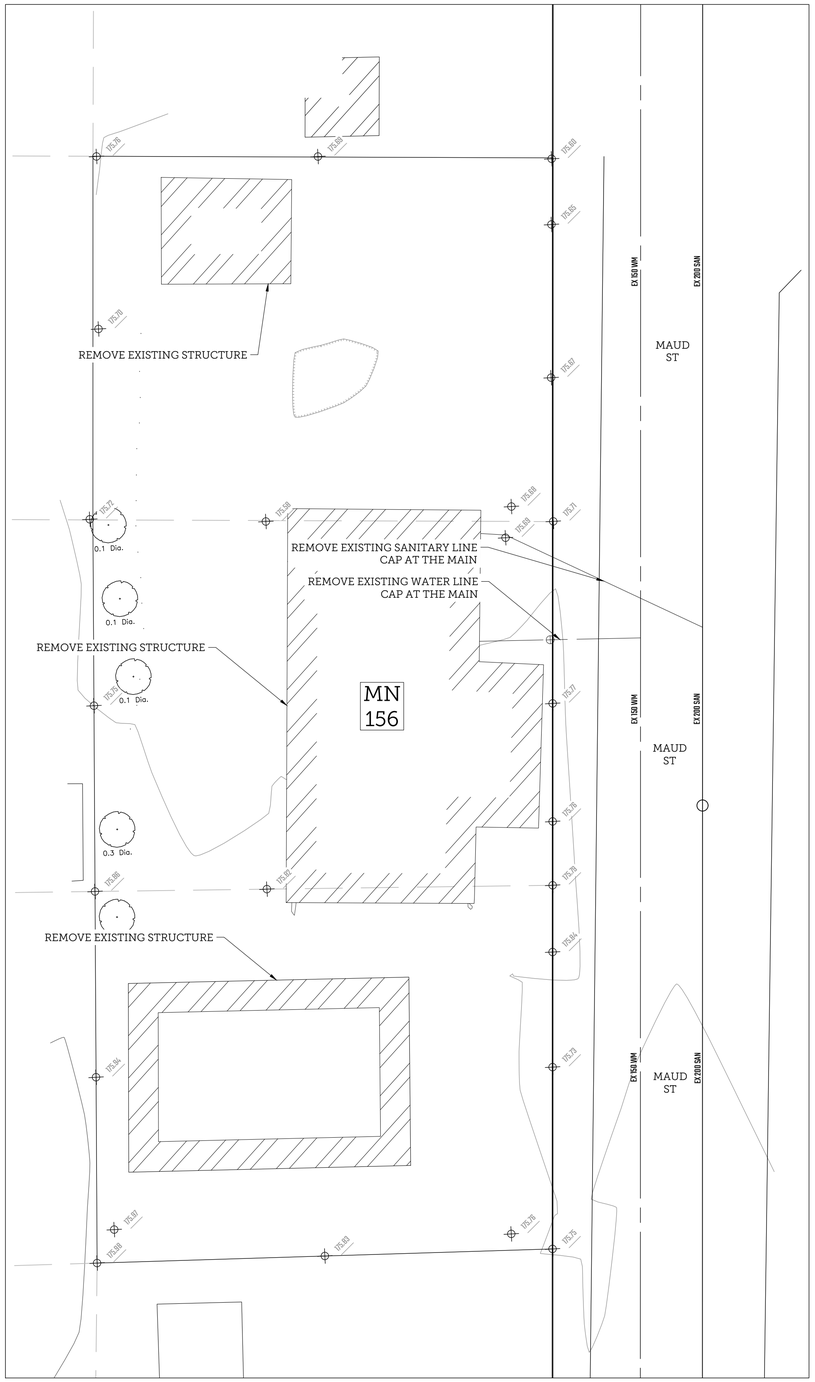


REMOVALS AND ENVIRONMENTAL PROTECTION ELEVATION

SCALE 1:10

GENERAL NOTES

1. THE OWNER'S PROFESSIONAL ENGINEER IS REQUIRED TO REVIEW THE INSTALLATION OF SERVICES INCLUDED IN THIS PROJECT IN ACCORDANCE WITH THE GENERAL REVIEW COMMITMENT CERTIFICATION PROCESS. THE CONTRACTOR IS TO PROVIDE AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION OF THE SITE SERVICES.
2. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE MINIMUM STANDARDS AND SPECIFICATIONS OF THE MUNICIPALITY AND 2012 ONTARIO BUILDING CODE.
3. DRIVEN ENGINEERING INC. IS NOT RESPONSIBLE FOR THE INFORMATION PROVIDED BY OTHERS, INCLUDING BUT NOT LIMITED TO EXISTING TOPOGRAPHY, BENCHMARKS, PROPERTY BOUNDARY.

CONSTRUCTION NOTES

1. THE CONTRACTOR IS TO CONTACT THE ENGINEER OF RECORD FOR FINAL INSPECTION.
2. THE CONTRACTOR SHALL, AT LEAST, TAKE ALL PRECAUTIONARY MEASURES UNDER THE OCCUPATIONAL HEALTH AND SAFETY ACT AS REQUIRED BY THE MINISTRY OF LABOUR.
3. THE CONTRACTOR IS TO REVIEW AND CONFIRM ALL EXISTING CONDITION INFORMATION & INFORM DRIVEN ENGINEERING INC. OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. DRIVEN ENGINEERING INC. IN NO WAY ACCEPTS RESPONSIBILITY FOR ANY INACCURACIES FOUND ON THIS PLAN RELATIVE TO EXISTING CONDITIONS FOR THE SITE.
4. PRIOR TO COMMENCING ANY CONSTRUCTION, ALL CONNECTION INFORMATION, BENCHMARKS, ELEVATIONS, DIMENSIONS, GRADES, ETC. MUST BE CHECKED BY THE CONTRACTOR AND VERIFIED AND ANY DISCREPANCIES REPORTED TO THE ENGINEER.
5. PRIOR TO COMMENCING ANY WORK ON THE INSTALLATION OF SERVICES, AN APPROVED SET OF ISSUED FOR CONSTRUCTION PLANS AND SPECIFICATIONS MUST BE AVAILABLE ON THE JOB AND SHALL REMAIN THERE WHILE WORK IS BEING DONE.
6. STRIP FULL DEPTH OF TOPSOIL IN AREAS TO BE DISTURBED AND STOCK PILE FOR RE-USE IN GRASSED/LANDSCAPED AREAS.
7. CONTRACTOR IS RESPONSIBLE FOR ALL AS-BUILT INVERTS AND GRADES. RECORD ANY DEVIATION OF PIPE OR STRUCTURE LOCATION INVOLVED WITH THIS PROJECT. CONTRACTOR TO PROVIDE A COPY OF THE AS-BUILT DRAWING SHOWING ALL CHANGES CLEARLY MARKED IN RED.
8. THE CONTRACTOR SHALL CONSTRUCT TEMPORARY MEASURES TO CONTROL SILT ENTERING THE STORM DRAINAGE SYSTEM TO THE SPECIFICATIONS OUTLINED IN THE GUIDELINES ON EROSION AND SEDIMENT CONTROL FOR URBAN CONSTRUCTION SITES PREPARED BY THE MINISTRY OF NATURAL RESOURCES. THESE MEASURES ARE TO BE INSTALLED PRIOR TO COMMENCING ANY CONSTRUCTION FOR THIS PROJECT, ARE TO REMAIN IN PLACE AND BE MAINTAINED IN WORKING ORDER UNTIL CONSTRUCTION HAS BEEN COMPLETED TO BASE ASPHALT AND SOD, TO THE SATISFACTION OF THE MUNICIPALITY.
9. WORK ON OR ADJACENT TO THE MUNICIPAL R.O.W. SHALL BE COMPLETED IN ACCORDANCE WITH THE ONTARIO TRAFFIC MANUAL BOOK 7 LATEST EDITION.
10. THE CONTRACTOR IS RESPONSIBLE FOR:
    - 10.1. CONNECTING ANY EXISTING SEWER OR DRAIN ENCOUNTERED DURING CONSTRUCTION TO A NEW SEWER OF SIMILAR TYPE, SIZE AND MATERIAL OR INTO ANOTHER EXISTING SEWER OF THE SAME TYPE.
    - 10.2. ENSURING THAT THERE IS NO INTERRUPTION OF ANY SURFACE OR SUBSURFACE DRAINAGE FLOW THAT WOULD ADVERSELY AFFECT NEIGHBOURING PROPERTIES.
11. WATER SERVICE CONNECTION TO MAIN BY MUNICIPAL STAFF.

RESTORATION NOTES

1. ALL WORK IN THE MUNICIPAL ROAD ALLOWANCE SHALL MEET THE MINIMUM STANDARDS AND SPECIFICATIONS OF THE MUNICIPALITY. THE CONTRACTOR IS REQUIRED TO OBTAIN & PAY FOR PERMIT TO WORK IN MUNICIPAL R.O.W.
2. ALL SURFACES WHICH ARE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO A CONDITION AT LEAST AS GOOD AS ORIGINAL, OR AS PER BELOW (WHICHEVER IS GREATER) OR IF WITHIN THE MUNICIPAL RIGHT OF WAY TO THE SATISFACTION OF THE MUNICIPAL ENGINEER, ALL AT NO COST TO THE MUNICIPAL
    - 2.1. GRASSED AREAS TO BE RESTORED w/ 100mm TOPSOIL & SEED
    - 2.2. CONCRETE SIDEWALK- N/A.
    - 2.3. CONCRETE CURB AND GUTTER- N/A
    - 2.4. ANY ASPHALT AREA DISTURBED DURING CONSTRUCTION SHALL BE RESTORED AS FOLLOWS:
        - 2.4.1. PROOF ROLL SUBGRADE (TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER) PRIOR TO PLACEMENT OF GRANULARS (98% STANDARD PROCTOR MAXIMUM DRY DENSITY MINIMUM).
        - 2.4.2. ADJACENT ASPHALT TO BE MILLED 50mm DEEP x 500mm WIDE PRIOR TO RESTORATION SEE DETAIL ON C105. ENSURE CLEAN EDGES IMMEDIATELY PRIOR TO PAVING.
        - 2.4.3. MINIMUM RECOMMENDED PAVEMENT STRUCTURE (TO BE REVIEWED & APPROVED BY THE GEOTECHNICAL ENGINEER)
            - -40mm HL3 SURFACE ASPHALT COMPACTED TO 97% MARSHALL MIX DESIGN BULK DENSITY
            - -50mm HL8 BINDER ASPHALT COMPACTED TO 97% MARSHALL MIX DESIGN BULK DENSITY ASPHALT TO BE SUPPLIED AND PLACED IN ACCORDANCE WITH OPSS 310 & 1150
            - -150mm OF GRANULAR 'A' COMPACTED TO 100% SPMDD
            - -300mm OF GRANULAR 'B' COMPACTED TO 100% SPMDD
            - GRANULARS TO BE SUPPLIED AND PLACED IN ACCORDANCE WITH OPSS 501 & 1010
    - 2.5 RESTORE ALL PAVEMENT MARKINGS TO MATCH EXISTING PRE-CONSTRUCTION CONDITIONS AND MARKINGS SHALL BE COMPLETED IN ACCORDANCE WITH OPSS 710 'CONSTRUCTION SPECIFICATION FOR PAVEMENT MARKING'. PAVEMENT MARKINGS WITHIN R.O.W. WITH GLASS BEADS
    - 2.6 ALL EXTERIOR HORIZONTAL CONCRETE SHALL BE MIN 100mm THICK, 32 MPa AT 28 DAYS c/w 5-8% AIR ENTRAINMENT ON MIN. 100mm THICK GRANULAR 'A' COMPACTED TO 100% SPMDD.
3. ALL AREAS OUTSIDE THE CONSTRUCTION LIMITS SHALL NOT BE DISTURBED. ANY DAMAGED TO THOSE AREAS ARE TO BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

UTILITIES NOTES

1. ALL WORK FOR COORDINATION, DESIGN, AND CONSTRUCTION OF UTILITIES IS BY OTHERS. DRIVEN ENGINEERING INC. DESIGN AND DRAWINGS ARE FOR MUNICIPAL SERVICING ONLY. ANY UTILITY INFORMATION SHOWN IS FOR REFERENCE/COORDINATION PURPOSES ONLY AND MAY NOT BE ACCURATE.
2. ALL EXISTING UNDERGROUND UTILITY (TELEPHONE, HYDRO, GAS, CABLE, SEWER, WATERMAINS, ETC.) THAT WILL BE CROSSED UNDER DURING THE INSTALLATION OF SERVICES FOR THIS DEVELOPMENT SHALL BE SUPPORTED, AS MAY BE REQUIRED BY THE OWNERS OF THE UTILITY BEING CROSSED UNDER. CONTRACTOR TO CONFIRM REQUIREMENTS WITH UTILITY OWNER.
3. CONTRACTOR TO LOCATE/FIELD VERIFY LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
4. CONTRACTOR TO COORDINATE WITH UTILITIES PROVIDER FOR BRACING, DECOMMISSIONING AND/OR RELOCATION OF EXISTING GAS, HYDRO, TELEPHONE, CABLE, ETC. SERVICES, IF REQUIRED.

SERVICING NOTES

1. ALL FLEXIBLE PIPE TO BE INSTALLED TO OPSD 800 SERIES AS APPLICABLE TO SOIL CONDITION AND PIPE MATERIAL, AS WELL AS THE CURRENT MUNICIPAL STANDARDS.
2. ALL SITE SERVICES SHALL BE INSTALLED TO 1.0M OUTSIDE FOUNDATION WALL.
3. ALL ORGANIC, UNSTABLE OR UNSUITABLE MATERIALS BENEATH THE ROAD ALLOWANCE, SERVICES, UTILITIES OR FOUNDATIONS MUST BE REMOVED AND THESE AREAS BACKFILLED WITH AN APPROVED FILL MATERIAL, ALL TO THE SATISFACTION OF A GEOTECHNICAL ENGINEER AND SHOULD BE PLACED IN LIFTS NOT EXCEEDING 300MM (LOOSE) THAT ARE COMPACTED TO 95% SPMDD FOR AREAS NOT PAVED AND 100% SPMDD FOR PAVED AREAS. THE REPLACEMENT BACKFILL SHOULD COMPRISE OF CLEAN, COMPACTIBLE FILL MATERIAL AND BE COMPACTED WITH OPTIMAL MOISTURE CONTENT.
4. REMOVE ALL TRENCH WATER WHEN PIPE LAYING IS IN PROGRESS. ALL REQUIREMENTS FOR DEWATERING AND DEWATERING PERMITS ARE THE RESPONSIBILITY OF THE CONTRACTOR.
5. ALL PROPOSED STORM AND SANITARY SEWER PIPE TO BE PVC SDR35 OR MUNICIPALITY APPROVED PIPE WITH CLASS 1 BEDDING UNDER 4.5M AND CLASS 2 BEDDING AT OR OVER 4.5M OF COVER. ALL SEWER BACKFILL MUST BE COMPACTED TO MINIMUM 95% SPMDD FOR AREAS NOT BELOW PAVEMENT AND 100% SPMDD FOR AREAS UNDER PAVEMENT.
6. THE MINIMUM DEPTH OF A STORM SEWER FROM FINISHED GRADE TO THE OBVERT OF THE PIPE SHALL BE NO LESS THAN 1.5M WITHOUT INSULATION. REFER TO THESE PLANS AND DETAILS FOR INSULATION REQUIREMENTS.
7. ALL STORM AND SANITARY SERVICES AND CATCH BASIN LEADS SHALL BE INSTALLED WITH RUBBER GASKET JOINTS. INSTALLATION SHALL USE A LASER PIPE LEVEL TO ENSURE THE DESIGN SLOPES ARE MAINTAINED.
8. CONTRACTOR TO PROVIDE DRIVEN ENGINEERING WITH SHOP DRAWINGS FOR ALL STRUCTURES AND PIPES PRIOR TO ORDERING FOR CONFIRMATION AGAINST THE DESIGN. DRIVEN DOES NOT ACCEPT RESPONSIBILITY FOR MATERIALS ORDERED PRIOR TO REVIEW. CONTRACTOR RETAINS ALL RESPONSIBILITY FOR THE ACCURACY OF THE ORDERED MATERIAL.
9. ALL CATCHBASINS AND CATCHBASIN MAINTENANCE HOLES SHALL HAVE 600MM SUMPS UNLESS OTHERWISE SHOWN.
10. ALL CATCH BASINS AND CATCH BASIN MAINTENANCE HOLES TO BE OUTFITTED WITH TWO 3.0M SUBDRAINS EXTENDING OUT AT OPPOSITE SIDE OF THE STRUCTURE. SUBDRAINS TO BE 150MM PERFORATED, FILTER-WRAPPED PC PIPE PLACED IN THE SUBGRADE IMEDIATELY BELOW THE SUBBASE.
11. MAINTENANCE HOLES TO BE CONSTRUCTED OF PRECAST CONCRETE. ALL STRUCTURES TO BE INSTALLED IN ACORDANCE WITH THE ONTATIO PROVINCIAL STANDARDS.
12. ALL WATERMAINS UP TO AND INCLUDING 300MM IN DIAMETER SHALL BE PVC C900, CLASS 150 SDR18. DUCTILE IRON CL15 AND CL52 C/W POLYEHTYLENE WRAP MAY BE USED IF APPROVED BY THE MUNICIPALITY.
13. WHERE ANY WATER SERVICE CONNECTION IS REQUIRED TO BE MADE FOLLOWING THE CONSTRUCTION OF THE CURB, GUTTER, CONCRETE SIDEWALKS AND/OR WEARING SURFACE OF THE ASPHALT ON ANY STREET WITHIN A NEW SUBDIVISION, SUCH WATER SERVICE CONNECTION SHALL BE MADE USING TRENCHLESS TECHNOLOGIES AND IN SUCH A MANNER AS TO ELIMINATE THE POSSIBILITY OF SETTLEMENT OF INSTALLED WORKS. THE ONLY SCENARIO IN WHICH OPEN CUT WILL BE ALLOWED IS IF IT IS SUCCESSFULLY DEMONSTRATED TO THE MUNICIPALITY'S ENGINEER THAT SUBSURFACE CONDITIONS WILL NOT REASONABLY PERMIT TRENCHLESS INSTALLATION OF THE SERVICE.
14. ALL WATERMAIN MATERIAL AND CONSTRUCTION SHALL CONFORM TO THE CURRENT MUNICIPAL STANDARDS.
15. ALL FIRE HYDRANTS SHALL BE 3-WAY HYDRANTS WITH STORZ CONNECTIONS OPENING CLOCKWISE. REFER TO THE MUNICIPAL STANDARDS.
16. ALL WATERMAIN VALVES SHALL BE GATE VALVES MANUFACTURED TO AWWA C500 AND EPOXY COATED TO AWWA C550 AND ARE TO OPEN CLOCKWISE.
17. INSTALLATION, HYDROSTATIC TESTING, SWABBING, FLUSHING AND DISINFECTION SHALL BE COMPLETED IN ACCORDANCE WITH THE MUNICIPAL STANDARDS.
18. ALL NON-METALLIC WATER PIPE TO BE INSTALLED WITH 10AWG TRACER WIRE.
19. SEPARATION BETWEEN BURIED WATER SERVICES AND PRIVATE DRAIN CONNECTIONS AS PER SECTION 7.3.5.7 OF THE ONTARIO BUILDING CODE AND MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS GUIDELINES.
20. WATER SERVICE TO BE PEX, OR OTHER MUNICIPALLY APPROVED EQUIVALENT AND IS TO HAVE TRACER WIRE. WATERMAIN TO BE INSTALLED WITH MINIMUM 1.7M-1.9M COVER.
21. FITTINGS ON PEX SERVICE SHALL BE BRASS. PROVIDE PIPE RESTRAINTS AS REQUIRED BY THE PIPE MANUFACTURER.
22. WHEN CROSSING ABOVE A SANITARY OR STORM SEWER, THE CONTRACTOR IS TO ENSURE A MINIMUM OF 0.5M VERTICAL SEPARATION FROM THE UNDERSIDE OF THE WATER SERVICE TO THE OBVERT OF THE SEWER BEING CROSSED AS OUTLINED IN THE MOST RECENT EDITION OF THE MINISTRY OF THE ENVIRONMENTS, CONSERVATION AND PARK'S "DESIGN GUIDELINES FOR DRINKING-WATER SYSTEMS" AND INSULATE WHERE REQUIRED PER THE ONTARIO BUILDING CODE SECTION 7.3.5.7.
23. ALL SUBSTITUTIONS TO BE APPROVED BY THE MUNICIPALITY'S ENGINEER PRIOR TO ORDERING OR IMPLEMENTING.

SEDIMENT & EROSION CONTROL MEASURES:

1. PROTECT ALL EXPOSED SURFACES AND CONTROL ALL RUNOFF DURING CONSTRUCTION.
2. SEDIMENT AND EROSION CONTROL MEASURES TO BE REMOVED AT COMPLETION OF PROJECT (FOLLOWING COMPLETION OF BASE ASPHALT AND LANDSCAPING).
3. MAINTAIN EROSION CONTROL MEASURES DURING CONSTRUCTION.
4. ALL COLLECTED SEDIMENT TO BE DISPOSED OF AT AN APPROVED LOCATION.
5. MINIMIZE AREA DISTURBED DURING CONSTRUCTION.
6. PROTECT ALL CATCH BASINS, MANHOLES AND PIPE ENDS FROM SEDIMENT INTRUSION WITH GEOTEXTILE FABRIC (TERRAFIX 270 R) OR APPROVED SILT SACKS.
7. KEEP ALL SUMPS CLEAN DURING CONSTRUCTION. CLEAN SUMPS IMMEDIATELY PRIOR TO SUBSTANTIAL COMPLETION.
8. PREVENT WIND-BLOWN DUST.
9. STRAW BALES TO BE USED IN LOCALIZED AREAS AS DIRECTED BY THE ENGINEER DURING CONSTRUCTION FOR WORKS WHICH ARE IN OR ADJACENT TO FLOOD LINES, FILL LINES AND HAZARDOUS SLOPES.
10. STRAW BALES TO BE TERMINATED BY ROUNDING BALES TO CONTAIN AND FILTER RUNOFF.
11. OBTAIN APPROVAL FROM THE LOCAL CONSERVATION AUTHORITY PRIOR TO CONSTRUCTION FOR WORKS WHICH ARE IN, OR ADJACENT TO FLOOD LINES, FILL LINES AND HAZARDOUS SLOPES.
12. ALL SILT FENCING AND DETAILS ARE AT THE MINIMUM TO BE CONSTRUCTED IN ACCORDANCE WITH THE MINISTRY OF NATURAL RESOURCES GUIDELINES ON EROSION AND SEDIMENT CONTROL FOR URBAN CONSTRUCTION SITES.
13. ALL OF THE ABOVE NOTES AND ANY SEDIMENT & EROSION CONTROL MEASURES ARE AT THE MINIMUM TO BE IN ACCORDANCE WITH THE MINISTRY OF NATURAL RESOURCES GUIDELINES ON EROSION AND SEDIMENT CONTROL FOR URBAN CONSTRUCTION SITES.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REGULAR MONITORING AND CLEANUP OF TACKED MUD/DEBRIS ON ADJACENT LANDS AND PUBLIC ROADS TO THE SATISFACTION OF THE ENGINEER AND MUNICIPALITY.
15. PERIODIC REMOVAL OF ACCUMULATED SEDIMENT SHALL BE UNDERTAKEN AS NECESSARY OR AT THE EXPRESSED DIRECTION OF THE ENGINEER. ALL COLLECTED SEDIMENT SHALL BE DISPOSED OF AT AN APPROVED LOCATION.
16. DRIVEN UNDERTAKES A TARGETED USE DESIGN PHILOSOPHY FOR SILT FENCE, SHOWING IT AT LOCATIONS WHICH MAY BE SUSCEPTIBLE TO RUN-OFF OF SILT IN RAIN EVENTS. IN SO DOING, DRIVEN IS REDUCING THE DISTURBANCE TO THE NATURAL AND ESTABLISHED VEGETATION AND CREATING LESS WASTE, BOTH IN THE LANDFILLS AND ON SITE.

LEGAL INFORMATION

LOTS 67,68,69
REGISTERED PLAN 176
(FORMERLY THE VILLAGE OF PORT STANLEY)
IN THE
MUNICIPALITY OF CENTRAL ELGIN
COUNTY OF ELGIN

LEGEND:

- 175.00 — EXISTING SPOT ELEVATION
- 175.00 — EXISTING SPOT ELEVATION (TO REMAIN)
- EXISTING/PROPOSED CATCH BASIN WITH SILT SACKS
- EXISTING/PROPOSED MAINTENANCE HOLE
- 20.0-150mm SA @ 1.0% — EXISTING SANITARY SEWER
- 150 PVC WSC — EXISTING WATERMAIN
- EXISTING/PROPOSED WATER VALVE
- PROPOSED WATER METER
- RSW — PROPOSED ROOF WATER LEADER
- BUILDING ENTRANCE
- EXISTING BUILDING
- PROPOSED BUILDING
- DECIDUOUS/CONIFEROUS TREE

SITE BENCHMARK:

ROUND IRON BAR 5.8M EAST OF CENTRELINE OF MAUD STREET, 1.5M SOUTH OF SOUTH FACE OF MUNICIPAL NO. 156 MAUD STREET
ELEVATION: 175.879

REFERENCE DOCUMENTS:

1. EXISTING TOPOGRAPHIC INFORMATION OBTAINED BY CALLON DIETZ INC. DATED AUGUST 10, 2023
2. PROPOSED SITE PLAN & BUILDING INFORMATION OBTAINED FROM PLANS BY ANNA WAZ VIA EMAIL, AS AMENDED.

		No.	REVISIONS	DATE	BY
DESIGN	AMTJ	00	ZBA AND PERMIT	2023-12-04	AMTJ
DRAWN	AMTJ	01			
CHECKED	AMTJ	02			
APPROVED	AMTJ	03			
DATE	DECEMBER 2023	04			
		05			
		06			
		07			
		08			

CONSULTANT: DRIVEN ENGINEERING INC.

LICENSED PROFESSIONAL ENGINEER — A.T. JOHNSON — 100183875 — 2023-12-05 — PROVINCE OF ONTARIO

HTTPS://DRIVENENG.CA/CONTACT-US.PHP

CLIENT: ANNA WAZ

NOT FOR CONSTRUCTION

SCALE: 1:250

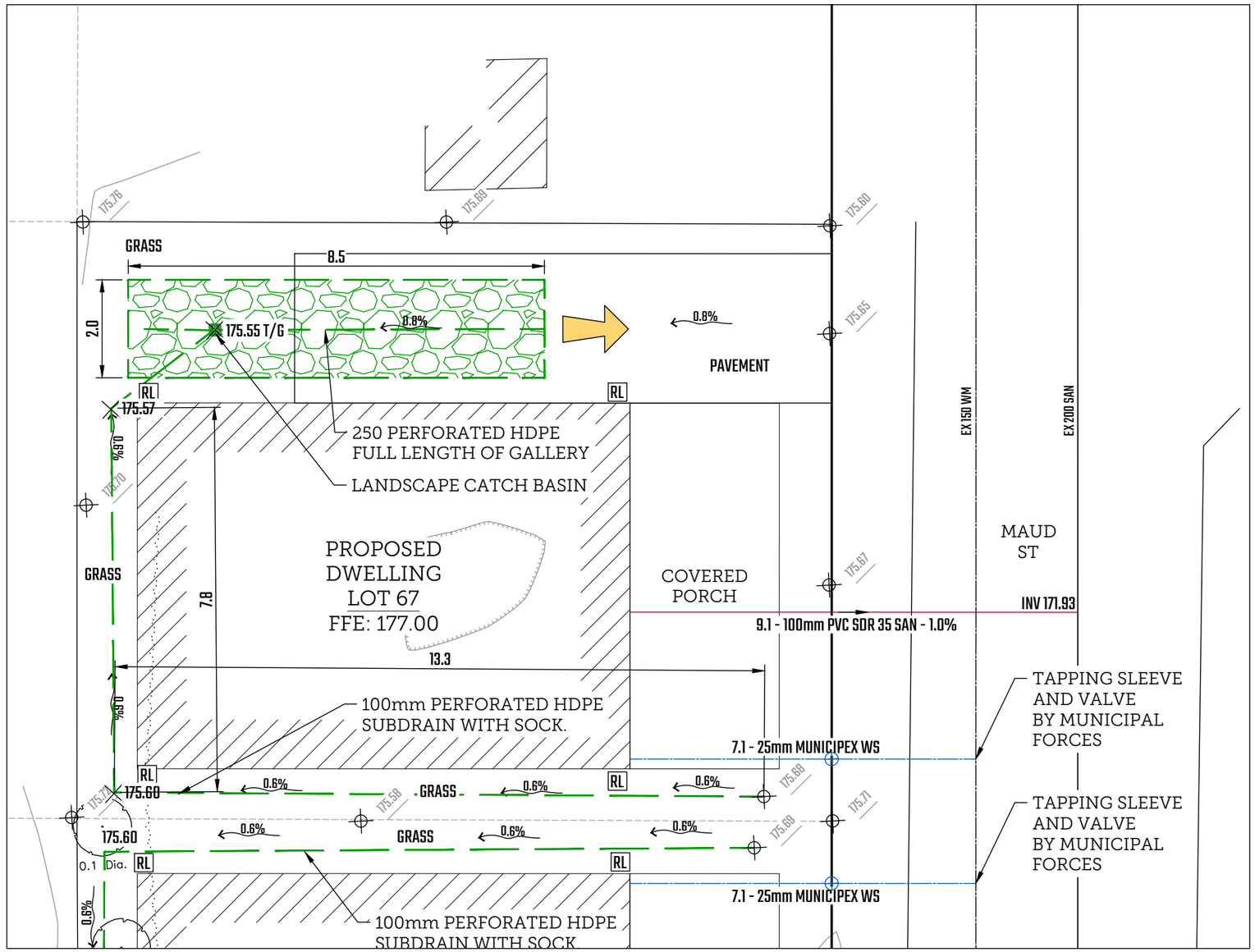
TITLE: REMOVALS PLAN

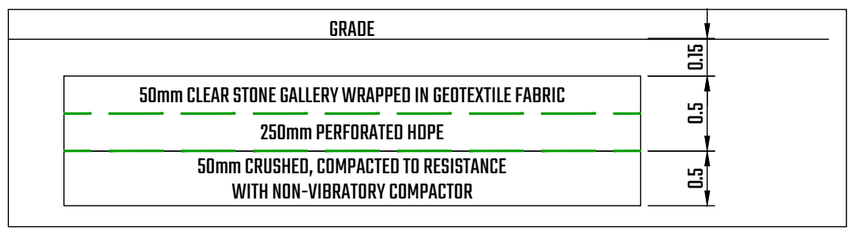
LOT 67, 68, 69 DWELLINGS
156 MAUD ST
PORT STANLEY, ON

PROJECT NUMBER: 23-2036

SHEET NUMBER: C101

PLAN FILE NUMBER: -





RETENTION GALLERY DETAIL

NOTE:
ALL ROOF RAINWATER LEADERS, INCLUDING THE COVERED PORCH, ARE TO BE DIRECTED TO THE STORM RETENTION GALLERY. AT NO TIME IS SITE WATER TO DISCHARGE DIRECTLY TO MAUD ST.

LEGEND:

- EXISTING/PROPOSED CATCH BASIN WITH SILT SACKS
- 0.0% — PROPOSED SWALE
- PROPOSED DRAINAGE DIRECTION
- EXISTING/PROPOSED OVERLAND FLOW ROUTE
- 20.0-300mm ST @ 1.0% — EXISTING STORM SEWER
- 20.0-300mm ST @ 1.0% — PROPOSED STORM SEWER
- 20.0-150mm SA @ 1.0% — EXISTING SANITARY SEWER
- 20.0-150mm SA @ 1.0% — PROPOSED SANITARY SEWER
- 150 PVC WSC — EXISTING WATERMAIN
- 150 PVC WSC — PROPOSED WATERMAIN
- EXISTING BUILDING
- PROPOSED BUILDING
- RL — ROOF RAINWATER LEADER

NOTE:
REFER TO C101 FOR NOTES GOVERNING ALL WORKS.

TITLE: *GRADING AND INFILTRATION PLAN*

PROJECT: *LOT 67, 68, 69 DWELLINGS*
156 MAUD ST, PORT STANLEY, ON.

CONSULTANT: DRIVEN ENGINEERING INC.

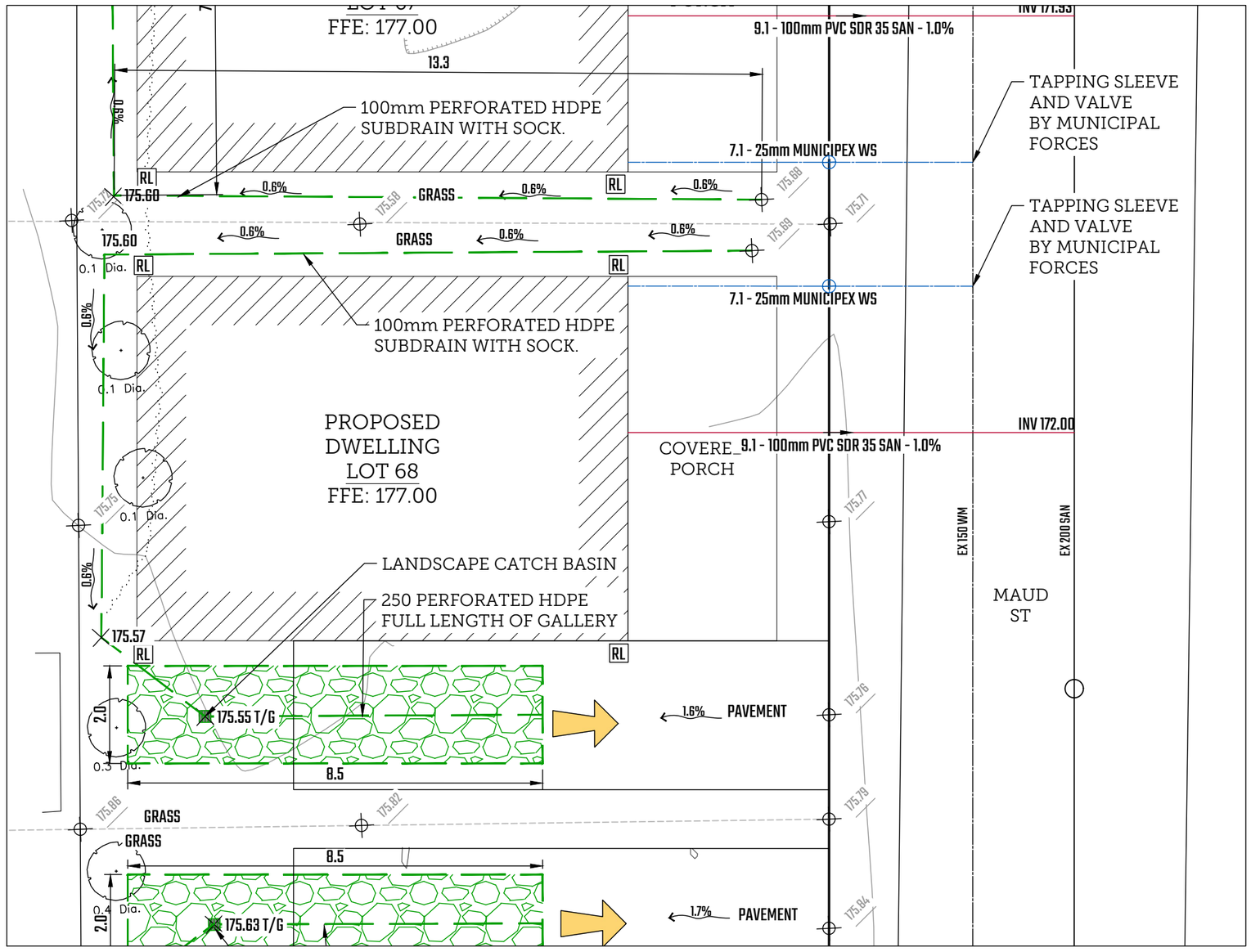
No.	REVISIONS	DATE
1	ZBA AND PERMIT	2023-12-04

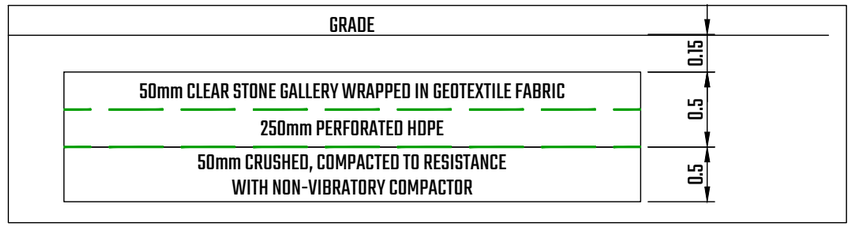
DRAWN BY: AMTJ
CHECKED BY: AMTJ
DATE: NOVEMBER 2023
SCALE: 1:100
PROJECT No.: 23-2036

DRAWING No.
C102

LICENSED PROFESSIONAL ENGINEER
M.T. JOHNSON
100183875
PROVINCE OF ONTARIO

PLOTTED: 2023-12-05 08:16:05





RETENTION GALLERY DETAIL

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- 20.0-150mm SA @ 1.0% — PROPOSED SANITARY SEWER
- 150 PVC WSC — EXISTING WATERMAIN
- 150 PVC WSC — PROPOSED WATERMAIN
- EXISTING BUILDING
- PROPOSED BUILDING
- RL — ROOF RAINWATER LEADER

NOTE:
REFER TO C101 FOR NOTES GOVERNING ALL WORKS.

TITLE: *GRADING AND INFILTRATION PLAN*

PROJECT: *LOT 67, 68, 69 DWELLINGS*
156 MAUD ST, PORT STANLEY, ON.

DRIVEN ENGINEERING INC.

CONSULTANT

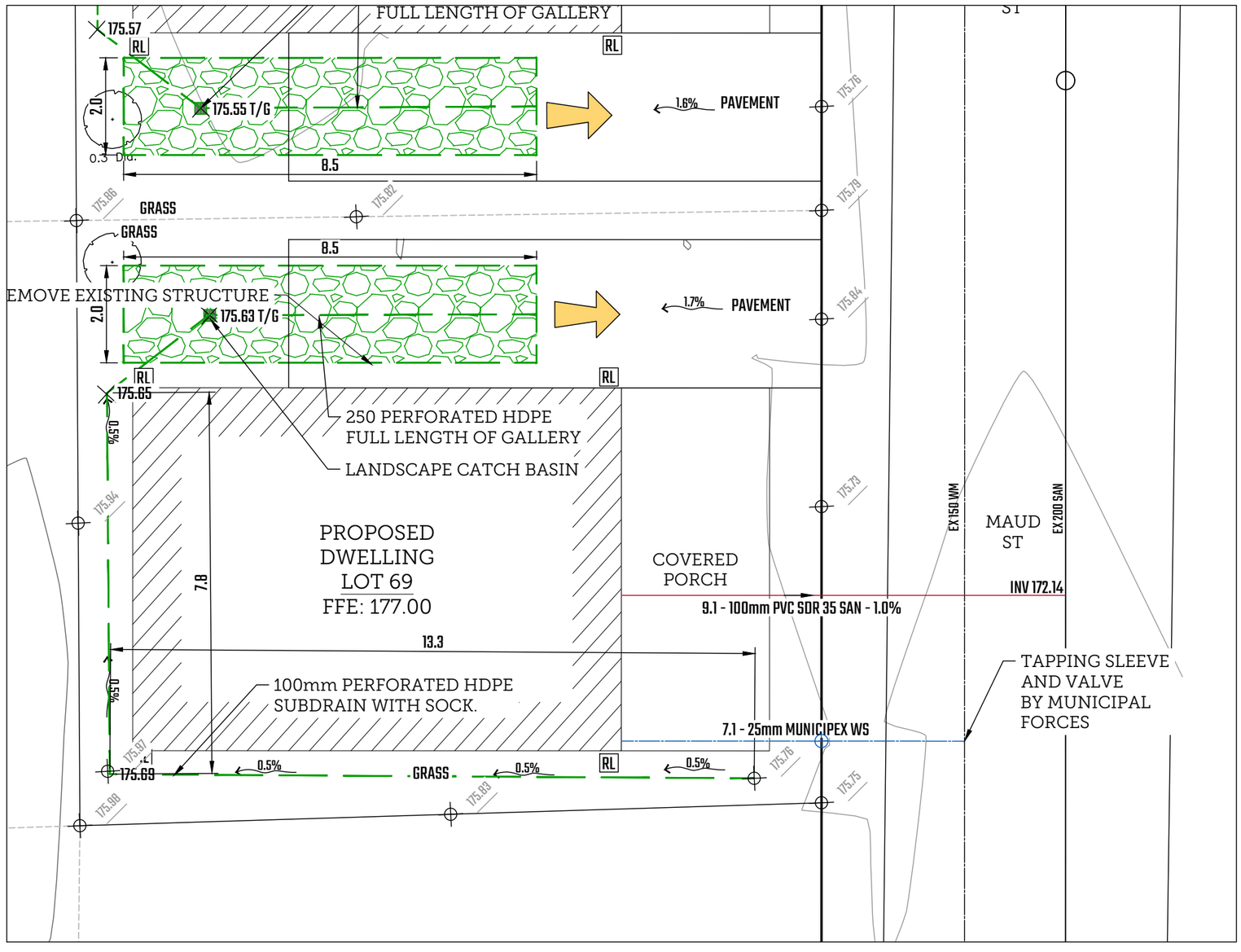
No.	REVISIONS	DATE
1	ZBA AND PERMIT	2023-12-04

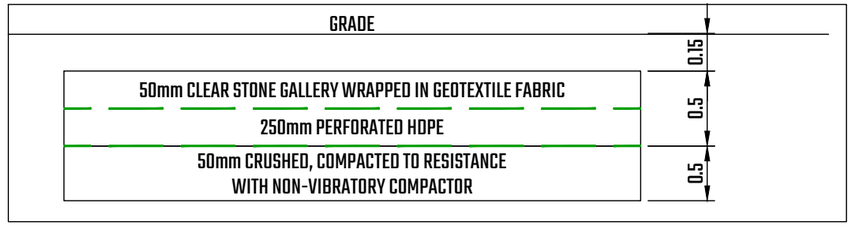
LICENSED PROFESSIONAL ENGINEER
A.M.T. JOHNSON
100183875
2023-12-05
PROVINCE OF ONTARIO

DRAWN BY	CHECKED BY	DATE	SCALE	PROJECT No.
AMTJ	AMTJ	NOVEMBER 2023	1:100	23-2036

DRAWING No.
C103

PLOTTED: 2023-12-05 08:16:08





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- 150 PVC WSC — PROPOSED WATERMAIN
- EXISTING BUILDING
- PROPOSED BUILDING
- RL — ROOF RAINWATER LEADER

NOTE:
REFER TO C101 FOR NOTES GOVERNING ALL WORKS.

TITLE: *GRADING AND INFILTRATION PLAN*

PROJECT: *LOT 67, 68, 69 DWELLINGS*
156 MAUD ST, PORT STANLEY, ON.

CONSULTANT: DRIVEN ENGINEERING INC.

No.	REVISIONS	DATE
1	ZBA AND PERMIT	2023-12-04

DRAWN BY: AMTJ
CHECKED BY: AMTJ
DATE: NOVEMBER 2023
SCALE: 1:100
PROJECT No.: 23-2036

LICENSED PROFESSIONAL ENGINEER
A.M.T. JOHNSON
100183875
2023-12-05
PROVINCE OF ONTARIO

DRAWING No.
C104

PLOTTED: 2023-12-05 08:16:13

DRIVEN ENGINEERING INC.

Municipality of Central Elgin
450 Sunset Drive
St. Thomas, ON, N5R 5V1

December 5, 2023
23-2036

RE: 156 Maud St, Port Stanley
Lot 67, 68, 69 Dwellings – Civil Engineering Design Brief

Driven Engineering Inc. has been engaged to undertake the civil engineering design portion of the subject project, including the preparation of a site servicing and stormwater management report. The proposed works are to construct three new dwellings on the site of the existing 156 Maud St. Each of the three dwellings will be on a separate Lot.

In consultation with the municipality of Central Elgin and the Kettle Creek Conservation Authority, the sites have been designed around certain parameters with respect to the stormwater management and flood impact mitigation. These include:

- A finished floor elevation no less than 177.00m
- 100% control of all generated stormwater up to the 25-Year event
- Restrict the outflow of stormwater up to the 25-Year event

Following discusses our findings and conclusions with respect to the proposed civil design for the captioned development.

1 Sanitary Sewer

The existing sanitary sewer at 156 Maud will be capped at the main and abandoned.

Each of the new dwellings will be connected with new 150mm diameter sanitary PDCs, which will connect to the existing 200mm diameter main along Maud St.

A minimum slope of 1.0% is provided.

2 Water Service

The water service for each dwelling will be a 25mm connected via tapping sleeve and valve to the existing 150mm water main on Maud St.

2.1 Water Quality

The service is approximately 7.1m from the main to the building face. It then has $\frac{0.025^2}{4}\pi \times 7.1 = 0.003m^3$, or 3 litres.

Based on typical consumption of approximately 255 litres per day per person, and an occupancy of 2.4 people per dwelling, the water service will turn over once every seven minutes, which is less than the maximum time of three days.

3 Stormwater Management Design

As described in the introduction, the stormwater management for these sites is predicated on controlling and retaining the 25-Year storm event.

To provide design parameters for the calculation of the infiltration potential, LDS Consultants were retained to undertake a geotechnical investigation.

The results of that investigation concluded that the soil has great infiltration potential, however the stable groundwater was very high, which eliminates the opportunity to design a formal infiltration strategy.

In order to formally infiltrate stormwater, the bottom of the infiltration gallery must be at least 1.0m above the stable groundwater elevation. The observed elevation of the groundwater was 1.1m below grade.

Therefore, and in consultation with the municipality, we designed informal soak away pits. These are effectively infiltration galleries, but without the formal constraints imposed on the design.

3.1 Post-development Conditions

Once built out, the proposed sites will have a composite C-Value of approximately 0.60.

The design of the soak away pits has been for the 25-Year storm.

Using the parameters from the LDS report and designing a stone gallery, it has been found that a gallery with dimensions of 8.5 x 2 x 0.5m will sufficiently exfiltrate the stormwater, while also providing sufficient storage for the storm event.

Each lot will draw down the stored water in approximately 1.2 hours, which is less than the 48 hours generally accepted for infiltration designs.

We are specifying an overland route through the driveway.

4 Closing

4.1 Passage of Time and Information

The findings, conclusions and recommendations contained herein are based on the information known at the time of the fact gathering. Those findings, conclusions and recommendations may be subject to changes or modifications with the passage of time and are for the sole use of the Municipality of Central Elgin and Anna Waz with respect to this project alone.

The document is accurate to the best of the information provided to Driven Engineering Inc. If any information contained within is obsolete, changes or is otherwise no longer relevant, this needs to be made known to Driven and Driven reserves the right to edit or modify this document to suit the new information. It is never the responsibility of Driven to stay current of the information used in the production of this report.

4.2 Closing

We trust that this report meets your satisfaction. Should you have any questions or require further information, please do not hesitate to contact the undersigned.

Sincerely,

Alan Johnson, P.Eng.
President, Principal Engineer
Driven Engineering Inc.

Appendix A

Civil Engineering Plans

(Enclosed Separately)

Appendix B

Civil Engineering Calculations

(Enclosed Separately)

Stormwater Management
Infiltration Calculations

Anna Waz

2023-12-05

Project Name: Port Stanley Dwellings

Prepared By: Alan Johnson

Project Location: Lot 67, 68, 69 156 Maud St, Port Stanley

Summary of Information

Post-Development Catchment areas

	Area (m2)	C-Value
Lot 67	188.0 m2	0.602
Lot 68	189.0 m2	0.600
Lot 69	188.0 m2	0.602
Total	565.0 m2 0.057 ha	0.601

Storage Required

Lot 1	2.71 m^3
Lot 2	2.72 m^3
Lot 3	2.72 m^3

Storage Available

Soak Away Pit	2.89 m^3
Total:	2.89 m^3

Available storgage is greater than required storage.

Notes:

The three dwellings are all presented in this one report as they are all very similar in their design, and subsequently use the same soak away pit design.

Only the 25-Year storm event was calculated as all larger events will over land to Maud St.

Ancillary Calculations and Information

Return Period	Parameters	
	A	B
2	23.500	-0.699
5	30.900	-0.699
10	35.800	-0.699
25	42.000	-0.699
50	46.600	-0.699
100	51.200	-0.699

Catchment Area Calculations

Post-Development

		Lot 67		Lot 68		Lot 69			Total	
C-Value		**Area (m^2)**	**C*A**	**Area (m^2)**	**C*A**	**Area (m^2)**	**C*A**		**Area (m^2)**	**C*A**
Asphalt	0.9	33	29.7	33	29.7	33	29.7		99	89.1
Building	0.9	75	67.5	75	67.5	75	67.5		225	202.5
Gravel	0.6	0	-		-		-		0	-
Grass	0.2	80	16	81	16.2	80	16		241	48.2
Totals		188	113.2	189	113.4	188	113.2		565	339.8
Equivalent C-Value		0.602		0.600		0.602			0.601	

Requirement

Infiltration Calculations

Infiltration Rate	84	mm/h	*From LDS Geotechnical report, dated 2023-08-22*
	0.0000233	m/s	

Trench Length	8.5	m
Trench Depth	0.5	m
Trench Width	2	m
Number of Trenches	1	ea
Trench hydraulic perimeter	27.5	m^2

Useable Storage

Trench Volume	8.5	m^3
Stone Porosity	0.34	
Storage	2.89	m^3

Infiltrate Rate 0.00064 m^3/s

Draw Down

Lot 1	1.2	hours
Lot 2	1.2	hours
Lot 3	1.2	hours

Lot 67

25 Year Storm Event

Duration (min.)	Intensity "i" (mm/hr)	Inflow, Q_i 2.78*C*i*A (L/s)	Volume In Q_i*t*60/1000 (m^3)	Allowable Outflow, Q_o (L/s)	Surface Outflow Q_o (l/s)	Volume Out Q_o*t*60/1000 (m^3)	Exfiltration Volume (m^3)	Difference/ Storage (m^3)
5	238.56	7.51	2.25	0.00	0.00	0.00	0.19	2.06
10	146.95	4.62	2.77	0.00	0.00	0.00	0.38	2.39
15	110.69	3.48	3.13	0.00	0.00	0.00	0.58	2.56
30	68.18	2.15	3.86	0.00	0.00	0.00	1.15	2.71
60	42.00	1.32	4.76	0.00	0.00	0.00	2.30	2.45
120	25.87	0.81	5.86	0.00	0.00	0.00	4.61	1.25
180	19.49	0.61	6.62	0.00	0.00	0.00	6.91	-0.29
							Max Storage	**2.71**

Stormwater Management
Infiltration Calculations

Anna Waz

2023-12-05

Lot 68

25 Year Storm Event

Duration (min.)	Intensity "i" (mm/hr)	Inflow, Q_i 2.78*C*i*A (L/s)	Volume In Q_i*t*60/1000 (m^3)	Allowable Outflow, Q_o (L/s)	Surface Outflow Q_o (l/s)	Volume Out Q_o*t*60/1000 (m^3)	Exfiltration Volume (m^3)	Difference/ Storage (m^3)
5	238.56	7.52	2.26	0.00	0.00	0.00	0.19	2.06
10	146.95	4.63	2.78	0.00	0.00	0.00	0.38	2.40
15	110.69	3.49	3.14	0.00	0.00	0.00	0.58	2.56
30	68.18	2.15	3.87	0.00	0.00	0.00	1.15	2.72
60	42.00	1.32	4.77	0.00	0.00	0.00	2.30	2.46
120	25.87	0.82	5.87	0.00	0.00	0.00	4.61	1.26
180	19.49	0.61	6.63	0.00	0.00	0.00	6.91	-0.28

Max Storage **2.72**

Lot 69

25 Year Storm Event

Duration (min.)	Intensity "i" (mm/hr)	Inflow, Q_i 2.78*C*i*A (L/s)	Volume In Q_i*t*60/1000 (m^3)	Allowable Outflow, Q_o (L/s)	Surface Outflow Q_o (l/s)	Volume Out Q_o*t*60/1000 (m^3)	Exfiltration Volume (m^3)	Difference/ Storage (m^3)
5	238.56	7.52	2.26	0.00	0.00	0.00	0.19	2.06
10	146.95	4.63	2.78	0.00	0.00	0.00	0.38	2.40
15	110.69	3.49	3.14	0.00	0.00	0.00	0.58	2.56
30	68.18	2.15	3.87	0.00	0.00	0.00	1.15	2.72
60	42.00	1.32	4.77	0.00	0.00	0.00	2.30	2.46
120	25.87	0.82	5.87	0.00	0.00	0.00	4.61	1.26
180	19.49	0.61	6.63	0.00	0.00	0.00	6.91	-0.28

Max Storage **2.72**