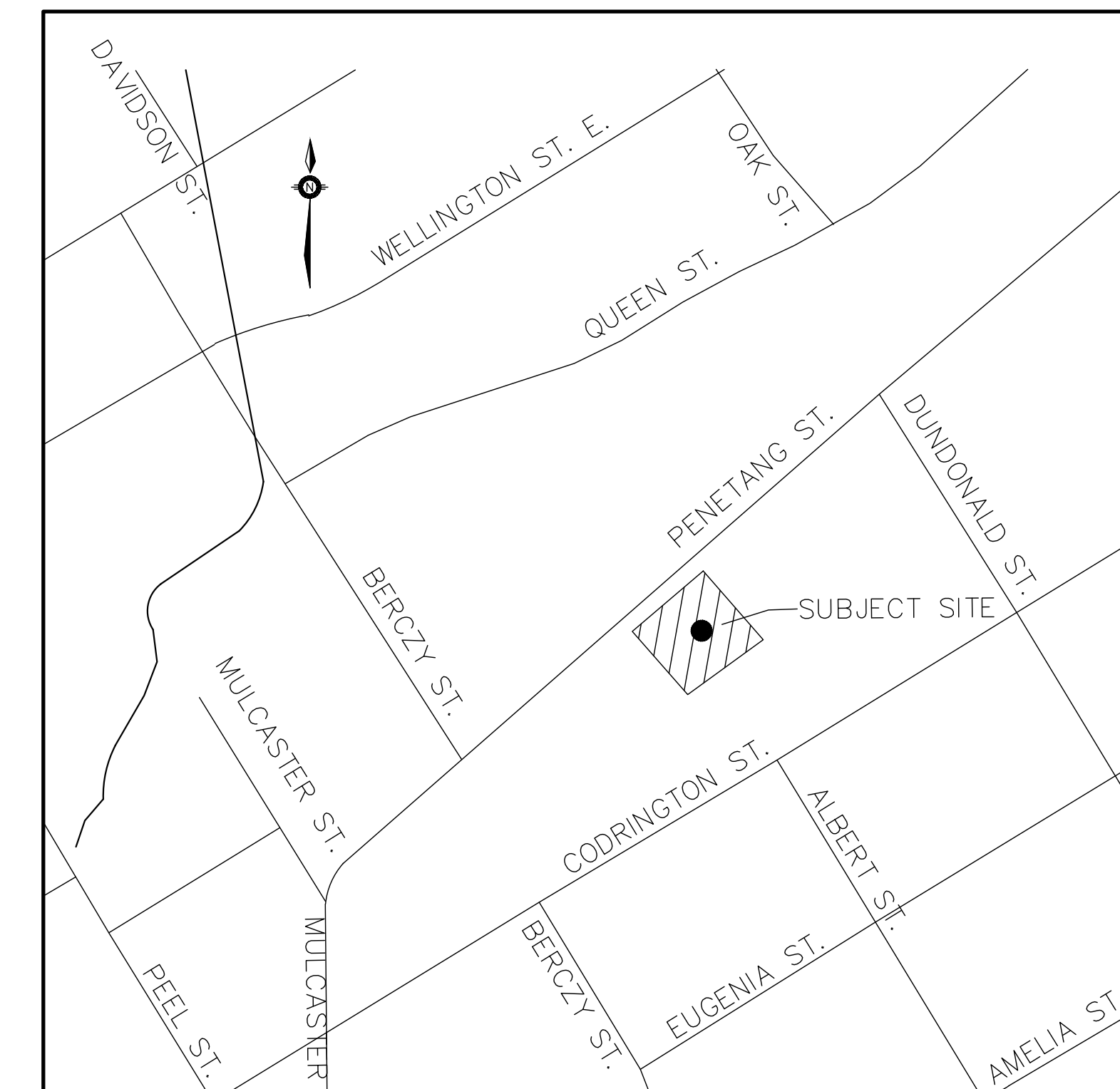


**PIVAG INC.
RESIDENTIAL DEVELOPMENT
45 - 51 PENETANG STREET, BARRIE**

DRAWING LIST

ND-1	NOTES AND DETAILS
ND-2	NOTES AND DETAILS
SG-1	SITE GRADING PLAN
SS-1	SITE SERVICING PLAN
STM-1	PRE-DEVELOPMENT STORMWATER MANAGEMENT PLAN
STM-2	POST DEVELOPMENT STORMWATER MANAGEMENT PLAN
EP-1	ENVIRONMENTAL PROTECTION PLAN



CITY OF BARRIE
70 COLLIER STREET
BARRIE, ON
L4M 4T5

INNOVATIVE PLANNING SOLUTIONS
150 DUNLOP STREET EAST
SUITE 201
BARRIE, ON
L4M 1B1



PEARSON
ENGINEERING LTD.
PEARSONENG.COM PH. 705.719.4785

GENERAL NOTES

1. DRAWINGS

- ALL DIMENSIONS ARE IN METERS, EXCEPT PIPE DIAMETERS, WHICH ARE IN MILLIMETERS, UNLESS SPECIFIED OTHERWISE.
- ALL WORK SHALL BE IN ACCORDANCE WITH CURRENT CITY OF BARRIE STANDARD DRAWINGS (BSD) AND ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD).
- ORDER OF PRECEDENCE OF STANDARD DRAWINGS IS FIRSTLY CITY OF BARRIE STANDARD DRAWINGS (BSD) AND SECONDLY ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD).
- LOCATION OF EXISTING SERVICES ARE NOT GUARANTEED. THE CONTRACTOR IS REQUIRED TO NOTIFY THE VARIOUS UTILITY COMPANIES 48 HOURS PRIOR TO THE COMMENCEMENT OF ANY WORK.
- RIGHT-OF-WAY ACTIVITY PERMIT IS REQUIRED FROM THE ENGINEERING DEPARTMENT (OPERATIONS CENTER, 165 FERDALE DR. NORTH) PRIOR TO THE COMMENCEMENT OF WORK WITHIN ANY CITY RIGHT-OF-WAY.
- A SITE ALTERATION PERMIT IS REQUIRED FROM THE ENGINEERING DEPARTMENT PRIOR TO THE COMMENCEMENT OF ANY EARTH WORKS ON THE SITE.
- NATIVE MATERIAL, SUITABLE FOR BACKFILL, SHALL BE COMPACTED TO 95% STANDARD PROCTOR MAXIMUM DRY DENSITY.
- GRANULAR MATERIAL, USED FOR BACKFILL, SHALL BE PLACED IN LAYERS 150mm IN DEPTH MAXIMUM AND COMPACTED TO 100% STANDARD PROCTOR MAXIMUM DRY DENSITY.
- ALL DISTURBED AREAS ARE TO BE REINSTATED TO THEIR ORIGINAL CONDITION OR BETTER, AS DETERMINED BY THE CITY ENGINEERING DEPARTMENT.
- ALL SILT CONTROL AND EROSION PROTECTION DEVICES ARE TO BE IN PLACE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION AND SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL CONSTRUCTION IS COMPLETE AND THE GRASS HAS ESTABLISHED GROWTH, SUBJECT TO APPROVAL BY THE CITY ENGINEERING DEPARTMENT.
- REMOVAL AND SALVAGE OF CITY INFRASTRUCTURE INCLUDING BUT NOT LIMITED TO ROADWAY AND PARKING LOT ILLUMINATION, PAY AND DISPLAY MACHINE, PARKING METERS, PARKING LOT SIGNAGE, ETC. SHALL BE COORDINATED WITH THE APPROPRIATE CITY STAFF.

2. SANITARY

- SEWERS SHALL BE CONSTRUCTED WITH BEDDINGS AS PER OPSD-802.010, (GRAN. 'A' EMBEDMENT MATERIAL) FOR FLEXIBLE PIPES AND OPSD-802.030 OR 802.031 CLASS B (GRAN. 'A' BEDDING MATERIAL) FOR RIGID PIPE UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF ENGINEERING.
- MAXIMUM DEFLECTION FROM COMBINED LIVE AND DEAD LOADING SHALL NOT EXCEED ANY C.S.A., O.P.S. OR MANUFACTURERS RECOMMENDED SPECIFICATIONS.
- PVC, CONCRETE AND PROFILE WALL PVC SEWERS SHALL HAVE RUBBER GASKET TYPE JOINTS AND SHALL BE CERTIFIED TO CONFORM TO ALL APPLICABLE CURRENT C.S.A. SPECIFICATIONS.
- CONCRETE SANITARY SEWERS SHALL HAVE A MINIMUM STRENGTH OF 50 N/m² CONFORMING TO CSA STANDARD A257.2-1982, CLASS 50-D (PREVIOUSLY C.S.A. STANDARD A257.2-1974, CLASS II).
- MAINTENANCE HOLE TOPS (FRAMES) ARE TO BE SET TO BASE COURSE ASPHALT GRADE AND THEN ADJUSTED TO FINAL GRADE WHEN THE TOP LIFT OF ASPHALT IS PLACED. ALL ADJUSTMENT WILL BE ACCORDANCE WITH BSD-N2.
- ALL CONNECTIONS TO NEW SANITARY MAINS SHALL BE PRE-MANUFACTURED, FABRICATED TEES. CONNECTIONS TO EXISTING SANITARY SEWER SHALL BE MADE WITH APPROVED FACTORY MADE TEES OR INSERTA-TEES IN STRICT ACCORDANCE TO MANUFACTURES GUIDELINES.
- PIPE TO BE MINIMUM 100 mm DIA. PVC SDR28, RUBBER GASKET TYPE JOINTS AND SHALL CONFORM TO C.S.A. (B-182.2.3.4) (COLOURED) FOR A RESIDENTIAL HOUSE AND 150mm MINIMUM DIA. PVC SDR28 FOR INDUSTRIAL/COMMERCIAL DEVELOPMENT.
- ALL CONNECTIONS TO NEW SANITARY MAINS SHALL BE PRE-MANUFACTURED, FABRICATED TEES. CONNECTIONS TO EXISTING SANITARY SEWER SHALL BE MADE WITH APPROVED FACTORY MADE TEES OR INSERTA-TEES IN STRICT ACCORDANCE TO MANUFACTURES GUIDELINES.

3. WATERMAIN

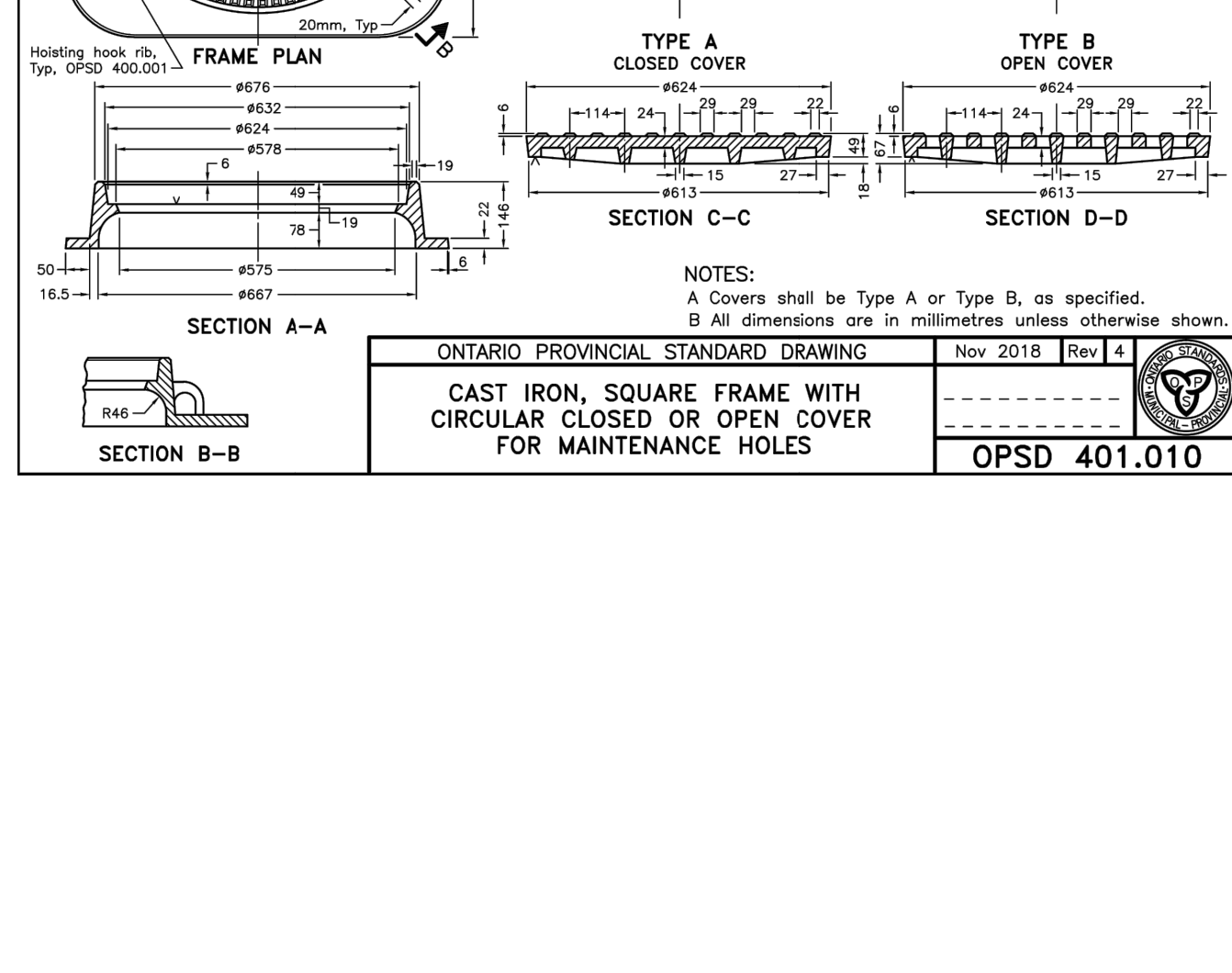
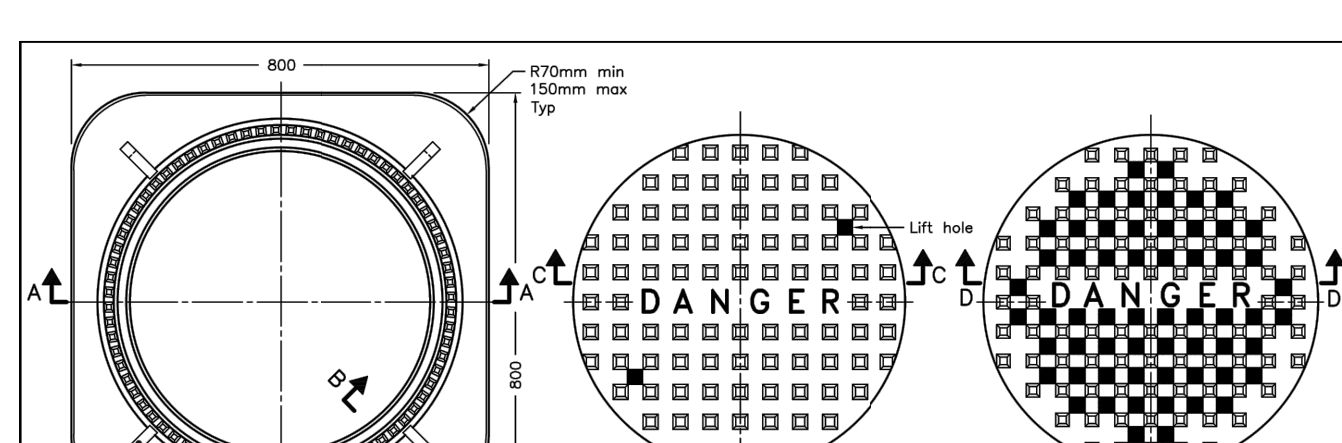
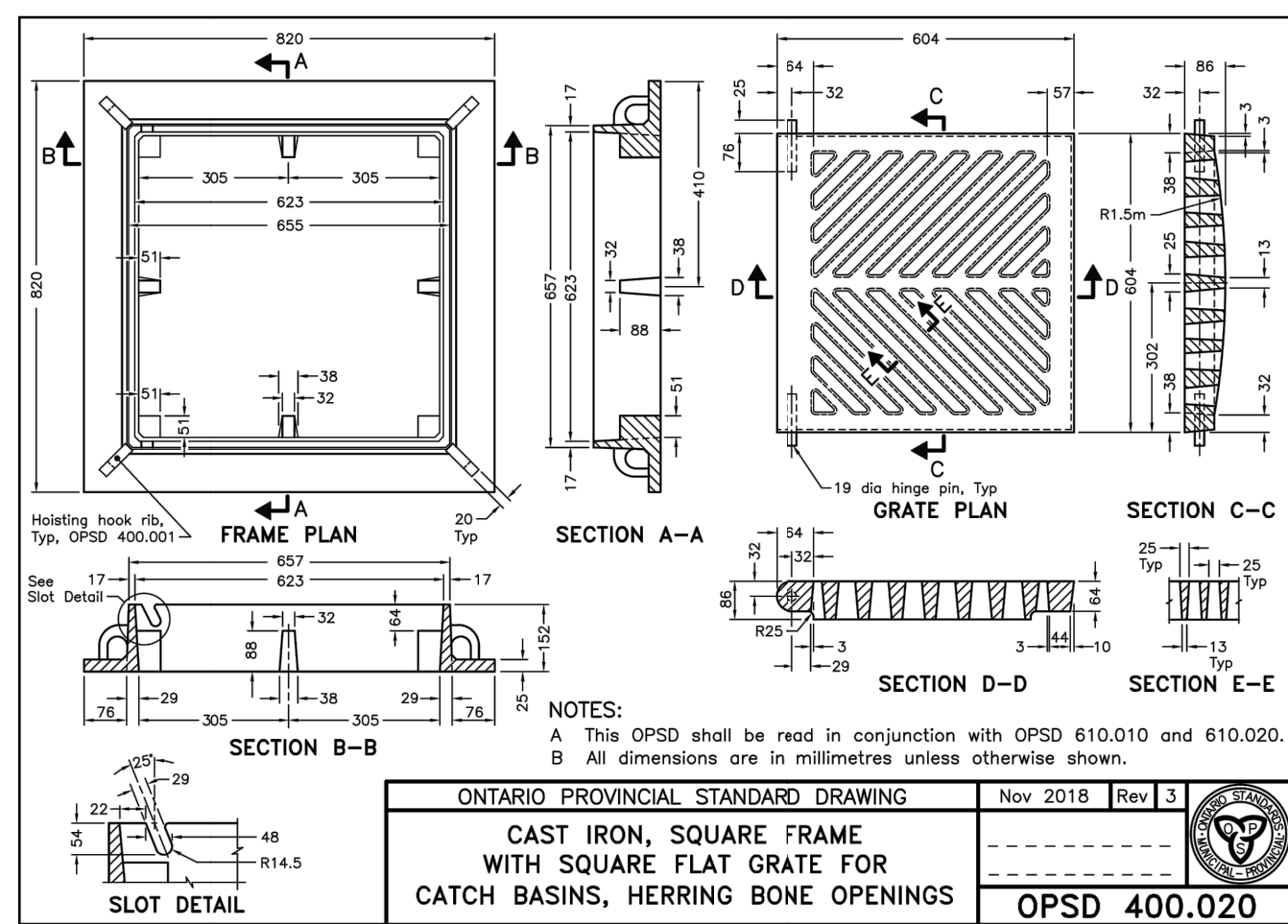
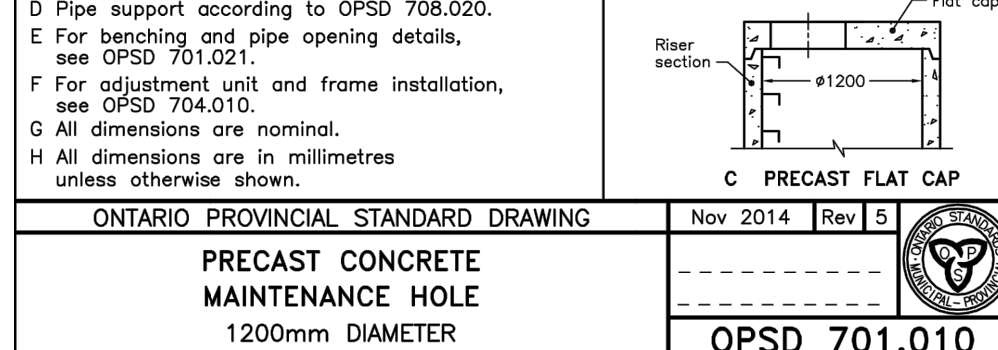
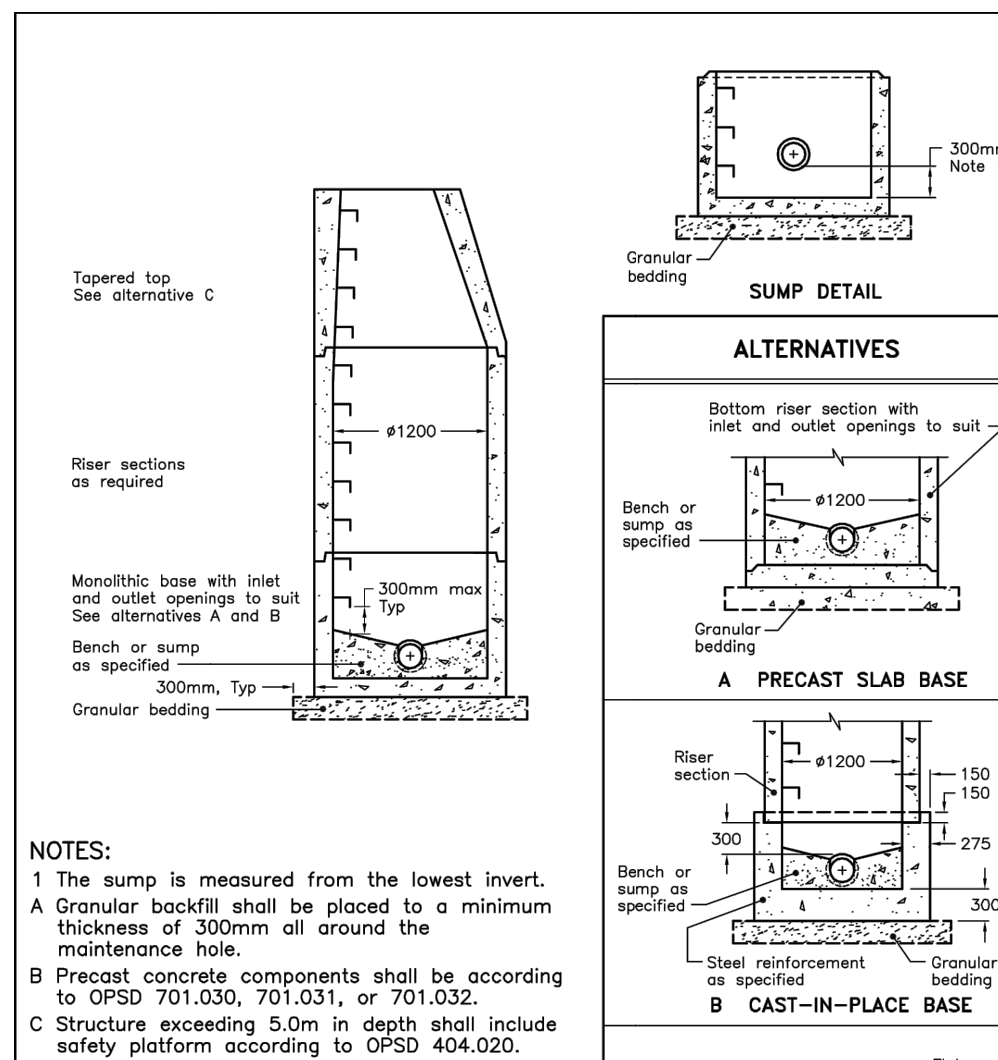
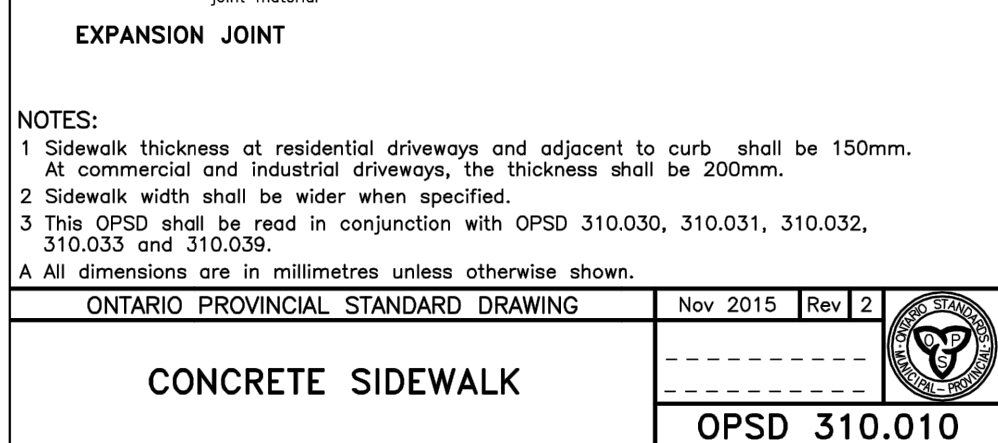
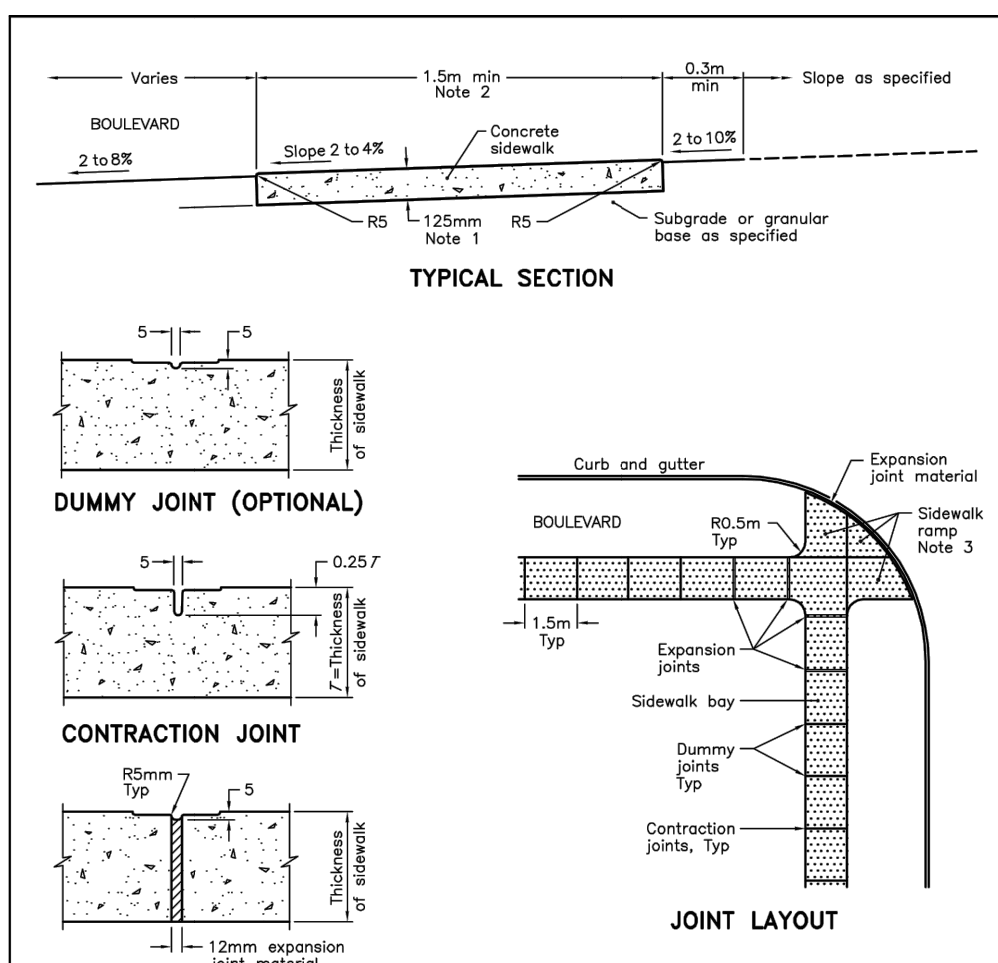
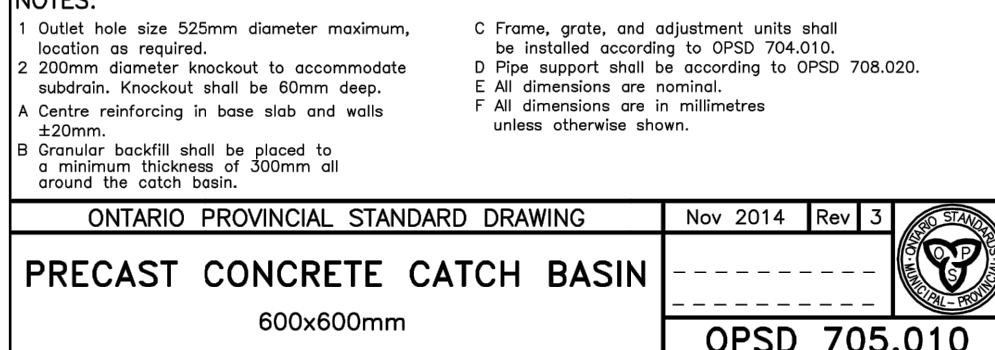
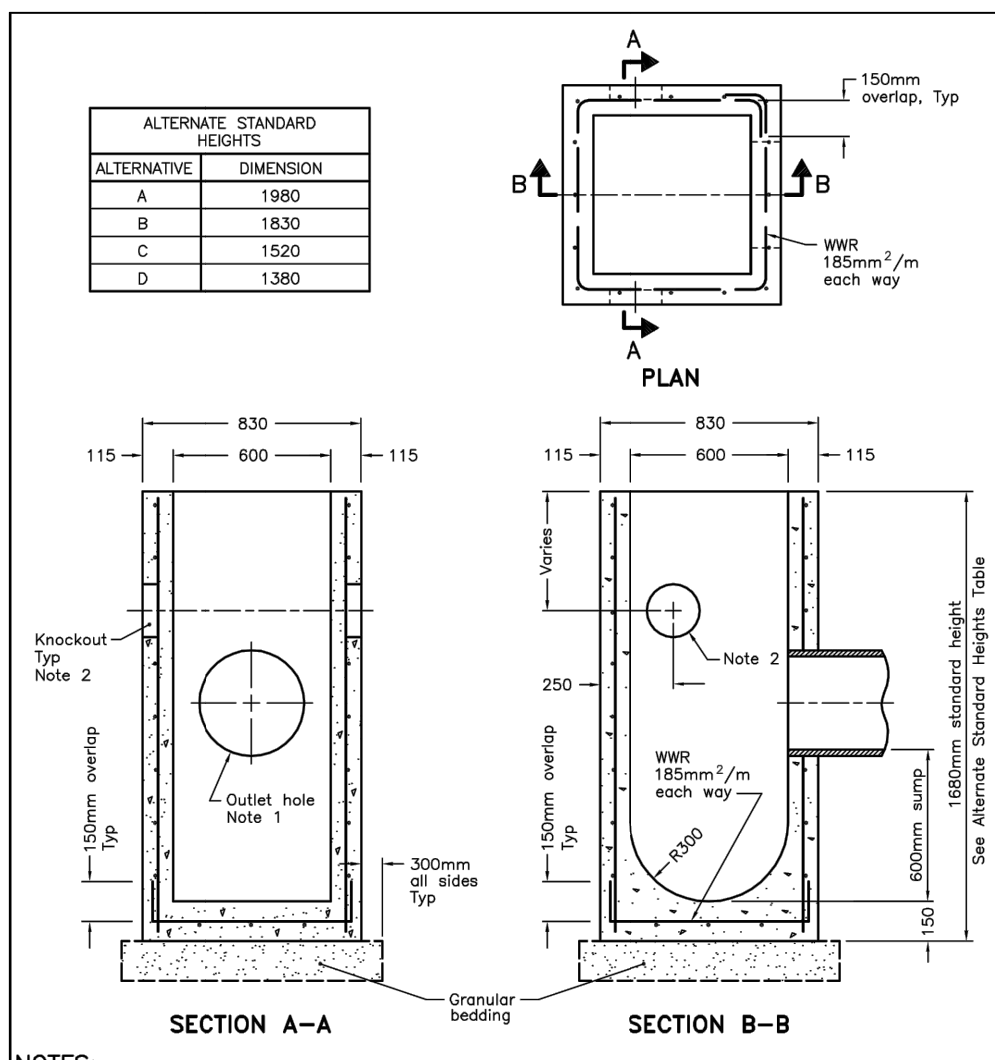
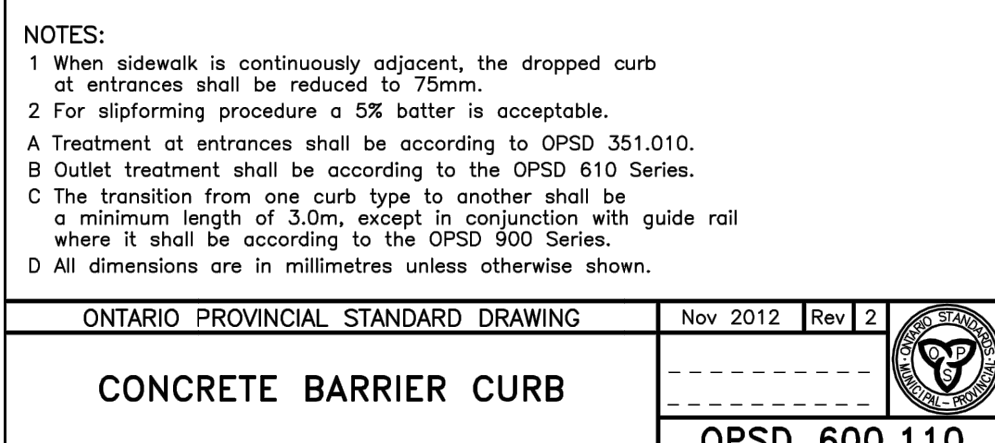
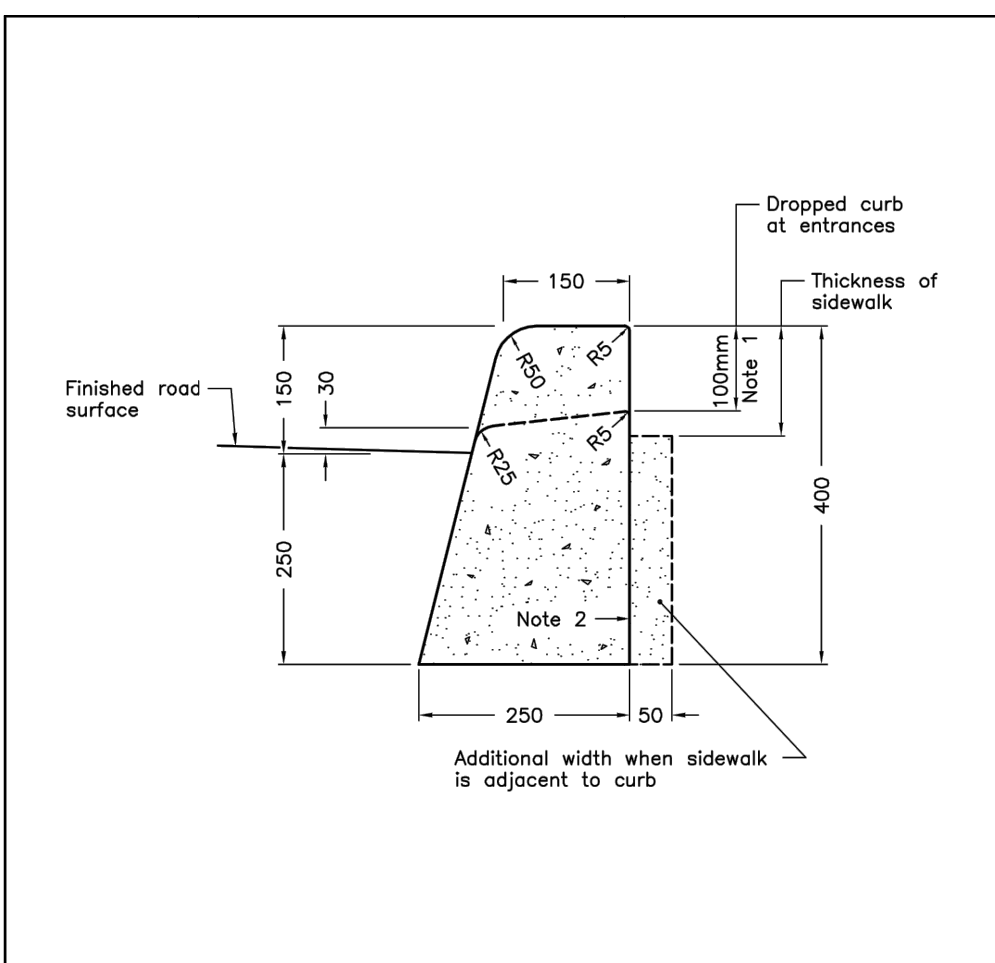
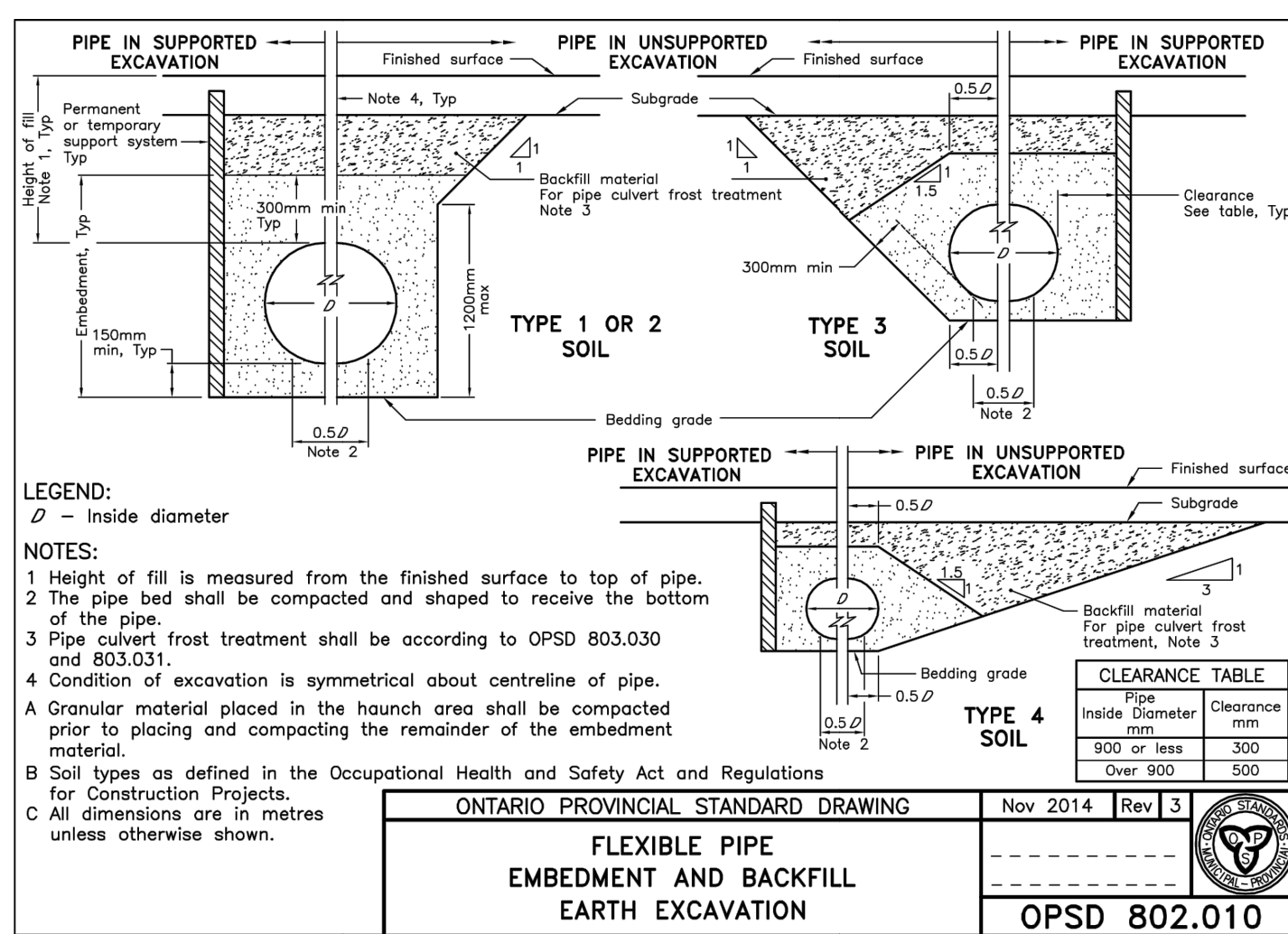
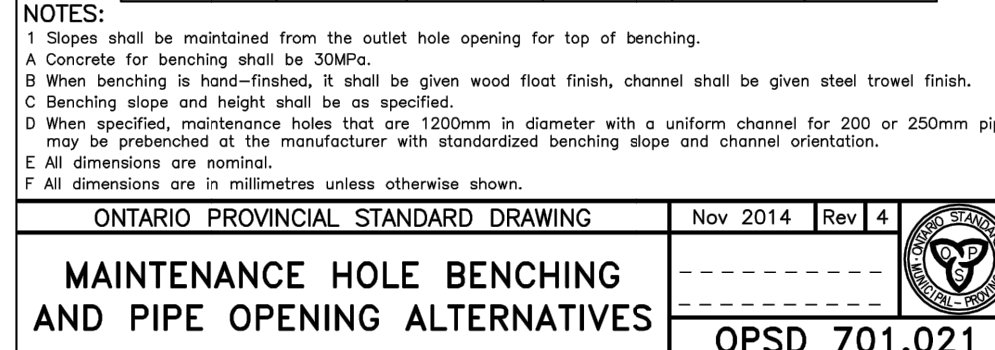
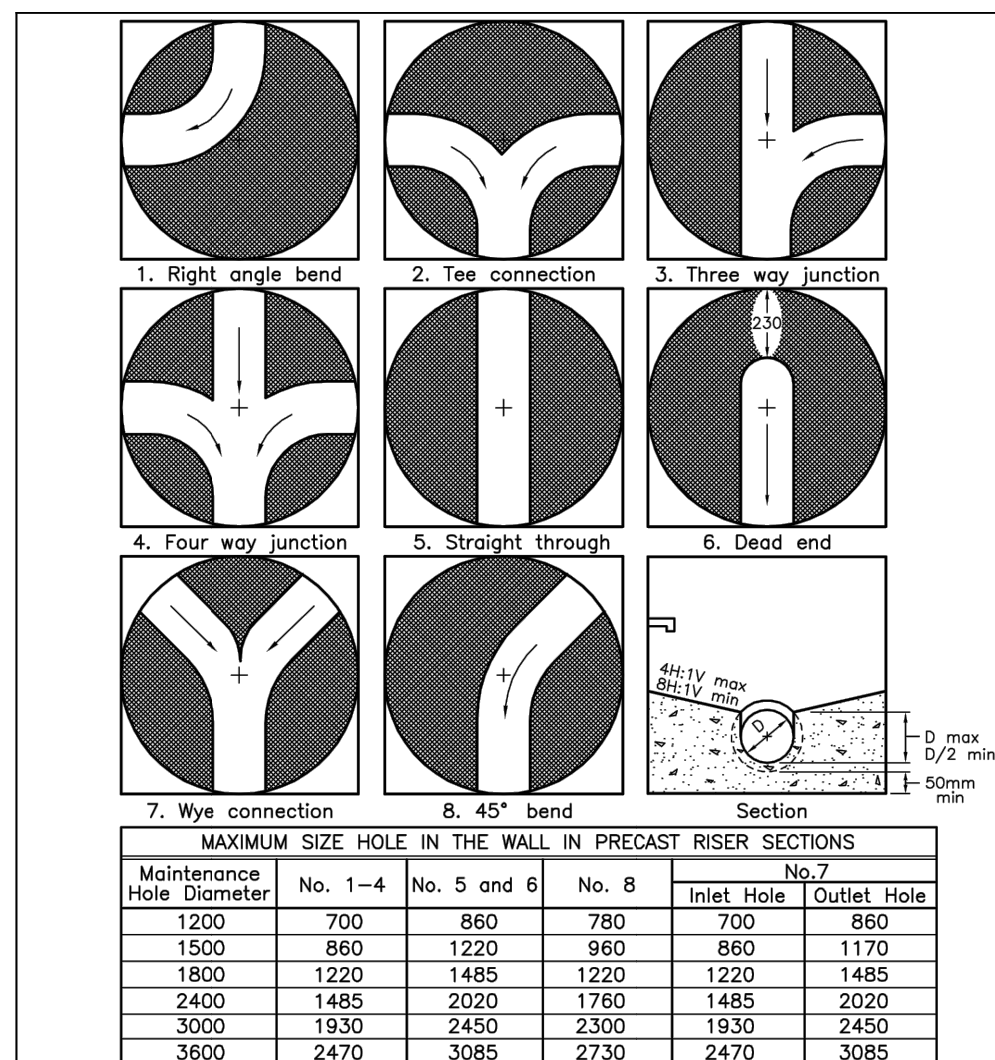
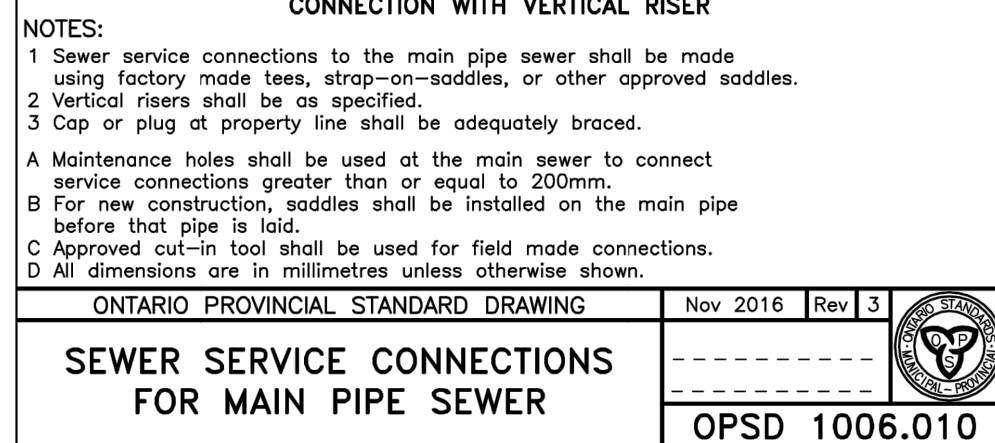
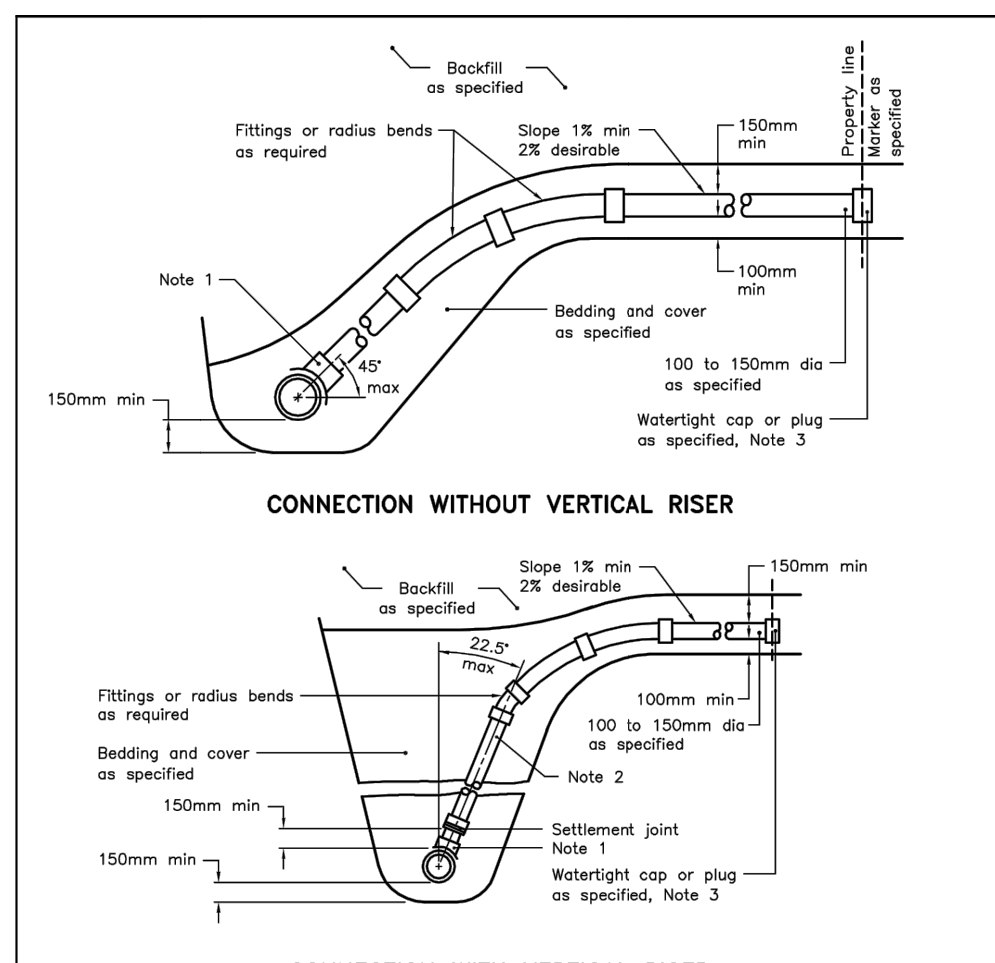
- CONTRACTORS SHALL INFORM THE CITY OF BARRIE WATER OPERATIONS DEPARTMENT A MINIMUM OF 48 HOURS IN ADVANCE OF THEIR INTENTIONS TO PERFORM WORK ON WATER INFRASTRUCTURE.
- OPERATION OF HYDRANTS AND VALVES ON THE POTABLE WATER SYSTEM BY OTHER THAN QUALIFIED WATER OPERATIONS STAFF IS PROHIBITED BY CURRENT BY-LAW. CITY SERVICE FEES ARE PER THE CURRENT FEES BY-LAW. THE CITY'S WATER OPERATIONS STAFF WILL SWAB, PRESSURE TEST, CHLORINATE AND FLUSH ALL NEW WATERMANS.
- MINIMUM COVER OVER WATERMAIN SHALL BE 1.7m. THE MINIMUM HORIZONTAL SEPARATION BETWEEN WATERMAIN AND SEWERS SHALL BE 2.5m WHERE WATERMAIN CONFLICTS WITH SEWER PIPES, DEFLECT WATERMAIN HORIZONTALLY OR VERTICALLY WHILE PROVIDING A MINIMUM OF 0.5m CLEARANCE BETWEEN WATERMAIN AND SEWERS. MAINTAIN MINIMUM DEPTH OF COVER AT ALL TIMES.
- WATERMAIN SHALL BE INSTALLED IN BEDDING AS PER OPSD 802.010 (GRANULAR 'A' EMBEDMENT MATERIAL) FOR FLEXIBLE PIPES AND OPSD 802.030 OR 802.031 CLASS 'B' (GRANULAR 'A' BEDDING MATERIAL, GRANULAR 'A' OR SELECT NATIVE COVER MATERIAL) FOR RIGID PIPE UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF WATER OPERATIONS ALTERNATIVE EMBEDMENT MATERIAL - SAND MEETING GRADATION REQUIREMENTS OF OPSD MUNI004.05.07 COMPACTED TO 95% STANDARD PROCTOR MAXIMUM DRY DENSITY IS PERMISSIBLE WHERE NOTED IN STANDARD DETAILS. GEOTECHNICAL CERTIFICATION OF MATERIAL AND COMPACTION TESTING MUST BE PROVIDED EVERY 150 METRES. THE COMPACTION TESTING MUST INCLUDE THE ENTIRE EMBEDMENT ENVELOPE (HAUNCHES, BEDDING, TOP OF PIPE AND COVER).
- COPPER WATER MAINS AND SERVICES 19mm TO 50mm IN DIAMETER SHALL BE EMBEDDED IN SAND 100 mm ABOVE AND BELOW TO CONFORM TO OPSD/MUNI 1004.05.07.
- RESTRAINING WILL BE REQUIRED ON ALL HYDRANTS, THRUST BLOCKS, AS PER OPSD 1103.010 AND 1103.020. RESTRAINING DEVICES MAY BE REQUIRED IN ADDITION TO STANDARD CONCRETE THRUST BLOCKING WHERE SOIL CONDITIONS WARRANT AT THE CITY'S DISCRETION.
- NEW WATERMANS TO BE PVC DR18 CL150 MINIMUM; DUCTILE IRON CL52AS PER THE APPROVED MANUFACTURERS PRODUCTS FOR LINEAR WATER SYSTEMS LIST.
- TRACING WIRE SHALL BE #12 AWG HIGH STRENGTH COPPER CLAD (HS-CSS) AND SHALL BE INSTALLED ON THE TOTAL LENGTH OF ALL WATERMAIN AND BROUGHT UP AT EACH HYDRANT AND CONNECTED TO FLAME BOLT. ALL SPLICES TO UTILIZE CONNECTORS AS PER THE APPROVED MANUFACTURERS PRODUCTS FOR LINEAR WATER SYSTEMS LIST.
- ALL WATER SERVICES SHALL BE MINIMUM 25mm TYPE 'K' COPPER OR 25mm CROSS-LINKED POLYETHYLENE UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF WATER OPERATIONS. WATER SERVICE SADDLES SHALL BE USED WHEN TAPPING INTO PVC WATERMAIN.
- SERVICE TAPPINGS SHALL BE PLACED AT A MINIMUM SEPARATION OF 1.0m AND A MINIMUM OF 0.6m FROM JOINTS. (ENDS OF PIPE)
- RISER PIPES ARE TO BE INSTALLED AS PER BSD-510, AND REMOVED AS DIRECTED. SWABBING SCHEDULE TO BE SUPPLIED BY A WATER OPERATIONS FIELD REPRESENTATIVE. ALL RISERS ARE TO BE RESTRAINED OR THRUST BLOCKED.
- ALL NEW CURB STOPS AND BOXES TO BE LOCATED AT PROPERTY LINE AND OUT OF DRIVEWAYS AND SIDEWALKS.
- DISCHARGE OF SUPER CHLORINATED WATER MUST BE TREATED WHEN DISINFECTING WATER LINES PRIOR TO DISCHARGING TO THE NATURAL ENVIRONMENT. SAMPLING VERIFICATION MUST BE COMPLETED AND RECORDED TO ENSURE NO RESIDUAL CHLORINE IS DETECTED. RECORD MUST BE RETAINED FOR 1 YEAR AND PROVIDED TO THE CITY UPON REQUEST.

4. STORM

- STORM SEWERS SHALL BE CONSTRUCTED WITH BEDDING AS PER OPSD-802.010 (GRAN. 'A' EMBEDMENT MATERIAL) FOR FLEXIBLE PIPES AND OPSD-802.030 OR 802.031 CLASS B (GRAN. 'A' BEDDING MATERIAL) FOR RIGID PIPE UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF ENGINEERING.
- MAINTENANCE HOLE TOPS (FRAMES) AND CATCH BASIN (FRAMES) ARE TO BE SET TO BASE COURSE ASPHALT GRADE AND THEN ADJUSTED TO FINAL GRADE WHEN THE TOP LIFT OF ASPHALT IS PLACED. ALL ADJUSTMENT WILL BE ACCORDANCE WITH BSD-N2.
- ALL CONNECTIONS TO THE STORM MAIN SHALL BE MADE WITH A STORM MANHOLE OR APPROVED FACTORY TEE CONNECTION AS PER OPSD-708.01 OR 708.03.
- PIPE MATERIAL TO BE REINFORCED CONCRETE WITH A MINIMUM STRENGTH OF 50 N/m² CERTIFIED TO C.S.A. STANDARD A247.2-1982, CLASS 50-D (PREVIOUSLY C.S.A. STANDARD A257.2-1974, CLASS II) OR PVC CERTIFIED TO C.S.A. STANDARDS 182.2 AND 182.4.
- STORM SEWER TO BE MINIMUM 300 mm DIAMETER WITH JOINTS CONFORMING TO C.S.A. STANDARD A257.3.
- ALL PIPE BEDDING MUST CONFORM TO OPSD, MAXIMUM COVER TABLE. NO FLEXIBLE PIPE SEWERS WILL BE INSTALLED WITH A DEPTH OF COVER GREATER THAN 6 METERS UNLESS SPECIFICALLY APPROVED BY THE DIRECTOR OF ENGINEERING.
- ALL PIPE HANDLING INSTALLATIONS MUST BE IN STRICT COMPLIANCE WITH MANUFACTURES INSTALLATION GUIDES AND THE O.C.P.A. OR UNIBELL GUIDELINES.

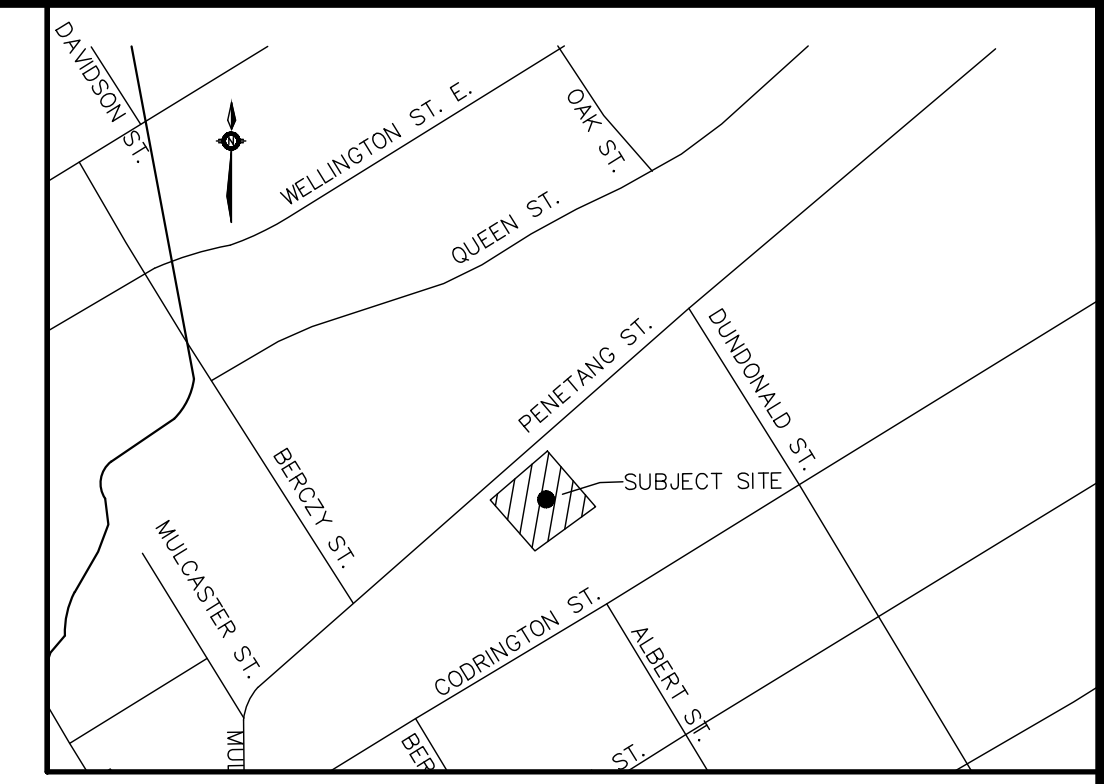
5. OTHER

- SIDEWALKS TO COMPLY WITH OPSD-310.010 AND ARE TO BE 1.5 m WIDE. MINIMUM THICKNESS AS FOLLOWS :
- RESIDENTIAL DRIVEWAY 150 mm
- COMMERCIAL/INDUSTRIAL DRIVEWAY 200 mm (REINFORCEMENT AS PER OPSD IF REQUIRED)
- WHEN NO DRIVEWAY IS PRESENT, 125 mm.
- NATIVE SUBGRADE SHALL HAVE A CROSSFALL OF 3% AND THE MATERIAL SHALL BE APPROVED BY A SOILS CONSULTANT AND IS SUBJECT TO APPROVAL BY THE DIRECTOR OF ENGINEERING.
- ALL CURB RADII TO BE MINIMUM OF 9.0 m AT THE ENTRANCE.
- NATIVE SUBGRADE TO BE COMPACTED TO MINIMUM 95% STANDARD PROCTOR MAXIMUM DRY DENSITY AND SHALL BE PROOF ROLLED.
- MORTAR IS USED FOR LEVELING OF PRECAST UNITS ONLY. THE THICKNESS OF MORTAR WILL BE 10mm TO FILL ALL VOIDS CREATED BY IRREGULARITIES IN THE PRECAST UNITS TO ENSURE AN EVEN SURFACE ONLY.
- NON-COMPRESSIBLE BACK FILL WILL BE USED DURING REBUILDING, ADJUSTING, OR ANY OTHER APPLICABLE CATCH BASIN OR MAINTENANCE HOLE WORKS.



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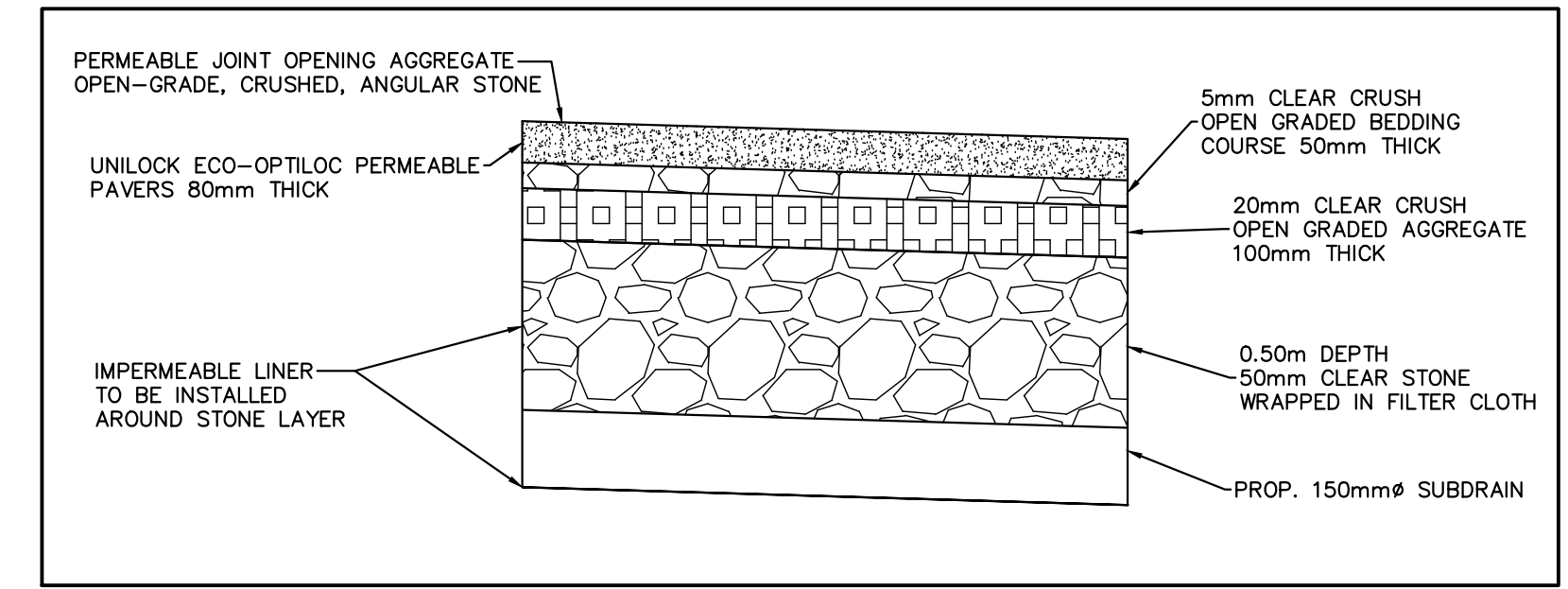
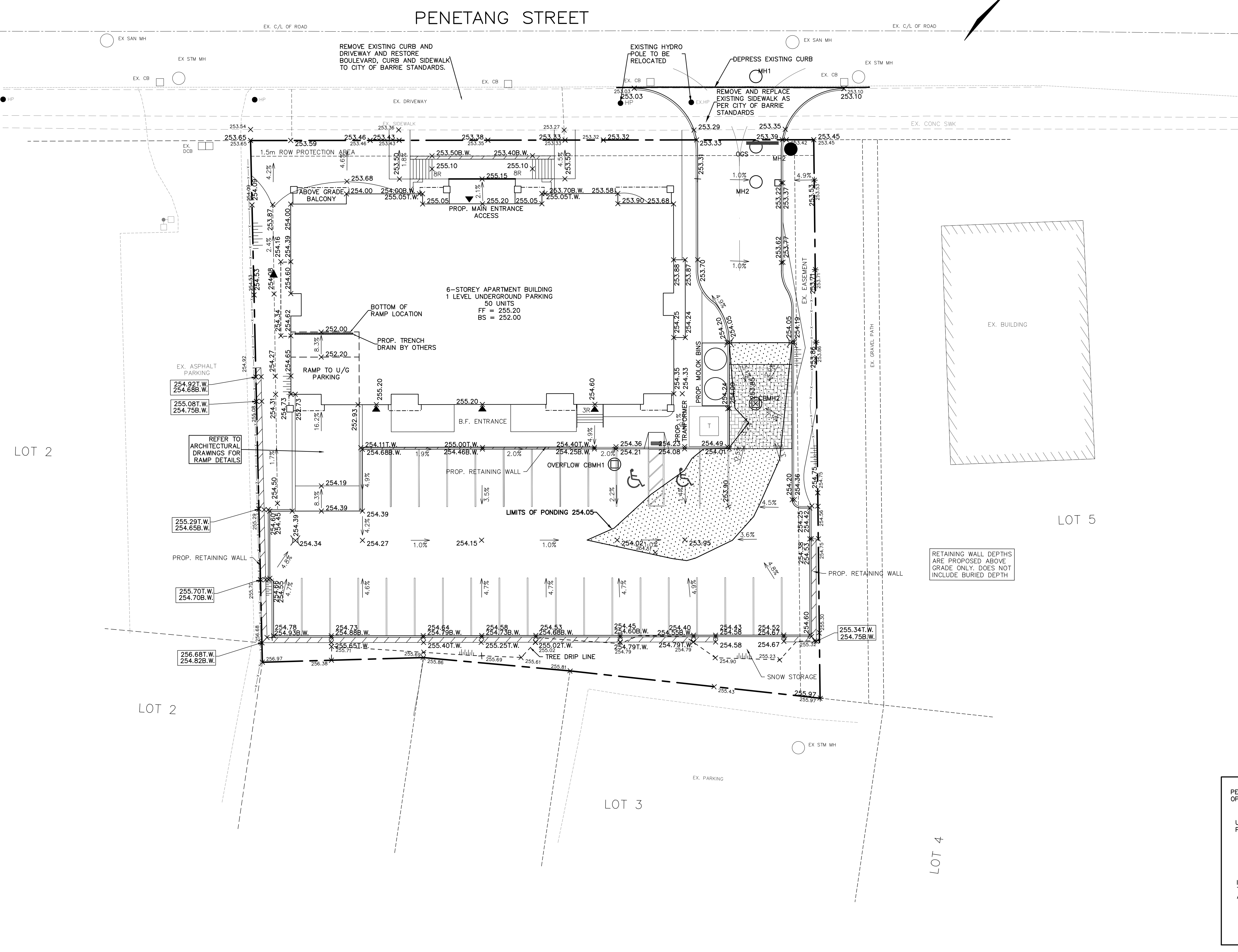
				BENCHMARK: HORIZONTAL MTO MONUMENT 01019860464 MONUMENT IS LOCATED AT THE INTERSECTION OF MULCASTER ST. AND PENETANG ST. MONUMENT IS ON THE WEST SIDE OF MULCASTER ST. IMMEDIATELY NORTH OF HOUSE #108 ON THE SOUTH EDGE OF GRAVEL DRIVE. MTO MONUMENT 01019860476 MONUMENT IS LOCATED ON THE EAST SIDE OF BAYFIELD ST. AND NORTH OF WELLINGTON ST. MONUMENT IS SET IN SIDEWALK ON THE EASTERLY PRODUCTION OF THE SOUTH WALL OF HOUSE #110. VERTICAL MTO MONUMENT 03120030003 MONUMENT IS SET FLUSH IN THE NORTH END OF THE SOPHIA CREEK CURVE AT THE INTERSECTION OF SOPHIA ST. AND PEELE ST. CURVERT IS ON THE EAST SIDE OF PEELE ST. THE TABLET IS CENTERED IN THE WALL IN LINE WITH HANDRAIL AND 140MM BELOW TOP OF WALL. ELEV. 236.902 MTO MONUMENT 0011801502 BARRE COLLIER ST. SUTATED CHURCH, ON THE NORTH SIDE OF COLLIER ST. AND WEST OF POINT ST. TABLET IS IN CENTRE OF FRONT OR SOUTH SOUTE FOUNDATION OF MOST WESTERLY COLUMN OF BELL TOWER, 60CM BELOW BRICK SIDING. ELEV. 241.012				PIVAG INC. 45 - 51 PENETANG STREET BARRIE, ONTARIO NOTES AND DETAILS		PEARSON ENGINEERING LTD. PEARSONENG.COM PH. 705.719.4785	
1.	AS PER CITY OF BARRIE COMMENTS	12/03/19	JPE	DESIGNED BY	MWD						
NO.	REVISION NOTE	DATE	BY	DRAWN BY	MJWP	VERT SCALE		DRAWING #	ND-1		
				CHECKED BY	MWD	DATE	FEB 2019	REVISION #	1		



KEYMAP

LEGEND

- CB CATCH BASIN
- DCB DOUBLE CATCH BASIN
- CBMH CATCH BASIN
- MH STORM MANHOLE
- MH SANITARY MANHOLE
- SERVICE CAP
- ◆ HYD. FIRE HYDRANT
- ⊕ VB WATER VALVE
- CS CURB STOP W/ SERVICE
- × 254.63 PROPOSED ELEVATION
- 254.09 EXISTING ELEVATION
- 2.0% PROPOSED DIRECTION AND GRADE
- BACK OF CURB
- EDGE OF PAVEMENT
- CURB CUT LOCATION
- HIGH POINT
- LIMITS OF UNDERGROUND PARKING
- ABOVE GRADE BALCONY
- ▨ PROPOSED 100 YEAR PONDING LIMIT
- ▨ PROPOSED PERMEABLE PAVERS
- EXISTING DRIP LINE
- T PROPOSED TRANSFORMER

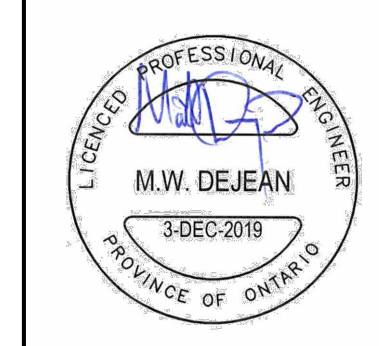


TYPICAL PERMEABLE PAVER DETAIL
N.T.S.

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NO.	REVISION NOTE	DATE	BY
1.	AS PER CITY OF BARRIE COMMENTS	12/03/19	JPE

BENCHMARK:
 HORIZONTAL
 MTO MONUMENT 01019860464 MONUMENT IS LOCATED AT THE INTERSECTION OF MULCASTER ST. AND PENETANG ST. MONUMENT IS ON THE WEST SIDE OF MULCASTER ST. IMMEDIATELY NORTH OF HOUSE #108 ON THE SOUTH EDGE OF GRAVEL DRIVE.
 MTO MONUMENT 01019860476 MONUMENT IS LOCATED ON THE EAST SIDE OF BAYFIELD ST. AND NORTH OF WELLINGTON ST. MONUMENT IS SET IN SIDEWALK ON THE EASTERLY PRODUCTION OF THE SOUTH WALL OF HOUSE #162.
 VERTICAL
 MTO MONUMENT 03120030003 MONUMENT IS SET FLUSH IN THE NORTH END OF THE SOPHIA CREEK CULVERT AT THE INTERSECTION OF SOPHIA ST. AND PEEL ST. CULVERT IS ON THE EAST SIDE OF PEEL ST. THE TABLET IS CENTERED IN THE WALL IN LINE WITH HANDRAIL AND 140MM BELOW TOP OF WALL. ELEV. 236.902
 MTO MONUMENT 00119860502 BARRIE COLLIER ST. UNITED CHURCH, ON THE NORTH SIDE OF COLLIER ST. AND WEST OF POINTZ ST. TABLET IS IN CENTRE OF FRONT OR SOUTH STONE FOUNDATION OF MOST WESTERLY COLUMN OF BELL TOWER, 60CM BELOW BRICK SIDING. ELEV. 241.012



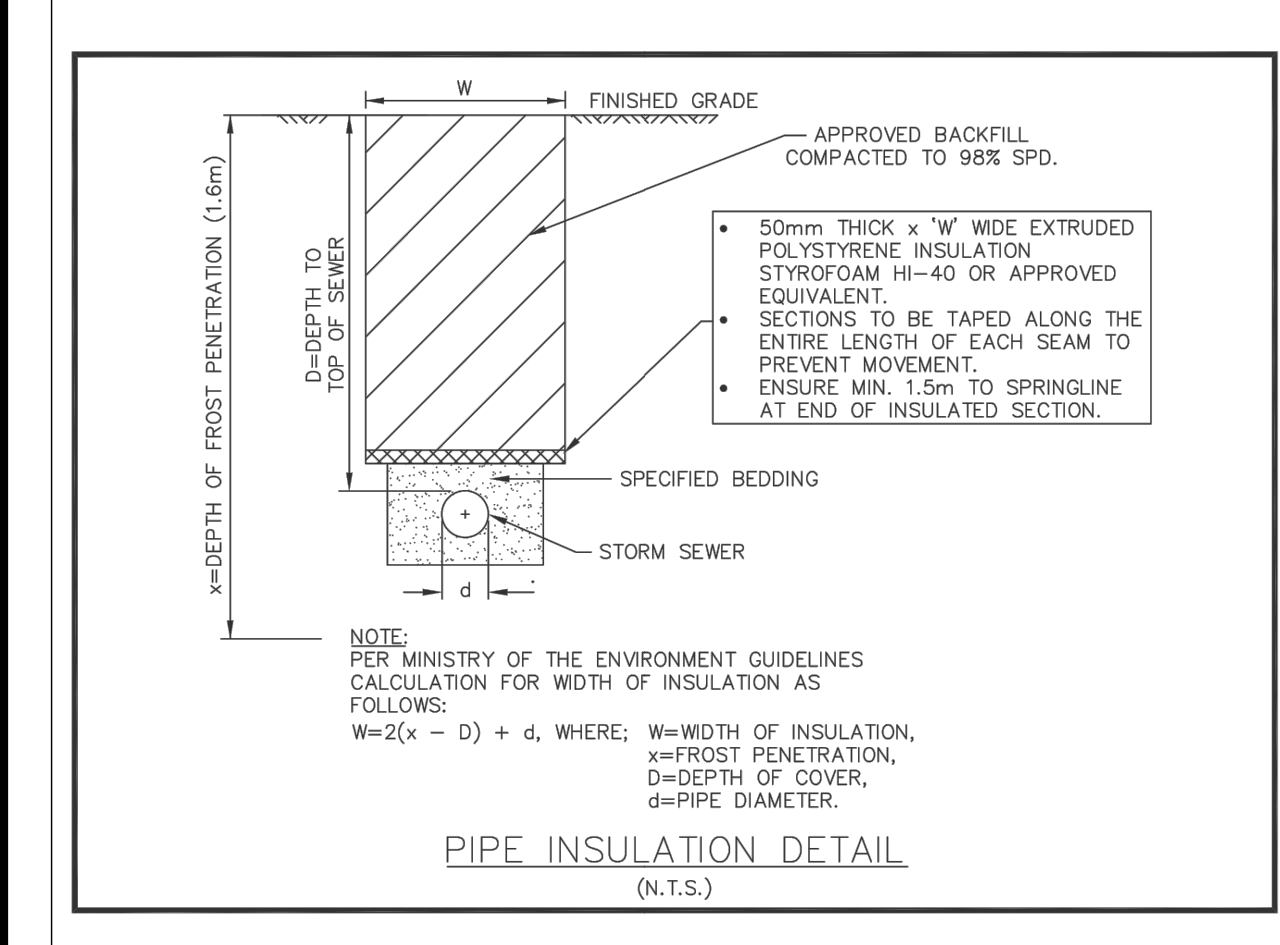
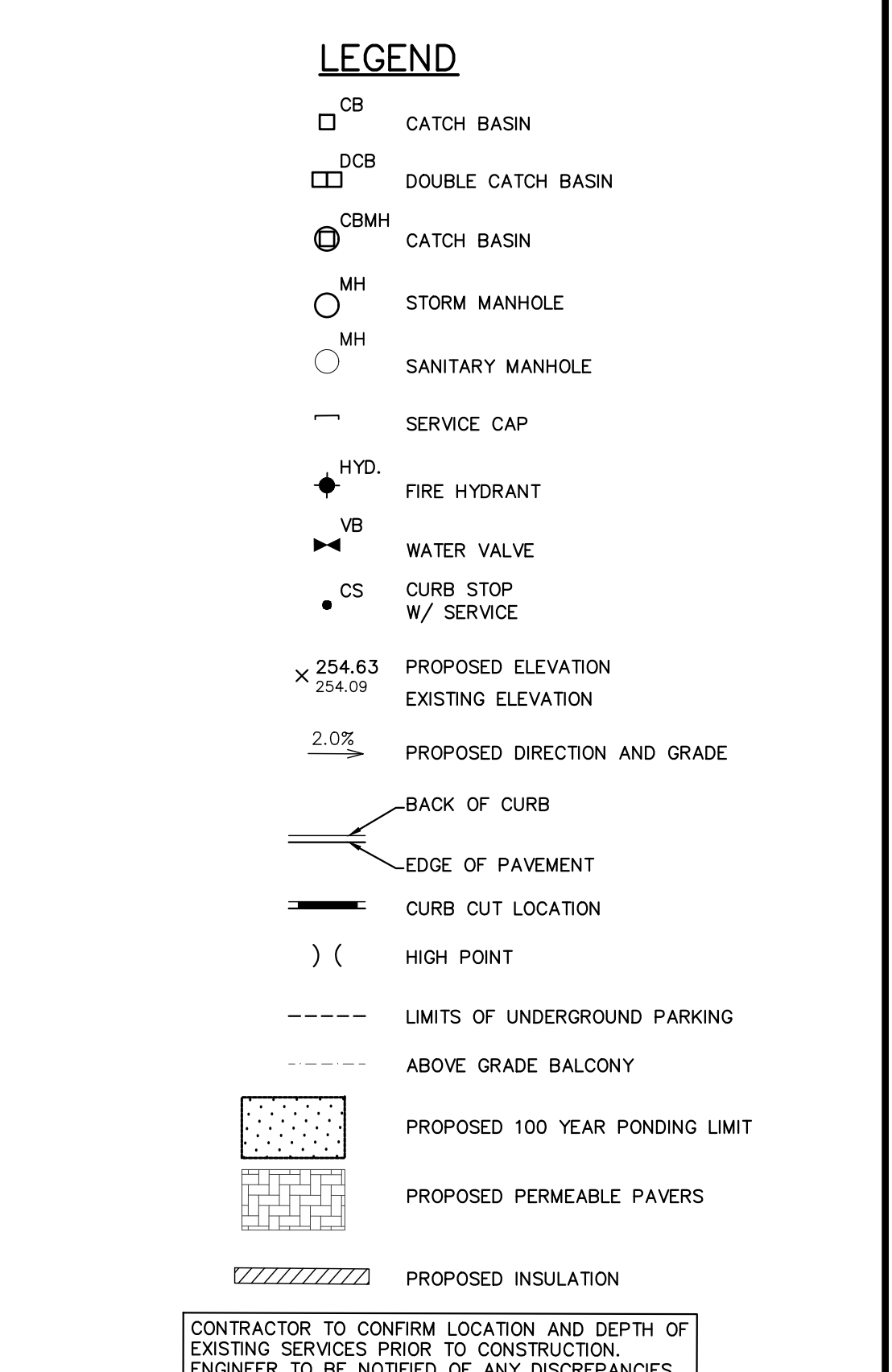
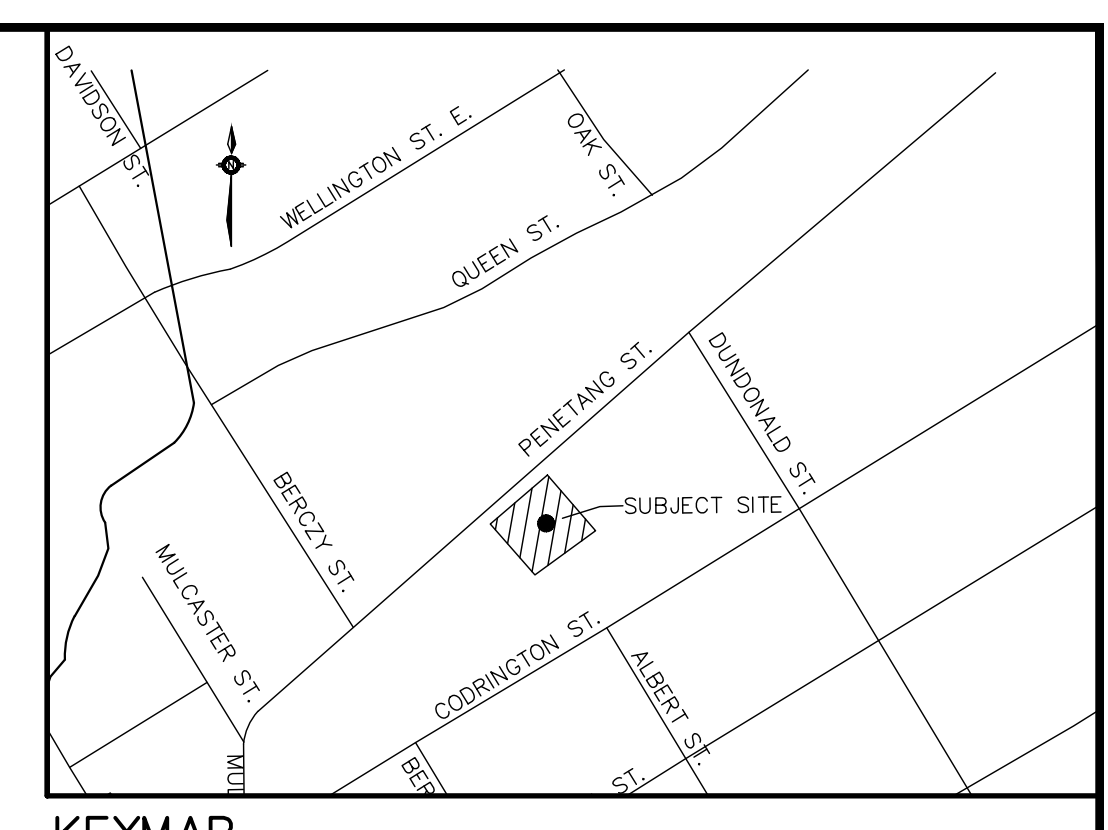
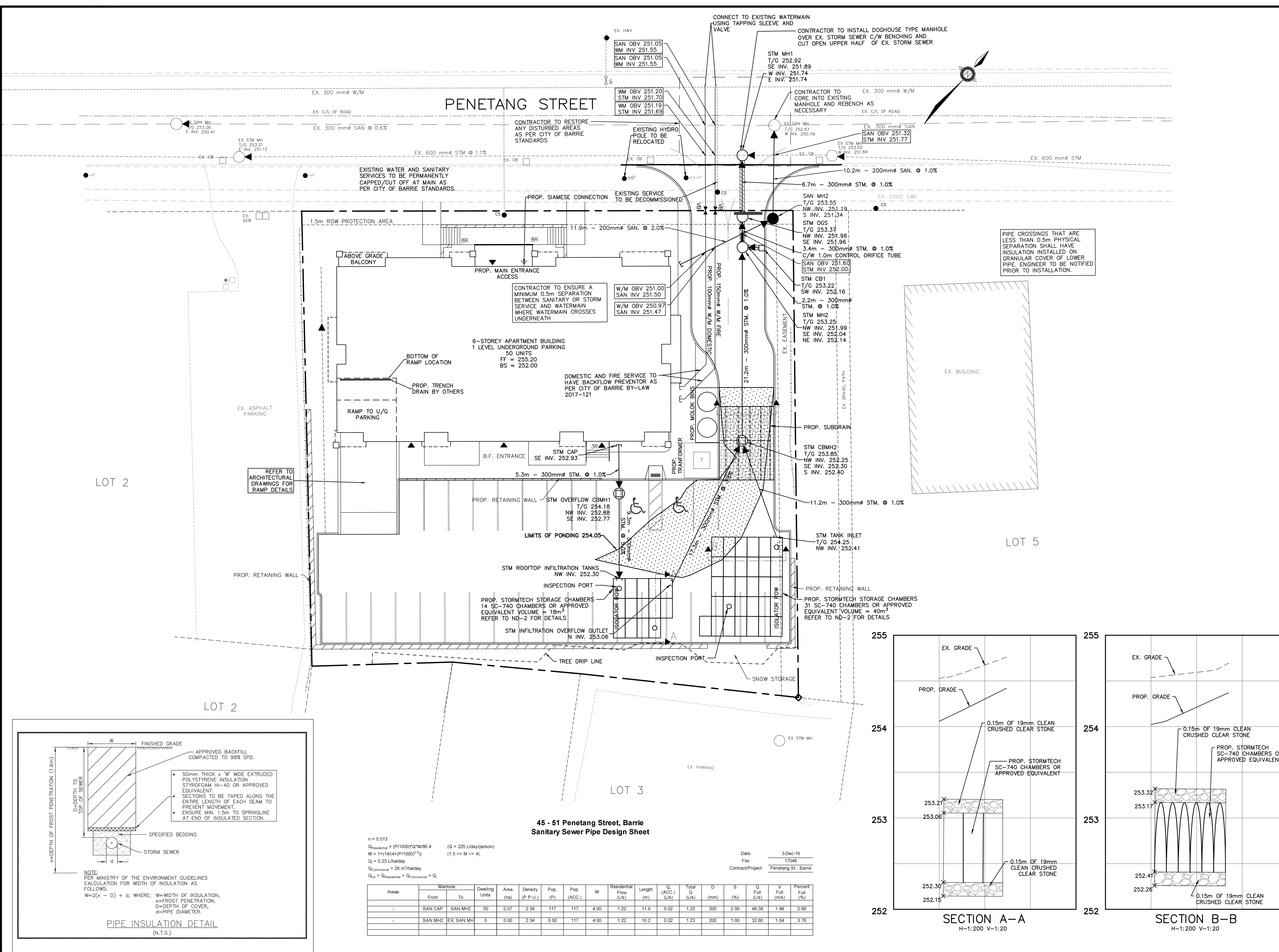
PIVAG INC.
 45 - 51 PENETANG STREET
 BARRIE, ONTARIO

SITE GRADING PLAN

PEARSON ENGINEERING LTD.
 PEARSONENG.COM PH. 705.719.4785

DESIGNED BY	MWD	HORIZ SCALE	1:200	PROJECT #	17048
DRAWN BY	JPE/MJWP	VERT SCALE		DRAWING #	SG-1
CHECKED BY	MWD	DATE	FEB 2019	REVISION #	1

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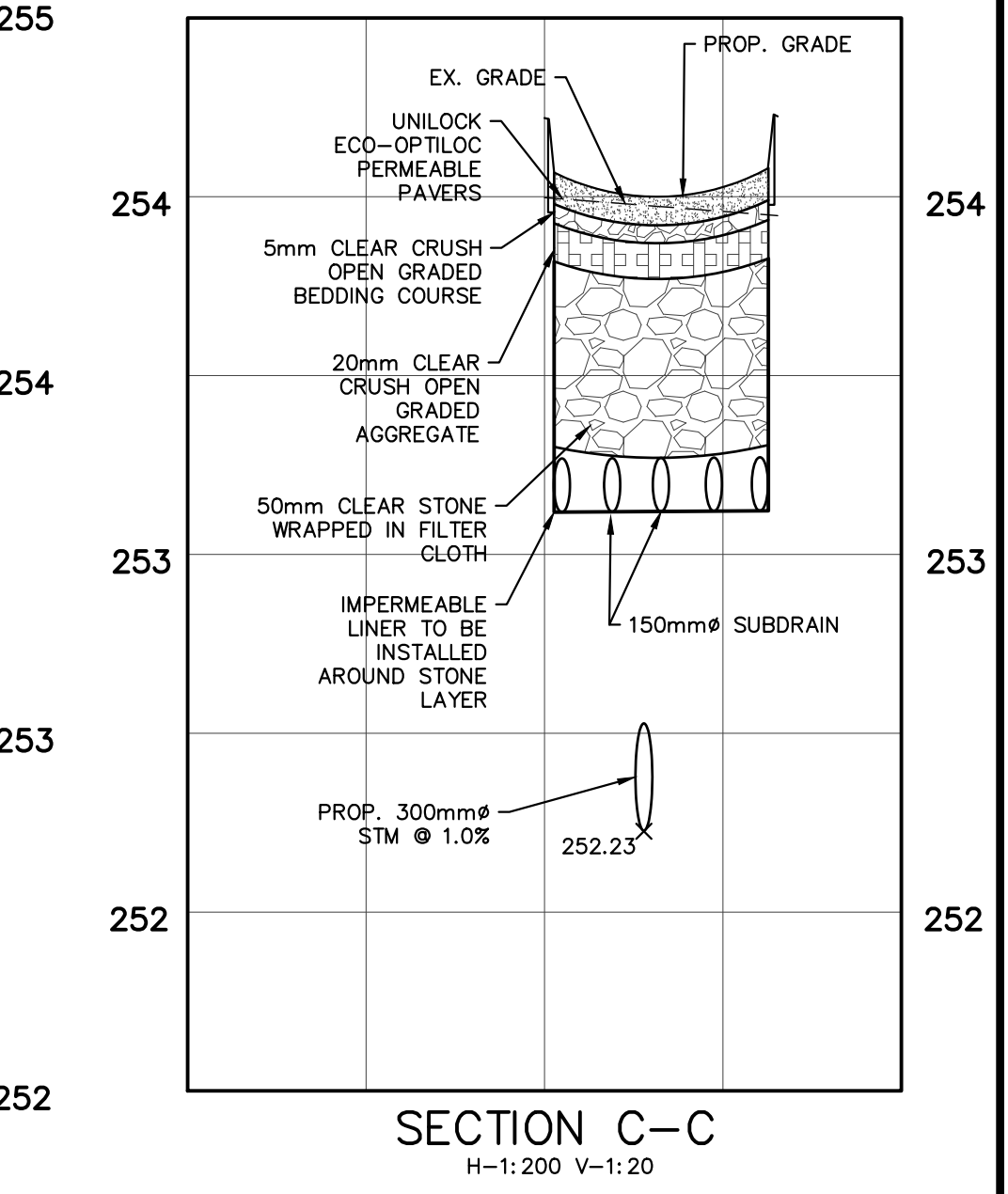
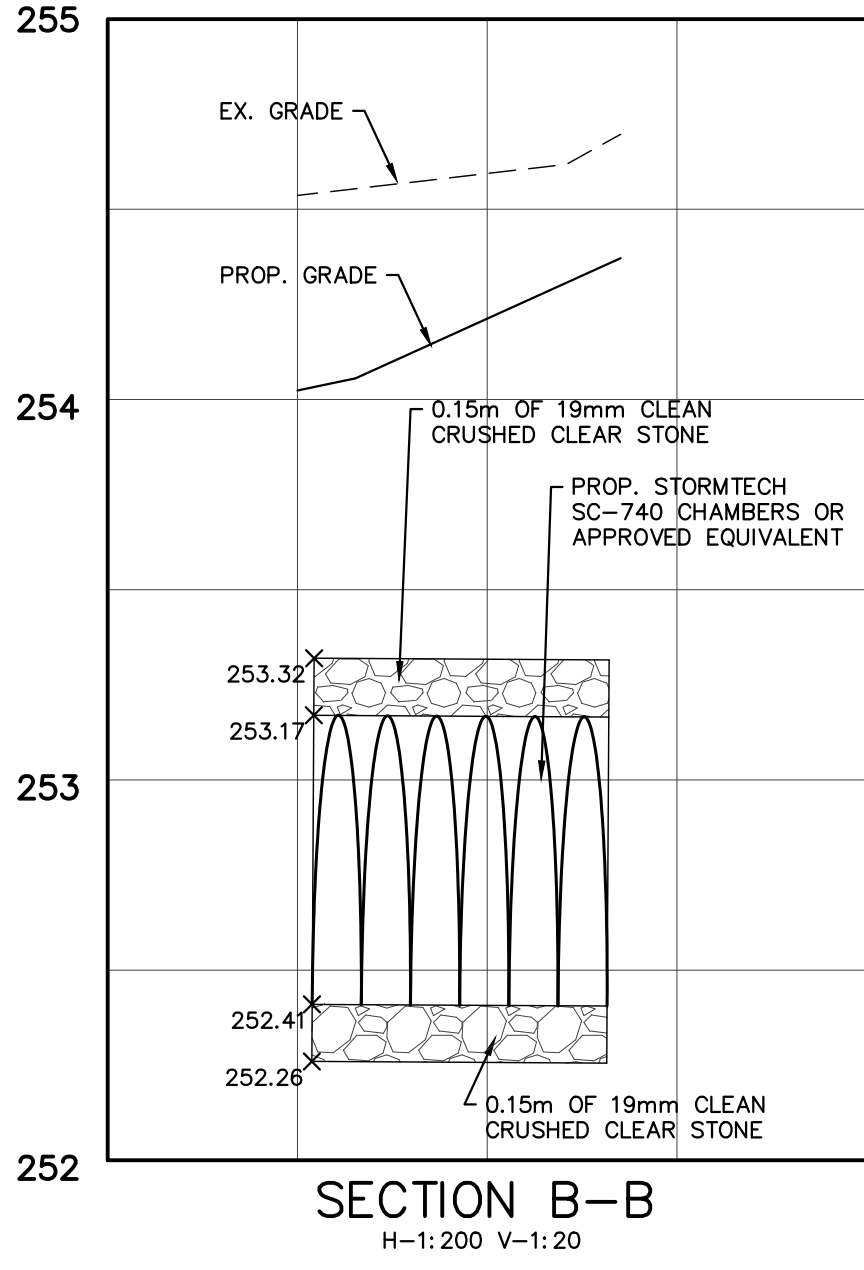
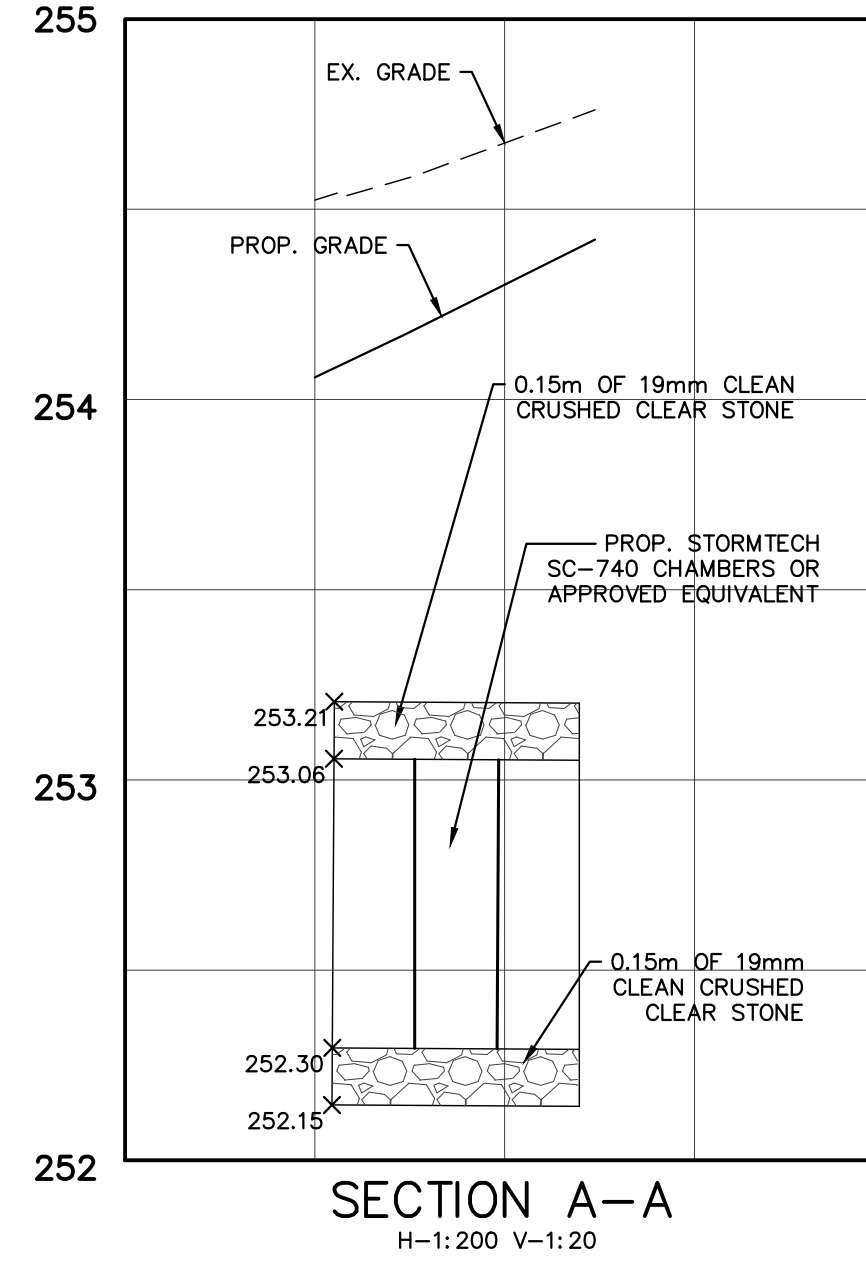


**45 - 51 Penetang Street, Barrie
Sanitary Sewer Pipe Design Sheet**

n = 0.013
 $Q_{residential} = (P/1000) \cdot Q^* / M^{0.4}$ (Q = 225 L/day/person)
 $M = 1 + (14 \cdot (P/1000)^{0.75})$ (1.5 <= M <= 4)
 $Q = 0.23 \text{ L/h/day}$
 $Q_{commercial} = 25 \text{ m}^3/\text{ha/day}$
 $Q_{total} = Q_{residential} + Q_{commercial} + Q$

Date: 3-Dec-19
 File: T1048
 Contract/Project: Penetang St., Barrie

Areas	Manhole	Dwelling Units	Area (ha)	Density (P.P.U.)	Pop. (P)	Pop. (ACC)	M	Residential Flow (L/s)	Length (m)	Q (ACC.) (L/s)	Total Q (L/s)	D (mm)	S (%)	Q Full (L/s)	V Full (m/s)	Percent Full (%)
-	SAN CAP SAN MH2	50	0.07	2.34	117	117	4.00	1.22	11.9	0.02	1.23	200	2.00	46.39	1.48	2.66
-	SAN MH2 EX SAN MH	0	0.00	2.34	0.00	117	4.00	1.22	10.2	0.02	1.23	200	1.00	32.80	1.04	3.76



NO.	REVISION NOTE	DATE	BY
1.	AS PER CITY OF BARRIE COMMENTS	12/03/19	JPE

BENCHMARK:
 HORIZONTAL MTO MONUMENT 01019860464 MONUMENT IS LOCATED AT THE INTERSECTION OF MULCASTER ST. AND PENETANG ST. MONUMENT IS ON THE WEST SIDE OF MULCASTER ST. IMMEDIATELY NORTH OF HOUSE #108 ON THE SOUTH EDGE OF GRAVEL DRIVE.
 MTO MONUMENT 01019860476 MONUMENT IS LOCATED ON THE EAST SIDE OF BAYFIELD ST. AND NORTH OF WELLINGTON ST. MONUMENT IS SET IN SIDEWALK ON THE EASTERLY PRODUCTION OF THE SOUTH WALL OF HOUSE #116.
 VERTICAL MTO MONUMENT 03120030003 MONUMENT IS SET FLUSH IN THE NORTH END OF THE SOPHIA CREEK CULVERT AT THE INTERSECTION OF SOPHIA ST. AND PEEL ST. CULVERT IS ON THE EAST SIDE OF PEEL ST. THE TABLET IS CENTERED IN THE WALL IN LINE WITH HANDRAIL AND 140MM BELOW TOP OF WALL. ELEV. 236.902
 MTO MONUMENT 00119860502 BARRIE COLLIER ST. UNITED CHURCH, ON THE NORTH SIDE OF COLLIER ST. AND WEST OF POINT ST. TABLET IS IN CENTRE OF FRONT OR SOUTH STONE FOUNDATION OF MOST WESTERLY COLUMN OF BELL TOWER, 60CM BELOW BRICK SIDING. ELEV. 241.012

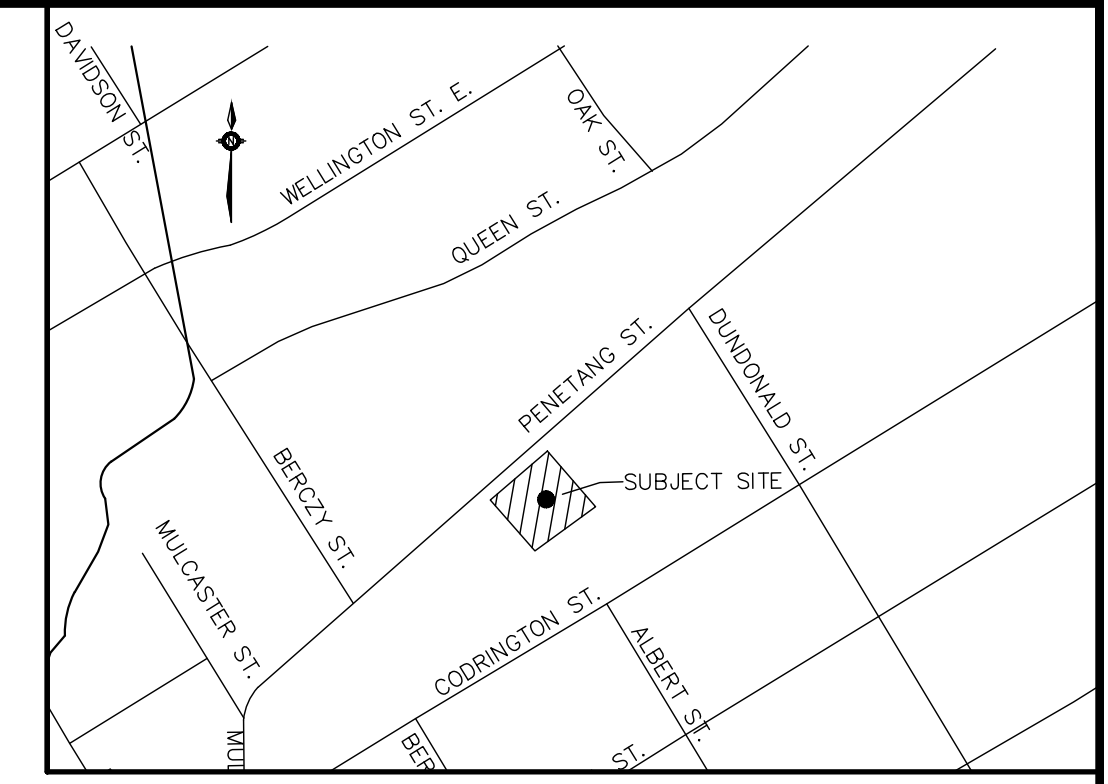
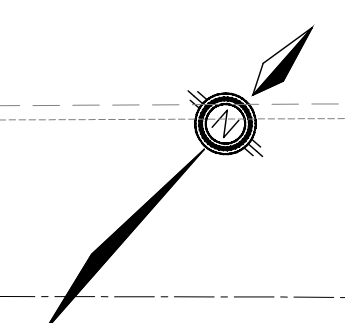
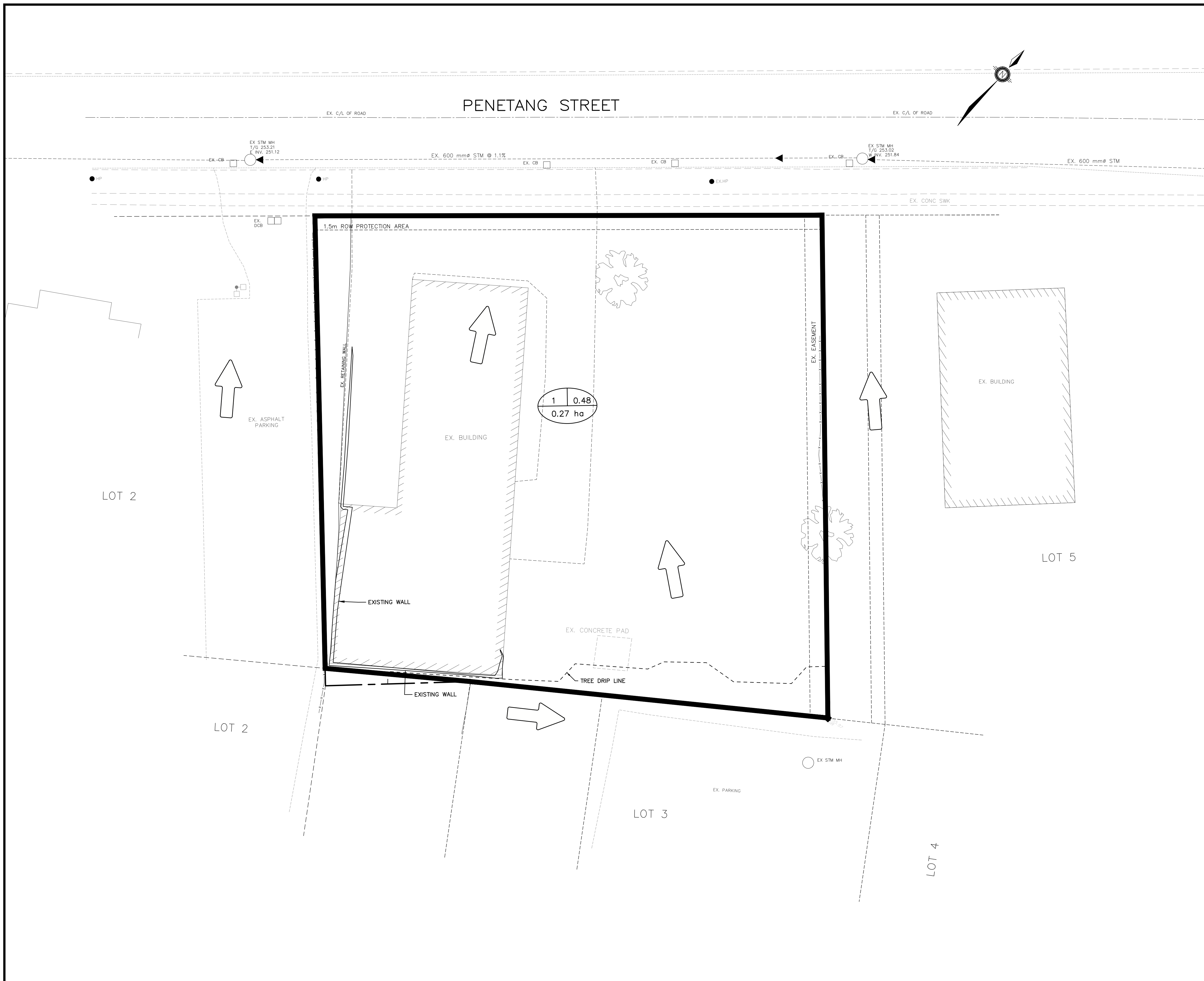
PIVAG INC.
 45 - 51 PENETANG STREET
 BARRIE, ONTARIO

SITE SERVICING PLAN

PEARSON ENGINEERING LTD.
 PEARSONENG.COM PH. 705.719.4785

DESIGNED BY	MWD	HORIZ SCALE	1:200	PROJECT #	17048
DRAWN BY	MJWP	VERT SCALE		DRAWING #	SS-1
CHECKED BY	MWD	DATE	FEB 2019	REVISION #	1

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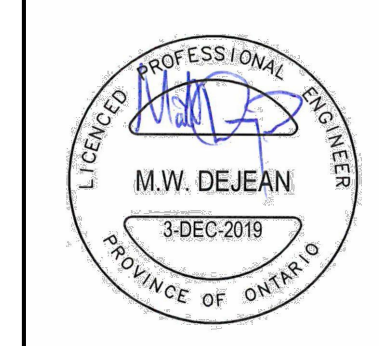
KEYMAP

LEGEND

- CB CATCH BASIN
- DCB DOUBLE CATCH BASIN
- CBMH CATCH BASIN
- MH STORM MANHOLE
- MH SANITARY MANHOLE
- SERVICE CAP
- ◆ HYD. FIRE HYDRANT
- ▽ VB WATER VALVE
- CS CURB STOP W/ SERVICE
- × 254.63 PROPOSED ELEVATION
- 254.09 EXISTING ELEVATION
- 2.0% PROPOSED DIRECTION AND GRADE
- BACK OF CURB
- EDGE OF PAVEMENT
- CURB CUT LOCATION
-) (HIGH POINT
- LIMITS OF UNDERGROUND PARKING
- ABOVE GRADE BALCONY
- ▨ PROPOSED 100 YEAR PONDING LIMIT
- ▨ PROPOSED PERMEABLE PAVERS
- ➔ OVERLAND FLOW DIRECTION
- 1 0.75 RUNOFF COEFFICIENT
- 1.00 ha AREA IN HECTARES
- CATCHMENT BOUNDARY

NO.	REVISION NOTE	DATE	BY
1.	AS PER CITY OF BARRIE COMMENTS	12/03/19	JPE

BENCHMARK:
 HORIZONTAL
 MTO MONUMENT 01019860464 MONUMENT IS LOCATED AT THE INTERSECTION OF MULCASTER ST. AND PENETANG ST. MONUMENT IS ON THE WEST SIDE OF MULCASTER ST. IMMEDIATELY NORTH OF HOUSE #108 ON THE SOUTH EDGE OF GRAVEL DRIVE.
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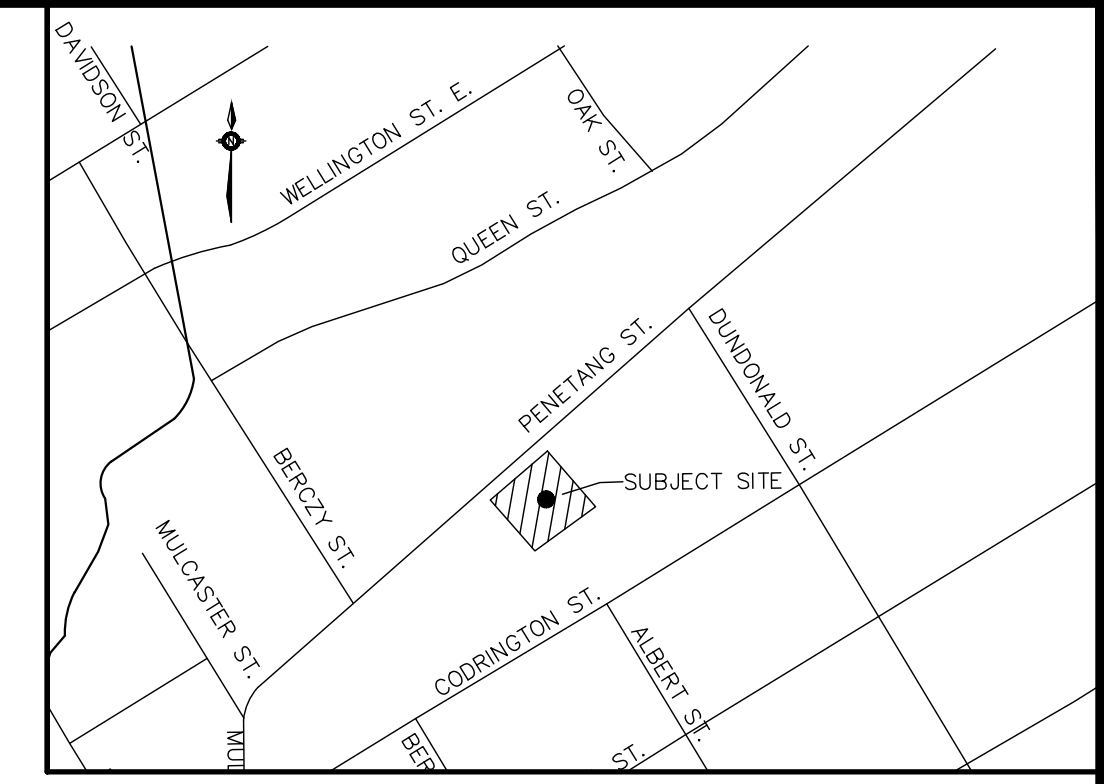
PIVAG INC.
 45 - 51 PENETANG STREET
 BARRIE, ONTARIO

PRE-DEVELOPMENT STORMWATER
 MANAGEMENT PLAN

DESIGNED BY	MWD	HORIZ SCALE	1:200	PROJECT #	17048
DRAWN BY	MJWP	VERT SCALE		DRAWING #	STM-1
CHECKED BY	MWD	DATE	FEB 2019	REVISION #	1



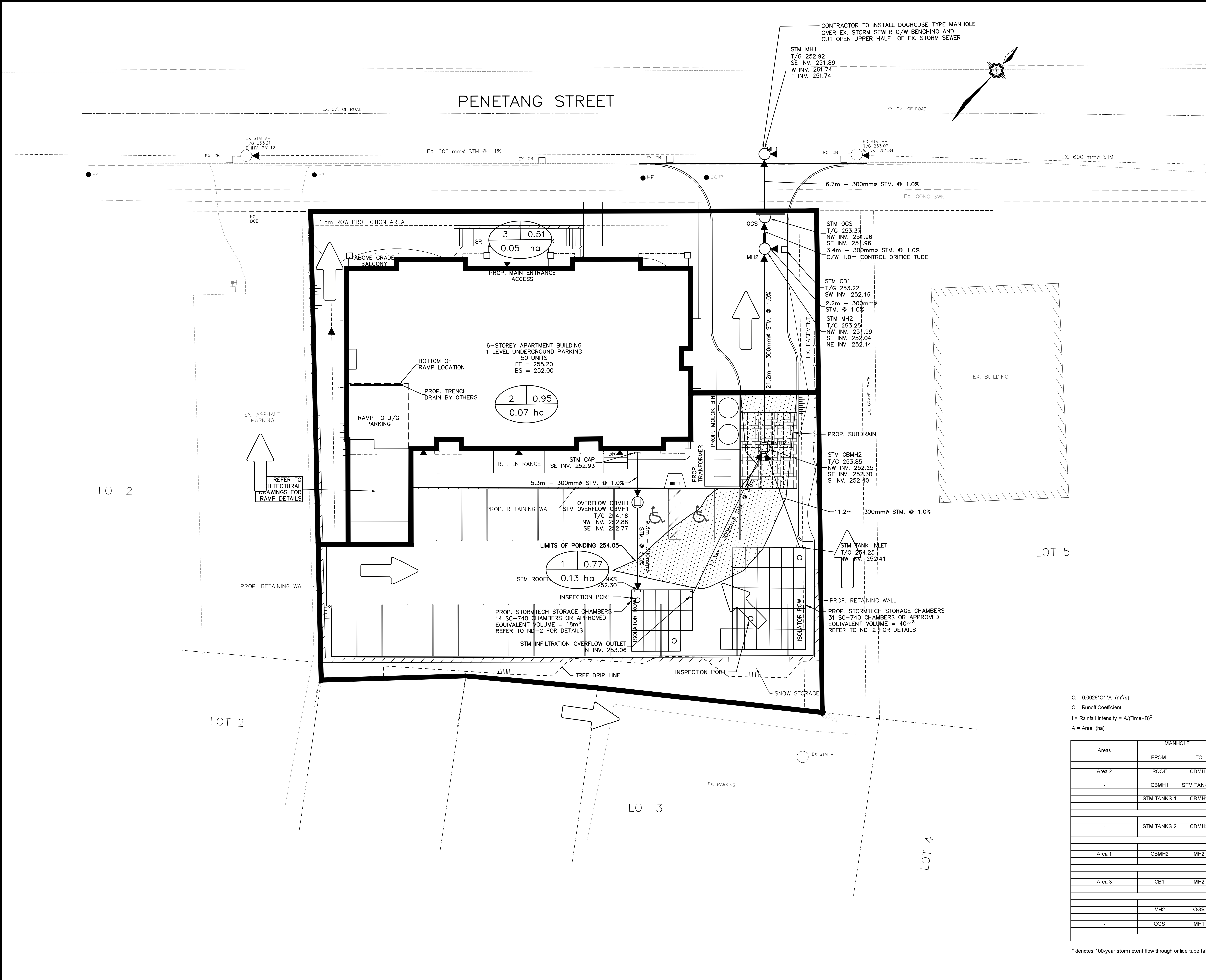
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KEYMAP

LEGEND

- CB CATCH BASIN
- DCB DOUBLE CATCH BASIN
- CBMH CATCH BASIN
- MH STORM MANHOLE
- SMH SANITARY MANHOLE
- SERVICE CAP
- ◆ HYD. FIRE HYDRANT
- ⊕ VB WATER VALVE
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- ABOVE GRADE BALCONY
- ▨ PROPOSED 100 YEAR PONDING LIMIT
- ▨ PROPOSED PERMEABLE PAVERS
- OVERLAND FLOW DIRECTION
- 1 0.75 CATCHMENT AREA RUNOFF COEFFICIENT
- 1.00 ha AREA IN HECTARES



Q = 0.0028°C^{1/4}A (m³/s)
 C = Runoff Coefficient
 I = Rainfall Intensity = A/(Time+B)^C
 A = Area (ha)

45 - 51 Penetang Street, Barrie
 Storm Sewer Design
 5-Year Storm Event

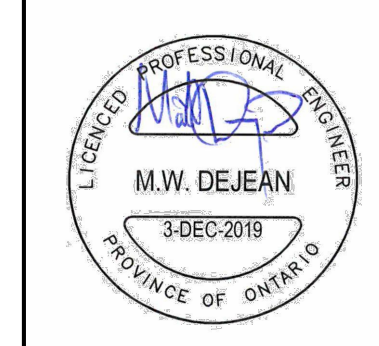
Date: 3-Dec-19
 File: 17048
 Contract/Project: Penetang St. Barrie

Areas	MANHOLE		LENGTH (m)	INCREMENT			TOTAL CA	FLOW TIME (min)		I (mm/h)	TOTAL Q (m ³ /s)	S (%)	D (mm)	Q FULL (m ³ /s)	V FULL (m ³ /s)
	FROM	TO		C	A	CA		TO	IN						
Area 2	ROOF	CBMH1	5.3	0.07	0.95	0.07	10.00	0.06	108.92	0.02	1.0	300	0.10	1.37	
-	CBMH1	STM TANKS 1	9.3	0.00	0.00	0.00	10.06	0.11	108.56	0.02	1.1	300	0.10	1.44	
-	STM TANKS 1	CBMH2	17.3	0.00	0.00	0.00	10.17	0.20	107.95	0.02	1.1	300	0.10	1.44	
-	STM TANKS 2	CBMH2	11.2	0.00	0.00	0.00	10.00	0.14	108.92	0.00	1.0	300	0.10	1.37	
Area 1	CBMH2	MH2	21.2	0.77	0.14	0.10	10.17	0.26	106.85	0.05	1.0	300	0.10	1.37	
Area 3	CB1	MH2	5.2	0.51	0.03	0.02	10.00	0.06	108.92	0.01	1.0	300	0.10	1.37	
-	MH2	OGS	3.4	0.00	0.00	0.00	10.63	0.04	105.47	0.04*	1.0	300	0.10	1.37	
-	OGS	MH1	6.7	0.00	0.00	0.00	10.67	0.06	105.25	0.04*	1.0	300	0.10	1.37	

* denotes 100-year storm event flow through orifice tube taken from SSD calculation sheet.

NO.	REVISION NOTE	DATE	BY
1.	AS PER CITY OF BARRIE COMMENTS	12/03/19	JPE

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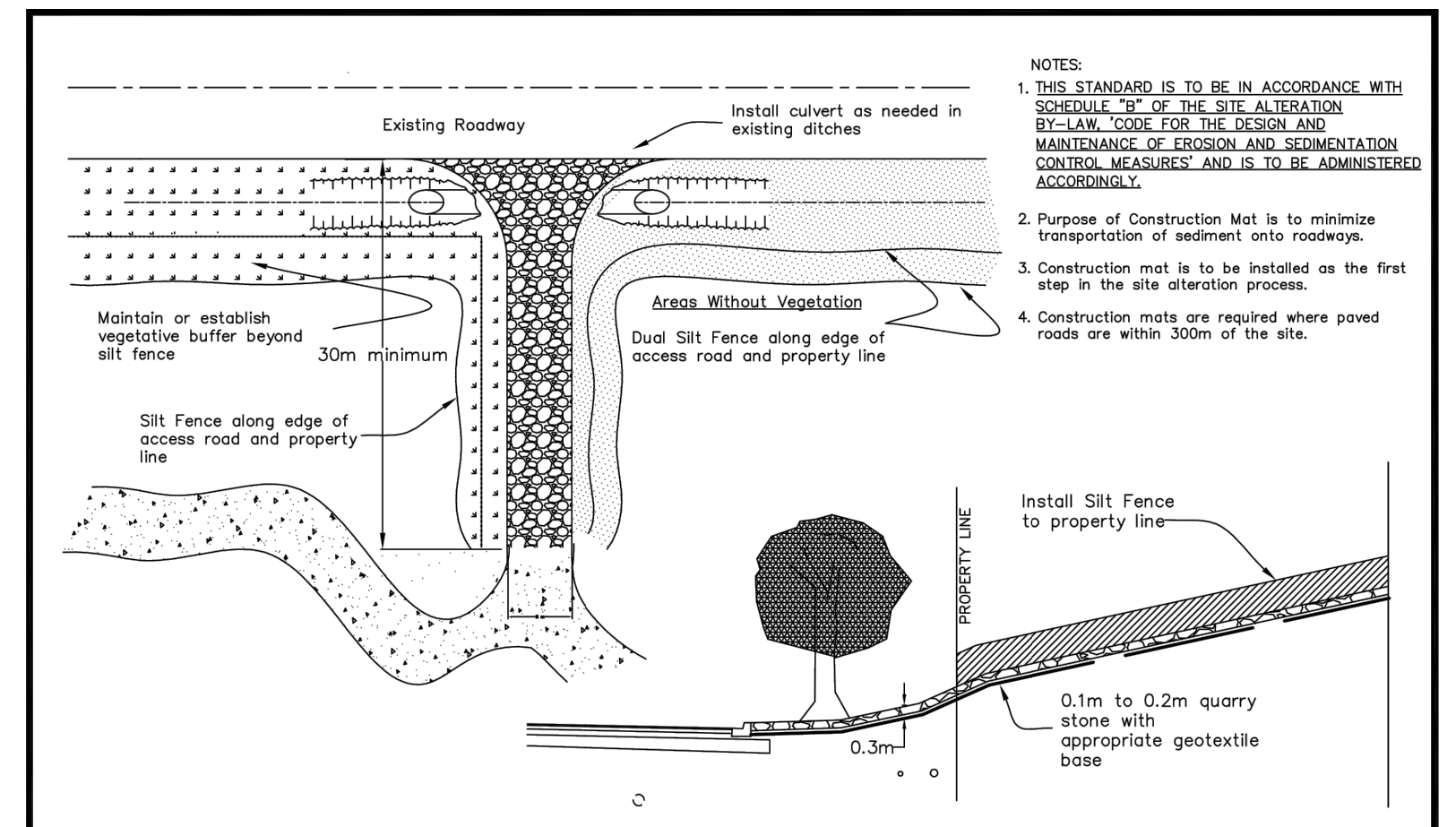
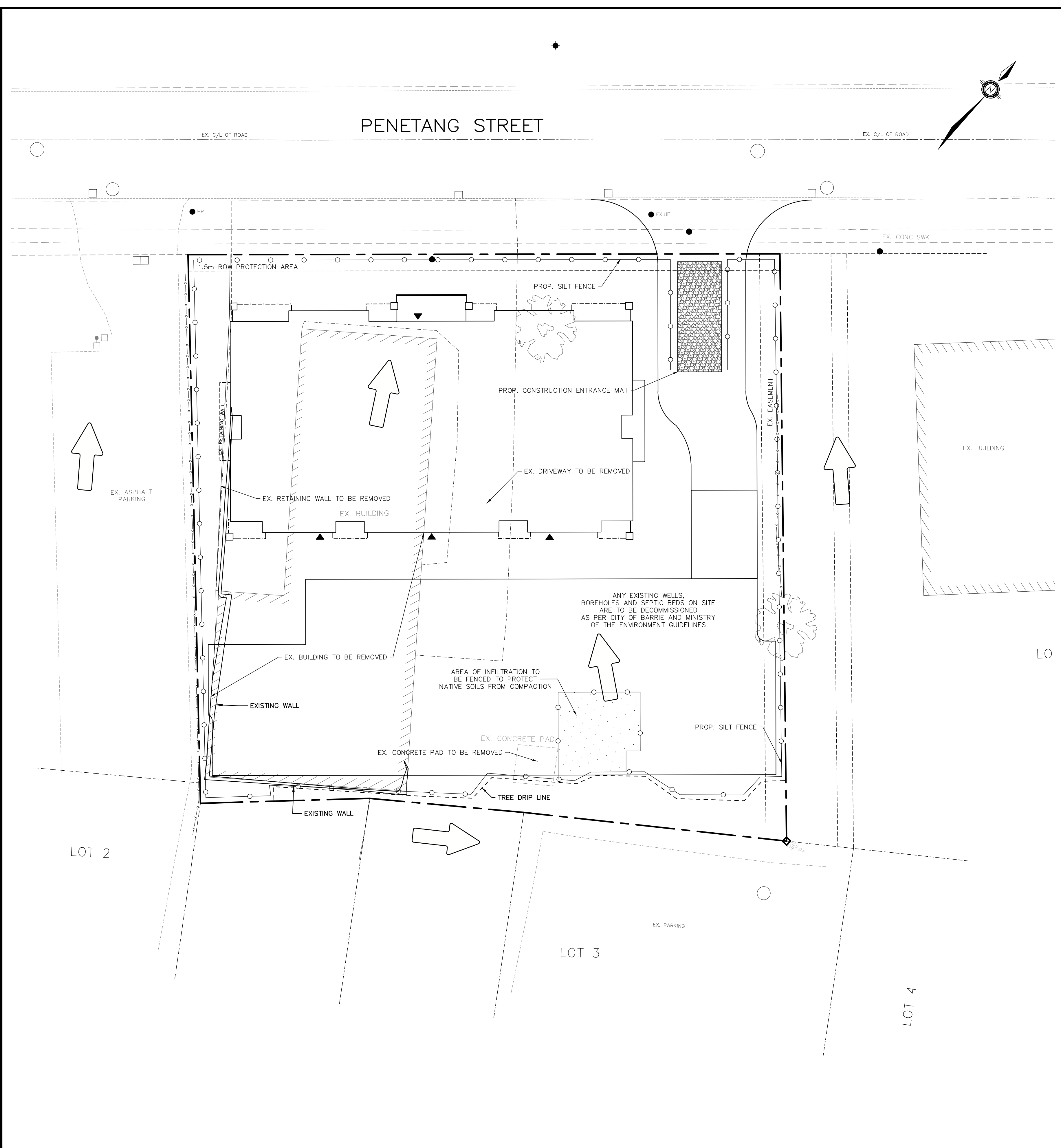


PIVAG INC.
 45 - 51 PENETANG STREET
 BARRIE, ONTARIO
 POST DEVELOPMENT STORMWATER
 MANAGEMENT PLAN

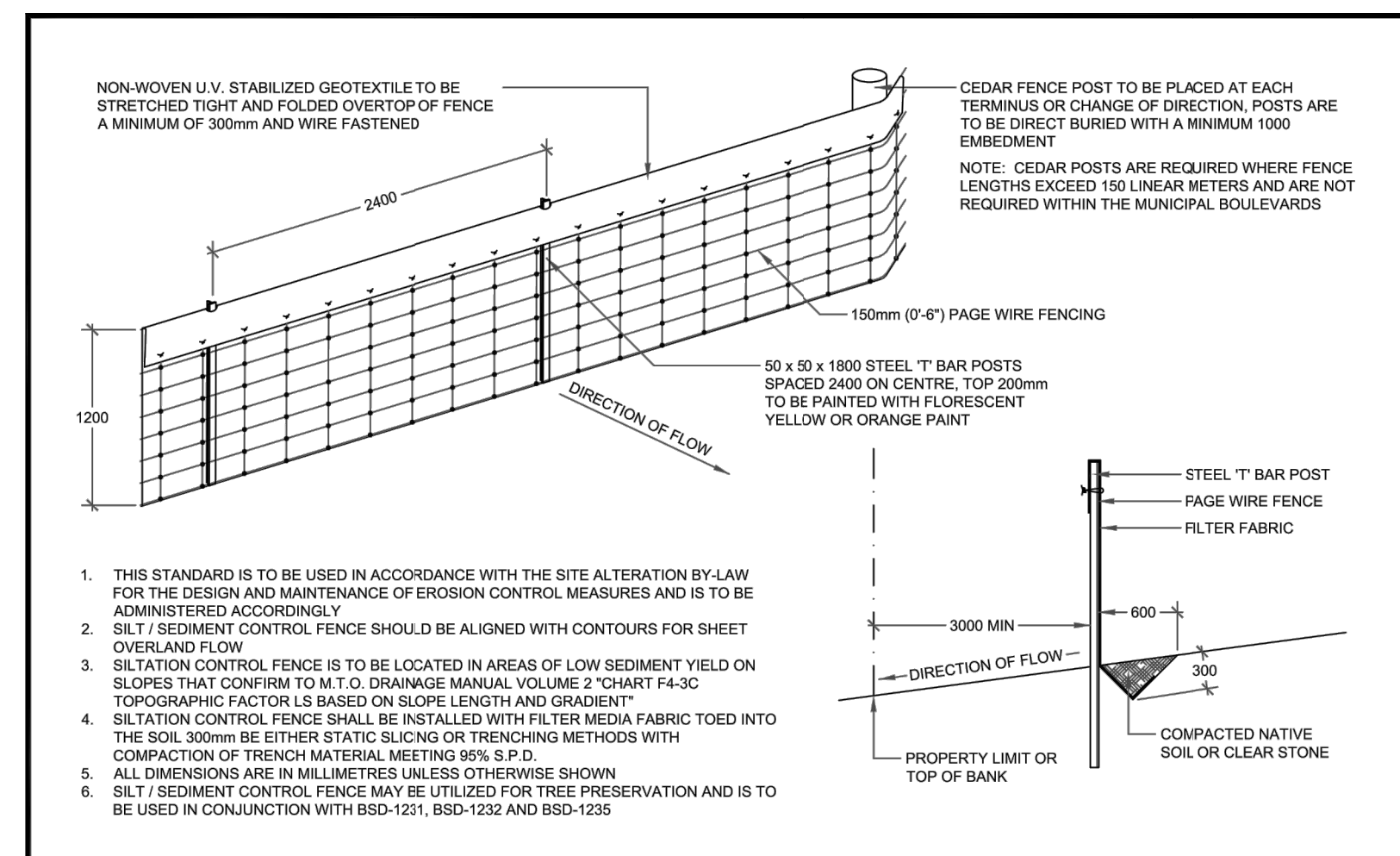
PEARSON ENGINEERING LTD.
 PEARSONENG.COM PH. 705.719.4785

DESIGNED BY	MWD	HORIZ SCALE	1:200	PROJECT #	17048
DRAWN BY	MJWP	VERT SCALE		DRAWING #	STM-2
CHECKED BY	MWD	DATE	FEB 2019	REVISION #	1

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CITY OF BARRIE STANDARD	1. Standardized Dimension Text	J.S. 05.10.28	APPR'D: R.G.N.	DATE: 04.03.16
CONSTRUCTION ENTRANCE MAT			DRAWN: A.S.C	SCALE: N.T.S
NO.	REVISION	APPR'D	DATE	BSD-23D



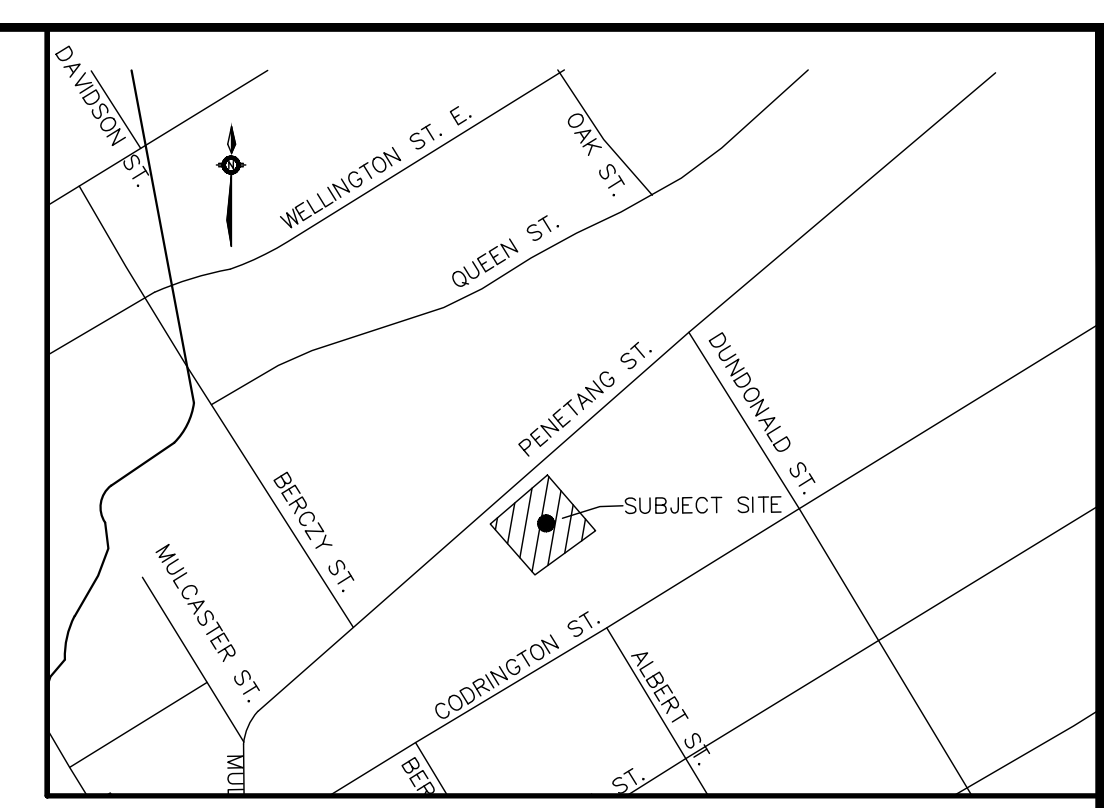
Barrie	SILTATION CONTROL FENCING	REV No. 2	DATE: OCT 2017	APPROVED
STANDARD DETAIL		SCALE: N.T.S.		DATE: Oct 10/17
		FORMERLY BSD-23A		Original Signed By

SEQUENCE OF CONSTRUCTION

1. ENGINEER TO BE NOTIFIED PRIOR TO INITIATION OF ANY ON SITE WORKS.
2. SILT FENCE AND MUD MAT CONSTRUCTION ENTRANCE IS TO BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY WORKS ON SITE.
3. VEGETATION REMOVAL MAY COMMENCE AFTER ALL SILT FENCE IS INSTALLED AND APPROVED BY THE ENGINEER.
4. EROSION CONTROL MEASURES TO BE MAINTAINED AS DIRECTED BY THE ENGINEER DURING THE CONSTRUCTION PERIOD. ADDITIONAL CONTROL MEASURES MAY BE REQUIRED AT THE DISCRETION OF THE ENGINEER.
5. ALL DISTURBED GROUND LEFT INACTIVE FOR MORE THAN 30 DAYS SHALL BE STABILIZED WITH SEED, SOD, MULCH OR OTHER ADEQUATE COVERING, AS INSTRUCTED BY THE ENGINEER.

NOTES FOR SEDIMENT & EROSION CONTROL

1. DISTURBED AREAS THAT HAVE FAILED TO HAVE STABLE GROUND COVER ESTABLISHED BY OCTOBER 30TH SHALL BE PROTECTED WITH A SILTATION CONTROL FENCE OR STRAW MULCH ETC. AND MAINTAINED BY THE CONTRACTOR UNTIL VEGETATION BECOMES ESTABLISHED IN THE SUBSEQUENT GROWING SEASON.
2. ANY DEWATERING WASTE SHALL BE DISCHARGED TO A VEGETATED AREA AT LEAST 30m FROM ANY WATERCOURSE AND FILTERED. FILTERING METHODS MUST BE APPROVED BY THE SITE ADMINISTRATOR. DISCHARGE TO MUNICIPAL SERVICES MUST BE APPROVED BY THE CITY OF BARRIE PRIOR TO STARTING WORK AND ADHERE TO CITY OF BARRIE STANDARDS.
3. SILT FENCE SHALL BE PUT IN PLACE PRIOR TO AND MAINTAINED DURING ALL GRADING. SILT FENCE TO BE INSPECTED PRIOR TO COMMENCEMENT OF EARTH GRADING ACTIVITIES. SILT FENCE TO BE INSPECTED AND REPAIRED OR REPLACED IF DAMAGED AS DIRECTED BY THE SITE ADMINISTRATOR. SILT CONTROLS TO BE INSPECTED ON A REGULAR BASIS AND AFTER EVERY RAIN EVENT. INSTALLATION SHALL BE TO THE MANUFACTURER'S SUGGESTED SPECIFICATIONS. THE CONTRACTOR SHALL BE PREPARED FOR UNEXPECTED CONDITIONS AND ACCORDINGLY HAVE STOCKPILED MATERIALS ON SITE FOR NECESSARY REPAIRS AS A RESULT OF FAILED OR INADEQUATE CONTROL MEASURES. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE A WEEK, AND AFTER EVERY RAINFALL EVENT.
5. CONTRACTOR SHALL OBTAIN A CURRENT COPY AND BECOME FAMILIAR WITH OPSS 577, CONSTRUCTION SPECIFICATION FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AS WELL AS ALL APPLICABLE MUNICIPAL STANDARDS.
6. THE CONTRACTOR MAY CONSIDER ALTERNATIVE SEDIMENT AND EROSION CONTROL MEASURES. SUCH MEASURES SHOULD BE PRESENTED IN WRITING FOR APPROVAL OF THE SITE ADMINISTRATOR AND MUST BE APPROVED IN WRITING BY THE MUNICIPALITY AND CONSERVATION AUTHORITY.
7. THE TOPS OF ALL FILTER FABRIC MUST BE A MINIMUM OF 1.0 METRES ABOVE THE GROUND LEVEL AND ATTACHED TO THE FENCE WITH A CONTINUOUS STEEL WIRE. ALTERNATIVELY, THE FILTER FABRIC MUST BE FOLDED OVER THE TOP OF THE FENCE AND ATTACHED TO THE FENCE WITH WIRE LOOPED THROUGH THE FABRIC ON BOTH SIDES OF THE FENCE. FILTER FABRIC IS TO BE TERRAFIX 270R OR EQUIVALENT.
8. ALL DISTURBED GROUND LEFT INACTIVE SHALL BE STABILIZED BY SEEDING, SODDING, MULCHING, OR COVERING OR OTHER EQUIVALENT CONTROL MEASURES. THIS PERIOD OF INACTIVITY SHALL BE AT THE DISCRETION OF THE CITY OF BARRIE MANAGER OF ENGINEERING BUT SHALL NOT EXCEED THIRTY DAYS.
9. CONTRACTOR SHALL INSTALL AND MAINTAIN CATCHBASIN SEDIMENT BARRIERS THROUGHOUT THE SITE DURING ALL CONSTRUCTION ACTIVITIES IN ORDER TO TRAP SEDIMENT. REFER TO DETAIL



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1.	AS PER CITY OF BARRIE COMMENTS	12/03/19	JPE	
NO.	REVISION NOTE	DATE	BY	

PIVAG INC.
45 - 51 PENETANG STREET
BARRIE, ONTARIO

ENVIRONMENTAL PROTECTION PLAN

M.W. DEJEAN
3 DEC 2019
PROVINCE OF ONTARIO

DESIGNED BY	MWD	HORIZ SCALE	1:200	PROJECT #	17048
DRAWN BY	MJWP	VERT SCALE		DRAWING #	EP-1
CHECKED BY	MWD	DATE	FEB 2019	REVISION #	1

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