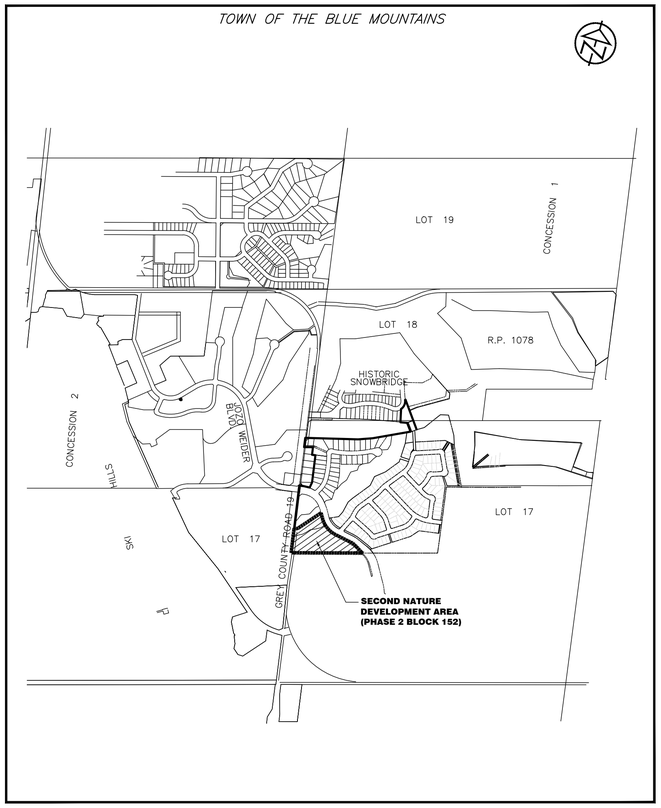
TOWN OF THE BLUE MOUNTAINS
MANORWOOD HOMES - SECOND NATURE
PHASE 2 BLOCK - 152



KEY PLAN
NTS

Dwg.No.	Description
117227-TP-1	TITLE PAGE, DRAWING INDEX AND LEGEND
117227-SS-1	SITE SERVICING PLAN
117227-SG-1	SITE GRADING PLAN
117227-SG-2	SITE GRADING PLAN
117227-STM-1	STORM DRAINAGE PLAN
117227-DE-1	DETAILS AND NOTES

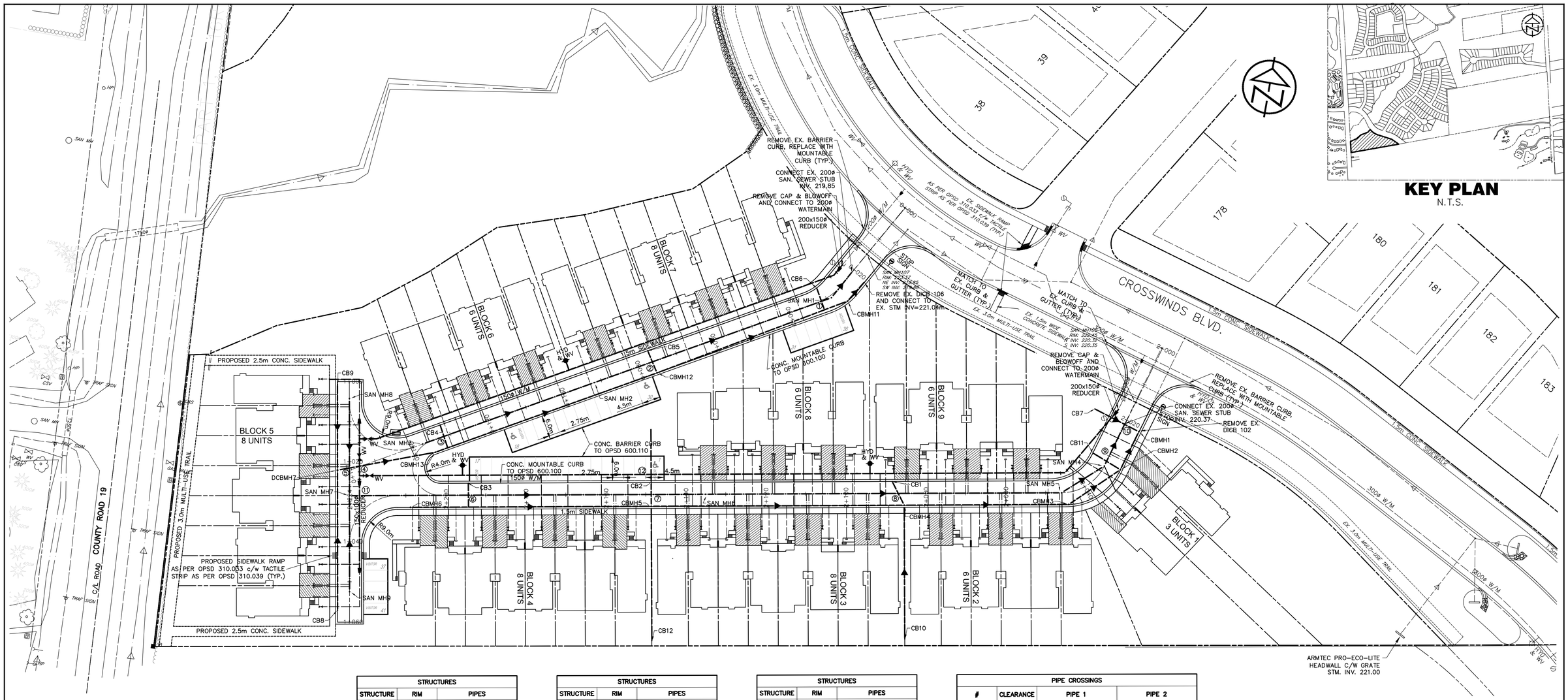
INDEX

TATHAM ENGINEERING

Contract No.: 117227
1ST SUBMISSION
JUL 4, 2019

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	200ø SAN
PROPOSED SANITARY SEWER/SIZE/DIRECTION OF FLOW	200ø SAN
EXISTING SANITARY SERVICE	
PROPOSED SANITARY SERVICE	
EXISTING SANITARY FORCEMAIN/SIZE/DIRECTION OF FLOW	200ø SAN F/M
EXISTING WATERMAIN/SIZE	150ø W/M
PROPOSED WATERMAIN/SIZE	150ø W/M
EXISTING WATER SERVICE	
PROPOSED WATER SERVICE	
EXISTING STORM SEWER/SIZE/DIRECTION OF FLOW	375ø STM
PROPOSED STORM SEWER/SIZE/DIRECTION OF FLOW	375ø STM
EXISTING CULVERT	
PROPOSED CULVERT	
PROPOSED SWALE LOCATION	
PROPOSED JOINT HYDRO, BELL AND ROGERS	
EXISTING GAS MAIN	
PROPOSED GAS MAIN	
EXISITNG FENCELINE	
PROPOSED FENCELINE	
EXISTING BUSHLINE	
EXISTING CONTOUR	179.00
EXISTING SPOT ELEVATION	× 179.00
PROPOSED SPOT ELEVATION	×179.00
EXISTING GRADING DIRECTION	
PROPOSED GRADING DIRECTION	
PROPOSED REAR YARD OVERFLOW ROUTE	
PROPOSED SWALE LOCATION	
EXISTING TEMPORARY BENCHMARK	TBM
EXISTING STANDARD IRON BAR	SIB
EXISTING BOREHOLE/NUMBER	BH9
EXISTING HYDRO TRANSFORMER	
EXISTING CABLE PEDESTAL	
EXISTING BELL PEDESTAL	
EXISTING BELL MAINTENANCE HOLE	BELL MH
EXISTING BELL POLE	BP
EXISTING HYDRO POLE	HP
EXISTING HYDRO GUY WIRE	
PROPOSED LIGHT STANDARD	LS
EXISTING TRAFFIC SIGN	TS
PROPOSED TRAFFIC SIGN	TS
PROPOSED STOP SIGN	STOP SIGN
PROPOSED STREET NAME SIGN	STREET NAME SIGN
EXISTING DECIDUOUS TREE	
EXISTING CONIFEROUS TREE	
EXISTING SANITARY MAINTENANCE HOLE/NUMBER	SAN MH17
PROPOSED SANITARY MAINTENANCE HOLE/NUMBER	SAN MH17
EXISTING HYDRANT AND VALVE	HYD & WV
PROPOSED HYDRANT AND VALVE	HYD & WV
EXISTING WATER VALVE	WV
PROPOSED WATER VALVE	WV
PROPOSED CURB STOP VALVE	
EXISTING BLOW-OFF	BLOWOFF
PROPOSED BLOW-OFF	BLOWOFF
EXISTING WM. AUTOFLUSHER	
PROPOSED WM. AUTOFLUSHER	
EXISTING WATERMAIN TERMINATION POINT	
PROPOSED WATERMAIN TERMINATION POINT	
EXISTING STORM MAINTENANCE HOLE	STM MH20
PROPOSED STORM MAINTENANCE HOLE/NUMBER	STM MH9
EXISTING CATCH BASIN	CBMH 18
PROPOSED CATCH BASIN	CB
PROPOSED CATCH BASIN MAINTENANCE HOLE/NUMBER	CBMH12
PROPOSED DOUBLE CATCH BASIN MAINTENANCE HOLE/NUMBER	DCBMH4
PROPOSED DOUBLE CATCH BASIN	DCB
PROPOSED DITCH INLET CATCH BASIN	DICB
PROPOSED RIP-RAP	



STRUCTURES		
STRUCTURE	RIM	PIPES
SAN MH1	223.50	SW INV: 219.95 200ø NE INV: 219.90 200ø
SAN MH2	224.14	NE INV: 220.98 200ø SW INV: 221.01 200ø
SAN MH3	224.87	NE INV: 221.80 200ø
SAN MH4	222.62	SW INV: 220.49 200ø N INV: 220.44 200ø
SAN MH5	222.75	NE INV: 220.55 200ø W INV: 220.60 200ø
SAN MH6	223.65	E INV: 221.05 200ø W INV: 221.08 200ø
SAN MH7	225.48	E INV: 221.70 200ø N INV: 222.00 200ø S INV: 222.50 200ø
SAN MH8	225.40	S INV: 222.24 200ø
SAN MH9	226.17	N INV: 223.20 200ø

STRUCTURES		
STRUCTURE	RIM	PIPES
CBMH1	222.43	S INV: 220.65 450ø W INV: 220.87 300ø
CBMH2	222.53	N INV: 220.74 450ø SW INV: 220.79 450ø W INV: 220.90 300ø
CBMH3	222.67	NE INV: 220.87 450ø W INV: 220.92 450ø
CBMH4	223.09	W INV: 221.31 300ø NW INV: 221.38 300ø S INV: 220.38 300ø E INV: 221.29 450ø
CBMH5	223.73	S INV: 221.71 300ø E INV: 221.63 300ø W INV: 221.65 300ø N INV: 221.71 300ø
CBMH6	225.04	E INV: 222.03 300ø
CBMH11	223.41	NE INV: 221.12 375ø SW INV: 221.17 300ø
CBMH12	223.94	SW INV: 221.75 300ø NE INV: 221.72 300ø NW INV: 222.08 300ø
CBMH13	224.79	NE INV: 222.29 300ø W INV: 222.34 300ø
DCBMH7	225.24	N INV: 223.44 300ø E INV: 222.59 300ø S INV: 223.44 300ø

STRUCTURES		
STRUCTURE	RIM	PIPES
CB1	222.12	SE INV: 221.51 300ø
CB2	223.73	S INV: 222.28 300ø N INV: 222.30 300ø
CB3	224.65	S INV: 222.06 300ø
CB4	224.68	SE INV: 222.38 300ø
CB5	223.93	SE INV: 222.20 300ø
CB6	223.48	SE INV: 221.32 300ø
CB7	222.38	E INV: 221.12 300ø
CB8	226.24	N INV: 224.00 300ø
CB9	225.36	S INV: 223.65 300ø
CB11	222.53	E INV: 221.06 300ø
CB12	223.35	N INV: 222.05 300ø

CATCH BASIN LEADS			
STRUCTURE	SIZE	LENGTH	SLOPE
CB1	300 mm	6.6 m	2.0%
CB2	300 mm	5.9 m	9.6%
CB3	300 mm	5.8 m	2.0%
CB4	300 mm	5.9 m	2.0%
CB5	300 mm	6.0 m	2.0%
CB6	300 mm	5.4 m	2.0%
CB7	300 mm	12.3 m	2.0%
CB8	300 mm	35.0 m	1.6%
CB9	300 mm	21.4 m	1.0%
CB10	300 mm	33.4 m	2.0%
CB11	300 mm	7.9 m	2.0%
CB12	300 mm	33.6 m	1.0%

PIPE CROSSINGS			
#	CLEARANCE	PIPE 1	PIPE 2
1	1.04m	CB6 TO CBMH11 STM PIPE INV.=221.24	SANMH2 TO SANMH1 SAN PIPE OBV.=220.20
2	1.20m	CB5 TO CBMH12 STM PIPE INV.=222.13	SANMH2 TO SANMH1 SAN PIPE OBV.=220.93
3	0.41m	CB4 TO CBMH13 STM PIPE INV.=222.31	SANMH3 TO SANMH2 SAN PIPE OBV.=221.90
4	0.57m	WATERMAIN W/M INV.=223.41	DCBMH7 TO CBMH13 STM PIPE OBV.=222.84
5	0.27m	DCBMH7 TO CBMH13 STM PIPE INV.=222.55	SANMH7 TO SANMH8 SAN PIPE OBV.=222.28
6	0.29m	CB3 TO CBMH6 STM PIPE INV.=221.99	SANMH7 TO SANMH6 SAN PIPE OBV.=221.70
7	0.60m	CB2 TO CBMH5 STM PIPE INV.=221.98	SANMH6 TO SANMH5 SAN PIPE OBV.=221.38
8	0.43m	CB1 TO CBMH4 STM PIPE INV.=221.44	SANMH6 TO SANMH5 SAN PIPE OBV.=221.01
9	0.34m	CB11 TO CBMH2 STM PIPE INV.=220.98	SANMH4 TO SANMH106 SAN PIPE OBV.=220.64
10	0.37m	CB7 TO CBMH1 STM PIPE INV.=220.94	SANMH4 TO SANMH106 SAN PIPE OBV.=220.57
11	1.69m	WATERMAIN W/M INV.=223.58	SANMH7 TO SANMH6 STM PIPE OBV.=221.89
12	0.25m	CB2A TO CB2 STM PIPE INV.=222.33	WATERMAIN W/M OBV.=222.09

BENCHMARKS

TBM1 – ELEVATION 226.036
TOP NUT FIRE HYDRANT LOCATED AT THE NORTHWEST CORNER OF MOUNTAIN DRIVE AND JOZO WEIDER BOULEVARD (99-21)

TBM2 – ELEVATION 224.127
RAIL ROAD SPIKE IN WEST FACE OF HYDRO POLE LOCATED AT THE SOUTH WEST CORNER OF GREY ROAD 19 AND JOZO WEIDER BOULEVARD

NOTES

ALL STORM CATCH BASIN LEADS ARE TO BE 300mm DIA. PVC PIPE UNLESS OTHERWISE NOTED.

ALL MAINTENANCE HOLES ARE TO BE 1200mmø UNLESS OTHERWISE NOTED.

No.	REVISION DESCRIPTION	DATE
1.	1ST SUBMISSION	JUL 4/19

ENGINEER STAMP

LICENSED PROFESSIONAL ENGINEER
D. J. HURLEY
PROVINCE OF ONTARIO

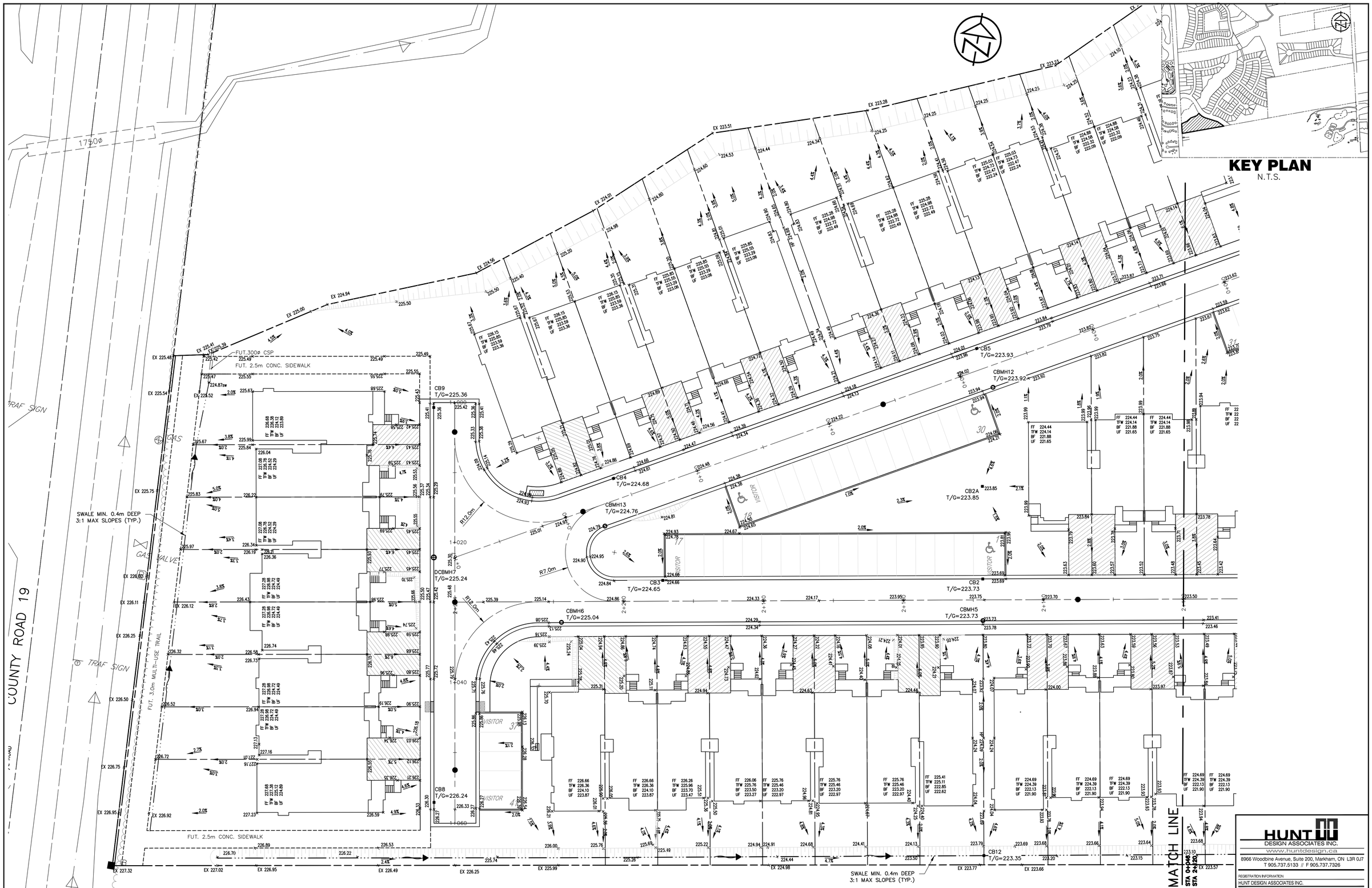
TOWN OF THE BLUE MOUNTAINS
MANORWOOD HOMES - SECOND NATURE
PHASE 2 BLOCK - 152

TATHAM ENGINEERING

SITE SERVICING PLAN

DESIGN: MR/AO	FILE: 117227	DWG: SS-1
DRAWN: MR	DATE: SEPT 2017	
CHECK: MJC	SCALE: 1:500	

Drawing Name: 117227_SS-1.dwg, Plotted: Jul 05, 2019



HUNT DESIGN ASSOCIATES INC.
www.huntdesign.ca
8966 Woodbine Avenue, Suite 200, Markham, ON L3R 0J7
T 905.737.5133 // F 905.737.7326
REGISTRATION INFORMATION
HUNT DESIGN ASSOCIATES INC.

BENCHMARKS

TBM1 – ELEVATION 226.036
TOP NUT FIRE HYDRANT LOCATED AT THE NORTHWEST CORNER OF MOUNTAIN DRIVE AND JOZO WEIDER BOULEVARD (99-21)

TBM2 – ELEVATION 224.127
RAIL ROAD SPIKE IN WEST FACE OF HYDRO POLE LOCATED AT THE SOUTH WEST CORNER OF GREY ROAD 19 AND JOZO WEIDER BOULEVARD

NOTES

SITE GRADING PLAN DESIGN COMPLETED BY HUNT DESIGN ARCHITECTS INC.

No.	REVISION DESCRIPTION	DATE
1.	1ST SUBMISSION	JUL 4/19

ENGINEER STAMP

LICENSED PROFESSIONAL ENGINEER
D. J. HURLEY
PROVINCE OF ONTARIO

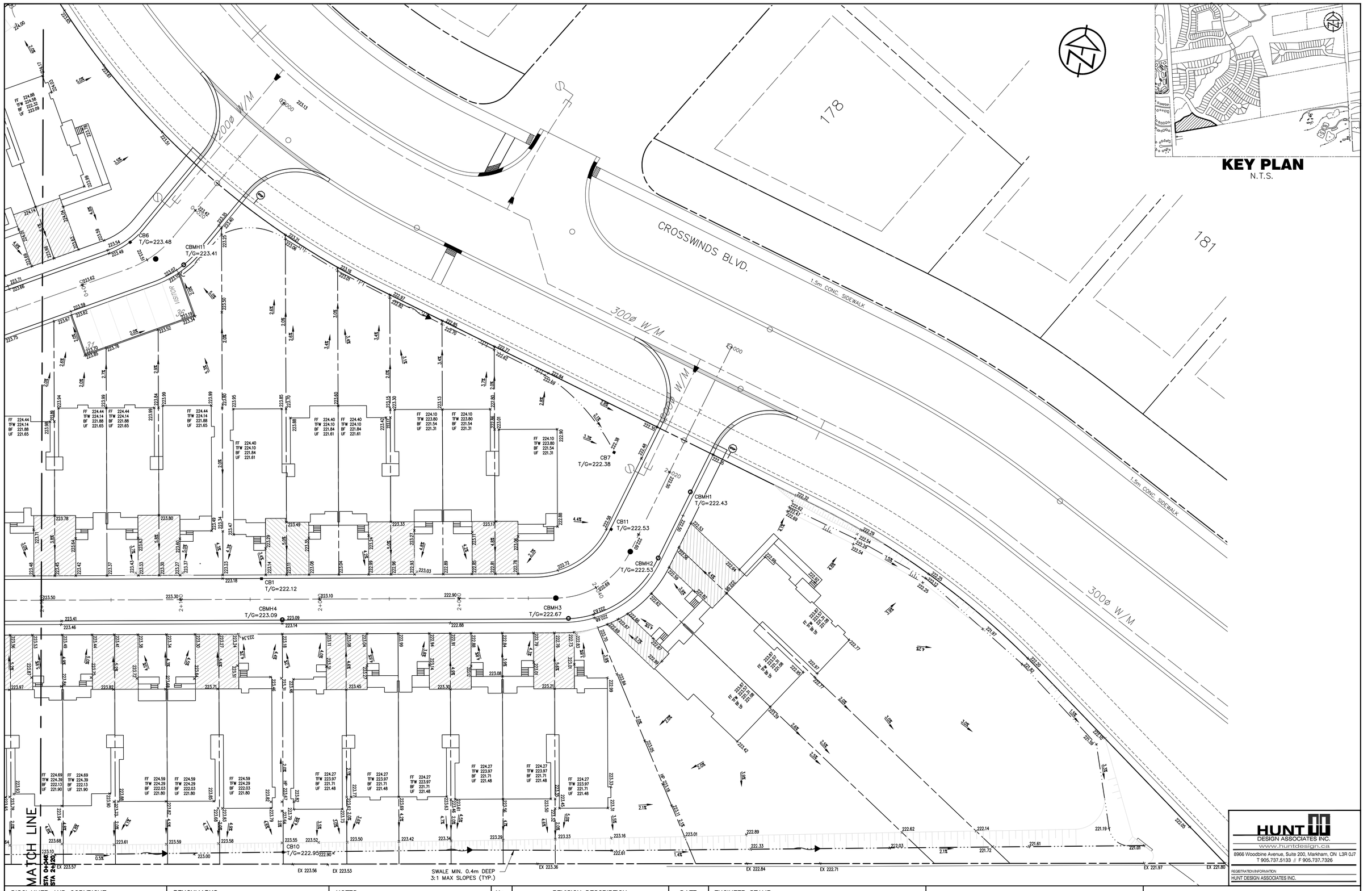
TOWN OF THE BLUE MOUNTAINS
MANORWOOD HOMES - SECOND NATURE
PHASE 2 BLOCK - 152

TATHAM ENGINEERING

SITE GRADING PLAN

DESIGN: MR	FILE: 117227	DWG: SG-1
DRAWN: MR	DATE: SEPT 2017	
CHECK: DJH	SCALE: 1:250	

Drawing Name: 117227_SG-2.dwg, Plotted: Jul 05, 2019



KEY PLAN
N.T.S.

HUNT DESIGN ASSOCIATES INC.
www.huntdesign.ca
8966 Woodbine Avenue, Suite 200, Markham, ON L3R 0J7
T 905.737.5133 // F 905.737.7326
REGISTRATION INFORMATION
HUNT DESIGN ASSOCIATES INC.

BENCHMARKS

TBM1 – ELEVATION 226.036
TOP NUT FIRE HYDRANT LOCATED AT THE NORTHWEST CORNER OF MOUNTAIN DRIVE AND JOZO WEIDER BOULEVARD (99–21)

TBM2 – ELEVATION 224.127
RAIL ROAD SPIKE IN WEST FACE OF HYDRO POLE LOCATED AT THE SOUTH WEST CORNER OF GREY ROAD 19 AND JOZO WEIDER BOULEVARD

NOTES

SITE GRADING PLAN DESIGN COMPLETED BY HUNT DESIGN ARCHITECTS INC.

No.	REVISION DESCRIPTION	DATE
1.	1ST SUBMISSION	JUL 4/19

ENGINEER STAMP

LICENSED PROFESSIONAL ENGINEER
D. J. HURLEY
PROVINCE OF ONTARIO
July 4/19

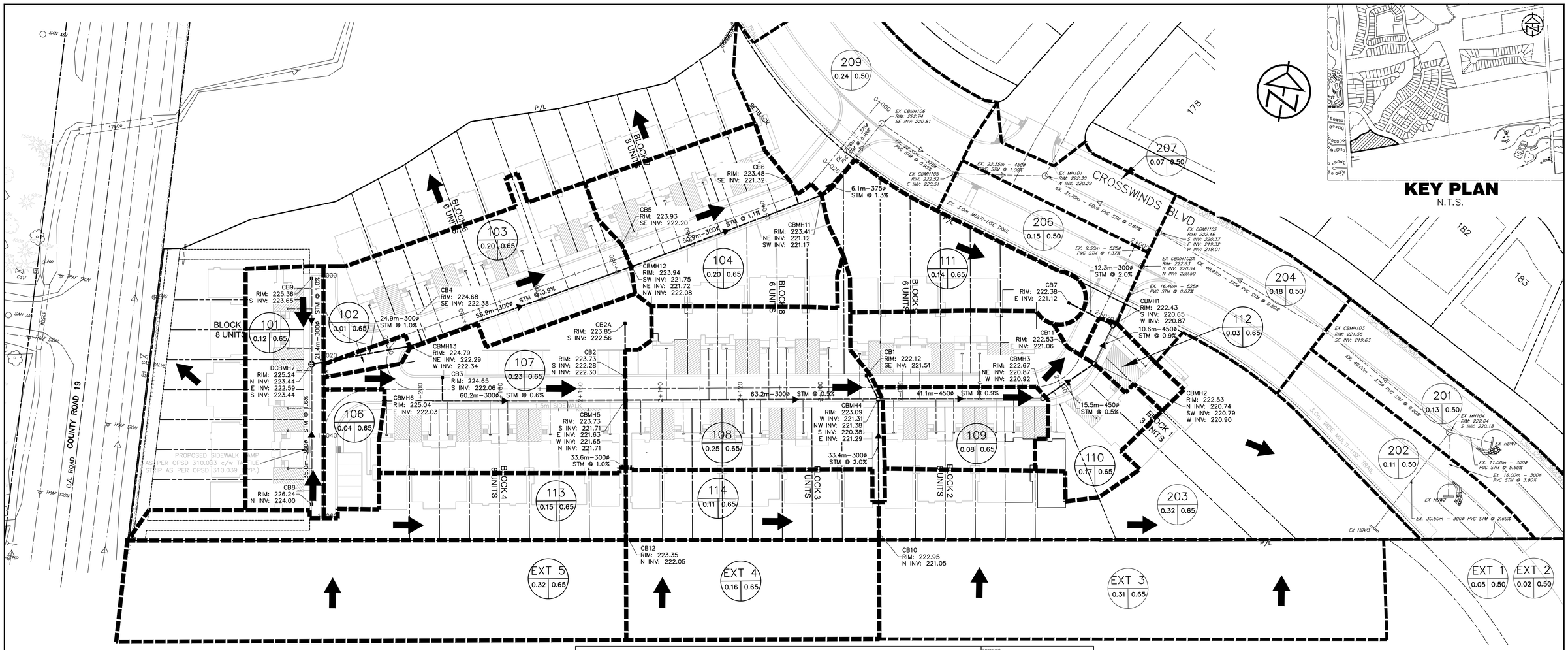
TOWN OF THE BLUE MOUNTAINS
MANORWOOD HOMES - SECOND NATURE
PHASE 2 BLOCK - 152

TATHAM ENGINEERING

SITE GRADING PLAN

DESIGN: MR	FILE: 117227	DWG: SG-2
DRAWN: MR	DATE: SEPT 2017	
CHECK: DJH	SCALE: 1:250	

Drawing Name: 117227_SG-2.dwg, Plotted: Jul 05, 2019



LEGEND

- CATCHMENT ID — 101
- AREA IN HECTARES — 0.12 | 0.65
- RUNOFF COEFFICIENT
- POST–DEVELOPMENT CATCHMENT AREA
- EXISTING CATCHMENT AREA (PHASE 2)
- PROPOSED FLOW DIRECTION

STORM SEWER DESIGN SHEET - 5 YEAR (DESIGN)

Approved:

TATHAM ENGINEERING

IDF Curve Coefficients

Storm	A	B
2 Year	22.300	-0.714
5 Year	**29.100**	**-0.724**
25 Year	39.500	-0.734
100 Year	47.700	-0.738

Manning's Coefficient

CSP	0.024
Conc.	0.013
PVC	0.009

Project Name: Second Nature - Block 153
Project Number: 117227
Municipality: Town of The Blue Mountains
Designed By: AO
Date: May 28, 2019
Checked By: MR
Date:
Revision Number: 1

STREET NAME	AREA LABEL	UPSTREAM MAINTENANCE HOLE	DOWNSTREAM MAINTENANCE HOLE	TRIBUTARY AREA - A	RUNOFF COEFFICIENT - C	INDIVIDUAL A x C	CUMULATIVE AREA	CUMULATIVE A x C	TIME OF CONCENTRATION	RAINFALL INTENSITY	PEAK FLOW	MANNING'S ROUGHNESS COEFFICIENT	LENGTH	SLOPE	ACTUAL DIAMETER	FULL FLOW VELOCITY	FULL FLOW CAPACITY	ACTUAL VELOCITY	TIME OF FLOW	CALCULATED PIPE DIAMETER	%PERCENT PIPE FULL	TIME OF CONCENTRATION
		MH No.	MH No.	ha			ha		min.	mm/hr	cms		m	m/m	mm	m/s	cms	m/s	min	mm	%	min
Crosswinds Boulevard (Phase 2)	201 + EXT1	HDW1	STM MH104	0.13	0.50	0.08	0.13	0.08	15.00	79.39	**0.017**	**0.013**	11.0	**5.6%**	**300**	3.24	**0.239**	1.81	0.10	112	**7.1%**	15.10
Crosswinds Boulevard (Phase 2)	202 + EXT2	HDW2	STM MH104	0.16	0.50	0.08	0.16	0.08	15.00	79.39	**0.018**	**0.013**	16.0	**3.9%**	**300**	2.70	**0.191**	1.61	0.17	123	**9.2%**	15.17
(Phase 2)	203 + EXT3	HDW3	STM MH104	0.63	0.50	0.32	0.63	0.32	15.00	79.39	**0.069**	**0.013**	30.5	**2.7%**	**300**	2.25	**0.159**	2.04	0.25	220	**43.7%**	15.25
Crosswinds Boulevard (Phase 2)		STM MH104	CBMH103	–	–	–	0.94	0.47	15.25	78.45	**0.102**	**0.013**	40.0	**0.6%**	**375**	1.23	**0.138**	1.23	0.54	337	**75.4%**	15.79
Crosswinds Boulevard (Phase 2)	204	CBMH103	CBMH102	0.18	0.50	0.09	1.12	0.56	15.79	76.49	**0.119**	**0.013**	48.5	**0.6%**	**375**	1.23	**0.138**	1.23	0.66	357	**87.8%**	16.45
South Lane	106	CBMH6	CBMH5	0.04	0.65	0.03	0.04	0.03	15.00	79.39	**0.006**	**0.013**	60.2	**0.6%**	**300**	1.06	**0.075**	0.60	1.68	114	**7.7%**	16.68
South Lane	113 + EXT5	CB12	CBMH5	0.47	0.65	0.31	0.47	0.31	15.00	79.39	**0.067**	**0.013**	33.6	**1.0%**	**300**	1.37	**0.097**	1.37	0.41	262	**69.7%**	15.41
South Lane	107	CBMH5	CBMH4	0.23	0.65	0.15	0.74	0.48	16.68	73.51	**0.098**	**0.013**	63.2	**0.5%**	**375**	1.12	**0.124**	1.12	0.94	345	**79.2%**	17.62
	114 + EXT4	CB10	CBMH4	0.27	0.65	0.18	0.27	0.18	17.62	70.65	**0.034**	**0.013**	33.4	**2.0%**	**300**	1.93	**0.137**	1.91	0.37	179	**25.2%**	17.99
South Lane	108	CBMH4	CBMH3	0.25	0.65	0.16	1.26	0.82	17.99	69.60	**0.158**	**0.013**	41.1	**0.9%**	**450**	1.70	**0.270**	1.66	0.41	368	**58.5%**	18.40
South Lane	109	CBMH3	CBMH2	0.08	0.65	0.05	1.34	0.87	18.40	68.47	**0.166**	**0.013**	14.5	**0.9%**	**450**	1.27	**0.202**	1.27	0.19	418	**82.2%**	18.59
South Lane	110	CBMH2	CBMH1	0.17	0.65	0.11	1.51	0.98	18.59	67.96	**0.185**	**0.013**	10.6	**0.9%**	**450**	1.70	**0.270**	1.70	0.10	390	**68.5%**	18.70
South Lane	111	CB7	CBMH1	0.14	0.65	0.09	0.14	0.09	15.00	79.39	**0.020**	**0.013**	12.3	**1.0%**	**300**	1.37	**0.097**	1.01	0.20	166	**20.8%**	15.20
South Lane	112	CBMH1	CBMH102A	0.03	0.65	0.02	1.68	1.09	18.70	67.68	**0.205**	**0.013**	16.5	**0.7%**	**525**	1.63	**0.352**	1.59	0.17	429	**58.3%**	18.87
Crosswinds Boulevard (Phase 2)	206	CBMH102A	CBMH102	0.15	0.50	0.08	1.83	1.17	18.87	67.23	**0.218**	**0.013**	9.5	**1.4%**	**525**	2.33	**0.503**	2.10	0.08	383	**43.3%**	18.95
Crosswinds Boulevard (Phase 2)	207	CBMH102	STM MH101	0.07	0.50	0.03	3.02	1.76	18.45	74.27	**0.363**	**0.013**	31.7	**0.9%**	**600**	2.04	**0.578**	2.03	0.26	509	**63.1%**	16.71
West Lane	101	CBMH7	CBMH13	0.12	0.65	0.08	0.12	0.08	15.00	79.39	**0.017**	**0.013**	24.9	**1.0%**	**300**	1.37	**0.097**	0.97	0.43	157	**17.8%**	15.43
North Lane	102	CBMH13	CBMH12	0.01	0.65	0.01	0.13	0.08	15.43	77.79	**0.018**	**0.013**	58.9	**0.9%**	**300**	1.30	**0.092**	0.95	1.04	164	**19.9%**	16.47
North Lane	103	CBMH12	CBMH11	0.20	0.65	0.13	0.33	0.21	16.47	74.21	**0.044**	**0.013**	50.9	**1.1%**	**300**	1.43	**0.101**	1.29	0.66	220	**43.6%**	17.12
North Lane	104	CBMH11	STM MH 106	0.20	0.65	0.13	0.53	0.34	17.12	72.14	**0.069**	**0.013**	23.4	**1.1%**	**375**	1.64	**0.181**	1.42	0.27	261	**38.2%**	17.40
Crosswinds Boulevard (Phase 2)		STM MH106	CBMH105	–	–	–	0.53	0.34	17.40	71.32	**0.068**	**0.013**	22.4	**1.0%**	**375**	1.57	**0.174**	1.38	0.27	264	**39.3%**	17.67
Crosswinds Boulevard (Phase 2)	209	CBMH105	STM MH101	0.24	0.50	0.12	0.77	0.46	17.67	70.53	**0.091**	**0.013**	22.4	**1.0%**	**450**	1.79	**0.288**	1.49	0.25	293	**31.8%**	17.92
Street "C" (Phase 2)	–	STM MH101	CBMH100	–	–	–	3.79	2.22	17.92	69.81	**0.431**	**0.013**	24.0	**1.0%**	**675**	2.35	**0.841**	2.22	0.18	525	**51.3%**	18.10

Notes:
1. Refer to Storm Drainage Plan drawing STM-1 , prepared by Tatham Engineering Limited for catchment areas and pipe details.
2. Runoff coefficients based on The Blue Mountains Engineering Standards, 2009.
3. Phase 2 drainage areas and pipe length (shown in grey) are taken from the Second Nature Development Phase 3 Storm Drainage Plans STM-1 and STM-2 (Pre-Servicing "Accepted For Construction" Drawings)
4. Time of Concentration calculated manually using the Bransby-Williams or Airport method. A minimum time of concentration of 15 minutes was used as specified in The Blue Mountains Engineering Standards, 2009..

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.

BENCHMARKS

TBM1 – ELEVATION 226.036
TOP NUT FIRE HYDRANT LOCATED AT THE NORTHWEST CORNER OF MOUNTAIN DRIVE AND JOZO WEIDER BOULEVARD (99–21)

TBM2 – ELEVATION 224.127
RAIL ROAD SPIKE IN WEST FACE OF HYDRO POLE LOCATED AT THE SOUTH WEST CORNER OF GREY ROAD 19 AND JOZO WEIDER BOULEVARD

NOTES

ALL STORM CATCH BASIN LEADERS ARE TO BE 300mm DIA. PVC PIPE UNLESS OTHERWISE NOTED.

No.	REVISION DESCRIPTION	DATE
1.	1ST SUBMISSION	JUL 4/19

ENGINEER STAMP

LICENSED PROFESSIONAL ENGINEER — D. J. HURLEY — PROVINCE OF ONTARIO

TOWN OF THE BLUE MOUNTAINS
MANORWOOD HOMES - SECOND NATURE
PHASE 2 BLOCK - 152

TATHAM ENGINEERING

STORM DRAINAGE PLAN

DESIGN: DEP/AO	FILE: 117227	DWG:	
DRAWN: DEP	DATE: SEPT 2017	**STM-1**	
CHECK: DRT	SCALE: 1:500		

Drawing Name: 117227_STM-1.dwg, Plotted: Jul 05, 2019

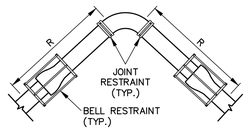


FIGURE 1
HORIZONTAL BEND

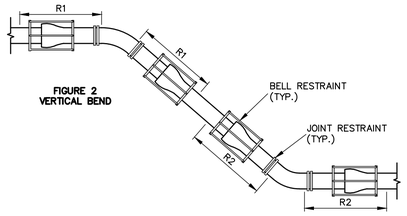


FIGURE 2
VERTICAL BEND

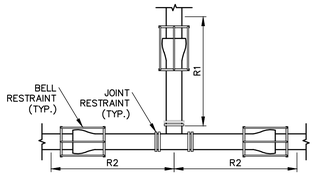


FIGURE 3
TEE

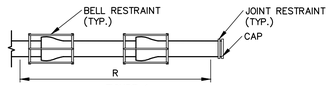


FIGURE 4
DEAD END

CHARACTERISTICS USED TO CALCULATE RESTRAINT LENGTH

PIPE MATERIAL:	PVC
SOIL TYPE:	ML (SILTS, VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS)
SAFETY FACTOR:	1.5 TO 1
TRENCH TYPE:	5 (PIPE BEDDED IN COMPACT GRANULAR MATERIAL)
DEPTH OF BURY:	1.8m (6 ft)
TEST PRESSURE:	1035 kPa (150 p.s.i.)
PROGRAM:	SIGMA IRON – RESTRAINT LENGTH CALCULATOR 1.0

TABLE 2: PIPE RESTRAINT SCHEDULE FOR PVC TEES (ALL JOINTS AND BELLS LOCATED WITHIN THE CALCULATED RESTRAINT LENGTH SHALL BE RESTRAINED WITH APPROVED BELL AND JOINT RESTRAINTS)

TEES			
NOMINAL PIPE DIA.	BRANCH PIPE DIA.	RESTRAINT 1 LENGTH (m)	RESTRAINT 2 LENGTH (m)
150	150	4.6	3.0
200	150	2.4	3.0
150	200	9.8	3.0
200	200	7.9	3.0
300	150	0.3	3.0
300	200	4.0	3.0
300	300	14.3	3.0

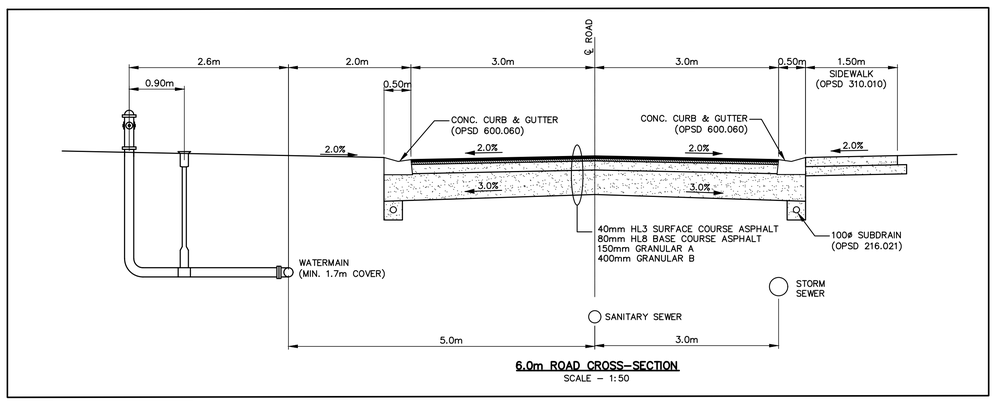
TABLE 1: PIPE RESTRAINT SCHEDULE FOR PVC PIPE (ALL JOINTS AND BELLS LOCATED WITHIN THE CALCULATED RESTRAINT LENGTH SHALL BE RESTRAINED WITH APPROVED BELL AND JOINT RESTRAINTS)

		HORIZONTAL BEND	VERTICAL BEND		DEAD END (NO BEND ANGLE)
PIPE DIA.	BEND ANGLE	RESTRAINT LENGTH (m)	RESTRAINT 1 LENGTH (m)	RESTRAINT 2 LENGTH (m)	RESTRAINT LENGTH (m)
150ø	90°	3.7	–	–	11.6
	45°	1.6	4.9	1.5	
	22.5°	0.9	2.5	0.9	
	11°	0.6	1.3	0.6	
200ø	90°	4.6	–	–	15.0
	45°	2.2	6.1	2.2	
	22.5°	0.9	3.1	1.0	
	11°	0.6	1.6	0.6	
300ø	90°	6.4	–	–	21.4
	45°	2.8	8.9	2.8	
	22.5°	1.5	4.3	1.5	
	11°	0.9	3.4	0.9	

NOTES
1. CONTRACTOR TO REPORT IN WRITING TO THE ENGINEER ANY CHANGES TO SOIL OR SITE CHARACTERISTIC THAT MAY ALTER THE PIPE RESTRAINT CALCULATION.
2. THE CONTRACTOR IS RESPONSIBLE TO CONFIRM THRUST RESTRAINT REQUIREMENTS WITH THE PIPE AND RESTRAINT MANUFACTURERS.
3. VALVES TO BE RESTRAINED AS IF THEY ARE DEAD ENDS.

ANODE SIZING CHART FOR ZINC ANODES

WTM/FITTING	ANODE SIZE (kg)	SPACING
100 mm	2.3	PER LENGTH OVER 3.0 m OR FITTING OF SIMILAR SIZE
150 mm	2.3	PER LENGTH OVER 3.0 m OR FITTING OF SIMILAR SIZE
200 mm	5.5	PER LENGTH OVER 3.0 m OR FITTING OF SIMILAR SIZE
250 mm	5.5	PER LENGTH OVER 3.0 m OR FITTING OF SIMILAR SIZE
300 mm	11	PER LENGTH OVER 3.0 m OR FITTING OF SIMILAR SIZE
COPPER SERVICE	2.3	AT EACH CURBSTOP
HYDRANT	5.5	AT HYDRANT BASE
VALVE	5.5	AT EACH VALVE
SERVICE SADDLE	2.3	AT EACH SERVICE SADDLE (CONNECT WIRE TO BOLT ON SADDLE TIGHT BETWEEN 2 NUTS)
TEES, ELBOWS ETC.	2.3	ON EACH FITTING FOR 100 mm – 150 mm PIPE
TEES, ELBOWS ETC.	5.5	ON EACH FITTING FOR 200 mm – 300 mm PIPE



6.0m ROAD CROSS–SECTION
SCALE – 1:50

GENERAL

1. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH TOWN OF THE BLUE MOUNTAINS STANDARDS AND OPS STANDARDS. WHERE CONFLICT OCCURS, TOWN STANDARDS TO GOVERN.
2. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN MILLIMETERS AND ALL ELEVATIONS ARE IN METERS.
3. THE CONTRACTOR MUST OBTAIN A ROAD OCCUPANCY PERMIT FROM PUBLIC WORKS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
4. THE OWNER'S ENGINEER SHALL PROVIDE BENCHMARK ELEVATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DETAILED LAYOUT OF THE WORK.
5. ALL PROPERTY BARS TO BE PRESERVED AND REPLACED BY OLS AT CONTRACTOR'S EXPENSE IF REMOVED/DAMAGED DURING CONSTRUCTION.
6. THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR THE SUPPLY OF TEMPORARY WATER AND POWER.
7. 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) WILL BEEN OBTAINED FOR THIS PROJECT. THE CONTRACTOR SHALL ENSURE THAT ALL DEWATERING WORKS ARE IN ACCORDANCE WITH THE PERMIT.
8. ALL TOPSOIL SHALL BE STRIPPED AND STOCKPILED AT A LOCATION APPROVED BY THE ENGINEER. ALL LOTS TO BE ROUGH GRADED AND COMPACTED TO 95% STANDARD PROCTOR DENSITY PRIOR TO PLACING ANY ROADWAY GRANULAR MATERIALS.
9. ALL ENGINE DRIVEN PUMPS TO BE ADEQUATELY SILENCED, SUITABLE FOR OPERATION IN A RESIDENTIAL DISTRICT.
10. GENERAL INSTALLATION AND TESTING OF SEWERS, WATERMAIN AND APPURTENANCES TO BE IN ACCORDANCE WITH MUNICIPAL STANDARDS AND FURTHER SUPPORTED AS NECESSARY BY OPSS 407, 408, 409 (CCTV), OPSS MUNI.410, OPSS.MUNI 421, AND OPSS.MUNI 441 AND ALL SPECIFICATIONS REFERENCED WITHIN THESE SECTIONS.
11. ALL MAINTENANCE HOLES ARE 1200 mm DIAMETER, UNLESS OTHERWISE SPECIFIED.
12. ALL STRUCTURES TO BE INSTALLED WITH FROST STRAPS TO OPSD 701.100.
13. PIPE SUPPORT AT ALL STRUCTURES TO OPSD 708.020.
14. ALL MAINTENANCE HOLE AND CATCH BASIN FRAME AND GRATES TO BE SET TO BASE COURSE ASPHALT ELEVATION IN ACCORDANCE WITH OPSD 704.010. FRAME AND GRATES TO BE RAISED TO FINISHED GRADE PRIOR TO THE PLACEMENT OF SURFACE COURSE ASPHALT USING CONCRETE ADJUSTMENT UNITS. MAXIMUM COMBINED HEIGHT OF ADJUSTMENT UNITS SHALL BE 300 mm.
15. TRENCH BACKFILL TO BE SELECT NATIVE MATERIAL 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).
16. PIPE EMBEDMENT TO BE COMPACTED TO A DRY DENSITY OF AT LEAST 95% OF THE MATERIAL'S SPMDD. BACKFILL AND EMBEDMENT TO OPSD 802.010 (FLEXIBLE PIPE), GRANULAR 'A' EMBEDMENT OR OPSD 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.
17. CLEAR STONE COMPLETELY WRAPPED IN FILTER FABRIC MAY BE SUBSTITUTED FOR EMBEDMENT MATERIAL IF APPROVED BY THE ENGINEER.
18. DISTURBED AREAS TO BE REINSTATED TO PREVIOUS CONDITION OR BETTER.
19. REINSTATEMENT OF ALL DISTURBED BOULEVARDS AND DITCHES TO INCLUDE REGRADING, PLACEMENT OF TOPSOIL AND SOD/SEED IN ACCORDANCE WITH OPSS 802, OPSS 803 AND OPSS 804. SOD TO BE STAKED WHERE NECESSARY TO AVOID MOVEMENT.
20. TRAFFIC MARKERS AND SIGNS ARE TO BE INSTALLED IN ACCORDANCE WITH THE ONTARIO TRAFFIC MANUAL BOOK 7.
21. 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 PRIOR TO COMMENCING WORK AND CO–ORDINATE CONSTRUCTION ACCORDINGLY.
22. 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.
23. ALL SIGNAGE TO COMPLY WITH THE TOWN OF THE BLUE MOUNTAINS SIGN BY–LAW.

ROADS

1. SUBGRADE AND BOULEVARD MATERIAL TO BE COMPACTED TO A DRY DENSITY OF AT LEAST 95% OF THE MATERIAL'S SPMDD. SUBGRADE TO BE PROOF ROLLED AND CERTIFIED PRIOR TO PLACING GRANULAR 'B'.
2. GRANULAR 'A' AND 'B' TO BE COMPACTED TO A DRY DENSITY OF 100% OF THE MATERIAL'S RESPECTIVE SPMDD.
3. ASPHALT TO BE COMPACTED TO A MINIMUM OF 97% OF THE MARSHALL BULK DENSITY.
4. ROADWAYS TO BE CONSTRUCTED WITH MIN. 450 mm GRANULAR 'B', 150 mm GRANULAR 'A', 80 mm HL8 ASPHALT, AND 40 mm HL3 ASPHALT.
5. JOINTS WITH EXISTING ASPHALT TO BE SAW CUT STRAIGHT PRIOR TO PLACING NEW ASPHALT. WHERE EXISTING ASPHALT IS THICKER THAN 75 mm, A 500 mm WIDE BY 40 mm DEEP LAP JOINT SHALL BE GROUND INTO EXISTING ASPHALT PRIOR TO THE PLACEMENT OF SURFACE COURSE ASPHALT (SEE DETAIL).
6. ALL GRANULAR AND ASPHALT MATERIAL TO BE PLACED IN ACCORDANCE WITH OPSS 310 AND OPSS.MUNI 314.
7. STOP SIGNS AND STREET SIGNS TO BE INSTALLED PER TOWN STANDARDS AND ONTARIO TRAFFIC MANUAL BOOK 7.
8. TACK COAT TO BE APPLIED AT THE DIRECTION OF THE ENGINEER.
9. CONCRETE CURB TO OPSD 600.060 AND OPSD 600.110 (AS SPECIFIED) AND OPSS.MUNI 353.
   CURB DEPRESSIONS AT SIDEWALK CROSSINGS IN ACCORDANCE WITH OPSD 310.033.
   CURB DEPRESSIONS AT DRIVEWAYS IN ACCORDANCE WITH OPSD 351.010.
10. CONCRETE CURB TERMINATIONS TO BE CONSTRUCTED IN ACCORDANCE WITH OPSD 608.010.
11. CONCRETE SIDEWALK TO OPSD 310.010, CONCRETE SIDEWALK RAMPS TO OPSD 310.033 AND OPSS 351. SUBBASE TO CONSIST OF 150 mm DEPTH GRANULAR 'A'.
12. UNPAINTED CAST IRON TACTILE WALKING SURFACE INDICATOR COMPONENTS TO BE IN ACCORDANCE WITH OPSD 310.039
13. ASPHALT DRIVEWAYS TO BE CONSTRUCTED WITH A MINIMUM OF 65 mm OF HL3A ASPHALT AND 200 mm GRANULAR 'A'.
14. GRANULAR TRAILS TO BE CONSTRUCTED WITH 100 mm COMPACTED LIMESTONE SCREENINGS AND 100 mm GRANULAR 'A'. ASPHALT TRAILS TO BE CONSTRUCTED WITH 150 mm GRANULAR 'B', 100 mm GRANULAR 'A' AND 50 mm HL3 SURFACE COURSE ASPHALT.
15. 100 mm DIAMETER PIPE SUBDRAINS SHALL BE PROVIDED ON BOTH SIDES OF THE ROAD IN ACCORDANCE WITH OPSS 405 AND OPSD 216.021, UNWRAPPED TRENCH, GRANULAR 'A' EMBEDMENT.
16. 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

1. STORM MAINTENANCE HOLES AND CATCH BASIN MAINTENANCE HOLES IN ACCORDANCE WITH OPSD 701.010, 701.011, 701.012, 701.013, 701.014, AND 701.015.
2. MAINTENANCE HOLES TO BE BENCHED TO OPSD 701.021. MINIMUM BENCHING WIDTH SHALL BE 230 mm. CATCH BASIN MAINTENANCE HOLES TO HAVE A SUMP PER OPSD 701.010.
3. MAINTENANCE HOLE AND CATCH BASIN MAINTENANCE HOLE STEPS TO OPSD 405.010.
4. MAINTENANCE HOLE FRAMES AND GRATES TO OPSD 401.010, TYPE 'A' CLOSED COVER.
5. CATCH BASINS AND DOUBLE CATCH BASINS TO OPSD 705.010 AND 705.020 C/W 600 mm SUMP. CATCH BASINS, DOUBLE CATCH BASINS AND REAR LOT CATCH BASINS FRAMES AND GRATES TO OPSD 400.020, FRAME AND GRATES WITHIN ROAD TO BE INSTALLED IN THE CURB LINE TO OPSD 610.010.
6. DITCH INLETS TO OPSD 705.030, GRATES INSTALLED IN ACCORDANCE WITH OPSD 403.010 (4:1 SLOPE UNLESS OTHERWISE SPECIFIED), C/W 600 mm SUMP. REAR LOT DITCH INLET CATCH BASINS WITHOUT SUMP.
7. CATCH BASIN LEADS – 250 mm DIA. SINGLE AND 300 mm DIA. DOUBLE. CATCH BASIN CONNECTIONS TO OPSD 708.010 AND OPSD 708.030.
8. RESIDENTIAL STORM SERVICE CONNECTIONS TO TOWN STD. DRAWING ST–STD–SUMP, 100 mm DIAMETER, GRANULAR 'A' EMBEDMENT (MIN. 150 mm BEDDING AND 300 mm COVER), USING PREMANUFACTURED CONNECTIONS TO THE MAIN. TERMINATE AT PROPERTY LINE WHERE SHOWN C/W A CAP/PLUG AND A 38 mm X 89 mm MARKER PLACED FROM THE INVERT TO 600 mm ABOVE FINISHED GRADE PAINTED WHITE. MINIMUM GRADE TO BE 1.0%. TERMINATE AT AN OBVERT ELEVATION AT LEAST 1.4 m BELOW PROPOSED GRADE AT MIN 1.0m DISTANCE FROM THE OUTSIDE WALL OF THE PROPOSED BUILDING .

SANITARY SEWER

1. SANITARY MAINTENANCE HOLES TO OPSD 701.010.
2. SANITARY MAINTENANCE HOLES TO BE BENCHED TO OPSD 701.021 ALL CONNECTIONS TO MAINTENANCE HOLES TO INCLUDE A KOR–N–SEAL RUBBER BOOT PIPE CONNECTION.
3. FROST STRAPS SHALL BE INSTALLED ON ALL MAINTENANCE HOLES IN ACCORDANCE WITH OPSD 701.100.
4. MAINTENANCE HOLE STEPS TO OPSD 405.010
5. MAINTENANCE HOLE FRAME AND COVER TO OPSD 401.010, TYPE 'A' CLOSED COVER.
6. MAINTENANCE HOLE STRUCTURES EXCEEDING 5.0m IN DEPTH TO INCLUDE SAFETY PLATFORM TO OPSD 404.020.
7. DROP STRUCTURES AT MAINTENANCE HOLES TO OPSD 1003.020.
8. RESIDENTIAL SERVICE CONNECTIONS TO OPSD 1006.010, WITH AN APPROVED MANUFACTURED TEE AT THE MAIN, 125 mm DIAMETER, GRANULAR 'A' EMBEDMENT (MIN. 150 mm BEDDING AND 300 mm COVER).
9. RESIDENTIAL SERVICE CONNECTIONS TO BE TERMINATED AT THE PROPERTY LINE WITH A TEST FITTING, 125 mm x 100 mm REDUCER, PLUG SUITABLY BRACED TO WITHSTAND TEST PRESSURES AND AN 38mm x 89mm MARKER PLACED FROM THE INVERT OF THE CONNECTION TO 600 mm ABOVE FINISHED GRADE PAINTED GREEN. MINIMUM GRADE OF SERVICE TO BE 2%, MAXIMUM GRADE TO BE 8%. TERMINATE AT AN ELEVATION AT LEAST 2.8 m BELOW PROPOSED GRADE AT PROPERTY LINE.
10. RADIUS BENDS TO BE USED ON ALL SEWER CONNECTIONS WHERE THE ANGLE OF CONNECTION BETWEEN THE SERVICE AND SEWER EXCEEDS 90°.

WATERMAIN

1. ALL WORK ON EXISTING WATERMAIN TO BE COORDINATED WITH THE TOWN.
2. MINIMUM GROUND COVER OVER WATERMAIN, SERVICE LATERALS AND HYDRANT LEADS TO BE 1.7m AT ALL POINTS, MAXIMUM GROUND COVER OVER WATERMAIN TO BE 2.5 m.
3. WHERE SPECIFIED, INSULATION TO BE INSTALLED OVER WATERMAIN OR SERVICES WITH LESS THAN 1.7m DEPTH OF COVER AS NOTED ON THE DRAWINGS OR MINIMUM AS FOLLOWS:
4. DEPTH OF COVER BETWEEN 1.4 TO 1.7m REQUIRES 50mm INSULATION.
5. DEPTH OF COVER BETWEEN 1.2 TO 1.7m REQUIRES 100mm INSULATION.
6. WATERMAIN NOT TO BE INSTALLED WITH LESS THAN 1.2 METRES DEPTH OF COVER.
7. THRUST BLOCKS OR PIPE RESTRAINTS TO BE PROVIDED AT ALL CHANGES IN PIPE DIRECTION, TERMINATIONS AND ANY LOCATION WHERE THRUST PRESSURES MAY OCCUR. WATER VALVES SHALL BE RESTRAINED ON EITHER SIDE TO THE SAME STANDARD THAT A DEAD END WOULD BE. WHERE SOIL CONDITIONS ARE SUSPECT, SUCH AS IN DISTURBED SOILS OR SOILS WITH BEARING STRENGTH OF LESS THAN 200 kPa, PIPE RESTRAINERS SHALL BE USED. IN LIEU OF THRUST BLOCKS PIPE RESTRAINTS FOR PVC SHALL BE PER TOWN STANDARDS. INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. THREADED ROD IN JOINT RESTRAINT IS NOT PERMISSIBLE. THRUST BLOCKS TO OPSD 1103.010 AND 1103.020.
8. CATHODIC PROTECTION OF ALL WATERMAIN FITTINGS AND APPURTENANCES TO BE PROVIDED AS PER TOWN STANDARD (SEE CHART).
9. RESIDENTIAL SERVICE CONNECTIONS TO OPSD 1104.010, 25 mm DIAMETER, 300 mm DEPTH GRANULAR 'A' EMBEDMENT.
10. RESIDENTIAL SERVICE CONNECTIONS TO TERMINATE AT MIN 1.0m DISTANCE FROM THE OUTSIDE WALL OF THE PROPOSED BUILDING COMPLETE WITH CURB STOP VALVE, TESTING TAIL TO SURFACE CAPPED OR CRIMPED AND A 38mm x 89mm MARKER FROM THE INVERT OF THE SERVICE TO 600 mm ABOVE GRADE PAINTED BLUE.
11. HYDRANTS TO BE INSTALLED TO OPSD 1105.010.
12. HYDRANTS TO BE PAINTED CHROME YELLOW AND INCLUDE A FLEXSTAKE HYDRANT MARKER MODEL FHV804, 1.2 m LONG, COLOUR YELLOW WITH REFLECTIVE GRAPHIC ON BOTH SIDES AT THE TOP OF THE MARKER. MARKER TO BE POSITIONED ON THE RIGHT PORT AS VIEWED FROM THE STREET. A FIRE HYDRANT MARKER POST AND SIGN SHALL BE INSTALLED 0.3 m BEHIND EACH HYDRANT. THE SIGN SHALL BE REFLECTIVE WITH A RED HYDRANT ON A WHITE BACKGROUND AND MEASURE 0.3 x 0.3 m. THE SIGN SHALL BE MOUNTED 1.5 m ABOVE GRADE.
13. ALL PVC WATERMAIN AND PE RESIDENTIAL SERVICES TO HAVE TRACER WIRE BETWEEN HYDRANTS AND OTHER CONDUCTING APPURTENANCES. CONTRACTOR SHALL TEST ALL TRACER WIRE TO CONFIRM CONNECTIVITY.
14. TRACER WIRE TO BE 10 GAUGE, MULTI–STRAND SHALL BE PLACED ON TOP AND ATTACHED IN TWO PLACES ON EACH LENGTH OF PVC OR PE PIPE. ALL CONNECTIONS SHALL BE MADE WITH "DRYCONN WATERPROOF CONNECTORS" OR APPROVED EQUAL.
15. VERTICAL CLEARANCE BETWEEN WATERMAINS AND SEWERS TO BE A MINIMUM OF 0.5m WHEN WATERMAIN IS BELOW THE SEWERS, HORIZONTAL CLEARANCE BETWEEN WATERMAINS AND SEWERS TO BE A MINIMUM OF 2.5m.
16. ALL WATER SERVICES TO INCLUDE THE INSTALLATION OF AN INDIVIDUAL PRV WITHIN EACH BUILDING. PRV TO BE SUPPLIED AND INSTALLED BY THE BUILDER DURING HOUSE CONSTRUCTION.
17. THE COMPLETE WATER SYSTEM, INCLUDING RESIDENTIAL SERVICE CONNECTIONS TO THE PROPERTY LINE AND HYDRANTS SHALL BE TESTED IN ACCORDANCE WITH THE TOWN'S WATERMAIN COMMISSIONING PROTOCOL. CONTRACTOR TO PROVIDE DETAILED WRITTEN WATERMAIN COMMISSIONING PROTOCOL FOR APPROVAL PRIOR TO COMMENCING TESTING OPERATIONS. CONNECTIONS TO EXISTING MAINS SHALL NOT BE MADE UNTIL WRITTEN AUTHORIZATION IS PROVIDED BY THE ENGINEER AND THE TOWN.
18. FOLLOWING TESTING, CONTRACTOR SHALL OPERATE EACH SERVICE TO VERIFY FULL FLOW AND PRESSURE AT CURB STOP TO SATISFACTION OF THE ENGINEER.
19. WATER VALVES TO BE OPERATED BY TOWN STAFF ONLY.
20. BLOWOFFS TO OPSD 1104.030 (50 mm DIA.).

MATERIALS

1. ALL MATERIAL TO COMPLY WITH CSA, OPSS AND TOWN STANDARDS.
2. SANITARY SEWER – PVC DR 35.
3. SANITARY SERVICE CONNECTIONS – PVC SDR 28.
4. STORM SEWER – PVC SDR 35 OR CONCRETE 65–D. ALL SEWER TO BE JOINED WITH A GASKETED BALL AND SPIGOT SYSTEM. NON–REINFORCED CONCRETE PIPE MAY BE USED FOR SIZES UP TO AND INCLUDING 375 mm DIA. REINFORCED CONCRETE PIPE MAY BE USED FOR ALL SIZES OF SEWER.
5. STORM SERVICE CONNECTIONS – PVC SDR 28, COLOUR WHITE.
6. PERFORATED SUBDRAIN – BIG 'O' WITH GEOTEXTILE FILTER SOCK OR APPROVED EQUAL.
7. ALL CHEMICALS AND MATERIALS USED IN THE ALTERATION OR OPERATION OF THE DRINKING WATER SYSTEM THAT COMES IN CONTACT WITH WATER WITHIN THE SYSTEM SHALL MEET ALL APPLICABLE STANDARDS SET BY BOTH THE AMERICAN WATER WORKS ASSOCIATION ("AWWA") AND THE AMERICAN NATIONAL STANDARDS INSTITUTE ("ANSI") SAFETY CRITERIA STANDARDS NSF/60, NSF/61 AND NSF372.
8. WATERMAIN – PVC DR 18.
9. WATER SERVICE CONNECTIONS TO BE TYPE 'K' COPPER PIPE, REHAU'S MUNICIPLEX (BLUE) OR SERIES 160 PE.
10. WATER SERVICE FITTINGS SHALL BE:
11. MAIN STOP – MUELLER H25008
12. CURB STOP – MUELLER H25209
13. SERVICE SADDLE – ROBAR 2706 DOUBLE STRAP
14. TAPPING SADDLE – ROBAR 6906
15. SERVICE BOXES – MUELLER A–726, STAINLESS STEEL RODS
16. PIPE RESTRAINERS – SIGMA C–900.
17. HYDRANTS – CANADA VALVE, OPEN LEFT, WITH STORTZ CONNECTIONS ON ALL STEAMER PORTS. HYDRANT SETS SHALL BE INSTALLED NOT LESS THAN 0.9 m FROM THE CENTER OF THE VALVE TO THE CENTER OF THE HYDRANT. TRACER WIRE SHALL BE ATTACHED TO THE OUTSIDE OF THE VALVE BOX AND WIRE BROUGHT INTO VALVE BOX UNDER CAP.
18. LIVE TAP SADDLES TO BE EPOXY COATED COMPLETE WITH STAINLESS STEEL BOLTS.
19. MECHANICAL JOINT DUCTILE FITTINGS TO AWWA/ANSI C153/A21.53. INCLUDING PROTECTO–CAPS, CAT NO. 175P190 OR APPROVED EQUAL.
20. ISOLATION VALVES TO BE RESILIENT SEAT GATE VALVES WITH MECHANICAL JOINTS, OPEN LEFT, CLOW OR MUELLER. VALVE BOXES TO BE 5–SL–48 SLIDING OR MUELLER MVB COMPOSITE COMPLETE WITH GUIDE PLATE AND DUCTILE ADJUSTABLE TOP AND LID OR APPROVED EQUAL. CAPS TO BE PAINTED BLUE.
21. ALL SPECIFIED AGGREGATES TO OPSD 1010.
22. FILTER FABRIC – TERRAFIX 270R OR APPROVED EQUAL.
23. INSULATION – STYROFOAM HIGHLOAD 40 EXTRUDED POLYSTYRENE FOAM INSULATION, 50mm THICK SHEETS.

BENCHMARKS

TBM1 – ELEVATION 226.036
TOP NUT FIRE HYDRANT LOCATED AT THE NORTHWEST CORNER OF MOUNTAIN DRIVE AND JOZO WEIDER BOULEVARD (99–21)

TBM2 – ELEVATION 224.127
RAIL ROAD SPIKE IN WEST FACE OF HYDRO POLE LOCATED AT THE SOUTH WEST CORNER OF GREY ROAD 19 AND JOZO WEIDER BOULEVARD

NOTES

No.	REVISION DESCRIPTION	DATE
1.	1ST SUBMISSION	JUL 4/19

ENGINEER STAMP

LICENSED PROFESSIONAL ENGINEER
D. J. HURLEY
PROVINCE OF ONTARIO
4/19

TOWN OF THE BLUE MOUNTAINS
MANORWOOD HOMES - SECOND NATURE
PHASE 2 BLOCK - 152

TATHAM ENGINEERING

DETAILS & NOTES

DESIGN: DEP/AO	FILE: 117227	DWG:
DRAWN: DEP	DATE: SEPT 2017	**DE-1**
CHECK: DJH	SCALE: AS NOTED	

Drawing Name: 117227_DE–1.dwg, Plotted: Jul 05, 2019