

**DRAINAGE REPORT
FOR THE**

GIBBS DRAIN

**IN THE
FORMER TOWNSHIP OF GOSFIELD NORTH
TOWN OF KINGSVILLE**



FINAL REPORT
15 NOVEMBER 2024
OLIVER E. T. MOIR, P. ENG.
FILE No. 21-3142

File No. 21-3142

Mayor and Members of Council
Town of Kingsville
2021 Division Road North
Kingsville, Ontario
N9Y 2Y9

**Drainage Report for the
GIBBS DRAIN
In the Former Township of Gosfield North
Town of Kingsville**

Mayor and Members of Council:

Instructions

The Municipality received a petition on 23 June 2023 from the Ministry of Transportation Ontario (MTO) for the incorporation of the lower portion of an existing private open drain that will be crossed by future roadworks being undertaken by the Ministry. The said roadworks involving construction of the Unnamed Road connecting County Road No. 29 to Inman Sideroad.

The petition for drainage being in accordance with Section 4 of the Drainage Act. Pursuant to Section 8(1) of the Drainage Act, the Town of Kingsville appointed Dillon Consulting Limited on 14 August 2023 to prepare a report.

Watershed Description

The Gibbs Drain consists of an open channel commencing at the north limit of the Unnamed Road right-of-way. The drain flows south along the easterly limit of property Roll No. 560-00220 crossing the roadway and proceeding southerly to its outlet into the No. 5 Drain. The upstream drainage area for the said works described herein is approximately 27.1 hectares (67 acres) of which approximately 39 acres of tiled lands are on the Gibbs farm situated north of the Unnamed Road and will be connected to the Gibbs Drain. The north-easterly part of the said farm is draining to the Inman Sideroad ditch. The surficial soils are predominately Brookston Clay which is defined as having poor natural drainage.

Area Requiring Drainage / Sufficiency of Petition

The area requiring drainage encompasses lands within the west half of Lot 264, South Talbot Road Concession. The Gibbs Drain will provide legal outlet for part of the Unnamed Road. In terms of sufficiency of the petition, we have determined the petition to be valid in accordance with Section 4(1)(c) of the Drainage Act, where the drainage works is required for a road and the petition has been signed by a person having jurisdiction over such road.

On-Site Meeting

An on-site meeting was held on 15 August 2024 to discuss the Gibbs Drain. A summary of the meeting is provided within Schedule 'A' herein.



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On-Site Meeting

An on-site meeting was held on 15 August 2024 to discuss the Gibbs Drain. A summary of the meeting is provided within Schedule 'A' herein.

Survey

Our survey and examination of the Gibbs Drain was carried out in February 2024. The survey comprised the recording of topographic data and examining the channel for available depth necessary to provide sufficient drainage.

Design Considerations

To provide sufficient depth and improved design capacity to better serve the upstream lands and associated new drain crossing required for the Unnamed Road, a drain widening and lowering of the existing drain is required. The improvements start at the drain's outlet into the No. 5 Drain and continue to the northerly extents of the future Unnamed Road. The drain spoils removed as part of the drain cleanout are to be trucked away and disposal off-site and managed by the Highway No. 3 project.

For Culvert No. 1, involving a new culvert across the Unnamed Road, the proposed culvert is a new 24.4 m long, 1830 mm x 910 mm concrete box culvert having a capacity to convey drainage flows from a 1 in 25-year storm event such that the headwaters do not overtop the adjacent drainage swales for the said roadway.

Surface water drainage from the north is intercepted by the Unnamed Road including a portion of the said road (approximately 2 acres) that will be conveyed by the Gibbs Drain. The remaining easterly portion of the Unnamed Road will have drainage directed to the Inman Sideroad ditch.

New Private Header Tile

The existing tile drainage system on the Gibbs farm will be intercepted by a new header tile situated 3 metres north of the north property limit of the Unnamed Road. The header tile shall consist of approximately 225 metres of 300 mm diameter high density polyethylene pipe (HDPE) Boss 2000 smooth interior wall that will intercept the two existing header tiles at concrete junction boxes placed on the private header tile. The new private header tile shall outlet into the top end of the Gibbs Drain. The private header tile is to be completed as part of the roadworks and do not constitute part of the Gibbs Drain.

Allowances

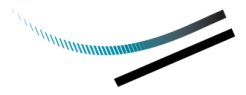
In accordance with Sections 29 of the Drainage Act, we have determined that the landowner on the west side of the drain receive compensation for additional lands required to widen the drain on the west side and to establish a new 6.0 m wide corridor beyond the widened portion of drain along the length from Station 0+000 to Station 0+149.

In accordance with Section 31 of the Drainage Act, we have provided compensation for the estimated value of the existing ditch in its unimproved state, that is being recommended for improvement and being incorporated in part as a new municipal drain.

Schedule 'B' herein, shows the distribution of these allowances in the total amount of \$7,000.00 for the Gibbs Drain.

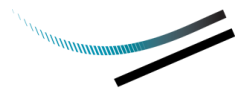
Recommendations and Cost Estimate

Based on our review of the history, the information obtained from our examination and analysis of the survey data, we recommend that the drainage works be repaired and improved as described below:



Item	Description	Amount
<u>GIBBS DRAIN</u>		
1.	Brushing of the drain within the working area, including removal and disposal off-site with trimming and/or removal of existing trees as required to accommodate the drainage works.	\$3,500.00
2.	Excavation and trucking of excavated material, as follows:	
	a) Excavation of the drain bottom and west bank from Station 0+000 to Station 0+149, totalling approximately 149 linear metres of drain and approximately 170 m ³ of material. The work shall include trucking of drain spoils off-site to an approved disposal site managed by the Highway No. 3 widening project.	\$6,000.00
3.	Hydroseeding of reshaped west drain bank, as follows:	
	a) Supply and placement of fibre reinforced matrix hydraulic mulch seed on west drain bank from Station 0+000 to Station 0+149, approx. 300 m ² .	\$2,500.00
4.	Stone erosion protection, as follows:	
	a) Supply and placement of R-50 rip rap stone erosion protection on south drain bank of No. 5 Drain at Gibbs Drain outlet, minimum 350 mm thickness, complete with filter fabric underlay, approx. 20 m ² .	\$2,000.00
5.	New Culvert Work, as follows:	
	a) <u>Culvert No. 1 (Unnamed Road)</u> –Supply and installation of a new 24.4 m long, 1830 mm x 910 mm precast concrete box culvert. Clear stone bedding below the culvert, minimum 150 mm thickness (approximately 15 tonnes), within roadway full Granular ‘A’ (crushed limestone) backfill material from the bottom of the pipe to the bottom of road surface (approximately 180 tonnes) compacted, clean native or imported clean native backfill material beyond roadway compacted (approximately 70 m ³) and sloping stone erosion protection R-50 rip rap, minimum 350 mm thickness pipe end treatment, approximately 50 m ² .	\$160,000.00
6.	Temporary silt control measures during construction.	\$5,000.00
	SUB-TOTAL	\$179,000.00
7.	Allowances as per Sections 29 and 31 of the Drainage Act	\$7,000.00
8.	Report, Assessments and Final Inspection	\$19,000.00

Item	Description	Amount
9.	Expenses and Incidentals	\$1,000.00
10.	ERCA review and permit fee.	\$800.00
	TOTAL ESTIMATED COSTS GIBBS DRAIN	\$206,800.00



The estimate provided in this report was prepared according to current materials and installation prices as of the date of this report. In the event of delays from the time of filing of the report by the Engineer to the time of tendering the work, it is understood that the estimate of cost is subject to inflation. The rate of inflation shall be calculated using the Consumer Price Index applied to the cost of construction from the date of the report to the date of tendering.

Assessment of Costs

The individual assessments are comprised of three (3) assessment components:

- i. Benefit (*advantages relating to the betterment of lands, roads, buildings, or other structures resulting from the improvement to the drain*).
- ii. Outlet Liability (*part of cost required to provide outlet for lands and roads*).
- iii. Special Benefit (*additional work or feature that may not affect function of the drain*).

We have assessed the estimated costs for the Gibbs Drain against the affected roads as listed in Schedule 'C' under "Special Benefit." Details of the Special Benefit assessment listed are provided in the Assessment Rationale below.

Assessment Rationale

Special Benefit assessment shown in Schedule 'C' was derived as follows:

- 1. As the new culvert works, deepening and widening of the open drain are to facilitate the proposed highway project, we have assessed 100% of the costs to the Ministry of Transportation Ontario in accordance with Section 26 of the Drainage Act as a non-proratable assessment. Since there are no special benefit assessments to other landowners, Schedule 'D' for the purposes of Special Benefit details has been omitted from this report.

Future Maintenance (Culvert No. 1 – Unnamed Road)

For Culvert No. 1, it shall be maintained by the Town of Kingsville Road Authority for 100% of the costs, subject of course, to any variations that may be made under the authority of the Drainage Act.

Future Maintenance (Open Drain Portion from Station 0+000 to 0+149)

The open drain portion from Station 0+000 to Station 0+149 shall be maintained by the Town of Kingsville. The future repair and maintenance costs shall be assessed to the lands and the roads for Benefit and Outlet assessments in the same relative proportions as listed in Schedule 'E' herein, subject of course to any variations that may be made under the authority of the Drainage Act. The assessment schedule is based on an arbitrary \$10,000.00 of future maintenance costs for which actual costs would be prorated.

Future Maintenance (Open Drain Portion from Station 0+149 to 0+179)

The open drain portion existing within the Unnamed Road corridor from Station 0+149 to Station 0+179 shall be maintained by the Town of Kingsville. The future repair and maintenance costs shall be assessed 100% against the Town of Kingsville Road Authority.

Drawings and Specifications

Attached to this report is Schedule 'F', which are Specifications setting out the details of the recommended works and Schedule 'G' which represent the drawings that are attached to this report.

Page 1 of 4 – Overall Plan

Page 2 of 4 – Plan 1 & Culvert No. 1 Details

Page 3 of 4 – Profile & Cross Sections

Page 4 of 4 – Header Tile Details

Construction Drawings and Specifications

The work included in this report will be performed under the provincial contract for the Widening of King's Highway No. 3 starting from 0.8 km west of Cameron Sideroad and continuing easterly to 1.8 km west of County Road No. 31. Contract drawings for the roadworks including drain realignment, Culvert No. 3 (Hwy 3 crossing) and other associated road culverts under County Road No. 27 have been prepared complete with associated specifications which shall adhere to the elevations, alignment, sizes, materials and location and be generally in compliance with this report.

Approvals

The construction and/or improvement to a drainage works, including repair and maintenance activities, and all operations connected therewith are subject to the approval, inspection, by-laws, and regulations of all Municipal, Provincial, Federal and other authorities having jurisdiction in respect to any matters embraced by the proposed works. Prior to any construction or maintenance works, the Municipality or proponent designated on the Municipality's behalf shall obtain all required approvals/permits and confirm any construction limitations including timing windows, mitigation/off-setting measures, standard practices or any other limitations related to in-stream works.

Agency Reviews

The Essex Region Conservation Authority (ERCA) has been previously notified and provided the opportunity to review the proposed drainage works as outlined within this report. An application for permit has been made for the proposed undertakings associated with this municipal drain. The Town of Kingsville will subsequently give notice to ERCA and other prescribed persons of an upcoming meeting of Council that will consider and adopt the final report, at which time this meeting is an opportunity to provide input.

Respectfully submitted,

DILLON CONSULTING LIMITED

Oliver E. T. Moir, P.Eng.

OEM:wlb:lld



SCHEDULE 'A'

SUMMARY OF LANDOWNER MEETING

GIBBS DRAIN

August 15, 2024 @ 9:30 a.m.

29 South Talbot Road, Kingsville

Present:

Mohammad Al-Ahmed	Ministry of Transportation Ontario
Tamish Gupta	Altus Group
Masood Rao	Altus Group
Orion Raes	Green Infrastructure Partners Inc.
Ed Gibbs	Landowner
John Meleg	Landowner
Lu-Ann Marentette	Town of Kingsville
Clarke Campbell	Dillon Consulting Limited
Tim Oliver	Dillon Consulting Limited

Tim Oliver provided an overview of the proposed new drains that have been petitioned by the Ministry of Transportation, as the acting road authority, having jurisdiction over the proposed Unnamed Road that will link County Road No. 29 to Inman Sideroad. Two drains have been proposed as Gibbs Drain No. 1 and Gibbs Drain No. 2 that would each cross the Unnamed Road to provide drainage for part of the road as well as lands to the north side of the road including a legal outlet for existing field tile drainage systems.

Gibbs Drain No. 1 was defined as the incorporation of an existing private ditch that would require deepening and widening to facilitate drainage for the new road construction. The No. 5 Drain which will serve as the Gibbs Drain No. 1 outlet is also being improved under a separate report that will provide sufficient outlet.

Gibbs Drain No. 2 was defined as a new tile drain that would be situated further east of the Gibbs Drain No. 1 and would provide outlet for the existing field tile drainage system on the Gibbs farm. The No. 5 Drain which will serve as the Gibbs Drain No. 1 outlet is also being improved under a separate report that will provide sufficient outlet.

Discussion ensued over whether one new municipal drain could suffice for both road drainage and field tile drainage as the header tile drain to intercept the field tiles be constructed as a private drain. It was agreed that this would be looked into to see if sufficient depth is available to do so, and to consider if one drain (Gibbs Drain No. 1) could provide all the necessary drainage.

Follow up from August 15, 2024 Meeting:

Our findings confirmed that the Gibbs Drain No. 1 could be designed to accept the farm tile drainage system as well as all contributing surface waters from the lands north of the future Unnamed Road and including part of the drainage from the new road. The Gibbs Drain No. 2 would no longer be contemplated. The Gibbs Drain No. 1 would just be known, moving forward, as the Gibbs Drain referred to under this report.

Meeting summary prepared by Tim Oliver, P. Eng.

"SCHEDULE B"
SCHEDULE OF ALLOWANCES
GIBBS DRAIN
TOWN OF KINGSVILLE

Roll No.	Con.	Description	Owner	Section 31 Incorporation	Section 29 Land	Total Allowances
560-00220	STR	Pt. Lot 264	2845881 Ontario Inc.	\$2,000.00	\$5,000.00	\$7,000.00
TOTAL ALLOWANCES				\$2,000.00	\$5,000.00	\$7,000.00

"SCHEDULE C"
SCHEDULE OF ASSESSMENT
GIBBS DRAIN
TOWN OF KINGSVILLE

ONTARIO LANDS:

Description	Area Affected		Owner	Special Benefit	Benefit	Outlet	Total Assessment
	(Acres)	(Ha.)					
King's Highway No. 3	0.00	0.00	Ministry of Transportation	\$206,800.00	\$0.00	\$0.00	\$206,800.00
Total on Ontario Lands.....				\$206,800.00	\$0.00	\$0.00	\$206,800.00
TOTAL ASSESSMENT				\$206,800.00	\$0.00	\$0.00	\$206,800.00
	(Acres)	(Ha.)					
Total Area	0.00	0.00					

"SCHEDULE E"
SCHEDULE OF ASSESSMENT FOR FUTURE MAINTENANCE (OPEN DRAIN STA. 0+000 TO STA. 0+149)
GIBBS DRAIN
TOWN OF KINGSVILLE

MUNICIPAL LANDS:

Description	Area Affected		Owner	Special Benefit	Benefit	Outlet	Total Assessment
	(Acres)	(Ha.)					
Unnamed Road	2.00	0.81	Town of Kingsville	\$0.00	\$316.00	\$1,574.00	\$1,890.00
Total on Municipal Lands.....				\$0.00	\$316.00	\$1,574.00	\$1,890.00

PRIVATELY-OWNED - NON-AGRICULTURAL LANDS

Roll No.	Con.	Description	Area Affected		Owner	Special Benefit	Benefit	Outlet	Total Assessment
			(Acres)	(Ha.)					
560-00200	STR	Pt. Lots 264 & 265	4.73	1.91	Domric Enterprises Inc.	\$0.00	\$107.00	\$742.00	\$849.00
560-00220	STR	Pt. Lot 264	1.33	0.54	2845881 Ontario Inc.	\$0.00	\$507.00	\$351.00	\$858.00
560-00100	STR	Pt. Lot 264	1.00	0.40	Jacob & Agatha Neufeld	\$0.00	\$501.00	\$311.00	\$812.00
660-00502	-	-	2.37	0.96 *	Hydro One Networks Inc.	\$0.00	\$0.00	\$216.00	\$216.00
Total on Privately-Owned - Non-Agricultural Lands				\$0.00	\$1,115.00	\$1,620.00	\$2,735.00		

PRIVATELY-OWNED - AGRICULTURAL LANDS

Roll No.	Con.	Description	Area Affected		Owner	Special Benefit	Benefit	Outlet	Total Assessment
			(Acres)	(Ha.)					
560-10501	STR	Pt. Lot 264	49.97	20.22 *	Edwin H. & Rachel A Gibbs	\$0.00	\$569.00	\$3,928.00	\$4,497.00
560-10000	STR	Pt. Lots 264 & 265	5.58	2.26	Roger J. Meleg	\$0.00	\$0.00	\$878.00	\$878.00
Total on Privately-Owned - Agricultural Lands				\$0.00	\$569.00	\$4,806.00	\$5,375.00		

TOTAL ASSESSMENT				\$0.00	\$2,000.00	\$8,000.00	\$10,000.00	
			(Acres)	(Ha.)				
Total Area:			66.98	27.10				

*denotes reduced assessment for lands where tile drainage flows are not directed to Gibbs Drain

“SCHEDULE F”
DRAINAGE REPORT FOR THE
GIBBS DRAIN
TOWN OF KINGSVILLE
SPECIAL PROVISIONS - GENERAL

1.0 GENERAL SPECIFICATIONS

The General Specifications attached hereto is part of “Schedule F.” It also forms part of this specification and is to be read with it, but where there is a difference between the requirements of the General Specifications and those of the Special Provisions which follow, the Special Provisions will take precedence.

2.0 DESCRIPTION OF WORK

The work to be carried out under this Contract includes, but is not limited to, the supply of all **labour, equipment and materials** to complete the following items:

- Brushing of the drain within the working area, including removal and disposal off-site with trimming and/or removal of existing trees as required to accommodate the drainage works.
- Excavation and trucking of excavated material, as follows:
 - Excavation of the drain bottom and west bank from Station 0+000 to Station 0+149, totalling approximately 149 linear metres of drain and approximately 170 m³ of material. The work shall include trucking of drain spoils off-site to an approved disposal site managed by the Highway No. 3 widening project.
- Hydroseeding of reshaped west drain bank, as follows:
 - Supply and placement of fibre reinforced matrix hydraulic mulch seed on west drain bank from Station 0+000 to Station 0+149, approx. 300 m².
- Stone erosion protection, as follows:
 - Supply and placement of R-50 rip rap stone erosion protection on south drain bank of No. 5 Drain at Gibbs Drain outlet, minimum 350 mm thickness, complete with filter fabric underlay, approx. 20 m².
- New Culvert Work, as follows:
 - Culvert No. 1 (Unnamed Road) –Supply and installation of a new 24.4 m long, 1830 mm x 910 mm precast concrete box culvert. Clear stone bedding below the culvert, minimum 150 mm thickness (approximately 15 tonnes), within roadway full Granular ‘A’ (crushed limestone) backfill material from the bottom of the pipe to the bottom of road surface (approximately 180 tonnes) compacted, clean native or imported clean native backfill material beyond roadway compacted (approximately 70 m³) and sloping stone erosion protection R-50 rip rap, minimum 350 mm thickness pipe end treatment, approximately 50 m².
- Temporary silt control measures during construction.

3.0 ACCESS TO THE WORK

Access to the drain shall be from the King's Highway No. 3 and Unnamed Road right-of-way. The Contractor shall make his/her own arrangements for any additional access for his/her convenience. All grass areas disturbed shall be restored to original conditions at the Contractor's expense.

4.0 WORKING CORRIDORS

For both the construction and future maintenance of the drain the Contractor shall restrict his/her equipment to the working corridor as specified in this Section. The working corridor for the open drain portion shall be defined as a 6.0 m wide area along the west side of the drain from Station 0+000 to Station 0+149. The working area for the construction and future maintenance for Culvert No. 1 shall be within the Unnamed Road allowance. Any damage resulting from non-compliance with this Section shall be borne by the Contractor.

SPECIAL PROVISIONS – OPEN DRAIN

5.0 BRUSHING

Brushing shall be carried out on the entire drain within the above identified sections of the drain where required and as specified herein. **All** brush and trees located within the drain side slopes shall be cut parallel to the side slopes, as close to the ground as practicable. Tree branches that overhang the drain shall be trimmed. Small branches and limbs are to be disposed of by the Contractor along with the other brush. Tree stumps, where removed to facilitate the drain excavation and reshaping of the drain banks, may be burned by the Contractor where permitted; otherwise, they shall be disposed of, off the site. The Contractor shall make every effort to preserve mature trees which are beyond the drain side slopes, and the working corridors. If requested to do so by the Drainage Superintendent, the Contractor shall preserve certain mature trees within the designated working corridors (see Section 4.0).

Except as specified herein, all brush and trees shall be stockpiled adjacent to the drain within the working corridors. Stockpiles shall not be less than 100 m apart and shall be a minimum of 2.0 m from the edge of the drain bank. All brush, timber, logs, stumps, large stones or other obstructions and deleterious materials that interfere with the construction of the drain, as encountered along the course of the drain are to be removed from the drain by the Contractor. Large stones and other similar material shall be disposed of by the Contractor off the site.

Following completion of the work, the Contractor is to trim up any broken or damaged limbs on trees which remain standing, disposing of the branches cut off along with other brush and leaving the trees in a neat and tidy condition. Brush and trees removed from the working area are to be put into piles by the Contractor, in locations where they can be safely burned, and to be burned by the Contractor after obtaining the necessary permits, as required. If, in the opinion of the Drainage Superintendent, any of the piles are too wet or green to be burned, he shall so advise the Contractor to haul away the unburned materials to an approved dump site. Prior to, and during the course of burning operations, the Contractor shall comply with the current guidelines prepared by the Air Quality Branch of the Ontario Ministry of Environment and shall ensure that the Environmental Protection Act is not violated. Since the trees and brush that are cut off flush with the earth surface may sprout new growth later, it is strongly recommended that the Municipality make arrangements for spraying this new growth at the appropriate time so as to kill the trees and brush.

As part of this work, the Contractor shall remove any loose timber, logs, stumps, large stones or other debris from the drain bottom and from the side slopes. **Timber, logs, stumps, large stones or other debris shall be disposed of off-site.**

6.0 EXCAVATION AND TRUCKING OF EXCAVATED MATERIALS

6.1 Excavation of Existing Drain Channel

In all cases, the Contractor shall use the benchmarks to establish the proposed grade. However, for convenience, the drawings provide the approximate depth from the surface of the ground and from the existing drain bottom to the proposed grades. **THE CONTRACTOR SHALL NOT EXCAVATE DEEPER THAN THE GRADELINES SHOWN ON THE DRAWINGS.** Should over-excavation of the drain bank occur, the Contractor will **not** be permitted to repair with native material packed into place by the excavator and reshaped. Should over-excavation occur, the Contractor will be required to have a bank repair detail engineered by a Professional Engineer (hired by the Contractor), to ensure long term stability of the bank is maintained. Such repairs shall be subject to approval by the Engineer and will be at no extra cost to the item.

All excavated material shall be handled as specified in Section 6.2. Materials deposited on the farmlands shall be within the working corridors, at least 1.0 m from the top of the drain bank, or as specified on the drawings. Upon allowing drying of excavated materials (if necessary) and as approved by the Drainage Superintendent, the Contractor shall level excavated materials in accordance with Section 6.2. Excavated material shall not be placed on dykes, in ditches, tiles or depressions intended to conduct water into the drain.

Seeding of the disturbed drain banks shall be completed immediately following drain construction and as specified in Section 7.0.

All excavation work shall be done in such a manner as to not harm any vegetation or trees, not identified in this report or by the Drainage Superintendent for clearing. Any damages to trees or vegetation caused by the Contractors work shall be rectified to the satisfaction of the Drainage Superintendent.

The Contractor shall exercise caution around existing tile inlets and shall confirm with the property owners that all tiles have been located and tile ends repaired as specified.

6.2 Trucking of Excavated Materials

Excavated materials are the property of the Contractor and trucking of excavated materials to off-site disposal site to be arranged by Contractor.

The Contractor shall be solely responsible for acquiring any and all permits and approvals required prior to hauling and disposal of materials off-site. The Contractor shall restore any such areas which are damaged by his operations, to original or better condition. The Contractor will be held liable for damages to roads, sodded areas and gardens, resulting from his non-compliance with these Specifications.

7.0 HYDRAULIC SEEDING OF NEW DRAIN CHANNEL

The newly established drain banks and all existing grassed areas disturbed by construction shall be hydraulic mulch seeded as specified herein. The surface shall be predominantly fine and free from weeds and other unwanted vegetation. All other loose surface litter shall be removed and disposed of.

The Contractor shall apply a fibre reinforced matrix (FRM) hydromulch engineered with pasteurized wood fibers and cross-linked with dispersible synthetic fibers and exclusive soil bonding agents for immediate and effective soil erosion control on newly constructed drain channels such as the FlexGuard product by Fibremulch company or approved equal. The hydromulch should be non-toxic and 100% biodegradable with a minimal curing period and up to 12 months longevity. The hydromulch shall be applied at a minimum rate of 3,300 kg of dry product per 10,000 m². It shall be thoroughly mixed with water in a hydraulic seeder and mulcher at a rate of 20 kg of dry product to 225 litres of water. Refer to OPSS.PROV 803 for additional specifications on vegetative cover.

Seeding and mulching shall be a one step process in which the seed and hydraulic mulch are applied simultaneously in a water slurry via the hydraulic seeder/mulcher. The materials shall be added to the supply tank while it is being loaded with water. The materials shall be thoroughly mixed into a homogeneous water slurry and shall be distributed uniform, cohesive mat over the prepared surface. The materials shall be measured by mass or by a mass-calibrated volume measurement, acceptable to the Drainage Superintendent.

The hydraulic seeder/mulcher shall be equipped with mechanical agitation equipment capable of mixing the materials into a homogenous state until applied. The discharge pumps and gun nozzles shall be capable of applying the material uniformly. Grass seed shall be MTO Modified Native Standard roadside seed mixture meeting the requirements as follows:

<i>Creeping Red Fescue</i>	60%
<i>Intermediate Ryegrass</i>	20%
<i>Colonial Bentgrass</i>	20%
<i>Canada Bluegrass</i>	10%

Bags shall bear the label of the supplier indicating the content by species, grade and mass. Seed shall be applied at a rate of 170 kg per 10,000 m². **The hydraulic seeding shall be deemed "Completed by the Contractor" when the seed has established in all areas to the satisfaction of the Engineer. Re-seeding and/or other methods required to establish the grass will be taken into consideration to achieve the end result and the costs shall be incidental to the works.**

8.0 STONE EROSION PROTECTION

Erosion protection, within the drain channel, shall be constructed of quarry stone rip-rap (R50) as shown on the drawings and as specified herein. The size of the rip-rap shall mostly vary between 150 mm and 250 mm. The rip-rap shall be sloped 1 vertical to 1.5 horizontal, with filter fabric underlay spanning across the entire width of the drain.

The minimum thickness requirement of the erosion stone layer is 350 mm with no portion of the filter fabric to be exposed.

Geotextile shall be placed uniformly, free of folds, tears or punctures and as specified in the Contract Documents. The geotextile shall be joined so that the material overlaps a minimum of 500 mm and shall be pinned together. Alternatively, the geotextile shall be joined to conform to the seam requirements of OPSS 1860. Geotextile shall be fixed to prevent movement during installation.

9.0 CULVERT CONSTRUCTION

9.1 Location

The new culvert denoted as Culvert No. 1 herein shall be located and installed as shown on the drawings attached hereto.

9.2 Materials

Materials shall be as follows:

<i>Culvert No. 1</i>	<i>New 24.4 m long, 1830 mm x 910 mm precast concrete culvert per OPSS 1821 or CHBDC CAN/CSA 56-06 standards where applicable.</i>
<i>Bedding below culvert pipes</i>	<i>Granular 'A' conforming to OPSS Division 10 or 19 mm clearstone, minimum 150mm thickness.</i>
<i>Culvert Backfill</i>	<i>Granular 'A' conforming to OPSS Division 10.</i>
<i>Erosion Stone</i>	<i>All stone to be used for erosion protection shall be R-50 clear quarried rock per OPSS 1004, minimum 350 mm thickness.</i>
<i>Filter Fabric</i>	<i>"Non-Woven" geotextile filter fabric with a minimum strength equal or greater than Terrafix 270R, Amoco 4546, Mirafi 140NC, or approved equivalent.</i>

9.3 Culvert Installation

Suitable dykes shall be constructed in the drain so that the installation of the culvert can be accomplished in the dry. The drain bottom shall be cleaned, prepared, shaped and compacted to suit the new culvert configuration, as shown on the drawings. Granular materials shall be compacted to 100% of their maximum dry density; imported clean native materials shall be supplied, placed and compacted to 95% of their maximum dry density.

9.4 Sloping Stone End Walls

Sloping stone end walls shall be constructed of quarry stone rip rap (R-50), as shown on the drawings and as specified herein. The rip rap shall be sloped 1 vertical to 1.5 horizontal, with filter fabric underlay and spanning across the entire drain. The minimum thickness requirement of the erosion stone layer is 350 mm with no portion of the filter fabric to be exposed.

GENERAL SPECIFICATIONS

1.0 AGREEMENT AND GENERAL CONDITIONS

The part of the Specifications headed "Special Provisions" which is attached hereto forms part of this Specification and is to be read with it. Where there is any difference between the requirements of this General Specification and those of the Special Provisions, the Special Provisions shall govern.

Where the word "Drainage Superintendent" is used in this specification, it shall mean the person, or persons appointed by the Council of the Municipality having jurisdiction to superintend the work.

Tenders will be received, and contracts awarded only in the form of a lump sum contract for the completion of the whole work or of specified sections thereof. The Tenderer agrees to enter into a formal contract with the Municipality upon acceptance of the tender. The General Conditions of the contract and Form of Agreement shall be those of the Stipulated Price Contract CCDC2-Engineers, 1994 or the most recent revision of this document.

2.0 EXAMINATION OF SITE, PLANS AND SPECIFICATIONS

Each tenderer must visit the site and review the plans and specifications before submitting his/her tender and must satisfy himself/herself as to the extent of the work and local conditions to be met during the construction. Claims made at any time after submission of his/her tender that there was any misunderstanding of the terms and conditions of the contract relating to site conditions, will not be allowed. The Contractor will be at liberty, before bidding to examine any data in the possession of the Municipality or of the Engineer.

The quantities shown or indicated on the drawings or in the report are estimates only and are for the sole purpose of indicating to the tenderers the general magnitude of the work. The tenderer is responsible for checking the quantities for accuracy prior to submitting his/her tender.

3.0 MAINTENANCE PERIOD

The successful Tenderer shall guarantee the work for a period of one (1) year from the date of acceptance thereof from deficiencies that, in the opinion of the Engineer, were caused by faulty workmanship or materials. The successful Tenderer shall, at his/her own expense, make good and repair deficiencies and every part thereof, all to the satisfaction of the Engineer. Should the successful Tenderer for any cause, fail to do so, then the Municipality may do so and employ such other person or persons as the Engineer may deem proper to make such repairs or do such work, and the whole costs, charges and expense so incurred may be deducted from any amount due to the Tenderer or may be collected otherwise by the Municipality from the Tenderer.

4.0 GENERAL CO-ORDINATION

The Contractor shall be responsible for the coordination between the working forces of other organizations and utility companies in connection with this work. The Contractor shall have no cause of action against the Municipality or the Engineer for delays based on the allegation that the site of the work was not made available to him by the Municipality or the Engineer by reason of the acts, omissions, misfeasance or non-feasance of other organizations or utility companies engaged in other work.

5.0 RESPONSIBILITY FOR DAMAGES TO UTILITIES

The Contractor shall note that overhead and underground utilities such as hydro, gas, telephone and water are not necessarily shown on the drawings. It is the Contractor's responsibility to contact utility companies for information regarding utilities, to exercise the necessary care in construction operations and to take other precautions to safeguard the utilities from damage.

All work on or adjacent to any utility, pipeline, railway, etc., is to be carried out in accordance with the requirements of the utility, pipeline, railway, or other, as the case may be, and its specifications for such work are to be followed as if they were part of this specification. The Contractor will be liable for any damage to utilities.

6.0 CONTRACTOR'S LIABILITY

The Contractor, his/her agents and all workmen or persons under his/her control including sub-contractors, shall use due care that no person or property is injured and that no rights are infringed in the prosecution of the work. The Contractor shall be solely responsible for all damages, by whomsoever claimable, in respect to any injury to persons or property of whatever description and in respect of any infringement of any right, privilege or easement whatever, occasioned in the carrying on of the work, or by any neglect on the Contractor's part.

The Contractor shall indemnify and hold harmless the Municipality and the Engineer, their agents and employees from and against claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of or attributable to the Contractor's performance of the contract.

7.0 PROPERTY BARS AND SURVEY MONUMENTS

The Contractor shall be responsible for marking and protecting all property bars and survey monuments during construction. All missing, disturbed, or damaged property bars and survey monuments shall be replaced at the Contractor's expense, by an Ontario Land Surveyor.

8.0 MAINTENANCE OF FLOW

The Contractor shall, at his/her own cost and expense, permanently provide for and maintain the flow of all drains, ditches and water courses that may be encountered during the progress of the work.

9.0 ONTARIO PROVINCIAL STANDARDS

Ontario Provincial Standard Specifications (OPSS) and Ontario Provincial Standard Drawings (OPSD) shall apply and govern at all times unless otherwise amended or extended in these Specifications or on the Drawing. Access to the electronic version of the Ontario Provincial Standards is available online through the MTO website, free of charge to all users. To access the electronic standards on the Web go to <http://www.mto.gov.on.ca/english/transrd/>. Under the title Technical Manuals is a link to the Ontario Provincial Standards. Users require Adobe Acrobat to view all pdf files.

10.0 APPROVALS, PERMITS AND NOTICES

The construction of the works and all operations connected therewith are subject to the approval, inspection, by-laws and regulations of all Municipal, Provincial, Federal and other authorities having jurisdiction in respect to any matters embraced in this Contract. The Contractor shall obtain all approvals and permits and notify the affected authorities when carrying out work in the vicinity of any public utility, power, underground cables, railways, etc.

11.0 SUBLETTING

The Contractor shall keep the work under his/her personal control, and shall not assign, transfer, or sublet any portion without first obtaining the written consent of the Municipality.

12.0 TIME OF COMPLETION

The Contractor shall complete all work on or before the date fixed at the time of tendering. The Contractor will be held liable for any damages or expenses occasioned by his/her failure to complete the work on time and for any expenses of inspection, superintending, re-tendering or re-surveying, due to their neglect or failure to carry out the work in a timely manner.

13.0 TRAFFIC CONTROL

The Contractor will be required to control vehicular and pedestrian traffic along roads at all times and shall, at his/her own expense, provide for placing and maintaining such barricades, signs, flags, lights and flag persons as may be required to ensure public safety. The Contractor will be solely responsible for controlling traffic and shall appoint a representative to maintain the signs and warning lights at night, on weekends and holidays and at all other times that work is not in progress. All traffic control during construction shall be strictly in accordance with the **Occupational Health and Safety Act** and the current version of the **Ontario Traffic Manuals**. Access to the electronic version of the **Ontario Traffic Manual** is available online through the MTO website, free of charge to all users. To access the electronic standards on the Web go to <http://www.mto.gov.on.ca/english/transrd/>, click on "Library Catalogue," under the "Title," enter "Ontario Traffic Manual" as the search. Open the applicable "Manual(s)" by choosing the "Access Key," once open look for the "Attachment," click the pdf file. Users require Adobe Acrobat to view all pdf files.

Contractors are reminded of the requirements of the Occupational Health and Safety Act pertaining to Traffic Protection Plans for workers and Traffic Control Plan for Public Safety.

14.0 SITE CLEANUP AND RESTORATION

As part of the work and upon completion, the Contractor shall remove and dispose of, off-site any loose timber, logs, stumps, large stones, rubber tires, cinder blocks or other debris from the drain bottom and from the side slopes. Where the construction works cross a lawn, the Contractor shall take extreme care to avoid damaging the lawn, shrubs and trees encountered. Upon completion of the work, the Contractor shall completely restore the area by the placement and fine grading of topsoil and seeding or sodding the area as specified by the Engineer or Drainage Superintendent.

15.0 UTILITY RELOCATION WORKS

In accordance with Section 26 of the Drainage Act, if utilities are encountered during the installation of the drainage works that conflict with the placement of the new culvert, the operating utility company shall relocate the utility at their own costs. The Contractor however will be responsible to co-ordinate these required relocations (if any) and their co-ordination work shall be considered incidental to the drainage works.

16.0 FINAL INSPECTION

All work shall be carried out to the satisfaction of the Drainage Superintendent for the Municipality, in compliance with the specifications, drawings and the Drainage Act. Upon completion of the project, the work will be inspected by the Engineer and the Drainage Superintendent. Any deficiencies noted during the final inspection shall be immediately rectified by the Contractor.

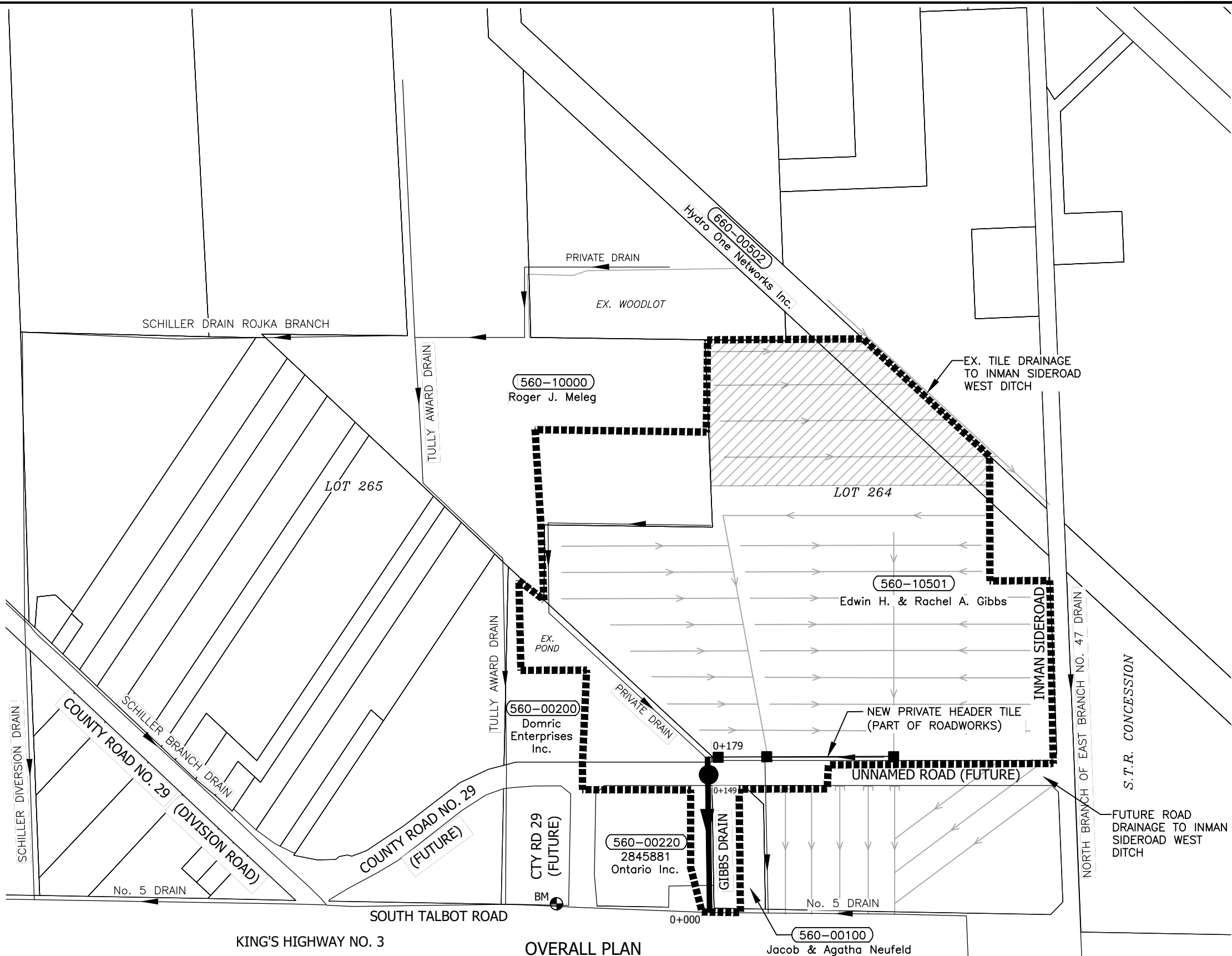
Final inspection will be made by the Engineer within 20 days after the Drainage Superintendent has received notice in writing from the Contractor that the work is completed, or as soon thereafter as weather conditions permit.

17.0 FISHERIES CONCERNS

Standard practices to be followed to minimize disruption to fish habitat include embedment of the culvert a minimum 10% below grade, constructing the work 'in the dry' and cutting only trees necessary to do the work (no clear-cutting). No in-water work is to occur during the timing window unless otherwise approved by the appropriate authorities.



PLAN NORTH



LEGEND

- WATERSHED BOUNDARY
- GIBBS DRAIN
- OTHER DRAINS
- TILE DRAINAGE NOT DIRECTED TO GIBBS DRAIN
- CULVERT NO. 1

SITE BENCHMARK BM

BM- TOP OF NORTHEAST CORNER OF EXISTING CONCRETE CULVERT OVER NO. 5 DRAIN SERVING DRIVEWAY ACCESS TO MUN. NO. 39 SOUTH TALBOT ROAD (ROYAL BRINKMAN)
ELEVATION=194.78m

NOTE: CONTRACTOR TO VERIFY BENCHMARKS PRIOR TO CONSTRUCTION.

KING'S HIGHWAY NO. 3

OVERALL PLAN
SCALE=1:5,000

'SCHEDULE G'



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No.	ISSUED FOR	DATE	BY
2	FINAL REPORT SUBMISSION	15 NOV 24	OEM
1	CLIENT REVIEW	7 NOV 24	OEM

DESIGN	TRO	REVIEWED BY	CBC
DRAWN	WLB	CHECKED BY	OEM
DATE	November 15, 2024		
SCALE	AS SHOWN		

PROJECT NO. 21-3142

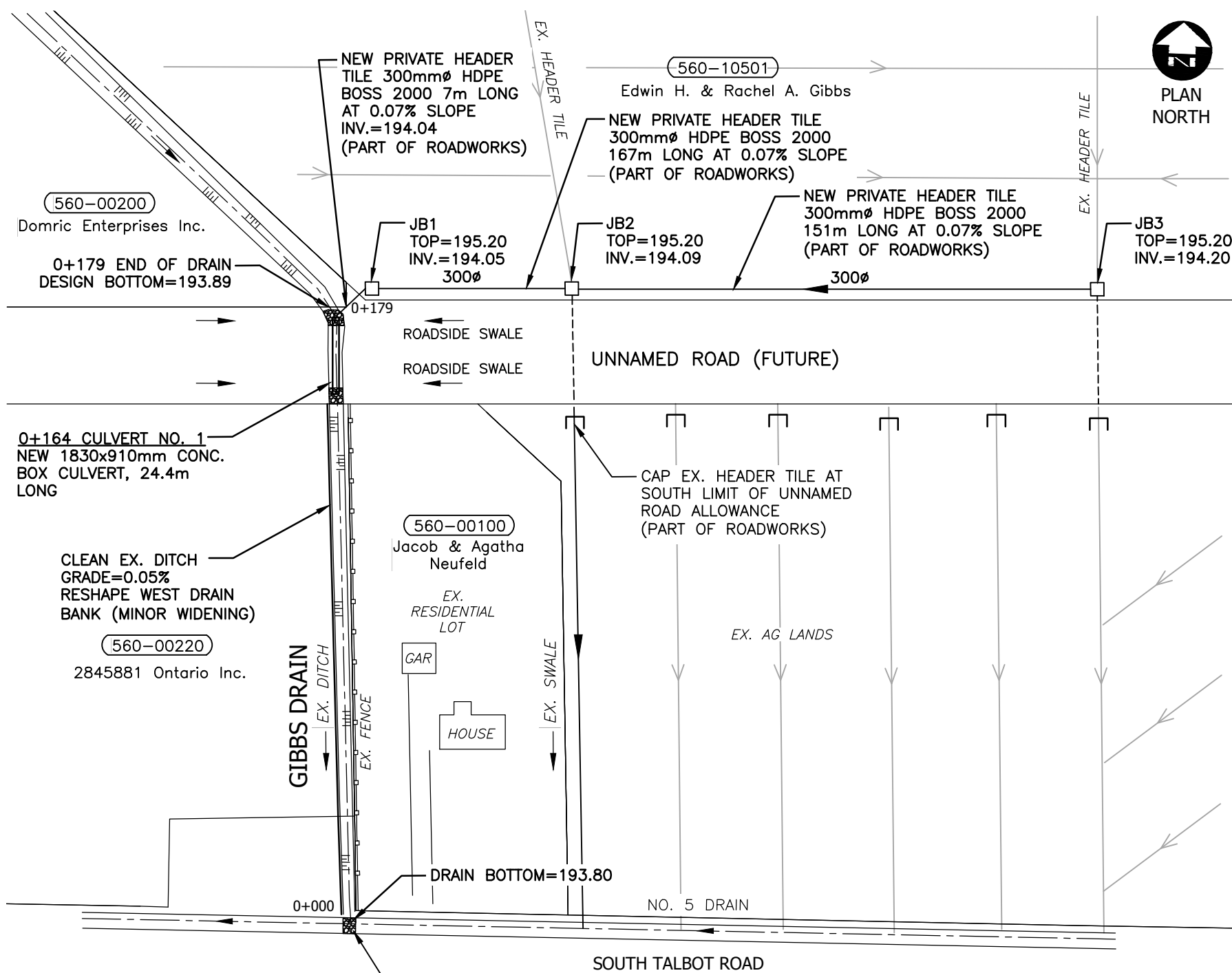
DRAWING SCALES BASED ON A 11" X 17" SHEET

Drainage Report for the
GIBBS DRAIN
Town of Kingsville

SHEET TITLE
OVERALL PLAN

PAGE NO.
1 of 4

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PLAN 1
SCALE=1:1,500

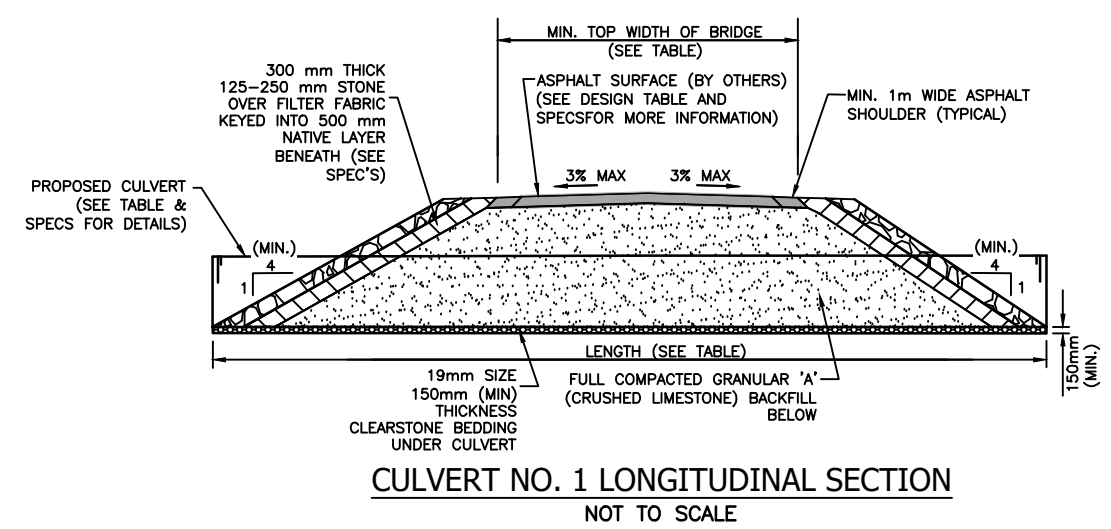
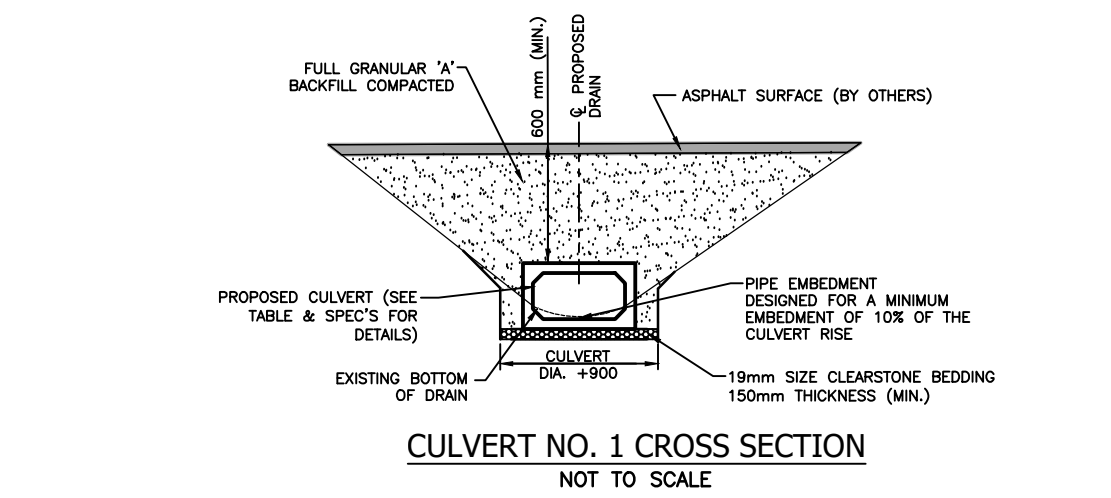


TABLE 1 - ROAD CULVERT DESIGN INFORMATION	
DESCRIPTION	CULVERT NO. 1
CULVERT LOCATION (STA.)	0+164
CULVERT INVERT ELEV. U/S SIDE(m)	193.80
CULVERT INVERT ELEV. D/S SIDE(m)	193.78
TOP OF ϕ ROADWAY SURFACE ELEV. (m)	195.84
DRAIN BOTTOM (m) (DESIGN) (AT CENTRELINE OF CULVERT)	193.88
MIN. TOP WIDTH OF ROAD (m)	9.0
MIN. CULVERT GRADE (%)	0.05
CULVERT TYPE	BOX
CULVERT MATERIAL	CONCRETE
CULVERT LENGTH (m)	24.4
CULVERT SIZE (mm)	1830x910
CULVERT ENDWALL TYPE	SLOPING



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DRAWING SCALES BASED ON A 11" X 17" SHEET

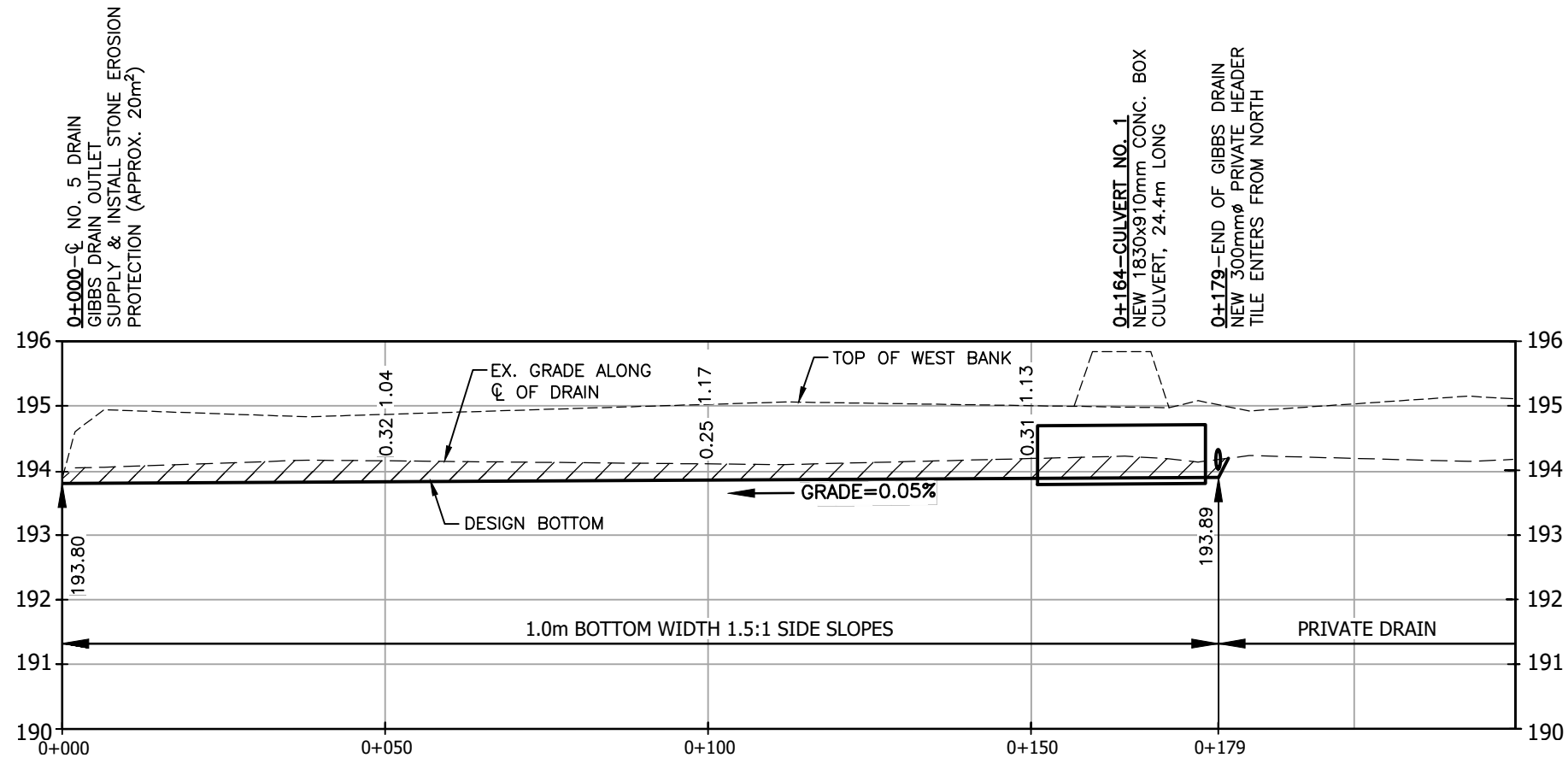
'SCHEDULE G'
Drainage Report for the
GIBBS DRAIN
Town of Kingsville

SHEET TITLE
PLAN 1 & CULVERT NO. 1 DETAILS

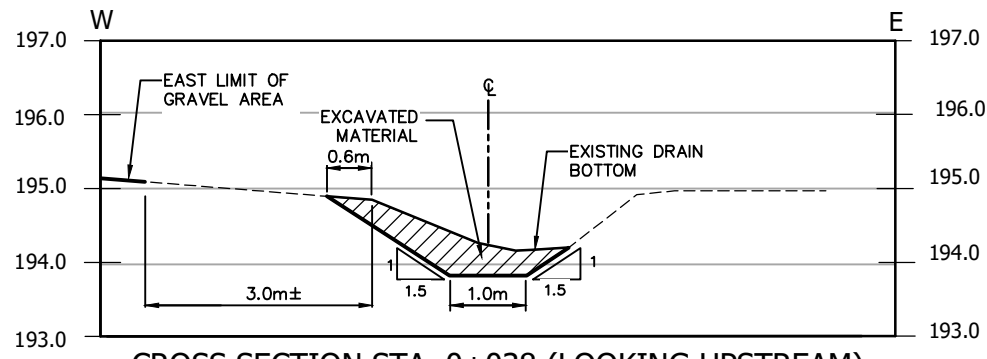
PAGE NO.
2 of 4

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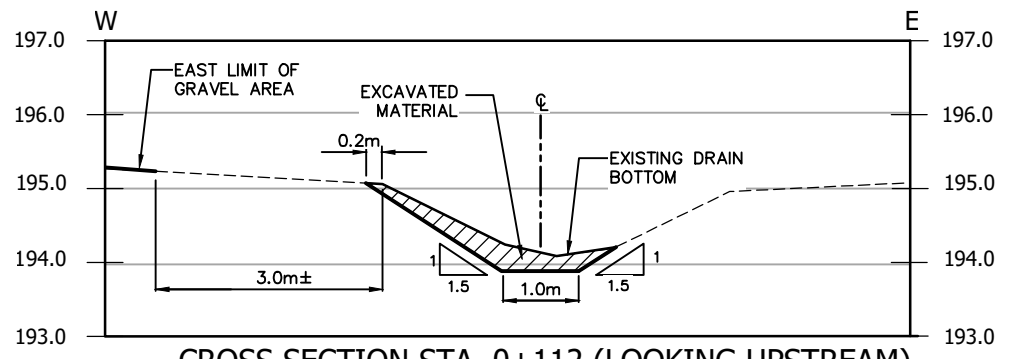
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PROFILE
SCALE-HORIZ.=1:1,000
VERT.=1:100



CROSS SECTION STA. 0+038 (LOOKING UPSTREAM)
SCALE-1:100



CROSS SECTION STA. 0+112 (LOOKING UPSTREAM)
SCALE-1:100



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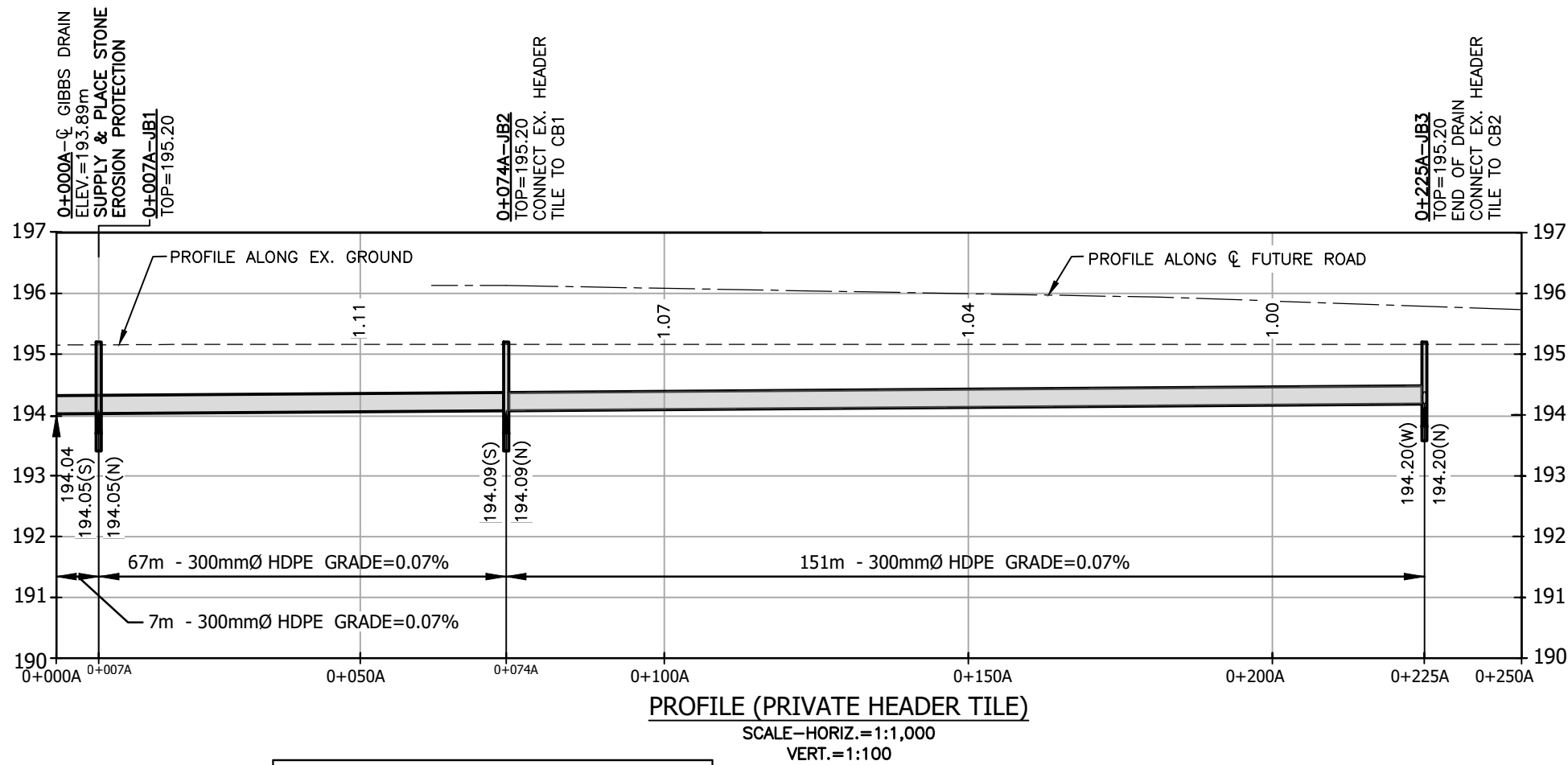
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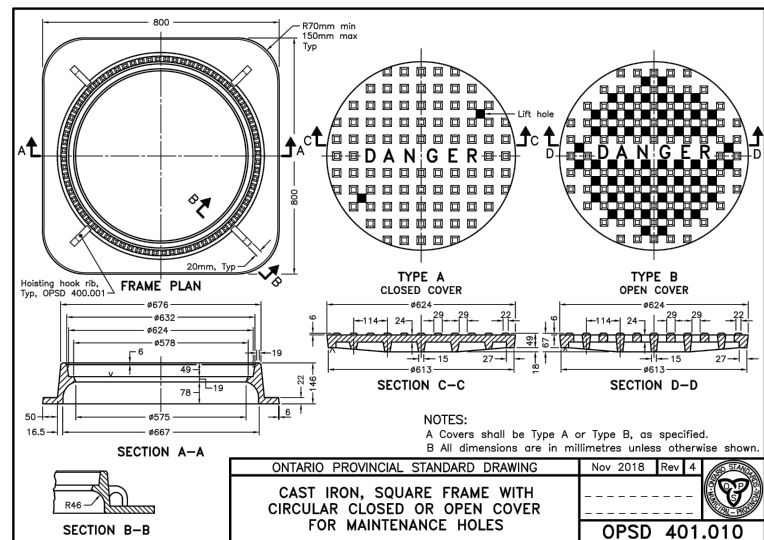
'SCHEDULE G'	
Drainage Report for the GIBBS DRAIN Town of Kingsville	
SHEET TITLE PROFILE & CROSS SECTIONS	
PAGE NO.	3 of 4

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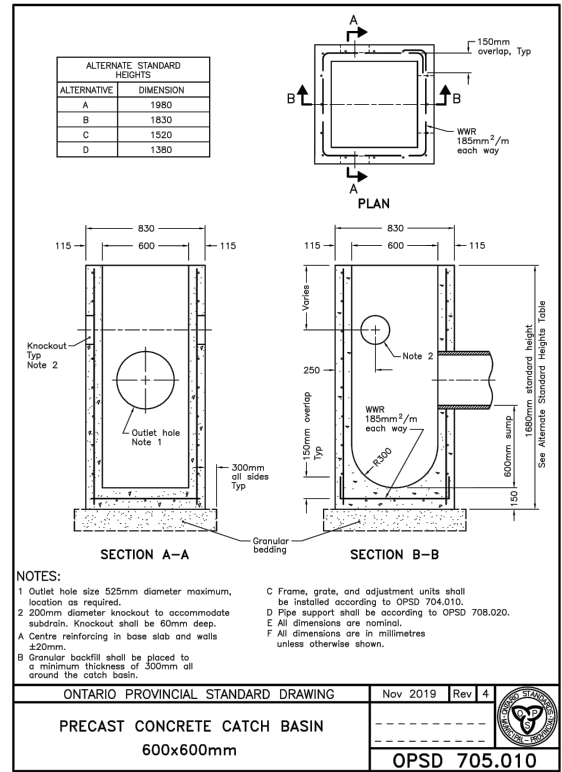


NOTE:

- CONCRETE JUNCTION BOXES (3) ON PRIVATE HEADER TILE TO BE COMPRISED OF STANDARD PRECAST CONCRETE CATCHBASINS WITH CAST IRON MAINTENANCE HOLE COVERS
- CONTRACTOR TO VERIFY DEPTH OF LATERAL TILES PRIOR TO HEADER TILE INSTALLATION



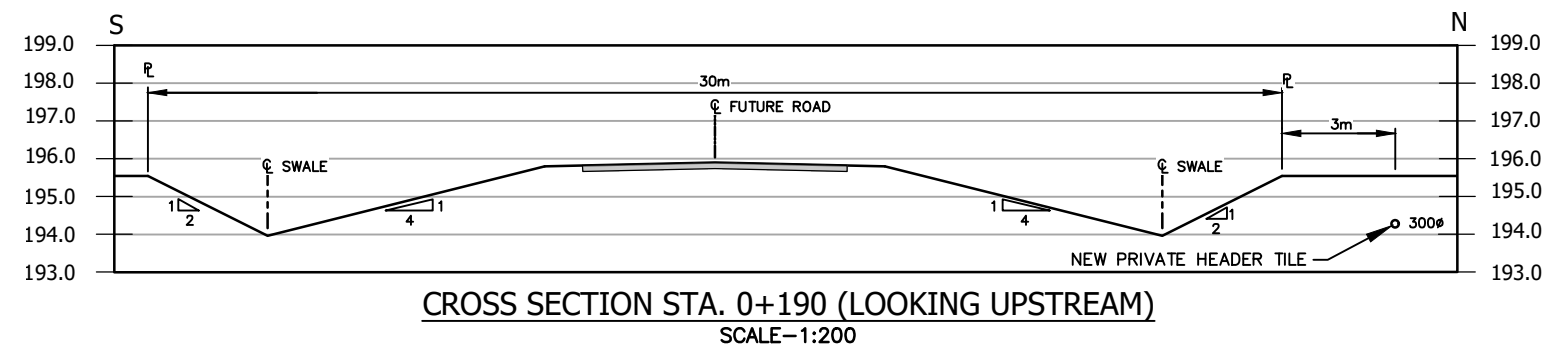
ONTARIO PROVINCIAL STANDARD DRAWING
 CAST IRON, SQUARE FRAME WITH CIRCULAR CLOSED OR OPEN COVER FOR MAINTENANCE HOLES
 Nov 2018 Rev 4
 OPSD 401.010



ALTERNATE STANDARD HEIGHTS

ALTERNATIVE	DIMENSION
A	1980
B	1830
C	1520
D	1380

ONTARIO PROVINCIAL STANDARD DRAWING
 PRECAST CONCRETE CATCH BASIN 600x600mm
 Nov 2019 Rev 4
 OPSD 705.010



CROSS SECTION STA. 0+190 (LOOKING UPSTREAM)
 SCALE - 1:200



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'SCHEDULE G'

Drainage Report for the
GIBBS DRAIN
 Town of Kingsville

SHEET TITLE
HEADER TILE DETAILS

PAGE NO.
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