TULLOCH

Planners | Surveyors | Biologists | Engineers

October 1, 2025
251146

Municipality of Huron Shores
7 Bridge Street
PO Box 460
Iron Bridge, ON.
P0R 1H0

Attention: Craig Coventry, Public Works Superintendent

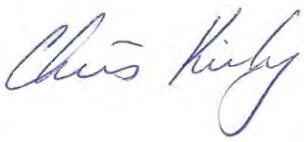
> Re: Chevis Road Assessment - Geometric Analysis and Improvement Options.

Dear Mr. Coventry,

Please find enclosed a brief report, outlining our findings related to the Geometric Analysis of a portion of Chevis Road, as well as the corresponding Improvement Options for Council's consideration.

Trusting this information is suitable for your purposes, and should you have any questions, concerns or require additional information please do not hesitate to contact us.

Sincerely yours,



Chris Kirby, P.Eng.
Project Manager

1. PROJECT SUMMARY

TULLOCH Engineering Inc. (TULLOCH) was retained by the Municipality of Huron Shores (Municipality) to complete a geometric analysis of Chevis Road over a length of 3.5km beginning approximately 240m east of Dayton Road and ending at the sharp corner where Chevis Road meets the Mississaugi River, as illustrated below.

Additionally, TULLOCH prepared several options for improvement areas, as well as undertook a desktop environmental review to determine if there were any significant environmental features that would need to be addressed should any improvements be undertaken.

Please note, as the majority of the existing road is a “forced road”, the occupied footprint of the roadway, i.e. cleared limits, is accepted as the legal road allowance and any proposed works beyond the cleared area will require landowner permissions and property acquisition. There are some legal monuments at the east of the project limits however this area is highly constrained by the sharp corner prior to the Mississaugi River.

2. METHODOLOGY

2.1. Geometric Analysis

To complete the geometric analysis, TULLOCH attended the site and undertook a detailed topographic survey of the roadway within the project limits utilizing RTK GPS survey equipment. Included in the data collection was the existing road surface, ditch lines and wood outline encompassing the roadway.

The collected data was imported into AutoCAD Civil 3D software and an existing centreline alignment and vertical profile was generated. These geometric values were compared to those

listed in the Transportation Association of Canada Geometric Design Guide for Canadian Roads, June 2017 (TAC Manual) as well as the MTO Design Supplement for TAC, October 2023 (MTO Supplement). The key components relating to the roadway geometrics are as follows:

i) Horizontal Curve Radius
ii) Vertical Crest Curve – K Factor
iii) Sag Vertical Curve – K Factor
iv) Maximum Grade

2.2. Environmental Review

TULLOCH completed an environmental screening for Natural Heritage features that may be present in proximity to the existing road and proposed improvement areas to assist feasibility planning for road realignments. Environmental legislation including Endangered Species Act, Fisheries Act, Migratory Birds Convention Act and Provincial Planning Statement, were reviewed to identify any concerns that may impact construction works for improvements or realignment areas. Two options were considered during the review process, which include the realignments to Chevis Road, as well as a possible new alignment extension of Woodside Drive.

2.3. Improvement & Realignment Options

Utilizing the existing geometric data and environmental review inputs, TULLOCH prepared several options for improvements to the existing roadway and realignments of sections of roadway to achieve a minimum design speed of 60km/hr throughout the project length. Consideration was also given to extending Woodside Drive northwesterly, connecting to Chevis Road west of the steep hill which extends down towards the Mississaugi River.

The following values as taken from the TAC Manual and MTO Supplement, correspond to a 60km/hr design speed:

i) Horizontal Curve Radius – 150m
ii) Vertical Crest Curve – K Factor of 10
iii) Sag Vertical Curve – K Factor of 15
iv) Maximum Grade – 10%

3. RESULTS

3.1. Geometric Analysis

The geometric analysis of Chevis Road within the project limints indicates that the existing roadway corresponds to a <30km/hr design speed. There are several locations of horizontal and vertical curves that are less than the targeted 60km/hr, however the minimum value will govern as the current design speed throughout the project limits. Additionally, the hill at the east end of the project limits is steeper than the design manuals recommend. The enclosed drawing package, presented in Appendix A, provides a visual representation of the existing roadway

geometrics, as shown on sheets C1 through C3. Values less than the targeted 60km/hr design speed have been highlighted for ease of reference.

Additionally, the average width of the existing road surface is approximately 6.5m, however the preferred surface width is a total of 8m, which corresponds to two 3.5m lanes with 0.5m shoulders.

3.2. Environmental Review

No major concerns were identified within either route (Chevis Road and Woodside Extension) which would lead to their abandonment or exclusion. In general, the two routes are subject to the same natural heritage constraints and future studies which would be required before any improvements or realignments could be undertaken. The full results of the environmental review are presented in Appendix B, Natural Heritage Desktop Screening and Recommendations Report.

3.3. Improvement & Realignment Options

TULLOCH prepared several options for improving and realigning Chevis Road, as well as two options for a Woodside Drive extension to Chevis Road, based on a 60km/hr design speed. These options are detailed below, with the associated design drawings presented in Appendix A.

<u>Chevis Road</u>

i) Existing Road Alignment – Improve to 60km/hr design speed for full length, with surface widening where required.
ii) Realignment Area A – Improves the first corner to an 80km/hr horizontal and 60km/hr vertical design speed.
iii) Realignment Area B – Eliminates the first corner with 60km/hr vertical design speed.
iv) Realignment Area C – Improves the eastern corner and hill with 60km/hr horizontal and vertical design speed.

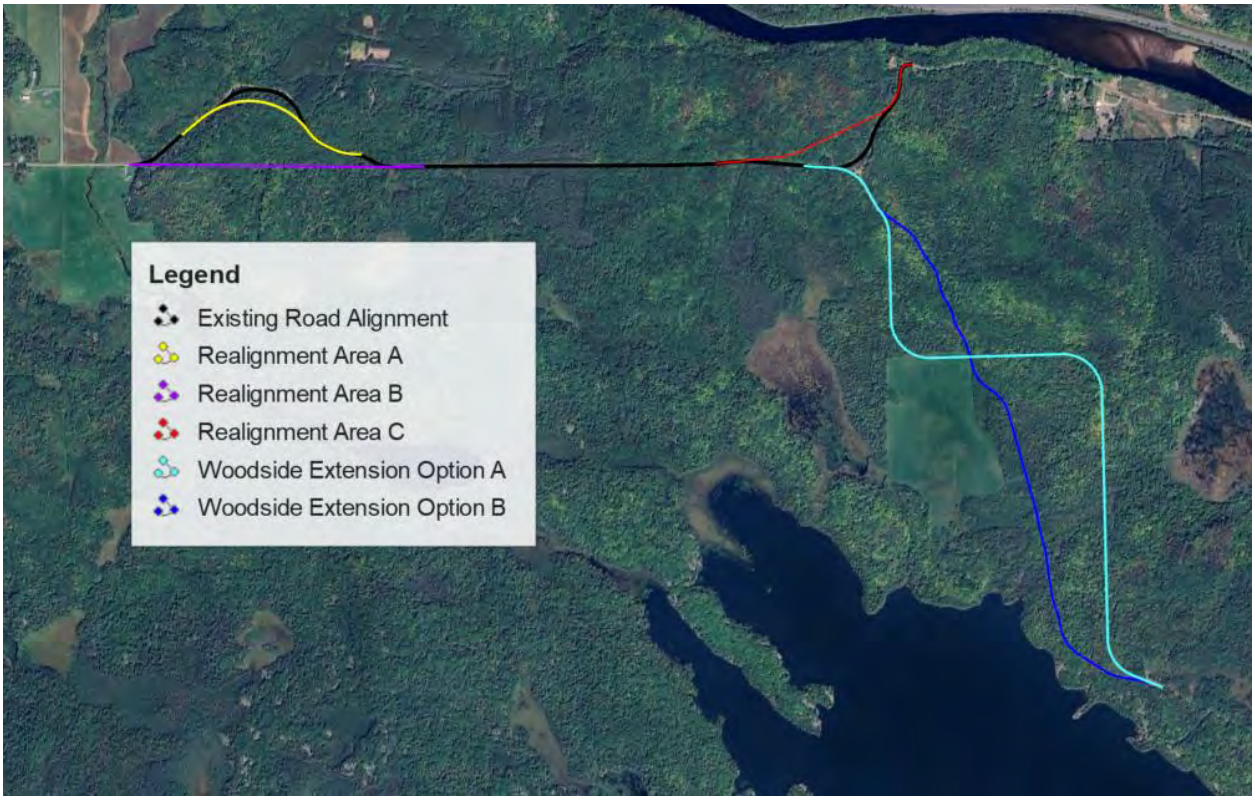
Further, should the Municipality consider undertaking a combination of improvements to Chevis Road, i.e. realign the hill and corner at the east end, then improve the existing alignment westerly, the following sectional breakdowns for improving the existing road alignment were prepared based on a 60km/hr design speed.

v) Existing West & Central Area – West project limits to west end of Realignment Area C.
vi) Existing Central Area – East end of Realignment Area B to west end of Realignment Area C

<u>Woodside Drive</u>

vii) Extension Option A – Alignment follows the wording of Municipal By-Law 151.
viii) Extension Option B – Alignment follows the existing trails from Chevis Road and Woodside Drive, and connects as a best fit through the central area.

The following figure provides a visual representation of the options considered, with detailed information presented in Appendix A.



4. ESTIMATED COST

Budgetary cost estimates were prepared for each of the options, as summarized below and presented in Appendix C. Please note, the below values have been rounded when compared to the detailed breakdowns presented in Appendix C. Unit rates presented in Appendix C are based on recent construction projects completed locally.

Chevis Road

i) Existing Road Alignment – $4.5M
ii) Realignment Area A – $1.2M
iii) Realignment Area B – $2.4M
iv) Realignment Area C – $1.9M
v) Existing West & Central Area - $3.4M
vi) Existing Central Area - $1.6M

Woodside Drive

vii) Extension Option A – $4.3M
viii) Extension Option B – $3.2M

As can be seen above, the minimum cost to improve Chevis Road to a 60km/hr design speed within the study limits is estimated at $4.5M. Additionally, the above costs can be combined to

represent a total cost for a specific route, i.e. the cost to complete Realignment Area B ($2.4M), improve the Central Area ($1.6M) and construct Woodside Option B ($3.2M) would total $7.2M. Similarly, the cost to improve Chevis Road West & Central Areas ($3.4M) and complete Realignment Area C ($1.9M) would total $5.3M. Furthermore, it should be noted that due to property constraints at the east end of the project limits, there is no option that will improve the sharp corner where Chevis Road meets the Mississaugi River beyond it's existing <30km/hr design speed.

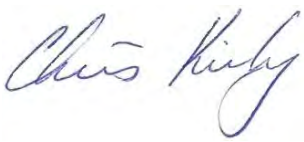
Please note the above costs are exclusive of HST as well as costs associated with property acquisition and legal fees. The costs presented reflect a finished road cross section of 8m with double course surface treatment. The engineering and surveying costs detailed in Appendix C include legal surveys, environmental, geotechnical and civil engineering, as well as tendering, contract administration and site inspections. Costs have been prepared independently of other sections, so there would be some minor cost savings based on efficiencies thought completing concurrently. Conversely, breaking up the work into smaller sections, i.e. completing the existing road alignment works over the course of a couple years could lead to cost increases based on smaller contract sizes and general cost inflation.

5. SUMMARY & CONCLUSION

This brief report has identified that the Chevis Road geometrics within the study limits correspond to a 30km/hr (or less) design speed and has presented options for reconstruction to achieve a minimum 60km/hr design speed. Unfortunately, property constraints at the east end of the study limits will prevent the sharp corner at the Mississaugi River from being meaningfully improved, without major private property impacts. Additionally, the vast majority of roadway is a forced road, which will require legal surveys and property acquisition to complete any work beyond the existing cleared area.

TULLOCH appreciates the opportunity to work with the Municipality of Huron Shores on the Chevis Road Assessment project and trust that the information presented is suitable for its intended purpose. Should you have any questions, concerns or require additional information please do not hesitate to contact the undersigned.

Sincerely yours,



Chris Kirby, P.Eng.
Project Manager
Thessalon Office

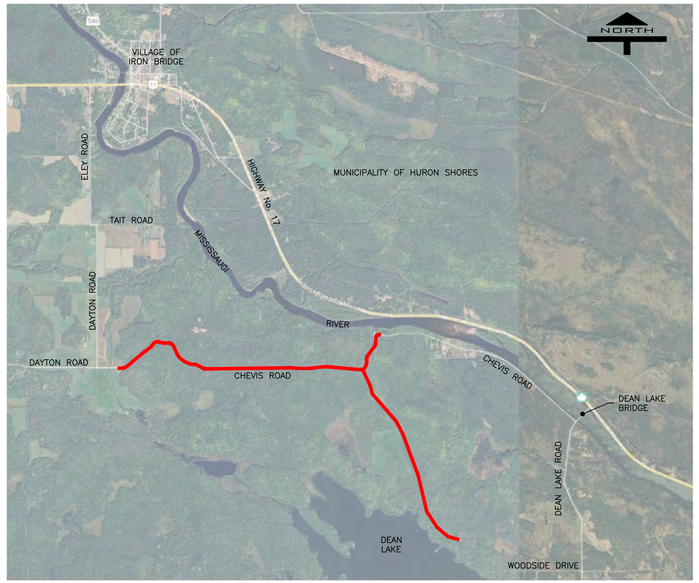
APPENDIX A

CHEVIS ROAD ASSESSMENT DRAWING PACKAGE

ISSUED FOR REVIEW
NOT FOR CONSTRUCTION
OCTOBER 1, 2025

MUNICIPALITY OF HURON SHORES

CHEVIS ROAD ASSESSMENT



KEY PLAN

LIST OF DRAWINGS		
No.	Rev.	DRAWING DESCRIPTION
IN1	A	INDEX SHEET
C1	A	EXISTING CHEVIS ROAD PLAN & PROFILE 0+240 to 1+720
C2	A	EXISTING CHEVIS ROAD PLAN & PROFILE 1+720 to 3+160
C3	A	EXISTING CHEVIS ROAD PLAN & PROFILE 3+160 to 3+800
C4	A	EXISTING CHEVIS ROAD IMPROVEMENTS 60km/hr PLAN & PROFILE 0+240 to 1+720
C5	A	EXISTING CHEVIS ROAD IMPROVEMENTS 60km/hr PLAN & PROFILE 1+720 to 3+160
C6	A	EXISTING CHEVIS ROAD IMPROVEMENTS 60km/hr PLAN & PROFILE 3+160 to 3+800
C7	A	REALIGNMENT AREA 'A' PLAN & PROFILE 0+560 to 1+160
C8	A	REALIGNMENT AREA 'B' PLAN & PROFILE 0+240 to 3+0
C9	A	REALIGNMENT AREA 'C' PLAN & PROFILE 9+000 to 10+800
C10	A	WOODSIDE DRIVE EXTENSION OPTION 'A' PLAN & PROFILE 10+800 to 12+600
C11	A	WOODSIDE DRIVE EXTENSION OPTION 'A' PLAN & PROFILE 12+600 to 14+400
C12	A	WOODSIDE DRIVE EXTENSION OPTION 'A' PLAN & PROFILE 14+400 to 16+200
C13	A	WOODSIDE DRIVE EXTENSION OPTION 'B' PLAN & PROFILE 16+200 to 18+000
C14	A	WOODSIDE DRIVE EXTENSION OPTION 'B' PLAN & PROFILE 18+000 to 19+800
C15	A	WOODSIDE DRIVE EXTENSION OPTION 'B' PLAN & PROFILE 19+800 to 21+600
C16	A	TYPICAL SECTIONS, DETAILS & NOTES

MUNICIPALITY OF HURON SHORES

TULLOCH

PROJECT No. 251146

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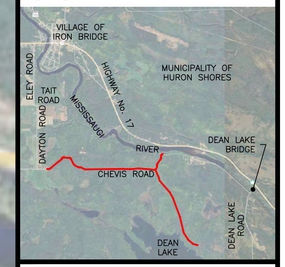
KEY PLAN



ENGINEER'S SEAL:

TULLOCH

ISSUED FOR REVIEW
NOT FOR CONSTRUCTION
OCTOBER 1, 2025

DATE	REV.	REVISION	BY	APP'D
24/10/01	A	Issued For Review	DAS	CLK

CLIENT:

MUNICIPALITY OF HURON SHORES

CONSULTANT:

TULLOCH

PROJECT TITLE:

CHEVIS ROAD ASSESSMENT

DRAWING TITLE:

INDEX SHEET

DRAWN	DESIGNED	CHECKED	APPROVED
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PROJECT No.	REVISION	DRAWING
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L = 66.466
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MATCH LINE 1+720 1251146-C1

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- INTERMEDIATE CONTOUR (0.25m INTERVAL)
- EDGE OF SHOULDER
- GATE
- DITCH LINE
- WOOD OUTLINE
- UTILITY POLE — B&H

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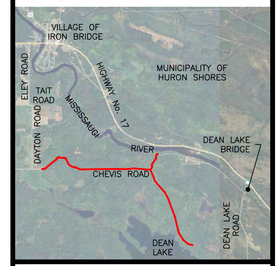

KEY PLAN

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DATE	REV.	REVISION	BY	APP'D
24/10/01	A	Issued For Review	DAS	CLK

CLIENT: MUNICIPALITY OF HURON SHORES

CONSULTANT: TULLOCH

PROJECT TITLE:
CHEVIS ROAD ASSESSMENT

DRAWING TITLE:
EXISTING ROAD
PLAN & PROFILE 0+240 to 1+720

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OCT. 1, 2025 — DATE

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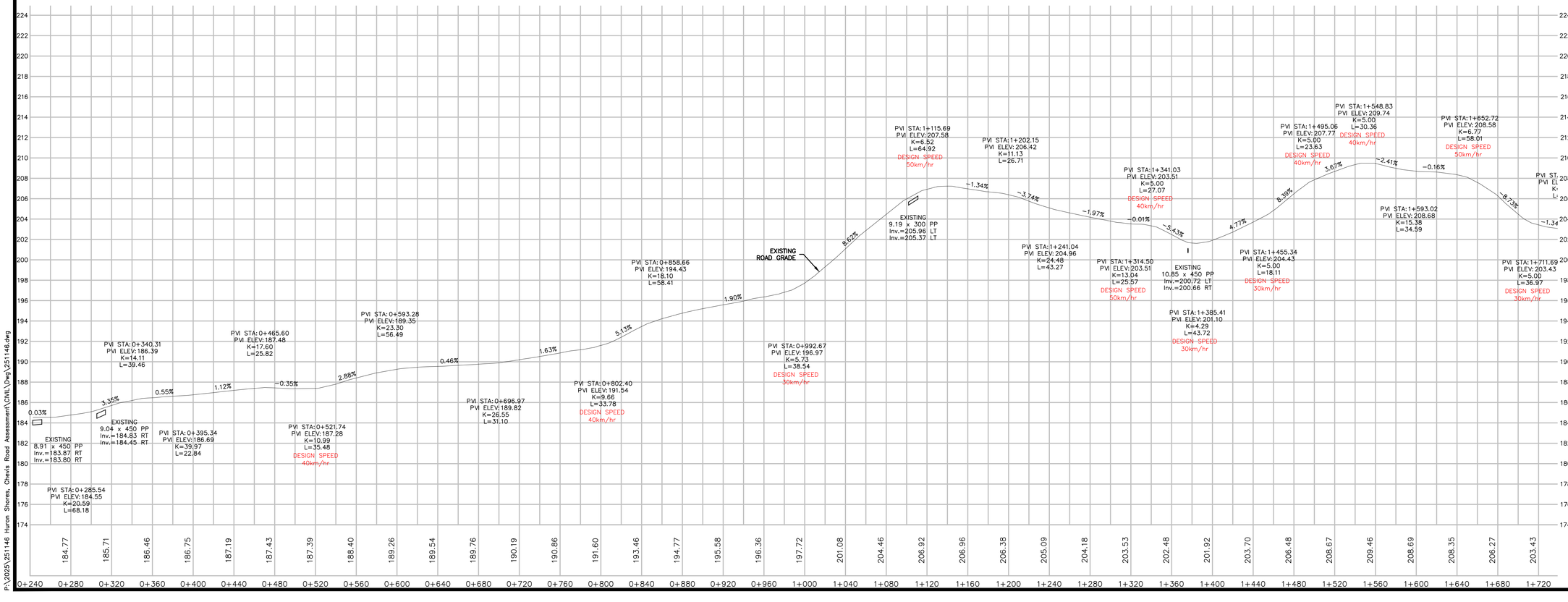

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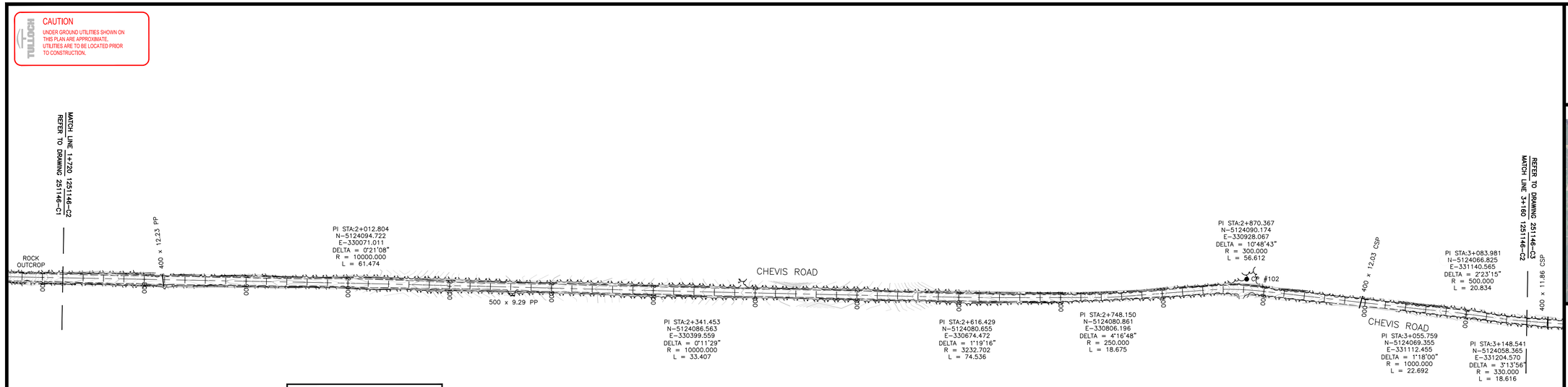

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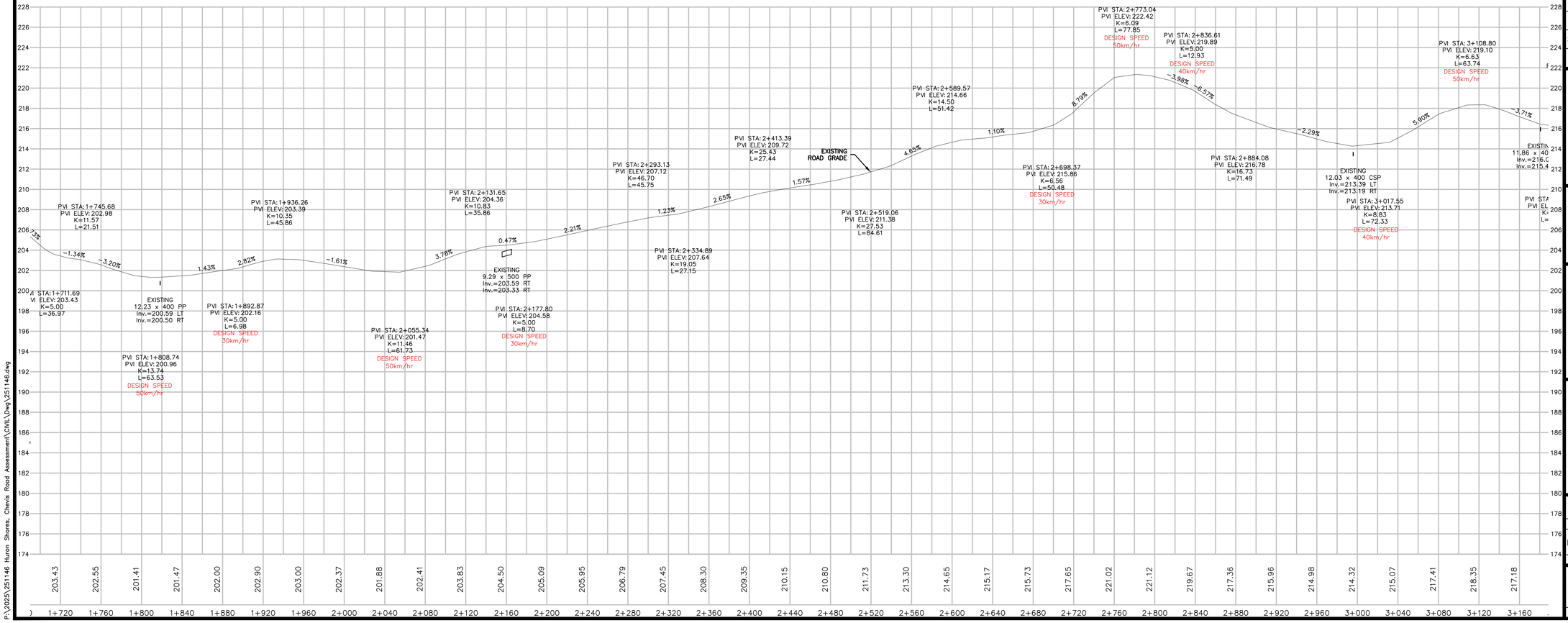
EDGE OF SHOULDER

GATE

DITCH LINE

WOOD OUTLINE

UTILITY POLE — B&H



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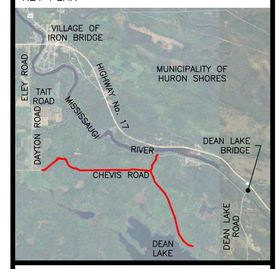

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CONSULTANT: TULLOCH

PROJECT TITLE:

CHEVIS ROAD ASSESSMENT

DRAWING TITLE:

EXISTING ROAD

PLAN & PROFILE 1+720 to 3+160

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OCT. 1, 2025 — DATE

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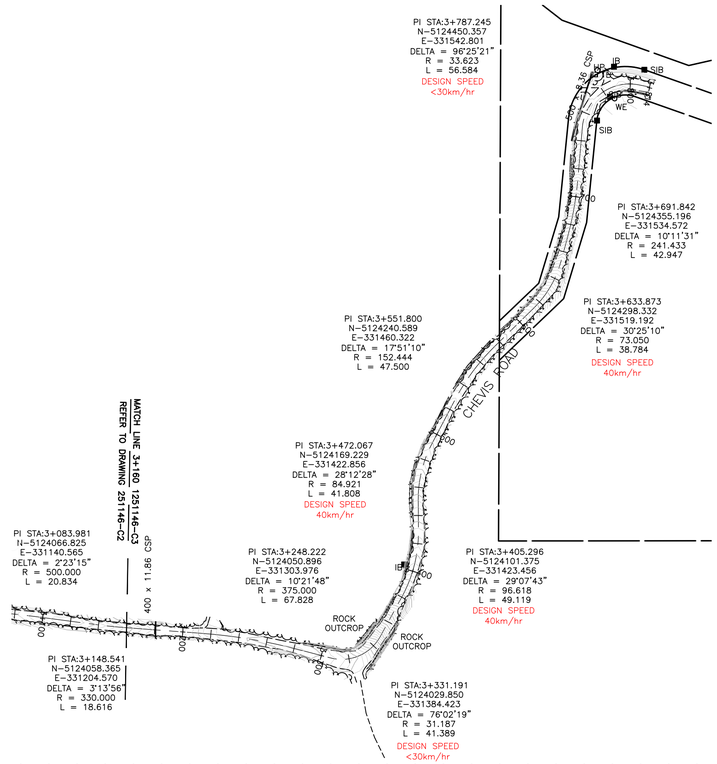

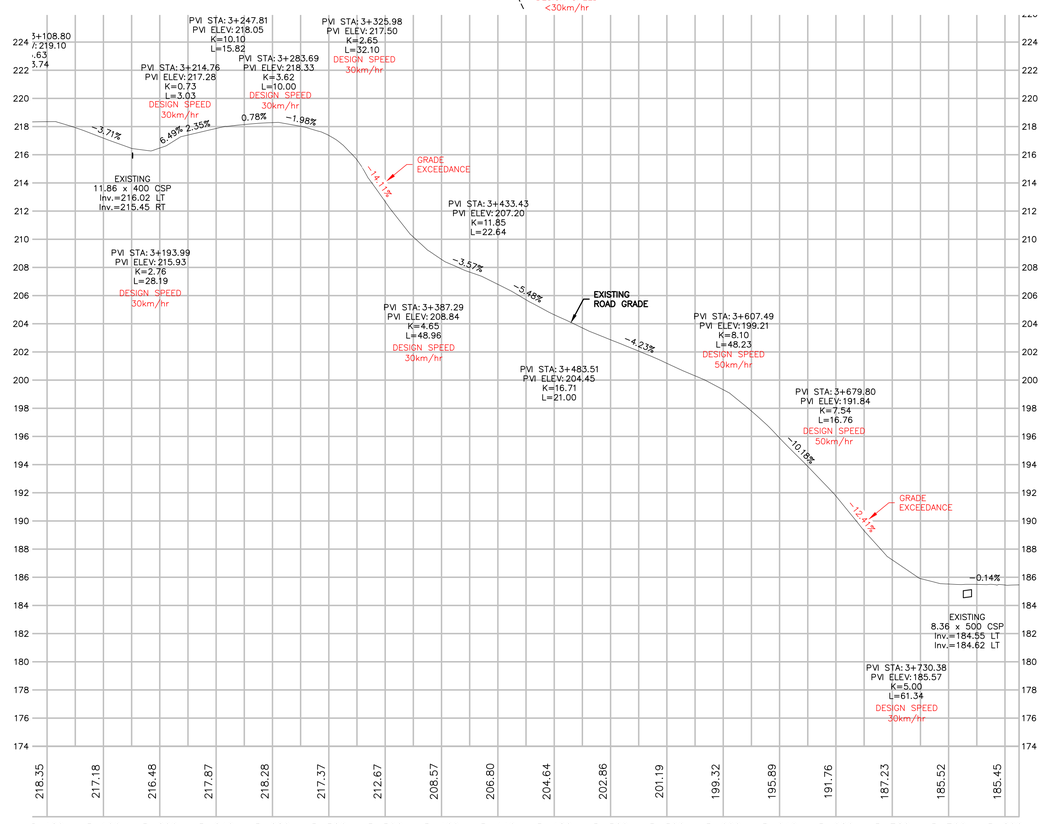

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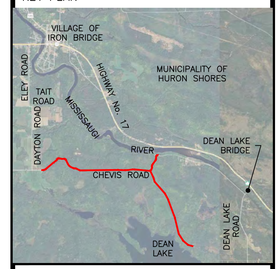
UTILITY POLE	B&H

KEY PLAN



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CONSULTANT:

TULLOCH

PROJECT TITLE:

CHEVIS ROAD ASSESSMENT

DRAWING TITLE:

EXISTING ROAD

PLAN & PROFILE 3+160 to 3+800

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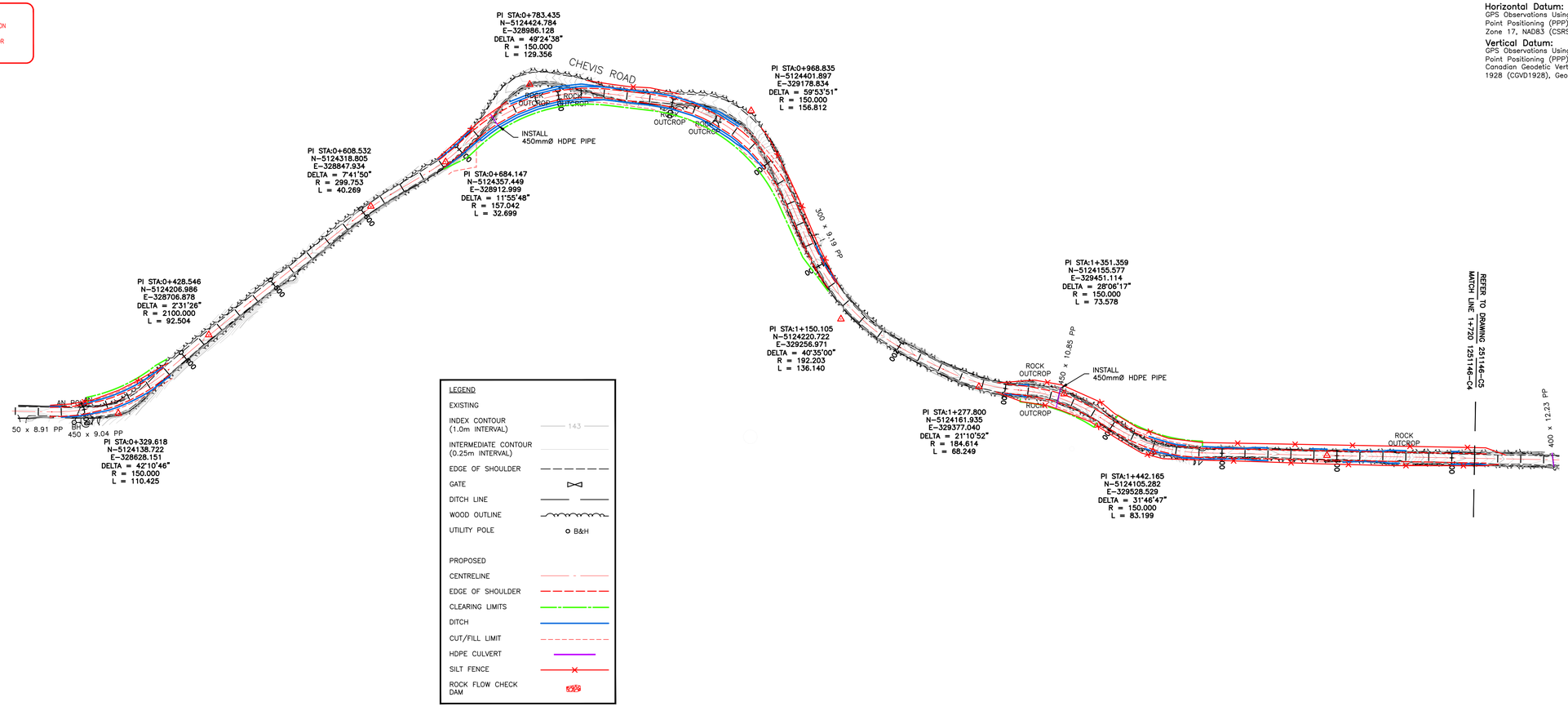

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- GATE
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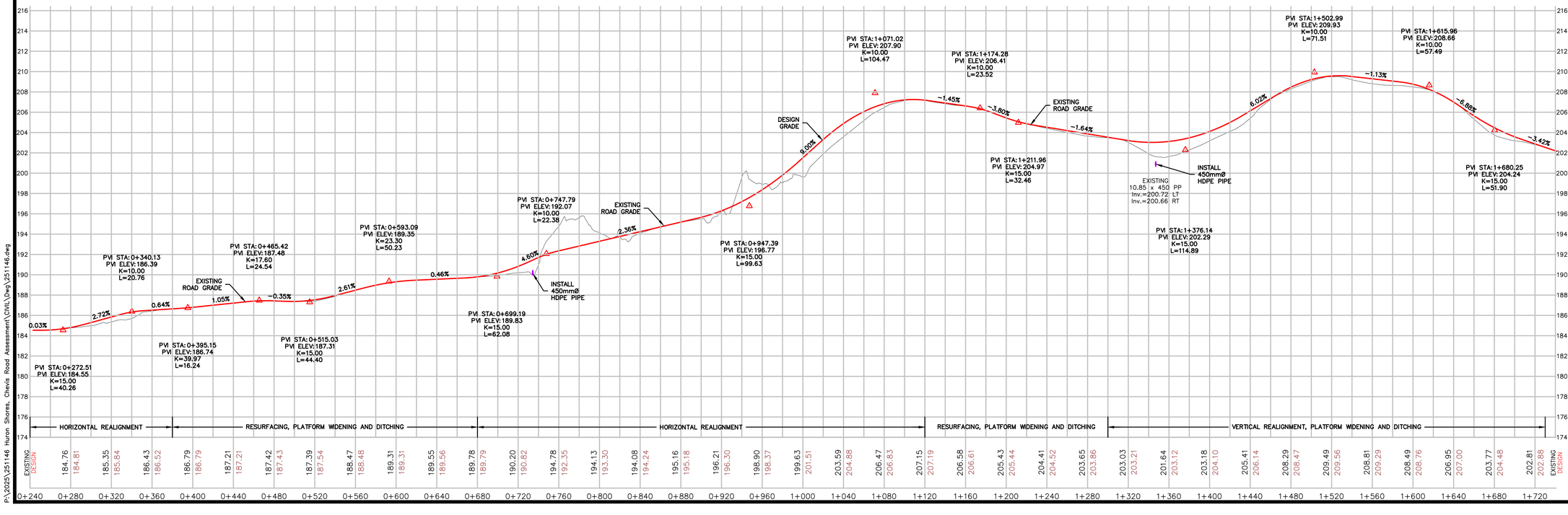
PROPOSED
- CENTRELINE
- EDGE OF SHOULDER
- CLEARING LIMITS
- DITCH
- CUT/FILL LIMIT
- HDPE CULVERT
- SILT FENCE
- ROCK FLOW CHECK DAM — RFCD



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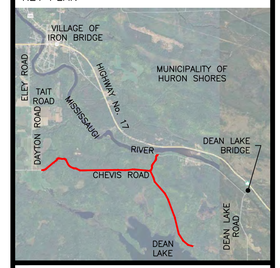

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DRAWING TITLE:
EXISTING ROAD IMPROVEMENTS 60km/hr PLAN & PROFILE 0+240 to 1+720

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LEGEND

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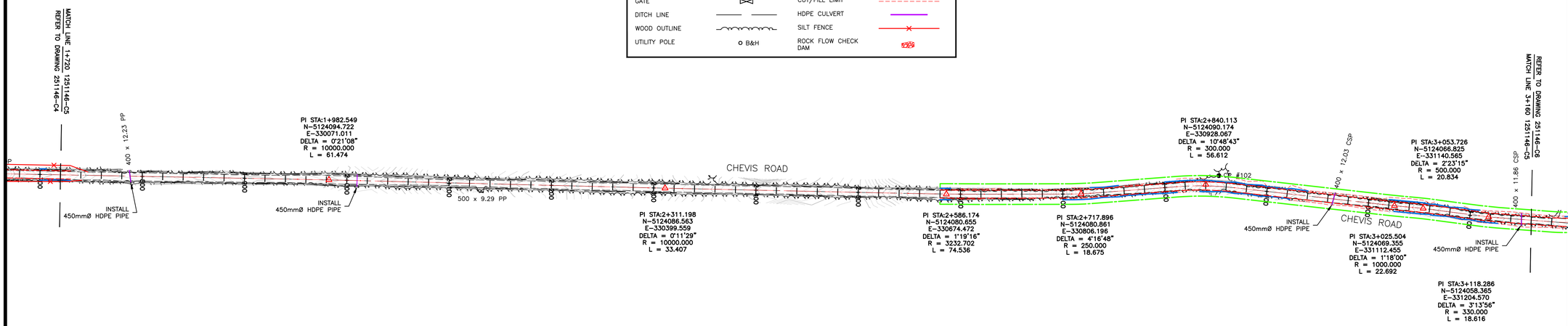
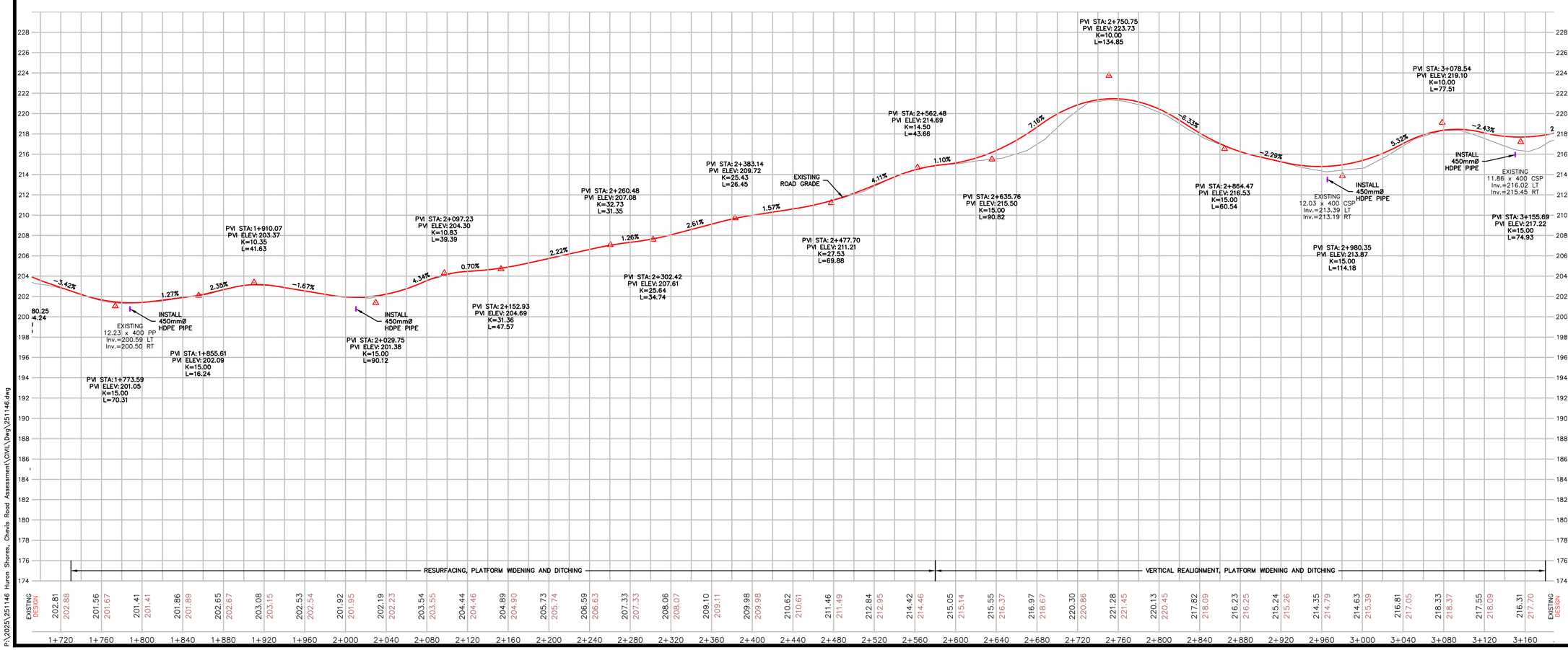
INTERMEDIATE CONTOUR (0.25m INTERVAL)		EDGE OF SHOULDER	
EDGE OF SHOULDER		CLEARING LIMITS	
GATE		DITCH	
DITCH LINE		CUT/FILL LIMIT	
WOOD OUTLINE		HDPE CULVERT	
UTILITY POLE	B&H	SILT FENCE	
		ROCK FLOW CHECK DAM	

Horizontal Datum:
GPS Observations Using The Precise Point Positioning (PPP) Service, UTM Zone 17, NAD83 (CSRS) (2010)

Vertical Datum:
GPS Observations Using The Precise Point Positioning (PPP) Service, Canadian Geodetic Vertical Datum of 1928 (CGVD1928), Geodetic Elevations





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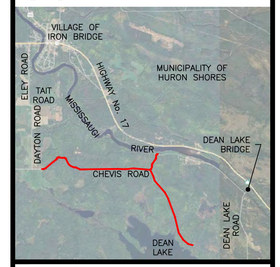
KEY PLAN



ENGINEER'S SEAL:

ISSUED FOR REVIEW
NOT FOR CONSTRUCTION
OCTOBER 1, 2025

DATE	REV.	REVISION	BY	APP'D
24/10/01	A	Issued For Review	DAS	CLK

CLIENT: MUNICIPALITY OF HURON SHORES

CONSULTANT: TULLOCH

PROJECT TITLE:
CHEVIS ROAD ASSESSMENT

DRAWING TITLE:
EXISTING ROAD IMPROVEMENTS 60km/hr PLAN & PROFILE 1+720 to 3+160

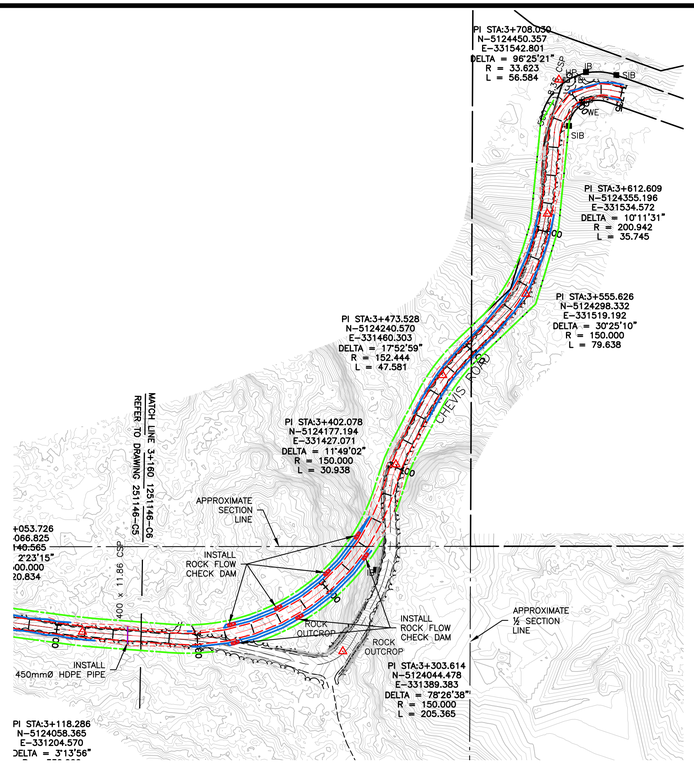
DRAWN	DESIGNED	CHECKED	APPROVED
DAS	DAS	CLK	CLK

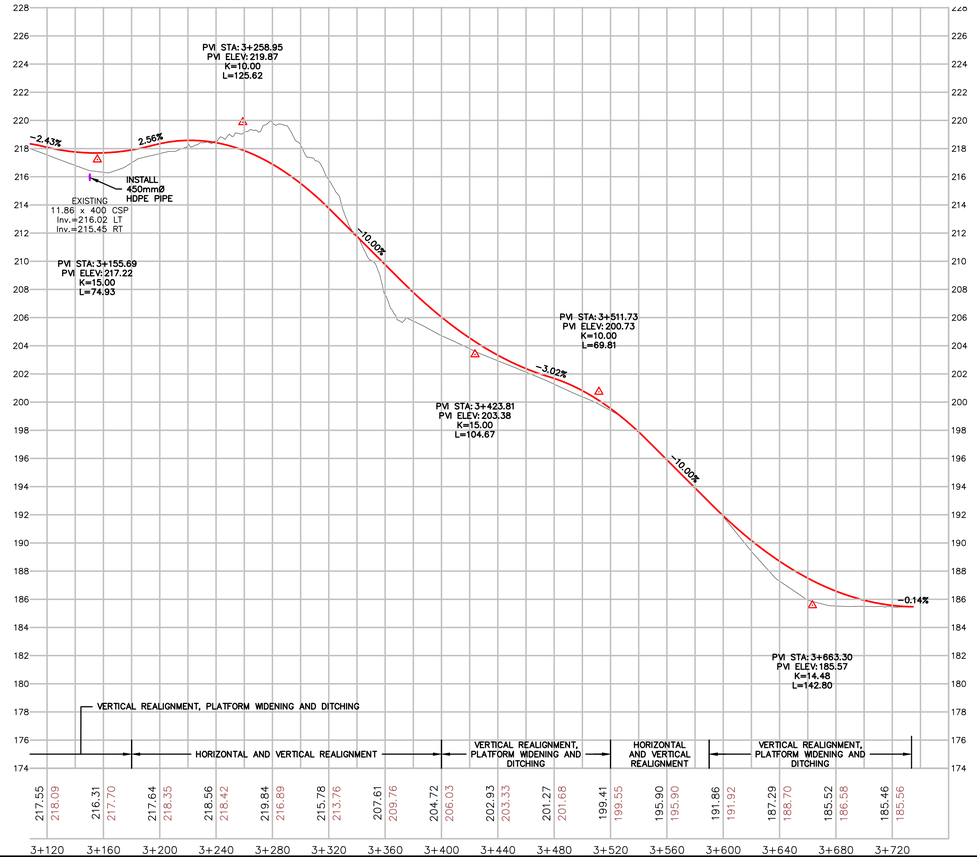
SCALE	DATE
H-1:2000 V-1:200	OCT. 1, 2025

PROJECT No.	REVISION	DRAWING
251146	A	C5

CAUTION

UNDER GROUND UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE. UTILITIES ARE TO BE LOCATED PRIOR TO CONSTRUCTION.





Horizontal Datum:
GPS Observations Using The Precise Point Positioning (PPP) Service, UTM Zone 17, NAD83 (CSRS) (2010)

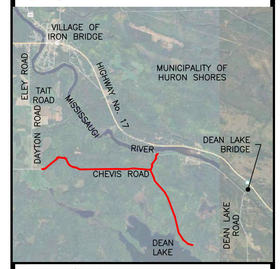
Vertical Datum:
GPS Observations Using The Precise Point Positioning (PPP) Service, Canadian Geodetic Vertical Datum of 1928 (CGVD1928), Geodetic Elevations

LEGEND

EXISTING
- INDEX CONTOUR (1.0m INTERVAL) — 143
- INTERMEDIATE CONTOUR (0.25m INTERVAL)
- EDGE OF SHOULDER
- GATE
- DITCH LINE
- WOOD OUTLINE
- UTILITY POLE — B&H

PROPOSED
- CENTRELINE
- EDGE OF SHOULDER
- CLEARING LIMITS
- DITCH
- CUT/FILL LIMIT
- HDPE CULVERT
- SILT FENCE
- ROCK FLOW CHECK DAM

KEY PLAN



ENGINEER'S SEAL:

ISSUED FOR REVIEW
NOT FOR CONSTRUCTION
OCTOBER 1, 2025

DATE	REV.	REVISION	BY	APP'D
24/10/01	A	Issued For Review	DAS	CLK

CLIENT: MUNICIPALITY OF HURON SHORES

CONSULTANT: TULLOCH

PROJECT TITLE:

CHEVIS ROAD ASSESSMENT

DRAWING TITLE:

EXISTING ROAD IMPROVEMENTS 60km/hr PLAN & PROFILE 3+160 to 3+740

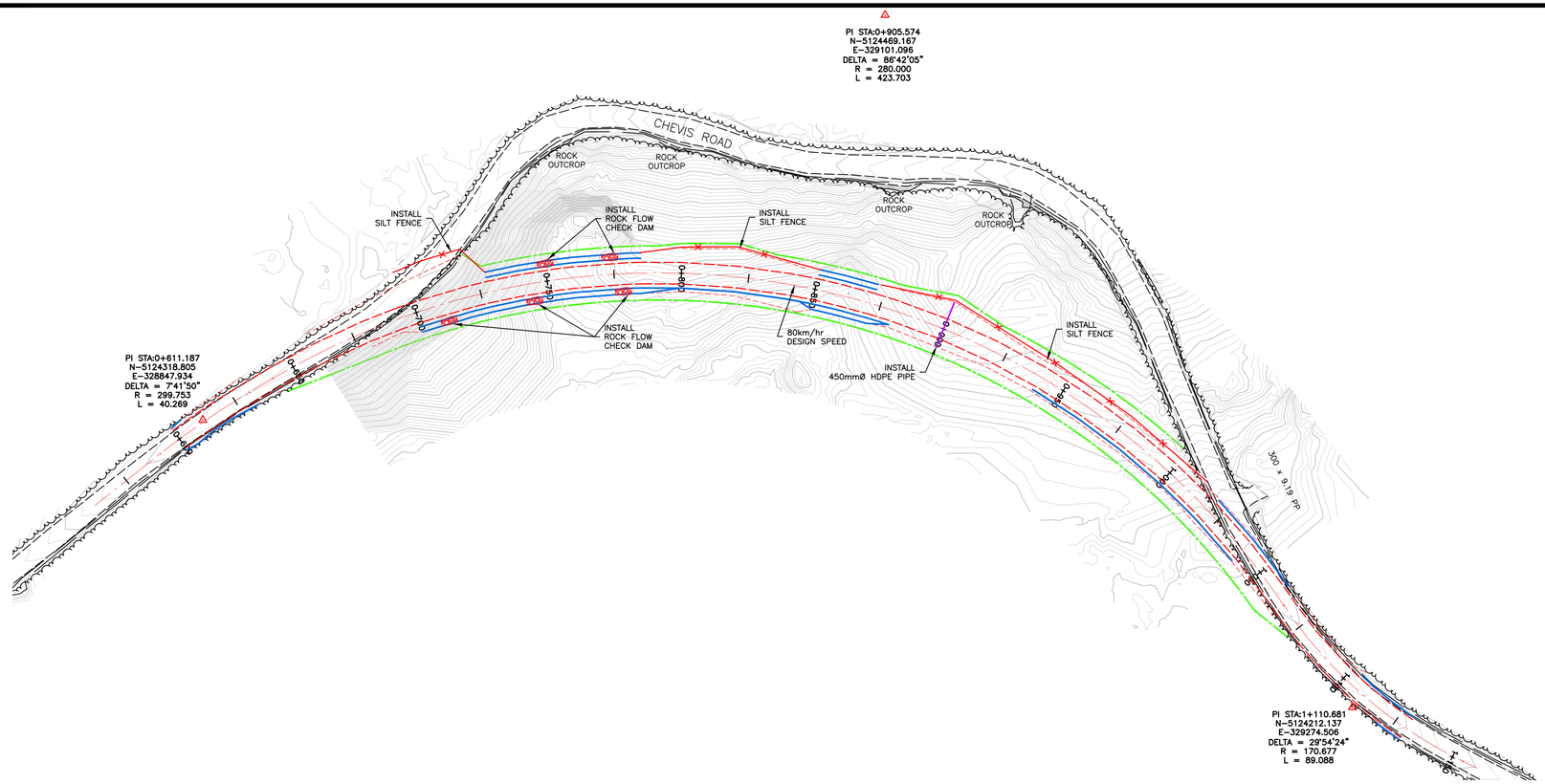
DRAWN	DESIGNED	CHECKED	APPROVED
DAS	DAS	CLK	CLK

SCALE	DATE
H-1:2000 V-1:200	OCT. 1, 2025

PROJECT No.	REVISION	DRAWING
251146	A	C6

P:\2025\251146 Huron Shores, Chevis Road Assessment\CIVIL\Dwg\251146.dwg

CAUTION
UNDER GROUND UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE. UTILITIES ARE TO BE LOCATED PRIOR TO CONSTRUCTION.



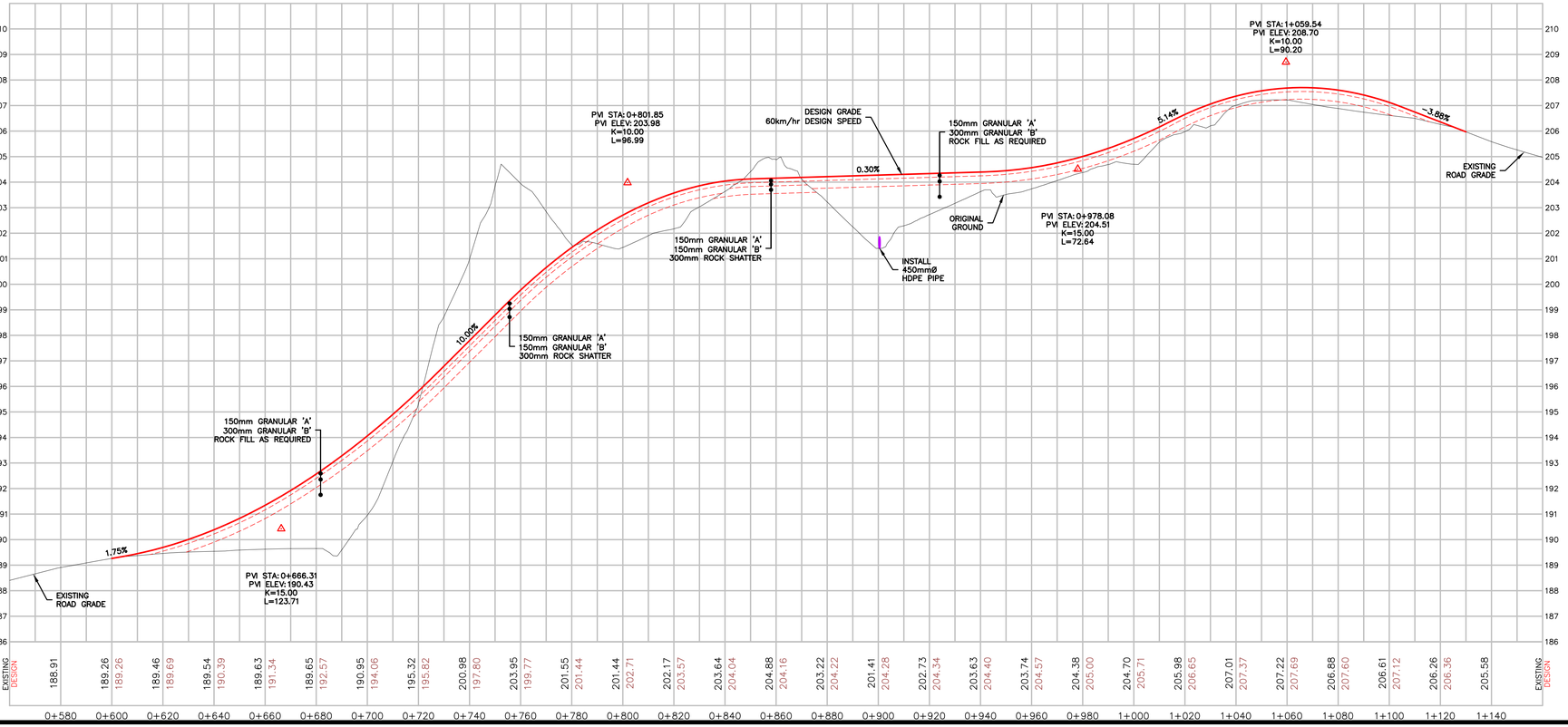
Horizontal Datum:
GPS Observations Using The Precise Point Positioning (PPP) Service, UTM Zone 17, NAD83 (CSRS) (2010)

Vertical Datum:
GPS Observations Using The Precise Point Positioning (PPP) Service, Canadian Geodetic Vertical Datum of 1928 (CGVD1928), Geodetic Elevations

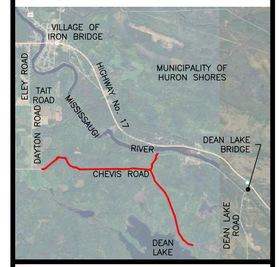
LEGEND

EXISTING
- INDEX CONTOUR (1.0m INTERVAL) — 143
- INTERMEDIATE CONTOUR (0.25m INTERVAL)
- EDGE OF SHOULDER
- GATE
- DITCH LINE
- WOOD OUTLINE
- UTILITY POLE — B&H

PROPOSED
- CENTRELINE
- EDGE OF SHOULDER
- CLEARING LIMITS
- DITCH
- CUT/FILL LIMIT
- HDPE CULVERT
- SILT FENCE
- ROCK FLOW CHECK DAM



KEY PLAN



ENGINEER'S SEAL:

ISSUED FOR REVIEW
NOT FOR CONSTRUCTION
OCTOBER 1, 2025

DATE	REV.	REVISION	BY	APP'D
24/10/01	A	Issued For Review	DAS	CLK

CLIENT: MUNICIPALITY OF HURON SHORES

CONSULTANT: TULLOCH

PROJECT TITLE:

CHEVIS ROAD ASSESSMENT

DRAWING TITLE:

REALIGNMENT AREA 'A'

PLAN & PROFILE 0+560 to 1+160

DRAWN	DESIGNED	CHECKED	APPROVED
DAS	DAS	CLK	CLK

SCALE	DATE
H-1:1000 V-1:100	OCT. 1, 2025

PROJECT No.	REVISION	DRAWING
251146	A	C7

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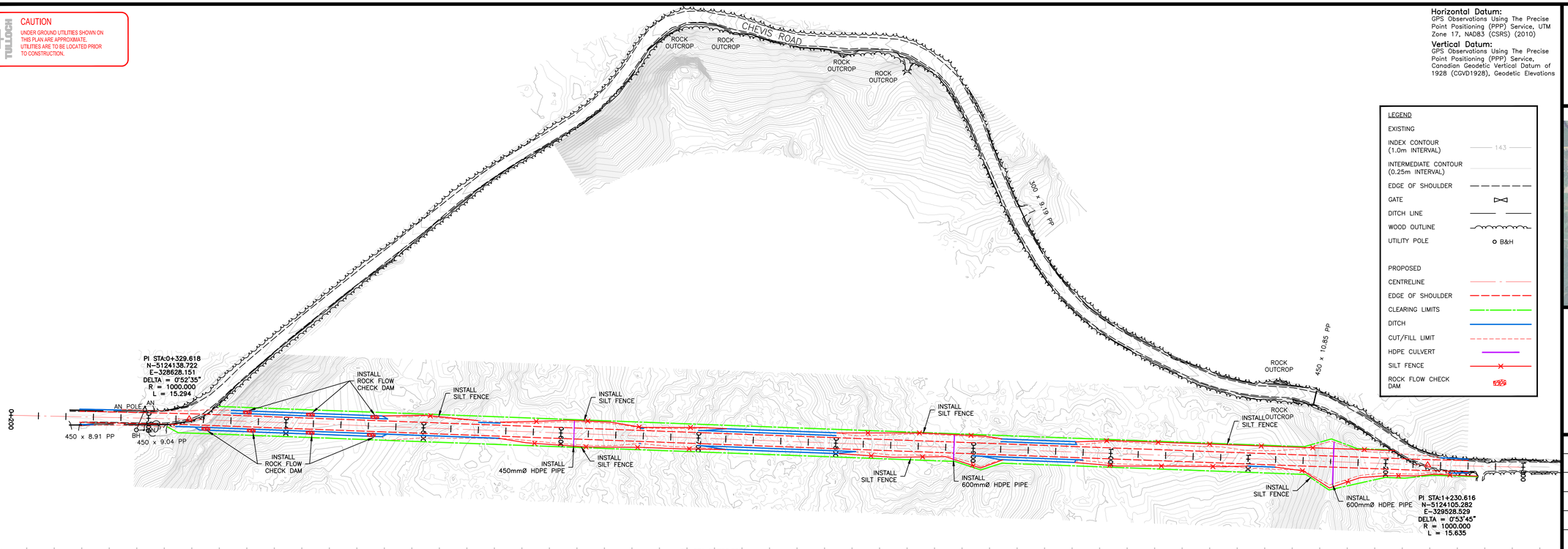
CAUTION

UNDER GROUND UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE. UTILITIES ARE TO BE LOCATED PRIOR TO CONSTRUCTION.

Horizontal Datum:
GPS Observations Using The Precise Point Positioning (PPP) Service, UTM Zone 17, NAD83 (CSRS) (2010)

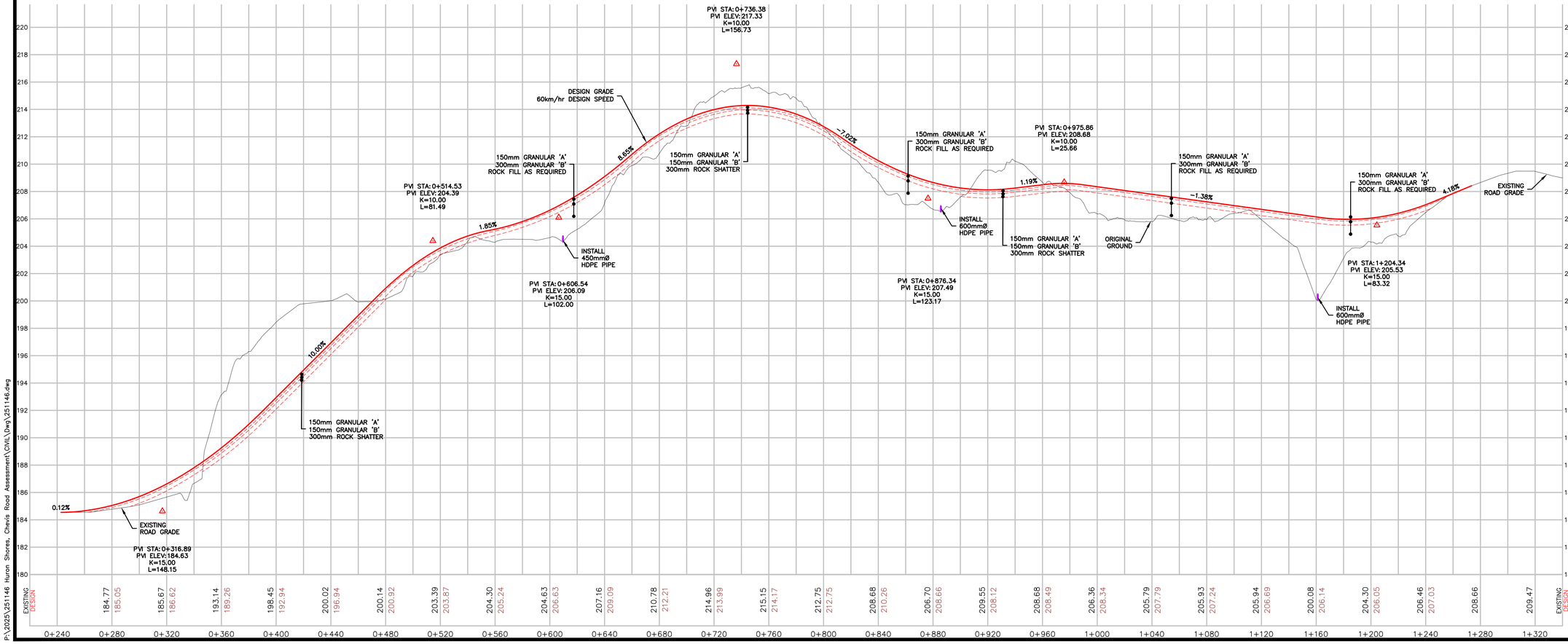
Vertical Datum:
GPS Observations Using The Precise Point Positioning (PPP) Service, Canadian Geodetic Vertical Datum of 1928 (CGVD1928), Geodetic Elevations



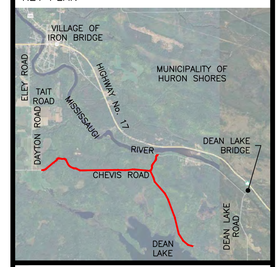
LEGEND

EXISTING
- INDEX CONTOUR (1.0m INTERVAL) — 143
- INTERMEDIATE CONTOUR (0.25m INTERVAL)
- EDGE OF SHOULDER
- GATE
- DITCH LINE
- WOOD OUTLINE
- UTILITY POLE — B&H

PROPOSED
- CENTRELINE
- EDGE OF SHOULDER
- CLEARING LIMITS
- DITCH
- CUT/FILL LIMIT
- HDPE CULVERT
- SILT FENCE
- ROCK FLOW CHECK DAM — RFCD



KEY PLAN



ENGINEER'S SEAL:

ISSUED FOR REVIEW
NOT FOR CONSTRUCTION
OCTOBER 1, 2025

DATE	REV.	REVISION	BY	APP'D
24/10/01	A	Issued For Review	DAS	CLK

CLIENT: MUNICIPALITY OF HURON SHORES

CONSULTANT: TULLOCH

PROJECT TITLE:

CHEVIS ROAD ASSESSMENT

DRAWING TITLE:

REALIGNMENT AREA 'B'

PLAN & PROFILE 0+240 to 1+290

DRAWN	DESIGNED	CHECKED	APPROVED
DAS	DAS	CLK	CLK

SCALE	DATE
H-1:1500 V-1:150	OCT. 1, 2025

PROJECT No.	REVISION	DRAWING
251146	A	C8

P:\2025\251146 Huron Shores, Chevis Road Assessment\CIVIL\dwg\251146.dwg

CAUTION

UNDER GROUND UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE. UTILITIES ARE TO BE LOCATED PRIOR TO CONSTRUCTION.

LEGEND

EXISTING

INDEX CONTOUR (1.0m INTERVAL) — 143

INTERMEDIATE CONTOUR (0.25m INTERVAL)

EDGE OF SHOULDER

GATE

DITCH LINE

WOOD OUTLINE

UTILITY POLE — B&H

PROPOSED

CENTRELINE

EDGE OF SHOULDER

CLEARING LIMITS

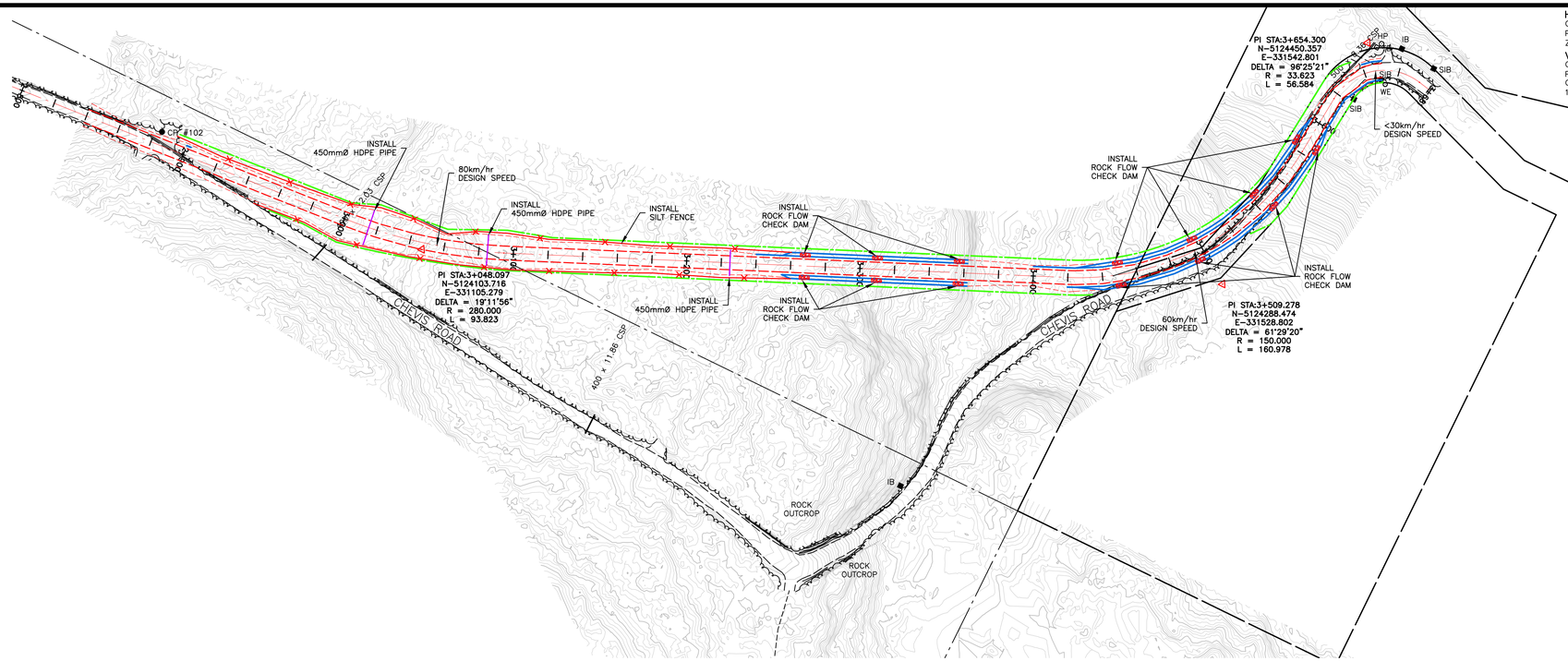
DITCH

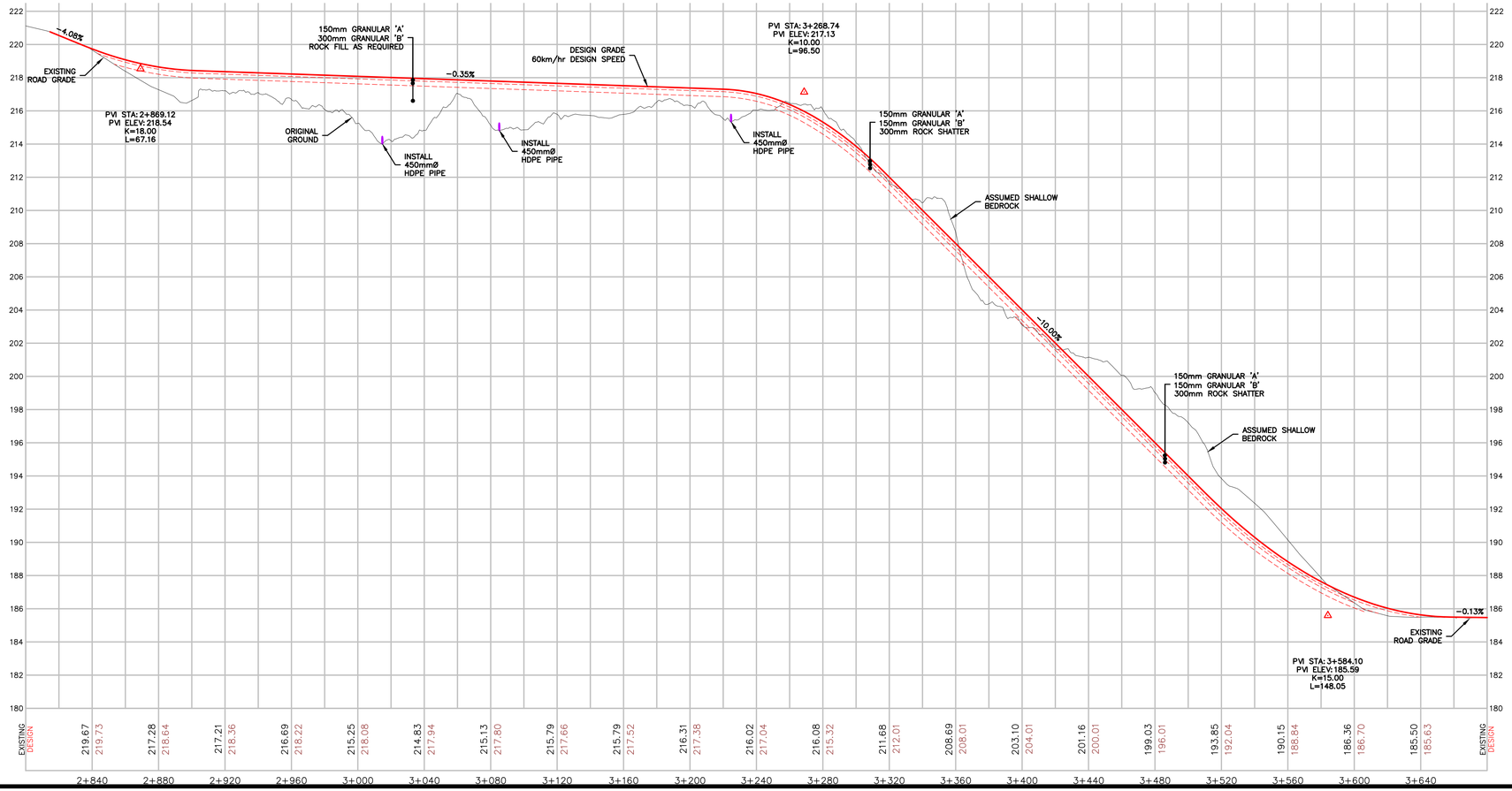
CUT/FILL LIMIT

HDPE CULVERT

SILT FENCE

ROCK FLOW CHECK DAM

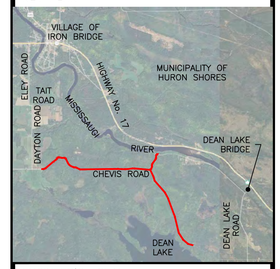




Horizontal Datum:
GPS Observations Using The Precise Point Positioning (PPP) Service, UTM Zone 17, NAD83 (CSRS) (2010)

Vertical Datum:
GPS Observations Using The Precise Point Positioning (PPP) Service, Canadian Geodetic Vertical Datum of 1928 (CGVD1928), Geodetic Elevations

KEY PLAN



ENGINEER'S SEAL:

ISSUED FOR REVIEW
NOT FOR CONSTRUCTION
OCTOBER 1, 2025

DATE	REV.	REVISION	BY	APP'D
24/10/01	A	Issued For Review	DAS	CLK

CLIENT: MUNICIPALITY OF HURON SHORES

CONSULTANT: TULLOCH

PROJECT TITLE:

CHEVIS ROAD ASSESSMENT

DRAWING TITLE:

REALIGNMENT AREA 'C'

PLAN & PROFILE 2+820 to 3+660

DRAWN	DESIGNED	CHECKED	APPROVED
DAS	DAS	CLK	CLK

SCALE		DATE
H-1:1500	V-1:150	OCT. 1, 2025

PROJECT No.	REVISION	DRAWING
251146	A	C9

P:\2025\251146 Huron Shores, Chevis Road Assessment\CIVIL\Dwg\251146.dwg

CAUTION
UNDER GROUND UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE. UTILITIES ARE TO BE LOCATED PRIOR TO CONSTRUCTION.

TULLOCH

SECTION 6

APPROXIMATE SECTION LINE

IB

ROCK OUTCROP

ROCK OUTCROP

PI STA:3+300.531
N-5124046.976
E-331356.138
DELTA = 58°02'53"
R = 150.000
L = 151.969

INSTALL 450mmØ HDPE PIPE

CONSTRUCT OFF-TAKE DITCH TO ENSURE POSITIVE DRAINAGE AWAY FROM ROAD

PI STA:3+452.829
N-5123899.244
E-331433.551
DELTA = 9°51'33"
R = 150.000
L = 25.811

PI STA:3+527.170
N-5123840.226
E-331478.860
DELTA = 37°45'41"
R = 150.000
L = 98.859

EXISTING TRAIL

NE ¼ SECTION 7

400 x 11.86 CSP

INSTALL 450mmØ HDPE PIPE

PI STA:3+148.541
N-5124058.365
E-331204.570
DELTA = 3°13'56"
R = 330.000
L = 18.616

CHEVIS ROAD

CSP

INSTALL SILT FENCE

60km/hr DESIGN SPEED

INSTALL 600mmØ HDPE PIPE

NW ¼ SECTION 7

REFER TO DRAWING 251146-C11
MATCH LINE 4+220 251146-C10

EXISTING FIELD

INSTALL 450mmØ HDPE PIPE

SE ¼ SECTION 7

PI STA:4+051.875
N-5123311.785
E-331476.576
DELTA = 90°18'10"
R = 150.000
L = 236.412

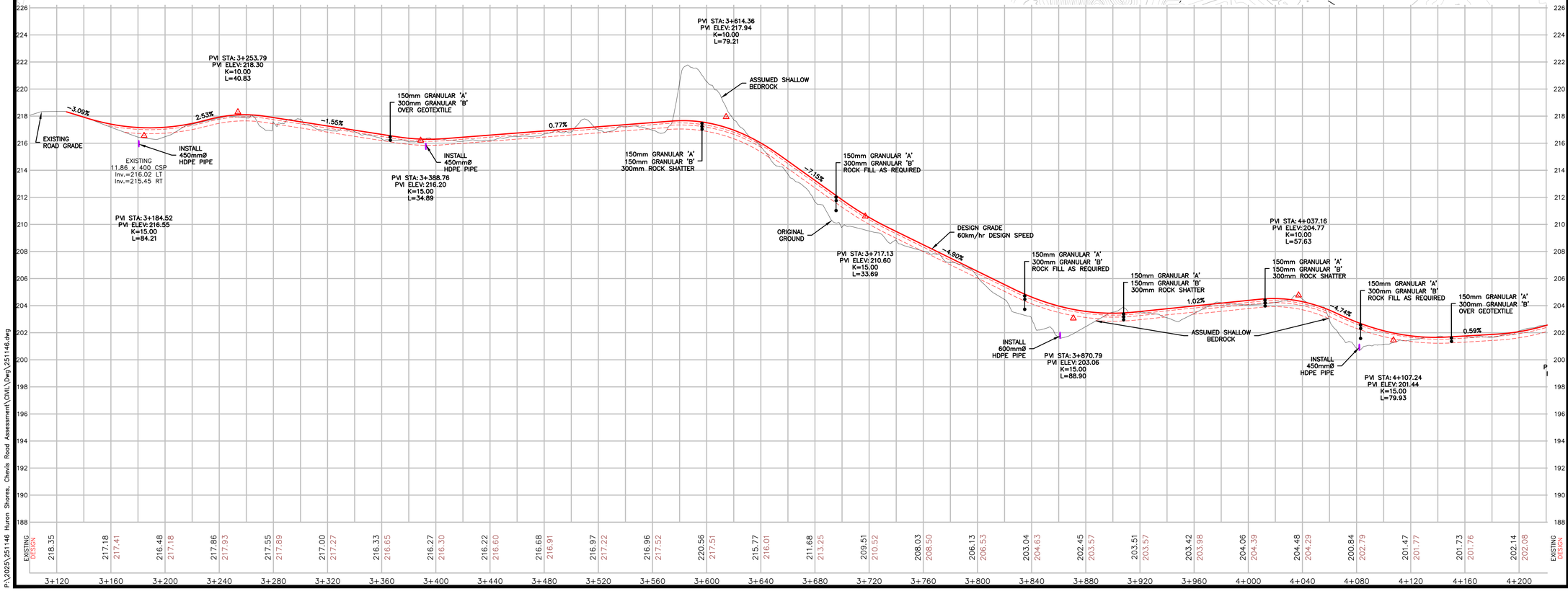
APPROXIMATE ½ SECTION LINE

LEGEND

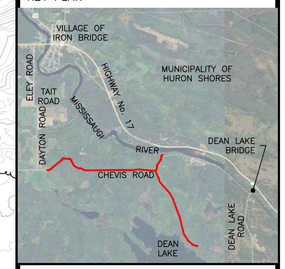
EXISTING	
INDEX CONTOUR (1.0m INTERVAL)	143
INTERMEDIATE CONTOUR (0.25m INTERVAL)	
EDGE OF SHOULDER	
GATE	
DITCH LINE	
WOOD OUTLINE	
UTILITY POLE	B&H
PROPOSED	
CENTRELINE	
EDGE OF SHOULDER	
CLEARING LIMITS	
DITCH	
CUT/FILL LIMIT	
HDPE CULVERT	
SILT FENCE	
ROCK FLOW CHECK DAM	

Horizontal Datum:
GPS Observations Using The Precise Point Positioning (PPP) Service, UTM Zone 17, NAD83 (CSRS) (2010)

Vertical Datum:
GPS Observations Using The Precise Point Positioning (PPP) Service, Canadian Geodetic Vertical Datum of 1928 (CGVD1928), Geodetic Elevations



KEY PLAN



ENGINEER'S SEAL:

ISSUED FOR REVIEW
NOT FOR CONSTRUCTION
OCTOBER 1, 2025

DATE	REV.	REVISION	BY	APP'D
24/10/01	A	Issued For Review	DAS	CLK

CLIENT:

MUNICIPALITY OF HURON SHORES

CONSULTANT:

TULLOCH

PROJECT TITLE:

CHEVIS ROAD ASSESSMENT

DRAWING TITLE:

WOODSIDE DRIVE EXTENSION OPTION 'A' PLAN & PROFILE 3+120 to 4+220

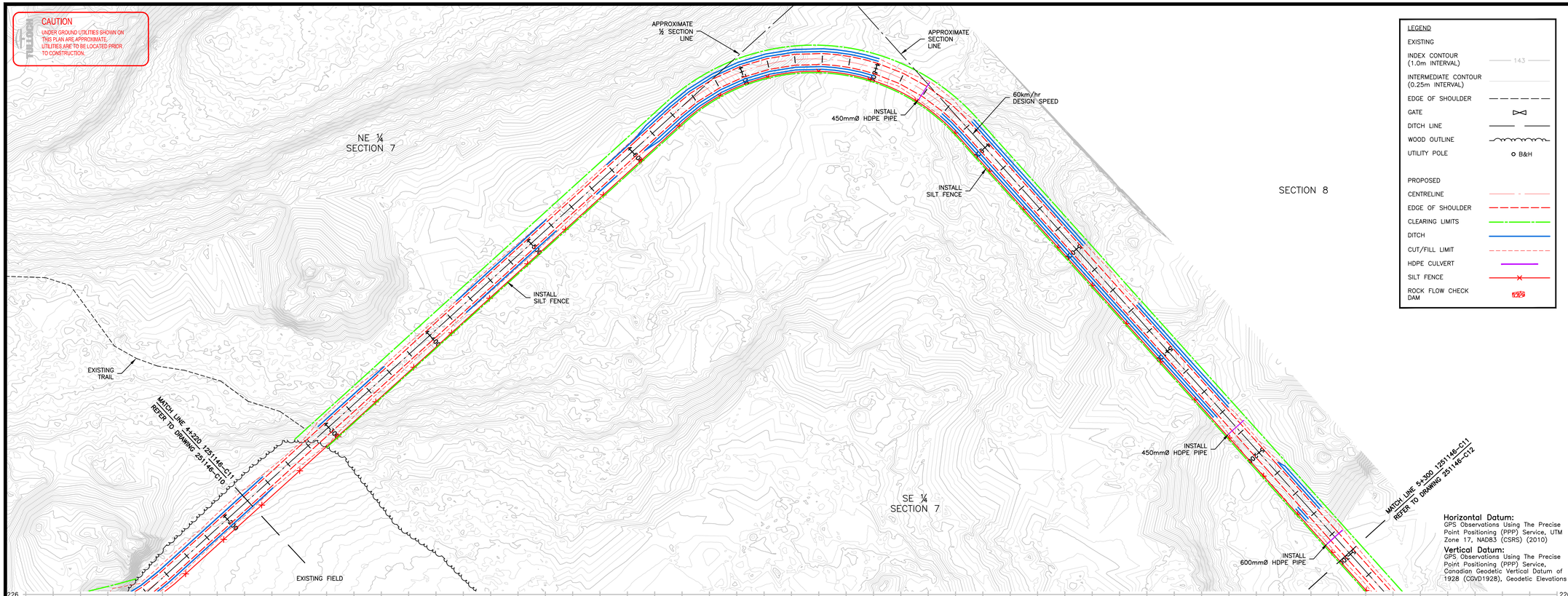
DRAWN	DESIGNED	CHECKED	APPROVED
DAS	DAS	CLK	CLK

SCALE	DATE
H-1:1500 V-1:150	OCT. 1, 2025

PROJECT No.	REVISION	DRAWING
251146	A	C10

P:\2025\251146 Huron Shores, Chevis Road Assessment\CIVIL\Dwg\251146.dwg

CAUTION
UNDER GROUND UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE, UTILITIES ARE TO BE LOCATED PRIOR TO CONSTRUCTION.



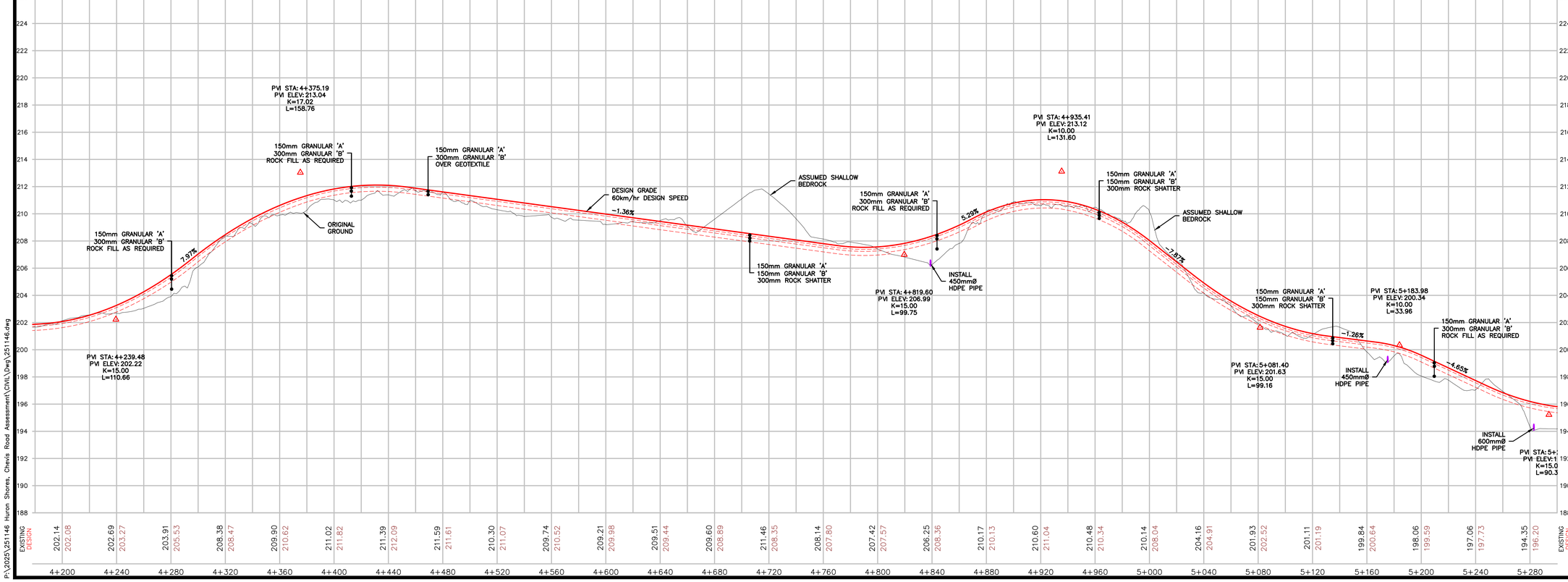
LEGEND

EXISTING
- INDEX CONTOUR (1.0m INTERVAL) — 143
- INTERMEDIATE CONTOUR (0.25m INTERVAL)
- EDGE OF SHOULDER
- GATE
- DITCH LINE
- WOOD OUTLINE
- UTILITY POLE — B&H

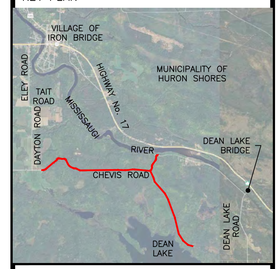
PROPOSED
- CENTRELINE
- EDGE OF SHOULDER
- CLEARING LIMITS
- DITCH
- CUT/FILL LIMIT
- HDPE CULVERT
- SILT FENCE
- ROCK FLOW CHECK DAM

Horizontal Datum:
GPS Observations Using The Precise Point Positioning (PPP) Service, UTM Zone 17, NAD83 (CSRS) (2010)

Vertical Datum:
GPS Observations Using The Precise Point Positioning (PPP) Service, Canadian Geodetic Vertical Datum of 1928 (CGVD1928), Geodetic Elevations



KEY PLAN



ENGINEER'S SEAL:

ISSUED FOR REVIEW
NOT FOR CONSTRUCTION
OCTOBER 1, 2025

DATE	REV.	REVISION	BY	APP'D
24/10/01	A	Issued For Review	DAS	CLK

CLIENT: MUNICIPALITY OF HURON SHORES

CONSULTANT: TULLOCH

PROJECT TITLE:
CHEVIS ROAD ASSESSMENT

DRAWING TITLE:
WOODSIDE DRIVE EXTENSION OPTION 'A' PLAN & PROFILE 4+220 to 5+300

DRAWN	DESIGNED	CHECKED	APPROVED
DAS	DAS	CLK	CLK

SCALE: H-1:1500 V-1:150
DATE: OCT. 1, 2025

PROJECT No.	REVISION	DRAWING
251146	A	C11

P:\2025\251146 Huron Shores, Chevis Road Assessment\CIVIL\dwg\251146.dwg

CAUTION

UNDER GROUND UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE. UTILITIES ARE TO BE LOCATED PRIOR TO CONSTRUCTION.

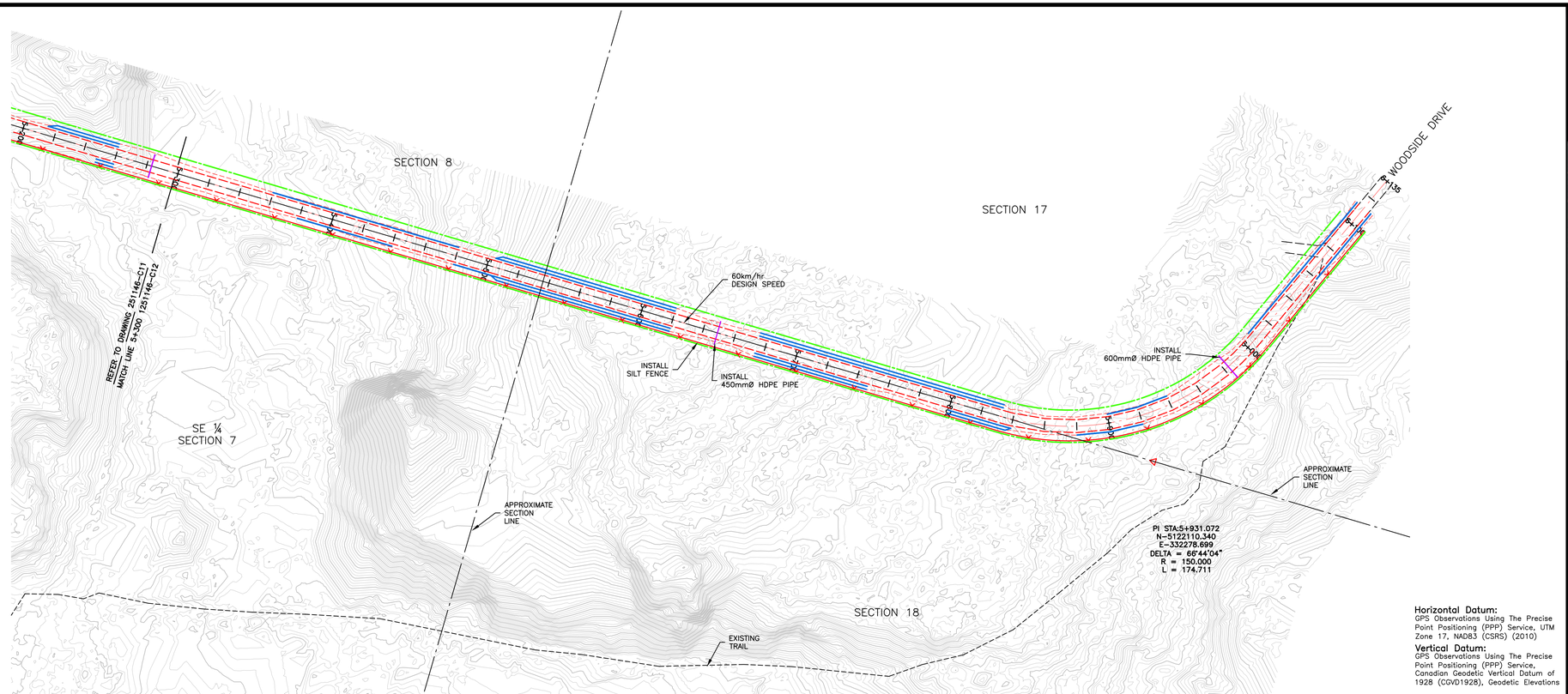
LEGEND

EXISTING

- INDEX CONTOUR (1.0m INTERVAL) — 143 —
- INTERMEDIATE CONTOUR (0.25m INTERVAL)
- EDGE OF SHOULDER
- GATE
- DITCH LINE
- WOOD OUTLINE
- UTILITY POLE — B&H

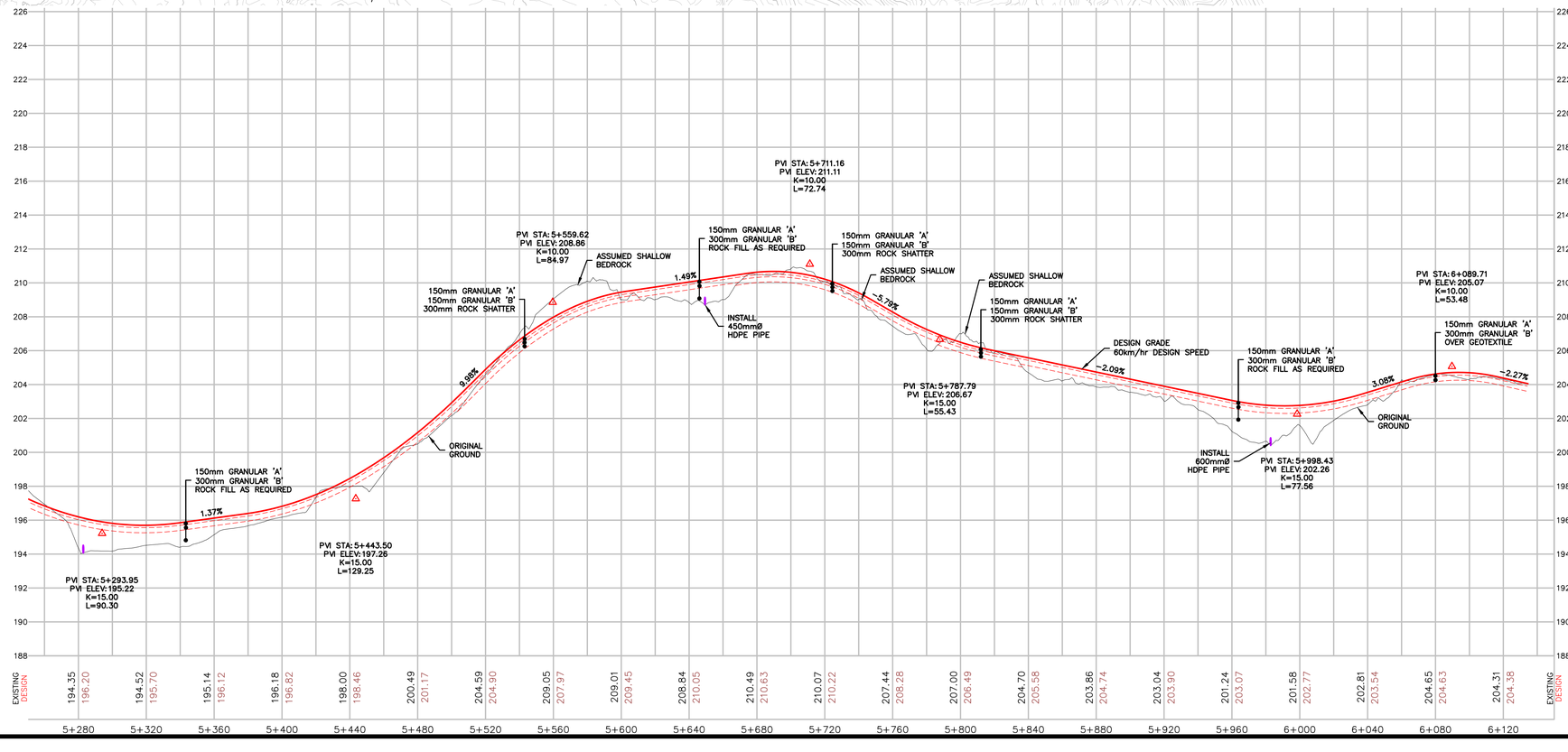
PROPOSED

- CENTRELINE
- EDGE OF SHOULDER
- CLEARING LIMITS
- DITCH
- CUT/FILL LIMIT
- HDPE CULVERT
- SILT FENCE
- ROCK FLOW CHECK DAM — RFCD

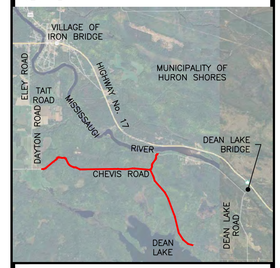


Horizontal Datum:
GPS Observations Using The Precise Point Positioning (PPP) Service, UTM Zone 17, NAD83 (CSRS) (2010)

Vertical Datum:
GPS Observations Using The Precise Point Positioning (PPP) Service, Canadian Geodetic Vertical Datum of 1928 (CGVD1928), Geodetic Elevations



KEY PLAN



ENGINEER'S SEAL:

ISSUED FOR REVIEW
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OCTOBER 1, 2025

DATE	REV.	REVISION	BY	APP'D
24/10/01	A	Issued For Review	DAS	CLK

CLIENT:

MUNICIPALITY OF HURON SHORES

CONSULTANT:

TULLOCH

PROJECT TITLE:

CHEVIS ROAD ASSESSMENT

DRAWING TITLE:

WOODSIDE DRIVE EXTENSION OPTION 'A' PLAN & PROFILE 5+300 to 6+140

DRAWN	DESIGNED	CHECKED	APPROVED
DAS	DAS	CLK	CLK

H-1:1500 V-1:150 — SCALE

OCT. 1, 2025 — DATE

PROJECT No.	REVISION	DRAWING
251146	A	C12

P:\2025\251146 Huron Shores, Chevis Road Assessment\CIVIL\Dwg\251146.dwg

CAUTION
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Horizontal Datum:
GPS Observations Using The Precise Point Positioning (PPP) Service, UTM Zone 17, NAD83 (CSRS) (2010)

Vertical Datum:
GPS Observations Using The Precise Point Positioning (PPP) Service, Canadian Geodetic Vertical Datum of 1928 (CGVD1928), Geodetic Elevations

SECTION 6

NW ¼ SECTION 7

NE ¼ SECTION 7

SE ¼ SECTION 7

APPROXIMATE SECTION LINE

APPROXIMATE ½ SECTION LINE

APPROXIMATE ½ SECTION LINE

IB

ROCK OUTCROP

ROCK OUTCROP

PI STA:3+300.530
N=5124046.976
E=331356.138
DELTA = 58°02'53"
R = 150.000
L = 151.969

INSTALL 450mmØ HDPE PIPE

400 x 11.86 CSP

INSTALL 450mmØ HDPE PIPE

PI STA:3+148.541
N=5124058.365
E=331204.570
DELTA = 3°13'56"
R = 330.000
L = 18.616

CHEVIS ROAD

PI STA:3+462.505
N=5123890.673
E=331438.042
DELTA = 24°47'06"
R = 150.000
L = 64.887

PI STA:3+631.950
N=5123786.752
E=331573.181
DELTA = 26°09'27"
R = 150.000
L = 68.480

PI STA:3+715.228
N=5123710.994
E=331610.594
DELTA = 10°05'03"
R = 150.000
L = 26.400

PI STA:3+793.019
N=5123648.299
E=331656.761
DELTA = 24°28'38"
R = 150.000
L = 64.081

INSTALL SILT FENCE

EXISTING TRAIL

PI STA:3+883.383
N=5123558.901
E=331675.582
DELTA = 16°51'19"
R = 150.000
L = 44.127

PI STA:3+959.666
N=5123491.738
E=331712.422
DELTA = 16°40'25"
R = 150.000
L = 43.651

PI STA:4+023.550
N=5123428.863
E=331725.846
DELTA = 22°17'26"
R = 150.000
L = 58.356

PI STA:4+081.099
N=5123380.839
E=331758.750
DELTA = 17°44'34"
R = 150.000
L = 46.450

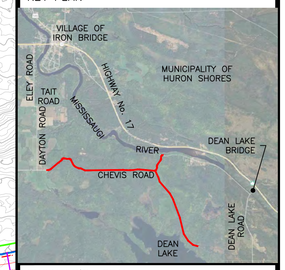
PI STA:4+139.209
N=5123324.797
E=331775.477
DELTA = 5°26'26"
R = 150.000
L = 14.244

REFER TO DRAWING LINE 4+220 251146-C13-4

PI STA:4+245.897
N=5123220.123
E=331796.162
DELTA = 45°46'33"
R = 150.000
L = 119.841

EXISTING FIELD

KEY PLAN



ENGINEER'S SEAL:

ISSUED FOR REVIEW
NOT FOR CONSTRUCTION
OCTOBER 1, 2025

DATE	REV.	REVISION	BY	APP'D
24/10/01	A	Issued For Review	DAS	CLK

CLIENT:

MUNICIPALITY OF HURON SHORES

CONSULTANT:

TULLOCH

PROJECT TITLE:

CHEVIS ROAD ASSESSMENT

DRAWING TITLE:

WOODSIDE DRIVE EXTENSION OPTION 'B' PLAN & PROFILE 3+120 to 4+220

DRAWN	DESIGNED	CHECKED	APPROVED
DAS	DAS	CLK	CLK

SCALE	DATE
H-1:1500 V-1:150	OCT. 1, 2025

PROJECT No.	REVISION	DRAWING
251146	A	C13

PVI STA: 3+184.52
PVI ELEV: 216.55
K=15.00
L=84.21

EXISTING ROAD GRADE

-3.09%

2.53%

PVI STA: 3+253.79
PVI ELEV: 218.30
K=10.00
L=40.83

INSTALL 450mmØ HDPE PIPE

EXISTING 11.86 x 400 CSP
Inv.=216.02 LT
Inv.=215.45 RT

150mm GRANULAR 'A'
300mm GRANULAR 'B'
OVER GEOTEXTILE

-1.55%

PVI STA: 3+388.76
PVI ELEV: 216.20
K=15.00
L=35.37

INSTALL 450mmØ HDPE PIPE

0.80%

PVI STA: 3+494.70
PVI ELEV: 217.05
K=15.00
L=71.40

5.56%

PVI STA: 3+575.60
PVI ELEV: 221.55
K=10.00
L=80.40

150mm GRANULAR 'A'
150mm GRANULAR 'B'
300mm ROCK SHATTER

-2.48%

PVI STA: 3+654.94
PVI ELEV: 219.59
K=15.00
L=70.92

2.25%

PVI STA: 3+716.55
PVI ELEV: 220.98
K=10.00
L=39.62

-1.71%

ORIGINAL GROUND

PVI STA: 3+803.87
PVI ELEV: 219.48
K=10.00
L=70.49

DESIGN GRADE
60km/hr DESIGN SPEED

-8.76%

PVI STA: 3+895.98
PVI ELEV: 211.41
K=15.00
L=109.70

150mm GRANULAR 'A'
150mm GRANULAR 'B'
300mm ROCK SHATTER

-1.45%

PVI STA: 4+046.41
PVI ELEV: 209.24
K=15.00
L=27.86

0.41%

PVI STA: 4+102.49
PVI ELEV: 209.47
K=10.00
L=84.16

-8.01%

150mm GRANULAR 'A'
300mm GRANULAR 'B'
ROCK FILL AS REQUIRED

	3+120	3+160	3+200	3+240	3+280	3+320	3+360	3+400	3+440	3+480	3+520	3+560	3+600	3+640	3+680	3+720	3+760	3+800	3+840	3+880	3+920	3+960	4+000	4+040	4+080	4+120	4+160	4+200
EXISTING	218.35	217.18	216.48	217.86	217.55	217.00	216.33	216.27	216.23	216.84	218.07	220.48	220.76	219.65	220.01	220.66	219.54	219.18	215.87	212.87	210.98	210.13	209.86	209.26	209.06	208.11	203.91	201.41
DESIGN		217.41	217.18	217.93	217.89	217.27	216.65	216.31	216.61	217.08	218.50	220.38	220.83	220.10	220.19	220.78	220.23	219.06	216.32	213.32	211.38	210.49	209.91	209.35	209.18	207.77	204.89	202.44

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CAUTION
UNDERGROUND UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE. UTILITIES ARE TO BE LOCATED PRIOR TO CONSTRUCTION.

APPROXIMATE ½ SECTION LINE

MATCH LINE 4+220 125146-C14 REFER TO DRAWING 251146-C13

PI STA:4+369.723
N-5123148.886
E-331905.666
DELTA = 42°40'03"
R = 150.000
L = 111.703

INSTALL 600mmØ HDPE PIPE

PI STA:4+245.897
N-5123220.123
E-331796.162
DELTA = 45°46'33"
R = 150.000
L = 119.841

EXISTING FIELD

SE ¼ SECTION 7

60km/hr DESIGN SPEED

INSTALL 600mmØ HDPE PIPE

EXISTING TRAIL

INSTALL SILT FENCE

PI STA:4+822.054
N-5122705.248
E-332018.638
DELTA = 6°14'25"
R = 150.000
L = 16.337

PI STA:4+878.368
N-5122649.473
E-332026.523
DELTA = 5°03'47"
R = 150.000
L = 13.255

PI STA:4+985.384
N-5122545.237
E-332050.797
DELTA = 8°11'27"
R = 150.000
L = 21.443

INSTALL 600mmØ HDPE PIPE

PI STA:5+064.179
N-5122466.696
E-332057.556
DELTA = 3°00'21"
R = 150.000
L = 7.869

PI STA:5+158.671
N-5122373.105
E-332070.584
DELTA = 8°20'31"
R = 150.000
L = 21.839

PI STA:5+235.177
N-5122299.824
E-332092.024
DELTA = 6°04'09"
R = 150.000
L = 15.889

MATCH LINE 5+300 125146-C14 REFER TO DRAWING 251146-C15

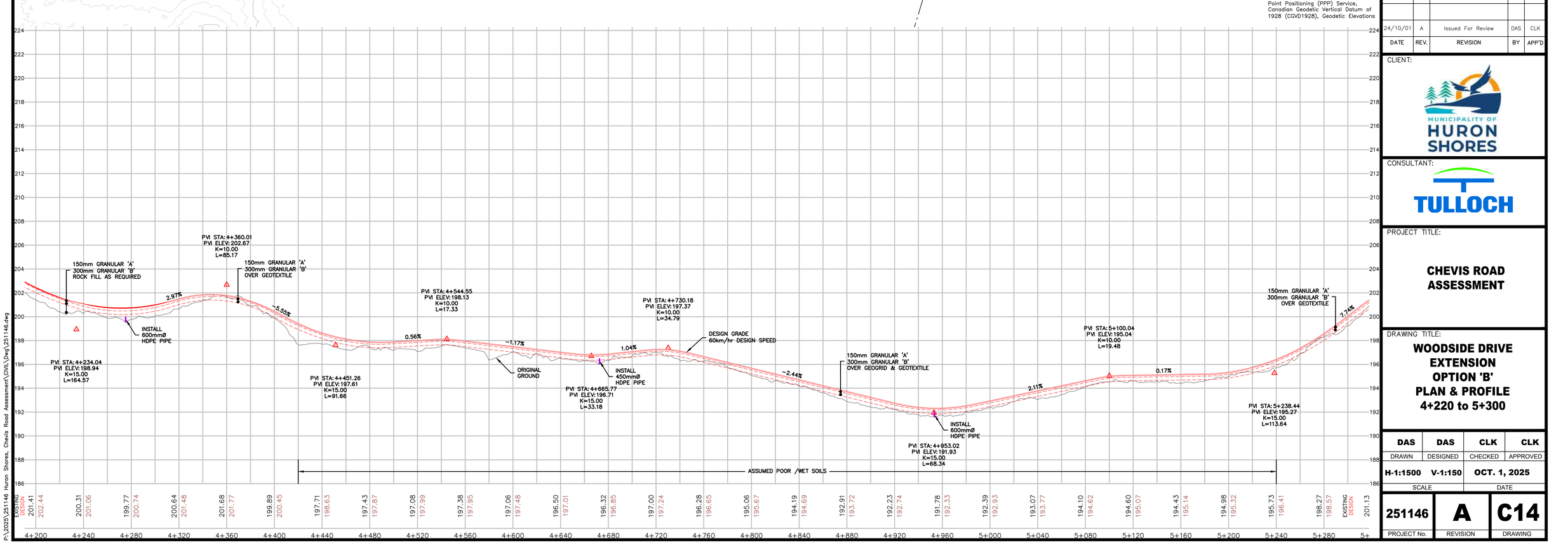
SECTION 17

SECTION 18

APPROXIMATE SECTION LINE

Horizontal Datum:
GPS Observations Using The Precise Point Positioning (PPP) Service, UTM Zone 17, NAD83 (CSRS) (2010)

Vertical Datum:
GPS Observations Using The Precise Point Positioning (PPP) Service, Canadian Geodetic Vertical Datum of 1928 (CGVD1928), Geodetic Elevations



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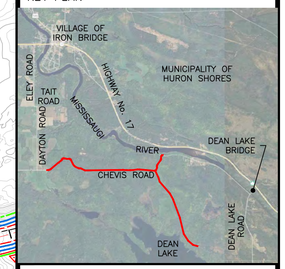

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CLIENT: MUNICIPALITY OF HURON SHORES

CONSULTANT: TULLOCH

PROJECT TITLE:
CHEVIS ROAD ASSESSMENT

DRAWING TITLE:
WOODSIDE DRIVE EXTENSION OPTION 'B' PLAN & PROFILE 4+220 to 5+300

DRAWN	DESIGNED	CHECKED	APPROVED
DAS	DAS	CLK	CLK

SCALE	DATE
H-1:1500 V-1:150	OCT. 1, 2025

PROJECT No.	REVISION	DRAWING
251146	A	C14

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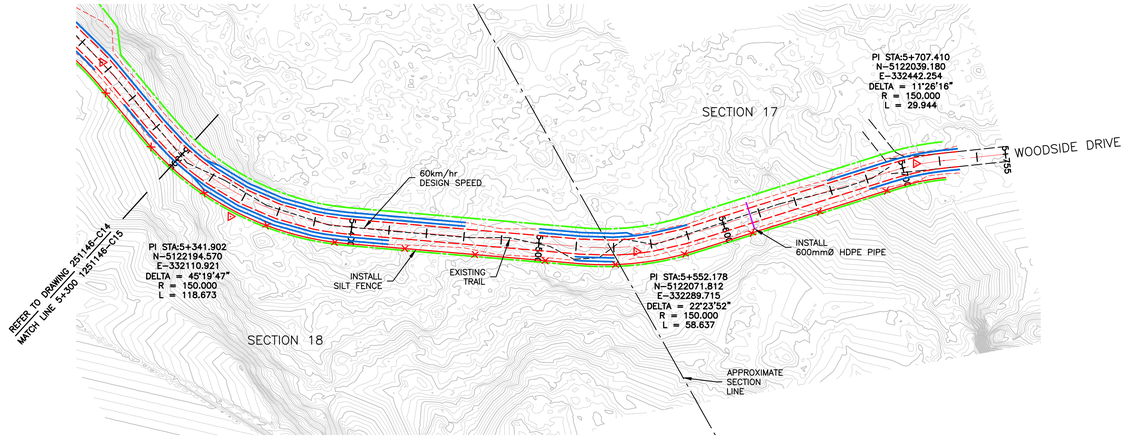
CAUTION

UNDER GROUND UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE. UTILITIES ARE TO BE LOCATED PRIOR TO CONSTRUCTION.

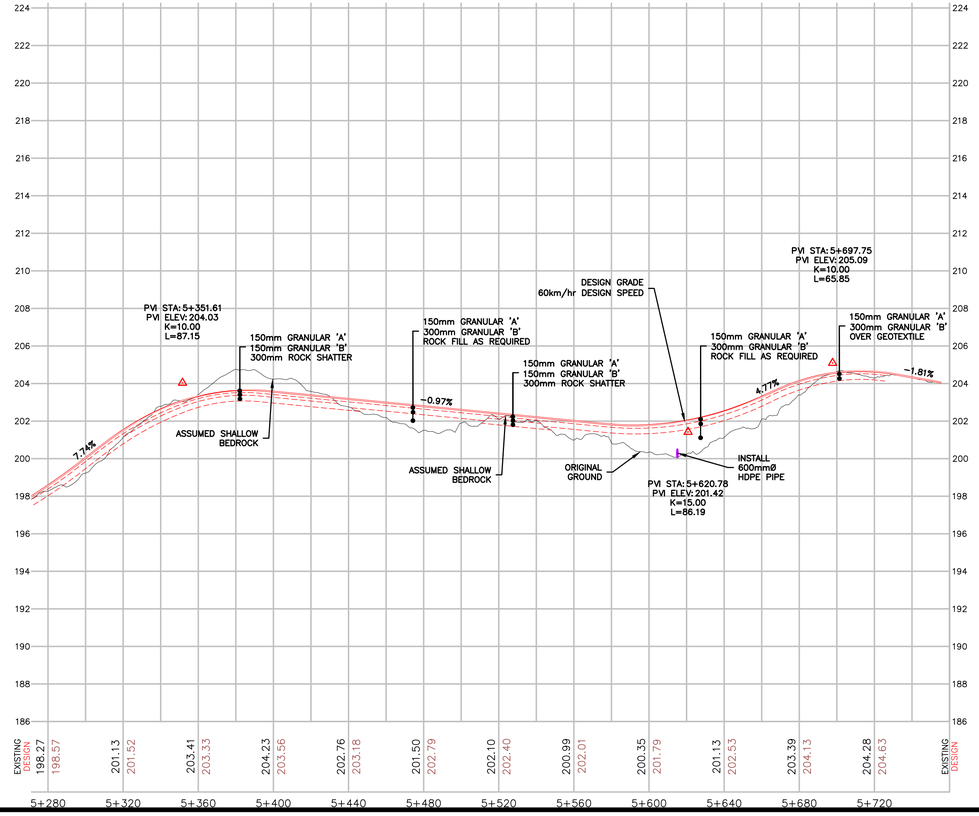
Horizontal Datum:
GPS Observations Using The Precise Point Positioning (PPP) Service, UTM Zone 17, NAD83 (CSRS) (2010)

Vertical Datum:
GPS Observations Using The Precise Point Positioning (PPP) Service, Canadian Geodetic Vertical Datum of 1928 (CGVD1928), Geodetic Elevations



LEGEND

EXISTING	
INDEX CONTOUR (1.0m INTERVAL)	143
INTERMEDIATE CONTOUR (0.25m INTERVAL)	
EDGE OF SHOULDER	
GATE	
DITCH LINE	
WOOD OUTLINE	
UTILITY POLE	B&H
PROPOSED	
CENTRELINE	
EDGE OF SHOULDER	
CLEARING LIMITS	
DITCH	
CUT/FILL LIMIT	
HDPE CULVERT	
SILT FENCE	
ROCK FLOW CHECK DAM	



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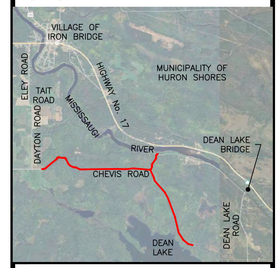

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CLIENT:

MUNICIPALITY OF HURON SHORES

CONSULTANT:

TULLOCH

PROJECT TITLE:

CHEVIS ROAD ASSESSMENT

DRAWING TITLE:

WOODSIDE DRIVE EXTENSION OPTION 'B' PLAN & PROFILE 5+300 to 5+760

DRAWN	DESIGNED	CHECKED	APPROVED
DAS	DAS	CLK	CLK

SCALE	DATE
H-1:1500 V-1:150	OCT. 1, 2025

PROJECT No.	REVISION	DRAWING
251146	A	C15

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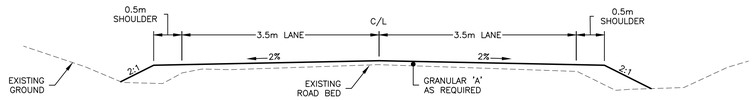
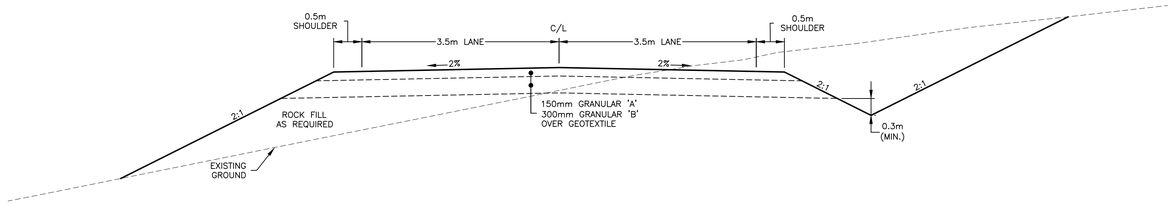
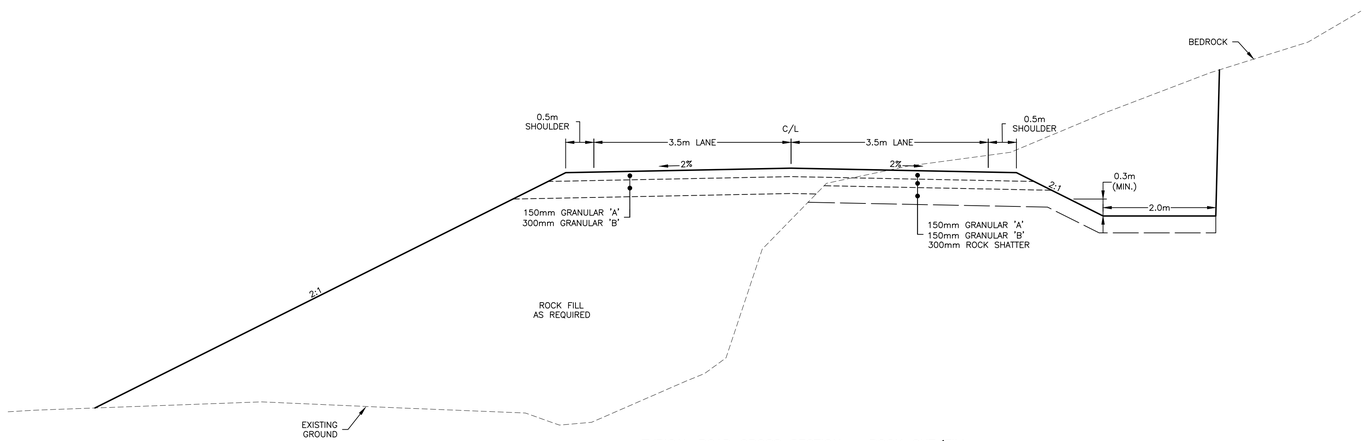


TYPICAL ROAD CROSS SECTION – RESURFACING AND PLATFORM WIDENING
1:50

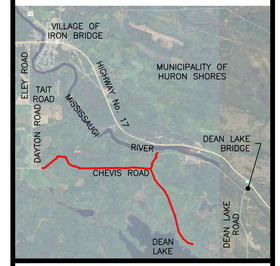


TYPICAL ROAD CROSS SECTION – EARTH CUT/FILL
1:50



TYPICAL ROAD CROSS SECTION – ROCK CUT/FILL
1:50

KEY PLAN



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OCTOBER 1, 2025

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CLIENT:

MUNICIPALITY OF HURON SHORES

CONSULTANT:

TULLOCH

PROJECT TITLE:

CHEVIS ROAD ASSESSMENT

DRAWING TITLE:

TYPICAL SECTIONS, DETAILS AND NOTES

DRAWN	DESIGNED	CHECKED	APPROVED
DAS	DAS	CLK	CLK

SCALE	DATE
AS NOTED	OCT. 1, 2025

PROJECT No.	REVISION	DRAWING
251146	A	C16

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APPENDIX B

NATURAL HERITAGE DESKTOP SCREENING - CHEVIS ROAD REALIGNMENT

TULLOCH

Natural Heritage Desktop Screening
Chevis Road Realignment

Municipality of Huron Shores

7 Bridge Street, Iron Bridge, Ontario

September 5, 2025

131 Fielding Road, Lively, ON P3Y 1L7

September 5, 2025
Project 251146

Municipality of Huron Shores

Attention: Craig Coventry, Public Works Superintendent

> Re: Chevis Road Realignment Assessment – Natural Heritage Desktop Screening and Recommendations

1. PROJECT SUMMARY

1.1. General

TULLOCH Environmental, a division of TULLOCH Engineering Inc. (TULLOCH), has been retained by the Municipality of Huron Shores (the 'Proponent') to provide environmental screening for Natural Heritage features that may be present in proximity to the existing, or proposed alternative, route options (Option A and Option B; Figure 1 in Attachment 1) for a road realignment along Chevis Road located in Iron Bridge, ON (the 'Site'). The road realignment is intended to address ongoing flooding concerns along the existing Chevis Road (the 'Project').

This report has been prepared to assist feasibility planning for road realignment. At the time of this report's publication, specific work plans have not been prepared, and so recommendations provided here are considered general.

The objectives of this report are to (1) complete a desktop review of the Natural Heritage information available for the Site, (2) identify Natural Heritage sensitivities known / suspected to occur along or within vicinity to the existing and proposed roadway alignments, (3) evaluate the best route options in light of these Natural Heritage constraints to determine the most suitable alignment option, and (4) use this assessment to inform future site-specific studies and develop general recommendations that promote best practices for minimizing environmental impacts associated with the proposed roadwork.

1.2. Proposed Realignment

This report evaluates two (2) proposed route options for the roadway realignment: Route Option A and Route Option B (Figure 1; Attachment 1). Both options generally follow the alignment of the existing roadway. Route Option A includes slight realignments at both the western and eastern ends of the corridor, with the alignment curving further inward at each bend in the road. These redirections are designed to better align the road away from areas that are known to be prone to flooding. Route Option B also begins along the existing roadway but bypasses the first northward bend, instead extending straight eastward along a new alignment. It then shifts southward near its eastern extent, continuing along a new corridor to connect with the existing Woodside Road.

1.3. Environmental Legislation

Endangered Species Act (ESA). The ESA is administered by the Species at Risk Branch of the Ministry of the Environment, Conservation and Parks (MECP). It provides protections to species listed as Endangered, Threatened or Extirpated. It also protects the habitat upon which those species depend. Habitat is variously defined in the regulations of the ESA and MECP policies. Some actions are exempt from ESA restrictions (such as certain agricultural practices) while others may be subject to authorisations or permitting. As of the publication of this report, the ESA has undergone significant amendments following the passage of Bill 5, which received Royal Assent on June 5, 2025. Additional legislative changes are anticipated with the upcoming repeal of the ESA and the introduction of the new *Species Conservation Act* (SCA), though the exact implementation date remains unconfirmed.

Fisheries Act. The *Fisheries Act* is federally administered by the Fisheries and Oceans Canada (the 'DFO'). The Act protects fish and fish habitat from undertakings that result in harmful alteration, disruption, or destruction. Fish habitat includes areas below the highwater mark of any waters that bear fish at any time of year, or are connected to fish habitat, including permanent, seasonal, and ephemeral waters.

Migratory Birds Convention Act (MBCA). The MBCA is federally administered to protect migratory bird species, their young, their eggs, and their active nests. Most bird species in Ontario are migratory and subject to protections under this Act. Migratory Birds Regulations elaborate on protections for migratory bird nests when they are considered to have a high conservation value, and select species are identified for increased protection.

Provincial Planning Statement (PPS). Most development in Ontario is subject to Ontario's PPS, issued under Section 3 of the Planning Act, and must comply with the protections set out for Natural Heritage features in the province. The PPS identifies Natural Heritage features as including:

- Fish Habitat
- Habitat for Threatened and Endangered Species at Risk ('SAR')
- Significant Wetlands
- Significant Coastal Wetlands

- Significant Woodlands
- Significant Valleylands
- Significant Wildlife Habitat ('SWH')
- Significant Areas of Natural and Scientific Interest ('ANSI')

These features are themselves defined by provincial legislation (e.g., the Endangered Species Act), provincial policy documents (e.g., the Ontario Wetland Evaluation System, Significant Wildlife Habitat Technical Guide) or are directly established by the provincial government. The PPS established restrictions on development proposed within, or adjacent, confirmed Natural Heritage features. Natural Heritage features also surface in other provincial regulatory processes, such as applications under the Aggregate Resources Act.

2. NATURAL HERITAGE DESKTOP REVIEW

2.1. Sources Reviewed

A background Natural Heritage review was conducted to determine which natural heritage features exist, or have the potential to exist, on Site. Records and resources searched as part of the background review are listed in Table 1. The area searched was considered the Site and areas within 1000m (the Area of Interest; 'AOI'). Geospatial Ontario (formerly known as Land Information Ontario) mapping generated by the search can be found in Attachment 1.

Table 1 – Desktop review of Natural Heritage information, including records of features known to exist, or have the potential to exist, within the Site and its general vicinity.

Feature	Description	Source(s) Reviewed	Records Obtained
Provincial Planning Statement 'PPS'			
Natural Heritage Systems	a) A natural heritage system is an ecologically based delineation of nature and natural function – a system of connected or to be connected green and natural areas that provide ecological functions over a longer period and enable movement of species. Natural heritage systems encompass or incorporate natural features, functions, and linkages (also referred to as "corridors") as component parts within them and across the landscape. They also enable the linking of different landscapes. b) Only applies to Ecoregions 6E and 7E.	• Ontario GeoHub: '*Natural Heritage Systems Area*' database. • Natural Heritage Information Centre web application ('NHIC'; https://www.ontario.ca/page/natural-heritage-information-centre)	• No records within 1000m of the Site. • The Site is located within Ecodistrict 5E-1 of Ecoregion 5E (the Georgian Bay Ecoregion). • The Site is not located within Ecoregions 6E or 7E and therefore would not qualify for this feature.
Significant Wetlands	• "Significant wetlands," as defined by the PPS, are referred to as "Provincially Significant Wetlands" (PSWs) when identified, mapped, and scored using a scientific point-based ranking system known as the Ontario Wetland Evaluation System (OWES).	• Ontario GeoHub : '*Wetlands'* database. • Natural Heritage Information Centre web application ('NHIC'; https://www.ontario.ca/page/natural-heritage-information-centre) • Review of aerial imagery.	• There are five (5) unevaluated wetlands within vicinity to the Site (Figure 4; Attachment 1).
Coastal Wetlands	• Any wetland that is located on one of the Great Lakes or their connecting channels (Lake St. Clair, St. Mary's, St. Clair, Detroit, Niagara, and St. Lawrence Rivers) • Any other wetland that is on a tributary to any of the above-specified water bodies and lies, either wholly or in part, downstream of a line located 2km upstream of the 1:100-year flood line (plus wave run-up) of the large water body to which the tributary is connected.	• Ontario GeoHub: '*Wetlands'* database. • Natural Heritage Information Centre web application ('NHIC'; https://www.ontario.ca/page/natural-heritage-information-centre)	• The Site is not located within 2km of the Great Lakes or their connecting channels and therefore would not qualify for this feature.
Significant Woodlands	• Defined under the PPS as an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history. • Only applies to Ecoregions 6E and 7E.	• Ontario GeoHub: *'Natural Heritage Systems Area'* database. • Natural Heritage Information Centre web application ('NHIC'; https://www.ontario.ca/page/natural-heritage-information-centre) • Review of aerial imagery.	• The Site is not located within Ecoregions 6E or 7E and therefore would not qualify for this feature.
Significant Valleylands	• A natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of the year. • Ecologically important in terms of features, functions, representation, or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system. • Only applies to Ecoregions 6E and 7E.	• Ontario GeoHub: *'Natural Heritage Systems Area'* database. • Natural Heritage Information Centre web application ('NHIC'; https://www.ontario.ca/page/natural-heritage-information-centre) • Review of aerial imagery.	• The Site is not located within Ecoregions 6E or 7E and therefore would not qualify for this feature.
Significant Wildlife Habitat (SWH)	• Significant Wildlife Habitat (SWH) is defined in the MNRF's Significant Wildlife Habitat Technical Guide as natural heritage areas that are "*ecologically important in terms of features, functions, representation and amount and contributing to the quality and diversity of an identifiable geographic area or Natural Heritage System*." They include a variety of seasonal	• Ontario GeoHub: *'Wildlife Values Area'* database. • Ontario GeoHub: *'Wildlife Values Site'* database. • Natural Heritage Information Centre web application ('NHIC'; https://www.ontario.ca/page/natural-heritage-information-centre) • Review of aerial imagery.	• The NHIC identified a Mixed Wader Nesting Colony within 1km of the Site. • White-tailed Deer Wintering Areas (Stratum 1 & 2) overlap with the Area of Interest. Both route options transect Stratum 1 habitat (Figure 4; Attachment 1).

Feature	Description	Source(s) Reviewed	Records Obtained
	concentration areas, rare vegetation communities, specialized habitat for wildlife, habitat of species of conservation concern, and animal movement corridors.		• Osprey Feeding & Resting Areas overlap with the Area of Interest (Figure 4; Attachment 1). • NHIC records of several species of Special Concern have been identified within 1km of the Site (Table 2).
Significant Areas of Natural and Scientific Interest (ANSI)	• Features (as defined by the MNRF) that represent land and water containing important natural landscapes or features that are important for natural heritage, protection, appreciation, scientific study, or education.	• Review of Ontario GeoHub '*Areas of Natural and Scientific Interest (ANSI)*' database. • Natural Heritage Information Centre web application ('NHIC'; https://www.ontario.ca/page/natural-heritage-information-centre)	• No records exist within 1000m of the Site.
Fish Habitat and the *Fisheries Act*	• The Fisheries Act applies protections to fish (or all body sizes) and fish habitat. Fish habitat includes any area that supports fish spawning, rearing, feeding, and migration at any time of year. It includes permanent, intermittent, and ephemeral waters on which fish depend directly or indirectly to carry out these life processes.	• Ontario GeoHub: *'Ontario Hydro Network'* database. • Ontario GeoHub: *'Aquatic Resource Area'* database. • Ontario Fish ON-line (https://www.ontario.ca/page/how-use-fish-line)	• **Mississagi River, Dean Lake, and Bolton River** are all located within vicinity to the Site. • The **Mississagi River** is located north of the Site. This waterbody has a cold-water thermal regime and is known to support Bluntnose Minnow (*Pimephales notatus*), Brook Trout (*Salvelinus fontinalis),* Cyprinidae hybrids, Emerald Shiner (*Notropis atherinoides),* Johnny Darter (*Etheostoma nigrum),* Logperch (*Percina caprodes),* Mottled Sculpin (*Cottus bairdii),* Northern Pike (*Esox lucius),* Pink Salmon (*Oncorhyncus gorbuscha),* Rainbow Trout (*Oncorhyncus mykiss),* Rock Bass (*Ambloplites rupestris),* Rosyface Shiner (*Notropis rubellus),* Smallmouth Bass (*Micropterus dolomieu),* Spottail Shiner (*Hudsonius hudsonius),* Walleye (*Sander vitreus),* White Sucker (*Catostomus commersonii), and* Yellow Perch (*Perca flavescens).* Fish stocking of Rainbow Trout (*Oncorhynchus mykiss*) has historically occurred in the Mississagi River. • **Bolton River** transects the northwestern corner of the AOI. Bolton River has a cold-water thermal regime and is known to support Bowfin (*Amia ocellicauda*), Northern Hog Sucker (*Hypentelium nigricans),* Northern Pike, Pumpkinseed (*Lepomis gibbosus),* Rock Bass, Walleye, and White Sucker. **Dean Lake** is located south of the Site. This system has a warm-water thermal regime and is known to support Bluegill (*Lepomis macrochrius),* Bluntnose Minnow, Brown Bullhead (*Ameiurus nebulosus),* Channel Catfish (*Ictalurus punctatus),* Common Shiner (*Luxius cornutus),* Northern Pike, Pumpkinseed, Rainbow Smelt (*Osmerus mordax),* Rock Bass, Smallmouth Bass, Walleye and Yellow Perch.
Threatened or Endangered Species and the *Endangered Species Act*	• Applies to species that is listed or categorized as an "Endangered Species" and "Threatened Species" within the regulations of Ontario's Endangered Species Act (ESA). • Under the ESA, no person shall harm or harass Threatened or Endangered species, nor shall they undertake any activity that would damage or destroy	• Natural Heritage Information Centre web application ('NHIC'; https://www.ontario.ca/page/natural-heritage-information-centre) • Atlas of the Breeding Birds of Ontario ('ABBO;' https://www.birdsontario.org/)	• NHIC identified three (3) species of Threatened or Endangered SAR to occur within 1km of the Site: Bobolink (*Dolichonyx oryzivorus;* Threatened*),* Eastern Meadowlark (*Sturnella magna;* Threatened), and Lake Sturgeon – Great Lakes – Upper St. Lawrence River population (*Acipenser fulvescens pop. 3;* Endangered*)*.

Feature	Description	Source(s) Reviewed	Records Obtained
	their habitat. Habitat is variously defined by ESA regulations, provincial policies (such as General Habitat Descriptions) and the species' Recovery Strategies.	• Ontario Reptile and Amphibian Atlas ('ORAA'; https://ontarionature.org/programs/citizen-science/reptile-amphibian-atlas/) • Global Biodiversity Information Facility ('GBIF;' www.gbif.org) • Bat Conservation International ('BCI;' https://www.batcon.org/about-bats/bat-profiles/) • Ontario Fish ON-line (https://www.ontario.ca/page/how-use-fish-line) • eBird (www.ebird.org) • iNaturalist (www.iNaturalist.org) • Ontario Butterfly Atlas Online Review ('OBAO;' https://www.ontarioinsects.org/atlas/) • Fisheries and Oceans Canada Species at Risk Distribution (https://open.canada.ca/data/en/dataset/e0fabad5-9379-4077-87b9-5705f28c490b) • Government of Canada Critical Habitat for Aquatic Species at Risk - Open Maps Data Viewer • Government of Canada Critical Habitat for Terrestrial Species at Risk - Open Maps Data Viewer	• Authoritative atlases identified records of two (2) Threatened or Endangered SAR within the 10x10km provincial grid squares 17TLM22 and 17TLM32 of the ABBO, OBAO, GBIF and ORAA associated with this Site. These results are provided in Table 2. • BCI results indicate an additional seven (7) species of endangered bats with ranges that overlap with the Site (Table 2). • DFO Sar Mapping Tool identified SAR present in the **Mississagi River**: Hickorynut (*Obovaria olivaria)* and SAR critical habitat present for Hickorynut. • Government of Canada Critical Habitat for Aquatic/Terrestrial Species at Risk found four (4) species with critical habitat within the Area of Interest: Wood Turtle (*Glyptemys insculpta;* Endangered), Little Brown Myotis (*Myotis lucifugus;* Endangered), Tri-colored Bat (*Perimyotis subflavus;* Endangered), and Northern Long-eared Bat (*Myotis septentrionalis;* Endangered). • TULLOCH Biologists also identify Black Ash (*Fraxinus nigra*; Endangered) as having a range that overlaps with the Site.
Other Acts			
Land use, Parks, Conservation Reserves, and other Protected Areas	• Protected areas are defined to protect natural and cultural features, maintain biodiversity, and provide opportunities for compatible recreation.	• Crown Land Use Policy Atlas ('CLUPA;' https://www.ontario.ca/page/crown-land-use-policy-atlas)	• The Site is located in proximity to a provincial park (Waterway Class) regulated by the Ministry of Environment, Conservation and Parks (MECP).
Conservation Authorities Act	• Conservation Authorities are empowered to regulate development and activities around rivers or stream valleys, watercourses, wetlands, and hazardous lands (e.g., unstable soils, unstable bedrock). Development taking place within (or adjacent to) these regulated areas may require professional studies, Conservation Authority consultations, and potentially permitting under the Conservation Authorities Act.	• Ontario GeoHub: *'Conservation Authority Administrative Area'* database.	• The Site is not within the administrative area of any Conservation Authority.
Migratory Birds Convention Act, and; **Migratory Birds Regulations**	• The Migratory Birds Convention Act protects and conserves migratory birds — as populations and individuals — and their active nests. Most bird species in Ontario are considered migratory. • The objective of the Migratory Birds Regulations is the conservation of migratory birds, including their eggs and nests, in Canada.	• Environment and Climate Chance Canada Nesting Periods (https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/general-nesting-periods/nesting-periods.html)	• The Site is in Nesting Zone C3 and has a general nesting period of April 12 to August 27 for forests, April 17 to August 27 for open habitats and April 12 to August 15 for wetlands. • NHIC records of five (5) species of Special Concern birds have been identified within 1km of the Site (Table 2).

Table 2 – Threatened or Endangered Species at risk (SAR) with records associated with this Site and within 1000m.

ESA Status	Common Name	Scientific Name
Endangered	Eastern Small-footed Myotis	*Myotis leibii*
	Hickorynut	*Obovaria olivaria*
	Hoary Bat	*Lasiurus cinereus*
	Lake Sturgeon (Great Lakes – Upper St. Lawrence River population)	*Acipenser fulvescens*
	Wood Turtle	*Glyptemys insculpta*
	Little Brown Myotis	*Myotis lucifugus*
	Northern Long-eared Bat	*Myotis septentrionalis*
	Silver-haired Bat	*Lasionycteris noctivagans*
	Eastern Red Bat	*Lasiurus borealis*
	Tri-colored Bat	*Perimyotis subflavus*
Threatened	Bank Swallow	*Riparia riparia*
	Bobolink	*Dolichonyx oryzivorus*
	Eastern Meadowlark	*Sturnella magna*
	Lesser Yellowlegs	*Tringa flavipes*
Special Concern	Canada Warbler	*Cardellina canadensis*
	Common Nighthawk	*Chordeiles minor*
	Eastern Wood-Pewee	*Contopus virens*
	Evening Grosbeak	*Coccothraustes vespertinus*
	Monarch	*Danaus plexippus*
	Snapping Turtle	*Chelydra serpentina*
	Wood Thrush	*Hylocichla mustelina*
	Yellow-banded Bumble Bee	*Bombus terricola*

3. METHODS

3.1. Natural Heritage Assessment

Information collected during the desktop Natural Heritage review was compared against the known habitat preferences for Threatened and Endangered SAR known or suspected to occur in the region. As per the ESA, suitable SAR habitat was considered as "*a dwelling-place, such as a den, nest or other similar place, that is occupied or habitually occupied by one or more members of a species for the purposes of breeding, rearing, staging, wintering or hibernating, and the area immediately around a dwelling place*". Where available, SAR habitat was defined in conformance with MNR General Habitat Descriptions, provincial / federal recovery strategies, or as regulated under the ESA. Any habitat with a moderate to high potential for supporting Threatened and Endangered SAR was considered candidate SAR habitat. Habitat descriptions and habitat

characteristics were compared against criteria outlined in the *Significant Wildlife Habitat Criteria Schedule for Ecoregion 5E* (MNRF 2015). Any habitat having a moderate to high potential for supporting SAR was considered candidate SWH. Any aquatic habitat with a potential for supporting fish was noted as candidate fish habitat.

The potential for Natural Heritage feature presence within the AOI was ranked according to the following criteria outlined in Table 3.

Table 3 – Criteria for establishing the potential for Natural Heritage features to occur within the AOI.

Potential	Criteria
None	Feature is not present in this Ecoregion.
Low	Feature is present in this Ecoregion, but habitat is not suitable within the AOI, or the known feature range does not include the AOI.
Moderate	Feature is present in this Ecoregion with a range that includes the AOI, habitat is suitable for the feature, but feature presence is considered unlikely.
High	Feature is present in this Ecoregion with a range that includes the AOI, habitat is suitable for the feature, and feature presence is considered likely.
Confirmed	Feature was confirmed to be present in the AOI at the time of desktop review.

4. RESULTS

4.1. Natural Heritage Features

Several Natural Heritage features with a moderate or high potential to occur were identified along the existing and proposed route options. These features are discussed below, summarized in Table 4, and depicted in Figure 4 and 5 in Attachment 1.

Fish Habitat

- A channelized permanent watercourse (Mississagi River) transects the northern portion of the AOI. Other permanent waterbodies exist in proximity to Site including Dean Lake and Bolton River. All waterbodies are known fish habitat with existing records of fish species. Although proposed Route Options A and B do not directly intersect any waterbodies, their proximity to Dean Lake (Option B), the Mississagi River (Option A), and several unnamed wetlands and tributaries near the existing roadway suggests that mitigation measures should be considered to minimize potential impacts on these natural features during construction. On-site assessments should be conducted to identify the location of water crossings along each proposed route options and potential for fish habitat connectivity. If proposed water crossings are required to service the road, federal (DFO) and provincial (MNR) permitting may be required.

Wetlands

- Wetlands are subject to development constraints according to the Ontario Provincial Planning Statement. Several unevaluated wetlands are located within the AOI. It is recommended that both route options be assessed by a qualified professional trained in the Ontario Wetland Evaluation System (OWES) to identify wetland presence / absence, and if present, to delineate boundaries along each route option in order to inform appropriate setback determinations and route realignment planning.

Threatened and Endangered Species at Risk (SAR)

- **Bank Swallow** are a species of bird listed as Threatened under the ESA. Bank Swallow forage around woodland edges, waterbodies, wetlands, and grassy fields. This species nests colonially in borrows in vertical banks of sand or silt. Examples include along riverbanks, in excavated pits, in earthen berms and in stockpiled soils. On-site assessments should be undertaken to determine if suitable habitat to support nesting by Bank Swallow exists within the AOI. The potential for Bank Swallow to occur within the AOI is **low.**
- **Bobolink and Eastern Meadowlark** are species of birds listed as Threatened under the ESA. They are both ground-nesting grassland birds that relies on open habitats such as tallgrass prairies, hayfields, and lightly grazed pastures. These habitats provide the vegetation needed for nesting and foraging during the breeding season, which typically occurs from late May through August. Given that Bobolink and Eastern Meadowlark frequently nest in agricultural grasslands, any agricultural lands overlapping the Area of Interest (AOI) should be treated as potential habitat. Route Options A and B do not intersect candidate habitat suitable to support these species, therefore their potential to occur on Site is considered **low.** The Site's proximity to candidate habitat warrants recommendations to avoid and minimize potential impacts (see Section 5, below).
- **Lesser Yellowlegs** are a medium-sized shorebird that typically breeds in boreal wetlands, including muskegs, bogs, wet meadows, and forested peatlands near shallow water bodies. It requires moist habitats with open water or mudflats for foraging and sparse ground cover for nesting. Their breeding season generally occurs from late May through July, during which the species nests on the ground, often near the edge of wetlands or in open forested areas with wetland influence. Any wetland or wetland-associated areas within the AOI, including marshes, bogs, riparian zones, and wet lowlands should be assessed as potential habitat for Lesser Yellowlegs. Qualified biologists should conduct surveys prior to any vegetation clearing, draining, or construction activities during the breeding season. Where evidence of nesting or use by Lesser Yellowlegs is found, appropriate timing windows or mitigation measures should be implemented in accordance with federal and provincial guidance to prevent disturbance or habitat loss. The potential for Lesser Yellowlegs to occur within the AOI is **moderate.**
- **Black Ash** is an Endangered tree species protected under the ESA. This species prefers moist habitats and generally occurs in wetlands, beside waterbodies, and can sometimes occur upland along woodland creeks or within areas of seasonal pooling. The Government

of Ontario has chosen not to impose protections for Black Ash across the entirety of the province. Instead, protections apply only to those municipalities, townships, and counties in which Emerald Ash Borer (the primary driver of Ash decline) is prevalent. **This Site is not included as an area in which Black Ash protections apply.** For more information, please see https://www.ontario.ca/page/black-ash-0. The potential for Black Ash to occur in wetlands within the AOI are **high.**

- Seven (7) species of Endangered bat occur in the Sault Ste. Marie/Blind River District: **Little Brown Bat**, **Eastern Small-footed Myotis**, **Northern Long-eared Bat, Silver-haired Bat, Hoary, Eastern Red Bat and Tri-colored Bat**. Of greatest conservation concern for SAR bats are large (>25 cm diameter) living and dead-standing cavity trees of Decay Class 1-3 that can support bat maternity roosting colonies, and caves that can serve as bat hibernacula. Some bats prefer to roost in rocks (primarily Eastern Small-footed Bat) or human structures (primarily Little Brown Bat). For maternity roosting purposes, these species demonstrate a preference for unconsolidated rock features such as talus, karst, rip rap, rock piles or fractured rock. In human structures, they prefer void spaces that are sheltered from the rain but heated by direct sunlight, such as attics, in soffits and under siding. The potential for maternity roosting and bat hibernation within the AOI (and along both route options) is considered **moderate**. Male bats and non-gravid females will also rest during the day singularly (or in small groups) in temporary roosts that are transient and quickly abandoned (i.e., “day roosts”). Day roosting is more commonly encountered in vicinity to waterbodies where insects are more abundant, and flyways are open. Existing information from the Government of Canada identifies areas that overlap with AOI as critical habitat for both Little Brown Bat and Northern Long-eared Bat. The potential for day roosting and foraging by Endangered bat species around wetlands/watercourses and riparian woodlands within the AOI is considered **high** along both route options.
- **Wood Turtle** is a semi-aquatic endangered turtle distinguished most often found in clear, moderately flowing rivers and streams with sand or gravel bottoms, frequently featuring deep pools, undercut banks, log debris, and oxbows, habitats typical of the Iron Bridge region. Although more terrestrial than most freshwater turtles, wood turtles typically remain within 300 – 500m of water. They rely on riparian woodlands, thickets, meadows, and open fields adjacent to waterways for foraging and nesting. Nesting occurs from late May to early July, usually on sunny, sandy or gravelly banks. Route Option A and B are both located within 300m of wetlands and water bodies that may be suitable to support this species. The potential of Wood Turtle to occur within the AOI and on Site is considered **high.**
- **Hickorynut** is an endangered species of freshwater mussel that occupies deep, fast-flowing sections of large rivers, typically in sandy substrates at depths exceeding 2 – 3m, and with moderate to strong currents. In Ontario, extant populations are found in only two (2) river systems: the Mississagi River and segments of the Ottawa River. The eastern realignment along Route Option A is located within 300m of the Mississagi River, and although the Project is not adjacent Hickorynut habitat, mitigations are recommended to

safeguard the species in Section 5 below. The potential for Hickorynut to occur on Site are **low.**

Significant Wildlife Habitat (SWH)

The natural heritage desktop records reviews identified up to four (4) candidate SWH with a moderate to high potential of occurring within or adjacent both AOI and two (2) confirmed SWH:

- **Deer Yarding Area – Stratum 1 & Stratum 2 (Confirmed).** The MNR identifies a Stratum 1 Deer Yard and Stratum 2 Wintering Area that intersects with the existing portion of road and both proposed route options. Stratum 1 represents the core thermal shelter area, generally composed of dense coniferous canopy (e.g., eastern white cedar, balsam fir, or hemlock), which reduces snow depth and wind exposure, enabling energy conservation. Stratum 2 includes the adjacent mixed or deciduous forested areas that support deer movement and provide access to forage during milder periods. Both are essential to the seasonal survival and long-term viability of regional deer populations. It is recommended that the impacts of the Project on Deer Yarding Areas be assessed by a Qualified Professional. Mitigations to safeguard this feature is provided below.
- **Osprey Feeding & Resting Areas (Confirmed).** The MNR identifies an Osprey (*Pandion haliaetus)* Feeding Area and an Osprey Resting Area that overlap with the Area of Interest. Feeding Areas are typically located within 300 metres of productive waterbodies such as lakes, rivers, or reservoirs that support adequate fish populations, and they must include suitable perching structures like tall trees, snags, or man-made platforms. Resting Areas generally consist of tall trees or perches situated near feeding zones or along flight corridors and are used for roosting between foraging trips or during migration. To protect the functional integrity of these habitats, development and site alteration should maintain a minimum 300-metre buffer around known active nest sites and primary feeding or resting areas, in accordance with MNR best practices. In addition, seasonal timing restrictions are recommended to avoid disturbance during the critical breeding and nesting period, which generally extends from April 15 to September 15. Activities such as vegetation removal, blasting, or high-noise construction should be avoided within this period near known Osprey habitat.
- **Bat Maternity Colonies (Candidate).** The Site should be walked by a qualified Environmental Professional to determine if there are any large (>25 cm diameter at breast height) living and dead-standing cavity trees, rock features, or human structures that can support SWH for Bat Maternity Roosting, or caves that can serve as SWH for bat hibernacula. The potential for maternity roosting along the proposed Route Option A is considered **moderate** in areas where realignment is planned, and **high** along Route Option B, particularly where a new roadway segment is proposed to the south and vegetation clearing will be most abundant.
- **Woodland Raptor Nesting (Candidate).** Raptors (i.e., birds of prey) nest within a variety of woodland conditions. Certain species, such as Bald Eagles and Osprey favour forest edges adjacent to wetlands and waterbodies. The potential for **Eagle / Osprey Nesting,**

Foraging and Perching (Candidate) within the AOI itself is considered **moderate** as both areas are within proximity to a watercourse (the Mississagi River) and to wetlands.

- **Special Concern and Rare Wildlife Species (Candidate).** Forests and forest edges could support nesting by several species of Special Concern songbirds. Habitat in which Special Concern species are reproducing can qualify as SWH. Based on records associated with the Site, Special Concern songbird species with the greatest potential to occur within the AOI are:
    - Canada Warbler
    - Common Nighthawk
    - Eastern Wood-pewee
    - Evening Grosbeak
    - Brewer's Blackbird
    - Wood Thrush

Migratory Birds

The Site is located within Nesting Zone C3. Most bird species in this nesting zone are considered migratory and they, their broods and their active nest are protected from harm federally under the *Migratory Birds Convention Act* (S.C. 1994, c. 22; 'MBCA').

All woody vegetation within the AOI have the potential to support nesting by migratory bird species. Nesting by migratory birds within the AOI (and along both route options) is considered **high**.

5. CONTRAINTS AND RECOMMENDATIONS

AOI suitability to support Natural Heritage features and associated recommendations and next steps are summarized in Table 4 below.

Table 4 – Summary of Natural Heritage Features and associated recommendations.

Constraint	Potential to Occur*	Rational	Recommendations	Conclusions
Provincial Planning Statement 'PPS'				
Natural Heritage Systems	**Absent.**	• Review of Land Information Ontario '*Natural Heritage Systems Area*' database found no such areas associated with the Site.	• **None required.**	**Option A and B** • **None.** Feature is absent.
Significant Wetlands	**Significant Wetlands:** Low **Coastal Wetlands:** Low **Unevaluated Wetlands:** High	• Geospatial Ontario indicates the presence of unevaluated wetlands surrounding and within the AOI.	• **Wetland mapping** should be performed at this Site. An absence of provincial wetland data on Site does not necessarily indicate an absence of wetlands. There are indications that unmapped wetlands intersect with the project footprint. The Site should be assessed for wetland presence. Any wetlands found on Site should be mapped according to Ontario Wetland Evaluation System (OWES) definitions by a qualified Environmental Professional trained by the MNR in the OWES. • **Wetland Avoidance.** It is recommended that a Qualified Professional assess both route options for the presence or absence of wetlands. If wetlands are identified, their boundaries should be delineated, and all work should be set back a minimum of 30m from the wetland edge. • **Work adjacent to wetlands.** If work is proposed adjacent to a wetland, then impacts to the ecological function of this feature should be assessed by a Qualified Professional. Adjacent is defined as those areas within 120m of the wetland boundary. It is generally recommended that mitigations be adopted for work within 120m of wetlands. • **Control all sediment and erosion.** Prior to undertaking work on Site, prepare Sediment and Erosion Control Plan to contain all sediments generated by the Project. Ensure that no sediments are allowed to wash into the adjacent wetlands or waterbodies. • **Ensure proper spills prevention and response.** Ensure that all deleterious substances are properly contained and stored on Site. Examples of common deleterious substances include fuels, lubricants, paint, and solvents. While construction is underway, ensure that protocols are in place to properly respond to spills, including the presence of spills kits appropriate to the nature and volumes of the deleterious substances on Site. Ensure that no deleterious substances are allowed to wash into the wetland complex. Do not refuel or service any equipment within 30m of the wetlands. • **Prevent the spread of invasive species.** Ensure all equipment arrives on Site clean and free of plant and soil debris. This may require off-site power washing of equipment and machinery prior to its arrival at this Site. • **Proper storage of deleterious substances.** Deleterious substances, such as fuels, lubricants, paints, and solvents should be safely stored on site in locations greater than 30m from any wetland.	**Option A and B** • **Knowledge Gap:** If work is proposed near wetlands, the Site should be assessed by a Qualified Professional for wetland presence, and wetland boundaries should be mapped to OWES definitions.
Coastal Wetlands	**Absent.**	• The Site is not within 2km of a Great Lake coast.	• **None required.**	**Option A and B** • **None.** Feature is absent.
Significant Woodlands	**Absent.**	• Review of Land Information Ontario Natural Heritage Systems Area database found no such areas associated with the Site.	• **None required.**	**Option A and B** • **None.** Feature is absent.

Constraint	Potential to Occur*	Rational	Recommendations	Conclusions
Significant Valleylands	**Absent.**	• No valleys are present on the Site.	• **None required.**	**Option A and B** • **None.** Feature is absent.
Significant Wildlife Habitat (SWH)	**Confirmed:** • Deer Yarding Area – Stratum 1 & 2 (on Site and within 1000m of the Site) • Osprey Feeding & Resting Areas **High** • Special Concern Species • Bat Maternity Colonies **Moderate** • Woodland Raptor Nesting • Eagle Nesting, Foraging and Perching	• Review of Geospatial Ontario '*Ontario Wildlife Values Area*' database found no such areas associated with the AOI. • The AOI is confirmed to intersect with Stratum 1 & 2 Deer Yard. • The AOI is confirmed to intersect with Osprey Feeding and Resting Areas • Records for Canada Warbler, Common Nighthawk, Eastern Meadowlark, Eastern Wood-pewee, Evening Grosbeak, Brewer's Blackbird and Wood Thrush exist throughout the AOI.	• **Minimize the clearing of vegetation.** Clear only what is necessary to accomplish alterations and incorporate existing vegetation into the alteration plans as much as possible. • **Bat Timing Window.** Do not clear large (>25cm DBH) cavity trees, or disturb rock features, while bats could be active on within the AOI, from April 15 to October 15, to safeguard these species from harm. • **Bird Timing Window.** Avoid clearing forested areas while bird species are nesting within the AOI, from April 8 and August 28, to ensure bird reproduction is not interrupted and active nests are safeguarded. This timing window conforms to Environment and Climate Change Canada's General Nesting Period for forests in Nesting Zone C3. • **Osprey Timing Window.** Avoid disturbance during the critical breeding and nesting period, which generally extends from April 15 to September 15. • **MNR consultations should raptor nesting be encountered.** If a raptor nest is encountered, such as that of an owl, hawk, eagle, or osprey, retain the nest and surround trees and contact the local MNR. Permitting it is required prior to disturbance or removal of active raptor nests. **Other General Best Practices** • **Contain domestic pets.** Do not allow domestic pets to roam freely unsupervised. Uncontained dogs may harass wildlife, and uncontained domestic cats can be detrimental to local songbird populations. • **Do not feed wildlife.** Do not provide artificial food sources to wildlife. • **Do not persecute wildlife.** Do not intentionally harm or harass wildlife, including reptiles such as snakes, which may use the surrounding habitat. • **Proper waste disposal.** Ensure all household waste, including food scraps, are properly contained on Site.	**Option A and B** • **Knowledge Gaps:** It is recommended that impacts of the Project on Deer Yarding Areas be assessed by a Qualified Professional • **Best management practices** are recommended to ensure no negative impacts to SWH.
Significant Areas of Natural and Scientific Interest (ANSI)	**Absent.**	• Review of Geospatial Ontario '*Areas of Natural and Scientific Interest (ANSI)*' database found that a Coarse-Grained Glacio-Lacustrine Deposit intersects with the AOI.	• **None required.**	**Option A and B** • **None.**
Fish Habitat and the Fisheries Act.	**Low.**	• The AOI is adjacent to the Mississagi River and Dean Lake. • Records of Hickorynut (Endangered) are associated with the Mississagi River.	• **DFO consultations.** Should work adjacent any watercourses have a potential to impact fish or their habitat, then the project and its impacts must be reviewed by Fisheries and Oceans Canada (the 'DFO') is a '*Request for Review*' submission. Channelized watercourses intersecting with the AOI are known to support fish and should be considered fish habitat. • **Watercourse setbacks.** The Mississagi River is confirmed fish habitat and known Hickorynut habitat. Typical advised setbacks from water bodies is 30m, but closer may be justifiable if impacts are professionally assessed. • **Control all sediment and erosion.** Prior to undertaking work within the AOI, prepare a Sediment and Erosion Control Plan to contain all sediments generated by the Project. Ensure that no sediments are allowed to wash into the adjacent wetlands and watercourses. • **Proper storage of deleterious substances.** Deleterious substances, such as fuels, lubricants, paints, and solvents, should be safely stored on site in locations greater than 30m from any wetland.	**Option A and B** • **In-water work is currently unknown.** • **Knowledge Gap:** It is recommended that an on-site assessment be conducted by a Qualified Professional to identify the location of possible water crossings along each proposed route option and assess the potential for fish habitat connectivity. • **Best management** practices are recommended to safeguard fish habitat and will be confirmed once final site plans are reviewed.

Constraint	Potential to Occur*	Rational	Recommendations	Conclusions
			• **Proper containment of sediments.** Any sediments generated on site, such as by earthworks or construction, must be contained and not allowed to wash into nearby fish-bearing waters. Sediment and erosion control should be planned in advance of undertaking work near wetlands and watercourses.	
Threatened and Endangered Species and the Endangered Species Act	**High:** - Black Ash - Eastern-Small Footed Bat - Little Brown Bat - Northern Long-eared Bat - Silver-haired Bat - Hoary Bat - Eastern Red Bat - Tri-colored Bat - Wood Turtle **Moderate:** - Lesser Yellowlegs - Bank Swallow **Low:** - Bobolink - Eastern Meadowlark - Hickorynut (discussed in Fish Habitat above)	• Forested habitat along the existing and proposed new route options within the AOI may contain large (>25cm diameter) cavity trees, rock features or caves suitable for endangered **bat** species. • Wetlands surrounding the existing and proposed new route options may be suitable to support **Black Ash. Protections under the ESA for this species do not apply for this Site.** • Critical habitat for Wood Turtle, Little Brown Myotis, Tri-colored Bat, and Northern Long-eared Bat overlap with the AOI. Habitat on Site may be suitable to support these species.	• **Timing window for bats.** Endangered bats can roost colonially large (>25cm Diameter) living or dead-standing cavity trees that contain cracks, crevices, holes, or sloughing bark. Retain these trees on Site where possible, and do not remove any of these trees between May 1 and July 31 while bats are reproducing and rearing young. More generally, trees or rock features on Site should not be removed between April 1 and September 30, while endangered bats are active on the landscape. Also note a similar timing window (below) for all other vegetation, which should not be removed between April 12 and August 27. When added together, avoid clearing vegetation from **April 1 to September 30.** • **Ensure proper vigilance and response to species encounters.** If a Threatened or Endangered species is encountered within the AOI, all work that could harm that species must halt and the species must be provided a reasonable amount of time to vacate on its own accord. Due to the proximity of the AOI to the watercourse and candidate Bank Swallow nesting habitat, be aware that Bank Swallow could move through the AOI. Contact a qualified Environmental Professional should a Threatened or Endangered species be found occupying the AOI or should the protected status of a species encountered within the AOI not be known. • **Consult the Species at Risk Branch of the MECP prior to undertaking activities that could impact Threatened or Endangered species, or their habitat.** Should Project plans change or should impacts to a Threatened or Endangered species be deemed likely because of this Project, then the SARB of the MECP should be consulted. It is recommended that a qualified Environmental Professional be retained to undertake that consultation. **Other General Best Practices** • **Contain domestic pets.** Do not allow domestic pets to roam freely unsupervised. • **Minimize the clearing of vegetation.** Clear only what is necessary to accomplish the future development and incorporate existing vegetation into the Site plan as much as possible.	**Option A and B** • **Bats** are not habitat limited species in Ontario but are in decline due to fungal infections of their hibernacula (i.e., White Nosed Syndrome). Bat habitat is abundant in forested areas across Ontario including this Site. Retaining wetlands, watercourses, and riparian forests (i.e., >30m setbacks) will retain the best quality habitat for bat roosting and foraging. Timing windows for land clearing will safeguard the species from harm. • **Knowledge Gap**: The Site should be assessed by a qualified Environmental Professional for presence of cavity trees, rock features or caves. • **Black Ash:** No action is required. Black Ash protections do not apply in this area. • **Knowledge Gap**: Pending review of the final Site plans, consideration may be given to having a Qualified Professional assess potential habitat suitability for Lesser Yellowlegs, Bank Swallow, and Wood Turtle, if deemed necessary.
Other Acts				
Migratory Birds Convention Act, and: **Migratory Bird Regulations**	**High.**	• All woody vegetation within the AOI has the potential to support nesting by migratory birds. • Protections apply primarily to the birds and their **active** nests.	• **Clear vegetation outside of the General Nesting Period.** Clear vegetation prior to April 12 or after August 27 to avoid bird nesting within the AOI. • **Remain vigilant for ground nesting birds.** Avoid and retain active nests by ground-nesting species which could be encountered on Site between April 12 and August 27. • **Minimize the clearing of vegetation.** Clear only what is necessary to accomplish the undertaking. Incorporate existing vegetation into the final plan where possible. Regreen de-vegetated areas where feasible. • **Seek permitting if required.** Should a protected migratory bird nest require removal or relocation, contact Environment and Climate Change Canada to explore permitting options.	**Option A and B** • Project conformance with the Migratory Birds Convention Act is anticipated provided these mitigations are applied.

6. CONCLUSION AND CLOSING

TULLOCH Environmental was retained by the Municipality of Huron Shores to conduct a Natural Heritage desktop screening of a portion of Chevis Road, where two (2) route options (Option A and Option B) are proposed for road realignment to address ongoing flooding concerns.

This report has been prepared to assist feasibility planning for road realignment and to provide environmental screening for Natural Heritage features that may be present in proximity to the existing, or proposed alternative, route options. At the time of this report's publication, specific work plans have not been prepared, and so recommendations provided here are considered general.

Route Options A and B are subject to the same natural heritage constraints; however, Option A is considered less invasive as it largely follows the existing roadway and requires less vegetation clearing. In contrast, Option B introduces a completely new section of roadway, resulting in greater disturbance. While Option A may also be more cost-effective in terms of environmental studies, both routes intersect similar areas of ecological sensitivity and will require comparable levels of environmental consideration.

Natural Heritage databases reviewed by this report are provided in Table 1. Potential Natural Heritage constraints and recommendations are depicted in Figure 4 and 5 (Attachment 1) and summarized in Table 4. The main Natural Heritage constraints / recommendations are:

- It is recommended that no vegetation be cleared between **April 12 and August 27** to avoid the general nesting period for migratory birds. In addition, large (>25cm diameter) cavity trees should not be felled between **April 1 and September 30,** while endangered bats are active on the landscape. This timing window will also accommodate the active nesting period for Osprey, which is from **April 15 to September 15.**
- If work is proposed near a wetland, the area should be assessed by a Qualified Professional for wetland presence, and wetland boundaries should be mapped to OWES definitions. In general, we recommend work be avoided within **30m** of any bodies of water and associated wetlands. Within these setbacks, prioritise the retention of as much vegetation as possible, including root layers, and take additional precautions against erosion and sediment mobilizations. Retained vegetation in these areas will maintain a visual barrier for wildlife that may occupy the wetlands / waterbodies, will retain important riparian forest habitat, and will help safeguard against erosion.
- Fish habitat is protected under the Fisheries Act. If the Project is located near a water feature and there is potential for Project activities to impact fish habitat, a Qualified Professional should be consulted to assess the presence of fish habitat and determine whether further permitting may be required. Erosion and sediment control measures must be implemented prior to any work occurring near waterbodies to ensure no sediments are allowed to wash into waterbodies and adjacent wetlands, and to prevent negative impacts to aquatic habitat.

- Pending review of the final Site plans, consideration may be given to having a Qualified Professional assess potential habitat suitability for Lesser Yellowlegs, Bank Swallow, and Wood Turtle, if deemed necessary.

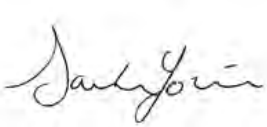
We, the undersigned, are pleased to provide this report as a record of our Natural Heritage desktop screening findings.

If you have any questions or if we can be of further assistance in this matter, please do not hesitate to contact us.

Sincerely,

TULLOCH Environmental, a division of TULLOCH Engineering

Chelsea Streich B.Sc. EPt.
Environmental Technician



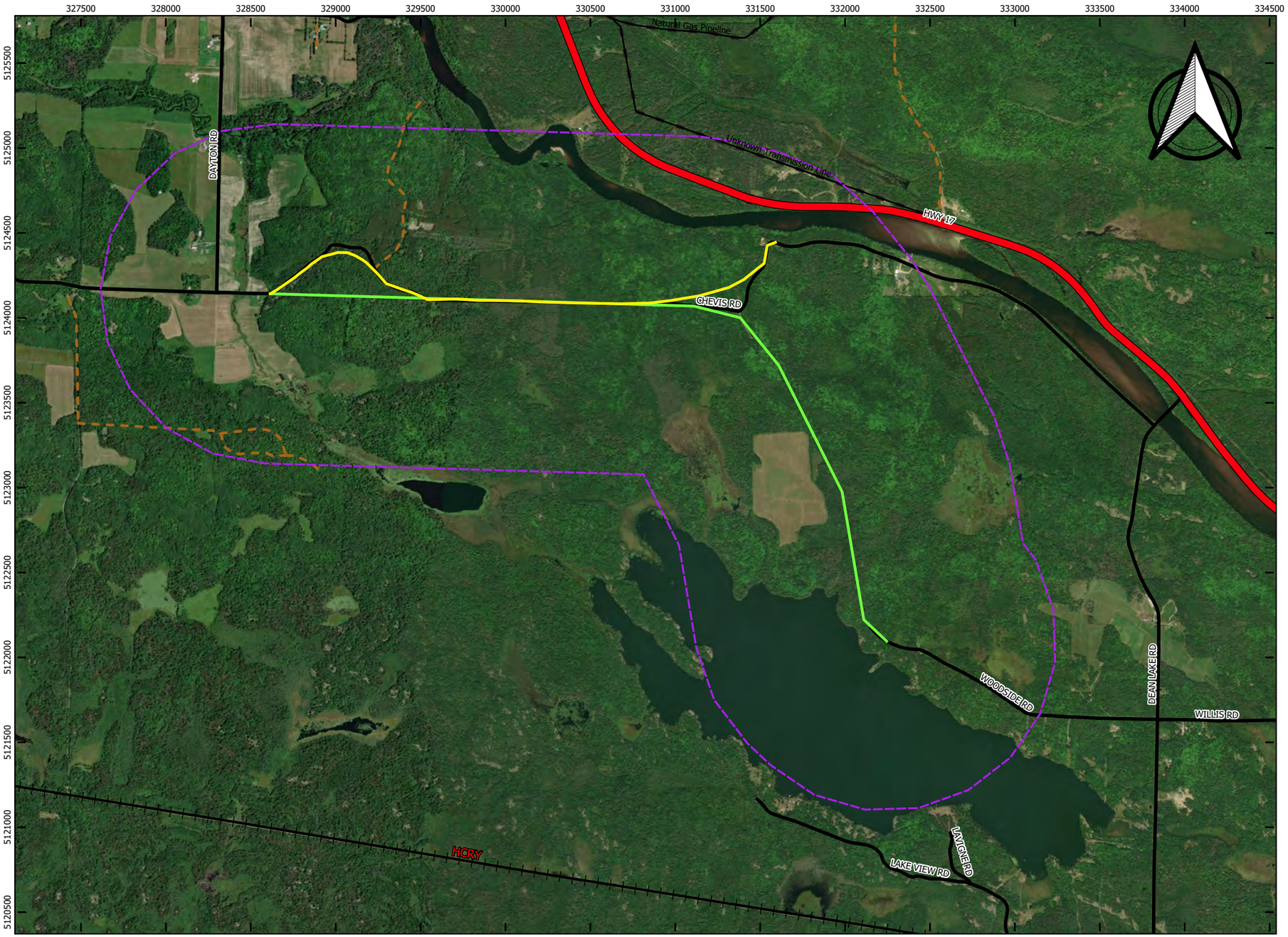
Sasha Losier, B.Sc. EPt.
Terrestrial Ecologist

Attachments
Attachment 1 – Geospatial Ontario Maps

ATTACHMENT 1: Geospatial Ontario Maps

Chevis Road Realignment
Municipality of Huron Shores

Natural Heritage Data Review



Legend

- Route Option A
- Route Option B
- Area of Interest
- Highway
- Local Road
- Other Road (Unsurfaced)
- OTN_TRAIL_SEGMENT
- ORWN_TRACK
- UTILITY_LINE

200 0 200 400 600 800 m

Projection: UTM (NAD83)
1:25,000

TULLOCH ENVIRONMENTAL

Figure 1 - Area of Interest

2024-04-01T10:11:37.000

Project: 251146

Notes: Data updated March 2024. Asterisk (*) denotes retired / discontinued data (may be 3 or more years old).

P:\2025\251146 Huron Shores, Chevis Road Assessment\Environmental\6_Mapping (No Locks)\LIO NH Mapping Tool v2024.1 (Internal Pathed to Storage).qgz - Chelsea Streich

Chevis Road Realignment
Municipality of Huron Shores

Natural Heritage Data Review

Legend

- Route Option A
- Route Option B
- Area of Interest
- BUILDING_AS_SYMBOL
- CONSTRUCTED_DRAIN
- Highway
- Local Road
- Other Road (Unsurfaced)
- OTN_TRAIL_SEGMENT
- ORWN_TRACK
- UTILITY_LINE
- MNR_DISTRICT
- MUNIC_BND_LOWER_AND_SINGLE
- GEOGRAPHIC_LOT_FABRIC
- OHN_100K_WATERBODY
- OHN_100K_WATERCOURSE
- PATENT_LAND_EXTERNAL
- CL_UNPATENTED
- INDIAN_RESERVE

200 0 200 400 600 800 m

Projection: UTM (NAD83)
1:25,000

TULLOCH ENVIRONMENTAL

Figure 2 - Land Use Features

2024-04-01T10:11:37.000

Project: 251146

Notes: Data updated March 2024. Asterisk (*) denotes retired / discontinued data (may be 3 or more years old).

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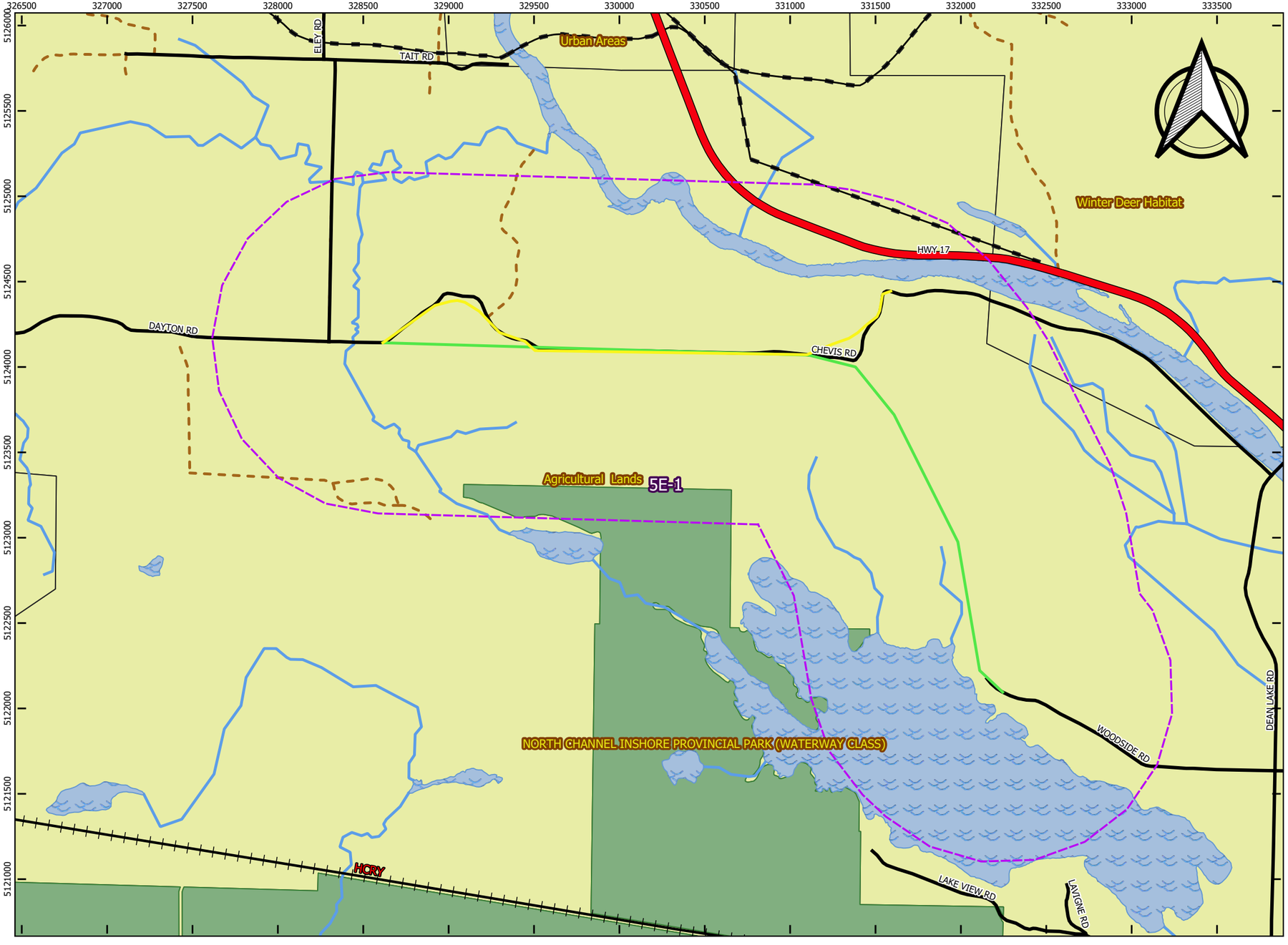
Chevis Road Realignment
Municipality of Huron Shores

Natural Heritage Data Review



Legend

Map 3 - Protected Areas

- Route Option A
- Route Option B
- Area of Interest
- Highway
- Local Road
- Other Road (Unsurfaced)
- OTN_TRAIL_SEGMENT
- ORWN_TRACK
- UTILITY_LINE
- ECODISTRICT
- OHN_100K_WATERBODY
- OHN_100K_WATERCOURSE
- PROV_PARK_REGULATED
- General Use Area
- Provincial Park

200 0 200 400 600 800 m

Projection: UTM (NAD83)
1:25,000

TULLOCH ENVIRONMENTAL

Figure 3 - Protected Areas

2024-04-01T10:11:37.000

Project: 251146

Notes: Data updated March 2024. Asterisk (*) denotes retired / discontinued data (may be 3 or more years old).

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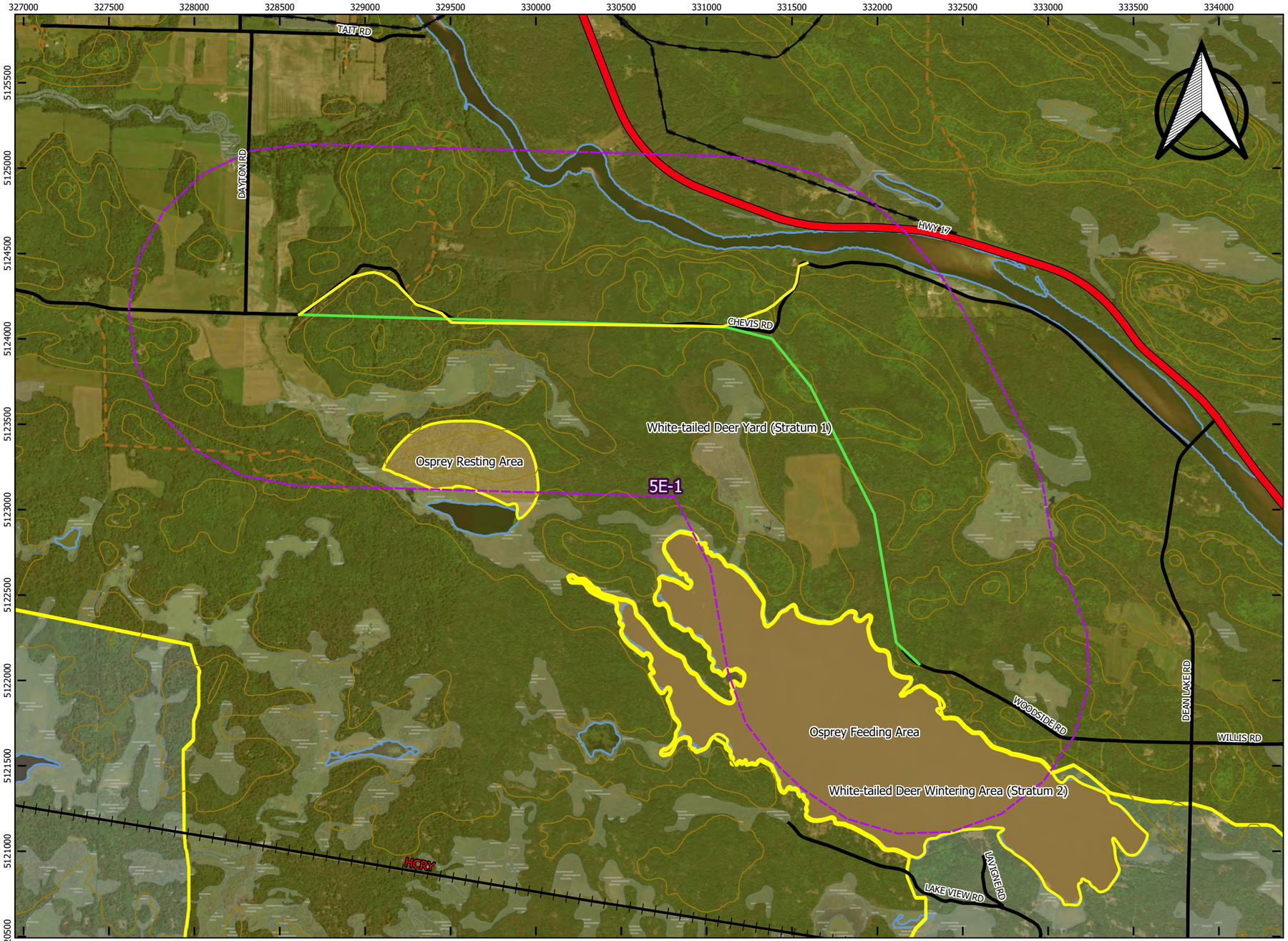
Chevis Road Realignment
Municipality of Huron Shores

Natural Heritage Data Review



Legend

- Route Option A
- Route Option B
- Area of Interest
- Highway
- Local Road
- Other Road (Unsurfaced)
- OTN_TRAIL_SEGMENT
- ORWN_TRACK
- UTILITY_LINE
- ECODISTRICT
- Contour
- Presently Suitable
- OHN_100K_WATERBODY*
- Not OWES Evaluated
- Osprey Feeding Area
- Osprey Resting Area
- White-tailed Deer Yard (Stratum 1)
- White-tailed Deer Wintering Area (Stratum 2)

200 0 200 400 600 800 m

Projection: UTM (NAD83)
1:25,000

TULLOCH ENVIRONMENTAL

Figure 4 - Terrestrial Habitat

2024-04-01T10:11:37.000

Project: 251146

Notes: Data updated March 2024. Asterisk (*) denotes retired / discontinued data (may be 3 or more years old).

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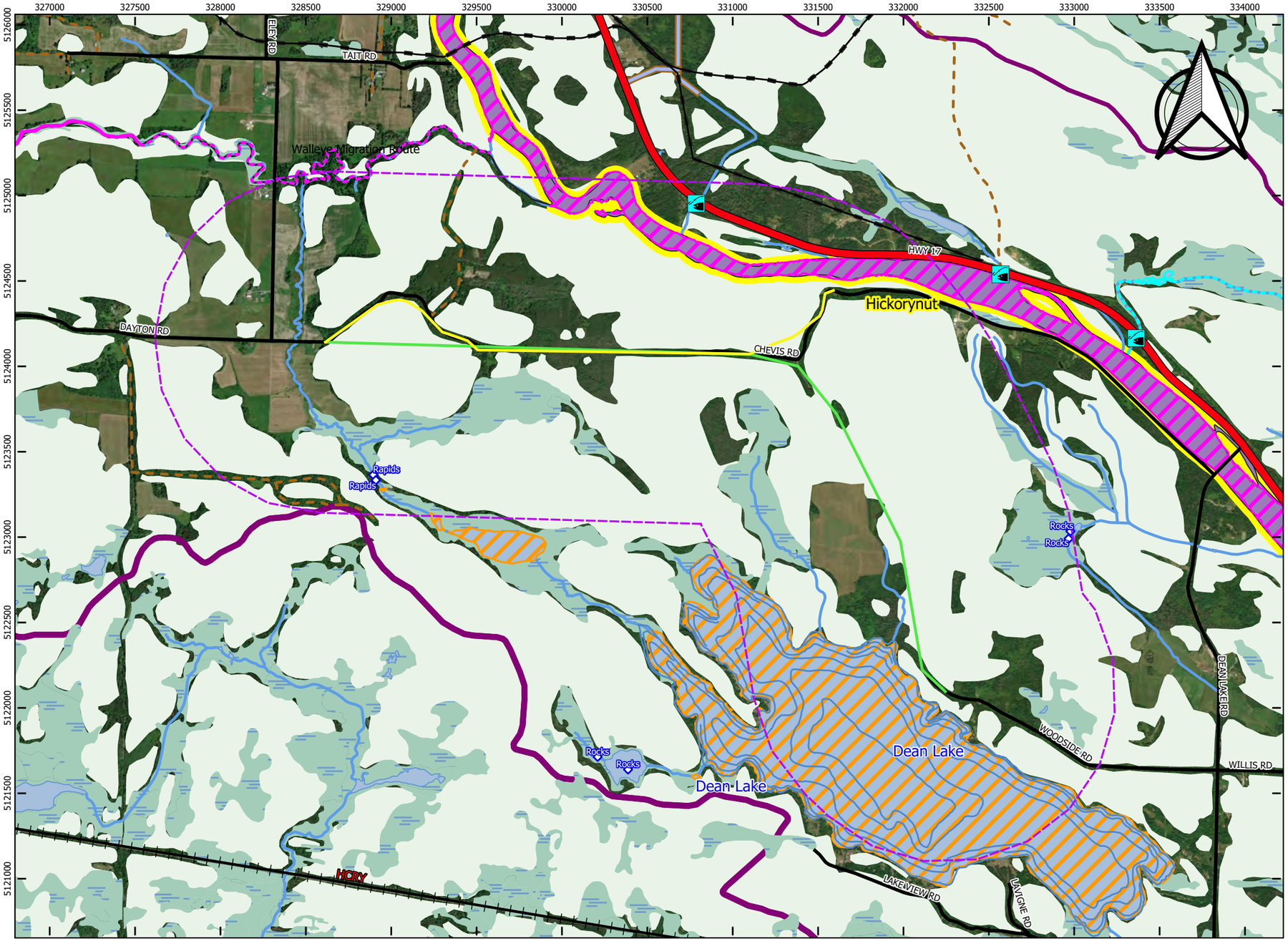
Chevis Road Realignment
Municipality of Huron Shores

Natural Heritage Data Review



Legend

- Route Option A
- Route Option B
- Area of Interest
- ARA_SURVEY_POINT
- Highway
- Local Road
- Other Road (Unsurfaced)
- OTN_TRAIL_SEGMENT
- ORWN_TRACK
- UTILITY_LINE
- Coldwater Ecosystem
- Coolwater Ecosystem
- Warmwater Ecosystem
- BATHYMETRY_LINE
- CONSTRUCTED_DRAIN
- Coldwater Ecosystem
- Coolwater Ecosystem
- Warmwater Ecosystem
- OHN_HYDROGRAPHIC_POINT
- TRAVEL_CORRIDOR_FISH
- OHN_WATERBODY
- OHN_WATERCOURSE
- DFO_SARA_Dist_2022_FGP_EN
- WETLAND
- ONT_WSHED_BDRY_PRI_DERIVED
- ONT_WSHED_BDRY_SEC_DERIVED
- ONT_WSHED_BDRY_TERT_DERIVED
- ONT_WSHED_BDRY_QUAT_DERIVED
- WOODED_AREA

200 0 200 400 600 800 m

Projection: UTM (NAD83)
1:25,000

TULLOCH ENVIRONMENTAL

Figure 5 - Aquatic Habitat

2024-04-01T10:11:37.000

Project: 251146

Notes: Data updated March 2024. Asterisk (*) denotes retired / discontinued data (may be 3 or more years old).

P:\2025\251146 Huron Shores, Chevis Road Assessment\Environmental\6_Mapping (No Locks)\LIO NH Mapping Tool v2024.1 (Internal Pathed to Storage).qgz - Chelsea Streich

Chevis Road Realignment
Municipality of Huron Shores

Natural Heritage Data Review

Legend

- Route Option A
- Route Option B
- Area of Interest
- Highway
- Local Road
- Other Road (Unsurfaced)
- OTN_TRAIL_SEGMENT
- ORWN_TRACK
- UTILITY_LINE
- OHN_100K_WATERBODY
- OHN_100K_WATERCOURSE
- SOIL_SURVEY_COMPLEX
- Alluvial
- Glaciolacustrine
- Organic
- Bedrock Dominated

200 0 200 400 600 800 m

Projection: UTM (NAD83)
1:25,000

TULLOCH ENVIRONMENTAL

Figure 6 - Surficial Geology

2024-04-01T10:11:37.000

Project: 251146

Notes: Data updated March 2024. Asterisk (*) denotes retired / discontinued data (may be 3 or more years old).

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TULLOCH
ENGINEERING

APPENDIX C

CHEVIS ROAD ASSESSMENT CONSTRUCTION COST ESTIMATES

251146 Chevis Road Assessment
Construction Cost Estimate
Prepared by: TULLOCH
Prepared on: October 1, 2025

Existing Road Alignment Improvements - Design Speed 60km/hr

Item No.	Description	Estimated Quantity	Units	Unit Price	Item Amount
MISCELLANEOUS ITEMS					
1	Mobilization/Demobilization	Lump Sum			$ 50,000.00
2	Bonding	Lump Sum			$ 50,000.00
3	Traffic Control	Lump Sum			$ 80,000.00
4	Light Duty Silt Fencing - OPSD 219.110	4,150	m	$ 20.00	$ 83,000.00
5	Rock Flow Check Dam - OPSD 219.211	10	ea	$ 1,200.00	$ 12,000.00
6	Clearing & Grubbing	23,000	m^2	$ 5.00	$ 115,000.00
7	Ditching	4,400	m	$ 20.00	$ 88,000.00
8	Platform Widening	2,200	m	$ 150.00	$ 330,000.00
9	Earth Excavation - Grading	7,500	m^3	$ 25.00	$ 187,500.00
10	Rock Excavation - Grading	8,200	m^3	$ 100.00	$ 820,000.00
11	Geotextile & Geogrid	35,000	m^2	$ 6.00	$ 210,000.00
12	Granular “B”, Roadway (In-Place)	9,800	m^3	$ 75.00	$ 735,000.00
13	Granular “A”, Roadway (In-Place)	6,200	m^3	$ 95.00	$ 589,000.00
14	450mmØ HDPE Pipe - OPSD 802.010	80	m	$ 500.00	$ 40,000.00
15	Double Course Surface Treatment	28,000	m^2	$ 15.00	$ 420,000.00
16	Contingency	Lump Sum			$ 300,000.00
	ESTIMATED CONSTRUCTION SUBTOTAL				*$ 4,109,500.00*
ENGINEERING & SURVEYING					
17	Legal Surveys	Lump Sum			$ 40,000.00
18	Environmental Investigations	Lump Sum			$ 15,000.00
19	Geotechnical Investigations	Lump Sum			$ 75,000.00
20	Engineering Design & Tendering	Lump Sum			$ 80,000.00
21	Contract Administration & Inspections	Lump Sum			$ 175,000.00
	ESTIMATED ENGINEERING & SURVEYING SUBTOTAL				*$ 385,000.00*
	ESTIMATED PROJECT TOTAL				**$ 4,494,500.00**

Costs Exclude HST

Definitions: ea – each, m – Linear Metres, m^2 – Square Metres, m^3 - Cubic Metres

251146 Chevis Road Assessment
Construction Cost Estimate
Prepared by: TULLOCH
Prepared on: October 1, 2025

Realignment Area 'A' - Design Speed 80km/hr Horizontal, 60km/hr Vertical

Item No.	Description	Estimated Quantity	Units	Unit Price	Item Amount
MISCELLANEOUS ITEMS					
1	Mobilization/Demobilization	Lump Sum			$ 20,000.00
2	Bonding	Lump Sum			$ 20,000.00
3	Traffic Control	Lump Sum			$ 40,000.00
4	Light Duty Silt Fencing - OPSD 219.110	225	m	$ 20.00	$ 4,500.00
5	Rock Flow Check Dam - OPSD 219.211	5	ea	$ 1,200.00	$ 6,000.00
6	Clearing & Grubbing	7,000	m^2	$ 5.00	$ 35,000.00
7	Earth Excavation - Grading	400	m^3	$ 25.00	$ 10,000.00
8	Rock Excavation - Grading	3,600	m^3	$ 100.00	$ 360,000.00
9	Geotextile	5,500	m^2	$ 5.00	$ 27,500.00
10	Granular “B”, Roadway (In-Place)	2,200	m^3	$ 75.00	$ 165,000.00
11	Granular “A”, Roadway (In-Place)	750	m^3	$ 95.00	$ 71,250.00
12	450mmØ HDPE Pipe - OPSD 802.010	18	m	$ 500.00	$ 9,000.00
13	Steel Beam Guide Rail	60	m	$ 300.00	$ 18,000.00
14	Energy Attenuators	4	ea	$ 15,000.00	$ 60,000.00
15	Double Course Surface Treatment	4,250	m^2	$ 15.00	$ 63,750.00
16	Contingency	Lump Sum			$ 150,000.00
	ESTIMATED CONSTRUCTION SUBTOTAL				*$ 1,060,000.00*
ENGINEERING & SURVEYING					
17	Legal Surveys	Lump Sum			$ 30,000.00
18	Environmental Investigations	Lump Sum			$ 5,000.00
19	Geotechnical Investigations	Lump Sum			$ 25,000.00
20	Engineering Design & Tendering	Lump Sum			$ 40,000.00
21	Contract Administration & Inspections	Lump Sum			$ 40,000.00
	ESTIMATED ENGINEERING & SURVEYING SUBTOTAL				*$ 140,000.00*
	ESTIMATED PROJECT TOTAL				**$ 1,200,000.00**

Costs Exclude HST

Definitions: ea – each, m – Linear Metres, m^2 – Square Metres, m^3 - Cubic Metres

251146 Chevis Road Assessment
Construction Cost Estimate
Prepared by: TULLOCH
Prepared on: October 1, 2025

Realignment Area 'B' - Design Speed 80km/hr Horizontal, 60km/hr Vertical

Item No.	Description	Estimated Quantity	Units	Unit Price	Item Amount
MISCELLANEOUS ITEMS					
1	Mobilization/Demobilization	Lump Sum			$ 30,000.00
2	Bonding	Lump Sum			$ 30,000.00
3	Traffic Control	Lump Sum			$ 30,000.00
4	Light Duty Silt Fencing - OPSD 219.110	1,150	m	$ 20.00	$ 23,000.00
5	Rock Flow Check Dam - OPSD 219.211	7	ea	$ 1,200.00	$ 8,400.00
6	Clearing & Grubbing	18,000	m^2	$ 5.00	$ 90,000.00
7	Earth Excavation - Grading	2,700	m^3	$ 25.00	$ 67,500.00
8	Rock Excavation - Grading	10,500	m^3	$ 100.00	$ 1,050,000.00
9	Geotextile	10,500	m^2	$ 5.00	$ 52,500.00
10	Granular “B”, Roadway (In-Place)	3,300	m^3	$ 75.00	$ 247,500.00
11	Granular “A”, Roadway (In-Place)	1,300	m^3	$ 95.00	$ 123,500.00
12	450mmØ HDPE Pipe - OPSD 802.010	18	m	$ 500.00	$ 9,000.00
13	600mmØ HDPE Pipe - OPSD 802.010	48	m	$ 600.00	$ 28,800.00
13	Steel Beam Guide Rail	100	m	$ 300.00	$ 30,000.00
15	Energy Attenuators	4	ea	$ 15,000.00	$ 60,000.00
16	Double Course Surface Treatment	8,200	m^2	$ 15.00	$ 123,000.00
17	Contingency	Lump Sum			$ 250,000.00
				ESTIMATED CONSTRUCTION SUBTOTAL	*$ 2,253,200.00*
ENGINEERING & SURVEYING					
18	Legal Surveys	Lump Sum			$ 30,000.00
19	Environmental Investigations	Lump Sum			$ 5,000.00
20	Geotechnical Investigations	Lump Sum			$ 40,000.00
21	Engineering Design & Tendering	Lump Sum			$ 45,000.00
22	Contract Administration & Inspections	Lump Sum			$ 70,000.00
				ESTIMATED ENGINEERING & SURVEYING SUBTOTAL	*$ 190,000.00*
				ESTIMATED PROJECT TOTAL	**$ 2,443,200.00**

Costs Exclude HST

Definitions: ea – each, m – Linear Metres, m^2 – Square Metres, m^3 - Cubic Metres

251146 Chevis Road Assessment
Construction Cost Estimate
Prepared by: TULLOCH
Prepared on: October 1, 2025

Realignment Area 'C' - Design Speed 60km/hr Horizontal & Vertical.

Item No.	Description	Estimated Quantity	Units	Unit Price	Item Amount
MISCELLANEOUS ITEMS					
1	Mobilization/Demobilization	Lump Sum			$ 30,000.00
2	Bonding	Lump Sum			$ 30,000.00
3	Traffic Control	Lump Sum			$ 30,000.00
4	Light Duty Silt Fencing - OPSD 219.110	1,500	m	$ 20.00	$ 30,000.00
5	Rock Flow Check Dam - OPSD 219.211	15	ea	$ 1,200.00	$ 18,000.00
6	Clearing & Grubbing	12,800	m^2	$ 5.00	$ 64,000.00
7	Earth Excavation - Grading	650	m^3	$ 25.00	$ 16,250.00
8	Rock Excavation - Grading	7,400	m^3	$ 100.00	$ 740,000.00
9	Geotextile	8,100	m^2	$ 5.00	$ 40,500.00
10	Granular “B”, Roadway (In-Place)	2,950	m^3	$ 75.00	$ 221,250.00
11	Granular “A”, Roadway (In-Place)	1,050	m^3	$ 95.00	$ 99,750.00
12	450mmØ HDPE Pipe - OPSD 802.010	54	m	$ 500.00	$ 27,000.00
13	Steel Beam Guide Rail	140	m	$ 300.00	$ 42,000.00
14	Energy Attenuators	4	ea	$ 15,000.00	$ 60,000.00
15	Double Course Surface Treatment	6,500	m^2	$ 15.00	$ 97,500.00
16	Contingency	Lump Sum			$ 200,000.00
				ESTIMATED CONSTRUCTION SUBTOTAL	*$ 1,746,250.00*
ENGINEERING & SURVEYING					
17	Legal Surveys	Lump Sum			$ 30,000.00
18	Environmental Investigations	Lump Sum			$ 5,000.00
19	Geotechnical Investigations	Lump Sum			$ 25,000.00
20	Engineering Design & Tendering	Lump Sum			$ 40,000.00
21	Contract Administration & Inspections	Lump Sum			$ 75,000.00
				ESTIMATED ENGINEERING & SURVEYING SUBTOTAL	*$ 175,000.00*
				ESTIMATED PROJECT TOTAL	**$ 1,921,250.00**

Costs Exclude HST

Definitions: ea – each, m – Linear Metres, m^2 – Square Metres, m^3 - Cubic Metres

251146 Chevis Road Assessment
Construction Cost Estimate
Prepared by: TULLOCH
Prepared on: October 1, 2025

Existing Road Alignment Improvements - Design Speed 60km/hr, West & Central Areas

Item No.	Description	Estimated Quantity	Units	Unit Price	Item Amount
MISCELLANEOUS ITEMS					
1	Mobilization/Demobilization	Lump Sum			$ 40,000.00
2	Bonding	Lump Sum			$ 50,000.00
3	Traffic Control	Lump Sum			$ 80,000.00
4	Light Duty Silt Fencing - OPSD 219.110	2,890	m	$ 20.00	$ 57,800.00
5	Clearing & Grubbing	1,800	m^2	$ 5.00	$ 9,000.00
6	Ditching	4,400	m	$ 20.00	$ 88,000.00
7	Platform Widening	2,200	m	$ 150.00	$ 330,000.00
8	Earth Excavation - Grading	6,850	m^3	$ 25.00	$ 171,250.00
9	Rock Excavation - Grading	4,350	m^3	$ 100.00	$ 435,000.00
10	Geotextile & Geogrid	27,500	m^2	$ 6.00	$ 165,000.00
11	Granular “B”, Roadway (In-Place)	7,900	m^3	$ 75.00	$ 592,500.00
12	Granular “A”, Roadway (In-Place)	5,050	m^3	$ 95.00	$ 479,750.00
13	450mmØ HDPE Pipe - OPSD 802.010	80	m	$ 500.00	$ 40,000.00
14	Double Course Surface Treatment	22,000	m^2	$ 15.00	$ 330,000.00
15	Contingency	Lump Sum			$ 250,000.00
	ESTIMATED CONSTRUCTION SUBTOTAL				*$ 3,118,300.00*
ENGINEERING & SURVEYING					
16	Legal Surveys	Lump Sum			$ 35,000.00
17	Environmental Investigations	Lump Sum			$ 10,000.00
18	Geotechnical Investigations	Lump Sum			$ 45,000.00
19	Engineering Design & Tendering	Lump Sum			$ 65,000.00
20	Contract Administration & Inspections	Lump Sum			$ 110,000.00
	ESTIMATED ENGINEERING & SURVEYING SUBTOTAL				*$ 265,000.00*
	ESTIMATED PROJECT TOTAL				**$ 3,383,300.00**

Costs Exclude HST

Definitions: ea – each, m – Linear Metres, m^2 – Square Metres, m^3 - Cubic Metres

251146 Chevis Road Assessment
Construction Cost Estimate
Prepared by: TULLOCH
Prepared on: October 1, 2025

Existing Road Alignment Improvements - Design Speed 60km/hr, Central Area

Item No.	Description	Estimated Quantity	Units	Unit Price	Item Amount
MISCELLANEOUS ITEMS					
1	Mobilization/Demobilization	Lump Sum			$ 20,000.00
2	Bonding	Lump Sum			$ 20,000.00
3	Traffic Control	Lump Sum			$ 30,000.00
4	Light Duty Silt Fencing - OPSD 219.110	2,000	m	$ 20.00	$ 40,000.00
5	Clearing & Grubbing	9,000	m^2	$ 5.00	$ 45,000.00
6	Ditching	1,700	m	$ 20.00	$ 34,000.00
7	Platform Widening	850	m	$ 150.00	$ 127,500.00
8	Earth Excavation - Grading	6,000	m^3	$ 25.00	$ 150,000.00
9	Geotextile & Geogrid	14,500	m^2	$ 6.00	$ 87,000.00
10	Granular “B”, Roadway (In-Place)	3,500	m^3	$ 75.00	$ 262,500.00
11	Granular “A”, Roadway (In-Place)	2,200	m^3	$ 95.00	$ 209,000.00
12	450mmØ HDPE Pipe - OPSD 802.010	70	m	$ 500.00	$ 35,000.00
13	Double Course Surface Treatment	13,500	m^2	$ 15.00	$ 202,500.00
14	Contingency	Lump Sum			$ 150,000.00
	ESTIMATED CONSTRUCTION SUBTOTAL				*$ 1,412,500.00*
ENGINEERING & SURVEYING					
15	Legal Surveys	Lump Sum			$ 40,000.00
16	Environmental Investigations	Lump Sum			$ 10,000.00
17	Geotechnical Investigations	Lump Sum			$ 25,000.00
18	Engineering Design & Tendering	Lump Sum			$ 35,000.00
19	Contract Administration & Inspections	Lump Sum			$ 50,000.00
	ESTIMATED ENGINEERING & SURVEYING SUBTOTAL				*$ 160,000.00*
	ESTIMATED PROJECT TOTAL				**$ 1,572,500.00**

Costs Exclude HST

Definitions: ea – each, m – Linear Metres, m^2 – Square Metres, m^3 - Cubic Metres

251146 Chevis Road Assessment
Construction Cost Estimate
Prepared by: TULLOCH
Prepared on: October 1, 2025

Woodside Drive Extension 'A' - Design Speed 60km/hr

Item No.	Description	Estimated Quantity	Units	Unit Price	Item Amount
MISCELLANEOUS ITEMS					
1	Mobilization/Demobilization	Lump Sum			$ 50,000.00
2	Bonding	Lump Sum			$ 50,000.00
3	Traffic Control	Lump Sum			$ 20,000.00
4	Light Duty Silt Fencing - OPSD 219.110	3,000	m	$ 20.00	$ 60,000.00
5	Clearing & Grubbing	52,500	m^2	$ 5.00	$ 262,500.00
6	Earth Excavation - Grading	4,150	m^3	$ 25.00	$ 103,750.00
7	Rock Excavation - Grading	13,900	m^3	$ 100.00	$ 1,390,000.00
8	Geotextile & Geogrid	30,000	m^2	$ 6.00	$ 180,000.00
9	Granular “B”, Roadway (In-Place)	12,100	m^3	$ 75.00	$ 907,500.00
10	Granular “A”, Roadway (In-Place)	3,750	m^3	$ 95.00	$ 356,250.00
11	450mmØ HDPE Pipe - OPSD 802.010	84	m	$ 500.00	$ 42,000.00
12	600mmØ HDPE Pipe - OPSD 802.010	52	m	$ 600.00	$ 31,200.00
13	Double Course Surface Treatment	24,000	m^2	$ 15.00	$ 360,000.00
14	Contingency	Lump Sum			$ 250,000.00
	ESTIMATED CONSTRUCTION SUBTOTAL				*$ 4,063,200.00*
ENGINEERING & SURVEYING					
15	Legal Surveys	Lump Sum			$ 40,000.00
16	Environmental Investigations	Lump Sum			$ 20,000.00
17	Geotechnical Investigations	Lump Sum			$ 40,000.00
18	Engineering Design & Tendering	Lump Sum			$ 35,000.00
19	Contract Administration & Inspections	Lump Sum			$ 100,000.00
	ESTIMATED ENGINEERING & SURVEYING SUBTOTAL				*$ 235,000.00*
	ESTIMATED PROJECT TOTAL				**$ 4,298,200.00**

Costs Exclude HST

Definitions: ea – each, m – Linear Metres, m^2 – Square Metres, m^3 - Cubic Metres

251146 Chevis Road Assessment
Construction Cost Estimate
Prepared by: TULLOCH
Prepared on: October 1, 2025

Woodside Drive Extension 'B' - Design Speed 60km/hr

Item No.	Description	Estimated Quantity	Units	Unit Price	Item Amount
MISCELLANEOUS ITEMS					
1	Mobilization/Demobilization	Lump Sum			$ 50,000.00
2	Bonding	Lump Sum			$ 50,000.00
3	Traffic Control	Lump Sum			$ 20,000.00
4	Light Duty Silt Fencing - OPSD 219.110	2,600	m	$ 20.00	$ 52,000.00
5	Clearing & Grubbing	49,500	m^2	$ 5.00	$ 247,500.00
6	Earth Excavation - Grading	4,250	m^3	$ 25.00	$ 106,250.00
7	Rock Excavation - Grading	6,800	m^3	$ 100.00	$ 680,000.00
8	Geotextile & Geogrid	26,000	m^2	$ 6.00	$ 156,000.00
9	Granular “B”, Roadway (In-Place)	9,000	m^3	$ 75.00	$ 675,000.00
10	Granular “A”, Roadway (In-Place)	3,300	m^3	$ 95.00	$ 313,500.00
11	450mmØ HDPE Pipe - OPSD 802.010	24	m	$ 500.00	$ 12,000.00
12	600mmØ HDPE Pipe - OPSD 802.010	51	m	$ 600.00	$ 30,600.00
13	Double Course Surface Treatment	21,000	m^2	$ 15.00	$ 315,000.00
14	Contingency	Lump Sum			$ 250,000.00
	ESTIMATED CONSTRUCTION SUBTOTAL				$ 2,957,850.00
ENGINEERING & SURVEYING					
15	Legal Surveys	Lump Sum			$ 40,000.00
16	Environmental Investigations	Lump Sum			$ 20,000.00
17	Geotechnical Investigations	Lump Sum			$ 40,000.00
18	Engineering Design & Tendering	Lump Sum			$ 35,000.00
19	Contract Administration & Inspections	Lump Sum			$ 100,000.00
	ESTIMATED ENGINEERING & SURVEYING SUBTOTAL				*$ 235,000.00*
	ESTIMATED PROJECT TOTAL				**$ 3,192,850.00**

Costs Exclude HST

Definitions: ea – each, m – Linear Metres, m^2 – Square Metres, m^3 - Cubic Metres