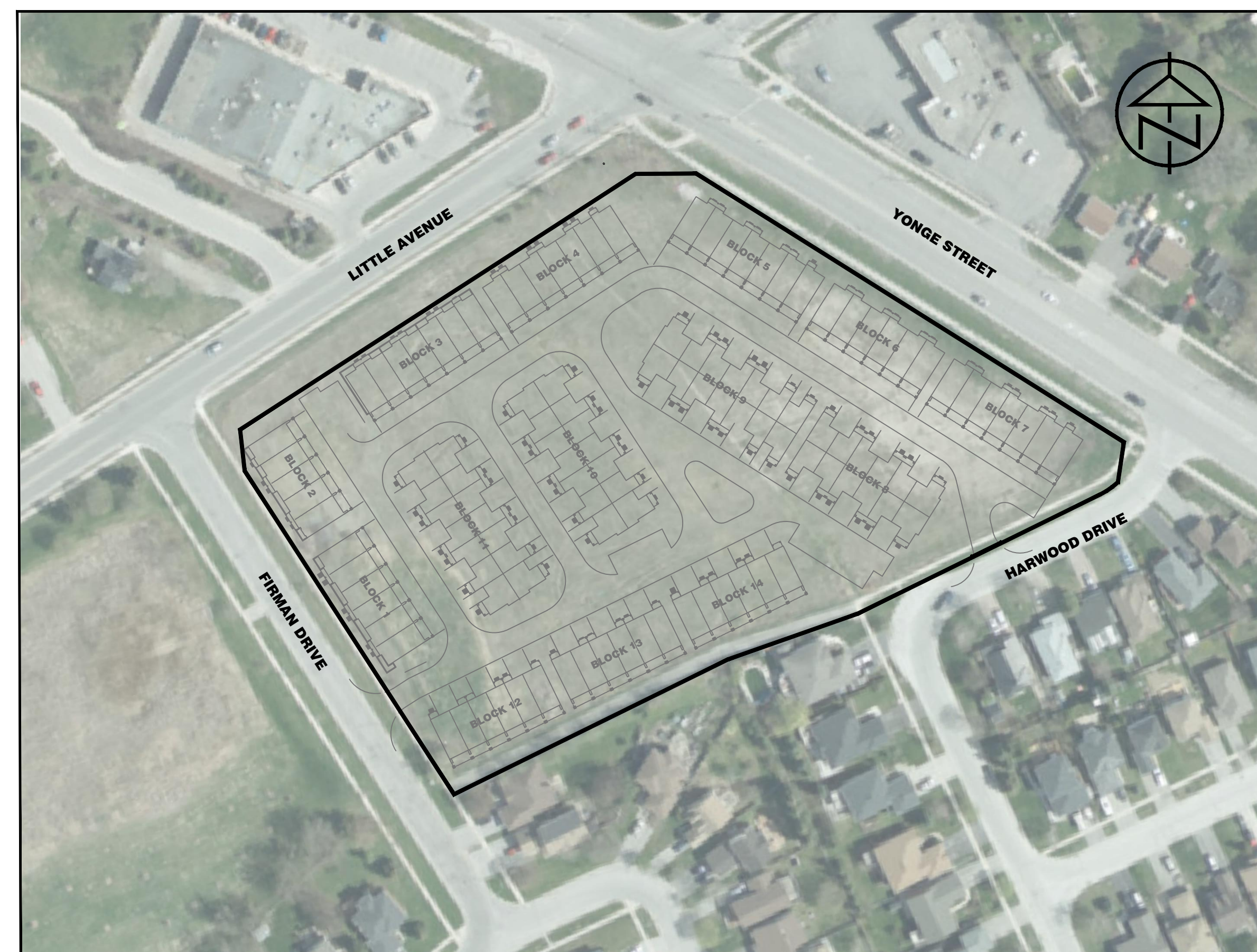


**YONGE STREET & LITTLE AVENUE
RESIDENTIAL DEVELOPMENT
CITY OF BARRIE
MASON HOMES LIMITED**



**KEY PLAN
NTS**



**ISSUED FOR SITE PLAN APPLICATION
JULY 2022
TATHAM FILE NO. 421374**

YONGE STREET & LITTLE AVENUE
RESIDENTIAL DEVELOPMENT
CITY OF BARRIE
MASON HOMES LIMITED

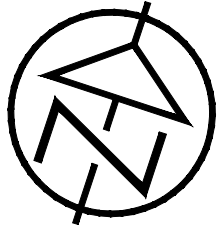
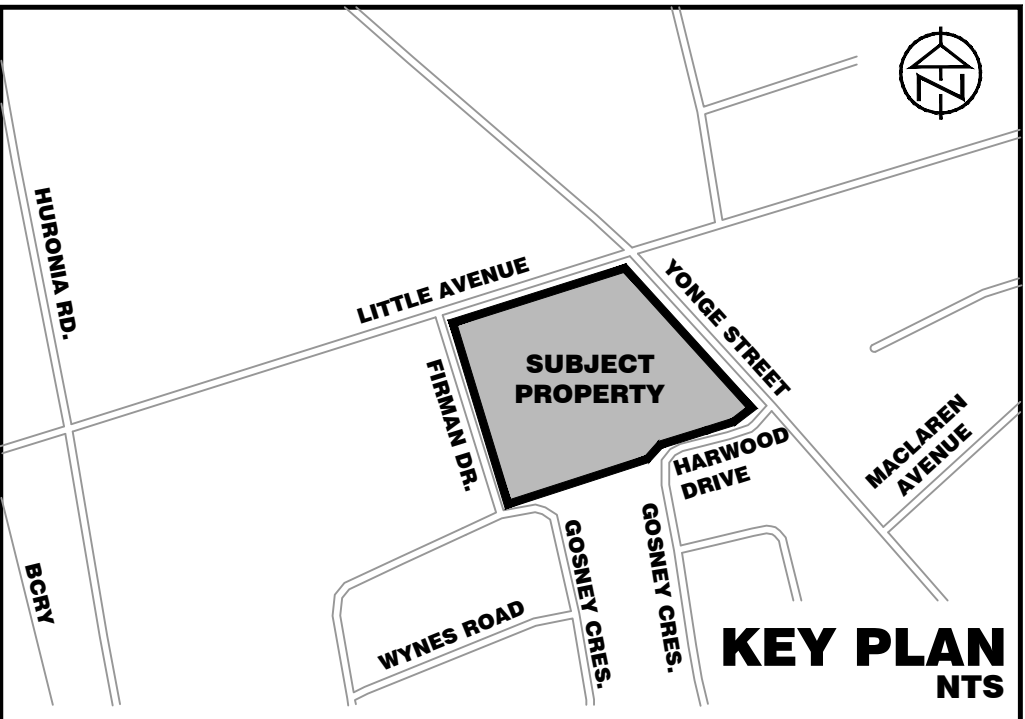
INDEX

DRAWING	DESCRIPTION
421374-TP-1	TITLE SHEET & KEY PLAN
421374-IN-1	INDEX SHEET & LEGEND
421374-ESC-1	EROSION & SEDIMENT CONTROL PLAN
421374-ESC-2	EROSION & SEDIMENT CONTROL DETAILS & NOTES
421374-STM-1	STORM SEWER CATCHMENT PLAN
421374-STM-2	STORM SEWER DESIGN SHEET
421374-SAN-1	SANITARY SEWER CATCHMENT PLAN
421374-SAN-2	SANITARY SEWER DESIGN SHEET
421374-SS-1	SITE SERVICING PLAN
421374-SG-1	SITE GRADING PLAN – SHEET 1 OF 2
421374-SG-2	SITE GRADING PLAN – SHEET 2 OF 2
421374-SWM-1	STORMWATER MANAGEMENT FACILITY DETAILS
421374-TANK-1	BRENTWOOD STORMTANK MODULE #1
421374-TANK-2	BRENTWOOD STORMTANK MODULE #2
421374-PM-1	PAVEMENT MARKINGS & SIGNAGE PLAN
421374-FB-1	FIRE BREAK PLAN
421374-DE-1	DETAILS & NOTES
421374-BSD-1	BARRIE STANDARD DETAILS

LEGEND

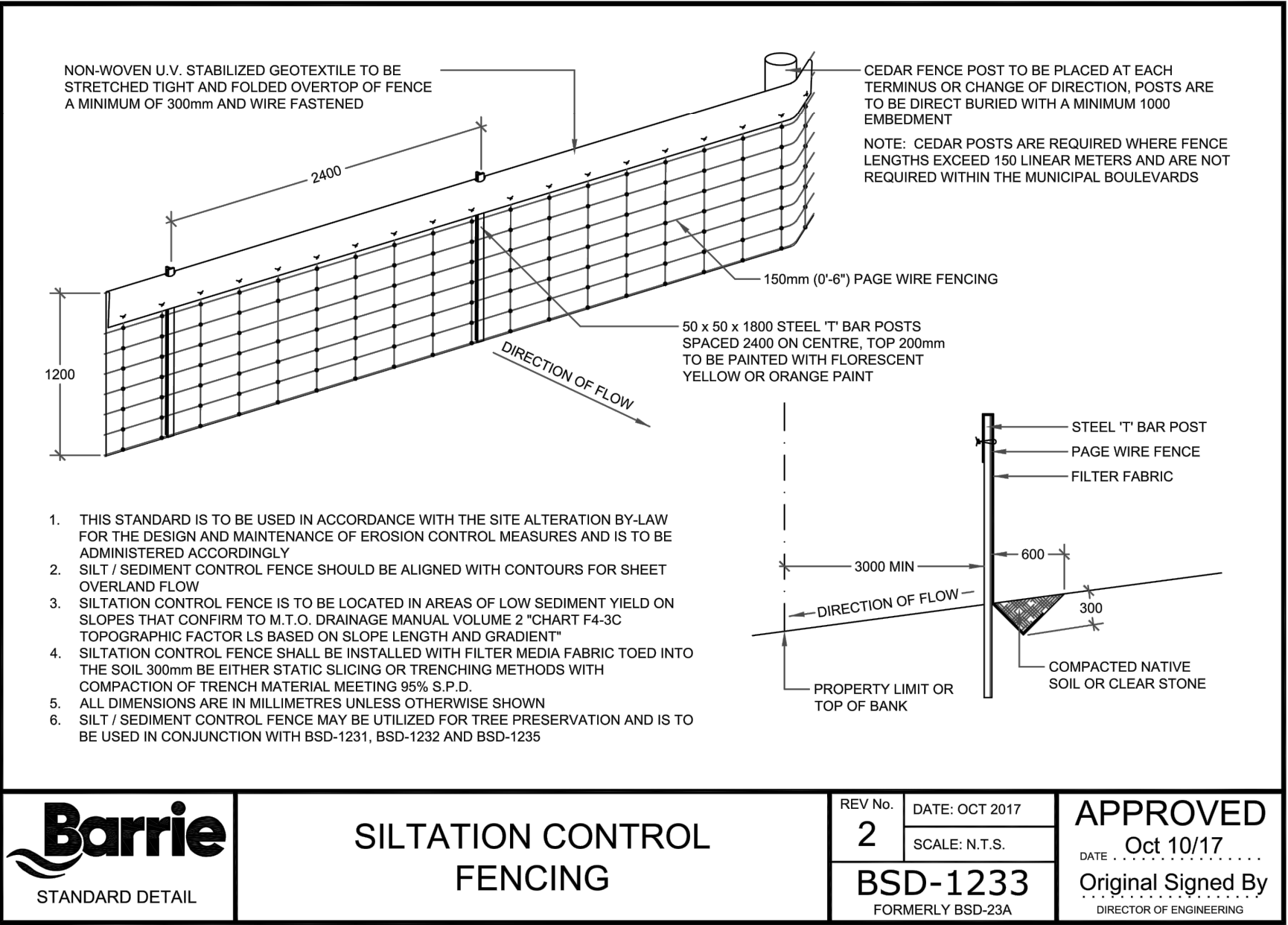
PROPERTY LINE	----
EXISTING CENTERLINE	----
PROPOSED CENTRELINE	----
EXISTING EDGE OF ASPHALT	----
PROPOSED EDGE OF ASPHALT	----
EXISTING EDGE OF SHOULDER	----
PROPOSED EDGE OF SHOULDER	----
EXISTING DITCH/DIRECTION OF FLOW	----->
PROPOSED DITCH/DIRECTION OF FLOW	----->
EXISTING SANITARY SEWER/SIZE/DIRECTION OF FLOW	-----> 200# SAN
PROPOSED SANITARY SEWER/SIZE/DIRECTION OF FLOW	-----> 200# SAN
EXISTING SANITARY SERVICE	-----CO
PROPOSED SANITARY SERVICE	-----CO
EXISTING WATERMAIN/SIZE	-----150# W/M
PROPOSED WATERMAIN/SIZE	-----150# W/M
EXISTING WATER SERVICE	-----
PROPOSED WATER SERVICE	-----
EXISTING STORM SEWER/SIZE/DIRECTION OF FLOW	-----> 375# STM
PROPOSED STORM SEWER/SIZE/DIRECTION OF FLOW	-----> 375# STM
EXISTING CULVERT	-----
PROPOSED CULVERT	-----
PROPOSED SWALE LOCATION	----->
PROPOSED JOINT HYDRO, BELL AND ROGERS	-----
EXISTING GAS MAIN	-----
PROPOSED GAS MAIN	-----
EXISTING FENCELINE	---X---
PROPOSED FENCELINE	---X---
EXISTING BUSHLINE	~~~~~
EXISTING CONTOUR	~~~~~ 179.00
EXISTING SPOT ELEVATION	X 179.00
PROPOSED SPOT ELEVATION	X 179.00
EXISTING GRADING DIRECTION	----->
PROPOSED GRADING DIRECTION	----->
EXISTING TEMPORARY BENCHMARK	TBM
EXISTING STANDARD IRON BAR	SIB
EXISTING BOREHOLE/NUMBER	BH9
EXISTING GAS VALVE	GAS
EXISTING HYDRO TRANSFORMER	HT
PROPOSED HYDRO TRANSFORMER	HT
EXISTING CABLE PEDESTAL	CP
EXISTING BELL PEDESTAL	BP
EXISTING BELL MAINTENANCE HOLE	BELL MH
EXISTING BELL POLE	BP
EXISTING HYDRO POLE	HP
EXISTING HYDRO GUY WIRE	HW
PROPOSED LIGHT STANDARD	LS
EXISTING TRAFFIC SIGN	TS
PROPOSED TRAFFIC SIGN	TS
PROPOSED STOP SIGN	STOP SIGN
PROPOSED STREET NAME SIGN	STREET NAME SIGN
PROPOSED SIGN (MISCELLANEOUS)	SIGN
EXISTING DECIDUOUS TREE	DT
EXISTING CONIFEROUS TREE	CT
EXISTING SANITARY MAINTENANCE HOLE/NUMBER	SAN MH17
PROPOSED SANITARY MAINTENANCE HOLE/NUMBER	SAN MH17
PROPOSED SANITARY CLEAN OUT	CO
EXISTING HYDRANT AND VALVE	HYD & WV
PROPOSED HYDRANT AND VALVE	HYD & WV
EXISTING WATER VALVE	WV
PROPOSED WATER VALVE	WV
PROPOSED CURB STOP VALVE	CSV
EXISTING BLOW-OFF	BLOWOFF
PROPOSED BLOW-OFF	BLOWOFF
EXISTING WATERMAIN PLUG AND THRUST BLOCK	WP
PROPOSED WATERMAIN PLUG AND THRUST BLOCK	WP
EXISTING STORM MAINTENANCE HOLE	STM MH20
PROPOSED STORM MAINTENANCE HOLE/NUMBER	STM MH9
EXISTING CATCH BASIN	CBM18
PROPOSED CATCH BASIN	CB
PROPOSED CATCH BASIN MAINTENANCE HOLE/NUMBER	CBMH12
PROPOSED DOUBLE CATCH BASIN MAINTENANCE HOLE/NUMBER	DCBMH4
EXISTING DOUBLE CATCH BASIN	DCB
PROPOSED DOUBLE CATCH BASIN	DCB
PROPOSED DITCH INLET	DI
AUTOMATIC FLUSHING DEVICE	AFD





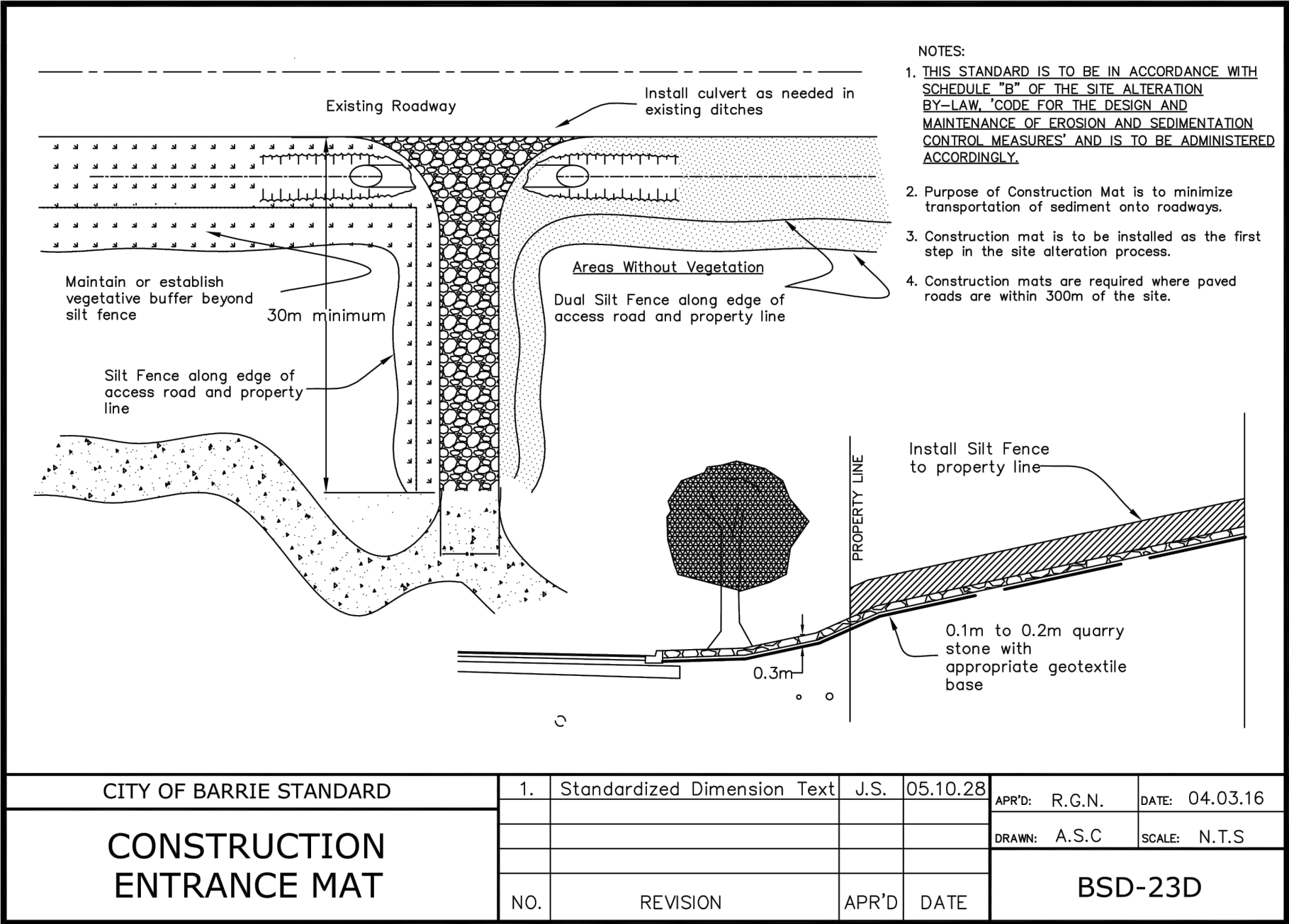
REFER TO DWG. ESC-2
FOR NOTES & DETAILS

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			1.	ISSUED FOR SITE PLAN APPLICATION	JULY 22/22					
EROSION & SEDIMENT CONTROL PLAN								DESIGN: LMB	FILE: 421374	DWG: ESC-1
								DRAWN: LMB	DATE: NOV 2021	
								CHECK: LC	SCALE: 1:400	



EROSION & SEDIMENT CONTROL

- A. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION AND SHALL REMAIN IN PLACE UNTIL ALL DISTURBED AREAS HAVE BEEN STABILIZED. EROSION AND SEDIMENT CONTROL MEASURES THAT ARE DESIGNED TO CONTROL RUNOFF FROM SPECIFIC AREAS MUST BE INSTALLED PRIOR TO ANY DISTURBANCE OF THAT PART OF THE SITE. THE LOCATION OF ALL EROSION AND SEDIMENT CONTROL WORKS TO BE REVIEWED ON SITE AND MAY BE REVISED AS DIRECTED BY THE ENGINEER.
- B. THE CONTRACTOR MAY CONSIDER ALTERNATIVE EROSION AND SEDIMENT CONTROL MEASURES. SUCH MEASURES MUST BE PRESENTED IN WRITING TO THE ENGINEER FOR APPROVAL BY THE CITY OF BARRIE.
- C. THE CONTRACTOR SHALL HAVE MATERIALS AVAILABLE ON-SITE TO REPAIR SEDIMENT AND EROSION CONTROL MEASURES IN THE EVENT OF UNFORESEEN CONDITIONS: HIGH WATER, EXTREME RAINFALL EVENTS, ETC.
- D. ALL EROSION AND SEDIMENT CONTROL MEASURES MUST BE INSPECTED, CLEANED AND MAINTAINED BY THE CONTRACTOR AFTER EACH STORM EVENT. ALL WORKS WILL BE INSPECTED BY THE ENGINEER BI-WEEKLY AND AFTER EACH MAJOR STORM EVENT.
- E. CONSTRUCTION OF ALL EROSION AND SEDIMENT CONTROL WORKS ARE TO BE IN ACCORDANCE WITH THE FOLLOWING STEPS:
1. INSTALL STONE MUD MAT AS PER BSD-23E.
 2. INSTALL SILT FENCE AS PER BSD-1233.
 3. INSTALL TEMPORARY CATCH BASIN SEDIMENT TRAPS BY LAYFIELD (OR APPROVED EQUIVALENT) AS SHOWN ON DWG. ESC-1 AND AS DIRECTED BY THE ENGINEER. INSTALL TEMPORARY CATCH BASIN SEDIMENT TRAPS ON ALL NEW CATCH BASINS. SEDIMENT TRAPS TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. ALL CATCH BASINS TO REMAIN SCREENED UNTIL BASE COURSE ASPHALT IS PLACED AND LOT GRADING IS COMPLETE.
- F. ALL CONSTRUCTION VEHICLES TO ACCESS SITE USING THE DESIGNATED CONSTRUCTION ENTRANCES.
- G. EROSION AND SEDIMENT CONTROL MEASURES TO BE REMOVED BY THE CONTRACTOR ONCE GROUND COVER IS ESTABLISHED AND LANDSCAPING IS COMPLETE AND AS APPROVED BY THE ENGINEER.
- H. ALL STOCKPILE LOCATIONS ARE TO BE APPROVED BY THE ENGINEER.
- I. PROVIDE SNOW FENCE OR APPROVED EQUAL ACROSS ALL CONSTRUCTION ENTRANCES DURING PERIODS OF INACTIVITY.
- J. CONSTRUCTION AREAS THAT EXCEED 30 DAYS OF INACTIVITY SHALL BE STABILIZED BY SEEDING. THIS SHALL INCLUDE STOCKPILES OF FILL AND TOPSOIL.



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ELEVATION

TBM#1 ELEV. 238.838 m
STATION 03120030027; SET FLUSH IN THE EAST EDGE OF THE BRIDGE ABUTMENT ON THE NORTH SIDE OF LITTLE AVENUE NEAR THE ENTRANCE TO #322 LITTLE AVENUE, IN THE CENTER OF THE WALL 0.80m BELOW THE TOP OF THE WALL.

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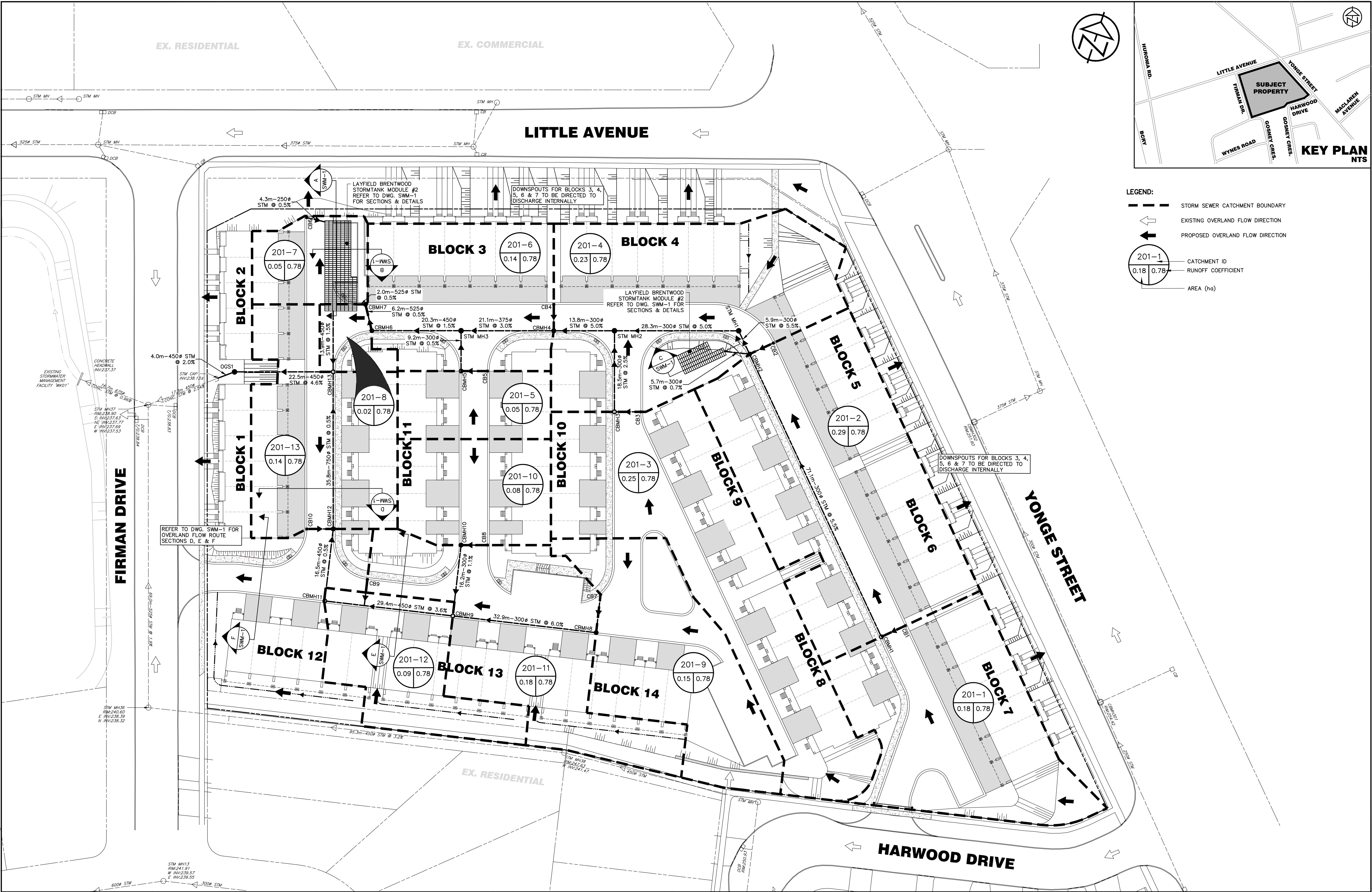


**YONGE STREET & LITTLE AVENUE
RESIDENTIAL DEVELOPMENT
CITY OF BARRIE
MASON HOMES LIMITED**

**EROSION & SEDIMENT CONTROL
NOTES & DETAILS**

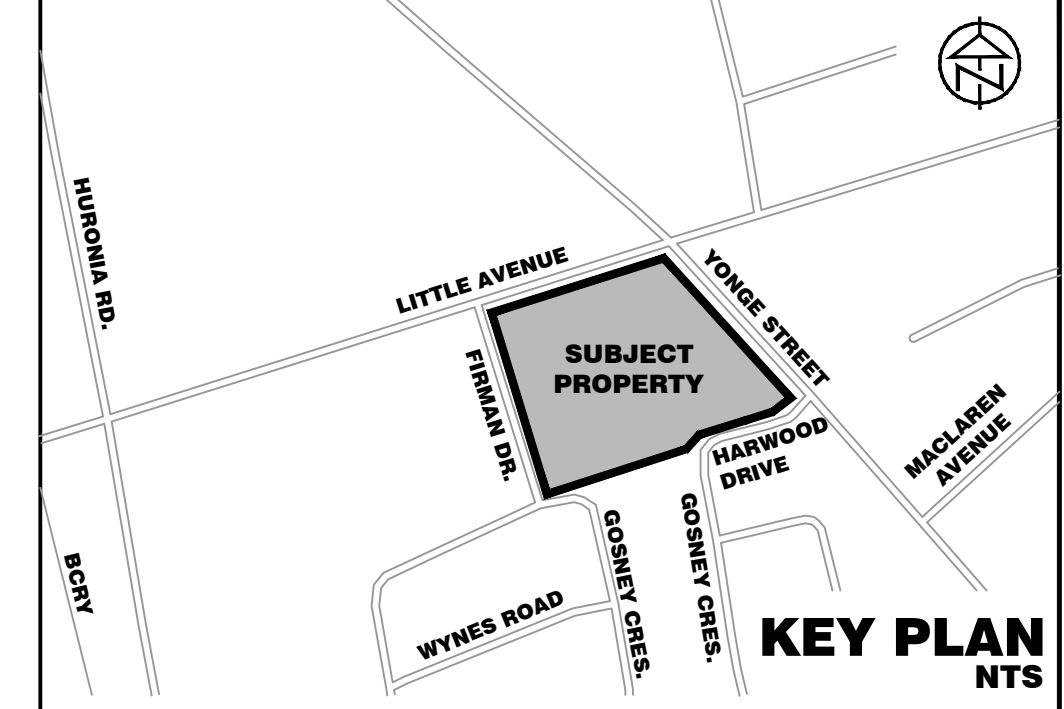


DESIGN: LMB	FILE: 421374	DWG: ESC-2
DRAWN: LMB	DATE: NOV 2021	
CHECK: LC	SCALE: 1:400	



LEGEND:

- STORM SEWER CATCHMENT BOUNDARY
- EXISTING OVERLAND FLOW DIRECTION
- PROPOSED OVERLAND FLOW DIRECTION
- 201-1
0.18 0.78
CATCHMENT ID
RUNOFF COEFFICIENT
AREA (ha)



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CHECK: LC	SCALE: 1:400																											



Storm Sewer Design Sheet

Version Number: 1 Version Date: July 19-22

Project Information	
Yonge Street & Little Avenue Residential Development	421374
Drawing Reference	
Storm Sewer Catchment Plan (Dwg. STM-1)	July 19-22
Prepared By	
Lauren Buss	July 19-22
Reviewed By	
Lisa Cowan	July 19-22

Municipality		
City of Barrie (2022)		
Runoff Coefficient Adjustment		
Year	A	B
10	1.00	0.00
25	1.10	0.00
50	1.20	0.00
100	1.25	0.00

Manning's Coefficient	
Pipe	Value
CSP	0.024
Concrete	0.013
PVC	0.013
Time of Concentration	
10 mins	

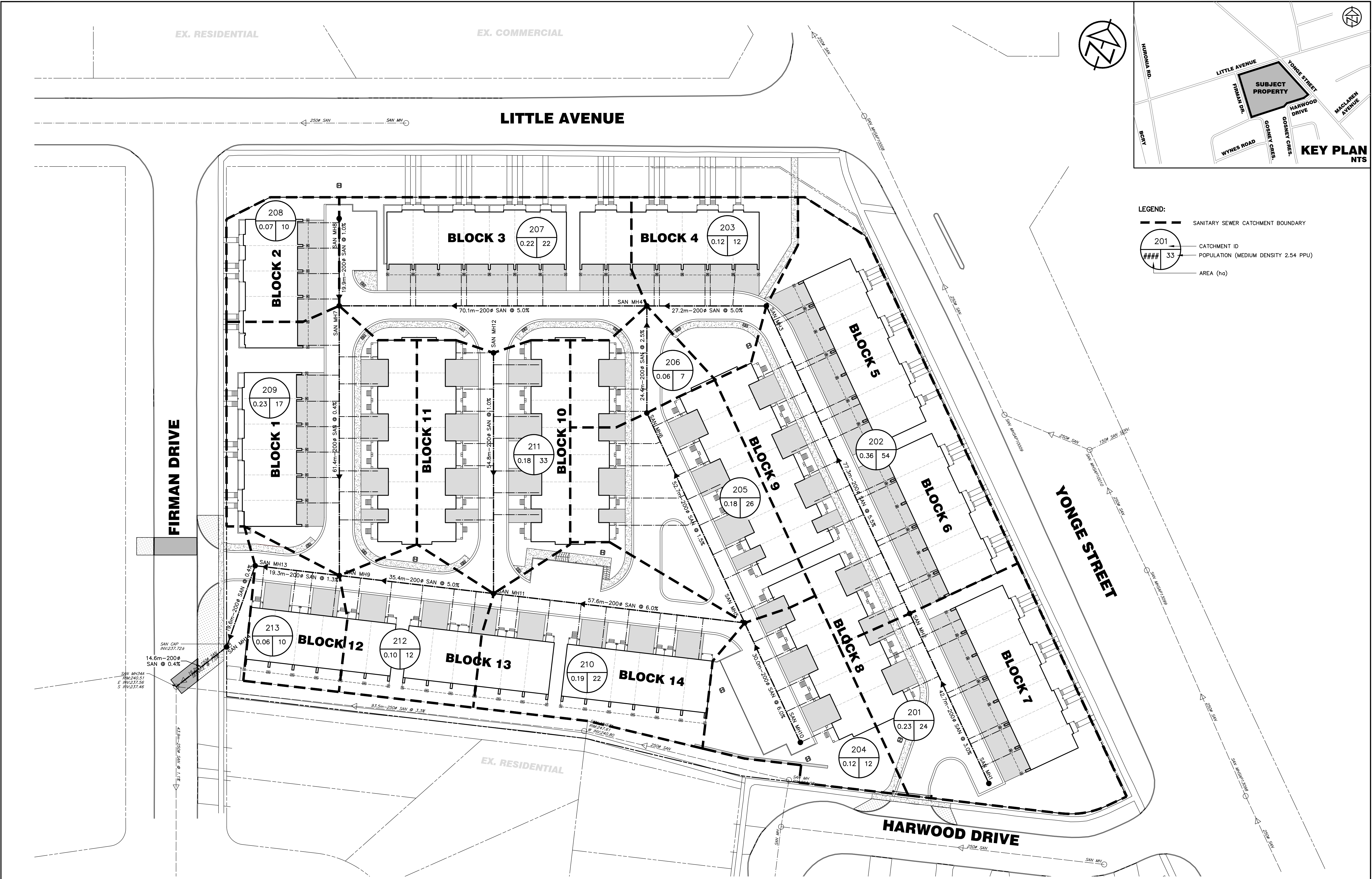
IDF Curve Coefficients			
Year	A	B	C
2	675.59	4.68	0.78
5	843.02	4.58	0.76
10	976.90	4.75	0.76
25	1133.12	4.73	0.76
50	1251.47	4.85	0.75
100	1383.63	4.91	0.75

Engineer Stamp	

Street Name	Area ID / Label	Upstream Maintenance Hole	Downstream Maintenance Hole	Area (ha)	5 Year Runoff Coefficient	Design Storm (Year)	Adjusted Runoff Coefficient	Area x Runoff Coefficient	Cumulative Area (ha)	Cumulative Area x Adjusted Runoff Coefficient	Time of Concentration (min)	Rainfall Intensity (mm/hr)	Peak Flow (m³/s)	Manning's Roughness Coefficient	Sewer Length (m)	Sewer Slope (%)	Actual Sewer Diameter (mm)	Full Flow Velocity (m/s)	Full Flow Capacity (L/s)	Actual Velocity (m/s)	Travel Time (min)	Calculated Sewer Diameter (mm)	Percentage of Full Flow Capacity (%)	Total Time of Travel (min)
	201-1	CBMH1	CBMH2	0.18	0.78	5	0.78	0.14	0.18	0.14	10.00	109.11	0.043	0.013	71.1	5.5%	300	3.21	0.227	2.32	0.51	160	18.8%	10.51
	201-2	CBMH2	STM MH1	0.29	0.78	5	0.78	0.23	0.47	0.37	10.51	106.28	0.108	0.013	5.9	5.5%	300	3.21	0.227	2.99	0.03	227	47.7%	10.54
	-	STM MH1	STM MH2	-	0.78	5	0.78	-	0.47	0.37	10.54	106.10	0.108	0.013	28.3	5.0%	300	3.06	0.216	2.88	0.16	231	50.0%	10.71
	201-3	CBMH3	STM MH2	0.25	0.78	5	0.78	0.20	0.25	0.20	10.00	109.11	0.059	0.013	18.5	2.5%	300	2.16	0.153	1.90	0.16	210	38.7%	10.16
	-	STM MH2	CBMH4	-	0.78	5	0.78	-	0.72	0.56	10.71	105.24	0.164	0.013	13.8	5.0%	300	3.06	0.216	3.06	0.08	270	75.9%	10.78
	201-4	CBMH4	STM MH3	0.23	0.78	5	0.78	0.18	0.95	0.74	10.78	104.84	0.216	0.013	21.1	3.0%	375	2.75	0.304	2.75	0.13	330	71.1%	10.91
	201-5	CBMH5	STM MH3	0.05	0.78	5	0.78	0.04	0.05	0.04	10.00	109.11	0.012	0.013	9.2	0.5%	300	0.97	0.068	0.68	0.23	155	17.3%	10.23
	-	STM MH3	CBMH6	-	0.78	5	0.78	-	1.00	0.78	10.91	104.18	0.226	0.013	20.3	1.5%	450	2.20	0.349	2.20	0.15	382	64.6%	11.06
	201-6	CBMH6	CBMH7	0.14	0.78	5	0.78	0.11	1.14	0.89	11.06	103.40	0.255	0.013	6.2	0.5%	525	1.40	0.304	1.40	0.07	492	84.0%	11.14
	-	CBMH7	STORMTANK	-	0.78	5	0.78	-	1.14	0.89	11.14	103.03	0.254	0.013	2.0	0.5%	525	1.40	0.304	1.40	0.02	491	83.7%	11.16
	201-7	CB6	STORMTANK	0.05	0.78	5	0.78	0.04	0.05	0.04	10.00	109.11	0.012	0.013	4.3	0.5%	250	0.86	0.042	0.68	0.10	155	28.1%	10.10
	201-8	STORMTANK	CBMH13	0.02	0.78	5	0.78	0.02	1.21	0.94	11.16	102.91	0.270	0.013	13.9	1.5%	450	2.20	0.349	2.20	0.11	408	77.3%	11.27
	201-9	CBMH8	CBMH9	0.15	0.78	5	0.78	0.12	0.15	0.12	10.00	109.11	0.035	0.013	32.9	6.0%	300	3.35	0.237	2.28	0.24	147	15.0%	10.24
	201-10	CBMH10	CBMH9	0.08	0.78	5	0.78	0.06	0.08	0.06	10.00	109.11	0.019	0.013	16.2	1.1%	300	1.43	0.101	1.03	0.26	160	18.6%	10.26
	201-11	CBMH9	CBMH11	0.18	0.78	5	0.78	0.14	0.41	0.32	10.24	107.75	0.096	0.013	29.4	3.6%	450	3.40	0.541	2.42	0.20	235	17.7%	10.44
	201-12	CBMH11	CBMH12	0.09	0.78	5	0.78	0.07	0.50	0.39	10.44	106.65	0.116	0.013	16.5	0.5%	450	1.27	0.202	1.23	0.22	365	57.3%	10.67
	201-13	CBMH12	CBMH13	0.14	0.78	5	0.78	0.11	0.64	0.50	10.67	105.45	0.146	0.013	35.8	0.5%	750	1.78	0.787	1.28	0.47	399	18.6%	11.13
	-	CBMH13	OGS1	-	0.78	5	0.78	-	1.85	1.44	11.27	102.39	0.211	0.013	22.5	4.6%	450	3.84	0.611	3.28	0.11	302	34.5%	11.38
	-	OGS1	STM MH37	-	0.78	5	0.78	-	1.85	1.44	11.38	101.83	0.211	0.013	4.0	2.0%	450	2.54	0.403	2.41	0.03	353	52.3%	11.41

Note: Highlighted Cell is attenuated Peak Flow from CBMH8 as per Modified Rational Method Sheet
Note: 450 mm dia. outlet pipe from SWM Facility #1 for quantity control purposes not conveyance therefore downsizing appropriate

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ELEVATION

TBM #1 ELEV. 238.838 m
STATION 03120030027: SET FLUSH IN THE EAST EDGE OF THE BRIDGE ABUTMENT ON THE NORTH SIDE OF LITTLE AVENUE NEAR THE ENTRANCE TO #322 LITTLE AVENUE, IN THE CENTER OF THE WALL 0.80m BELOW THE TOP OF THE WALL.

No.	REVISION DESCRIPTION	DATE	ENGINEER STAMP
1.	ISSUED FOR SITE PLAN APPLICATION	JULY 22/22	



YONGE STREET & LITTLE AVENUE
RESIDENTIAL DEVELOPMENT
CITY OF BARRIE
MASON HOMES LIMITED

SANITARY SEWER CATCHMENT PLAN



DESIGN: LMB	FILE: 421374	DWG:
DRAWN: LMB	DATE: NOV 2021	SAN-1
CHECK: LC	SCALE: 1:400	



Sanitary Sewer Design Sheet

Version Number: 1 Version Date: July 19, 2022

Project Information	
Yonge Street & Little Avenue Residential Development	421374
Drawing Reference	
Sanitary Sewer Catchment Plan (Dwg. SAN-1)	July 19-22
Prepared By	
Leanna Badke	July 19-22
Reviewed By	
Lisa Cowan	July 19-22

Municipality			
City of Barrie			
Population Density			
Capita per Unit	Low	Medium	High
	3.13	2.34	1.67
Infiltration			
Infiltration (L/s/ha)		0.1	

Flow		
Development Type	Average (L/cap/day)	Peaking Factor
Residential	225	Harmon
Development Type	Average (L/ha/day)	Peaking Factor
Institution	28,000	2
Commercial	28,000	2
Industrial High Intensity	55,000	-
Industrial Low Intensity	50,000	-

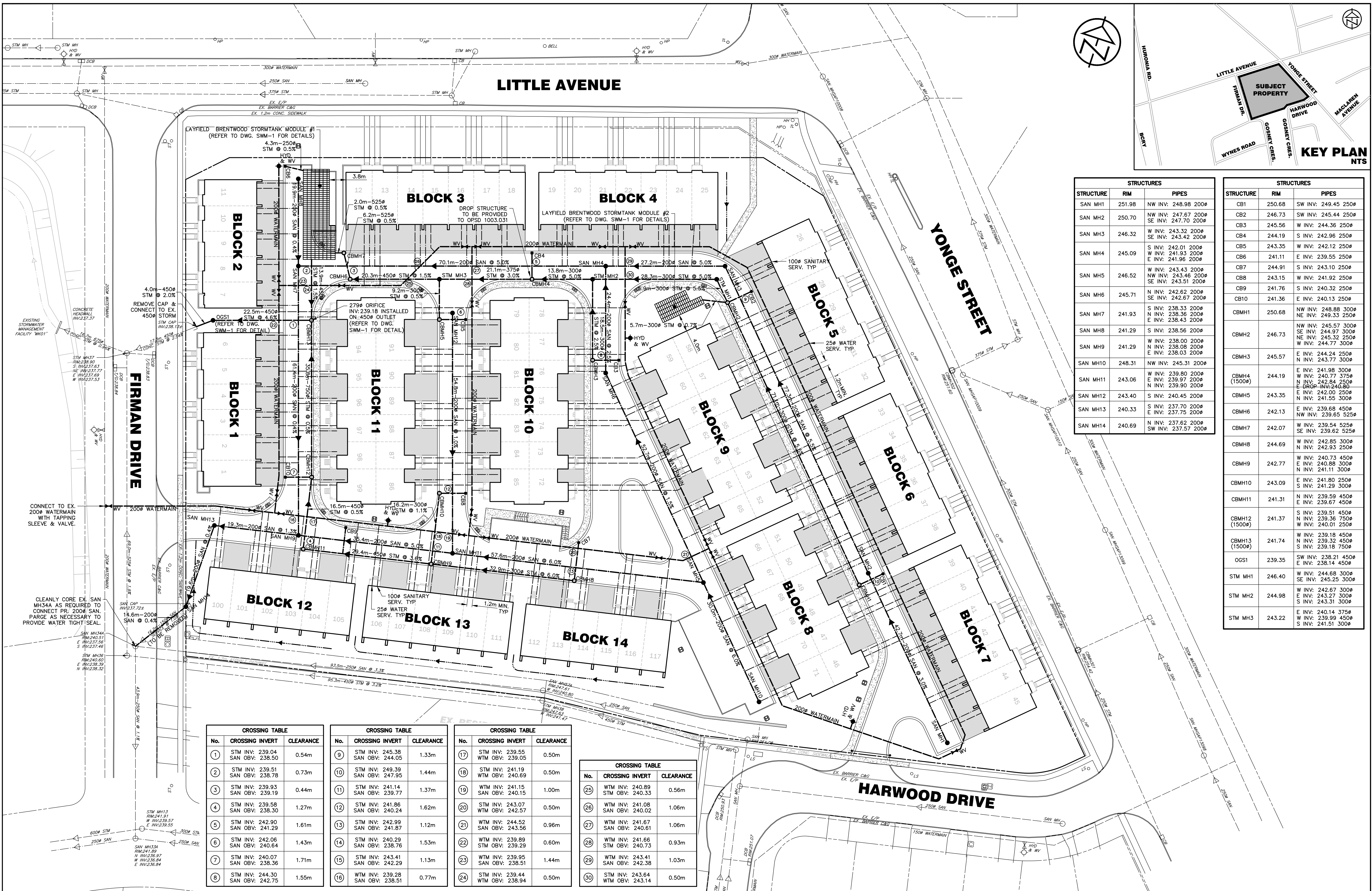
Manning's Coefficient	
Pipe Material	Value
Concrete	0.013
PVC	0.013
Applied	0.013

Engineer Stamp

Street Name	Area Label/ID	Upstream Maintenance Hole	Downstream Maintenance Hole	Development Type	Population Density	Number of Units	Population (cap)	Accumulated Population (cap)	Peaking Factor	Area (ha)	Cumulative Area (ha)	Average Flow (L/s)			Peak Flow (L/s)			Proposed Sanitary Sewer							
												Development	Infiltration	Total	Development	Infiltration	Total	Sewer Length (m)	Sewer Slope (%)	Actual Sewer Diameter (mm)	Full Flow Velocity (m/s)	Full Flow Capacity (L/s)	Actual Velocity (m/s)	Calculated Sewer Diameter (mm)	Percentage of Full Flow Capacity (%)
	201	SAN MH1	SAN MH2	Residential	Med.	10	23.4	23.4	4.37	0.23	0.23	0.06	0.02	0.08	0.27	0.02	0.29	42.7	3.0%	200	1.81	56.81	0.50	28	0.5%
	202	SAN MH2	SAN MH3	Residential	Med.	23	53.8	77.2	4.27	0.36	0.59	0.20	0.06	0.26	0.87	0.06	0.92	77.3	5.5%	200	2.45	76.92	0.85	38	1.2%
	203	SAN MH3	SAN MH4	Residential	Med.	5	11.7	88.9	4.26	0.12	0.71	0.23	0.07	0.30	0.99	0.07	1.07	27.7	5.0%	200	2.33	73.34	0.86	41	1.5%
	204	SAN MH10	SAN MH5	Residential	Med.	5	11.7	11.7	4.41	0.12	0.12	0.03	0.01	0.04	0.13	0.01	0.15	30.0	6.0%	200	2.56	80.34	0.54	19	0.2%
	205	SAN MH5	SAN MH6	Residential	Med.	11	25.7	37.4	4.34	0.18	0.30	0.10	0.03	0.13	0.43	0.03	0.46	52.7	1.5%	200	1.28	40.17	0.44	37	1.1%
	206	SAN MH6	SAN MH4	Residential	Med.	3	7.0	44.5	4.32	0.06	0.36	0.12	0.04	0.15	0.50	0.04	0.54	24.4	2.5%	200	1.65	51.86	0.55	36	1.0%
	207	SAN MH4	SAN MH7	Residential	Med.	9	21.1	154.4	4.19	0.22	1.29	0.40	0.13	0.53	1.73	0.13	1.86	70.1	5.0%	200	2.33	73.34	1.00	50	2.5%
	208	SAN MH8	SAN MH7	Residential	Med.	4	9.4	9.4	4.42	0.07	0.07	0.02	0.01	0.03	0.11	0.01	0.11	19.9	1.0%	200	1.04	32.80	0.26	24	0.3%
	209	SAN MH7	SAN MH9	Residential	Med.	7	16.4	180.2	4.16	0.23	1.59	0.47	0.16	0.63	2.01	0.16	2.17	61.4	0.4%	200	0.66	20.74	0.41	86	10.5%
	210	SAN MH5	SAN MH11	Residential	Med.	9	21.1	32.8	4.35	0.19	0.31	0.09	0.03	0.12	0.37	0.03	0.40	57.6	6.0%	200	2.56	80.34	0.70	27	0.5%
	211	SAN MH12	SAN MH11	Residential	Med.	14	32.8	32.8	4.35	0.18	0.18	0.09	0.02	0.10	0.37	0.02	0.39	54.8	1.0%	200	1.04	32.80	0.36	38	1.2%
	212	SAN MH11	SAN MH9	Residential	Med.	5	11.7	77.2	4.27	0.10	0.59	0.20	0.06	0.26	0.87	0.06	0.93	35.4	5.0%	200	2.33	73.34	0.83	39	1.3%
	213	SAN MH9	SAN MH13	Residential	Med.	4	9.4	266.8	4.10	0.06	2.24	0.69	0.22	0.92	2.99	0.22	3.21	19.3	1.3%	200	1.19	37.40	0.71	80	8.6%
		SAN MH13	SAN MH14	Residential	Med.	0	0.0	266.8	4.10	0.00	2.24	0.69	0.22	0.92	2.99	0.22	3.21	19.6	0.4%	200	0.66	20.74	0.46	99	15.5%

T:\2021 PROJECTS\421374 - Yonge & Little Residential Development - Barrie\Design\Sanitary\421374 - Sewer Design Sheet - Sanitary

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			1.	ISSUED FOR SITE PLAN APPLICATION	JULY 22/22											
										SANITARY SEWER DESIGN SHEET				DESIGN: LMB	FILE: 421374	DWG:
														DRAWN: LMB	DATE: NOV 2021	SAN-2
						CHECK: LC	SCALE: 1:400									



STRUCTURES		
STRUCTURE	RIM	PIPES
SAN MH1	251.98	NW INV: 248.98 200#
SAN MH2	250.70	NW INV: 247.67 200# SE INV: 247.70 200#
SAN MH3	246.32	W INV: 243.32 200# SE INV: 243.42 200#
SAN MH4	245.09	S INV: 242.01 200# W INV: 241.93 200# E INV: 241.96 200#
SAN MH5	246.52	W INV: 243.43 200# NW INV: 243.46 200# SE INV: 243.51 200#
SAN MH6	245.71	N INV: 242.62 200# SE INV: 242.67 200#
SAN MH7	241.93	S INV: 238.33 200# N INV: 238.36 200# E INV: 238.43 200#
SAN MH8	241.29	S INV: 238.56 200#
SAN MH9	241.29	W INV: 238.00 200# N INV: 238.08 200# E INV: 238.03 200#
SAN MH10	248.31	NW INV: 245.31 200#
SAN MH11	243.06	W INV: 239.80 200# E INV: 239.97 200# N INV: 239.90 200#
SAN MH12	243.40	S INV: 240.45 200#
SAN MH13	240.33	S INV: 237.70 200# E INV: 237.75 200#
SAN MH14	240.69	N INV: 237.62 200# SW INV: 237.57 200#

STRUCTURES		
STRUCTURE	RIM	PIPES
CB1	250.68	SW INV: 249.45 250#
CB2	246.73	SW INV: 245.44 250#
CB3	245.56	W INV: 244.36 250#
CB4	244.19	S INV: 242.96 250#
CB5	243.35	W INV: 242.12 250#
CB6	241.11	E INV: 239.55 250#
CB7	244.91	S INV: 243.10 250#
CB8	243.15	W INV: 241.92 250#
CB9	241.76	S INV: 240.32 250#
CB10	241.36	E INV: 240.13 250#
CBMH1	250.68	NW INV: 248.88 300# NE INV: 249.33 250#
CBMH2	246.73	NW INV: 245.57 300# SE INV: 244.97 300# NE INV: 245.32 250# W INV: 241.77 300#
CBMH3	245.57	E INV: 244.24 250# N INV: 243.77 300#
CBMH4 (1500#)	244.19	E INV: 241.98 300# W INV: 240.77 375# N INV: 242.84 250# E DROP INV: 240.80
CBMH5	243.35	E INV: 242.00 250# N INV: 241.55 300#
CBMH6	242.13	E INV: 239.68 450# NW INV: 239.65 525#
CBMH7	242.07	W INV: 239.54 525# SE INV: 239.62 525#
CBMH8	244.69	W INV: 242.85 300# N INV: 242.93 250#
CBMH9	242.77	W INV: 240.73 450# E INV: 240.88 300# N INV: 241.11 300#
CBMH10	243.09	E INV: 241.80 250# S INV: 241.29 300#
CBMH11	241.31	N INV: 239.59 450# E INV: 239.67 450#
CBMH12 (1500#)	241.37	S INV: 239.51 450# N INV: 239.32 450# S INV: 239.18 750#
CBMH13 (1500#)	241.74	W INV: 239.18 450# N INV: 239.32 450# S INV: 239.18 750#
OGS1	239.35	SW INV: 238.21 450# E INV: 238.14 450#
STM MH1	246.40	W INV: 242.67 300# SE INV: 245.25 300#
STM MH2	244.98	W INV: 243.27 300# S INV: 243.31 300#
STM MH3	243.22	E INV: 240.14 375# W INV: 239.99 450# S INV: 241.51 300#

CROSSING TABLE		
No.	CROSSING INVERT	CLEARANCE
1	STM INV: 239.04 SAN OBV: 238.50	0.54m
2	STM INV: 239.51 SAN OBV: 238.78	0.73m
3	STM INV: 239.93 SAN OBV: 239.19	0.44m
4	STM INV: 239.58 SAN OBV: 238.30	1.27m
5	STM INV: 242.90 SAN OBV: 241.29	1.61m
6	STM INV: 242.06 SAN OBV: 240.64	1.43m
7	STM INV: 240.07 SAN OBV: 238.36	1.71m
8	STM INV: 244.30 SAN OBV: 242.75	1.55m

CROSSING TABLE		
No.	CROSSING INVERT	CLEARANCE
9	STM INV: 245.38 SAN OBV: 244.05	1.33m
10	STM INV: 249.39 SAN OBV: 247.95	1.44m
11	STM INV: 241.14 SAN OBV: 239.77	1.37m
12	STM INV: 241.86 SAN OBV: 240.24	1.62m
13	STM INV: 242.99 SAN OBV: 241.87	1.12m
14	STM INV: 240.29 SAN OBV: 238.76	1.53m
15	STM INV: 243.41 SAN OBV: 242.29	1.13m
16	STM INV: 239.28 SAN OBV: 238.51	0.77m

CROSSING TABLE		
No.	CROSSING INVERT	CLEARANCE
17	STM INV: 239.55 WTM OBV: 239.05	0.50m
18	STM INV: 241.19 WTM OBV: 240.69	0.50m
19	WTM INV: 241.15 SAN OBV: 240.15	1.00m
20	WTM INV: 243.07 WTM OBV: 242.57	0.50m
21	WTM INV: 244.52 SAN OBV: 243.56	0.96m
22	WTM INV: 239.89 WTM OBV: 239.29	0.60m
23	WTM INV: 239.95 SAN OBV: 238.51	1.44m
24	STM INV: 239.44 WTM OBV: 238.94	0.50m

CROSSING TABLE		
No.	CROSSING INVERT	CLEARANCE
25	WTM INV: 240.89 STM OBV: 240.33	0.56m
26	WTM INV: 241.08 SAN OBV: 240.02	1.06m
27	WTM INV: 241.67 SAN OBV: 240.61	1.06m
28	WTM INV: 241.66 STM OBV: 240.73	0.93m
29	WTM INV: 243.41 SAN OBV: 242.38	1.03m
30	STM INV: 243.64 WTM OBV: 243.14	0.50m

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No.	REVISION DESCRIPTION	DATE
1.	ISSUED FOR SITE PLAN APPLICATION	JULY 22/22

ENGINEER STAMP

22.07.22

R. E. SIMPSON

PROFESSIONAL ENGINEER

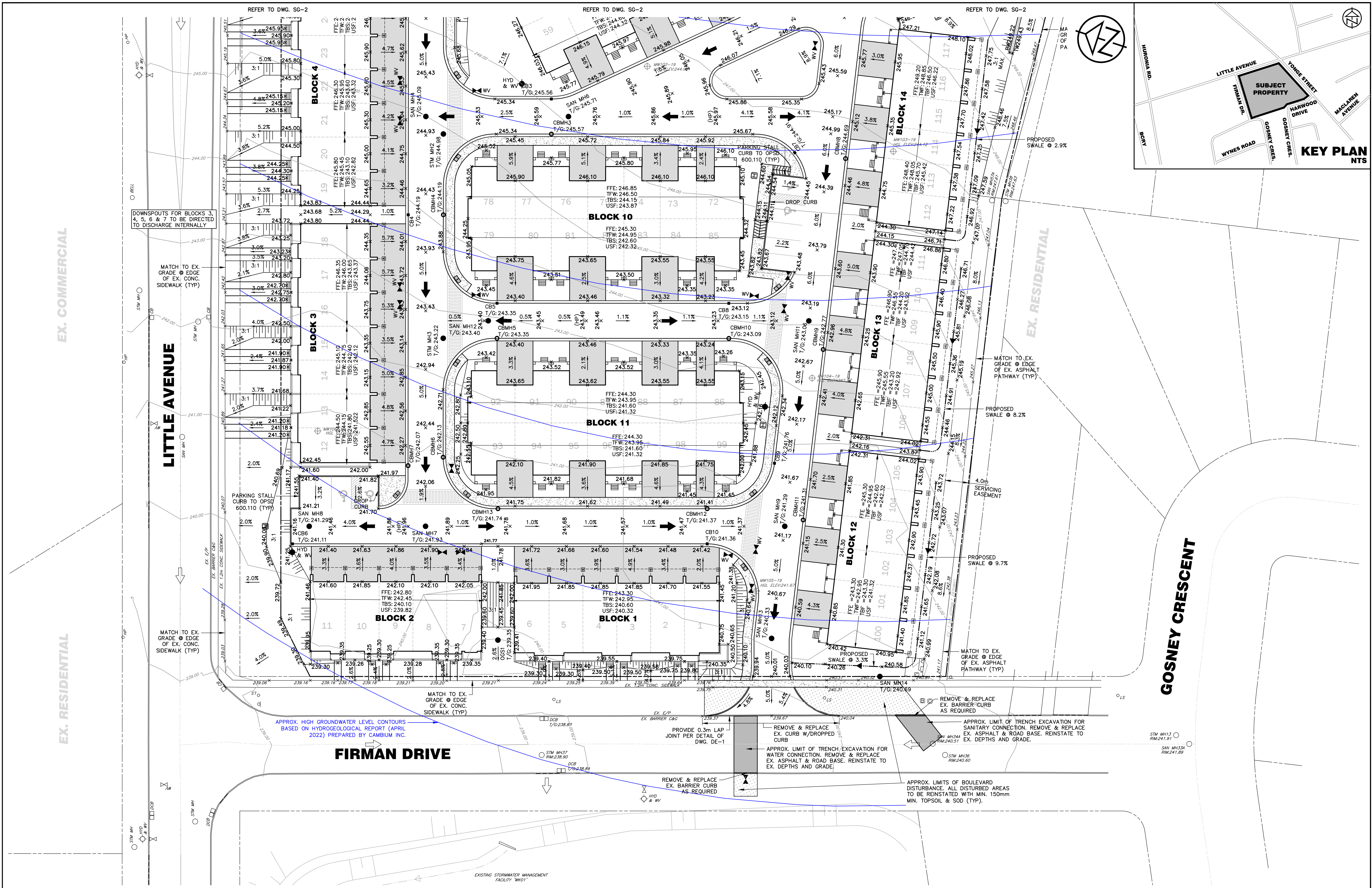
PROVINCE OF ONTARIO

**YONGE STREET & LITTLE AVENUE
RESIDENTIAL DEVELOPMENT
CITY OF BARRIE
MASON HOMES LIMITED**

SITE SERVICING PLAN

TATHAM ENGINEERING

DESIGN: LMB	FILE: 421374	DWG: SS-1
DRAWN: LMB	DATE: NOV 2021	
CHECK: LC	SCALE: 1:400	



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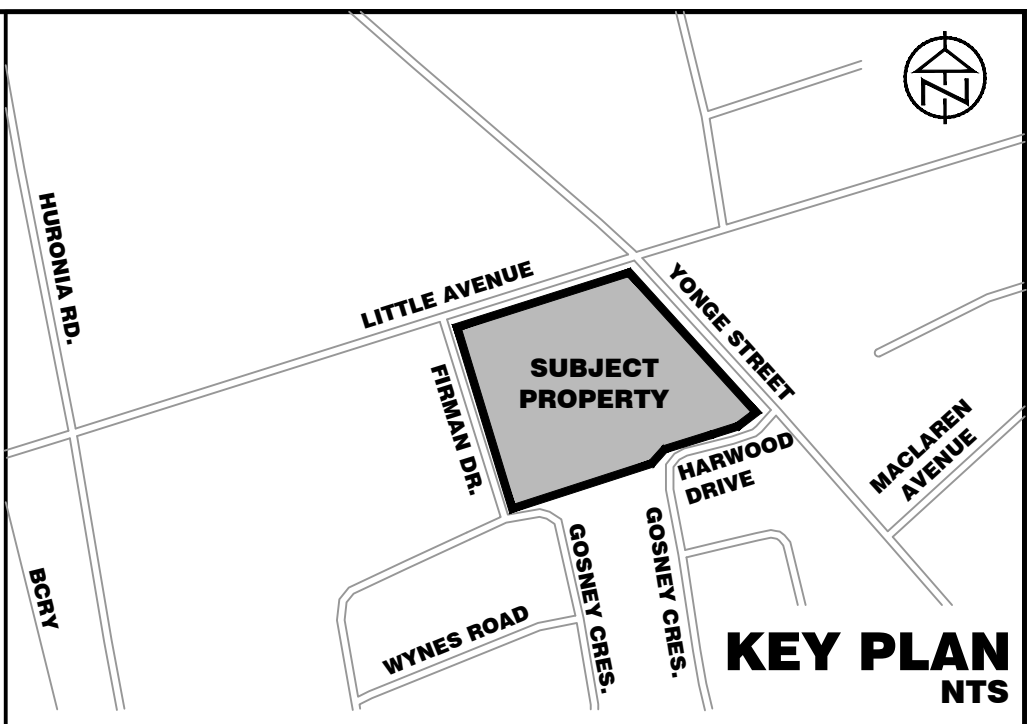
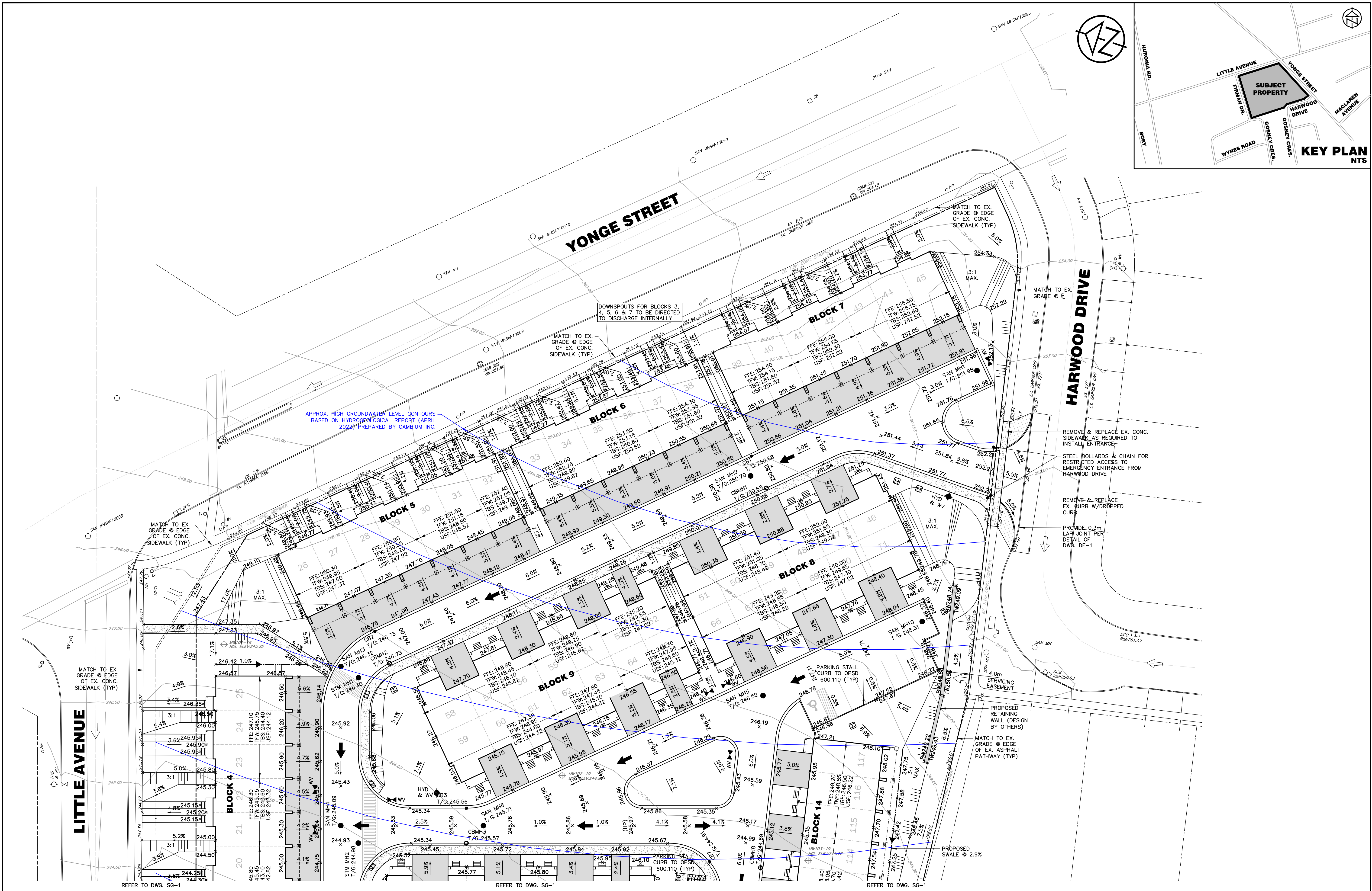
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R. SIMPSON
PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO

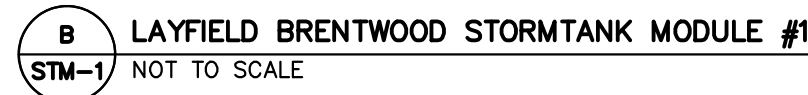
**YONGE STREET & LITTLE AVENUE
RESIDENTIAL DEVELOPMENT
CITY OF BARRIE
MASON HOMES LIMITED**

**SITE GRADING PLAN
SHEET 1 OF 2**

TATHAM ENGINEERING		DWG: SG-1
DESIGN: LMB	FILE: 421374	
DRAWN: LMB	DATE: NOV 2021	
CHECK: LC	SCALE: 1:300	



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No.	REVISION DESCRIPTION	DATE																										
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SITE GRADING PLAN SHEET 2 OF 2										DESIGN: LMB		FILE: 421374		DWG:														
										DRAWN: LMB		DATE: NOV 2021		SG-2														
										CHECK: LC		SCALE: 1:300																



Drawing Name: 421374-SWM01.dwg, Plotted: Jul 22, 2022

Material Quantity (ST-33)

ST-33	318
Platens	636
33" Columns	2544
33" Side Panels	149
10" Observation Port	5

Elevations

Leveling Stone Bottom	239.3000
Module Invert	239.4500
Top of Module	240.2904
Top of Stone Backfill	240.5952
Minimum Finished Grade	240.9000
Maximum Finished Grade	242.8000

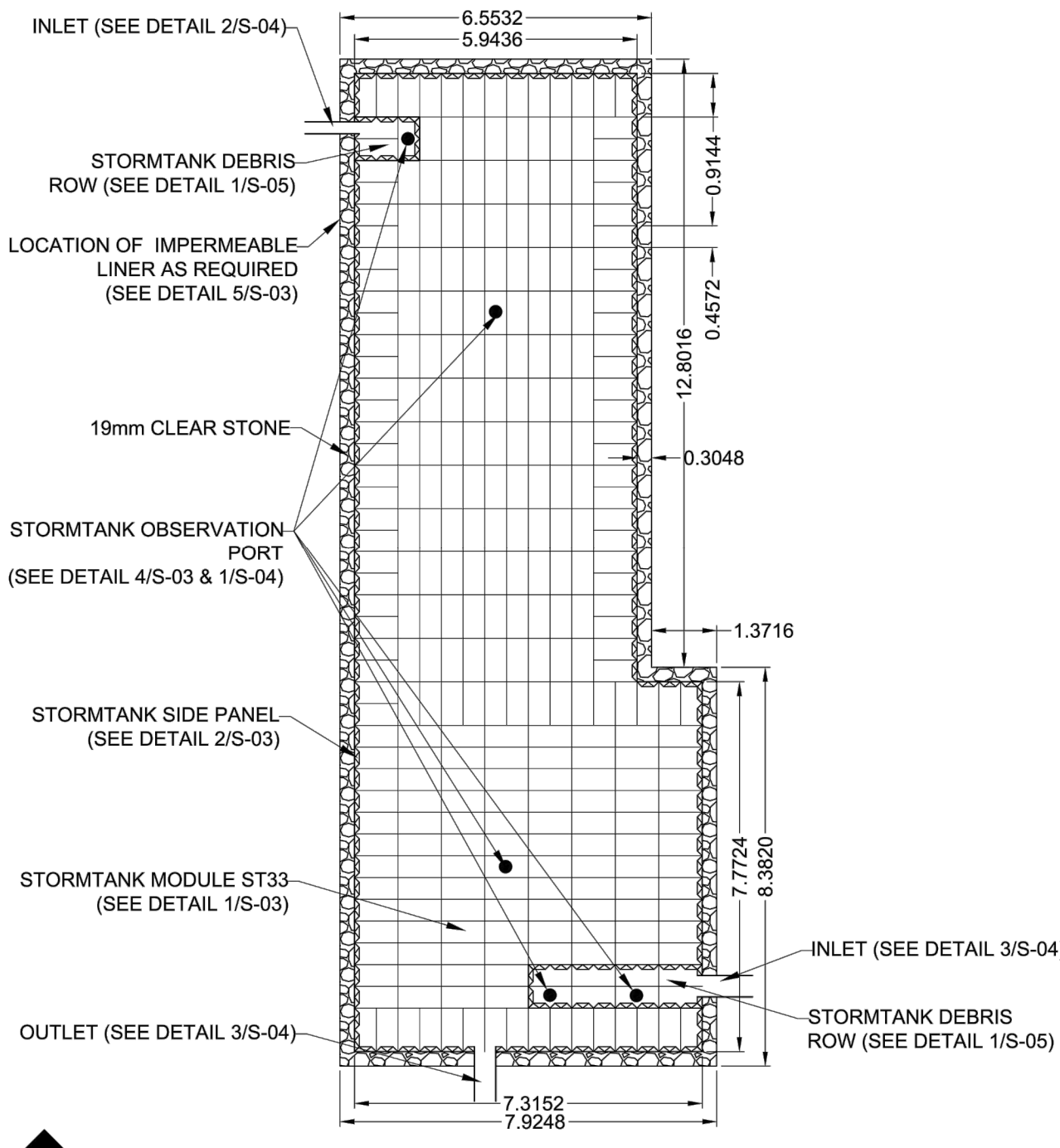
Contractor to confirm that quantities shipped to site match those listed above. Please report any discrepancy or damage to Layfield immediately.

NOTES:

- All dimensions are measured in meters unless noted otherwise.
- Reference Brentwood Industries standard drawings and notes for detailed information.
- Reference current Brentwood Module installation instructions for proper installation practices.
<https://stormwater.brentwoodindustries.com/resources/>
- Engineer of record to confirm conformance to manufacturer's allowable proximity to other structures and slopes.
- All inlet and pipe locations and designs by others.
- The sub-grade and side backfill needs to be compacted to 95%, unless noted otherwise.
- During and after installation, the Brentwood Module area should be clearly marked and roped off to prevent unauthorized construction and equipment trafficking over the modules.
- Top of Ground water is to be maintained 610 mm (2 R) below the module to prevent buoyancy, unless otherwise noted by engineer.
- The quantities related to stone and geosynthetics are estimated values as the roll size, overlaps, waste, etc. may vary.
- Materials must be stored in a manner to prevent prolonged exposure to UV light.

NOTES

STORAGE VOLUME MODULES ONLY = 108.90 cu.m



MODULE LAYOUT

SCALE: NTS



117 Basaltic Rd.
Concord, ON L4K 1G4 Canada
Ph: (905) 761-9123
www.layfieldgroup.com

SINGLE STACK MODULE SYSTEM

Total Storage Volume	141.40 m ³
Module Storage Volume	108.09 m ³
Stone Storage Volume	33.31 m ³
System Footprint	150.32 m ²
Estimated Geotextile Fabric	NuBarrier 718 m ² LP8 1196 m ²
Estimated Liner	598 m ²
Estimated Stone Volume	83.29 m ³
Excavation Required	240.54 m ³
Excavation Depth	1.60 m
Stone Type	19mm Clear Stone
Stone Void Space	40%
Model Type	25 Series ST-33

LITTLE AVE & YOUNG ST
DETENTION TANK-1
Barrie, ON

REV	Record of Changes	Date	By
1	Preliminary Drawing	07APR2022	LP
2	Revised Elevations	20APR2022	LP

Project Number: OP2022-00003794

Page Name: Module Layout

Drawn by: LP Checked by: AW

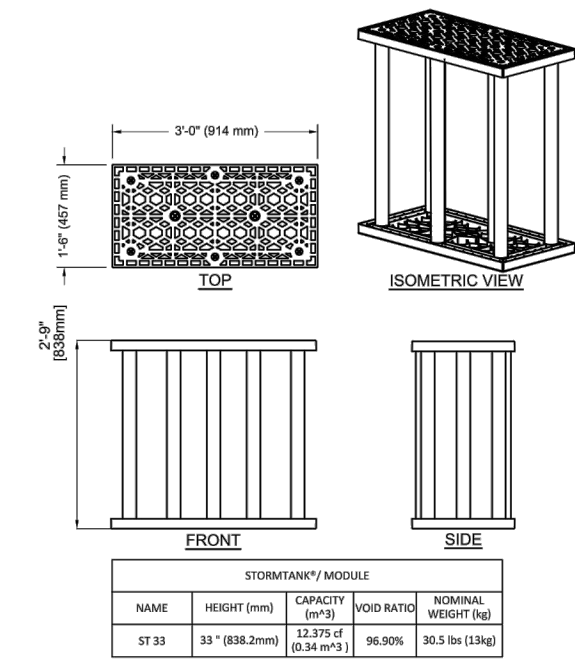
Scale: NTS Date: 20APR2022

THIS LAYOUT DRAWING WAS PREPARED TO SUPPORT THE ENGINEER OF RECORD FOR THE PROPOSED SYSTEM. IT IS THE RESPONSIBILITY OF THE ENGINEER OF RECORD TO REVIEW THE INFORMATION AND ENSURE THAT THE LAYOUT AND DESIGN IS IN FULL COMPLIANCE WITH ALL APPLICABLE LAWS AND REGULATIONS AND THAT THE STORMTANK SYSTEM HAS BEEN DESIGNED IN ACCORDANCE WITH BRENTWOOD'S REQUIREMENTS. LAYFIELD DOES NOT REVIEW OR APPROVE PLANS, SIZING OR DESIGNS.

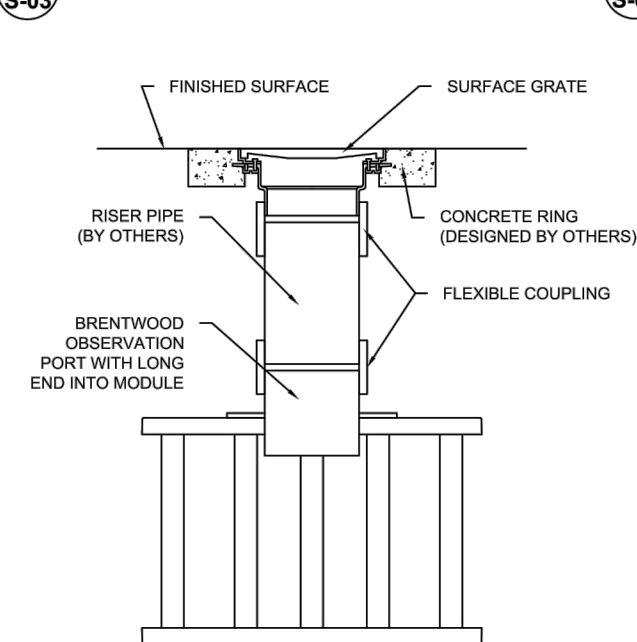
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02 OF 07

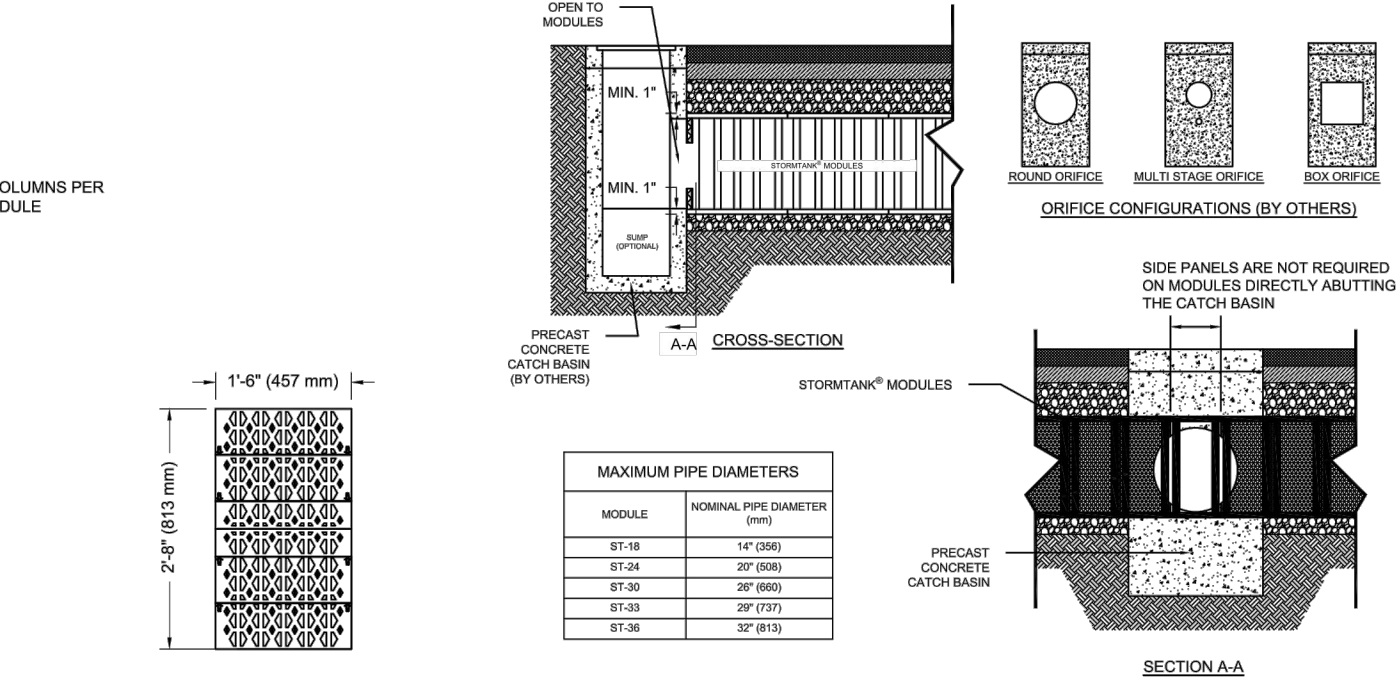
ANSI B Size Page (Horizontal)



33" (838 mm) MODULE DETAIL

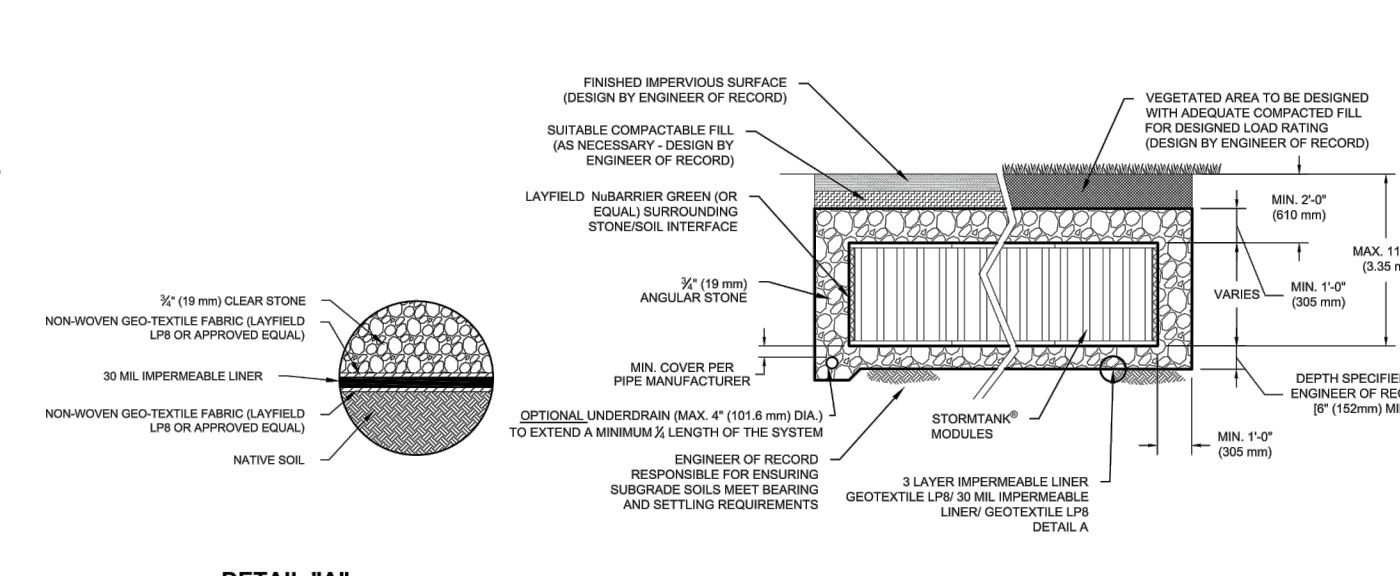


SINGLE STACK OBSERVATION PORT DETAIL



TYP. CATCH BASIN ABUTMENT DETAIL

(IF APPLICABLE)



TYPICAL SINGLE STACKED SYSTEM BASIC CROSS-SECTION



117 Basaltic Rd.
Concord, ON L4K 1G4 Canada
Ph: (905) 761-9123
www.layfieldgroup.com

SINGLE STACK MODULE SYSTEM

Total Storage Volume	141.40 m ³
Module Storage Volume	108.09 m ³
Stone Storage Volume	33.31 m ³
System Footprint	150.32 m ²
Estimated Geotextile Fabric	NuBarrier 718 m ² LP8 1196 m ²
Estimated Liner	598 m ²
Estimated Stone Volume	83.29 m ³
Excavation Required	240.54 m ³
Excavation Depth	1.60 m
Stone Type	19mm Clear Stone
Stone Void Space	40%
Model Type	25 Series ST-33

LITTLE AVE & YOUNG ST
DETENTION TANK-1
Barrie, ON

REV	Record of Changes	Date	By
1	Preliminary Drawing	07APR2022	LP
2	Revised Elevations	20APR2022	LP

Project Number: OP2022-00003794

Page Name: TYP. Construction Details

Drawn by: LP Checked by: AW

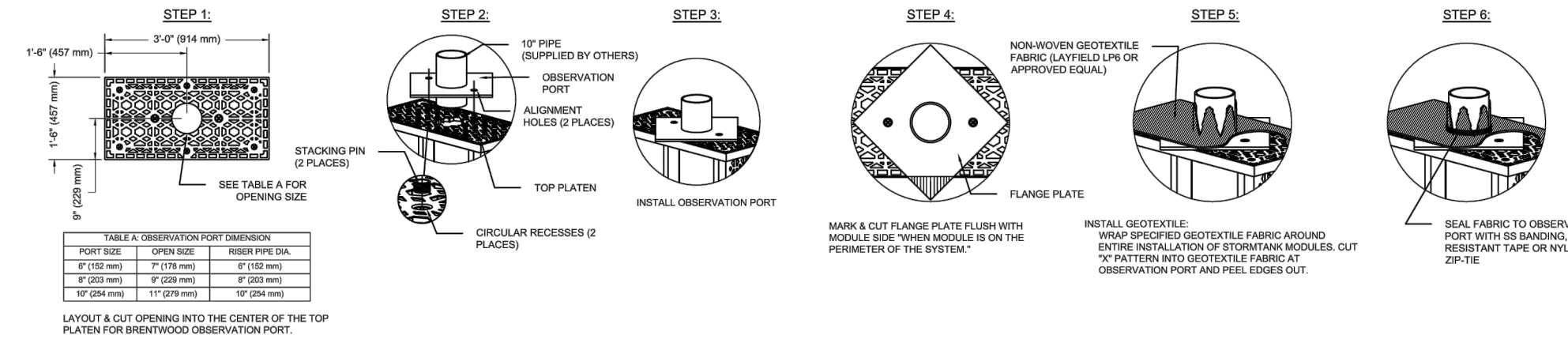
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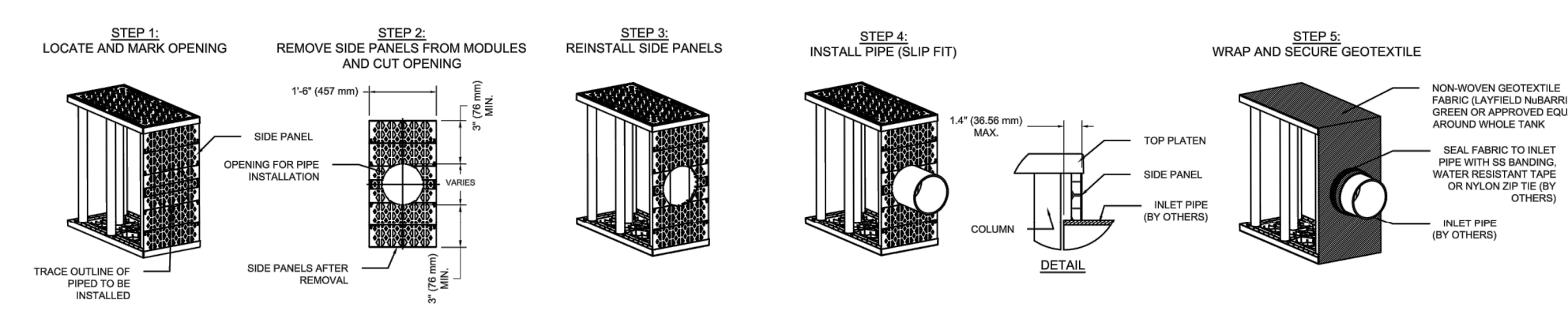
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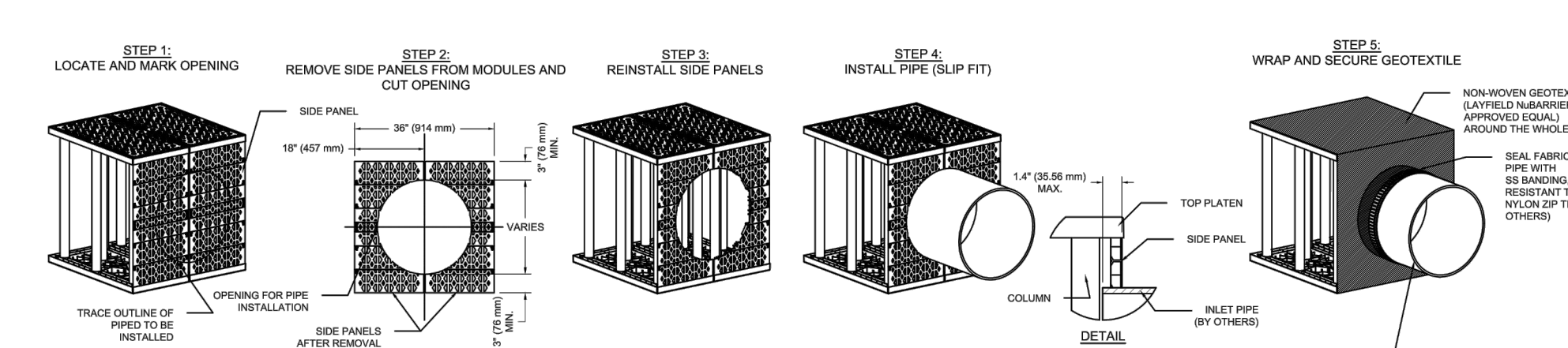
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TYP. OBSERVATION PORT INSTALLATION DETAIL



SMALL DIAMETER (14" [356 mm] AND SMALLER) PIPE CONNECTION DETAIL



LARGE DIAMETER (15" [381 mm] AND GREATER) PIPE CONNECTION DETAIL



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DETENTION TANK-1
Barrie, ON

REV	Record of Changes	Date	By
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2	Revised Elevations	20APR2022	LP

Project Number: OP2022-00003794

Page Name: TYP. Pipe Penetration Details

Drawn by: LP Checked by: AW

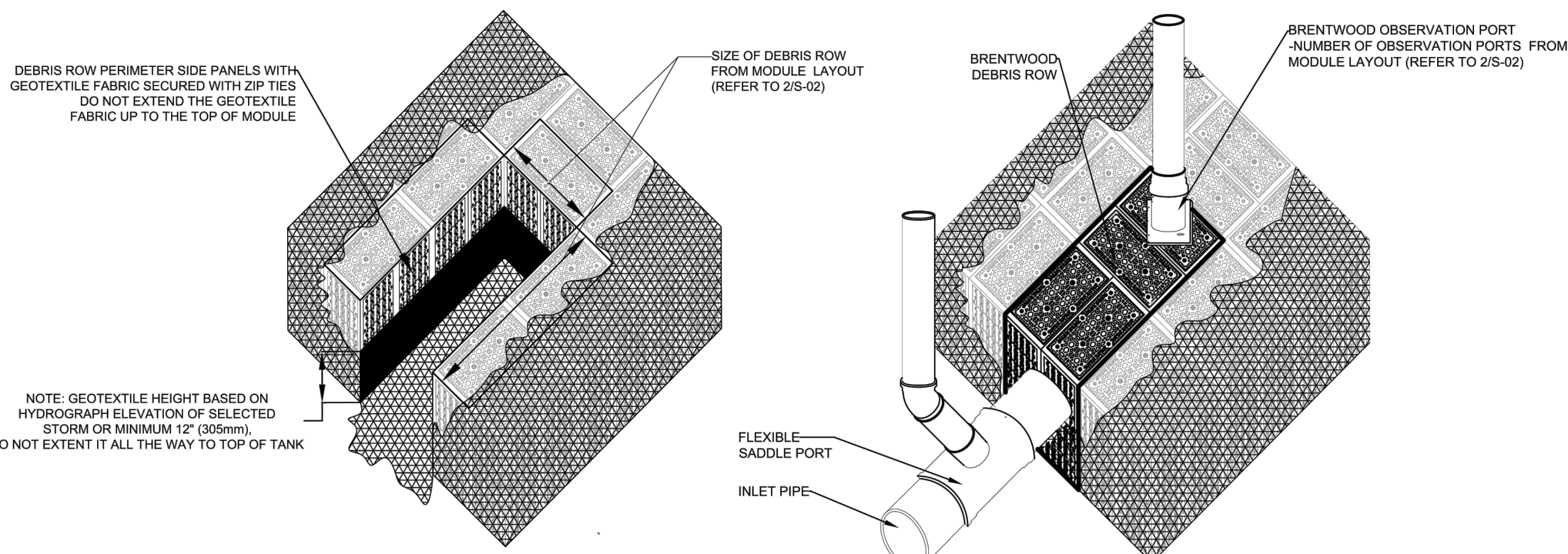
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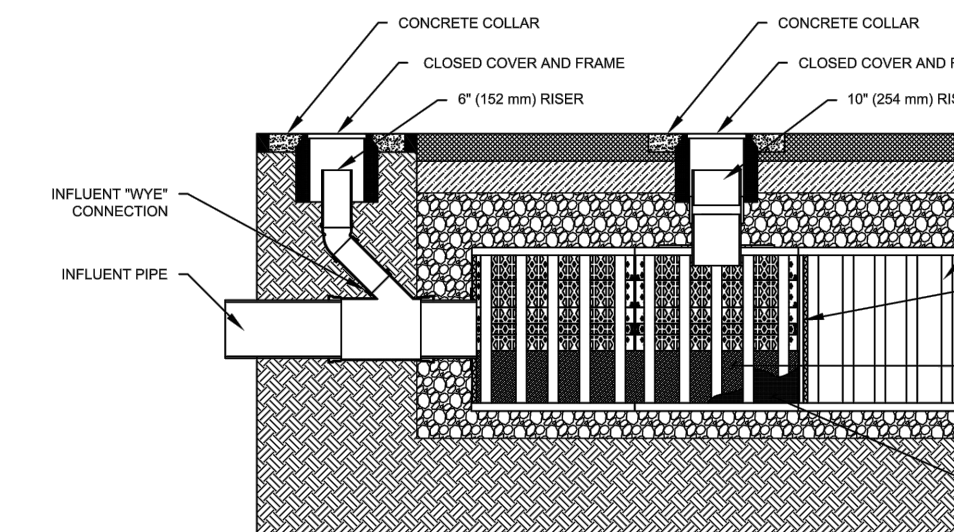
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SIDE PANELS AND GEOTEXTILE FABRIC ALONG THE PERIMETER OF DEBRIS ROW



TYP. DEBRIS ROW CROSS SECTION

TYP. DEBRIS ROW DETAIL SINGLE STACK SYSTEM



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Concord, ON L4K 1G4 Canada
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www.layfieldgroup.com

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LITTLE AVE & YOUNG ST
DETENTION TANK-1
Barrie, ON

REV	Record of Changes	Date	By
1	Preliminary Drawing	07APR2022	LP
2	Revised Elevations	20APR2022	LP

Project Number: OP2022-00003794

Page Name: TYP. Debris Row Details

Drawn by: LP Checked by: AW

Scale: NTS Date: 20APR2022

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Sheet

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DRAWING REFERENCES

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BOREHOLE DATA SHOWN ON THIS PLAN BASED ON GEOTECHNICAL REPORT PREPARED BY CAMBIUM INC. DATED OCTOBER 2014.

ELEVATION

TBM#1 ELEV. 238.838 m
STATION 03120030027: SET FLUSH IN THE EAST EDGE OF THE BRIDGE ABUTMENT ON THE NORTH SIDE OF LITTLE AVENUE NEAR THE ENTRANCE TO #322 LITTLE AVENUE, IN THE CENTER OF THE WALL 0.80m BELOW THE TOP OF THE WALL.

No.	REVISION DESCRIPTION	DATE	ENGINEER STAMP
1.	ISSUED FOR SITE PLAN APPLICATION	JULY 22/22	



**YONGE STREET & LITTLE AVENUE
RESIDENTIAL DEVELOPMENT
CITY OF BARRIE
MASON HOMES LIMITED**

BRENTWOOD STORMTANK MODULE #1



DESIGN: LMB	FILE: 421374	DWG:
DRAWN: LMB	DATE: NOV 2021	TANK-1
CHECK: LC	SCALE: AS NOTED	

Material Quantity (ST-24)

ST-24	97
Platens	194
24" Columns	776
24" Side Panels	75
10" Observation Port	3

Elevations

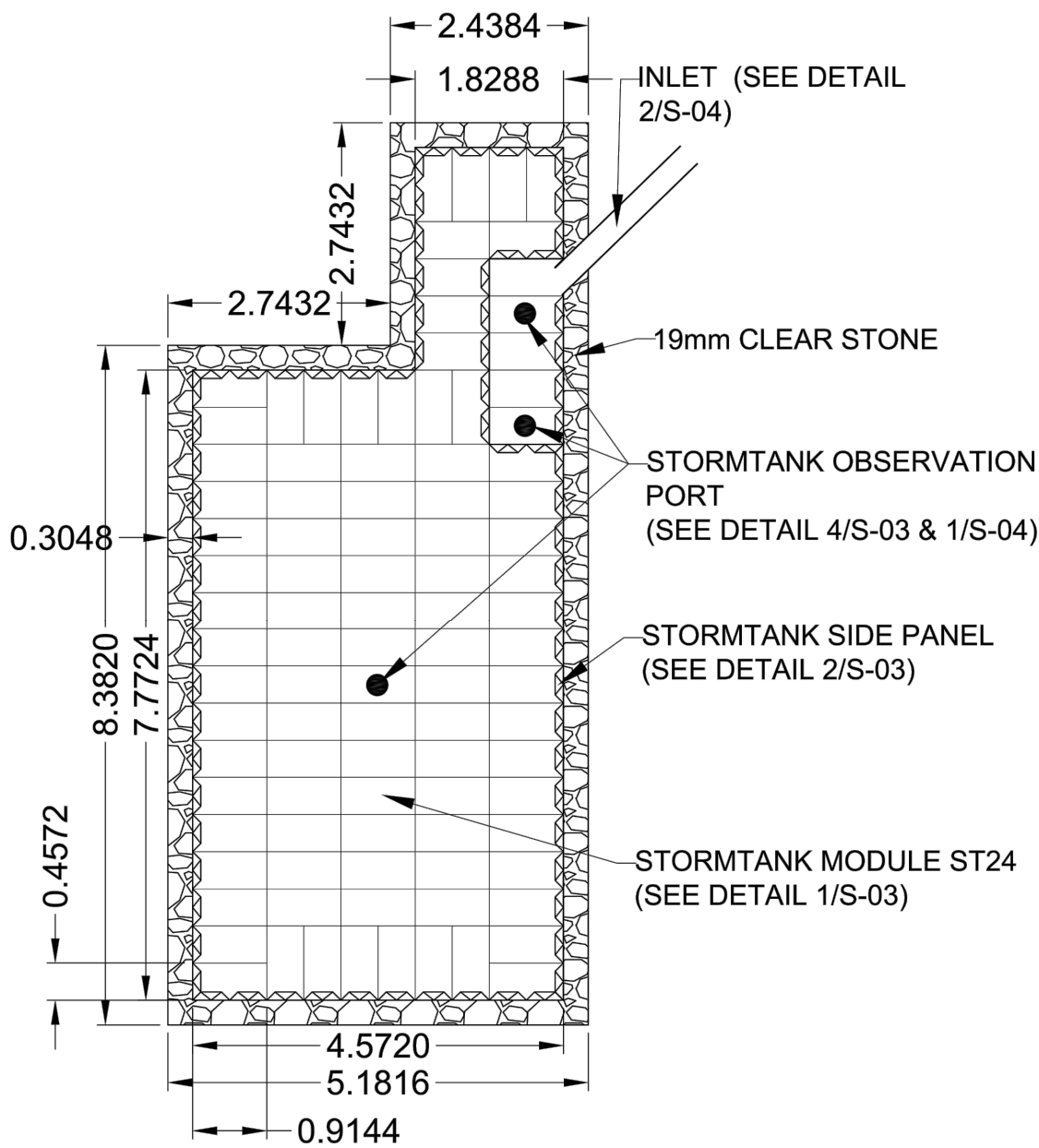
Leveling Stone Bottom	244.5000
Module Invert	244.6524
Top of Module	245.2620
Top of Stone Backfill	245.5668
Minimum Finished Grade	245.8716
Maximum Finished Grade	248.0024

Contractor to confirm that quantities shipped to site match those listed above. Please report any discrepancy or damage to Layfield immediately.

NOTES:

- All dimensions are measured in meters unless noted otherwise.
- Reference Brentwood Industries standard drawings and notes for detailed information.
- Reference current Brentwood Module installation instructions for proper installation practices.
<https://stormwater.brentwoodindustries.com/resources/>
- Engineer of record to confirm conformance to manufacturer's allowable proximity to other structures and slopes.
- All inlet and pipe locations and designs by others.
- The sub-grade and side backfill needs to be compacted to 95%, unless noted otherwise.
- During and after installation, the Brentwood Module area should be clearly marked and roped off to prevent unauthorized construction and equipment trafficking over the modules.
- Top of Ground water is to be maintained 610 mm (2 ft) below the module to prevent buoyancy, unless otherwise noted by engineer.
- The quantities related to stone and geosynthetics are estimated values as the roll size, overlaps, waste, ect. may vary.
- Materials must be stored in a manner to prevent prolonged exposure to UV light.

NOTES



MODULE LAYOUT

SCALE: NTS



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Concord, ON L4K 1G4 Canada
Ph: (905) 761-9123
www.layfieldgroup.com

SINGLE STACK MODULE SYSTEM

Total Storage Volume	35.30 m ³
Module Storage Volume	23.80 m ³
Stone Storage Volume	11.5 m ³
System Footprint	50.12 m ²
Estimated Geotextile Fabric	270 m ²
Estimated Stone Volume	28.75 m ³
Excavation Required	68.75 m ³
Excavation Depth	1.37 m
Stone Type	19mm Clear Stone
Stone Void Space	40%
Module Type	25 Series ST-24

LITTLE AVE & YOUNG ST INFILTRATION TANK-2

Barrie, ON

REV	Record of Changes	Date	By
△	Preliminary Drawing	07APR2022	LP
△	Debris Row Added	15JUL2022	LP

Project Number: OP2022-00003794

Page Name: Module Layout

Drawn by: LP

Scale: NTS

Checked By: AW

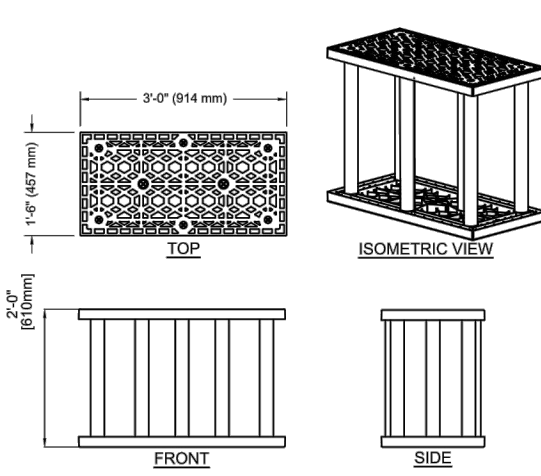
Date: 15JUL2022

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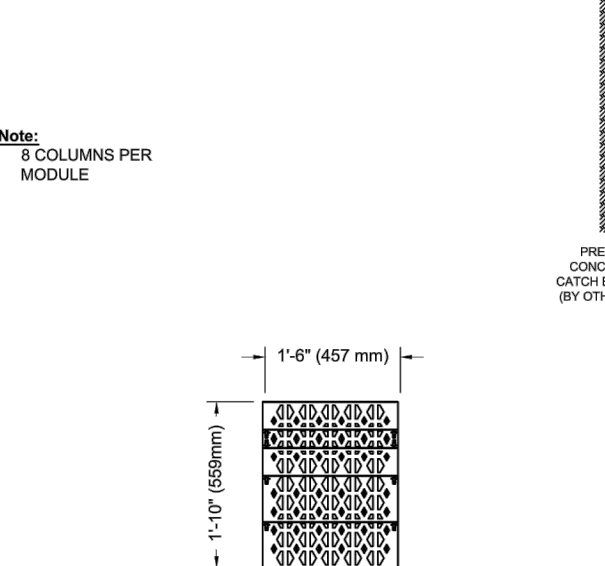
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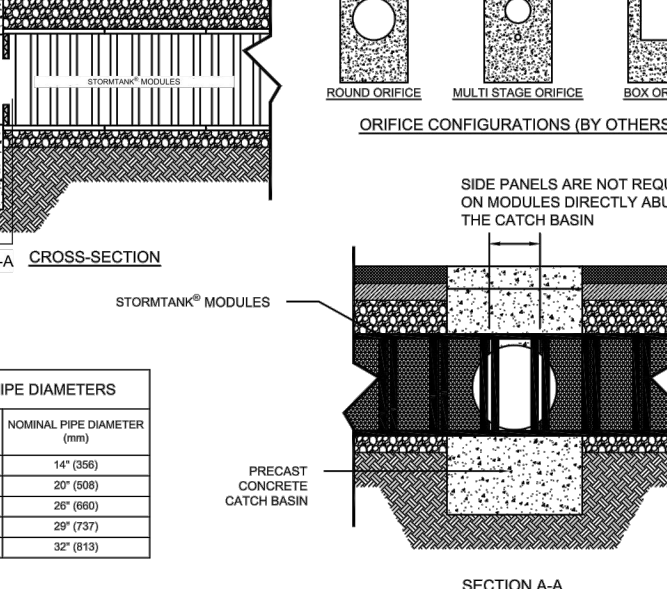
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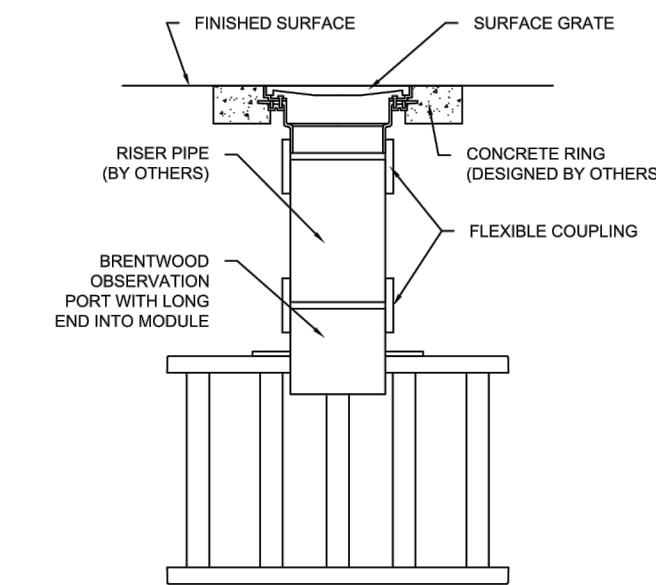
24" (610 mm) MODULE DETAIL



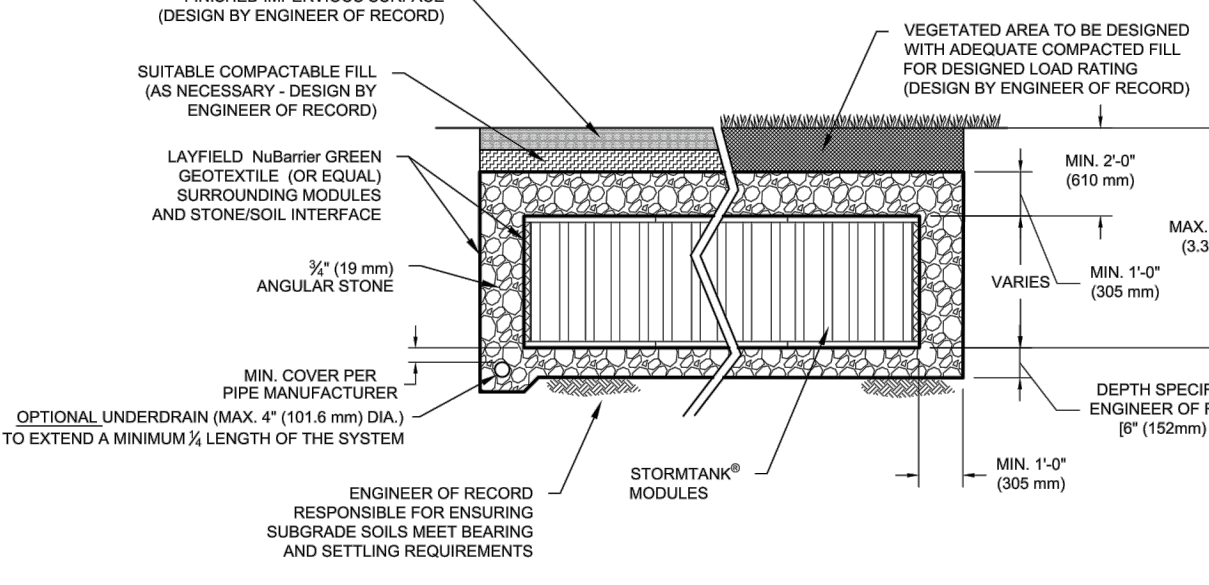
24" (610 mm) SIDE PANEL DETAIL



TYP. CATCH BASIN ABUTMENT DETAIL



SINGLE STACK OBSERVATION PORT DETAIL



TYPICAL SINGLE STACKED SYSTEM BASIC CROSS-SECTION



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LITTLE AVE & YOUNG ST INFILTRATION TANK-2

Barrie, ON

REV	Record of Changes	Date	By
△	Preliminary Drawing	07APR2022	LP
△	Debris Row Added	15JUL2022	LP

Project Number: OP2022-00003794

Page Name: TYP. Construction Details

Drawn by: LP

Scale: NTS

Checked By: AW

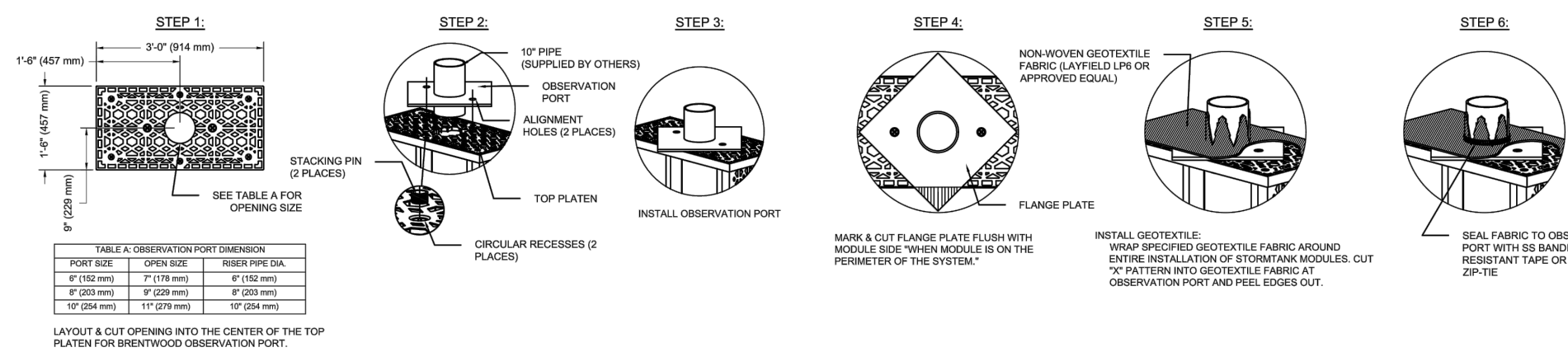
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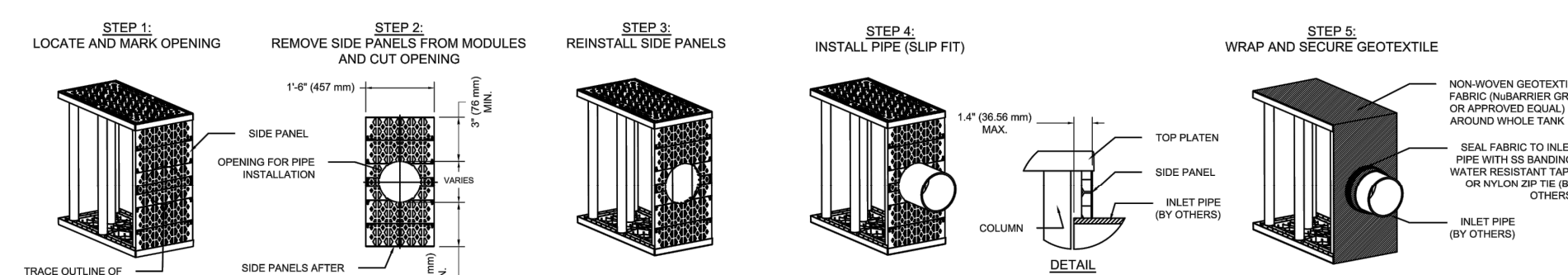
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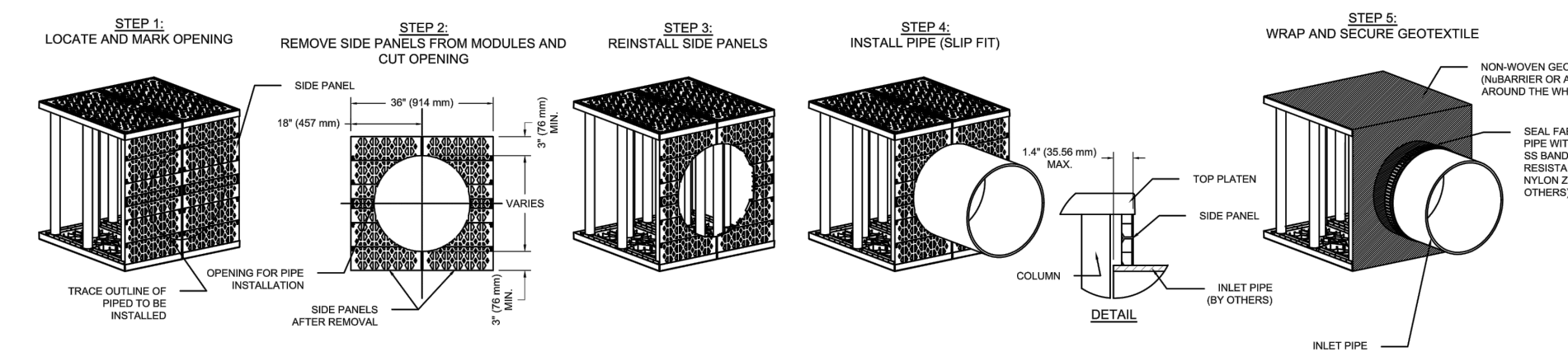
ANSI B Size Page (Horizontal)



TYP. OBSERVATION PORT INSTALLATION DETAIL



SMALL DIAMETER (14" [356 mm] AND SMALLER) PIPE CONNECTION DETAIL



LARGE DIAMETER (15" [381 mm] AND GREATER) PIPE CONNECTION DETAIL



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LITTLE AVE & YOUNG ST INFILTRATION TANK-2

Barrie, ON

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△	Preliminary Drawing	07APR2022	LP
△	Debris Row Added	15JUL2022	LP

Project Number: OP2022-00003794

Page Name: TYP. Pipe Penetration Details

Drawn by: LP

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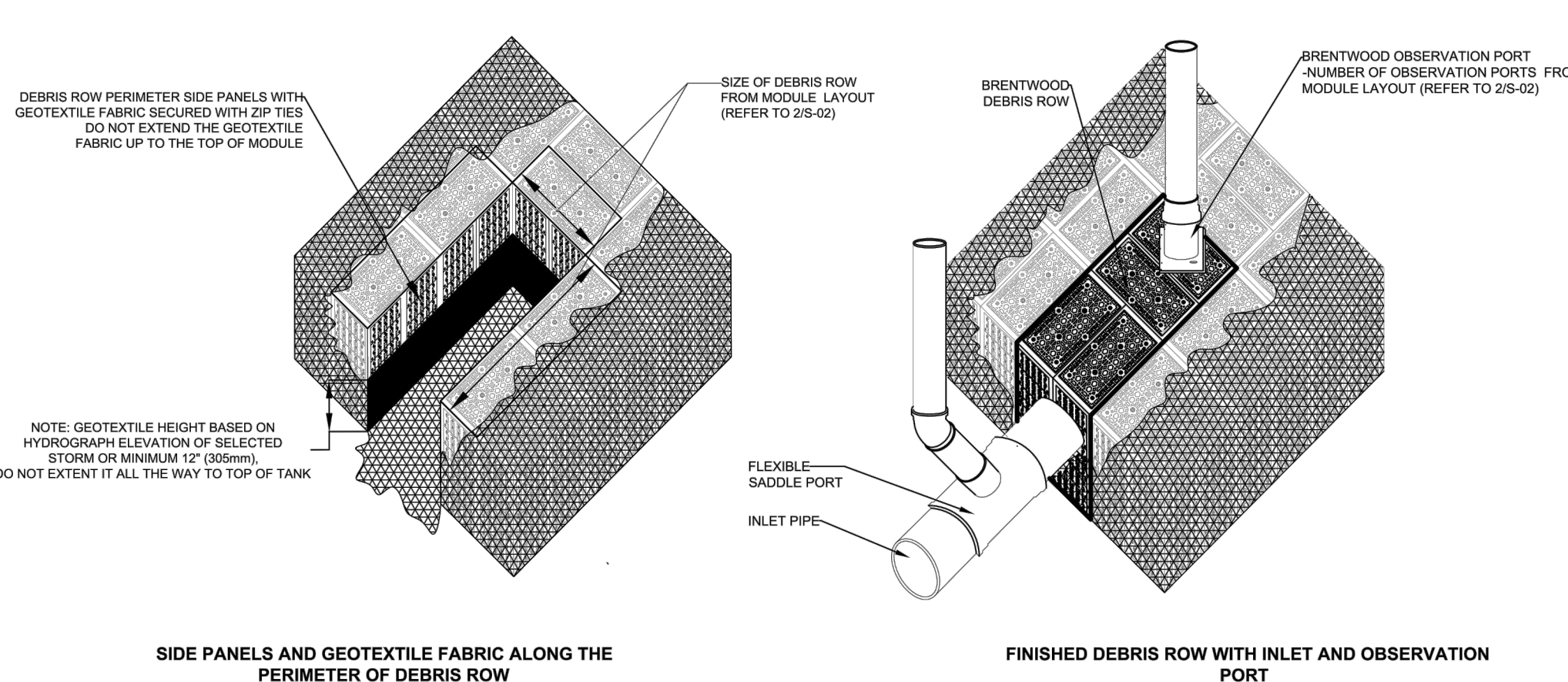
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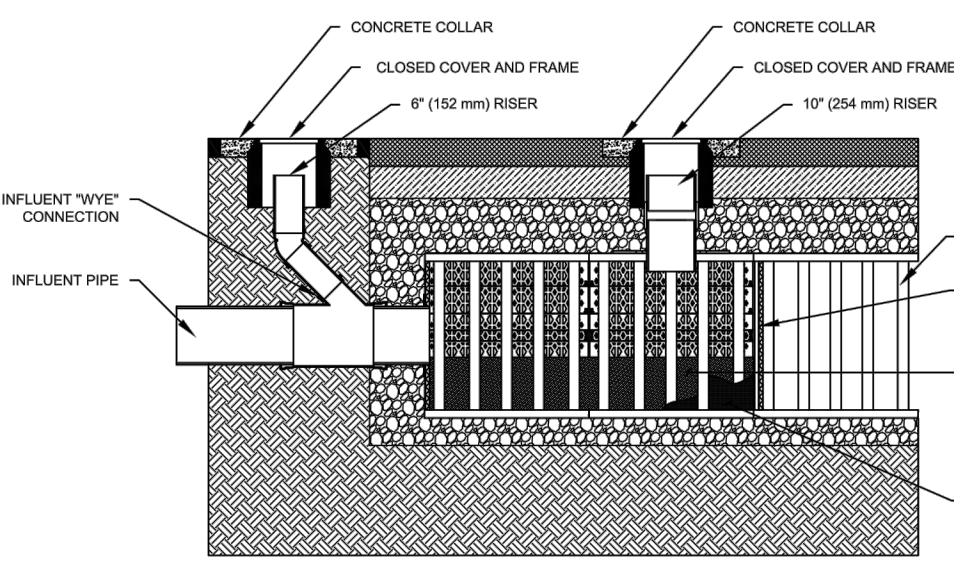
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ANSI B Size Page (Horizontal)



SIDE PANELS AND GEOTEXTILE FABRIC ALONG THE PERIMETER OF DEBRIS ROW

FINISHED DEBRIS ROW WITH INLET AND OBSERVATION PORT



TYP. DEBRIS ROW CROSS SECTION

TYP. DEBRIS ROW DETAIL SINGLE STACK SYSTEM



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Barrie, ON

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△	Preliminary Drawing	07APR2022	LP
△	Debris Row Added	15JUL2022	LP

Project Number: OP2022-00003794

Page Name: TYP. Debris Row Details

Drawn by: LP

Scale: NTS

Checked By: AW

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No.	REVISION DESCRIPTION	DATE	ENGINEER STAMP
1.	ISSUED FOR SITE PLAN APPLICATION	JULY 22/22	

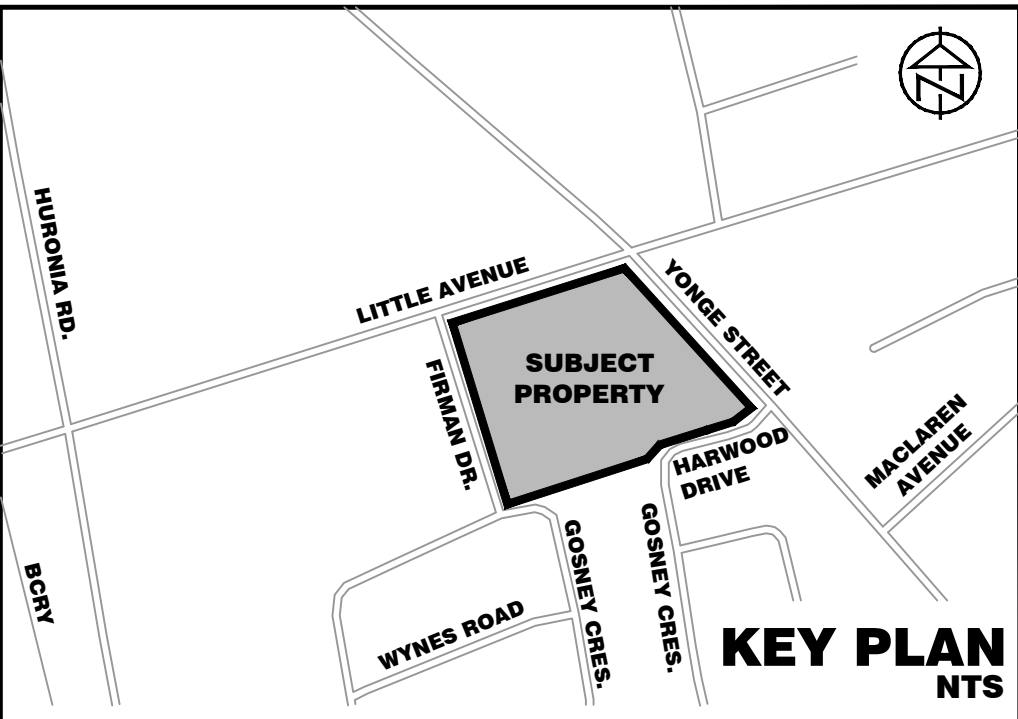
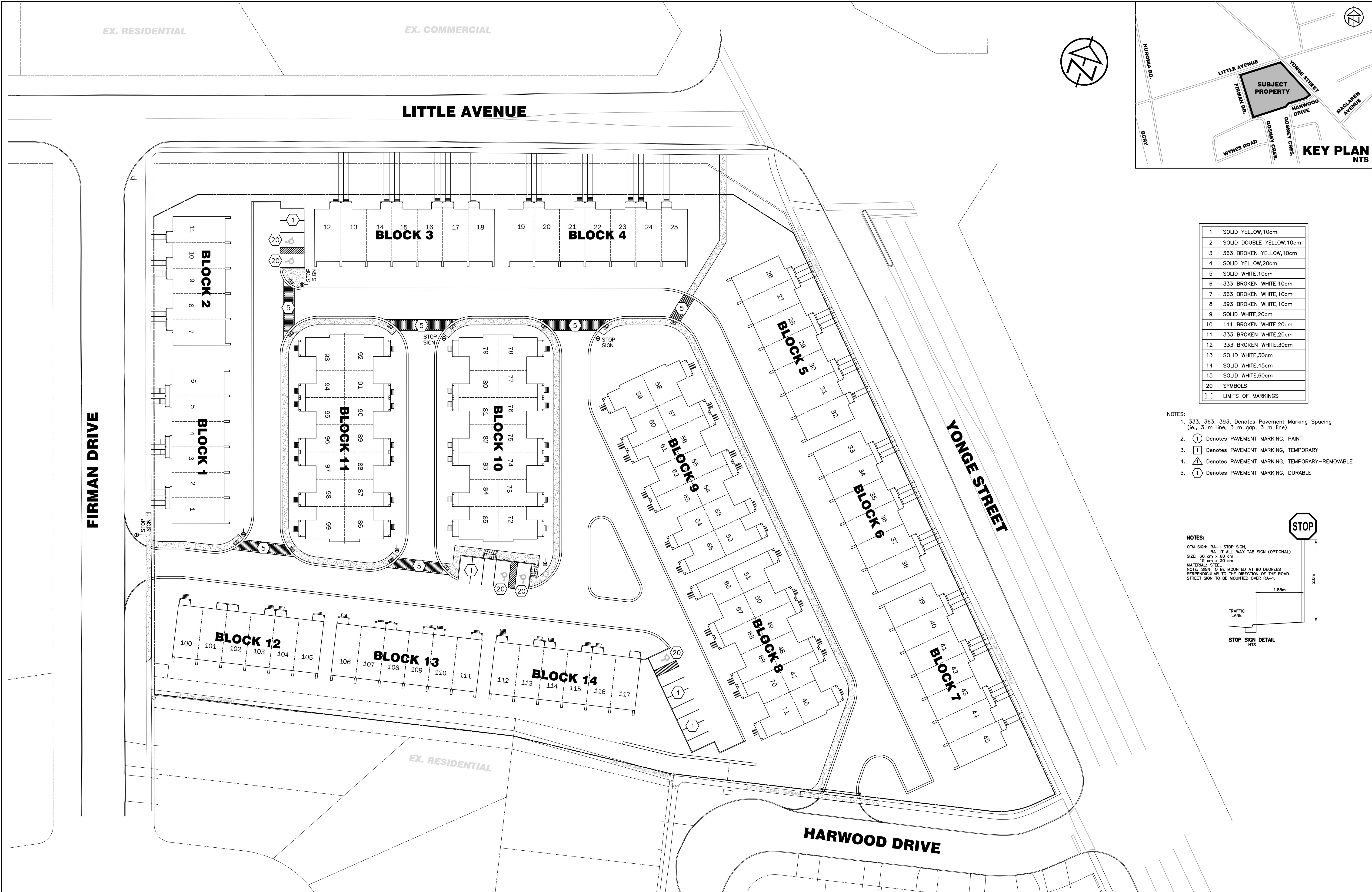


YONGE STREET & LITTLE AVENUE RESIDENTIAL DEVELOPMENT CITY OF BARRIE MASON HOMES LIMITED

BRENTWOOD STORMTANK MODULE #2

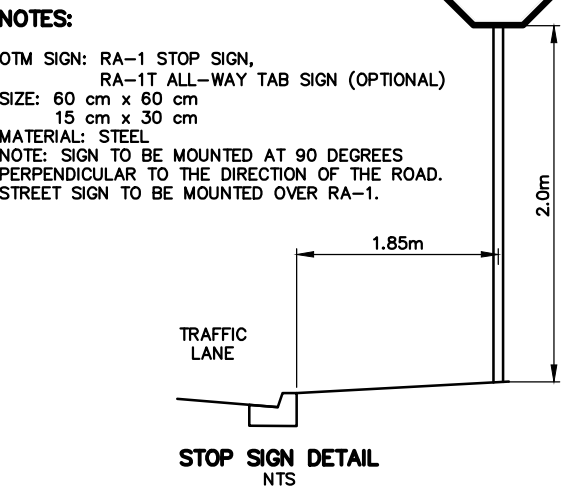


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DRAWN: LMB	DATE: NOV 2021	
CHECK: LC	SCALE: AS NOTED	

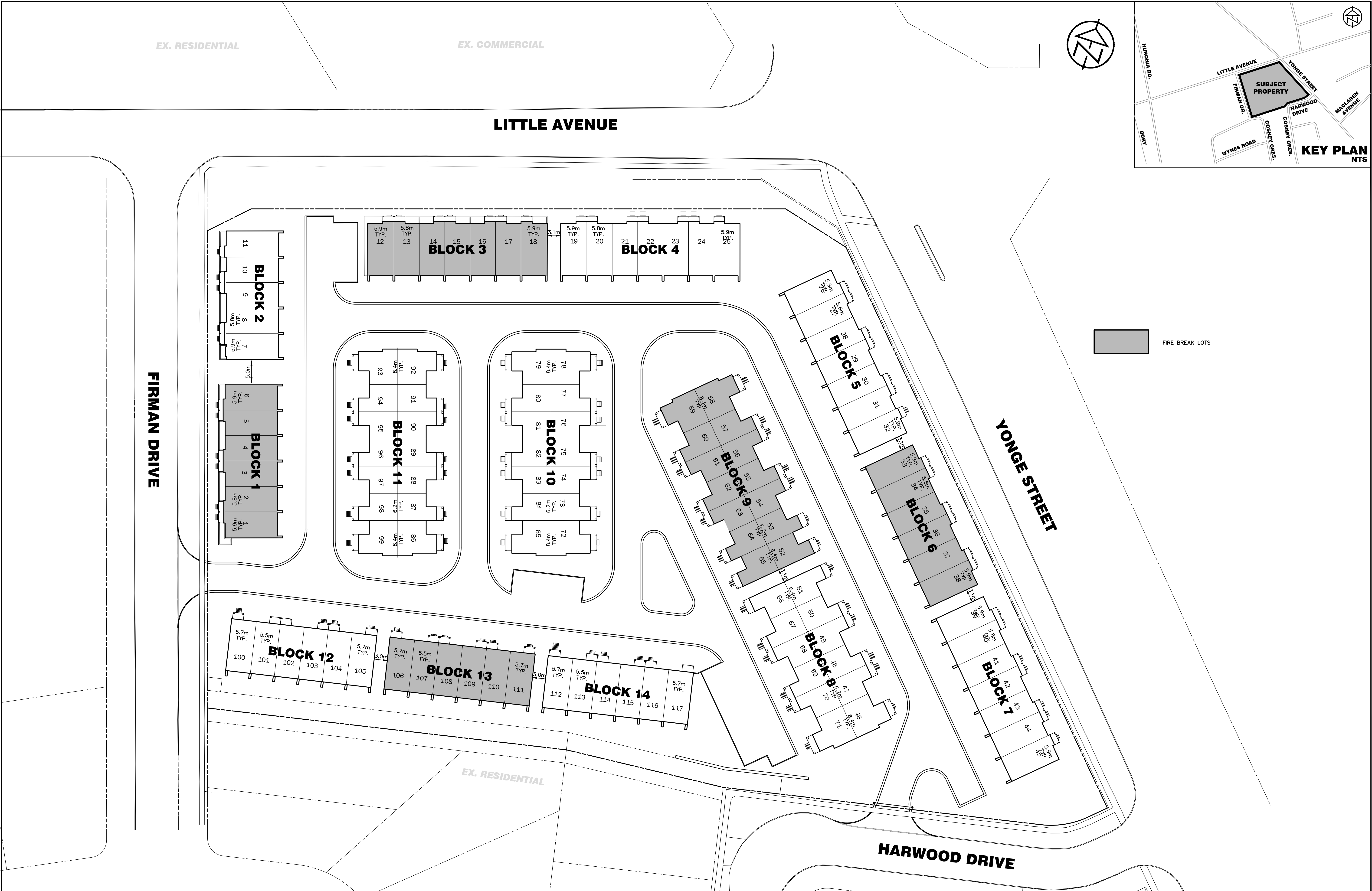


1	SOLID YELLOW,10cm
2	SOLID DOUBLE YELLOW,10cm
3	363 BROKEN YELLOW,10cm
4	SOLID YELLOW,20cm
5	SOLID WHITE,10cm
6	333 BROKEN WHITE,10cm
7	363 BROKEN WHITE,10cm
8	393 BROKEN WHITE,10cm
9	SOLID WHITE,20cm
10	111 BROKEN WHITE,20cm
11	333 BROKEN WHITE,20cm
12	333 BROKEN WHITE,30cm
13	SOLID WHITE,30cm
14	SOLID WHITE,45cm
15	SOLID WHITE,60cm
20	SYMBOLS
] [LIMITS OF MARKINGS	

- NOTES:
- 333, 363, 393, Denotes Pavement Marking Spacing (ie., 3 m line, 3 m gap, 3 m line)
 - ① Denotes PAVEMENT MARKING, PAINT
 - ① Denotes PAVEMENT MARKING, TEMPORARY
 - △ Denotes PAVEMENT MARKING, TEMPORARY-REMOVABLE
 - ① Denotes PAVEMENT MARKING, DURABLE



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			1.	ISSUED FOR SITE PLAN APPLICATION	JULY 22/22																		
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DRAWN: LMB	DATE: NOV 2021																						
CHECK: LC	SCALE: 1:400																						



DISCLAIMER AND COPYRIGHT CONTRACTOR MUST VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER BEFORE COMMENCING WORK. DRAWINGS ARE NOT TO BE SCALED. TATHAM ENGINEERING LIMITED CLAIMS COPYRIGHT TO THIS DRAWING WHICH MAY NOT BE USED FOR ANY PURPOSE OTHER THAN THAT PROVIDED IN THE CONTRACT BETWEEN THE OWNER/CLIENT AND THE ENGINEER WITHOUT THE EXPRESS CONSENT OF TATHAM ENGINEERING LIMITED.	DRAWING REFERENCES TOPOGRAPHIC FEATURES, CONTOURS AND LEGAL BOUNDARIES SHOWN ON THIS PLAN BASED ON SURVEY COMPLETED BY H.F.GRANDER Co. LTD., DATED JANUARY 13, 2014. SITE PLAN INFORMATION SHOWN ON THIS PLAN BASED ON DRAWING PREPARED BY INNOVATIVE PLANNING SOLUTIONS INC., DATED JULY 5, 2022. BOREHOLE DATA SHOWN ON THIS PLAN BASED ON GEOTECHNICAL REPORT PREPARED BY CAMBIUM INC. DATED OCTOBER 2014.	ELEVATION TBM#1 ELEV. 238.838 m STATION 03120030027: SET FLUSH IN THE EAST EDGE OF THE BRIDGE ABUTMENT ON THE NORTH SIDE OF LITTLE AVENUE NEAR THE ENTRANCE TO #322 LITTLE AVENUE, IN THE CENTER OF THE WALL 0.80m BELOW THE TOP OF THE WALL.	No.	REVISION DESCRIPTION	DATE	ENGINEER STAMP 	YONGE STREET & LITTLE AVENUE RESIDENTIAL DEVELOPMENT CITY OF BARRIE MASON HOMES LIMITED			
			1.	ISSUED FOR SITE PLAN APPLICATION	JULY 22/22					
FIRE BREAK PLAN										

GENERAL

- A. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH CURRENT CITY OF BARRIE ENGINEERING STANDARDS AND ONTARIO PROVINCIAL STANDARD SPECIFICATIONS AND DRAWINGS. WHERE CONFLICT OCCURS, CITY OF BARRIE ENGINEERING STANDARDS TO GOVERN.
- B. A ROAD OCCUPANCY PERMIT SHALL BE OBTAINED FROM THE ROADS AND PARKS OPERATIONS BRANCH PRIOR TO THE COMMENCEMENT OF WORK WITHIN THE CITY ROAD ALLOWANCE.
- C. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN MILLIMETERS AND ALL ELEVATIONS ARE IN METERS.
- D. THE OWNER'S ENGINEER SHALL PROVIDE BENCHMARK ELEVATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DETAILED LAYOUT OF THE WORK.
- E. ALL PROPERTY BARS TO BE PRESERVED AND REPLACED BY OLS AT CONTRACTOR'S EXPENSE IF REMOVED DURING CONSTRUCTION.
- F. THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR THE SUPPLY OF TEMPORARY WATER AND POWER.
- G. DEWATERING TO BE CARRIED OUT IN ACCORDANCE WITH OPSS:MUNI 517 AND OPSS:MUNI 518. MAINTAIN ALL TRENCHES IN A DRY CONDITION. A MOECC PERMIT TO TAKE WATER (PTTW) HAS NOT BEEN OBTAINED FOR THIS PROJECT. THE CONTRACTOR SHALL ENSURE THAT ALL DEWATERING WORKS BETWEEN 50,000 AND 400,000 L/DAY BE REPORTED TO THE GEOTECHNICAL CONSULTANT. THE GEOTECHNICAL CONSULTANT SHALL BE RESPONSIBLE FOR MONITORING DEWATERING ACTIVITIES AND REPORTING WATER TAKING WITH THE ENVIRONMENTAL ACTIVITY SECTOR REGISTRY (EASR).
- H. ALL ENGINE DRIVEN PUMPS TO BE ADEQUATELY SILENCED, SUITABLE FOR OPERATION IN A RESIDENTIAL DISTRICT.
- I. GENERAL INSTALLATION AND TESTING OF SEWERS, WATERMAIN AND APPURTENANCES TO BE IN ACCORDANCE WITH MUNICIPAL STANDARDS AND WITH OPSS 407, 408, 409 (CCTV), OPSS MUNI:410, OPSS:MUNI 421, AND OPSS:MUNI 441 AND ALL SPECIFICATIONS REFERENCED WITHIN THESE SECTIONS.
- J. ALL MAINTENANCE HOLES ARE 1,200 mm DIAMETER, UNLESS OTHERWISE SPECIFIED.
- K. PIPE SUPPORT AT ALL STRUCTURES TO OPSS 708.020.
- L. MAINTENANCE HOLE AND CATCH BASIN FRAMES AND GRATES TO BE SET TO BASE COURSE ASPHALT ELEVATION IN ACCORDANCE WITH BSD-41. FRAME AND GRATES TO BE RAISED TO FINISHED GRADE PRIOR TO THE PLACEMENT OF SURFACE COURSE ASPHALT USING CONCRETE ADJUSTMENT UNITS. ADJUSTMENT UNITS MUST BE CERTIFIED TO MEET ALL PERTINENT OPS, CSA, ASTM AND MTO-DSM LISTS, OR OTHER INDUSTRY GUIDELINES FOR MATERIALS, PERFORMANCE AND USE AS APPLICABLE. MAXIMUM COMBINED HEIGHT OF ADJUSTMENT UNITS SHALL BE 300 mm.
- M. ADJUSTMENT UNITS AND JOINTS SHALL BE SEALED AND PARGED IN COMPLIANCE WITH MANUFACTURER'S SPECIFICATIONS.
- N. MORTAR SHALL BE USED FOR LEVELING PRECAST UNITS ONLY. THE THICKNESS OF MORTAR SHALL BE 10 mm TO FILL ALL VOIDS CREATED BY IRREGULARITIES IN THE PRECAST UNITS TO ENSURE AN EVEN SURFACE ONLY.
- O. GRADE AND CROSSFALL ADJUSTMENT OF MAINTENANCE HOLE AND CATCH BASIN FRAMES SHALL BE MADE WITH USING PRODUCTS SPECIFICALLY MANUFACTURED FOR THAT PURPOSED.
- P. TRENCH BACKFILL TO BE SELECT NATIVE MATERIAL AS APPROVED BY ENGINEER, OR IMPORTED SELECT SUBGRADE MATERIAL TO OPSS 1010. BACKFILL TO BE PLACED IN MAXIMUM 200 mm THICK LIFTS (OR AS OTHERWISE DIRECTED BY THE GEOTECHNICAL CONSULTANT) AND COMPACTED TO A DRY DENSITY OF AT LEAST 95% OF THE MATERIAL'S STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD).
- Q. PIPE EMBEDMENT TO BE COMPACTED TO A DRY DENSITY OF AT LEAST 95% OF THE MATERIAL'S SPMDD. BACKFILL AND EMBEDMENT TO OPSS 802.010 (FLEXIBLE PIPE), GRANULAR 'A' EMBEDMENT OR OPSS 802.031 (RIGID PIPE) CLASS 'B', GRANULAR 'A' BEDDING, GRANULAR 'B' COVER (MAX. AGGREGATE SIZE 25 mm), MINIMUM BEDDING DEPTH 150 mm, MINIMUM COVER DEPTH 300 mm ON ALL PIPES. WHERE EXCESSIVELY WET OR POOR SUBGRADE IS ENCOUNTERED AT THE INVERT LEVEL, IT MAY BE NECESSARY TO INCREASE THE BEDDING THICKNESS.
- R. CLEAR STONE COMPLETELY WRAPPED IN FILTER FABRIC MAY BE SUBSTITUTED FOR EMBEDMENT MATERIAL IF APPROVED BY THE ENGINEER.
- S. ALL SILTATION AND EROSION CONTROL 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 THE APPROVAL OF THE CITY ENGINEERING DEPARTMENT.
- T. DISTURBED AREAS TO BE REINSTATED TO PREVIOUS CONDITION OR BETTER.
- U. REINSTATEMENT OF ALL DISTURBED BOULEVARDS AND DITCHES TO INCLUDE REGRADING, PLACEMENT OF MINIMUM 150 mm TOPSOIL AND SOD/SEED IN ACCORDANCE WITH OPSS 802, OPSS 803 AND OPSS:MUNI 804. SOD TO BE STAKED WHERE NECESSARY TO AVOID MOVEMENT.
- V. DURING CONSTRUCTION TRAFFIC MARKERS AND SIGNS ARE TO BE INSTALLED IN ACCORDANCE WITH WITH THE MTO TRAFFIC CONTROL MANUAL FOR ROADWAY OPERATIONS, FIELD EDITION 1987.
- W. LOCATIONS OF EXISTING UTILITIES ARE NOT GUARANTEED. THE CONTRACTOR IS RESPONSIBLE FOR THE PRESERVATION OF ALL EXISTING INFRASTRUCTURE/FACILITIES AS WELL AS NOTIFYING ALL UTILITY COMPANIES AT LEAST 48 HOURS PRIOR TO COMMENCING WORK AND COORDINATE CONSTRUCTION ACCORDINGLY.
- X. ALL ON-SITE MATERIAL SHALL BE PROPERLY STORED, SECURED, MONITORED AND COVERED AS REQUIRED. SPECIFICALLY, ALL PVC PIPE SHALL BE COVERED WHILE STORED ON-SITE.

ROADS

- A. SUBGRADE AND BOULEVARD MATERIAL TO BE COMPACTED TO A DRY DENSITY OF AT LEAST 98% OF THE MATERIAL'S SPMDD. SUBGRADE TO BE PROOF ROLLED AND CERTIFIED PRIOR TO PLACING GRANULAR 'B'.
- B. GRANULAR 'A' AND 'B' TO BE COMPACTED TO A DRY DENSITY OF 98% OF THE MATERIAL'S RESPECTIVE SPMDD.
- C. ASPHALT TO BE COMPACTED TO A MINIMUM OF 97% OF THE MARSHALL BULK DENSITY.
- D. ROADWAYS SHALL BE CONSTRUCTED WITH MINIMUM 250 mm GRANULAR 'B', 150 mm GRANULAR 'A', 50 mm HL8 BASE COURSE ASPHALT AND 40 mm HL3 SURFACE ASPHALT. LIGHT DUTY ASPHALT AREAS (PARKING STALLS) SHALL BE CONSTRUCTED WITH MINIMUM 250 mm GRANULAR 'B', 150 mm GRANULAR 'A' AND 50 mm HL3 SURFACE COURSE ASPHALT.
- E. JOINTS WITH EXISTING ASPHALT TO BE SAW CUT STRAIGHT PRIOR TO PLACING NEW ASPHALT. WHERE EXISTING ASPHALT IS THICKER THAN 75 mm, A 300 mm WIDE BY 40 mm DEEP LAP JOINT SHALL BE GROUND INTO EXISTING ASPHALT PRIOR TO THE PLACEMENT OF SURFACE COURSE ASPHALT. REFER TO INSET DETAIL.
- F. ALL GRANULAR AND ASPHALT MATERIAL TO BE PLACED IN ACCORDANCE WITH OPSS 310 AND OPSS:MUNI 314.
- G. TACK COAT TO BE APPLIED AT THE DIRECTION OF THE ENGINEER.
- H. CONCRETE MOUNTABLE CURB WITH NARROW GUTTER SHALL BE IN ACCORDANCE WITH OPSS 600.100 AND OPSS:MUNI 353.
- I. CONCRETE BARRIER CURB IN ACCORDANCE WITH OPSS 600.110 AND OPSS:MUNI 353 SHALL BE INSTALLED IN PARKING LOTS.
- J. CURB DEPRESSIONS AT SIDEWALK SHALL BE IN ACCORDANCE WITH OPSS 310.033. CURB DEPRESSIONS AT DRIVEWAYS SHALL BE IN ACCORDANCE WITH OPSS 351.010.
- K. CONCRETE SIDEWALK SHALL BE IN ACCORDANCE WITH OPSS 310.010 AND OPSS 351. SUBBASE TO CONSIST OF 150 mm DEPTH GRANULAR 'A'. SIDEWALK RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH OPSS 310.033 AND TACTILE WALKING SURFACE INDICATORS WHERE SPECIFIED IN ACCORDANCE WITH OPSS 310.039.
- L. ASPHALT DRIVEWAYS TO BE CONSTRUCTED WITH A MINIMUM OF 50 mm OF HL3A ASPHALT AND 200 mm GRANULAR 'A'.
- M. SUBDRAINS TO BE PERFORATED, COMPLETE WITH FILTER SOCK, OTHER THAN THE 2.0 m SECTION IMMEDIATELY UPSTREAM OF ALL STRUCTURES WHICH SHALL BE NON-PERFORATED.

STORM SEWER

- A. STORM MAINTENANCE HOLES AND CATCH BASIN MAINTENANCE HOLES IN ACCORDANCE WITH OPSS 701.010, 701.011, AND 701.012.
- B. MAINTENANCE HOLES TO BE BENCHED IN ACCORDANCE WITH OPSS 701.021. MINIMUM BENCHING WIDTH SHALL BE 230 mm. CATCH BASIN MAINTENANCE HOLES TO HAVE A 900 mm SUMP IN ACCORDANCE WITH OPSS 701.010.
- C. MAINTENANCE HOLE AND CATCH BASIN MAINTENANCE HOLE STEPS IN ACCORDANCE WITH OPSS 405.010.
- D. MAINTENANCE HOLE FRAME AND GRATES IN ACCORDANCE WITH OPSS 401.010, TYPE 'A' CLOSED COVER.
- E. CATCH BASINS AND DOUBLE CATCH BASINS IN ACCORDANCE WITH OPSS 705.010 AND 705.020 C/W 900 mm SUMP.
- F. CATCH BASINS AND DOUBLE CATCH BASINS FRAME AND GRATES IN ACCORDANCE WITH OPSS 401.081. CATCH BASINS, DOUBLE CATCH BASINS AND CATCH BASIN MAINTENANCE HOLES INSTALLED IN CURB LINE IN ACCORDANCE WITH OPSS 610.010.
- G. MAINTENANCE HOLES AND CATCH BASIN ADJUSTMENT UNITS SHALL BE IN ACCORDANCE WITH BSD-41.
- H. CATCH BASIN LATERALS TO BE INSTALLED WITH MINIMUM 2.0% GRADE. MINIMUM PIPE SIZE 250 mm DIA. SINGLE, 300 mm DIA. DOUBLE.
- I. ALL CONNECTIONS TO THE STORM SEWER SHALL BE MADE WITH A STORM MAINTENANCE HOLE OR AN APPROVED FACTORY TEE CONNECTION IN ACCORDANCE WITH OPSS 708.010 OR OPSS 708.030.
- J. STORM SEWER TO BE MINIMUM 300 mm DIAMETER WITH JOINTS CONFORMING TO CSA STANDARD A257.3.
- K. ALL PIPE BEDDING MUST BE IN ACCORDANCE WITH OPSS. MAXIMUM COVER TABLE NO FLEXIBLE PIPE SEWERS WILL BE INSTALLED WITH A DEPTH OF COVER GREATER THAN 6 m UNLESS SPECIFICALLY APPROVED BY THE DIRECTOR OF ENGINEERING.
- L. ALL PIPE HANDLING INSTALLATIONS MUST BE IN STRICT COMPLIANCE WITH MANUFACTURER'S INSTALLATION GUIDES AND THE ONTARIO CONCRETE PIPE ASSOCIATION OR UNIBELL GUIDELINES.

SANITARY SEWER

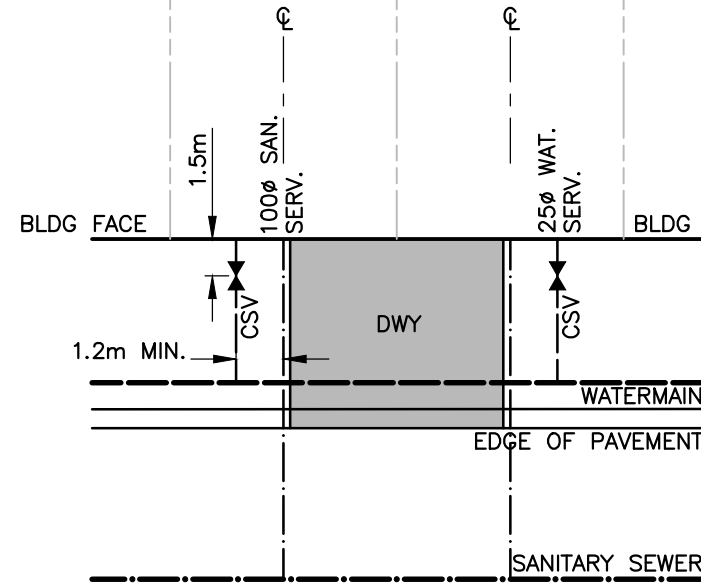
- A. SANITARY MAINTENANCE HOLES IN ACCORDANCE WITH OPSS 701.010 AND OPSS 701.011.
- B. SANITARY MAINTENANCE HOLES TO BE BENCHED IN ACCORDANCE WITH OPSS 701.021. ALL CONNECTION TO MAINTENANCE HOLES TO INCLUDE KOR-N-SEAL RUBBER BOOT CONNECTION.
- C. FROST STRAPS TO BE INSTALLED ON ALL MAINTENANCE HOLES IN ACCORDANCE WITH OPSS 701.100.
- D. FROST STRAPS SHALL BE INSTALLED ON ALL MAINTENANCE HOLES IN ACCORDANCE WITH OPSS 701.100.
- E. MAINTENANCE HOLE STEPS IN ACCORDANCE WITH OPSS 405.010.
- F. MAINTENANCE HOLE FRAME AND COVER TO OPSS 401.010, TYPE 'A' CLOSED COVER.
- G. MAINTENANCE HOLE FRAMES ARE TO BE SET TO BASE COURSE ASPHALT GRADE AND ADJUSTED TO FINAL GRADE WHEN THE TOP LIFT OF ASPHALT IS PLACED. ALL ADJUSTMENTS TO BE IN ACCORDANCE WITH BSD-41.
- H. MAINTENANCE HOLE STRUCTURES EXCEEDING 5.0 m IN DEPTH TO INCLUDE SAFETY PLATFORM IN ACCORDANCE WITH OPSS 404.020.
- I. MAXIMUM DEFLECTION FROM COMBINED LIVE AND DEAD LOADING SHALL NOT EXCEED ANY CSA, OPSS OR MANUFACTURER'S SPECIFICATIONS.
- J. PVC, CONCRETE AND PROFILE WALL PVC SEWERS SHALL HAVE RUBBER GASKET TYPE JOINTS AND SHALL BE CERTIFIED TO CONFORM TO ALL APPLICABLE CURRENT CSA SPECIFICATIONS.
- K. ALL CONNECTIONS TO NEW SANITARY MAINS SHALL BE MADE WITH PRE-MANUFACTURED, FABRICATED TEES.
- L. SANITARY SERVICES TO BE 100 mm DIA. PVC SDR 28, RUBBER GASKET TYPE JOINTS AND SHALL CONFORM TO CSA. (B-182.2.3.4) (COLOURED GREEN).
- M. MINIMUM DEPTH OF LATERAL AT PROPERTY LINE SHALL BE 2.4 m MEASURED FROM THE SEWER OBVERT TO FINISHED GROUND SURFACE ELEVATION UNLESS NOTED OTHERWISE.
- N. RADIUS BENDS TO BE USED ON ALL SEWER CONNECTIONS WHERE THE ANGLE OF CONNECTION BETWEEN THE SERVICE AND SEWER EXCEEDS 90°.
- O. SANITARY SERVICES TO BE IN ACCORDANCE WITH OPSS 1006.010 WITH A MINIMUM PIPE SLOPE OF 1.0%.

WATERMAIN

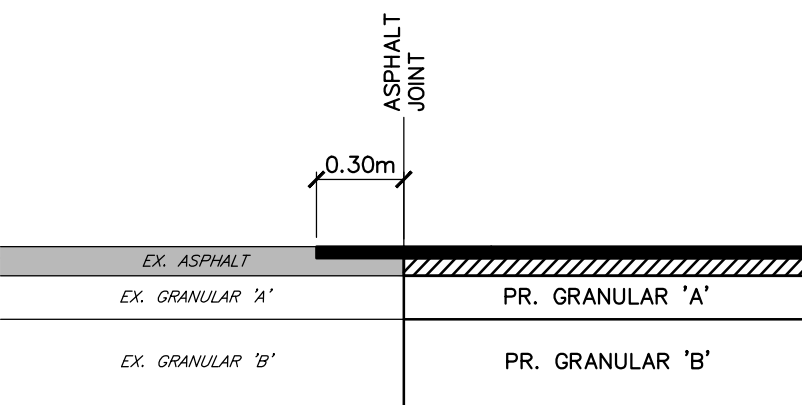
- A. GENERAL INSTALLATION AND TESTING OF WATERMAIN TO BE IN ACCORDANCE WITH OPSS:MUNI 421, OPSS:MUNI 701 AND CITY OF BARRIE ENGINEERING STANDARDS. ALL WORK ON THE EXISTING WATERMAIN TO BE COORDINATED WITH THE CITY OF BARRIE.
- B. CONTRACTORS SHALL INFORM THE CITY OF BARRIE WATER OPERATIONS DEPARTMENT A MINIMUM OF 48 HOURS IN ADVANCE OF THEIR INTENTIONS TO PERFORM WORK ON WATER INFRASTRUCTURE.
- C. 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 WATERMAINS.
- D. MINIMUM COVER OVER WATERMAIN SHALL BE 1.7 m. THE MINIMUM HORIZONTAL SEPARATION BETWEEN WATERMAIN AND SEWERS SHALL BE 2.5 m WHERE WATERMAIN CONFLICTS WITH SEWER PIPES. DEFLECT WATERMAIN HORIZONTALLY OR VERTICALLY WHILE PROVIDING A MINIMUM OF 0.5 m CLEARANCE BETWEEN WATERMAIN AND SEWERS. INSULATION TO BE PROVIDED WHERE MINIMUM COVER CAN NOT BE ACHIEVED. WATERMAIN SHALL NOT BE INSTALLED WITH COVER LESS THAN 1.2 m.
- E. WATER SERVICES SHALL BE EMBEDMENT 100 mm ABOVE AND BELOW TO CONFORM TO OPSS:MUNI 1004.05.07.
- F. RESTRAINING WILL BE REQUIRED ON ALL HYDRANTS. THRUST BLOCKS IN ACCORDANCE WITH OPSS 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. RESTRAINING DEVICES TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
- G. CONTRACTOR SHALL PROVIDE CATHODIC PROTECTION ON THE WATER DISTRIBUTION SYSTEM. IN DETERMINING THE MODE OF PROTECTION, AN ELECTRICAL RESISTIVITY OF 4000-4500 OHM-CM SHOULD BE USED. THE CONTRACTOR SHALL PROPOSE METHODS AND MATERIALS TO BE USED FOR APPROVAL BY THE ENGINEER AND CITY OF BARRIE WATER OPERATIONS DEPARTMENT.
- H. TRACER 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 FLANGE BOLT. ALL SPLICES TO UTILIZE CONNECTORS AS PER THE APPROVED MANUFACTURERS PRODUCTS FOR LINEAR WATER SYSTEMS LIST.
- I. ALL WATER SERVICES SHALL BE MINIMUM 25 mm TYPE 'K' COPPER. WATER SERVICE SADDLES SHALL BE USED WHEN TAPPING INTO PVC WATERMAIN.
- J. SERVICE TAPPINGS SHALL BE PLACED AT A MINIMUM SEPARATION OF 1.0 m AND A MINIMUM OF 0.6 m FROM JOINTS (ENDS OF PIPE).
- K. 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.
- L. ALL NEW CURB STOPS AND BOXES TO BE LOCATED 1.5 m OFFSET FROM BUILDING FACE AND OUT OF DRIVEWAYS AND SIDEWALKS.

MATERIALS

- A. SANITARY SEWER - SDR 35 PVC
- B. SANITARY SERVICES - SDR 28 PVC - 100 mm DIA. COLOUR GREEN (CONNECTIONS TO BE MADE USING APPROVED FACTORY MADE TEES).
- C. WATERMAIN - PVC DR18 CL150 MINIMUM; DUCTILE IRON CL52 AS PER THE APPROVED MANUFACTURERS PRODUCTS FOR LINEAR WATER SYSTEMS LIST.
- D. WATER SERVICES - 25 mm TYPE 'K' (W.H.) 3RD PARTY SOFT COPPER.
- E. MAIN STOPS - 1" to 2" 301NL-A484 (NO LEAD, LIFETIME GUARANTEED AGAINST LEAD LEACHATE FROM THE CASTING), BALL STYLE c/w STAINLESS STEEL STEM, AWWA THREAD BY COMPRESSION CAMBRIDGE BRASS.
- F. CURB STOPS - 1" to 2" 202NL-B484 (NO LEAD, LIFETIME GUARANTEED AGAINST LEAD LEACHATE FROM THE CASTING), BALL STYLE WITH DRAIN c/w STAINLESS STEEL STEM, COMPRESSION JOINT CAMBRIDGE BRASS.
- G. SERVICE BOXES - NUMBER 7, D-1 CLOW OR MUELLER, 24" BLACK RODS STRAIGHT.
- H. HYDRANTS - CANADA VALVE CENTURY OR CLOW D67M PREMIER. STORZ CONNECTIONS MUST BE SUPPLIED BY MANUFACTURER SPECIFIC TO THE HYDRANT.
- I. VALVES - RESILIENT SEATED GATE VALVE, MECHANICAL JOINT, OPEN LEFT CLOW OR MUELLER WITH 5 SL-48 SLIDING VALVE BOX. PROVIDE VALVE STEM EXTENSIONS WHERE WATERMAIN EXCEEDS 1.7m DEPTH.
- J. MECHANICAL JOINT DUCTILE FITTINGS - AWWA/ANSI C153/A21.53.
- K. RESTRAINING GLANDS - SIGMA ONE-LOK.
- L. LIVE TAP SADDLES - EPOXY COATED WITH STAINLESS STEEL BOLTS.
- M. LIVE TAP VALVE - RESILIENT SEATED RSGV, LIVE TAP VALVE, OPEN LEFT CLOW OR MUELLER.
- N. FILTER FABRIC - TERRAFIX 270R OR APPROVED EQUAL.
- O. PERFORATED SUBDRAINS - 100mm BIG 'O' WITH GEOTEXTILE FILTER SOCK OR APPROVED EQUAL.
- P. STORM SEWER - REINFORCED CONCRETE WITH A MINIMUM STRENGTH OF 50 N/m/mm CERTIFIED TO CSA STANDARD A247.2-1982, CLASS 100-D OR PVC CERTIFIED TO CSA STANDARDS 182.2 AND 182.4 (MAX. PIPE DIAMETER 450 mm).
- Q. RIP RAP TO OPSS 1004.05.05, ON TERRAFIX 270R FILTER FABRIC.
- R. ALL SPECIFIED AGGREGATES TO OPSS 1010.



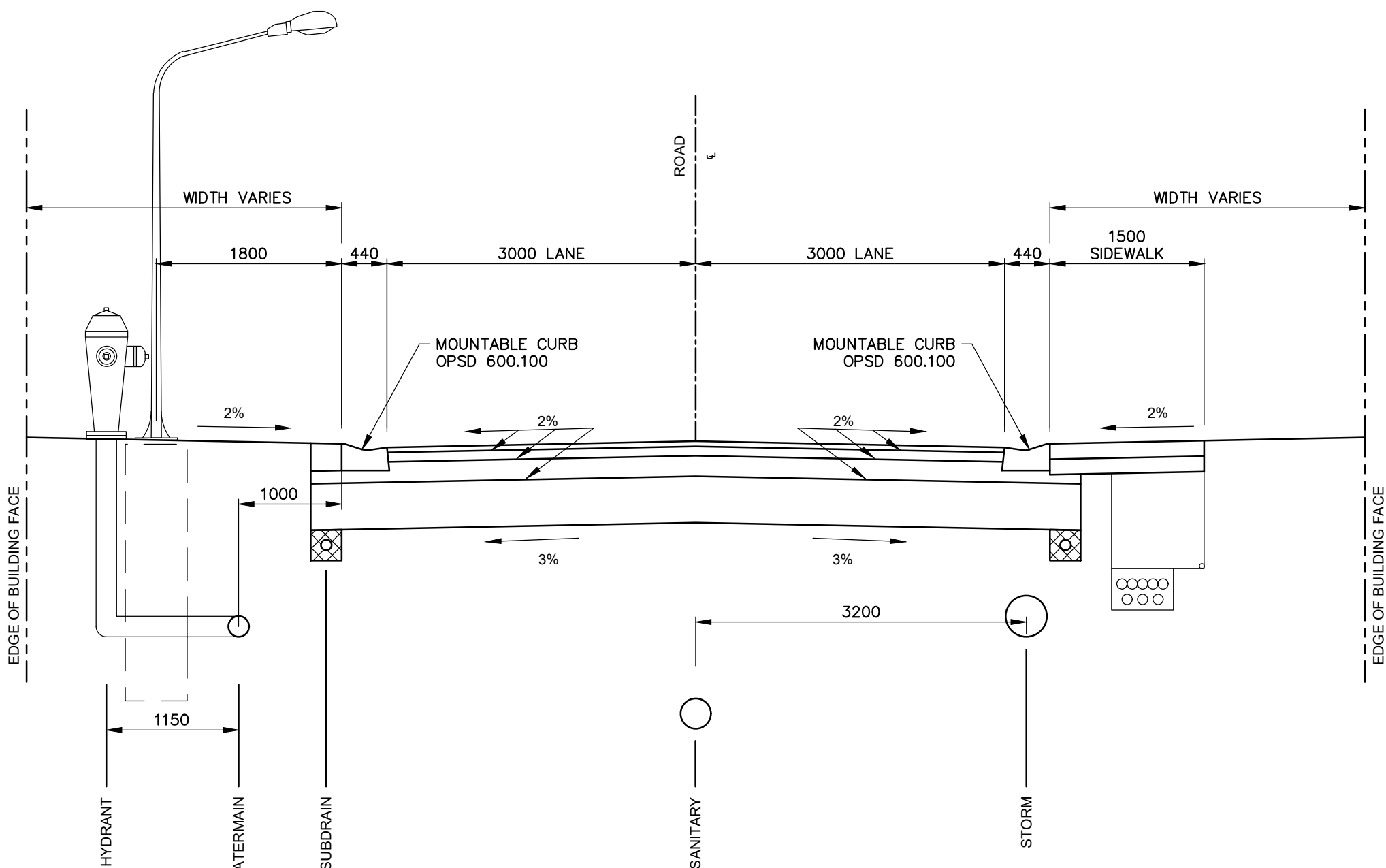
TYPICAL SERVICE LOCATIONS
NTS



LAP JOINT DETAIL
NOT TO SCALE

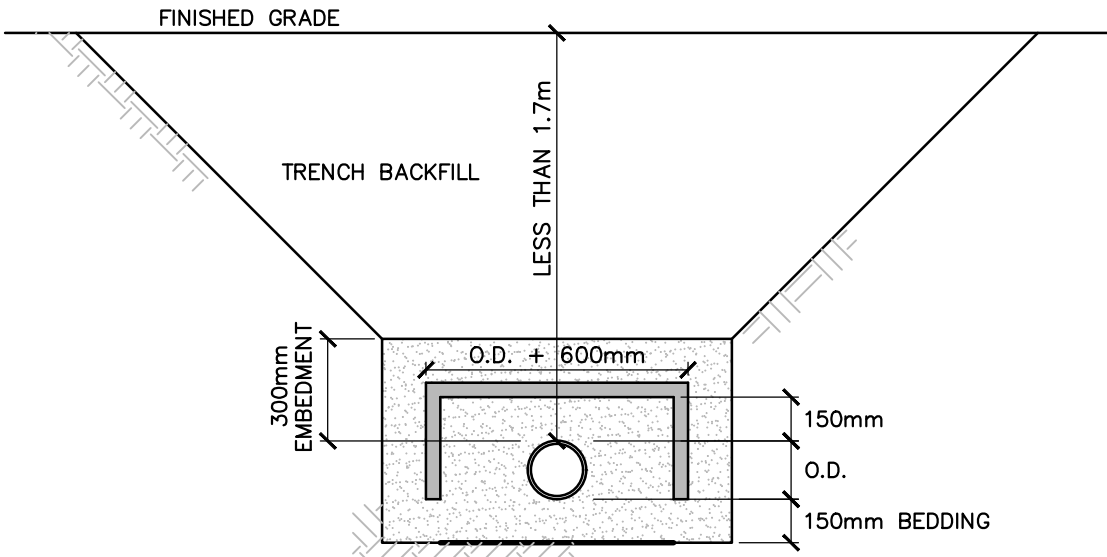
PRIVATE ROAD - 6.0 m PLATFORM
TYPICAL SECTION

NOT TO SCALE



- NOTES:
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
 - STORMWATER SYSTEMS TO BE DESIGNED IN ACCORDANCE WITH CITY OF BARRIE ENGINEERING GUIDELINES AND STANDARDS.

- NOTES:
- SANITARY SERVICES ARE TO BE TEMPORARILY CAPPED. LOCATIONS TO BE PROPERLY MARKED WITH A 50 x 100 mm STAKE (PAINTED GREEN) EXTENDING FROM THE INVERT OF THE SERVICE TO GROUND LEVEL.
 - WATER SERVICES ARE TO BE INSTALLED TO BUILDING FACE, TERMINATED WITH A CURB STOP VALVE AND PROPERLY MARKED WITH A 50 x 100 mm STAKE (PAINTED BLUE) EXTENDING FROM THE INVERT OF THE SERVICE TO GROUND LEVEL (REFER TO BSD-48).
 - WATER SERVICE TO BE LOCATED MIN. 1.2 m EAST OR WEST OF THE SANITARY SERVICE. CURB STOP BOXES INSTALLED IN WITHIN DRIVEWAYS SHALL HAVE FROST COLLARS.



- NOTES:
- WATERMAIN SHALL BE INSULATED TO PROVIDE FROST PROTECTION WHEREVER COVER IS LESS THAN 1.7 m AND AS SPECIFIED ON THE DRAWINGS.
 - INSULATION SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS:
 - DEPTH OF COVER BETWEEN 1.4 m TO 1.7 m REQUIRES MIN. 50 mm INSULATION
 - DEPTH OF COVER BETWEEN 1.2 m TO 1.4 m REQUIRES MIN. 100 mm INSULATION

WATERMAIN INSULATION DETAIL
NOT TO SCALE

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CONTRACTOR MUST VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER BEFORE COMMENCING WORK. DRAWINGS ARE NOT TO BE SCALED.

TATHAM ENGINEERING LIMITED CLAIMS COPYRIGHT TO THIS DRAWING WHICH MAY NOT BE USED FOR ANY PURPOSE OTHER THAN THAT PROVIDED IN THE CONTRACT BETWEEN THE OWNER/CLIENT AND THE ENGINEER WITHOUT THE EXPRESS CONSENT OF TATHAM ENGINEERING LIMITED.

DRAWING REFERENCES

TOPOGRAPHIC FEATURES, CONTOURS AND LEGAL BOUNDARIES SHOWN ON THIS PLAN BASED ON SURVEY COMPLETED BY H.F.GRANDER Co. LTD., DATED JANUARY 13, 2014.

SITE PLAN INFORMATION SHOWN ON THIS PLAN BASED ON DRAWING PREPARED BY INNOVATIVE PLANNING SOLUTIONS INC., DATED JULY 5, 2022.

BOREHOLE DATA SHOWN ON THIS PLAN BASED ON GEOTECHNICAL REPORT PREPARED BY CAMBIUM INC. DATED OCTOBER 2014.

ELEVATION

TBM#1 ELEV. 238.838 m
STATION 03120030027: SET FLUSH IN THE EAST EDGE OF THE BRIDGE ABUTMENT ON THE NORTH SIDE OF LITTLE AVENUE NEAR THE ENTRANCE TO #322 LITTLE AVENUE, IN THE CENTER OF THE WALL 0.80m BELOW THE TOP OF THE WALL.

No.	REVISION DESCRIPTION	DATE	ENGINEER STAMP
1.	ISSUED FOR SITE PLAN APPLICATION	JULY 22/22	

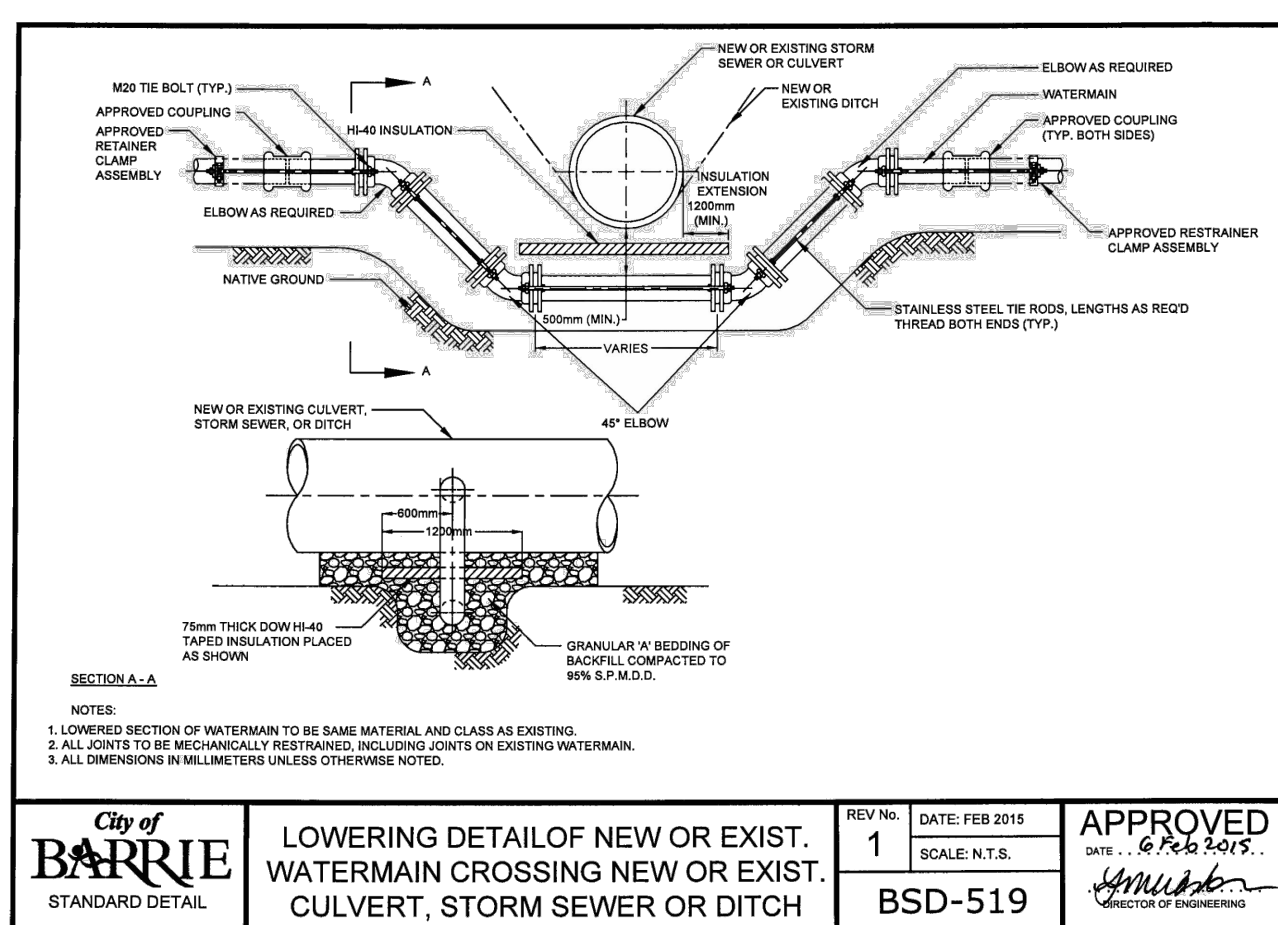
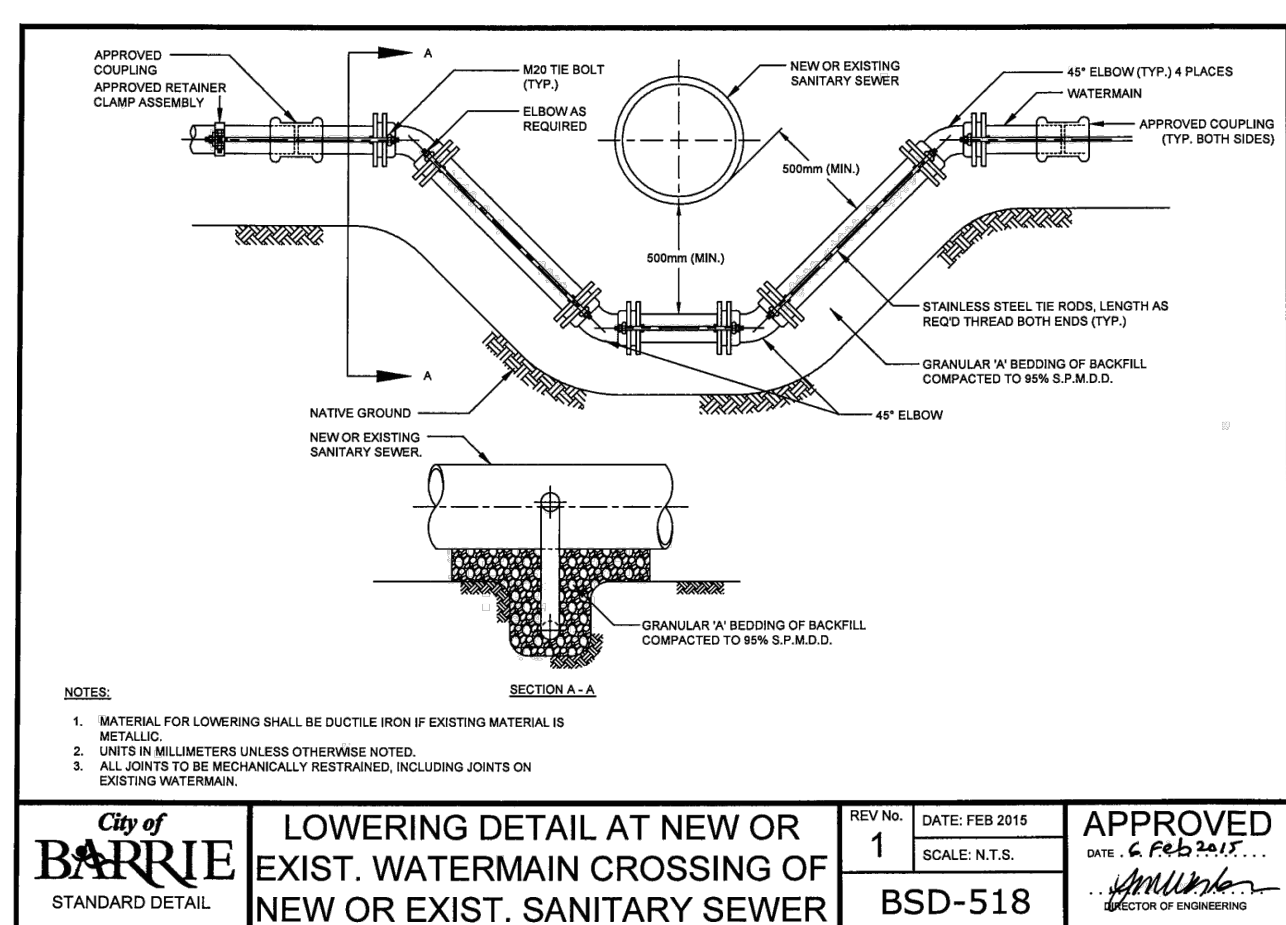
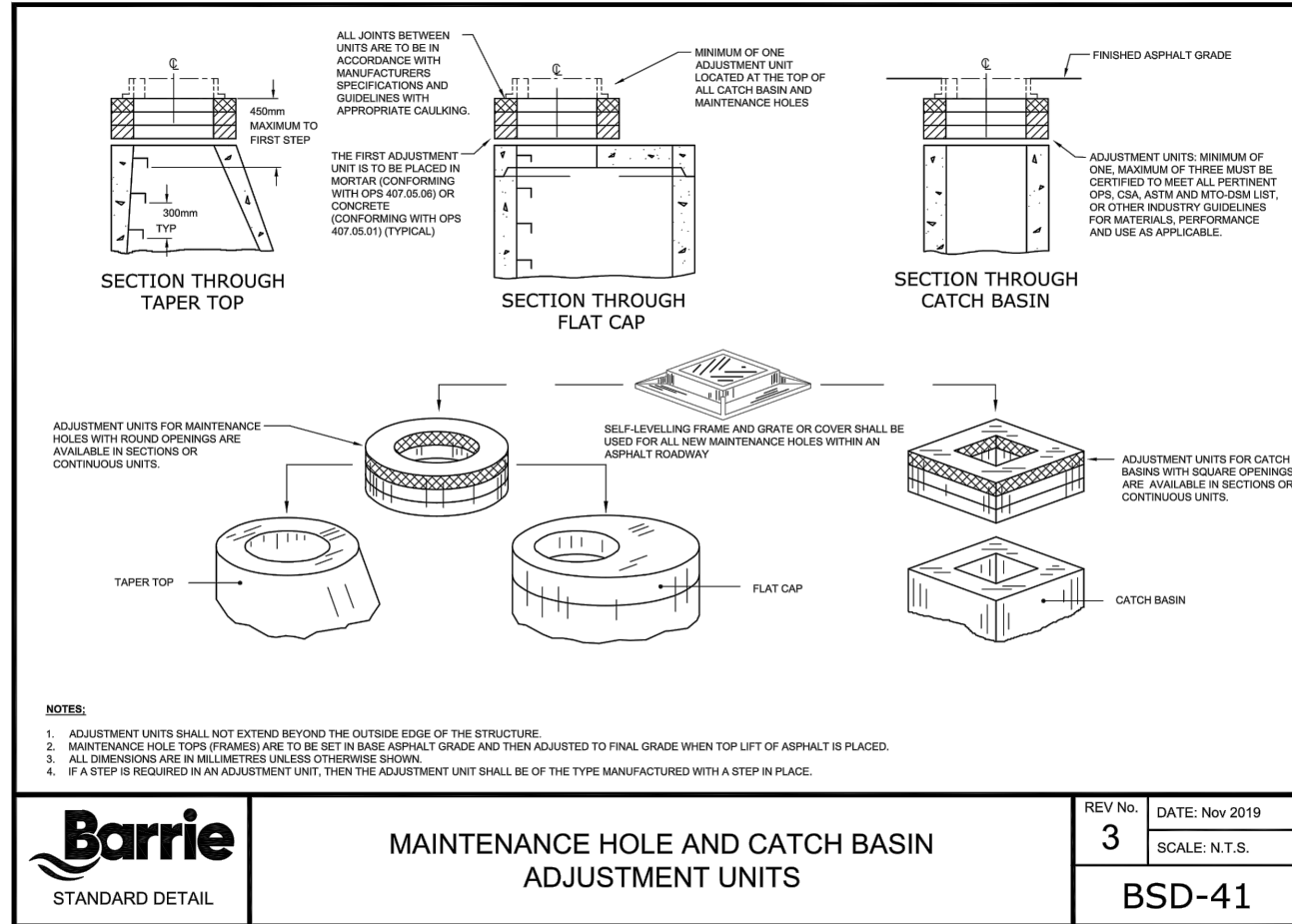
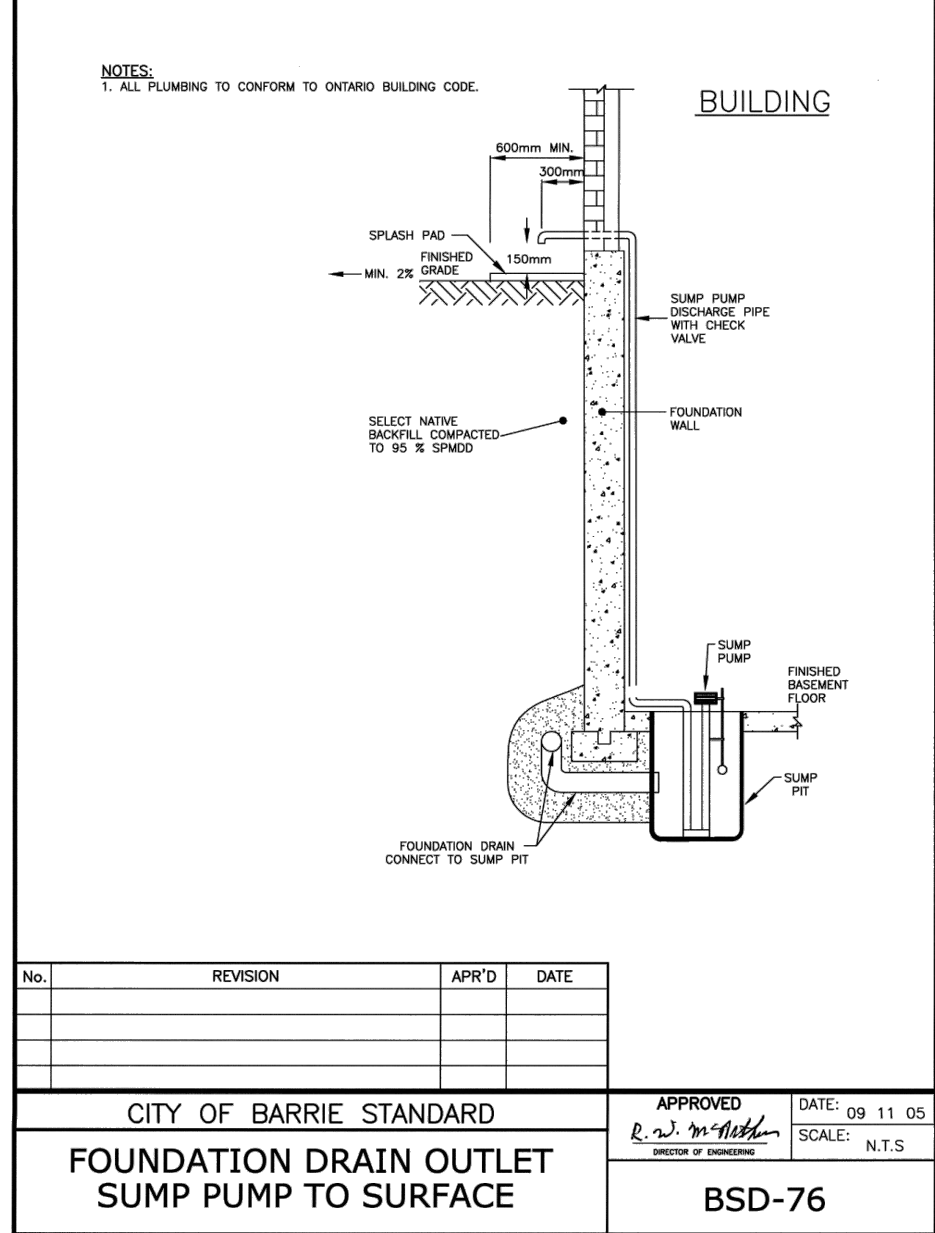
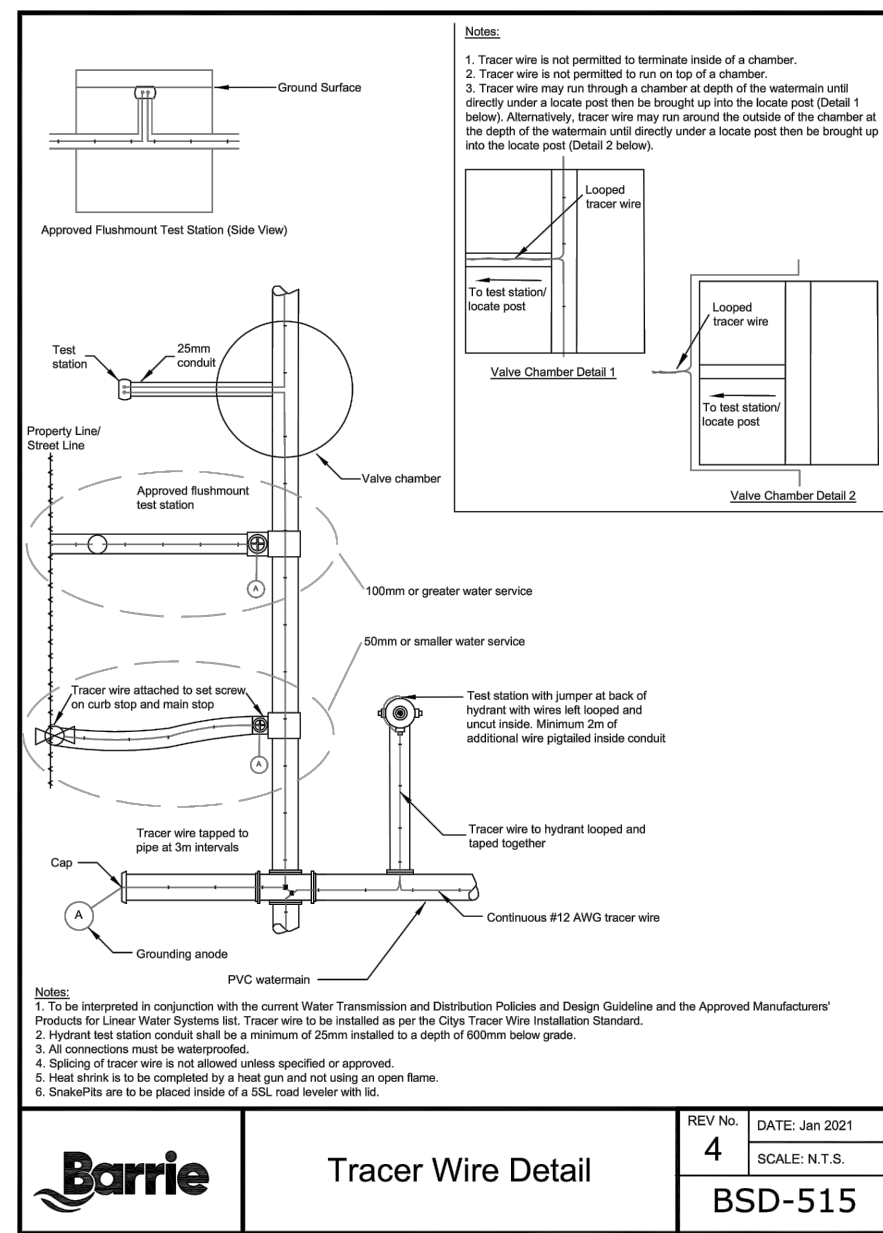
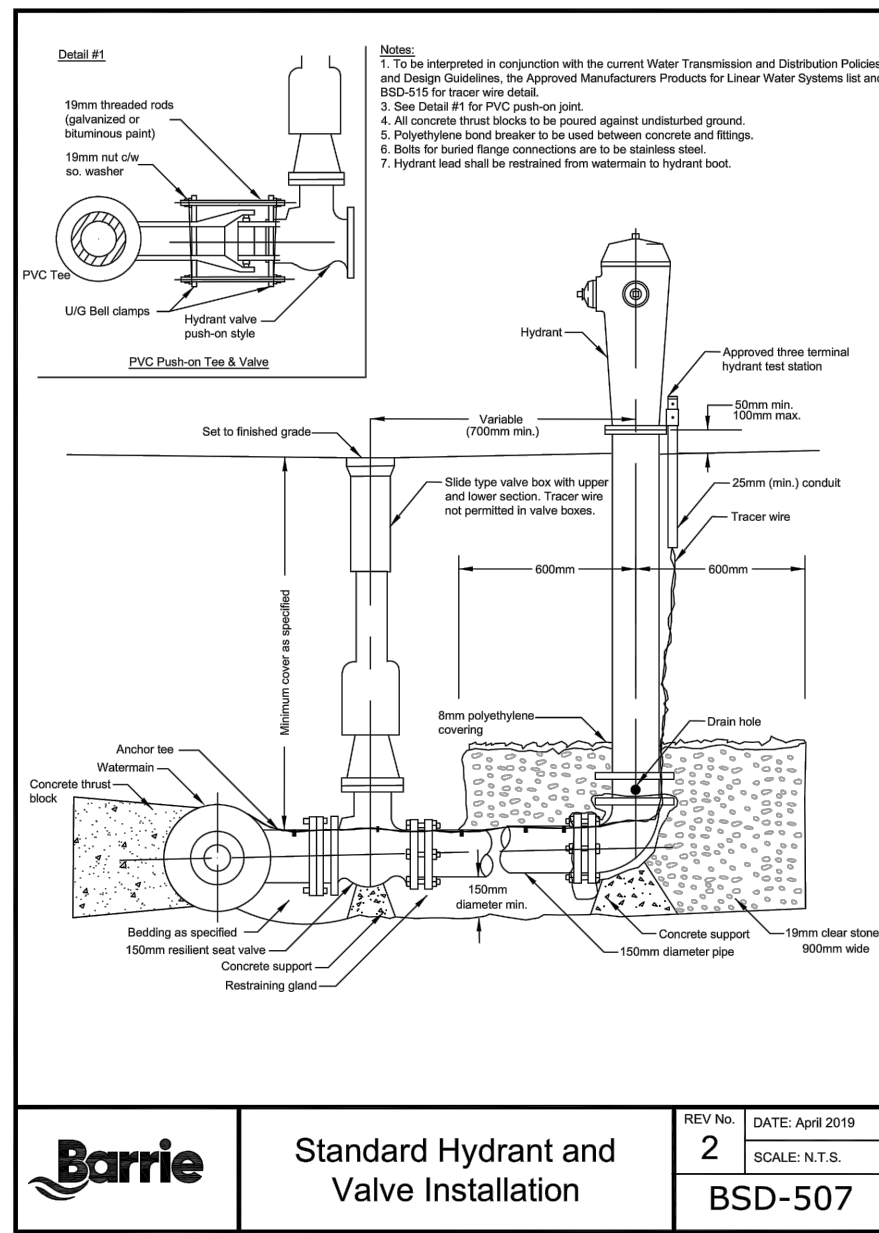
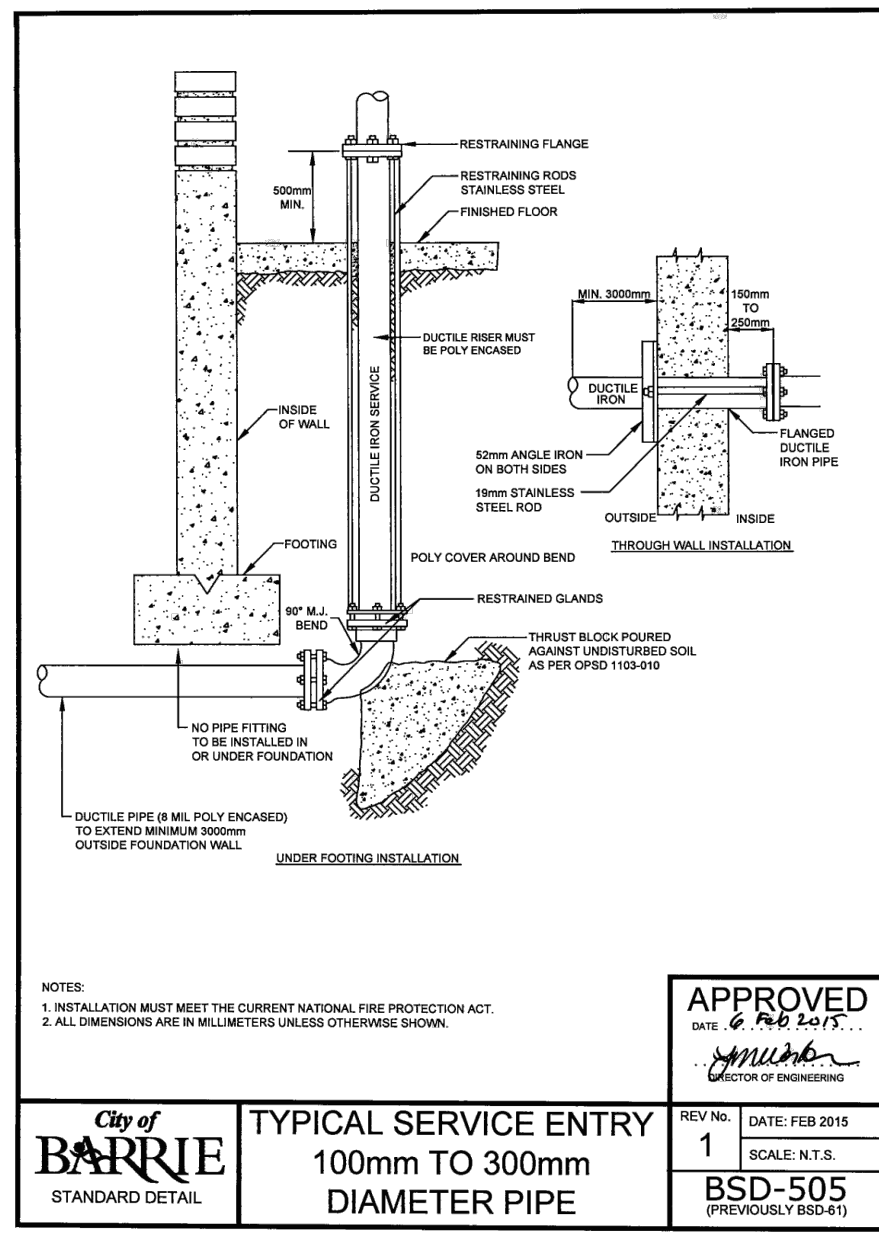
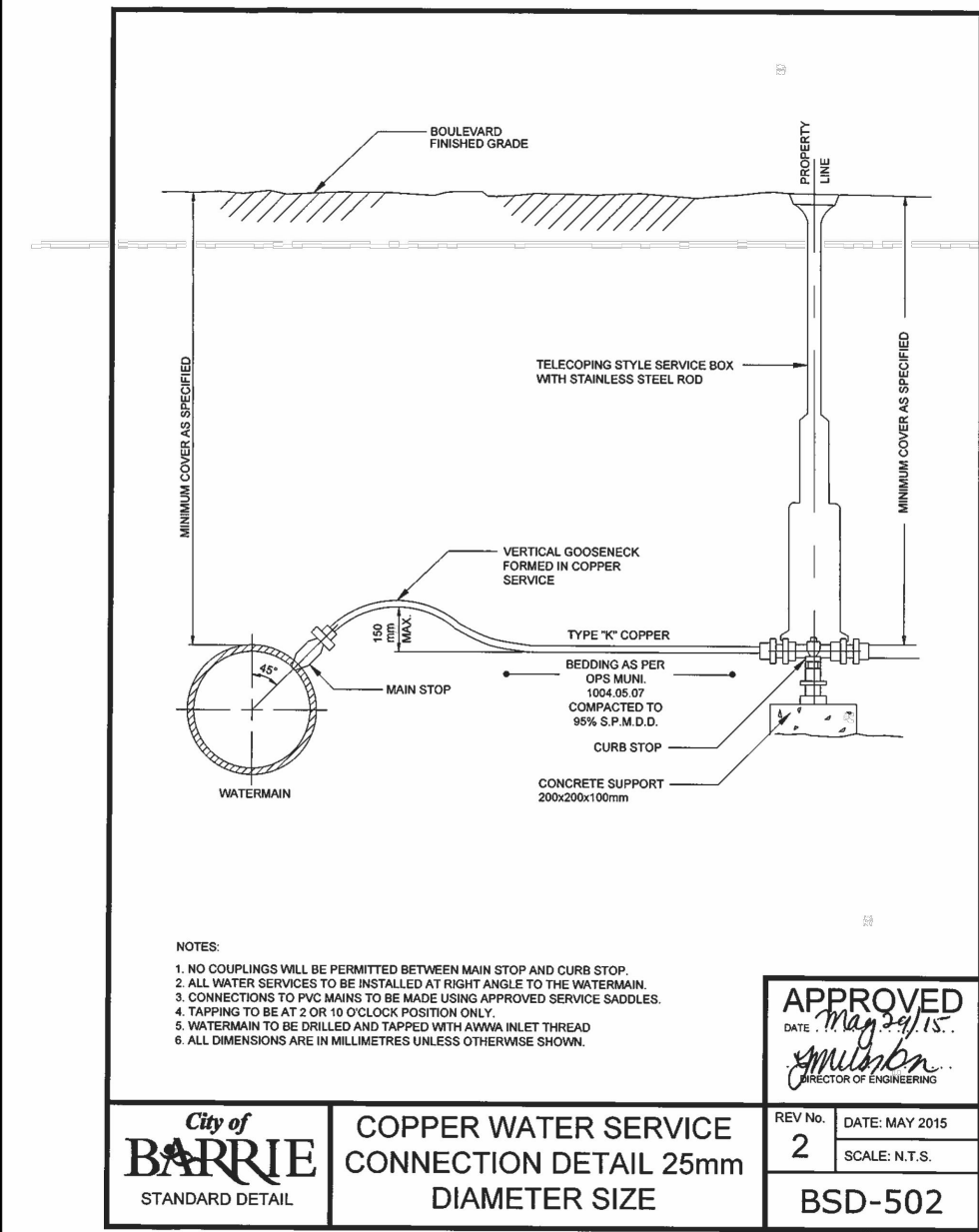


YONGE STREET & LITTLE AVENUE
RESIDENTIAL DEVELOPMENT
CITY OF BARRIE
MASON HOMES LIMITED



DETAILS & NOTES

DESIGN: LMB	FILE: 421374	DWG: DE-1
DRAWN: LMB	DATE: NOV 2021	
CHECK: LC	SCALE: AS NOTED	



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CONTRACTOR MUST VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER BEFORE COMMENCING WORK. DRAWINGS ARE NOT TO BE SCALED.

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DRAWING REFERENCES

TOPOGRAPHIC FEATURES, CONTOURS AND LEGAL BOUNDARIES SHOWN ON THIS PLAN BASED ON SURVEY COMPLETED BY H.F.GRANDER CO. LTD., DATED JANUARY 13, 2014.

SITE PLAN INFORMATION SHOWN ON THIS PLAN BASED ON DRAWING PREPARED BY INNOVATIVE PLANNING SOLUTIONS INC., DATED JULY 5, 2022.

BOREHOLE DATA SHOWN ON THIS PLAN BASED ON GEOTECHNICAL REPORT PREPARED BY CAMBIUM INC. DATED OCTOBER 2014.

ELEVATION

TBM#1 ELEV. 238.838 m
STATION 03120030027: SET FLUSH IN THE EAST EDGE OF THE BRIDGE ABUTMENT ON THE NORTH SIDE OF LITTLE AVENUE NEAR THE ENTRANCE TO #322 LITTLE AVENUE, IN THE CENTER OF THE WALL 0.80m BELOW THE TOP OF THE WALL.

No.	REVISION DESCRIPTION	DATE	ENGINEER STAMP
1.	ISSUED FOR SITE PLAN APPLICATION	JULY 22/22	



**YONGE STREET & LITTLE AVENUE
RESIDENTIAL DEVELOPMENT
CITY OF BARRIE
MASON HOMES LIMITED**



BARRIE STANDARD DETAILS

DESIGN: LMB	FILE: 421374	DWG:
DRAWN: LMB	DATE: NOV 2021	BSD-1
CHECK: LC	SCALE: AS NOTED	