THE CORPORATION OF THE
TOWNSHIP OF MALAHIDE
ROAD SAFETY AUDIT – PHASE 2
BETWEEN RON McNEIL LINE
& JOHN WISE LINE



19031 14 May 2021

(Rev. 1) 11 June 2021

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• DEFICIENCY PRIORITY RANKING

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• ROAD SEGMENT EVALUATIONS



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14 May 2021

19031

(Rev. 1) 11 June 2021

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1.0 BACKGROUND AND INTRODUCTION

Cyril J. Demeyere Limited (CJDL) has been retained by the Township of Malahide to complete Phase 2 of a Road Safety Audit consisting of all Township roads located between Ron McNeil Line and John Wise Line; the extents of which are illustrated in Figure 1. The purpose of this Audit is to review physical features of the approximately 110km of roadways within the study area and identify hazards with the potential to affect road user safety.

This report provides a recommended priority listing for corrective and/or mitigation measures to be implemented in order to rectify the observed deficiencies within the project limits. Detailed geometric and grading design of the recommended corrective measures is beyond the scope of work of this project; however, may be completed supplementally on a project specific basis upon request.

2.0 CRITERIA REVIEW

Road Safety criteria was evaluated in accordance with guidance material found in 'Geometric Design Guide for Canadian Roads' (TAC, 1999), 'Geometric Design Standards for Ontario Highways' (MTO, 1994), 'Roadside Safety Manual' (MTO, 1993), 'Roadside Design Manual' (MTO, 2020), and 'Rural Intersection Safety Handbook' (Transport Canada, 2006) and sound engineering judgment. Site observations made by CJDL staff during site visits to each road segment were documented using a standardized evaluation template, where areas of non-conformance were flagged for further examination. Completed Criteria Review sheets with site photographs are included in Appendix B for reference.

Each road segment was evaluated using a design speed equal to the legal posted speed, considered the appropriate normal practice for "Secondary Highways" (MTO, 1994). "Secondary Highways" are analogous to County Roads; therefore, it is appropriate to evaluate Township roads with design speeds equal to the posted speed limit.

2.1 Geometry

The recommended 'rural' cross-section to be applied to the studied road segments is as follows for design speed of 80 km/h and Average Annual Daily Traffic (AADT) counts for the ranges identified in subsection 3; (2x) 3.5m vehicular travel lanes, (2x) 1.0m gravel shoulders, with (2x) 5.56m boulevard width remaining assuming (66' (20.12m) ROW) to construct drainage facilities in accordance with Municipal Engineers Association, 1984 and TAC, 1999 recommendation, unless site conditions warrant otherwise.



Each of the studied road segments are considered two-lane rural cross-sections, and have been assumed to generally be centred within the right-of-way. Cross-fall over the vehicular travel lanes is recommended as 2.0%, and gravel shoulders should have maximum crossfall of 4-6%.

2.2 Surface Treatment Condition

A cursory review of the road surface condition along road segments in the study area was completed during the site visits. Surface conditions that impact the safety of roads were documented; such as road edge degradation causing lane width reductions in localized areas and large pot holes that could cause vehicles to lose control. A quantitative pavement condition assessment was not in the scope of this assignment.

2.3 Drainage

A cursory review of drainage in areas impacting these road segments was completed during the site visits. Roadside swales should generally contain roadway flows to within the right-of-way and, following existing topography, should convey flows to Municipal Drains or other outlets intersecting the areas of study.

2.4 <u>Vertical Alignment</u>

Maximum road segment grades and Rates of Vertical Curvature (K) were reviewed as part of this study. Table 2-1 describes the reference standards with respect to roadway speed limits.

Table 2-1 - Vertical Alig	nment Design Standards	(TAC, 1999)

Speed Limit	Maximum Road Segment Grade*	K _{CREST}	K _{SAG}	
50 km/h	8-12%	6-7	5-6	
60 km/h	6-12%	10-13	8-9	
80 km/h	6-8%	24-36	12-16	
*May be modified depending on existing topography in the region.				

CJDL identified areas of suspected non-conforming vertical alignment within the project limits and surveyed the centreline profile. Each suspected deficient road segment was surveyed using GPS survey equipment and a centreline profile was plotted and reviewed for conformance to recommended design criteria. Road segments which do not meet the standards shown in Table 2-1 are identified. Plots completed have been included in Appendix B.

For a design speed of 80 km/h, the minimum design passing sight distance required is 550m (TAC, 1999). When passing sight distance is reviewed with respect to pavement markings, TAC recommends a minimum of 275m be required; this value has been used as a minimum for the purpose of this analysis.

2.5 Horizontal Alignment

For 50 km/h, the minimum recommended design radius is 80 to 100m for a corresponding maximum superelevation of 0.08 to 0.04 m/m.

For 60 km/h, the minimum recommended design radius is 120 to 150m for a corresponding maximum superelevation of 0.08 to 0.04 m/m.

For 80 km/h, the minimum recommended design radius is 230 to 280m for a corresponding maximum superelevation of 0.08 to 0.04 m/m (TAC, 1999).



2.6 Intersections

The design stopping sight distance for passenger vehicles is 115 - 140m and 155 - 210m for trucks at a design speed of 80 km/h. A line-of-sight distance of 250 - 330m is recommended to permit passenger vehicles approaching a stop-controlled intersection to turn left into oncoming traffic without impacting the 80 km/h travel speed of approaching traffic. Vertical or horizontal curves within these sight distances are not recommended.

Intersection alignment is preferred at 90°; however, this may not be feasible to achieve depending on site specific circumstances. It is recommended that horizontal intersection alignment does not skew by greater than 20° from perpendicular (Transport Canada, 2006). Further, the preferred rural intersection corner radius is >12 m to permit turning of farm equipment and trucks (Transport Canada, 2006).

2.7 Clear Zone

A significant number of serious accidents and injuries can be reduced if a clear zone is provided from the edge of the travelled portion of the roadway. The clear zone should be generally free of obstacles which can potentially cause damage to a vehicle. Table 2-2 describes the reference standards with respect to clear zone limits:

Table 2-2 - Desirable Clear Zone Values (MTO, 2020)

Design Speed (km/h)	AADT	Clear Zone (m)
	≥ 1500	5.5
70 to 80	≥ 750	5
	< 750	3.5
	≥ 1500	4.5
≤ 60	≥ 750	3.5
	< 750	3

2.8 Embankments, Bridges, Structures or Culverts

Roadside embankments parallel with the flow of traffic were reviewed to determine if protection is warranted to be installed. Areas where fill heights approach 3 m (from roadside swale to centreline road) and/or slopes are 3:1 or steeper were reviewed in greater detail to determine if embankment protection is warranted (MTO, 1993).

Ditches transverse to the roadway, such as culvert locations, were reviewed to determine if protection is warranted to be installed. Transverse ditches are generally critical to errant motorists because the banks of these ditches are typically struck head on by run-off-the-road vehicles. Transverse ditch banks deeper than 0.75m which cannot be flattened to slopes of 4:1, or preferably less, are recommended to be shielded by a roadside barrier (MTO, 1993).

More recent design guidelines do not provide a method for evaluating the protection requirements of



existing embankments, therefore the evaluation method described in the 1993 MTO Roadside Safety Manual was used.

2.9 Visual Aid

The presence of pavement marking and advanced warning signage, together with horizontal and vertical alignment considerations, may provide a greater factor of safety to a road segment. AADT counts for each road section were reviewed together with the above criteria to determine whether existing markings and signage are adequate, or where additional consideration is warranted to increase safety for vehicular traffic.

Generally, it is recommended that all surface treated roads receive centre pavement markings, to assist with indication of safe passing zones and restrictive passing at vertical curves. Stop bars are additionally required at all stop-controlled intersections, save and except for those with gravel return aprons.

2.10 Active Transportation

The 'Elgin - St. Thomas Cycling Master Plan' (September 2014) has been initiated to develop and implement a network throughout Elgin County that encourages active forms of transportation and recreation. Against a number of criteria, The Cycling Master Plan study selected a number of designated routes throughout the County in an attempt to improve connections between Aylmer and Tillsonburg, and recommended improvements (i.e., bicycle lanes, multi-use trail, paved shoulder, etc.) along these routes. Please refer to the referenced study for further information.

Conservation Line, (Springwater Road to Rogers Road), Rogers Road (Conservation Line to Brook Line), and Brook Line (Rogers Road to Aylmer Town Limits) are designated as Proposed Active Transportation routes in the next 0-10 years. These road segments are currently equipped with "Share the Road" cycling signage.

Dingle Street (full length), Glencolin Line (Springfield Road to Springer Hill Road), and Springer Hill Road (Glencolin Line to Pressey Road) are designated as Proposed Active Transportation routes in the next 11-20 years. These road segments are currently equipped with "Share the Road" cycling signage, with the exception of the southbound lane of Springer Hill Road.

Glencolin Line (Springwater Road to Hacienda Road), Hacienda Road (Dingle Street to Glencolin Line), Pigram Road (Pressey Line to Ron McNeil Line), Pressey Line (full length), and Springer Hill Road (Heritage Line to Glencolin Line) are designated as Proposed Active Transportation routes in 20+ years. These road segments are currently equipped with "Share the Road" cycling signage, with the exception of Pigram Road and Pressey Line between Springer Hill Road and Carter Road.



3.0 ROAD SEGMENT ANALYSIS

The following sections provide a detailed outline of methodology and criteria used to evaluate road safety of road segments within the study area, including a summary of noted deficiencies and recommended corrective measures.

Priority rankings are identified in their respective sections herein as:

- PRIORITY 'A' = Immediate priority
- PRIORITY 'B' = medium priority
- PRIORITY 'C' = low priority

PRIORITY 'A' rankings potentially pose a current safety risk, where a portion of the assessed segment falls outside of TAC, MTO, and Transport Canada guidelines, and the recommended corrections should be investigated immediately.

PRIORITY 'B' rankings include segments which may marginally fall outside of the recommended guidelines, however do not pose an immediate safety concern. Recommended corrections should be investigated in the medium term, 1-to-5-year timeframe.

PRIORITY 'C' ranking includes those segments of marginal non-conformance to the recommended guidelines. An immediate safety concern is not present; however, corrections should be investigated as the opportunity arises. Segments which are absent of a priority rating do not require further investigation.



3.1 Anger Road: John Wise Line to Chalet Line

AADT: 104

Surface Treatment: Double Surface Treatment

Design Speed: 80 km/h

Priority 'C'

3.1.1 Geometry / Alignment

Anger Road is a two-lane rural cross-section. Lane widths were measured at 3.7m with 0.7m of gravel shoulder; recommended cross-section is 3.5m lane widths with 1.0m shoulder. Therefore, the shoulder width of Anger Road generally does not meet the recommended with of 1.0m.

3.1.2 Surface Treatment Condition

No deficiencies were noted along the road surface that impact road safety.

3.1.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.1.4 Vertical Alignment

Topographic survey included as Drawings 1 and 2 in Appendix B indicate all segment grades are less than 6%, which falls within the recommended design parameters for a speed limit of 80 km/h.

3.1.5 Horizontal Alignment

No horizontal curves requiring further review exist within this road segment.

3.1.6 Intersections

Anger Road intersects with two other roads along its alignment. Stop-controlled T-intersections are present at Chalet Line and John Wise Line. Stopping sight distance >210m is afforded and considered adequate at Chalet Line and John Wise Line. Line of sight distance >330m is afforded and is considered adequate at both intersections and is considered adequate.

3.1.7 Clear Zone

No obstructions are located within the recommended 3.5m clear zone along Anger Road.

3.1.8 Embankments, Bridges, Structures or Culverts

Embankment protection is not warranted at the culvert crossing south of Chalet Line. Refer to Appendix B for embankment protection warrant guide for this location.

3.1.9 Visual Aid

Speed limit signage is not present on this section of road and is not required due to a low AADT.

A solid yellow line is painted along the centreline of Anger Road. ATV Trail signs are present at each end of Anger Road.

3.1.10 Recommendations

i. Shoulder widening to suit recommended Geometry.



3.2 Bradley Creek Line: Imperial Road to Hacienda Road

AADT: 363

Surface Treatment: Double Surface Treatment

Design Speed: 80 km/h

Priority 'C'

3.2.1 Geometry / Alignment

Bradley Creek Line is a two-lane rural cross-section. Lane widths were measured at 3.6m with a 2.0m shoulder, which meets and exceeds recommended values.

3.2.2 Surface Treatment Condition

No deficiencies were noted along the road surface that impact road safety.

3.2.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.2.4 Vertical Alignment

Topographic survey included as Drawing 3 in Appendix B indicates all segment grades are less than 6%, which falls within the recommended design parameters for a speed limit of 80 km/h.

3.2.5 Horizontal Alignment

No horizontal curves requiring further review exist within this road segment.

3.2.6 Intersections

Bradley Creek Line intersects two other roads along its alignment. Stop-controlled T-intersections are present at Imperial Road and Hacienda Road. Stopping sight distance >210m is afforded and considered adequate at Imperial Road and Hacienda Road. Line of sight distance >330m is afforded and is considered adequate at both intersections and is considered adequate.

3.2.7 Clear Zone

No obstructions are located within the recommended 3.5m clear zone along Bradley Creek Line.

3.2.8 Embankments, Bridges, Structures or Culverts

Embankments are not present along Bradley Creek Line. The drain culvert crossing west of Mun No. 49731 Bradley Creek Line consists of a ditch transverse to the direction of traffic. The ditch height is greater than 0.75m, but the ditch side slopes are flatter than 4:1. Therefore, protection is not required at this location.

3.2.9 Visual Aid

A speed limit of 80 km/h is posted at each end of Bradley Creek Line.

3.2.10 Recommendations

i. No changes are recommended for Bradley Creek Line.



3.3 Brook Line: Rogers Road to Caverly Road

AADT: 587 to 600

Surface Treatment: Double Surface Treatment

Design Speed: 50-80 km/h

Priority 'C'

3.3.1 Geometry / Alignment

Brook Line is a two-lane rural cross-section. Lane widths were measured 3.5m with 1.5 to 2.0m of shoulder; which meets and exceeds design recommendations.

3.3.2 Surface Treatment Condition

No deficiencies were noted along the road surface that impact road safety.

3.3.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.3.4 Vertical Alignment

Topographic survey included as Drawing 4 in Appendix B indicates all segment grades are less than 6%, which falls within the recommended design parameters for a speed limit of 80 km/h.

3.3.5 Horizontal Alignment

No horizontal curves requiring further review exist within this road segment.

3.3.6 Intersections

Brook Line intersects two roads along its alignment. Stop-controlled T-intersections are present at Rogers Road and Caverly Road. Stopping sight distance >210m is afforded and considered adequate at Rogers Road and Caverly Road. Line of sight distance >330m is afforded and is considered adequate at both intersections and is considered adequate.

3.3.7 Clear Zone

No obstructions are located within the recommended 3.0m or 3.5m clear zone along Brook Line.

3.3.8 Embankments, Bridges, Structures or Culverts

Embankments are not present along Brook Line.

3.3.9 Visual Aid

A 50 km/h speed limit sign is posted approximately 400m west of Caverly Road. A solid yellow line is painted along the road's centreline.

3.3.10 Recommendations

i. No changes are recommended for Brook Line.



3.4 Carter Road: John Wise Line to Pressey Line

AADT: 227 to 416

Surface Treatment: Double Surface Treatment

Design Speed: 80 km/h

Priority 'A'

3.4.1 Geometry / Alignment

Carter Road is a two-lane rural cross-section. Lane widths were measured to vary from 3.7m to 4.5m with 2.5m of shoulder; which meets and exceeds design recommendations.

3.4.2 Surface Treatment Condition

No deficiencies were noted along the road surface that impact road safety.

3.4.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.4.4 Vertical Alignment

Topographic survey included as Drawings 5 to 13 in Appendix B indicate all segment grades are less than 6%, which falls within the recommended design parameters for a speed limit of 80 km/h.

There are two (2) instances where minimum crest value was exceeded (K=20 at STA 1+000, K=15 at 2+150, and one (1) instance where minimum sag value was exceeded (K=16 at STA 0+800). Speed reduction to 60 km/h should be posted at these locations to account for reduced stopping sight distance caused by vertical curves.

3.4.5 Horizontal Alignment

No horizontal curves requiring further review exist within this road segment. The horizontal curves on the north and south sides of the intersection with Talbot Line are within design recommendations. However, it would be beneficial to equip the curves with chevron signage as per OTM recommendations.

3.4.6 Intersections

Carter Road intersects with six (6) roads along its alignment. Five (5) stop-controlled intersections are present at John Wise Line, Talbot Line, Glencolin Line, College Line, and Pressey Line. One (1) through street intersection is present at Chalet Line.

There is a horizontal curve present at the north and southbound approaches to the stop-controlled intersection with Talbot Line. The southbound approach is accompanied by a "Stop Sign Ahead" sign. The northbound approach is accompanied by an "S" bend hazard sign.

The other four (4) stop-controlled intersections are afforded stopping sight distances >210m and considered adequate. Line of sight distance >330m is afforded at these intersections and is considered adequate.

A vertical curve is present at the through street intersection with Chalet Line. The northbound lane is equipped with a "Hidden Intersection" sign. Sight distance is poor for the southbound traffic approaching and turning left onto Chalet Line until at the intersection.

Carter Road intersects with a railway between Glencolin Line and College Line. This intersection is stop-controlled and is marked with "Stop Sign Ahead" signs, "Railway Ahead" signs, and railway paint markings on the surface. The railway also has a posted sign indicating "Attention Active Trains".



3.4.7 Clear Zone

Hydro poles at Mun No 9677 are located within the recommended 3.5m clear zone of this roadway. Consideration should be given to posting hazard signs on objects within the clear zone or relocating the objects when feasible.

3.4.8 Embankments, Bridges, Structures or Culverts

Embankment protection is warranted at three (3) locations along Carter Road (near Mun Nos 7900, 8403, 8868). Steel beam or high-tension cable guiderail protection should be used. Guiderail length and road offset should be set in accordance with MTO recommendations. Refer to Appendix B for executed warrant guide.

Eroding washout fill was noted at the embankment to the north of Chalet Line. The stability of this fill should be evaluated and vegetative protection considered.

3.4.9 Visual Aid

Speed limit signage is not present on this section of road and is not required due to a low AADT.

A solid yellow line is present along the centreline of Carter Road.

3.4.10 Recommendations

- i. Speed limit reductions to 60 km/h where vertical curves do not meet design recommendation should be considered as an interim measure until opportunity for possible correction with future road reconstruction. Vertical alignment correction should be prioritized based on AADT.
- ii. Equip horizontal curves on the north and south sides of the Talbot Line intersection with chevron signage.
- iii. "Hidden Intersection" signage for southbound traffic at Chalet Line.
- iv. Evaluate hydro poles in clear zone. Hazard signage should be installed or objects in clear zone relocated.
- v. Embankment protection warranted at three (3) locations.
- vi. Eroding washout fill was noted at the embankment to the north of Chalet Line. The stability of this fill should be evaluated and vegetative protection considered.



3.5 Catherina Street: West End to Hacienda Road

AADT: no data

Surface Treatment: Double Surface Treatment

Design Speed: 50 km/h

Priority 'C'

3.5.1 Geometry / Alignment

Catherina Street is a two-lane rural cross-section. Lane widths were measured at 3.6m with a concrete curb; which meets recommended values.

3.5.2 Surface Treatment Condition

No deficiencies were noted along the road surface that impact road safety.

3.5.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.5.4 Vertical Alignment

No vertical curves requiring further review exist within this road segment.

3.5.5 Horizontal Alignment

No horizontal curves requiring further review exist within this road segment.

3.5.6 Intersections

Catherina Street intersects with two (2) roads along its alignment. A stop-controlled intersection is located at Hacienda Road and a through street intersection is located at Louisa Crescent. Stopping sight distances >210m are afforded and considered adequate at all intersections. Line of sight distance >330m is afforded and is considered adequate at all intersections and is considered adequate.

3.5.7 Clear Zone

No obstructions are located within the recommended 3.0m clear zone along Catherina Street.

3.5.8 Embankments, Bridges, Structures or Culverts

There are no embankments, bridges, structures, or culverts requiring protection along Catherina Street.

3.5.9 Visual Aid

- 3.5.10 Recommendations
- i. No action recommended.



3.6 <u>Catherine Street: Pressey Line to Ron McNeil Line</u>

AADT: no data

Surface Treatment: Double Surface Treatment

Design Speed: 50 km/h

Priority 'C'

3.6.1 Geometry / Alignment

Catherine Street is classified as a two-lane urban cross-section with allowance for parking on one side of the road and curb and gutter. Lane widths were measured at 3.1m with 1.0m of shoulder and no on-street parking. The recommended cross-section for an urban local road with parking is 3.0m lane widths with 2.4m allowance for parking shoulder (8.4m total). Lane widths meet design recommendations for urban local roads. The road will need to be widened to allow for on street parking.

3.6.2 Surface Treatment Condition

No deficiencies were noted along the road surface that impact road safety.

3.6.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.6.4 Vertical Alignment

No vertical curves requiring further review exist within this road segment.

3.6.5 Horizontal Alignment

No horizontal curves requiring further review exist within this road segment.

3.6.6 Intersections

Catherine Street intersects with two (2) roads along its alignment. A stop-controlled intersection are located at Pressey Line and Ron McNeil Line. Stopping sight distances >210m are afforded and considered adequate at all intersections. Line of sight distance >330m is afforded and is considered adequate at all intersections and is considered adequate.

3.6.7 Clear Zone

No obstructions are located within the recommended 3.0m clear zone along Catherine Street.

3.6.8 Embankments, Bridges, Structures or Culverts

There are no embankments, bridges, structures, or culverts requiring protection along Catherine Street.

3.6.9 Visual Aid

- 3.6.10 Recommendations
- i. Road widening to allow for on street parking..



3.7 Caverly Road: Brook Line to South End

AADT: 100

Surface Treatment: Double Surface Treatment

Design Speed: 50 km/h

Priority 'C'

3.7.1 Geometry / Alignment

Caverly Road is classified as a two-lane urban cross-section with allowance for parking on one side of the road and curb and gutter. Lane widths were measured at 2.55 to 2.85m with no shoulder with on street parking. The recommended cross-section for an urban local road with parking is 3.0m lane widths with 2.4m allowance for parking shoulder (8.4m total). The road will need to be widened to meet design recommendations and allow for on street parking.

3.7.2 Surface Treatment Condition

No deficiencies were noted along the road surface that impact road safety.

3.7.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.7.4 Vertical Alignment

No vertical curves requiring further review exist within this road segment.

3.7.5 Horizontal Alignment

No horizontal curves requiring further review exist within this road segment.

3.7.6 Intersections

Caverly Road intersects with one (1) road along its alignment. A through street intersection is located at Brook Line. Stopping sight distances >210m are afforded and considered adequate at all intersections. Line of sight distance >330m is afforded and is considered adequate at all intersections and is considered adequate.

3.7.7 Clear Zone

No obstructions are located within the recommended 3.0m clear zone along Caverly Road.

3.7.8 Embankments, Bridges, Structures or Culverts

There are no embankments, bridges, structures, or culverts requiring protection along Caverly Road.

3.7.9 Visual Aid

- 3.7.10 Recommendations
- i. Road widening to suit recommended Geometry.
- ii. Shoulder widening to suit recommended Geometry.



3.8 Chalet Line: Hacienda Road to East Cul-de-sac

AADT: 66 to 175

Surface Treatment: Gravel Design Speed: 80 km/h

Priority 'A'

3.8.1 Geometry / Alignment

Chalet Line is a two-lane rural cross-section. Lane widths were measured to vary from 3.25 to 3.5m with no shoulder to 1.5m of shoulder; recommended cross-section is 3.5m lane widths with 1.0m shoulder.

3.8.2 Surface Treatment Condition

No deficiencies were noted along the road surface that impact road safety.

3.8.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.8.4 Vertical Alignment

Topographic survey included as Drawings 14 to 18 in Appendix B indicate all segment grades are less than 6%, which falls within the recommended design parameters for a speed limit of 80 km/h.

There are four (4) instances where minimum crest value was exceeded (K=12 at STA 4+950, K=7 at STA 5+200, K=21 at STA 6+400, and K=20 at STA 7+040). Speed reductions to 50 km/h (where K<10) and 60 km/h (where 10<K<24) should be posted at these locations to account for reduced stopping sight distance caused by vertical curves.

3.8.5 Horizontal Alignment

The horizontal curve shown on Drawing 14, near Mun No. 52220, has a radius of 181m and meets design recommendations. However, it would be beneficial to equip the curves with chevron signage as per OTM recommendations.

The horizontal curve shown on Drawing 18 has a radius of 73m, which does not meet design recommendations (230 to 280 for 80 km/h roads and 80 to 100m for 50 km/h roads). Horizontal curve signage is not present. A speed reduction to 40 km/h should be posted along with horizontal curve and chevron signage to meet design recommendations.

3.8.6 Intersections

Chalet Line intersects with five (5) roads along its alignment. Stop-controlled intersections are located at Hacienda Road, Springfield Road, and Carter Road. Through street intersections are located at Walker Road and Anger Road. Stopping sight distances >210m are afforded and considered adequate at all intersections. Line of sight distance >330m is afforded and is considered adequate at all intersections and is considered adequate.

3.8.7 Clear Zone

Hydro poles at Mun No 52220 and 52773 are located within the recommended 3.5m clear zone of this roadway. Consideration should be given to posting hazard signs on objects within the clear zone or relocating the objects when feasible.



3.8.8 Embankments, Bridges, Structures or Culverts

Embankment protection is warranted at two (2) locations along Chalet Line: the embankment near Mun No 52773 and at the pond on the north side of Chalet Line west of Carter Road. Protection is required at the pond west of Carter Road because the pond edge is within the clear zone. Protection is not required on the south side of the road at the pond location.

Steel beam or high-tension cable guiderail protection should be used. Guiderail length and road offset should be set in accordance with MTO recommendations. Refer to Appendix B for executed warrant guide.

3.8.9 Visual Aid

Speed limit signage is not present on this section of road and is not required due to a low AADT. A faded hazard sign is located at Mun No. 52220.

3.8.10 Recommendations

- i. Road widening to suit recommended Geometry.
- ii. Speed limit reductions to 50 and 60 km/h should be considered where vertical curves do not meet design recommendations as an interim measure until opportunity for possible correction with future road reconstruction. Vertical alignment correction should be prioritized based on AADT.
- iii. Speed limit reduction to 40 km/h should be considered where horizontal curve does not meet design recommendation as an interim measure until opportunity for possible correction with future road reconstruction. Horizontal alignment correction should be prioritized based on AADT.
- iv. Equip horizontal curve near Mun No. 52220 with chevron signage.
- v. Embankment protection is warranted at two (2) locations.
- vi. Evaluate hydro poles in clear zone. Hazard signage should be installed or objects in clear zone relocated.
- vii. Replace faded hazard sign at Mun No 52220.



3.9 Church Street: Springwater Road to Norton Street

AADT: 100

Surface Treatment: Double Surface Treatment

Design Speed: 60 km/h

Priority 'C'

3.9.1 Geometry / Alignment

Church Street is a two-lane rural cross-section. Lane widths were measured at 3.65m with 1.0m of shoulder: which meets recommended values.

3.9.2 Surface Treatment Condition

No deficiencies were noted along the road surface that impact road safety.

3.9.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.9.4 Vertical Alignment

No vertical curves requiring further review exist within this road segment.

3.9.5 Horizontal Alignment

No horizontal curves requiring further review exist within this road segment.

3.9.6 Intersections

Church Street intersects with two (2) roads along its alignment. Stop-controlled intersections are located at Springwater Road and Norton Street. Stopping sight distances >210m are afforded and considered adequate at all intersections. Line of sight distance >330m is afforded and is considered adequate at all intersections and is considered adequate.

3.9.7 Clear 7one

A hydro pole near Mun No. 47343 is within the recommended 3.0m clear zone along Church Street.

3.9.8 Embankments, Bridges, Structures or Culverts

There are no embankments, bridges, structures, or culverts requiring protection along Church Street.

3.9.9 Visual Aid

- 3.9.10 Recommendations
- i. Evaluate hydro pole in clear zone. Hazard signage should be installed or objects in clear zone relocated.



3.10 College Line: Springwater Road to Springer Hill Road

AADT: 381 to 795

Surface Treatment: Double Surface Treatment

Design Speed: 60-80 km/h

Priority 'A'

3.10.1 Geometry / Alignment

College Line is a two-lane rural cross-section. Lane widths were measured to vary from 3.25m to 3.75m with 1.3 to 2.0m of shoulder; recommended cross-section is 3.5m lane widths with 1.0m shoulder.

3.10.2 Surface Treatment Condition

Localized paved road edge raveling was noted at numerous locations College Line. The raveling and pavement loss in these areas decreases the already deficient lane widths between Springfield Road and Springer Hill Road. A large pothole was noted at Mun No. 52464.

3.10.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.10.4 Vertical Alignment

Topographic survey included as Drawings 19 to 23 in Appendix B indicate all segment grades are less than 6%, which falls within the recommended design parameters for a speed limit of 80 km/h.

There are two (2) instances where minimum crest value was exceeded (K=20 at STA 5+500, and K=19 at STA 13+100). Speed reductions to 60 km/h should be posted at these locations to account for reduced stopping sight distance caused by vertical curves.

3.10.5 Horizontal Alignment

No horizontal curves requiring further review exist within this road segment.

3.10.6 Intersections

College Line intersects with eight (8) roads along its alignment. Stop-controlled intersections are located at Springwater Road, Imperial Road, Hacienda Road, Springfield Road, and Springer Hill Road. Through street intersections are located at Dorchester Road, Rogers Road, Walker Road, and Carter Road. Stopping sight distances >210m are afforded and considered adequate at all intersections. Line of sight distance >330m is afforded and is considered adequate at all intersections and is considered adequate.

College Line intersects with a railway between Carter Road and Springer Hill Road. This intersection is a signaled railway crossing marked with "Railway Ahead" sign for westbound traffic, and railway paint markings on the surface for both directions.

3.10.7 Clear Zone

No obstructions are located within the recommended 3.5m clear zone along College Line between Springwater Road and Imperial Road and between Hacienda Road and Springer Hill Road.

Between Imperial Road and Hacienda Road the AADT is 795, which requires a clear zone of 5.0m. Along this section of College Line, the row of hydro poles on the north side of the road and the hydro pole at Mun No. 49856 on the south side of the road are within the clear zone.



3.10.8 Embankments, Bridges, Structures or Culverts

There are no embankments requiring protection along College Line. There are two (2) culvert crossings that were evaluated for the need of roadside barriers. The culvert at Mun No. 51416 does not have ditch side slopes steeper than 4:1. Therefore, roadside protection is not required. The double culvert east of Springfield Road is an approximately 4 to 4.5m deep ditch with ditch side slopes of 1:1 to 2:1 which cannot be flattened to 4:1. Therefore, the double culvert requires roadside protection. steel beam or high-tension cable guiderail protection should be used. Guiderail length and road offset should be set in accordance with MTO recommendations.

3.10.9 Visual Aid

A speed limit of 60 km/h is posted between Hacienda Road and Springer Hill Road. Speed limit signage is not present on the remainder of College Line and is not required due to a low AADT.

A solid yellow line is painted on the centerline of College Line.

3.10.10 Recommendations

- i. Road widening to suit recommended Geometry.
- ii. Localized shoulder repairs where pavement raveling is contributing to reduced lane widths.
- iii. Repair pothole near Mun No 52464.
- iv. Speed limit reductions to 60 km/h should be considered where vertical curves do not meet design recommendations as an interim measure until opportunity for possible correction with future road reconstruction. Vertical alignment correction should be prioritized based on AADT.
- v. Evaluate hydro poles in clear zone. Hazard signage should be installed or objects in clear zone relocated.
- vi. Roadside protection is warranted at the double culvert east of Springfield Road.



3.11 Conservation Line: Springwater Road to Imperial Road

AADT: 314 to 408

Surface Treatment: Double Surface Treatment

Design Speed: 50-80 km/h

Priority 'A'

3.11.1 Geometry / Alignment

Conservation Line is a two-lane rural cross-section. Lane widths were measured to vary from 3.65m to 3.75m with 1.0 to 1.5m of shoulder; which meets and exceeds recommended values.

3.11.2 Surface Treatment Condition

No deficiencies were noted along the road surface that impact road safety.

3.11.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.11.4 Vertical Alignment

Topographic survey included as Drawings 24 and 25 in Appendix B indicate all segment grades are less than 6%, which falls within the recommended design parameters for a speed limit of 80 km/h.

3.11.5 Horizontal Alignment

No horizontal curves requiring further review exist within this road segment.

3.11.6 Intersections

Conservation Line intersects with three (3) other roads along its alignment. Stop-controlled T-intersections are present at Springwater Road and Imperial Road. The intersection with Rogers Road is a 4-way stop-controlled intersection. Stopping sight distance >210m is afforded and line of sight distance >330m is afforded at all intersections and is considered adequate.

3.11.7 Clear Zone

No obstructions are located within the recommended 3.0m to 3.5m clear zone along Conservation Line.

3.11.8 Embankments, Bridges, Structures or Culverts

Embankment Protection Warrants were completed at embankments west of Mun No. 48110 and east of Mun No. 47719. Both warrants determined that protection is not warranted at these locations.

Roadside barriers are warranted at the Lee Municipal Drain culvert crossing on the north side of the road. The drain ditch on the north side of the road has side slopes steeper than 4:1. If flattening the ditch slopes is not possible, the north side of the road at this location requires protection. Steel beam or high-tension cable guiderail protection should be used. Guiderail length and road offset should be set in accordance with MTO recommendations.

3.11.9 Visual Aid

A speed limit of 50 km/h posted at each end of Conservation Line. "Share the Road" cycling signs are also posted along Conservation Line.

The section of Conservation Line between Mun No. 49210 and Imperial Road meets the density requirements for a speed zone reduction. A speed zone reduction to 60km/h should be posted in this area.



A solid yellow line is painted along the centerline of the entire road segment.

3.11.10 Recommendations

- i. Roadside protection is warranted at the Lee Municipal Drain culvert crossing on the north side of the road.
- ii. A speed zone reduction to 60km/h should be posted between Mun No. 49120 and Imperial Road.



3.12 <u>Dingle Street: Aylmer Town Limit to Springfield Road</u>

AADT: 133 to 802

Surface Treatment: Double Surface Treatment

Design Speed: 60 km/h

Priority 'B'

3.12.1 Geometry / Alignment

Dingle Street is a two-lane rural cross-section. Lane widths were measured to vary from 3.0m to 3.6m with 1.0 to 1.5m of shoulder; recommended cross-section is 3.5m lane widths with 1.0m shoulder.

3.12.2 Surface Treatment Condition

Poor surface treatment condition that could impact vehicle control was noted at the south end of the bridge on Dingle Street.

3.12.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.12.4 Vertical Alignment

No vertical curves requiring further review exist within this road segment.

3.12.5 Horizontal Alignment

Topographic survey included as Drawings 26 to 30 in Appendix B indicate six (6) horizontal curves are located on Dingle Street. Two (2) curves with centerline radii from 107 to 133m are located to the west of Hacienda Road without any posted speed reductions or Chevron warning signs. This section of road has a posted speed limit of 50 km/h. and the minimum design radius for this section of road is 90m. Therefore, the horizontal cures meet minimum design standards. However, it would be beneficial to equip the curves with chevron signage as per OTM recommendations.

Four (4) horizontal curves with centerline radii from 34 to 73m are located between Hacienda Road and Springfield Road, where the posted speed limit is 60 km/h. The curves are signed with curve ahead signs and speed reductions of 30 km/h. It would be beneficial to equip the curves with chevron signage as per OTM recommendations.

3.12.6 Intersections

Dingle Street intersects with two (2) roads along its alignment in the study area. Stop-controlled intersections are located at Hacienda Road and Springfield Road. Stopping sight distance >210m is afforded and line of sight distance >330m is afforded at both intersections and is considered adequate.

3.12.7 Clear Zone

Hydro poles near Mun Nos 49894, 49908, 50144, and 50589 are located within the recommended 3m clear zone of this roadway. However, hazard signs are mounted on each hydro pole. Consideration should be given to posting hazard signs on objects within the clear zone or relocating the objects when feasible.

3.12.8 Embankments, Bridges, Structures or Culverts

There are no embankments requiring protection along Dingle Street.

3.12.9 Visual Aid

Speed limits are posted as 50 km/h and 60 km/h to the west and east of Hacienda Road respectively. A solid yellow line is painted along the centerline of Dingle Street.



3.12.10 Recommendations

- i. Road widening to suit recommended Geometry.
- ii. Minor surface treatment repair at bridge crossing.
- iii. Evaluate hydro poles in clear zone. Hazard signage should be installed or objects in clear zone relocated.
- iv. Trim vegetation covering hazard sign at hydro pole near Mun No 50589.
- v. Equip horizontal curves Dingle Street with chevron signage.



3.13 Dorchester Road: College Line to Ron McNeil Line

AADT: 178

Surface Treatment: Double Surface Treatment

Design Speed: 80 km/h

Priority 'C'

3.13.1 Geometry / Alignment

Dorchester Road is a two-lane rural cross-section. Lane widths were measured at 3.7m with 2.0m of shoulder; which meets and exceeds design recommendations.

3.13.2 Surface Treatment Condition

No deficiencies were noted along the road surface that impact road safety.

3.13.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.13.4 Vertical Alignment

No vertical curves requiring further review exist within this road segment.

3.13.5 Horizontal Alignment

No horizontal curves requiring further review exist within this road segment.

3.13.6 Intersections

Dorchester Road intersects with two (2) roads along its alignment in the study area. Stop-controlled intersections are located at College Line and Ron McNeil Line. Stopping sight distance >210m is afforded and line of sight distance >330m is afforded at both intersections and is considered adequate.

3.13.7 Clear 7one

No obstructions are located within the recommended 3.5m clear zone along Dorchester Road.

3.13.8 Embankments, Bridges, Structures or Culverts

There are no embankments requiring protection along Dorchester Road.

3.13.9 Visual Aid

Speed limit signage is not present on this section of road and is not required due to a low AADT. A solid yellow line is painted along the centerline of Dorchester Road.

- 3.13.10 Recommendations
- i. No changes are recommended for Dorchester Road.



3.14 Glencolin Line: Springwater to Road Imperial Road

AADT: 1011 to 1424

Surface Treatment: Double Surface Treatment

Design Speed: 80 km/h

Priority 'B'

3.14.1 Geometry / Alignment

Glencolin Line is a two-lane rural cross-section. Lane widths were measured at 3.6m with 2.5 to 2.6m of shoulder; which meets and exceeds design recommendations.

3.14.2 Surface Treatment Condition

No deficiencies were noted along the road surface that impact road safety.

3.14.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.14.4 Vertical Alignment

Topographic survey included as Drawings 31 and 32 in Appendix B indicate all segment grades are less than 6%, which falls within the recommended design parameters for a speed limit of 80 km/h.

3.14.5 Horizontal Alignment

No horizontal curves requiring further review exist within this road segment.

3.14.6 Intersections

This section of Glencolin Line intersects three (3) roads along its alignment. Stop-controlled intersections are located at Springwater Road and Imperial Road. A through street intersection is located at Rogers Road.

Stopping sight distances >210m are afforded and considered adequate at all intersections. Line of sight distance >330m is afforded and is considered adequate at all intersections and is considered adequate, with the exception of Springer Hill Road.

3.14.7 Clear Zone

Between Springwater Road and Imperial Road there are hydro poles within the recommended 5m clear zone. These hydro poles are located at Mun No. 48102 (1 on south side, row of hydro poles on the north side of the road), at Mun No. 48625 (1 on south side of the road), a row of hydro poles on the south side of the road at Rogers Road, at Mun No. 48813 (1 on the north side of the road).

3.14.8 Embankments, Bridges, Structures or Culverts

There are no embankments requiring protection along Glencolin Line.

3.14.9 Visual Aid

Speed limit signage is not posted west of Imperial Road and is not required due to low AADT.

The following signage is present along Glencolin Line: Share the Road and Deaf Child in Area.

Solid or dashed yellow lines are painted along the centerline of Glencolin Line.



3.14.10 Recommendations i. Evaluate hydro poles in clear zone. Hazard signage should be installed or objects in clear zone relocated.



3.15 Glencolin Line: Hacienda Road to Springer Hill Road

AADT: 361 to 1140

Surface Treatment: Double Surface Treatment

Design Speed: 60 km/h

Priority 'A'

3.15.1 Geometry / Alignment

Glencolin Line is a two-lane rural cross-section. Lane widths were measured to vary from 3.65m to 3.75m with 2.0 to 2.6m of shoulder. It is understood from Township staff that design lane widths between Hacienda Road and Springer Hill Road are 3.0m travel lanes and a 2.5m buggy lane including shoulder. Measurements are in general conformance with these criteria.

3.15.2 Surface Treatment Condition

No deficiencies were noted along the road surface that impact road safety.

3.15.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.15.4 Vertical Alignment

Topographic survey included as Drawings 33 to 35 in Appendix B indicate all segment grades are less than 6%, which falls within the recommended design parameters for a speed limit of 60 km/h.

3.15.5 Horizontal Alignment

No horizontal curves requiring further review exist within this road segment.

3.15.6 Intersections

This portion of Glencolin Line intersects five (5) roads along its alignment. Stop-controlled intersections are located at Hacienda Road and Springer Hill Road. Through street intersections are located at Springfield Road, Walker Road, and Carter Road.

Stopping sight distances >210m are afforded and considered adequate at all intersections. Line of sight distance >330m is afforded and is considered adequate at all intersections and is considered adequate, with the exception of Springer Hill Road. The line of sight for vehicles at the Glencolin Line stop sign to southbound Springer Hill Road traffic is approximately 100m. However, southbound Springer Hill Road traffic has an "intersection ahead" sign. Therefore, the limited line of sight at the intersection is acceptable.

Glencolin Line intersects with a railway between Hacienda Road and Springfield Road. This intersection is a signaled railway crossing marked with "Railway Ahead" signs.

3.15.7 Clear Zone

No obstructions are located within the recommended 3.5m clear zone.

3.15.8 Embankments, Bridges, Structures or Culverts

There are no embankments requiring protection along Glencolin Line.

The Fuller Drain culvert (near Mun No. 70727) has an embankment height less than 3.0m, therefore an embankment protection warrant is not required. The drain ditch on the north side of the road, transverse to the direction of traffic, is deeper than 0.75m and has side slopes steeper than 4:1. The same ditch on the south side of the road has side slopes flatter than 4:1. Therefore, the ditch side slopes on the north



side of the road are recommended to be flattened to a minimum slope of 4:1 or alternatively, a roadside barrier should be installed.

The culvert west of Walker Road has an embankment height less than 3.0m, therefore an embankment protection warrant is not required. The drain ditch on both sides of the road, transverse to the direction of traffic, is deeper than 0.75m and has side slopes steeper than 4:1. Therefore, the ditch side slopes on the north side of the road are recommended to be flattened to a minimum slope of 4:1 or alternatively, a roadside barrier should be installed.

The culvert crossing near Mun No. 53042 has a ditch transverse to the road alignment on the north side of the road. The east and west banks of the north ditch are steeper than 4:1. If these ditches cannot be flattened, roadside protection will be required. On the south side of the road, the ditch is parallel to the road alignment. An Embankment Protection Warrant was completed for this ditch and is enclosed in Appendix B. Based on the Warrant, protection is not recommended for the south side of the road at this location.

Steel beam or high-tension cable guiderail protection should be used. Guiderail length and road offset should be set in accordance with MTO recommendations.

3.15.9 Visual Aid

A speed limit of 60 km/h is posted along Glencolin Line between Hacienda Road and Springer Hill Road. Speed limit signage is not posted west of Hacienda Road and is not required due to low AADT.

The following signage is present along Glencolin Line: Community Safe Zone, Share the Road, cycling and horse traffic keep right, school zone, and pedestrian warning.

Solid yellow lines are painted along the centerline of Glencolin Line. A white solid line painted on the shoulder to indicate where cycling and horse traffic is to keep right of.

A pedestrian sign near Mun No 52313 was faded at the time of inspection. The solid yellow line between Carter Road and Springer Hill Road was faded at the time of inspection.

3.15.10 Recommendations

- i. Replace faded pedestrian sign at Mun No 52313.
- ii. Roadside protection is required at three (3) locations.
- iii. Repaint faded centerline between Carter Road and Springer Hill Road.



3.16 Hacienda Road: John Wise Line to Glencolin Line

AADT: 1000 to 1230

Surface Treatment: Double Surface Treatment

Design Speed: 80 km/h

Priority 'A'

3.16.1 Geometry / Alignment

Hacienda Road is a two-lane rural cross-section. Lane widths were measured to vary from 3.75m to 4.0m with 2.0 to 2.5m of shoulder; which meets and exceeds design recommendations.

3.16.2 Surface Treatment Condition

No deficiencies were noted along the road surface that impact road safety.

3.16.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.16.4 Vertical Alignment

Topographic survey included as Drawings 36 to 39 in Appendix B indicate all segment grades are less than 6%, which falls within the recommended design parameters for a speed limit of 80 km/h.

There is one (1) instance where minimum crest value was exceeded (K=18 at STA 0+600). Speed reductions to 60 km/h should be posted at these locations to account for reduced stopping sight distance caused by vertical curves.

3.16.5 Horizontal Alignment

No horizontal curves requiring further review exist within this road segment. The horizontal curves at the intersection with College Line meet design recommendations. However, it would be beneficial to equip the curves with chevron signage as per OTM recommendations.

3.16.6 Intersections

Hacienda Road intersects seven (7) roads along its alignment. Stop-controlled intersections are located at John Wise Line and Talbot Line. Through street intersections are located at Van Patter Line, Chalet Line, Bradley Creek Line, Dingle Road, and Glencolin Line.

Stopping sight distances >210m are afforded and considered adequate at all intersections with the exception of Van Patter Line. The stopping distance for southbound Hacienda Traffic is only 80m to Van Patter Line. Line of sight distance >330m is afforded and is considered adequate at all intersections

Hacienda Road intersects with a railway between Dingle Line and Glencolin Line. This intersection is a signaled railway crossing marked with "Railway Ahead" signs, a painted stop bar, and railway crossing paint marks on the road.

3.16.7 Clear Zone

Rows of hydro poles on the east and west sides of Hacienda Road between John Wise Line and Van Patter are within the recommended 5m clear zone along Hacienda Road.

Two (2) of the three (3) trees on the west side of Hacienda Road, near Mun No. 8174, and hydro poles between Van Patter Line and Chalet Line are within the recommended 5m clear zone.



3.16.8 Embankments, Bridges, Structures or Culverts

Embankment protection is warranted at one (1) location along Hacienda Road: the embankment at the pond south of Talbot Line on the east side of the road. Steel beam or high-tension cable guiderail protection should be used. Guiderail length and road offset should be set in accordance with MTO recommendations. Refer to Appendix B for executed warrant guide.

The culvert located at the intersection of Hacienda Road and Glencolin Line requires protection on the southeast corner of the intersection. The culvert at this location has steep ditch slopes and vertical concrete blocks at the inlet of the culvert that could be struck head on by northbound Hacienda Road Traffic. Steel beam or high-tension cable guiderail protection should be used. Guiderail length and road offset should be set in accordance with MTO recommendations.

3.16.9 Visual Aid

Speed limits of 60 km/h are posted between approximately 400m south of Talbot Line and Dingle Street and speed limits of 80 km/h are posted to the south of Talbot Line and north of Dingle Street. The following additional signage is present along Hacienda Road: Share the Road and horse and buggy warning.

The section of Hacienda Road between John Wise Line and the vertical curve noted at STA 0+600 meets the density requirements for a speed zone reduction. A speed zone reduction to 60km/h should be posted in this area.

Single solid, double solid, or dashed yellow lines are painted along the centerline of Hacienda Road.

3.16.10 Recommendations

- i. Speed limit reductions to 60 km/h should be considered where vertical curves (STA 0+600, north of John Wise Line) do not meet design recommendations as an interim measure until opportunity for possible correction with future road reconstruction. Vertical alignment correction should be prioritized based on AADT. A speed zone reduction to 60km/h between John Wise Line and STA 0+600 is also recommended as it meets the Municipality's density requirements.
- ii. Equip horizontal curves at the College Line intersection with chevron signage.
- iii. Evaluate hydro poles and trees in clear zone. Hazard signage should be installed or objects in clear zone relocated.
- iv. Embankment/roadside protection is warranted at two (2) locations.
- v. "Hidden Intersection" sign for southbound traffic approaching Van Patter line Intersection.



3.17 Hilltop Lane: West End to Springfield Road

AADT: no data

Surface Treatment: Double Surface Treatment

Design Speed: 50 km/h

Priority 'C'

3.17.1 Geometry / Alignment

Hilltop Lane is a two-lane rural cross-section. Lane widths were measured at 3.6m with 1.5m of shoulder; which meets recommended values.

3.17.2 Surface Treatment Condition

No deficiencies were noted along the road surface that impact road safety.

3.17.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.17.4 Vertical Alignment

No vertical curves requiring further review exist within this road segment.

3.17.5 Horizontal Alignment

No horizontal curves requiring further review exist within this road segment.

3.17.6 Intersections

Hilltop Lane intersects with one (1) road along its alignment. A stop-controlled intersection is located at Springfield Road. Stopping sight distances >210m are afforded and considered adequate at all intersections. Line of sight distance >330m is afforded and is considered adequate at all intersections and is considered adequate.

3.17.7 Clear Zone

No obstructions are located within the recommended 3.0m clear zone along Hilltop Lane.

3.17.8 Embankments, Bridges, Structures or Culverts

There are no embankments, bridges, structures, or culverts requiring protection along Hilltop Lane.

3.17.9 Visual Aid

- 3.17.10 Recommendations
- i. No action recommended.



3.18 John Wise Line: Springfield Road to Richmond Road

AADT: 727 to 1326

Surface Treatment: Double Surface Treatment

Design Speed: 80 km/h

Priority 'A'

3.18.1 Geometry / Alignment

John Wise Line is a two-lane rural cross-section. Lane widths were measured at 3.75m with 2.0m of shoulder; which meets and exceeds design recommendations.

3.18.2 Surface Treatment Condition

No deficiencies were noted along the road surface that impact road safety.

3.18.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.18.4 Vertical Alignment

No vertical curves requiring further review exist within this road segment.

3.18.5 Horizontal Alignment

Topographic survey included as Drawing 40 in Appendix B indicates two (2) horizontal curves with centerline radii from 95 to 102m are located between Carter Road and Richmond Road, where the speed limit is assumed to be 80 km/h. The curves are signed with curve ahead signs and chevron warning signs, both of which are considered appropriate. Speed limit reduction to 50 km/h for the horizontal curves could be implemented to meet design guidelines for horizontal minimum design radius (90m).

3.18.6 Intersections

John Wise Line intersects five (5) roads along its alignment. Stop-controlled intersections are located at Springfield Road and Richmond Road. Through street intersections are located at Sawmill Road, Anger Road, and Carter Road.

Stopping sight distances >210m are afforded and considered adequate at all intersections. Line of sight distance >330m is afforded and is considered adequate at all intersections and is considered adequate.

3.18.7 Clear Zone

The majority of hydro poles on the north and south side of John Wise Line are within the recommended 5m clear zone between Springfield Road and Carter Road. There are no obstructions within the recommended 3.5m clear zone between Carter Road and Richmond Road

3.18.8 Embankments, Bridges, Structures or Culverts

Embankment protection is warranted at one (1) location along John Wise Line: the embankment near Mun No 51082 west of Springfield Road. Steel beam or high-tension cable guiderail protection should be used. Guiderail length and road offset should be set in accordance with MTO recommendations. Refer to Appendix B for executed warrant guide.

3.18.9 Visual Aid

Speed limit signage is not present on this section of road and is not required due to a low AADT. A solid yellow line is painted along the centerline of John Wise Line. Additional signage along John Wise Line includes: ATV trails and deer crossing.



3.18.10 Recommendations

- i. Speed limit reduction to 50 km/h should be considered where horizontal curve does not meet design recommendation as an interim measure until opportunity for possible correction with future road reconstruction. Horizontal alignment correction should be prioritized based on AADT.
- ii. Evaluate hydro poles in clear zone. Hazard signage should be installed or objects in clear zone relocated.
- iii. Embankment protection is warranted at one (1) location.



3.19 Louisa Crescent: Hacienda Road to Catherina Street

AADT: 50

Surface Treatment: Double Surface Treatment

Design Speed: 50 km/h

Priority 'C'

3.19.1 Geometry / Alignment

Louisa Crescent is a two-lane rural cross-section. Lane widths were measured at 3.6m with a concrete curb; which meets recommended values.

3.19.2 Surface Treatment Condition

No deficiencies were noted along the road surface that impact road safety.

3.19.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.19.4 Vertical Alignment

No vertical curves requiring further review exist within this road segment.

3.19.5 Horizontal Alignment

No horizontal curves requiring further review exist within this road segment.

3.19.6 Intersections

Louisa Crescent intersects with two (2) roads along its alignment. Stop-controlled intersections are located at Hacienda Road and Catherina Street. Stopping sight distances >210m are afforded and considered adequate at all intersections. Line of sight distance >330m is afforded and is considered adequate at all intersections and is considered adequate.

3.19.7 Clear Zone

No obstructions are located within the recommended 3.0m clear zone along Louisa Crescent.

3.19.8 Embankments, Bridges, Structures or Culverts

There are no embankments, bridges, structures, or culverts requiring protection along Louisa Crescent.

3.19.9 Visual Aid

- 3.19.10 Recommendations
- i. No changes are recommended for Louisa Crescent.



3.20 Norton Street: Talbot Line to North End Cul-de-sac

AADT: 200

Surface Treatment: Double Surface Treatment

Design Speed: 50 km/h

Priority 'B'

3.20.1 Geometry / Alignment

Norton Street is a two-lane rural cross-section. Lane widths were measured at 3.6m with 1.0m of shoulder; which meets recommended values.

3.20.2 Surface Treatment Condition

No deficiencies were noted along the road surface that impact road safety.

3.20.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.20.4 Vertical Alignment

No vertical curves requiring further review exist within this road segment.

3.20.5 Horizontal Alignment

No horizontal curves requiring further review exist within this road segment.

3.20.6 Intersections

Norton Street intersects with two (2) roads along its alignment. A stop-controlled intersection is located at Talbot Line and a through street intersection is located at Church Street. Stopping sight distances >210m are afforded and considered adequate at all intersections. Line of sight distance >330m is afforded and is considered adequate at all intersections and is considered adequate.

3.20.7 Clear Zone

Hydro poles are within the recommended 3.0m clear zone along the full length Norton Street.

3.20.8 Embankments, Bridges, Structures or Culverts

There are no embankments, bridges, structures, or culverts requiring protection along Norton Street.

3.20.9 Visual Aid

Speed limit signage is not present on this section of road and is not required due to a low AADT. There are no lane markings on the road.

3.20.10 Recommendations

i. Evaluate hydro poles in clear zone. Hazard signage should be installed or objects in clear zone relocated.



3.21 Pigram Road: Ron McNeil Line to Pressey Road

AADT: 673

Surface Treatment: Double Surface Treatment

Design Speed: 80 km/h

Priority 'A'

3.21.1 Geometry / Alignment

Pigram Road is a two-lane rural cross-section. Lane widths were measured at 3.6m with 2.0m of shoulder; which meets and exceeds design recommendations.

3.21.2 Surface Treatment Condition

No deficiencies were noted along the road surface that impact road safety.

3.21.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.21.4 Vertical Alignment

No vertical curves requiring further review exist within this road segment.

3.21.5 Horizontal Alignment

No horizontal curves requiring further review exist within this road segment.

3.21.6 Intersections

Pigram Road intersects with two (2) roads along its alignment in the study area. A stop-controlled intersection is located at Pressey Line. A through street intersection is located at Ron McNeil Line. Stopping sight distances >210m are afforded and considered adequate at all intersections. Line of sight distance >330m is afforded and is considered adequate at all intersections and is considered adequate.

The stop sign at Pressey Line is equipped with a flashing light. Crop planting limits appear to be staked out onto the farmland to the west of Pigram Road at Pressey Line. It appears that any planting beyond this staked area will cause line of sight problems at this intersection.

3.21.7 Clear Zone

No obstructions are located within the recommended 4m clear zone along Pigram Road.

3.21.8 Embankments, Bridges, Structures or Culverts

Protection is warranted for the bridge at the Bear Creek Municipal Drain crossing. The creek ditches that are transverse to the direction of traffic are deeper than 0.75m and the ditch side slopes are steeper than 4:1. Therefore, protection is required and steel beam or high-tension cable guiderail protection should be used. Guiderail length and road offset should be set in accordance with MTO recommendations.

3.21.9 Visual Aid

Speed limit signage is not present on this section of road and is not required due to a low AADT. A solid or dashed yellow line is painted along the centerline of Pigram Road.

3.21.10 Recommendations

- i. Enforce crop planting limits at Pressey Line to maintain intersection line of site.
- ii. Roadside protection is warranted at one (1) location.



3.22 Pressey Line: Springfield Road to Springer Hill Road

AADT: 946 to 1748 (highest among roads studied) Surface Treatment: Double Surface Treatment

Design Speed: 80 km/h

Priority 'B'

3.22.1 Geometry / Alignment

Pressey Line is a two-lane rural cross-section. Lane widths were measured to vary from 3.3m to 3.95m with 1.5 to 2.0m of shoulder; recommended cross-section is 3.5m lane widths with 1.0m shoulder.

3.22.2 Surface Treatment Condition

Localized paved road edge raveling was noted at numerous locations Pressey Line. The raveling and pavement loss in these areas decreases the already deficient lane widths between Springfield Road and Carter Road. Potholes have developed in numerous locations and should continue to be monitored by the Township for repair.

3.22.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.22.4 Vertical Alignment

No vertical curves requiring further review exist within this road segment.

3.22.5 Horizontal Alignment

No horizontal curves requiring further review exist within this road segment.

3.22.6 Intersections

Pressey Line intersects five (5) roads along its alignment in the study area. A stop-controlled intersection is located at Springfield Road. Through street intersections are located at Walker Road, Carter Road, Pigram Road, and Springer Hill Road. Stopping sight distances >210m are afforded and considered adequate at all intersections. Line of sight distance >330m is afforded and is considered adequate at all intersections and is considered adequate.

3.22.7 Clear Zone

Hydro poles on the south side of Pressey Line are within the recommended 3.5m clear zone where the posted speed limit is 50 km/h. Hydro poles are within the recommended 5m clear zone on the north side of the road between 400m east of Springfield Road and Walker Road, on the south side of the road between Walker Road and Carter Road. The row of trees west of Mun No. 123251 are within the recommended 5m clear zone. No obstructions are located within the recommended 5m clear zone along the remainder of Pressey Line.

3.22.8 Embankments, Bridges, Structures or Culverts

There are no embankments, bridges, structures, or culverts requiring protection along Pressey Line.

A bridge is located between Pigram Road and Springer Hill Road. The bridge was reconstructed with widened lane widths in 2020 and is appropriately equipped with guard rails and hazard signs.



3.22.9 Visual Aid

Between Springfield Road and Walker Road, speed limits of 50 km/h and 80 km/h are posted for westbound traffic and eastbound traffic, respectively.

A solid yellow line is pained along the centreline of Pressey Line. Share the road signs and a deer crossing sign are located on Pressey Line. A solid white line is painted on the road edges of the horizontal curve of Pressey Line.

3.22.10 Recommendations

- i. Road widening to suit recommended Geometry.
- ii. Evaluate hydro poles and trees in clear zone. Hazard signage should be installed or objects in clear zone relocated.
- iii. Localized shoulder repairs where pavement raveling is contributing to reduced lane widths.



3.23 Rogers Road: John Wise Line to Ron McNeil Line

AADT: 101 to 1195

Surface Treatment: Double Surface Treatment

Design Speed: 80 km/h

Priority 'A'

3.23.1 Geometry / Alignment

Rogers Road is a two-lane rural cross-section. Lane widths were measured to vary from 3.5m to 3.7m with 1.2 to 2.5m of shoulder; which meets and exceeds design recommendations.

3.23.2 Surface Treatment Condition

No deficiencies were noted along the road surface that impact road safety.

3.23.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.23.4 Vertical Alignment

Topographic survey included as Drawings 42 to 48 in Appendix B indicate all segment grades are less than 6%, which falls within the recommended design parameters for a speed limit of 80 km/h.

There are four (4) instances where minimum crest value was exceeded (K=15 at STA 1+300, K=8 at STA 1+550, K=20 at STA 1+800, and K=23 at STA 5+100) and one (1) instance where minimum sag value was exceeded (K=12 at STA 1+450). Speed reductions to 50 km/h (where K<10) and 60 km/h (where 10<K<24) should be posted at these locations to account for reduced stopping sight distance caused by vertical curves.

3.23.5 Horizontal Alignment

Horizontal curves with centreline radii of 237 to 204m are located between Talbot Line and Glencolin Line, which meet design recommendations. The curves are signed with curve ahead signs, chevron warning signs, and for a speed reduction of 50 km/h, both of which is considered appropriate. Chevron sign placement should be updated as per OTM requirements.

3.23.6 Intersections

Rogers Road intersects with eight (8) roads along its alignment in the study area. Stop-controlled intersections are located at John Wise Line, Conservation Line (4-way), Talbot Line, Glencolin Line, College Line, and Ron McNeil Line. Through street intersections are located at Catt Line and Brook Line. Stopping sight distances >210m are afforded and considered adequate at all intersections. Line of sight distance >330m is afforded and is considered adequate at all intersections and is considered adequate.

3.23.7 Clear Zone

There are multiple obstructions within the recommended 5m clear zone along Rogers Road between John Wise Line and Talbot Line. The obstruction within the clear zone include:

- One (1) tree near Mun No. 7707;
- The edge of the woodlot north of Mun No. 7881, on the east side of the road;
- Hydro poles near Mun No. 8122;
- Two (2) trees south of Mun No. 8692;



- One (1) hydro pole at Catt Line on the east side of the road; and
- One (1) tree on the east side of the road, between Brook Line and Talbot Line near a Natural Gas Warning sign.

No obstructions are located within the recommended 3.5m clear zone along the remainder of Rogers Road.

3.23.8 Embankments, Bridges, Structures or Culverts

There are no embankments, bridges, structures, or culverts requiring protection along Rogers Road. The pond/creek south of Conservation Line does not have ditches transverse to the direction of traffic that pose a safety risk. No protection is required at this location.

3.23.9 Visual Aid

A speed limit of 60 km/h is posted for northbound traffic approaching Talbot Line and a speed limit of 80 km/h is posted in the same location for southbound traffic. Speed limit signage is not present for the remainder of Rogers Road, with the exception of the horizontal curve speed reduction, on this section of road and is not required due to a low AADT.

3.23.10 Recommendations

- i. Speed limit reductions to 50 and 60 km/h should be considered where vertical curves do not meet design recommendations as an interim measure until opportunity for possible correction with future road reconstruction. Vertical alignment correction should be prioritized based on AADT.
- ii. Chevron signage on curves north of Talbot Line should be updated as per current OTM requirements.
- iii. Evaluate hydro poles and trees in clear zone. Hazard signage should be installed or objects in clear zone relocated.



3.24 Springer Hill Road: South End to Pressey Line

AADT: 361 to 469

Surface Treatment: Double Surface Treatment

Design Speed: 80 km/h

Priority 'A'

3.24.1 Geometry / Alignment

Springer Hill Road is a two-lane rural cross-section. Lane widths were measured to vary from 3.5m to 3.6m with 1.2m to 2.0m of shoulder; which meets and exceeds design recommendations.

3.24.2 Surface Treatment Condition

No deficiencies were noted along the road surface that impact road safety.

3.24.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.24.4 Vertical Alignment

Topographic survey included as Drawings 49 to 51 in Appendix B indicate all segment grades are less than 6%, which falls within the recommended design parameters for a speed limit of 80 km/h.

There are two (2) instances where minimum crest value was exceeded (K=17 at STA 5+900 and K=8 at STA 7+200). Speed reductions to 50 km/h (where K<10) and 60 km/h (where 10<K<24) should be posted at these locations to account for reduced stopping sight distance caused by vertical curves.

3.24.5 Horizontal Alignment

No horizontal curves requiring further review exist within this road segment.

3.24.6 Intersections

Springer Hill Road intersects with five (5) roads along its alignment in the study area. Stop-controlled intersections are located at Heritage Line, Talbot Line, and Pressey Line. Through street intersections are located at Glencolin Line and College Line. Stopping sight distances >210m are afforded and considered adequate at all intersections. Line of sight distance >330m is afforded and is considered adequate at all intersections and is considered adequate, with the exception of the intersection at Glencolin Line.

The line of sight for vehicles at the Glencolin Line stop sign to southbound Springer Hill Road traffic is approximately 100m. However, southbound Springer Hill Road traffic has an "intersection ahead" sign. Therefore, the limited line of sight at the intersection is acceptable.

Springer Hill Road intersects with a railway between College Line and Pressey Line. This intersection is a stop-controlled railway crossing marked with "Railway Ahead" signs, railway crossing paint marks on the road, and an "Attention Active Trains" sign.

3.24.7 Clear Zone

Two (2) hydro poles near Mun No. 9822 are located within recommended 3.5m clear zone along Springer Hill Road.



3.24.8 Embankments, Bridges, Structures or Culverts

Embankment protection is warranted at three (3) municipal drain crossings (near Mun Nos 9822, 9851, and 9931). Steel beam or high-tension cable guiderail protection should be used. Guiderail length and road offset should be set in accordance with MTO recommendations. Refer to Appendix B for executed warrant guide.

The culverts north of Talbot Line have ditches transverse to the direction of traffic on Springer Hill Road, are deeper than 0.75m, and have side slopes steeper than 4:1. However, the culverts are at a stop-controlled intersection. Therefore, the risk of a critical collision with these ditch side slopes is low and protection is not required.

3.24.9 Visual Aid

Speed limit signage is not present on this section of road and is not required due to a low AADT. A solid yellow line is painted along the centerline of Springer Hill Road, between Heritage Line and Glencolin Line. Lane markings are not present along Springer Hill Road, north of Glencolin Line.

Additional signage that is used on this road includes: "share the road", horse and buggy warning, T-intersection ahead for College Line, and "Rural Community. Please Slow Down" sign.

3.24.10 Recommendations

- i. Speed limit reductions to 50 and 60 km/h should be considered where vertical curves do not meet design recommendations as an interim measure until opportunity for possible correction with future road reconstruction. Vertical alignment correction should be prioritized based on AADT.
- ii. Evaluate hydro poles in clear zone. Hazard signage should be installed or objects in clear zone relocated.
- iii. Embankment protection warranted at three (3) municipal drain crossings.



3.25 Van Patter Line: Imperial Road to Hacienda Road

AADT: 106

Surface Treatment: Gravel Design Speed: 80 km/h

Priority 'A'

3.25.1 Geometry / Alignment

Van Patter Line is a two-lane rural cross-section. Lane widths were measured at 3.5m with 1.0m of shoulder; which meets design recommendations.

3.25.2 Surface Treatment Condition

No deficiencies were noted along the road surface that impact road safety.

3.25.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.25.4 Vertical Alignment

Topographic survey included as Drawings 53 to 54 in Appendix B indicate all segment grades are less than 6%, which falls within the recommended design parameters for a speed limit of 80 km/h.

3.25.5 Horizontal Alignment

No horizontal curves requiring further review exist within this road segment.

3.25.6 Intersections

Van Patter Line intersects with two (2) roads along its alignment. Stop-controlled intersections are located at Imperial Road and Hacienda Road. Stopping sight distances >210m are afforded and considered adequate at all intersections. Line of sight distance >330m is afforded and is considered adequate at Imperial Road and is considered adequate. The line of sight of southbound Hacienda Road traffic when stopped on Van Patter Line is <100m. Recommendations for this deficient line of sight are described in Section 3.15.

3.25.7 Clear Zone

A hydro pole at Mun No 49512 and the row of hydro poles on the north side of the road at the west end of Van Patter Line are located within the recommended 3.5m clear zone of this roadway. Consideration should be given to posting hazard signs on objects within the clear zone or relocating the objects when feasible.

3.25.8 Embankments, Bridges, Structures or Culverts

There are no embankments, bridges, structures, or culverts requiring protection along Van Patter Road.

3.25.9 Visual Aid

Speed limit signage is not present on this section of road and is not required due to a low AADT. Lane markings are not present on Van Patter Line. A no parking on road sign is located at the soccer field parking lot, east of Imperial Road.

3.25.10 Recommendations

i. Evaluate hydro poles in clear zone. Hazard signage should be installed or objects in clear zone relocated.



3.26 Walker Road: Chalet Line to Ron McNeil Line

AADT: 93 to 394

Surface Treatment: Double Surface Treatment/Gravel

Design Speed: 60-80 km/h

Priority 'A'

3.26.1 Geometry / Alignment

Walker Line is a two-lane rural cross-section. Lane widths were measured to vary from 3.5m to 3.75m with 1.0m to 1.5m of shoulder; which meets and exceeds design recommendations.

3.26.2 Surface Treatment Condition

No deficiencies were noted along the road surface that impact road safety.

3.26.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.26.4 Vertical Alignment

Topographic survey included as Drawings 55 to 58 in Appendix B indicate all segment grades are less than 6%, which falls within the recommended design parameters for a speed limit of 80 km/h.

There is one (1) instance where minimum crest value was exceeded (K=10 at STA 3+600). Speed reductions to 50 km/h (where K<10) and 60 km/h (where 10<K<24) should be posted at these locations to account for reduced stopping sight distance caused by vertical curves.

3.26.5 Horizontal Alignment

No horizontal curves requiring further review exist within this road segment. The horizontal 'S'-curve on Walker Road, south of Glencolin Line, meets design recommendations. However, it would be beneficial to equip the curves with chevron signage as per OTM recommendations.

3.26.6 Intersections

Walker Road intersects with six (6) roads along its alignment in the study area. Stop-controlled intersections are located at Chalet Line, Talbot Line, Glencolin Line, College Line, Pressey Line, and Ron McNeil Line. Stopping sight distances >210m are afforded and considered adequate at all intersections. Line of sight distance >330m is afforded and is considered adequate at Imperial Road and is considered adequate.

A steep drop was noted at the northeast corner of the intersection with College Line that has been temporarily marked with pylons. This steep drop (slope>1:1) should be regraded or protection measures put in place.

Walker Road intersects with a railway between Glencolin Line and College Line. This intersection is a stop-controlled railway crossing marked with "Railway Ahead" signs, railway crossing paint marks on the road, and an "Attention Active Trains effective Dec 19, 2016" sign.

3.26.7 Clear Zone

No obstructions are located within the recommended 3.0 to 3.5m clear zone along Walker Road.

3.26.8 Embankments, Bridges, Structures or Culverts

There are no embankments, bridges, structures, or culverts requiring protection along Walker Road.



3.26.9 Visual Aid

A speed limit of 50 km/h is posted between Talbot Line and half the distance to Chalet Line, where the posted speed limit changes to 80 km/h. A speed limit of 60km /h is posted between Talbot Line and College Line. Speed limit signage is not present on the remaining section of road and is not required due to a low AADT. There are no lane markings on the gravel portion of Walker Road. A solid yellow line is painted along the centerline of the portion of Walker Road with surface treatment. Additional signage along Walker Road includes: ATV Trail, "Rural Settlement Area",

3.26.10 Recommendations

- i. Speed limit reductions to 50 km/h should be considered where vertical curves do not meet design recommendations as an interim measure until opportunity for possible correction with future road reconstruction. Vertical alignment correction should be prioritized based on AADT.
- ii. Equip horizontal curve south of Glencolin Line with chevron signage.
- iii. Regrade slope to catchbasin at northeast corner of intersection with College Line.



3.27 Weldon Street: Springwater Road to East End

AADT: No data

Surface Treatment: Double Surface Treatment

Design Speed: 50 km/h

Priority 'C'

3.27.1 Geometry / Alignment

Weldon Street is a two-lane rural cross-section. Lane widths were measured at 2.3m with 1.0m of shoulder; recommended cross-section is 3.5m lane widths with 1.0m shoulder.

3.27.2 Surface Treatment Condition

No deficiencies were noted along the road surface that impact road safety.

3.27.3 Drainage

No drainage deficiencies were noted that may impact road safety.

3.27.4 Vertical Alignment

No vertical curves requiring further review exist within this road segment.

3.27.5 Horizontal Alignment

No horizontal curves requiring further review exist within this road segment.

3.27.6 Intersections

Weldon Street intersects with one (1) road along its alignment. A stop-controlled intersection is located at Springwater Road. Stopping sight distances >210m are afforded and considered adequate at all intersections. Line of sight distance >330m is afforded and is considered adequate at all intersections and is considered adequate.

3.27.7 Clear Zone

A small tree at Mun No 47373 is located within the recommended 3.0m clear zone along Weldon Street.

3.27.8 Embankments, Bridges, Structures or Culverts

There are no embankments, bridges, structures, or culverts requiring protection along Weldon Street.

3.27.9 Visual Aid

Speed limit signage is not present on this section of road and is not required due to a low AADT. There are no lane markings on the road.

3.27.10 Recommendations

- i. Road widening to suit recommended Geometry.
- ii. Evaluate small tree in clear zone. Hazard signage should be installed or objects in clear zone relocated.



3.28 Woolleyville Line: Springfield Road to East End

AADT: 216

Surface Treatment: Double Surface Treatment/Gravel

Design Speed: 50 km/h

Priority 'C'

3.28.1 Geometry / Alignment

Woolleyville Line is a two-lane rural cross-section. Lane widths were measured at 3.25m with 1.0 of shoulder; recommended cross-section is 3.5m lane widths with 1.0m shoulder.

3.28.2 Surface Treatment Condition

Localized paved road edge raveling was noted along Woolleyville Line. The raveling and pavement loss in these areas decreases the already deficient lane widths on the road segment.

3.28.3 Drainage

The east end of Woolleyville Line does not have any drainage ditches on either side of the road.

3.28.4 Vertical Alignment

No vertical curves requiring further review exist within this road segment.

3.28.5 Horizontal Alignment

No horizontal curves requiring further review exist within this road segment.

3.28.6 Intersections

Woolleyville Line intersects with one (1) road along its alignment. A stop-controlled intersection is located at Springfield Road. Stopping sight distances >210m are afforded and considered adequate at all intersections. Line of sight distance >330m is afforded and is considered adequate at Imperial Road and is considered adequate.

3.28.7 Clear Zone

Trees and hydro poles are located within the recommended 3.0m clear zone of this roadway near Mun Nos. 51333 and 51432. Consideration should be given to posting hazard signs on objects within the clear zone or relocating the objects when feasible.

3.28.8 Embankments, Bridges, Structures or Culverts

There are no embankments, bridges, structures, or culverts requiring protection along Woolleyville Line.

3.28.9 Visual Aid

A speed limit of 50 km/h is posted at the entrance of Woolleyville Road. No lane markings are present along the road. Additional signage includes: children playing warning and a pavement ends sign.

3.28.10 Recommendations

- i. Road widening to suit recommended Geometry.
- ii. Localized paved shoulder repairs.
- iii. Construction of roadside ditches where required to fix drainage issues.
- iv. Evaluate hydro poles in clear zone. Hazard signage should be installed or objects in clear zone relocated.



4.0 CONCLUSIONS

The suggested mitigation measures reviewed in Section 3.0 above as summarized in the Appendix 'A'.

Quantities of the most common deficiencies in the study area are:

- Lane width less than recommended values 8
- Shoulder width less than recommended values 3
- Poor surface treatment condition 5
- Vertical alignment values less than design recommendations 18
- Horizontal alignment values less than design recommendation 2
- Roadside Protection Warranted 16
- Locations with hydro poles/trees in recommended clear zone 33
- Faded signage 2
- Intersection deficiencies 4

As an additional safety measure, all centrelines can be painted or repainted for all evaluated roads.

Deficiency Priority Ranking in the recommended order of priority are based on AADT and sound engineering judgment in each independent section, and severity of deficiency. Deficiencies are presented by road segment, to ease in creation of a master priority listing consistent with budget considerations allotted.

Evaluation of these deficiency recommendations has been completed in accordance with recommendations from:

"Draft Elgin - St. Thomas Cycling Master Plan" (2014)

"Geometric Design Guide for Canadian Roads" (TAC, 1999)

"Municipal Works Design Manual" (Municipal Engineers Association, 1984)

"Roadside Safety Manual" (MTO, 1993)

"Geometric Design Standards for Ontario Highways" (MTO, 1994)

"Roadside Design Manual (MTO, 2020)

"Rural Intersection Safety Handbook" (Transport Canada, 2006)

If there are any questions, please do not hesitate to contact this office.

All of which is respectfully submitted by,

Cameron Cluett, P.Eng.

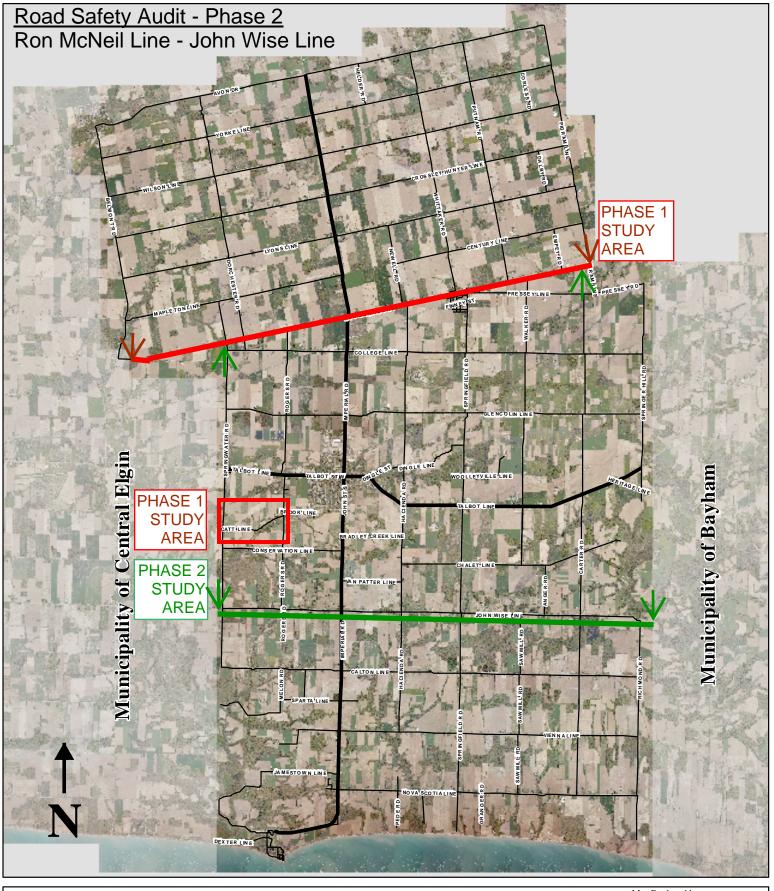
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Township of Malahide





12,000 4,000 8,000 Meters

Map Produced by: Township of Malahide GIS Department Projection: NAD 83 UTM Zone 17 Date: Oct 01, 2009
This drawing is neither a legally recorded map nor a survey and is not intended to be used as one.

APPENDIX 'A'

• DEFICIENCY PRIORITY RANKING

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APPENDIX A: DEFICIENCY PRIORITY LISTING

Priority Ranking	Road Name	From	То	AADT**	Surface Treatment	Lane Width*	Shoulder Width*	Surface Treatment Condition	Drainage	Vertical Alignment	Horizontal Alignment	Intersections	Clear Zones	Embankment	Visual Aid	Comments
С	Anger Road	John Wise Line	Chalet Line	104	Surface Treatment	3.7m	0.7m								Repaint solid yellow centreline.	
С	Bradley Creek Line	Imperial Road	Hacienda Road	363	Surface Treatment	3.8m	2.0m								Paint solid yellow centreline.	
С	Brook Line	Rogers Road	Caverly Road	587 - 600	Surface Treatment	3.5m	1.5 - 2.0m								Repaint solid yellow centreline.	
Α	Carter Road	John Wise Line	Pressey Line	227 - 416	Surface Treatment	3.7 - 4.5m	2.5m			STA 0+800 (Sag, K=16) STA 1+000 (Crest, K=20) STA 2+150 (Crest, K=15)		Poor sightline for southbound traffic at Chalet Line. No intersection ahead sign.	hydro pole in clear zone at Mun No. 9677.	Protection required at Mun No. 7900 between Johr Wise and Chalet. Protection required at Mun No. 8403, 8868 betwee Chalet Line and Talbot Line Washout fill eroding at Mun No. 8403 embankment	n Repaint solid yellow centreline.	3 animal related collisions between 2011 and 2015
С	Catherina Street	West End	Hacienda Road	Unknown	Surface Treatment	3.6m	Curb								Paint solid yellow centreline.	
С	Catherine Street	Pressey Line	Ron McNeil Line	Unknown	Surface Treatment	3.1m	1.0m								Paint solid yellow centreline.	
С	Caverly Road	Brook Line	South End	100	Surface Treatment	2.55 - 2.85m	No shoulder								Paint solid yellow centreline.	
Α	Chalet Line	Hacienda Road	East Culdesac	60 - 175	Gravel/Surface Treatment	3.25 - 3.5m	0.0 - 1.5m			STA 4+950 (Crest, K=12) STA 5+200 (Crest, K=7) STA 6+400 (Crest, K=21) STA 7+040 (Crest, K=20)	STA 7+600 Radius = 73m		hydro pole in clear zone at Mun No. 52220. hydro pole in clear zone at Mun No. 52773.	Protection required at Mun No. 52773 east of Carte Road. Protection required on the north side of Chalet Line west of Carter Road, at the pond.		1 animal related collision in 2016
С	Church Street	Springwater Road	Norton Street	100	Surface Treatment	3.65m	1.0m						hydro pole in clear zone at Mun No. 47343		Paint solid yellow centreline.	
А	College Line	Springwater Road	Springer Hill Road	381 - 795	Surface Treatment	3.2 - 3.75m	1.3 - 2.0m	Poor pavement shoulder condition Pothole at Mun No 52464		STA 5+500 (Crest, K=20) STA 13+100 (Crest, K=19)			Row of hydro poles in clear zone on the north side of the road between imperial Road and Hacienda Road. Hydro pole in clear zone at Mun No. 49856, north side of the road.	Protection required at double culvert west of	Repaint solid yellow centreline.	6 animal related collisions between 2009 and 2016
А	Conservation Line	Springwater Road	Imperial Road	314 - 408	Surface Treatment	3.65 - 3.75m	1.0 -1.5m							Protection required at the Lee Municipal Drain on the north side of the road.	Repaint solid yellow centreline. Speed zone reduction from Mun No. 49210 to Imperial Road.	1 animal related collision in 2010
В	Dingle Street	Aylmer Town Limit	Springfield Road	133 - 802	Surface Treatment	3.0 - 3.6m	1.0 - 1.5m	Poor pavement condition on south side of bridge crossing					hydro pole in clear zone at Mun No. 49894. hydro pole in clear zone at Mun No. 49908. hydro pole in clear zone at Mun No. 50144. hydro pole in clear zone at Mun No. 50589.		Vegetation partially covering hazard sign on hydro pole at Mun No 50589. Repaint solid yellow centreline. Chevron signage at horizontal curves.	3 animal related collisions between 2011 and 2015
С	Dorchester Road	College Line	Ron McNeil Line	178	Surface Treatment	3.7m	2.0m								Repaint solid yellow centreline.	
А	Glencolin Line	Hacienda Road	Springer Hill Road	361 - 1140	Surface Treatment	3.65 - 3.75m	2.0 - 2.6m							Protection required at Fuller Drain on the north sid of the road. Protection required at culvert crossing west of Walker Road on the north side of the road. Protection required at culvert near Mun No. 53042 on the north side of the road.	Faded pedestrian sign at Mun. No. 52313. Repaint solid yellow centreline.	
В	Glencolin Line	Springwater Road	Imperial Road	1011 - 1424	Surface Treatment	3.6m	2.5 - 2.6m						hydro pole in clear zone at Mun No. 48102. hydro pole in clear zone at Mun No. 48625. hydro pole in clear zone at Mun No. 48813.		Repaint solid yellow centreline.	4 animal related collision between 2010 and 2016
А	Hacienda Road	John Wise Line	Glencolin Line	1000 - 1230	Surface Treatment	3.75 - 4.0m	2.0 - 2.5m			STA 0+600 (Crest, K=18)		Sightline for left turn to Van Patter Line = 80m. No intersection ahead sign for southbound traffic.	Trees in clear zone at Mun No. 8174. Hydro poles in clear zone between Van Patter Line and Chalet Line.	Protection is required at the pond south of Talbot Line on the east side of the road. Protection required for the culvert at the southeast corner of the intersection with College Line.	College Line intersection. Repaint solid , dashed, or double yellow	6 animal related collision between 2009 and 2016 in study area (16 total on Hacienda Road)
С	Hilltop Lane	West End	Springfield Road	N/A	Surface Treatment	3.7m	1.5m								Paint solid yellow centreline.	
А	John Wise Line	Springfield Road	Richmond Road	727 - 1326	Surface Treatment	3.75m	2.0m				STA 11+400 Radii = 95 - 102m. Chevror signs and S-bend signs present. Update chevrons as required. No speed reduction posted.		Hydro poles in clear zone on north and south side of the road, between Springfield Road and Carter Road.	of Protection is required at the embankment near Mu No. 51082, west of Springfield Road.	¹ Repaint solid yellow centreline.	10 animal related collisions between 2010 and 2014
С	Louisa Crescent	Hacienda Road	Catherina Street	50	Surface Treatment	3.6m	Curb								Paint solid yellow centreline.	
В	Norton Street	Talbot Line	North End Culdesac	200	Surface Treatment	3.6m	1.0m						Hydro poles in clear zone along full length of road.		Paint solid yellow centreline.	
А	Pigram Road	Ron McNeil Line	Pressey Road	673	Surface Treatment	3.6m	2.0m					Crop planting limits appear to be staked out at Pressey Lin intersection. Ensure limits are enforced to maintain adequate intersection sight lines.	9	Protection is required at the Bear Creek Bridge.	Repaint solid or dashed yellow centreline.	2 animal related collision in 2011
В	Pressey Line	Springfield Road	Springer Hill Road	946 - 1748	Surface Treatment	3.3 - 3.95m	1.5 - 2.0m	Poor pavement shoulder condition Potholes in numerous locations along Pressey Line					Hydro poles in clear zone on the south side of the road where speed limit is 50km/h. Hydro poles in clear zone between Springfield Road and Walker Road. Row of trees in clear zone west of Mun No. 123251	i	Repaint solid yellow centreline.	

Project No. Date:

19031 11-Jun-21

APPENDIX A: DEFICIENCY PRIORITY LISTING

Priority Ranking	Road Name	From	То	AADT**	Surface Treatment	Lane Width*	Shoulder Width*	Surface Treatment Condition	Drainage	Vertical Alignment	Horizontal Alignment	Intersections	Clear Zones	Embankment	Visual Aid	Comments
А	Rogers Road	John Wise Line	Ron McNeil Line	101 - 1195	Surface Treatment	3.5 - 3.7m	1.2 - 2.5m			STA 1+300 (Crest, K=15) STA 1+450 (Sag, K=12) STA 1+550 (Crest, K=8) STA 1+800 (Crest, K=20) STA 5+100 (Crest, K=23)			Tree in clear zone at Mun No. 7707 Woodlot north of Mun No 7881 in clear zone. Hydro poles in clear zone near Mun No. 8122. Two trees in clear zone near Mun No. 8692. Hydro pole in clear zone at Catt Line, east side of road. Tree in clear zone on east side of the road, betwee Brook Line and Talbot Line (near natural gas warning sign)	1	Repaint solid yellow centreline.	10 animal related collisions between 2010 and 20116
А	Springer Hill Road	South End	Heritage Line	361 - 469	Surface Treatment	3.5 - 3.6m	1.2 - 2.5m			STA 5+900 (Crest, K=17) STA 7+200 (Crest, K=8)			Two hydro poles in clear zone at Mun No. 9822.	Protection required at Mun No. 9822, 9851, and 9931.	Repaint solid yellow centreline between Heritage Line and Glencolin Line. Paint solid yellow line north of Glencolin Line	2 animal related collision between 2015 and 2016
А	Van Patter Line	Imperial Road	Hacienda Road	106	Gravel	3.5m	1.0m					80m of sightline for southbound Hacienda Traffic. See Hacienda Road recommendation.	Hydro pole in clear zone at Mun No.49512. Row of hydro poles at west end of road are within			
А	Walker Road	Chalet Line	Ron McNeil Line	93 - 394	Gravel/Surface Treatment	3.5 - 3.75m	1.0 - 1.5m			STA 3+600 (Crest, K=10)		Steep drop to CB at intersection with College Line marked b temporary pylons.	у		Repaint solid yellow centreline on paved portion of Walker Road. Chevron signage at horizontal curve south of Glencolin Line.	
С	Weldon Street	Springwater Road	East End	Unknown	Surface Treatment	2.3m	1.0m						Small tree in clear zone at Mun No. 47373.		Paint solid yellow centreline.	
В	Woolleyville Line	Springfield Road	East End	216	Gravel/Surface Treatment	3.25m	1.0m	Minor pavement shoulder ravelling	No roadside ditches a east end. Construct ditches as required.				hydro pole in clear zone at Mun No.51333. hydro pole in clear zone at Mun No.51432.		Repaint solid yellow centreline on paved portion of Wolleyville Line.	

NOTES:

*Bold values do not meet design recommendations

**ADT Counts in the above table have been updated to reflect 2018 counts. Where 2018 traffic data AADT is not available, 2015 data was used.

PRIORITY 'A' = IMMEDIATE PRIORITY
PRIORITY 'B' = MEDIUM PRIORITY
PRIORITY 'C' = LOW PRIORITY

APPENDIX 'B'

• ROAD SEGMENT EVALUATIONS

<u>Anger Road</u> <u>John Wise Line to Chalet Line</u>

- Criteria Review Sheet
- Embankment Protection Warrant Guide
- Centreline Profile Drawings (1-2)

		Deficiencies Showlder width							
Study Section: John Wise Line to Chalet Line Total Distance Analysed: 1.72 km AADT: 104 (Year: 2015) Date of Site Inspection:		2m 4.4m de O. 4m oc. 4m		Drainage OK				-	Clients OK. ATU tenil sign. Solid yellow line.
	Design Recommendations	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: - Crown Centered	- Comment on surface treatment - Roadside swales? - Municipal Drains: N/A	- Maximum road segment grades: 6-8%	- Minimum design radius: - Maximum super elevation: (TAC, 1999)	- Min passing sight distance (AASHTO): 275-550m - Min decision sight distance: 155-230m	Anger Road / Chalet Line - Intersection control: - Stopping sight distance: Anger Road / John Wise Line - Intersection control:	- Stopping sight distance: 155-210m - Recommended clear zone: (MTO,NYS)4m (excluding cut or fill slopes) (MTO,2029)3.5g - Slope? - Height? - Protection required? Limits?	- Bridges? - Line painting: - Signage?
Road Name: <i>Anger Road</i> Direction of Travel: <i>North to South</i> Posted Speed: <i>80km/h</i> Right-of-Way Width: <i>20m (66')</i>	Criteria	Geometry	Surface Treatment Drainage	Vertical Alignment	Horizontal Alignment	Passing Sight Distance Decision Sight Distance	List of intersections within project limits List of intersections within project limits	Clear Zone (Poles, Trees, etc.) Embankments	Bridges, Culverts, etc.)
Road Name: Anger Road Direction of Travel: Nor Posted Speed: 80km/h Right-of-Way Width: 20	O	Cross-Section			Alignment		Intersections	Physical Objects	Visual Aids

2.0 Criteria Review



Chapter 2 Policy, Warrants, Guidelines Section 2.5 Embankments

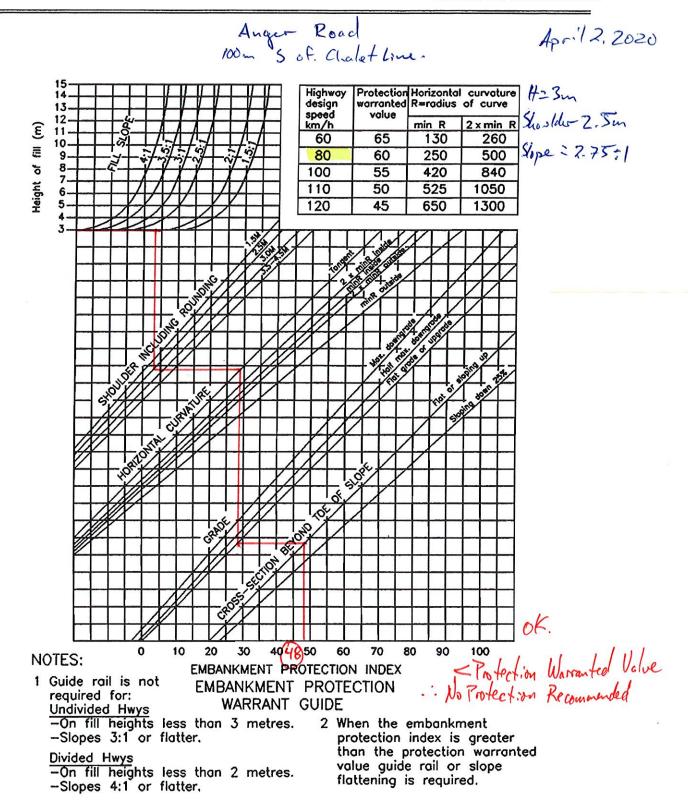
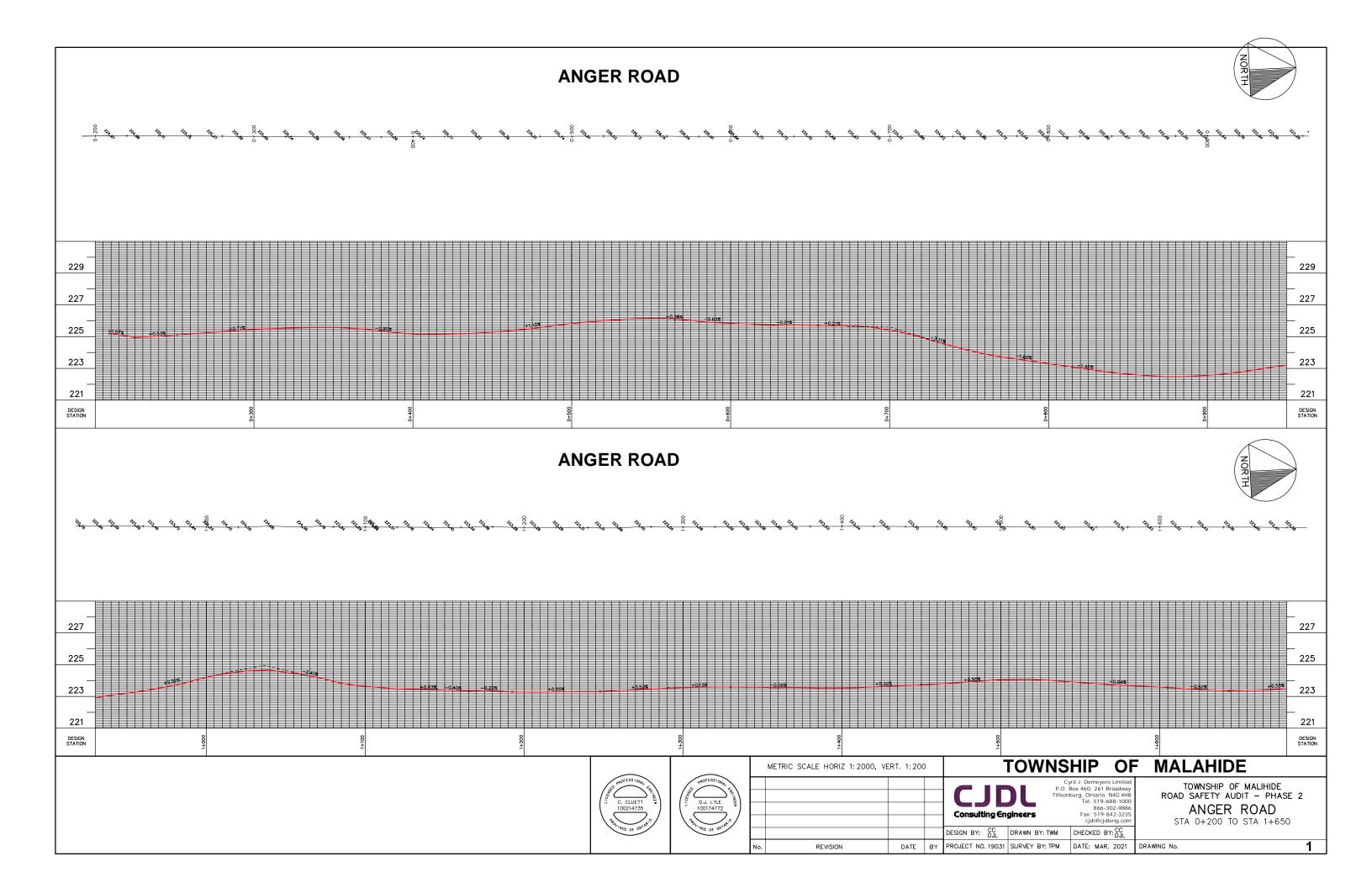
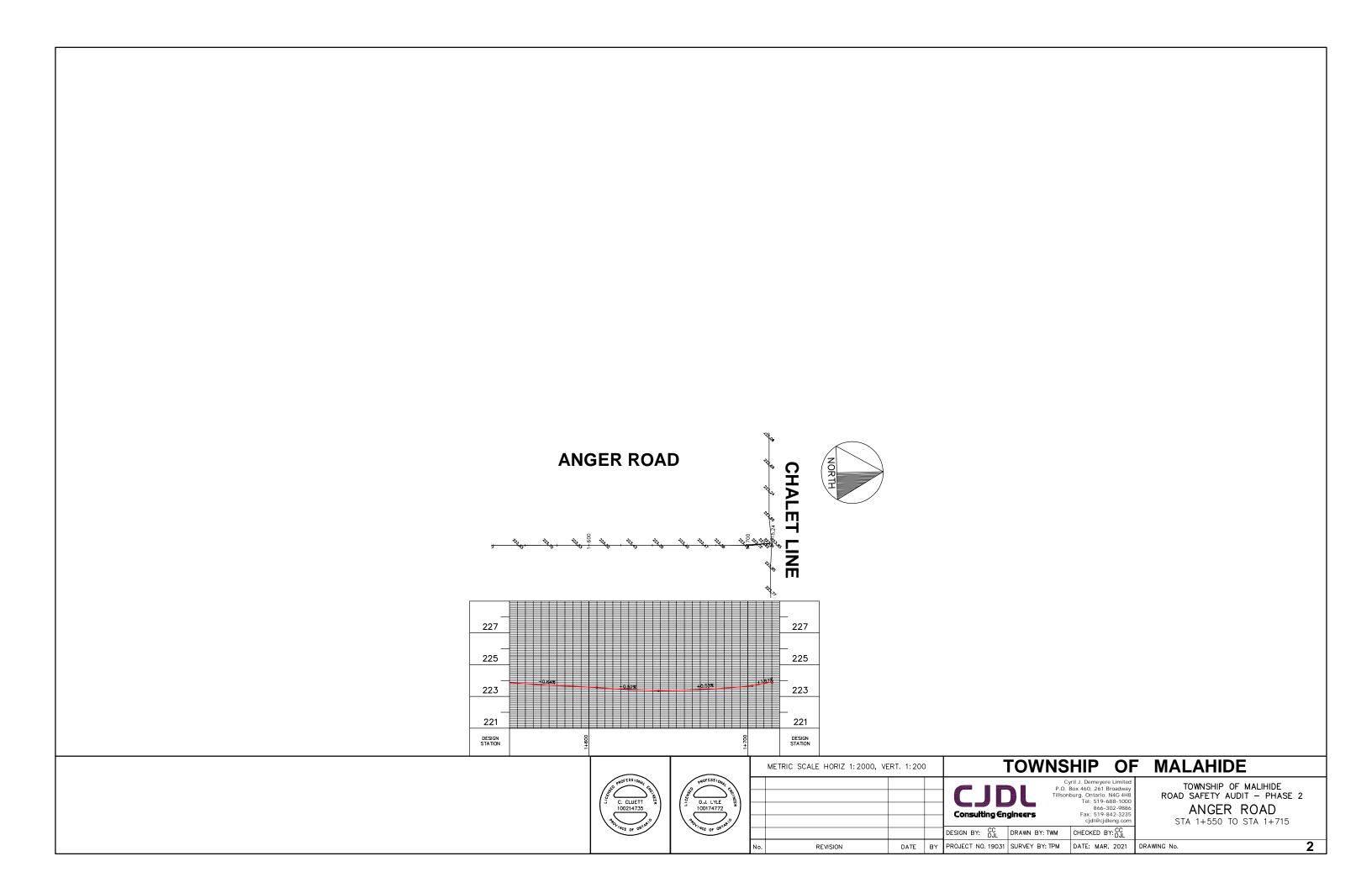


FIGURE 2.5.1 Embankment Warrant Guide





Bradley Creek Line Imperial Road to Hacienda Road

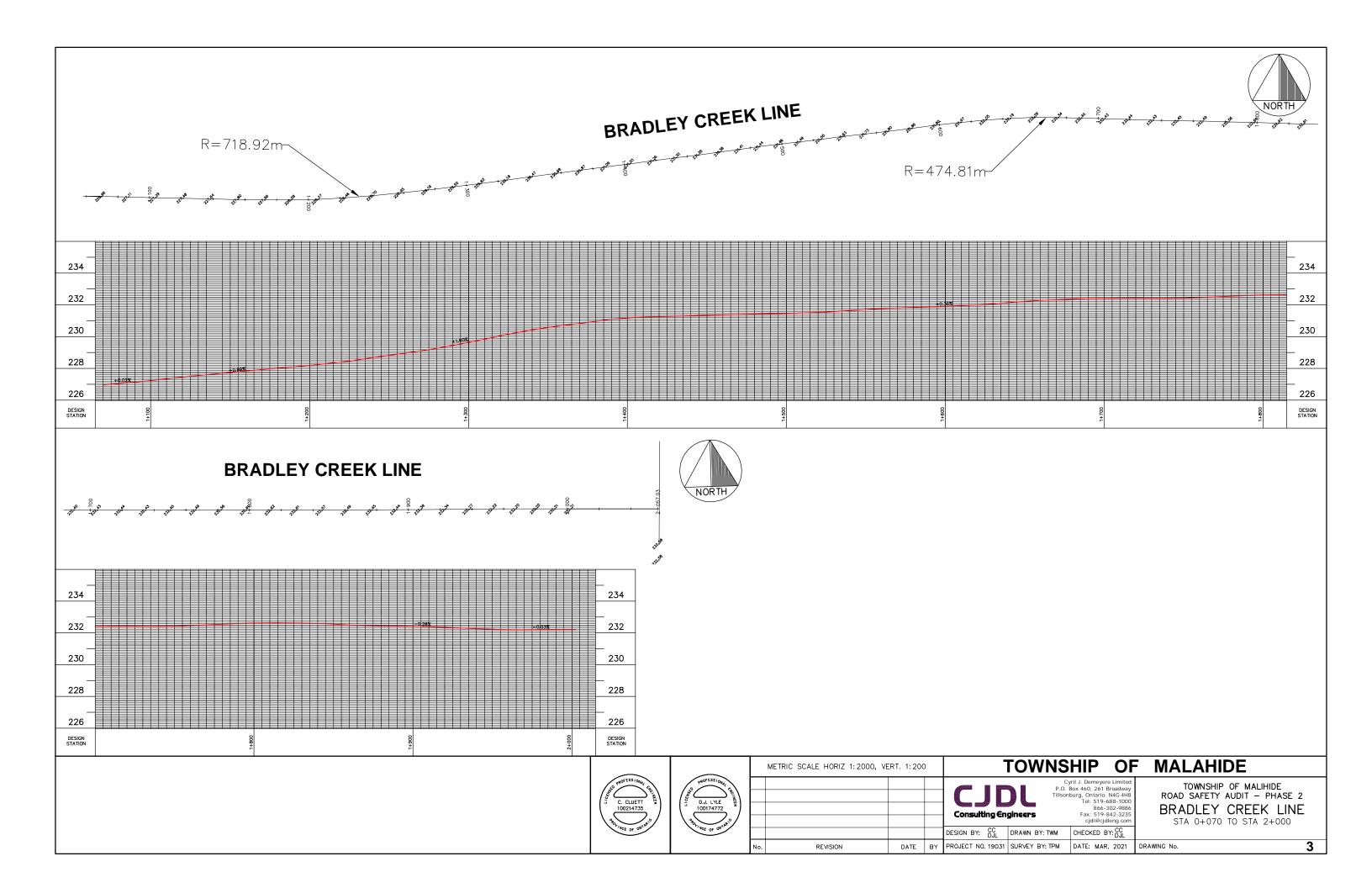
- Criteria Review Sheet
- Centreline Profile Drawing (3)

2.0 Criteria Review

Road Name: Bradley Creek Line	dley Creek Line			Study Section: Imperial Road to Hacienda Road	
Direction of Travel: East to West	vel: East to West			Total Distance Analysed: 2.05 km	
Posted Speed: 80km/h	'Okm/h			AADT: 363 (Year: 2015)	
Right-of-Way Width: 20m (66')	idth: <i>20m (66')</i>			Date of Site Inspection: April 2, 2020	
Crit	Criteria	Design Recommendations	itions	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall:	3.6m x 2 = 7.2m 2.0m wide 5.40m± to PL 2% 4-6% Crown Centered	2m bk ok	ì
	Surface Treatment Drainage	- Comment on surface treatment - Roadside swales? - Municipal Drains: Bradley Creek Drain	_	Sortace trentumt OK. Danuge OK	
	Vertical Alignment	- Maximum road segment grades: -Vertical curve 'K' value	%8-9		
Alignment	Horizontal Alignment	- Minimum design radius: - Maximum super elevation: (TAC, 1999)	280 to 230m 4-8%	2 cornes @ Ste (4200 P 14600. R>280m, OK.	
)	Passing Sight Distance	- Min passing sight distance (AASHTO):	275-550m		
	Decision Sight Distance	- Min decision sight distance:	155-230m	olh.	
:+0	List of intersections within project limits	Bradley Creek Line / Imperial Road - Intersection control: - Stopping sight distance:	155-210m	Stop sign. Co Warning sign.	
ווונפן אפרנוסווא	List of intersections within project limits	Bradley Creek Line / Hacienda Road - Intersection control: - Stopping sight distance:		Steping Steping	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (excluding cut or fill slopes)	(MTO,1993) 4m (MTO,2020) 3.5	0K. "	
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	-	N/A	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?		NO	
		- Line painting: - Signage?		Speed limit 80hm/L posted	



Visual Aids



Brook Line Rogers Road to Caverly Road

- Criteria Review Sheet
- Centreline Profile Drawing (4)

2.0 Criteria Review

Road Name: Brook Line	Study Section: Rogers Road to 400m W of Caverly Road (speed limit change)
Direction of Travel: East to West	Total Distance Analysed: 0.4 km
Posted Speed: 80km/h	AADT: 587 (Year: 2015)
Right-of-Way Width: 20m (66′)	Date of Site Inspection: 4pr. 1 2, 2020

Cross-Section Geometry Concessed and evides Section large widths: Cross-Section Surface Treatment Comment of Section Californe Section Library Comment on surface treatment Comment of Section Californe Comment						
Cross-section lane widths: 3.6m x 2 = 7.2m - Cross-section lane widths: 3.6m x 2 = 7.2m - Shoulder(s): 5.46m to PL - Boulward(s): 2x - Max shoulder crossfall: 4-6% - Cross-Section CL alignment: Crown Centered - Max shoulder crossfall: 4-6% - Max shoulder crossfal	Crit	eria	Design Recommend	ations	On-Site Observations	Deficiencies
Surface Treatment - Comment on surface treatment - Roadside swales? Drainage - Municipal Drains: N/A Vertical Alignment - Maximum road segment grades: - Maximum road segment grades: - Vertical curve 'K' value - Waximum super elevation: - Maximum aper elevation: - Maximum super elevation: - Maximum super elevation: - Min passing sight distance (AASHTO): 275-530m - Min decision sight distance: - ISS-230m - Min decision sight distance: - ISS-230m - Recommended clear zone - Stopping sight distance: - ISS-210m - Recommended clear zone: - Stopping sight distance: - ISS-210m - Recommended clear zone: - Stopping sight distance: - ISS-210m - Recommended clear zone: - Stopping sight distance: - ISS-210m - Recommended clear zone: - Stopping sight distance: - ISS-210m - Recommended clear zone: - ISS-210m - Reight? - Structures - Signage? - Line painting: - Signage?	ss-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment:		7.0m 2 m 0K 0K	Love width.
Vertical Alignment - Maximum road segment grades: - Vertical curve 'K' value - Vertical curve 'K' value - Minimum design radius: - Minimum design radius: - Maximum super elevation: - Maximum super elevation: - Minimum design radius: - Maximum design radius: - Minimum design radius: - Maximum design radius: - Minimum design radius: - Minimum design radius: - Maximum de		Surface Treatment Drainage	- Comment on surface treatment - Roadside swales? - Municipal Drains: N/A		So there treatment OK Drawage OK.	
Passing Sight Distance Decision Sight Distance Issuerts, etc.) Structures Clar Structures Structures Decision Alignment (TAC, 1999) - Min decision sight distance (AASHTO): 275-550m - Min decision sight distance: 155-230m Brook Line / Rogers Road - Intersections outrol: 155-210m - Recommended clear zone: (Arto, Arg.) 4m (Poles, Trees, etc.) - Slope? - Slope? - Height? - Protection required? Limits? - Culverts? - Line painting: - Signage?		Vertical Alignment	- Maximum road segment grades: -Vertical curve 'K' value - Minimum design radius:	6-8% 280 to 230m	OK.	
Decision Sight Distance - Min decision sight distance: 155-230m Brook Line / Rogers Road - Intersection control: 155-210m - Intersection control: 155-210m - Stopping sight distance: 155-210m - Recommended clear zone: (Mto, 1643) 4m (Poles, Trees, etc.) (excluding cut or fill slopes) (Mto, 2010) 3.5m Slope? - Height? - Protection required? Limits? - Culverts? - Culverts? - Culverts? - Line painting: - Signage?	ınment	Horizontal Alignment Passing Sight Distance	- Maximum super elevation: (TAC, 1999) - Min passing sight distance (AASHTO)	275-	N/#	
List of intersections Brook Line / Rogers Road - Intersections - Intersection control: 155-210m - Stopping sight distance: 155-210m - Stopping sight distance: (MTC, M43) 4m (Poles, Trees, etc.) - Slope? - Height? - Slope? - Height? - Slope? - Height? - Structures - Culverts? - Culverts? - Culverts? - Line painting: - Signage? - Signag		Decision Sight Distance	- Min decision sight distance:	155-230m	OK	
Clear Zone (Poles, Trees, etc.) (Excluding cut or fill slopes) (NTO, 2010) 3.5 6 K - Slope? - Height? - Height? - Protection required? Limits? - Protection required? Limits? - Structures - Culverts? - Bridges? - Line painting: - Signage? - Signage? - Signage?	ersections	List of intersections within project limits	Brook Line / Rogers Road - Intersection control: - Stopping sight distance:		Stop sign, & Worning sign. Stop ing Stoping OK.	
- Slope? - Height? - Protection required? Limits? - Culverts? - Culverts? - Line painting: - Signage?		Clear Zone (Poles, Trees, etc.)	mended clear zone: ng cut or fill slopes)			
Structures - Culverts? (Bridges, Culverts, etc.) - Bridges? - Line painting: - Signage?	sical Objects	Embankments	- Slope? - Height? - Protection required? Limits?		WIA	
- Line painting: - Signage?		Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?		DH	
tal Aids			- Line painting: - Signage?		Solid yellow live	
	al Aids					

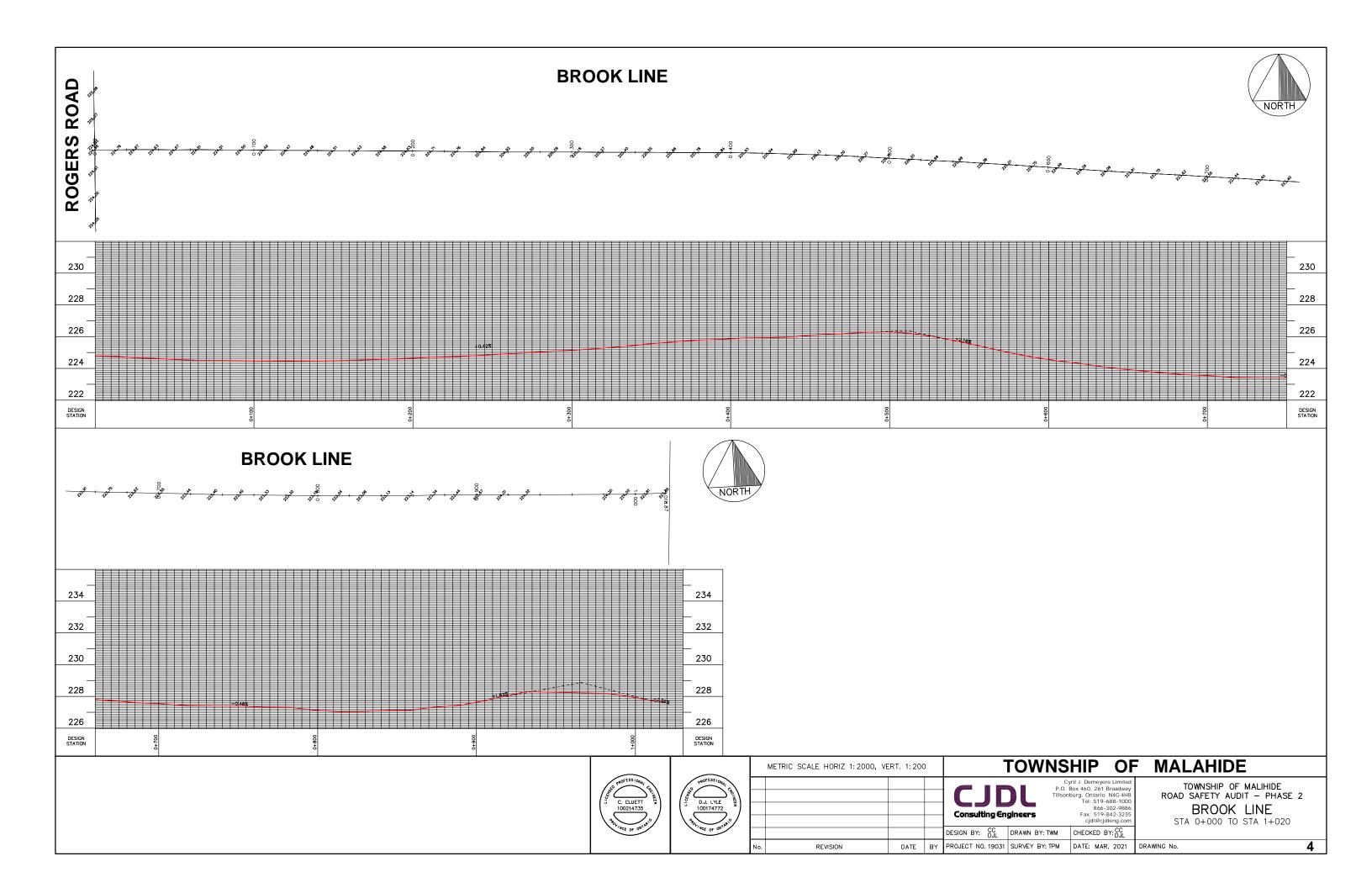


2.0 Criteria Review

Road Name: Brook Line	Study Section: 400m W of Caverly Road (speed limit change) to Caverly Road
Direction of Travel: East to West	Total Distance Analysed: 0.6 km
Posted Speed: 50km/h	AADT: 600 (Year: 2015)
Right-of-Way Width: 20m (66')	Date of Site Inspection: April 2,2020

Crit	Criteria	Design Recommendations	ns	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: 3. S - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: Cro	3. Sm x 2 = 7.0m 1.0m wide 5.46m± to PL 2% 4-6% Crown Centered	town 1.5m ok ok	
	Surface Treatment Drainage	- Comment on surface treatment - Roadside swales? - Municipal Drains: N/A		Drawing OK	
† 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Vertical Alignment Horizontal Alignment	- Maximum road segment grades: -Vertical curve 'K' value - Minimum design radius: - Maximum super elevation:	8-12% 100 to 80m 4-8%	oK' N/A	
Aligillien	Passing Sight Distance Decision Sight Distance	- Min passing sight distance (AASHTO): - Min decision sight distance:	160-350m 75-145m	OK OK	
Intersections	List of intersections within project limits	Brook Line / Caverly Road - Intersection control: - Stopping sight distance:	60-110m	Stop sign. A Warning Syn.	
Physical Objects	Clear Zone (Poles, Trees, etc.) Embankments	ended clear zone: cut or fill slopes) (3m 0.5m if curb present)	0K 1	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?		N/4	
Visual Aids		- Line painting: - Signage?		solid Linux Speed liwit postal	





<u>Carter Road</u> <u>John Wise Line to Pressey Line</u>

- Criteria Review Sheets
- Embankment Protection Warrant Guides
- Site Photographs
- Centreline Profile Drawings (5-13)

2.0 Criteria Review

Road Name: Carter Road	Study Section: John Wise Line to Chalet Line
Direction of Travel: North to South	Total Distance Analysed: 3.16 km
Posted Speed: 80km/h	AADT: 327 (Year: 2015)
Right-of-Way Width: 20m (66')	Date of Site Inspection: 4pril 3,2020

Crit	Criteria	Design Recommendations	SI	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: 3.6m - Shoulder(s): 2 - Boulevard(s): 5. - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: Crow	3.6m x 2 = 7.2m 2.0 m wide 5.46m± to PL 2% 4-6% Crown Centered	7.0m 2.5 m 0.K 0.K	i.
	Surface Treatment	- Comment on surface treatment		Surface Treatment CK	
	Drainage	- Roadside swales? - Municipal Drains: N/A		Mirage OK	
	Vertical Alignment	- Maximum road segment grades: -Vertical curve 'K' value	%8-9	Kingt < 24 5 5th 14000, 2+150	2 crest XX24
Alignment	Horizontal Alignment	- Minimum design radius: - Maximum super elevation: (TAC, 1999)	280 to 230m 4-8%		•
)	Passing Sight Distance	- Min passing sight distance (AASHTO):	275-550m	01/2	
	Decision Sight Distance	- Min decision sight distance:	155-230m	01%	
1	List of intersections within project limits	Carter Road / John Wise Line - Intersection control: - Stopping sight distance:	155-210m	Step sign Warring Sign. Sight lives, Stepping distunce OK,	
ווופו אפרנוסווא	List of intersections within project limits	Carter Road / Chalet Line - Intersection control: - Stopping sight distance:	155-210m	tworgh St. Hidlen on tersection sign for	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (אדס, excluding cut or fill slopes) (אדס,	(MTO, 1993) 4m (MTO, 2020) 3.5m . OK.	, OK.	
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?		knownt Warrant Goods Failed.	Patcher Revised
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?		K	
3		- Line painting: - Signage?		solid line.	
Visual Aids					



Chapter 2 Policy, Warrants, Guidelines Section 2.5 Embankments

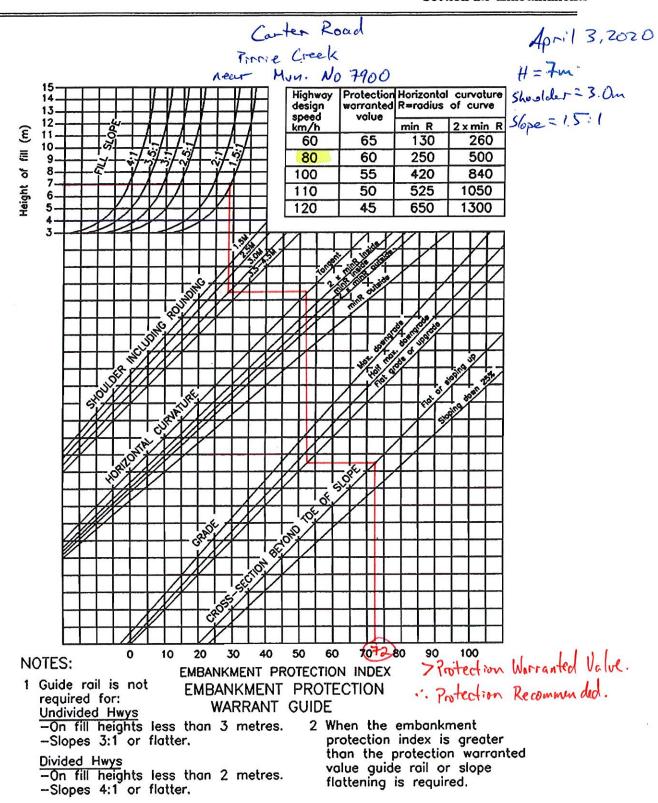


FIGURE 2.5.1 Embankment Warrant Guide

2.0 Criteria Review

Road Name: Carter Road	ter Road		Study Section: Chalet Line to Talbot Line	
Direction of Tra	Direction of Travel: North to South		Total Distance Analysed: 2.04 km	
Posted Speed: 80km/h	30km/h		AADT: 362 (Year: 2015)	
Right-of-Way Width: 20m (66')	/idth: <i>20m (66')</i>		Date of Site Inspection: April 3, 2020	
Cri	Criteria	Design Recommendations	On-Site Observations	Deficiencies
)		
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: - Cross-Section CL alignment: - Cross-Section CL alignment: - Cross-Section Cantered	# # # # # # # # # # # # # # # # # # #	
	Surface Treatment	- Comment on surface treatment	S. The Testurent Of	
	Drainage	- Roadside swales? - Municipal Drains: N/A	Drainage OK	100
	Vertical Alignment	- Maximum road segment grades: 6-8% -Vertical curve 'K' value		1 Kinst 24, Ontex
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	R= 56 @ Talloof Line- Haguate signification Place,	
ò	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m	OK	
	Decision Sight Distance	- Min decision sight distance: 155-230m	m 0/C.	
	List of intersections within project limits	Carter Road / Chalet Line - Intersection control: - Stopping sight distance: 155-210n	Though St. Poor sight has for SB tather EK	
Intersections	List of intersections within project limits		Stop sign. Sight lines, stopping distance OK.	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (MTO, 1943) 4m (excluding cut or fill slopes) (MTO, 2020) 3.5 Fm.	CK. , , , ,	
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	Embankonent warmt gride tails @ How. No.	Profes Fibr recommended
	2000	- Culverts?		Coloreday (



Hidolin interaction Ollulet. S-band warming O TAII

Solid yellow time

- Line painting: - Signage?

Visual Aids

- Culverts? - Bridges?

Structures (Bridges, Culverts, etc.)

DK DK

Chapter 2 Policy, Warrants, Guidelines Section 2.5 Embankments

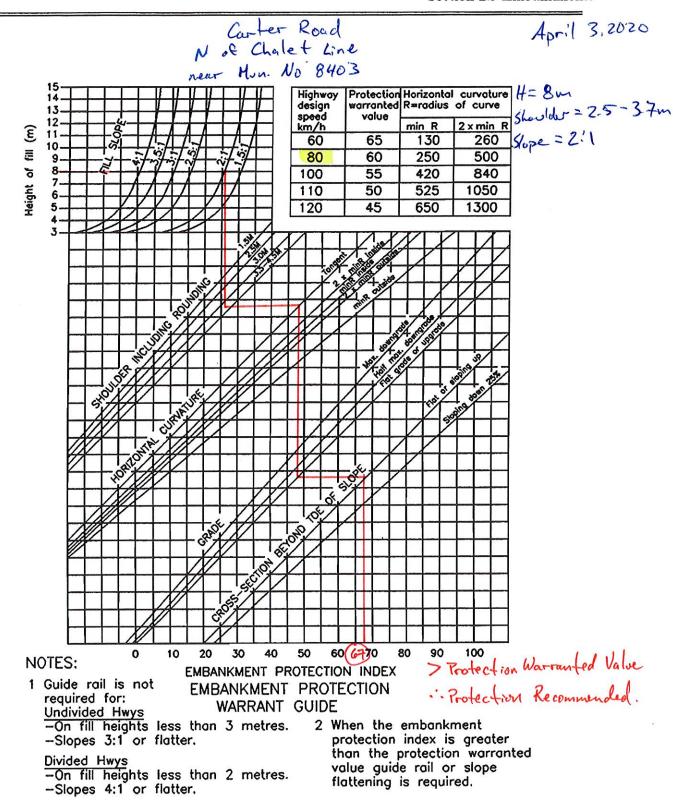


FIGURE 2.5.1 Embankment Warrant Guide

Chapter 2 Policy, Warrants, Guidelines Section 2.5 Embankments

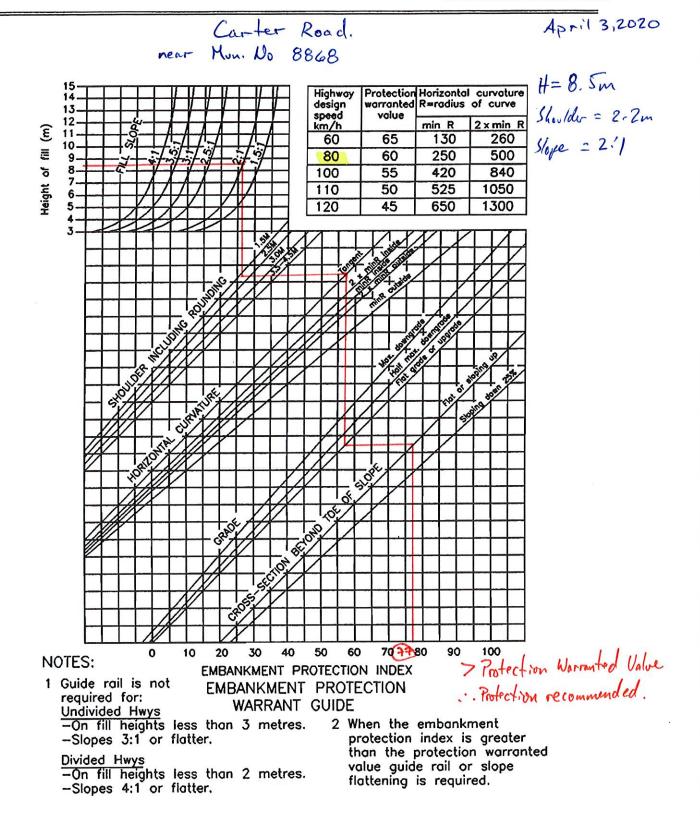


FIGURE 2.5.1 Embankment Warrant Guide

Road Name: Carter Road	Study Section: Talbot Line to Glencolin Line
Direction of Travel: North to South	Total Distance Analysed: 2.77 km
Posted Speed: 80km/h	AADT: 416 (Year: 2018)
Right-of-Way Width: 20m (66')	Date of Site Inspection: April 3, 2020

Crit	Criteria	Design Recommendations	tions	On-Site Observations	Deficiencies
Cross-Section	Geometry	 Cross-section lane widths: Shoulder(s): Boulevard(s): Typ. cross-fall (lanes): Max shoulder crossfall: Cross-Section CL alignment: 	3.6m x 2 = 7.2m 2.0 m wide 5.46m ± to PL 2% 4-6% Crown Centered	2.5 x 5 x 5 x 5 x 5 x 5 x 5 x 5 x 5 x 5 x	
•	Surface Treatment	- Comment on surface treatment		Surface Treatment OK	
	Drainage	- Koadside swales ? - Municipal Drains: Patton Drain	_	Drainage OK	
	Vertical Alignment	- Maximum road segment grades: -Vertical curve 'K' value	%8-9	, OK	
Alignment	Horizontal Alignment	- Minimum design radius: - Maximum super elevation: (TAC, 1999)	280 to 230m 4-8%	NA	
	Passing Sight Distance	- Min passing sight distance (AASHTO):	275-550m	NO	
	Decision Sight Distance	- Min decision sight distance:	155-230m	OK	
Intercertions	List of intersections within project limits	Carter Road / Talbot Line - Intersection control: - Stopping sight distance:	155-210m	Stop sign alread. Stop sign.	
	List of intersections within project limits	Carter Road / Glencolin Line - Intersection control: - Stopping sight distance:	5-210m	5 1	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (M) (excluding cut or fill slopes)	(MTO, M93) 4m (MTO, 2020) 3.5m	Cholopoles in clear zone	HO Hun. No. 9677
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?		NA	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?		NIA	
		- Line painting: - Signage?		solid yellow live.	
Visual Alds					



Criteria Review 2.0

8				
Road Name: Carter Road	ter Road		Study Section: Glencolin Line to College Line	
Direction of Travel: North to South	vel: North to South		Total Distance Analysed: 2.06 km	
Posted Speed: 80km/h	0km/h		AADT: 354 (Year: 2018)	
Right-of-Way Width: 20m (66')	'idth: 20m (66')		Date of Site Inspection: 45,020	
Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: - Cross-Section CL alignment: - Cross-section CL alignment: - Cross-section C	7.6m 2.5m Ok ok	
	Surface Treatment	- Comment on surface treatment	Sictace Teaturent OK	
	Drainage	- Roadside swales? - Municipal Drains: Eicher Drain	Draining OK	
	Vertical Alignment	- Maximum road segment grades: 6-8% -Vertical curve 'K' value	YQ.	
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	NA	
)	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m	λίδ	
	Decision Sight Distance	- Min decision sight distance: 155-230m	oK	

"Attention Tains opening tollection

sa, Twoy costeing , Railray Cossing Sign,

Railway cossing mortings on road

solvel yellow live, stop sign always

Š V

OR.W. crossing

Burrankound

る人

(MTD, 2020) 3.5m (HTP, 1993)

- Recommended clear zone: (excluding cut or fill slopes)

Clear Zone (Poles, Trees, etc.)

- Stopping sight distance:

- Intersection control:

List of intersections within project limits

4m

155-210m

155-210m

Carter Road / Glencolin Line

- Intersection control:

within project limits

Intersections

List of intersections

Carter Road / College Line - Stopping sight distance:

- 70

- Protection required? Limits?

- Height? - Slope?

Embankments

Physical Objects

- Culverts? - Bridges?

Structures (Bridges, Culverts, etc.)

- Line painting: - Signage?

Visual Aids

Dec 19,2016



Chapter 2 Policy, Warrants, Guidelines Section 2.5 Embankments

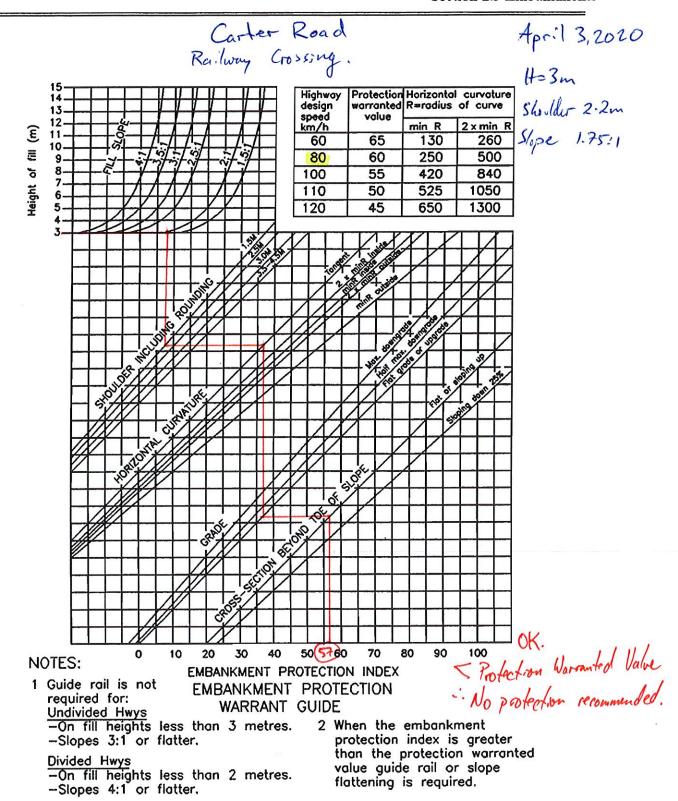


FIGURE 2.5.1 Embankment Warrant Guide

Road Name: Carter Road	Study Section: College Line to Pressey Line
Direction of Travel: North to South	Total Distance Analysed: 2.07 km
Posted Speed: 80km/h	AADT: 277 (Year: 2018)
Right-of-Way Width: 20m (66′)	Date of Site Inspection: 450.1 3, 2020

Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Typ. shoulder crossfall: - Cross-Section CL alignment: - Cross-sect	8.0m 7.0m 0K 0K	
,	Surface Treatment	- Comment on surface treatment - Roadside swales?	Surface Treatment OK	
	Drainage Vertical Alignment	- Municipal Drains: Catfish Creek Municipal Drain - Maximum road segment grades: 6-8% -Vertical curve 'K' value	Daining OK.	
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	NIA	
)	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m	7/0	
	Decision Sight Distance	- Min decision sight distance: 155-230m	0/K	
n torcortions	List of intersections within project limits	Carter Road / College Line - Intersection control: - Stopping sight distance: 155-210m	Stopping distance, sight lives OK.	
וויפו אפרנוסווא	List of intersections within project limits	Carter Road / Pressey Line - Intersection control: - Stopping sight distance: 155-210m	001	
,	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (MTO, M43) 4m (excluding cut or fill slopes) (MTO, 2020) 3.5m) NO	
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	NIA	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	Bridge, Guardrails OM.	
Visual Aids		- Line painting: - Signage?	Solial yellow line,	

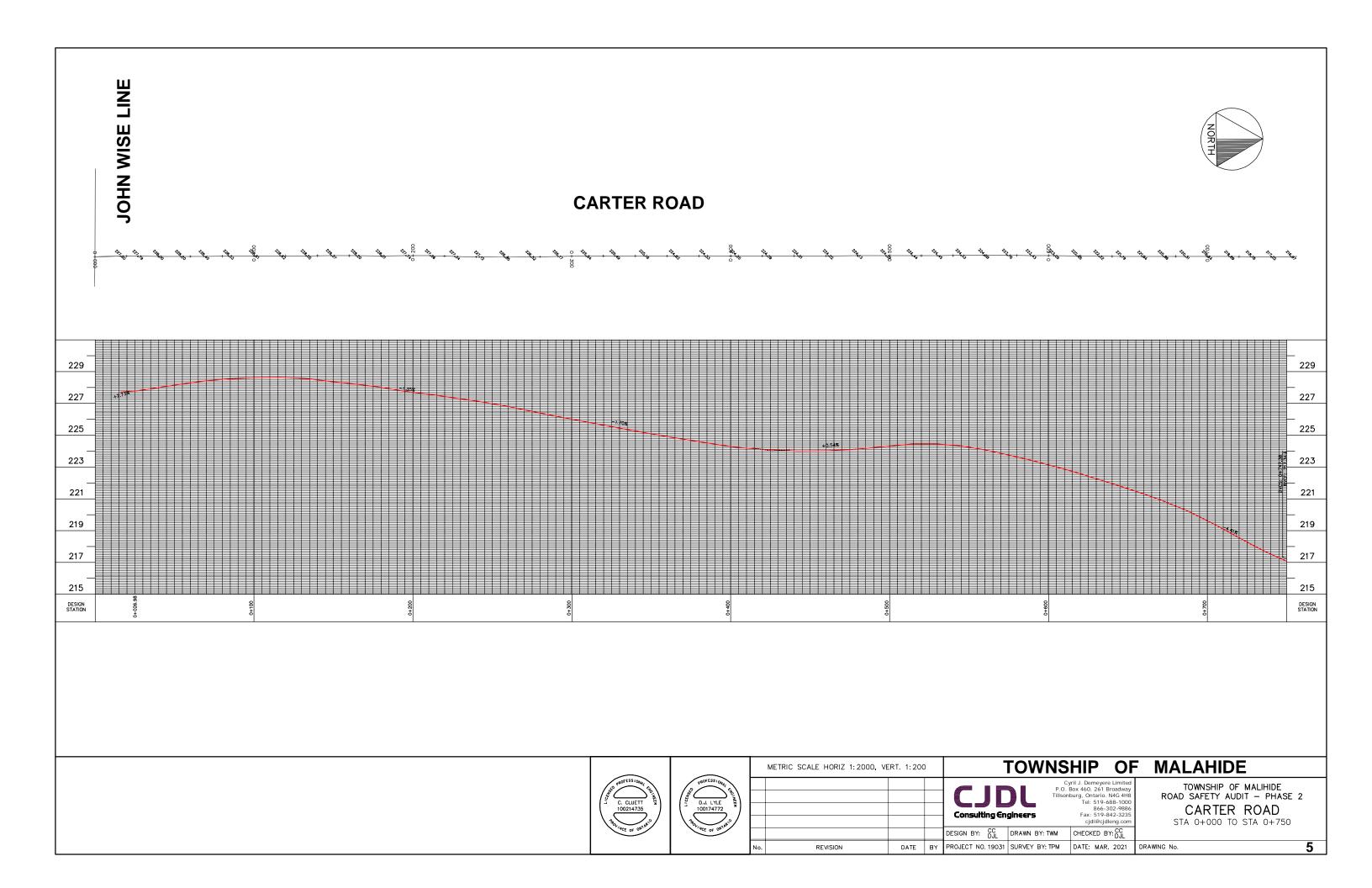




(Above) Carter Road – Facing south. Washout fill marked by temporary orange cones at Mun No 8403. Vertical curve at Chalet Line intersection.

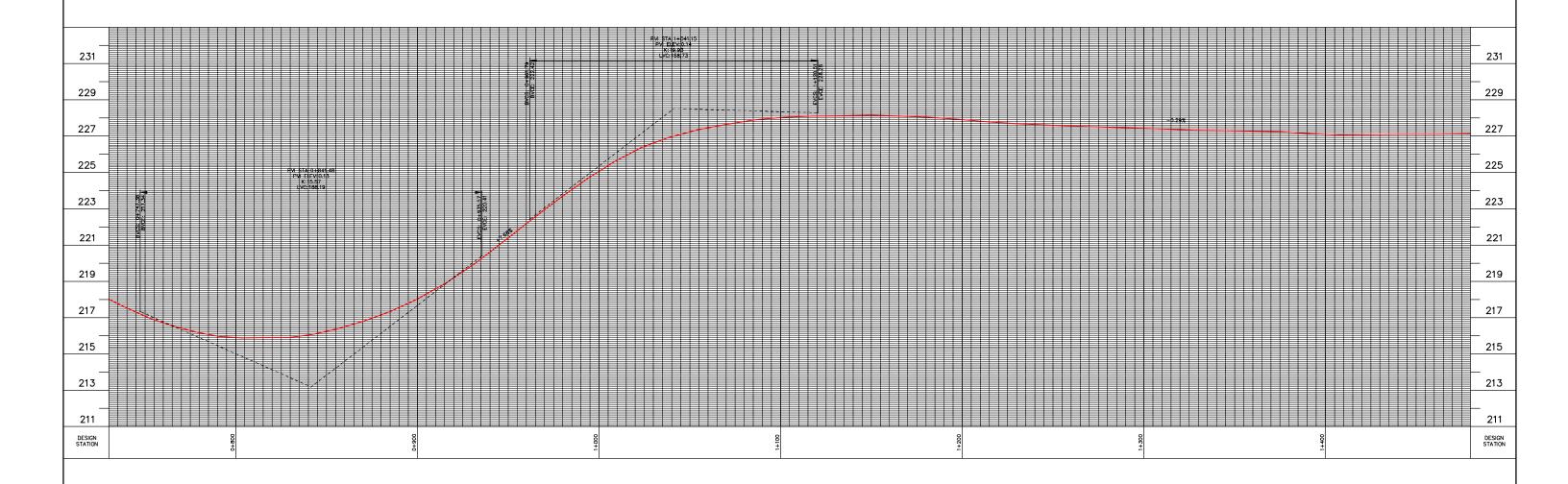
(Below) Facing south. Vertical curve at Chalet Line intersection.











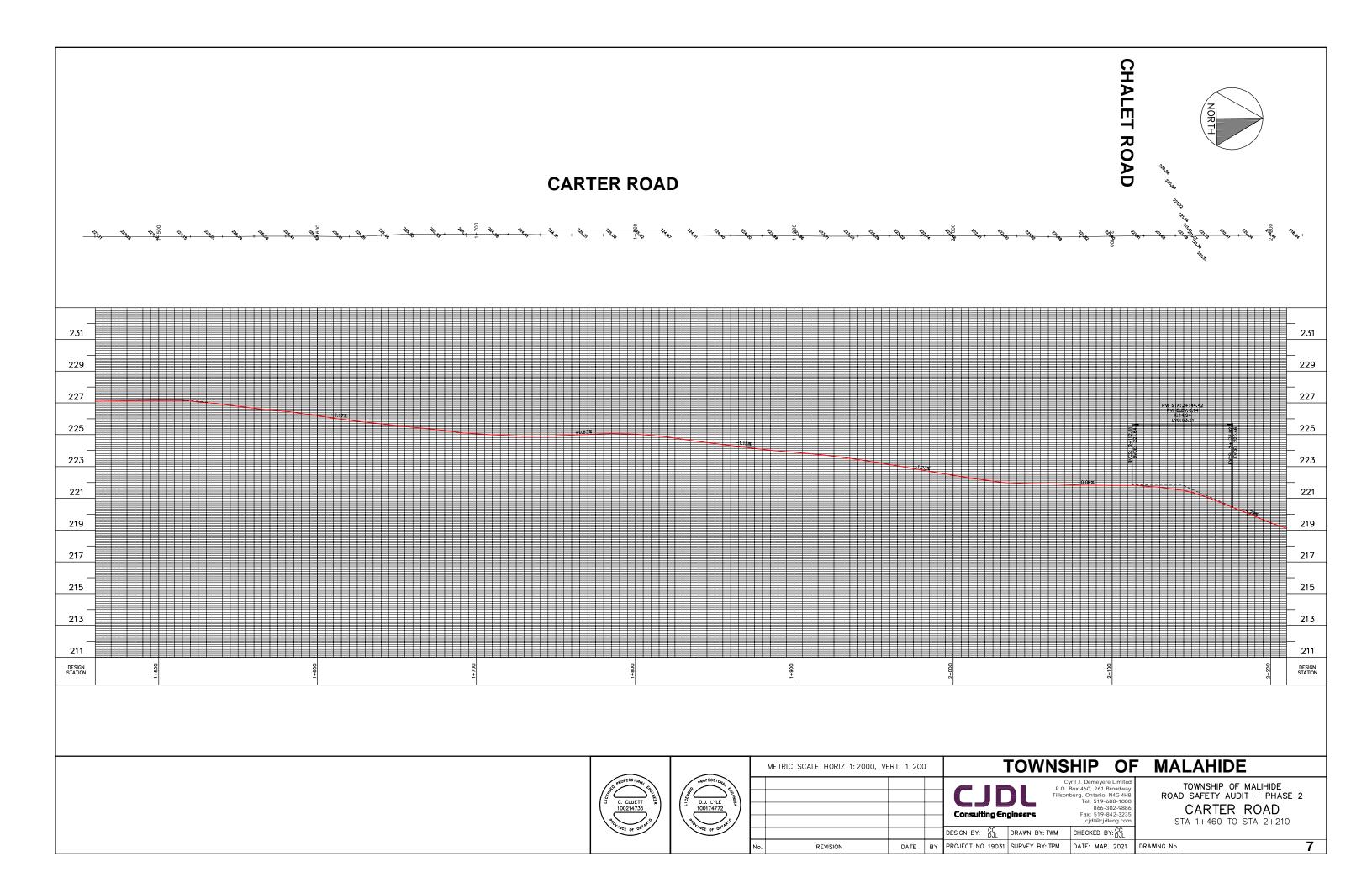




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	Cyril J. Demeyere Limited P.O. Box 460, 261 Broadway Tillsonburg, Ontario. N4G 4HB Tel: 519-688-1000 866-302-9886 Fax: 519-842-3235 cjdl@cjdleng.com	TOWNSHIP OF MA ROAD SAFETY AUDIT - CARTER RO STA 0+730 TO STA
	DESIGN BY: CC DRAWN BY: TWM CHECKED BY: CC	

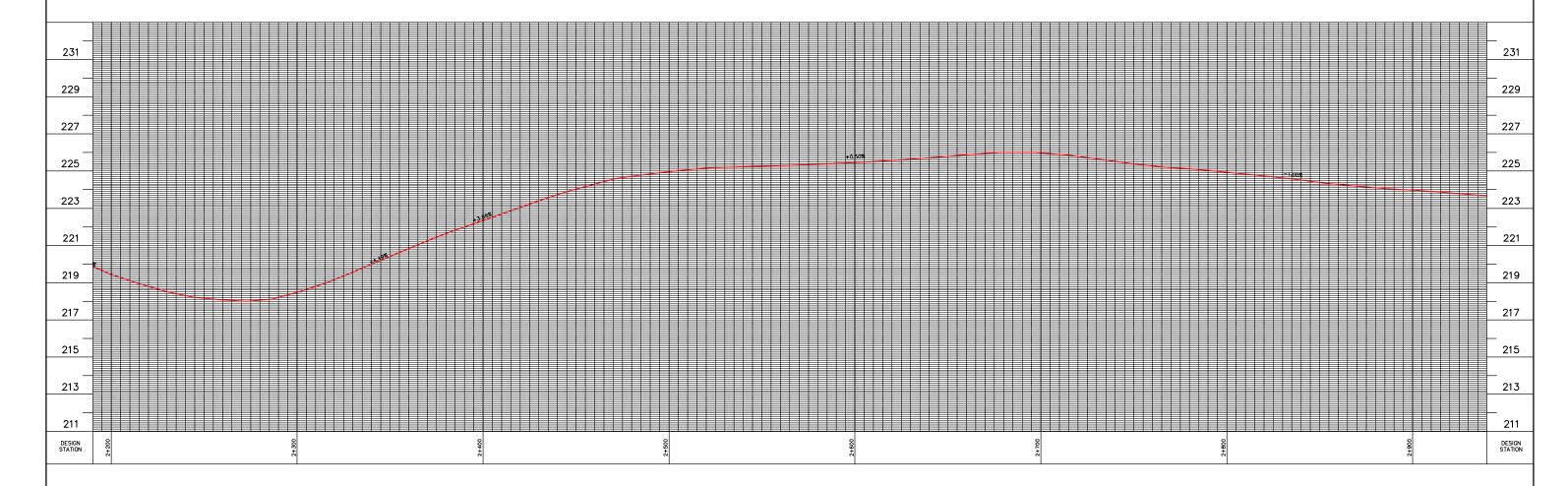
TOWNSHIP OF MALIHIDE ROAD SAFETY AUDIT — PHASE 2 CARTER ROAD

STA 0+730 TO STA 1+480









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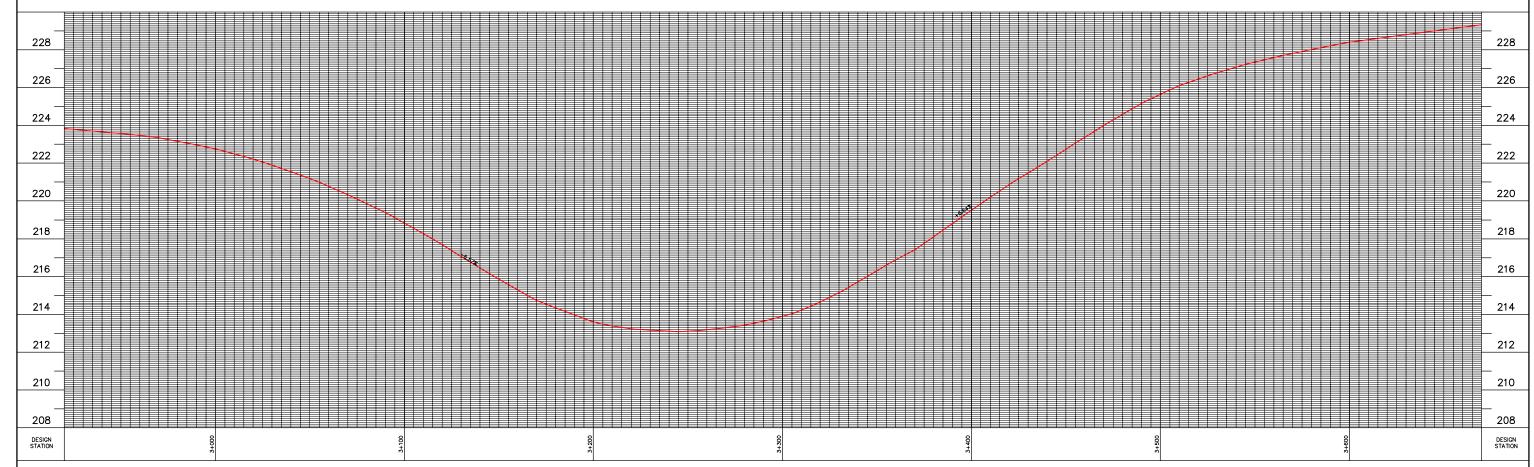
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TOWNSHIP OF MALIHIDE ROAD SAFETY AUDIT - PHASE 2 CARTER ROAD

STA 2+190 TO STA 2+940







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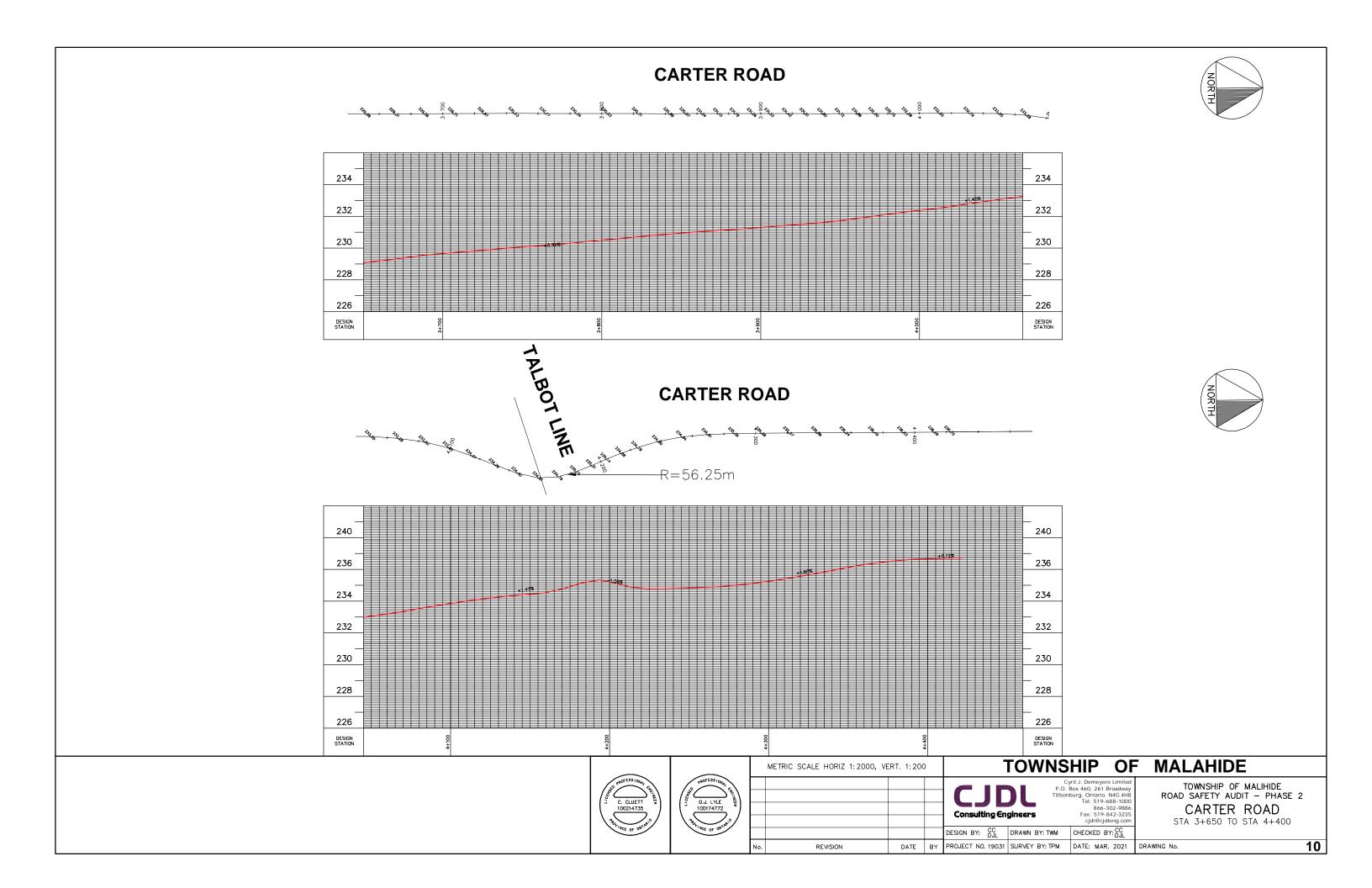
TOWNSHIP OF MALIHIDE ROAD SAFETY AUDIT - PHASE 2 CARTER ROAD

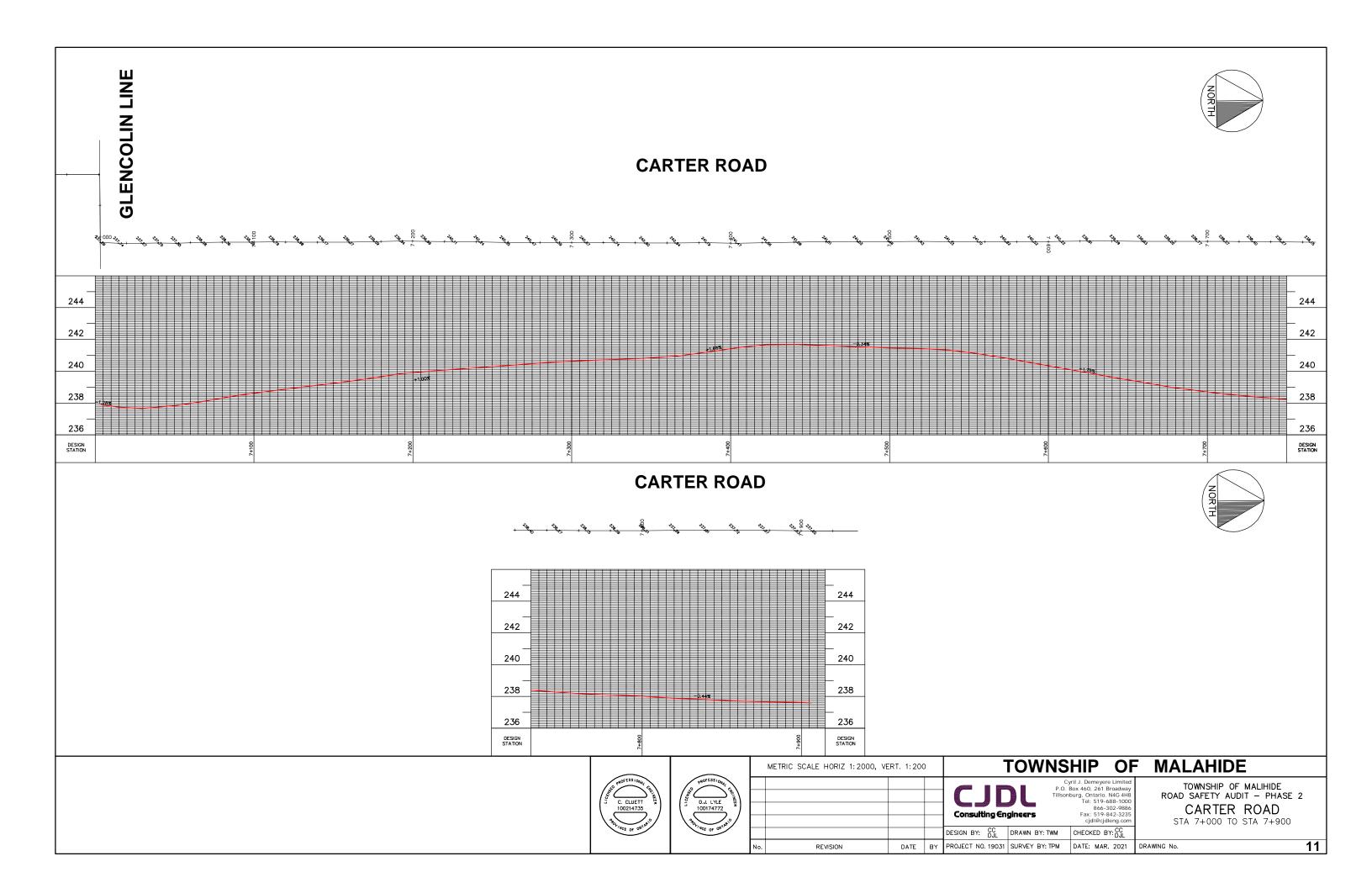
STA 2+920 TO STA 3+670

9

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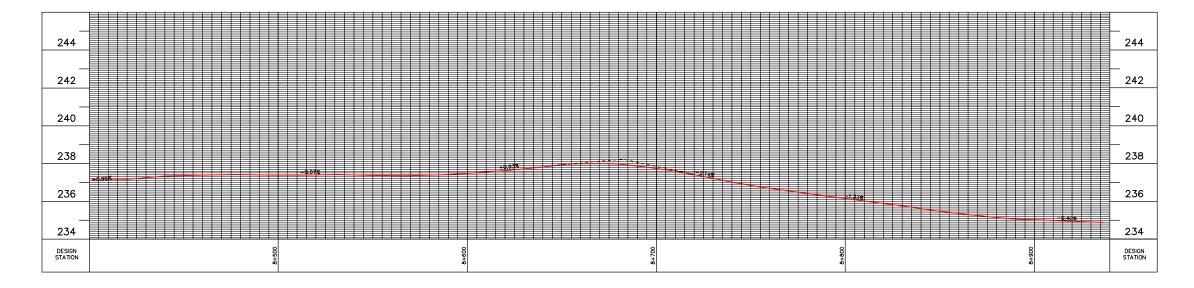
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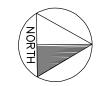


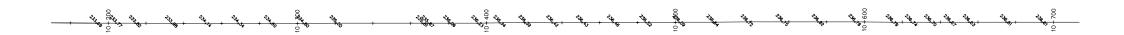
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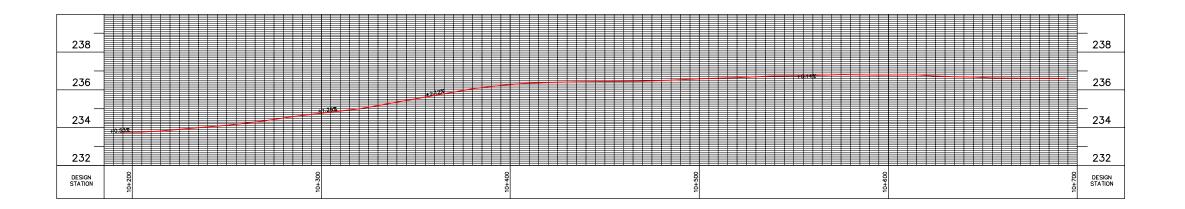
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TOWNSHIP OF MALIHIDE ROAD SAFETY AUDIT - PHASE 2

CARTER ROAD STA 10+200 TO STA 10+700

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13

<u>Catherina Street</u> <u>West End to Hacienda Road</u>

• Criteria Review Sheet

Road Name: Catherina Street	Study Section: West End to Hacienda Road
Direction of Travel: North to South/East to West	Total Distance Analysed: 0.13 km
Posted Speed: 50km/h	AADT: 50 (Year: 2015)
Right-of-Way Width: 20m (66')	Date of Site Inspection: 4 3,2020

Crit	Criteria	Design Recommendations	ions	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment:	3.5m x 2 = 7.0m 1.0m wide 5.46m± to PL 2% 4-6% Crown Centered	7. 2. J. 5. 5. 7. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5.	
	Surface Treatment	- Comment on surface treatment		S. ctore treatment Of	
	Drainage	- Roadside swales? - Municipal Drains: N/A		Deginage to CBs. OK.	/8*
	Vertical Alignment	- Maximum road segment grades: -Vertical curve 'K' value	8-12%	, , >/0	
Alignment	Horizontal Alignment	 Minimum design radius: Maximum super elevation: (TAC, 1999) 	100 to 80m 4-8%	No	
)	Passing Sight Distance	- Min passing sight distance (AASHTO):	160-350m	N/4	
	Decision Sight Distance	- Min decision sight distance:	75-145m	NA	
Intersections	List of intersections within project limits	Louisa Crescent / Hacienda Road - Intersection control: - Stopping sight distance:	60-110m	Stop sign. Sight lives, stopping distance OK.	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (excluding cut or fill slopes)	3m 0.5m if curb present)	OK	
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?		Wint	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?		NA	
Visual Aids		- Line painting: - Signage?		No how on road.	



<u>Catherine Street</u> <u>Pressey Line to Ron McNeil Line</u>

• Criteria Review Sheet

Road Name: Catherine Street	Study Section: Pressey Line to Ron McNeil Line
Direction of Travel: North to South	Total Distance Analysed: 0.14 km
Posted Speed: 50km/h	AADT: 50 (Year: 2015)
Right-of-Way Width: 20m (66′)	Date of Site Inspection: Apr. 7 23, 202 O

Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: - Cross-Secti	6.2m No shestoter	
	Surface Treatment Drainage	L	Surface Treston	
	Vertical Alignment	- Maximum road segment grades: 8-12% -Vertical curve 'K' value		
Alignment	Horizontal Alignment	- Minimum design radius: 100 to 80m - Maximum super elevation: 4-8% (TAC, 1999)	NA	
)	Passing Sight Distance	- Min passing sight distance (AASHTO): 160-350m	OK	
	Decision Sight Distance	- Min decision sight distance: 75-145m	7/0	
n torcortions	List of intersections within project limits	Catherine Street / Pressey Line - Intersection control: - Stopping sight distance: 60-110m		
200000000000000000000000000000000000000	List of intersections within project limits	Catherine Street / Ron McNeil Line - Intersection control: - Stopping sight distance: 60-110m	Stop sign, sight lives, stopping distunce	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: 3m (excluding cut or fill slopes) (0.5m if curb present)	OK	
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	4/14	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	WIR	
Visual Aids		- Line painting: - Signage?	No how parated.	



<u>Caverly Road</u> <u>Brook Line to South End</u>

• Criteria Review Sheet

Road Name: Caverly Road	Study Section: Brook Line to South End
Direction of Travel: North to South	Total Distance Analysed: 0.24 km
Posted Speed: 50km/h	AADT: 100 (Year: 2015)
Right-of-Way Width: 20m (66′)	Date of Site Inspection: Apr. 73, 2020

Crit	Criteria	Design Recommendations	ions	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment:	3.5m x 2 = 7.0m 1.0m wide 5.46m± to PL 2% 4-6% Crown Centered	5:1 to 5:7 No shawlder OK	lane Wolth
	Surface Treatment Drainage	- Comment on surface treatment - Roadside swales? - Municipal Drains: Lower Catfish 2		Sorbee Toutont OK Dozinize OK	
	Vertical Alignment	- Maximum road segment grades: -Vertical curve 'K' value - Minimum design radius:	8-12% 100 to 80m	70	
Alignment	Horizontal Alignment Passing Sight Distance	- Maximum super elevation: (TAC, 1999) - Min passing sight distance (AASHTO):	4-8% 160-350m	N/7+	
	Decision Sight Distance	- Min decision sight distance:	75-145m	0%	
Intersections	List of intersections within project limits	Caverly Road / Brook Line - Intersection control: - Stopping sight distance:	60-110m	Through St. Sight lives, shopping distance OK.	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (excluding cut or fill slopes) - Slope?	3m (0.5m if curb present)	OK.	
Physical Objects	Embankments	- Height? - Protection required? Limits? - Culvare?		DIK	
	Structures (Bridges, Culverts, etc.)	- Culverts: - Bridges?		Colomb OK	
Visual Aids		- Line painting: - Signage?		No ine, speed limit posted.	



<u>Chalet Line</u> <u>Hacienda Road to East Cul-de-sac</u>

- Criteria Review Sheets
- Embankment Protection Warrant Guide
- Site Photographs
- Centreline Profile Drawings (14-18)

Road Name: Chalet Line	let Line		Study Section: Hacienda Road to Springfield Road	
Direction of Travel: East to West	vel: East to West		Total Distance Analysed: 2.06 km	
Posted Speed: N	Posted Speed: N/A Gravel/Surface Treatment; Assume 60km/h	tment; Assume 60km/h	AADT: 136 (Year: 2015)	
Right-of-Way Width: 20m (66')	'idth: 20m (66')		Date of Site Inspection: Apr.' ス、スの20	
Git	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: - Crown Centered	40 - 1.0 m	
	Surface Treatment Drainage	- Comment on surface treatment - Roadside swales? - Municipal Drains: S. Ryan Drain	Gravel. OK. Drainuage OK.	
	Vertical Alignment	ades: 6		
Alignment	Horizontal Alignment Passing Sight Distance	- Maximum super elevation: 4-8% (TAC, 1999) - Min passing sight distance (AASHTO): 200-410m	N/A	
	Decision Sight Distance	- Min decision sight distance: 95-175m	0/4	
Intersections	List of intersections within project limits	Chalet Line / Hacienda Road - Intersection control: - Stopping sight distance: Chalet Line / Springfield Road	Stop sign. Le Waring sign.	
	within project limits	- Intersection control: - Stopping sight distance: 75-130m	sight was, stopping ditance OK.	
Dhysical Objects	Clear Zone (Poles, Trees, etc.) Emhankments	- Necontinended clear 20ne: - Neconding cut or fill slopes) - Slope? - Hainh?	0K	
	Structures (Bridges, Culverts, etc.)	- Protection required? Limits? - Culverts? - Bridges?	WA Colourt OK	
7 T V V		- Line painting: - Signage?	114.	



N/4.

Visual Aids

Road Name: <i>Chalet Line</i>	Study Section: Springfield Road to Walker Road
Direction of Travel: East to West	Total Distance Analysed: 2.06 km
Posted Speed: N/A Gravel; Assume 60km/h	AADT: 66 (Year: 2015)
Right-of-Way Width: 20m (66')	Date of Site Inspection: Apr. 12, 2020

Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Typ. cross-fal	4.0m	
	Surface Treatment Drainage	- Comment on surface treatment - Roadside swales? - Municipal Drains: S. Ryan Drain, Learn Drain	Grave 1 OK Drainage OK	
	Vertical Alignment	- Maximum design radius: 6-12% -Vertical curve 'K' value - Minimum design radius: 150 to 120m		
Alignment	Horizontal Alignment	n: 	N/A	
	Passing Sight Distance Decision Sight Distance		0K 0K	
ntercections	List of intersections within project limits	Chalet Line / Springfield Road - Intersection control: - Stopping sight distance: 75-130m	Stap sign.	
	List of intersections within project limits	Chalet Line / Walker Road - Intersection control: - Stopping sight distance: 75-130m	Though St. 1 Stopping distance Mr.	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: 3m (excluding cut or fill slopes) (0.5m if curb present)	OK	- L
Physical Objects	Embankments	- Jupre: - Height? - Protection required? Limits?	NCA	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	Colourts OK.	
Visual Aids		- Line painting: - Signage?	N/A.	



Road Name: <i>Chalet Line</i>	Study Section: Walker Road to Anger Road
Direction of Travel: East to West	Total Distance Analysed: 0.83 km
Posted Speed: N/A Gravel; Assume 60km/h	AADT: 127 (Year: 2015)
Right-of-Way Width: 20m (66')	Date of Site Inspection: 4pril 2, 2020

Crit	Criteria	Design Recommendations	S	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: 3.5m - Shoulder(s): - Boulevard(s): 5 Typ. cross-fall (lanes): - Max shoulder crossfall: Cross-Section CL alignment: Crow	3.5m x 2 = 7.0m 1.0m wide 5.46m± to PL 2% 4-6% Crown Centered	7.0 m	
	Surface Treatment Drainage	- Comment on surface treatment - Roadside swales? - Municipal Drains: Johnson Drain		Grant. OK. Drivuge OK.	
	Vertical Alignment	ades:	6-12% 150 to 120m	ok '	
Alignment	Horizontal Alignment Passing Sight Distance	on: ce (AASHTO):	4-8% 200-410m	N/A OK	
	Decision Sight Distance	- Min decision sight distance:	95-175m	OK	
Intercentions	List of intersections within project limits	Chalet Line / Walker Road - Intersection control: - Stopping sight distance:	75-130m	Through St. Stance, sight has OK.	
	List of intersections within project limits	Chalet Line / Anger Road - Intersection control: - Stopping sight distance:	75-130m	Though steet, stopping distance, explit hows	
	Clear Zone (Poles, Trees, etc.)	mended clear zone: ng cut or fill slopes)	3m (0.5m if curb present)	OK	
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?		U/A	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?		N/A	
Visual Aids		- Line painting: - Signage?		MIM	



Road Name: Chalet Line	Study Section: Anger Road to Carter Road
Direction of Travel: East to West	Total Distance Analysed: 1.30 km
Posted Speed: N/A Gravel; Assume 60km/h	AADT: 175 (Year: 2015)
Right-of-Way Width: 20m (66')	Date of Site Inspection: チャパクスの

Crit	Criteria	Design Recommendations	ns	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: 3.5s - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: Crox	3.5m x 2 = 7.0m 1.0m wide 5.46m± to PL 2% 4-6% Crown Centered	6.5 to 4.0m 0 to 6.0m 0K	w,oth shov/der
	Surface Treatment	- Comment on surface treatment		Gave OK	
	Drainage	- Roadside swales? - Municipal Drains: N/A		Diainuge OK	
	Vertical Alignment	- Maximum road segment grades: -Vertical curve 'K' value	6-12%	Kust 10 @ St. 57200	1 Kinst tail.
Alignment	Horizontal Alignment	- Minimum design radius: - Maximum super elevation: (TAC, 1999)	150 to 120m 4-8%	Radius = 180m OK.	
)	Passing Sight Distance	- Min passing sight distance (AASHTO):	200-410m	OK	
	Decision Sight Distance	- Min decision sight distance:	95-175m	δK	
1	List of intersections within project limits	Chalet Line / Anger Road - Intersection control: - Stopping sight distance:	75-130m	Through St. Sight lives, stopping distance OK. ("tersether aloud size for boxingontal con	je Sk.
intersections	List of intersections within project limits	Chalet Line / Carter Road - Intersection control: - Stopping sight distance:	75-130m	Stop sign. Stopping distance, sight lines OK.	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (0.5m if c	3m 0.5m if curb present)		HP @ Hum. No
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?		Bond west of carbor Road. No sharlkes, vertical 0.3m. olsop than 2. Fan betar pond colga . on north side of d.	Rond edge within class.
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?		90	
Visual Aids		- Line painting: - Signage?		Fabra hazard s.yn on HPB 52220.	taded hazard sign on HP.
			\$ 2	South side of road not a contern.	



Road Name: Chalet Line	Study Section: Carter Road to East Culdesac
Direction of Travel: East to West	Total Distance Analysed: 1.56 km
Posted Speed: N/A Surface Treatment; Assume 80km/h	AADT: 72 (Year: 2015)
Right-of-Way Width: 20m (66')	Date of Site Inspection: April 2, 2020

Crit	Criteria	Design Recommendations	St	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: 3.6n - Shoulder(s): 6 - Boulevard(s): 5 - Typ. cross-fall (lanes): 5 - Max shoulder crossfall: 6row	3.6 m v v = 7.2 m (-O m wide 5.46 m ± to PL 2% 4-6% Crown Centered	6,5m 1 to 1.5m 0k	Wolf
	Surface Treatment Drainage	- Comment on surface treatment - Roadside swales? - Municipal Drains: N/A		Souther Trentumt OK. Gravel Coldssac.	
	Vertical Alignment	- Maximum road segment grades: -Vertical curve 'K' value	%8-9	KOREST < 24 @ 54 6+400, 7+000,	Krest fail x2
Alignment	Horizontal Alignment	- Minimum design radius: - Maximum super elevation: (TAC, 1999)	280 to 230m 4-8%	R=73m west of coldesae.	Redrus
0	Passing Sight Distance	- Min passing sight distance (AASHTO):	275-550m	0K	
	Decision Sight Distance	- Min decision sight distance:	155-230m	бК	
Intersections	List of intersections within project limits	Chalet Line / Carter Road - Intersection control: - Stopping sight distance:	-210m	Story sign. Thure, sight lives OK	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (MTO,1943) (excluding cut or fill slopes) (MTO,2020)	1913) 4m 2020) 3.5m	(MTO, 1020) 3.5m (Hydropoles in Cleux Born.	@ Hum. No SZZZZ.
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?		Enbankment warrant goods. Failed.	Protection reported
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?		70	
		- Line painting: - Signage?		Solod Live	
Visual Aids				The exit " sign.	



Chapter 2 Policy, Warrants, Guidelines Section 2.5 Embankments

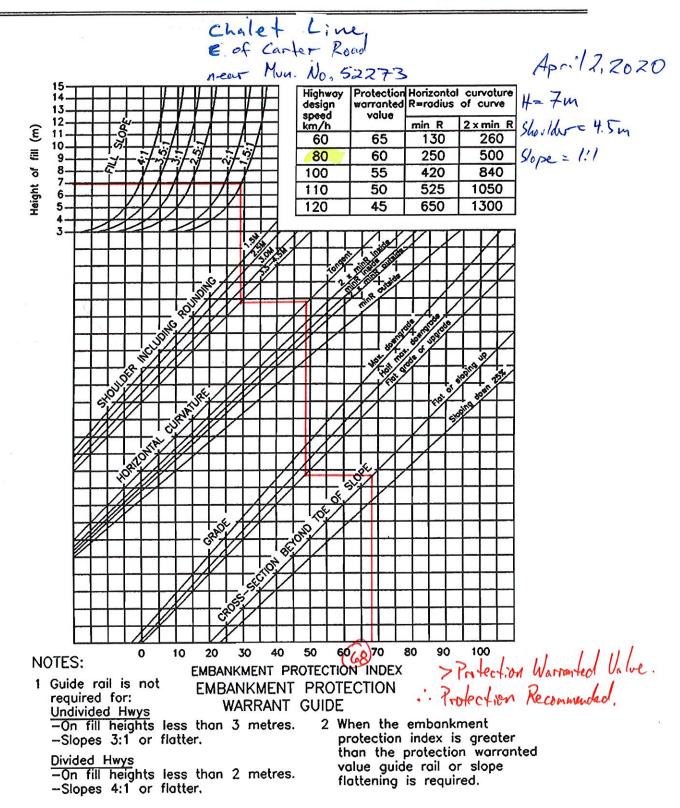
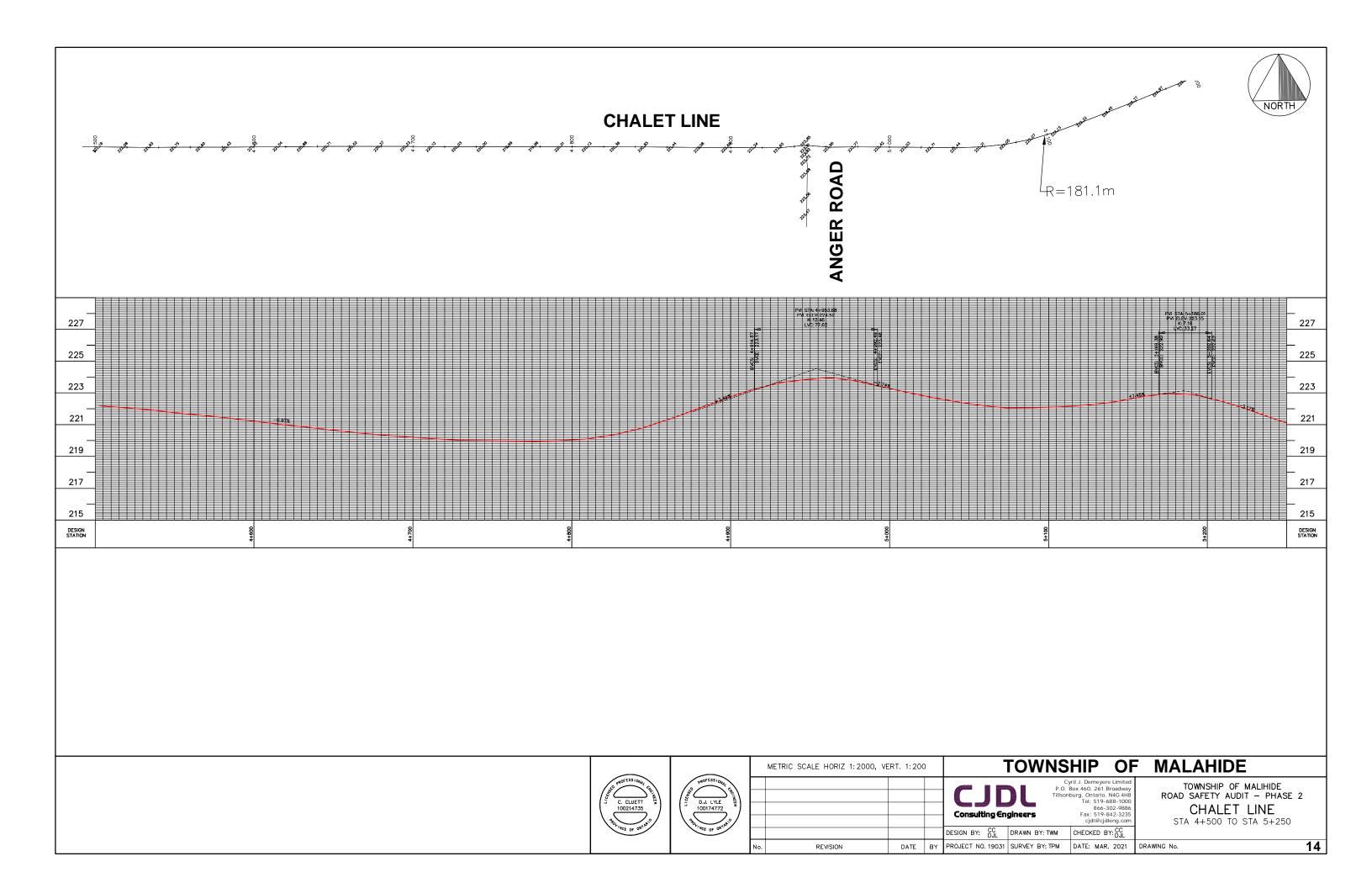


FIGURE 2.5.1 Embankment Warrant Guide



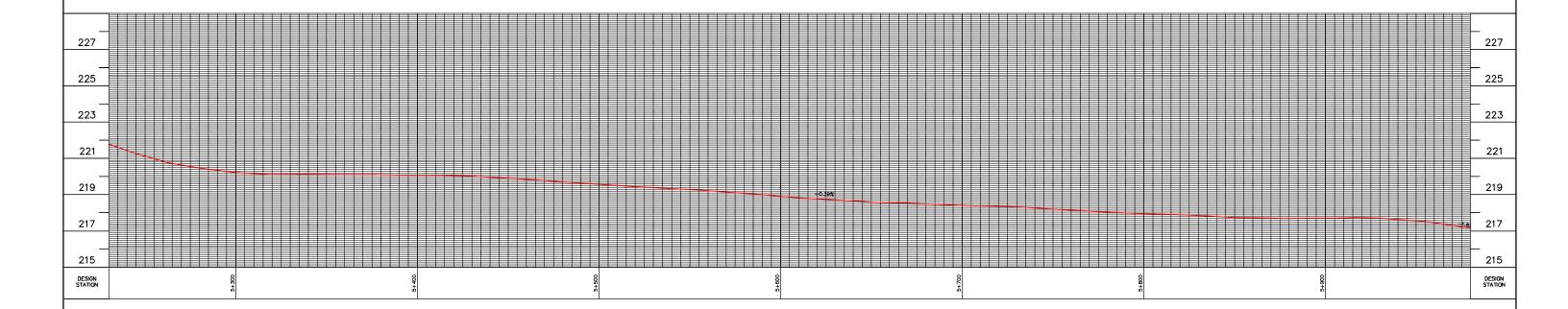
Chalet Line – faded hazard sign and hydro pole in clear zone at Mun No 52220.





CHALET LINE





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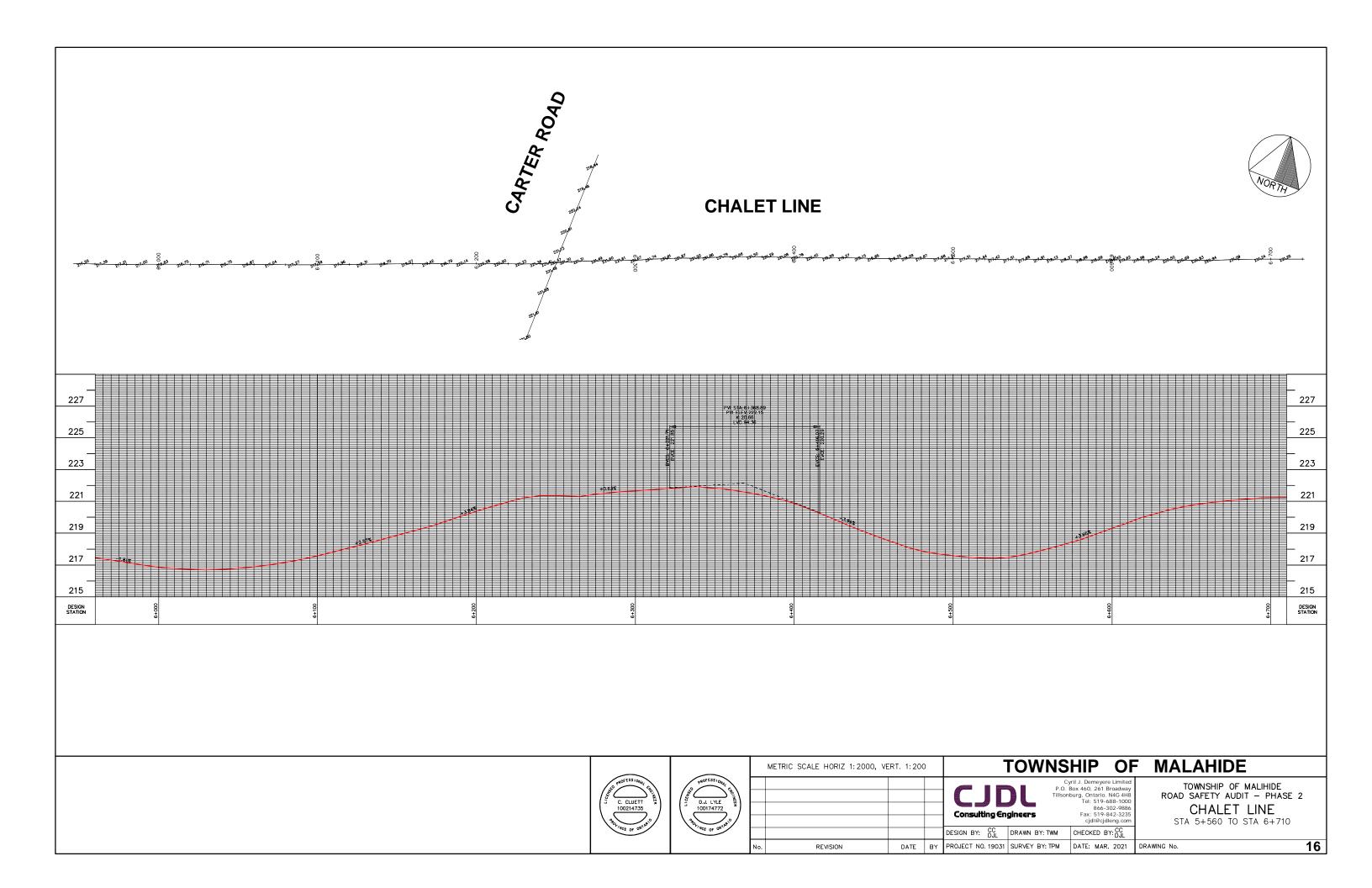


METRIC SCALE HORIZ 1:2000, VERT. 1:200	TOWNSHIP OF	MALAHIDE
	Cyril J. Demeyere Limited P.O. Box 460, 261 Broadway Tillsonburg, Ontario. N4G 4H8 Tel: 519-688-1000 866-302-9886 Fax: 519-842-3235 cjdl@cjdleng.com	TOWNSHIP OF MA ROAD SAFETY AUDIT - CHALET L STA 5+230 TO STA
	DESIGN BY: CC DRAWN BY: TWM CHECKED BY: CC	

TOWNSHIP OF MALIHIDE ROAD SAFETY AUDIT - PHASE 2 CHALET LINE

STA 5+230 TO STA 5+980

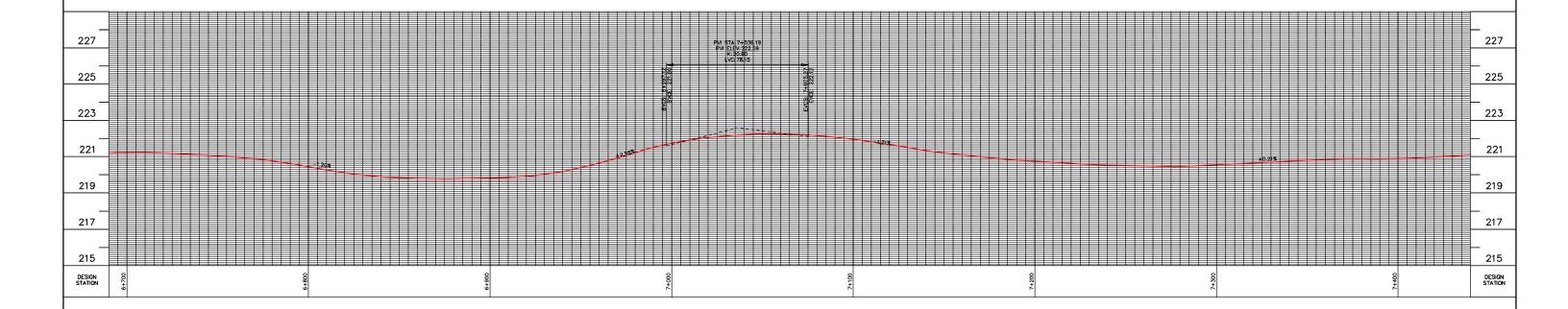
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CHALET LINE





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METRIC SCALE HORIZ 1:2000, VERT. 1:200	TOWNSHIP OF	MALAHIDE
	Cyril J. Demeyere Limited P.O. Box 460, 261 Broadway Tillsonburg, Ontario. N4G 4H8 Tel: 519-688-1000 866-302-9886 Fax: 519-842-3235 cjdl@cjdleng.com	TOWNSHIP OF MA ROAD SAFETY AUDIT : CHALET L STA 6+690 TO STA
	DESIGN BY: CC DRAWN BY: TWM CHECKED BY: CC	

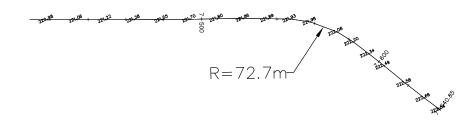
REVISION

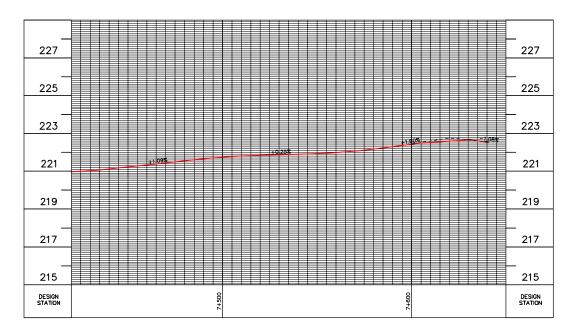
TOWNSHIP OF MALIHIDE ROAD SAFETY AUDIT - PHASE 2 CHALET LINE

STA 6+690 TO STA 7+440



CHALET LINE









METRIC SCALE HORIZ 1: 2000, VERT. 1: 200 TOWNSHIP OF MALAHIDE Cyril J. Demeyere Limited P.O. Box 460, 261 Broadway Tillsonburg, Ontario. N46 4HB Tel: 519-688-1000 866-302-986 Fax: 519-688-1000 Box 519-882-3235 cjdl@cjdleng.com DESIGN BY: CD DRAWN BY: TWM CHECKED BY: CD DRAWN BY: CD DRAWN BY: TWM CHECKED BY: CD DRAWN BY: TWM CHECKED BY: CD DRAWN BY: CD DRAWN BY: TWM CHECKED BY: CD DRAWN BY: TWM CHECKED BY: CD DRAWN BY: CD DRAWN BY: CD DRAWN BY: CD DRAWN BY: TWM CHECKED BY: CD DRAWN BY: CD DRAWN BY: CD DRAWN BY: CD DRAWN BY: TWM CHECKED BY: CD DRAWN BY: CD D									
P.O. Box 460, 261 Broadway Tillsonburg, Ontario. N4G 4H8 Tel: 519-688-1000 866-302-9886 Fax: 519-842-3235 cjdl@cjdleng.com	MALAHIDE	HIP OF	TOWNS	-)	ERT. 1: 200	E HORIZ 1:2000, VI	METRIC SCALE H	
DESIGN BY: CC DRAWN BY: TWM CHECKED BY: CC CHECKED BY: CC DRAWN BY: TWM	road safety audit CHALET L	80x 460, 261 Broadway burg, Ontario. N4G 4H8 Tel: 519-688-1000 866-302-9886 Fax: 519-842-3235 cjdl@cjdleng.com	P.O. E Tillsoni	Consulting En					_
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REVISION

TOWNSHIP OF MALIHIDE ROAD SAFETY AUDIT - PHASE 2 CHALET LINE

STA 7+420 TO STA 7+650

<u>Church Street</u> <u>Springwater Road to Norton Street</u>

• Criteria Review Sheet

Criteria Review 2.0



Visual Aids

<u>College Line</u> <u>Springwater Road to Springer Hill Road</u>

- Criteria Review Sheets
- Centreline Profile Drawings (19-23)

Road Name: College Line	Study Section: Springwater Road to Dorchester Road
Direction of Travel: East to West	Total Distance Analysed: 0.62 km
Posted Speed: 80km/h	AADT: 387 (Year: 2018)
Right-of-Way Width: 20m (66′)	Date of Site Inspection: April 6,202 O

Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: 3.6m x ? = 7.2m - Shoulder(s): 5.46m± to PL - Typ. cross-fall (lanes): 2% - Max shoulder crossfall: 4-6% - Cross-Section CL alignment: Crown Centered	7-0 m 2-0 m 0 k 0 k	w, th
	Surface Treatment	- Comment on surface treatment	Sorbice Teathern to OK	
	Drainage	- Roadside swales? - Municipal Drains: Hartemink Drain	Dainuy OK.	
	Vertical Alignment	- Maximum road segment grades: 6-8% -Vertical curve 'K' value	YO YO	ì
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	NA	
0	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m	90	
	Decision Sight Distance	- Min decision sight distance: 155-230m	OK	
1	List of intersections within project limits	College Line / Springwater Road - Intersection control: - Stopping sight distance: 155-210m	Stop sign. 6+ sign. 5:500 as distance OK	
ווופו אפרנוסווא	List of intersections within project limits	College Line / Dorchester Road - Intersection control: - Stopping sight distance:	Through state + 1 Stopp my do the sixth thes, OK.	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (MTO, 1943) 4m (excluding cut or fill slopes) (MTO, 2020) 3.5m		
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	11/14	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	. Clourt OK	
Visual Aids		- Line painting: - Signage?	Solid live.	



Road Name: College Line	Study Section: Dorchester Road to Rogers Road
Direction of Travel: East to West	Total Distance Analysed: 0.62 km
Posted Speed: 80km/h	AADT: 387 (Year: 2018)
Right-of-Way Width: 20m (66′)	Date of Site Inspection: April 6,2020

Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Typ. ax shoulder crossfall: - Cross-Section CL alignment: - Cross-Section are widths: - Cross-section Crown Centered	7.2m &-8 wide (-5 to PL 2% %/k tered 0/K	Wilder Shavider
	Surface Treatment Drainage	- Comment on surface treatment - Roadside swales? - Municipal Drains: Catfish Creek	Do La Fortunt OR.	
A limmont	Vertical Alignment Horizontal Alignment	- Maximum road segment grades: 6-8% -Vertical curve 'K' value - Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	6-8% Ok 1 230m N/A	
	Passing Sight Distance Decision Sight Distance	- Min passing sight distance (AASHTO): 275-550m - Min decision sight distance: 155-230m	20	
Intersections	List of intersections within project limits List of intersections within project limits	College Line / Dorchester Road - Intersection control: - Stopping sight distance: College Line / Rogers Road - Intersection control: - Stopping sight distance:	Though St. Sight lives & stoping Though St. Sight lives & stopping Though St. Sight lives & stopping of the st	
Physical Objects	Clear Zone (Poles, Trees, etc.) Embankments Structures (Birdges, Culverts, etc.)	ne: (MTO, N43) ss) (MTO, 2020) 3 nits?	3	
Visual Aids		- Line painting: - Signage?	sold yellow line.	



Road Name: College Line	Study Section: Rogers Road to Imperial Road
Direction of Travel: East to West	Total Distance Analysed: 2.05 km
Posted Speed: 80km/h	AADT: 501 (Year: 2018)
Right-of-Way Width: 20m (66')	Date of Site Inspection: 4500 6,2020

Crit	Criteria	Design Recommendations	8	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: 3.6m - Shoulder(s): 5.4 - Boulevard(s): 5.4 - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: Crow	3.6m x 2 = 7.2m 2. C m wide 5.46m± to PL 2% 4-6% Crown Centered	6.7 1.3 0k 0k	es, eth
	Surface Treatment Drainage	- Comment on surface treatment - Roadside swales? - Municipal Drains: N/A		Sortare Treatment OK.	
A liram on t	Vertical Alignment Horizontal Alignment	- Maximum road segment grades: -Vertical curve 'K' value - Minimum design radius: - Maximum super elevation: (TAC, 1999)	6-8% 280 to 230m 4-8%	0K ' NA	
	Passing Sight Distance Decision Sight Distance	- Min passing sight distance (AASHTO): - Min decision sight distance:	275-550m 155-230m	0K	
Intersections	List of intersections within project limits List of intersections within project limits	College Line / Rogers Road - Intersection control: - Stopping sight distance: College Line / Imperial Road - Intersection control:	155-210m	Through short, sight lives & stopping distance OK. Stop sign! Sight lives, stopping distance	
Physical Objects	Clear Zone (Poles, Trees, etc.) Embankments Structures	ne: !ss) mits?	(MTO,1445) 4m (MTO,2020) 3.5m	0K N/4 1/14	
Visual Aids	(Dinges, Curells, etc.)	- Line painting: - Signage?		Solid yellow live.	



Road Name: College Line	lege Line		Study Section: Imperial Road to Hacienda Road	
Direction of Travel: East to West	vel: East to West		Total Distance Analysed: 2.07 km	
Posted Speed: ₹	Posted Speed: 80km/h- 60 km/h	7.	AADT: 795 (Year: 2018)	
Right-of-Way Width: 20m (66')			Date of Site Inspection: April 6, 2020	
Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
		- Cross-section lane widths: 3.5 x 2= 7.2m - Shoulder(s): [.gim wide	かん	
	Geometry			
Cross-section		- Cross-Section CL alignment: Crown Centered	OK	
	Surface Treatment	- Comment on surface treatment	So the Treatment OK.	
	Drainage	- Roadside swales? - Municipal Drains: Laidlaw Drain	Dainuge Of.	
	Vertical Alignment	- Maximum road segment grades: 6-8% -Vertical curve 'K' value	Kersh 274 @ Sh. 57500.	Kerst fail.
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	4/V	
0	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m	7/0	
	Decision Sight Distance	- Min decision sight distance: 155-230m	, >10	
	List of intersections within project limits	College Line / Imperial Road - Intersection control: - Stopping sight distance: 155-210m	Stop sign. Stop sign about. Stopping distance OK.	
Intersections	List of intersections within project limits	College Line / Hacienda Road - Intersection control: - Stopping sight distance:	pre gots	

	Gers
	G. G
	Ilting
L	Jouse

60 benth Posted speed,

NA

NO

- Slope? - Height? - Protection required? Limits?

Physical Objects | Embankments

Line painting:Signage?

Visual Aids

- Culverts? - Bridges?

Structures (Bridges, Culverts, etc.)

(MTD, 1993) 4m (MTD, 2028) 5m

- Recommended clear zone: (excluding cut or fill slopes) - Stopping sight distance:

Clear Zone (Poles, Trees, etc.)

Road Name: College Line	de Line		Study Section: Hacienda Road to Springfield Road	
Direction of Travel: East to West	rel: East to West		Total Distance Analysed: 2.02 km	
Posted Speed: 30km/h	OKM/h GO KM	Commont salety 2 and	AADT: 657 (Year: 2018)	
Right-of-Way Width: 20m (66')	dth: 20m (66')		Date of Site Inspection: Asr' 6,2020	
Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: - Cross-Secti	6.8m 2.0m 04 04	Wroth
	Surface Treatment	- Comment on surface treatment	Surfice Trasment OK	
	Drainage	- Roadside swales? - Municipal Drains: N/A	Dainage OK.	
	Vertical Alignment	- Maximum road segment grades: 6-8% -Vertical curve 'K' value	614	
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	NA	
0	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m	6K	
	Decision Sight Distance	- Min decision sight distance: 155-230m	OK	
	List of intersections within project limits	College Line / Hacienda Road - Intersection control: - Stopping sight distance: 155-210m	Stop sign. Sight thos; shopping dis	
Intersections	List of intersections within project limits	College Line / Springfield Road - Intersection control: - Stopping sight distance: 155-210m	Stop sign: Stop sign alread. 5. Jet "ves, extraoring distance OK.	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (MTO, 1015) 4m (excluding cut or fill slopes) (MTO, 2002) 35.	1 / f	
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	N/A	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	N/A	



- Line painting: - Signage?

Visual Aids

Road Name: College Line	Study Section: Springfield Road to Walker Road
Direction of Travel: East to West	Total Distance Analysed: 2.04 km
Posted Speed: Better/h 60 Lun 14	AADT: 512 (Year: 2018)
Right-of-Way Width: 20m (66')	Date of Site Inspection: April 6,2020

Crit	Criteria	Design Recommendations	ations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment:	7.2m (1.2m) = 7.2m (1.2m)	6.4m 1.8m 0/k	Width.
	Surface Treatment	- Comment on surface treatment		Shas der ravelling in wave.	Swoller and Low.
	Drainage	- Roadside swales? - Municipal Drains: Simpson Creek, Stirton Drain	rton Drain	Draining OK.	
	Vertical Alignment	- Maximum road segment grades: -Vertical curve 'K' value	%8-9	OK (
Alignment	Horizontal Alignment	- Minimum design radius: - Maximum super elevation: (TAC, 1999)	280 to 230m 4-8%	ULA	
0	Passing Sight Distance	- Min passing sight distance (AASHTO)	: 275-550m	OK	
	Decision Sight Distance	- Min decision sight distance:	155-230m	OK	
-	List of intersections within project limits	College Line / Springfield Road - Intersection control: - Stopping sight distance:	155-210m	stop signisized him, stopping distance CK.	
intersections	List of intersections within project limits	ס	Ċ	Through street sight has, shoping distance	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (excluding cut or fill slopes)	(MTO, 1943) 4m MTO, 2020) 3.5h	OK	
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?		20	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?		Colours @ Mun 514/1, No stoop short (4110>540pc)	
Visual Aids		- Line painting: - Signage?		Sold yellow live! horse chuggy sign. Pedo chrish sign - FADED	Feded pedestring Sign @ Mun. No. 51385
				Colourst @ spring high Read.	
Consulting Engineers	Sngineers			-tomoverse slopes lil to zil ditch	Page 21 of 75 Republication



Page 21 of 75 Rey was Protection

	Study Section: Walker Road to Carter Road
Direction of Travel: East to West	Total Distance Analysed: 2.07 km
Posted Speed: 284m/11 60 4 1/4 ADDT:	AADT: 489 (Year: 2018)
Right-of-Way Width: 20m (66')	Date of Site Inspection: 人人スロスロ

Crit	Criteria	Design Recommendations	SL	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: Crow	3.5m; x 2 = 7.2m 6 5.5m; x 2 = 7.2m 6 5.46m± to PL 2% 4-6% Crown Centered	6.7 m 1.1 m 0 k 0 k	W. eth Shoother
	Surface Treatment	ent		Shooted ravelling, novowing law with en	wore. The deep
	Drainage	- Roadside swales? - Municipal Drains: Catfish Creek		Daimage OK.	
	Vertical Alignment	- Maximum road segment grades: -Vertical curve 'K' value	%8-9	0 % 0	
Alignment	Horizontal Alignment	- Minimum design radius: - Maximum super elevation: (TAC, 1999)	280 to 230m 4-8%	NIA	
ò	Passing Sight Distance	- Min passing sight distance (AASHTO):	275-550m	7/0	
	Decision Sight Distance	- Min decision sight distance:	155-230m	0K	
nterceptions.	List of intersections within project limits	College Line / Walker Road - Intersection control: - Stopping sight distance:	155-210m	through Street. Sight lives, stopping	
ווופואפרווסווא	List of intersections within project limits	College Line / Carter Road - Intersection control: - Stopping sight distance:	155-210m	Though street. Sight live a stopping distance OK.	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (איניס) (איניס) (excluding cut or fill slopes)	(MTD, 2020) 3.5m	0K	
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?		U/A	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?		N/A	
		- Line painting: - Signage?		Solid yellow live.	
Visual Aids				School Zone.	

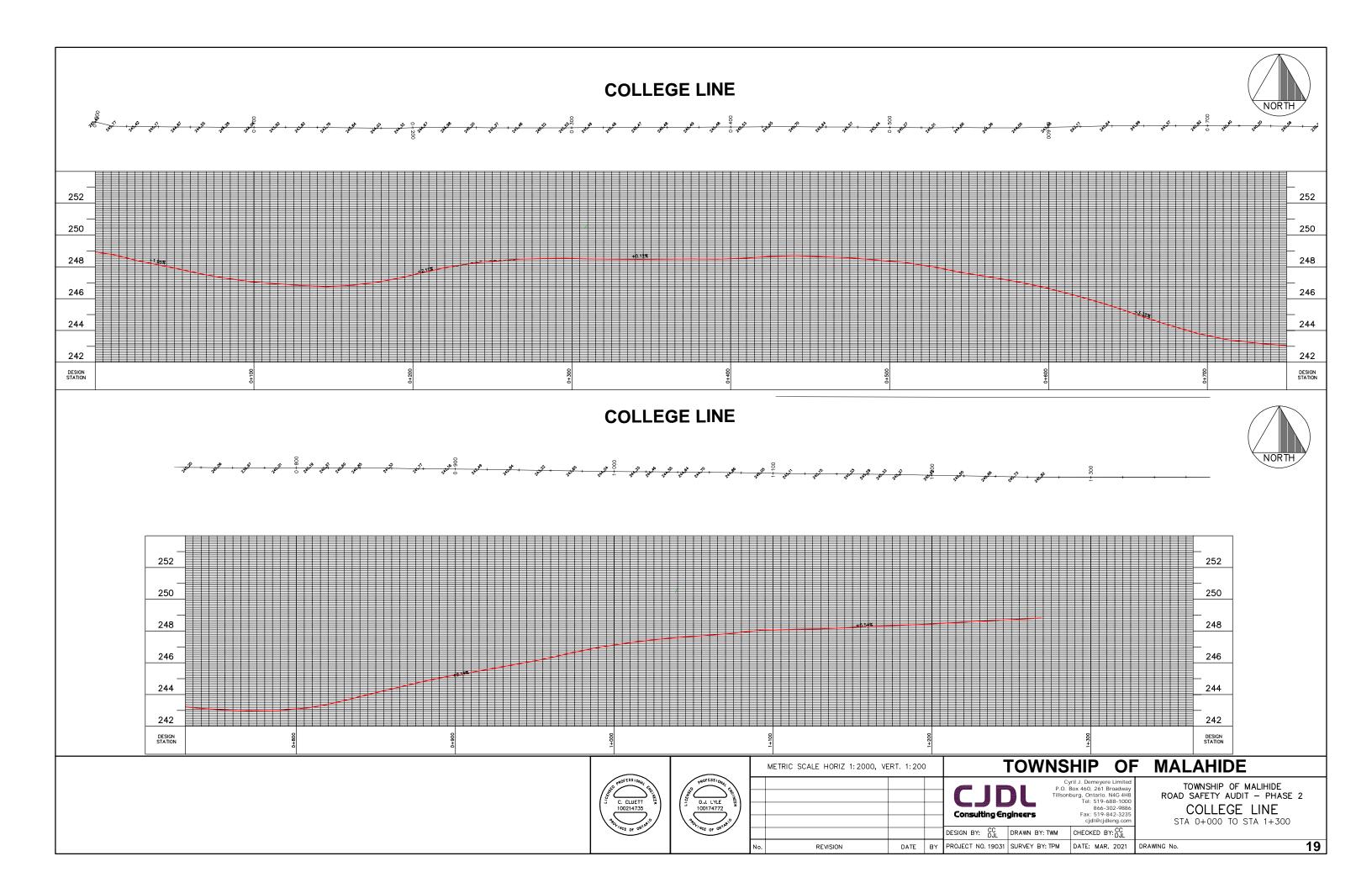
* Sharlow Pailure & pother @ 52464. Howlash with orange cone



Road Name: College Line	Study Section: Carter Road to Springer Hill Road
Direction of Travel: East to West	Total Distance Analysed: 2.00 km
Posted Speed: 80km/h COG L	AADT: 381 (Year: 2018)
Right-of-Way Width: 20m (66')	Date of Site Inspection: 人がい 6,2020

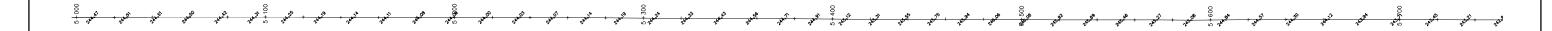
Crit	Criteria	Design Recommendations		Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: 75 n x 2 = 7.2m - Shoulder(s): 5.46m± to PL - Typ. cross-fall (lanes): 2% - Max shoulder crossfall: 4-6% - Cross-Section CL alignment: Crown Centered	7. S C C C C C C C C C C C C C C C C C C	
,	Surface Treatment Drainage	- Comment on surface treatment - Roadside swales? - Municipal Drains: N/A	Shoolder ravelling in wase.	Sho liter court from-
	Vertical Alignment	- Maximum road segment grades: 6-8% -Vertical curve 'K' value		Koest fail,
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	NIA	
0	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m	n OK	
	Decision Sight Distance	- Min decision sight distance: 155-230m	The same of the	
-	List of intersections within project limits	College Line / Carter Road - Intersection control: - Stopping sight distance: 155-210m	Through sheet sight lives, stapping distance	
Intersections	List of intersections within project limits	ll Road		
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (MD) M13) 4m (excluding cut or fill slopes) (MTD, 2020) 3.55.		
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	Embankuent O. K.W. OK.	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	1/14	
Visual Aids		- Line painting: - Signage?	Solid yellow live. R.W. crossing, R.W. working,	
			Signalled R.W. cortains	
			60 km/l posted sped.	

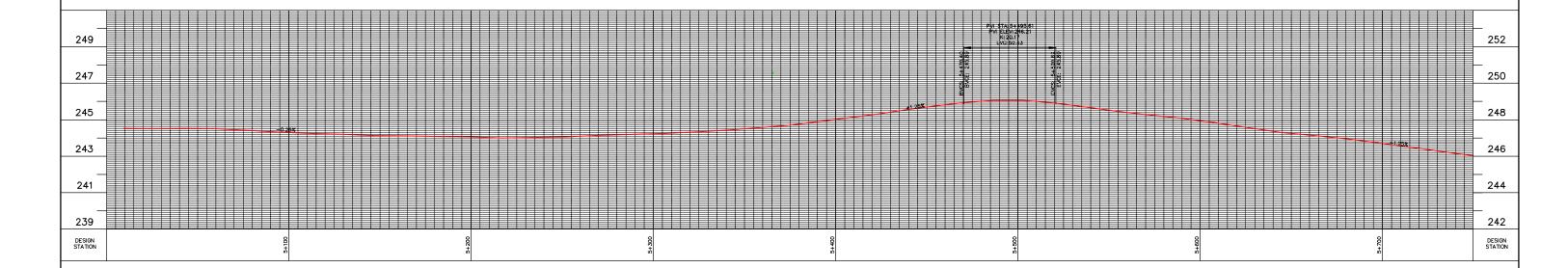






COLLEGE LINE







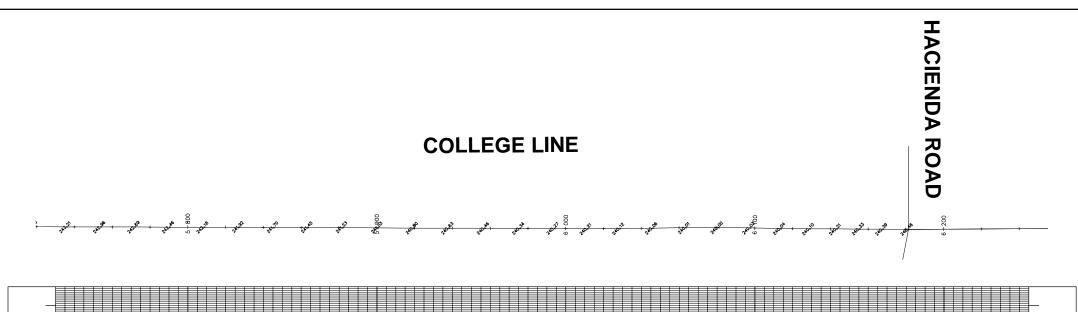


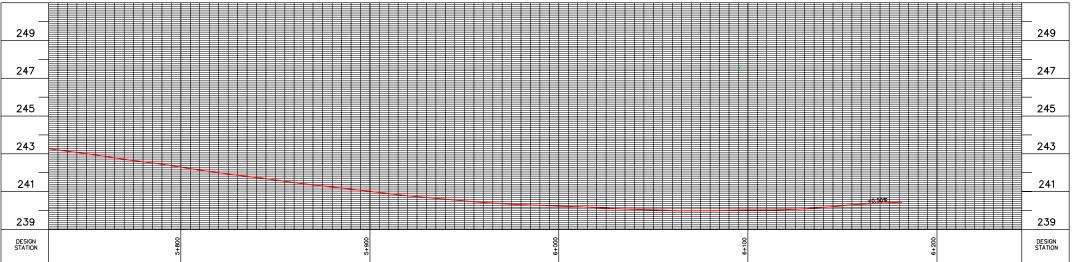
METRIC SCALE HORIZ 1:2000, VERT. 1:200	TOWNSHIP OF MALAHIDE
	Cyril J. Demeyere Limited P.O. Box 460, 261 Broadway Tillsonburg, Ontario. N4G 4H8 Tel: 519-688-1000 866-302-9886 Fax: 519-884-3235 cjdl@cjdleng.com TOWNSHIP OF MA ROAD SAFETY AUDIT COLLEGE L STA 5+000 TO STA
	DESIGN BY: CC DRAWN BY: TWM CHECKED BY: CC DJL

TOWNSHIP OF MALIHIDE ROAD SAFETY AUDIT - PHASE 2 COLLEGE LINE

STA 5+000 TO STA 5+750

20 DATE BY PROJECT NO. 19031 SURVEY BY: TPM DATE: MAR. 2021 DRAWING No.









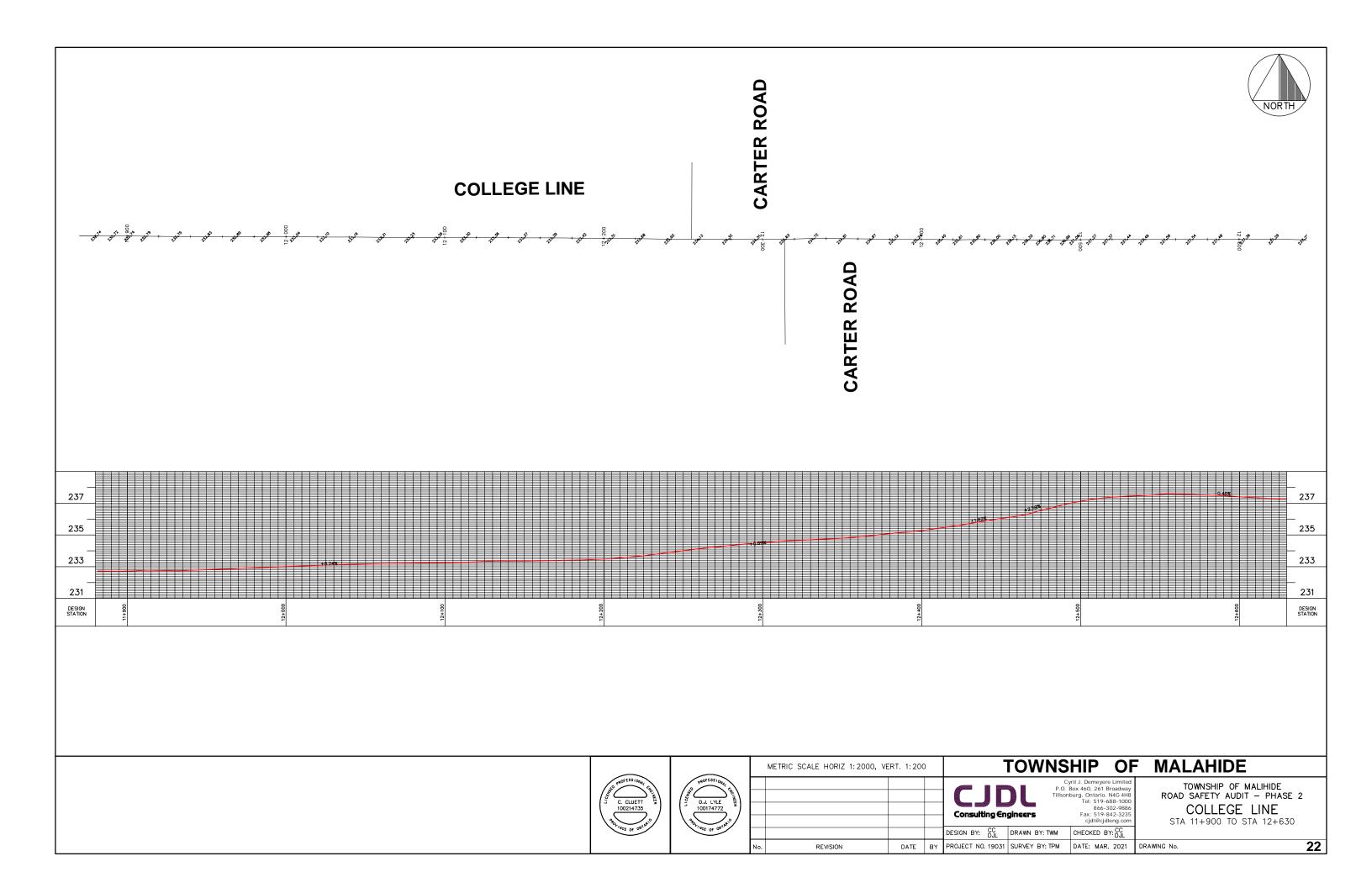
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		CJDL P.O. Box 460, Tillsonburg, On Tel: Consulting Engineers Fax:	meyere Limited 261 Broadway tario. N4G 4H8 519-688-1000 866-302-9886 519-842-3235 Il@cjdleng.com	TOWNSHIP OF MA ROAD SAFETY AUDIT - COLLEGE L STA 5+730 TO STA
		DESIGN BY: CC DRAWN BY: TWM CHECK	ED BY: CC	

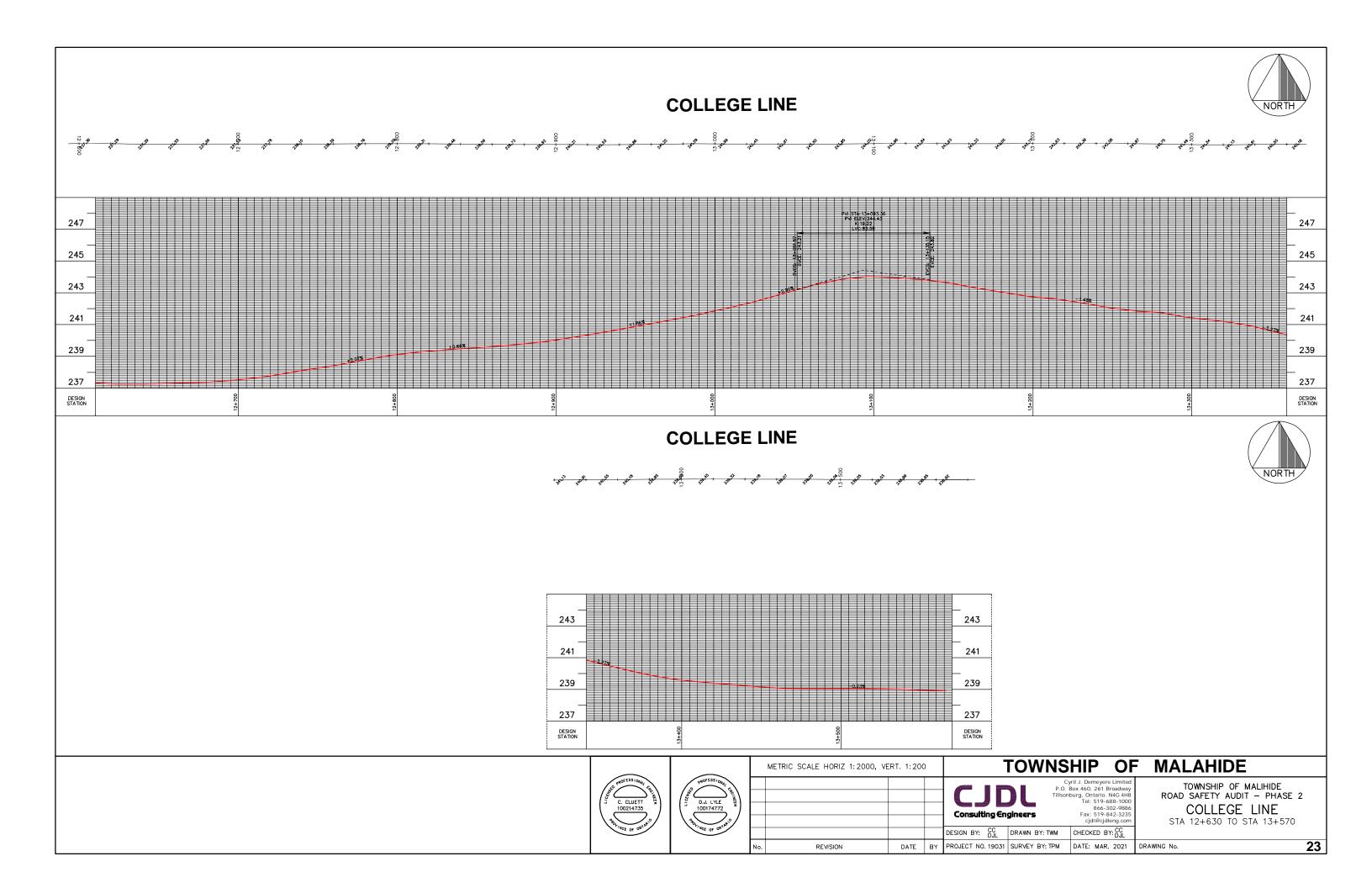
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TOWNSHIP OF MALIHIDE ROAD SAFETY AUDIT - PHASE 2 COLLEGE LINE STA 5+730 TO STA 6+200

21 DATE BY PROJECT NO. 19031 SURVEY BY: TPM DATE: MAR. 2021 DRAWING No.





<u>Conservation Line</u> <u>Springwater Road to Imperial Road</u>

- Criteria Review Sheets
- Embankment Protection Warrant Guide
- Centreline Profile Drawings (24-25)

Road Name: Conservation Line	servation Line		Study Section: Springwater Road to Rogers Road	
Direction of Travel: East to West	rel: East to West		Total Distance Analysed: 2.06 km	
Posted Speed: 50km/h	0km/h		AADT: 314 (Year: 2018)	
Right-of-Way Width: 20m (66')	dth: 20m (66')		Date of Site Inspection: 人。これ、 ススのスプ	
Criteria	eria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: 3.5m x 2 = 7.0m 7 Shoulder(s): 5.46m± to PL - Typ. cross-fall (lanes): 2% 0 K - Max shoulder crossfall: 4-6% 0 K - Cross-Section CL alignment: Crown Centered	7.3 1.5 0.K 0.K	
		•		

Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: - Cross-Section CL alignment: - Cross-section CL alignment: - Cross-section C	ide 7-3 2% 0K 5% 0K	
	Surface Treatment	- Comment on surface treatment - Roadside swales?	Surface Treatment OK	
	Drainage Vertical Alignment	- Municipal Drains: Lower Catfish 2 - Maximum road segment grades: 8-12% -Vertical curve 'K' value	Drawings OK.	
Alignment	Horizontal Alignment	- Minimum design radius: 100 to 80m - Maximum super elevation: 4-8% (TAC, 1999)	" W/A	
)	Passing Sight Distance	- Min passing sight distance (AASHTO): 160-350m	m 0K	
	Decision Sight Distance	- Min decision sight distance: 75-145m	m 0K	
1400000	List of intersections within project limits	Conservation Line / Springwater Road - Intersection control: - Stopping sight distance: 60-110m	x x x x x x x x x x x x x x x x x x x	
ווופוזפרנוסווז	List of intersections within project limits	Conservation Line / Rogers Road - Intersection control: - Stopping sight distance: 60-110m	Stop sign.	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: 3m (excluding cut or fill slopes) (0.5m if curb present)	am // Feat / Color / C	
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	Embankment Warrant Gride OK. X2.	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	01%	
Visual Aids		- Line painting: - Signage?	share the road (Goding) solid yellow line.	



Chapter 2 Policy, Warrants, Guidelines Section 2.5 Embankments

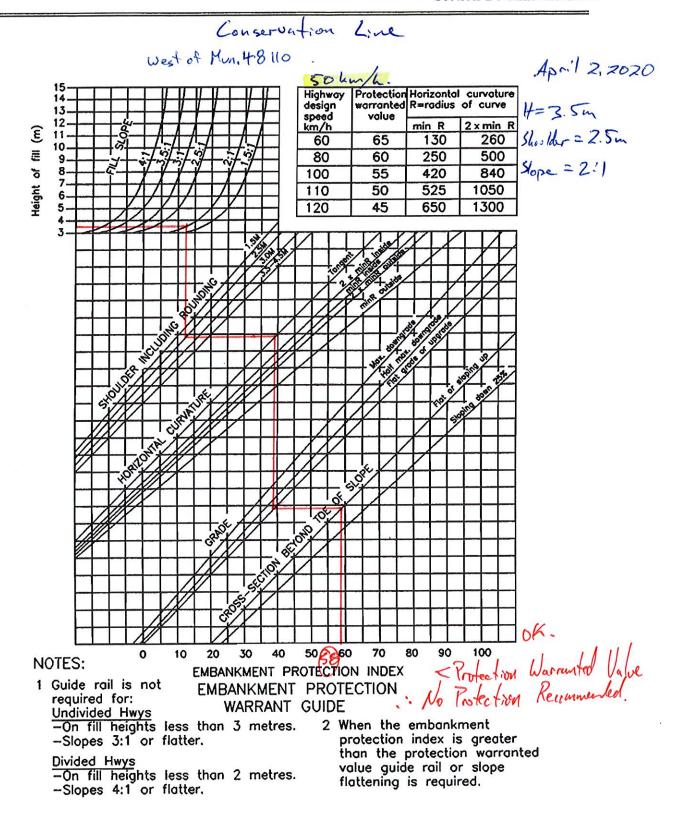


FIGURE 2.5.1 Embankment Warrant Guide

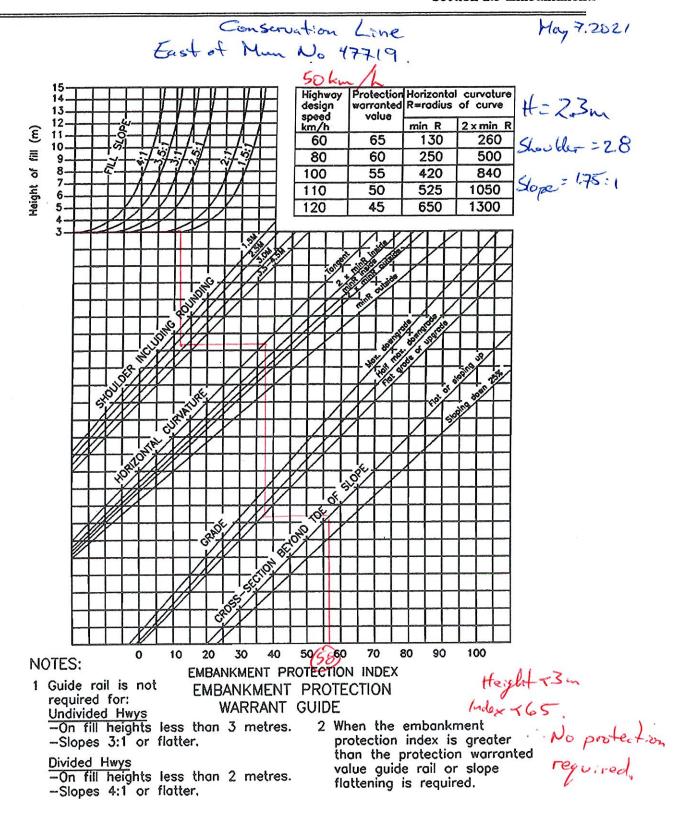
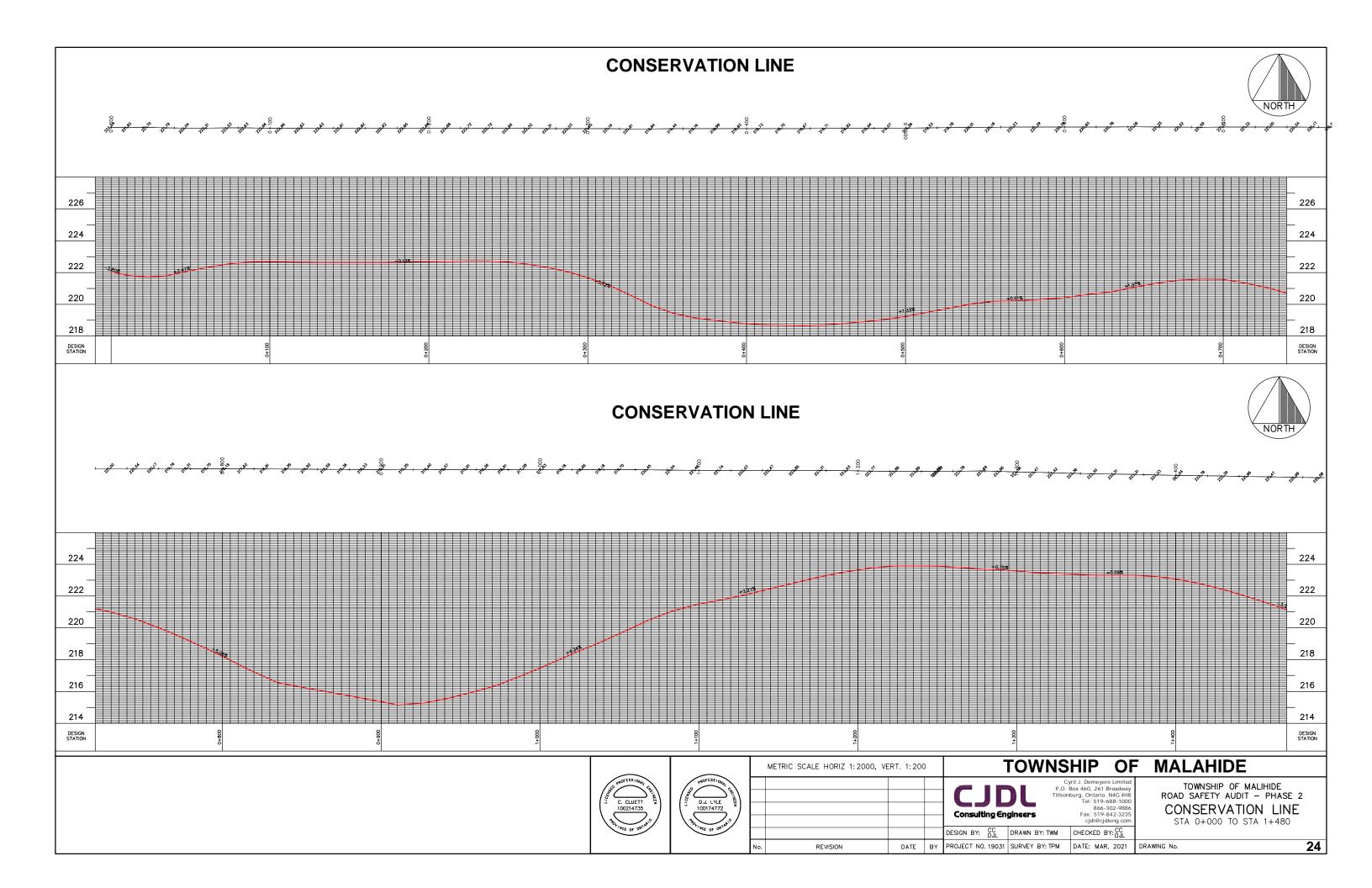


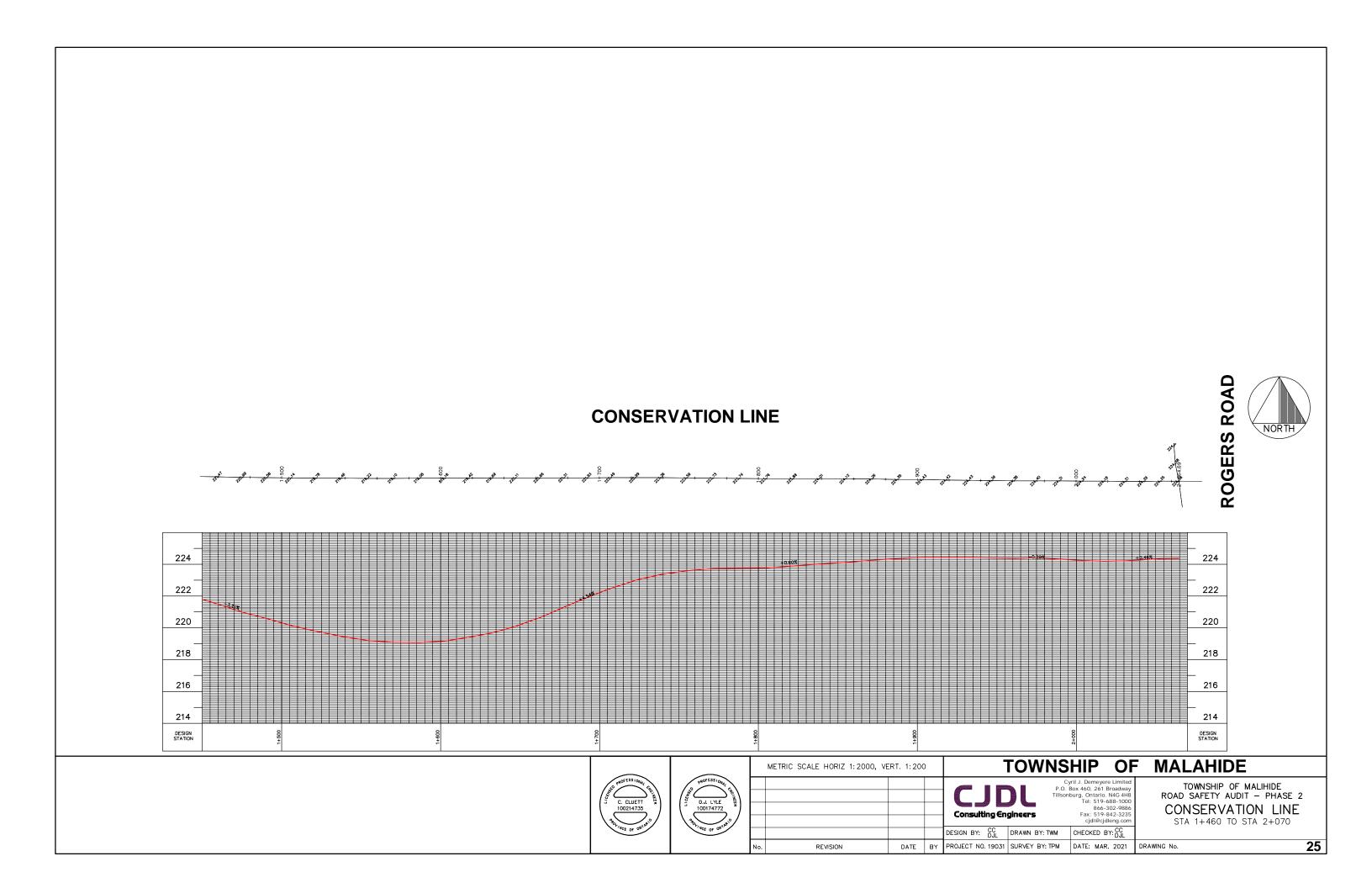
FIGURE 2.5.1 Embankment Warrant Guide

Road Name: Conservation Line	Study Section: Rogers Road to Imperial Road
Direction of Travel: East to West	Total Distance Analysed: 2.06 km
Posted Speed: 80km/h	AADT: 408 (Year: 2018)
Right-of-Way Width: 20m (66′)	Date of Site Inspection: 人のい スプロス

Crit	Criteria	Design Recommendations	On-Site Observations De	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: - Crown Centered	7.2m 7-5 wide 1.5 to PL 2% Ok tered OK	
	Surface Treatment Drainage	- Comment on surface treatment - Roadside swales? - Municipal Drains: Lee Drain 2006	Swince Tretural OK.	
	Vertical Alignment Horizontal Alignment	- Maximum road segment grades: 6-8% -Vertical curve 'K' value - Minimum design radius: 280 to 230m - Maximum super elevation: 4-8%	6-8% OL U 230m 4-8% V/A	
Alignment	Passing Sight Distance Decision Sight Distance	- Min decision sight distance: (AASHTO): 275-550m	30m 0/C	
Intersections	List of intersections within project limits List of intersections within project limits	Conservation Line / Rogers Road - Intersection control: - Stopping sight distance: Conservation Line / Imperial Road - Intersection control:	Stop sign. Stop sign absect. 4-way stop. Signt lives a stopping distance OK.	
Physical Objects	Clear Zone (Poles, Trees, etc.) Embankments Structures	ne: (אינס, ופניב)	UK U/A Cylvert & Lee Drain. East embankunt stages than P	Raymodon
Visual Aids	(סווסקיי), כשויפוגי, פנינין	Line painting:	Sold yellan lite	, , , , , , , , , , , , , , , , , , ,







<u>Dingle Street</u> <u>Aylmer Town Limit to Springfield Road</u>

- Criteria Review Sheets
- Site Photographs
- Centreline Profile Drawings (26-30)

Road Name: Dinale Street	Study Section: Aylmer Town Limit to Hacienda Road
Direction of Travel: East to West	Total Distance Analysed: 1.32 km
Doctor Snew/h	AADT: 802 (Year: 2018)
Posted operation (66)	Date of Site Inspection: 1 3,2020
וופור כו יישן יישניי במייוכי	

Criteria Design Recommendations On-Site Observations Cosservations Signal 2 = 700 Cosservation					
- Cross-section lane widths: 3.5m x 2 = 7.0m - Shoulder(s): 1.0m wide - Shoulder(s): 2.86 - Boulevard(s): 2.86 - Typ, cross-Section CL alignment: Crown Centered - Municipal Drains: Lower Caffsh 2 - Maximum road segment grades: 8-12% - Wertical Alignment - Minimum design radius: 100 to 80m - Minimum design radius: 100 to 80m - Minimum super elevation: 160-350m - Min passing sight distance (AASHTO): 160-350m - Min passing sight distance (AASHTO): 160-350m - Min passing sight distance: Chartored - Maximum special - Min passing sight distance: Chartored - Min passing sight distance: Chartored - Min passing sight distanc	Crite	eria	Design Recommendations	On-Site Observations	Deficiencies
Surface Treatment - Comment on surface treatment - Roadside swales? - Roadside swales? - Maximum road segment grades: - Wertical Alignment - Wertical Lower Catfish 2 - Maximum road segment grades: - Wertical Lower Catfish 2 - Maximum road segment grades: - Winimum design radius: - Minimum design radius: - Minimum design radius: - Minimum design radius: - Minimum super elevation: - Min passing sight distance (AASHTO): - Min decision sight distance: - Recommended clear zone: - Recommended clea	Cross-Section	Geometry	ths: 3.5m x 2 = 1.0m	4 - 00	
Vertical Alignment Vertical Lourve 'K' value - Minimum design radius: - Min passing sight distance (AASHTO): - Min passing sight distance (AASHTO): - Min decision sight distance: - Min decision sequere: - Min		Surface Treatment Drainage	- Comment on surface treatment - Roadside swales? - Municipal Drains: Lower Catfish 2	Suchice treatment OK. Dominungs OK.	
Horizontal Alignment - Maximum super elevation: (TAC, 1999) Passing Sight Distance - Min passing sight distance (AASHTO): 160-350m Decision Sight Distance - Min decision sight distance: 75-145m Dingle Street / Hacienda Road - Intersections within project limits - Stopping sight distance: 60-110m Clear Zone (Poles, Trees, etc.) - Slope? - Height? - Height? - Height? - Height? - Line painting: - Signage?		Vertical Alignment	1001		
Passing Sight Distance Decision Sight Distance Uist of intersections within project limits Clear Zone Clear Zone (Arro, 100) - Slope? CtS Embankments Structures (Bridges, Culverts, etc.) - Line painting: - Signage?	Alignment	Horizontal Alignment	AASHTO): 160-:		
List of intersections within project limits - Stopping sight distance: 60-110m - Stopping sight distance: (ATC),10m - Recommended clear zone: (ATC),2020, 3.5m, [Poles, Trees, etc.] - Slope? CLS Embankments - Height? - Height? - Protection required? Limits? - Culverts; (Bridges, Culverts, etc.) - Line painting: - Signage?		Passing Sight Distance Decision Sight Distance			
Clear Zone (excluding cut or fill slopes) (Poles, Trees, etc.) Embankments - Height? - Height? - Protection required? Limits? - Culverts? - Griverts? - Line painting: - Signage?	Intersections	List of intersections within project limits			**************************************
- Slope? - Height? - Height? - Protection required? Limits? - Culverts? - Culverts? - Bridges? - Line painting: - Signage?		Clear Zone (Poles, Trees, etc.)		in Hydropolds in clear zone	2006 74 2006 74
Structures - Culverts? (Bridges, Culverts, etc.) - Bridges? - Line painting:	Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	UR	
- Line painting: - Signage?		Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	7)0	
			- Line painting: - Signage?	"Share the rocal" sign.	
	Visual Aids			solid yellew live,	



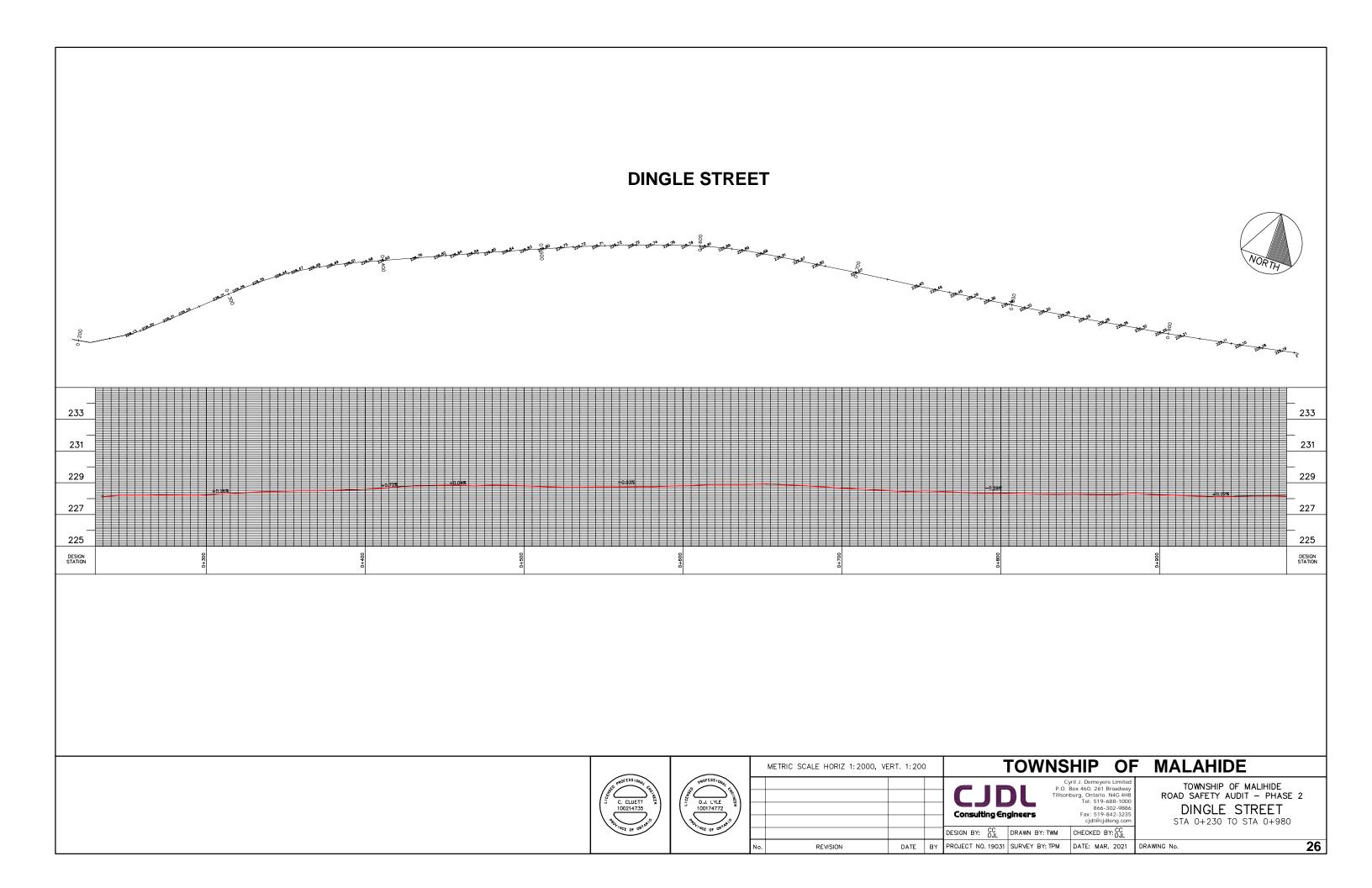
Road Name: Dingle Line	Study Section: Hacieusla Read to Spring Poeld Road.
Direction of Travel: East to West	Total Distance Analysed: 2.42 km
Posted Speed: 60km/h	AADT: 133 (Year: 2018)
Right-of-Way Width: 20m (66')	Date of Site Inspection: 人か、/ ヌ, マゥマの

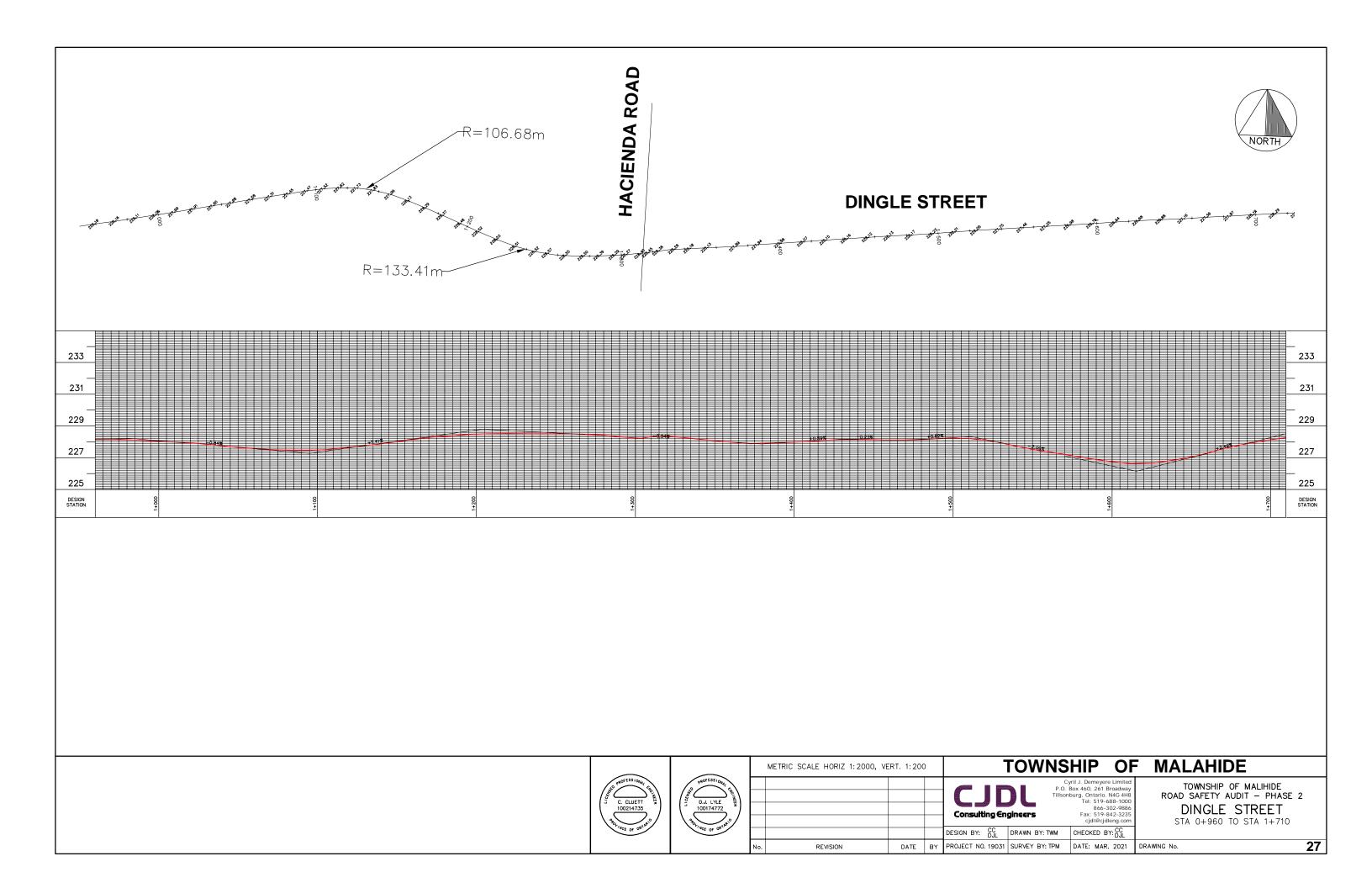
Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: - Cross-Secti	6.0m 1.0m 0K 0K.	Silth.
	Surface Treatment Drainage	- Comment on surface treatment - Roadside swales? - Municipal Drains: Teeple Drain, Catfish Creek, Staley Drain (x2), GA Summers Drain	Swilles ravelling on south side of bridge. Downwar OK.	Shar let and hon,
	Vertical Alignment Horizontal Alignment	- Maximum road segment grades: 6-12% -Vertical curve 'K' value - Minimum design radius: 150 to 120m - Maximum super elevation: 4-8%	OK R= 34 to 73m30km/k speed reduction.	
Alignment	Passing Sight Distance Decision Sight Distance	(I.Ac, 1999) - Min passing sight distance (AASHTO): 200-410m - Min decision sight distance: 95-175m	OK.	
Intersections	List of intersections within project limits List of intersections within project limits	Diragle Line / Haci work Road . - Intersection contro. - Stopping sight distance: Diragle Line / Spiragh: 200 Road . - Intersection control. Stopping Stopping Spiragh distance.	Stop sign. stopping distance, stylet lines Stop sign. Erofet lines, stopping distance	
Physical Objects	Clear Zone (Poles, Trees, etc.) Embankments	s) (0.5m if curb		HP @ 50144
Visual Aids	Structures (Bridges, Culverts, etc.)	- Bridges? - Line painting: - Signage?	Bounday of good rails, OK. Sold rellow line. Hazard sign on one of the HP is clear	

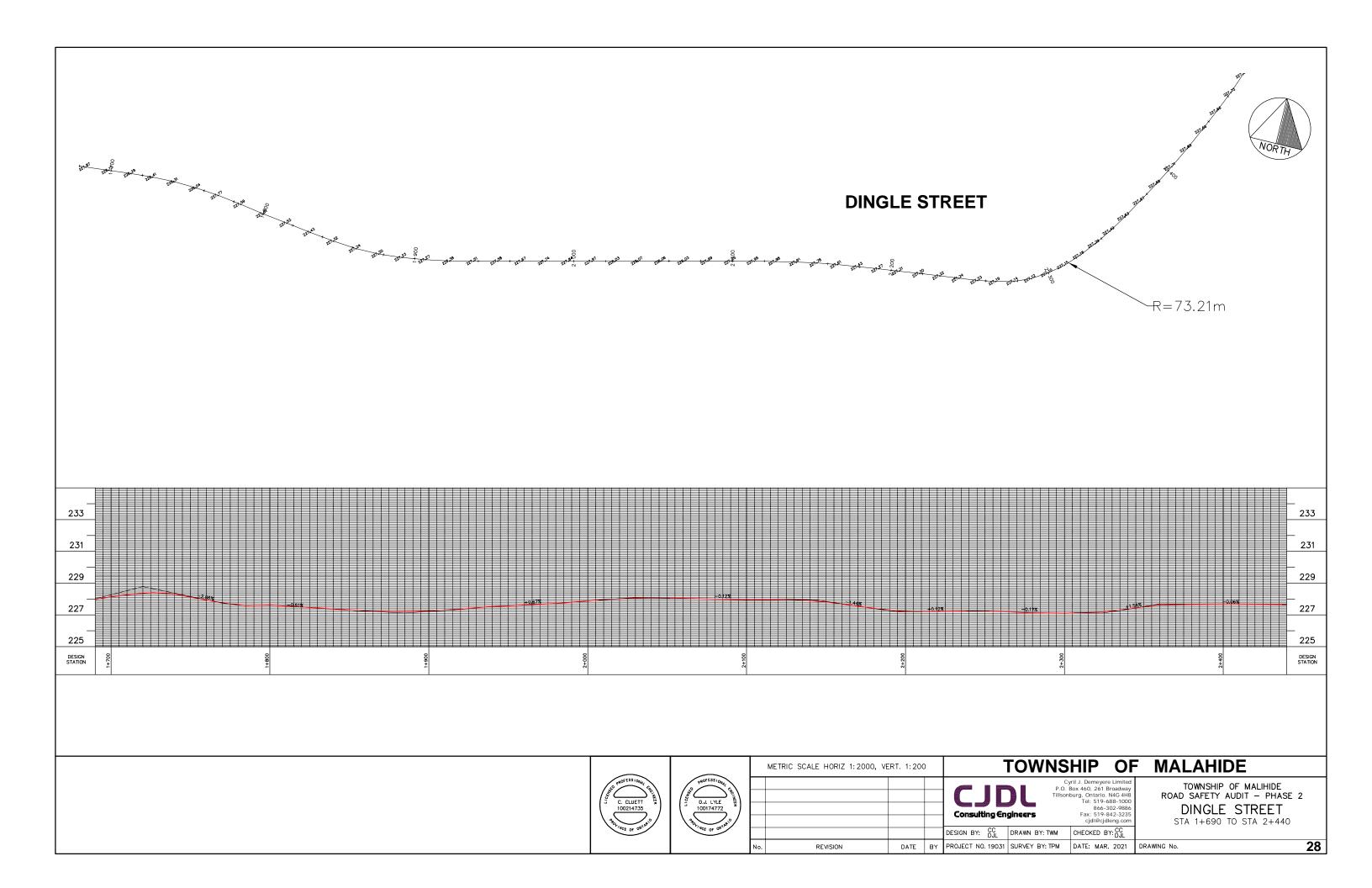


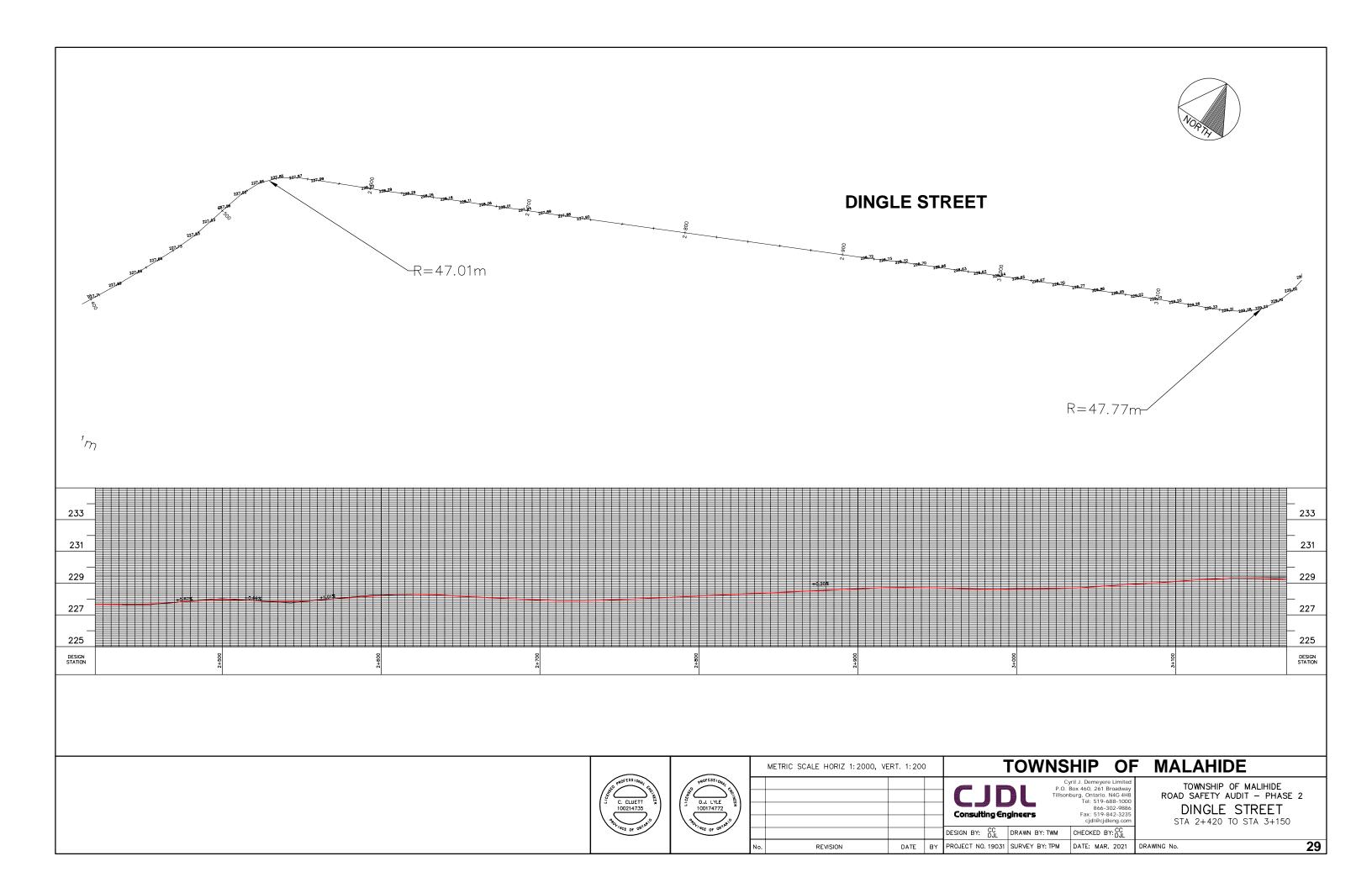


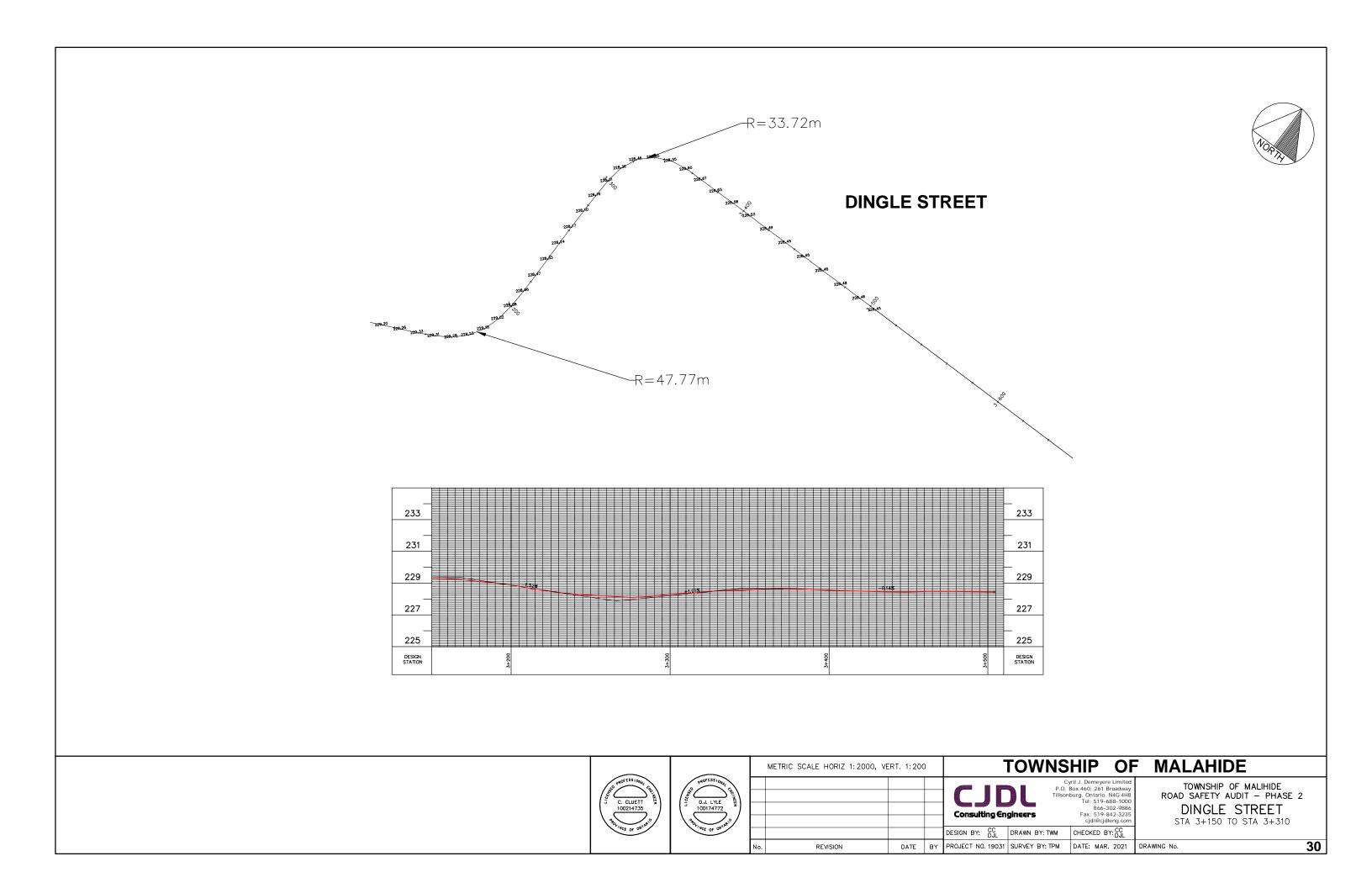
Dingle Street - Hazard sign blocked by vegetation











<u>Dorchester Road</u> <u>College Line to Ron McNeil Line</u>

• Criteria Review Sheet

Road Name: Dorchester Road	chester Road		Study Section: College Line Ron McNeil Line	
Direction of Travel: North to South	vel: North to South		Total Distance Analysed: 0.4 km	
Posted Speed: 80km/h	30km/h		AADT: 178 (Year: 2018)	
Right-of-Way Width: 20m (66')	idth: <i>20m (66')</i>		Date of Site Inspection: May 7,2021	
Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: - Cross-Section CL alignment: - Cross-section CL alignment: - Cross-section C	7.5 2.0 014 014	
	Surface Treatment	- Comment on surface treatment - Roadside swales?	Surface Teather + OK.	5
	Drainage		0%	
	Vertical Alignment	- Maximum road segment grades: 6-8% -Vertical curve 'K' value	ok	
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	7/4	
)	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m	04	
	Decision Sight Distance	- Min decision sight distance: 155-230m	710	
; ; ; ;	List of intersections within project limits	Dorchester Road / College Line - Intersection control: - Stopping sight distance: 75-130m	Stopping Districe, Soft true OK.	
ווופן אפרווסווא	List of intersections within project limits	Dorchester Road / Ron McNeil Line - Intersection control: - Stopping sight distance: 75-130m	Stapping 1,3 houce, 5 whit has OK.	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: 3.5m (excluding cut or fill slopes)	1 710	
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	N/A	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	N. P.	
Visual Aids		- Line painting: - Signage?	Solid yellow controline	



<u>Glencolin Line</u> <u>Springwater Road to Springfield Road</u>

- Criteria Review Sheets
- Site Photographs
- Centreline Profile Drawings (31-35)

Road Name: Glencolin Line	ncolin Line		Study Section: Springwater Road to Rogers Road	
Direction of Travel: East to West	vel: East to West		Total Distance Analysed: 2.07 km	
Posted Speed: 80km/h	80km/h		AADT: 1011 (Year: 2018)	
Right-of-Way Width: 20m (66')	/idth: 20m (66')		Date of Site Inspection: 人のストリーク	
Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
		- Cross-section lane widths: 3.6m x 2 = 7.2m - Shoulder(s): 2.0m wide	4.2m	
	Geometry	3.40ffE		
Cross-Section		- Max shoulder crossfall: 4-6% - Cross-Section CL alignment: Crown Centered	\$ %	
	Surface Treatment	- Comment on surface treatment	Sirtice testment OK.	
	Drainage	- Roadside swales? - Municipal Drains: Snelgrove Drain	Dairuage OK.	
	Vertical Alignment	- Maximum road segment grades: -Vertical curve 'K' value	2/0	
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	OK. Adequate signinge @ horizontel	
0	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m	OK	
	Decision Sight Distance	- Min decision sight distance: 155-230m	7/0	
7	List of intersections within project limits	Glencolin Line / Springwater Road - Intersection control: - Stopping sight distance: 155-210m	Stop sign. <> Warning sign. Stopping distance, sight line OK.	
5101305	List of intersections within project limits	Glencolin Line / Rogers Road - Intersection control: - Stopping sight distance: 155-210m	Through St. Sight lines + stopping	
		- Becommended clear zone.	7/87/7	" (,

	۾ ق
L	J Sub

south side, row of poles on the north

Hydropoles >- clear Zone on south side

(MP,1943) 4m (MTO,2020) 5m

- Recommended clear zone: (excluding cut or fill slopes)

Clear Zone (Poles, Trees, etc.)

1

414

- Protection required? Limits?

- Slope? - Height?

Embankments

Physical Objects

- Culverts?

- Bridges?

Structures (Bridges, Culverts, etc.)

- Line painting: - Signage?

Visual Aids

Row of polar on south side @ Rogers 124

solid yellow ine, Doelad yellow har.

"Share the road

colorts ok

2				
Koad Name: Gencolin Line	ncolin Line		Study Section: Rogers Road to Imperial Road	
Direction of Iravel: East to West	vel: East to West		lotal Distance Analysed: 2.05 km	
Posted Speed: 80km/h	30km/h		AADT: 1424 (Year: 2018)	
Right-of-Way Width: 20m (66')	idth: <i>20m (66')</i>		Date of Site Inspection: 人人のこの	
Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: 3.6m x 2 = 7.2m - Shoulder(s): 2.45m x to PL - Typ. cross-fall (lanes): 2% - Max shoulder crossfall: 4-6% - Cross-Section CL alignment: Crown Centered	2.6 2.6 0.5 0.5	
	Surface Treatment	- Comment on surface treatment	Sortace Treatment. OK.	
	Drainage	- Roadside swales? - Municipal Drains: Skinner Drain	Drainuge ok.	
	Vertical Alignment	- Maximum road segment grades: -Vertical curve 'K' value		
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	NA	
o O	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m	90	
	Decision Sight Distance	- Min decision sight distance: 155-230m		
-	List of intersections within project limits	Glencolin Line / Rogers Road - Intersection control: - Stopping sight distance: 155-210m	,-	
ווופן אפרנוסווא	List of intersections within project limits	Glencolin Line / Imperial Road - Intersection control: - Stopping sight distance: 155-210m	Stay	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (κττο, 1443) 4m (excluding cut or fill slopes) (κττά, 2020) 54	Holypole on month side @ Min 40813	Holopole
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	X0	

10m langth

- Line painting: - Signage?

Visual Aids

- Culverts? - Bridges?

Structures (Bridges, Culverts, etc.)

0.9m Shoulder 4:1 entra knownt 1.8-2m vertical dogs

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Hazard signs @ supratected where



	of from the second			
Road Name: Glencolin Line	ncolin Line		Study Section: Hacienda Road to Springfield Road (south leg)	
Direction of Travel: East to West	vel: East to West		Total Distance Analysed: 2.06 km	
Posted Speed: 80km/h 60 hm	30km/h Golyn hr		AADT: 1140 (Year: 2018)	T
Right-of-Way Width: 20m (66')	idth: <i>20m (66')</i>		Date of Site Inspection: Apr.' 6,2020	
Crit	Criteria	Design Recommendations	On-Site Observations Deficiencies	
Cross-Section	Geometry	- Cross-section lane widths: \$\frac{5}{5}\text{sin v 2} = 7.2m\$ - Shoulder(s): \$\frac{5}{5}\text{m wide}\$ - Boulevard(s): \$\frac{5}{5}\text{m wide}\$ - Typ. cross-fall (lanes): \$2\text{m}\$ - Max shoulder crossfall: \$4-6\text{6}\$ - Cross-Section CL alignment: \$\frac{5}{5}\text{m wide}\$ - Cross-Section CL alignment: \$\frac{5}{5}\text{m wide}\$	4.5 × × × × × × × × × × × × × × × × × × ×	1
	Surface Treatment	- Comment on surface treatment	Surface teathout OK	
	Drainage	- Roadside swales? - Municipal Drains: Upper Catfish 2	Dra. wage OK	
	Vertical Alignment	- Maximum road segment grades: 6-8% -Vertical curve 'K' value	70	Т
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	NA	T
)	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m	75	<u> </u>
	Decision Sight Distance	- Min decision sight distance: 155-230m	De Xo	T
ntercentions	List of intersections within project limits	Glencolin Line / Hacienda Road - Intersection control: - Stopping sight distance: 155-210m	Hap sign. stopping distance, sight lines OK.	
	List of intersections within project limits	Glencolin Line / Springfield Road - Intersection control: - Stopping sight distance:	Through street. stopping distance, eight	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (۳۲۲۰) 4m (excluding cut or fill slopes)	ya	T
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	Color + Slopes Flatter to 4:1.	, in the second
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	Kridar (3) Somafield Road, Good 12,1/3 C	\$ \$
		- Line painting: - Signage?	weeled signs. Ock	Т
Visual Aids			Railway Carring RW cootting motes and. Double solid live Obridge	
			Signelled Mu cossing,	1



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Criteria Review 2.0

3				
Road Name: Glencolin Line	ncolin Line		Study Section: Springfield Road (south leg) to Walker Road	
Direction of Travel: East to West	vel: East to West		Total Distance Analysed: 1.95 km	
Posted Speed: 80km/h	30kmth (co km)	Me	AADT: 646 (Year: 2018)	
Right-of-Way Width: 20m (66')	'idth: 20m (66')		Date of Site Inspection: April 6.2020	
			-	
Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
.i-	Geometry	- Cross-section lane widths: 3.5 m x 2 = 7.2m - Shoulder(s): 5.40m± to PL - Typ. cross-fall (lanes): 2% - Max shoulder crossfall: 2% - Crows-Section Claimment: Crown Centered	4.3 2.6 0k	
	Surface Treatment	ent	Surface Treatment OK	
	Drainage	- Roadside swales? - Municipal Drains: Eggleton Drain, Pound Drain, St. Claire Drain, Catfish Creek Municipal Drain	Daimye OK.	
	Vertical Alignment	- Maximum road segment grades: 6-8% -Vertical curve 'K' value	OK NO	
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	NA	
0	Passing Sight Distance	g sight distance (AASHTO):	0K	
	Decision Sight Distance	- Min decision sight distance: 155-230m	7/0	
	List of intersections within project limits	Glencolin Line / Springfield Road - Intersection control: - Stopping sight distance: 155-210m	through St. Sight line, stapping distance OK.	
Intersections	List of intersections within project limits	Glencolin Line / Walker Road - Intersection control: - Stopping sight distance: 155-210m	twargh st. sight lives restopping distance.	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (MTD, MT3) 4m (excluding cut or fill slopes) (MTD, 2020) 30 m	90	
		5000		



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Shore the road solod yellow line.

Cycling, larges lace right

NA

NA

- Slope? - Height? - Protection required? Limits? - Culverts? - Bridges?

- Line painting: - Signage?

Visual Aids

Structures (Bridges, Culverts, etc.)

Embankments

Physical Objects

Failury Cooking alread.

60 km/h

Road Name: Glencolin Line	scolin Line		Study Section: Walker Road to Carter Road (south leg)	
Direction of Travel: East to West	vel: East to West		Total Distance Analysed: 2.06 km	
Posted Speed: 80km/h	Warth Go km/W		AADT: 532 (Year: 2018)	
Right-of-Way Width: 20m (66')	idth: <i>20m (66')</i>		Date of Site Inspection: ハタトリ 6, スロスの	
			4	
Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: - Cross-Section CL alignment: - Cross-Section CL alignment: - Cross-Section CL alignment:	۲-۷ م. ۱ م. ۲ م. ۲ م. ۲	3
	Surface Treatment	- Comment on surface treatment	Sortice treatment. OK	
	Drainage	- Roadside swales? - Municipal Drains: St. Claire Drain (x2)	Drainuge OK.	
	Vertical Alignment	- Maximum road segment grades: 6-8% -Vertical curve 'K' value	OK.	
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	N/A	
0	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m	OK	
	Decision Sight Distance	- Min decision sight distance: 155-230m	NO	
2	List of intersections within project limits	Glencolin Line / Walker Road - Intersection control: - Stopping sight distance:	though Street. Sight hous, I toping	
Intersections	List of intersections within project limits	Glencolin Line / Carter Road - Intersection control: - Stopping sight distance:	Through street sight house, stopping	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (http, ms) 4m (excluding cut or fill slopes) (http, 2020)3,07m	Yo	
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	N/A	

60 hr. /h posted speed.

school zour.

Cycling, horses been rights show the coad.

- Line painting: - Signage?

Visual Aids

- Culverts? - Bridges?

Structures (Bridges, Culverts, etc.)



Mon. No. 52313.

Road Name: Glencolin Line	Study Section: Carter Road (south leg) to Springer Hill Road
Direction of Travel: East to West	Total Distance Analysed: 2.00 km
Posted Speed: 80km/h 60km/hr	AADT: 361 (Year: 2018)
Right-of-Way Width: 20m (66')	Date of Site Inspection: 人ない /6 ,スロスロ

Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: 3,5 m x 2 = 7.2m - Shoulder(s): 1.5 m wide - Boulevard(s): 5.46m± to PL - Typ. cross-fall (lanes): 2% - Mas Abulder crossfall: 4-6%	7.5 2.1 0k	l.
	Surface Treatment	lent	Sortice treatment OK	
	Drainage		Draininge OK.	
	Vertical Alignment	- Maximum road segment grades: 6-8% -Vertical curve 'K' value	0 K	
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	N/A.	
)	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m) olk	
	Decision Sight Distance	- Min decision sight distance: 155-230m	7.0	
; ; ; ;	List of intersections within project limits	Glencolin Line / Carter Road - Intersection control: - Stopping sight distance: 155-210m	Through St. Syld lines & Stopping distance	
ווופואפרווחווא	List of intersections within project limits	Glencolin Line / Springer Hill Road - Intersection control: - Stopping sight distance: 155-210m	Stop s. gn. C+ Werning s. gn. graffling for syllhound	Sporuge H. T.
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (MTO, M93) 4m. (excluding cut or fill slopes) (MTO, 2020) 5.0 m.	fulfic. Interaction alund sign propert for spunger 11:11	11 Roud
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	OK.	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	Caprofected worked consimp, 1.8m vertical	
3000		- Line painting: - Signage?	Cycling always hap right	
Visual Aids			there is by sign.	
			tedestran sign.	
			(1) W do 1. 2 m of . Mar.	



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Solid White live on shoulder.
Solid vellow live.
Cobhilh posted speed.

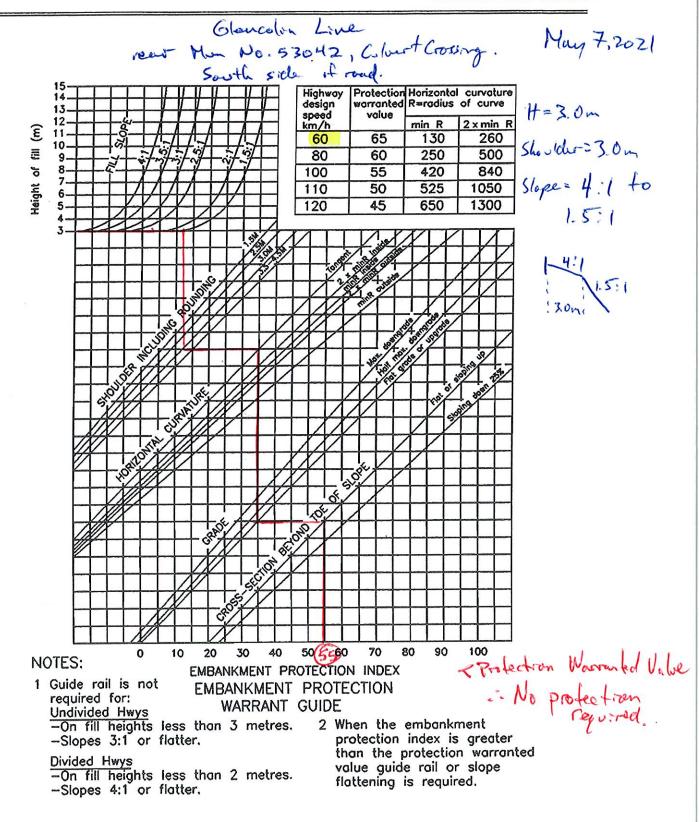
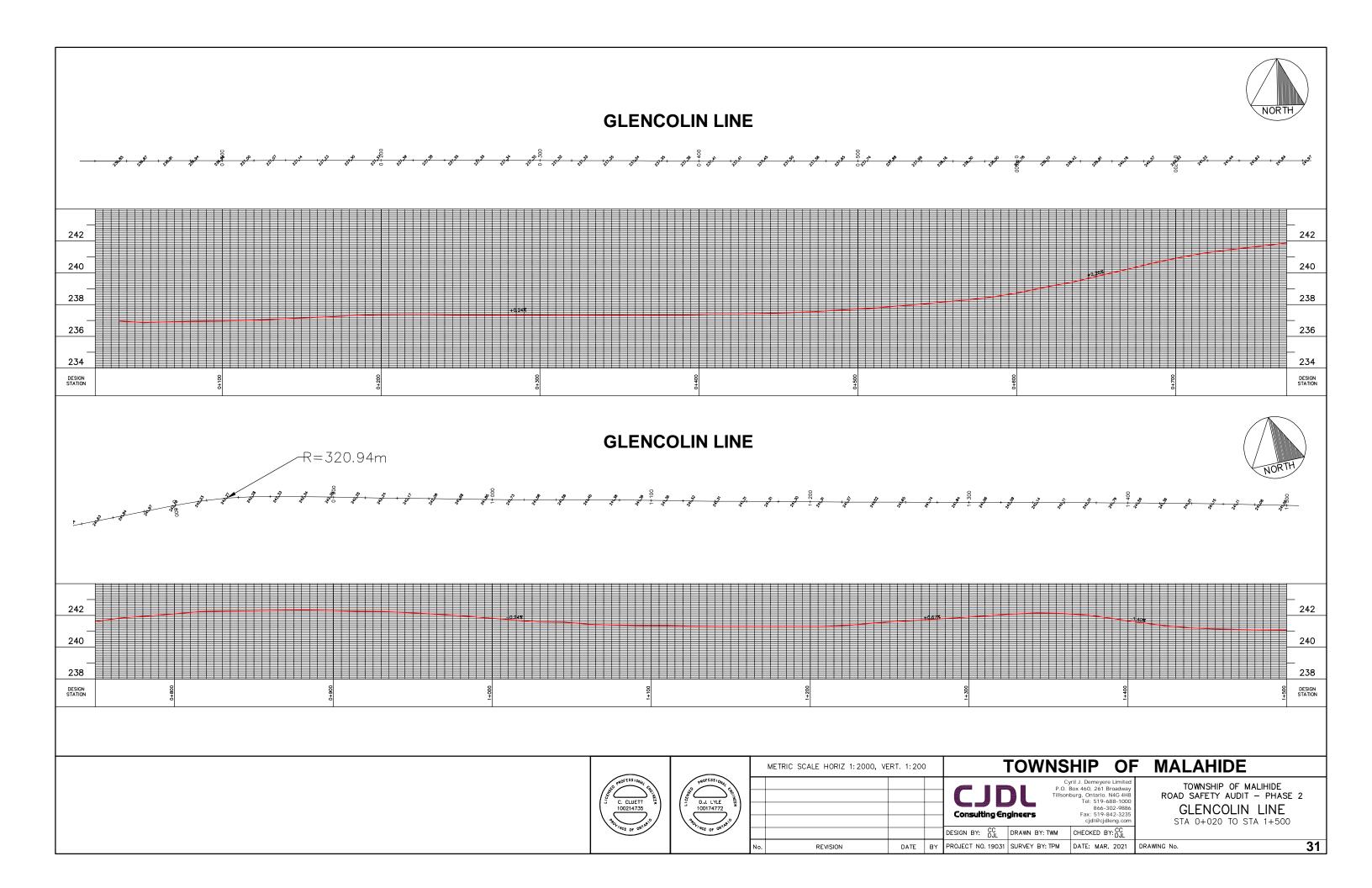
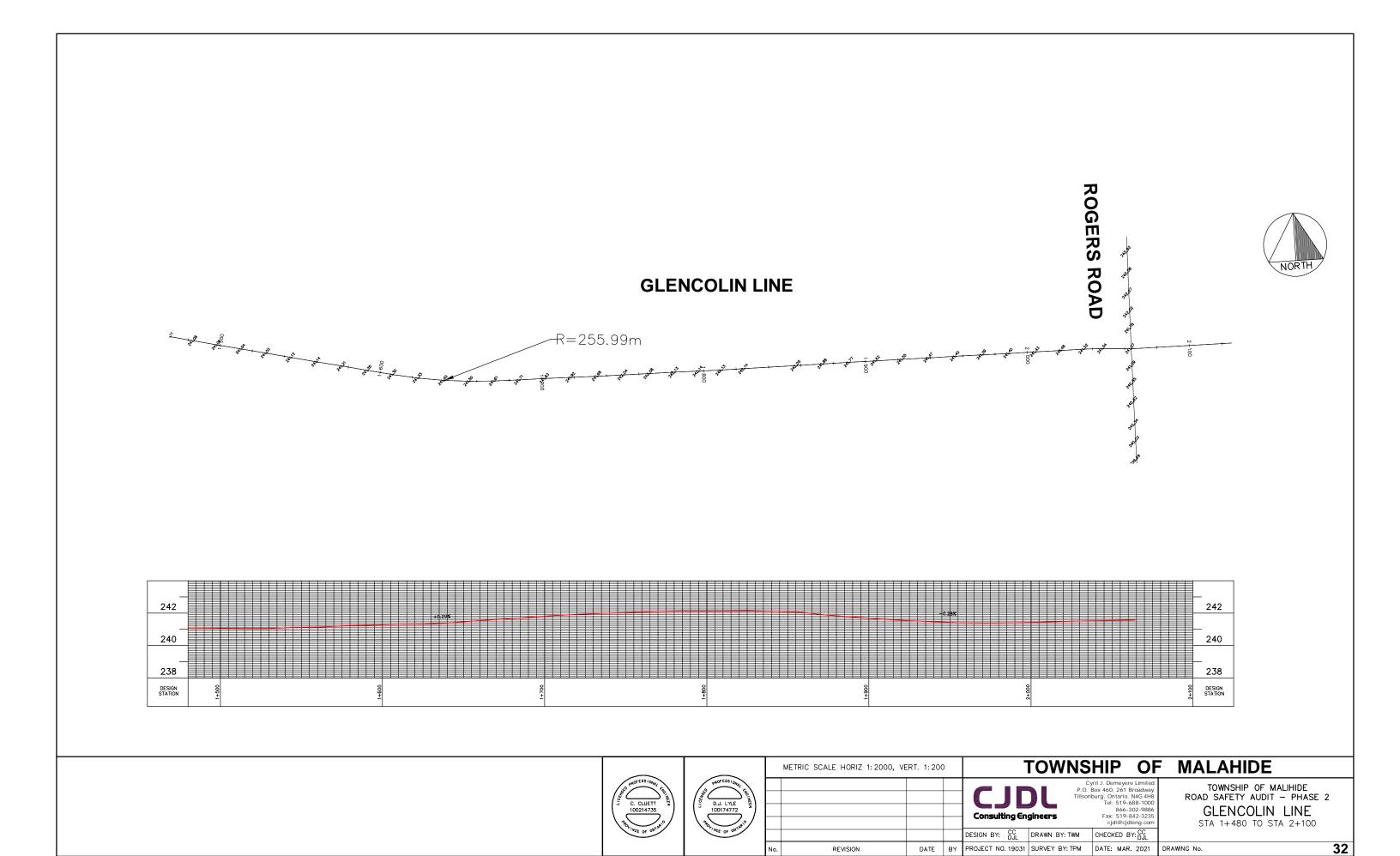


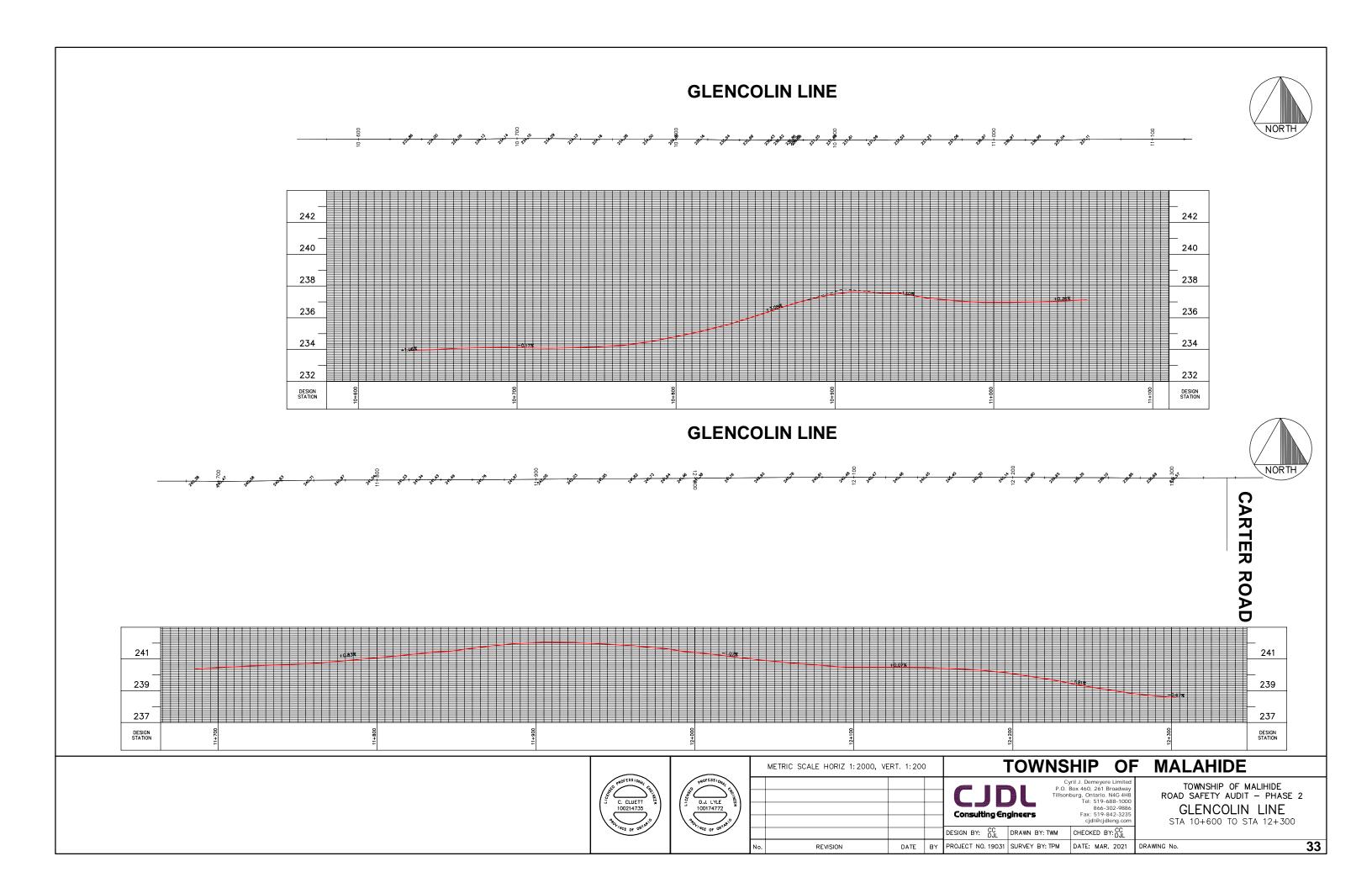
FIGURE 2.5.1 Embankment Warrant Guide

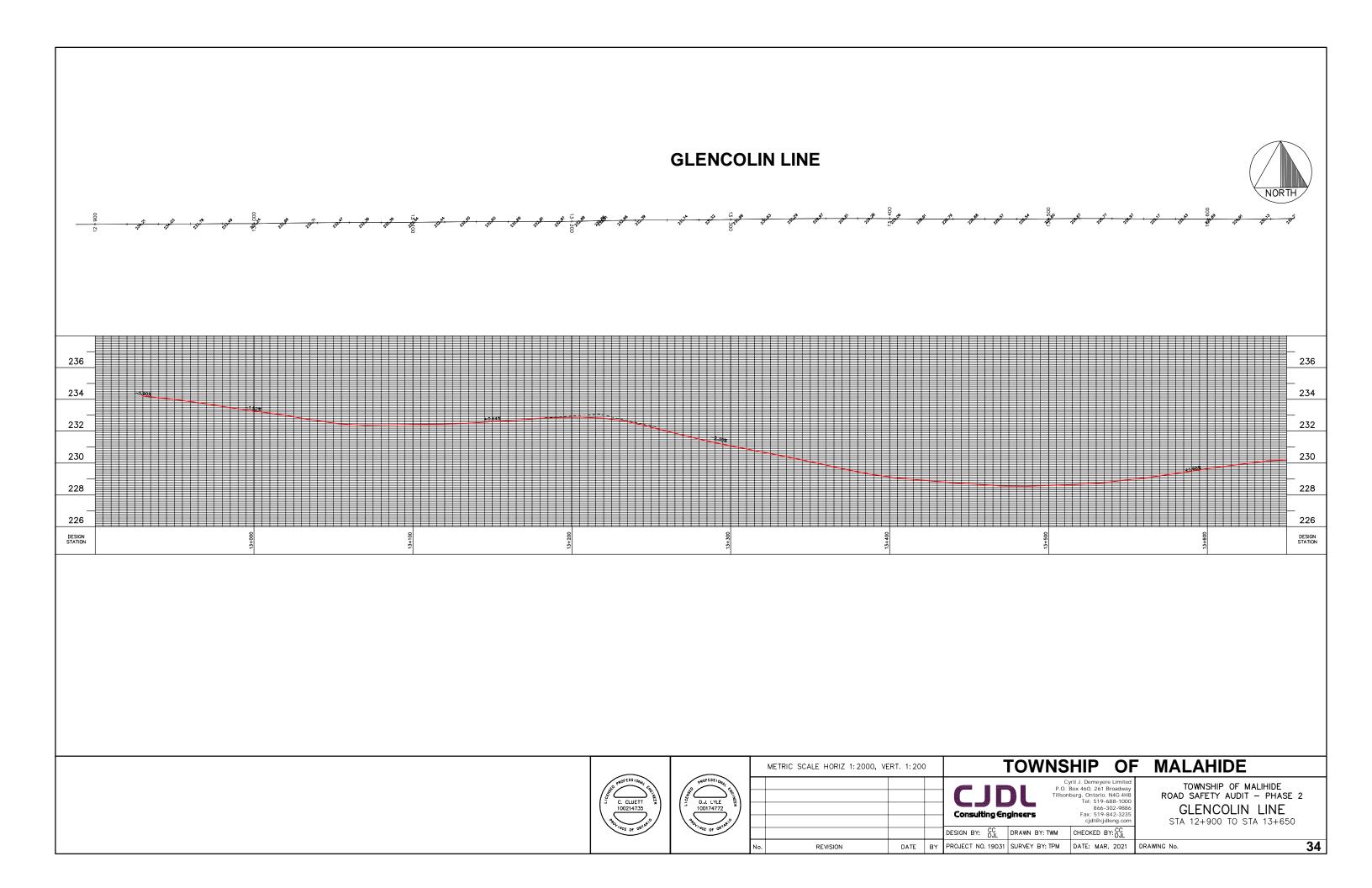


Faded pedestrian sign at 52313 Glencolin Line



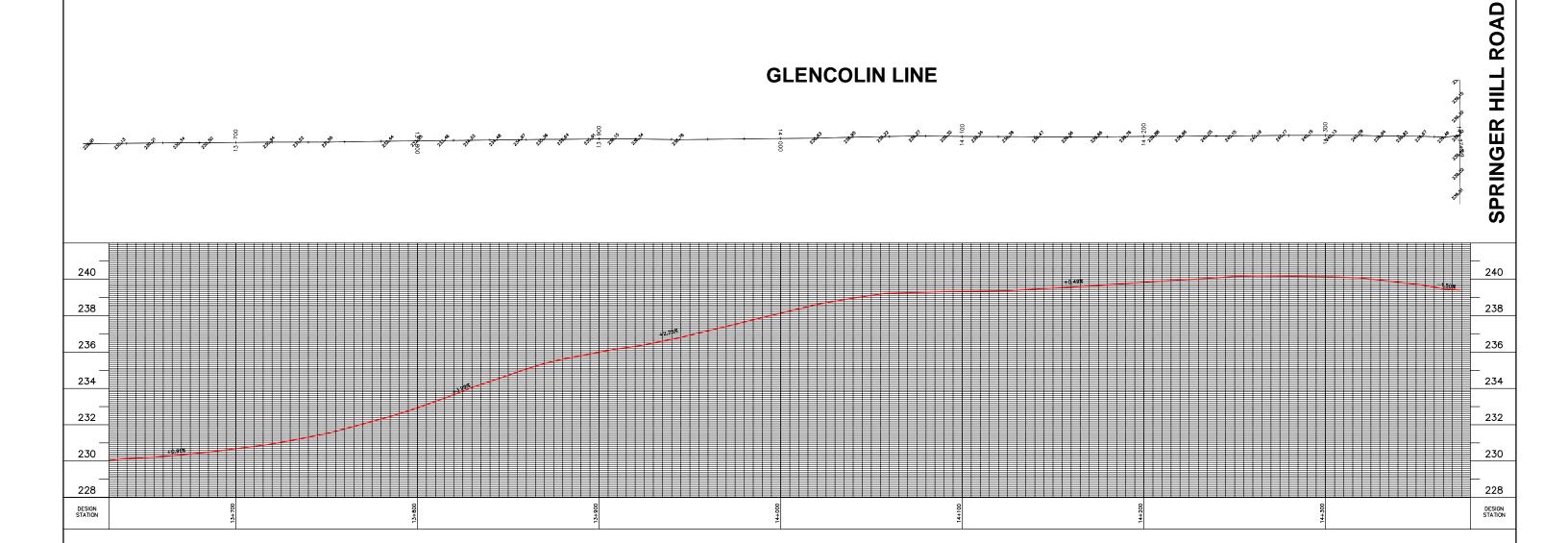














LICEMOSES	0.J. LYLE	CHO!
רוסנ	D.J. LYLE 100174772	NEER)
39.	ON ACE OF ONTH	
	$\overline{}$	

METRIC SCALE HORIZ 1:2000, VERT. 1:200	TOWNSHIP OF MALAHIDE
	Cyril J. Demeyere Limited P.O. 80x 460, 261 Broadway Tillsonburg, Ontario. N4G 4H8 Tel: 519-688-1000 866-302-9886 Fax: 519-842-3235 cjdl@cjdleng.com
	DESIGN BY: CC DJL DRAWN BY: TWM CHECKED BY: CC DJL

TOWNSHIP OF MALIHIDE ROAD SAFETY AUDIT - PHASE 2 GLENCOLIN LINE STA 13+630 TO STA 14+380

WM CHECKED BY: CC

35 DATE BY PROJECT NO. 19031 SURVEY BY: TPM DATE: MAR. 2021 DRAWING No.

<u>Hacienda Road</u> <u>John Wise Line to Glencolin Line</u>

- Criteria Review Sheets
- Centreline Profile Drawings (36-39)

Road Name: Hacienda Road	Study Section: John Wise Line to Van Patter Line
Direction of Travel: North to South	Total Distance Analysed: 1.02 km
Posted Speed: 80km/h	AADT: 1040 (Year: 2015)
Right-of-Way Width: 20m (66')	Date of Site Inspection: April 3,2020

Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: 3.6m x/2 = 7.2m - Shoulder(s): 2.0 m wide - Boulevard(s): 5.46m± to Pl - Typ. cross-fall (lanes): 2% - Max shoulder crossfall: 4-6% - Cross-Section CL alignment: Crown Centered	2% OK 6% OK	
	Surface Treatment	- Comment on surface treatment	Surface Treatment OK	
	Drainage	- Roadside swales? - Municipal Drains: N/A	Draining OK.	
¥	Vertical Alignment	- Maximum road segment grades: 6-8% -Vertical curve 'K' value	Rest < 24 @ Ste 0+600.	Korest G. 11.
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	» N/A ,	
)	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m	m OK	
,	Decision Sight Distance	- Min decision sight distance: 155-230m	2270	
14000000	List of intersections within project limits	Hacienda Road / John Wise Line - Intersection control: - Stopping sight distance: 155-210m	Stop sign. at Warmy sign.	
200000000000000000000000000000000000000	List of intersections within project limits	Hacienda Road / Van Patter Line - Intersection control: - Stopping sight distance: 155-210m		Sightline.
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (سرق, دبرج) 4m (excluding cut or fill slopes) (برتان) 5س	Hodropola Gaw sides in Co.	Hylapole
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	NIA	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	WIT	
		- Line painting: - Signage?	Since the Bad.	
Visual Aids			solid yellow hore.	



	Posted Speed: 80km/h	Road Name: Hacienda Road	uth
m (66')			

Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: - Cross-Secti	7.2m 8.0 wide 2.0 to PL 2% OK tered OK	
	Surface Treatment	- Comment on surface treatment	Surface treatment of	
	Drainage	- Roadside swales? - Municipal Drains: N/A	Drainuge OK.	
	Vertical Alignment	- Maximum road segment grades: -Vertical curve 'K' value	6-8% OK.	
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	4-8% N/A	
)	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m	0m	
	Decision Sight Distance	- Min decision sight distance: 155-230m	0m 0K	
ntercontions.	List of intersections within project limits	Hacienda Road / Van Patter Line - Intersection control: - Stopping sight distance: 155-210m		Stopping distrace.
	List of intersections within project limits	Hacienda Road / Chalet Line - Intersection control: - Stopping sight distance: 155-210m	Through sheet, Eight lives, sispony	Southbould for
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (MTO, 1493) (excluding cut or fill slopes) (MTO, 2020) 5	4m 208 3 trees on west side, wer Hon 8144	2 trees
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	NIA	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	NA	
Visual Aids		- Line painting: - Signage?	Sold yellow line.	



Road Name: Hacienda Road	Study Section: Chalet Line to Bradley Creek Line
Direction of Travel: North to South	Total Distance Analysed: 1.00 km
Posted Speed: 80km/h	AADT: N/A
Right-of-Way Width: 20m (66')	Date of Site Inspection: April 3,2020

Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: - Cross-Secti	0.0°1 0.0°1 0.0°1 0.0°1 0.0°1	
	Surface Treatment	ace treatment	Sortace tentural OK.	
	Drainage	- Roadside swales? - Municipal Drains: N/A	Dainage OK	
,	Vertical Alignment	- Maximum road segment grades: -Vertical curve 'K' value	ok .	
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	NIA	
)	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m	710	
	Decision Sight Distance	- Min decision sight distance: 155-230m	7)0	
3000:40	List of intersections within project limits	Hacienda Road / Chalet Line - Intersection control: - Stopping sight distance: 155-210m	Through street, Sight trees, stopping	
ווופן אברווחווא	List of intersections within project limits	Hacienda Road / Bradley Creek Line - Intersection control: - Stopping sight distance: 155-210m	Through street. Soft hoss, stageing distance OK.	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (MO, M3) 4m (excluding cut or fill slopes) (MTD, 2626) 5m	0K	
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	NIM	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	NA	
		- Line painting: - Signage?	Horsenbuggy sign.	
Visual Aids			Solid yellar live.	



Road Name: Hacienda Road	Study Section: Bradley Creek Line to Talbot Line
Direction of Travel: North to South	Total Distance Analysed: 1.03 km
Posted Speed: 80km/h	AADT: 1230 (Year: 2015)
Right-of-Way Width: 20m (66')	Date of Site Inspection: April 3,202 の

Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: 3.6m x 2 = 7.2m - Shoulder(s): 2.0 m wide - Boulevard(s): 5.46.11 to PL - Typ. cross-fall (lanes): 2% - Max shoulder crossfall: 4-6% - Cross-Section CL alignment: Crown Centered	7.2m 7-8 wide 2.0 to PL 2% OK tered OK	
	Surface Treatment Drainage	- Comment on surface treatment - Roadside swales? - Municipal Drains: N/A	So the featurent OK. Draining OK.	
	Vertical Alignment	: grades:		
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	4-8% N/A	
0	Passing Sight Distance	AASHTO):	OK OK	
	Decision Sight Distance	- Min decision sight distance: 155-230m	7/0 MC	
1 to C 1	List of intersections within project limits	Hacienda Road / Bradley Creek Line - Intersection control: - Stopping sight distance: 155-210m	Through street. Sight lives, stapping distance	
sillitei sectionis	List of intersections within project limits	Hacienda Road / Talbot Line - Intersection control: - Stopping sight distance:	Stop Sign. Stop sign closed, stopping	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (איזי), א פאספו (פאל איזי) (איזי) (פאכוע מוון slopes) (איזיי) (איזיי) (איזיי) איזיי	5m OK	
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	Eurlankarent Warrent Filled. @ pourd on east P. side of road south at Talkot tone	Protection Ryporal.
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?		
		- Line painting: - Signage?	Solid yellow line,	
Visual Aids			Speed limit posted.	
			it loom of Talloof Line.	



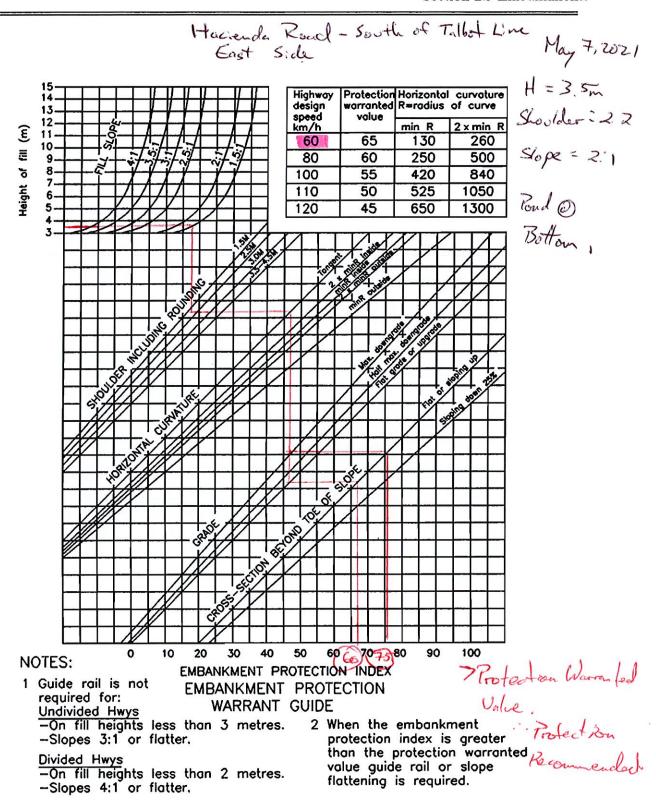


FIGURE 2.5.1 Embankment Warrant Guide

Road Name: Hacienda Road	Study Section: Talbot Line to Dingle Line
Direction of Travel: North to South	Total Distance Analysed: 1.28 km
Posted Speed: 60km/h	AADT: 1000 (Year: 2018)
Right-of-Way Width: 20m (66')	Date of Site Inspection: $A_{\text{B-1}} \mid 3, 2020$

Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: - Cross-Secti	2.0. 2.0. 0.1. 0.1.	
	Surface Treatment	- Comment on surface treatment - Roadside swales?	Sortace treatment OK.	
	Drainage	Catfish Creek, St	Drainnage OK	
	Vertical Alignment	grades:	ok "	
Alignment	Horizontal Alignment	- Minimum design radius: 150 to 120m - Maximum super elevation: 4-8% (TAC, 1999)	NIA	
)	Passing Sight Distance	- Min passing sight distance (AASHTO): 200- 410m	OK	
	Decision Sight Distance	- Min decision sight distance:	04.	
7	List of intersections within project limits	Hacienda Road / Talbot Line - Intersection control: - Stopping sight distance: 75-130m	Stopping absolistop sign for the Stopping distance, gight lives CK.	
ווופו אפרנוסווא	List of intersections within project limits	Hacienda Road / Dingle Road - Intersection control: - Stopping sight distance: 75-130m	Though street Stopping distance, s. ght lines OK.	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (MTD, 445) 3m (excluding cut or fill slopes) (MTD, 2020) 3.5m	OK	
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	NIA	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	Bridge w/ quard ails & bazard signs. OK.	
Visual Aids		- Line painting: - Signage?	Single or Double solid yellow line. Dasked line north of Tallist.	
			the se buggy ign.	



Criteria Review 2.0

Road Name: Hacienda Road	ienda Road		Study Section: Dingle Line to Glencolin Line	
Direction of Tra	Direction of Travel: North to South		Total Distance Analysed: 1.90 km	
Posted Speed: 80km/h	30km/h		AADT: 1228 (Year: 2018)	
Right-of-Way Width: 20m (66')	idth: <i>20m (66')</i>		Date of Site Inspection: April 3, 2020	
Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: 3.5 n x 2 = 7.2m - Shoulder(s): 2.0 m wide - Boulevard(s): 5.40m± to PL - Typ. cross-fall (lanes): 2% - Max shoulder crossfall: 4-6% - Cross-Section CL alignment: Crown Centered	0.0% 7.0% 8.5 8.5 8.5	
	Surface Treatment	- Comment on surface treatment	Switner Leaturnt OK	
	Drainage	- Roadside swales? - Municipal Drains: McEwan Drain, Dingle Street Drain	Drivinge OK.	
	Vertical Alignment	- Maximum road segment grades: 6-8% -Vertical curve 'K' value	, , , , , , , , , , , , , , , , , , , ,	
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	Corne (2) 6 percelin intersection.	
ò	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m		
	Decision Sight Distance	- Min decision sight distance: 155-230m	OK.	
-	List of intersections within project limits	Hacienda Road / Dingle Line - Intersection control: - Stopping sight distance: 155-210m	Through st. Eglit lives, skipping distance	
intersections	List of intersections within project limits	Hacienda Road / Glencolin Line - Intersection control: - Stopping sight distance: 155-210m	though sheet, sight lives a stapping distance of.	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (HTD, Hn3) 4m (excluding cut or fill slopes) (HTD, Zezza) 5	70	
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	NIA	



Deskul yellow live, Dobb dash yellow live, R.W. Costing sign Propol waskings. Sognalled R.W. Costing.

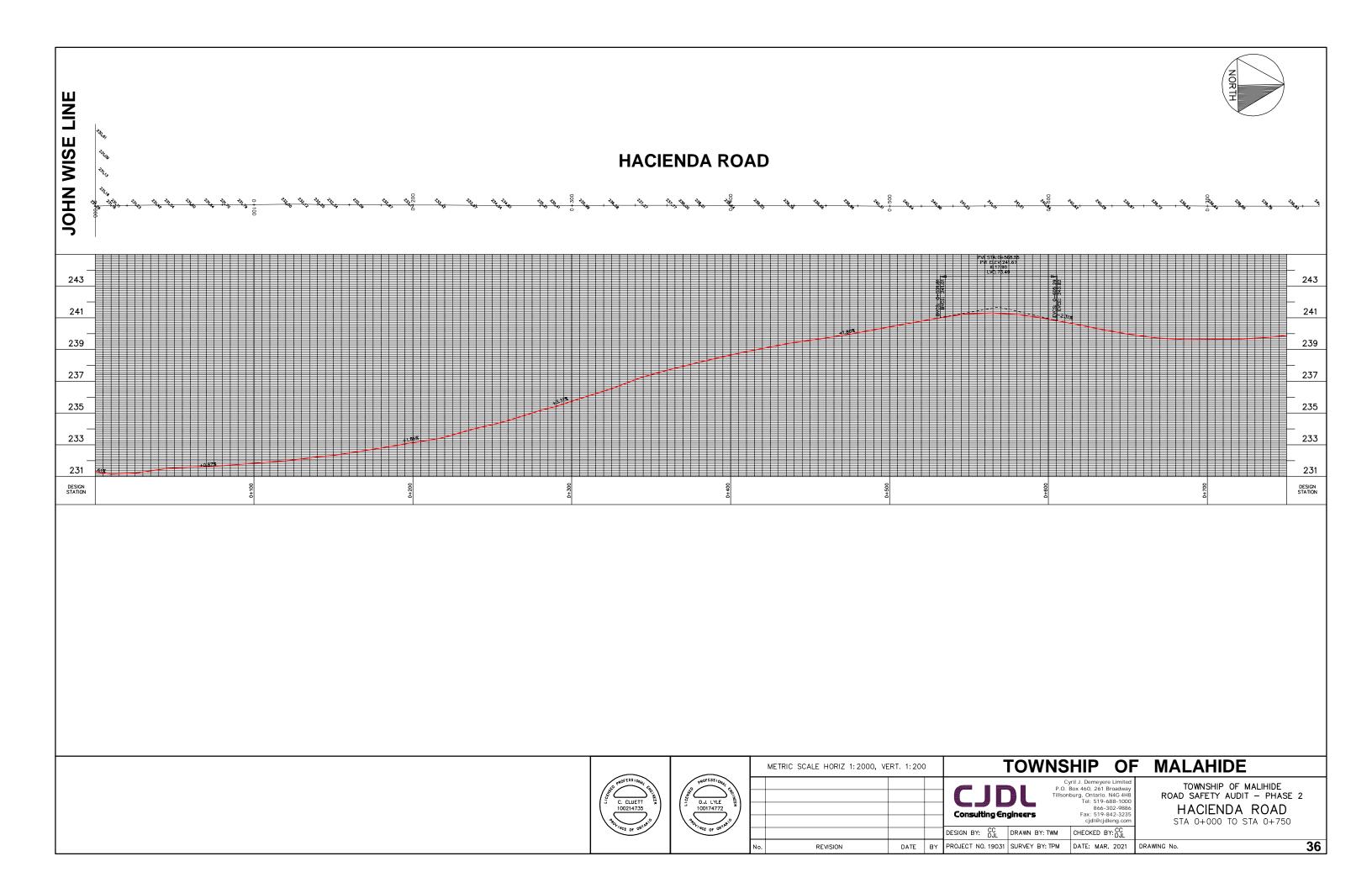
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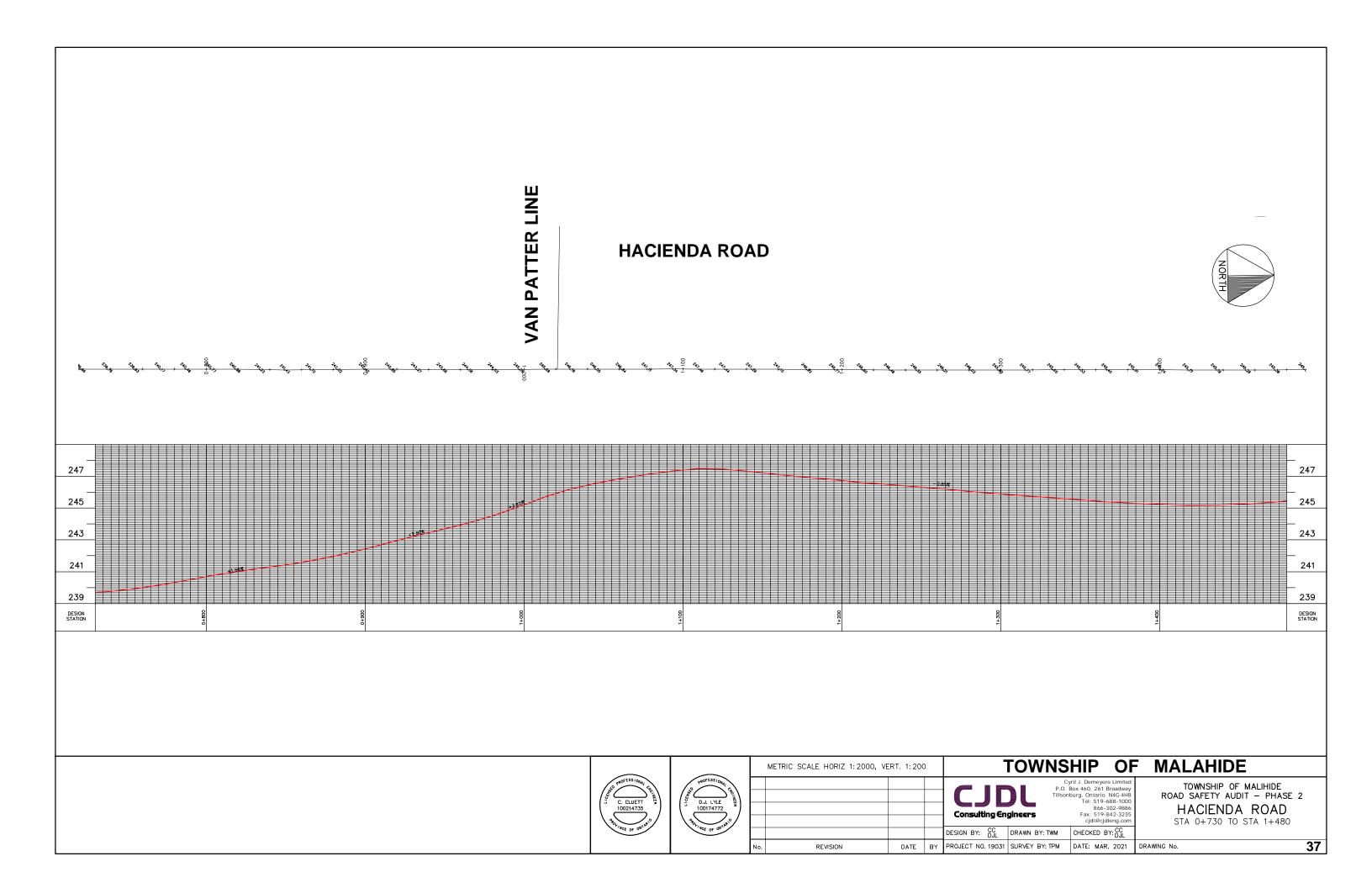
- Line painting: - Signage?

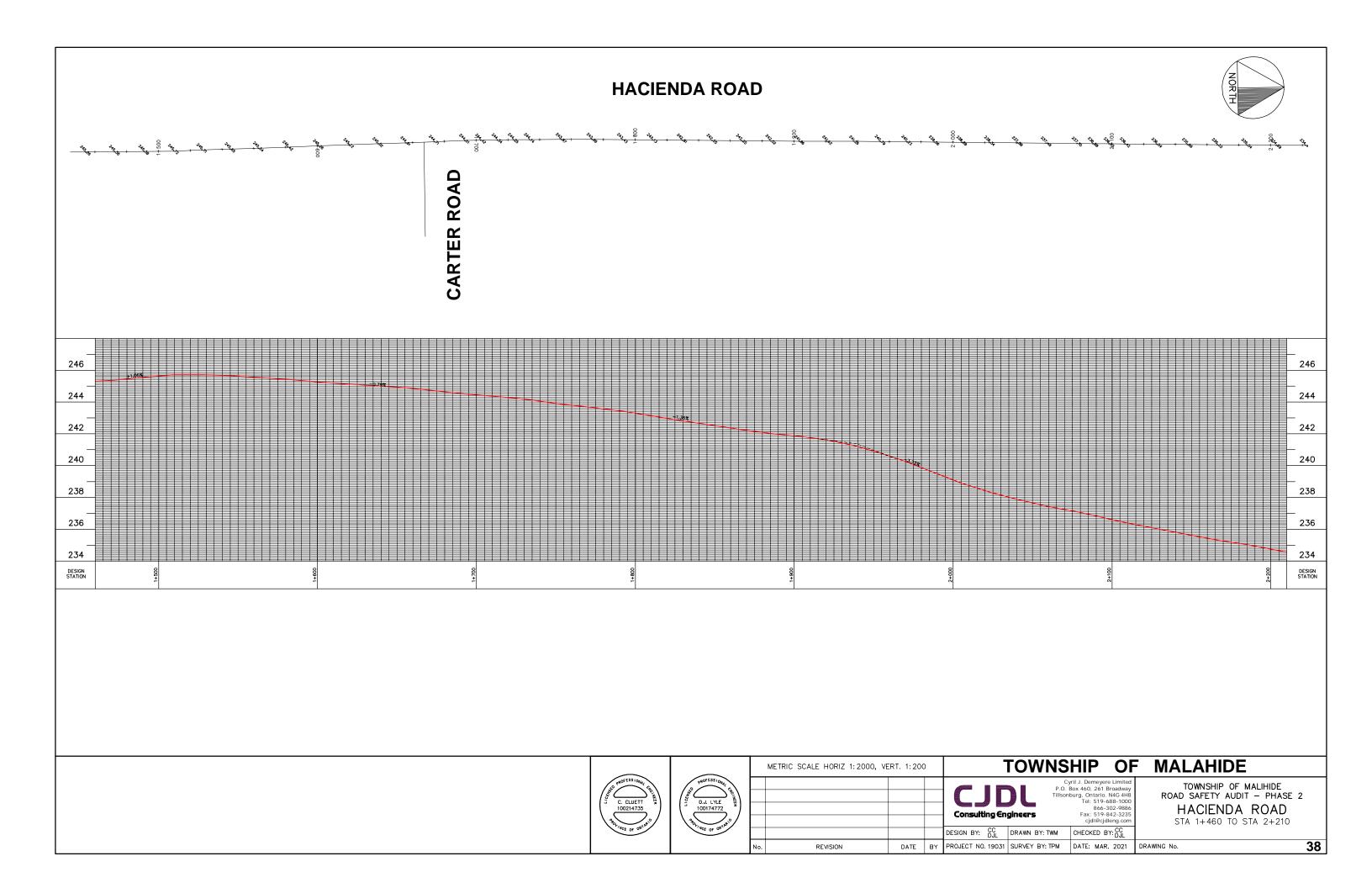
Visual Aids

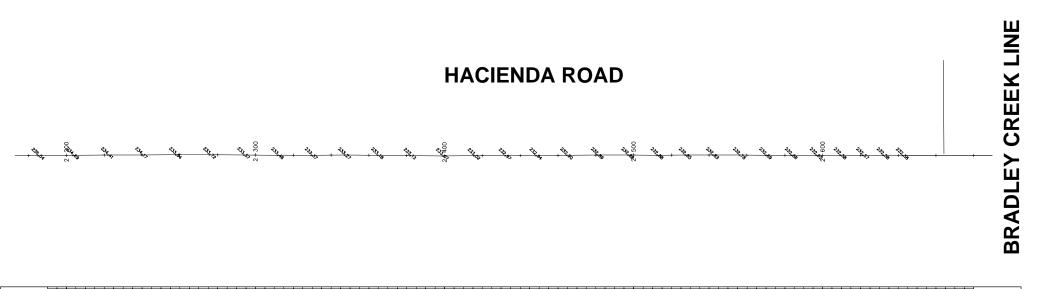
- Culverts? - Bridges?

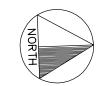
Structures (Bridges, Culverts, etc.)

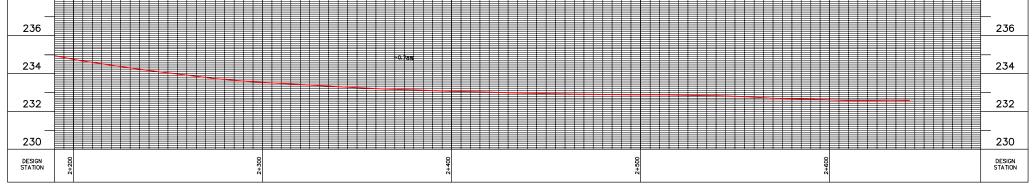
















TOWNSHIP OF I	IP OF MALAH	IIDE
Cyril J. Demeyere Limited P.O. Box 460, 261 Broadway Tillsonburg, Ontario. N4G 4H8 Tel: 519-688-1000 866-302-9886 Fax: 519-842-3235 cjdl@cjdleng.com	50, 261 Broadway Ontario. N4G 4H8 ei: 519-688-1000 866-302-9886 x: 519-842-3235 cjdl@cjdleng.com	NDA F
DESIGN BY: CC DRAWN BY: TWM CHECKED BY: CC DJL	CKED BY: CC	

TOWNSHIP OF MALIHIDE ROAD SAFETY AUDIT - PHASE 2 HACIENDA ROAD

STA 2+190 TO STA 2+700

39

DATE BY PROJECT NO. 19031 SURVEY BY: TPM DATE: MAR. 2021 DRAWING No.

<u>Hilltop Lane</u> <u>West End to Springfield Road</u>

• Criteria Review Sheet

Road Name: Hilltop Lane	op Lane		Study Section: West End to Springfield Road	
Direction of Travel: East to West	vel: East to West		Total Distance Analysed: 0.27 km	
Posted Speed: 50km/h	Okm/h		AADT: N/A	
Right-of-Way Width: 20m (66')	'idth: 20m (66')		Date of Site Inspection: May 7, 2021	
Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: - Crown Centered		
	Surface Treatment Drainage	- Comment on surface treatment - Roadside swales? - Municipal Drains: Staley Drain Wellman Branch	Surface Treatment OK.	
	Vertical Alignment	- Maximum road segment grades: 8-12% -Vertical curve 'K' value	901	
Alignment	Horizontal Alignment	- Minimum design radius: 100 to 80m - Maximum super elevation: 4-8% (TAC, 1999)	N.A.	
)	Passing Sight Distance	- Min passing sight distance (AASHTO): 160-350m	MA	
	Decision Sight Distance	- Min decision sight distance: 75-145m	よう	
Intersections	List of intersections within project limits	Hilltop Lane / Springfield Road - Intersection control: - Stopping sight distance: 60-110m	stop sign. Eightline, stopping distance ok	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: 3m (excluding cut or fill slopes)	oK.	
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	NA.	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	N/A.	
Visual Aids		- Line painting: - Signage?	No painted Cartreline.	



<u>John Wise Line</u> <u>Springfield Road to Richmond Road</u>

- Criteria Review Sheets
- Embankment Protection Warrant Guide
- Centreline Profile Drawing (40)

Road Name: John Wise Line	Study Section: Springfield Road to Sawmill Road
Direction of Travel: East to West	Total Distance Analysed: 2.06 km
Posted Speed: 80km/h	AADT: 1326 (Year: 2015)
Right-of-Way Width: 20m (66')	Date of Site Inspection: Apr. 1 3, 2020

Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: 3.6m v 2 = 7.2m - Shoulder(s): 7.6 m wide - Boulevard(s): 5.46m± to PL - Typ. cross-fall (lanes): 2% - Max shoulder crossfall: 4-6% - Cross-Section CL alignment: Crown Centered	4:5 × 5 × 5 × 5 × 5 × 5 × 5 × 5 × 5 × 5 ×	
	Surface Treatment Drainage	- Comment on surface treatment - Roadside swales? - Municipal Drains: Lake Eire Trib 10, Harmon Drain (x2),	- 1	
	Vertical Alignment Horizontal Alignment	- Maximum road segment grades: 6-8% -Vertical curve 'K' value - Minimum design radius: 280 to 230m - Maximum super elevation: 4-8%		
Angline	Passing Sight Distance Decision Sight Distance	- Min decision sight distance: (AASHTO): 275-550m	6K 0K.	
Intersections	List of intersections within project limits List of intersections within project limits	John Wise Line / Springfield Road - Intersection control: - Stopping sight distance: John Wise Line / Sawmill Road - Intersection control: - Stopping sight distance:	Stap sign. Sight lives & stapping distance OK. Through St. Sight lives & stapping distance OK.	
Physical Objects	Clear Zone (Poles, Trees, etc.) Embankments Structures (Bridges, Culverts, etc.)	ne: (Μτ0, ι ^κ (s) (Μτο, 2.	Entanhunt Wornt Carde of road. It of Colly work of Sountield Rud. Courte Column Roll Road. Courte Column Roll Road.	Hychopele Embulunt Paketon Warrented.
Visual Aids		- Line painting: - Signage?	5,64 yellow live. Thater time.	



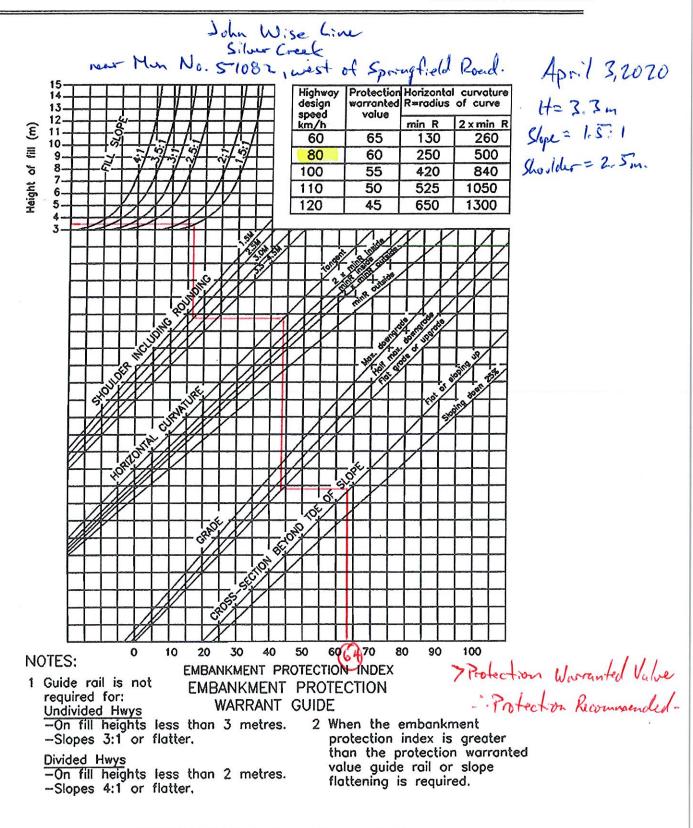


FIGURE 2.5.1 Embankment Warrant Guide

Criteria Review 2.0

Road Name: John Wise Line	n Wise Line		Study Section: Sawmill Road to Anger Road	
Direction of Travel: East to West	vel: East to West		Total Distance Analysed: 0.80 km	
Posted Speed: 80km/h	30km/h		AADT: 1174 (Year: 2015)	
Right-of-Way Width: 20m (66')	'idth: 20m (66')		Date of Site Inspection: Apr. (3,2020	
Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry Surface Treatment Drainage	3.6m, v ≥ = 7.2m Z, O m wide 5.46m± to PL 2% 4-6% Crown Centered		
		- Municipal Drains: Parker Drain (x2)	19:22 2000	

Crit	Criteria	Design Recommendations	tions	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment:	3.6m, ∨ = 7.2m ∠.O m wide 5.46m± to PL 2% 4-6% Crown Centered	N, 4 0, 0 70 70 70	
	Surface Treatment	- Comment on surface treatment		S, Mare Leathert OK.	
	Drainage	- Roadside swales? - Municipal Drains: Parker Drain (x2)		Dainage OK.	
	Vertical Alignment	- Maximum road segment grades: -Vertical curve 'K' value	%8-9	70	
Alignment	Horizontal Alignment	- Minimum design radius: - Maximum super elevation: (TAC, 1999)	280 to 230m 4-8%	NIA	
)	Passing Sight Distance	- Min passing sight distance (AASHTO):	275-550m	0K	
	Decision Sight Distance	- Min decision sight distance:	155-230m	0K	
ntercortions	List of intersections within project limits	John Wise Line / Sawmill Road - Intersection control: - Stopping sight distance:	155-210m	Through sheet Sight I was r stopping distance OK.	
	List of intersections within project limits	John Wise Line / Anger Road - Intersection control: - Stopping sight distance:		Though street sold line & stopping destruce OK.	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (excluding cut or fill slopes)	(MTO, 1943) 4m (MTO, 2020) 5m	the of road within	Hydropeter.
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?		NIA	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?		NIA	
		- Line painting: - Signage?		Solid yellow live.	
Visual Aids				Der corring sign. ATU trail sign.	



Road Name: John Wise Line	Study Section: Anger Road to Carter Road
Direction of Travel: East to West	Total Distance Analysed: 1.25 km
Posted Speed: 80km/h	AADT: 1174 (Year: 2015)
Right-of-Way Width: 20m (66')	Date of Site Inspection: 人へ、 3,2020

Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: 3.6m x 2 = 7.2m Shoulder(s): 2.5 m wide - Boulevard(s): 5.46m± to PL - Typ. cross-fall (lanes): 2% - Max shoulder crossfall: 6.6% - Cross-Section CL alignment: Crown Centered	4:V 0:U 0X 0X	
	Surface Treatment	- Comment on surface treatment	S, r face treatment OK.	
	Drainage	- Koadside swales? - Municipal Drains: Parker Drain, Versnick Drain, Branch A & B of the PRessy Drain	Dainuge OKi	
	Vertical Alignment	- Maximum road segment grades: 6-8% -Vertical curve 'K' value		
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	NIA	
	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m	0 M	
	Decision Sight Distance	- Min decision sight distance: 155-230m	OK	
ntercentions	List of intersections within project limits	John Wise Line / Anger Road - Intersection control: - Stopping sight distance: 155-210m	Through Sheet. Stopping distance, sight lines	
	List of intersections within project limits	John Wise Line / Carter Road - Intersection control: - Stopping sight distance: 155-210m	Through street. Stopping distance, sight inset OK	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (MTO, M13) 4m (excluding cut or fill slopes) (M0, 2020) 5m	18 Hychopoles on south side are within	Host hype
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	NIA	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	NIA	
Visual Aids		- Line painting: - Signage?	Ested yellow true	
			ATV tail sign.	

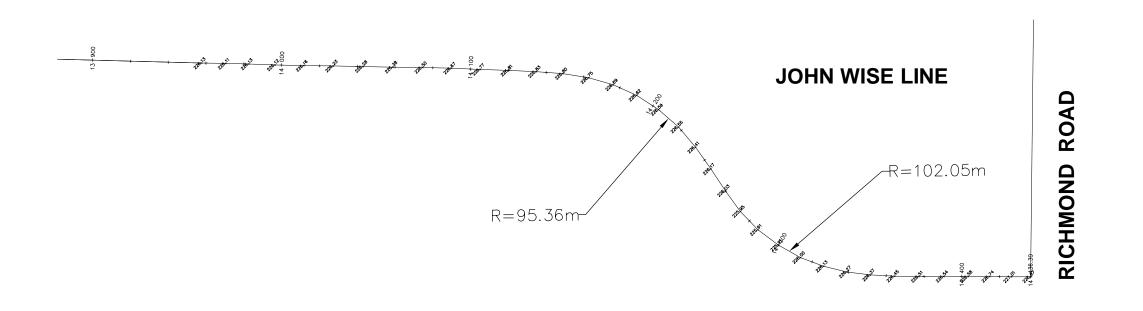


Criteria Review 2.0

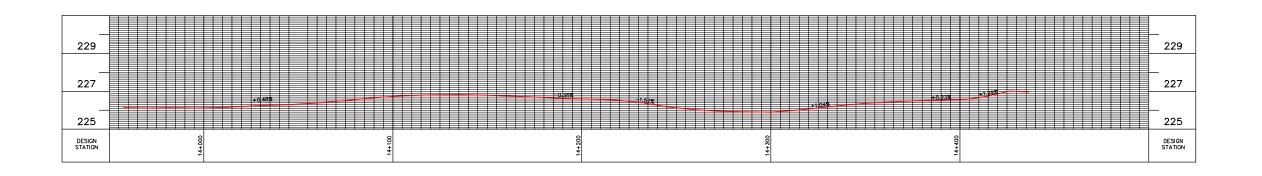
Road Name: John Wise Line	Wise Line		Study Section: Carter Road to Richmond Road		
Direction of Travel: East to West	vel: East to West		Total Distance Analysed: 2.11 km		
Posted Speed: 80km/h	30km/h		AADT: 727 (Year: 2015)		
Right-of-Way Width: 20m (66')	idth: <i>20m (66')</i>		Date of Site Inspection: Apr. 1 3, 2020		
Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies	
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: - Cross-Secti	7.5. 2 ~ 0 K 0 K		
	Surface Treatment	- Comment on surface treatment	Surface treatment OK		
	Drainage	- Roadside swales? - Municipal Drains: Ellis Drain Branch A, John Wise Line Drain	Dainge Of		
	Vertical Alignment	- Maximum road segment grades: 6-8% -Vertical curve 'K' value	90		
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	R= 95 to 102m. Chausen signs, 5 beard 1	No godo reduction	Street
ò	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m	0K		W.
	Decision Sight Distance	- Min decision sight distance: 155-230m	OK		
	List of intersections within project limits	John Wise Line / Carter Road - Intersection control: - Stopping sight distance:	through street soft was distance OK.		
וונפו אפרנוסווא	List of intersections within project limits	John Wise Line / Richmond Road - Intersection control: - Stopping sight distance:	ign bows	·	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (ארני) איים (excluding cut or fill slopes) איים (ארנס איים) איים (ארנס איים) איים איים (ארנס איים) איים איים איים איים איים איים איי			
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	OK		
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	W/A		
Visual Aids		- Line painting: - Signage?	Solid yellow live		



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METRIC SCALE HORIZ 1:2000, VE	ERT. 1:200)	TOWNSHIP O
			Cyril J. Demeyere Limite P.O. Box 460, 261 Broadwa Tillsonburg, Ontario. Nde Tel: 519-688-100 866-302-988 Fax: 519-842-323 cjdl@cjdleng.cor
			DESIGN BY: CC DRAWN BY: TWM CHECKED BY: CC DJL

TOWNSHIP OF MALAHIDE Cyril J. Demeyere Limited . Box 460, 261 Broadway onburg, Ontario. N4G 4H8 Tel: 519-688-1000 866-302-9886 Fax: 519-842-3235 cjdl@cjdleng.com TOWNSHIP OF MALIHIDE ROAD SAFETY AUDIT - PHASE 2

JOHN WISE LINE STA 13+960 TO STA 14+440

40 DATE BY PROJECT NO. 19031 SURVEY BY: TPM DATE: MAR. 2021 DRAWING No.

<u>Louisa Crescent</u> <u>Hacienda Road to Catherina Street</u>

• Criteria Review Sheet

Road Name: Louisa Crescent	Study Section: Hacienda Road to Catherina Street
Direction of Travel: North to South/East to West	Total Distance Analysed: 0.13 km
Posted Speed: 50km/h	AADT: 50 (Year: 2015)
Right-of-Way Width: 20m (66')	Date of Site Inspection: 4pril 3, 2020

Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: - Cross-Secti	7.2 Cb OK	
	Surface Treatment	- Comment on surface treatment	Surface Trestant OK.	
	Drainage	- Roadside swales? - Municipal Drains: N/A	Dainigs to CBs.	
	Vertical Alignment	- Maximum road segment grades: 8-12% -Vertical curve 'K' value	ok '	
Alignment	Horizontal Alignment	- Minimum design radius: 100 to 80m - Maximum super elevation: 4-8% (TAC, 1999)	OK .	
)	Passing Sight Distance	- Min passing sight distance (AASHTO): 160-350m	N/4	
	Decision Sight Distance	- Min decision sight distance: 75-145m	NA	
1+00000	List of intersections within project limits	Louisa Crescent / Hacienda Road - Intersection control: - Stopping sight distance: 60-110m	Step sign. Sight hour, stopping distance	
ווופוזפרווסווז	List of intersections within project limits	Louisa Crescent / Catherina Street - Intersection control: - Stopping sight distance: 60-110m	Stop sign. Inglit lives, stopping distance	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: 3m (excluding cut or fill slopes)	70	
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	Mix	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	Not	
علمالا احتاءالا		- Line painting: - Signage?	No lives on road.	
מוא אומי				



Norton Street Talbot Line to North End Cul-de-sac

• Criteria Review Sheet

Road Name: <i>Norton Street</i> .	Study Section: Talbot Line to North End Culdesac
Direction of Travel: North to South	Total Distance Analysed: 0.28 km
Posted Speed: N/A Asphalt; Assume 50¢m/h	AADT: 200 (Year: 2015)
Right-of-Way Width: 20m (66')	Date of Site Inspection: チャーノ 23,2020

Criteria	eria	Design Recommendations	SL	On-Site Observations	Deficiencies
Orossa-Saction	Geometry	- Cross-section lane widths: 3.5 Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall:	3.5m x 2 = 7.0m 1.0m wide 5.46m± to PL 2% 4-6%	F. 2m Siewlidus OK OF	
	Surface Treatment	ace treatment		ok	
	Drainage	- Roadside swales? - Municipal Drains: N/A		9/<	
	Vertical Alignment	- Maximum road segment grades: -Vertical curve 'K' value	6-12%	SK.	
Alignment	Horizontal Alignment	- Minimum design radius: - Maximum super elevation: (TAC, 1999)	150 to 120m 4-8%	NCA	
0	Passing Sight Distance	- Min passing sight distance (AASHTO):	200-410m	NIA	
	Decision Sight Distance	- Min decision sight distance:	95-175m	NIA	
Intersections	List of intersections within project limits	Norton Street / Talbot Line - Intersection control: - Stopping sight distance:	75-130m	35-130m Though shat (3) Unich. OK.	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (excluding cut or fill slopes) (0.5m if o	3m (0.5m if curb present)		Hydro police
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?		NA	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?		MM	
		- Line painting: - Signage?		No ine parakd.	
Visual Aids				"No exit" sign!	



<u>Pigram Road</u> <u>Ron McNeil Line to Pressey Road</u>

• Criteria Review Sheet

Road Name: Pigram Road	am Road		Study Section: Ron McNeil Line to Pressey Road	
Direction of Travel: North to South	rel: North to South		Total Distance Analysed: 0.09 km	
Posted Speed: 80km/h	'Okm/h		AADT: 673 (Year: 2018)	
Right-of-Way Width: 20m (66')	idth: <i>20m (66')</i>		Date of Site Inspection: 4pri' 6,スのスの	
Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry Surface Treatment	- Cross-section lane widths: 3.6m x2 = 7.2m - Shoulder(s): 2.46 m wide - Boulevard(s): 5.46m± to PL - Typ. cross-fall (lanes): 2% - Max shoulder crossfall: 2% - Cross-Section CL alignment: Crown Centered - Comment on surface treatment	7.2m 2 h OK Soface treatent OK	
	Drainage Votice Name of	- Municipal Drains: Cady/Bear Drain - Maximum road segment grades: 6-8%	Dramage OK.	
Alignment	Vertical Alignment Horizontal Alignment	28	δK N/A	
	Passing Sight Distance Decision Sight Distance	- Min passing sight distance (AASHLO): 2/5-55um - Min decision sight distance: 155-230m		
Intersections	List of intersections within project limits List of intersections within project limits	Pigram Road / Ron McNeil Line - Intersection control: - Stopping sight distance: - Pigram Road / Pressey Road - Intersection control: - Stopping sight distance: - Stopping sight distance:	Through St. Sight lives, stopping distance OK. Stop 5 zon W/ fledwig light. Stop 5. zon orbered 60. H. Hooding light. It &	
Physical Objects	Clear Zone (Poles, Trees, etc.) Embankments Structures (Bridges, Culverts, etc.)	- Recommended clear zone: (大फ, 小珍, 小孩, 4m (excluding cut or fill slopes) (大फ, 2620) 3.5元 - Slope? - Height? - Protection required? Limits? - Culverts? - Bridges?	Cometer colount-continue. Dielus stepes 11m unprotected length, 180- shoulder, from 471	Requires Protections
Visual Aids		- Line painting: - Signage?	Dodos yellow live ambiento O Dodos / solid yellow live ambiento	
	* Cape to	Cape to west of intersetion could pose planting that have been stall	expl live politime. Aspersos	Page 47 of 75

<u>Pressey Line</u> <u>Springfield Road to Springer Hill Road</u>

- Criteria Review Sheets
- Centreline Profile Drawing (41)

Criteria Review 2.0

Road Name: Pressey Line Direction of Travel: Fact to West		Study Section: Springfield Road to $\frac{400}{100}$ m E of Springfield Road	
		AADT: 946 (Year: 2018)	
1 1		Date of Site Inspection: April 6,2020	
	Design Recommendations	On-Site Observations	Deficiencies
	- Cross-section lane widths: 3.5m x - Shoulder(s): 2.4 - Boulevard(s): 5.44 - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: Crown	3.5m x2 = 7.0m 7.0 2.0 m wide 2.0 5.46m± to Pl. 2% OK 4-6% OK Crown Centered	
	- Comment on surface treatment	Soface trataunt OR	
	- Roadside swales? - Municipal Drains: Lower Catfish 2	Dainog Ok	
	- Maximum road segment grades: -Vertical curve 'K' value	8-12%	
	- Minimum design radius: - Maximum super elevation: (TAC, 1999)	100 to 80m A/M	
	- Min passing sight distance (AASHTO):	160-350m 0K	
Decision Sight Distance	- Min decision sight distance:	75-145m 6/L	
	Pressey Line / Springfield Road - Intersection control: - Stopping sight distance:	Stop sign. Sight lives, stopping distance	
	- Recommended clear zone: (서で, 143) 3m (excluding cut or fill slopes) (HTO, 2020) 発	thotopoles in Ozon south sub st	spladus 43
	- Slope? - Height? - Protection required? Limits?	N/A	
	- Culverts? - Bridges?	NA	



- Line painting: - Signage?

Visual Aids

Road Name: Pressey Line	sey Line		(5.5	Study Section: 400 m E of Springfield Road to Walker Road	
Direction of Travel: East to West	vel: East to West			Total Distance Analysed: 2.03 km	
Posted Speed: 80km/h	30km/h			AADT: 946 (Year: 2018)	
Right-of-Way Width: 20m (66')	idth: 20m (66')			Date of Site Inspection: チャー・ 6, スロスの	
Crit	Criteria	Design Recommendations	Su	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: 3.fg - Shoulder(s): 2 - Boulevard(s): 5 - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: - Cros	3.6m v 2 = 7.2m 2.0 m wide 5.46m± to PL 2% 4-6% Crown Centered	2-0 2-0 01c	W. elth
	Surface Treatment	- Comment on surface treatment		the Sholder ravelling in areas.	Shoulder condition.
	Drainage	- Roadside swales? - Municipal Drains: Stover Drain		Draincook OK.	
	Vertical Alignment	- Maximum road segment grades: -Vertical curve 'K' value	%8-9	00%	
Alignment	Horizontal Alignment	- Minimum design radius: - Maximum super elevation: (TAC, 1999)	280 to 230m 4-8%	NICH	
)	Passing Sight Distance	- Min passing sight distance (AASHTO):	275-550m	OK	
	Decision Sight Distance	- Min decision sight distance:	155-230m	OK	
Intersections	List of intersections within project limits	Pressey Line / Walker Road - Intersection control: - Stopping sight distance:	155-210m	though Street. Sight lines, stopping distance OK,	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (HTO, 1473) (excluding cut or fill slopes) (HTD, 2618)	(MTO, 1993) 4m MTO, 2020) Sm	Applopulation CZ on north side	th dropule
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	•	414	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?		N/4	
Visual Aids		- Line painting: - Signage?		shit yellow live Shore the soad.	



Road Name: Pressey Line	Study Section: Walker Road to Carter Road
Direction of Travel: East to West	Total Distance Analysed: 1.96 km
Posted Speed: 80km/h	AADT: 1024 (Year: 2018)
Right-of-Way Width: 20m (66')	Date of Site Inspection: Apr. 1 6,2020

Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: - Cross-Secti	66m 2.om ok ok	W. ofth
	Surface Treatment Drainage	- Comment on surface treatment - Roadside swales? - Municipal Drains: Lindsey Drain, Shively Drain,	Shoolder ravelling in areas. Dainage OK.	She vide and two.
A is a manual transfer of the second	Vertical Alignment Horizontal Alignment	- Maximum road segment grades: -Vertical curve 'K' value - Minimum design radius: - Maximum super elevation: (TAC, 1999)		
	Passing Sight Distance Decision Sight Distance	- Min passing sight distance (AASHTO): 275-550m - Min decision sight distance: 155-230m		
Intersections	List of intersections within project limits List of intersections within project limits	Pressey Line / Walker Road - Intersection control: - Stopping sight distance: - The Pressey Line / Carter Road - Intersection control: - Stopping sight distance: - Stopping sight distance:	Though sheet, south how, stopping though sheet, is the lives, stopping though sheet. is the lives, stopping distance obe.	
Physical Objects	Clear Zone (Poles, Trees, etc.) Embankments Structures (Bridges, Culverts, etc.)	- Recommended clear zone: (MTb,1913) 4m (excluding cut or fill slopes) (MTb,2020) 5m - Slope? - Slope? - Height? - Protection required? Limits? - Culverts?	Hydropoles N/A Bridge W/ Good or	Anlaple
Visual Aids		- Line painting: - Signage?	Solid yellow live. "One lave, Navous", solid yellow live.	



Criteria Review 2.0

Road Name: Pressey Line	ssey Line		Study Section: Carter Road to Pigram Road	
Direction of Travel: East to West	vel: East to West		Total Distance Analysed: 0.29 km	
Posted Speed: 80km/h	80km/h		AADT: 1150 (Year: 2018)	
Right-of-Way Width: 20m (66')	/idth: 20m (66')		Date of Site Inspection: 人のい, 6, 202〇	
Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: 3.6m x 2 = 7.2m - Shoulder(s): 2.0 m wide - Boulevard(s): 5.46m± to PL - Typ. cross-fall (lanes): 2% - Max shoulder crossfall: 4-6% - Cross-Section CL alignment: Crown Centered	7.0 2.0 0,k 0,k	y.
	Surface Treatment	- Comment on surface treatment	Sortere testaunt OK	
	Drainage	- Roadside swales? - Municipal Drains: N/A	Dainuge OK	
	Vertical Alignment	- Maximum road segment grades: 6-8% -Vertical curve 'K' value		
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	R=480m. OK. Churans & harrzonki	
0	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m	OK	
	Decision Sight Distance	- Min decision sight distance: 155-230m	OK	
	List of intersections within project limits	Pressey Line / Carter Road - Intersection control: - Stopping sight distance: 155-210m		
Intersections	List of intersections within project limits	Pressey Line / Pigram Road - Intersection control: - Stopping sight distance: 155-210m	Through st. Lybet lives & stapping distance OK	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (ATD, M13) 4m (excluding cut or fill slopes) (ATD, 2020) 5m	NO	
Physical Objects	Embankments		dia.	



Solid yellow live.
While solid lives on shulder @ how zontal

NA

- Line painting: - Signage?

Visual Aids

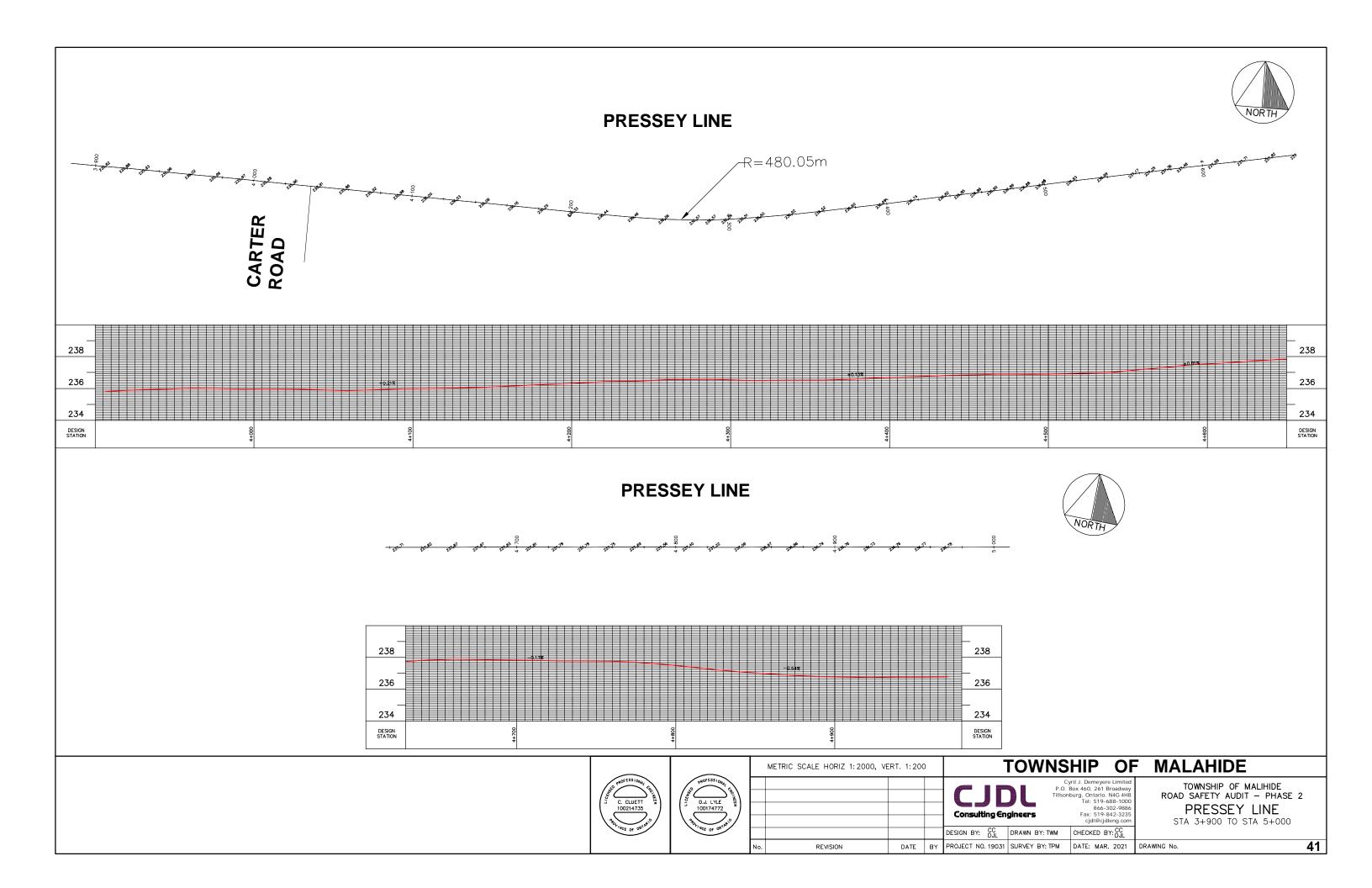
- Culverts? - Bridges?

Structures (Bridges, Culverts, etc.)

Road Name: Pressey Line	Study Section: Pigram Road to Springer Hill Road
Direction of Travel: East to West	Total Distance Analysed: 1.8 km
Posted Speed: 80km/h	AADT: 1748 (Year: 2018)
Right-of-Way Width: 20m (66')	Date of Site Inspection: 4 p.ハートリンのスの

Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: - Crown Centered	7.2m 4.3 wide 1.7 to PL 2% 0 LC 4-6% 0 LC	Shoulder
	Surface Treatment Drainage	- Comment on surface treatment - Roadside swales? - Municipal Drains: Germuska Drain	Sortace treetunt OK	
	Vertical Alignment Horizontal Alignment	- Maximum road segment grades: 6-8% -Vertical curve 'K' value - Minimum design radius: 280 to 230m - Maximum super elevation: 4-8%		
Alignment	Passing Sight Distance Decision Sight Distance	- Min decision sight distance: (AASHTO): 275-550m		
Intersections	List of intersections within project limits List of intersections within project limits	Pressey Line / Pigram Road - Intersection control: - Stopping sight distance: - Stopping sight distance: - Stopping sight distance: - Intersection control:	Though Though	
Physical Objects	Clear Zone (Poles, Trees, etc.) Embankments	agin unstance. (kro, 1 cut or fill slopes) (rro, 2 n required? Limits?	4m 2000 of thees may of Mus. W. 123251	1,40%
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	Brdge W/ ground rails thatard signs	
Visual Aids		- Line painting: - Signage?	sold relland line Share the road.	





Rogers Road John Wise Line to Ron McNeil Line

- Criteria Review Sheets
- Centreline Profile Drawings (42-48)

Road Name: Rogers Road	Study Section: John Wise Line to Conservation Line
Direction of Travel: North to South	Total Distance Analysed: 2.06 km
Posted Speed: 80km/h	AADT: 872 (Year: 2015)
Right-of-Way Width: 20m (66')	Date of Site Inspection: 人かい 2,2020

Crite	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: - Cross-Section CL alignment: - Cross-Section CL alignment: - Cross-Section C	7.4 2.5 1.0 % 01/A	
	Surface Treatment	- Comment on surface treatment	Surface freezhout OK.	
	Drainage	2 (x3)	Draininge Oh.	
	Vertical Alignment	- Maximum road segment grades: 6-8% -Vertical curve 'K' value	Koist < 24 @ sta 1+200, 1+550, 1+800	3 Kores h, 1 Kso g
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	N/A	
)	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m	n OK	
	Decision Sight Distance	- Min decision sight distance: 155-230m	n 0K	
1001400	List of intersections within project limits	Rogers Road / John Wise Line - Intersection control: - Stopping sight distance: 155-210m	Stop sign. C+ Worning Sign.	
וונפוספכנוסווס	List of intersections within project limits	Rogers Road / Conservation Line - Intersection control: - Stopping sight distance:	Stop sign. Sight lives; stopping distance ch.	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (אדס, 1979) 4m (excluding cut or fill slopes) און (אדס, 2020) און איניין אייין איניין אינייין איניין איניין איניין איניין איניין אינייין איייין איייייין איייין איייין איייין איייין איייין אייין איייין איייין איייי	Tree in CZ @Mm. 7-707. " Of my pour 7707.	Tree, Astopole
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	OK	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	Culvarts Ol.	
		- Line painting: - Signage?	since the road deer endering	
Visual Aids			Solved yellow line.	

Woodlet north of Hun. 7881, east site within clearzonen Hydropen: this area ok, Page

Hydrophes now Mar 8122 in clear soon

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Road Name: Rogers Road	ers Road		Study Section: Conservation Line to Catt Line	
Direction of Trav	Direction of Travel: North to South		Total Distance Analysed: 1.18 km	
Posted Speed: 80km/h	30km/h		AADT: 1195 (Year: 2015)	
Right-of-Way Width: 20m (66')	'idth: 20m (66')		Date of Site Inspection: April 2,2020	
			7.	
Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Typ. dax shoulder crossfall: - Cross-Section CL alignment: - Cross-Section CL alignment:	462 77	W,etth Shoolder
	Surface Treatment	ent		
	Drainage	- Roadside swales? - Municipal Drains: Lower Catfish (x2)	Dramage OK	
	Vertical Alignment	- Maximum road segment grades: 6- -Vertical curve 'K' value	, ¥⊙ , ×o , ∞e-9	
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	4-8% N/A	
0	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m)Om (OK	
	Decision Sight Distance	- Min decision sight distance: 155-230m		
1	List of intersections within project limits	Rogers Road / Conservation Line - Intersection control: - Stopping sight distance: 155-210m	Stop sign about. Stop sign. 4-way	
ווופואפרנוסווא	List of intersections within project limits	Rogers Road / Catt Line - Intersection control: - Stopping sight distance:	1	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (শেক), 1993) (excluding cut or fill slopes)	lens	TR 87.
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	Embankum + protection in place. OK.	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	OK	
		- Line painting: - Signage?	Sold yellow live.	



Visual Aids

Shore the road sign.

Road Name: Rogers Road	ers Road		Study Section: Catt Line to Brook Line	
Direction of Travel: North to South	rel: North to South		Total Distance Analysed: 0.16 km	
Posted Speed: 80km/h	Okm/h		AADT: 1195 (Year: 2015)	
Right-of-Way Width: 20m (66')	idth: <i>20m (66')</i>		Date of Site Inspection: April 2,2020	
Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: 3.6m x 2 = 7.2m - Shoulder(s): 2.0m wide - Boulevard(s): 5.4em± to PL - Typ. cross-fall (lanes): 2% - Max shoulder crossfall: 4-6% - Cross-Section CL alignment: Crown Centered	7.5 2.5 0K	
	Surface Treatment	- Comment on surface treatment	Surface freetheat OK	
	Drainage	- Roadside swales? - Municipal Drains: N/A	Dainage OK.	
	Vertical Alignment	t grades:	OK	
Alignment	Horizontal Alignment	 - Minimum design radius: - Maximum super elevation: 4-8% (TAC, 1999) 	Net	
)	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m	ok	
	Decision Sight Distance	- Min decision sight distance: 155-230m	ok ,	
	List of intersections within project limits	Rogers Road / Catt Line - Intersection control: - Stopping sight distance: 155-210m	through street sight lives, stapping	
mersections	List of intersections within project limits	Rogers Road / Brook Line - Intersection control: - Stopping sight distance: 155-210m	Through street sight lives, stopping i	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (MTD, M3) 4m (excluding cut or fill slopes) (MTO, 2020) 5M	Aydropade @ Call Live, east side of road.	of laple
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	NIA	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	NA	
Visual Aids		- Line painting: - Signage?	solio yellow live.	



Criteria Review 2.0

Road Name: Rogers Road	ters Road		Study Section: Brook Line to Talbot Line	
Direction of Tra	Direction of Travel: North to South		Total Distance Analysed: 1.23 km	
Posted Speed: 80km/h	80km/h		AADT: 1195 (Year: 2015)	
Right-of-Way Width: 20m (66')	/idth: 20m (66')		Date of Site Inspection: チャパス, スクスの	
Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry Surface Treatment	- Cross-section lane widths: 3.6m × 2 = 7.2m	2.5 2.5 OK Surface Teathur + OK.	
	Oracioado	- Koadside swales :		

Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: - Cross-Secti	7.2m 7-5 wide 2-5 to Pl. 2% 2% 0/K 4-6% 0/K tered 0/K	
	Surface Treatment	- Comment on surface treatment	Surface Trenthount OK.	
	Drainage	- Roadside swales? - Municipal Drains: Ferguson Drain	Danuge OK	
	Vertical Alignment	- Maximum road segment grades: -Vertical curve 'K' value	<i>1</i> 7/□ 28-9	
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	4-8% N/4	
ò	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m	oom oo K	
	Decision Sight Distance	- Min decision sight distance: 155-230m	som ok	
0.000	List of intersections within project limits	Rogers Road / Tallb. F Line - Intersection control. - Stopping sight distance: 155-210m		
ווונפן אפריוסון א	List of intersections within project limits	Rogers Road / いろっさん イルー・ - Intersection control: - Stopping sight distance:	Throng	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (MTO, M13) 4n (MTO, 2020) 5m	The on each side of road, adjacent to	True.
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	WA .	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	>/0	
Visual Aids		- Line painting: - Signage?	Solod yellows line. Both	



Road Name: Rogers Road	Study Section: Talbot Line to Glencolin Line
Direction of Travel: North to South	Total Distance Analysed: 2.08 km
Posted Speed: 80km/h	AADT: 511 (Year: 2018)
Right-of-Way Width: 20m (66')	Date of Site Inspection: 4ァーノ 6,スのこの

Cri	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: 3.6m v 2 = 7.2m - Shoulder(s): 2.0³ m wide - Boulevard(s): 5.46m± to PL - Typ. cross-fall (lanes): 2% - Max shoulder crossfall: 4-6% - Cross-Section CL alignment: Crown Centered	2m 7.2 ide 1.57 2% 0% 6% 0%	Shaulter
	Surface Treatment	- Comment on surface treatment	Surface Treatment OK	
	Drainage	- Roadside swales ; - Municipal Drains: Catfish Creek	Drawage OK.	
	Vertical Alignment	- Maximum road segment grades: 6-8% -Vertical curve 'K' value	KCEEST < 24 @ Sta 5+100.	KLEEST Gail
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	R=204 to 237. Speed limit reduction	
)	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m		
	Decision Sight Distance	- Min decision sight distance: 155-230m	100000000000000000000000000000000000000	
100000000000000000000000000000000000000	List of intersections within project limits	Rogers Road / Talbot Line - Intersection control: - Stopping sight distance: 155-210m	Stop sign. 4- Wearing sign.	
ווינבן אברנוסון	List of intersections within project limits	Rogers Road / Glencolin Line - Intersection control: - Stopping sight distance: 155-210m		
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (শট,1493) 4m (excluding cut or fill slopes) (শত,2020) 3.5m	OK.	
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	014	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	Bridge (2) Tallot Council and Ecople	
20		- Line painting: - Signage?	Solid yellow line.	
Visual Aids			Store com D. R. W. Costung	



R.W ahud, Stopings about. "Active trains as at Dec 19,201657gm."

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Criteria Review 2.0

Road Name: Rogers Road	yers Road		Study Section: Glencolin Line to College Line	
Direction of Tra	Direction of Travel: North to South		Total Distance Analysed: 2.21 km	
Posted Speed: 80km/h	80km/h		AADT: 251 (Year: 2018)	
Right-of-Way Width: 20m (66')	/idth: 20m (66')		Date of Site Inspection: April 6,2020	
Cri	Criteria	Design Recommendations	On-Site Observations	Deficiencies
		lane widths: 3.6	7.2	Showler
	Geometry	- Boulevard(s): 5.46m± to PL - Typ. cross-fall (lanes): 2%		
Cross-Section		- Max shoulder crossfall: 4-6% - Cross-Section CL alignment: Crown Centered	8 × ×	
	Surface Treatment	- Comment on surface treatment	So tace treatment OH	
	Drainage	- Roadside swales? - Municipal Drains: Skinner Drain (x2), Smit Drain	May wage OK	
	Vertical Alignment	- Maximum road segment grades: 6-8% -Vertical curve 'K' value	ok 1	
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	4114	
	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m	OK	
	Decision Sight Distance	- Min decision sight distance: 155-230m	2/5	
	List of intersections within project limits	Rogers Road / Glencolin Line - Intersection control: - Stonoling eight distance:	proporties days whis days	
Intersections	List of intersections within project limits	a	Stopsign Sight lines, stopping distance	

Stop sign Sight lines, stopping distance

4/4

20

(MB,M3) 4m

- Stopping sight distance: - Recommended clear zone: (excluding cut or fill slopes)

Clear Zone (Poles, Trees, etc.)

- Protection required? Limits?

- Slope? - Height?

Embankments

Physical Objects

- Culverts? - Bridges?

Structures (Bridges, Culverts, etc.)

- Line painting: - Signage?

Visual Aids

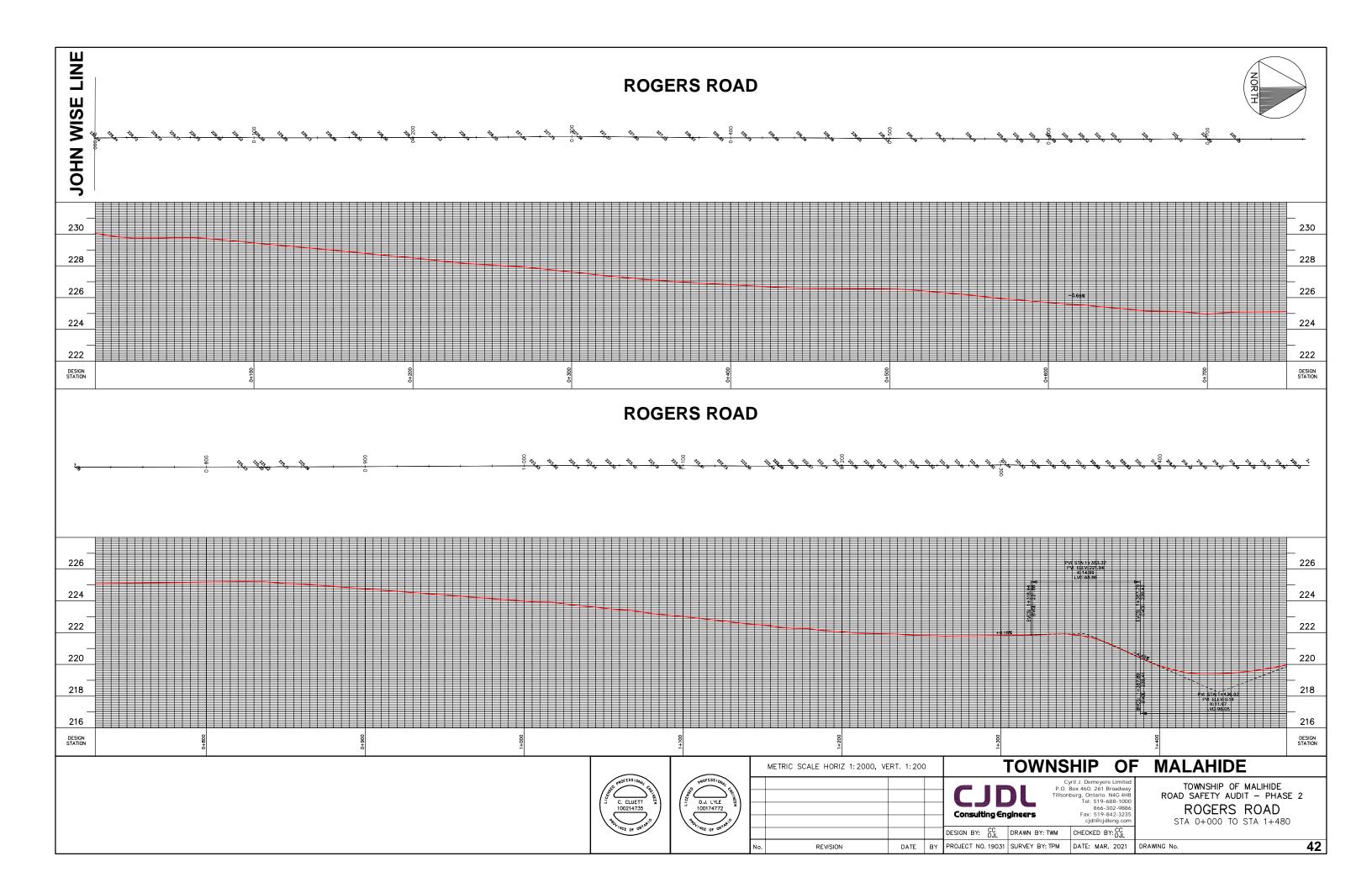
155-210m

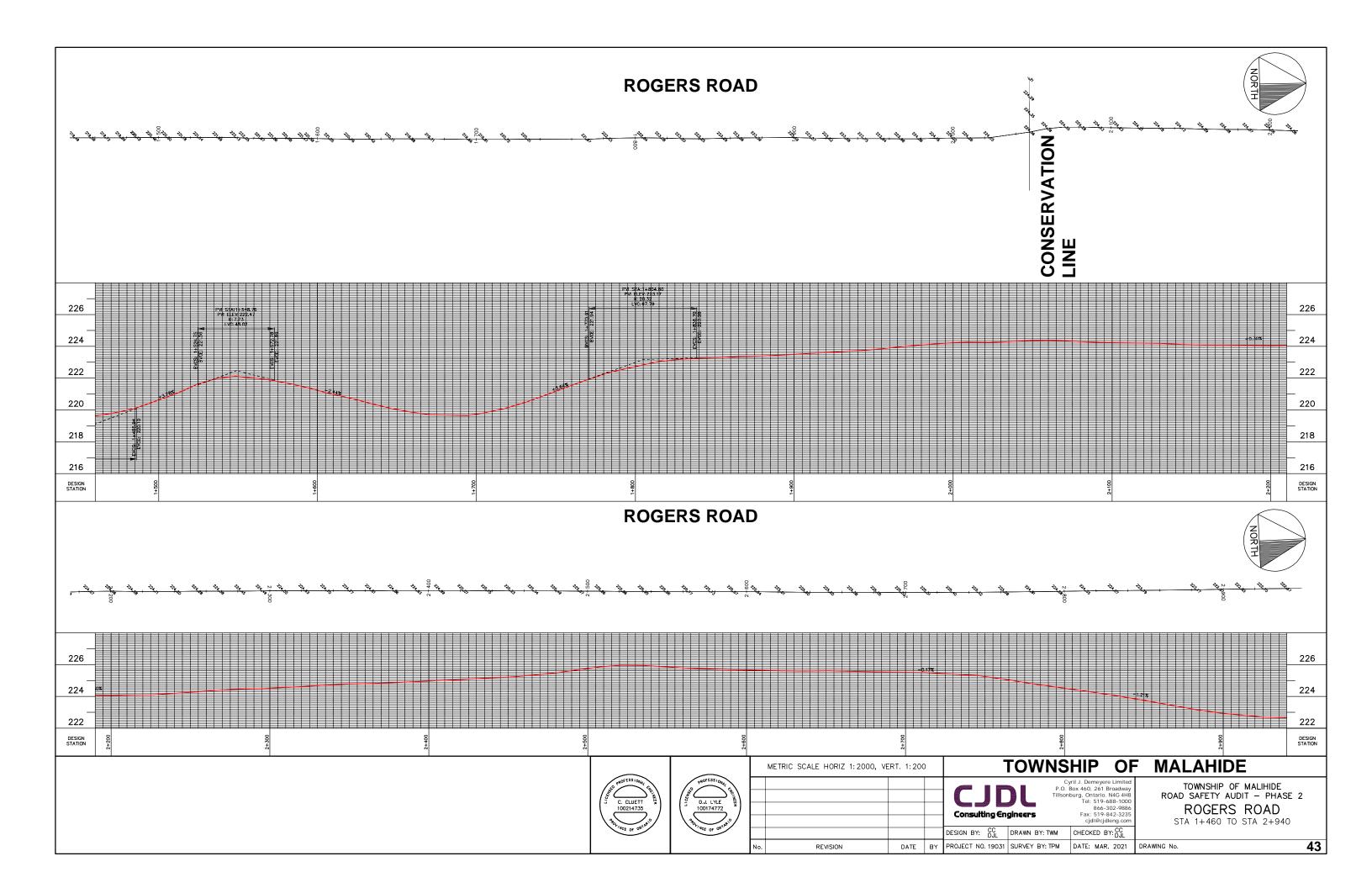
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J	Consulti

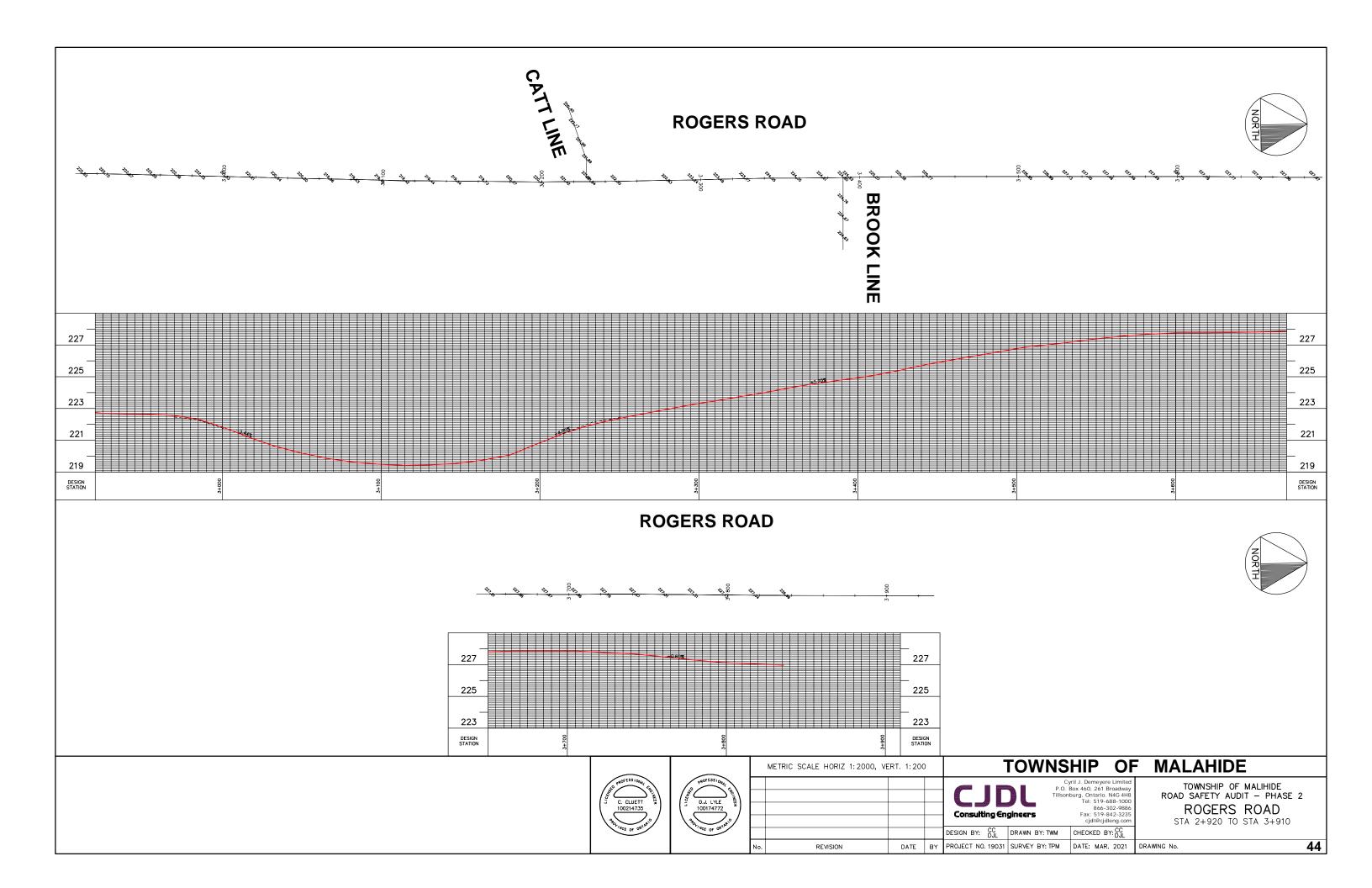
Road Name: Rogers Road	Study Section: College Line to Ron McNeil Line
Direction of Travel: North to South	Total Distance Analysed: 0.74 km
Posted Speed: 80km/h	AADT: 101 (Year: 2018)
Right-of-Way Width: 20m (66')	Date of Site Inspection: 4pから 6,2020

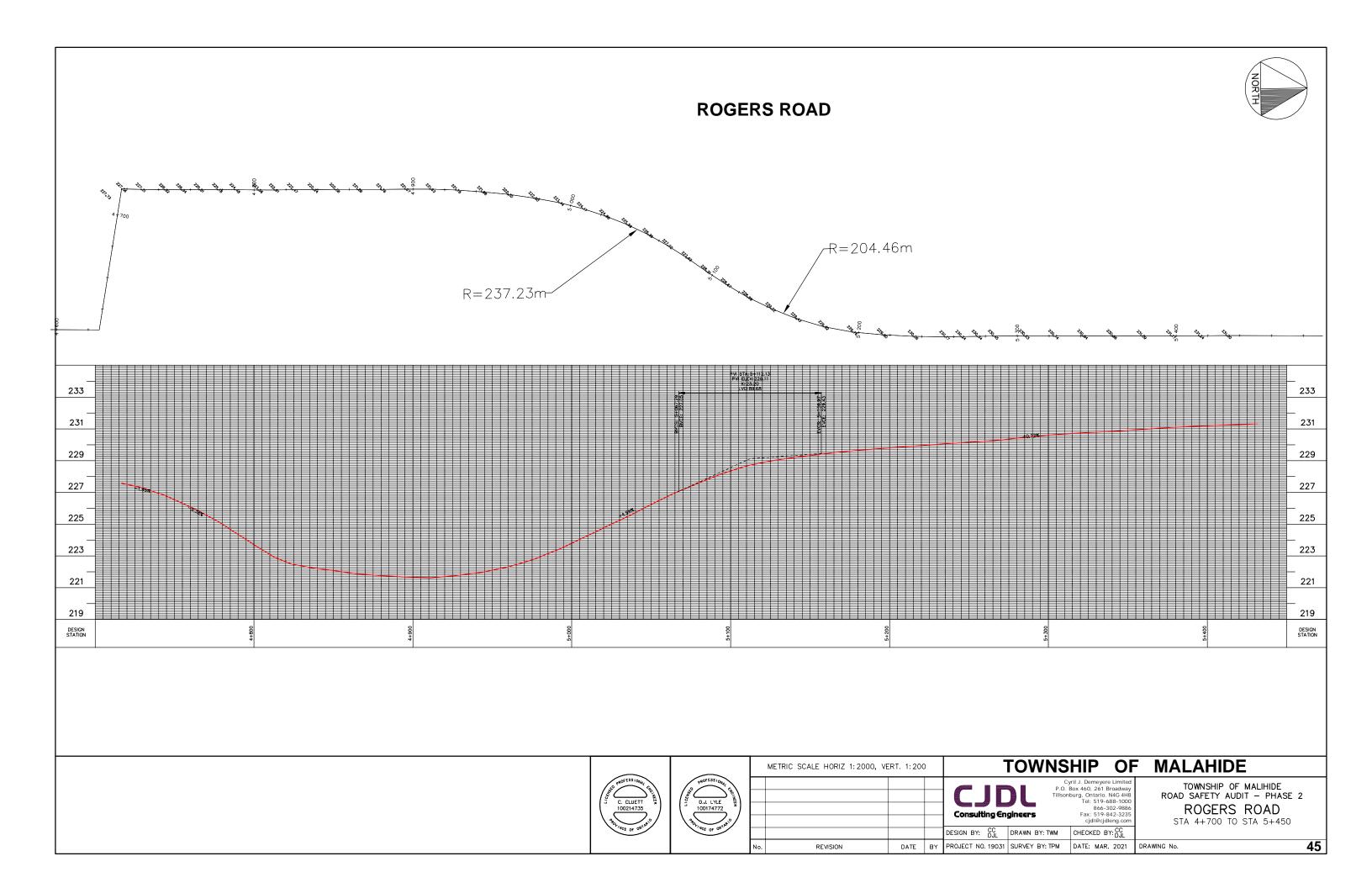
Crit	Criteria	Design Recommendations	ions	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment:	3.6m x 2 = 7.2m 2. Om wide 5.46m± to PL 2% 4-6% Crown Centered	4.7 7.7 0.7 0.7	Shooldes
	Surface Treatment Drainage	in (x2)		Sortace Trestment OK.	
Alignment	Vertical Alignment Horizontal Alignment	- Maximum road segment grades: -Vertical curve 'K' value - Minimum design radius: - Maximum super elevation: (TAC, 1999)	6-8% 280 to 230m 4-8%	OK N/A	
0	Passing Sight Distance Decision Sight Distance	- Min passing sight distance (AASHTO): - Min decision sight distance:	275-550m 155-230m	OK.	
Intersections	List of intersections within project limits List of intersections within project limits	Rogers Road / College Line - Intersection control: - Stopping sight distance: Rogers Road / Ron McNeil Line - Intersection control:	155-210m	Stop sign. Sight lives, stopping distance Stop sight lives, stopping distance of	
Physical Objects	Clear Zone (Poles, Trees, etc.) Embankments Structures	ne: ss) mits?	(MD,1993) 4m	0K V/A	
Visual Aids	(Bridges, Culverts, etc.)	- Bridges? - Line painting: - Signage?		solved yellow live .	

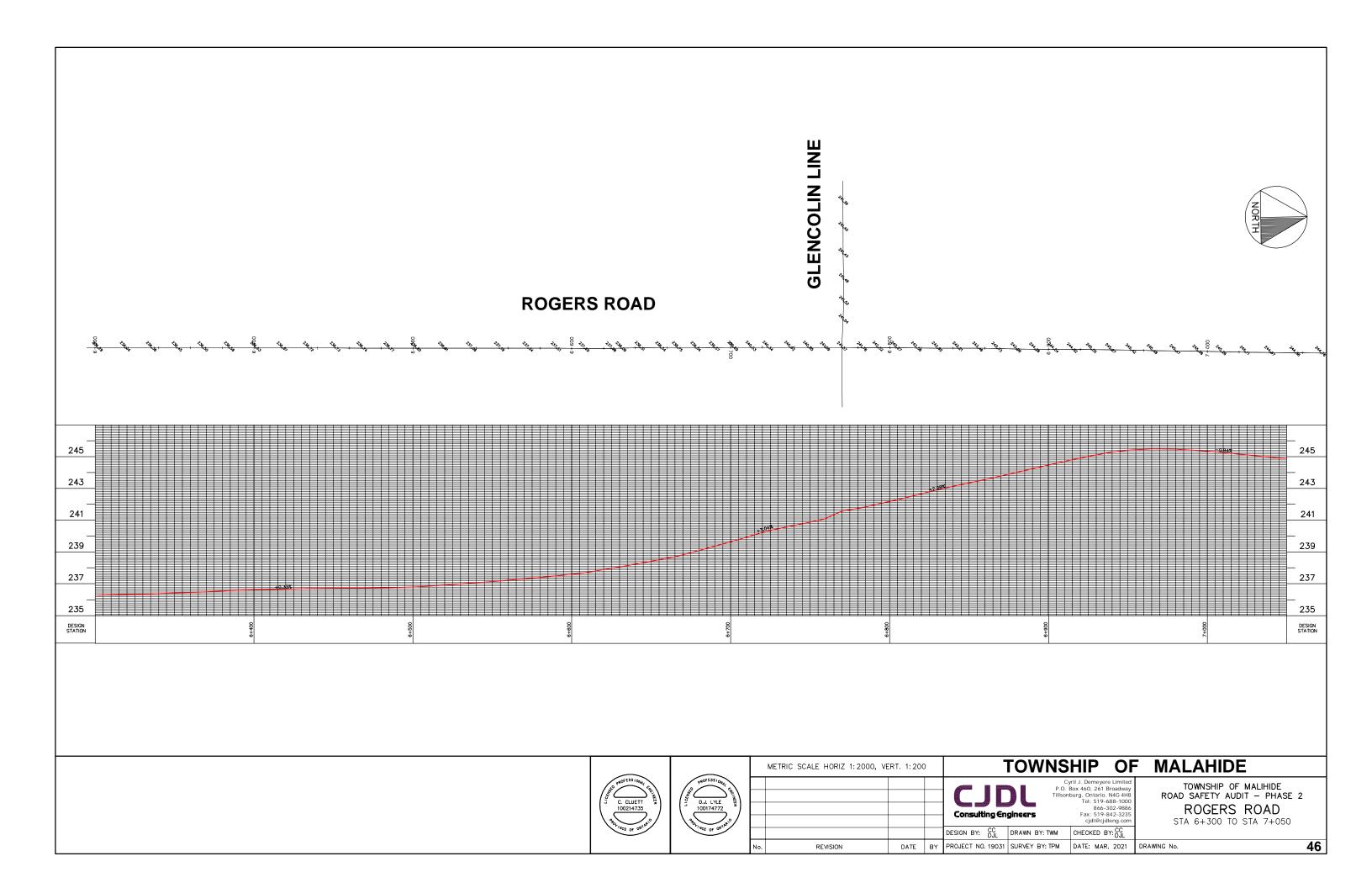








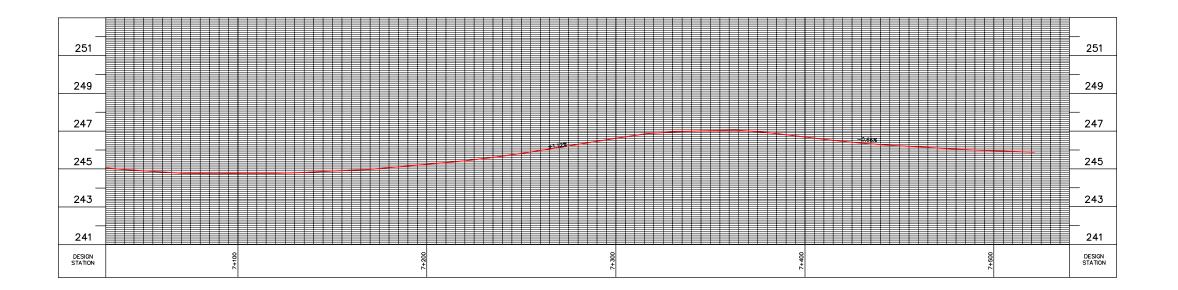






ROGERS ROAD









ETRIC SCALE HORIZ 1:2000, VERT. 1:200	TOWNSHIP OF MALAHIDE
	Cyril J. Demeyere Limited P.O. Box 460, 261 Broadway Tillsonburg, Ontario. N4G 4H8 Tel: 519-688-1000 866-302-9886 Fax: 519-884-23235 cjdl@cjdleng.com TOWNSHIP OF MA ROAD SAFETY AUDIT ROGERS RO
	DESIGN BY: CC DRAWN BY: TWM CHECKED BY: CC DJL

REVISION

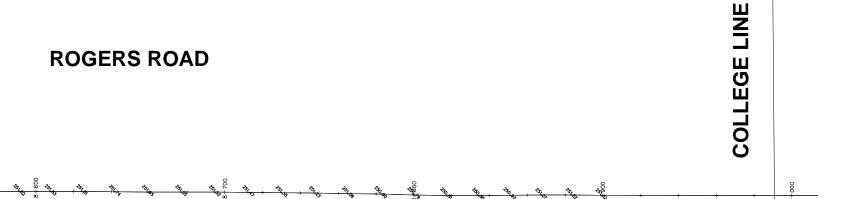
TOWNSHIP OF MALIHIDE ROAD SAFETY AUDIT - PHASE 2 ROGERS ROAD

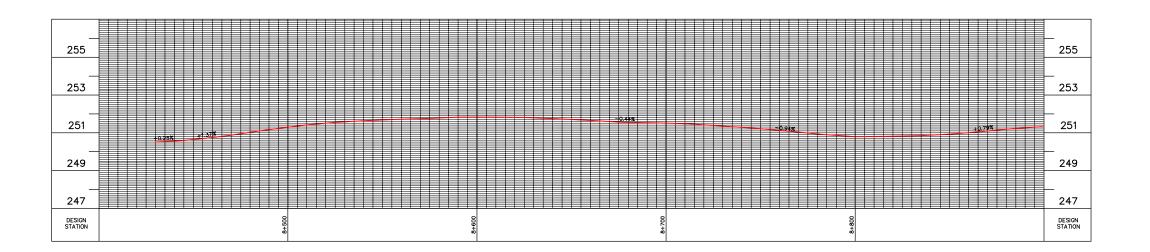
STA 7+030 TO STA 7+540

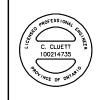
47 DATE BY PROJECT NO. 19031 SURVEY BY: TPM DATE: MAR. 2021 DRAWING No.



ROGERS ROAD









MALAHIDE	HIP OF	TOWNS	٦)	ERT. 1: 200	HORIZ 1: 2000, V	METRIC SCALE H	
TOWNSHIP OF MA ROAD SAFETY AUDIT - ROGERS RO STA 8+400 TO STA	ril J. Demeyere Limited lox 460, 261 Broadway burg, Ontario. N4G 4H8 Tel: 519-688-1000 866-302-9886 Fax: 519-842-3235 cjdl@cjdleng.com	P.O. É Tillsont gineers		Consult DESIGN BY:					

TOWNSHIP OF MALIHIDE ROAD SAFETY AUDIT - PHASE 2 ROGERS ROAD

STA 8+400 TO STA 8+900

48 DATE BY PROJECT NO. 19031 SURVEY BY: TPM DATE: MAR. 2021 DRAWING No.

Springer Hill Road South End to Pressey Line

- Criteria Review Sheets
- Embankment Protection Warrant Guides
- Centreline Profile Drawings (49-52)

Road Name: Springer Hill Road	inger Hill Road		Study Section: South End to Heritage Line	
Direction of Tra	Direction of Travel: North to South		Total Distance Analysed: 0.40 km	
Posted Speed: /	Posted Speed: N/A Gravel; Assume 60km/h	m/h	AADT: 10 (Year: 2015)	
Right-of-Way Width: 20m (66')	/idth: <i>20m (66')</i>		Date of Site Inspection: Apr. / 6,20 > 0	
Crii	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: 3.5m v 2 = 7.0m - Shoulder(s): 5.46m± to PL - Typ. cross-fall (lanes): 2% - Max shoulder crossfall: 4-6% - Cross-Section CL alignment: Crown Centered	4.0 7:7 0x 0x	
	Surface Treatment	- Comment on surface treatment	Grave Olk	
	Drainage	- Roadside swales? - Municipal Drains: N/A	Draining OK	
	Vertical Alignment	- Maximum road segment grades: 6-12% -Vertical curve 'K' value		
Alignment	Horizontal Alignment	- Minimum design radius: 150 to 120m - Maximum super elevation: 4-8% (TAC, 1999)	Wirt	
	Passing Sight Distance	- Min passing sight distance (AASHTO): 200-410m	24	
	Decision Sight Distance	- Min decision sight distance: 95-175m	7/0	



Deal enel.

- Line painting: - Signage?

Visual Aids

- Culverts? - Bridges?

Structures (Bridges, Culverts, etc.)

7/4

2/4

- Slope? - Height? - Protection required? Limits?

Embankments

Physical Objects

NO E

75-130m

Springer Hill Road / Heritage Line - Intersection control: - Stopping sight distance:

List of intersections within project limits

Intersections

のス

3m (0.5m if curb present)

- Recommended clear zone: (excluding cut or fill slopes)

Clear Zone (Poles, Trees, etc.)

Road Name: Springer Hill Road	Study Section: Heritage Line to Talbot Line
Direction of Travel: North to South	Total Distance Analysed: 0.75 km
Posted Speed: 80km/h	AADT: 411 (Year: 2015)
Right-of-Way Width: 20m (66')	Date of Site Inspection:
	4

Crit	Criteria	Design Recommendations	Jations	On-Site Observations	33 6
	5			OII-SICE ODSEIVATIONS	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment:	3.6m x 2 = 7.2m ∠0xx wide 5.46m± to PL 2% 4-6% Crown Centered	7.2 2.5 0/k 0/k	
,	Surface Treatment	- Comment on surface treatment		Susface Treatment OK	
	Drainage	- Roadside swales? - Municipal Drains: N/A		Drainoge OK	
	Vertical Alignment	- Maximum road segment grades: -Vertical curve 'K' value	%8-9	ak s	
Alignment	Horizontal Alignment	- Minimum design radius: - Maximum super elevation: (TAC, 1999)	280 to 230m 4-8%	N.14	
,	Passing Sight Distance	- Min passing sight distance (AASHTO):): 275-550m	OK	
	Decision Sight Distance	- Min decision sight distance:	155-230m	ok	
or city against a	List of intersections within project limits	Springer Hill Road / Heritage Line - Intersection control: - Stopping sight distance:	155-210m	130m sight line to Easthound Heartage taffic. Possely signed.	
	List of intersections within project limits	Springer Hill Road / Talbot Line - Intersection control: - Stopping sight distance:	210m	Stop sign sight lives, stapping	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (excluding cut or fill slopes)	(MTO, MPS) 4m (HTO, 2020) 3.5m	OK	
Physical Objects	Embankments	n required? Limits?		WIA	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?		N/A	
علونه ادرونا		- Line painting: - Signage?		"Shar the road" sign.	
Visual Alds				solid yellow but.	

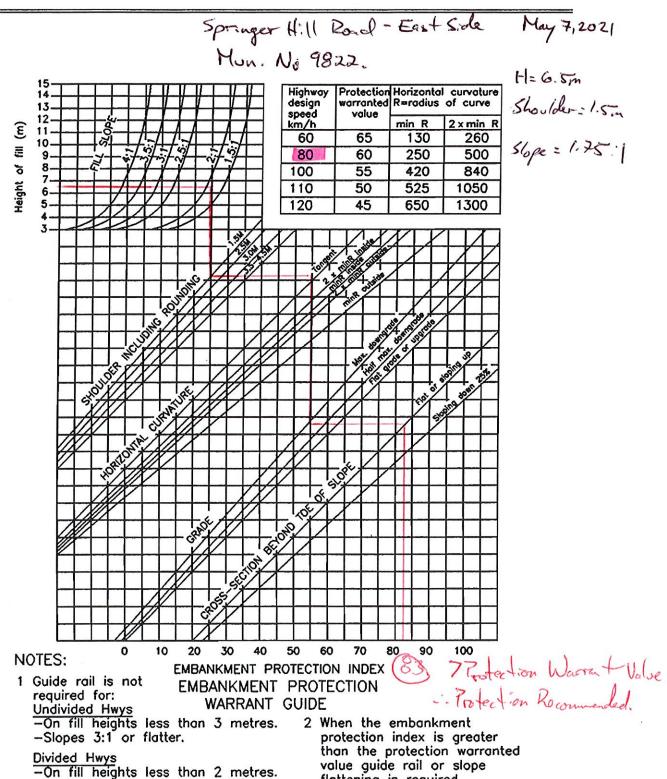


Road Name: Springer Hill Road	Study Section: Talbot Line to Glencolin Line
Direction of Travel: North to South	Total Distance Analysed: 1.84 km
Posted Speed: 80km/h	AADT: 416 (Year: 2018)
Right-of-Way Width: 20m (66')	Date of Site Inspection: チュト・・・・ 6 , 2020

Crit	Criteria	Design Recommendations		On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: 3.6m x ? = 7.2m	7.2m 4-0 wide 2.5 to Pl. 2% OK tered OK tered OK		weth.
	Surface Treatment	- Comment on surface treatment	Sofer	Surface Treatment OK	
	Drainage	- Roadside swales? - Municipal Drains: N/A	Danage Of	e K	
	Vertical Alignment	- Maximum road segment grades: -Vertical curve 'K' value	6-8% Kerest <	Kozes 224 @ St. 5+800	Minst fail
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	4-8% N/4		
0	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-	275-550m OK		
	Decision Sight Distance	- Min decision sight distance: 155-	155-230m O.K.		
	List of intersections within project limits	Springer Hill Road / Talbot Line - Intersection control: - Stopping sight distance: 155-	5 tags 5 fg	Stop sign, sight lives, stopping datance	
mersections	List of intersections within project limits	Springer Hill Road / Glencolin Line - Intersection control: - Stopping sight distance:	Though 155-210m	street. Stoffing distance,	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (אתס, ויויב) 4m (excluding cut or fill slopes) און (excluding cut or fill slopes)	3.5 OK		
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?		Embeddunt identant 60 de failed @	Protection reprived
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	Columbs	Colorate Not Tollat St. Ditch doeser the other	patetra not a
Visual Aids		- Line painting: - Signage?	Solial yeile More the roa	Solial yellow live. "Shore the road sign. Here absence com.	1 (B) interestion.
				1 111	



Chapter 2 Policy, Warrants, Guidelines Section 2.5 Embankments



flattening is required.

FIGURE 2.5.1 Embankment Warrant Guide

-Slopes 4:1 or flatter.

Chapter 2 Policy, Warrants, Guidelines Section 2.5 Embankments

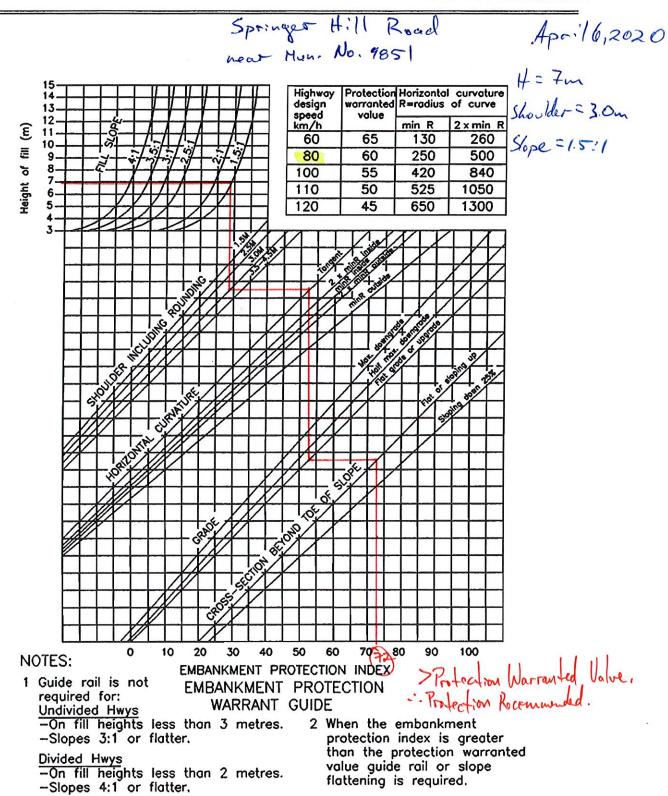


FIGURE 2.5.1 Embankment Warrant Guide

Chapter 2 Policy, Warrants, Guidelines Section 2.5 Embankments

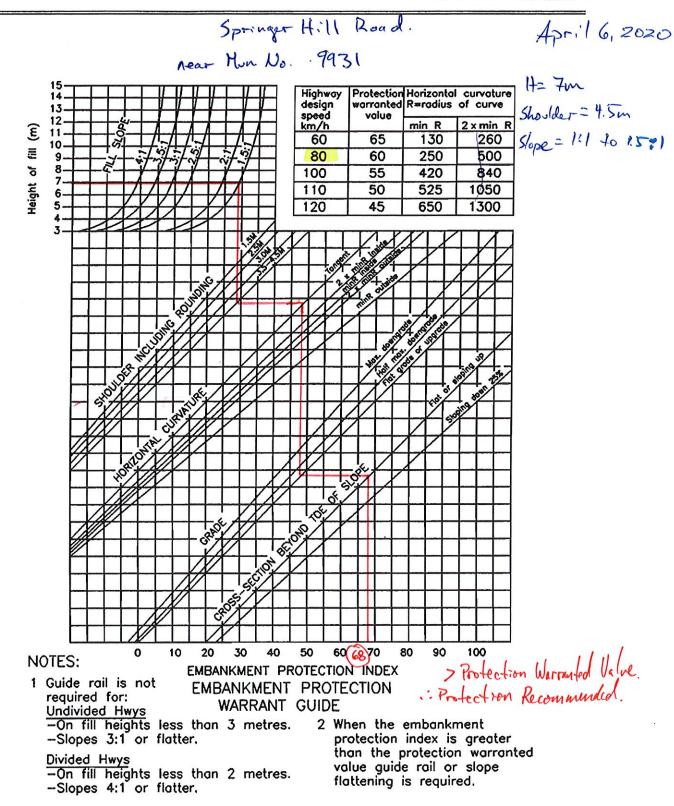


FIGURE 2.5.1 Embankment Warrant Guide

Road Name: Springer Hill Road	Study Section: Glencolin Line to College Line
Direction of Travel: North to South	Total Distance Analysed: 2.06 km
Posted Speed: 80km/h	AADT: 469 (Year: 2015)
Right-of-Way Width: 20m (66')	Date of Site Inspection: Apr., 6, 2020

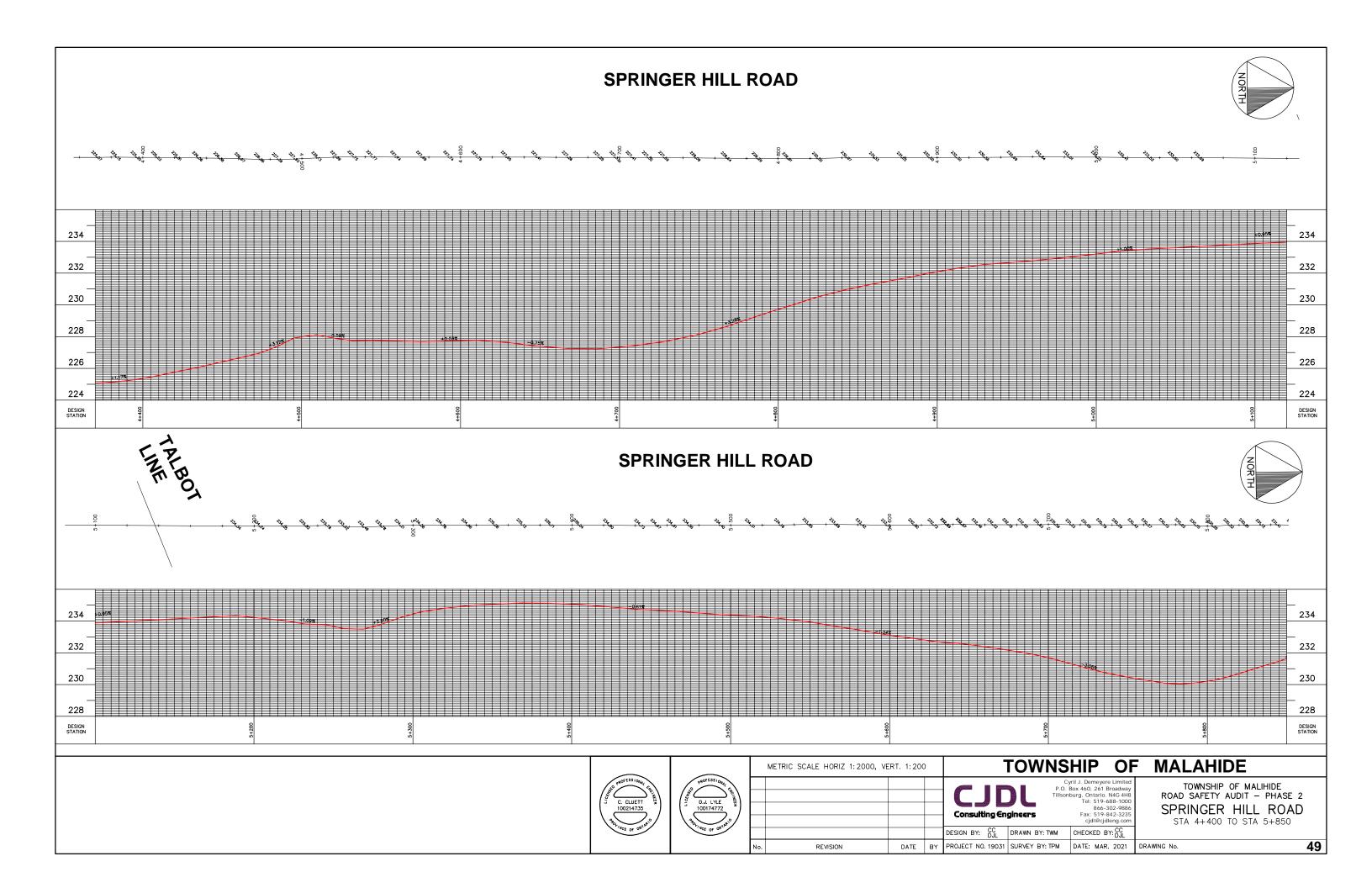
Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CL alignment: - Cross-Section lane widths: - Cross-section and widths: - Cross-Section CL alignment: - Cross-Section CL alignment:	2.0m wide 2.0 5.46m± to PL 2% 0.K 4-6% 0.K wn Centered 0.K	
	Surface Treatment Drainage	- Comment on surface treatment - Roadside swales? - Municipal Drains: Anderson Drain	Surface Treatment OK. Draining OK	
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Vertical Alignment Horizontal Alignment	- Maximum road segment grades: -Vertical curve 'K' value - Minimum design radius: - Maximum super elevation: (TAC. 1999)	1 @ sta 7+200	Kerest fail
	Passing Sight Distance Decision Sight Distance	g sight distance (AASHTO): on sight distance:	275-550m OK 155-230m OK .	
Intersections	List of intersections within project limits List of intersections within project limits	Springer Hill Road / Glencolin Line - Intersection control: - Stopping sight distance: Springer Hill Road / College Line - Intersection control: - Stopping sight distance:	155-210m Sight lives & Stocet, Intersection about sign. Through St. intersection about sign. Through St. intersection about sign. St. At live stocking details Of.	
Physical Objects	Clear Zone (Poles, Trees, etc.) Embankments Structures (Bridges, Culverts, etc.)	- Recommended clear zone: (Krto, 1447) 4m (excluding cut or fill slopes) (八170, 26-20)3.5元 - Slope? - Height? - Protection required? Limits? - Culverts? - Bridges?	10) 4m OK. 10) 15. OK. 10) 15. Datection in place (3) embenhunt. OK.	
Visual Aids		- Line painting: - Signage?	No lives on seed,	

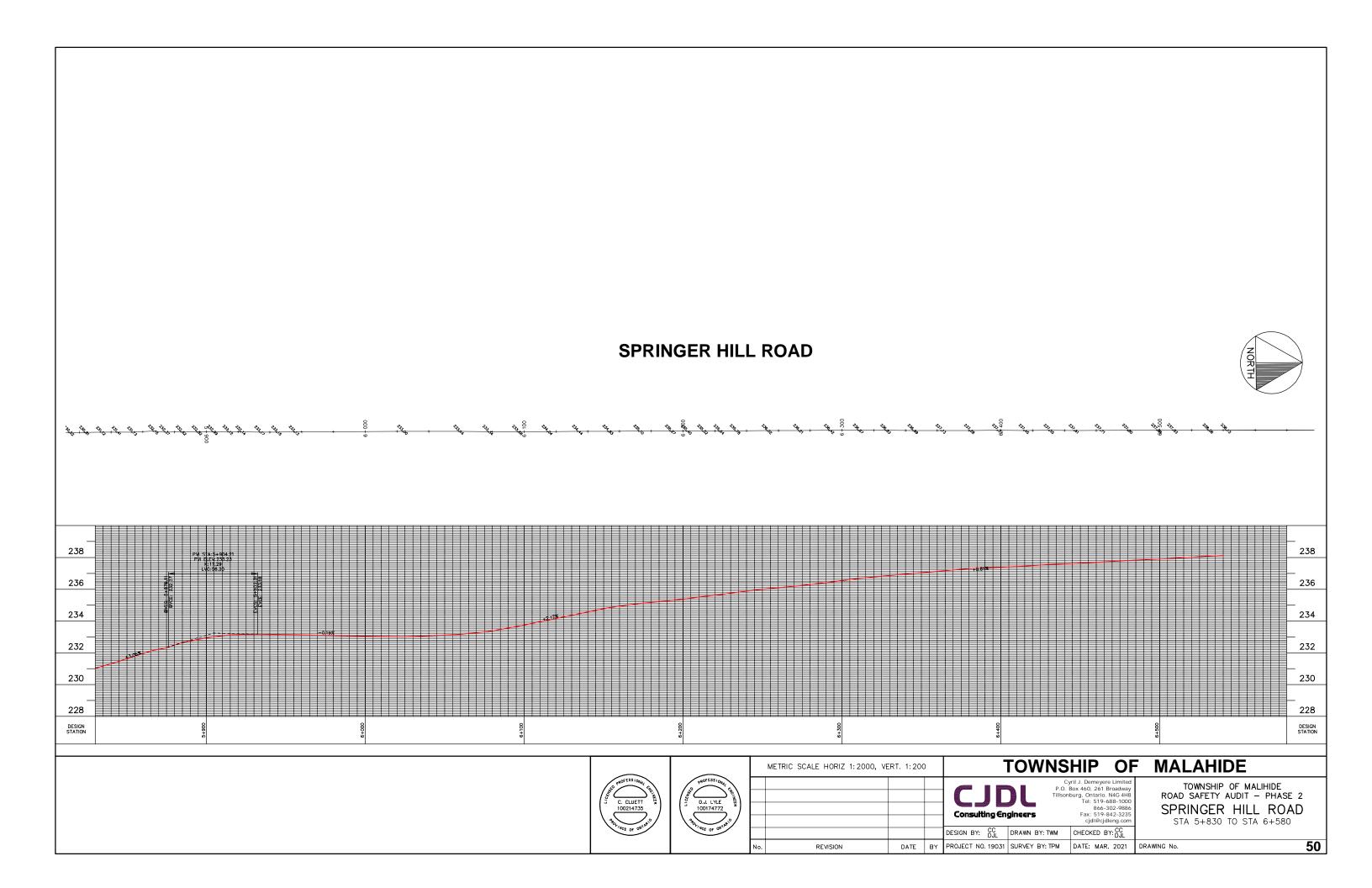


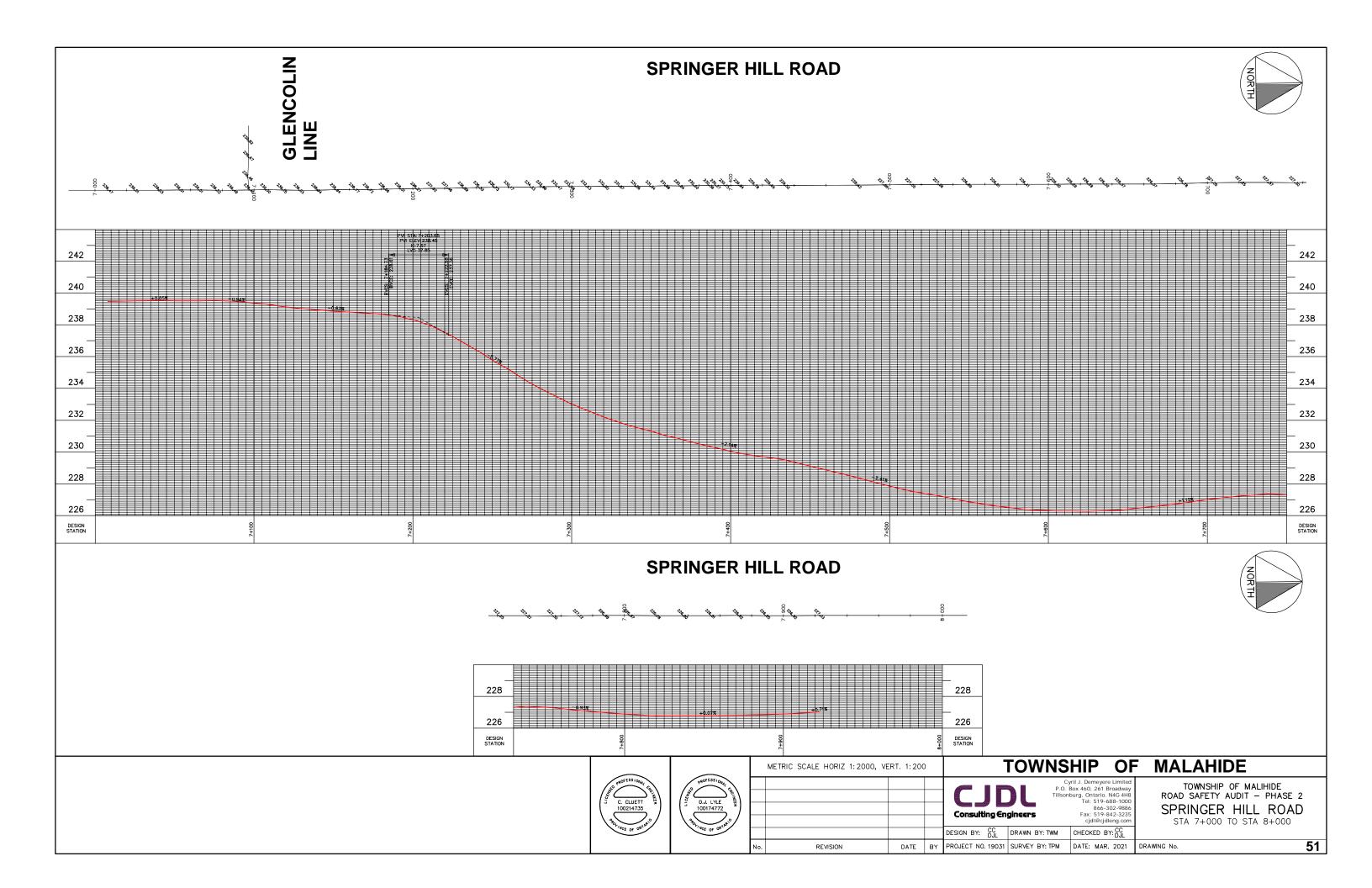
Criteria Review 2.0

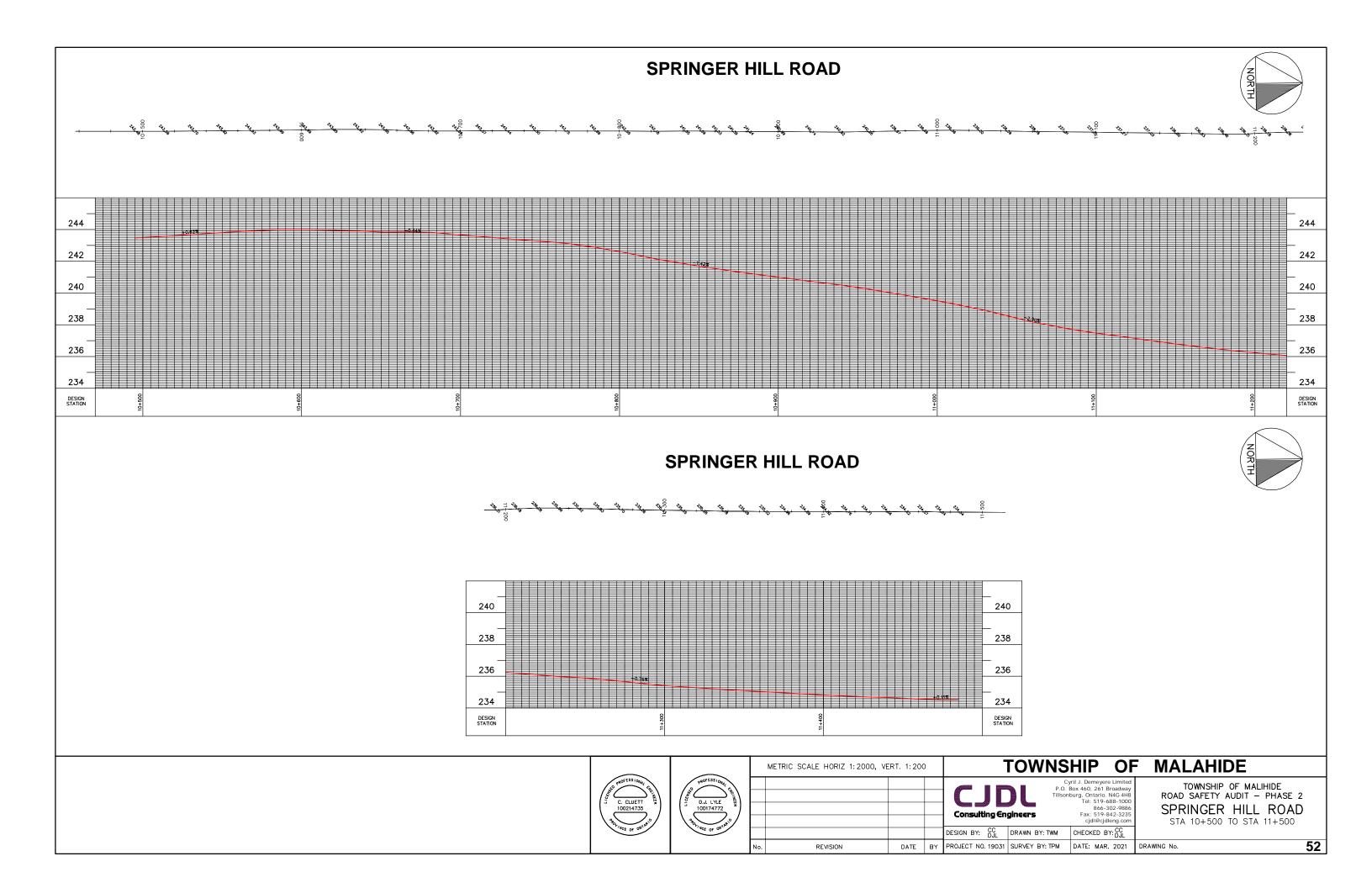
Road Name: Springer Hill Road	nger Hill Road		Study Section: College Line to Pressey Line	
Direction of Trav	Direction of Travel: North to South		Total Distance Analysed: 2.44 km	
Posted Speed: 80km/h	30km/h		AADT: 409 (Year: 2015)	
Right-of-Way Width: 20m (66')	idth: 20m (66')		Date of Site Inspection: April 6, 2020	
Crit	Criteria	Design Recommendations	On-Site Observations Deficiencies	ies
Cross-Section	Geometry	- Cross-section lane widths: 3.6m × 2 = 7.2m - Shoulder(s): 20m wide - Boulevard(s): 5.46m± to PL - Typ. cross-fall (lanes): 2% - Max shoulder crossfall: 4-6% - Cross-Section CL alignment: Crown Centered	7.2m 7.2 wide 2.5 to PL 2% O/A 4-6% O/A	
	Surface Treatment Drainage	- Comment on surface treatment - Roadside swales? - Municipal Drains: N/A	Service Testunt OK	
	Vertical Alignment	- Maximum road segment grades: 6-	%8-9 %8-9	
Alignment	Horizontal Alignment	- Minimum design radius; 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	230m 4-8% <i>L/A</i>	
)	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m - Min decision sight distance: 155-230m		
	Decision Sight Distance		OK	
1	List of intersections within project limits	Springer Hill Road / College Line - Intersection control: - Stopping sight distance: 155-210m	Through street sight lives, stopping	
intersections	List of intersections within project limits	ey Line	Stap sizer. Stopsign alread Worning.	
Physical Objects	Clear Zone (Poles, Trees, etc.) Embankments	- Recommended clear zone: (MTO, 1175) 4m (excluding cut or fill slopes) (ATO, 2002) 57	ST. OK.	
	Structures (Bridges, Culverts, etc.)	- Protection required? Limits? - Culverts? - Bridges?	8/4	
Visual Aids		- Line painting: - Signage?	No low painted a rand. Rocal Common by Roce Sow Down".	
			Stop sign @ R.W. 12.W. cossing morking	
Consulting Enginee	J. Cinqineers		"Stop @ Crossing on mod." Page 66 of 75	10











<u>Van Patter Line</u> <u>Imperial Road to Hacienda Road</u>

- Criteria Review Sheet
- Site Photographs
- Centreline Profile Drawings (53-54)

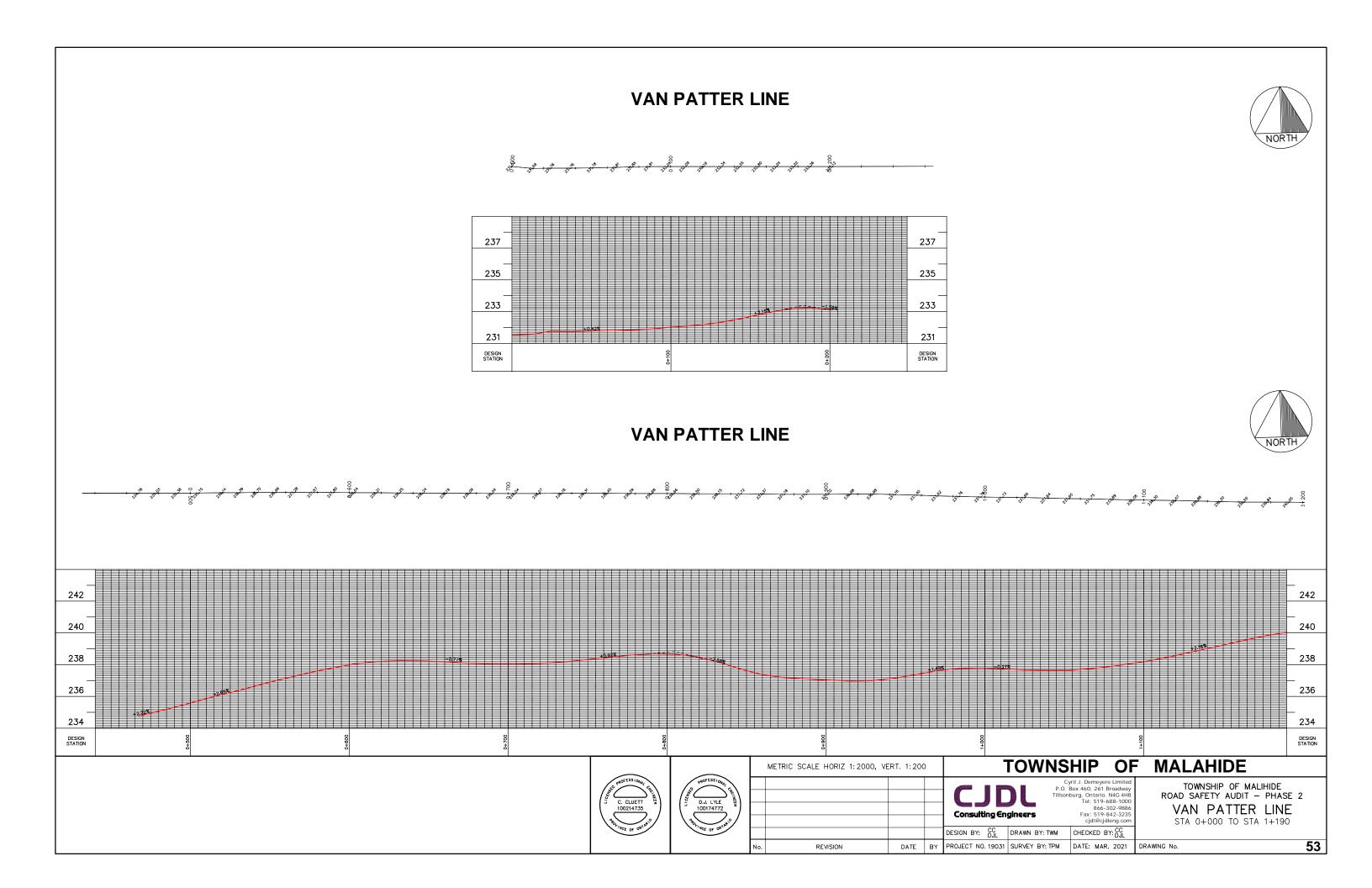
Road Name: Van Patter Line	Study Section: Imperial Road to Hacienda Road
Direction of Travel: East to West	Total Distance Analysed: 2.05 km
Posted Speed: 6 vavel. 60km/h Assumed.	AADT: 106 (Year: 2015)
Right-of-Way Width: 20m (66')	Date of Site Inspection: 45000

Crite	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: 3.5 m x 2 = 7.2m - Shoulder(s): 5.46m± to PL - Typ. cross-fall (lanes): 2% - Max shoulder crossfall: 4-6% - Cross-Section CL alignment: Crown Centered	1.0 0.7 0.X 0.X	
	Surface Treatment	- Comment on surface treatment	Gravel OK.	
	Drainage	- Roadside swales? - Municipal Drains: Vanderendonck Drain	Damage OK.	
	Vertical Alignment	- Maximum road segment grades: -Vertical curve 'K' value		
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	11/14	
ò	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m	70	
	Decision Sight Distance	- Min decision sight distance: 155-230m	OK	
1	List of intersections within project limits	Van Patter Line / Imperial Road - Intersection control: - Stopping sight distance: 155-210m	Step sign. +> Wesning sign.	c
ווופן אפרנוסווא	List of intersections within project limits	Van Patter Line / Hacienda Road - Intersection control: - Stopping sight distance: 155-210m	Step sign.	o signings tos
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone:	hydropale in clear zone @ Has 512 1	Ps @ M. show
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	With the said, wet	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	OK.	
		- Line painting: - Signage?	The parking on sool "O societ put	
Visual Aids				





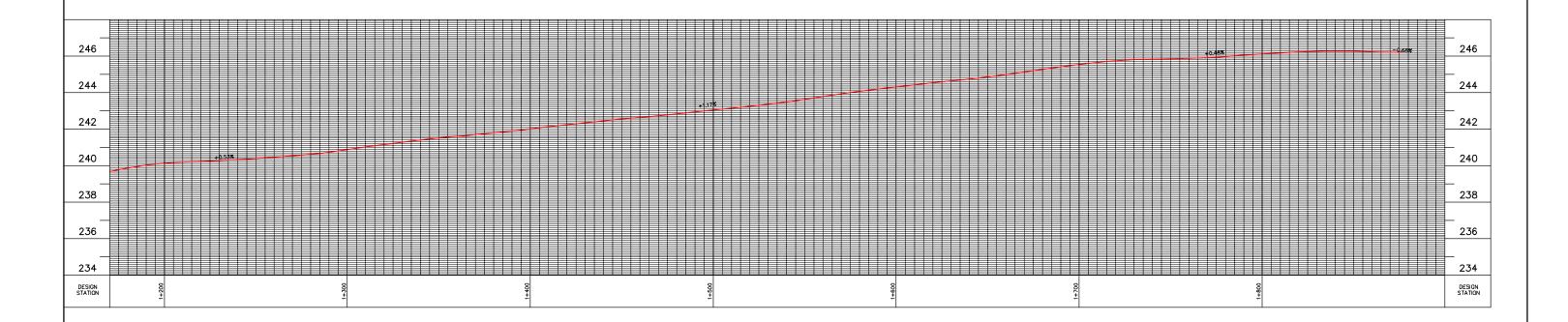
Van Patter Line – Intersection with Hacienda Road facing north. 80m sightline for southbound Hacienda Road traffic.



VAN PATTER LINE











MALAHIDE	TOWNSHIP OF	2000, VERT. 1:200	METRIC SCALE HORIZ 1: 2000,	
TOWNSHIP OF MAROAD SAFETY AUDIT VAN PATTER STA 1+170 TO STA	Cyril J. Demeyere Limited P.O. Box 460, 261 Broadway Tillsonburg, Ontario. N46 4H8 Tel: 519-688-1000 866-302-9986 Fax: 519-842-3235 cjdl@cjdleng.com			_
	DESIGN BY: CC DRAWN BY: TWM CHECKED BY: CC			_

TOWNSHIP OF MALIHIDE ROAD SAFETY AUDIT - PHASE 2

VAN PATTER LINE STA 1+170 TO STA 1+900

54

<u>Walker Road</u> <u>Chalet Line to Ron McNeil Line</u>

- Criteria Review Sheets
- Site Photographs
- Centreline Profile Drawings (55-58)

Road Name: Walker Road	Study Section: Chalet Line to Talbot Line
Direction of Travel: North to South	Total Distance Analysed: 2.01 km
Posted Speed: 80km/h	AADT: 394 (Year: 2015)
Right-of-Way Width: 20m (66')	Date of Site Inspection: Assil 3, 2020

Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: 3.6m × 2 = 7.2m - Shoulder(s): 2.0 m wide - Boulevard(s): 5.46m± to PL - Typ. cross-fall (lanes): 2% - Max shoulder crossfall: 4-6% - Cross-Section CL alignment: Crown Centered	7.5 2.5 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6	:
	Surface Treatment Drainage	- Comment on surface treatment - Roadside swales? - Municipal Drains: Partlow Drain, Learn Drain	Socha Tostunt OK	
	Vertical Alignment	- Maximum road segment grades: 6-8% -Vertical curve 'K' value	3+600	Keaest fail
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	NIA	
ò	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m	70	
	Decision Sight Distance	- Min decision sight distance: 155-230m	old.	
	List of intersections within project limits	Walker Road / Chalet Line - Intersection control: - Stopping sight distance: 155-210m	Stop sign. 40 Waring sign.	Not assissant.
ווופואפרנוסווא	List of intersections within project limits	Walker Road / Talbot Line - Intersection control: - Stopping sight distance: 155-210m	topolog distance OK. 108 yang pros the live storaine distance OK.	et. Intersection as
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (איזס, ויאיז) 4m (excluding cut or fill slopes) איזיי (איזס, ייאיז) איזייי	of, , of	
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	MA	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	20	
2		- Line painting: - Signage?	Shid yelles line.	
Visual Aids			ATV Trail.	



Road Name: Walker Road	Study Section: Talbot Line to Glencolin Line
Direction of Travel: North to South	Total Distance Analysed: 3.20 km
Posted Speed: ***********************************	AADT: 240 (Year: 2018)
Right-of-Way Width: 20m (66')	Date of Site Inspection: April 3, 202.0

Criteria	Design Recommendations	tions	On-Site Observations	Deficiencies
	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Max shoulder crossfall: - Cross-Section CI alianment:	3.6m x ? = 7.2m 2.0m wide 5.46m± to PL 2% 4-6% Crown Centered	1.55 1.57 0,4	Show War
Surface Treatment	- Comment on surface treatment		Sertace tentrant OK.	
Drainage	- Roadside swales? - Municipal Drains: St. Claire Drain, Roa Harris Drain	Roay Drain, JW	\$ & &	
Vertical Alignment	- Maximum road segment grades: -Vertical curve 'K' value	%8-9	Yox	
Horizontal Alignment	- Minimum design radius: - Maximum super elevation: (TAC, 1999)	280 to 230m 4-8%	R=426 to cosm. ck	
Passing Sight Distance	- Min passing sight distance (AASHTO):	275-550m	94	
Decision Sight Distance	- Min decision sight distance:	155-230m	No X	
List of intersections within project limits	Walker Road / Talbot Line - Intersection control: - Stopping sight distance:	155-210m	Soon signif has stopping distance	
List of intersections within project limits	Walker Road / Glencolin Line - Intersection control: - Stopping sight distance:	155-210m	Stop sign Sight lives. stopping distance	
Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (excluding cut or fill slopes)	(MT0, M93) 4m	96	
Embankments	- Slope? - Height? - Protection required? Limits?		NIA	
Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?		4114	
	- Line painting: - Signage?		Elid yellow live. Roal sellement Hoen. Here Son Dan	ų
			Posted 60km/h speed lim.t.	



Criteria Review 2.0

Road Name: Walker Road	Study Section: Glencolin Line to College Line
Direction of Travel: North to South	Total Distance Analysed: 2.08 km
Posted Speed: Gravel. Assume 60km/h	AADT: 134 (Year: 2018)
Right-of-Way Width: 20m (66')	Date of Site Inspection: 45-1 3,2020

Crit	Criteria	Design Recommendations	s On-Site Observations	Deficiencies	ncies
	Geometry	- Cross-section lane widths: 3.5m - Shoulder(s): - Boulevard(s): 5./	3.5m x 2 = 7.0m 7 · O 1.0m wide 7 · O · O 5.46m± to PL		
Cross-Section		l: ment:	4-6% 0 K Crown Centered 0 0		
	Surface Treatment	- Comment on surface treatment	Gravel OK		
	Drainage	- Roadside swales? - Municipal Drains: S. Ryan Drain	Draininge OK		
	Vertical Alignment	- Maximum road segment grades: -Vertical curve 'K' value	6-12% OK 1		
Alignment	Horizontal Alignment	- Minimum design radius: - Maximum super elevation: (TAC, 1999)	150 to 120m 4-8% N/F4		
)	Passing Sight Distance	- Min passing sight distance (AASHTO):	200-410m <i>OlK</i>		
	Decision Sight Distance	- Min decision sight distance:	95-175m 0/K		
	List of intersections within project limits	Walker Road / Glencolin Line - Intersection control: - Stopping sight distance:	Stap Sign: Stapping distance, sight lives	yt hos	
ווופן אפרנוסווא	List of intersections within project limits	Walker Road / College Line - Intersection control: - Stopping sight distance:	Step xgr. +> Wanne sign. Sight lines.	lines, K.	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (excluding cut or fill slopes)	3m 0/k.		
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	Emberghount @ Kid. correcting. OK.	F. OK.	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	Budgers/ Good rails OK.		
Visual Aids		- Line painting: - Signage?	Vosique/fed R.W. costang.		

stop sign O. R. W. Cording sign about.

R. W. Cording sign.

Robert Dec 19,2016"

Speed. Dec 19,2016"

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Road Name: Walker Road	Study Section: College Line to Pressey Line
Direction of Travel: North to South	Total Distance Analysed: 2.06 km
Posted Speed: Gravel. Assume 60km/h	AADT: 93 (Year: 2018)
Right-of-Way Width: 20m (66')	Date of Site Inspection: 4501 3, 2020

Crit	Criteria	Design Recommendations	tions	On-Site Observations	Deficiencies
Cross-Section	Geometry	 Cross-section lane widths: Shoulder(s): Boulevard(s): Typ. cross-fall (lanes): Max shoulder crossfall: Cross-Section CL alignment: 	3.5m x 2 = 7.0m 1.0m wide 5.46m± to PL 2% 4-6% Crown Centered	7.7 0.1 0.4 0.4	
	Surface Treatment	- Comment on surface treatment - Roadside swales?		brank 10K	
	Drainage Vertical Alignment	- Municipal Drains: S. Ryan Drain - Maximum road segment grades: -Vertical curve 'K' value	6-12%	Drawings OK	
Alignment	Horizontal Alignment	- Minimum design radius: - Maximum super elevation: (TAC, 1999)	150 to 120m 4-8%	Nut	
ò	Passing Sight Distance	- Min passing sight distance (AASHTO):	200-410m	0K	
	Decision Sight Distance	- Min decision sight distance:	95-175m	OK	
	List of intersections within project limits	Walker Road / College Line - Intersection control: - Stopping sight distance:	75-130m	Stop sign. Sight hars, stopping distance OK, Pellons working shoulder failure.	distance OK, Steep drap to CB.
ווופו אפרנוסווא	List of intersections within project limits	Walker Road / Pressey Line - Intersection control: - Stopping sight distance:	75-130m	Stop sign. Swamp sign.	emyhd.
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (excluding cut or fill slopes)	3m (0.5m if curb present)	0 // 0 0/K	
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?		Wist	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?		NIA	
Visual Aids		- Line painting: - Signage?		No line on road.	



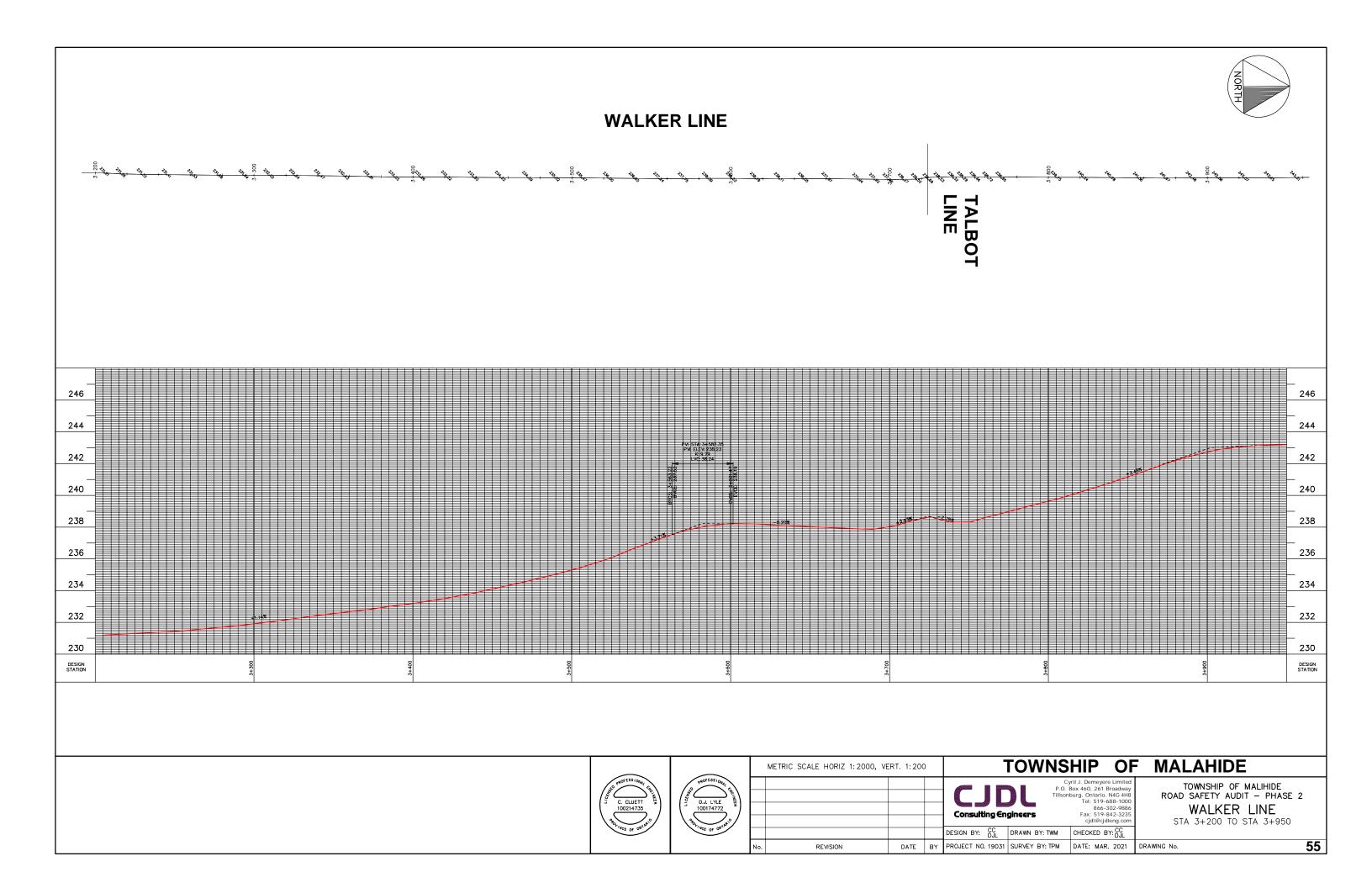
Road Name: Walker Road	Study Section: Pressey Line to Ron McNeil Line
Direction of Travel: North to South	Total Distance Analysed: 0.51 km
Posted Speed: 80km/h	AADT: 138 (Year: 2018)
Right-of-Way Width: 20m (66')	Date of Site Inspection: 4500 3,2000

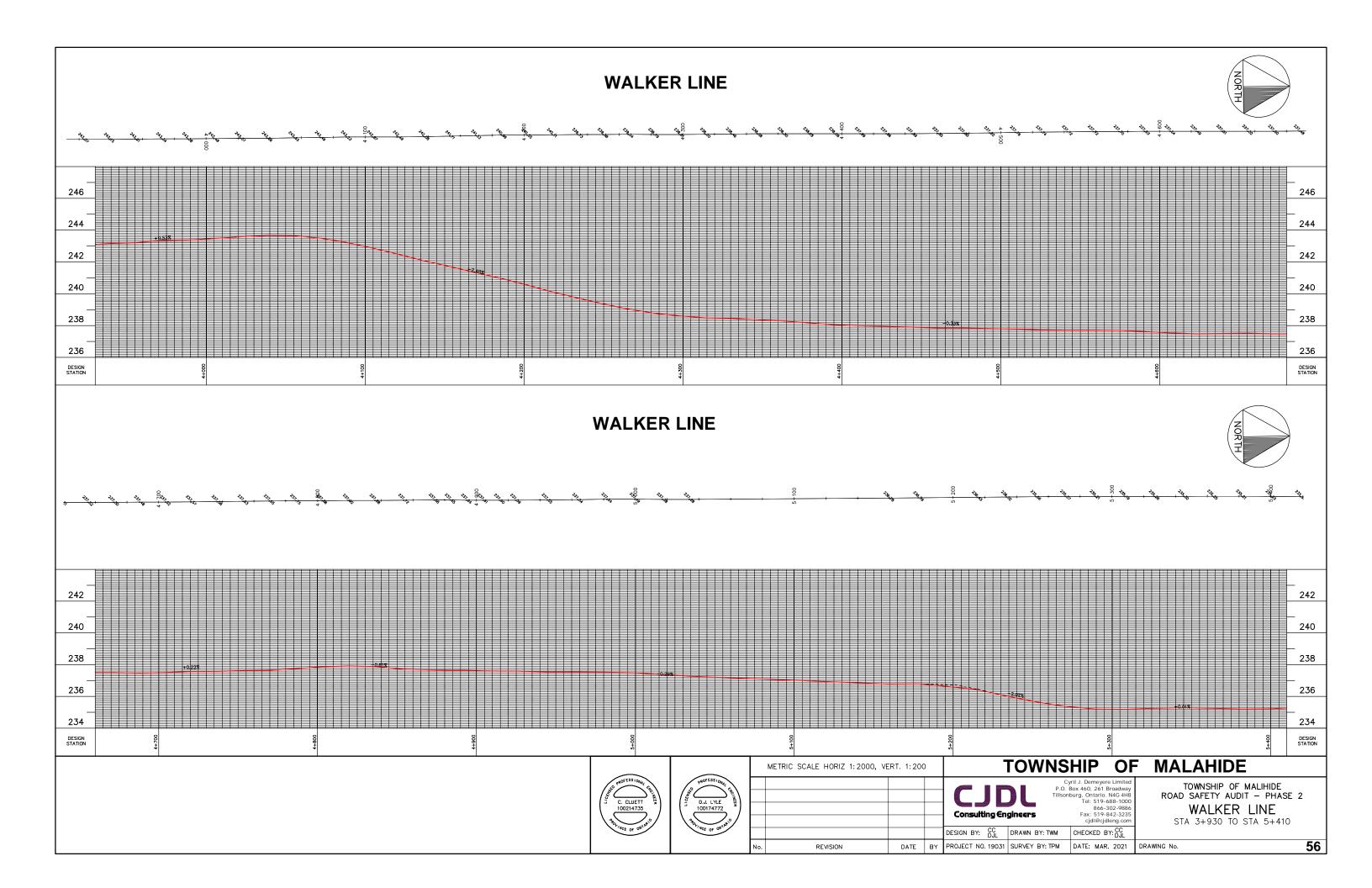
Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: - Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Typ. shoulder crossfall: - Cross-Section CL alignment: - Cross-Section lance widths: - Cross-Section CL alignment: - Cross-Sect	7.2m 7-2 wide 7.0 to PL 2% 0/K tered 0/K	
	Surface Treatment	- Comment on surface treatment	Surface treatment OK	
	Drainage	- Roadside swales? - Municipal Drains: N/A	Daimage OK	
	Vertical Alignment	- Maximum road segment grades: -Vertical curve 'K' value) X0 8-9	
Alignment	Horizontal Alignment	- Minimum design radius: 280 to 230m - Maximum super elevation: 4-8% (TAC, 1999)	4-8% N/A	
)	Passing Sight Distance	- Min passing sight distance (AASHTO): 275-550m	0 K	
	Decision Sight Distance	- Min decision sight distance: 155-230m	01/2	
1400000	List of intersections within project limits	Walker Road / Pressey Line - Intersection control: - Stopping sight distance: 75-130m	Stop sign. => Wooning sign.	
וונפו אפרנוסו	List of intersections within project limits	Walker Road / Ron McNeil Line - Intersection control: - Stopping sight distance: 75-130m	Stop sign.	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: (אני איז) אן איי	ow .	
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	N/4	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	N/A	
Visual Aids		- Line painting: - Signage?	Solal yellow has.	

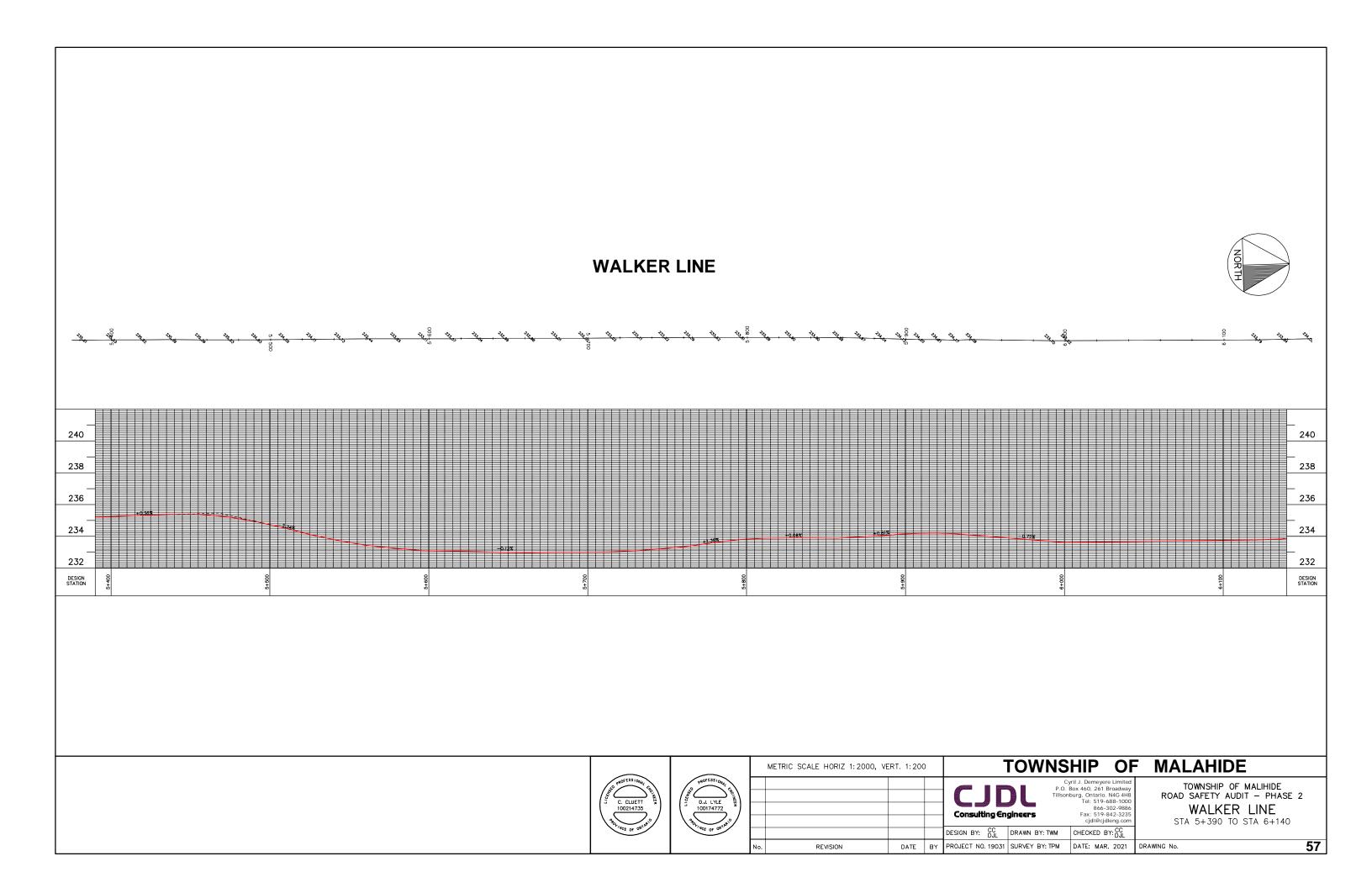


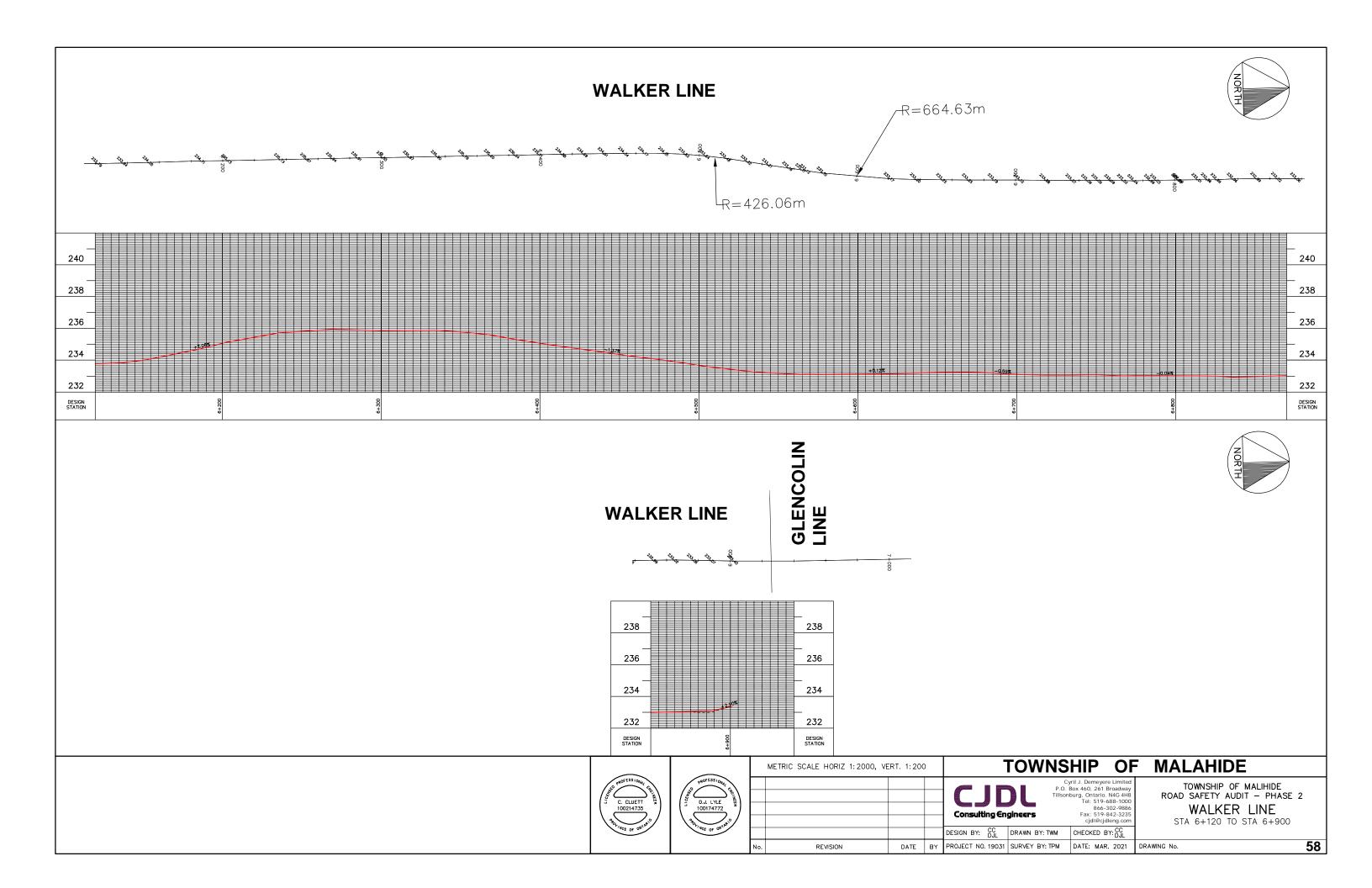


Walker Road – Intersection with College Line









<u>Weldon Street</u> <u>Springwater Road to East End</u>

• Criteria Review Sheet

Road Name: Weldon Street	Study Section: Springwater Road to East End
Direction of Travel: East to West	Total Distance Analysed: 0.22 km
Posted Speed: N/A Asphalt; Assume 60km/h	AADT: 50 (Year: 2015)
Right-of-Way Width: 20m (66')	Date of Site Inspection: April 23, 2020

Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Typ. shoulder crossfall: - Cross-Section CL alignment: - Cross-Sectio	4.6 m 4.6 m Show idus ok	W, Stork
	Surface Treatment Drainage	- Comment on surface treatment - Roadside swales? - Municipal Drains: N/A	Burtace Testinent OK Da: unge OK	
	Vertical Alignment	grades:	% o(<	
Alignment	Horizontal Alignment	- Minimum design radius: 150 to 120m - Maximum super elevation: 4-8% (TAC, 1999)	N/A	
	Passing Sight Distance	- Min passing sight distance (AASHTO): 200-410m	m 0K	
26	Decision Sight Distance	- Min decision sight distance: 95-175m		
Intersections	List of intersections within project limits	Weldon Street / Springwater Road - Intersection control: - Stopping sight distance: 75-130m	Stop sign. Sight hime, stopping	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: 3m (excluding cut or fill slopes) (0.5m if curb present)	ent) Givell tree in clear zone @ 42373	snoll free.
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	NIA	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	N/A	
30		- Line painting: - Signage?	No line painted.	
Visual Aids				



Woolleyville Line Springfield Road to East End

• Criteria Review Sheet

Road Name: Wolleyville Line	Study Section: Springfield Road to East End
Direction of Travel: East to West	Total Distance Analysed: 1.22 km
Posted Speed: 50km/h	AADT: 216 (Year: 2018)
Right-of-Way Width: 20m (66')	Date of Site Inspection: $A_{>\sim}$: $3,202$

Crit	Criteria	Design Recommendations	On-Site Observations	Deficiencies
Cross-Section	Geometry	- Cross-section lane widths: Shoulder(s): - Boulevard(s): - Typ. cross-fall (lanes): - Typ. dax shoulder crossfall: - Cross-Section CL alignment: - Cross-section and the content of the construction of the	6.5 m	s, dth.
	Surface Treatment Drainage	- Comment on surface treatment - Roadside swales? - Municipal Drains: Staley Drain Wellman Branch	So tave treatment & Grave I some she	side revellent
	Vertical Alignment	- Maximum road segment grades: 8-12% -Vertical curve 'K' value	19	
Alignment	Horizontal Alignment	- Minimum design radius: 100 to 80m - Maximum super elevation: 4-8% (TAC, 1999)	5-bend property morked with signs,	
0	Passing Sight Distance	- Min passing sight distance (AASHTO): 160-350m	OK	
	Decision Sight Distance	- Min decision sight distance: 75-145m	Yo .	
Intersections	List of intersections within project limits	Wolleyville Line / Springfield Road - Intersection control: - Stopping sight distance: 60-110m	Stop sign> Worning sign.	
	Clear Zone (Poles, Trees, etc.)	- Recommended clear zone: 3m (excluding cut or fill slopes) (0.5m if curb present)	ly don	Hydropoles & fract.
Physical Objects	Embankments	- Slope? - Height? - Protection required? Limits?	2/5	
	Structures (Bridges, Culverts, etc.)	- Culverts? - Bridges?	NA	
		- Line painting: - Signage?	No vex +- "Pavement Ends"	
Visual Aids			Children physing No lives parated on	



