ARIK ENGINEERING LTD.
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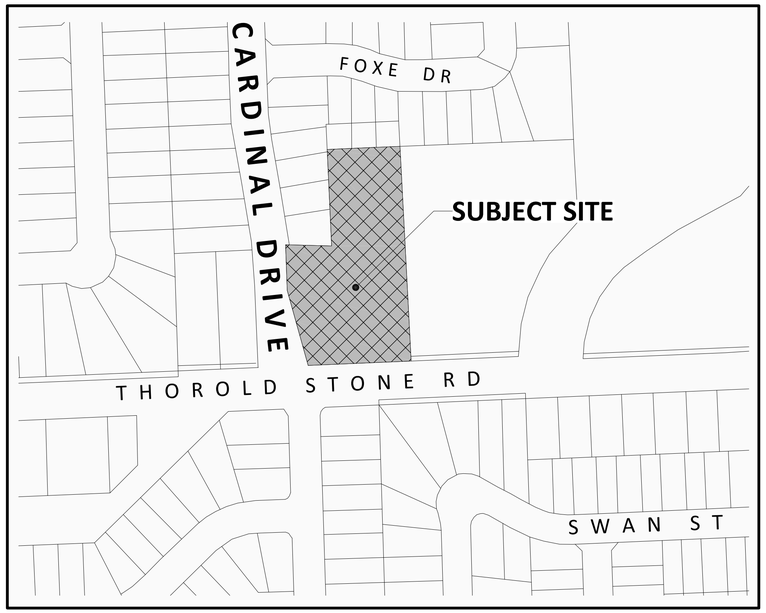
MUNICIPALITY: CITY OF NIAGARA FALLS

3958 CARDINAL DRIVE



KEY PLAN
N.T.S

LIST OF DRAWINGS

DWG-1	GENERAL NOTES AND DETAILS
DWG-2	SITE SERVICING PLAN
DWG-3	SITE GRADING PLAN
DWG-4	EROSION & SEDIMENT CONTROL PLAN
DWG-5	STORM DRAINAGE AREA PLAN

OWNER:
12604515 CANADA CORPORATION

JULY 10, 2023

PROJECT NUMBER: 22181

MUNICIPALITY: CITY OF NIAGARA FALLS

3958 CARDINAL DRIVE

STANDARD NOTES FOR PRIMARY & SECONDARY SERVICES:

A. SEWERS

SANITARY AND STORM SEWERS

a) CONSTRUCTION OF SANITARY AND STORM SEWERS AND PRIVATE SERVICES SHALL BE IN ACCORDANCE WITH CITY OF NIAGARA FALLS STANDARDS & SPECIFICATIONS (LATEST EDITION) AND MINISTRY OF ENVIRONMENT AND CONSERVATION PARKS (MECP) GUIDELINES (LATEST EDITION).

b) COVER AND BEDDING MATERIAL FOR CONCRETE PIPE SHALL BE GRANULAR 'A' MATERIAL AS PER OPSD 802.030 OR 802.033, CLASS 'B' BEDDING, OR AS PER GEOTECHNICAL SPECIFICATIONS.

c) COVER AND BEDDING MATERIAL FOR PVC PIPE SHALL BE GRANULAR 'A' MATERIAL AS PER OPSD 802.010 OR 802.013 OR AS PER GEOTECHNICAL SPECIFICATION.

d) ALL SEWERS SHALL BE CLEANED AND FLUSHED PRIOR TO VIDEO INSPECTION.

e) MANHOLE FRAMES AND COVERS SHALL BE AS PER OPSD 401.010 (STORM-OPEN, SANITARY-CLOSED).

f) SANITARY SEWER (200MM TO 675MM DIA) SHALL BE PVC PIPE, CSA B182.2. SDR-35.

g) STORM SEWER (300MM TO 600MM DIA.) SHALL BE PVC PIPE, CSA B182.2, SDR-35.

h) STORM SEWER > 600MM DIA. SHALL BE CONCRETE PIPE, CSA A257.2 (AS SPECIFIED)

i) ALTERNATE MATERIALS MAY BE ACCEPTABLE IF APPROVAL HAS BEEN OBTAINED FROM THE CITY OF NIAGARA FALLS.

j) THE CONNECTION TO THE MAIN SANITARY SEWER SHALL BE MADE WITH APPROVED MANUFACTURED TEE. APPROVED SADDLES SHALL BE USED FOR CONNECTING TO EXISTING SEWER MAIN.

k) MINIMUM SLOPE FOR PRIVATE SERVICES TO BE 2.0%.

l) TOP OF SANITARY PRIVATE SERVICES AT STREET LINE TO BE 2.80M (MIN.) BELOW CENTRELINE ROAD ELEVATION AT THAT POINT OR AS DETAILED.

m) TOP OF STORM PRIVATE DRAINS AT STREET LINE TO BE 1.2M (MIN.) BELOW CENTRELINE ROAD ELEVATION AT THAT POINT OR AS DETAILED.

n) BUILDING RAINWATER LEADERS SHALL NOT BE CONNECTED TO THE STORM PRIVATE DRAIN BUT SHALL DISCHARGE ONTO THE GROUND SURFACE VIA SPLASH PADS.

o) SUMP PUMPS WITH CHECK VALVES SHALL BE INSTALLED IN THE BUILDING TO PUMP THE BUILDING WEEPING TILES TO THE GRADE OUTSIDE THE BUILDING IF REQUIRED. THE SUMP OUTLET PIPE SHALL EXTEND A MINIMUM OF 150MM ABOVE THE PROPOSED GRADE AT THE DWELLING .

CATCH BASINS

a. ALL CATCH BASIN CONNECTIONS TO BE 200mm DIA PVC CSA B182.2, SDR-35 OR AS DETAILED.

b. CATCH BASIN AS PER OPSD705.010.

c. CATCH BASIN COVER IN ASPHALT AREA AS PER OPSD 400.100.

d. CATCH BASIN COVER IN GRASS AREA SHALL BE BEEHIVE TYPE GRATE OR AS PER OPSD 400.120.

B. WATERMAINS AND WATER SERVICES

WATER SERVICES

a) GRANULAR A MATERIAL IS TO BE USED FOR BEDDING UNDER THE WATERMAIN. BALANCE OF TRENCH BACKFILL MATERIAL TO GROUND LEVEL IS ACCORDING TO COUNTY SPECIFICATIONS.

b) CONCRETE THRUST BLOCK OR APPROVED RESTRAINING DEVICES ARE REQUIRED AS PER OPSD-1103.010, 1103.020.

c) ALL VALVES, HYDRANTS WATER METERS TO BE INSTALLED AS PER CITY OF NIAGARA FALLS STANDARDS AND SPECIFICATIONS.

d) TO BE INSTALLED TO A MINIMUM COVER OF 1.7m.

C. ROADWORKS

1. SIDEWALKS, CURBS, AND GUTTERS

a) CONCRETE CURB AS PER OPSD 600.110 - (BARRIER TYPE).

b) CURB DEPRESSION AT DRIVEWAYS AS PER OPSD 600.040 AND OPSD 310-050.

c) 1.5M WIDE CONCRETE SIDEWALK AS PER CITY STANDARD AND SPECIFICATIONS.

d) MAXIMUM DRIVEWAY SLOPE NOT MORE THAN 8.0% AND NOT LESS THAN 2.0%.

e) 150MM FILTER WRAPPED CORRUGATED SUBDRAINS TO BE INSTALLED CONTINUOUSLY BELOW THE CURB AND GUTTER AND CONNECTED TO THE STORM OUTLET OR AS DETAILED ON SERVICING AND GRADING PLANS.

D. COMPACTION REQUIREMENTS

a) ALL BEDDING AND BACKFILL MATERIAL, ROAD SUB-GRADES AND GENERALLY ALL MATERIAL USED FOR LOT GRADING AND FILL SECTIONS, ETC., SHALL BE COMPACTED TO MIN. 100% SPD (UNLESS OTHERWISE RECOMMENDED BY THE GEOTECHNICAL ENGINEER). ALL MATERIAL SHALL BE PLACED IN LAYERS NOT EXCEEDING 300MM LIFTS.

b) ALL GRANULAR ROAD BASE MATERIALS SHALL BE COMPACTED TO 100% SPD.

c) FOR ALL SEWERS AND WATERMAINS IN FILL SECTIONS, THE COMPACTION SHALL BE CERTIFIED BY A GEOTECHNICAL ENGINEER PRIOR TO LAYING OF PIPE.

d) REFER TO GEOTECHNICAL REPORT FOR ADDITIONAL ON SITE SOIL INFORMATION AND RECOMMENDATION.

E. SILTATION AND EROSION CONTROL

a) SILTATION CONTROL BARRIERS SHALL BE PLACED AS DETAILED.

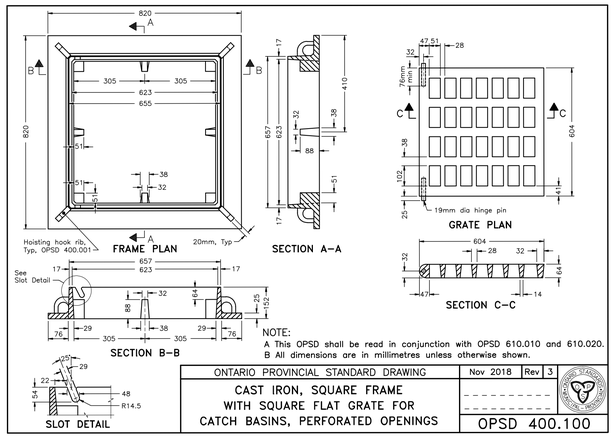
b) ALL SILTATION CONTROL MEASURES SHALL BE CLEANED AND MAINTAINED AFTER EACH RAINFALL AS DIRECTED AND TO THE SATISFACTION OF THE OF CITY OF NIAGARA FALLS.

c) ADDITIONAL SILT CONTROL LOCATIONS MAY BE REQUIRED AS DETERMINED BY THE CITY OF NIAGARA FALLS.

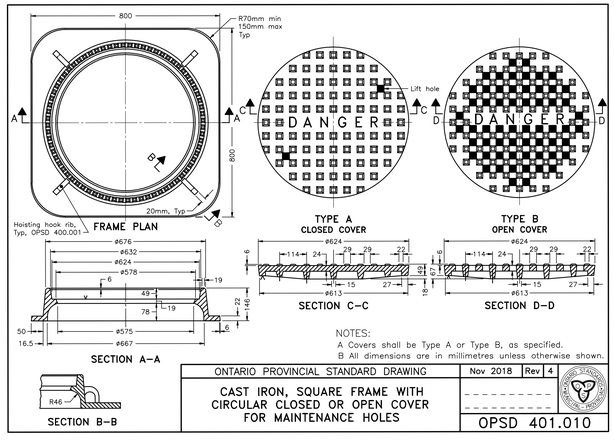
d) SEDIMENT CONTROL FENCES AS PER OPSD 219.130

F. GENERAL NOTES

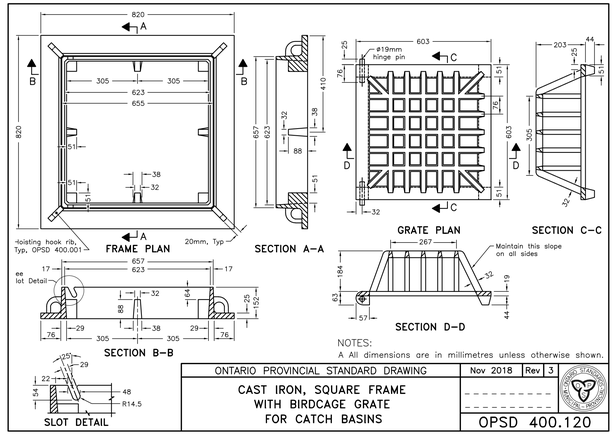
1. EXISTING SEWERS, WATERMAINS & UTILITIES ALIGNMENTS AND ELEVATIONS ARE ONLY PROVIDED FOR INFORMATION PURPOSES. THE CONTRACTOR ONSITE SHALL BE RESPONSIBLE TO LOCATE ALL EXISTING SEWERS, WATERMAINS & UTILITIES ALIGNMENT & ELEVATIONS PRIOR TO START OF CONSTRUCTION.
2. THE BIDDER/CONTRACTOR MUST REVIEW/VERIFY EXISTING SOIL CONDITIONS ONSITE.
3. THE CONTRACTOR WILL BE RESPONSIBLE FOR COSTS ASSOCIATED WITH THE CROSSING OF ANY EXISTING SEWERS, WATERMAINS AND UTILITIES INCLUDING ANY SUPPORTS AND PRECAUTIONS REQUIRED ON SITE SPECIFIC BASIS.
4. THE BIDDER/CONTRACTOR MUST VERIFY ALL DIMENSIONS ON ALL THE DRAWINGS. ANY ERRORS AND/OR OMISSIONS MUST BE REPORTED TO THE ENGINEER IMMEDIATELY.



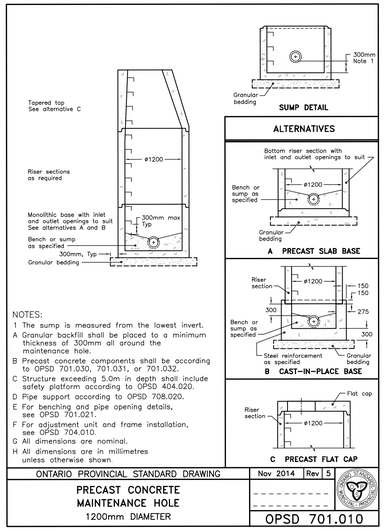
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 3
CAST IRON, SQUARE FRAME WITH SQUARE FLAT GRATE FOR CATCH BASINS, PERFORATED OPENINGS		OPSD 400.100



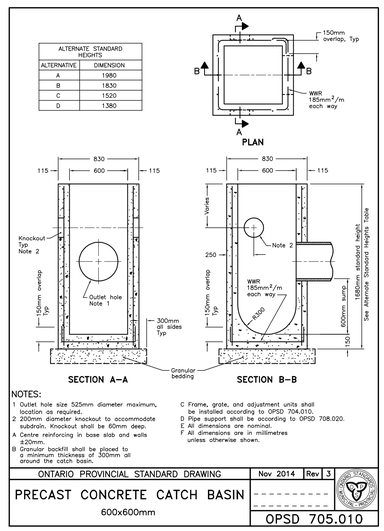
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 4
CAST IRON, SQUARE FRAME WITH CIRCULAR CLOSED OR OPEN COVER FOR MAINTENANCE HOLES		OPSD 401.010



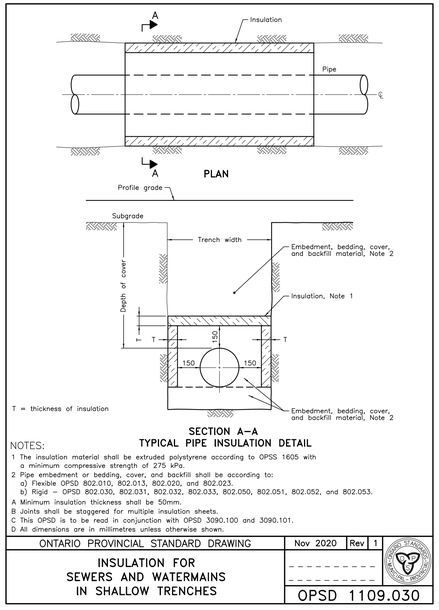
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 3
CAST IRON, SQUARE FRAME WITH BIRDCAGE GRATE FOR CATCH BASINS		OPSD 400.120



ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 5
PRECAST CONCRETE MAINTENANCE HOLE 1200mm DIAMETER		OPSD 701.010



ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 3
PRECAST CONCRETE CATCH BASIN 600x600mm		OPSD 705.010



ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2020	Rev 1
INSULATION FOR SEWERS AND WATERMAINS IN SHALLOW TRENCHES		OPSD 1109.030

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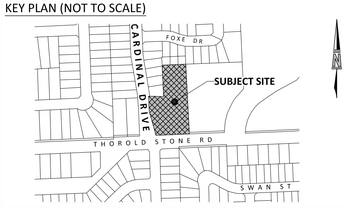
SITE BENCH MARK

- TOPOGRAPHIC INFORMATION IS BASED ON J.D BARNES LTD. DATED JANUARY 13, 2023.
- ELEVATIONS ARE OF GEODETIC ORIGIN AND ARE REFERRED TO CITY OF NIAGARA FALLS BENCHMARK NO. 90036034. ELEVATION = 188.124 METERS

KEY PLAN (NOT TO SCALE)



REVISIONS RECORD

No.	BY	DD/MM/YYYY	DESCRIPTION
1.	A.R	10/07/2023	FIRST SUBMISSION

NOT ISSUED FOR CONSTRUCTION

DATE: JULY 10, 2023

DESIGN BY: A.R

DRAWN BY: A.J

CHECKED BY: A.R

SCALE: N/A

LICENSED PROFESSIONAL ENGINEER — A. RAZZAK — 100505914 — JULY 10, 2023 — PROVINCE OF ONTARIO

ENGINEER'S STAMP

LEGEND

PROJECT: 3958 CARDINAL DRIVE

OWNER: 12604515 CANADA CORPORATION

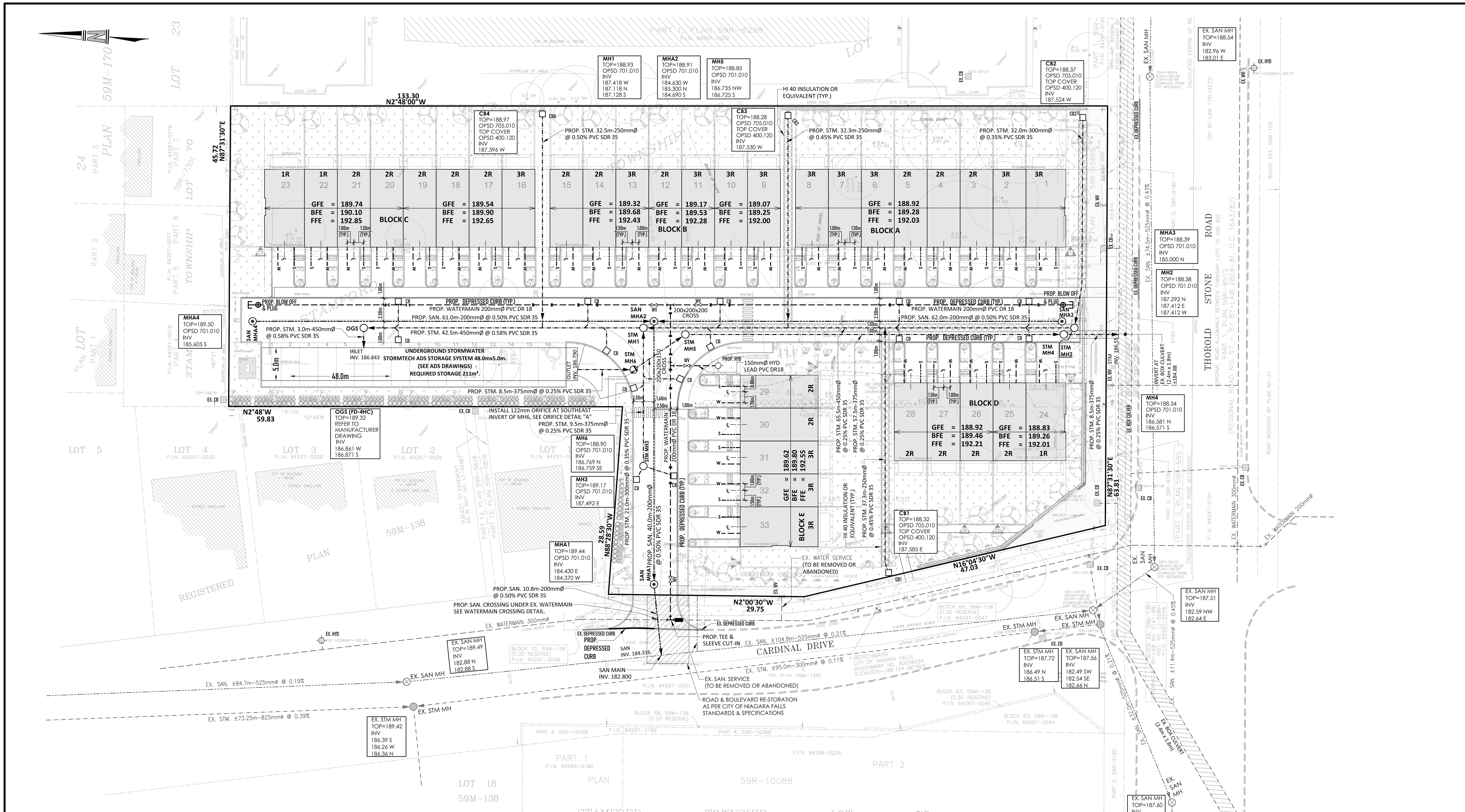
MUNICIPALITY: CITY OF NIAGARA FALLS

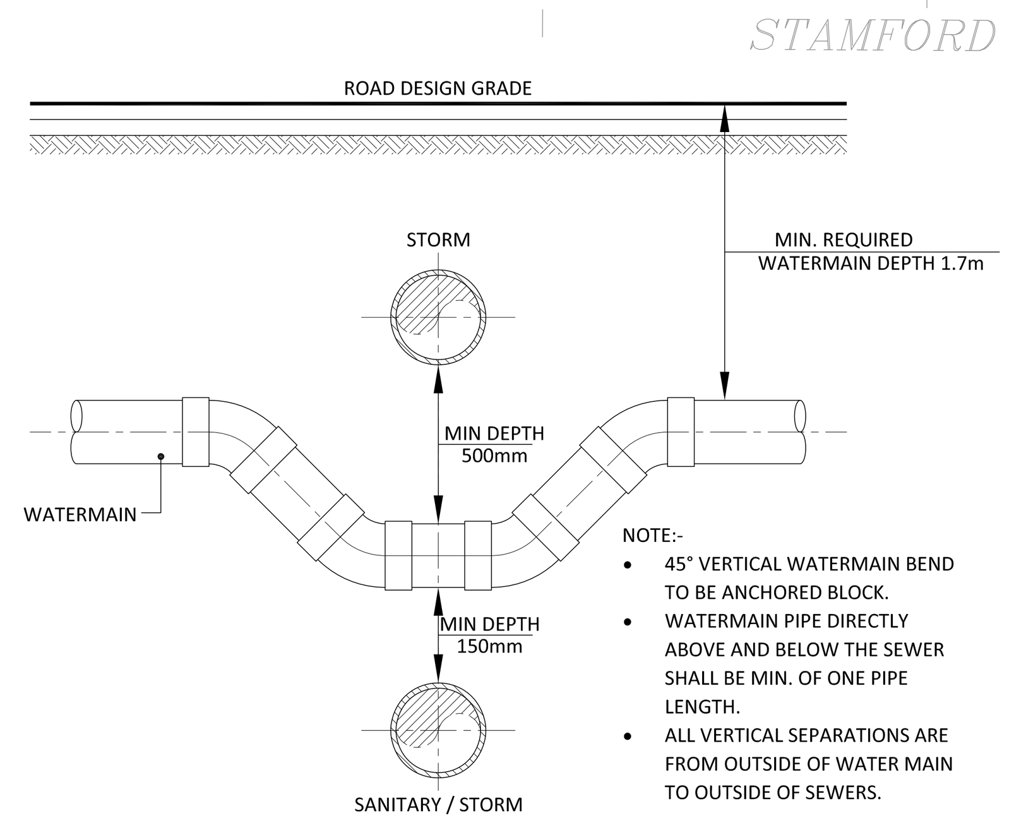
GENERAL NOTES AND DETAILS

PROJECT NUMBER: 22181

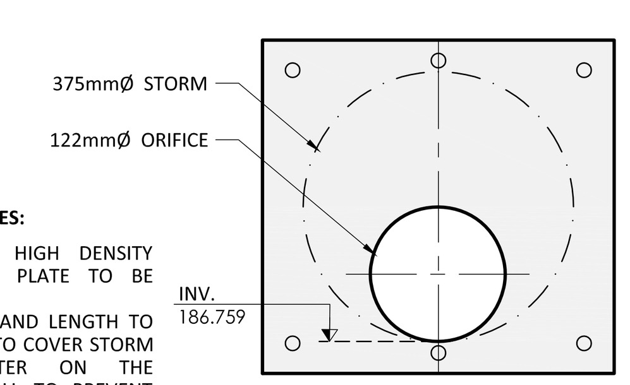
DRAWING: DWG-1

3958 CARDINAL DRIVE



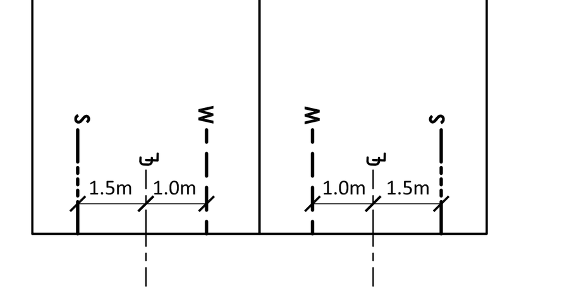


WATERMAIN CROSSING DETAIL
N.T.S.



ORIFICE PLATE NOTES:
1. 20MM THICK HIGH DENSITY POLYETHYLENE PLATE TO BE INSTALLED.
2. PLATE WIDTH AND LENGTH TO BE PROVIDED TO COVER STORM PIPE DIAMETER ON THE MANHOLE WALL TO PREVENT LEAKAGE.
3. FASTENER SHALL BE STAINLESS STEEL 13MM X 95MM BOLT WITH NUT AND WASHER.
4. PLATE MUST BE SEALED TO PREVENT LEAKAGE.

ORIFICE PLATE DETAIL "A"
N.T.S.



W = WATER SERVICE 25mmØ TYPE K SOFT COPPER.
(CURB STOP TO BE PROVIDED AS PER CITY OF NIAGARA FALLS STANDARDS)
INDIVIDUAL WATER METER TO BE PROVIDED IN EACH TOWNHOUSE UNIT.
S = SANITARY SERVICE 100mm PVC SDR-28 @ MINIMUM 2.0% SLOPE

TYPICAL TOWNHOUSE SERVICE CONNECTION DETAIL UNLESS OTHERWISE NOTED ON SERVICING PLAN
N.T.S.

GENERAL NOTES FOR SERVICING:

1. ALL MUNICIPAL AND PRIVATE SANITARY, STORM AND WATERMAIN SERVICES TO BE INSTALLED AS PER THE CURRENT CITY STANDARDS AND SPECIFICATIONS.
2. EXISTING MUNICIPAL AND PRIVATE SEWERS, WATERMAINS AND UTILITIES ALIGNMENTS AND THEIR ELEVATIONS ARE ONLY PROVIDED FOR INFORMATION PURPOSES. THE CONTRACTOR ONSITE SHALL BE RESPONSIBLE TO LOCATE ALL EXISTING SEWERS, WATERMAINS AND UTILITIES ALIGNMENT AND ELEVATIONS PRIOR TO START OF CONSTRUCTION.
3. THE BIDDER/CONTRACTOR MUST REVIEW/VERIFY EXISTING SOIL CONDITIONS ONSITE.
4. THE CONTRACTOR WILL BE RESPONSIBLE FOR COST ASSOCIATED WITH THE CROSSING OF ANY EXISTING SEWERS, WATERMAINS AND UTILITIES INCLUDING ANY SUPPORTS AND PRECAUTIONS REQUIRED ON SITE SPCIFIC BASIS.
5. THE BIDDER/CONTRACTOR MUST VERIFY ALL DIMENSIONS ON ALL THE DRAWINGS. ANY ERRORS AND/OR OMISSIONS MUST BE REPORTED TO THE ENGINEER IMMEDIATELY.

STANDARD SERVICING NOTES :

1. THE PROPERTY OWNER IS RESPONSIBLE FOR RESTORATION OF ALL DAMAGED AND/OR DISTURBED PROPERTY WITHIN THE CITY OR REGIONAL RIGHT-OF-WAY TO CITY OF NIAGARA FALLS STANDARDS.
2. IF, FOR UNFORESEEN REASONS, THE OWNER AND/OR HIS/HER REPRESENTATIVE ENCROACH ONTO PRIVATE LANDS TO UNDERTAKE ANY WORKS, HE/SHE MUST OBTAIN WRITTEN PERMISSION FROM THE ADJACENT PROPERTY OWNERS PRIOR TO ENTERING UPON THE PRIVATE PROPERTY TO PERFORM ANY WORKS. COPIES OF THESE LETTERS OF CONSENT MUST BE SUBMITTED TO DEVELOPMENT ENGINEERING DIVISION, PRIOR TO ANY WORK BEING PERFORMED. FAILURE TO COMPLY WITH THE ABOVE IS AT THE PROPERTY OWNERS OWN RISK.
3. REFER TO LANDSCAPING PLAN FOR TREE PRESERVATIONS AND PROPOSED TREES WITH RESPECT TO THE SITE SERVICING.
4. ALL PRIVATE WATER, SANITARY AND STORM SERVICE CONNECTIONS TO BE CONSTRUCTED AS PER CITY OF NIAGARA FALLS STANDARDS AND GUIDELINES.
5. CONTRACTOR IS RESPONSIBLE TO LOCATE ALL EXISTING UTILITIES AROUND THE DEVELOPMENT PRIOR TO START CONSTRUCTION AND NOTIFY TO THE OWNER AND THE ENGINEER.

RAINWATER ROOF LEADERS AND SUMP PUMPS:
- ALL RAINWATER LEADERS SHALL DISCHARGE ONTO SPLASH PADS AND THEN TO GRASSED OR LANDSCAPED AREAS A MINIMUM OF 0.60M FROM THE BUILDING FACE.
- SUMP PUMP REQUIREMENT TO BE CONFIRMED BY GEOTECHNICAL INVESTIGATIONS.

SPECIAL NOTES:

1. **REFER TO LATEST ARCHITECTURAL PLANS FOR BUILDING LEVELS, RETAINING WALLS SETBACKS, SITE STATISTICS AND PERIMETER AND/OR OTHER FENCES.**
2. **ALL EXISTING MUNICIPAL SANITARY AND STORM SEWERS LOCATION AND INVERTS WHERE PROPOSED SITE SERVICES WILL TIE IN TO BE VERIFIED ON SITE PRIOR TO CONSTRUCTION.**
3. **MINIMUM BASEMENT FLOOR ELEVATION SHALL BE BASED ON INVERT OF THE SANITARY SERVICE. CONTRACTOR MUST VERIFY SANITARY SERVICE INVERT PRIOR TO SETTING BASEMENT FOUNDATION LEVEL.**
4. **ALL EXISTING UTILITIES TO BE LOCATED ON SITE.**
5. **THE BIDDER/CONTRACTOR MUST REVIEW/VERIFY EXISTING SOIL CONDITIONS ONSITE.**
6. **THE CONTRACTOR WILL BE RESPONSIBLE FOR COST ASSOCIATED WITH THE CROSSING OF ANY EXISTING SEWERS, WATERMAINS AND UTILITIES INCLUDING ANY SUPPORTS AND PRECAUTIONS REQUIRED ON SITE SPECIFIC BASIS WHERE APPLICABLE.**
7. **THE BIDDER/CONTRACTOR MUST VERIFY ALL DIMENSIONS ON THE DRAWING. ANY ERRORS AND/OR OMISSIONS MUST BE REPORTED TO THE ENGINEER IMMEDIATELY.**

ALL EXISTING SANITARY AND STORM MANHOLES AND INVERTS WERE EXTRACTED FROM CITY OF NIAGARA FALLS DRAWINGS AND MUST BE CONFIRMED ONSITE PRIOR TO CONSTRUCTION.

ONSITE STORMWATER MANAGEMENT REQUIREMENTS:
1. POST-DEVELOPMENT FLOWS TO MATCH WITH PRE-DEVELOPMENT CONDITIONS UNDER 5-YEAR & 100 YEAR STORM EVENTS.
2. STORMWATER MANAGEMENT ONSITE QUANTITY CONTROL REQUIRED STORAGE OF 211m^3 IS TO BE PROVIDED AT THE ALLOWABLE DISCHARGE RATE OF 0.038cms WITH AN ORIFICE SIZE OF 122mm DIAMETER.
3. REFER TO ADS STORMTECH DESIGN/DRAWINGS FOR UNDERGROUND STORAGE SYSTEM.

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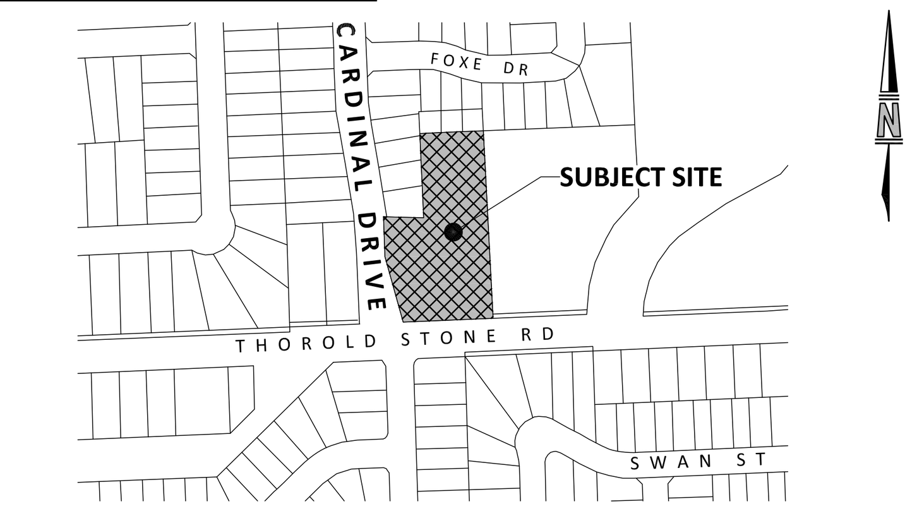
KEY PLAN (NOT TO SCALE)



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NOT ISSUED FOR CONSTRUCTION

DATE: JULY 10, 2023
DESIGN BY: A.R
DRAWN BY: A.J
CHECKED BY: A.R
SCALE: 1:300

LICENSED PROFESSIONAL ENGINEER — A. RAZZAK — 100505914 — JULY 10, 2023 — PROVINCE OF ONTARIO
ENGINEER'S STAMP

LEGEND
- EXISTING STORM SEWER & MANHOLE
- EXISTING SANITARY SEWER & MANHOLE
- PROPOSED STORM SEWER & MANHOLE
- PROPOSED SANITARY SEWER & MANHOLE
- EXISTING WATERMAIN
- PROPOED WATERMAIN
- WATERMAIN CROSSING
- PROPOSED CURB & GUTTER
- EXISTING CURB & GUTTER
- DEPRESSED CURB
- EXISTING DEPRESSED CURB
- EXISTING CURB STOP
- PROPOSED WATER VALVE
- EXISTING WATER VALVE
- EXISTING CATCHBASIN
- PROPOSED CATCHBASIN
- PROPOSED DOUBLE CATCHBASIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- PROPOSED CATCHBASIN MANHOLE
- WM — PROPOSED WATER METER
- BFP — PROPOSED BACKFLOW PREVENTER
- PROPOSED RETAINING WALL
- TW[000.00] BW[000.00] — PROPOSED TOP OF RETAINING WALL / PROPOSED BOTTOM OF RETAINING WALL
- PROPOSED SUBDRAIN
- EXISTING FENCE
- PROPOSED FENCE
- HYDRO POLE
- PROPOSED TRANSFORMER
- EXISTING BELL LINES
- EXISTING HYDRO LINES
- EXISTING GAS LINES
- FFE — FIRST FLOOR ELEVATION
- BFE — BASEMENT FLOOR ELEVATION
- M — PROPOSED MAILBOX
- EXISTING TREE
- PROPOSED BLOW OFF
- PROPOSED LIGHT POLE
- EXISTING LIGHT POLE
- PROPOSED FLOOR DRAIN

PROJECT:
3958 CARDINAL DRIVE

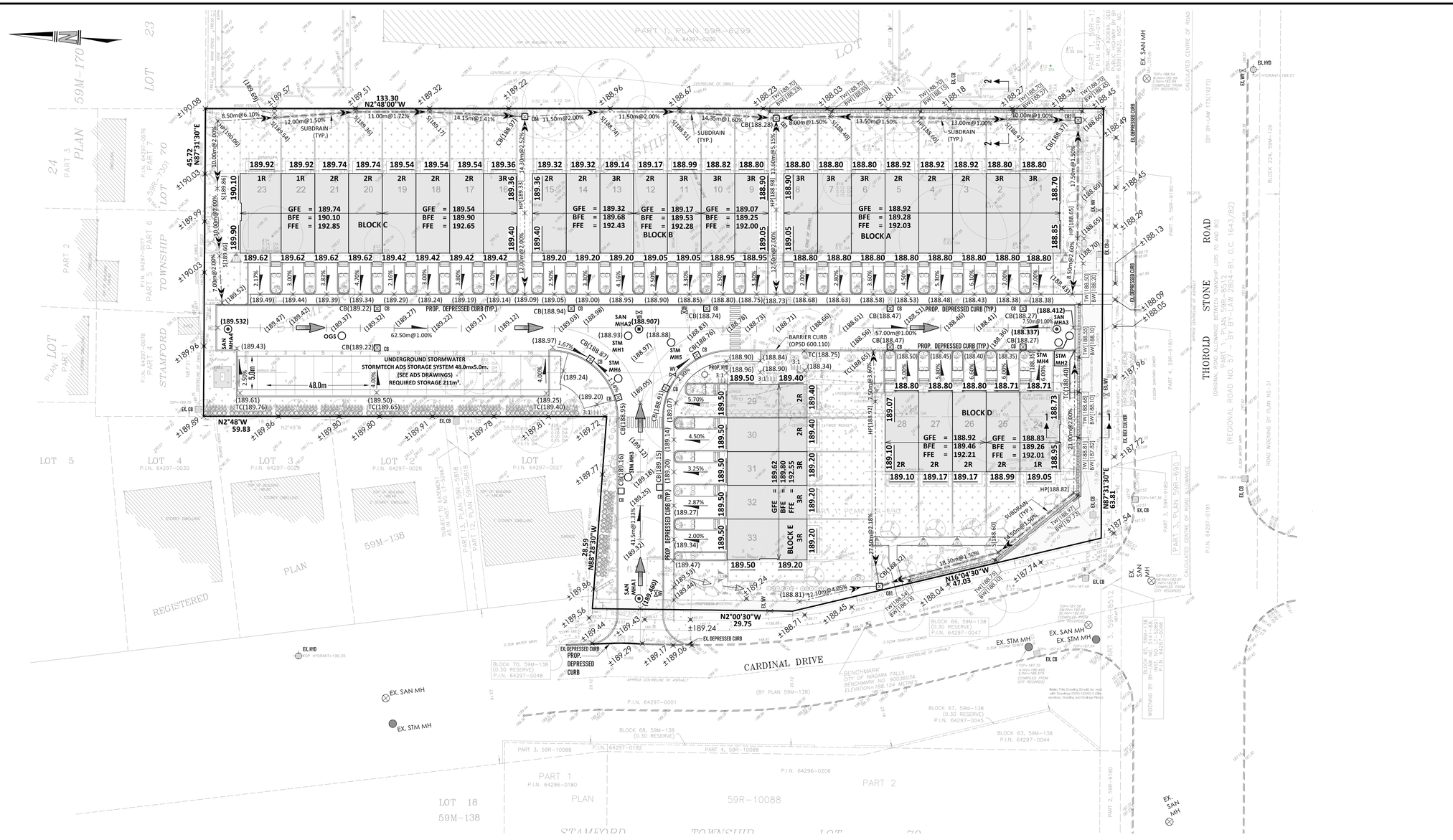
OWNER:
12604515 CANADA CORPORATION

MUNICIPALITY:
CITY OF NIAGARA FALLS

SITE SERVICING PLAN

PROJECT NUMBER: 22181
DRAWING: DWG-2

3958 CARDINAL DRIVE



GENERAL LOT GRADING NOTES

1. ALL RETAINING WALLS 1.0M OR HIGHER SHALL BE DESIGNED AND CERTIFIED BY THE STRUCTURAL ENGINEER.
2. IF A RETAINING WALL BE REQUIRED, THE TOP OF WALL ELEVATION SHALL BE SET 150MM ABOVE THE PROPOSED SIDE YARD SWALE WHERE APPLICABLE.
3. RETAINING WALL 0.60M IN HEIGHT OR MORE WILL REQUIRE CONSTRUCTION OF A FENCE OR GUARD RAIL AT THE TOP OF THE REAR OF THE WALL. GUARDS FOR THE RETAINING WALLS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF EXTERIOR GUARD AS PER THE ONTARIO BUILDING CODE.
4. ADJOINING PROPERTIES GRADE SHALL MEET EXISTING OR PROPOSED ELEVATIONS WITH SODDED SLOPES (MIN. 3H TO 1V) AND/OR RETAINING WALLS AS SPECIFIED.
5. TOP OF FOUNDATION WALLS FOR BUILDINGS SHALL BE MINIMUM 150MM ABOVE FINISHED GRADE.
6. MINIMUM DRIVEWAY SLOPES SHALL BE 2% AND MAXIMUM SLOPE 8.0%.
7. ALL FILL PLACED SHALL BE COMPACTED TO A MINIMUM 95% SPD (UNLESS OTHERWISE RECOMMENDED BY THE GEOTECHNICAL ENGINEER). ALL MATERIAL SHALL BE PLACED IN LAYERS NOT EXCEEDING 300MM LIFTS.
8. FOR TREE PROTECTION /REMOVAL AND HOARDING FENCE DETAILS REFER TO TREE PROTECTION PLAN AND REPORT PREPARED BY THE ARBORIST.
9. GRADING SHALL FOLLOW STRICTLY WITH THIS DRAWING. ANY CHANGES, UNLESS APPROVED PRIOR TO CONSTRUCTION BY THE MUNICIPALITY, SHALL RESULT IN NON-ACCEPTANCE OF THE MUNICIPALITY.
10. IF GRADING IS REQUIRED ON LANDS ADJACENT TO THE DEVELOPMENT WHICH ARE NOT OWNED BY THE DEVELOPER, THEN THE DEVELOPER MUST OBTAIN WRITTEN AGREEMENT FROM THE ADJACENT PROPERTY OWNER TO ALLOW THE DEVELOPER TO GRADE ON THE ADJACENT LANDS, OTHERWISE RETAINING WALLS SHALL BE USED.
11. WRITTEN AGREEMENT REQUIRED FROM THE ADJACENT LANDOWNER SHALL BE OBTAINED PRIOR TO ENTERING THE LANDS. IF AGREEMENT NOT BE OBTAINED OR IS WITHDRAWN PRIOR TO COMMENCING THE CONSTRUCTION, THEN THE DEVELOPER MUST LIMIT ACTIVITIES TO THE LIMITS OF THEIR DEVELOPMENT SITE.

SITE PLAN ROAD PAVENENT STRUCTURE:

TO BE CONFIRMED BY GEOTECHNICAL ENGINEER
STANDARD PAVEMENT TO BE INSTALLED AS PER CITY STANDARDS:

LIGHT DUTY ASPHALT (FOR PARKING AREAS)

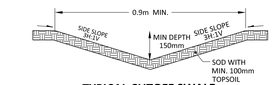
40mm HL3 – ASPHALT
50mm HL8 – ASPHALT
150mm GRANULAR 'A'
300mm GRANULAR 'B'

HEAVY DUTY ASPHALT (FOR HEAVY TRAFFIC FIRE ROUTE AREAS)

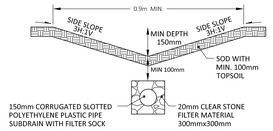
40mm HL3 – ASPHALT
80mm HL8 – ASPHALT
150mm GRANULAR 'A'
450mm GRANULAR 'B'

RAINWATER ROOF LEADERS AND SUMP PUMPS:

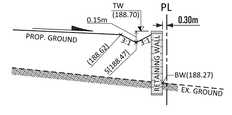
- ALL RAINWATER LEADERS SHALL DISCHARGE ONTO SPLASH PADS AND THEN TO GRASSED OR LANDSCAPED AREAS A MINIMUM OF 0.60M FROM THE BUILDING FACE.
- SUMP PUMP REQUIREMENT TO BE CONFIRMED BY GEOTECHNICAL INVESTIGATIONS.



TYPICAL CUTOFF SWALE
N.T.S.

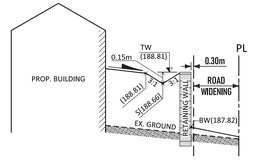


TYPICAL CUTOFF SWALE WITH SUBDRAIN
N.T.S.



RETAINING WALL CROSS SECTION
SECTION 2-2
N.T.S.

- RETAINING WALLS TO BE DESIGNED BY STRUCTURAL ENGINEER.
- RETAINING WALLS 0.60m IN HEIGHT OR GREATER REQUIRE A FENCE OR RAILING.
- IF FENCE TO BE INSTALLED AT THE TOP OF RETAINING WALLS, RETAINING WALLS TO BE DESIGNED TO ACCOMMODATE FENCE LOADING. .
- ALL PROPOSED RETAINING WALL LOCATION/DETAIL MUST BE COORDINATED WITH LANDSCAPE AND STRUCTURAL DESIGN/DRAWINGS.



RETAINING WALL CROSS SECTION
SECTION 1-1
N.T.S.

- RETAINING WALLS TO BE DESIGNED BY STRUCTURAL ENGINEER.
- RETAINING WALLS 0.60m IN HEIGHT OR GREATER REQUIRE A FENCE OR RAILING.
- IF FENCE TO BE INSTALLED AT THE TOP OF RETAINING WALLS, RETAINING WALLS TO BE DESIGNED TO ACCOMMODATE FENCE LOADING.
- ALL PROPOSED RETAINING WALL LOCATION/DETAIL MUST BE COORDINATED WITH LANDSCAPE AND STRUCTURAL DESIGN/DRAWINGS.

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SITE BENCH MARK

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KEY PLAN (NOT TO SCALE)

REVISIONS RECORD

No.	BY	DD/MM/YYYY	DESCRIPTION
1.	A.R	10/07/2023	FIRST SUBMISSION

NOT ISSUED FOR CONSTRUCTION

DATE: JULY 10, 2023
DESIGN BY: A.R
DRAWN BY: A.J
CHECKED BY: A.R
SCALE: 1:300

LICENSED PROFESSIONAL ENGINEER
A. RAZZAK
100505914
JULY 10, 2023
PROVINCE OF ONTARIO
ENGINEER'S STAMP

LEGEND

±000.00	EXISTING GROUND ELEVATION TO REMAIN
	CONTOUR ELEVATION
000.00	EXISTING GROUND ELEVATION
(000.00)	PROPOSED DESIGN GRADE
TC(000.00)	PROPOSED TOP OF CURB DESIGN GRADE
000.00	APPROXIMATE GRADE AT THE BUILDING
S[000.00]	PROPOSED SWALE ELEVATION
	PROPOSED RETAINING WALL
TW[000.00]	PROPOSED TOP OF RETAINING WALL
BW[000.00]	PROPOSED BOTTOM OF RETAINING WALL
FFE	FIRST FLOOR ELEVATION
BFE	BASEMENT FLOOR ELEVATION
GFE	GARAGE FLOOR ELEVATION
	DIRECTION OF MAJOR DRAINAGE ROUTE
	SHEET FLOW DIRECTION
1.00%	ROAD/PARKING/GRASS AREA SLOPE
5m@1.00%	GRASS SWALE
	PROPOSED CURB & GUTTER
	EXISTING CURB & GUTTER
	DEPRESSED CURB
	EXISTING DEPRESSED CURB
	EXISTING STORM MANHOLE
	EXISTING SANITARY MANHOLE
	PROPOSED STORM MANHOLE
	PROPOSED SANITARY MANHOLE
	PROPOSED SUBDRAIN
	EXISTING CATCHBASIN
	PROPOSED CATCHBASIN
	PROPOSED DOUBLE CATCHBASIN
	EXISTING HYDRANT
	PROPOSED HYDRANT
	PROPOSED CATCHBASIN MANHOLE
	EXISTING FENCE
	PROPOSED FENCE
	HYDRO POLE
	PROPOSED TRANSFORMER
BELL BELL	EXISTING BELL LINES
HYD HYD	EXISTING HYDRO LINES
GAS GAS	EXISTING GAS LINES
FD-1	PROPOSED FLOOR DRAIN
	EXISTING TREE
	PROPOSED LIGHT POLE
	EXISTING LIGHT POLE

PROJECT:
3958 CARDINAL DRIVE

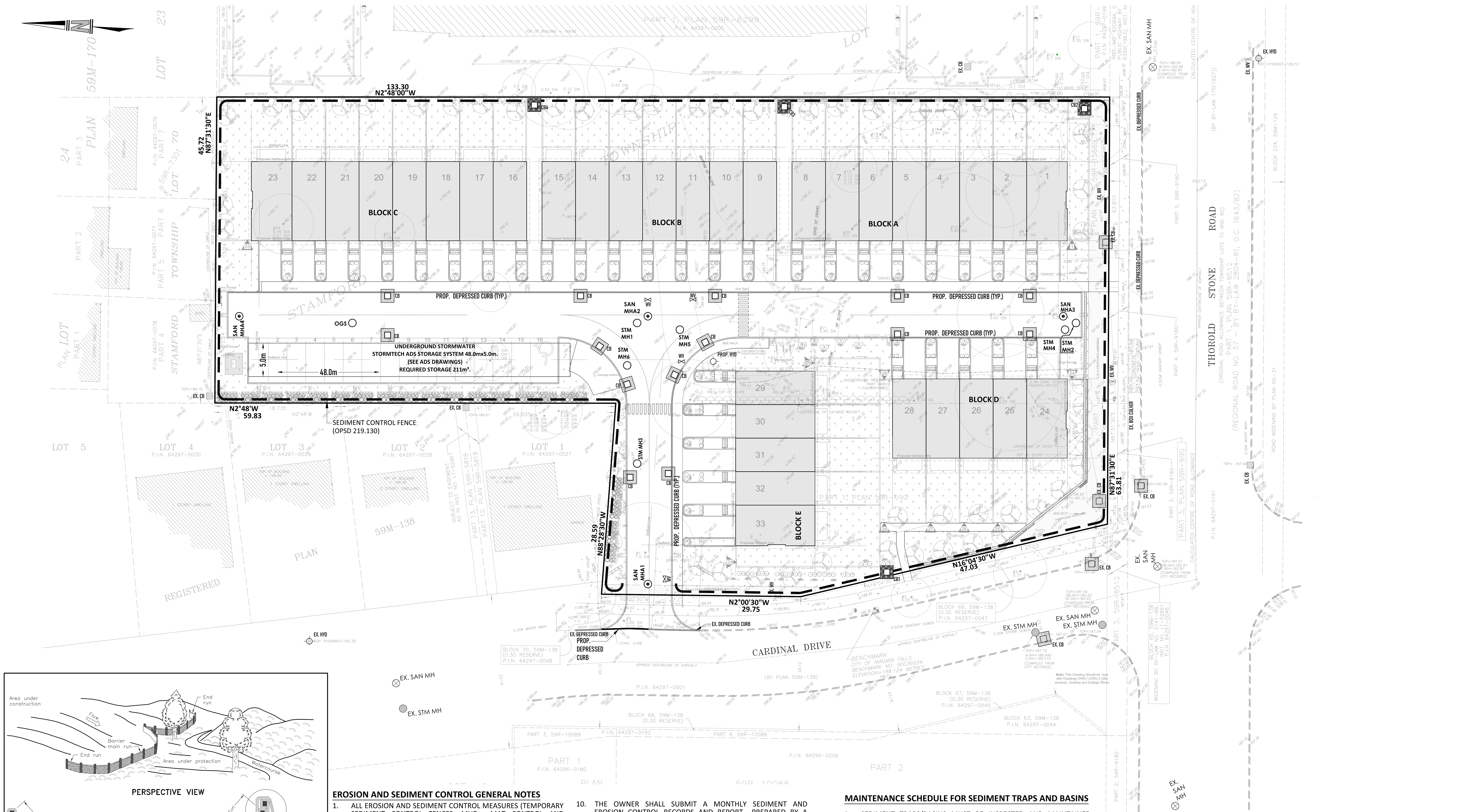
OWNER:
12604515 CANADA CORPORATION

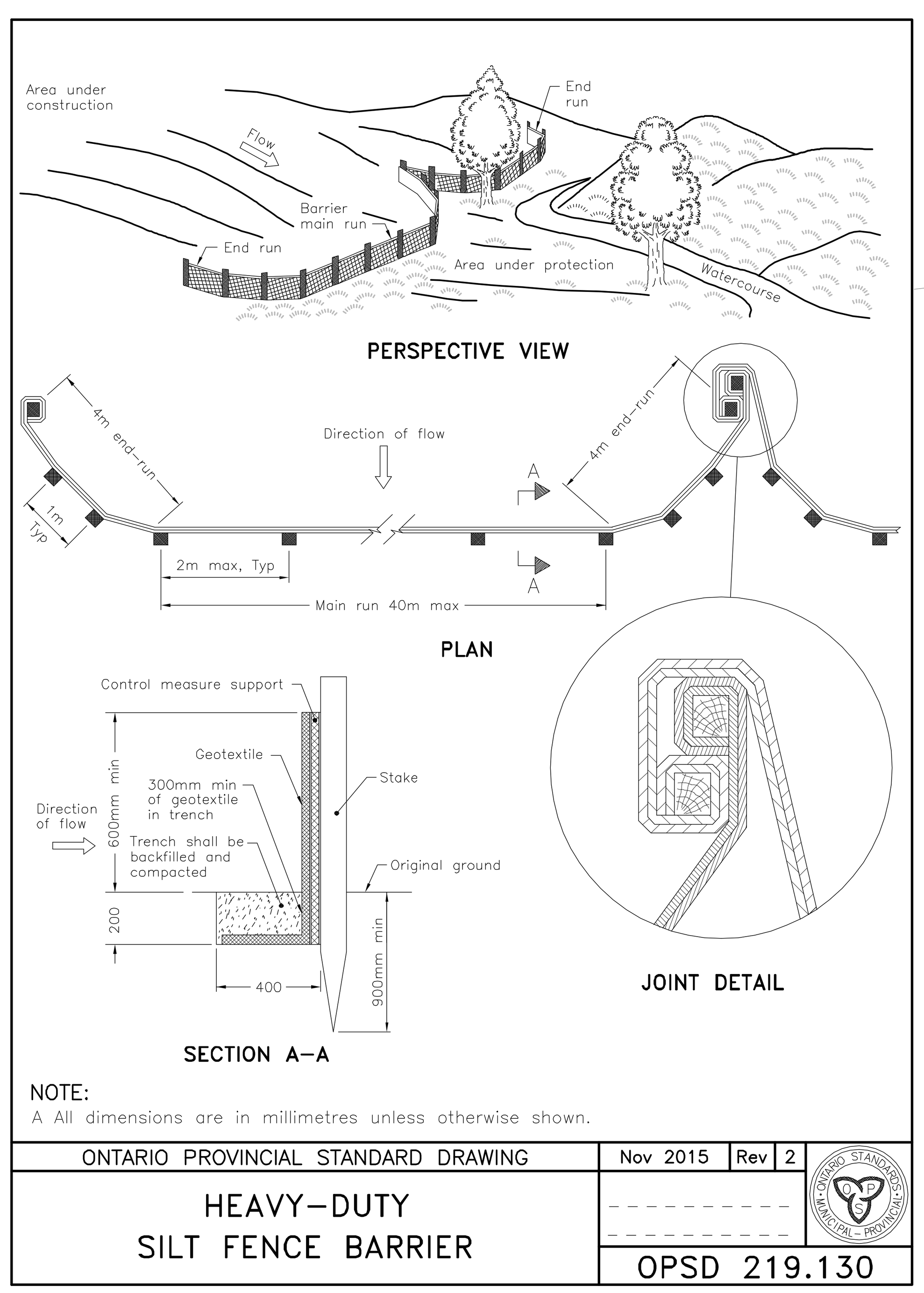
MUNICIPALITY:
CITY OF NIAGARA FALLS

SITE GRADING PLAN

PROJECT NUMBER: 22181
DRAWING: DWG-3

3958 CARDINAL DRIVE



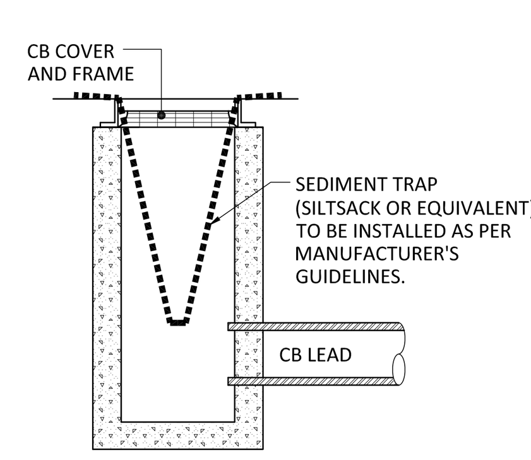


CONTRACTOR TO CLEAN SEDIMENTS FROM EXISTING ROADWAYS DUE TO CONSTRUCTION TRAFFIC EVERY DAY

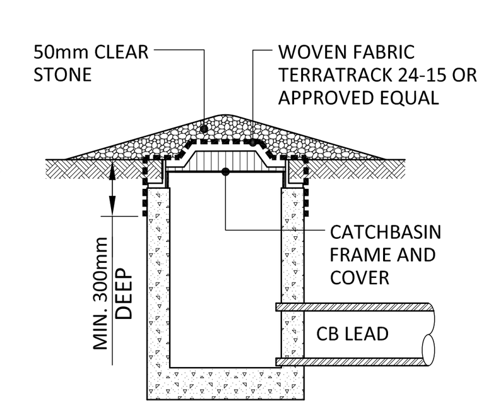
3958 CARDINAL DRIVE

EROSION AND SEDIMENT CONTROL GENERAL NOTES

1. ALL EROSION AND SEDIMENT CONTROL MEASURES (TEMPORARY SEDIMENT CONTROL FENCES, MUD MAT CONTROL AND SEDIMENT BASINS, ETC) MUST BE INSTALLED PRIOR TO DEVELOPMENT AND MAINTAINED THROUGHOUT THE CONSTRUCTION, UNTIL ALL DISTURBED AREAS HAVE BEEN REVEGETATED. ALL ESC MEASURES SHALL BE INSTALLED AS DETAILED ON THIS DRAWINGS AND AS PER 'EROSION & SEDIMENT CONTROL GUIDELINES FOR URBAN CONSTRUCTION', DECEMBER 2006.
2. TEMPORARY VEHICLE TRACKING CONTROLS TO BE CONSTRUCTED AT ALL ACCESS POINTS. CONTRACTOR SHALL MAINTAIN THESE AS REQUIRED AND AS DIRECTED BY THE CITY ENGINEER .
3. SEDIMENT CONTROL FENCES SHALL BE AS PER OPSD 219.130.
4. CUT-OFF SWALES TO BE CONSTRUCTED WHERE SPECIFIED AND PERIODICALLY INSPECTED TO ENSURE THAT EROSION DOES NOT OCCUR.
5. REGULAR MAINTENANCE FOR ALL CATCH BASIN IS REQUIRED. ACCUMULATED SEDIMENTS SHALL BE REMOVED FROM CATCH BASIN. FLUSHING OF SEDIMENTS IN TO THE STORM SEWER IS NOT PERMITTED. FILTER CLOTH IN CATCH BASIN MUST BE CLEANED OR REPLACED IF STANDING WATER REMAIN IN THE CATCH BASIN MORE THAN 24 HOURS AFTER A STORM EVENT.
6. STREET CATCH BASIN SEDIMENT TRAP TO BE INSTALLED AS PER DETAIL “AA” AND BACKYARD CATCH BASIN SEDIMENT TRAP TO BE INSTALLED AS PER DETAIL “BB”. VEHICLE TRACKING CONTROL/MUD MAT TO BE INSTALLED AS PER DETAIL “CC”.
7. TOPSOIL PILES SHALL BE TEMPORARY SEEDED TO PREVENT EROSION. ANY DISTURBED AREA IN THE PROPOSED DEVELOPMENT NOT SCHEDULE FOR FURTHER CONSTRUCTION WITHIN 45 DAYS MUST BE STABILIZED WITH A SUITABLE TEMPORARY MULCH AND SEED COVER WITHIN 7 DAYS OF THE COMPLETION OF THAT PARTICULAR PHASE OF CONSTRUCTION.
8. ALL DISTURBED EXTERNAL AREAS SHALL BE VEGETATED WITH PERMANENT SOD WITHIN 7 DAYS OF THE COMPLETION OF THE CONSTRUCTION.
9. WORK LIMIT FENCE SHALL CONSIST OF PLASTIC SNOW FENCE SUPPORTED BY STEEL “T” POSTS AT A MINIMUM 2.4M CENTRE TO CENTRE.
10. THE OWNER SHALL SUBMIT A MONTHLY SEDIMENT AND EROSION CONTROL RECORDS AND REPORT PREPARED BY A PROFESSIONAL ENGINEER TO THE SATISFACTION OF THE LOCAL MUNICIPALITY AND CONSERVATION AUTHORITY. THE REPORT MUST INDICATE FREQUENCY OF INSPECTION AND AREA INSPECTED.
11. VEGETATION RESTORATION FOR ALL AREAS DISTURBED BY GRADING ACTIVITY SHALL BE SEEDED AS FOLLOWS WITH THE APPLICATION RATE OF 2.5 KG/100 SQUARE METERS. THE CONTRACTOR SHALL MAINTAIN THESE AREAS UNTIL SATISFACTORY GROUND COVER IS ESTABLISHED:
    i. CREEPING RED FESCUE 30%
    ii. PERENNIAL RYE 30%
    iii. CANADA BLUEGRASS 20%
    iv. RED TOP 20%



STREET CATCH BASIN
SEDIMENT TRAP
DETAIL "AA"
N.T.S.



BACKYARD CATCH BASIN
SEDIMENT TRAP
DETAIL "BB"
N.T.S.

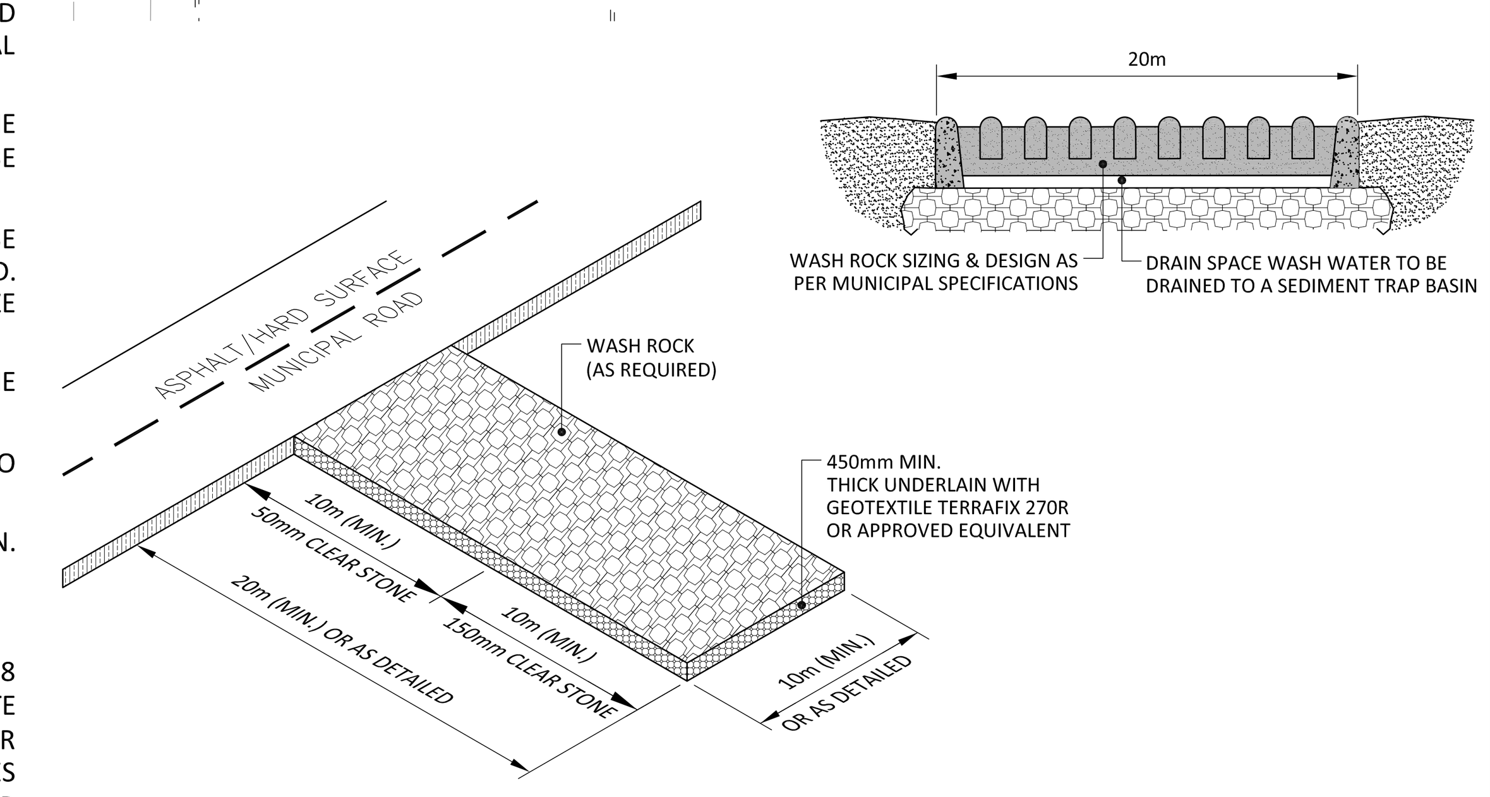
MAINTENANCE SCHEDULE FOR SEDIMENT TRAPS AND BASINS

1. SEDIMENT TRAPS/BASINS MUST BE INSPECTED AND MAINTAINED AFTER EVERY RAINFALL EVENT TO THE SATISFACTION OF LOCAL MUNICIPALITY AND CONSERVATION AUTHORITY.
2. TRASH AND DEBRIS SHALL BE REMOVED FROM WITHIN THE TRAP/BASIN. ANY DAMAGE TO THE TRAPS/BASIN OUTLET MUST BE REPAIRED IMMEDIATELY.
3. THE SEDIMENT TRAP/BASIN SIDES ONTO DITCH SIDE SLOPES MUST BE INSPECTED TO ENSURE THAT THEY HAVE NOT ERODED OR SETTLED. IMMEDIATE ACTION SHALL BE TAKEN TO RESHAPE AND STABILIZE SLOPES.
4. WHEN SEDIMENT ACCUMULATES TO HALF THE HEIGHT OF THE SEDIMENT TRAP/BASIN DESIGN

   DEPTHTHENSEDIMENTREMOVAL IS REQUIRED. CARE MUST BE TAKENTO AVOIDDAMAGING

   THEOUTLET ANDINLET DURING THIS MAINTENANCE OPERATION. DISPOSAL OF THE SEDIMENT

   SHALL BE TO A CONTROLLEDAREA AND STABILIZED (VEGETATED).
5. IF STANDING WATER REMAINS IN THE SEDIMENT TRAP/BASIN FOR 48 HOURS (MINIMUM) AFTER A STORM EVENT THEN IT COULD INDICATE A BLOCKAGE. VISUALLY INSPECT THE EXCESSIVE SEDIMENTS AND/OR TRASH BUILDUP. IF SURFACE SEDIMENT AND TRASH REMOVAL DOES NOT ALLEVIATE THE PROBLEM THEN REPLACEMENT OF TRAP AND/OR GRANULAR MATERIAL IN THE SEDIMENT BASIN IS REQUIRED.
6. ALL WORKS MUST BE PERFORMED TO THE SATISFACTION OF THE LOCAL MUNICIPALITY AND CONSERVATION AUTHORITY.



VEHICLE TRACKING CONTROL/MUD MAT
DETAIL 'CC'
N.T.S.

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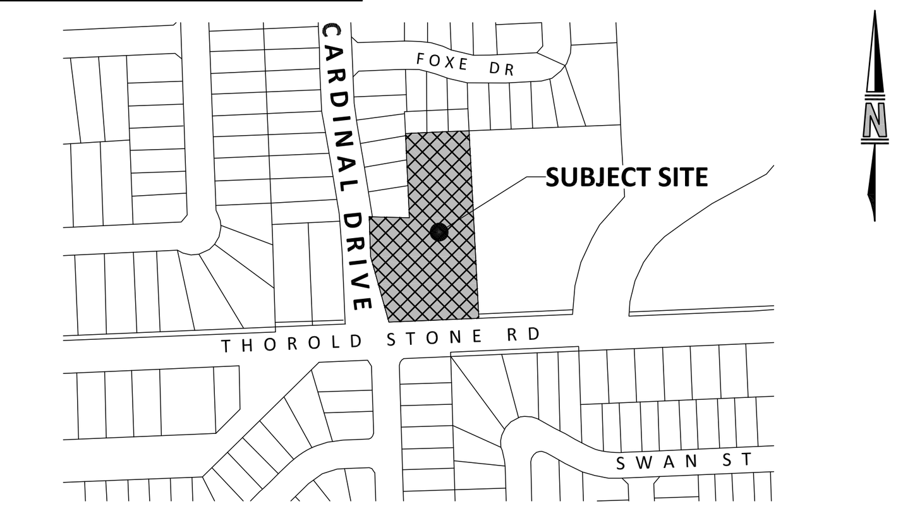
KEY PLAN (NOT TO SCALE)



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CHECKED BY: A.R
SCALE: 1:300

LICENSED PROFESSIONAL ENGINEER
A. RAZZAK
100505914
JULY 10, 2023
PROVINCE OF ONTARIO

ENGINEER'S STAMP

LEGEND

- SEDIMENT CONTROL FENCE - OPSD 219.130
- SEDIMENT TRAP FOR STREET CATCHBASIN DETAIL "AA"
- SEDIMENT TRAP FOR BACKYARD CATCHBASIN DETAIL "BB"
- MUD MAT CONSTRUCTION VEHICLE TRACKING CONTROL DETAIL "CC"

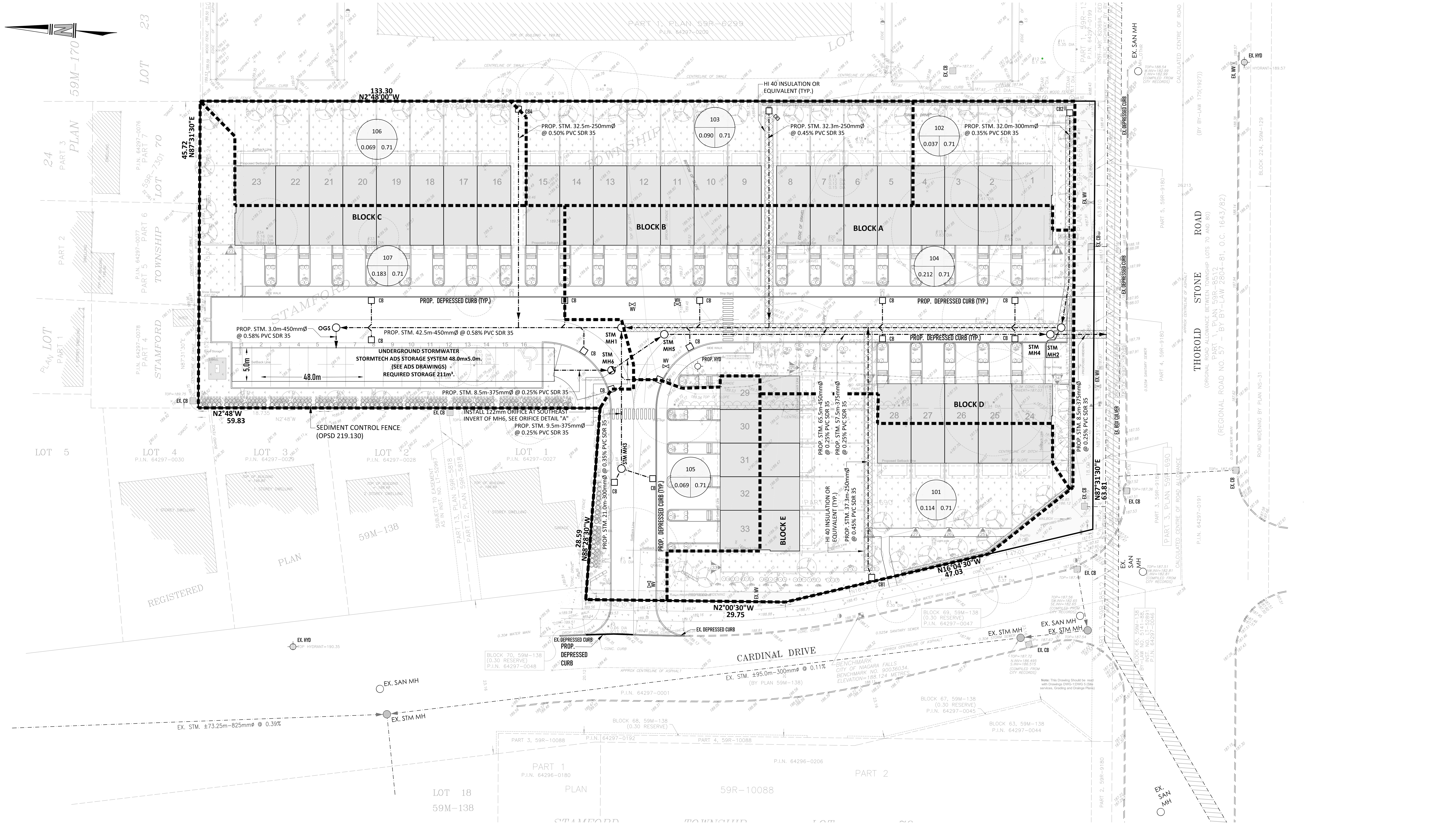
PROJECT: 3958 CARDINAL DRIVE

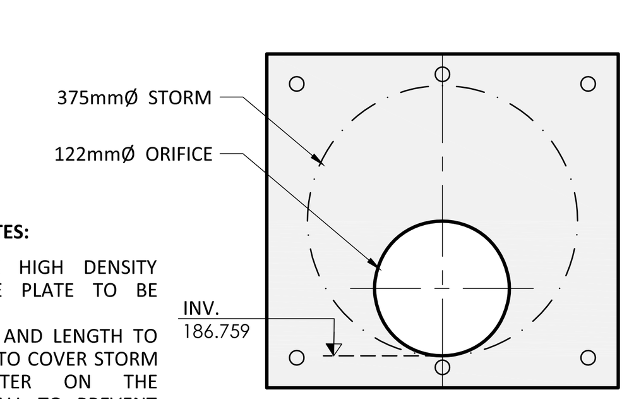
OWNER: 12604515 CANADA CORPORATION

MUNICIPALITY: CITY OF NIAGARA FALLS

EROSION & SEDIMENT CONTROL PLAN

PROJECT NUMBER: 22181
DRAWING: DWG-4





ORIFICE PLATE NOTES:

1. 20MM THICK HIGH DENSITY POLYETHYLENE PLATE TO BE INSTALLED.
2. PLATE WIDTH AND LENGTH TO BE PROVIDED TO COVER STORM PIPE DIAMETER ON THE MANHOLE WALL TO PREVENT LEAKAGE.
3. FASTENER SHALL BE STAINLESS STEEL 13MM X 95MM BOLT WITH NUT AND WASHER.
4. PLATE MUST BE SEALED TO PREVENT LEAKAGE.

ORIFICE PLATE DETAIL "A"
N.T.S.

ONSITE STORMWATER MANAGEMENT REQUIREMENTS:

1. POST-DEVELOPMENT FLOWS TO MATCH WITH PRE-DEVELOPMENT CONDITIONS UNDER 5-YEAR & 100 YEAR STORM EVENTS.
2. STORMWATER MANAGEMENT ONSITE QUANTITY CONTROL REQUIRED STORAGE OF 211m^3 IS TO BE PROVIDED AT THE ALLOWABLE DISCHARGE RATE OF 0.038cms WITH AN ORIFICE SIZE OF 122mm DIAMETER.
3. REFER TO ADS STORMTECH DESIGN/DRAWINGS FOR UNDERGROUND STORAGE SYSTEM.

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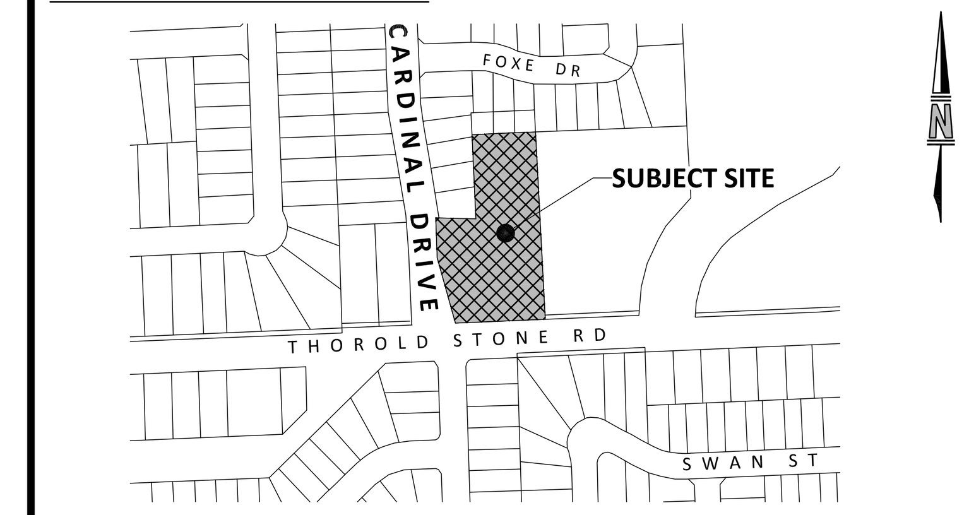

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DESIGN BY: A.R
DRAWN BY: A.J
CHECKED BY: A.R
SCALE: 1:300

LICENSED PROFESSIONAL ENGINEER A. RAZZAK 100505914 JULY 10, 2023 PROVINCE OF ONTARIO
ENGINEER'S STAMP

LEGEND

- EXISTING STORM SEWER & MANHOLE
- PROPOSED STORM SEWER & MANHOLE
- DIRECTION OF MAJOR DRAINAGE ROUTE
- STORM DRAINAGE AREA
- DRAINAGE AREA I.D (101)
- AREA IN HECTARES (0.050)
- RUNOFF COEFFICIENT (0.71)

PROJECT: 3958 CARDINAL DRIVE

OWNER: 12604515 CANADA CORPORATION

MUNICIPALITY: CITY OF NIAGARA FALLS

STORM DRAINAGE AREA PLAN

PROJECT NUMBER: 22181
DRAWING: DWG-5

3958 CARDINAL DRIVE

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