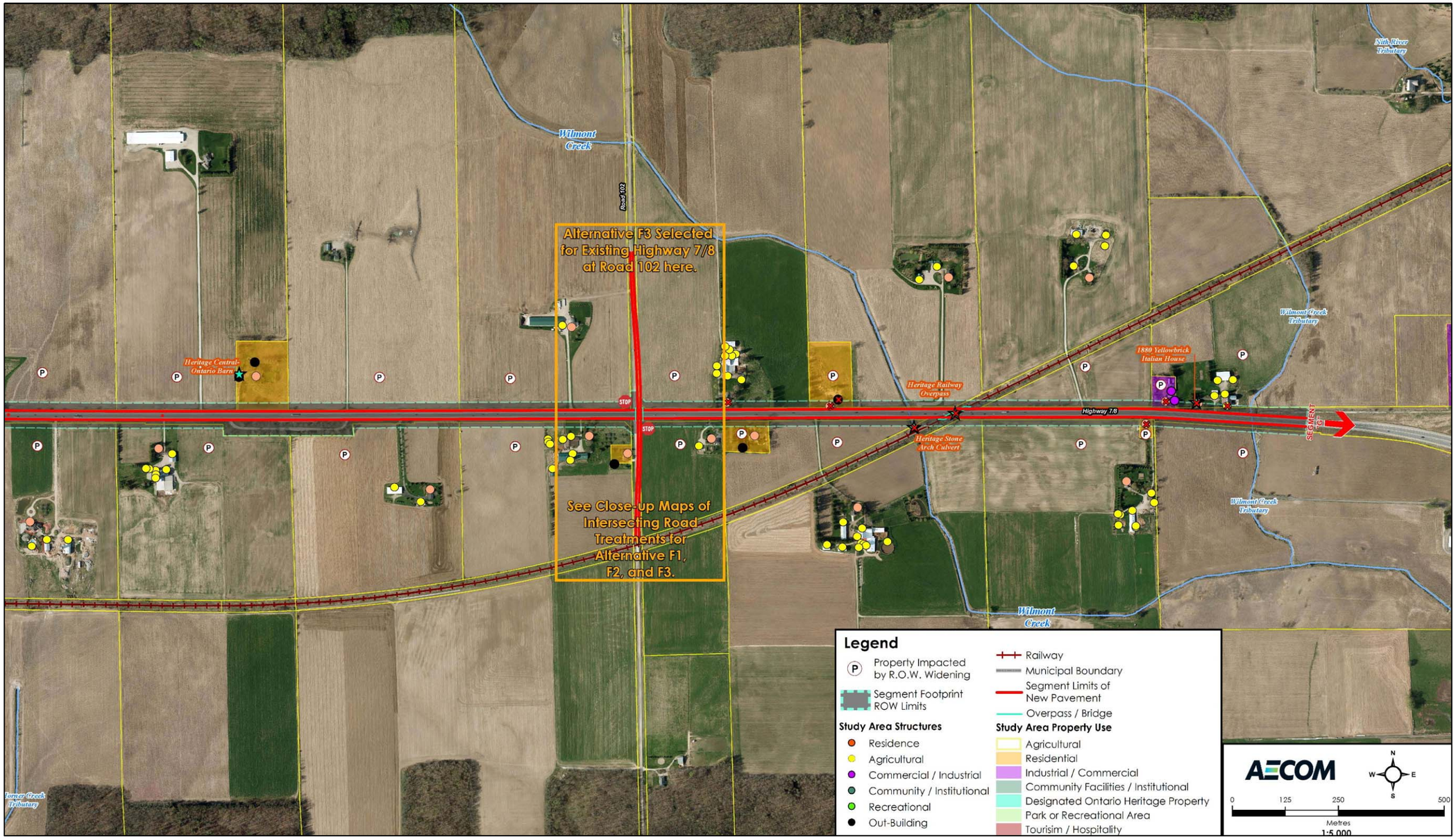
Environmental Considerations Mapping: Preliminary Design Map for Recommended Plan and Close-up Maps of Crossing Road Intersection Treatment Alternatives

Preliminary Design Alternatives Assessment and Evaluation Table

Highway 7 & 8 Transportation Corridor Planning and Class EA Study - Preliminary Design Map of Segment F - Draft - July, 2013



Highway 7 & 8 Transportation Corridor Planning and Class EA Study - Preliminary Design Map of Segment F - Draft - July, 2013



Legend

- Property Impacted by R.O.W. Widening
- Segment Footprint ROW Limits
- Railway
- Municipal Boundary
- Segment Limits of New Pavement
- Overpass / Bridge

Study Area Structures

- Residence
- Agricultural
- Commercial / Industrial
- Community / Institutional
- Recreational
- Out-Building

Study Area Property Use

- Agricultural
- Residential
- Industrial / Commercial
- Community Facilities / Institutional
- Designated Ontario Heritage Property
- Park or Recreational Area
- Tourisim / Hospitality

AECOM

N W E S

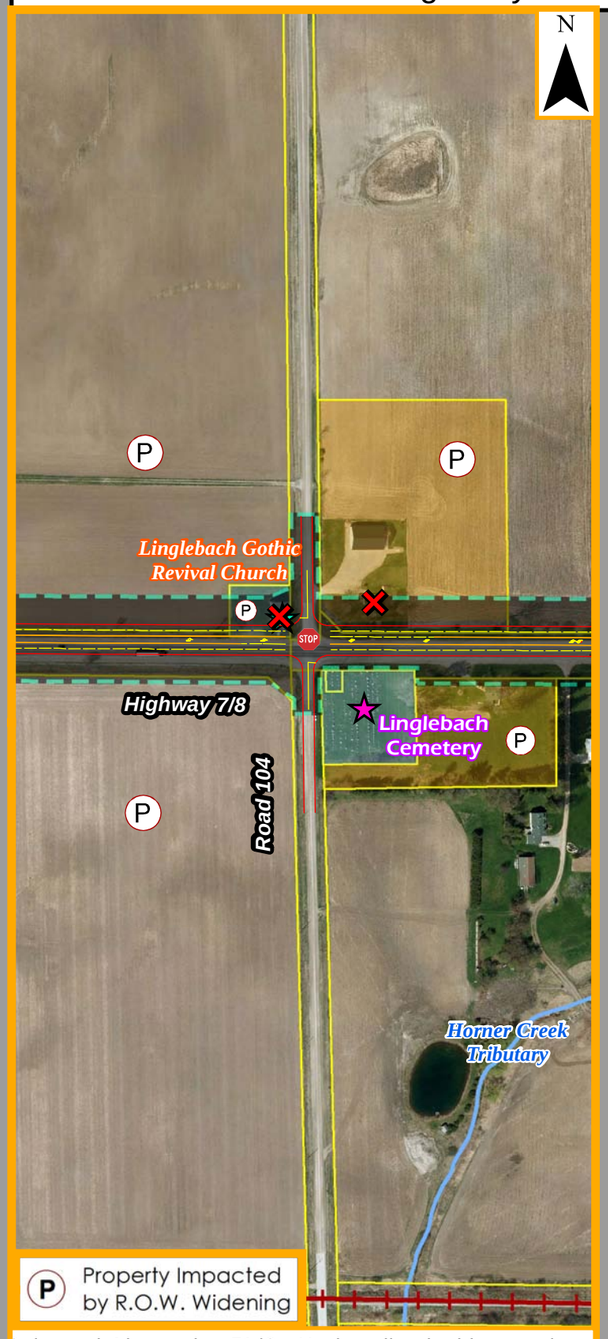
0 125 250 500

Metres

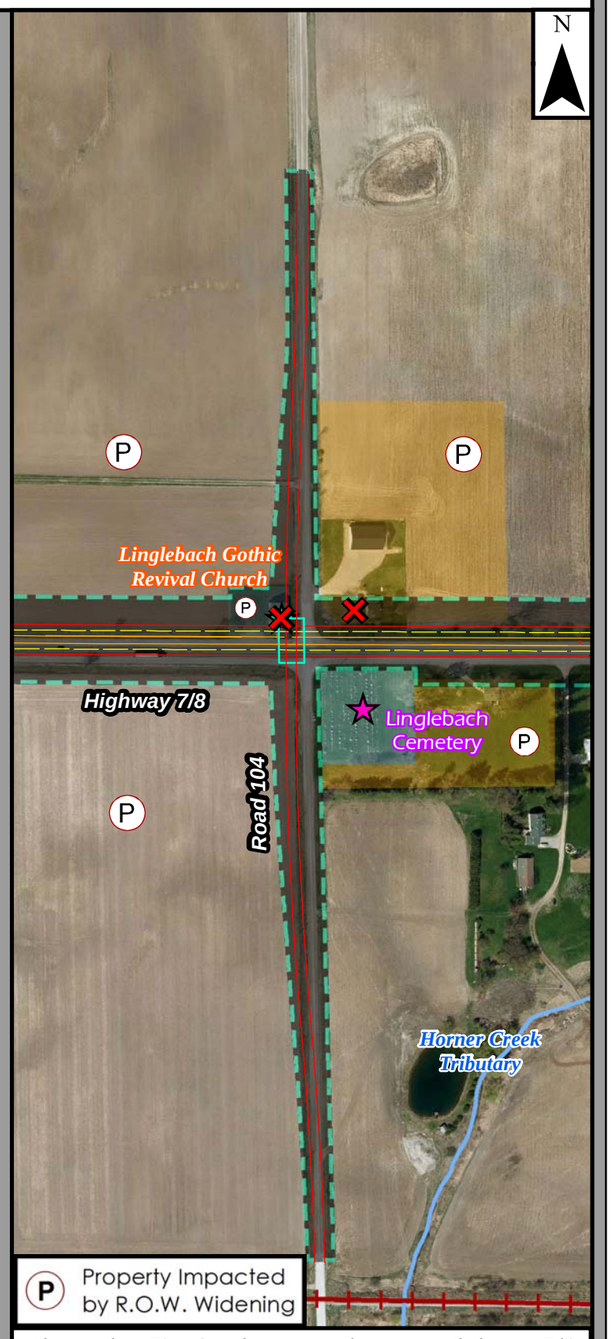
1:5,000

Highway 7 & 8 Corridor Planning and Class EA Study - Preliminary Design - Close-up Map of Connecting Road Intersection Treatment Alternatives for Segment F (July, 2013)

Highway 7/8 and Road 104

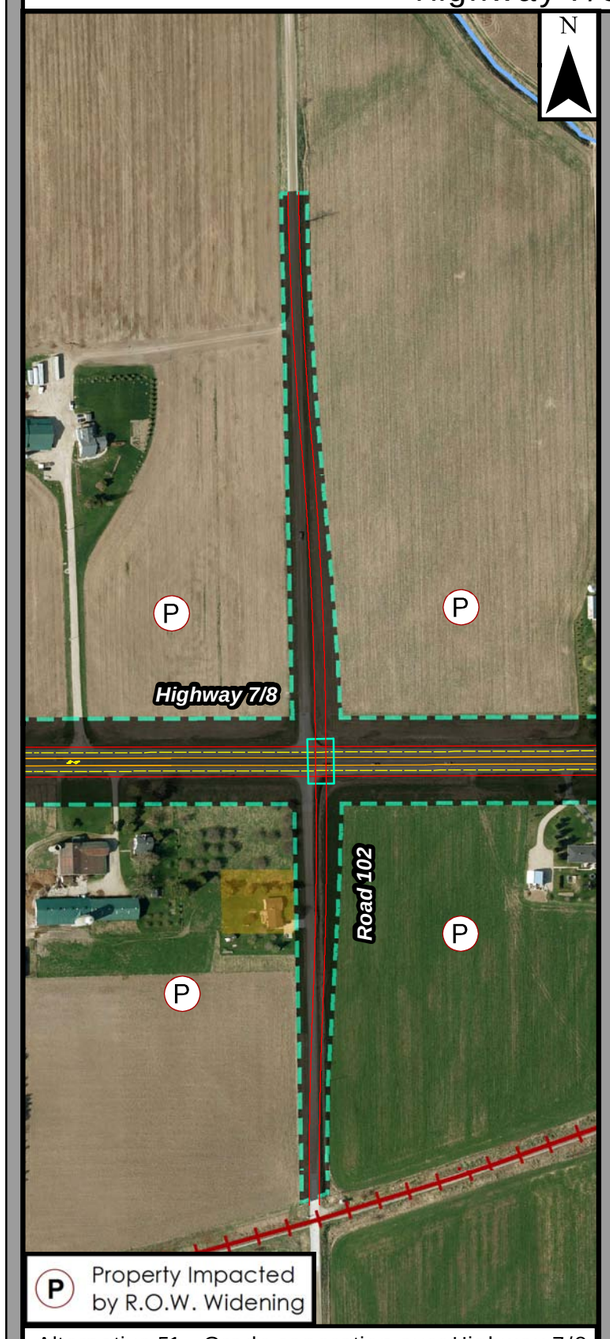


Selected Alternative F1/3 - Unsignalized with stop signs

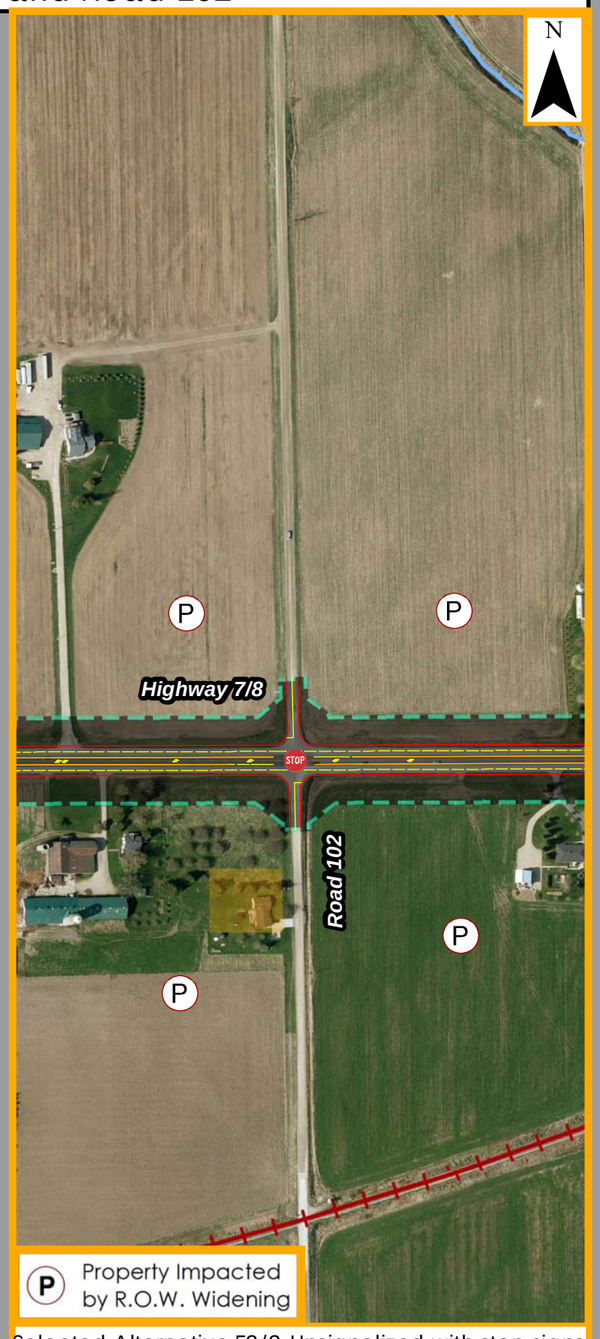


Alternative F2 - Grade separation over Highway 7/8

Highway 7/8 and Road 102



Alternative F1 - Grade separation over Highway 7/8



Selected Alternative F2/3-Unsignalized with stop signs

Path: F:\60117929 Highway 7 and 8\GIS Data\Maps\Road Treatments\60117929_SegF_Intersection_Group_Map_1_20130409.mxd

Highway 7&8 Transportation Corridor Planning and Class EA Study **EVALUATION OF PRELIMINARY DESIGN ALTERNATIVES** Note: The evaluation is based on a qualitative assessment of each alternative (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.				
SEGMENT F – East of Road 106 to West of Regional Road 1				
Segment F Alternatives		**Alternative F1**	**Alternative F2**	**Alternative F3 - Recommended**
	Cross Section	4-lanes with continuous centre left turn lane	4-lanes with continuous centre left turn lane	4-lanes with continuous centre left turn lane
	Crossing Road Treatments	Road 104 – Unsignalized Road 102 – Grade Separation	Road 104 – Grade Separation Road 102 – Unsignalized	Road 104 – Unsignalized Road 102 – Unsignalized
Factor / Sub-Factor	**Criteria**			
1. Natural Environmental Factors				
1.1 Fisheries and Aquatic Ecosystems	1.1.1 Fish Habitat 1.1.2 Fish Community	**Moderate** potential to affect fish and fish habitat • 5 watercourse crossings - 2 crossings of Wilmot Creek (cold water) - 2 crossings of Homer Creek (warm water) - 1 crossing of Homer Creek (thermal regime unknown) • 7 SAR recorded in Wilmot Creek crossings - Silver Shiner - Redside Dace - Eastern Pondmussel - Fawnsfoot Mussel - Hickorynut Mussel - Mapleleaf Mussel - Rainbow Mussel	**Moderate** potential to affect fish and fish habitat • 5 watercourse crossings - 2 crossings of Wilmot Creek (cold water) - 2 crossings of Homer Creek (warm water) - 1 crossing of Homer Creek (thermal regime unknown) • 7 SAR recorded in Wilmot Creek crossings - Silver Shiner - Redside Dace - Eastern Pondmussel - Fawnsfoot Mussel - Hickorynut Mussel - Mapleleaf Mussel - Rainbow Mussel	**Moderate** potential to affect fish and fish habitat • 5 watercourse crossings - 2 crossings of Wilmot Creek (cold water) - 2 crossings of Homer Creek (warm water) - 1 crossing of Homer Creek (thermal regime unknown) • 7 SAR recorded in Wilmot Creek crossings - Silver Shiner - Redside Dace - Eastern Pondmussel - Fawnsfoot Mussel - Hickorynut Mussel - Mapleleaf Mussel - Rainbow Mussel
1.2 Terrestrial Ecosystems	1.2.1 Wildlife	**Low** potential to affect wildlife and their habitat • 98 breeding bird species in the study area • Area sensitive bird species recorded in close proximity / within the alternative	**Low** potential to affect wildlife and their habitat • 98 breeding bird species in the study area • Area sensitive bird species recorded in close proximity / within the alternative	**Low** potential to affect wildlife and their habitat • 98 breeding bird species in the study area • Area sensitive bird species recorded in close proximity / within the alternative
	1.2.2 Wetlands	**No** potential to affect wetlands • No wetlands impacted	**No** potential to affect wetlands • No wetlands impacted	**No** potential to affect wetlands • No wetlands impacted
	1.2.3 Forests (e.g. woodlands [forest stands, woodlots and interior forest habitat] and significant valley lands [valley and stream corridors])	**Low** potential to affect forested areas • 1 forested area impacted - 1 encroachment displacing approximately 0.1 hectares fringe area	**Low** potential to affect forested areas • 1 forested area impacted - 1 encroachment displacing approximately 0.1 hectares fringe area	**Low** potential to affect forested areas • 1 forested area impacted - 1 encroachment displacing approximately 0.1 hectares fringe area
	1.2.4 Vegetation Species At Risk	**Moderate** potential to affect vegetation • 1 vegetation SAR (Showy Goldenrod, S-Rank 1) in close proximity • 1 vegetation SAR (Soft Hairy False Gromwell, S-Rank 2) in close proximity	**Moderate** potential to affect vegetation • 1 vegetation SAR (Showy Goldenrod, S-Rank 1) in close proximity • 1 vegetation SAR (Soft Hairy False Gromwell, S-Rank 2) in close proximity	**Moderate** potential to affect vegetation • 1 vegetation SAR (Showy Goldenrod, S-Rank 1) in close proximity • 1 vegetation SAR (Soft Hairy False Gromwell, S-Rank 2) in close proximity
	1.2.5 Designated/Special Areas (such as world biosphere reserves, heritage rivers, ESAs, ESPAs, ANSIs, environmental plan areas, conservation reserves; and the designated special areas of national parks, provincial parks, conservation areas, etc)	**No** potential to affect designated special areas • No designated areas impacted	**No** potential to affect designated special areas • No designated areas impacted	**No** potential to affect designated special areas • No designated areas impacted

Highway 7&8 Transportation Corridor Planning and Class EA Study

EVALUATION OF PRELIMINARY DESIGN ALTERNATIVES

Note: The evaluation is based on a qualitative assessment of each alternative (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

SEGMENT F – East of Road 106 to West of Regional Road 1

Segment F Alternatives		**Alternative F1**	**Alternative F2**	**Alternative F3 - Recommended**
	Cross Section	4-lanes with continuous centre left turn lane	4-lanes with continuous centre left turn lane	4-lanes with continuous centre left turn lane
	Crossing Road Treatments	Road 104 – Unsignalized Road 102 – Grade Separation	Road 104 – Grade Separation Road 102 – Unsignalized	Road 104 – Unsignalized Road 102 – Unsignalized
Factor / Sub-Factor	**Criteria**			
1.3 Groundwater	1.3.1 Areas of Groundwater Recharge and Discharge 1.3.2 Groundwater Source Areas and Wellhead Protection Areas	**Low** potential to affect areas of groundwater recharge / discharge areas / large volume wells / wellhead protection areas • No temporary or long term change to groundwater recharge / discharge areas • No wellhead protection areas impacted • Some surface runoff is expected to exceed infiltration for the majority of the route given the relatively impermeable nature of the surrounding soils	**Low** potential to affect areas of groundwater recharge / discharge areas / wellhead protection areas • No temporary or long term change to groundwater recharge / discharge areas • No wellhead protection areas impacted • Some surface runoff is expected to exceed infiltration for the majority of the route given the relatively impermeable nature of the surrounding soils	**Low** potential to affect areas of groundwater recharge / discharge areas / wellhead protection areas • No temporary or long term change to groundwater recharge / discharge areas • No wellhead protection areas impacted • Some surface runoff is expected to exceed infiltration for the majority of the route given the relatively impermeable nature of the surrounding soils
	1.3.3 Large Volume Wells	**Low** potential to affect large volume wells • No large volume wells impacted	**Low** potential to affect large volume wells • No large volume wells impacted	**Low** potential to large volume wells • No large volume wells impacted
	1.3.4 Private Wells	**Moderate** potential to affect private well use • 2 private, deep rock wells displaced • 15 shallow dug wells in close proximity (<150 m) - Sensitive to surface contamination; potential short and long term impacts • 3 deep bedrock aquifer wells in close proximity (<150 m)	**Moderate** potential to affect private well use • 2 private, deep rock wells displaced • 15 shallow dug wells in close proximity (<150 m) - Sensitive to surface contamination; potential short and long term impacts • 3 deep bedrock aquifer wells in close proximity (<150 m)	**Moderate** potential to affect private well use • 2 private, deep rock wells displaced • 15 shallow dug wells in close proximity (<150 m) - Sensitive to surface contamination; potential short and long term impacts • 3 deep bedrock aquifer wells in close proximity (<150 m)
	1.3.5 Groundwater-Sensitive Ecosystems (e.g. groundwater fed wetlands, coldwater streams)	**Low** potential to affect groundwater sensitive ecosystems • No groundwater sensitive ecosystems impacted • Low potential for short and long term change to groundwater quantity / quality - Potential for long-term effects to groundwater quality due to increased road salt use and road run-off. - Potential for temporary effects to groundwater quantity if construction dewatering is required.	**Low** potential to affect groundwater sensitive ecosystems • No groundwater sensitive ecosystems impacted • Low potential for short and long term change to groundwater quantity / quality - Potential for long-term effects to groundwater quality due to increased road salt use and road run-off. - Potential for temporary effects to groundwater quantity if construction dewatering is required.	**Low** potential to affect groundwater sensitive ecosystems • No groundwater sensitive ecosystems impacted • Low potential for short and long term change to groundwater quantity / quality - Potential for long-term effects to groundwater quality due to increased road salt use and road run-off. - Potential for temporary effects to groundwater quantity if construction dewatering is required.
1.4 Surface Water	1.4.1 Watershed / Sub-Watershed Drainage Features/Patterns 1.4.2 Surface Water Quality and Quantity	**Low** potential to affect drainage features / patterns and surface water quality / quantity • 5 watercourse crossings	**Low** potential to affect drainage features / patterns and surface water quality / quantity • 5 watercourse crossings	**Low** potential to affect drainage features / patterns and surface water quality / quantity • 5 watercourse crossings
NATURAL ENVIRONMENT SUMMARY		**For all alternatives, potential impacts to features of the natural environment are comparable with no discernible differences.**		
2. Land Use / Socio-Economic Environmental Factors				
2.1 Land Use Planning Policies, Goals, Objectives	2.1.1 First Nations Land Claims	**No** potential to affect First Nations Land Claims • No First Nations Land Claims impacted - 5 First Nations Land Claims filed in the study area	**No** potential to affect First Nations Land Claims • No First Nations Land Claims impacted - 5 First Nations Land Claims filed in the study area	**No** potential to affect First Nations Land Claims • No First Nations Land Claims impacted - 5 First Nations Land Claims filed in the study area
	2.1.2 Provincial/Federal land use planning policies/goals/objectives	*Previously addressed through the detailed planning phase.*		
	2.1.3 Municipal (regional and local) land use planning policies/ goals/objectives (Official Plans)	*Previously addressed through the detailed planning phase.*		
	2.1.4 Development Objectives of Private Property Owners	*Previously addressed through the detailed planning phase.*		

Highway 7&8 Transportation Corridor Planning and Class EA Study **EVALUATION OF PRELIMINARY DESIGN ALTERNATIVES** Note: The evaluation is based on a qualitative assessment of each alternative (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.				
SEGMENT F – East of Road 106 to West of Regional Road 1				
Segment F Alternatives		**Alternative F1**	**Alternative F2**	**Alternative F3 - Recommended**
	Cross Section	4-lanes with continuous centre left turn lane	4-lanes with continuous centre left turn lane	4-lanes with continuous centre left turn lane
	Crossing Road Treatments	Road 104 – Unsignalized Road 102 – Grade Separation	Road 104 – Grade Separation Road 102 – Unsignalized	Road 104 – Unsignalized Road 102 – Unsignalized
Factor / Sub-Factor	**Criteria**			
2.2 Land Use / Community	2.2.1 First Nation Reserves	**No** potential to affect First Nations Reserves • No First Nations Reserves in the study area	**No** potential to affect First Nations Reserves • No First Nations Reserves in the study area	**No** potential to affect First Nations Reserves • No First Nations Reserves in the study area
	2.2.2 First Nations' Sacred Grounds	**Low** potential to affect First Nations Sacred Grounds • No known First Nations Sacred Grounds in the study area	**Low** potential to affect First Nations Sacred Grounds • No known First Nations Sacred Grounds in the study area	**Low** potential to affect First Nations Sacred Grounds • No known First Nations Sacred Grounds in the study area
	2.2.3 Urban and Rural Residential	**High** potential for impacts to urban and rural residential areas • 6 residential properties impacted - 2 residential properties lose frontage - Homes are displaced on 3 of these residential properties - 3 residential properties are completely displaced - No residential property severed • High impact on character and use of residential property though change is limited to a few individual rural residential properties	**High** potential for impacts to urban and rural residential areas • 6 residential properties impacted - 2 residential properties lose frontage - Homes are displaced on 3 of these residential properties - 3 residential properties are completely displaced - No residential property severed • High impact on character and use of residential property though change is limited to a few individual rural residential properties	**High** potential for impacts to urban and rural residential areas • 6 residential properties impacted - 2 residential properties lose frontage - Homes are displaced on 3 of these residential properties - 3 residential properties are completely displaced - No residential property severed • High impact on character and use of residential property though change is limited to a few individual rural residential properties
	2.2.4 Commercial/Industrial	**Low** potential for impacts to commercial / industrial areas • 1 commercial / industrial properties impacted - 1 commercial / industrial properties lose frontage - 1 commercial / industrial building displaced - 1 home displaced on commercial / industrial property - 1 commercial / industrial property completely displaced • No impacts on use, character and cohesion of commercial / industrial	**Low** potential for impacts to commercial / industrial areas • 1 commercial / industrial properties impacted - 1 commercial / industrial properties lose frontage - No commercial / industrial building displaced - 1 home displaced on commercial / industrial property - 1 commercial / industrial property completely displaced • No impacts on use, character and cohesion of commercial / industrial	**Low** potential for impacts to commercial / industrial areas • 1 commercial / industrial properties impacted - 1 commercial / industrial properties lose frontage - No commercial / industrial building displaced - 1 home displaced on commercial / industrial property - 1 commercial / industrial property completely displaced • No impacts on use, character and cohesion of commercial / industrial
	2.2.5 Tourist Areas and Attractions (e.g. museums, theatres, etc.)	**No** potential for impacts to tourist areas and attractions • No tourist areas / attractions impacted • No impacts on use, character and cohesion of tourist areas / attractions	**No** potential for impacts to tourist areas and attractions • No tourist areas / attractions impacted • No impacts on use, character and cohesion of tourist areas / attractions	**No** potential for impacts to tourist areas and attractions • No tourist areas / attractions impacted • No impacts on use, character and cohesion of tourist areas / attractions
	2.2.6 Community Facilities / Institutions (e.g. hospitals, schools, places of worship, unique community features, municipal parks, public spaces, golf courses, trails, greenways and open space linkages)	**Moderate** potential for impacts to community facilities and institutions • 1 community facility / institution impacted - Linglebach Gothic Revival Church is displaced - Community facility / institution property is displaced • No impacts on use, character and cohesion of community facilities / institutions as church was closed	**Moderate** potential for impacts to community facilities and institutions • 1 community facility / institution impacted - Linglebach Gothic Revival Church is displaced - Community facility / institution property is displaced • No impacts on use, character and cohesion of community facilities / institutions as church was closed	**Moderate** potential for impacts to community facilities and institutions • 1 community facility / institution impacted - Linglebach Gothic Revival Church is displaced - Community facility / institution property is displaced • No impacts on use, character and cohesion of community facilities / institutions as church was closed
	2.2.7 Municipal Infrastructure and Public Service Facilities (e.g. sewage and water services, police/emergency services, local utilities)	**No** potential to affect Municipal Infrastructure and Public Service Facilities • No municipal infrastructure / public service facilities impacted	**No** potential to affect Municipal Infrastructure and Public Service Facilities • No municipal infrastructure / public service facilities impacted	**No** potential to affect Municipal Infrastructure and Public Service Facilities • No municipal infrastructure / public service facilities impacted
	2.2.8 Downtown Historic Crossroads Function	**No** potential to affect Downtown or Historic Crossroads • No historic downtown cross roads in this segment	**No** potential to affect Downtown or Historic Crossroads • No historic downtown cross roads in this segment	**No** potential to affect Downtown or Historic Crossroads • No historic downtown cross roads in this segment

Highway 7&8 Transportation Corridor Planning and Class EA Study **EVALUATION OF PRELIMINARY DESIGN ALTERNATIVES** Note: The evaluation is based on a qualitative assessment of each alternative (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.				
SEGMENT F – East of Road 106 to West of Regional Road 1				
Segment F Alternatives		**Alternative F1**	**Alternative F2**	**Alternative F3 - Recommended**
	Cross Section	4-lanes with continuous centre left turn lane	4-lanes with continuous centre left turn lane	4-lanes with continuous centre left turn lane
	Crossing Road Treatments	Road 104 – Unsignalized Road 102 – Grade Separation	Road 104 – Grade Separation Road 102 – Unsignalized	Road 104 – Unsignalized Road 102 – Unsignalized
Factor / Sub-Factor	**Criteria**			
	2.2.9 Out of Way Travel for Access to / from local land uses	**Moderate** potential to affect Out of Way Travel • 1 crossing road where crossing road treatment introduces out-of-way travel to access the highway - Grade separation proposed at Road 102	**Moderate** potential to affect Out of Way Travel • 1 crossing road where crossing road treatment introduces out-of-way travel to access the highway - Grade separation proposed at Road 104	**Low** potential to affect Out of Way Travel • No crossing roads where crossing road treatment introduces out-of-way travel to access the highway
2.3 Noise Sensitive Areas (NSAs) (residential areas and sensitive institutional uses)	2.3.1 Highway Noise	**Low** potential for highway noise impacts. • Noise levels are anticipated to increase based on additional traffic volumes using the corridor. • Design alternatives presented result in no discernible differences in noise levels for receptors adjacent to or in close proximity to the corridor.	**Low** potential for highway noise impacts. • Noise levels are anticipated to increase based on additional traffic volumes using the corridor. • Design alternatives presented result in no discernible differences in noise levels for receptors adjacent to or in close proximity to the corridor.	**Low** potential for highway noise impacts. • Noise levels are anticipated to increase based on additional traffic volumes using the corridor. • Design alternatives presented result in no discernible differences in noise levels for receptors adjacent to or in close proximity to the corridor.
	2.3.2 Construction Noise	**Moderate** potential for construction noise impacts • For all alternatives, construction activities will vary temporally and spatially as the project progresses. • Noise levels from construction at a given receptor location will also vary over time as different activities take place, and as those activities change location. • At this time, detailed construction plans are not available. Construction noise mitigation in the form of a construction Code of Practice will be written into the contract documentation for the contractor.	**Moderate** potential for construction noise impacts • For all alternatives, construction activities will vary temporally and spatially as the project progresses. • Noise levels from construction at a given receptor location will also vary over time as different activities take place, and as those activities change location. • At this time, detailed construction plans are not available. Construction noise mitigation in the form of a construction Code of Practice will be written into the contract documentation for the contractor.	**Moderate** potential for construction noise impacts • For all alternatives, construction activities will vary temporally and spatially as the project progresses. • Noise levels from construction at a given receptor location will also vary over time as different activities take place, and as those activities change location. • At this time, detailed construction plans are not available. Construction noise mitigation in the form of a construction Code of Practice will be written into the contract documentation for the contractor.
2.4 Agriculture	2.4.1 Agriculture - Canada Land Inventory Class 1,2,3 Land	**Moderate** potential for impacts to CLI Class 1,2, 3 lands • Potentially displaces 15.2 hectares of agricultural land from a total of 30 agricultural properties	**Moderate** potential for impacts to CLI Class 1,2, 3 lands • Potentially displaces 15.2 hectares of agricultural land from a total of 30 agricultural properties	**Moderate** potential for impacts to CLI Class 1,2, 3 lands • Potentially displaces 15.2 hectares of agricultural land from a total of 29 agricultural properties
	2.4.2 Agricultural - Farm Infrastructure	**High** potential for impacts to farm infrastructure • 2 farm buildings (excluding houses) displaced • Homes displaced on 2 agricultural properties • 30 farm properties with tile drainage / irrigation systems impacted (assume all impacted agricultural properties are tile drained)	**High** potential for impacts to farm infrastructure • 2 farm buildings (excluding houses) displaced • Homes displaced on 2 agricultural properties • 30 farm properties with tile drainage / irrigation systems impacted (assume all impacted agricultural properties are tile drained)	**High** potential for impacts to farm infrastructure • 2 farm buildings (excluding houses) displaced • Homes displaced on 2 agricultural properties • 29 farm properties with tile drainage / irrigation systems impacted (assume all impacted agricultural properties are tile drained)
	2.4.3 Agriculture – Operations on Individual Farms	**Low** potential for impacts to operations on individual farms • 30 agricultural properties impacted - No agricultural properties are severed resulting in no potentially landlocked parcels - 30 agricultural properties lose frontage - No agricultural property completely displaced	**Low** potential for impacts to operations on individual farms • 30 agricultural properties impacted - No agricultural properties are severed resulting in no potentially landlocked parcels - 30 agricultural properties lose frontage - No agricultural property completely displaced	**Low** potential for impacts to operations on individual farms • 29 agricultural properties impacted - No agricultural properties are severed resulting in no potentially landlocked parcels - 29 agricultural properties lose frontage - No agricultural property completely displaced
	2.4.4 Agriculture – Transportation Linkages between Integrated Agricultural Business Units	**Moderate** potential for impacts to transportation linkages between integrated agricultural business units • 1 crossing road where crossing road treatment restricts access to the highway - Road 102 • 1 crossing road where increased number of lanes potentially impacts ease of crossing the highway for agricultural vehicles - Road 104 • Existing road maintained as highway use with additional traffic causing disruption to agricultural linkage route (Highway 7&8)	**Moderate** potential for impacts to transportation linkages between integrated agricultural business units • 1 crossing road where crossing road treatment restricts access to the highway - Road 104 • 1 crossing road where increased number of lanes potentially impacts ease of crossing the highway for agricultural vehicles - Road 102 • Existing road maintained as highway use with additional traffic causing disruption to agricultural linkage route (Highway 7&8)	**Moderate** potential for impacts to transportation linkages between integrated agricultural business units • No crossing road where crossing road treatment restricts access to or across the highway • 2 crossing roads where increased number of lanes potentially impacts ease of crossing the highway for agricultural vehicles - Road 102 - Road 104 • Existing road maintained as highway use with additional traffic causing disruption to agricultural linkage route (Highway 7&8)

Highway 7&8 Transportation Corridor Planning and Class EA Study EVALUATION OF PRELIMINARY DESIGN ALTERNATIVES Note: The evaluation is based on a qualitative assessment of each alternative (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.				
SEGMENT F – East of Road 106 to West of Regional Road 1				
Segment F Alternatives		**Alternative F1**	**Alternative F2**	**Alternative F3 - Recommended**
Cross Section		4-lanes with continuous centre left turn lane	4-lanes with continuous centre left turn lane	4-lanes with continuous centre left turn lane
Crossing Road Treatments		Road 104 – Unsignalized Road 102 – Grade Separation	Road 104 – Grade Separation Road 102 – Unsignalized	Road 104 – Unsignalized Road 102 – Unsignalized
Factor / Sub-Factor	**Criteria**			
2.5 Land Use / Resources	2.5.1 First Nations People's Treaty Rights or Use of Land and Resources for Traditional Purposes (e.g. hunting, fishing, harvesting of country foods, harvesting of medicinal plants)	**Low** potential to affect First Nations People's Treaty Rights or Use of Land and Resources for Traditional Purposes • All alternatives result in similar potential to affect First Nations People's Treaty Rights of Use of Land / Resources	**Low** potential to affect First Nations People's Treaty Rights or Use of Land and Resources for Traditional Purposes • All alternatives result in similar potential to affect First Nations People's Treaty Rights of Use of Land / Resources	**Low** potential to affect First Nations People's Treaty Rights or Use of Land and Resources for Traditional Purposes • All alternatives result in similar potential to affect First Nations People's Treaty Rights of Use of Land / Resources
	2.5.2 Parks and Recreational Areas (e.g. national/provincial parks, conservation areas)	**No** potential to affect parks and recreational areas • No parks or conservation areas impacted	**No** potential to affect parks and recreational areas • No parks or conservation areas impacted	**No** potential to affect parks and recreational areas • No parks or conservation areas impacted
	2.5.3 Aggregates, Mineral Resources	**No** potential to affect aggregate / mineral resources • No aggregate / mineral resources impacted	**No** potential to affect aggregate / mineral resources • No aggregate / mineral resources impacted	**No** potential to affect aggregate / mineral resources • No aggregate / mineral resources impacted
2.6 Major Utility Transmission Corridors (e.g. railroads, hydro, gas, oil)		**Low** potential to affect major utility corridors • 1 crossing of railway corridor	**Low** potential to affect major utility corridors • 1 crossing of railway corridor	**Low** potential to affect major utility corridors • 1 crossing of railway corridor
2.7 Contaminated Property and Waste Management (e.g. Landfills, Hazardous Waste Sites, "Brownfield" Areas, other known contaminated sites, and high-risk contamination areas)		**Low** potential to affect contaminated property / waste management sites • No properties impacted with known potential contamination concerns	**Low** potential to affect contaminated property / waste management sites • No properties impacted with known potential contamination concerns	**Low** potential to affect contaminated property / waste management sites • No properties impacted with known potential contamination concerns
2.8 Landscape Composition	2.8.1 Scenic Composition (total aesthetic value of landscape components)	**Low** potential to affect scenic composition / aesthetic value • Low impacts to aesthetic value for a majority of route given route is on existing roads	**Low** potential to affect scenic composition / aesthetic value • Low impacts to aesthetic value for a majority of route given route is on existing roads	**Low** potential to affect scenic composition / aesthetic value • Low impacts to aesthetic value for a majority of route given route is on existing roads
	2.8.2 Sensitive Viewer Groups	**Low** potential to affect sensitive viewer groups • No sensitive viewer groups adjacent to this alternative where vistas / outlooks will be impacted	**Low** potential to affect sensitive viewer groups • No sensitive viewer groups adjacent to this alternative where vistas / outlooks will be impacted	**Low** potential to affect sensitive viewer groups • No sensitive viewer groups adjacent to this alternative where vistas / outlooks will be impacted
	2.8.3 Scenic value of views/vistas from the transportation facility	**Low** potential to affect views / vistas from the facility • All alternatives result in similar alteration of the vistas / outlooks for users of the transportation facility	**Low** potential to affect views / vistas from the facility • All alternatives result in similar alteration of the vistas / outlooks for users of the transportation facility	**Low** potential to affect views / vistas from the facility • All alternatives result in similar alteration of the vistas / outlooks for users of the transportation facility
	2.8.4 Specimen Trees	**Moderate** potential to affect specimen trees	**Moderate** potential to affect specimen trees	**Moderate** potential to affect specimen trees
2.9 Air Quality	2.9.1 Regional Air Quality and Total Contaminant and Greenhouse Gas Emissions	*Previously considered during the detailed planning phase.*		
	2.9.2 Local Air Quality and Sensitive Receptors to Air Pollutants	**Low** potential to affect air quality for sensitive receptors • Design alternatives presented result in no discernible differences in air quality levels for sensitive receptors adjacent to or in close proximity to the corridor.	**Low** potential to affect air quality for sensitive receptors • Design alternatives presented result in no discernible differences in air quality levels for sensitive receptors adjacent to or in close proximity to the corridor.	**Low** potential to affect air quality for sensitive receptors • Design alternatives presented result in no discernible differences in air quality levels for sensitive receptors adjacent to or in close proximity to the corridor.
SOCIO-ECONOMIC SUMMARY		**For all alternatives, potential impacts to features of the socio-economic environment are comparable with no discernible differences however, Alternative F3 is very slightly preferred as it results in least out of way travel to and across the highway for local users.**		

Highway 7&8 Transportation Corridor Planning and Class EA Study **EVALUATION OF PRELIMINARY DESIGN ALTERNATIVES** Note: The evaluation is based on a qualitative assessment of each alternative (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.				
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Segment F Alternatives		**Alternative F1**	**Alternative F2**	**Alternative F3 - Recommended**
	Cross Section	4-lanes with continuous centre left turn lane	4-lanes with continuous centre left turn lane	4-lanes with continuous centre left turn lane
	Crossing Road Treatments	Road 104 – Unsignalized Road 102 – Grade Separation	Road 104 – Grade Separation Road 102 – Unsignalized	Road 104 – Unsignalized Road 102 – Unsignalized
Factor / Sub-Factor	**Criteria**			
3. Cultural Environmental Factors				
3.1 Cultural Heritage – Built Heritage and Cultural Landscapes	3.1.1 Buildings or “Standing” Sites of Architectural or Heritage Significance or Ontario Heritage Foundation Easement Properties	**Moderate** potential for impacts to buildings or “standing” sites of architectural or heritage significance • 6 structures of architectural or heritage significance displaced - Linglebach Gothic Revival Church - Stone Arch Culvert Heritage Structure - 1880 Yellowbrick Italian House - Heritage House of First Doctor - Heritage Georgian Stucco House - Rubble Stone Heritage Structure • 5 heritage structures where property is encroached upon - Central Ontario Barn - Pennsylvania German Barn - Pennsylvania Dutch Barn - Heritage 19th Century Shed - Pennsylvania German Barn • 1 heritage property adjacent to proposed right of way - Fryfogel Inn	**Moderate** potential for impacts to buildings or “standing” sites of architectural or heritage significance • 6 structures of architectural or heritage significance displaced - Linglebach Gothic Revival Church - Stone Arch Culvert Heritage Structure - 1880 Yellowbrick Italian House - Heritage House of First Doctor - Heritage Georgian Stucco House - Rubble Stone Heritage Structure • 5 heritage structures where property is encroached upon - Central Ontario Barn - Pennsylvania German Barn - Pennsylvania Dutch Barn - Heritage 19th Century Shed - Pennsylvania German Barn • 1 heritage property adjacent to proposed right of way - Fryfogel Inn	**Moderate** potential for impacts to buildings or “standing” sites of architectural or heritage significance • 6 structures of architectural or heritage significance displaced - Linglebach Gothic Revival Church - Stone Arch Culvert Heritage Structure - 1880 Yellowbrick Italian House - Heritage House of First Doctor - Heritage Georgian Stucco House - Rubble Stone Heritage Structure • 5 heritage structures where property is encroached upon - Central Ontario Barn - Pennsylvania German Barn - Pennsylvania Dutch Barn - Heritage 19th Century Shed - Pennsylvania German Barn • 1 heritage property adjacent to proposed right of way - Fryfogel Inn
	3.1.2 Heritage Bridges	**High** potential for impacts to heritage bridges • 1 heritage bridge displaced (railway overpass)	**High** potential for impacts to heritage bridges • 1 heritage bridge displaced (railway overpass)	**High** potential for impacts to heritage bridges • 1 heritage bridge displaced (railway overpass)
	3.1.3 Areas of Historic 19th Century Settlement	**No** potential for impacts to areas of historic 19th century settlement • No intrusion into 19th century settlement areas	**No** potential for impacts to areas of historic 19th century settlement • No intrusion into 19th century settlement areas	**No** potential for impacts to areas of historic 19th century settlement • No intrusion into 19th century settlement areas
	3.1.4 Cultural Heritage Landscapes (collection of individual man-made features modifying pristine landscape)	**No** potential for impacts to cultural landscapes • No cultural landscapes identified	**No** potential for impacts to cultural landscapes • No cultural landscapes identified	**No** potential for impacts to cultural landscapes • No cultural landscapes identified
	3.1.5 First Nations' Burial Sites	**No** potential for impacts to First Nations burial sites • No known / reported First Nation burial sites in the study area	**No** potential for impacts to First Nations burial sites • No known / reported First Nation burial sites in the study area	**No** potential for impacts to First Nations burial sites • No known / reported First Nation burial sites in the study area
	3.1.6 Cemeteries	**No** potential for impacts to cemeteries • No known cemeteries impacted	**No** potential for impacts to cemeteries • No known cemeteries impacted	**No** potential for impacts to cemeteries • No known cemeteries impacted
3.2 Cultural Heritage – Archaeology	3.2.1 Pre-Historic and Historic First Nations Sites 3.2.2 Historic Euro-Canadian Archaeological Sites	**Low** potential for destruction or disturbance of documented or undocumented archaeological sites • General concentration of registered archaeological sites in vicinity of existing roads (Highway 7&8) • Limited potential for previously undocumented archaeological sites within new areas of right-of-way given lands are developed and heavily disturbed	**Low** potential for destruction or disturbance of documented or undocumented archaeological sites • General concentration of registered archaeological sites in vicinity of existing roads (Highway 7&8) • Limited potential for previously undocumented archaeological sites within new areas of right-of-way	**Low** potential for destruction or disturbance of documented or undocumented archaeological sites • General concentration of registered archaeological sites in vicinity of existing roads (Highway 7&8) • Limited potential for previously undocumented archaeological sites within new areas of right-of-way
CULTURAL ENVIRONMENT SUMMARY		**For all alternatives, potential impacts to features of the cultural environment are comparable with no discernible differences.**		

Highway 7&8 Transportation Corridor Planning and Class EA Study

EVALUATION OF PRELIMINARY DESIGN ALTERNATIVES

Note: The evaluation is based on a qualitative assessment of each alternative (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

SEGMENT F – East of Road 106 to West of Regional Road 1

Segment F Alternatives		**Alternative F1**	**Alternative F2**	**Alternative F3 - Recommended**
	Cross Section	4-lanes with continuous centre left turn lane	4-lanes with continuous centre left turn lane	4-lanes with continuous centre left turn lane
	Crossing Road Treatments	Road 104 – Unsignalized Road 102 – Grade Separation	Road 104 – Grade Separation Road 102 – Unsignalized	Road 104 – Unsignalized Road 102 – Unsignalized
Factor / Sub-Factor	**Criteria**			
4. Area Economy	Previously Addressed During the Needs Assessment Phase			
5. Transportation Factors				
5.1 Area Transportation System Capacity and Efficiency	5.1 Federal/Provincial/Municipal transportation planning policies/goals/objectives	*Previously addressed during Needs Assessment Phase*	Highway 7&8 is a regionally significant part of the overall provincial highway network. It plays a key role in linking communities in south-western Ontario and supports economic prosperity across Ontario.	
	5.2 Efficient movement of people	**Moderate** potential to support efficient movement of people • Route utilizes existing roadway corridor, with reduced level of service given number of private driveways • Direct route	**Moderate** potential to support efficient movement of people • Route utilizes existing roadway corridor, with reduced level of service given number of private driveways • Direct route	**Moderate** potential to support efficient movement of people • Route utilizes existing roadway corridor, with reduced level of service given number of private driveways • Direct route
	5.3 Efficient movement of goods	**Moderate** potential to support efficient movement of goods • Route utilizes existing roadway corridors, with reduced level of service given number of private driveways • Direct route	**Moderate** potential to support efficient movement of goods • Route utilizes existing roadway corridors, with reduced level of service given number of private driveways • Direct route	**Moderate** potential to support efficient movement of goods • Route utilizes existing roadway corridors, with reduced level of service given number of private driveways • Direct route
5.2 System reliability / redundancy		**Low** potential to support system reliability and redundancy • Route uses existing roadway corridor, which does not provide an alternate route to accommodate travel during adverse conditions; however, parallel municipal roads do currently serve this function	**Low** potential to support system reliability and redundancy • Route uses existing roadway corridor, which does not provide an alternate route to accommodate travel during adverse conditions; however, parallel municipal roads do currently serve this function	**Low** potential to support system reliability and redundancy • Route uses existing roadway corridor, which does not provide an alternate route to accommodate travel during adverse conditions; however, parallel municipal roads do currently serve this function
5.3 Safety	5.3.1 Traffic Safety	**Moderate** potential to improve traffic safety • Route uses existing roadway corridor with direct access points associated with private entrances • Five lane cross section provides for good passing opportunity • Centre left turn lane would accommodate safer left turns along the highway to private entrances • Reduced collision potential with grade separation	**Moderate** potential to improve traffic safety • Route uses existing roadway corridor with direct access points associated with private entrances • Five lane cross section provides for good passing opportunity • Centre left turn lane would accommodate safer left turns along the highway to private entrances • Reduced collision potential with grade separation	**Moderate** potential to improve traffic safety • Route uses existing roadway corridor with direct access points associated with private entrances • Five lane cross section provides for good passing opportunity • Centre left turn lane would accommodate safer left turns along the highway to private entrances
	5.3.2 Emergency Access	**Moderate** potential to support emergency access to/from route • Full moves connection provided at Road 104; no access at Road 102 (grade separation)	**Moderate** potential to support emergency access to/from route • Full moves connection provided at Road 102; no access at Road 104 (grade separation)	**High** potential to support emergency access to/from route • Full moves connection provided at Road 102 and Road 104
	5.3.3 Pedestrian, Cyclist and Snowmobile Safety within the highway right-of-way	**Low** potential to improve pedestrian, cyclist and snowmobile safety • Cyclist movements within right-of-way can be accommodated via improved shoulders • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations	**Low** potential to improve pedestrian, cyclist and snowmobile safety • Cyclist movements within right-of-way can be accommodated via improved shoulders • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations	**Low** potential to improve pedestrian, cyclist and snowmobile safety • Cyclist movements within right-of-way can be accommodated via improved shoulders • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations
5.4 Mobility and Access	5.4.1 Modal integration, balance and efficiency	**Moderate** potential to improve modal integration, balance and efficiency • Transit service is potentially constrained by the bypass of the community of Shakespeare, but is supported by the direct connection to development along Highway 7&8 both east and west of Shakespeare • Use of existing roadways would constrain transit travel performance	**Moderate** potential to improve modal integration, balance and efficiency • Transit service is potentially constrained by the bypass of the community of Shakespeare, but is supported by the direct connection to development along Highway 7&8 both east and west of Shakespeare • Use of existing roadways would constrain transit travel performance	**Moderate** potential to improve modal integration, balance and efficiency • Transit service is potentially constrained by the bypass of the community of Shakespeare, but is supported by the direct connection to development along Highway 7&8 both east and west of Shakespeare • Use of existing roadways would constrain transit travel performance

Highway 7&8 Transportation Corridor Planning and Class EA Study EVALUATION OF PRELIMINARY DESIGN ALTERNATIVES Note: The evaluation is based on a qualitative assessment of each alternative (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.				
SEGMENT F – East of Road 106 to West of Regional Road 1				
Segment F Alternatives		**Alternative F1**	**Alternative F2**	**Alternative F3 - Recommended**
	Cross Section	4-lanes with continuous centre left turn lane	4-lanes with continuous centre left turn lane	4-lanes with continuous centre left turn lane
	Crossing Road Treatments	Road 104 – Unsignalized Road 102 – Grade Separation	Road 104 – Grade Separation Road 102 – Unsignalized	Road 104 – Unsignalized Road 102 – Unsignalized
Factor / Sub-Factor	**Criteria**			
	5.4.2 Linkages to Population and Employment Centres	**High** potential to improve linkages to population and employment centres • Connection between Stratford area and New Hamburg improved	**High** potential to improve linkages to population and employment centres • Connection between Stratford area and New Hamburg improved	**High** potential to improve linkages to population and employment centres • Connection between Stratford area and New Hamburg improved
	5.4.3 Recreation and Tourism Travel	**Moderate** potential to support recreation and tourism travel • Direct route to New Hamburg, Shakespeare and Stratford	**Moderate** potential to support recreation and tourism travel • Direct route to New Hamburg, Shakespeare and Stratford	**Moderate** potential to support recreation and tourism travel • Direct route to New Hamburg, Shakespeare and Stratford
	5.4.4 Accommodate mobility of pedestrians, cyclists and snowmobiles	**Low** potential to accommodate mobility of pedestrians, cyclists and snowmobiles • Cyclist movements within right-of-way can be accommodated via improved shoulders • Pedestrian and cyclist movements across right-of-way can be provided at intersection locations and/or designated crossing locations	**Low** potential to accommodate mobility of pedestrians, cyclists and snowmobiles • Cyclist movements within right-of-way can be accommodated via improved shoulders • Pedestrian and cyclist movements across right-of-way can be provided at intersection locations and/or designated crossing locations	**Low** potential to accommodate mobility of pedestrians, cyclists and snowmobiles • Cyclist movements within right-of-way can be accommodated via improved shoulders • Pedestrian and cyclist movements across right-of-way can be provided at intersection locations and/or designated crossing locations
5.5 Network Compatibility	5.5.1 Network Connectivity	**High** potential to improve transportation system connectivity • Provides improved linkage between Stratford and New Hamburg	**High** potential to improve transportation system connectivity • Provides improved linkage between Stratford and New Hamburg	**High** potential to improve transportation system connectivity • Provides improved linkage between Stratford and New Hamburg
	5.5.2 Flexibility for Future Expansion	**Low** potential for future expansion • Route uses existing alignment	**Low** potential for future expansion • Route uses existing alignment	**Low** potential for future expansion • Route uses existing alignment
5.6 Engineering	5.6.1 Constructability	**High** potential for constructability issues • Uses existing roadway corridor requiring more complex traffic staging during construction • One railway crossing	**High** potential for constructability issues • Uses existing roadway corridor requiring more complex traffic staging during construction • One railway crossing	**High** potential for constructability issues • Uses existing roadway corridor requiring more complex traffic staging during construction • One railway crossing
	5.6.2 Compliance with Design Criteria	**High** conformity to safety and design standards • Supports use of better than minimum horizontal and vertical alignment elements • Can accommodate standard lane and shoulder widths **High** conformity to control private entrances and road connections onto highway • Strict access control resulting in highway that functions safely and efficiently for its useful life • Highway Access Management Plan would be developed for managing entrances onto the corridor: - spacing between existing/proposed intersections along highway - density of proposed entrances along highway - offset spacing from highway to first intersection / entrance on public crossing road - location of existing and proposed inter-regional and municipal transit routes and facilities - traffic impact study(s), to support existing and future land use planning decisions for above	**High** conformity to safety and design standards • Supports use of better than minimum horizontal and vertical alignment elements • Can accommodate standard lane and shoulder widths **High** conformity to control private entrances and road connections onto highway • Strict access control resulting in highway that functions safely and efficiently for its useful life • Highway Access Management Plan would be developed for managing entrances onto the corridor: - spacing between existing/proposed intersections along highway - density of proposed entrances along highway - offset spacing from highway to first intersection / entrance on public crossing road - location of existing and proposed inter-regional and municipal transit routes and facilities - traffic impact study(s), to support existing and future land use planning decisions for above	**High** conformity to safety and design standards • Supports use of better than minimum horizontal and vertical alignment elements • Can accommodate standard lane and shoulder widths **High** conformity to control private entrances and road connections onto highway • Strict access control resulting in highway that functions safely and efficiently for its useful life • Highway Access Management Plan would be developed for managing entrances onto the corridor: - spacing between existing/proposed intersections along highway - density of proposed entrances along highway - offset spacing from highway to first intersection / entrance on public crossing road - location of existing and proposed inter-regional and municipal transit routes and facilities - traffic impact study(s), to support existing and future land use planning decisions for above

Highway 7&8 Transportation Corridor Planning and Class EA Study **EVALUATION OF PRELIMINARY DESIGN ALTERNATIVES** Note: The evaluation is based on a qualitative assessment of each alternative (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.				
SEGMENT F – East of Road 106 to West of Regional Road 1				
Segment F Alternatives		**Alternative F1**	**Alternative F2**	**Alternative F3 - Recommended**
Cross Section		4-lanes with continuous centre left turn lane	4-lanes with continuous centre left turn lane	4-lanes with continuous centre left turn lane
Crossing Road Treatments		Road 104 – Unsignalized Road 102 – Grade Separation	Road 104 – Grade Separation Road 102 – Unsignalized	Road 104 – Unsignalized Road 102 – Unsignalized
Factor / Sub-Factor	**Criteria**			
5.7 Traffic Operations		**Moderate** potential for negative impact on traffic operations • Route uses existing roadway alignment, with multiple private entrances • Continuous two-way left turn lane would separate left turns from through movement • 2 crossing roads (1 unsignalized; 1 grade separation)	**Moderate** potential for negative impact on traffic operations • Route uses existing roadway alignment, with multiple private entrances • Continuous two-way left turn lane would separate left turns from through movement • 2 crossing roads (1 unsignalized; 1 grade separation)	**Moderate** potential for negative impact on traffic operations • Route uses existing roadway alignment, with multiple private entrances • Continuous two-way left turn lane would separate left turns from through movement • 2 crossing roads (2 unsignalized)
5.8 Construction Cost (excludes property costs and engineering costs)		**Moderate Relative Cost** $28.4 M	**Moderate Relative Cost** $28.4 M	**Moderate Relative Cost** $26.9 M
TRANSPORTATION SUMMARY		**Alternative F3 is preferred from a transportation perspective as it has higher potential to support emergency service access to/from the route relative to the other alternatives.**		
RECOMMENDATION		**Alternative F3 is recommended.** **For all alternatives, potential impacts to features of the natural, socio-economic and cultural environments are comparable with no discernible differences. However, Alternative F3 is very slightly preferred as it results in least out of way travel to and across the highway for local users. Alternative F3 is preferred from a transportation perspective as it has higher potential to support emergency service access to/from the route relative to the other alternatives.**		