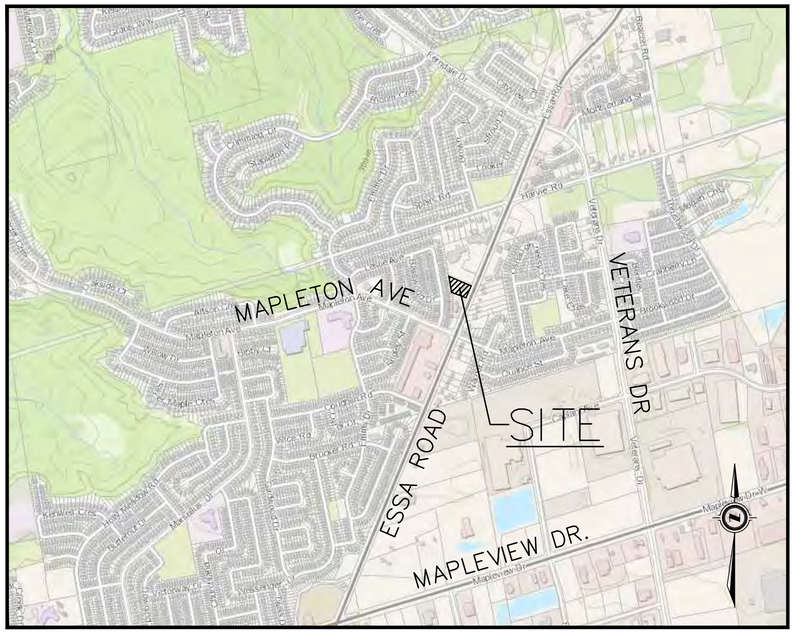


SITE LOCATION

PROPOSED RESIDENTIAL DEVELOPMENT

521-525 ESSA ROAD

Barrie

PEL
PINESTONE ENGINEERING LIMITED | www.pel.ca

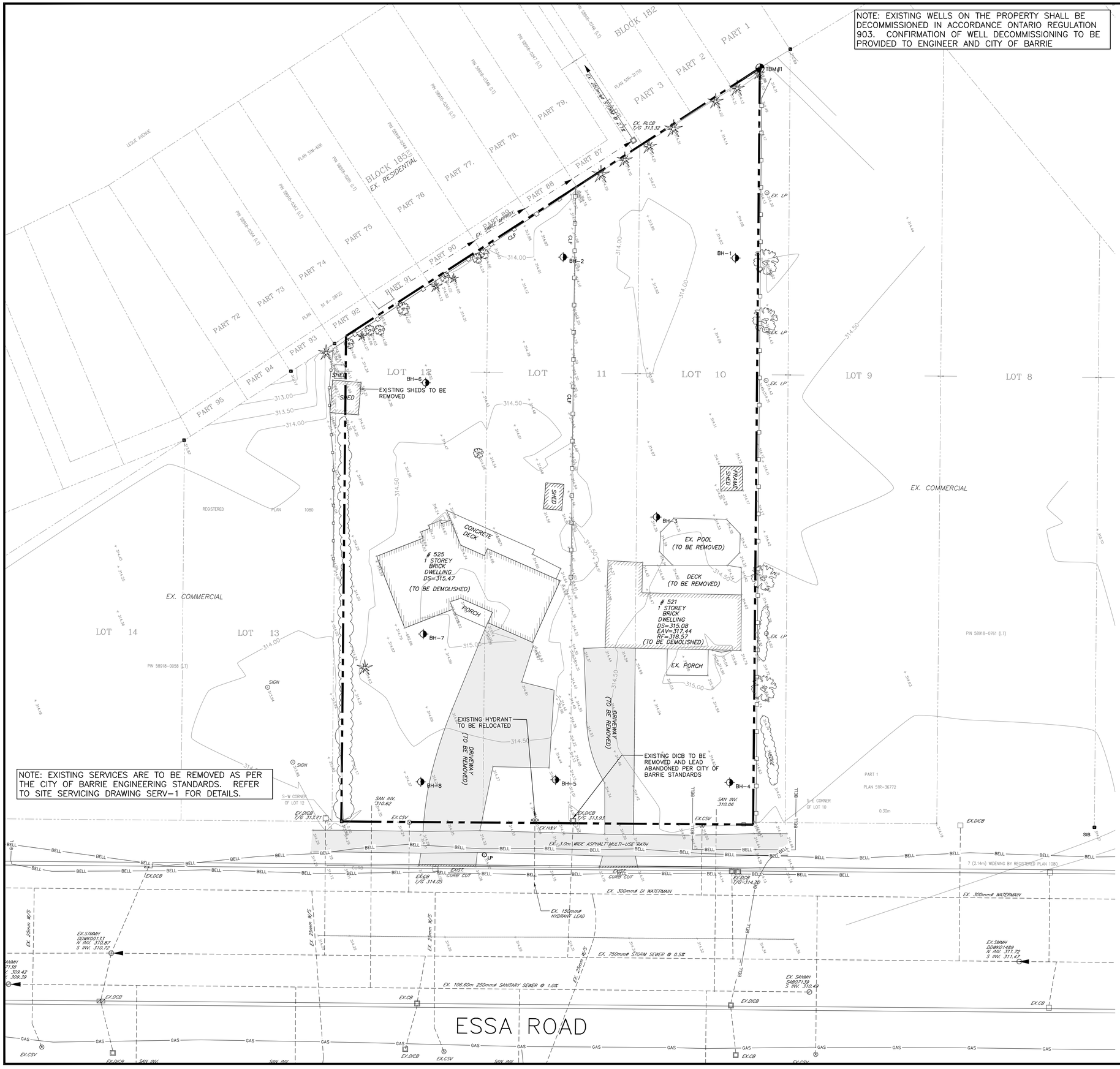
LIST OF DRAWINGS

PROJECT NO. 20-11501-B

4th SUBMISSION
MARCH 2021

NOTE: EXISTING WELLS ON THE PROPERTY SHALL BE DECOMMISSIONED IN ACCORDANCE ONTARIO REGULATION 903. CONFIRMATION OF WELL DECOMMISSIONING TO BE PROVIDED TO ENGINEER AND CITY OF BARRIE

NOTE: EXISTING SERVICES ARE TO BE REMOVED AS PER THE CITY OF BARRIE ENGINEERING STANDARDS. REFER TO SITE SERVICING DRAWING SERV-1 FOR DETAILS.



LEGEND

- EX. HP/LS
- EX. CATCHBASIN
- EX. HYDRANT
- EX. VALVE AND BOX
- EX. SANITARY MANHOLE
- EX. STORM MANHOLE
- EX. TRAFFIC LIGHT
- EX. SIGN
- 246.00 CONTOUR
- HW HW OVERHEAD HYDRO WIRE
- DITCH CENTERLINE
- EXISTING FENCE
- BH-1 APPROXIMATE BOREHOLE LOCATION
- EXISTING TREE
- LIMIT OF EXISTING VEGETATION
- EXISTING ASPHALT SURFACE

HORIZONTAL CONTROL MONUMENTS
U.T.M. (ZONE 17) NAD 83

ELEVATIONS SHOW GEODETIC DRIVEN FROM CITY OF BARRIE BENCHMARK #03120030016 ELEVATION, 314.967.

BEARINGS HERE IN ARE GRID BEARINGS ARE DERIVED FROM CONTROL MONUMENTS 031950003 (N=4910748.411, E=603095.546) AND ARE REFERRED TO CENTRAL MERIDIAN (81 DEGREES OF LONGITUDE IN ZONE, 17 AND ARE BASED ON NAD83)

BENCHMARK V010865470 300.3254 – CONCRETE HEADWALL ON EASTSIDE OF RED FERN AVENUE, 0.15km NORTH OF DYER ROAD. TABLET IS SET HORIZONTALLY IN THE EAST FACE, 16.3m EAST OF CENTERLINE OF ROAD, 52cm WEST OF SOUTH END, 42 cm BELOW THE TOP

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Any errors and/or omissions shall be reported to Pinestone Engineering Ltd. without delay.

KEY MAP

NOTES

1. TOPOGRAPHIC SURVEY AND LEGAL INFORMATION COMPLETED BY AZIZ SURVEYORS INC. APRIL 6 2017,
2. SITE PLAN PROVIDED BY PATRICK MARKUS LUCKIE ARCHITECT.
3. REFER TO SOILS REPORT PREPARED BY PETO MacCALLUM LTD. FOR BOREHOLE DETAILS.
4. REFER TO DRAWING ESC-1 FOR SITE DISTURBANCE LIMITS.
5. EXISTING ON-SITE SEWAGE SYSTEMS TO BE PUMPED PRIOR TO REMOVAL.

BENCHMARK

TBM#1
TOP OF IB IN NORTHWEST CORNER OF PROPERTY
ELEVATION 314.30

NO.	YY.MM.DD	REVISION	BY
3	21.03.08	SITE PLAN REVISION	G.N.
2	20.05.13	SITE PLAN REVISION	G.N.
1	19.06.06	REVISED PER CITY COMMENTS	G.N.

SEAL

LICENSED PROFESSIONAL ENGINEER
J. R. VOISIN
100172758
Mar. 15th, 2021
PROVINCE OF ONTARIO

NORTH ARROW

DESIGN BY:	J.V.
DRAWN BY:	G.N.
CHECKED	J.V.
DATE:	MARCH 2020
SCALE:	1:250

CLIENT/PROJECT

521 AND 525 ESSA ROAD RESIDENTIAL DEVELOPMENT

DRAWING TITLE

EXISTING CONDITIONS AND REMOVALS PLAN

PROJECT NO.	DRAWING NO.	REVISION
20-11501-B	RM-1	3

HORIZONTAL CONTROL MONUMENTS
U.T.M. (ZONE 17) NAD 83

ELEVATIONS SHOW GEODETIC DRIVEN FROM CITY OF BARRIE BENCHMARK #03120030016 ELEVATION, 314.967.

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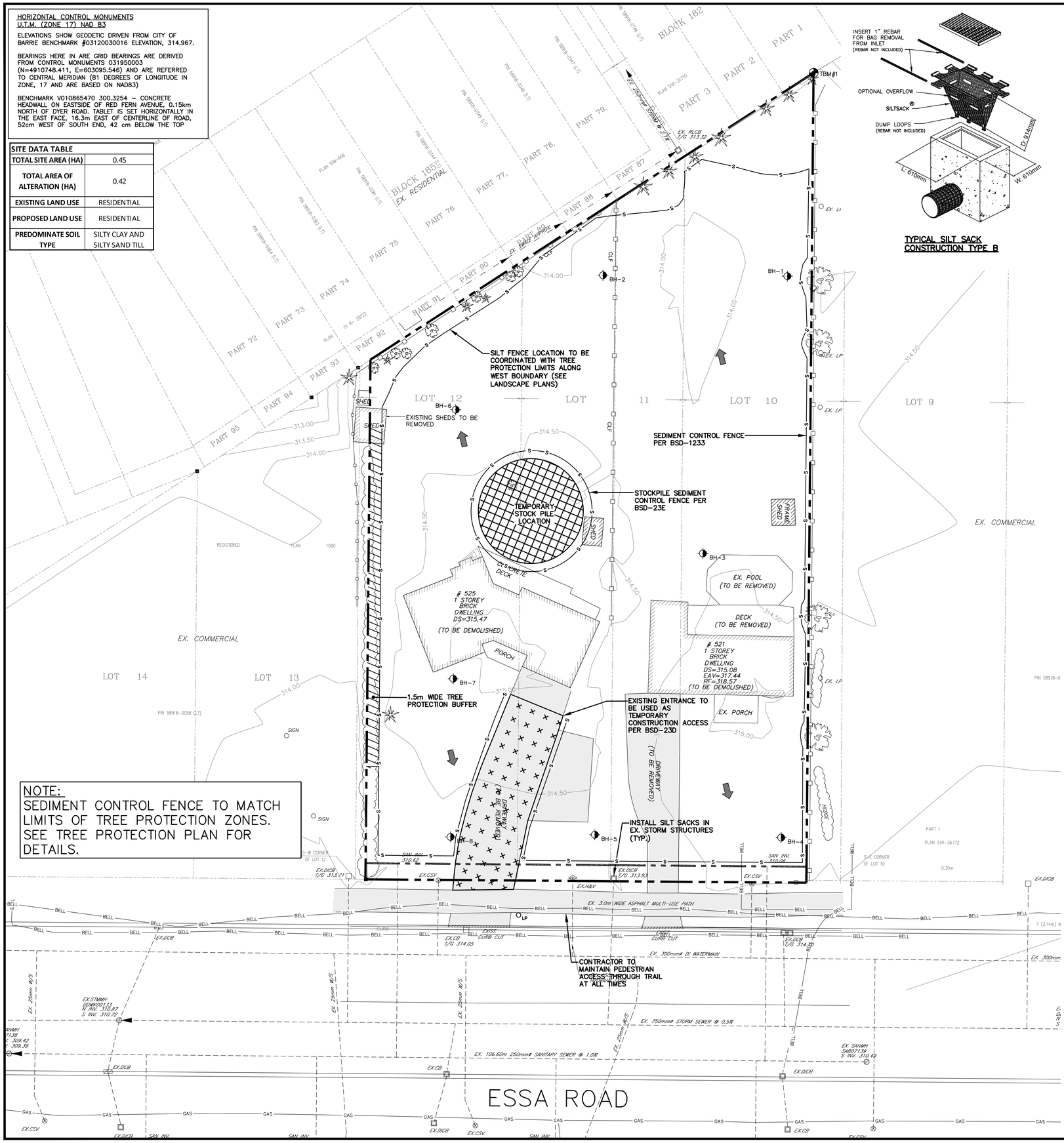
SITE DATA TABLE	
TOTAL SITE AREA (HA)	0.45
TOTAL AREA OF ALTERATION (HA)	0.42
EXISTING LAND USE	RESIDENTIAL
PROPOSED LAND USE	RESIDENTIAL
PREDOMINATE SOIL TYPE	SILTY CLAY AND SILTY SAND TILL

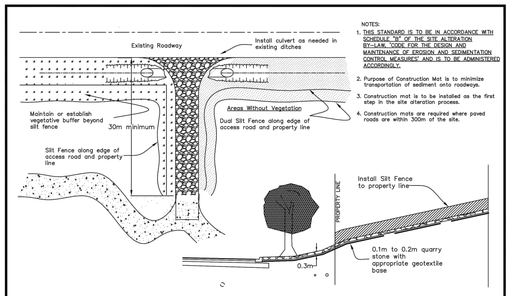


NOTE:
SEDIMENT CONTROL FENCE TO MATCH LIMITS OF TREE PROTECTION ZONES. SEE TREE PROTECTION PLAN FOR DETAILS.

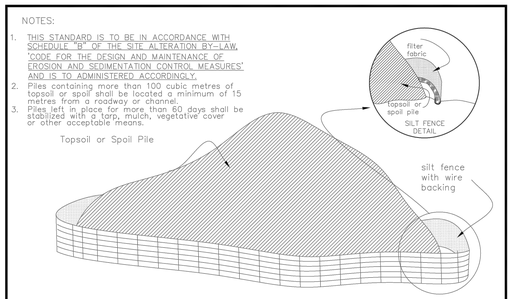
TYPICAL SILT SACK CONSTRUCTION TYPE B

EROSION CONTROL NOTES:

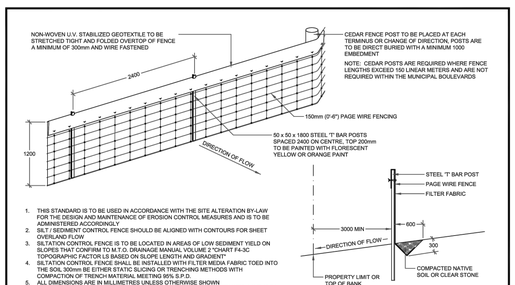
1. ALL SILT FENCING TO BE INSTALLED PRIOR TO ANY GRADING OR EXCAVATION.
2. EROSION CONTROL FENCING TO BE INSTALLED AROUND THE BASE OF ALL STOCKPILES. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED AS SITE DEVELOPMENT PROGRESSES. CONTRACTOR TO PROVIDE ALL ADDITIONAL EROSION CONTROL STRUCTURES.
3. PINESTONE ENGINEERING LTD. TO MONITOR EROSION CONTROL STRUCTURES TO ENSURE FENCING IS INSTALLED AND MAINTENANCE IS PERFORMED TO CITY REQUIREMENTS.
4. EROSION CONTROL STRUCTURES TO BE MONITORED AT LEAST ONCE A WEEK AND AFTER EVERY RAINFALL AND DAMAGE REPAIRED IMMEDIATELY.
5. SEDIMENTS TO BE REMOVED WHEN ACCUMULATIONS REACH A MAXIMUM OF 1/2 THE HEIGHT OF THE FENCE.
6. ALL EROSION CONTROL STRUCTURES TO REMAIN IN PLACE UNTIL ALL DISTURBED GROUND HAVE BEEN RESTABLIZED EITHER BY PAVING OR RESTORATION OF VEGETATIVE GROUND COVER.
7. NO ALTERNATE METHODS OF EROSION PROTECTION SHALL BE PERMITTED UNLESS APPROVED BY PINESTONE ENGINEERING LTD. AND THE CITY OF BARRIE DEPARTMENT OF PUBLIC WORKS.
8. CONTRACTOR IS RESPONSIBLE FOR MUNICIPAL ROADWAY AND SIDEWALK TO BE CLEARED OF ALL SEDIMENTS FROM VEHICULAR TRACKING ETC. AT THE END OF EACH DAY.



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



CITY OF BARRIE STANDARD						
TOPSOIL OR SPOIL PILE SILTATION CONTROL					APR'D: R.G.N.	DATE: 04.03.16
					DRAWN: A.S.C	SCALE: N.T.S
	NO.	REVISION	APR'D	DATE	BSD-23E	



Barrie STANDARD DETAIL	SILTATION CONTROL FENCING	REV No. 2	DATE: OCT 2017	SCALE: N.T.S.	APPROVED Oct 10/17 DATE Original Signed By DIRECTOR OF ENGINEERING
		BSD-1233 FORMERLY BSD-23A			

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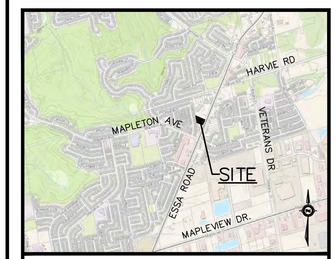


KEY MAP NOTES

1. TOPOGRAPHIC SURVEY AND LEGAL INFORMATION COMPLETED BY AZIZ SURVEYORS INC. APRIL 6 2017,
2. SITE PLAN PROVIDED BY PATRICK MARKUS LUCKIE ARCHITECT.
3. REFER TO SOILS REPORT PREPARED BY PETO MacCALLUM LTD. FOR BOREHOLE DETAILS.

LEGEND

- 246.00 — CONTOUR
- OH — OH — OVERHEAD HYDRO WIRE
- DITCH CENTERLINE
- DIRECTION OF OVERLAND FLOW
- EXISTING FENCE
- S — S — SILT FENCE
- CONSTRUCTION ENTRANCE MAT
- TEMPORARY STOCKPILE LOCATION
- BH-2 — APPROXIMATE BOREHOLE LOCATION

BENCHMARK

TBM#1
TOP OF IB IN NORTHWEST CORNER OF PROPERTY
ELEVATION 314.30

NO.	YY.MM.DD	REVISION	BY
3	21.03.15	SITE PLAN REVISION	G.N.
2	20.05.13	SITE PLAN REVISION	G.N.
1	19.06.06	REVISED PER CITY COMMENTS	G.N.

SEAL

LICENSED PROFESSIONAL ENGINEER
J.H. VOISIN
100172758
Mar. 15th, 2021
PROVINCE OF ONTARIO

NORTH ARROW

DESIGN BY:	J.V.
DRAWN BY:	G.N.
CHECKED	J.V.
DATE:	MARCH 2020
SCALE:	1:250

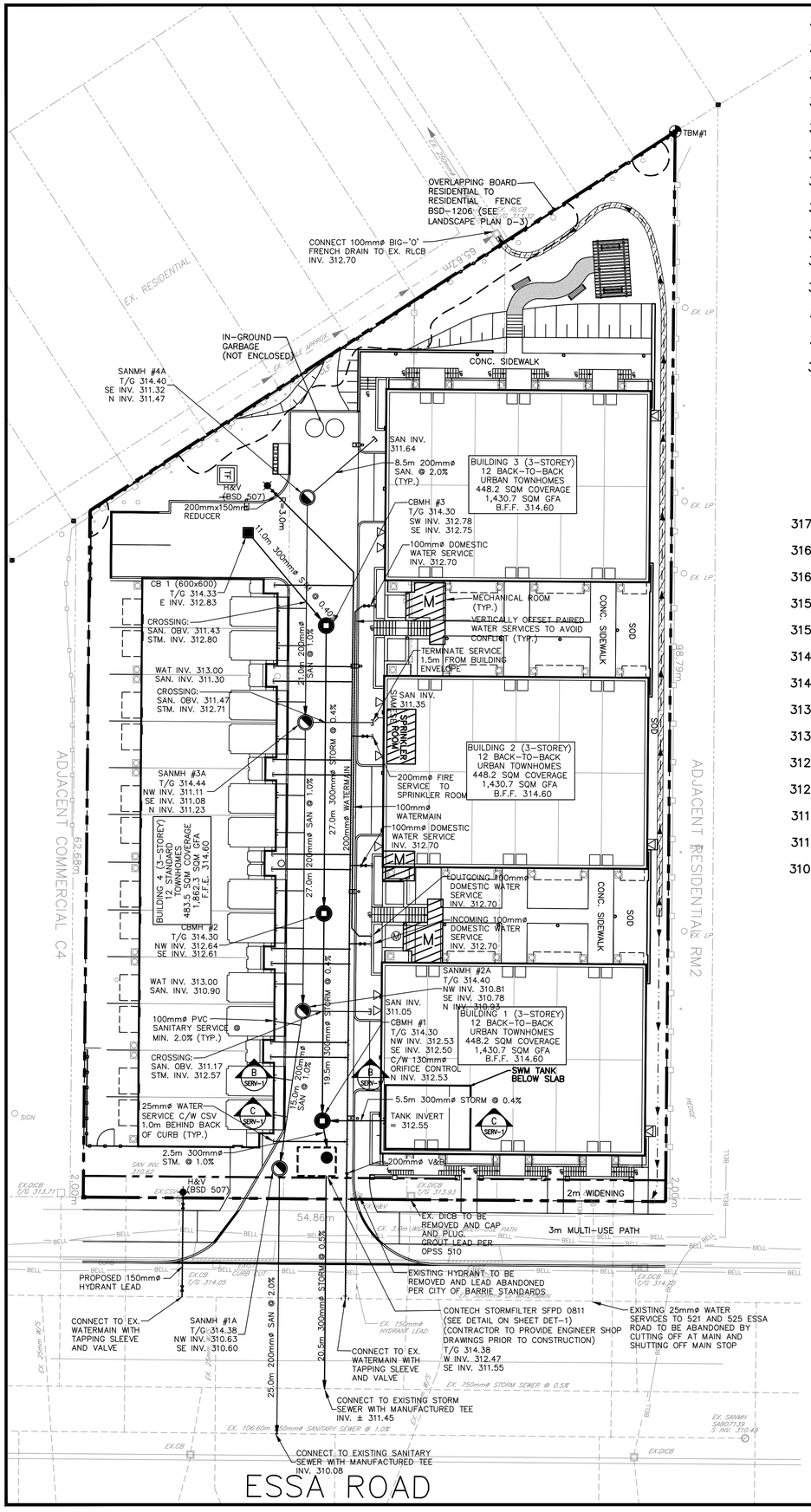
CLIENT/PROJECT

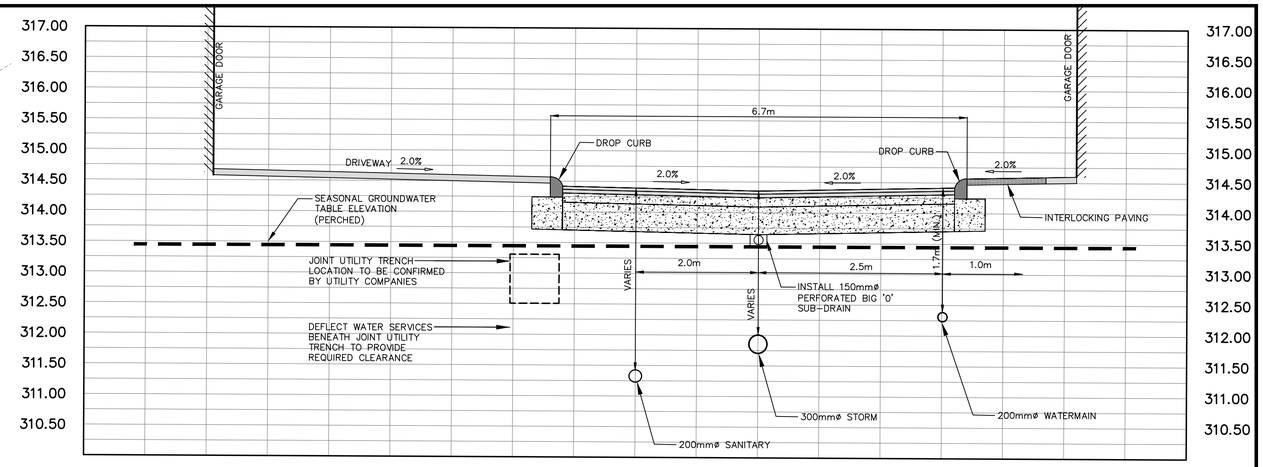
521 AND 525 ESSA ROAD RESIDENTIAL DEVELOPMENT

DRAWING TITLE

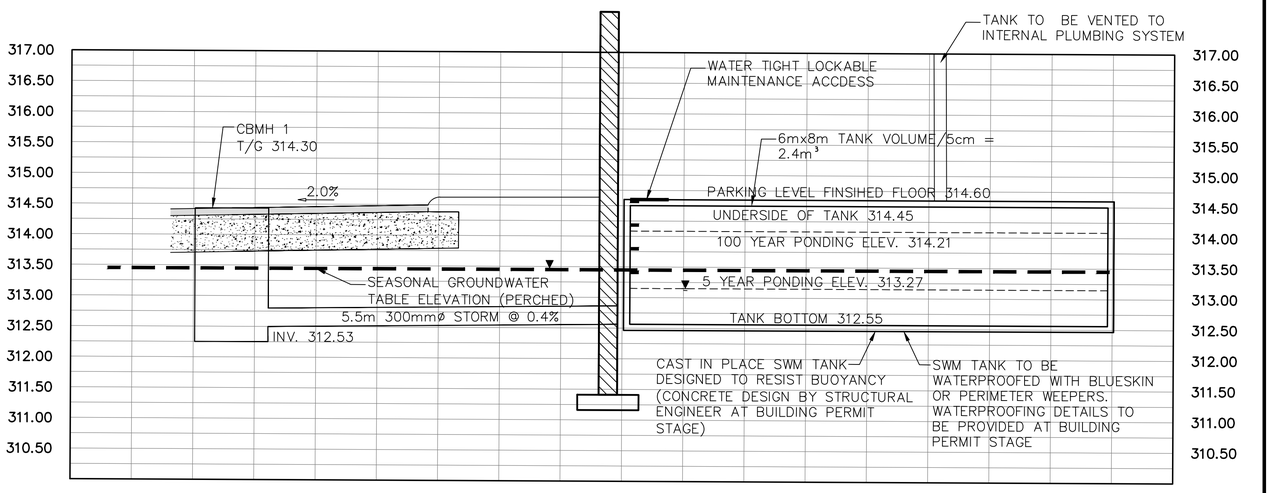
EROSION AND SEDIMENT CONTROL PLAN

PROJECT NO.	DRAWING NO.	REVISION
20-11501-B	ESC-1	3





SECTION B–B
H 1:50 V 1:50



SECTION C–C
TYPICAL SWM TANK SECTION
H 1:50 V 1:50

NOTE:
REFER TO TREE PROTECTION PLAN FOR TREE REMOVALS AND PRESERVATION AREAS.

HORIZONTAL CONTROL MONUMENTS
U.T.M. (ZONE 17) NAD 83

ELEVATIONS SHOW GEODETIC DRIVEN FROM CITY OF BARRIE BENCHMARK #03120030016 ELEVATION, 314.967.

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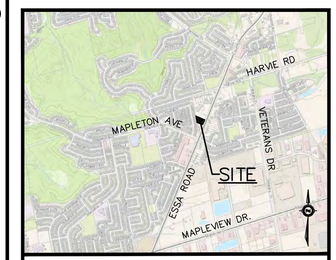


KEY MAP

NOTES

1. TOPOGRAPHIC SURVEY AND LEGAL INFORMATION COMPLETED BY AZIZ SURVEYORS INC. APRIL 6 2017,
2. SITE PLAN PREPARED BY PATRICK MARCUS LUCKIE, ARCHITECT APRL 10th 2018
3. LOCATE CURB STOP (CSV'S) WITHIN LANDSCAPE AREAS WHERE POSSIBLE.
4. 100mmø WATER SERVICES C/W BYPASS PER CITY STANDARD BSD-533 AND BACK-FLOW PREVENTION PER CITY BY-LAW 2017-121.
5. PRIVATE HYDRANT SHALL BE PAINTED RED.
6. FINAL SIZE AND LOCATION OF THE DOMESTIC WATER SERVICES TO BE DETERMINED AT BUILDING PERMIT STAGE

LEGEND

- PROPOSED CATCHBASIN
- PROPOSED CONTECH STORMFILTER MODEL NO. SFPD0811
- PROPOSED CATCHBASIN MANHOLE
- PROPOSED SANITARY MANHOLE
- PROPOSED HYDRANT
- WATER METER LOCATION
- LIGHT STANDARDS
- FRENCH DRAIN
- SIDE YARD SWALE

BENCHMARK

TBM#1
TOP OF IB IN NORTHWEST CORNER OF PROPERTY
ELEVATION 314.30

NO.	YY.MM.DD	REVISION	BY
3	21.03.15	SITE PLAN REVISION	G.N.
2	20.05.13	SITE PLAN REVISION	G.N.
1	19.06.06	REVISED PER CITY COMMENTS	G.N.

SEAL

LICENSED PROFESSIONAL ENGINEER
G.A. VOISIN
100172758
Mar. 15th, 2021
PROVINCE OF ONTARIO

NORTH ARROW

DESIGN BY:	J.V.
DRAWN BY:	G.N.
CHECKED	J.V.
DATE:	MARCH 2020
SCALE:	1:250

CLIENT/PROJECT

521 AND 525 ESSA ROAD RESIDENTIAL DEVELOPMENT

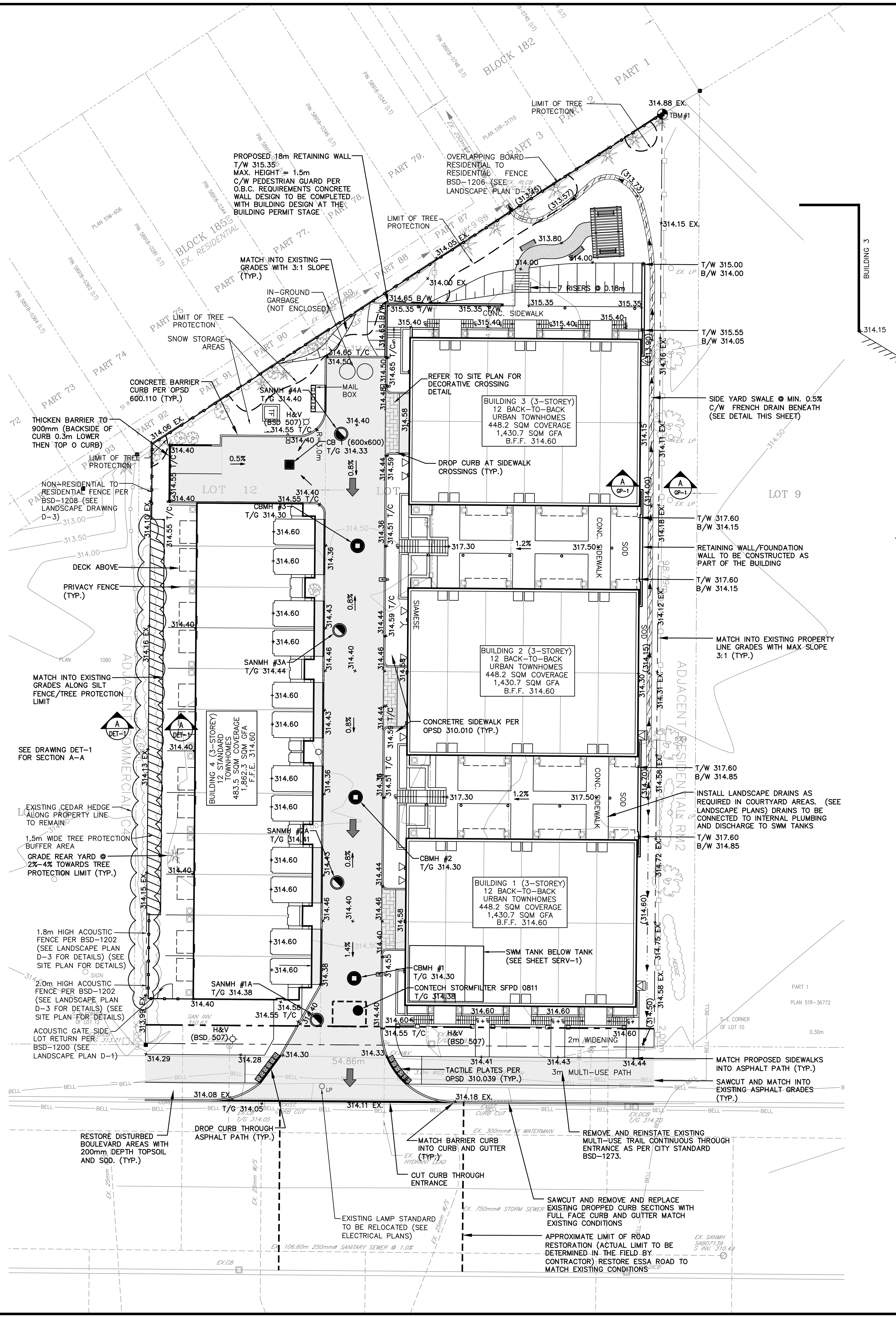
DRAWING TITLE

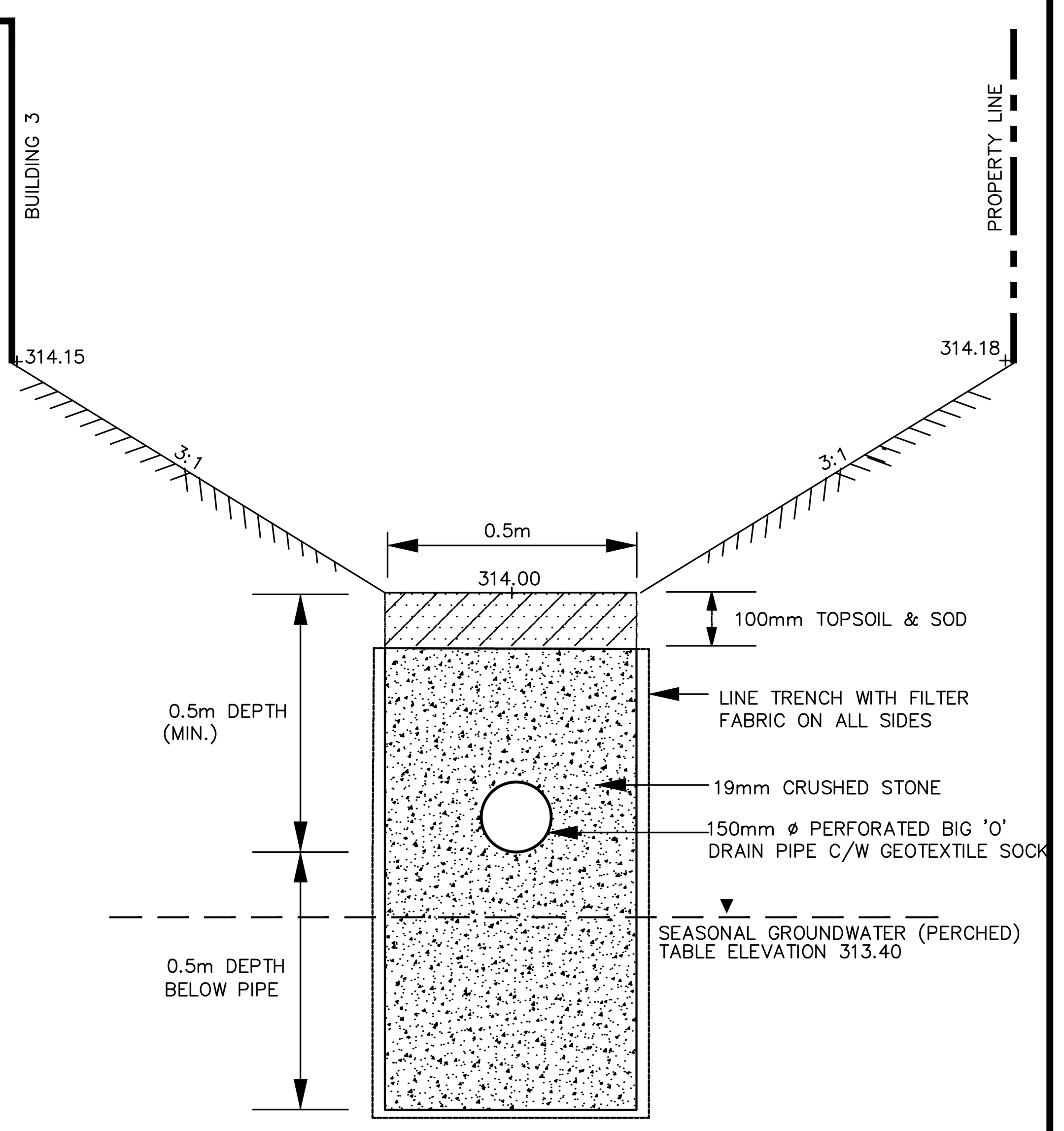
GENERAL SERVICING PLAN

PROJECT NO.	DRAWING NO.	REVISION
20-11501-B	SERV-1	3

LEGEND

- PROPOSED CATCHBASIN
- PROPOSED CONTECH STORMFILTER MODEL NO. SFPD0811
- PROPOSED CATCHBASIN MANHOLE
- PROPOSED SANITARY MANHOLE
- CURB STOP VALVE
- PROPOSED HYDRANT
- EX. SANITARY MANHOLE
- EX. CATCH BASIN
- EX. CATCH BASIN MANHOLE
- EXISTING HYDRANT
- EXISTING WATER VALVE
- ×250.00 PROPOSED ELEVATION
- ×250.00 EX. EXISTING ELEVATION
- DIRECTION OF MAJOR OVERLAND FLOW
- STAMPED ASPHALT
- LIGHT STANDARDS
- DROP CURB
- PROPOSED TRANSFORMER LOCATION
- FRENCH DRAIN
- SIDE YARD SWALE





SECTION A–A FRENCH DRAIN

PAVEMENT STRUCTURE		
MATERIAL		THICKNESS (mm)
ASPHALT	HL3 SURFACE	50
	HL8 BINDER	60
GRANULAR BASE (OPSS 1010)	GRANULAR 'A'	150
	GRANULAR 'B'	450

NOTE:
REFER TO TREE PROTECTION PLAN FOR TREE REMOVALS AND PRESERVATION AREAS.

HORIZONTAL CONTROL MONUMENTS
U.T.M. (ZONE 17) NAD 83

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PEL
PINESTONE ENGINEERING LIMITED | www.pel.ca

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KEY MAP

NOTES

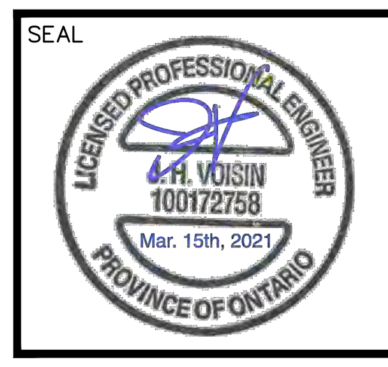
1. TOPOGRAPHIC SURVEY AND LEGAL INFORMATION COMPLETED BY AZIZ SURVEYORS INC. APRIL 6 2017,
2. SITE PLAN PREPARED BY PATRICK MARCUS LUCKIE, ARCHITECT.
3. ESSA ROAD TO BE RESTORED TO CITY OF BARRIE STANDARDS.

BENCHMARK

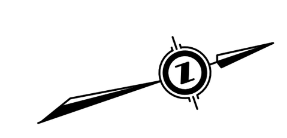
TBM#1
TOP OF IB IN NORTHWEST CORNER OF PROPERTY
ELEVATION 314.30

NO.	YY.MM.DD	REVISION	BY
3	21.03.15	SITE PLAN REVISION	G.N.
2	20.05.13	SITE PLAN REVISION	G.N.
1	19.06.06	REVISED PER CITY COMMENTS	G.N.

SEAL



NORTH ARROW



DESIGN BY:	J.V.
DRAWN BY:	G.N.
CHECKED	J.V.
DATE:	MARCH 2020
SCALE:	1:250

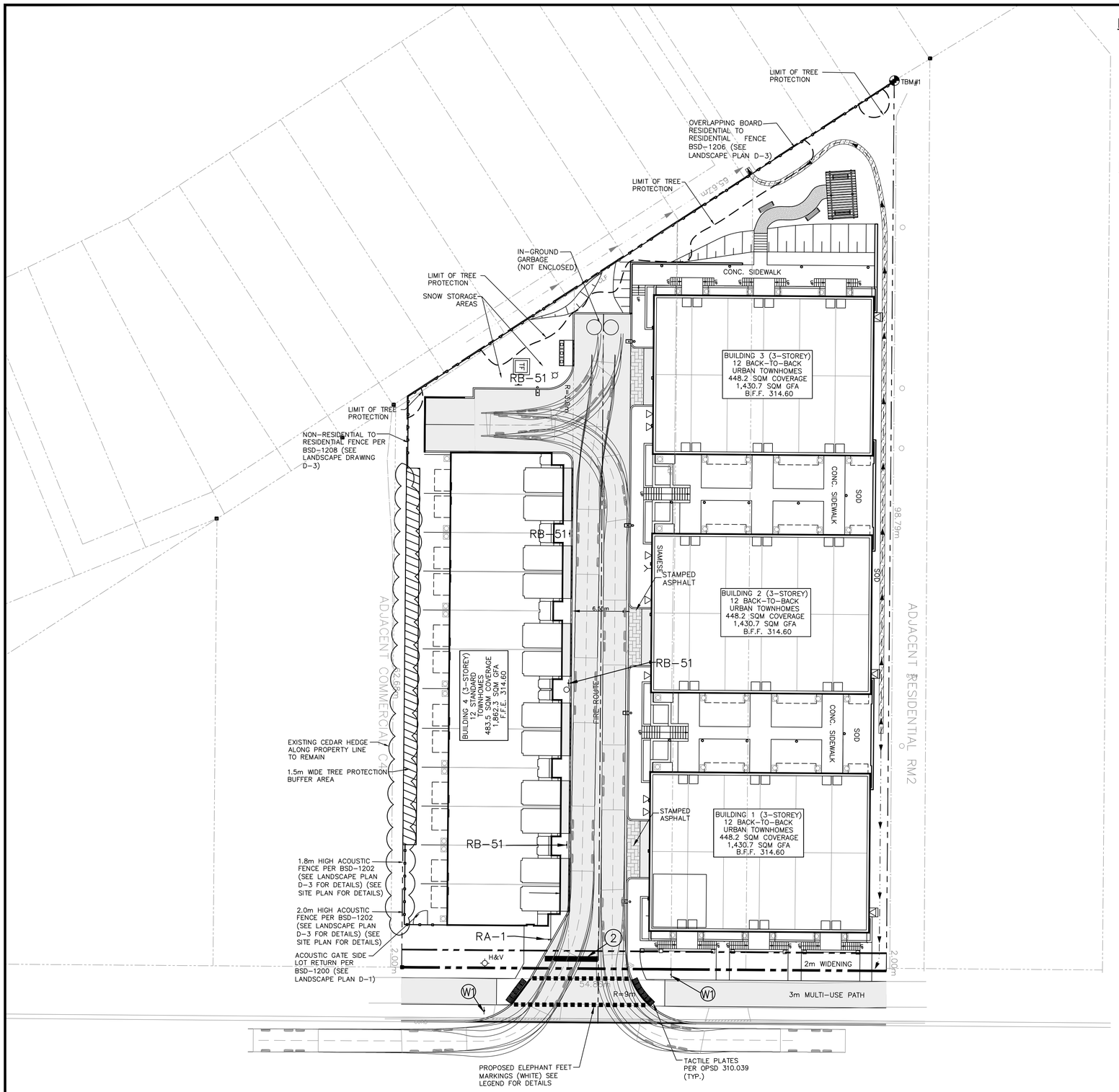
CLIENT/PROJECT

521 AND 525 ESSA ROAD RESIDENTIAL DEVELOPMENT

DRAWING TITLE

GRADING PLAN

PROJECT NO.	DRAWING NO.	REVISION
20-11501-B	GP-1	3



PAVEMENT MARKING AND SIGNAGE NOTES:

1. PROVIDE ALL SITE SIGNAGE AND PAVEMENT MARKINGS AS SHOWN ON SITE PLAN AND PAVEMENT MARKING AND SIGNAGE PLAN.
2. FINAL LOCATION OF FIRE ROUTE SIGNAGE TO BE DETERMINED IN FIELD BY LOCAL FIRE DEPARTMENT.
3. SAIGNAGE AND LINE PAINTING TO BE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
4. REFER TO SITE PLAN FOR BARRIER FREE PARKING SIGNAGE DETAILS.
5. PAVEMENT MARKING TO CONFORM WITH OPSS.710 AND 1712.
6. W1 SIGN TO BE APPROVED BY CITY OF BARRIE PRIOR TO CONSTRUCTION. SIGN TO MATCH EXISTING SIGNS USED AT RIGHT IN RIGHT OUT ENTRANCE LOCATED BETWEEN MAPLETON AVE. AND COUGHLIN ROAD. ON THE WEST SIDE OF ESSA ROAD.
7. ALL STRIPPING TO BE 100mm WIDE AND WHITE.

LEGEND

- RA-1
- RB-51
- (W1) WATCH FOR VEHICLES TURNING
- (2) SOLID WHITE 60cm WIDTH
- PROPOSED ASPHALT AREA
- PROPOSED SIGN
- PROPOSED SIGN FACE (DIRECTION)
- TACTILE PLATE PER OPSD 310.039 (TYP.)
- LIGHT STANDARDS
- WASTE DISPOSAL TRUCK TURNING PATH
- ELEPHANT FEET (200–400 mm)

TYPICAL SIGN MOUNTING DETAIL
N.T.S.

PAVEMENT STRUCTURE		
MATERIAL		THICKNESS (mm)
ASPHALT	HL3 SURFACE	50
	HL8 BINDER	60
GRANULAR BASE (OPSS 1010)	GRANULAR 'A'	150
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HORIZONTAL CONTROL MONUMENTS
U.T.M. (ZONE 17) NAD 83

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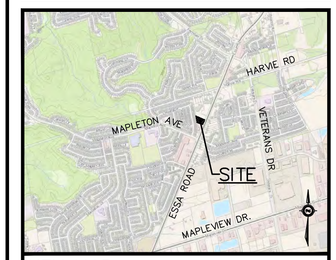
www.pel.ca



KEY MAP NOTES

1. TOPOGRAPHIC SURVEY AND LEGAL INFORMATION COMPLETED BY AZIZ SURVEYORS INC. APRIL 6 2017.
2. SITE PLAN PREPARED BY PATRICK MARCUS LUCKIE, ARCHITECT APRIL 10th, 2018

BENCHMARK

TBM#1
TOP OF IB IN NORTHWEST CORNER OF PROPERTY
ELEVATION 314.30

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3	21.03.15	SITE PLAN REVISION	G.N.
2	20.05.13	SITE PLAN REVISION	G.N.
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SEAL

LICENSED PROFESSIONAL ENGINEER
J.H. VOISIN
100172758
Mar. 15th, 2021
PROVINCE OF ONTARIO

NORTH ARROW

DESIGN BY:	J.V.
DRAWN BY:	G.N.
CHECKED	J.V.
DATE:	MARCH 2020
SCALE:	1:250

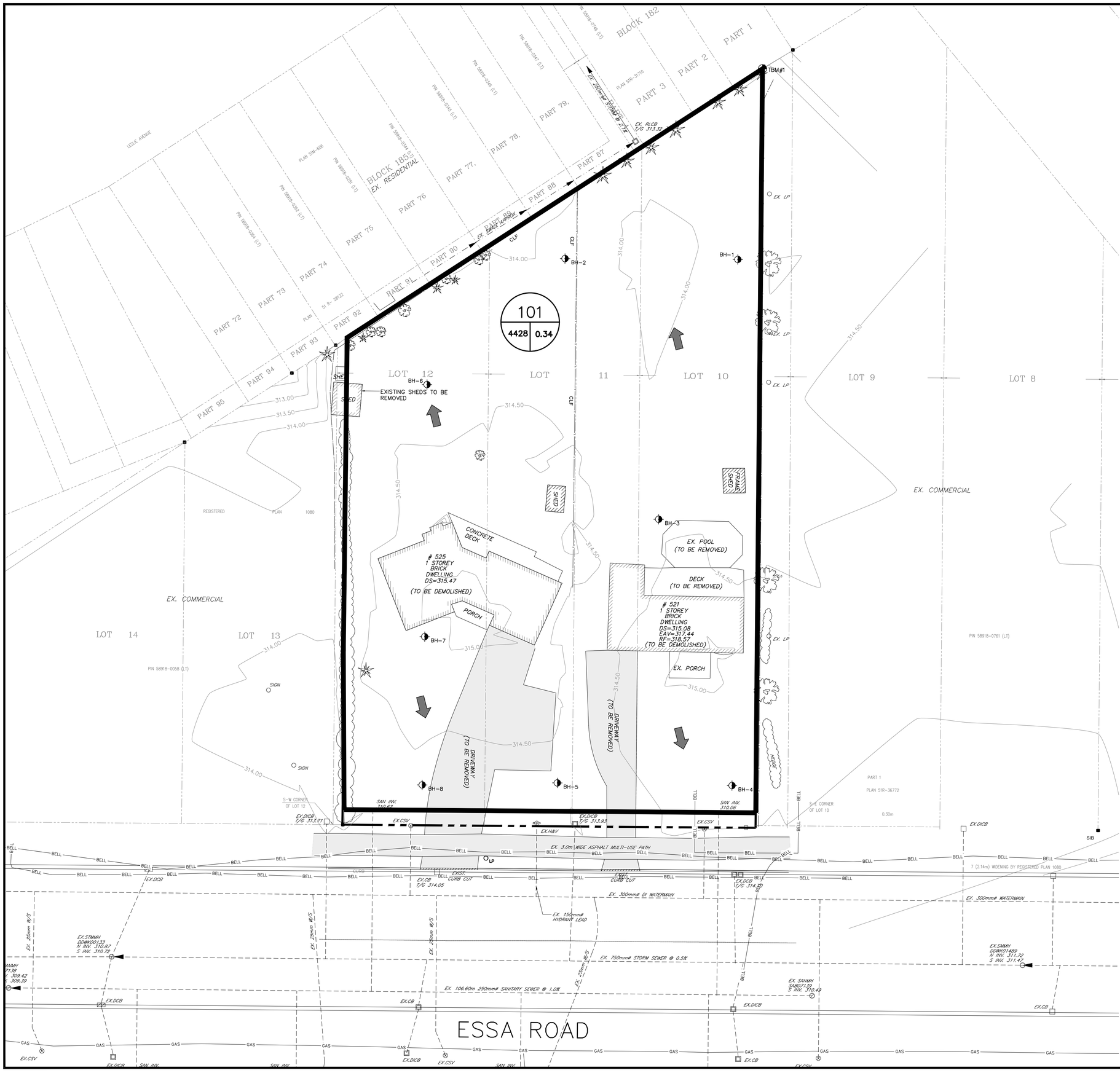
CLIENT/PROJECT

521 AND 525 ESSA ROAD RESIDENTIAL DEVELOPMENT

DRAWING TITLE

PAVEMENT MARKINGS AND SIGNAGE PLAN OPTION #3

PROJECT NO.	DRAWING NO.	REVISION
20-11501-B	PM-1	3



LEGEND

- EX. HP/LS
- EX. CATCHBASIN
- EX. HYDRANT
- EX. VALVE AND BOX
- EX. SANITARY MANHOLE
- EX. STORM MANHOLE
- EX. TRAFFIC LIGHT
- EX. SIGN
- 246.00 — CONTOUR
- EXISTING ASPHALT
- EXISTING FENCE
- BH-1 — APPROXIMATE BOREHOLE LOCATION
- EXISTING TREE
- LIMIT OF EXISTING VEGETAION
- PRE-DEVELOPMENT CATCHMENT BOUNDARY
- 101 — PRE-DEVELOPMENT CATCHMENT NUMBER
- 4428 0.47 — COEFFICIENT / PRE-DEVELOPMENT CATCHMENT AREA(m)
- DIRECTION OF OVERLAND FLOW

HORIZONTAL CONTROL MONUMENTS

U.T.M. (ZONE 17) NAD 83

ELEVATIONS SHOW GEODETIC DRIVEN FROM CITY OF BARRIE BENCHMARK #03120030016 ELEVATION, 314.967.

BEARINGS HERE IN ARE GRID BEARINGS ARE DERIVED FROM CONTROL MONUMENTS 031950003 (N=4910748.411, E=603095.546) AND ARE REFERRED TO CENTRAL MERIDIAN (81 DEGREES OF LONGITUDE IN ZONE, 17 AND ARE BASED ON NAD83)

BENCHMARK V010865470 300.3254 – CONCRETE HEADWALL ON EASTSIDE OF RED FERN AVENUE, 0.15km NORTH OF DYER ROAD. TABLET IS SET HORIZONTALLY IN THE EAST FACE, 16.3m EAST OF CENTERLINE OF ROAD, 52cm WEST OF SOUTH END, 42 cm BELOW THE TOP

PINESTONE ENGINEERING LIMITED |
www.pel.ca

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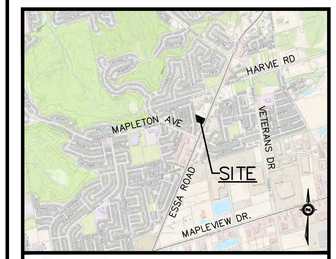


KEY MAP

NOTES

1. TOPOGRAPHIC SURVEY AND LEGAL INFORMATION COMPLETED BY AZIZ SURVEYORS INC. APRIL 6 2017.
2. SITE PLAN PROVIDED BY PATRICK MARKUS LUCKIE ARCHITECT.
3. REFER TO SOILS REPORT PREPARED BY PETO MacCALLUM LTD. FOR BOREHOLE DETAILS.
4. REFER TO DRAWING ESC-1 FOR SITE DISTURBANCE LIMITS.

BENCHMARK

TBM#1
TOP OF IB IN NORTHWEST CORNER OF PROPERTY
ELEVATION 314.30

NO.	YY.MM.DD	REVISION	BY
3	21.03.15	SITE PLAN REVISION	G.N.
2	20.05.13	SITE PLAN REVISION	G.N.
1	19.06.06	REVISED PER CITY COMMENTS	G.N.

SEAL

LICENSED PROFESSIONAL ENGINEER
J.H. VOISIN
100172758
Mar. 15th, 2021
PROVINCE OF ONTARIO

NORTH ARROW

DESIGN BY:	J.V.
DRAWN BY:	G.N.
CHECKED	J.V.
DATE:	MARCH 2020
SCALE:	1: 250

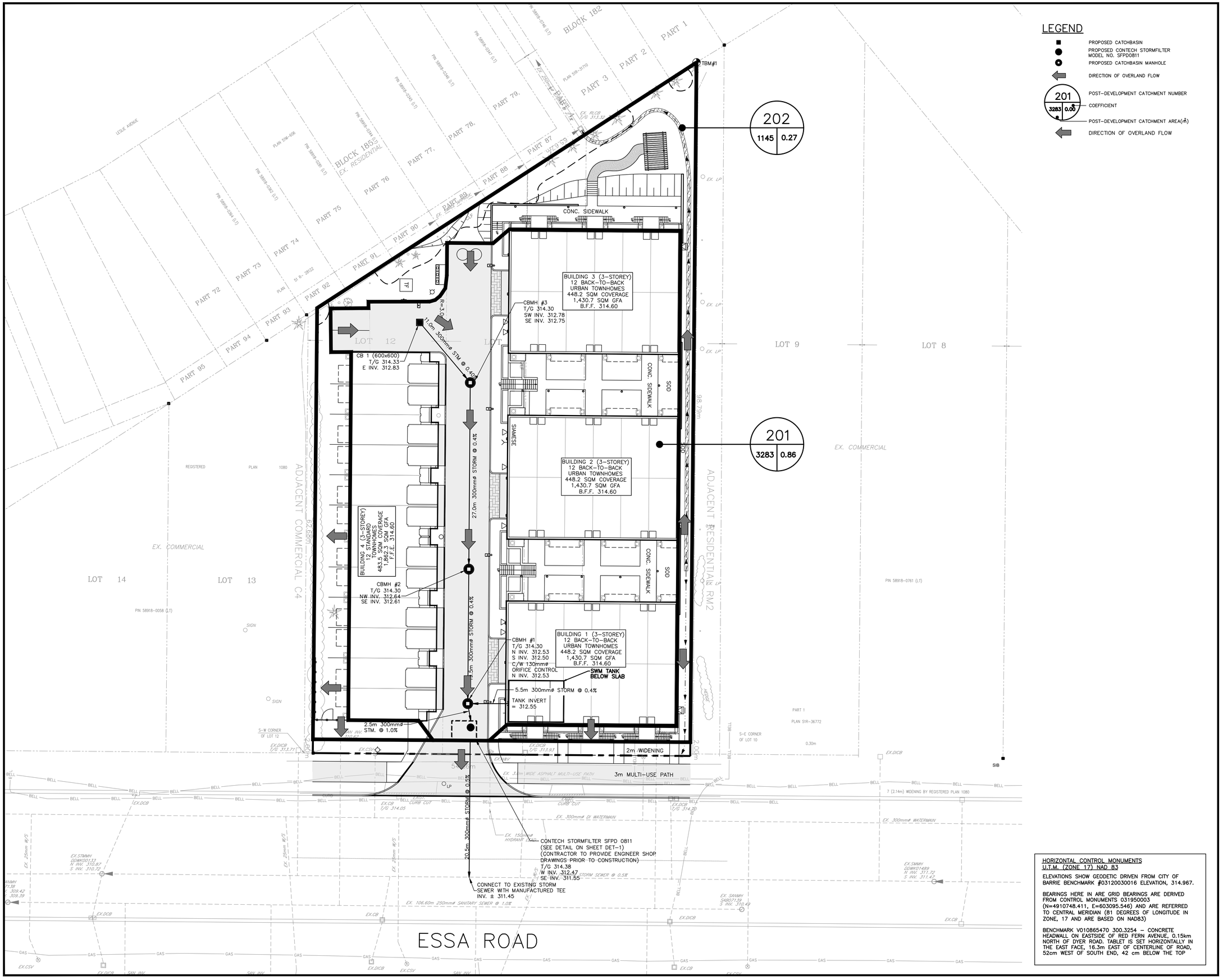
CLIENT/PROJECT

521 AND 525 ESSA ROAD RESIDENTIAL DEVELOPMENT

DRAWING TITLE

PRE-DEVELOPMENT CATCHMENT PLAN

PROJECT NO.	DRAWING NO.	REVISION
20-11501-B	PRE-1	3



PEL
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SEAL

LICENSED PROFESSIONAL ENGINEER
J.V. VOISIN
100172768
Mar. 15th, 2021
PROVINCE OF ONTARIO

NORTH ARROW

DESIGN BY:	J.V.
DRAWN BY:	G.N.
CHECKED	J.V.
DATE:	MARCH 2020
SCALE:	1: 250

CLIENT/PROJECT

521 AND 525 ESSA ROAD RESIDENTIAL DEVELOPMENT

DRAWING TITLE

POST DEVELOPMENT CATCHMENT PLAN

PROJECT NO.	DRAWING NO.	REVISION
20-11501-B	POST-1	3

HORIZONTAL CONTROL MONUMENTS
U.T.M. (ZONE 17) NAD 83

ELEVATIONS SHOW GEODETIC DRIVEN FROM CITY OF BARRIE BENCHMARK #03120030016 ELEVATION, 314.967.

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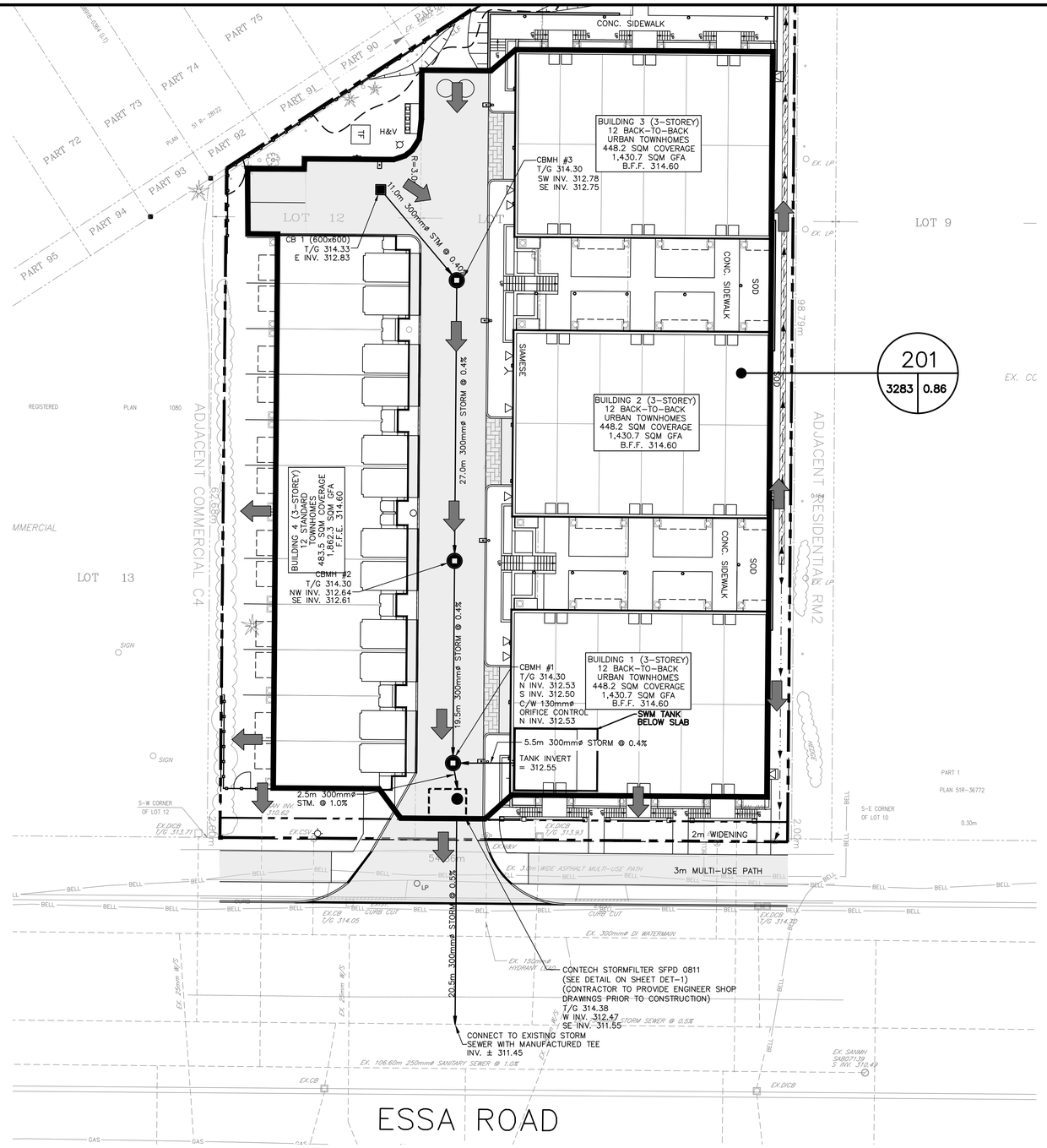

LEGEND

- PROPOSED CATCHBASIN
- PROPOSED CONTECH STORMFILTER MODEL NO. SFPD0811
- PROPOSED CATCHBASIN MANHOLE
- DIRECTION OF OVERLAND FLOW
- 201 / 3283 / 0.00 — STORM CATCHMENT NUMBER / COEFFICIENT / STORM CATCHMENT AREA(ha)
- DIRECTION OF OVERLAND FLOW

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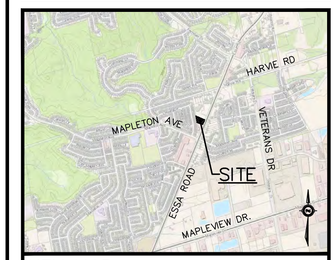

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TBM#1
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SEAL

LICENSED PROFESSIONAL ENGINEER
J.R. VOISIN
100172758
Mar. 15th, 2021
PROVINCE OF ONTARIO

NORTH ARROW

DESIGN BY:	J.V.
DRAWN BY:	G.N.
CHECKED	J.V.
DATE:	MARCH 2020
SCALE:	1:250

CLIENT/PROJECT

521 AND 525 ESSA ROAD RESIDENTIAL DEVELOPMENT

DRAWING TITLE

STORM SEWER CATCHMENT PLAN

PROJECT NO.	DRAWING NO.	REVISION
20-11501-B	STM-1	3

521 & 525 Essa Road Residential Development
City of Barrie

STORM SEWER DESIGN SHEET
ENGINEERING AND PUBLIC WORKS

Project Number: 20-11501B
Date: May 6, 2020
Design By: DPH
Checked By: JHV
File: Z:\Project Documents\11501B 521-525 Essa Road Townhomes\SWM Rev 2, April 2020\Storm Sewer Design Sheet (Barrie IDF).xls

Drainage Area Plan No: N/A

Design Parameters

100 YEAR STORM

Q=kAIR, k=0.00278 — Manning's "n" 0.013
Intensity (I) = a/(tc+b)^c — Min. Velocity 0.800 m/s
a = 1426.408 — Max. Velocity 6.000 m/s
b = 5.273
c = 0.759

PINESTONE ENGINEERING LTD.

LOCATION				STORMWATER FLOW								DESIGN					
STREET	AREA NUMBER	MANHOLE LOCATION FROM MH	MANHOLE LOCATION TO MH	AREA (A)	RUNOFF COEFF. (C)	A x C	CUMUL. A x C	CONCENTRATION TIME TOTAL	CONCENTRATION TIME IN PIPE	RAIN INTENSITY (I)	FLOW (Q)	PIPE SIZE	LENGTH	SLOPE	CAPACITY	FULL FLOW VELOCITY	ACTUAL VELOCITY
				ha		ha	ha	min	min	mm/hr	L/s	mm	m	%	L/s	m/s	m/s
Catchment 201	201	SFPD 0811	Ex. Storm Sewer	**100 YEAR CONTROLLED DESIGN FLOW FROM MODIFIED RATIONAL METHOD CALCULATIONS**							47.00000	300	20.5	0.50	68.37776	0.9673	1.0424

HORIZONTAL CONTROL MONUMENTS
U.T.M. (ZONE 17) NAD 83

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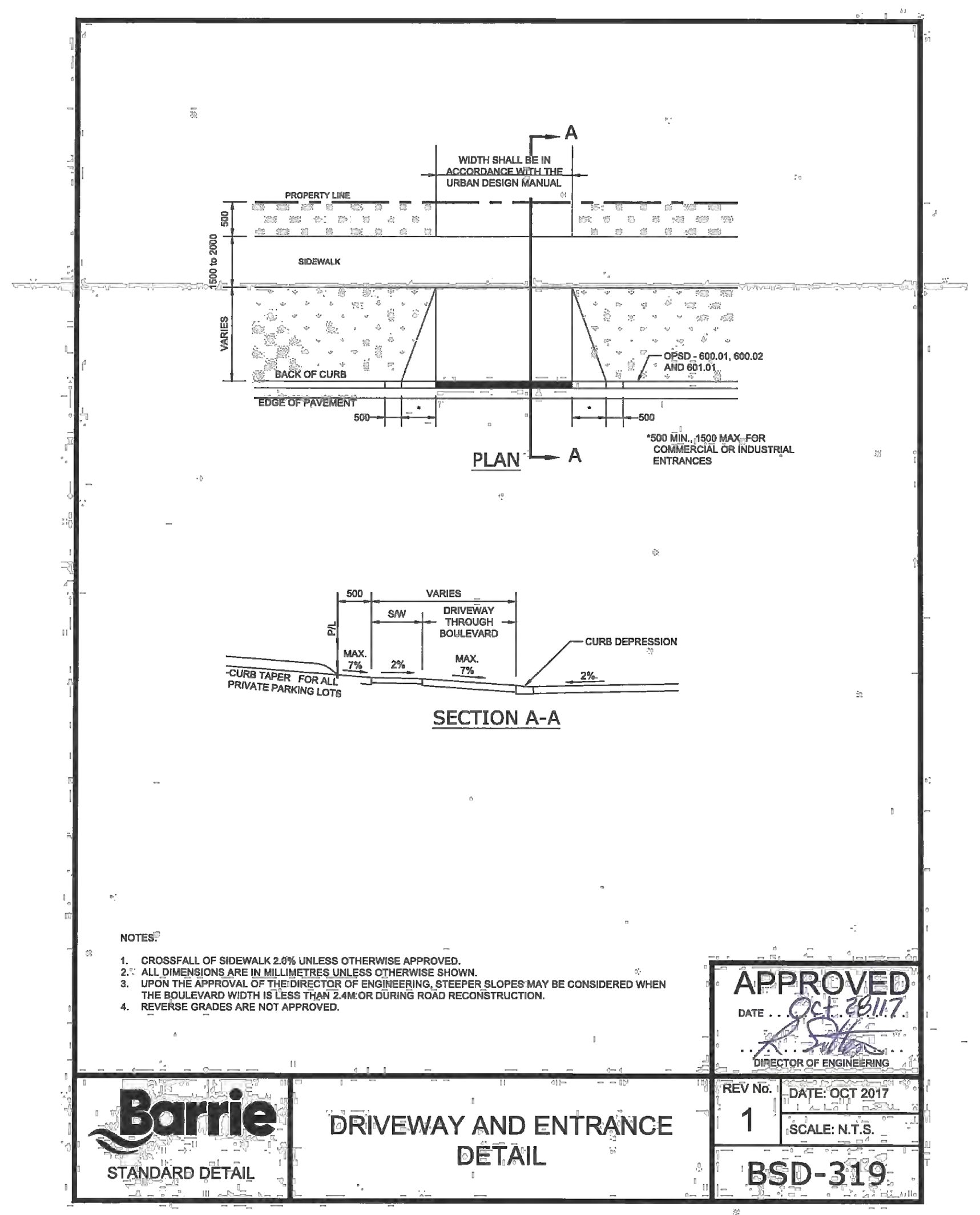

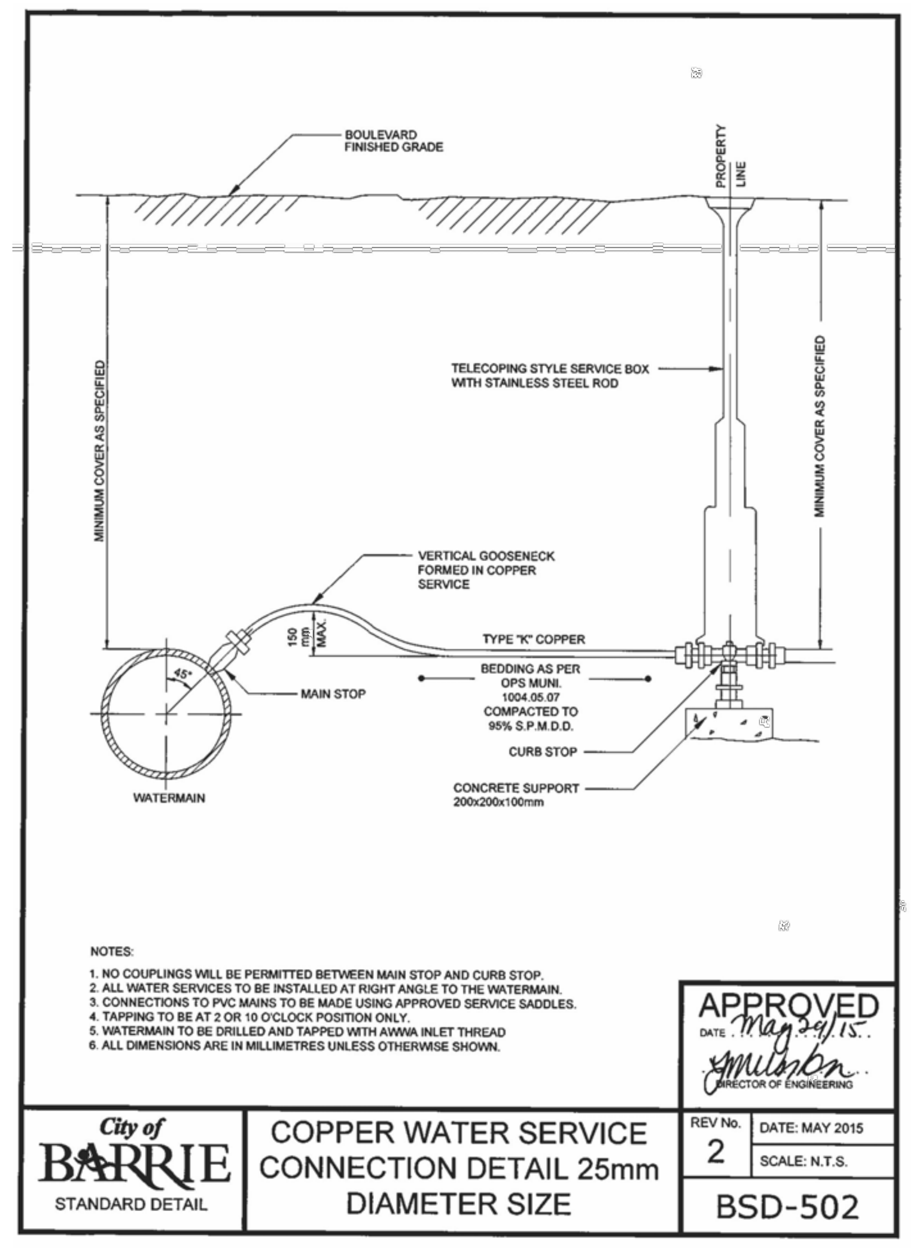

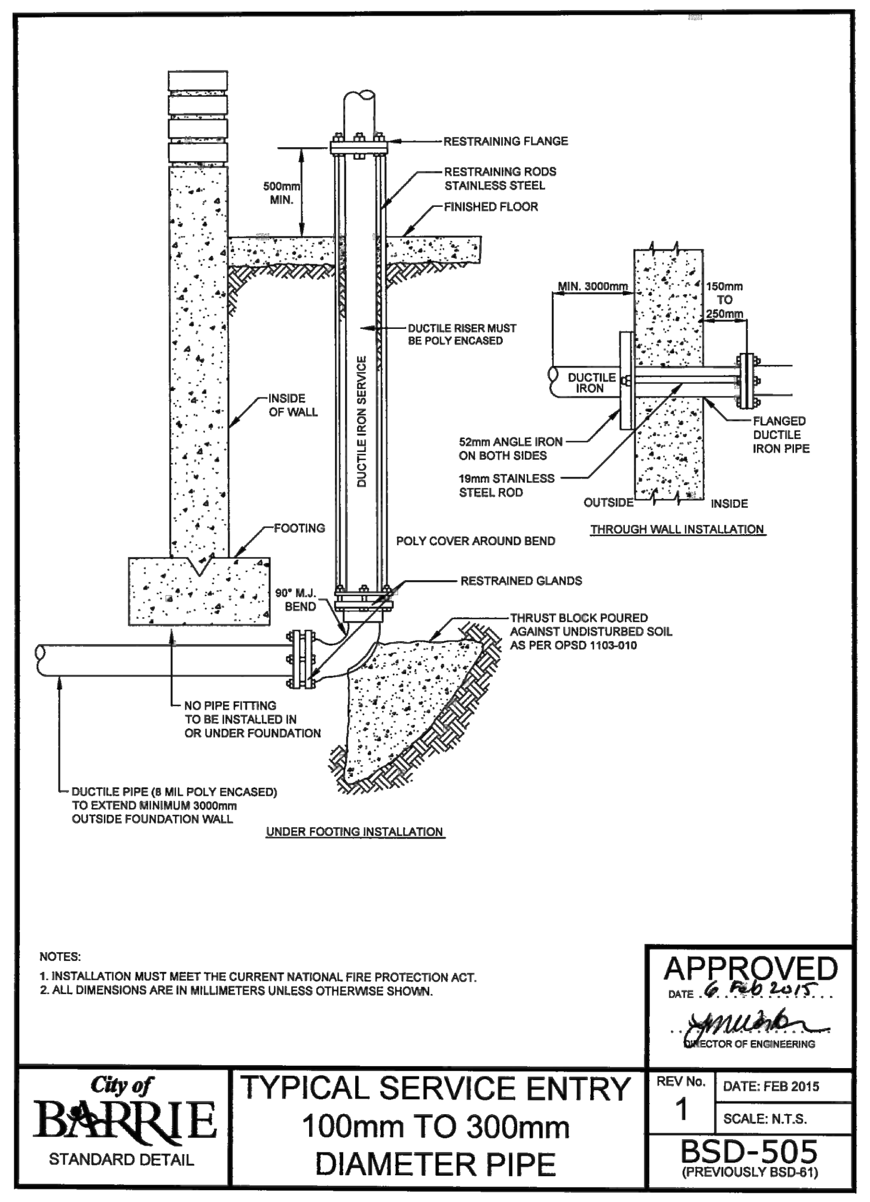

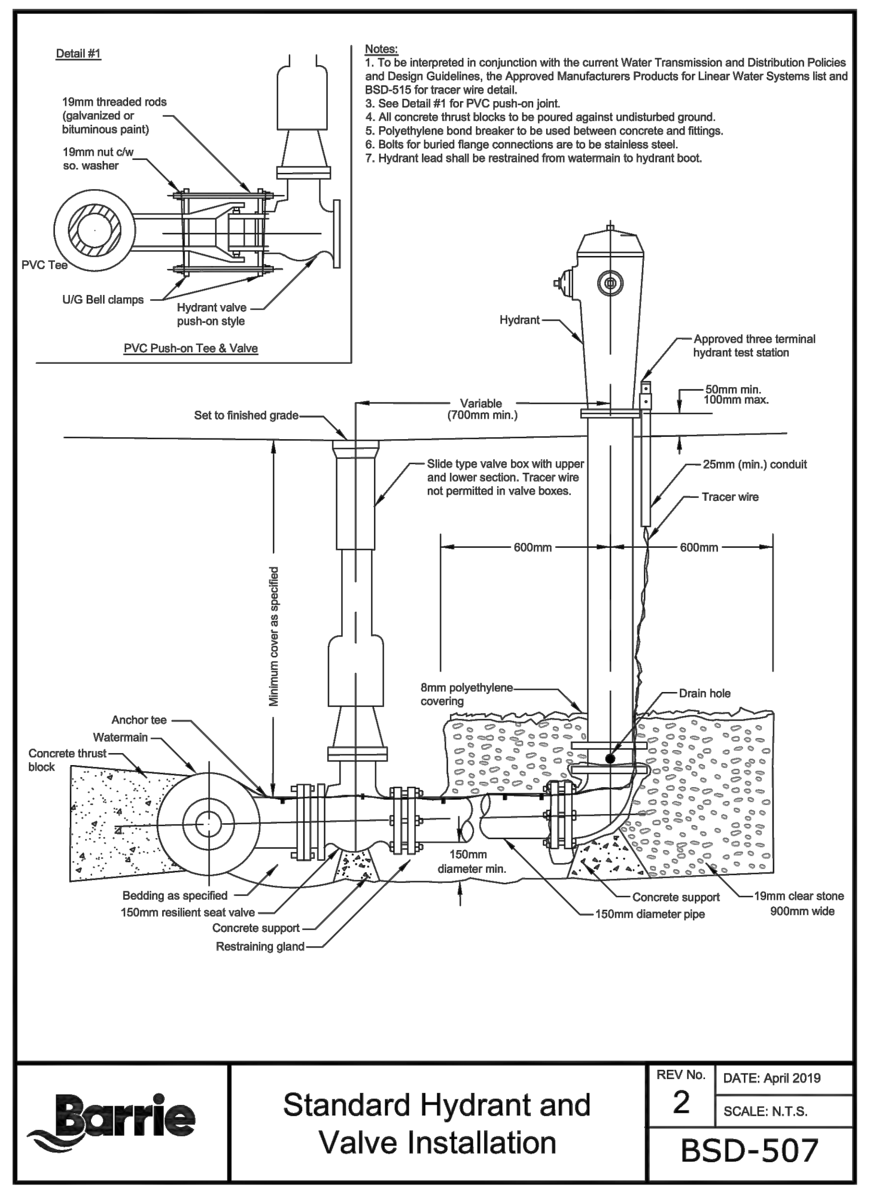

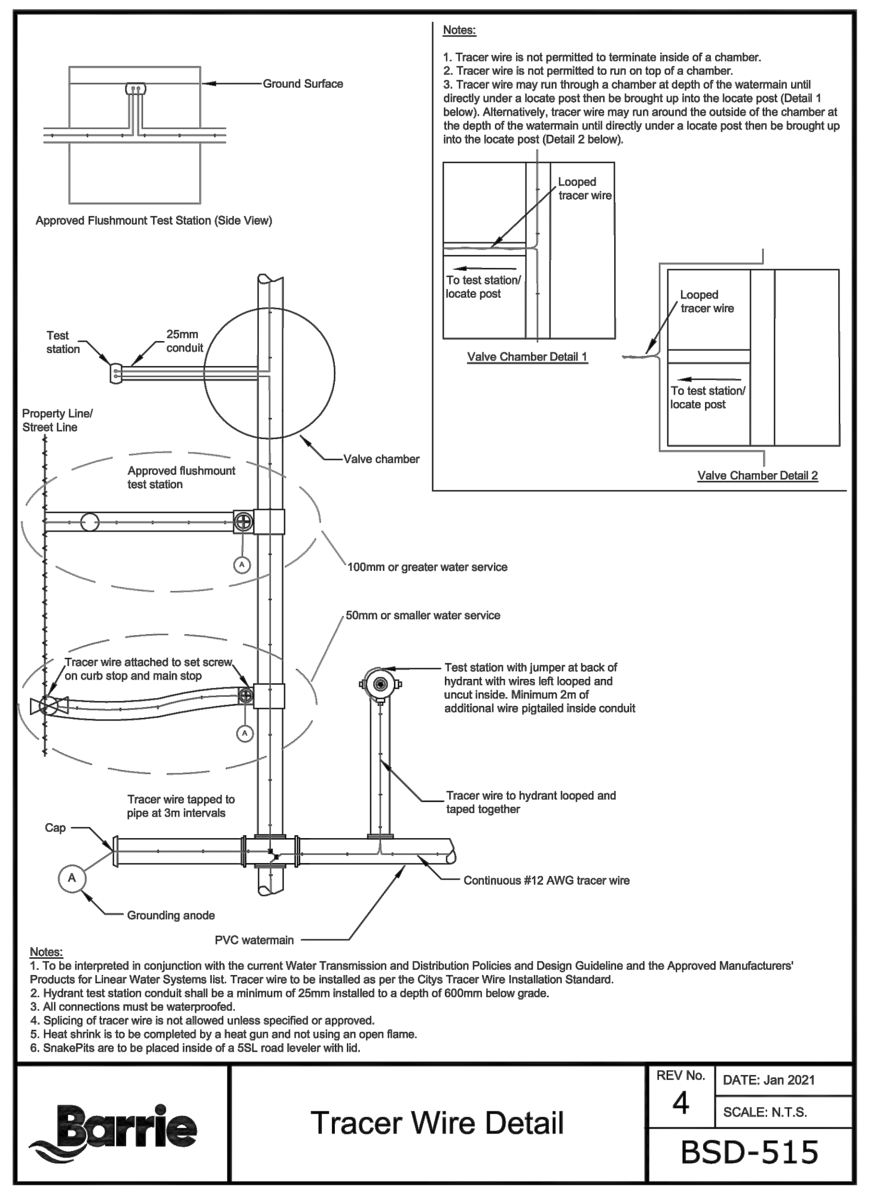

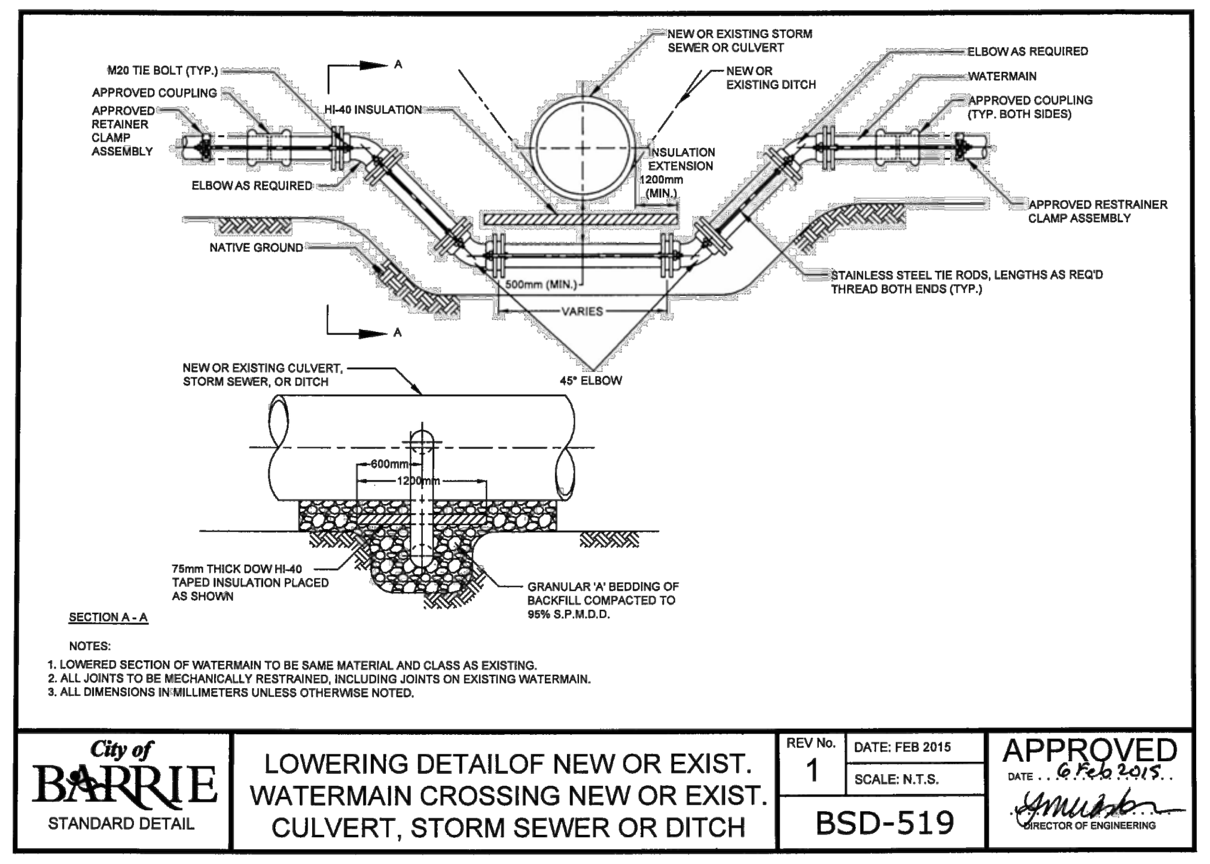

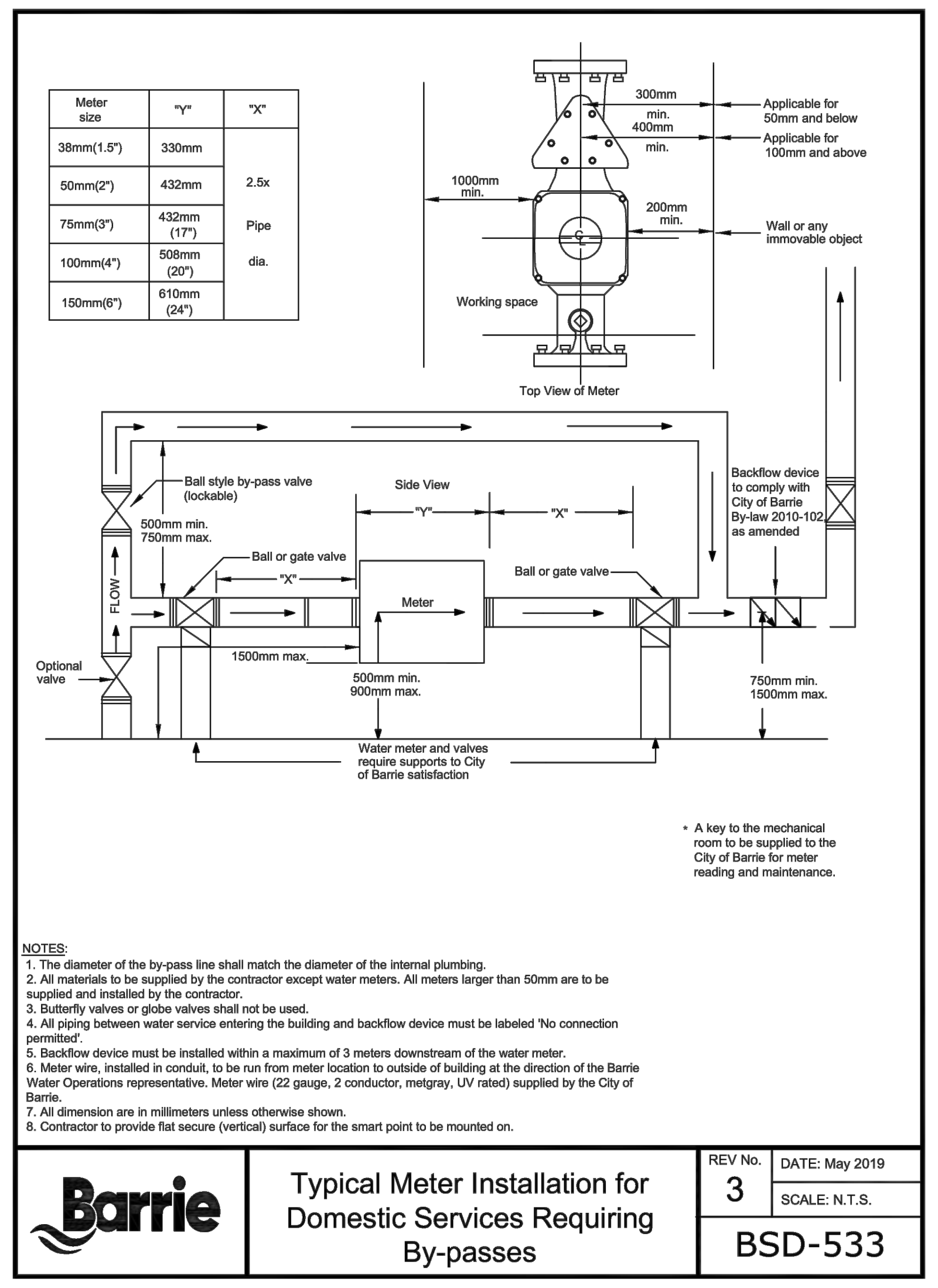

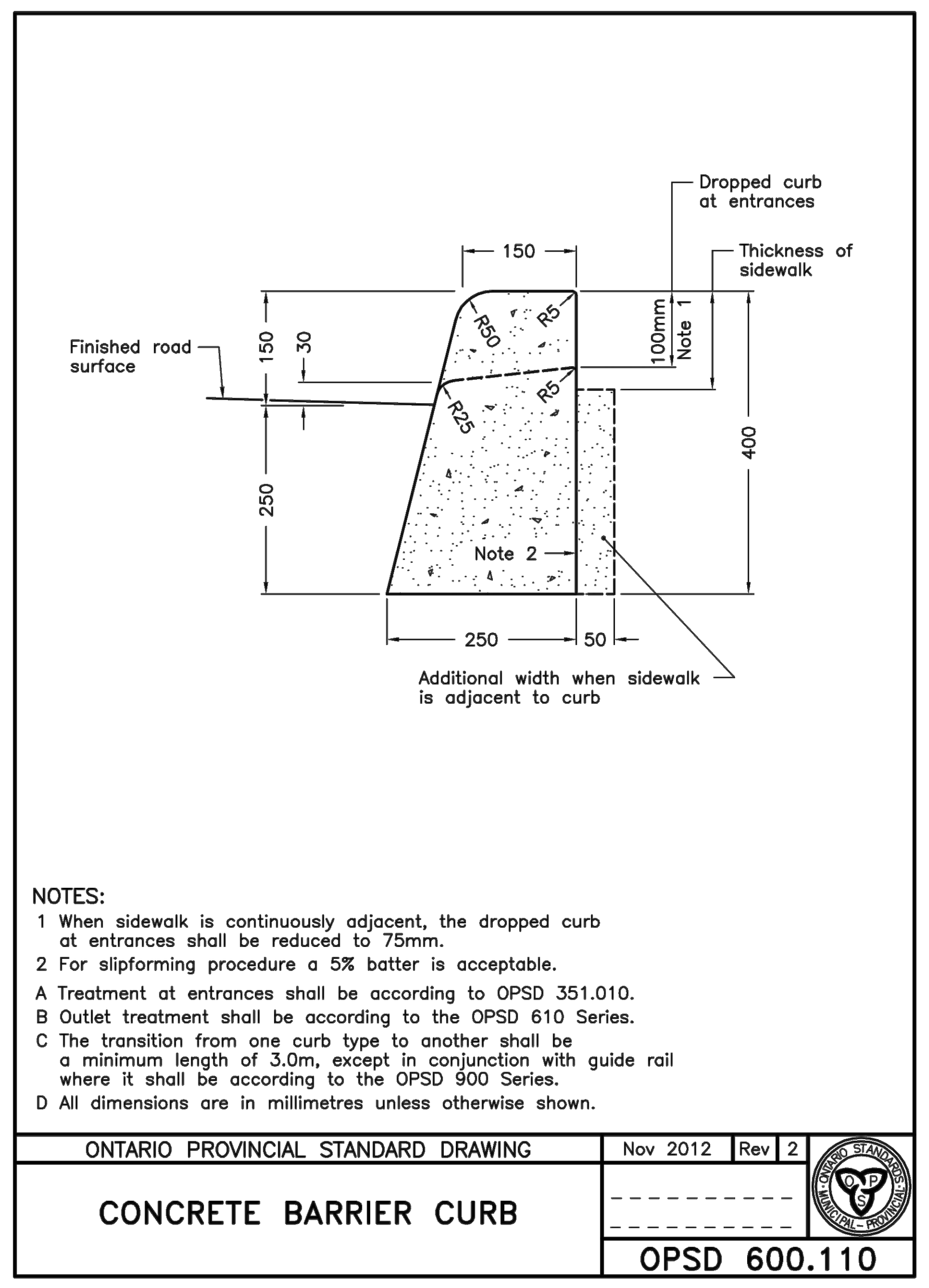

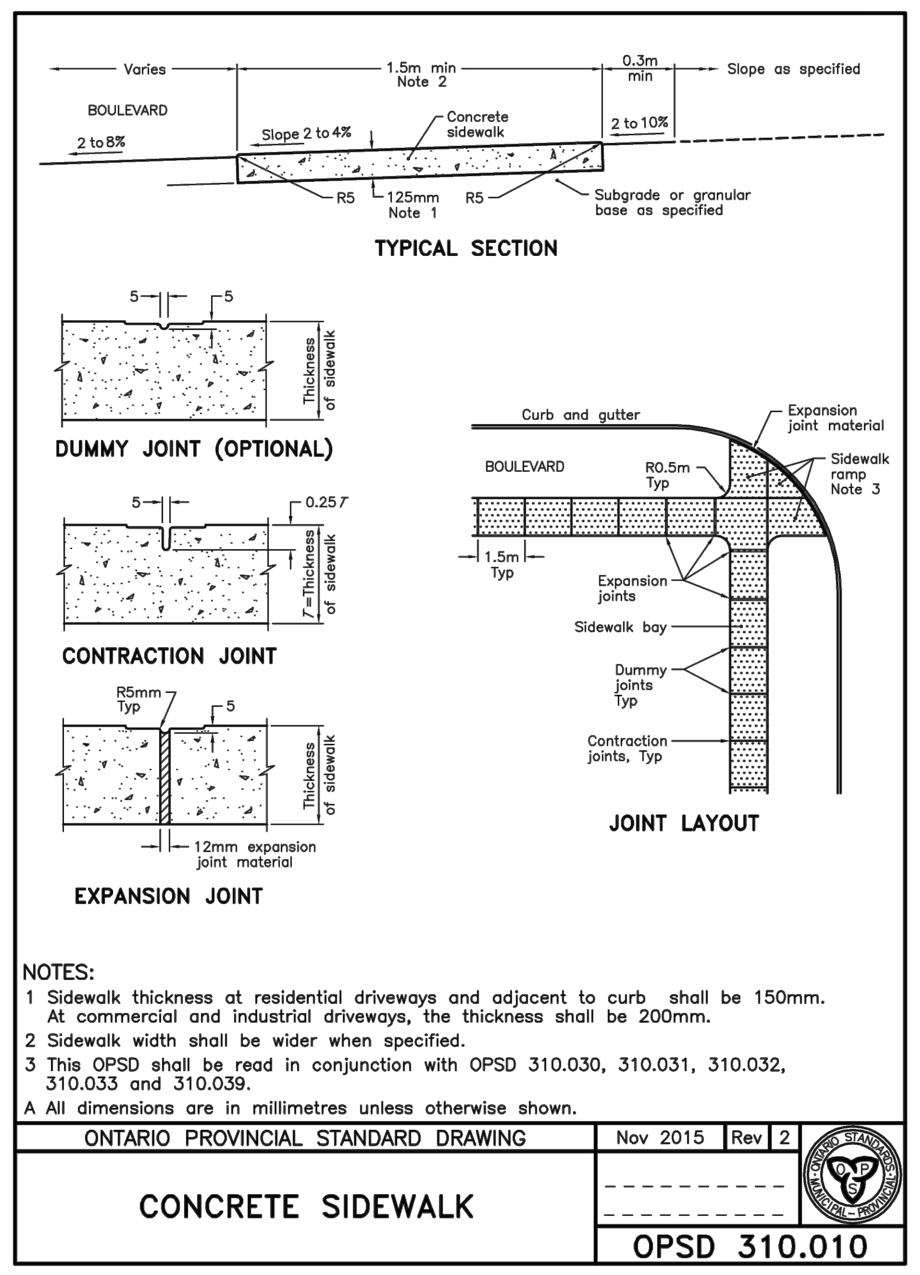

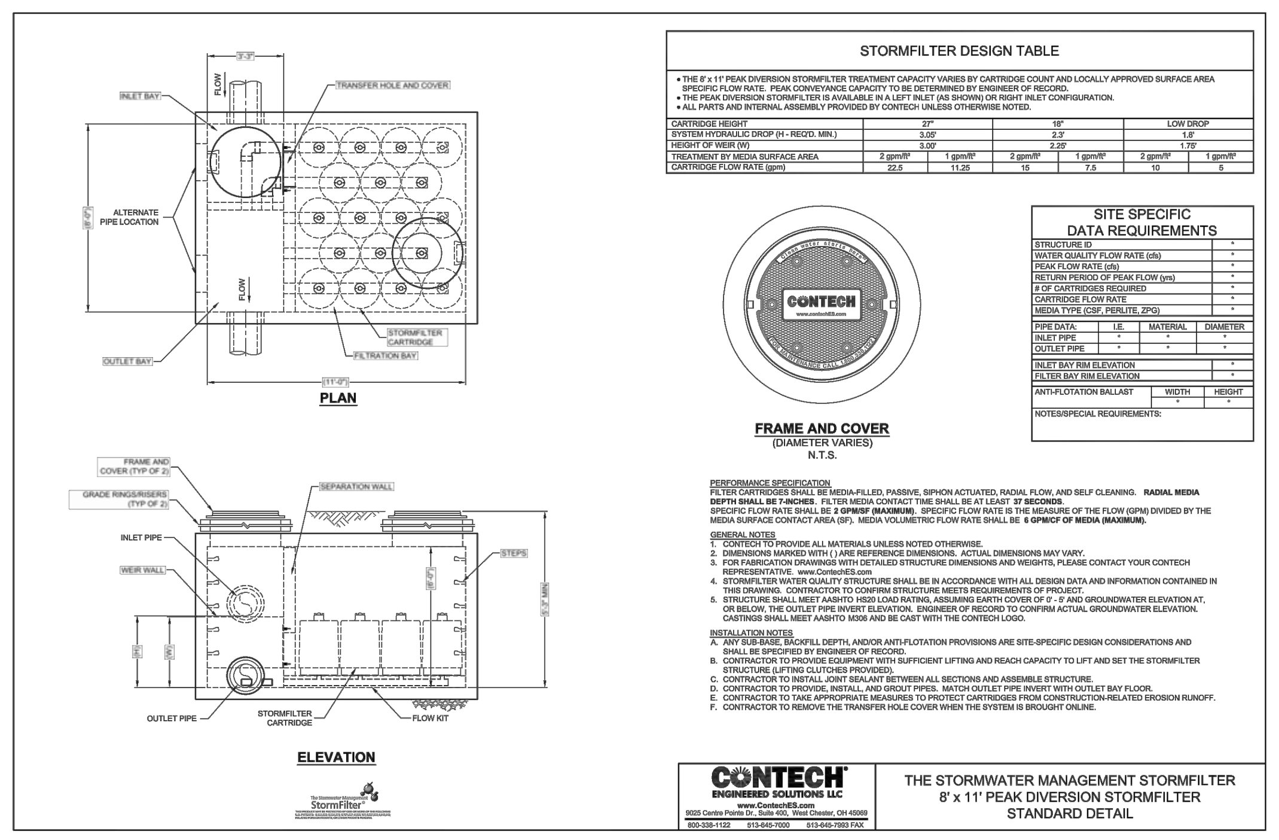

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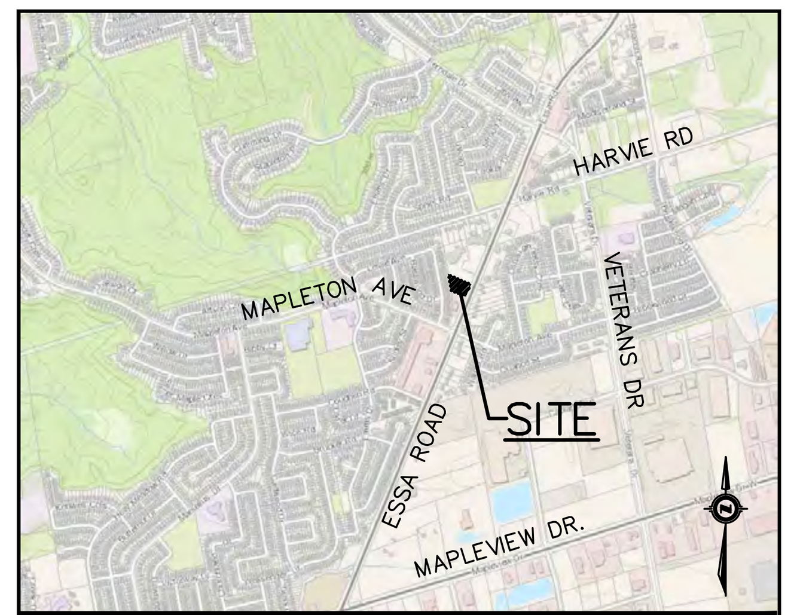


KEY MAP

NOTES

1. TOPOGRAPHIC SURVEY AND LEGAL INFORMATION COMPLETED BY AZIZ SURVEYORS INC. APRIL 6 2017,
2. SITE PLAN PREPARED BY PATRICK MARCUS LUCKIE, ARCHITECT APRIL 10th, 2018

NO.	YY.MM.DD	REVISION	BY
3	21.03.15	SITE PLAN REVISION	G.N.
2	20.05.13	SITE PLAN REVISION	G.N.
1	19.06.06	REVISED PER CITY COMMENTS	G.N.

SEAL: LICENSED PROFESSIONAL ENGINEER, J.R. VOISIN, 100172758, Mar. 15th, 2021, PROVINCE OF ONTARIO

NORTH ARROW

DESIGN BY:	J.V.
DRAWN BY:	G.N.
CHECKED	J.V.
DATE:	MARCH 2020
SCALE:	1:250

CLIENT/PROJECT

521 AND 525 ESSA ROAD RESIDENTIAL DEVELOPMENT

DRAWING TITLE

STANDARD AND CONSTRUCTION DETAILS

PROJECT NO.	DRAWING NO.	REVISION
20-11501-B	DET-1	3

GENERAL NOTES

1. DRAWINGS

A. ALL DRAWINGS SHALL BE PRODUCED IN ACCORDANCE WITH CURRENT CITY OF BARRIE STANDARDS & SYMBOLS FOR PLAN & PROFILE DRAWINGS, GENERAL SERVICE PLANS AND LOT GRADING PLANS.

2. MEASUREMENTS

A. ALL DIMENSIONS ARE IN METRES, EXCEPT PIPE DIAMETERS, WHICH ARE IN MILLIMETRES, UNLESS SPECIFIED OTHERWISE.

3. GENERAL

A. ALL WORK SHALL BE IN ACCORDANCE WITH CURRENT CITY OF BARRIE STANDARD DRAWINGS (BSD) AND ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD).

B. ORDER OF PRECEDENCE OF STANDARD DRAWINGS IS FIRSTLY CITY OF BARRIE STANDARD DRAWINGS (BSD) AND SECONDLY ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD).

C. LOCATION OF EXISTING SERVICES ARE NOT GUARANTEED. THE CONTRACTOR IS REQUIRED TO NOTIFY THE VARIOUS UTILITY COMPANIES 48 HOURS PRIOR TO THE COMMENCEMENT OF ANY WORK.

D. A ROAD OCCUPANCY PERMIT IS REQUIRED FROM THE ROADS AND PARKS OPERATIONS BRANCH PRIOR TO THE COMMENCEMENT OF WORK WITHIN ANY CITY RIGHT-OF-WAY.

E. A SITE ALTERATION PERMIT IS REQUIRED FROM THE ENGINEERING DEPARTMENT PRIOR TO THE COMMENCEMENT OF ANY EARTH WORKS ON THE SITE.

F. NATIVE MATERIAL, SUITABLE FOR BACKFILL, SHALL BE COMPACTED TO 95% STANDARD PROCTOR MAXIMUM DRY DENSITY.

G. GRANULAR MATERIAL , USED FOR BACKFILL , SHALL BE PLACED IN LAYERS 150mm IN DEPTH MAXIMUM AND COMPACTED TO 100% STANDARD PROCTOR MAXIMUM DRY DENSITY.

H. ALL DISTURBED AREAS ARE TO BE REINSTATED TO THEIR ORIGINAL CONDITION OR BETTER, AS DETERMINED BY THE CITY ENGINEERING DEPARTMENT.

I. ALL SILT CONTROL AND EROSION PROTECTION DEVICES ARE TO BE IN PLACE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION AND SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL CONSTRUCTION IS COMPLETE AND THE GRASS HAS ESTABLISHED GROWTH, SUBJECT TO APPROVAL BY THE CITY ENGINEERING DEPARTMENT.

CITY OF BARRIE STANDARD

GENERAL NOTES

NO.	REVISION	APR'D	DATE
3.	3. NOTE: 3.E. REVISED & 3.I. ADDED	J.S.	05.01.10
2.	3.D. – "ENGINEERING DEPARTMENT"	B.R.	02.10.28
1.	3.E. TOPSOIL PERMIT		01.12.06

APP'D: R.G.N. DATE: 92.05.15
DRAWN: L.A.J. SCALE: N.T.S.

BSD-N6

GENERAL NOTES – STORM SEWER

STORM SEWER

A. STORM SEWER TO BE PROVIDED ON ALL ROADS WITH CURB AND GUTTER.

B. PLACE ALL CATCH BASIN LATERALS AT 2% GRADE UNLESS OTHERWISE NOTED. PIPE SIZE MINIMUM 250mm DIA. SINGLE , 300mm DIA. DOUBLE.

C. STORM SEWERS SHALL BE CONSTRUCTED WITH BEDDING AS PER OPSD–802.010 (GRAN. 'A' EMBEDMENT MATERIAL) FOR FLEXIBLE PIPES AND OPSD–802.030 OR 802.031 CLASS B (GRAN. 'A' BEDDING MATERIAL) FOR RIGID PIPE UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF ENGINEERING.

D. MAINTENANCE HOLE TOPS (FRAMES) AND CATCH BASIN (FRAMES) ARE TO BE SET TO BASE COURSE ASPHALT GRADE AND THEN ADJUSTED TO FINAL GRADE WHEN THE TOP LIFT OF ASPHALT IS PLACED. ALL ADJUSTMENT WILL BE ACCORDANCE WITH BSD–N2.

E. STORM SEWER TO BE LOCATED OFFSET 3.0m SOUTH OR EAST OF CENTRELINE UNLESS OTHERWISE SPECIFIED.

F. ALL CONNECTIONS TO THE STORM MAIN SHALL BE MADE WITH A STORM MANHOLE OR APPROVED FACTORY TEE CONNECTION AS PER OPSD–708.01 OR 708.03.

G. PIPE MATERIAL TO BE REINFORCED CONCRETE WITH A MINIMUM STRENGTH OF 50 N/m/mm CERTIFIED TO C.S.A. STANDARD A247.2–1982, CLASS 50–D (PREVIOUSLY C.S.A. STANDARD A257.2–1974, CLASS II) OR PVC CERTIFIED TO C.S.A. STANDARDS 182.2 AND 182.4.

H. STORM SEWER TO BE MINIMUM 300mm DIAMETER WITH JOINTS CONFORMING TO C.S.A. STANDARD A257.3.

I. ALL PIPE BEDDING MUST CONFORM TO OPSD, MAXIMUM COVER TABLE. NO FLEXIBLE PIPE SEWERS WILL BE INSTALLED WITH A DEPTH OF COVER GREATER THAN 6 METRES UNLESS SPECIFICALLY APPROVED BY THE DIRECTOR OF ENGINEERING.

J. ALL PIPE HANDLING INSTALLATIONS MUST BE IN STRICT COMPLIANCE WITH MANUFACTURES INSTALLATION GUIDES AND THE O.C.P.A. OR UNIBELL GUIDELINES.

K. SUMP PUMP DISCHARGE PIPING IN BOULEVARD:
IN THE EVENT OF OVERACTIVE SUMP PUMP ACTIVITY, A 150mm DIAMETER PVC DR–28 SEWER MAY BE INSTALLED, WHEN SO DIRECTED BY THE DIRECTOR OF ENGINEERING, ALONG THE FRONTAGES OF DESIGNATED LOTS, WITH AN OFFSET OF 0.6m FROM BACK OF CURB. THIS SEWER IS TO BE CAPPED AT THE UPSTREAM END AND IS TO OUTLET INTO THE NEAREST CATCHBASIN DOWNSTREAM. DEPTH OF SEWER IS TO BE EQUAL TO SUBDRAIN DEPTH. NOT TO BE DIRECTLY CONNECTED TO FOUNDATION DRAINS.

CITY OF BARRIE STANDARD

GENERAL NOTES
STORM SEWERS

NO.	REVISION	APR'D	DATE
4.	NOTE 'K' – SUMP PUMP DISCHARGE PIPING	B.R.	2003.01.07
3.	NOTE 'J' & 'C' – "DIRECTOR OF ENGINEERING"	B.R.	2002.10.28
2.	NOTE 'C' OPSD NUMBER REVISION	K.C.	2000.03.16
1.	NOTE 'D' CHANGED	K.C.	98.03.30

APP'D: R.G.N. DATE: 92.05.15
DRAWN: L.A.J. SCALE: N.T.S.

BSD-N5

GENERAL NOTES - WATERMAIN

1. 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.

2. 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.

3. MINIMUM COVER OVER WATERMAIN SHALL BE 1.7m. THE MINIMUM HORIZONTAL SEPARATION BETWEEN WATERMAIN AND SEWERS SHALL BE 2.5m; WHERE WATERMAIN CONFLICTS WITH SEWER PIPES, DEFLECT WATERMAIN HORIZONTALLY OR VERTICALLY WHILE PROVIDING A MINIMUM OF 0.5m CLEARANCE BETWEEN WATERMAIN AND SEWERS. MAINTAIN MINIMUM DEPTH OF COVER AT ALL TIMES.

4. WATERMAIN SHALL BE INSTALLED IN BEDDING AS PER OPSD 802.010 (GRANULAR 'A' EMBEDMENT MATERIAL) FOR FLEXIBLE PIPES AND OPSD 802.030 OR 802.031 CLASS 'B' (GRANULAR 'A' BEDDING MATERIAL, GRANULAR 'A' OR SELECT NATIVE COVER MATERIAL) FOR RIGID PIPE UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF WATER OPERATIONS). ALTERNATIVE EMBEDMENT MATERIAL - SAND MEETING GRADATION REQUIREMENTS OF OPSS.MUNI 1004.05.07 COMPACTED TO 95% STANDARD PROCTOR MAXIMUM DRY DENSITY IS PERMISSIBLE WHERE NOTED IN STANDARD DETAILS. GEOTECHNICAL CERTIFICATION OF MATERIAL AND COMPACTION TESTING MUST BE PROVIDED EVERY 150 METRES. THE COMPACTION TESTING MUST INCLUDE THE ENTIRE EMBEDMENT ENVELOPE (HAUNCHES, BEDDING, TOP OF PIPE AND COVER).

5. COPPER WATER MAINS AND SERVICES 25mm TO 50mm IN DIAMETER SHALL BE EMBEDDED IN SAND 100mm ABOVE AND BELOW TO CONFORM TO OPSS.MUNI 1004.05.07.

6. RESTRAINING WILL BE REQUIRED ON ALL HYDRANTS. THRUST BLOCKS, AS PER OPSD 1103.010 AND 1103.020. RESTRAINING DEVICES MAY BE REQUIRED IN ADDITION TO STANDARD CONCRETE THRUST BLOCKING WHERE SOIL CONDITIONS WARRANT AT THE CITY'S DISCRETION.

7. NEW WATERMAINS TO BE PVC DR18 CL150 MINIMUM; DUCTILE IRON CL50 AS PER THE APPROVED MANUFACTURERS PRODUCTS FOR LINEAR WATER SYSTEMS LIST.

8. TRACING WIRE SHALL BE #12 AWG HIGH STRENGTH COPPER CLAD (HS-CSS) AND SHALL BE INSTALLED ON THE TOTAL LENGTH OF ALL WATERMAIN AND BROUGHT UP AT EACH HYDRANT AND CONNECTED TO FLANGE BOLT. ALL SPLICES TO UTILIZE CONNECTORS AS PER THE APPROVED MANUFACTURERS PRODUCTS FOR LINEAR WATER SYSTEMS LIST.

9. ALL WATER SERVICES SHALL BE MINIMUM 25mm TYPE 'K' COPPER OR 25mm CROSS-LINKED POLYETHYLENE UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF WATER OPERATIONS. WATER SERVICE SADDLES SHALL BE USED WHEN TAPPING INTO PVC WATERMAIN.

10. SERVICE TAPPINGS SHALL BE PLACED AT A MINIMUM SEPARATION OF 1.0m AND A MINIMUM OF 0.6m FROM JOINTS. (ENDS OF PIPE)

11. 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.

12. ALL NEW CURB STOPS AND BOXES TO BE LOCATED AT PROPERTY LINE AND OUT OF DRIVEWAYS AND SIDEWALKS.

City of BARRIE
STANDARD DETAIL

GENERAL NOTES - WATERMAIN

REV No. 2 | DATE: MAY 2015 | SCALE: N.T.S.

BSD-500

APPROVED
DATE May 29/15
DIRECTOR OF ENGINEERING

PARKING LOT/DRIVEWAY NOTES

1) EXISTING SOILS AND GRANULAR MATERIALS TO BE REMOVED TO THE LIMITS SHOWN ON THE DRAWINGS AND ANY SURPLUS IS TO BE DISPOSED OFF–SITE AT A LOCATION CHOSEN BY, AND PAID FOR, BY THE CONTRACTOR.

2) PROPOSED SUB–GRADE TO BE INSPECTED AND PROOF–ROLLED IN THE PRESENCE OF THE GEOTECHNICAL ENGINEER AND APPROVED PRIOR TO PLACEMENT OF GRANULAR "B". DEFICIENT AREAS ARE TO BE SUB–EXCAVATED AND REPLACED WITH GRANULAR "B" AS DIRECTED BY THE GEOTECHNICAL ENGINEER.

3) THE GRANULAR SUB–BASE IS TO BE INSPECTED AND PROOF–ROLLED IN THE PRESENCE OF THE GEOTECHNICAL ENGINEER AND APPROVED PRIOR TO PLACEMENT OF THE GRANULAR "A".

4) THE GRANULAR BASE IS TO BE INSPECTED AND PROOF–ROLLED IN THE PRESENCE OF THE GEOTECHNICAL ENGINEER AND APPROVED PRIOR TO PLACEMENT OF THE ASPHALT.

5) CONTRACTOR TO PROVIDE SAMPLES OF GRANULAR MATERIALS AND THE ASPHALT MIX DESIGNS TO THE GEOTECHNICAL ENGINEER PRIOR TO CONSTRUCTION.

6) GRANULAR MATERIALS TO BE UNIFORMLY COMPACTED TO MINIMUM 100% STANDARD PROCTOR MAXIMUM DRY DENSITY. HOT LAID ASPHALT TO BE ROLLED UNIFORMLY TO A MINIMUM OF 97% MARSHALL BULK DENSITY.

7) GRASSED AREAS DISTURBED DURING CONSTRUCTION TO BE RESTORED WITH MINIMUM 200mm TOPSOIL AND SOD.

8) TOPSOIL SHALL CONFORM TO OPSS 570, EXCEPT THAT TOPSOIL SHALL CONTAIN NOT LESS THAN 4% ORGANIC MATTER FOR CLAY LOAMS AND NOT LESS THAN 2% FOR SANDY LOAMS, WITH AN ACIDITY VALUE RANGING FROM P.H. 6.0 TO P.H. 7.5 AND CAPABLE OF SUSTAINING VIGOROUS PLANT GROWTH. IT SHALL BE FREE FROM ANY ADMIXTURE OF SUBSOIL, CLAY LUMPS, STONES GREATER THAN 25MM IN DIAMETER AND ANY OTHER EXTRANEOUS MATTER.

9) SOD SHALL CONFORM TO OPSS 571.

RESTORATION NOTES

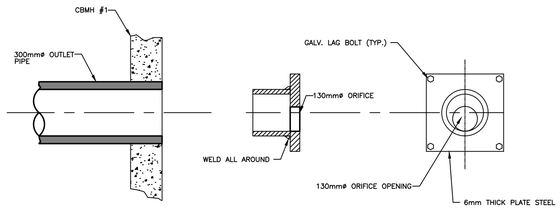
A. REINSTATE ROADS TO PREVIOUS CONDITION OR BETTER. MINIMUM 40mm HL3, 100mm HL4, 150mm GRANULAR 'A AND 500mm GRANULAR 'B'

B. CONTRACTOR TO RESTORE DRIVEWAYS AND BOULEVARD IN AREAS DISTURBED BY CONSTRUCTION TO EQUAL OR BETTER CONDITIONS.

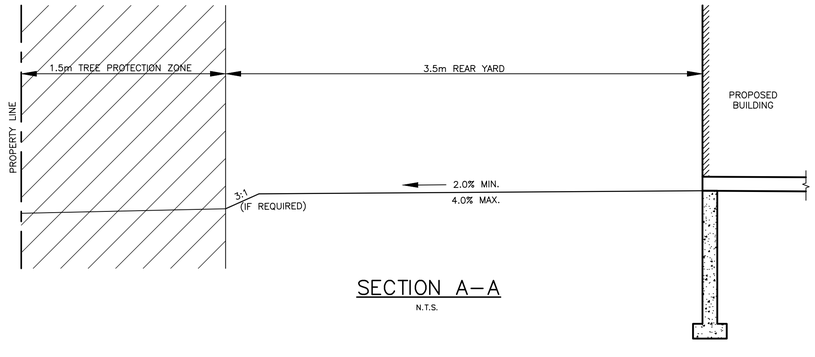
C. MINIMUM GRAVEL DRIVEWAY RESTORATION TO BE 150mm, GRANULAR 'A'. ASPHALT DRIVEWAY RESTORATION TO BE 50mm OF HL3. AND 200mm GRANULAR 'A'

D. ALL GRASSED AREAS DISTURBED DURING CONSTRUCTION SHALL BE RESTORED WITH 200mm DEPTH TOPSOIL AND SOD. MAINTAIN UNTIL ESTABLISHED.

E. ALL RESTORATION WORK TO BE COMPLETED TO THE SATISFACTION OF THE ENGINEER. F. DRIVEWAYS TO BE 50mm HL3 WITH 200mm GRANULAR 'A' MINIMUM.



ONLINE ORIFICE DETAIL
N.T.S.



SECTION A–A
N.T.S.

GENERAL NOTES – SANITARY SEWER

SANITARY SEWERS

A. SANITARY SEWER TO BE LOCATED AT THE CENTRELINE OF THE ROAD.

B. SEWERS SHALL BE CONSTRUCTED WITH BEDDINGS AS PER OPSD–802.010, (GRAN. 'A' EMBEDMENT MATERIAL) FOR FLEXIBLE PIPES AND OPSD–802.030 OR 802.031 CLASS B (GRAN. 'A' BEDDING MATERIAL) FOR RIGID PIPE UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF ENGINEERING.

C. MAXIMUM DEFLECTION FROM COMBINED LIVE AND DEAD LOADING SHALL NOT EXCEED ANY C.S.A., O.P.S. OR MANUFACTURERS RECOMMENDED SPECIFICATIONS.

D. PVC, CONCRETE AND PROFILE WALL PVC SEWERS SHALL HAVE RUBBER GASKET TYPE JOINTS AND SHALL BE CERTIFIED TO CONFORM TO ALL APPLICABLE CURRENT C.S.A. SPECIFICATIONS.

E. CONCRETE SANITARY SEWERS SHALL HAVE A MINIMUM STRENGTH OF 50 N/m/mm CONFORMING TO CSA STANDARD A257.2–1982, CLASS 50–D (PREVIOUSLY C.S.A. STANDARD A257.2–1974, CLASS II).

F. MAINTENANCE HOLE TOPS (FRAMES) ARE TO BE SET TO BASE COURSE ASPHALT GRADE AND THEN ADJUSTED TO FINAL GRADE WHEN THE TOP LIFT OF ASPHALT IS PLACE. ALL ADJUSTMENT WILL BE ACCORDANCE WITH BSD–N2.

G. ALL CONNECTIONS TO NEW SANITARY MAINS SHALL BE PRE–MANUFACTURED, FABRICATED TEES. CONNECTIONS TO EXISTING SANITARY SEWER SHALL BE MADE WITH APPROVED FACTORY MADE TEES OR INSERTA–TEES IN STRICT ACCORDANCE TO MANUFACTURES GUIDELINES.

CITY OF BARRIE STANDARD

GENERAL NOTES
SANITARY SEWERS

NO.	REVISION	APR'D	DATE
4.	NOTE "B" – "ENGINEERING"	B.R.	2002.10.28
3.	NOTE "B" OPSD NUMBER REVISION	K.C.	2000.03.16
2.	NOTE "F" CHANGED	K.C.	98.03.30
1.	CHANGES TO B. TO G.	K.C.	95.04.24

APP'D: R.G.N. DATE: 92.05.15
DRAWN: L.A.J. SCALE: N.T.S.

BSD-N3

GENERAL NOTES – SANITARY SEWER

SANITARY SERVICE LATERALS

A. SANITARY LATERAL CONNECTION TO BE LOCATED AT THE CENTRELINE OF THE LOT AND CAPPED.

B. LOCATION OF LATERAL TO BE MARKED 2.0m PAST PROPERTY LINE WITH A 50 x 100mm WOOD MARKER, PAINTED GREEN, EXTENDING FROM SERVICE INVERT TO 300mm ABOVE GROUND LEVEL.

C. PIPE TO BE MINIMUM 100 mm DIA. PVC SDR28, RUBBER GASKET TYPE JOINTS AND SHALL CONFORM TO C.S.A. (B–182.2.3.4) (COLOURED) FOR A RESIDENTIAL HOUSE AND 150mm MINIMUM DIA. PVC SDR28 FOR INDUSTRIAL/COMMERCIAL DEVELOPMENT.

D. MINIMUM DEPTH OF LATERAL AT PROPERTY LINE SHALL BE 2.4m MEASURED FROM THE SEWER OBVERT TO FINISHED GROUND SURFACE ELEVATION UNLESS NOTED OTHERWISE.

E. ALL CONNECTIONS TO NEW SANITARY MAINS SHALL BE PRE–MANUFACTURED, FABRICATED TEES. CONNECTIONS TO EXISTING SANITARY SEWER SHALL BE MADE WITH APPROVED FACTORY MADE TEES OR INSERTA–TEES IN STRICT ACCORDANCE TO MANUFACTURES GUIDELINES.

F. MINIMUM PIPE SLOPE TO BE 2.0%, MAXIMUM 8.0% (SEE OPSD–1006.010, 1006.020).

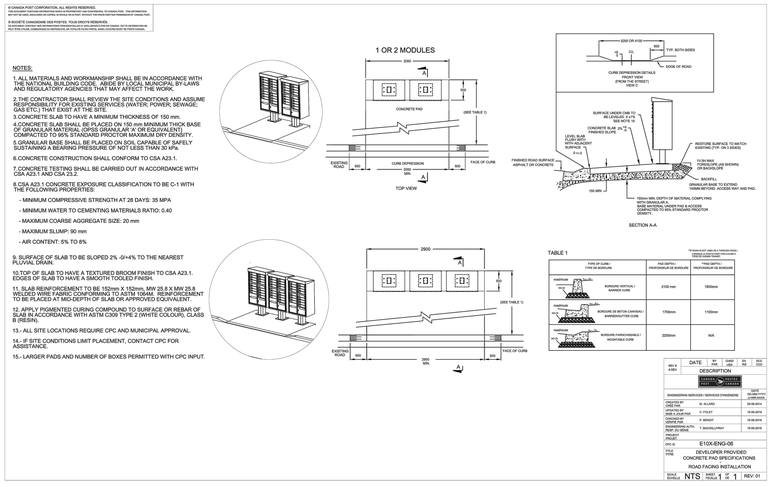
CITY OF BARRIE STANDARD

GENERAL NOTES
SANITARY SEWERS

NO.	REVISION	APR'D	DATE
2.	OPSD NUMBERS REVISED	K.C.	2000.08.17
1.	CHANGES TO B. TO G.	K.C.	95.04.24

APP'D: R.G.N. DATE: 92.05.15
DRAWN: L.A.J. SCALE: N.T.S.

BSD-N4



KEY MAP

PEL
PINESTONE ENGINEERING LIMITED
www.pel.ca

The position of existing above ground and underground utilities and facilities are not necessarily shown on the drawings, and where shown, the accuracy of the position of such utilities and facilities is not guaranteed. Before starting work, the contractor shall confirm the exact location of all existing utilities and facilities, and shall assume all liability for damage to them

Drawings shall not be used for construction unless sealed and signed. All work to be performed in accordance with the Occupational Health & Safety Act 1990.

Any errors and/or omissions shall be reported to Pinestone Engineering Ltd. without delay.

NO.	YY.MM.DD	REVISION	BY
3	21.03.15	SITE PLAN REVISION	G.N.
2	20.05.13	SITE PLAN REVISION	G.N.
1	19.06.06	REVISED PER CITY COMMENTS	G.N.

SEAL

LICENSED PROFESSIONAL ENGINEER
4.H. VOISIN
100172758
Mar. 15th, 2021
PROVINCE OF ONTARIO

NORTH ARROW

DESIGN BY:	J.V.
DRAWN BY:	G.N.
CHECKED	J.V.
DATE:	MARCH 2020
SCALE:	N.T.S.

CLIENT/PROJECT

521 AND 525 ESSA ROAD
RESIDENTIAL DEVELOPMENT

DRAWING TITLE

GENERAL NOTES AND DETAILS

PROJECT NO.	DRAWING NO.	REVISION
20-11501-B	GN-1	3