

The Corporation of the Township of Huron-Kinloss



BY-LAW

2020- 86

Being a By-Law to provide for Drainage Works on the Emerson Municipal Drain, 2020

WHEREAS the requisite number of owners had petitioned the Council for The Township of Huron-Kinloss in accordance with the provisions of the *Drainage Act, R.S.O., 1990* requesting the following lands and roads be drained by a drainage works;

WHEREAS the Council of The Corporation of the Township of Huron-Kinloss has procured a report prepared by Dietrich Engineering Limited and the report is attached and forms part of this by-law;

WHEREAS the estimated total cost of constructing the drainage works for the drain is \$281,800.00;

WHEREAS the Council is of the opinion that the drainage of the area is desirable;

NOW THEREFORE the Council of The Corporation of the Township of Huron-Kinloss, pursuant to the *Drainage Act, R.S.O., 1990* enacts as follows:

- 1.0 That The Corporation of the Township of Huron-Kinloss Council hereby adopts the report dated March 27, 2020 and the drainage works as therein indicated and set forth is hereby authorized and shall be completed in accordance therewith.
- 2.0 The Corporation of the Township of Huron-Kinloss may borrow on the credit of the Corporation the amount necessary for construction of the drain works.
- 3.0 The Corporation will issue invoices for the amount borrowed less the total amount of:
 - a) Grants received under Section 85 of the Act;
 - b) Moneys paid under subsection 61(3) of the Act;
- 4.0 A special rate sufficient to redeem the total cost of the drainage works shall be levied upon the lands and roads, as noted on Schedule "A" attached hereto, to be collected.
- 5.0 All assessments will be payable as per the payment terms established by the municipality.
- 6.0 This by-law shall come into full force and effect upon final passage.
- 7.0 This by-law may be cited as the "Emerson Municipal Drain, 2020 By-Law".

Read a First and Second time and Provisionally Adopted this 14th day of September, 2020.

Don Murray, Deputy-Mayor

Emily Dance, Clerk

Read a Third time and Enacted this day of , 20.

Mitch Twolan, Mayor

Emily Dance, Clerk

**Emerson Municipal Drain 2020
Township of Huron-Kinloss
(Former Township of Huron)**



DIETRICH ENGINEERING LIMITED
CONSULTING ENGINEERS

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DIETRICH ENGINEERING LIMITED
CONSULTING ENGINEERS

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Kitchener, Ontario

March 27, 2020

**Emerson Municipal Drain 2020
Township of Huron-Kinloss
(Former Township of Huron)**

To the Mayor and Council
of the Township of Huron-Kinloss

Members of Council:

1.0 Introduction

We are pleased to present our report on the “Emerson Municipal Drain 2020”, serving parts of the following Lots and Concessions in the Township of Huron-Kinloss, Bruce County:

Lots 1 to 9, Concession 10, Former Township of Huron,
Lots 1 to 12, Concession 11, Former Township of Huron,
Lots 1 to 8, Concession 12, Former Township of Huron,
Lots 1 to 5, Concession 10 to 12, Former Township of Kinloss, and
Lots 1 to 6, Range 3 S.D.R, Former Township of Kinloss

The attached Plan, Profiles, Details and Cross Sections; Drawing No.'s 1 to 11 Reference No. 0921, Specifications and the Instructions to Tenderers form part of this report. They show and describe in detail the location and extent of the work to be done and the lands which are affected.

2.0 Authorization

Authority to prepare this report was obtained by a resolution of the Township of Huron-Kinloss Council at its March 16th, 2009 meeting to appoint Dietrich Engineering Limited to prepare an Engineer's Report.

In accordance with your instructions pursuant to a petition received by Council under Section 4 of the Drainage Act, R.S.O. 1990, we have made an examination and survey of the affected area and submit herewith our Report which includes Plan, Profiles and Specifications for this work.

The area requiring drainage is parts of Lots 3 to 6, Concessions 10 and parts of Lots 5 and 6 in Concession 11, in the Former Township of Huron. The petition is valid in accordance with Section 4(1)(a) of the Drainage Act, R.S.O. 1990.

3.0 History

3.1 Emerson Municipal Drain (1952)

The Emerson Municipal Drain was originally constructed under the authority of a report prepared by James A. Howes, OLS, dated July 18, 1952. This report provided for the construction of an open ditch system from Lot 2, Concession 11 (Former Township of Kinloss) to Lot 1, Concession 11 (Former Township of Huron).

3.2 Emerson Municipal Drain Extension (1967)

The Emerson Municipal Drain was later extended upstream under the authority of a report prepared by H.M. Gibson Ltd., dated September 30, 1967. This report also provided for the construction of 23 branch tile drainage systems located between Lots 2 to 5, Concessions 10 to 12 in the Former Township of Kinloss.

3.3 Emerson Municipal Drain Extension (1968)

The Emerson Municipal Drain was extended downstream under the authority of a report prepared by H.M. Gibson Ltd., dated December 30, 1968. The report provided for the construction of an open ditch on Lots 1 and 2 Concession 11, Former Township of Huron, and the installation of a tile drainage system on Lot 1, Concession 11, Former Township of Kinloss.

3.4 Emerson Municipal Drain Extension (1975)

The Emerson Municipal Drain was further extended downstream under the authority of a report prepared by H.M. Gibson Ltd., dated May 1, 1975. This report provided for the excavation of approximately 853 metres of open ditch on Lots 10 and 11, Concession 11, in the Former Township of Huron.

The outlet for the Emerson Municipal Drain is the North Branch of the Pine River.

4.0 On-Site Meeting

In accordance with Section 9(1) of the Drainage Act, R.S.O. 1990, an on-site meeting was held on April 21, 2009. Persons in attendance were:

Greg Nancekivell, C.E.T.	Dietrich Engineering Limited
Kim Lefebvre	Saugeen Valley Conservation Authority – Regulations Officer
Dana Boyter	Department of Fisheries and Oceans – Fish Habitat Biologist

Landowners Included:

Eli Stauffer	Paul Murray
Robert Emerson	Roy Collins

5.0 Information Meeting

An information meeting was held on Tuesday June 25, 2019 at the Township of Huron-Kinloss Municipal Office. Persons in attendance were:

Stephen Brickman, P.Eng.	Dietrich Engineering Limited
Greg Nancekivell, C.E.T.	Dietrich Engineering Limited

Paul Elston, P.Eng.	Saugeen Valley Conservation Authority – Regulations Officer
Don Murray	Township of Huron Kinloss – Council Representative
Grant Collins	Township of Huron Kinloss – Drainage Superintendent
Emily Dance	Township of Huron-Kinloss – Clerk
Kelly Lush	Township of Huron-Kinloss – Deputy Clerk/Administrative Assistant
Kaitlin Bos	Township of Huron-Kinloss

Landowners Included:

David Hoover	Dianne Simpson	Levi Weber
Alvin Gingrich	Roy Collins	Owen Bauman
David Gingrich	Brian Reid	Terry Zinn
Edwin Bauman	Don Reid	Jim McFarlan
Elmer Knorr	Eli Stauffer	John Wagler

The information provided proposed selective clearing and clean out of the Emerson Municipal Drain from Lot 3 to Lot 10, Concession 11, Township of Huron-Kinloss, (Former Township of Huron) and five crossing replacements. This meeting provided a review of the design of the proposed drainage system, the estimated costs of the project and proposed preliminary assessments.

6.0 Additional Discussions

Subsequent to the information meeting, Dietrich Engineering Limited reached out to Landowners who needed new crossings but were not present at the information meeting. As a result the following modifications were made:

1. The crossings on the Paul Murray, McIlhargey Millwriting Inc., and Roy Collins properties will be removed, and not replaced. Loss of Access Allowances are provided to compensate the Landowner for constructing a crossing privately, in lieu of receiving a new crossing under the Drainage Act R.S.O. 1990.
2. Additionally, the existing crossing on the David Collins property (Roll No. 3-089) will remain in place and shall remain private. When the replacement of this crossing is necessary a 2000mm diameter CSP culvert is recommended.

7.0 Findings

We have made an examination of the drainage area and have found the following:

1. Just over five kilometers of open channel between the outlet for the Emerson Drain 1968 and the upper end of the Emerson Drain 1975 is not a municipal drain.
2. Significant portions of the Emerson Drain have large, well vegetated riparian flood plains with a meandering low flow channel.
3. Portions of the Emerson Drain are not of sufficient depth to drain the surrounding and upstream lands within the watershed at today's standards of drainage.
4. Many existing crossings are in a poor state of repair and are not of sufficient capacity nor depth to convey flows at today's standards of drainage.
5. Segments of the drain are partially blocked with woody debris.

8.0 Recommendations

It is our recommendation that:

1. Portions of the existing municipal drain be cleaned out for a cumulative distance of approximately 3,483 metres (non-consecutive).
2. Areas where bank failure has occurred shall be reconstructed by reshaping the bank slope and establishing new vegetation armored with rip-rap.
3. A total of three private crossings be removed, one private crossing be removed and reconstructed and one road crossing be replaced.
4. Any future crossings constructed privately shall be reviewed and commented on by the Township prior to construction.
5. This new drainage system shall be known as the “Emerson Municipal Drain 2020”.

9.0 Environmental Considerations

The work proposed under this report includes the construction and maintenance of silt traps in locations downstream of expected excavation.

The proposed drainage system is designed to minimize the impacts on fish and fish habitat both during construction and after construction. Large segments of untouched channel and riparian vegetation distributed at various locations throughout the length of the entire system will allow for fish refuge during construction. Existing stream meanders are to be left in place. Construction timing will abide with DFO timing restrictions, and work shall be phased over a two-year period to minimize the instantaneous impacts of construction.

The Ontario Ministry of Agriculture, Food and Rural Affairs’ Agricultural Information Atlas indicates that the Department of Fisheries and Oceans (DFO) has not rated this drainage ditch. A review of the works proposed in this report was required by DFO to assess if an authorization is required. DFO provided correspondence dated October 8, 2019 which states the following:

“... the [Fisheries Protection] Program is of the view that your proposal will not require an authorization under the Fisheries Act or the Species at Risk Act.”

The Saugeen Valley Conservation Authority (SVCA) has been provided with details of the proposed work and has indicated that the SVCA holds no objections, with the exception of potential disposal sites for excavated material. SVCA approval of disposal locations is required. The SVCA requires a permit to Alter a Watercourse.

10.0 Summary of Proposed Works

The proposed work consists of:

1. Approximately 3,483 metres of non-consecutive open ditch excavation;
2. Construction of one low-level crossings (Sta. 0+774)
3. The removal of three existing private crossings (Sta. 2+880, Sta. 4+438, Sta. 5+362); and
4. The installation of one unopened road allowance crossing (Sta. 0+609)

11.0 Working Area and Access

Each landowner on whose property the drainage work is to be constructed shall designate access to and from the working area.

The working area shall be a width of 12 metres for construction purposes, and a width of 10 metres for maintenance purposes on the side of the drain where excavated material is to be loaded.

12.0 Watershed and Soils Characteristics

The watershed was established through analysis of tile drainage maps, previous engineer's reports, field investigations, surveys, and data analysis of the Southwestern Ontario Orthophotographic Project (SWOOP).

The Drainage Area comprises of approximately 1,450 hectares. Land use within the watershed is primarily agricultural with some bush and wetland areas.

The Ontario Ministry of Agriculture, Food and Rural Affairs' Agricultural Information Atlas describes the soil types within the watershed and along the route of the drain as approximately 50% Clay Loam and 50% Silt Loam.

13.0 Allowances

In accordance with Sections 29, 30 and 33 of the Drainage Act, R.S.O. 1990, we have calculated Allowances payable to Landowners using the following methodology.

13.1 Allowances for Right-of-Way (Section 29)

The land values used for calculating allowances for Right-of-Way was \$30,000/ha for agricultural areas, and \$12,000/ha for bush areas.

The allowances for Right-of-Way under Section 29 of the Drainage Act, R.S.O. 1990 were calculated based on 100% of the land value for the average proposed top width of the open ditch for segments of the drain that are not currently municipal. Right-of-way allowances are also provided for a ten metre working width for future maintenance purposes based on 25% of the land value.

Allowances for Right-of-Way were not provided in the previous Engineers' Reports for the future maintenance corridor, which authorized the construction of the existing Emerson Municipal Drain.

13.2 Allowances for Damages to Lands and Crops (Section 30)

Allowances for Damages to Lands and Crops under Section 30 of the Drainage Act, R.S.O. 1990 were primarily calculated to compensate landowners for crop losses, bush losses and land damages due to the construction of the drain, including access to the working corridor.

Damage allowances have been calculated based on \$4,000/ha for agricultural damages and \$2000/ha for bush damages.

13.3 Allowances for Loss of Access (Section 33)

Several Landowners who were to receive new drain crossings in our original proposal that was presented at the Information Meeting, have indicated that a Loss of Access Allowance is more suitable to their needs. Allowances for Loss of Access were calculated based on the estimated costs to construct a new crossing.

We determined the allowances payable to Landowners entitled thereto as shown in Schedule A.

Total Allowances, under Sections 29, 30 and 33 of the Drainage Act, R.S.O. 1990;

Emerson Municipal Drain 2020: **\$149,450**

14.0 Estimated Construction Costs

We have made an estimate of the cost of the proposed work based on labour, equipment and materials. A detailed description of the costs involved can be found in Schedule B of this report.

Total Estimated Construction Costs **\$ 281,800**

15.0 Summary of Estimated Project Costs

The total estimated project costs are as follows:

Allowances under Sections 29, 30 and 33 of the Drainage Act, R.S.O. 1990 (Refer to Schedule A)	\$ 149,450
Total Estimated Construction Costs (Refer to Schedule B)	\$ 281,800
Meetings, survey, design, preparation of preliminary cost estimates, preparation of final drainage report, consideration of report	\$ 103,000
Consultation with Environmental Agencies & Permitting Fees	\$ 12,000
Preparation of contract documents, contract administration, supervision and inspection of construction	\$ 41,600
Contingencies, Interest and net H.S.T.	<u>\$ 27,050</u>
TOTAL ESTIMATED PROJECT COSTS – EMERSON MUNICIPAL DRAIN 2020	<u>\$ 614,900</u>

The estimated cost of the work in the Township of Huron-Kinloss is \$614,900.00.

The above costs are estimates only. The final costs of construction, engineering and administration cannot be determined until construction is complete. The above cost estimate does not include costs associated with defending the drainage report should appeals be filed with the Court of Revision, Drainage Tribunal and/or Drainage Referee.

16.0 Assessment

We assess the cost of this work against the lands and roads liable for assessment for benefit and outlet as shown in the annexed Schedule C - Assessment for Construction. We have determined that there is no injuring liability assessment involved.

16.1 Special Assessments (Section 26)

Whether or not the Township of Huron-Kinloss elects to do the work on their property, Sta. 0+599 to Sta. 0+619, (Side Road 10 - unopened), they shall be assessed the actual increased costs to the drainage works due to the construction and operation of the road as a Special Assessment in addition to any benefit and outlet assessments. The Special Assessment shall be made up of the actual construction costs plus an allowance for administration costs.

16.2 Grant Eligibility of Hauling Excess Excavated Material Offsite

In accordance with Policy No. 2.3.j) of the Agriculture Drainage Infrastructure Program (ADIP) we have conducted a cost comparison between the estimated costs of levelling excavated material onsite with the estimated costs of hauling excess material offsite.

We have estimated the cost of onsite disposal of excavated material to be approximately \$89,000 based on additional tree removal, topsoil stripping and levelling required. Hauling of excess excavated material is estimated to be approximately \$60,000. Since there are no increased costs associated with hauling of excess material, hauling costs are eligible for ADIP grants.

16.3 Grant Eligibility of Allowances under Section 33 – Loss of Access

In accordance with Policy No. 2.4.e) of the Agriculture Drainage Infrastructure Program (ADIP), we have determined that the Allowances for Loss of Access under Section 33 of the Drainage Act are not eligible for grant.

17.0 Maintenance

After completion, this drain shall be maintained by the Township of Huron-Kinloss at the expense of all the lands and roads assessed in the attached Schedule D - Assessment for Maintenance and in the same relative proportions until such time as the assessment is changed under the Drainage Act, except for those portions of the drain constructed within road right-of-ways. These portions of the drain shall be maintained at the expense of the road authority having jurisdiction over said road.

Respectfully submitted,

DIETRICH ENGINEERING LIMITED



Stephen Brickman, P.Eng.

Project Engineer/Manager

SB:sm



Greg Nancekivell, C.E.T.

Project Manager

GN:sm



Schedule A - Allowances

Lot or Part	Con.	Landowner	Roll No.	Right-of-Way (Section 29)	Damages to Lands and Crops (Section 30)	Loss of Access (Section 33)	Total Allowances
<u>Emerson Municipal Drain</u>							
<u>Former Township of Huron</u>							
5	10	Wayne Lowry Construction Ltd.	3-047	\$1,570	\$580		\$2,150
Pt. 6	10	B. & M. Scott	3-050	\$9,080	\$2,050		\$11,130
Pt. 6	10	A. MacDonald & L. McCulloch	3-050-20	\$1,230	\$880		\$2,110
1	11	L. & K. Reid	3-087	\$3,370	\$100		\$3,470
Pt. 2	11	E. & E. Knorr	3-088	\$790	\$600		\$1,390
Pt. 2 & 3	11	D. & I. Collins	3-089	\$10,970	\$2,620		\$13,590
Pt. 4	11	R. & M. Collins	3-090	\$8,690	\$2,980	\$22,500	\$34,170
Pt. 5	11	Mcilhargey Millwriting Inc.	3-091	\$7,420	\$2,620	\$22,500	\$32,540
Pt. 6	11	B. & M. Scott	3-094	\$4,000	\$680		\$4,680
7 & 8	11	P. & C. Murray	3-095	\$11,160	\$1,860	\$22,500	\$35,520
9	11	P. Schlegel	3-096	\$5,710			\$5,710
10	11	P. Schlegel	3-097	\$730	\$460		\$1,190
11	11	D. & D. Simpson	3-098	\$1,800			\$1,800
Total Allowances,							
Emerson Municipal Drain 2020				\$66,520	\$15,430	\$67,500	\$149,450

The report prepared by H.M. Gibson Ltd. dated December 30, 1968 provided Right-of-Way allowances for the top width of the ditch from Sta. 0+100 to Sta. 1+160.

The report prepared by H.M. Gibson Ltd. dated May 1, 1975 provided Right-of-Way allowances for the top width of the ditch from Sta. 6+650 to Sta. 7+405.

Schedule B - Estimated Construction Costs

The estimated construction costs for the outlined proposed work below is as follows:

Description	Estimated Quantity	\$/Unit	Total
A) Emerson Drain			
1 Clearing, brushing and mulching			
Sta. 0+750 to Sta. 0+900	150 m	\$18.00	\$2,700.00
Sta. 2+300 to Sta. 2+700	400 m	\$25.00	\$10,000.00
Sta. 2+850 to Sta. 3+000	150 m	\$25.00	\$3,750.00
Sta. 3+250 to Sta. 3+675	425 m	\$25.00	\$10,625.00
Sta. 3+675 to Sta. 4+825	1,150 m	\$10.00	\$11,500.00
Sta. 4+942 to Sta. 6+150	1,208 m	\$8.00	\$9,664.00
Sub-Total	3,483 m		\$48,239.00
2 Open ditch excavation			
Sta. 0+750 to Sta. 0+900	150 m	\$10.00	\$1,500.00
Sta. 2+300 to Sta. 2+700	400 m	\$15.00	\$6,000.00
Sta. 2+850 to Sta. 3+000	150 m	\$10.00	\$1,500.00
Sta. 3+250 to Sta. 4+825	1,575 m	\$12.00	\$18,900.00
Sta. 4+942 to Sta. 6+150	1,208 m	\$12.00	\$14,496.00
Sub-Total	3,483 m		\$42,396.00
3 Loading and hauling of excavated material offsite	5,000 m ³	\$12.00	\$60,000.00
4 Hydroseed disturbed side slopes	7,000 m ²	\$4.00	\$28,000.00
5 Fill in eroded areas and place quarry stone rip-rap protection and geotextile filter material (miscellaneous locations)	500 m ²	\$40.00	\$20,000.00
6 Construction of low level crossing including dewatering, granular base preparation and the installation of approximately 210m2 of IECS CC-45 articulating concrete block mats			
Sta. 0+774	210 m2	\$90.00	\$18,900.00
7 Removal and offsite disposal of existing crossing			
Sta. 2+880	I.s.		\$2,000.00
8 Removal and offsite disposal of existing crossing			
Sta. 4+438	I.s.		\$2,000.00
9 Removal and offsite disposal of existing crossing			
Sta. 5+362	I.s.		\$2,000.00
Sub-Total			\$223,535.00



Description	Estimated Quantity	\$/Unit	Total
10 Work to be done on the Township of Huron-Kinloss Road Allowance, Sideroad 10 South (Unopened Road Allowance) (Sta. 0+599 to Sta. 0+619)			
a) Supply 2-2000mm diameter, 3.5mm thickness (Type II Aluminized coating) corrugated metal pipe roadway culverts (125mm X 25mm corrugations) (18m length)	36 m	\$800.00	\$28,800.00
Installation of 2-2000mm diameter roadway culverts at Sta. 0+609 complete with quarry stone rip-rap protection and geotextile filter material (35m ²) and including the removal and offsite disposal of existing crossing	l.s.		\$19,965.00
b) Supply and placement of 150mm thickness of granular 'A' surface treatment including elevating road driving surface north of crossing (approx. 60m length) (approx. 90 m ³)	l.s.		\$9,500.00
Sub-Total			\$58,265.00
TOTAL ESTIMATED CONSTRUCTION COSTS EMERSON MUNICIPAL DRAIN 2020			\$281,800.00



Schedule C - Assessment For Construction

TOTAL ASSESSMENT												
Lot or Part	Con.	Approx. Hectares	Affected Landowner	Roll No.	Benefit (Sec. 22)	Outlet Liability (Sec. 23)	Special Benefit (Sec. 24)	Special Assessment (Sec. 26)	Total Assessment	Less 1/3 ADIP Grant	Less Allowances	Net Assessment
Township of Huron-Kinloss (Former Township of Huron)												
Pt. 1	10	23.4	D. & J. Beishuizen	3-044		\$4,862			\$4,862	\$1,621		\$3,241
2	10	20.2	R. & A. McCosh	3-045		\$4,103			\$4,103	\$1,368		\$2,735
3	10	23.1	Wayne Lowry Const. Ltd.	3-046	\$1,000	\$4,811			\$5,811	\$1,937		\$3,874
Pt. 4 & 5	10	42.2	Wayne Lowry Const. Ltd.	3-047	\$18,000	\$6,803			\$24,803	\$8,268	\$2,150	\$14,385
Pt. 6 & Ept. 7	10	18.7	B. & M. Scott	3-050	\$30,000	\$2,117			\$32,117	\$10,706	\$11,130	\$10,281
* Pt. 6	10	1.1	A. MacDonald & L. McCulloch	3-050-20	\$2,000	\$139			\$2,139		\$2,110	\$29
Wpt. 7 & 8	10	13.4	193422 Ontario Ltd.	3-053		\$877			\$877	\$292		\$585
Ept. 9	10	6.9	P. Schlegel	3-054		\$168			\$168	\$56		\$112
Wpt. 9	10	1.1	P. Schlegel	3-056		\$32			\$32	\$11		\$21
1	11	40.5	L. & K. Reid	3-087	\$2,500	\$8,998			\$11,498	\$3,833	\$3,470	\$4,195
Ept. 2	11	20.2	E. & E. Knorr	3-088	\$1,500	\$4,365			\$5,865	\$1,955	\$1,390	\$2,520
Wpt. 2 & 3	11	60.7	D. & I. Collins	3-089	\$38,000	\$11,300			\$49,300	\$16,433	\$13,590	\$19,277
Pt. 4	11	38.3	R. & M. Collins	3-090	\$41,000	\$5,161	\$8,200		\$54,361	\$15,387	\$34,170	\$4,804
* Pt. 4	11	2.0	R. McCosh	3-090-01		\$192			\$192			\$192
Pt. 5	11	40.3	McIlhargey Millwrighting Inc.	3-091	\$36,000	\$4,600	\$8,200		\$48,800	\$13,533	\$32,540	\$2,727



Schedule C - Assessment For Construction

TOTAL ASSESSMENT												
Lot or Part	Con.	Approx. Hectares Affected	Landowner	Roll No.	Benefit (Sec. 22)	Outlet Liability (Sec. 23)	Special Benefit (Sec. 24)	Special Assessment (Sec. 26)	Total Assessment	Less 1/3 ADIP Grant	Less Allowances	Net Assessment
* Spt. 5	11	0.2	Purple Grove Community Centre	3-092		\$20			\$20			\$20
Pt. 6	11	20.1	P. Schlegel	3-093		\$1,909			\$1,909	\$636		\$1,273
* Pt. 6	11	0.1	McIlhargey Millwrighting Inc.	3-093-01		\$10			\$10			\$10
Spt. 6	11	20.2	B. & M. Scott	3-094	\$16,000	\$1,999			\$17,999	\$6,000	\$4,680	\$7,319
7 & 8	11	80.1	P. & C. Murray	3-095	\$43,000	\$5,323	\$8,200		\$56,523	\$16,108	\$35,520	\$4,895
9	11	36.0	P. Schlegel	3-096	\$4,000	\$1,339			\$5,339	\$1,780	\$5,710	-\$2,151
10	11	39.3	P. Schlegel	3-097	\$6,000	\$1,054	\$9,000		\$16,054	\$5,351	\$1,190	\$9,513
11	11	8.9	D. & D. Simpson	3-098	\$2,000	\$54			\$2,054	\$685	\$1,800	-\$431
1	12	39.7	D. & B. Hoover	3-166		\$8,348			\$8,348	\$2,783		\$5,565
2	12	32.9	M. & M. Brubacher	3-167		\$7,205			\$7,205	\$2,402		\$4,803
Spt. 3	12	30.4	J. Murray	3-125		\$4,745			\$4,745	\$1,582		\$3,163
Npt. 3	12	8.3	967329 Ontario Ltd.	3-168		\$739			\$739	\$246		\$493
4	12	50.4	B. & J. Reid	3-169		\$3,045			\$3,045	\$1,015		\$2,030
Spt. 5	12	20.2	2217608 Ontario Ltd.	3-126		\$1,199			\$1,199	\$400		\$799
Npt. 5	12	12.2	J. & L. McIlhargey	3-170		\$557			\$557	\$186		\$371
Spts. 6 & 7	12	40.5	R. & T. Thompson	3-127		\$2,107			\$2,107	\$702		\$1,405
Pt. 6	12	8.6	967329 Ontario Ltd.	3-127-10		\$423			\$423	\$141		\$282
Npt. 7	12	6.6	D. Reid	3-172		\$227			\$227	\$76		\$151
Spt. 8	12	6.3	967329 Ontario Ltd.	3-128		\$308			\$308	\$103		\$205
* Spt. 8	12	0.7	J. Maschke	3-128-02		\$43			\$43			\$43



Schedule C - Assessment For Construction

TOTAL ASSESSMENT												
Lot or Part	Con.	Approx. Hectares Affected	Landowner	Roll No.	Benefit (Sec. 22)	Outlet Liability (Sec. 23)	Special Benefit (Sec. 24)	Special Assessment (Sec. 26)	Total Assessment	Less 1/3 ADIP Grant	Less Allowances	Net Assessment
Township of Huron-Kinloss (Former Township of Kinloss)												
1, 2 & 3	10	73.2	R. & J. Sohn	3-030		\$15,669			\$15,669	\$5,223		\$10,446
4	10	22.3	G. Rhody	3-034		\$4,873			\$4,873	\$1,624		\$3,249
5	10	5.9	A. Martin	3-035		\$1,377			\$1,377	\$459		\$918
1	11	40.5	McLeod Well Drilling Ltd.	3-057		\$8,812			\$8,812	\$2,937		\$5,875
2 & Wpt. 3	11	59.8	J. & M. Wagler	3-058		\$13,140			\$13,140	\$4,380		\$8,760
* Pt. 3	11	0.9	Kinloss Mennonite Church	3-058-10		\$219			\$219			\$219
Pt. 4 & Pt. 5	11	48.8	A. & L. Brubacher	3-059		\$11,145			\$11,145	\$3,715		\$7,430
Ept. 3 & Pt. 4	11	42.6	D. & E. Gingrich	3-060		\$9,849			\$9,849	\$3,283		\$6,566
Pt. 1	12	8.7	S. & M. Knorr	3-093		\$1,251			\$1,251	\$417		\$834
Pt. 1	12	53.1	E. & M. Bauman	3-094		\$11,261			\$11,261	\$3,754		\$7,507
2	12	61.9	M. & M. Martin	3-095		\$12,593			\$12,593	\$4,198		\$8,395
Pt. 3	12	59.4	Zinn Farms Ltd.	3-096		\$13,943			\$13,943	\$4,648		\$9,295
* Pt. 3	12	1.3	O. & E. Bauman	3-097		\$320			\$320			\$320
Spt. 4	12	40.5	E. & M. Bauman	3-098		\$9,450			\$9,450	\$3,150		\$6,300
Spt. 5	12	18.7	J. Mc Farlan	3-099		\$4,303			\$4,303	\$1,434		\$2,869
Npts. 4 & 5	12	12.5	J. Mc Farlan	3-100		\$2,616			\$2,616	\$872		\$1,744



Schedule C - Assessment For Construction

TOTAL ASSESSMENT											
Lot or Part	Con.	Approx. Hectares Affected	Landowner	Roll No.	Benefit (Sec. 22)	Outlet Liability (Sec. 23)	Special Benefit (Sec. 24)	Special Assessment (Sec. 26)	Total Assessment	Less 1/3 ADIP Grant	Net Assessment
1	3 SDR	2.0	J. Armstrong	3-144		\$486			\$486	\$162	\$324
2 & 3	3 SDR	16.2	E. & E. Stauffer	3-145		\$3,014			\$3,014	\$1,005	\$2,009
4 & 5	3 SDR	28.7	E. Brubacher	3-148		\$6,604			\$6,604	\$2,201	\$4,403
6	3 SDR	15.4	S. Brubacher	3-149		\$3,567			\$3,567	\$1,189	\$2,378
Total Assessment on Lands					\$241,000	\$233,674	\$33,600		\$508,274	\$160,247	\$198,577
Huron-Kinloss Township						\$4,313			\$4,313		\$4,313
Sideroad 5					\$11,000	\$1,191			\$12,191		\$12,191
Sideroad 10 South (unopened)					\$1,000	\$20		\$82,700	\$83,720		\$83,720
Concession Road 12						\$3,315			\$3,315		\$3,315
Hayes Lake Ave.						\$2,656			\$2,656		\$2,656
Guest Ave (unopened)						\$431			\$431		\$431
Total Assessment on Roads					\$12,000	\$11,926	\$82,700		\$106,626		\$106,626
Total Assessment on Lands and Roads,											
Emerson Municipal Drain 2019					\$253,000	\$245,600	\$33,600	\$82,700	\$614,900	\$160,247	\$305,203

NOTES:

1. The NET ASSESSMENT is the total estimated assessment less a one-third (1/3) Provincial grant, and allowances, if applicable.
2. The NET ASSESSMENT is provided for information purposes only.
3. * Denotes lands not eligible for ADIP grants.

Schedule D - Assessment For Maintenance

Lot or Part	Con.	Landowner	Roll No.	Approx. Hectares Affected	Portion of Maintenance Cost
<u>Open Ditch Work</u>					
<u>Township of Huron-Kinloss (Former Township of Huron)</u>					
Pt. 1	10	D. & J. Beishuizen	3-044	23.4	1.99%
2	10	R. & A. McCosh	3-045	20.2	1.60%
3	10	Wayne Lowry Const. Ltd.	3-046	23.1	1.85%
Pt. 4 & 5	10	Wayne Lowry Const. Ltd.	3-047	42.3	2.59%
Pt. 6 & Ept. 7	10	B. & M. Scott	3-050	18.7	0.93%
* Pt. 6	10	A. MacDonald & L. McCulloch	3-050-20	1.1	0.06%
Wpt. 7 & 8	10	193422 Ontario Ltd.	3-053	13.4	0.39%
Ept. 9	10	P. Schlegel	3-054	6.9	0.07%
Wpt. 9	10	P. Schlegel	3-056	1.1	0.01%
1	11	L. & K. Reid	3-087	40.5	3.59%
Ept. 2	11	E. & E. Knorr	3-088	20.2	1.73%
Wpt. 2 & 3	11	D. & I. Collins	3-089	60.7	4.38%
Pt. 4	11	R. & M. Collins	3-090	38.3	1.97%
* Pt. 4	11	R. Mc Cosh	3-090-01	2.0	0.08%
Pt. 5	11	Mcllhargey Millwrighting Inc.	3-091	40.3	1.88%
* Spt. 5	11	Purple Grove Community Centre	3-092	0.2	0.01%
Pt. 6	11	P. Schlegel	3-093	20.2	0.78%
* Pt. 6	11	Mcllhargey Millwrighting Inc.	3-093-01	0.1	0.01%
Spt. 6	11	B. & M. Scott	3-094	20.2	0.84%
7 & 8	11	P. & C. Murray	3-095	80.1	2.31%
9	11	P. Schlegel	3-096	36.0	0.57%
10	11	P. Schlegel	3-097	39.3	0.39%
11	11	D. & D. Simpson	3-098	8.9	0.03%
1	12	D. & B. Hoover	3-166	39.7	3.31%
2	12	M. & M. Brubacher	3-167	32.9	2.85%
Spt. 3	12	J. Murray	3-125	30.4	1.89%
Npt. 3	12	967329 Ontario Ltd.	3-168	8.3	0.31%
4	12	B. & J. Reid	3-169	50.4	1.30%
Spt. 5	12	2217608 Ontario Ltd.	3-126	20.2	0.51%
Npt. 5	12	J. & L. Mcllhargey	3-170	12.2	0.25%

Schedule D - Assessment For Maintenance

Lot or Part	Con.	Landowner	Roll No.	Approx. Hectares Affected	Portion of Maintenance Cost
Spts. 6 & 7	12	R. & T. Thompson	3-127	40.5	0.93%
Pt. 6	12	967329 Ontario Ltd.	3-127-10	8.6	0.19%
Npt. 7	12	D. Reid	3-172	6.6	0.10%
Spt. 8	12	967329 Ontario Ltd.	3-128	6.3	0.14%
* Spt. 8	12	J. Maschke	3-128-02	0.7	0.02%
<u>Township of Huron-Kinloss (Former Township of Kinloss)</u>					
1, 2 & 3	10	R. & J. Sohn	3-030	73.2	6.46%
4	10	G. Rhody	3-034	22.3	2.01%
5	10	A. Martin	3-035	5.9	0.57%
1	11	Mcleod Well Drilling Ltd.	3-057	40.5	3.63%
2 & Wpt. 3	11	J. & M. Wagler	3-058	59.8	5.41%
* Pt. 3	11	Kinloss Mennonite Church	3-058-10	0.9	0.09%
Pt. 4 & Pt. 5	11	A. & L. Brubacher	3-059	48.8	4.59%
Ept. 3 & Pt. 4	11	D. & E. Gingrich	3-060	42.6	4.06%
Pt. 1	12	S. & M. Knorr	3-093	8.7	0.52%
Pt. 1	12	E. & M. Bauman	3-094	53.1	4.52%
2	12	M. & M. Martin	3-095	61.9	5.19%
Pt. 3	12	Zinn Farms Ltd.	3-096	59.4	5.74%
* Pt. 3	12	O. & E. Bauman	3-097	1.3	0.13%
Spt. 4	12	E. & M. Bauman	3-098	40.5	3.89%
Spt. 5	12	J. Mc Farlan	3-099	18.7	1.77%
Npts. 4 & 5	12	J. Mc Farlan	3-100	12.5	1.08%
1	3 SDR	J. Armstrong	3-144	2.0	0.20%
2 & 3	3 SDR	E. & E. Stauffer	3-145	16.2	1.24%
4 & 5	3 SDR	E. Brubacher	3-148	28.7	2.72%
6	3 SDR	S. Brubacher	3-149	15.4	1.47%
Total Assessment on Lands					95.15%
Huron-Kinloss Townline	Township of Huron-Kinloss			6.2	1.74%
Sideroad 5	Township of Huron-Kinloss			4.3	0.51%
Sideroad 10 South (unopened)	Township of Huron-Kinloss			1.4	0.01%

Schedule D - Assessment For Maintenance

Lot or Part	Con.	Landowner	Roll No.	Approx. Hectares Affected	Portion of Maintenance Cost
Concession Road 12		Township of Huron-Kinloss		6.6	1.33%
Hayes Lake Ave.		Township of Huron-Kinloss		3.7	1.09%
Guest Ave (unopened)		Township of Huron-Kinloss		2.5	0.17%
Total Assessment on Roads					4.85%
Total Assessment on Lands and Roads, Emerson Municipal Drain 2019 (Open Ditch Work)					100.00%

NOTE: 1. * Denotes lands not eligible for ADIP grants.

Schedule D - Assessment For Maintenance

Lot or Part	Con.	Landowner	Roll No.	Approx. Hectares Affected	Portion of Maintenance Cost
<u>P. Schlegel Crossing (Sta. 0+787)</u>					
<u>Township of Huron-Kinloss (Former Township of Huron)</u>					
Pt. 1	10	D. & J. Beishuizen	3-044	23.4	0.97%
2	10	R. & A. McCosh	3-045	20.2	0.90%
3	10	Wayne Lowry Const. Ltd.	3-046	23.1	1.09%
Pt. 4 & 5	10	Wayne Lowry Const. Ltd.	3-047	42.2	2.00%
Pt. 6 & Ept. 7	10	B. & M. Scott	3-050	18.7	0.88%
* Pt. 6	10	A. MacDonald & L. McCulloch	3-050-20	1.1	0.05%
Wpt. 7 & 8	10	193422 Ontario Ltd.	3-053	13.4	0.63%
Ept. 9	10	P. Schlegel	3-054	6.9	0.20%
Wpt. 9	10	P. Schlegel	3-056	1.1	0.04%
1	11	L. & K. Reid	3-087	40.5	1.90%
Ept. 2	11	E. & E. Knorr	3-088	20.2	0.93%
Wpt. 2 & 3	11	D. & I. Collins	3-089	60.7	2.65%
Pt. 4	11	R. & M. Collins	3-090	38.3	1.77%
* Pt. 4	11	R. Mc Cosh	3-090-01	2	0.09%
Pt. 5	11	McIlhargey Millwrighting Inc.	3-091	40.3	1.90%
* Spt. 5	11	Purple Grove Community Centre	3-092	0.2	0.01%
Pt. 6	11	P. Schlegel	3-093	20.1	0.95%
* Pt. 6	11	McIlhargey Millwrighting Inc.	3-093-01	0.1	0.01%
Spt. 6	11	B. & M. Scott	3-094	20.2	0.93%
7 & 8	11	P. & C. Murray	3-095	80.1	3.46%
9	11	P. Schlegel	3-096	36	1.48%
10	11	P. Schlegel	3-097	32.1	35.42%
1	12	D. & B. Hoover	3-166	39.7	1.78%
2	12	M. & M. Brubacher	3-167	32.9	1.55%
Spt. 3	12	J. Murray	3-125	30.4	1.44%
Npt. 3	12	967329 Ontario Ltd.	3-168	8.3	0.36%
4	12	B. & J. Reid	3-169	50.4	2.29%
Spt. 5	12	2217608 Ontario Ltd.	3-126	20.2	0.92%
Npt. 5	12	J. & L. McIlhargey	3-170	12.2	0.54%
Spts. 6 & 7	12	R. & T. Thompson	3-127	40.5	1.91%

Schedule D - Assessment For Maintenance

Lot or Part	Con.	Landowner	Roll No.	Approx. Hectares Affected	Portion of Maintenance Cost
Pt. 6	12	967329 Ontario Ltd.	3-127-10	8.6	0.41%
Npt. 7	12	D. Reid	3-172	6.6	0.22%
Spt. 8	12	967329 Ontario Ltd.	3-128	6.3	0.30%
Spt. 8	12	J. Maschke	3-128-02	0.7	0.04%
<u>Township of Huron-Kinloss (Former Township of Kinloss)</u>					
1, 2 & 3	10	R. & J. Sohn	3-030	73.2	3.09%
4	10	G. Rhody	3-034	22.3	0.96%
5	10	A. Martin	3-035	5.9	0.27%
1	11	Mcleod Well Drilling Ltd.	3-057	40.5	1.74%
2 & Wpt. 3	11	J. & M. Wagler	3-058	59.8	2.59%
* Pt. 3	11	Kinloss Mennonite Church	3-058-10	0.9	0.04%
Pt. 4 & Pt. 5	11	A. & L. Brubacher	3-059	48.8	2.20%
Ept. 3 & Pt. 4	11	D. & E. Gingrich	3-060	42.6	1.94%
Pt. 1	12	S. & M. Knorr	3-093	8.7	0.24%
Pt. 1	12	E. & M. Bauman	3-094	53.1	2.35%
2	12	M. & M. Martin	3-095	61.9	2.48%
Pt. 3	12	Zinn Farms Ltd.	3-096	59.4	2.75%
* Pt. 3	12	O. & E. Bauman	3-097	1.3	0.06%
Spt. 4	12	E. & M. Bauman	3-098	40.5	1.86%
Spt. 5	12	J. Mc Farlan	3-099	18.7	0.85%
Npts. 4 & 5	12	J. Mc Farlan	3-100	12.5	0.52%
1	3 SDR	J. Armstrong	3-144	2	0.09%
2 & 3	3 SDR	E. & E. Stauffer	3-145	16.2	0.60%
4 & 5	3 SDR	E. Brubacher	3-148	28.7	1.30%
6	3 SDR	S. Brubacher	3-149	15.4	0.70%
Total Assessment on Lands					96.65%

Schedule D - Assessment For Maintenance

Lot or Part	Con.	Landowner	Roll No.	Approx. Hectares Affected	Portion of Maintenance Cost
Huron-Kinloss Townline		Township of Huron-Kinloss			0.88%
Sideroad 5		Township of Huron-Kinloss			0.61%
Concession Road 12		Township of Huron-Kinloss			1.24%
Hayes Lake Ave.		Township of Huron-Kinloss			0.53%
Guest Ave (unopened)		Township of Huron-Kinloss			0.09%
Total Assessment on Roads					3.35%
Total Assessment on Lands and Roads, Emerson Municipal Drain 2019 (P. Schlegel Crossing, Sta. 0+787)					100.00%

NOTE: 1. * Denotes lands not eligible for ADIP grants.

APPENDIX

Fisheries & Oceans Canada – Letter of Advice



Fisheries and Oceans
Canada

Pêches et Océans
Canada

Central & Arctic Region
Fish and Fish Habitat
Protection Program
867 Lakeshore Road
Burlington, ON L7S 1A1

Région du Centre et de l'Arctique
Programme de la protection
du poisson et de son habitat
867 Lakeshore Road
Burlington, ON L7S 1A1

October 8, 2019

Our file *Notre référence*

18-HCAA-00334

Township of Huron-Kinloss
ATTN: Grant Collins
21 Queen St. P.O. Box 130
Ripley, Ontario
NOG 2R0

Subject: Drain Maintenance, Emerson Municipal Drain, Unrated, Township of Huron-Kinloss – Implementation of Measures to Avoid and Mitigate the Potential for Prohibited Effects to Fish and Fish Habitat

Dear Grant Collins:

The Fish and Fish Habitat Protection Program (the Program) of Fisheries and Oceans Canada (DFO) received your proposal on March 23, 2018. We understand that you propose to:

- Maintain an existing drain along 7500 linear m, including bottom clean out, brushing of banks, and reshaping banks.

Our review considered the following information:

- DFO Request for Review received on March 23, 2018;
- Emerson Drain Conceptual Drawing Plan
- Emerson Drain Survey Photo Log
- Email and phone conversations between Stephen Brickman and Steve Cho between June 11, 2018 and September 3, 2019

Your proposal has been reviewed to determine whether it is likely to result in:

- the death of fish by means other than fishing and the harmful alteration, disruption or destruction of fish habitat which are prohibited under subsections 34.4(1) and 35(1) of the *Fisheries Act*;
- effects to listed aquatic species at risk, any part of their critical habitat or the residences of their individuals in a manner which is prohibited under sections 32, 33 and subsection 58(1) of the *Species at Risk Act*.

The aforementioned impacts are prohibited unless authorized under their respective legislation and regulations.

To avoid and mitigate the potential for prohibited effects to fish and fish habitat (as listed above), we recommend implementing the measures outlined in your plan, in addition to the following listed below:

- No in-water works between June 1 – March 31
- Maintain stream meanders
- Construct low flow channel design around Sta. 2+600, 3+200, 4+500, 5+200, and 5+300
- Establish buffer strips where possible
- Project phasing over two years

Provided that you incorporate these measures into your plans, the Program is of the view that your proposal will not require an authorization under the *Fisheries Act* or the *Species at Risk Act*.

Should your plans change or if you have omitted some information in your proposal, further review by the Program may be required. Consult our website (<http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>) or consult with a qualified environmental consultant to determine if further review may be necessary. It remains your responsibility to remain in compliance with the *Fisheries Act*, avoid prohibited effects on listed aquatic species at risk, any part of their critical habitat or the residences of their individuals, and prevent the introduction of non-indigenous species.

It is also your *Duty to Notify* DFO if you have caused, or are about to cause, the death of fish by means other than fishing and/or the harmful alteration, disruption or destruction of fish habitat. Such notifications should be directed to (<http://www.dfo-mpo.gc.ca/pnw-ppe/CONTACT-eng.html>).

Please notify this office at least 10 days before starting your project. A copy of this letter should be kept on site while the work is in progress. It remains your responsibility to meet all other federal, territorial, provincial and municipal requirements that apply to your proposal.

If you have any questions with the content of this letter, please contact Steve Cho at 905-336-6248 or by email at Steve.Cho@dfo-mpo.gc.ca. Please refer to the file number referenced above when corresponding with the Program.

Yours sincerely,



Steve Cho
A/ Senior Biologist

Copy:
Stephen Brickman (sbrickman@dietricheng.com)

**SPECIFICATIONS FOR THE CONSTRUCTION OF
MUNICIPAL DRAINAGE WORKS**

DIVISION A – General Conditions

DIVISION B – Specification for Open Drains

DIVISION H – Special Provisions

DIVISION A – GENERAL CONDITIONS**TABLE OF CONTENTS**

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DIVISION A – GENERAL CONDITIONS

A.1. Scope

The work to be done under this contract consists of supplying all labour, equipment and materials to construct the drainage work as outlined in the Scope of Work, Drawings, General Conditions and other Specifications.

A.2. Tenders

Tenders are to be submitted on a lump sum basis for the complete works or a portion thereof, as instructed by the Municipality. The Scope of Work must be completed and submitted with the Form of Tender and Agreement. A certified cheque is required as Tender Security, payable to the Treasurer of the Municipality.

All certified cheques, except that of the bidder to whom the work is awarded will be returned within ten (10) days after the tender closing. The certified cheque of the bidder to whom the work is awarded will be retained as Contract Security and returned when the Municipality receives a Completion Certificate for the work.

A certified cheque is not required if the Contractor provides an alternate form of Contract Security such as a Performance Bond for 100% of the amount of the Tender or other satisfactory security, if required/permitted by the Municipality. A Performance Bond may also be required to insure maintenance of the work for a period of one (1) year after the date of the Completion Certificate.

A.3. Examinations of Site, Drawings, and Specifications

The Tenderer must examine the premises and site to compare them with the Drawings and Specifications in order to satisfy himself of the existing conditions and extent of the work to be done before submission of his Tender. No allowance shall subsequently be made on behalf of the Contractor by reason of any error on his part. Any estimates of quantities shown or indicated on the Drawings, or elsewhere are provided for the convenience of the Tenderer. Any use made of these quantities by the Tenderer in calculating his Tender shall be done at his own risk. The Tenderer for his own protection should check these quantities for accuracy.

The standard specifications (Divisions B through G) shall be considered complementary and where a project is controlled under one of the Divisions, the remaining Divisions will apply for miscellaneous works.

In case of any inconsistency or conflict between the Drawings and Specifications, the following order of precedence shall apply:

- Direction of the Engineer
- Special Provisions (Division H)
- Scope of Work
- Contract Drawings
- Standard Specifications (Divisions B through G)
- General Conditions (Division A)

A.4. Payment

Progress payments equal to 87±% of the value of work completed and materials incorporated in the work will be made to the Contractor monthly. An additional ten per cent (10±%) will be paid 45 days after the final acceptance by the Engineer, and three per cent (3±%) of the Contract price may be reserved by the Municipality as a maintenance holdback for a one (1) year period from the date of the Completion Certificate. A greater percentage of the Contract price may be reserved by the Municipality for the same one (1) year period if in the opinion of the Engineer, particular conditions of the Contract requires such greater holdback.

After the completion of the work, any part of this reserve may be used to correct defects developed within that time from faulty workmanship and materials, provided that notice shall first be given to the Contractor and that he may promptly make good such defects.

A.5. Contractor's Liability Insurance

Prior to commencement of any work, the Contractor shall file with the Municipality evidence of compliance with all Municipality insurance requirements (Liability Insurance, WSIB, etc.) for no less than the minimum amounts as stated in the Purchasing Procedures of the Municipality. All insurance coverage shall remain in force for the entire contract period including the warranty period which expires one year after the date of the Completion Certificate.

The following are to be named as co-insured:

- Successful Contractor
- Sub-Contractor Municipality
- Dietrich Engineering Ltd.

A.6. Losses Due to Acts of Nature, Etc.

All damage, loss, expense and delay incurred or experienced by the Contractor in the performance of the work, by reason of unanticipated difficulties, bad weather, strikes, acts of nature, or other mischances shall be borne by the Contractor and shall not be the subject of a claim for additional compensation.

A.7. Commencement and Completion of Work

The work must commence as specified in the Form of Tender and Agreement. If conditions are unsuitable due to poor weather, the Contractor may be required, at the discretion of the Engineer to postpone or halt work until conditions become acceptable and shall not be subject of a claim for additional compensation.

The Contractor shall give the Engineer a minimum of 48 hours notice before commencement of work. The Contractor shall then arrange a meeting to be held on the site with Contractor, Engineer, and affected Landowners to review in detail the construction scheduling and other details of the work.

If the Contractor leaves the job site for a period of time after initiation of work, he shall give the Engineer and the Municipality a minimum of 24 hours notice prior to returning to the project. If any work is commenced without notice to the Engineer, the Contractor shall be fully responsible for all such work undertaken prior to such notification.

The work must proceed in such a manner as to ensure its completion at the earliest possible date and within the time limit set out in the Form of Tender and Agreement.

A.8. Working Area and Access

Where any part of the drain is on a road allowance, the road allowance shall be the working area. For all other areas, the working area available to the Contractor to construct the drain is specified in the Special Provisions (Division H).

Should the specified widths become inadequate due to unusual conditions, the Contractor shall notify the Engineer immediately. Where the Contractor exceeds the specified working widths without authorization, he shall be held responsible for the costs of all additional damages.

If access off an adjacent road allowance is not possible, each Landowner on whose property the drainage works is to be constructed, shall designate access to and from the working area. The Contractor shall not enter any other lands without permission of the Landowner and he shall compensate the Landowner for damage caused by such entry.

A.9. Sub-Contractors

The Contractor shall not sublet the whole or part of this Contract without the approval of the Engineer.

A.10. Permits, Notices, Laws and Rules

The Contractor shall obtain and pay for all necessary permits or licenses required for the execution of the work (but this shall not include MTO encroachment permits, County Road permits permanent easement or rights of servitude). The Contractor shall give all necessary notices and pay for all fees required by law and comply with all laws, ordinances, rules and regulations relating to the work and to the preservation of the public's health and safety.

A.11. Railways, Highways, and Utilities

A minimum of 72 hours' notice to the Railway or Highways, exclusive of Saturdays, Sundays, and Statutory Holidays, is required by the Contractor prior to any work activities on or affecting the applicable property. In the case of affected Utilities, a minimum of 48 hours' notice to the utility owner is required.

A.12. Errors and Unusual Conditions

The Contractor shall notify the Engineer immediately of any error or unusual conditions which may be found. Any attempt by the Contractor to correct the error on his own shall be done at his own risk. Any additional cost incurred by the Contractor to remedy the wrong decision on his part shall be borne by the Contractor. The Engineer shall make the alterations necessary to correct errors or to adjust for unusual conditions during which time it will be the Contractor's responsibility to keep his men and equipment gainfully employed elsewhere on the project.

The Contract amount shall be adjusted in accordance with a fair evaluation of the work added or deleted.

A.13. Alterations and Additions

The Engineer shall have the power to make alterations in the work shown or described in the Drawings and Specifications and the Contractor shall proceed to make such changes without causing delay. In every such case, the price agreed to be paid for the work under the Contract shall be increased or decreased as the case may require according to a fair and reasonable evaluation of the work added or deleted. The valuation shall be determined as a result of negotiations between the Contractor and the Engineer, but in all cases the Engineer shall maintain the final responsibility for the decision. Such alterations and variations shall in no way render the Contract void. No claims for a variation or alteration in the increased or decreased price shall be valid unless done in pursuance of an order from the Engineer and notice of such claims made in writing before

commencement of such work. In no such case shall the Contractor commence work which he considers to be extra before receiving the Engineer's approval.

A.14. Supervision

The Contractor shall give the work his constant supervision and shall keep a competent foreman in charge at the site.

A.15. Field Meetings

At the discretion of the Engineer, a field meeting with the Contractor or his representative, the Engineer and with those others that the Engineer deems to be affected, shall be held at the location and time specified by the Engineer.

A.16. Periodic and Final Inspections

Periodic inspections by the Engineer will be made during the performance of the work. If ordered by the Engineer, the Contractor shall expose the drain as needed to facilitate inspection by the Engineer.

Final inspection by the Engineer will be made within twenty (20) days after he has received notice from the Contractor that the work is complete.

A.17. Acceptance By the Municipality

Before any work shall be accepted by the Municipality, the Contractor shall correct all deficiencies identified by the Engineer and the Contractor shall leave the site neat and presentable.

A.18. Warranty

The Contractor shall repair and make good any damages or faults in the drain that may appear within one (1) year after its completion (as dated on the Completion Certificate) as the result of the imperfect or defective work done or materials furnished if certified by the Engineer as being due to one or both of these causes; but nothing herein contained shall be construed as in any way restricting or limiting the liability of the Contractor under the laws of the Country, Province or Locality in which the work is being done. Neither the Completion Certificate nor any payment there under, nor any provision in the Contract Documents shall relieve the Contractor from his responsibility.

A.19. Termination of Contract By The Municipality

If the Contractor should be adjudged bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he should refuse or fail to supply enough properly skilled workmen or proper materials after having received seven (7) days notice in writing from the Engineer to supply additional workmen or materials to commence or complete the works, or if he should fail to make prompt payment to Sub-Contractors, or for material, or labour, or persistently disregards laws, ordinances, or the instruction of the Engineer, or otherwise be guilty of a substantial violation of the provisions of the Contract, then the Municipality, upon the certificate of the Engineer that sufficient cause exists to justify such action, may without prejudice to any other right or remedy, by giving the Contractor written notice, terminate the employment of the Contractor and take possession of the premises, and of all materials, tools and appliances thereon, and may finish the work by whatever method the Engineer may deem expedient but without delay or expense. In such a case, the Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Contract price will exceed the expense of finishing the work including compensation to the Engineer for his additional services and including the other damages of every name and nature, such excess shall be paid by the

Contractor. If such expense will exceed such unpaid balance, the Contractor shall pay the difference to the Municipality. The expense incurred by the Municipality, as herein provided, shall be certified by the Engineer.

If the Contract is terminated by the Municipality due to the Contractor's failure to properly commence the works, the Contractor shall forfeit the certified cheque bid deposit and furthermore shall pay to the Municipality an amount to cover the increased costs, if any, associated with a new Tender for the Contract being terminated.

If any unpaid balance and the certified cheque do not match the monies owed by the Contractor upon termination of the Contract, the Municipality may also charge such expense against any money which may thereafter be due to the Contractor from the Municipality.

A.20. Tests

The cost for the testing of materials supplied to the job by the Contractor shall be borne by the Contractor. The Engineer reserves the right to subject any lengths of any tile or pipe to a competent testing laboratory to ensure the adequacy of the tile or pipe. If any tile supplied by the Contractor is determined to be inadequate to meet the applicable A.S.T.M. standards, the Contractor shall bear full responsibility to remove and/or replace all such inadequate tile in the Contract with tile capable of meeting the A.S.T.M. Standards.

A.21. Pollution

The Contractor shall keep their equipment in good repair. The Contractor shall refuel or repair equipment away from open water.

If polluted material from construction materials or equipment is caused to flow into the drain, the Contractor shall immediately notify the Ministry of the Environment, and proceed with the Ministry's protocols in place to address the situation.

A.22. Species and Risk

If a Contractor encounters a known Species at Risk as designated by the MNR or DFO, the Contractor shall notify the Engineer immediately and follow the Ministry's guidelines to deal with the species.

A.23. Road Crossings

This specification applies to all road crossings (Municipality, County, Regional, or Highway) where no specific detail is provided on the drawings or in the standard specifications. This specification in no way limits the Road Authority's regulations governing the construction of drains on their Road Allowance.

A.23.1 Road Occupancy Permit

Where applicable, the Contractor must submit an application for a road occupancy permit to the Road Authority and allow a minimum of five (5) working days for its review and issuance.

A.23.2 Road Closure Request and Construction Notification

The Contractor shall submit written notification of construction and request for road closure (if applicable) to the Road Authority and the Engineer for review and approval a minimum of five (5) working days prior to proceeding with any work on the road allowance. The Contractor shall be responsible for notifying all applicable emergency services, schools, etc. of the road closure or construction taking place.

A.23.3 Traffic Control

The Contractor shall supply flagmen, and warning signs and ensure that detour routes are adequately signed in accordance with no less than the minimum standards as set out in the Ontario Traffic Manual's Book 7.

A.23.4 Weather

No construction shall take place during inclement weather or periods of poor visibility.

A.23.5 Equipment

No construction material and/or equipment is to be left within three (3) metres of the travelled portion of the road overnight or during periods of inclement weather.

If not stated on the drawings, the road crossing shall be constructed by open cut method. Backfill from the top of the cover material over the subsurface pipe or culvert to the under side of the road base shall be Granular "B". The backfill shall be placed in lifts not exceeding 300mm in thickness and each lift shall be thoroughly compacted to 98% Standard Proctor. Granular "B" road base for County Roads and Highways shall be placed to a 450mm thickness and Granular "A" shall be placed to a thickness of 200mm. Granular road base materials shall be thoroughly compacted to 100% Standard Proctor.

Where the road surface is paved, the Contractor shall be responsible for placing HL-8 Hot Mix Asphalt patch at a thickness of 50mm or of the same thickness as the existing pavement structure. The asphalt patch shall be flush with the existing roadway on each side and without overlap.

Excavated material from the trench beyond 1.25 metres from the travelled portion or beyond the outside edge of the gravel shoulder may be used as backfill in the trench in the case of covered drains. The material shall be compacted in lifts not exceeding 300mm.

A.24. Laneways

All pipes crossing laneways shall be backfilled with material that is clean, free of foreign material or frozen particles and readily tamped or compacted in place unless otherwise specified. Laneway culverts on open ditch projects shall be backfilled with material that is not easily erodible. All backfill material shall be thoroughly compacted as directed by the Engineer.

Culverts shall be bedded with a minimum of 300mm of granular material. Granular material shall be placed simultaneously on each side of the culvert in lifts not exceeding 150mm in thickness and compacted to 95% Standard Proctor Density. Culverts shall be installed a minimum of 10% of the culvert diameter below design grade with a minimum of 450mm of cover over the pipe unless otherwise noted on the Drawings.

The backfill over culverts and subsurface pipes at all existing laneways that have granular surfaces on open ditch and closed drainage projects shall be surfaced with a minimum of 300mm of Granular "B" material and 150mm of Granular "A" material. All backfill shall be thoroughly compacted as directed by the Engineer. All granular material shall be placed to the full width of the travelled portion.

Any settling of backfilled material shall be repaired by or at the expense of the Contractor during the warranty period of the project and as soon as required.

A.25. Fences

No earth is to be placed against fences and all fences removed by the Contractor shall be replaced by him in as good a condition as found. Where practical the Contractor shall take down existing fences in good condition at the nearest anchor post and roll it back rather than cutting the fence and attempting to patch it. The replacement of the fences shall be done to the satisfaction of the Engineer. Any fences found in such poor condition where the fence is not salvageable, shall be noted and verified with the Engineer prior to commencement of work.

Fences damaged beyond repair by the Contractor's negligence shall be replaced with new materials, similar to those materials of the existing fence, at the Contractor's expense. The replacement of the fences shall be done to the satisfaction of the Landowner and the Engineer.

Any fences paralleling an open ditch that are not line fences that hinder the proper working of the excavating machinery, shall be removed and rebuilt by the Landowner at his own expense.

The Contractor shall not leave fences open when he is not at work in the immediate vicinity.

A.26. Livestock

The Contractor shall provide each landowner with 48 hours notice prior to removing any fences along fields which could possibly contain livestock. Thereafter, the Landowner shall be responsible to keep all livestock clear of the construction areas until further notified. The Contractor shall be held responsible for loss or injury to livestock or damage caused by livestock where the Contractor failed to notify the Landowner, or through negligence or carelessness on the part of the Contractor.

A.27. Standing Crops

The Contractor shall be responsible for damages to standing crops which are ready to be harvested or salvaged along the course of the drain and access routes if the Contractor has failed to notify the Landowners 48 hours prior to commencement of the work on that portion of the drain.

A.28. Surplus Gravel

If as a result of any work, gravel or crushed stone is required and not all the gravel or crushed stone is used, the Contractor shall haul away such surplus material.

A.29. Iron Bars

The Contractor is responsible for the cost of an Ontario Land Surveyor to replace any iron bars that are altered or destroyed during the course of the construction.

A.30. Rip-Rap

Rip-rap shall be quarry stone rip-rap material and shall be the sizes specified in the Special Provisions. Broken concrete shall not be used as rip-rap unless otherwise specified.

A.31. Clearing, Grubbing and Brushing

This specification applies to all brushing where no specific detail is provided on the drawings or in the Special Provisions.

The Contractor shall clear, brush and stump trees from within the working area that interfere with the installation of the drainage system.

All trees, limbs and brush less than 150mm in diameter shall be mulched. Trees greater than 150mm in diameter shall be cut and neatly stacked in piles designated by the Landowners.

A.32. Restoration of Lawns

This specification applies to all lawn restoration where no specific detail is provided on the drawings or in the Special Provisions and no allowance for damages has been provided under Section 30 of the Drainage Act RSO 1990 to the affected property.

The Contractor shall supply “high quality grass seed” and the seed shall be broadcast by means of an approved mechanical spreader. All areas on which seed is to be placed shall be loose at the time of broadcast to a depth of 25mm. Seed and fertilizer shall be spread in accordance with the supplier’s recommendations unless otherwise directed by the Engineer. Thereafter it will be the responsibility of the Landowner to maintain the area in a manner so as to promote growth

END OF DIVISION

DIVISION B – SPECIFICATIONS FOR OPEN DRAINS

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DIVISION B – SPECIFICATIONS FOR OPEN DRAINS

B.1. Alignment

The drain shall be constructed in a straight line and shall follow the course of the present drain or water run unless noted on the drawings. Where there are unnecessary bends or irregularities on the existing course of the drain, the Contractor shall contact the Engineer before commencing work to verify the manner in which such irregularities or bends may be removed from the drain. All curves shall be made with a minimum radius of fifteen (15) metres from the centre line of the drain.

B.2. Profile

The Profile Drawing shows the depth of cuts from the top of the bank to the final invert of the ditch in metres and decimals of a metre, and also the approximate depth of excavated material from the bottom of the existing ditch to the final invert of the ditch. These cuts are established for the convenience of the Contractor; however, bench marks (established along the course of the drain) will govern the final elevation of the drain. The location and elevation of the bench marks are given on the Profile Drawing. Accurate grade control must be maintained by the Contractor during ditch excavation.

B.3. Excavation

The bottom width and the side slopes of the ditch shall be those shown on the drawings. If the channel cross-section is not specified it shall be a one metre bottom width with 1.5(h):1(v) side slopes. At locations along the drain where the cross section dimensions change, there shall be a transitional length of not less than 10:1 (five metre length to 0.5 metre width differential). Where the width of the bottom of the existing ditch is sufficient to construct the design width, then construction shall proceed without disturbing the existing banks.

Where existing side slopes become unstable, the Contractor shall immediately notify the Engineer. Alternative methods of construction and/or methods of protection will then be determined prior to continuing work.

Where an existing drain is being relocated or where a new drain is being constructed, the Contractor shall strip the topsoil for the full width of the drain, including the location of the spoil pile. Upon completion of levelling, the topsoil shall be spread to an even depth across the full width of the spoil.

An approved hydraulic excavator shall be used to carry out the excavation of the open ditch unless otherwise directed by the Engineer.

B.4. Excavated Material

Excavated material shall be placed on the low side of the drain or opposite trees and fences. The Contractor shall contact all Landowners before proceeding with the work to verify the location to place and level the excavated material.

No excavated material shall be placed in tributary drains, depressions, or low areas which direct water behind the spoil bank. The excavated material shall be placed and levelled to a maximum depth of 200 mm, unless instructed otherwise and commence a minimum of one (1) metre from the top of the bank. The edge of the spoil bank away from the ditch shall be feathered down to the existing ground; the edge of the spoil bank nearest the ditch shall have a maximum slope of 2(h):1(v). The material shall be levelled such that it may be

cultivated with ordinary farm equipment without causing undue hardship to the farm machinery and farm personnel. No excavated material shall cover any logs, brush, etc. of any kind.

Any stones or boulders which exceed 300mm in diameter shall be removed and disposed of in a location specified by the Landowner.

Where it is necessary to straighten any unnecessary bends or irregularities in the alignment of the ditch or to relocate any portion or all of an existing ditch, the excavated material from the new cut shall be used for backfilling the original ditch. Regardless of the distance between the new ditch and the old ditch, no extra compensation will be allowed for this work and must be included in the Contractor's lump sum price for the open work.

B.5. Excavation at Existing Bridge and Culvert Sites

The Contractor shall excavate the drain to the full specified depth under all bridges and to the full width of the structure. Temporary bridges may be carefully removed and left on the bank of the drain but shall be replaced by the Contractor when the excavation is complete. Permanent bridges must, if at all possible, be left intact. All necessary care and precautions shall be taken to protect the structure. The Contractor shall notify the Landowner if excavation will expose the footings or otherwise compromise the structural integrity of the structure.

The Contractor shall clean through all pipe culverts to the grade and width specified on the profile.

B.6. Pipe Culverts

All pipe culverts shall be installed in accordance with the standard detail drawings. If couplers are required, five corrugation couplers shall be used for up to and including 1200mm diameter pipes and 10 corrugation couplers for greater than 1200mm diameter pipes.

When an existing crossing is being replaced, the Contractor may backfill the new culvert with the existing native material that is free of large rocks and stones. The Contractor is responsible for any damage to a culvert pipe that is a result of rocks or stones in the backfill.

B.7. Rip-Rap Protection For Culverts

Quarry stone rip-rap shall be used as end treatment for new culverts and placed on geotextile filter material (Mirafi 160N or approved equal). The rip-rap shall be adequately keyed in along the bottom of the slope, and shall extend to the top of the pipe or as directed on the drawings. The maximum slope for rip-rap shall be 1(h):1(v) or as directed by the Engineer.

The Contractor shall be responsible for any defects or damages that may develop in the rip-rap or the earth behind the rip-rap that the Engineer deems to have been fully or partially caused by faulty workmanship or materials.

B.8. Clearing, Grubbing and Mulching

Prior to excavation, all trees, scrub, fallen timber and debris shall be removed from the side slopes of the ditch and for such a distance on the working side so as to eliminate any interference with the construction of the drain or the spreading of the spoil. The side slopes shall be neatly cut and cleared flush with the slope whether or not they are affected directly by the excavation. With the exception of large stumps causing damage to the drain, the side slopes shall not be grubbed. All other cleared areas shall be grubbed and the stumps put into piles for disposal by the Landowner.

All trees or limbs 150mm or larger, that is necessary to remove, shall be cut, trimmed and neatly stacked in the working width for the use or disposal by the Landowner. Brush and limbs less than 150mm in diameter shall be mulched. Clearing, grubbing and mulching shall be carried out as a separate operation from the excavation of the ditch, and shall not be completed simultaneously at the same location.

B.9. Tributary Tile Outlets

All tile outlets in existing ditches shall be marked by the Landowner prior to excavation. The Contractor shall guard against damaging the outlets of tributary drains. Any tile drain outlets that were marked or noted on the drawings and are subsequently damaged by the Contractor shall be repaired by the Contractor at his expense. The Landowner shall be responsible for repairs to damaged tile outlets that were not marked.

B.10. Seeding

The side slopes where disturbed shall be seeded using an approved grass seed mixture. The grass seed shall be applied the same day as the excavation of the open ditch.

Grass seed shall be fresh, clean and new crop seed, meeting the requirements of the MTO and composed of the following varieties mixed in the proportion by weight as follows:

- 55% Creeping Red Fescue
- 40% Perennial Rye Grass
- 5% White Clover

Grass seed shall be applied at the rate of 100 kg/ha.

B.11. Hydro Seeding

The areas specified in the contract document shall be hydro seeded and mulched upon completion of construction in accordance with O.P.S.S. 572.

B.12. Hand Seeding

Placement of the seed shall be of means of an approved mechanical spreader.

B.13. Completion

At the time of completion and final inspection, all work in the Contract shall have the full dimensions and cross-sections specified without any allowance for caving of banks or sediment in the ditch bottom.

END OF DIVISION



DIVISION H – SPECIAL PROVISIONS

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DIVISION H – SPECIAL PROVISIONS

Emerson Municipal Drain 2020

Township of Huron-Kinloss

Reference No. 0921

Special provisions means special directions containing requirements peculiar to the work not adequately provided for by the standard or supplemental Specifications. Special provisions shall take precedence and govern any standard or supplemental Specifications.

H.1 General

The Contractor shall organize and hold a preconstruction meeting with the Engineer and the Drainage Superintendent prior to the start of construction. The Contractor shall notify and invite all Landowners along the drain and all applicable road authorities of the preconstruction meeting.

The Contractor shall notify the Landowners, the Township Drainage Superintendent (Grant Collins) and the Engineer 48 hours prior to construction.

All objects or obstructions within the construction working area such as signs, mailboxes, fences, property ornamentals, etc., that interfere with the installation of the drain shall be removed and re-erected in the same location or another location satisfactory to the Landowner. Any damages to such objects by the Contractor shall be repaired, replaced, installed and paid for by the Contractor at the discretion of the Engineer.

The Contractor shall be responsible to arrange all traffic control signals, signs and devices that are required for safe and proper traffic management during the installation of the drainage system. The Contractor shall contact the Township of Huron-Kinloss for specified local procedures, guidelines and timelines. Traffic control shall meet the standards of Book 7 of the Ontario Traffic Manual.

H.2 Utilities

All utilities shall be located and uncovered in the affected areas by the Contractor prior to construction.

The Contractor shall arrange to have a representative of the utility owner on site during construction if it is a requirement by the utility owner.

H.3 Working Area And Access

The working area for construction purposes shall be a width of 12 metres on the side of the drain where the excavated material is to be loaded. Where the working side of the drain is not specified, the Contractor shall verify the working side of the drain with the Landowner. Each Landowner shall designate access to and from the working area.

H.4 Clearing and Grubbing

The Contractor shall clear and brush trees from within the working area (maximum width of 12 metres) that interfere with the construction of the drain. The Contractor shall not clear all trees within the working area unless the full width in a specific section is required, and unless the Engineer has authorized the full clearing of the trees.

An approved mulching attachment for a hydraulic excavator or wood-chipper shall be used. Clearing brushing and mulching shall be done prior to the construction of the drain.

All trees, limbs and brush less than 150mm in diameter shall be mulched/chipped. Trees greater than 150mm in diameter shall be cut into lengths no greater than four metres and neatly stacked in piles designated by the Landowners.

H.5 Open Ditch Work

The proposed drainage system is designed to minimize the impacts on fish and fish habitat both during construction and after construction. Large segments of untouched channel and riparian vegetation distributed at various locations throughout the length of the entire system will allow for fish refuge during construction. Existing meanders are to be left in place. Construction timing will abide with DFO timing restrictions, and shall be phased over a two-year period to minimize the instantaneous impacts of construction.

The Contractor shall construct the open ditch in accordance with the plans, profiles and cross sections included in the attached drawing set.

Prior to any re-sloping of the side slopes of the ditch, the Contractor shall strip the topsoil from the side and stockpile onsite. The Contractor shall later spread the topsoil over the side slopes and disturbed areas of the ditch.

Areas requiring fill along the course of the drain shall be filled with excess excavated material.

The Contractor shall construct silt traps at periodic locations along the course of the drain and maintain them for the duration of construction. Silt traps may be left in place after construction is complete.

H.6 Disposal of Excavated Material

The Contractor shall immediately load excess excavated material. The Contractor shall obtain disposal site approval from the Saugeen Valley Conservation Authority prior to any disposal of excavated material on private properties.

All material not disposed of on private properties may be disposed of at the Huron-Kinloss landfill site located at 2087 Concession 6 East. Contact John Youngblut, Director of Public Works for the Township of Huron-Kinloss at (519) 395-3735.

H.7 Seeding

The Contractor shall supply and place SoilGuard hydroseed and mulch mixture (or approved equal) on the disturbed areas of side slopes using the seed manufacturers application recommendations.

The Contractor shall ensure a minimum of an 80% catch of all applied grass seed after a year of application.

H.8 Bank Repair

In areas where high levels of erosion have occurred the Contractor shall reshape the banks to match typical bank side slopes. The Contractor shall then place quarry stone rock rip-rap for long term bank stabilization.

All stone rip-rap material shall be quarry stone 150 mm to 300 mm dia. and placed to a depth of 400 mm. Geo-textile filter material (Mirafi 180N) shall be laid prior to the placement of stone rip-rap.

Variations to the depth of placement and gradation of rip-rap must be approved by the Engineer.

H.9 Private Crossings

H.9.1 Existing Culvert Removals

The existing crossings at Sta. 0+774, Sta. 2+880, Sta. 4+438 and Sta. 5+362 shall be removed and disposed of offsite by the Contractor.

H.9.2 New Crossing Construction – Sta. 0+774

Construction of the crossing shall occur during low flow or no flow conditions. If construction is not possible during low flow conditions, the Contractor shall implement a flow diversion scheme.

The crossing shall be installed in accordance with the attached cable concrete crossing detail and the manufacturer's specifications.

The Contractor shall construct the crossing approaches to a slope of 8(h):1(v) or flatter.

All stone rip-rap material shall be quarry stone 150 mm to 300 mm dia. and placed to a depth of 400 mm. Geo-textile filter material (Mirafi 180N) shall be laid prior to the placement of stone rip-rap.

H.10 Road Crossing – Sta. 0+609

The Contractor shall be responsible to arrange all traffic control signals, signs and devices that are required for safe and proper traffic management during the installation of the drainage system. The Contractor shall contact the Township of Huron-Kinloss for specified local procedures, guidelines and timelines. Traffic control shall meet the standards of Book 7 of the Ontario Traffic Manual.

H.10.1 Removals

The existing truck frame crossing over Sideroad 10 shall be removed and disposed of offsite by the Contractor. Any excavated material not suitable for backfill of the travelled portion of the road shall be removed and disposed of offsite by the Contractor.

H.10.2 New Crossing Installation

Construction of the crossings shall occur during low flow or no flow conditions. If construction is not possible during low flow conditions, the Contractor shall implement a flow diversion scheme.

The Contractor shall install twin 2000mm diameter C.M.P. road culverts in accordance with the Road Crossing Detail in the drawing set.

The new culvert shall have M.T.O. Granular 'A' bedding and backfill from 300mm below the pipe to 300mm above the pipe and Granular 'B' backfill to 300mm below finished road grade.

All granular materials shall be placed in lifts not exceeding 300mm and compacted to at least 95% Standard Proctor Maximum Dry Density (SPMDD) using an approved mechanical vibratory compactor.

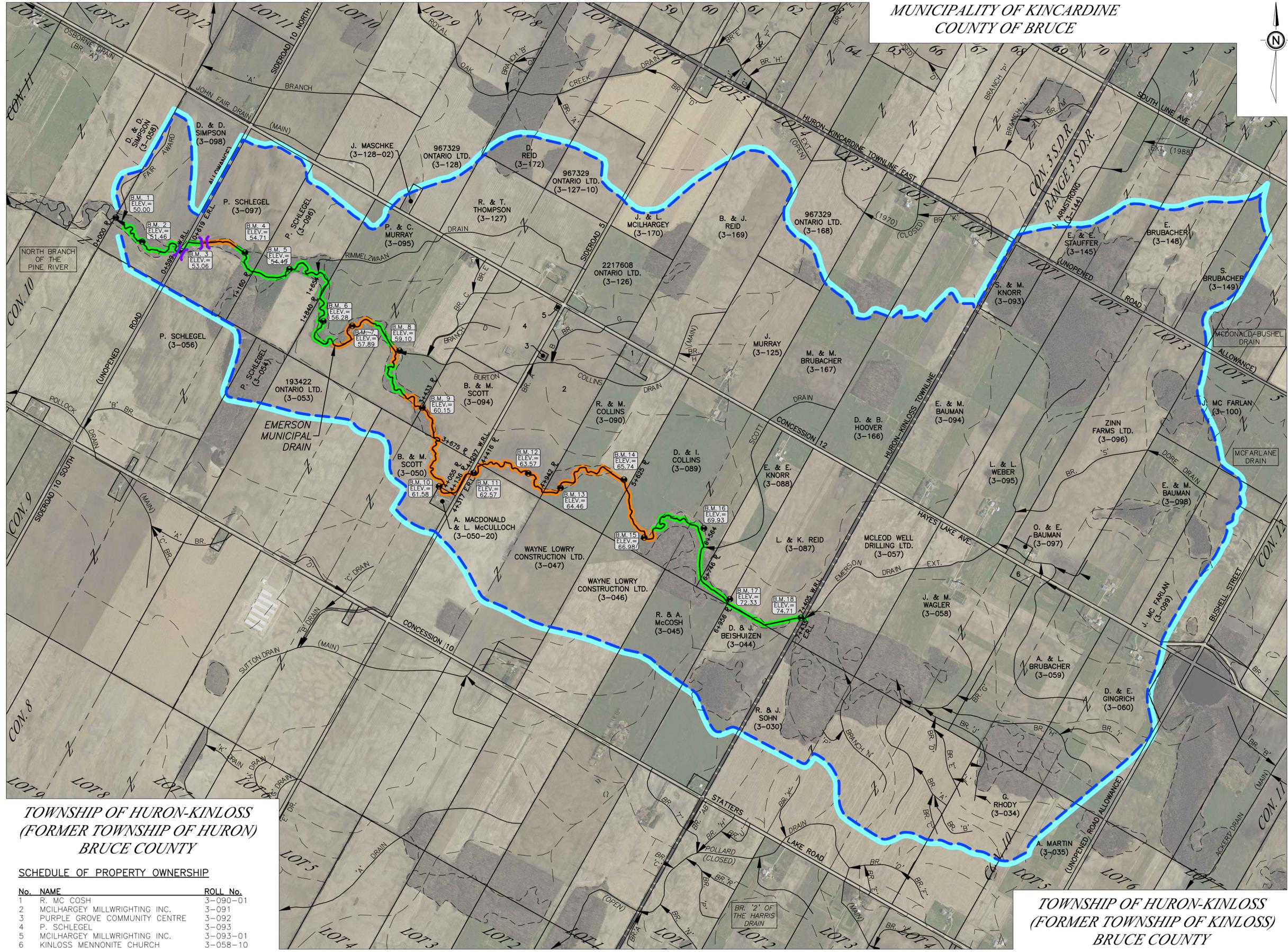
All stone rip-rap material shall be quarry stone 150 mm to 300 mm dia. and placed to a depth of 450 mm. Geo-textile filter material (Mirafi 180N) shall be laid prior to the placement of stone rip-rap.

H.10.3 Road Restoration

The Contractor shall place 200mm of M.T.O. Granular 'A' surface course. The Contractor shall restore the surface to match the existing cross section of the road.

Any areas disturbed within the Municipal Right-of-Way during construction shall be top soiled and hydroseeded with an approved grass seed mixture.

END OF DIVISION



BENCHMARK No. 1	ELEV.=50.00
NAIL IN SOUTH FACE OF 300mm DIA. TREE 10 METRES NORTH OF STA. 0+001	
BENCHMARK No. 2	ELEV.=51.46
NAIL IN NORTH FACE OF 500mm DIA. TREE 7 METRES SOUTH OF STA. 0+286	
BENCHMARK No. 3	ELEV.=53.06
TOP NORTHEAST CORNER OF WINGWALL, NORTH SIDE OF BRIDGE AT STA. 0+613	
BENCHMARK No. 4	ELEV.=54.71
NAIL IN SOUTH FACE OF 500mm DIA. TREE 6 METRES NORTH OF STA. 1+023	
BENCHMARK No. 5	ELEV.=54.49
NAIL IN SOUTH FACE OF 250mm DIA. TREE 3 METRES NORTH OF STA. 1+398	
BENCHMARK No. 6	ELEV.=56.28
NAIL IN SOUTH FACE OF 400mm DIA. TREE 3 METRES NORTH OF STA. 2+048	
BENCHMARK No. 7	ELEV.=57.89
NAIL IN WEST FACE OF 350mm DIA. TREE 4 METRES SOUTH OF STA. 2+534	
BENCHMARK No. 8	ELEV.=59.10
NAIL IN WEST FACE OF 600mm DIA. TREE 24 METRES NORTHEAST OF STA. 2+905	
BENCHMARK No. 9	ELEV.=60.15
NAIL IN EAST FACE OF 800mm DIA. TREE 4 METRES NORTH OF STA. 3+435	
BENCHMARK No. 10	ELEV.=61.58
NAIL IN NORTHEAST FACE OF FENCE POST 6 METRES WEST OF STA. 4+055	
BENCHMARK No. 11	ELEV.=62.57
NAIL IN WEST FACE OF HYDRO POLE 6 METRES NORTH OF STA. 4+324	
BENCHMARK No. 12	ELEV.=63.57
NAIL IN NORTHEAST FACE OF 300mm DIA. TREE 5 METRES SOUTH OF STA. 4+767	
BENCHMARK No. 13	ELEV.=64.46
NAIL IN WEST FACE OF 550mm DIA. TREE 3 METRES EAST OF STA. 5+054	
BENCHMARK No. 14	ELEV.=65.74
NAIL IN SOUTH FACE OF FENCE POST 8 METRES NORTH OF STA. 5+570	
BENCHMARK No. 15	ELEV.=66.98
NAIL IN NORTH FACE OF 500mm DIA. TREE 7 METRES SOUTHWEST OF STA. 5+945	
BENCHMARK No. 16	ELEV.=69.93
NAIL IN SOUTH FACE OF 400mm DIA. TREE 42 METRES NORTHEAST OF STA. 6+456	
BENCHMARK No. 17	ELEV.=72.33
NAIL IN SOUTH FACE OF FENCE POST 25 METRES NORTH OF STA. 6+956	
BENCHMARK No. 18	ELEV.=74.71
TOP OF DOWNSTREAM (WEST) END OF C.M.P. CULVERT ARCH AT STA. 7+410	

LEGEND:

	DRAIN NAME	EXISTING MUNICIPAL DRAIN
		INTERIOR/EXTERIOR WATERSHED BOUNDARY
		PROPERTY BOUNDARY
		LOT OR CONCESSION BOUNDARY
		TOWNSHIP BOUNDARY
		M.N.R. WETLAND LIMITS
	DRAIN NAME	MUNICIPAL DRAIN (STREAMBED EXCAVATION)
		MUNICIPAL DRAIN (NO STREAMBED EXCAVATION)
		WATERSHED BOUNDARY
		CROSSING REPLACEMENT
	BENCHMARK LOCATION	BENCHMARK No. & ELEVATION

5.	REPORT SUBMISSION	2020-03-27	DEL
4.	DRAFT REPORT SUBMISSION	2019-07-11	DEL
3.	INFORMATION MEETING	2019-06-25	DEL
2.	SUBMITTED FOR DFO REVIEW	2018-12-14	DEL
1.	ON-SITE MEETING	2009-04-21	DEL
No.	ISSUES AND REVISIONS	DATE	BY

**TOWNSHIP OF HURON-KINLOSS
(FORMER TOWNSHIP OF HURON)
BRUCE COUNTY**

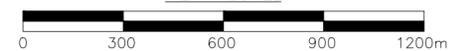
SCHEDULE OF PROPERTY OWNERSHIP

No.	NAME	ROLL No.
1.	R. MC COSH	3-090-01
2.	MCILHARGEY MILLWRIGHTING INC.	3-091
3.	PURPLE GROVE COMMUNITY CENTRE	3-092
4.	P. SCHLEGEL	3-093
5.	MCILHARGEY MILLWRIGHTING INC.	3-093-01
6.	KINLOSS MENNONITE CHURCH	3-058-10

**TOWNSHIP OF HURON-KINLOSS
(FORMER TOWNSHIP OF KINLOSS)
BRUCE COUNTY**

PLAN

PLAN SCALE



PROJECT: EMERSON MUNICIPAL DRAIN 2020

DRAWING: Plan

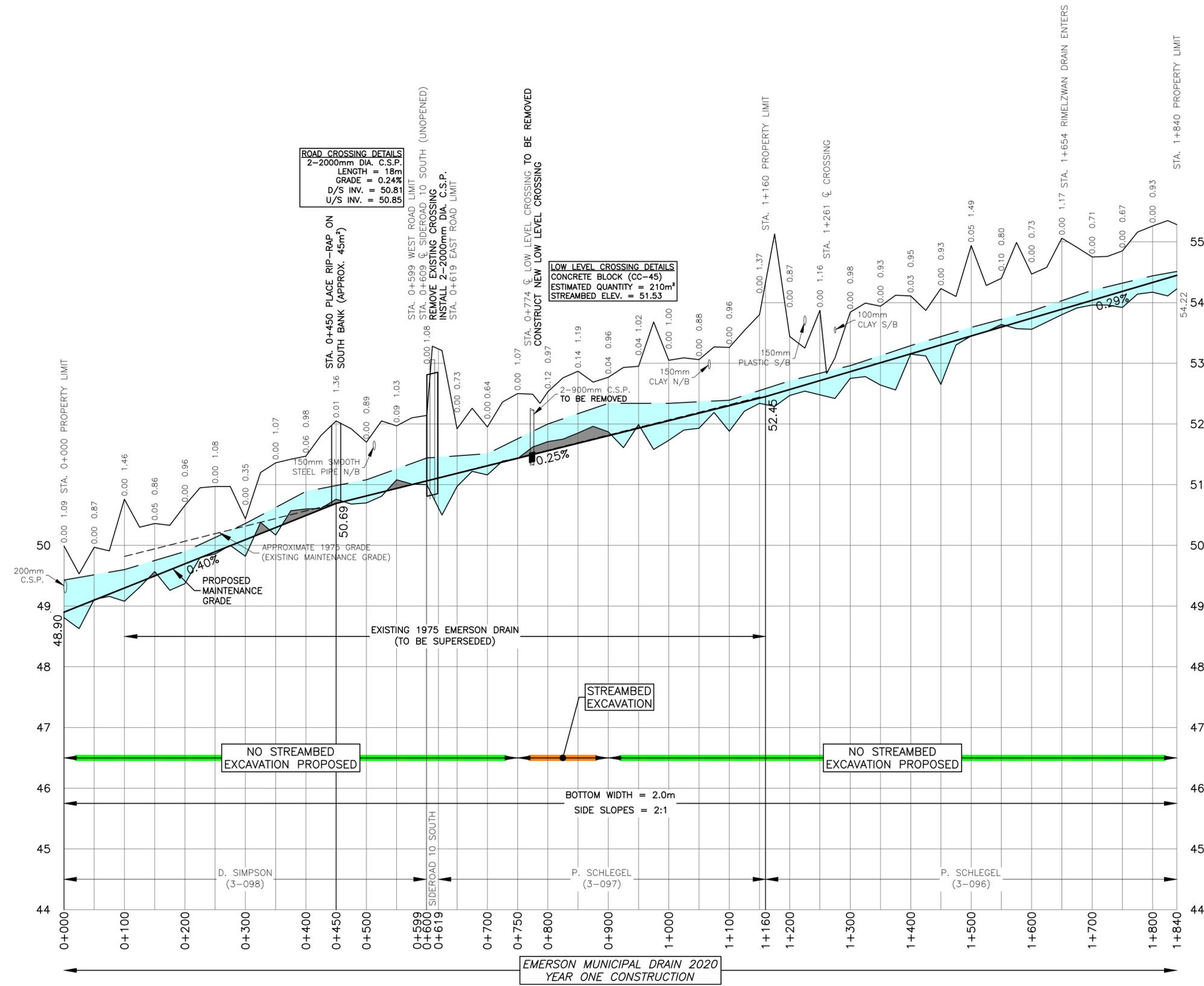


DIETRICH ENGINEERING LIMITED
CONSULTING ENGINEERS

10 Alpine Court, Kitchener, ON, N2E 2M7

PROJ. MGR:	S.B.	DESIGNED BY:	S.B.	DRAWN BY:	R.U.	CHECKED BY:	S.B.
DRAWING SCALE:	AS NOTED	DATE:	MARCH 27, 2020	PROJECT No.:	0921	DRAWING No.:	1 of 11

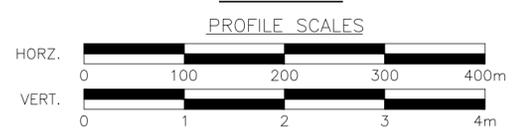
C:\USERS\RAY_L\DESKTOP\0921 - EMERSON - REPORT\0921 - EMERSON - REPORT



ROAD CROSSING DETAILS
 2-2000mm DIA. C.S.P.
 LENGTH = 18m
 GRADE = 0.24%
 D/S INV. = 50.81
 U/S INV. = 50.85

LOW LEVEL CROSSING DETAILS
 CONCRETE BLOCK (CC-45)
 ESTIMATED QUANTITY = 210m³
 STREAMBED ELEV. = 51.53

PROFILE



NOTES:

- BENCHMARK No. 1 ELEV.=50.00
NAIL IN SOUTH FACE OF 300mm DIA. TREE 10 METRES NORTH OF STA. 0+001
- BENCHMARK No. 2 ELEV.=51.46
NAIL IN NORTH FACE OF 500mm DIA. TREE 7 METRES SOUTH OF STA. 0+286
- BENCHMARK No. 3 ELEV.=53.06
TOP NORTHEAST CORNER OF WINGWALL, NORTH SIDE OF BRIDGE AT STA. 0+613
- BENCHMARK No. 4 ELEV.=54.71
NAIL IN SOUTH FACE OF 500mm DIA. TREE 6 METRES NORTH OF STA. 1+023
- BENCHMARK No. 5 ELEV.=54.49
NAIL IN SOUTH FACE OF 250mm DIA. TREE 3 METRES NORTH OF STA. 1+398
- BENCHMARK No. 6 ELEV.=56.28
NAIL IN SOUTH FACE OF 400mm DIA. TREE 3 METRES NORTH OF STA. 2+048
- BENCHMARK No. 7 ELEV.=57.89
NAIL IN WEST FACE OF 350mm DIA. TREE 4 METRES SOUTH OF STA. 2+534
- BENCHMARK No. 8 ELEV.=59.10
NAIL IN WEST FACE OF 600mm DIA. TREE 24 METRES NORTHEAST OF STA. 2+905
- BENCHMARK No. 9 ELEV.=60.15
NAIL IN EAST FACE OF 800mm DIA. TREE 4 METRES NORTH OF STA. 3+435
- BENCHMARK No. 10 ELEV.=61.58
NAIL IN NORTHEAST FACE OF FENCE POST 6 METRES WEST OF STA. 4+055
- BENCHMARK No. 11 ELEV.=62.57
NAIL IN WEST FACE OF HYDRO POLE 6 METRES NORTH OF STA. 4+324
- BENCHMARK No. 12 ELEV.=63.57
NAIL IN NORTHEAST FACE OF 300mm DIA. TREE 5 METRES SOUTH OF STA. 4+767
- BENCHMARK No. 13 ELEV.=64.46
NAIL IN WEST FACE OF 550mm DIA. TREE 3 METRES EAST OF STA. 5+054
- BENCHMARK No. 14 ELEV.=65.74
NAIL IN SOUTH FACE OF FENCE POST 8 METRES NORTH OF STA. 5+570
- BENCHMARK No. 15 ELEV.=66.98
NAIL IN NORTH FACE OF 500mm DIA. TREE 7 METRES SOUTHWEST OF STA. 5+945
- BENCHMARK No. 16 ELEV.=69.93
NAIL IN SOUTH FACE OF 400mm DIA. TREE 42 METRES NORTHEAST OF STA. 6+456
- BENCHMARK No. 17 ELEV.=72.33
NAIL IN SOUTH FACE OF FENCE POST 25 METRES NORTH OF STA. 6+956
- BENCHMARK No. 18 ELEV.=74.71
TOP OF DOWNSTREAM (WEST) END OF C.M.P. CULVERT ARCH AT STA. 7+410

LEGEND:

No.	ISSUES AND REVISIONS	DATE	BY
5.	REPORT SUBMISSION	2020-03-27	DEL
4.	DRAFT REPORT SUBMISSION	2019-07-11	DEL
3.	INFORMATION MEETING	2019-06-25	DEL
2.	SUBMITTED FOR DFO REVIEW	2018-12-14	DEL
1.	ON-SITE MEETING	2009-04-21	DEL



PROJECT: EMERSON MUNICIPAL DRAIN 2020

DRAWING: Profile
(Sta. 0+000 to Sta. 1+840)

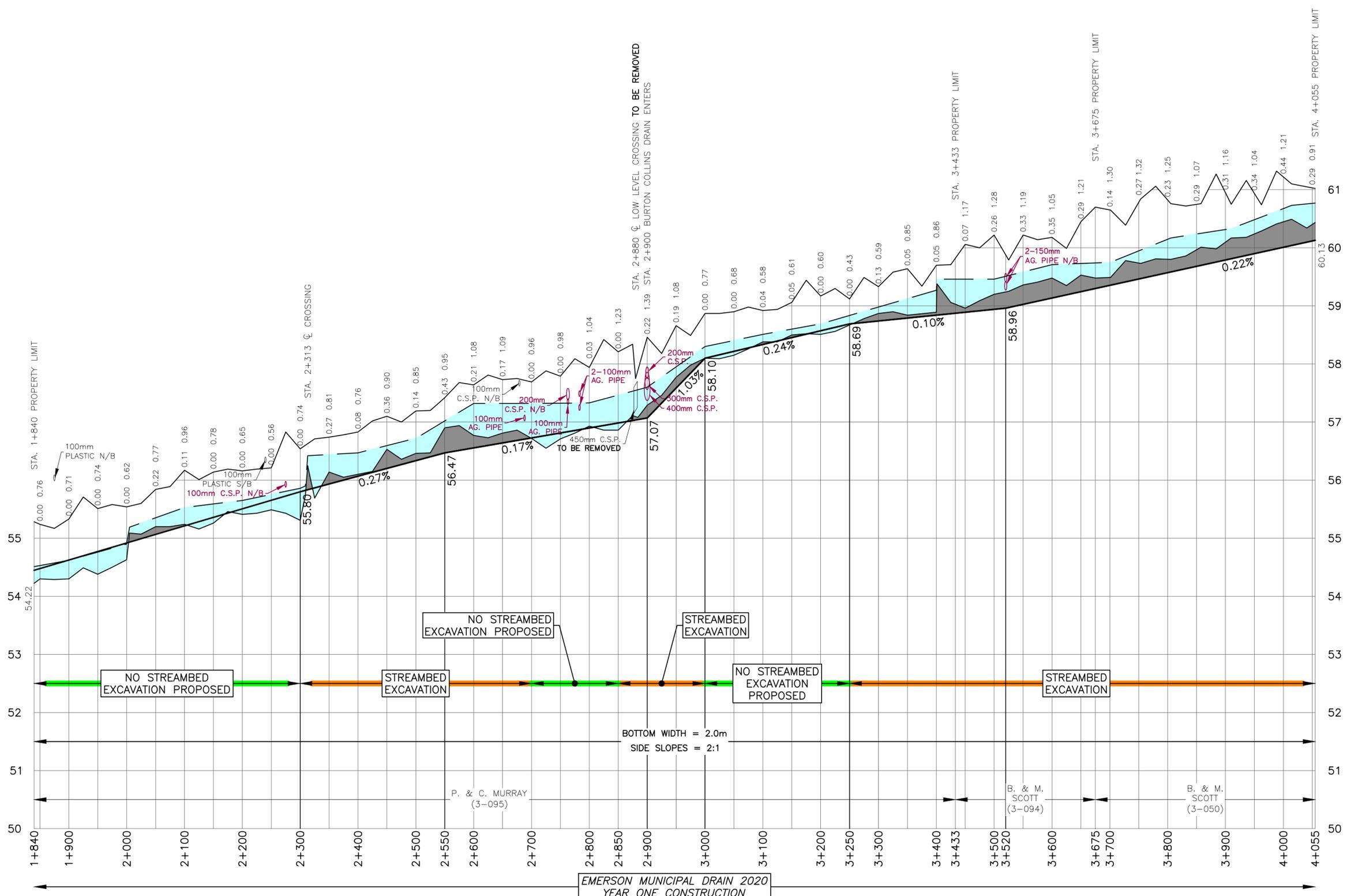


DIETRICH ENGINEERING LIMITED
CONSULTING ENGINEERS

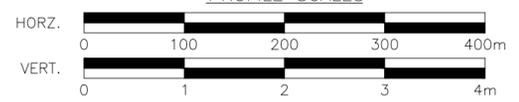
10 Alpine Court, Kitchener, ON, N2E 2M7

PROJ. MGR:	S.B.	DESIGNED BY:	S.B.	DRAWN BY:	R.U.	CHECKED BY:	S.B.
DRAWING SCALE:	AS NOTED	DATE:	MARCH 27, 2020	PROJECT No.:	0921	DRAWING No.:	2 of 11

C:\USERS\RAY\Desktop\0921 - EMERSON\0921 - EMERSON - REPORT



PROFILE
PROFILE SCALES



- NOTES:**
- BENCHMARK No. 1 ELEV.=50.00
NAIL IN SOUTH FACE OF 300mm DIA. TREE 10 METRES NORTH OF STA. 0+001
 - BENCHMARK No. 2 ELEV.=51.46
NAIL IN NORTH FACE OF 500mm DIA. TREE 7 METRES SOUTH OF STA. 0+286
 - BENCHMARK No. 3 ELEV.=53.06
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 - BENCHMARK No. 5 ELEV.=54.49
NAIL IN SOUTH FACE OF 250mm DIA. TREE 3 METRES NORTH OF STA. 1+398
 - BENCHMARK No. 6 ELEV.=56.28
NAIL IN SOUTH FACE OF 400mm DIA. TREE 3 METRES NORTH OF STA. 2+048
 - BENCHMARK No. 7 ELEV.=57.89
NAIL IN WEST FACE OF 350mm DIA. TREE 4 METRES SOUTH OF STA. 2+534
 - BENCHMARK No. 8 ELEV.=59.10
NAIL IN WEST FACE OF 600mm DIA. TREE 24 METRES NORTHEAST OF STA. 2+905
 - BENCHMARK No. 9 ELEV.=60.15
NAIL IN EAST FACE OF 800mm DIA. TREE 4 METRES NORTH OF STA. 3+435
 - BENCHMARK No. 10 ELEV.=61.58
NAIL IN NORTHEAST FACE OF FENCE POST 6 METRES WEST OF STA. 4+055
 - BENCHMARK No. 11 ELEV.=62.57
NAIL IN WEST FACE OF HYDRO POLE 6 METRES NORTH OF STA. 4+324
 - BENCHMARK No. 12 ELEV.=63.57
NAIL IN NORTHEAST FACE OF 300mm DIA. TREE 5 METRES SOUTH OF STA. 4+767
 - BENCHMARK No. 13 ELEV.=64.46
NAIL IN WEST FACE OF 550mm DIA. TREE 3 METRES EAST OF STA. 5+054
 - BENCHMARK No. 14 ELEV.=65.74
NAIL IN SOUTH FACE OF FENCE POST 8 METRES NORTH OF STA. 5+570
 - BENCHMARK No. 15 ELEV.=66.98
NAIL IN NORTH FACE OF 500mm DIA. TREE 7 METRES SOUTHWEST OF STA. 5+945
 - BENCHMARK No. 16 ELEV.=69.93
NAIL IN SOUTH FACE OF 400mm DIA. TREE 42 METRES NORTHEAST OF STA. 6+456
 - BENCHMARK No. 17 ELEV.=72.33
NAIL IN SOUTH FACE OF FENCE POST 25 METRES NORTH OF STA. 6+956
 - BENCHMARK No. 18 ELEV.=74.71
TOP OF DOWNSTREAM (WEST) END OF C.M.P. CULVERT ARCH AT STA. 7+410

LEGEND:

No.	ISSUES AND REVISIONS	DATE	BY
5.	REPORT SUBMISSION	2020-03-27	DEL
4.	DRAFT REPORT SUBMISSION	2019-07-11	DEL
3.	INFORMATION MEETING	2019-06-25	DEL
2.	SUBMITTED FOR DFO REVIEW	2018-12-14	DEL
1.	ON-SITE MEETING	2009-04-21	DEL

No.	ISSUES AND REVISIONS	DATE	BY
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3.	INFORMATION MEETING	2019-06-25	DEL
2.	SUBMITTED FOR DFO REVIEW	2018-12-14	DEL
1.	ON-SITE MEETING	2009-04-21	DEL



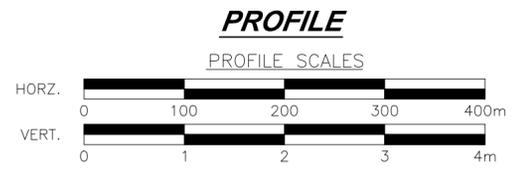
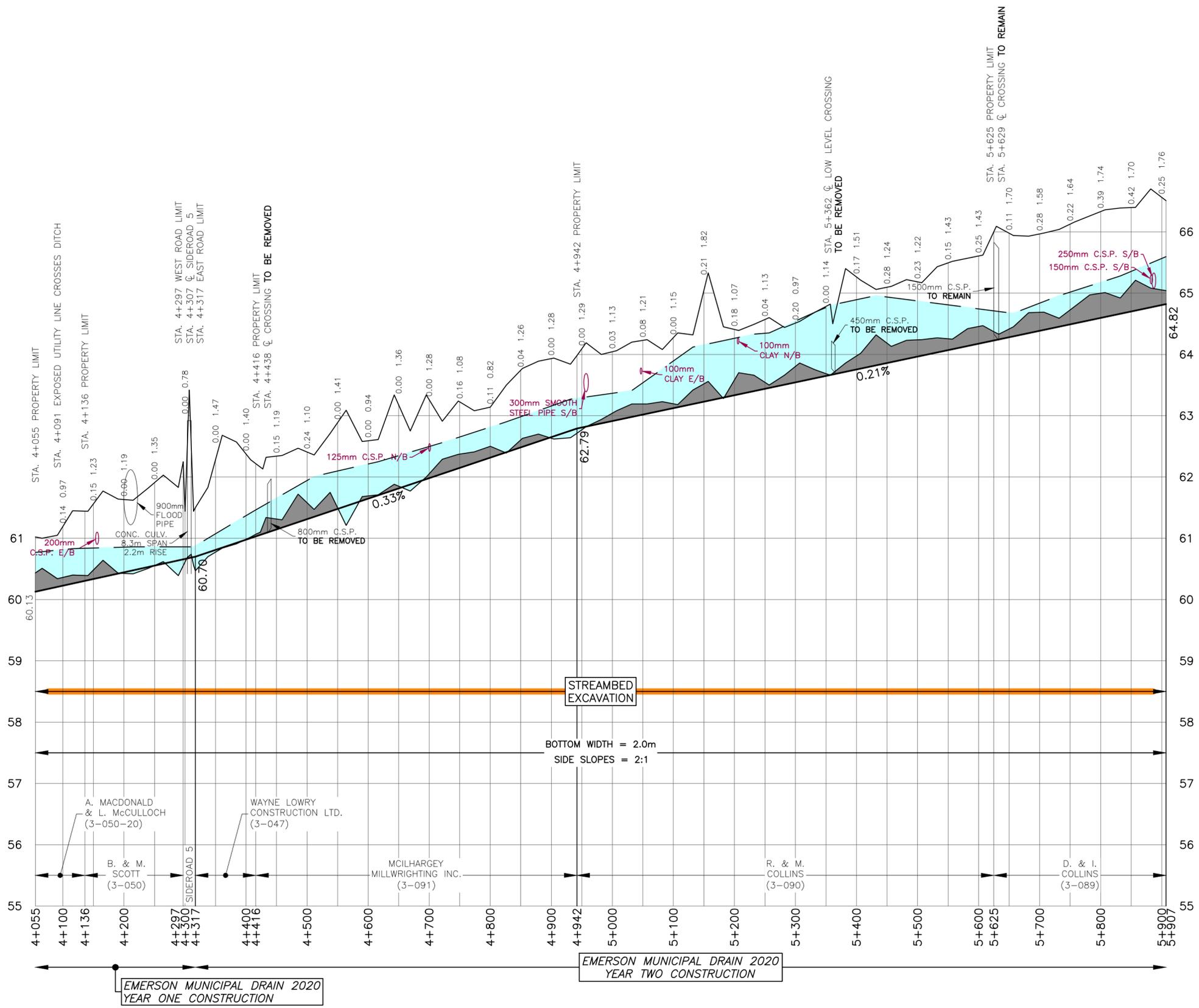
PROJECT: EMERSON MUNICIPAL DRAIN 2020

DRAWING: Profile
(Sta. 1+840 to Sta. 4+055)



PROJ. MGR: S.B.	DESIGNED BY: S.B.	DRAWN BY: R.U.	CHECKED BY: S.B.
DRAWING SCALE: AS NOTED	DATE: MARCH 27, 2020	PROJECT No. 0921	DRAWING No. 3 of 11

C:\USERS\RAY_L\DESKTOP\0921 EMERSON\0921 EMERSON - REPORT\0921 EMERSON - REPORT



- NOTES:**
- BENCHMARK No. 1 ELEV.=50.00
NAIL IN SOUTH FACE OF 300mm DIA. TREE 10 METRES NORTH OF STA. 0+001
 - BENCHMARK No. 2 ELEV.=51.46
NAIL IN NORTH FACE OF 500mm DIA. TREE 7 METRES SOUTH OF STA. 0+286
 - BENCHMARK No. 3 ELEV.=53.06
TOP NORTHEAST CORNER OF WINGWALL, NORTH SIDE OF BRIDGE AT STA. 0+613
 - BENCHMARK No. 4 ELEV.=54.71
NAIL IN SOUTH FACE OF 500mm DIA. TREE 6 METRES NORTH OF STA. 1+023
 - BENCHMARK No. 5 ELEV.=54.49
NAIL IN SOUTH FACE OF 250mm DIA. TREE 3 METRES NORTH OF STA. 1+398
 - BENCHMARK No. 6 ELEV.=56.28
NAIL IN SOUTH FACE OF 400mm DIA. TREE 3 METRES NORTH OF STA. 2+048
 - BENCHMARK No. 7 ELEV.=57.89
NAIL IN WEST FACE OF 350mm DIA. TREE 4 METRES SOUTH OF STA. 2+534
 - BENCHMARK No. 8 ELEV.=59.10
NAIL IN WEST FACE OF 600mm DIA. TREE 24 METRES NORTHEAST OF STA. 2+905
 - BENCHMARK No. 9 ELEV.=60.15
NAIL IN EAST FACE OF 800mm DIA. TREE 4 METRES NORTH OF STA. 3+435
 - BENCHMARK No. 10 ELEV.=61.58
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 - BENCHMARK No. 11 ELEV.=62.57
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NAIL IN NORTHEAST FACE OF 300mm DIA. TREE 5 METRES SOUTH OF STA. 4+767
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 - BENCHMARK No. 14 ELEV.=65.74
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 - BENCHMARK No. 17 ELEV.=72.33
NAIL IN SOUTH FACE OF FENCE POST 25 METRES NORTH OF STA. 6+956
 - BENCHMARK No. 18 ELEV.=74.71
TOP OF DOWNSTREAM (WEST) END OF C.M.P. CULVERT ARCH AT STA. 7+410

LEGEND:

No.	ISSUES AND REVISIONS	DATE	BY
5.	REPORT SUBMISSION	2020-03-27	DEL
4.	DRAFT REPORT SUBMISSION	2019-07-11	DEL
3.	INFORMATION MEETING	2019-06-25	DEL
2.	SUBMITTED FOR DFO REVIEW	2018-12-14	DEL
1.	ON-SITE MEETING	2009-04-21	DEL



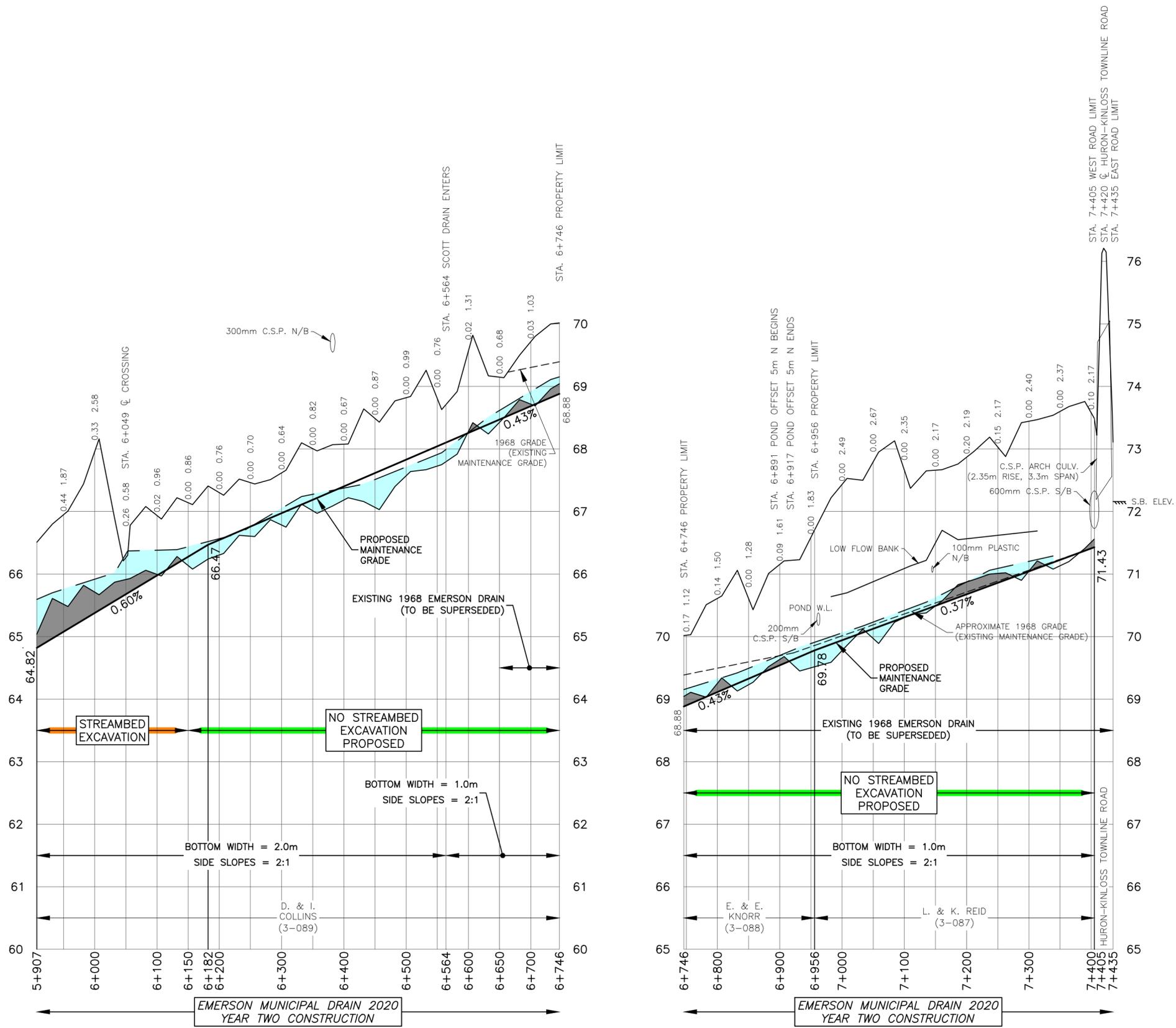
PROJECT: EMERSON MUNICIPAL DRAIN 2020

DRAWING: Profile
(Sta. 4+055 to Sta. 5+907)



PROJ. MGR:	S.B.	DESIGNED BY:	S.B.	DRAWN BY:	R.U.	CHECKED BY:	S.B.
DRAWING SCALE:	AS NOTED	DATE:	MARCH 27, 2020	PROJECT No.:	0921	DRAWING No.:	4 of 11

C:\USERS\RAY\Desktop\0921 - EMERSON\0921 - EMERSON - REPORT\0921 - EMERSON - REPORT



- NOTES:**
- BENCHMARK No. 1 ELEV.=50.00
NAIL IN SOUTH FACE OF 300mm DIA. TREE 10 METRES NORTH OF STA. 0+001
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TOP OF DOWNSTREAM (WEST) END OF C.M.P. CULVERT ARCH AT STA. 7+410

LEGEND:

No.	ISSUES AND REVISIONS	DATE	BY
5.	REPORT SUBMISSION	2020-03-27	DEL
4.	DRAFT REPORT SUBMISSION	2019-07-11	DEL
3.	INFORMATION MEETING	2019-06-25	DEL
2.	SUBMITTED FOR DFO REVIEW	2018-12-14	DEL
1.	ON-SITE MEETING	2009-04-21	DEL

March 27, 2020

PROJECT: EMERSON MUNICIPAL DRAIN 2020
DRAWING: Profile (Sta. 5+907 to Sta. 7+435)

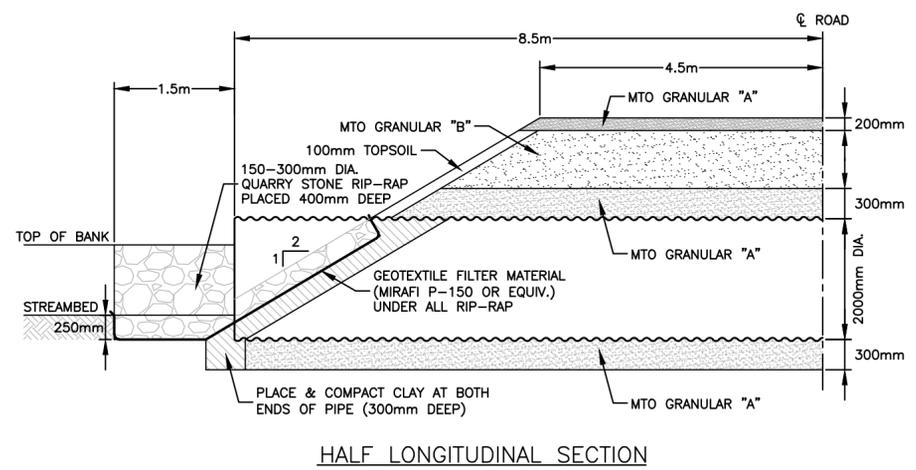
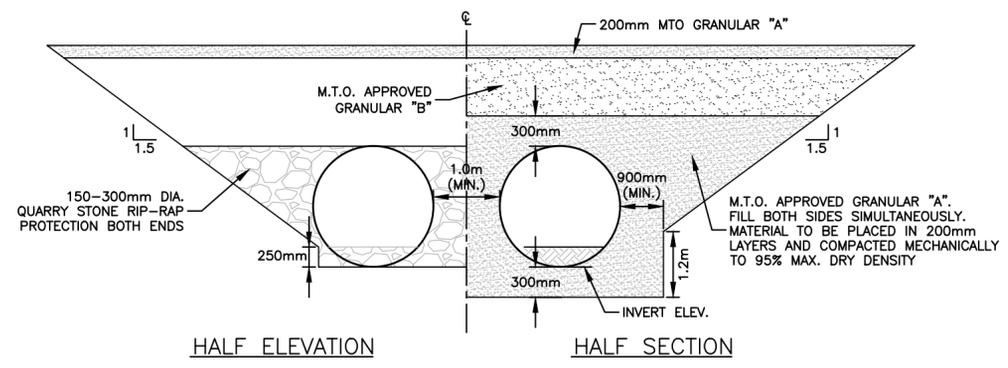
DIETRICH ENGINEERING LIMITED
CONSULTING ENGINEERS
10 Alpine Court, Kitchener, ON, N2E 2M7

PROJ. MGR:	S.B.	DESIGNED BY:	S.B.	DRAWN BY:	R.U.	CHECKED BY:	S.B.
DRAWING SCALE:	AS NOTED	DATE:	MARCH 27, 2020	PROJECT No.:	0921	DRAWING No.:	5 of 11

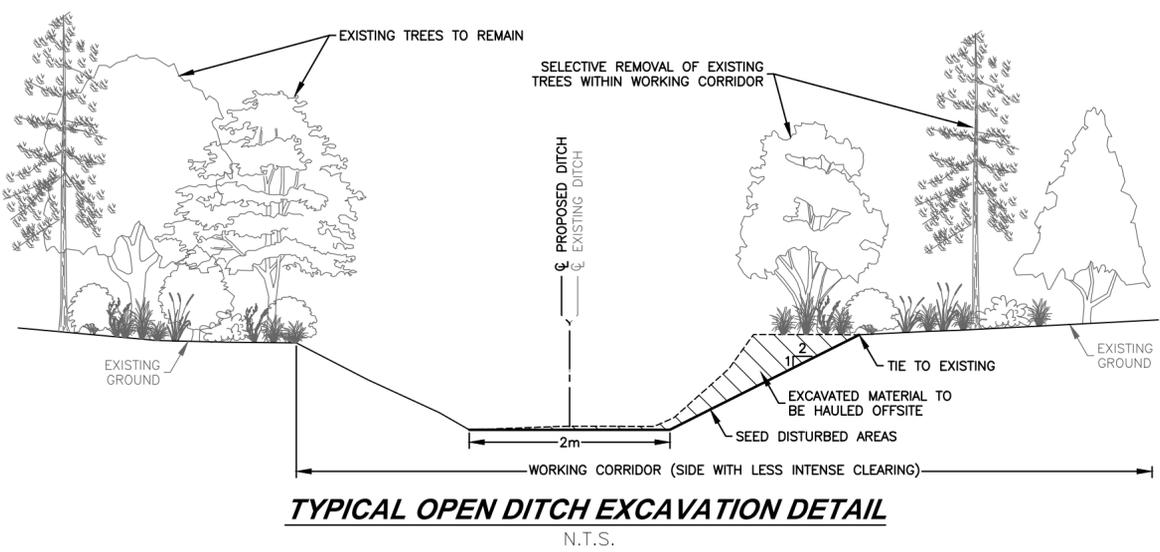
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NOTES:

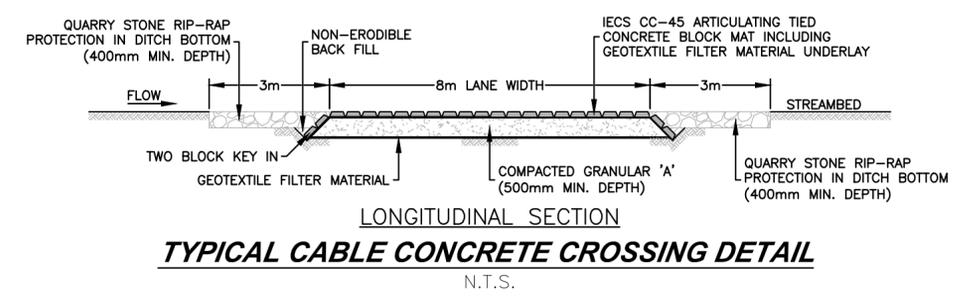
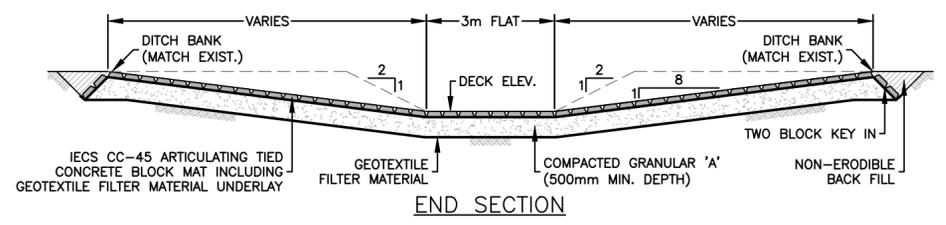
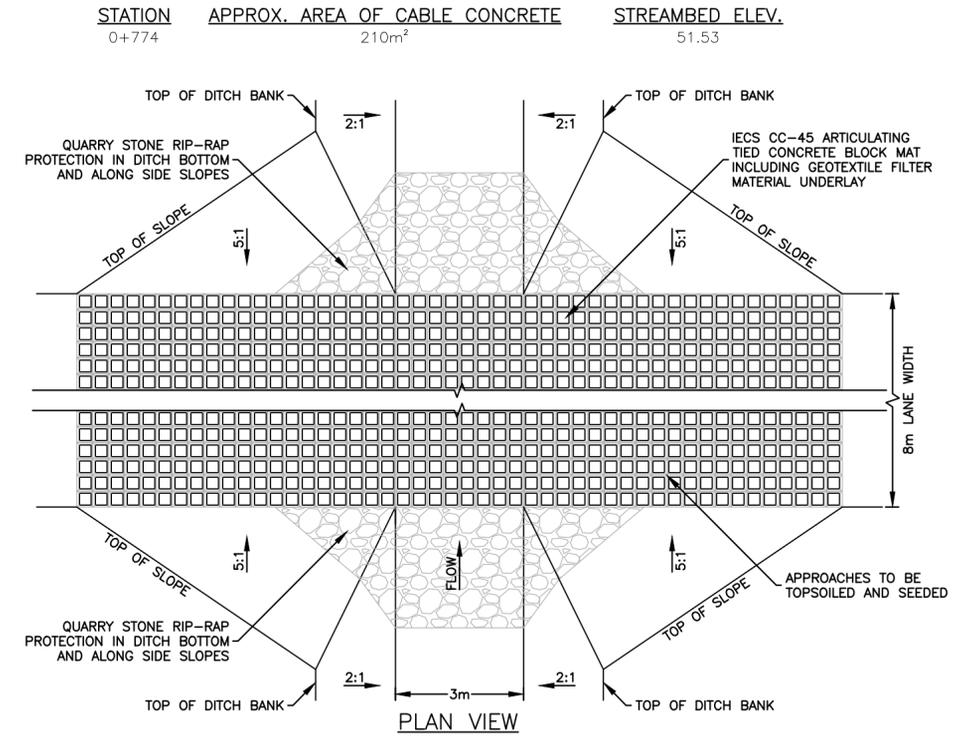
STATION	DIAMETER	LENGTH	INVERT	STREAMBED	CORRUGATIONS	THICKNESS
0+609	2-2000mm	18m	U.S.E. = 50.85 D.S.E. = 50.81	U.S.E. = 51.15 D.S.E. = 51.11	125mm x 25mm	2.80mm



TYPICAL ROAD CULVERT DETAIL
N.T.S.



TYPICAL OPEN DITCH EXCAVATION DETAIL
N.T.S.



TYPICAL CABLE CONCRETE CROSSING DETAIL
N.T.S.

LEGEND:

No.	ISSUES AND REVISIONS	DATE	BY
5.	REPORT SUBMISSION	2020-03-27	DEL
4.	DRAFT REPORT SUBMISSION	2019-07-11	DEL
3.	INFORMATION MEETING	2019-06-25	DEL
2.	SUBMITTED FOR DFO REVIEW	2018-12-14	DEL
1.	ON-SITE MEETING	2009-04-21	DEL



PROJECT: EMERSON MUNICIPAL DRAIN 2020

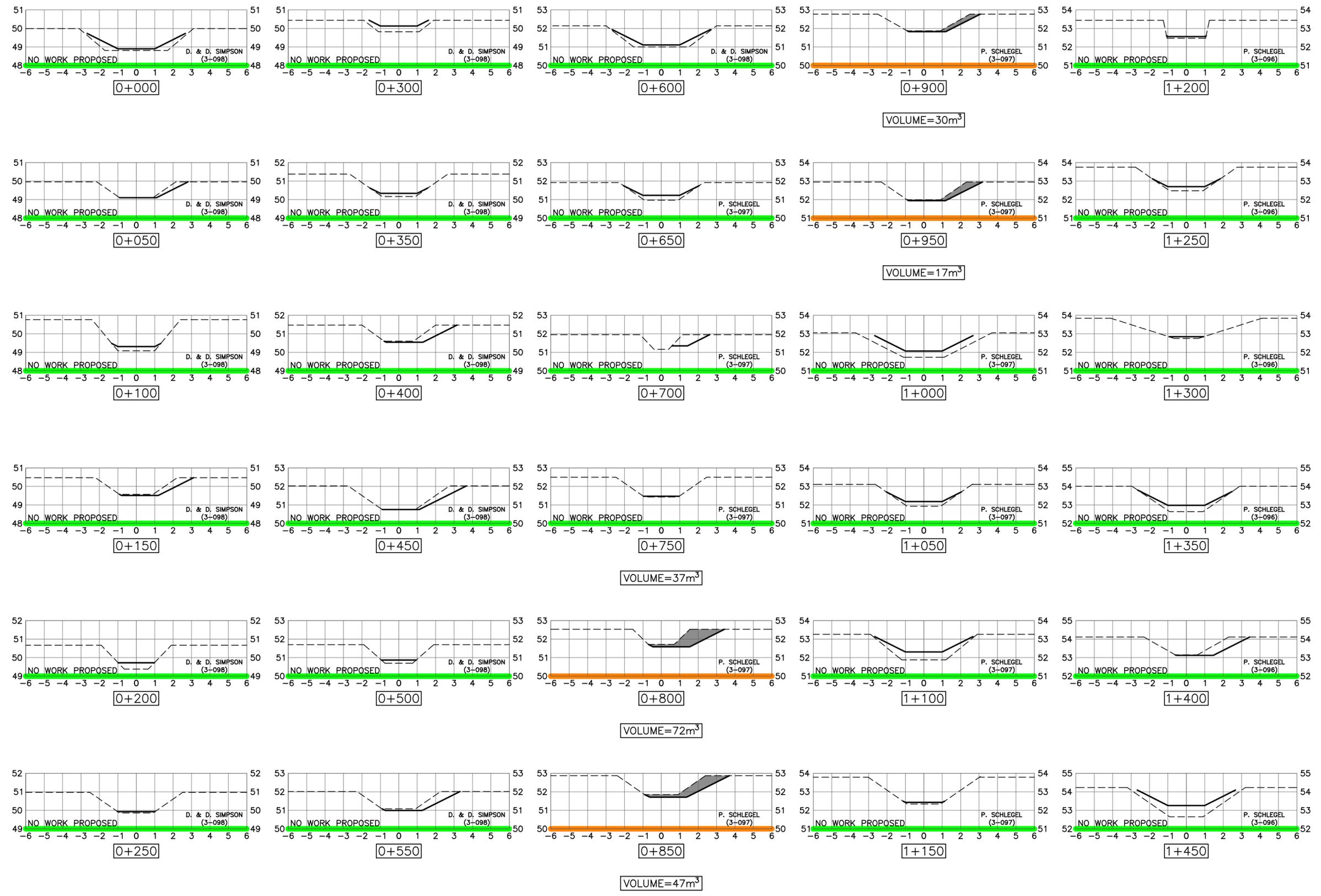
DRAWING: Details

DEL
DIETRICH ENGINEERING LIMITED
CONSULTING ENGINEERS
10 Alpine Court, Kitchener, ON, N2E 2M7

PROJ. MGR.	S.B.	DESIGNED BY:	S.B.	DRAWN BY:	R.U.	CHECKED BY:	S.B.
DRAWING SCALE:	AS NOTED	DATE:	MARCH 27, 2020	PROJECT No.	0921	DRAWING No.	6 of 11

C:\USERS\RAY\UNDESKTOP\0921_EMERSON\0921_EMERSON - REPORT\0921_EMERSON - REPORT

NOTES:



LEGEND:

No.	ISSUES AND REVISIONS	DATE	BY
5.	REPORT SUBMISSION	2020-03-27	DEL
4.	DRAFT REPORT SUBMISSION	2019-07-11	DEL
3.	INFORMATION MEETING	2019-06-25	DEL
2.	SUBMITTED FOR DFO REVIEW	2018-12-14	DEL
1.	ON-SITE MEETING	2009-04-21	DEL



PROJECT: EMERSON MUNICIPAL DRAIN 2020
 DRAWING: Sections (Sta. 0+000 to Sta. 1+450)

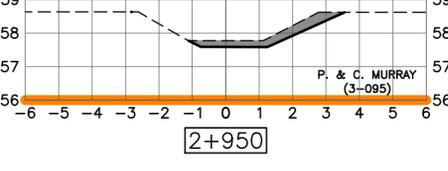
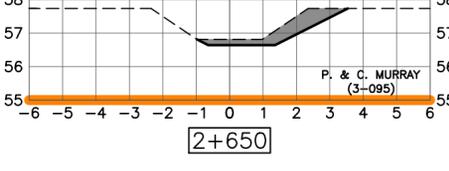
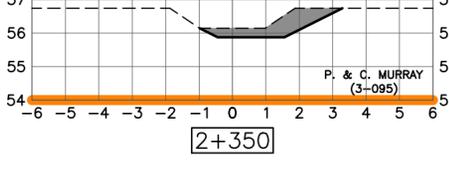
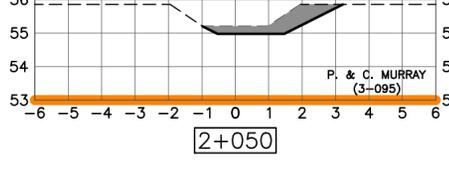
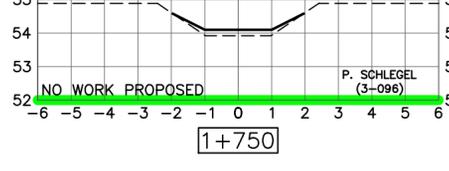
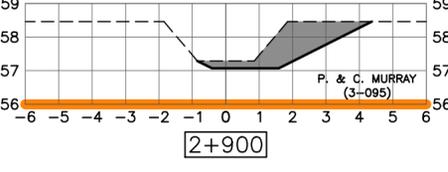
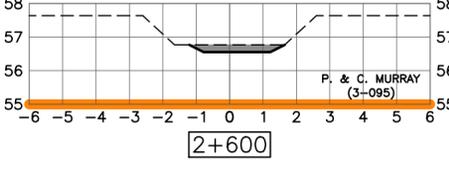
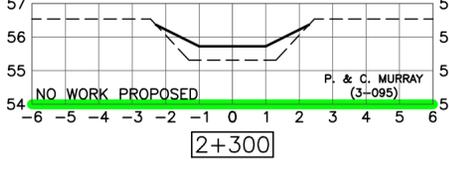
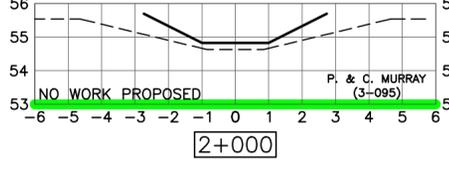
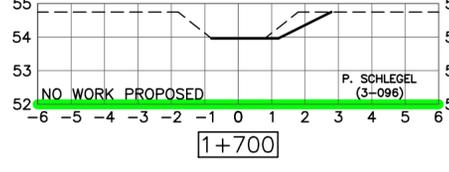
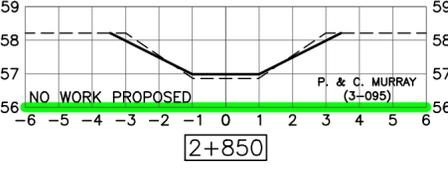
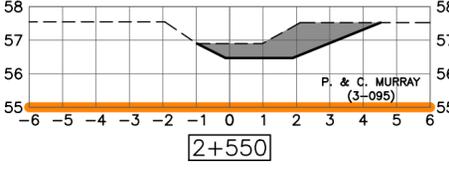
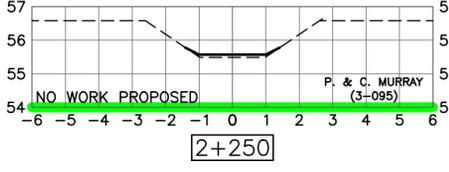
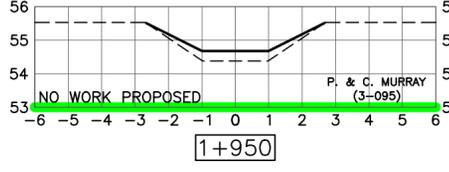
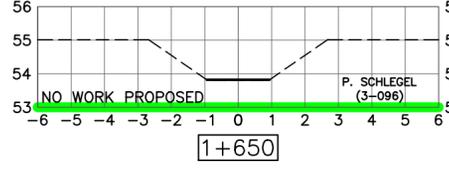
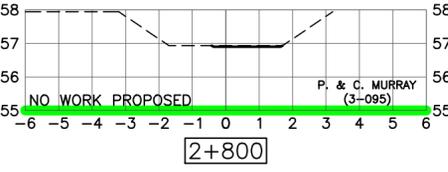
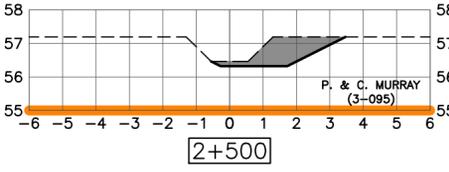
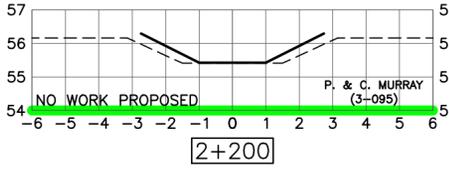
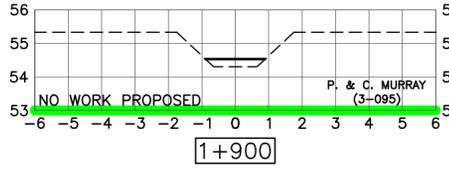
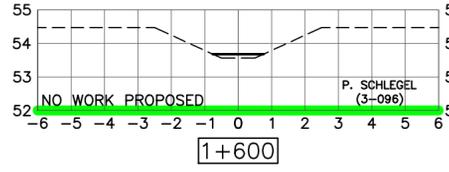
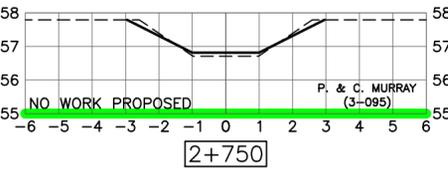
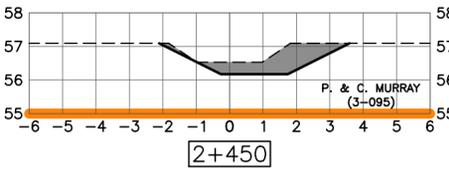
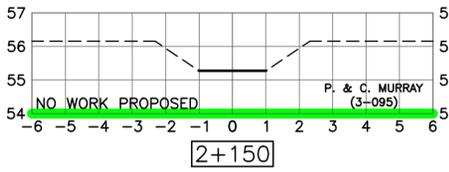
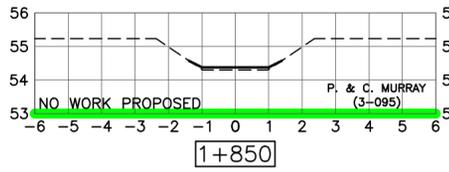
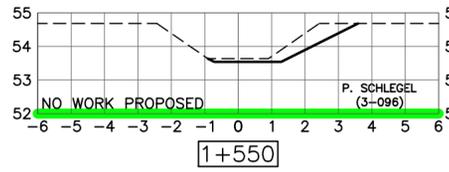
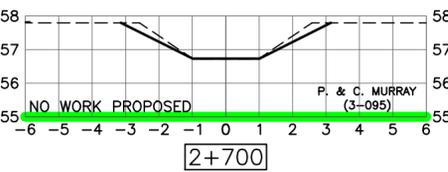
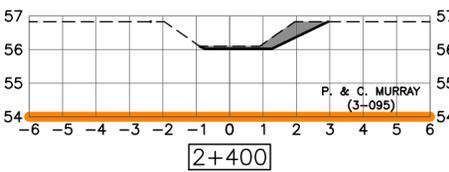
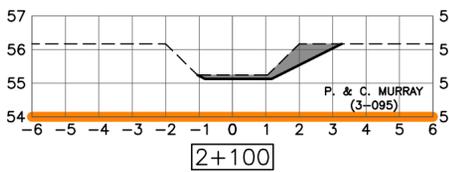
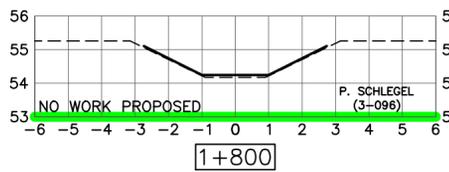
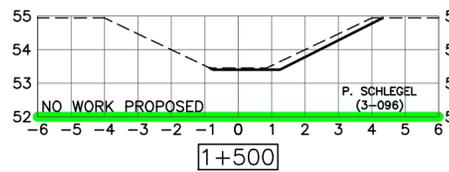


DIETRICH ENGINEERING LIMITED
 CONSULTING ENGINEERS

10 Alpine Court, Kitchener, ON, N2E 2M7

PROJ. MGR:	S.B.	DESIGNED BY:	S.B.	DRAWN BY:	R.U.	CHECKED BY:	S.B.
DRAWING SCALE:	AS NOTED	DATE:	MARCH 27, 2020	PROJECT No.:	0921	DRAWING No.:	7 of 11

C:\USERS\RAY\UNDESKTOP\0921 EMERSON\REPORT\0921 EMERSON - REPORT



VOLUME=25m³

VOLUME=67m³

VOLUME=90m³

VOLUME=107m³

VOLUME=79m³

VOLUME=66m³

VOLUME=45m³

VOLUME=93m³

VOLUME=32m³

VOLUME=36m³

VOLUME=57m³

VOLUME=54m³

VOLUME=32m³

VOLUME=38m³

SECTION SCALE



NOTES:

LEGEND:

No.	ISSUES AND REVISIONS	DATE	BY
5.	REPORT SUBMISSION	2020-03-27	DEL
4.	DRAFT REPORT SUBMISSION	2019-07-11	DEL
3.	INFORMATION MEETING	2019-06-25	DEL
2.	SUBMITTED FOR DFO REVIEW	2018-12-14	DEL
1.	ON-SITE MEETING	2009-04-21	DEL



PROJECT: EMERSON MUNICIPAL DRAIN 2020

DRAWING: Sections
(Sta. 1+500 to Sta. 2+950)

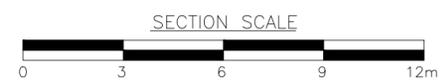
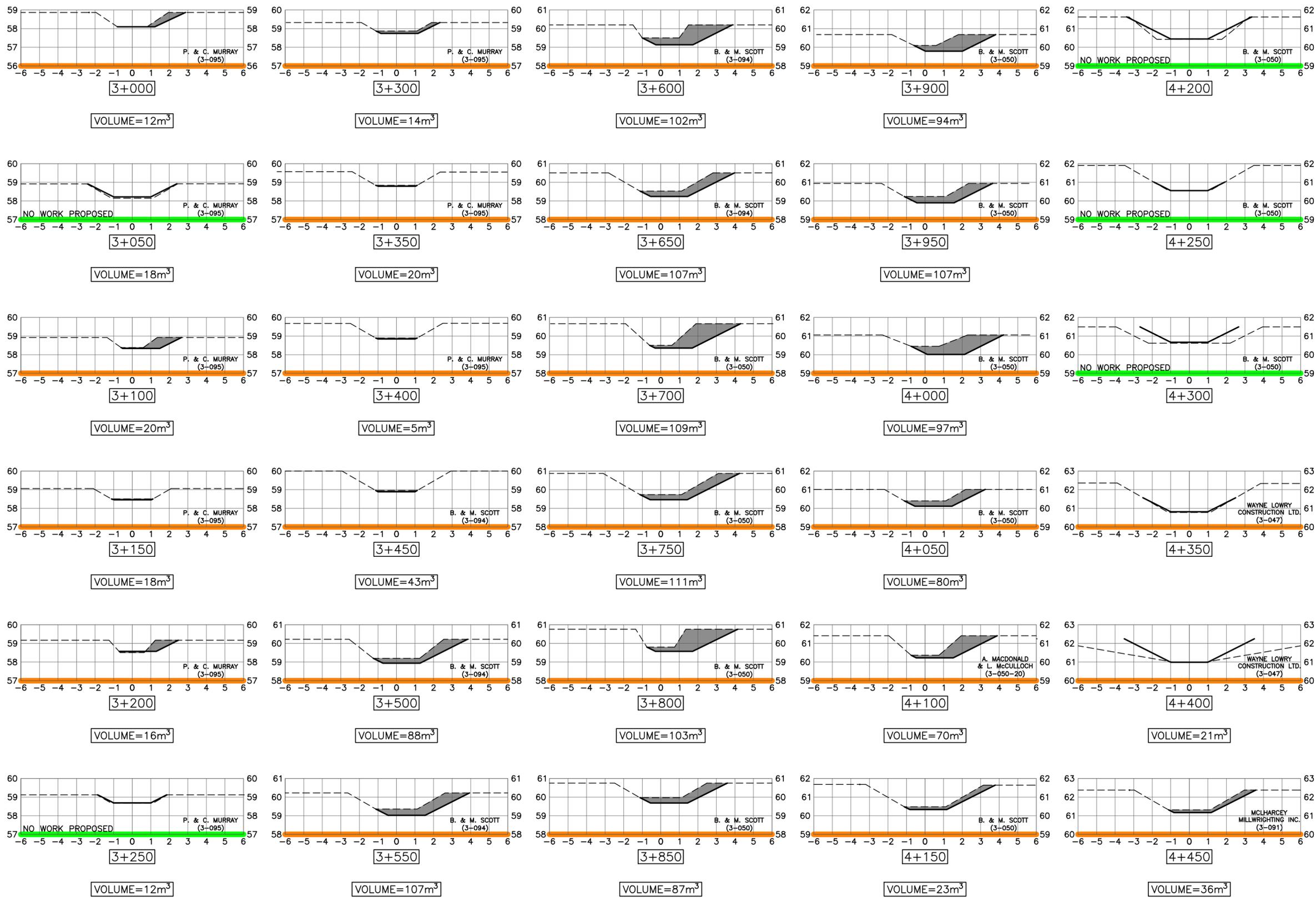


DIETRICH ENGINEERING LIMITED
CONSULTING ENGINEERS

10 Alpine Court, Kitchener, ON, N2E 2M7

PROJ. MGR.	S.B.	DESIGNED BY:	S.B.	DRAWN BY:	R.U.	CHECKED BY:	S.B.
DRAWING SCALE:	AS NOTED	DATE:	MARCH 27, 2020	PROJECT No.	0921	DRAWING No.	8 of 11

C:\USERS\RAY\UNDESKTOP\0921 EMERSON - REPORT\0921 EMERSON - REPORT



NOTES:

LEGEND:

No.	ISSUES AND REVISIONS	DATE	BY
5.	REPORT SUBMISSION	2020-03-27	DEL
4.	DRAFT REPORT SUBMISSION	2019-07-11	DEL
3.	INFORMATION MEETING	2019-06-25	DEL
2.	SUBMITTED FOR DFO REVIEW	2018-12-14	DEL
1.	ON-SITE MEETING	2009-04-21	DEL



PROJECT: EMERSON MUNICIPAL DRAIN 2020

DRAWING: Sections (Sta. 3+000 to Sta. 4+450)

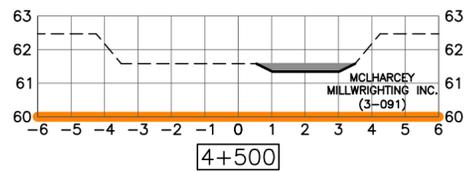


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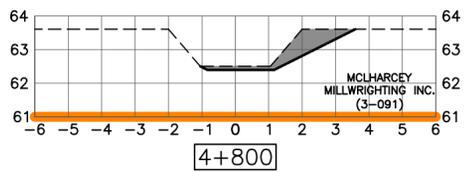
10 Alpine Court, Kitchener, ON, N2E 2M7

PROJ. MGR:	S.B.	DESIGNED BY:	S.B.	DRAWN BY:	R.U.	CHECKED BY:	S.B.
DRAWING SCALE:	AS NOTED	DATE:	MARCH 27, 2020	PROJECT No.:	0921	DRAWING No.:	9 of 11

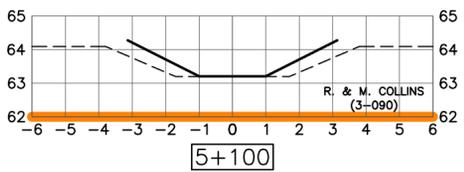
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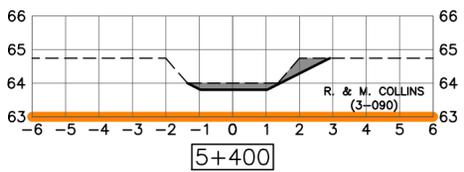
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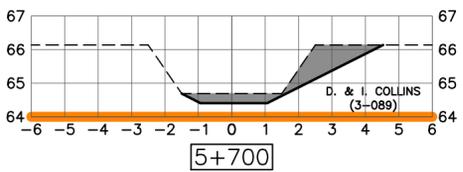
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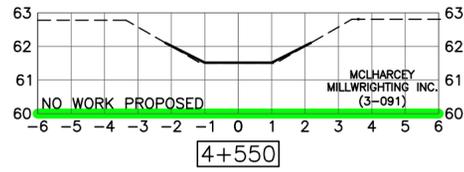
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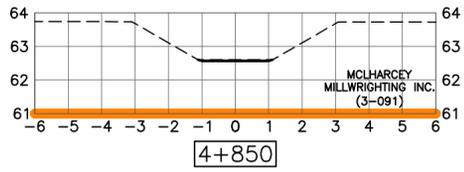
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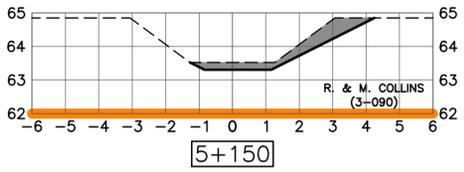
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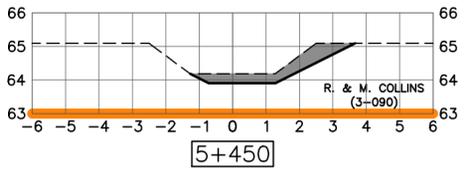
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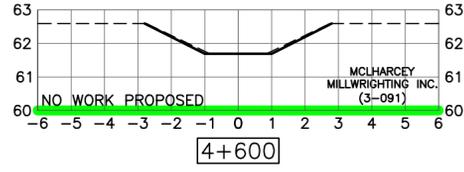
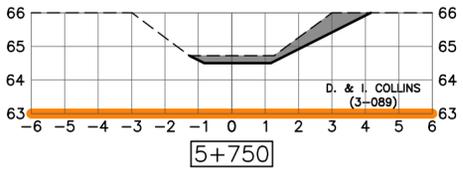
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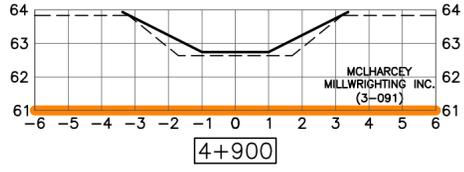
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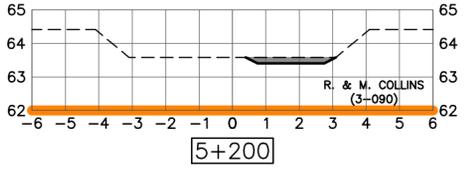
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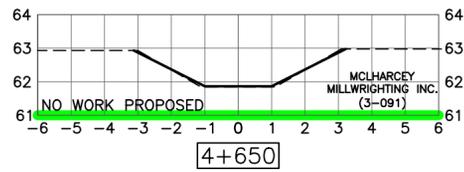
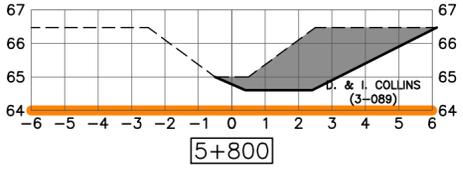
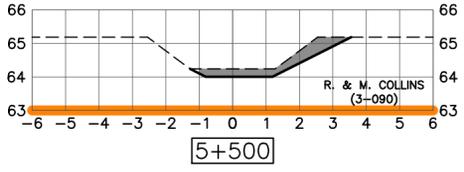
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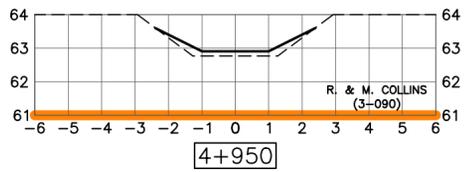
VOLUME=39m³



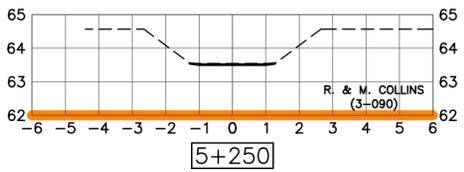
VOLUME=227m³



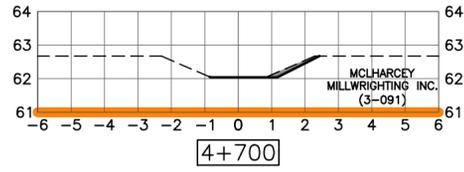
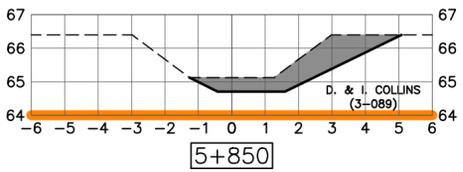
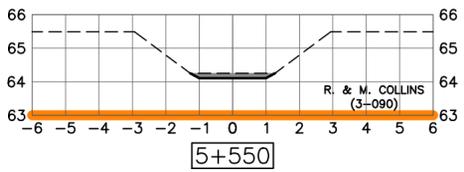
VOLUME=15m³



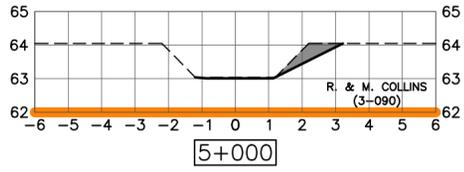
VOLUME=27m³



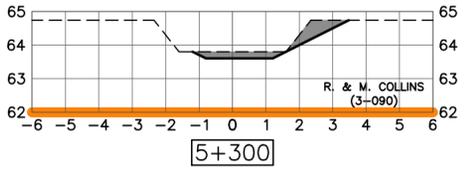
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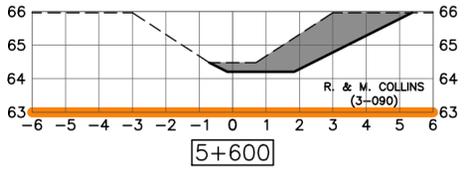
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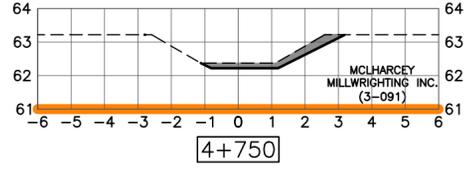
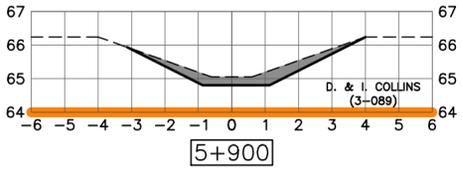
VOLUME=15m³



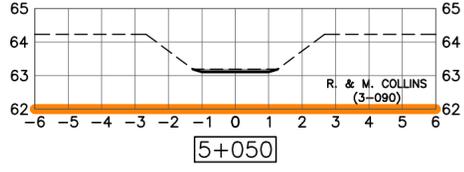
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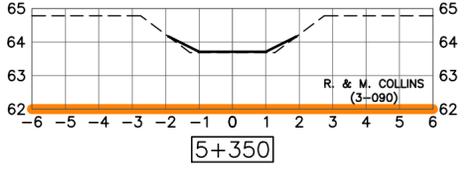
VOLUME=121m³



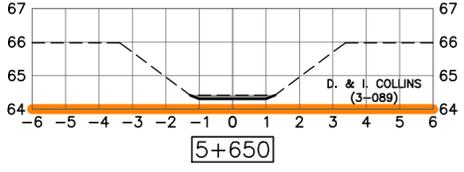
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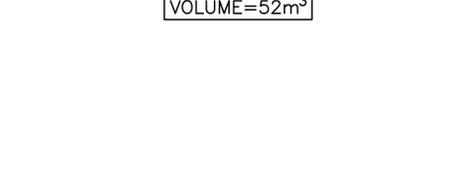
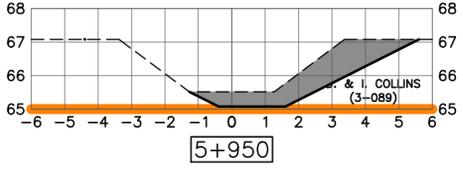
VOLUME=20m³



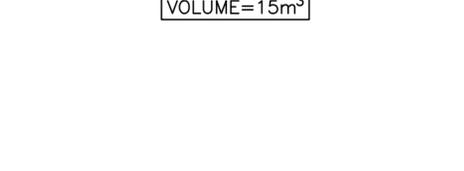
VOLUME=98m³



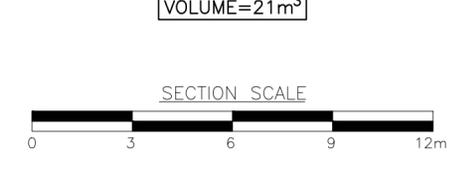
VOLUME=137m³



VOLUME=52m³



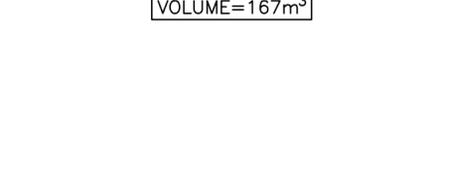
VOLUME=15m³



VOLUME=21m³



VOLUME=63m³



VOLUME=167m³



NOTES:

LEGEND:

No.	ISSUES AND REVISIONS	DATE	BY
5.	REPORT SUBMISSION	2020-03-27	DEL
4.	DRAFT REPORT SUBMISSION	2019-07-11	DEL
3.	INFORMATION MEETING	2019-06-25	DEL
2.	SUBMITTED FOR DFO REVIEW	2018-12-14	DEL
1.	ON-SITE MEETING	2009-04-21	DEL



PROJECT: EMERSON MUNICIPAL DRAIN 2020
 DRAWING: Sections
 (Sta. 4+500 to Sta. 5+950)

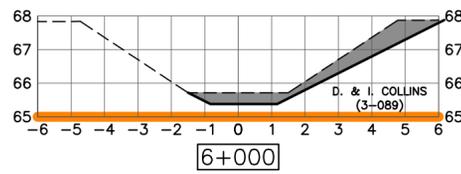


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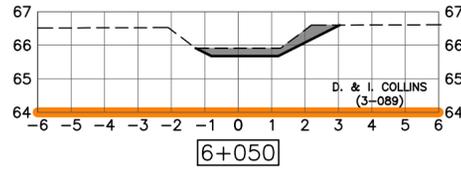
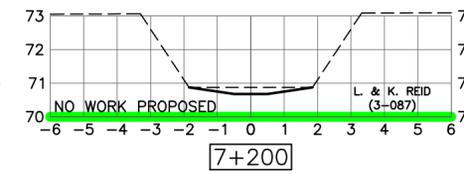
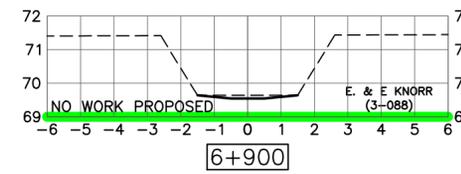
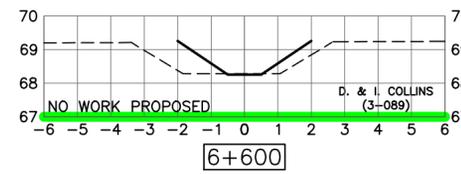
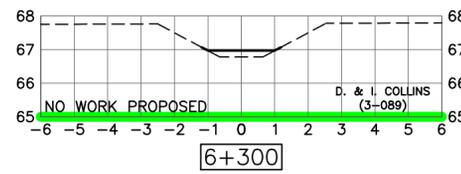
10 Alpine Court, Kitchener, ON, N2E 2M7

PROJ. MGR:	S.B.	DESIGNED BY:	S.B.	DRAWN BY:	R.U.	CHECKED BY:	S.B.
DRAWING SCALE:	AS NOTED	DATE:	MARCH 27, 2020	PROJECT No.:	0921	DRAWING No.:	10 of 11

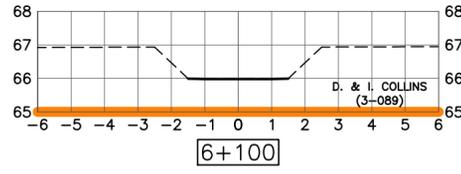
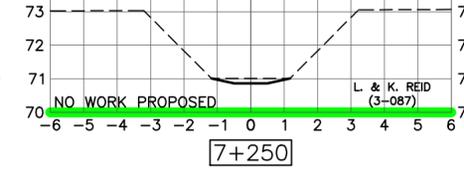
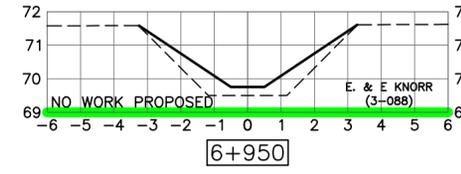
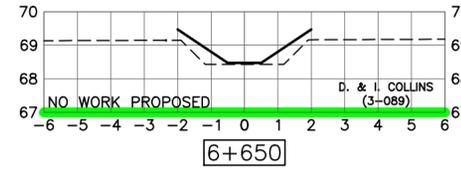
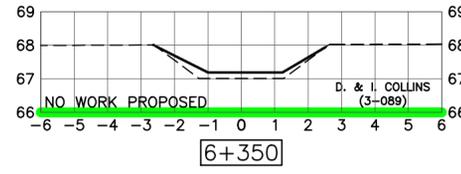
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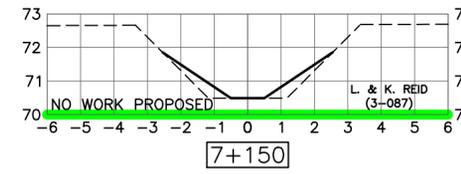
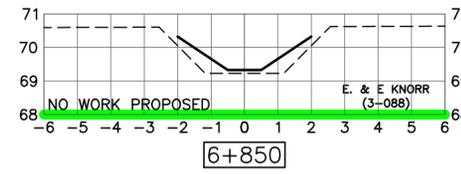
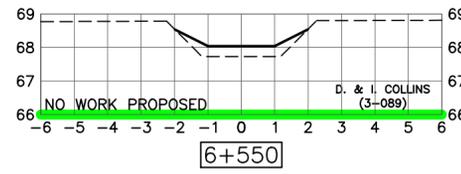
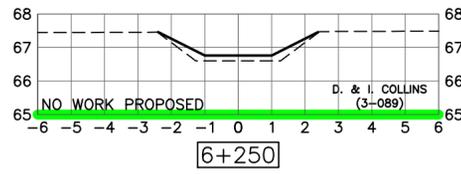
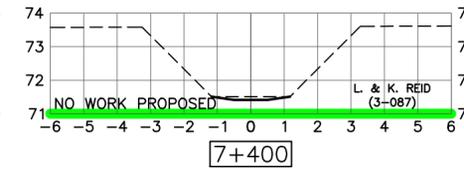
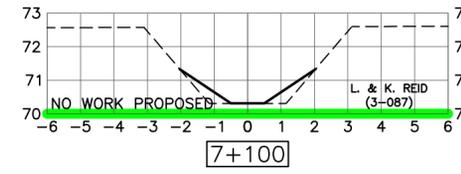
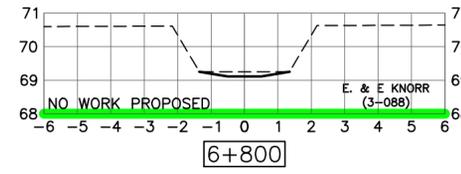
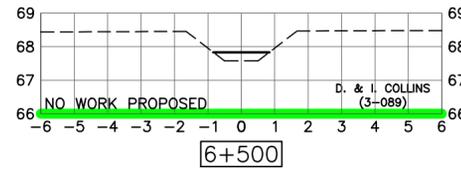
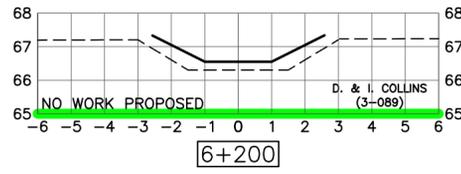
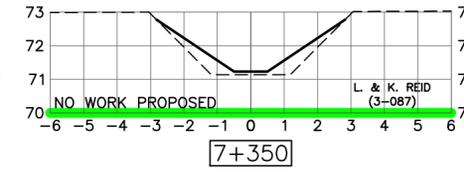
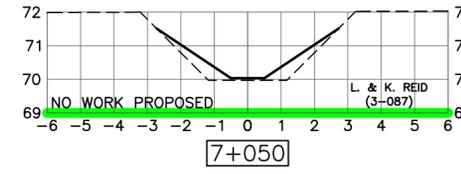
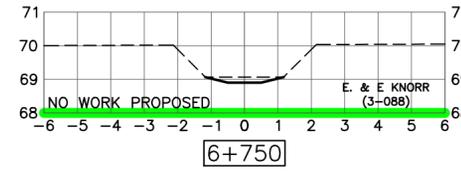
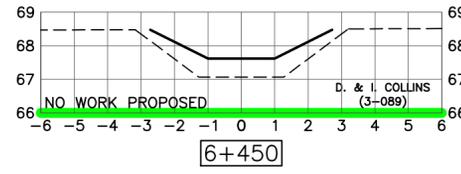
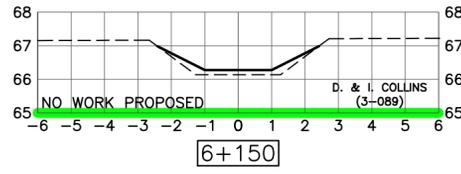
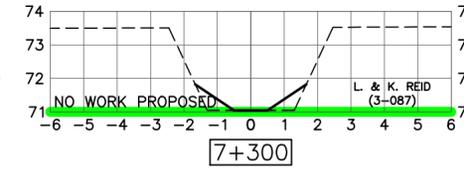
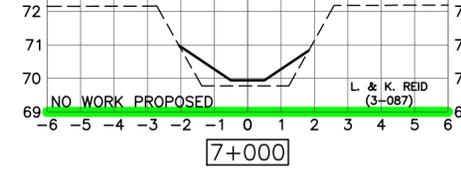
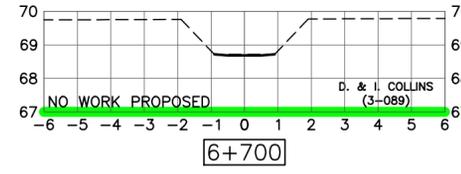
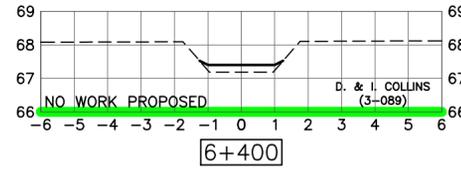
VOLUME=94m³



VOLUME=26m³



VOLUME=1m³



SECTION SCALE



NOTES:

LEGEND:

No.	ISSUES AND REVISIONS	DATE	BY
5.	REPORT SUBMISSION	2020-03-27	DEL
4.	DRAFT REPORT SUBMISSION	2019-07-11	DEL
3.	INFORMATION MEETING	2019-06-25	DEL
2.	SUBMITTED FOR DFO REVIEW	2018-12-14	DEL
1.	ON-SITE MEETING	2009-04-21	DEL



PROJECT: EMERSON MUNICIPAL DRAIN 2020

DRAWING: Sections
(Sta. 6+000 to Sta. 7+435)



DIETRICH ENGINEERING LIMITED
CONSULTING ENGINEERS

10 Alpine Court, Kitchener, ON, N2E 2M7

PROJ. MGR.	S.B.	DESIGNED BY:	S.B.	DRAWN BY:	R.U.	CHECKED BY:	S.B.
DRAWING SCALE:	AS NOTED	DATE:	MARCH 27, 2020	PROJECT No.:	0921	DRAWING No.:	11 of 11

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