Appendix A

Background Information

THE KING'S HIGHWAY No. 5 (DUNDAS STREET)
DUNDAS STREET

CONSTN NORTH

ONTARIO HYDRO

EX. GOLF COURSE

PART 10
20R-6131

BLOCK 123

BLOCK 124
FUT. MULTIPLE FAMILY

BLOCK 125

BLOCK 126
0.3m RESERVE

BLOCK 127
0.3m RESERVE

BLOCK 128
0.3m RESERVE

BLOCK 129
0.3m RESERVE

BLOCK 130
0.3m RESERVE

BLOCK 134
0.3m RES

BLOCK 135
0.3m RES

BLOCK 122
FUT. MULTIPLE FAMILY

FUT. SCHOOL
BLOCK 133

FUT. PARK
BLOCK 132

COUPLES CRESCENT

SARAZEN DRIVE

TIGER ROAD

SNEAD ROAD

PLAYER COURT

MILLCROFT PARK DRIVE

TAYWOOD DRIVE

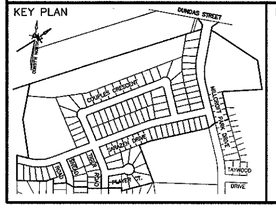
EAST 20 VALLEY CREEK

0.63 / 55
0.72 / 135
0.33 / 55
1.06 / 135
1.08 / 55
1.22 / 55
0.67 / 55
0.91 / 55
1.29 / EXISTING / 55
1.78 / 135
0.70 / 55
0.55 / 55
0.60 / 55
0.38 / 55
0.64 / 55
0.72 / EXISTING / 55
0.40 / EXISTING / 55
0.39 / 55
0.29 / 55
2.44 / 40
0.49 / EXISTING / 55
0.17 / 55
0.23 / 55
0.18 / 55
0.10 / EXISTING / 135
0.22 / EXISTING / 55
0.28 / 55
0.21 / 55
0.10 / EXISTING / 135
0.87 / 55
0.23 / 55
0.27 / 55
0.26 / 55
0.41 / 55
0.28 / 55
0.43 / 55
2.63 / —
0.78 / EXISTING / 135
0.73 / EXISTING / 135
FUT. MULTIPLE FAMILY

NOTE:
FOR GENERAL NOTES SEE DWG E-314-A

B- 8703

KEY PLAN



LEGEND

0.35 / 55 — AREA IN HECTARES / POPULATION PER HECTARE

No.	DATE	BY	REVISION
1	DEC/02		'AS CONSTRUCTED'

DESIGN	I.F.G.	CHECKED	B.I.	DATE	MARCH 1999
DRAWN	F. WHITE	CHECKED	I.F.G.		

SCALE
0 20 40
1:1000

REGISTERED PROFESSIONAL ENGINEER
CIVIL
DORIS IVANOV
PROVINCE OF ONTARIO

APPROVALS

CITY of BURLINGTON
ORIGINAL SIGNED BY
FOR DIRECTOR OF ENGINEERING
DATED

REGION of HALTON
DESIGN OF SANITARY & WATER SERVICES APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO HALTON REGION STANDARDS & SPECIFICATIONS & LOCATON APPROVAL FROM AREA MUNICIPALITY.
ORIGINAL SIGNED BY MARGARET SMITH DATED AUG. 13, 2002
PLANNING AND PUBLIC WORKS DEPARTMENT – HALTON REGION

CONSULTANT
URBAN ENGINEERING CONSULTANTS
CONSULTING ENGINEERS – TORONTO
239-3051

MUNICIPALITY
REGIONAL MUNICIPALITY OF HALTON
CITY OF BURLINGTON
ENGINEERING DEPARTMENT

Monarch Construction Ltd.

MILLCROFT Phase 2 E-2a

SANITARY DRAINAGE PLAN

MUNICIPAL DRAWING No: B- 8703

CONTRACT No: DB-0502

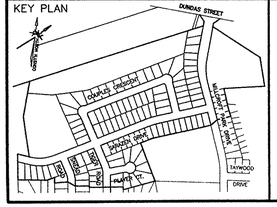
E-314-12

SHEET 1 OF 1



NOTE:
FOR GENERAL NOTES SEE DWG E-314-A

KEY PLAN



LEGEND

0.26 / 0.40 — AREA IN HECTARES / RUN-OFF CO-EFFICIENT

⇨ — OVERLAND FLOW ROUTE

No.	DATE	BY	REVISION

DESIGN	I.F.G.	CHECKED	B.I.	DATE
DRAWN	F.WHITE	CHECKED	I.F.G.	MARCH 1999

SCALE
0 20 40
1:1000

REGISTERED PROFESSIONAL CIVIL ENGINEER
BORIS IVANOV
July 31/02
PROVINCE OF ONTARIO

APPROVALS

CITY of BURLINGTON

DIRECTOR OF ENGINEERING
DATE Aug 6 '02

REGION of HALTON

DESIGN OF SANITARY & WATER SERVICES APPROVED
SUBJECT TO DETAIL CONSTRUCTION CONFORMING
TO HALTON REGION STANDARDS & SPECIFICATIONS
& LOCATION APPROVAL FROM AREA MUNICIPALITY.
SIGNED _____ DATE _____
PLANNING AND PUBLIC WORKS DEPARTMENT - HALTON REGION

CONSULTANT
URBAN ENGINEERING CONSULTANTS
CONSULTING ENGINEERS - TORONTO
239-3051

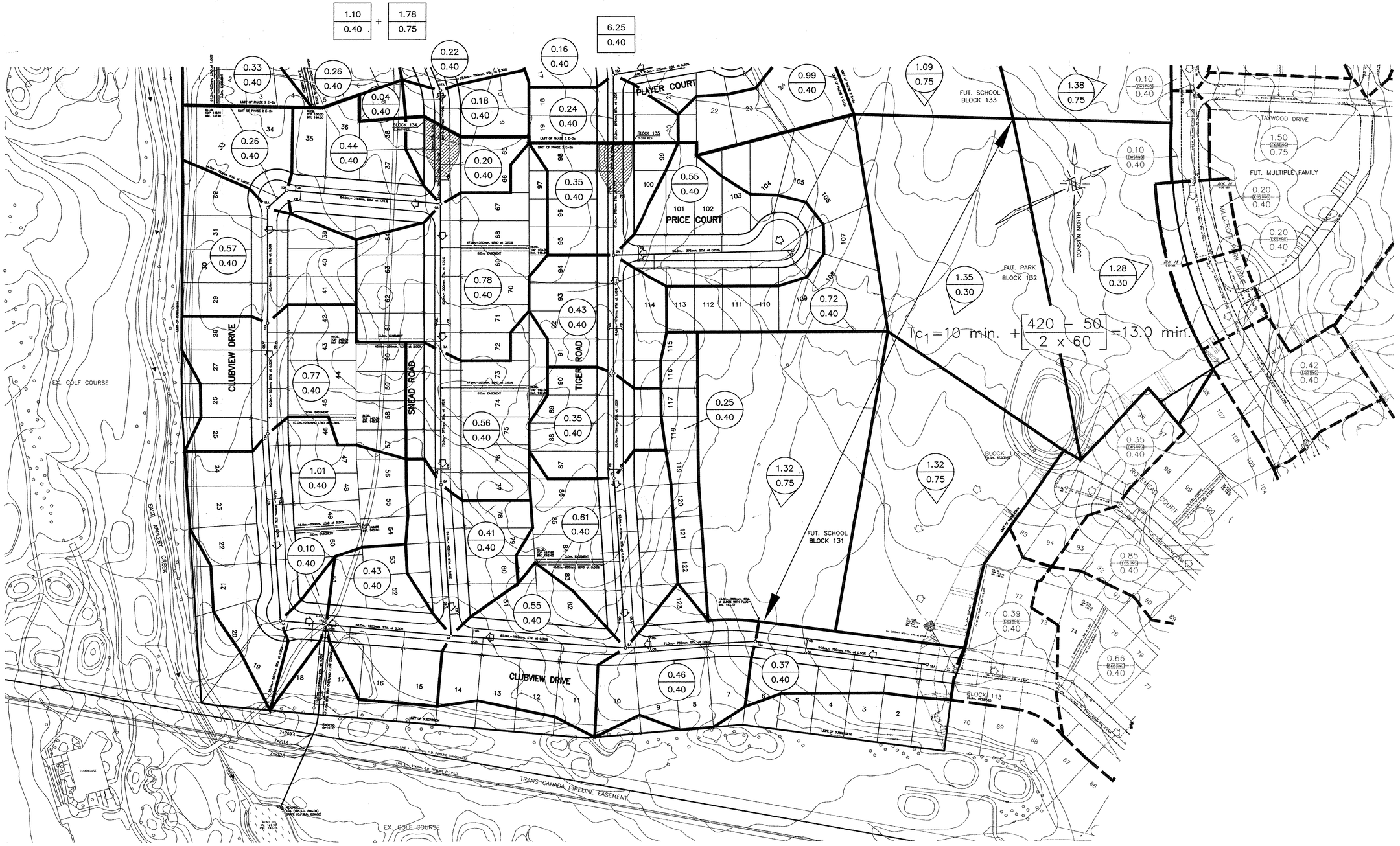
MUNICIPALITY
REGIONAL MUNICIPALITY OF HALTON
CITY OF BURLINGTON
ENGINEERING DEPARTMENT

Monarch Construction Ltd.

MILLCROFT Phase 2 E-2a

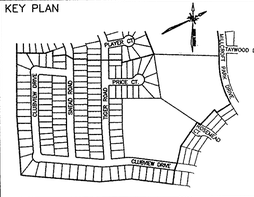
STORM DRAINAGE PLAN

MUNICIPAL DRAWING No	REGIONAL DRAWING No
MX-12/87 2E 2A_26	
CONTRACT No	E-314-11
DB-0502	SHEET 1 OF 2



NOTE:
FOR GENERAL NOTES SEE DWG E-314-A

KEY PLAN



LEGEND

0.26 / 0.40 — AREA IN HECTARES — RUN-OFF CO-EFFICIENT

⇨ — OVERLAND FLOW ROUTE

No.	DATE	BY	REVISION

DESIGN	I.F.G.	CHECKED	B.I.	DATE	MARCH 1999
DRAWN	F.WHITE	CHECKED	I.F.G.		

SCALE 0 20 40 — 1:1000

REGISTERED PROFESSIONAL ENGINEER — CIVIL — BORIS IVANOV — July 31/02 — PROVINCE OF ONTARIO

APPROVALS

CITY of BURLINGTON

DIRECTOR OF ENGINEERING

DATE Aug 6/02

REGION of HALTON

DESIGN OF SANITARY & WATER SERVICES APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO HALTON REGION STANDARDS & SPECIFICATIONS & LOCATION APPROVAL FROM AREA MUNICIPALITY.

SIGNED _____ DATE _____

PLANNING AND PUBLIC WORKS DEPARTMENT – HALTON REGION

CONSULTANT

URBAN ENGINEERING CONSULTANTS
CONSULTING ENGINEERS – TORONTO
239-3051

MUNICIPALITY

REGIONAL MUNICIPALITY OF HALTON

CITY OF BURLINGTON

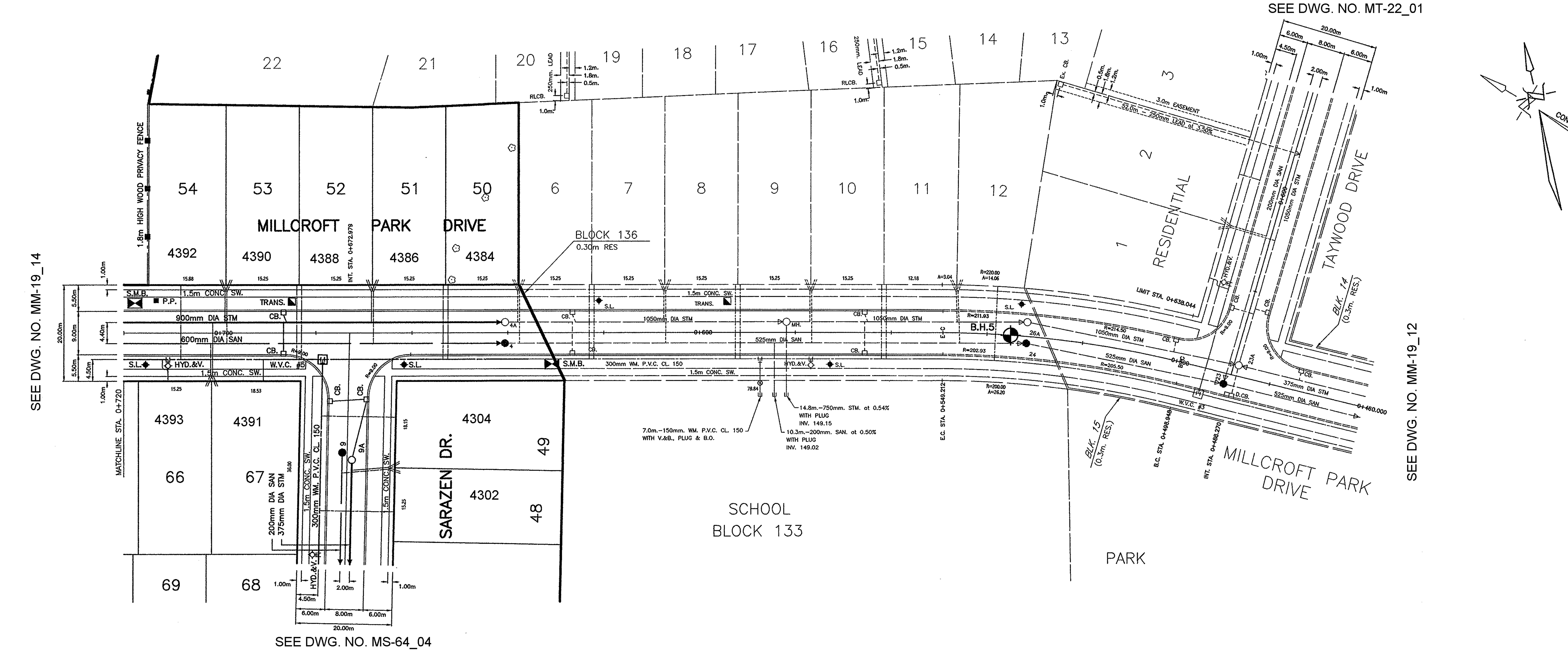
ENGINEERING DEPARTMENT

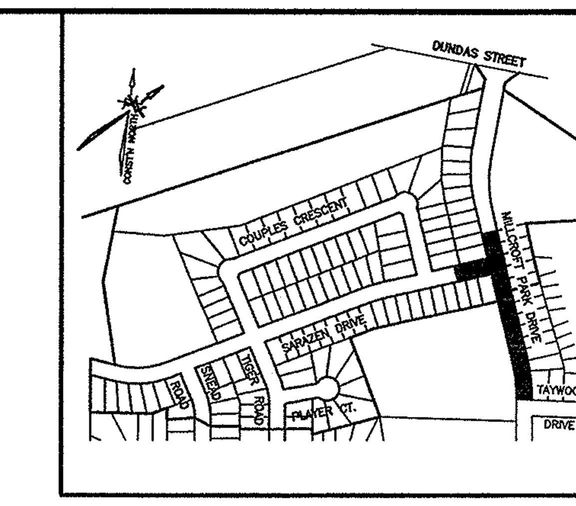
Monarch Construction Ltd.

MILLCROFT Phase 2 E-2c

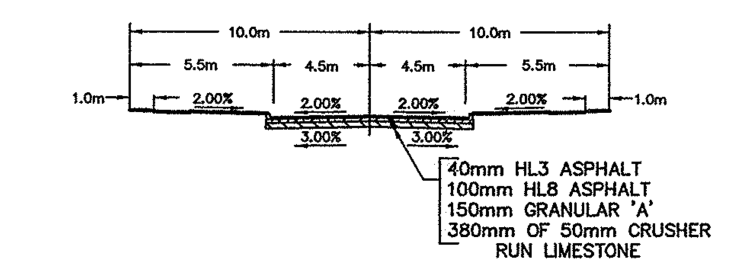
STORM DRAINAGE PLAN

MUNICIPAL DRAWING No	REGIONAL DRAWING No
MX-12/87 2E 2A_27	E-314-11
CONTRACT No	SHEET 2 OF 2
DB-0502	





KEY PLAN



20m ROAD ALLOWANCE
9.0m PAVEMENT (S–101–M)
N.T.S.

NOTES:
1. FOR GENERAL NOTES SEE DWG. MSD-12-87-2E-2A_01
2. ALL SEWERS TO HAVE CLASS 'B' BEDDING UNLESS OTHERWISE NOTED.

ELEVATIONS REFER TO 1978 GEODETIC ADJUSTMENT

BM. 17 CONCRETE MONUMENT ON NORTHWEST SIDE OF UPPER MIDDLE ROAD, 0.32Km NORTHEAST OF WALKERS LINE, 3.66m NORTHEAST OF TRANSMISSION TOWER No. 113, 8.10m SOUTHWEST OF DRIVEWAY TO A BROWN BUNGALOW, 2.13m NORTHWEST OF EDGE OF HIGHWAY; TABLET IN TOP OF CONCRETE AT GROUND LEVEL. ESTABLISHED BY TOPOGRAPHICAL SURVEY No. 650048.
ELEV. 138.925m



℄ ROAD	153.66	153.56	153.46	153.36	153.26	153.22	153.16	153.06	152.96	152.86	152.76	152.66 · 152.56 · 152.54 · 152.64
STORM SEWER	108.2m.– 900mm. STM. at 0.27% C.S.A. A257.2 100–D R.C. PIPE				N.149.01 S.148.93	109.0m.–1050mm. STM. at 0.27% C.S.A. A257.2 100–D R.C. PIPE			N.148.74 S.148.74	51.0m.–1050mm. STM. at 0.24% C.S.A. A257.2 100–D R.C. PIPE	N.148.60 S.148.57	45.0m.–1050mm. STM. at 0.30% C.S.A. A257.2 100–D R.C. PIPE · N.148.43 S.149.10 · 49.0m.– 375mm. STM. at 0.50% C.S.A. A257.2 100–D R.C. PIPE
SANITARY SEWER	108.9m.– 600mm. SAN. at 0.27% C.S.A. A257.2 140–D R.C. PIPE				N.146.80 S.146.77	109.0m.– 525mm. SAN. at 0.50% C.S.A. A257.2 140–D R.C. PIPE					N.146.22 S.146.18	42.0m.– 525mm. SAN. at 0.50% C.S.A. A257.2 140–D R.C. PIPE · N.145.97 S.145.94 · 52.0m.– 525mm. SAN. at 0.50% C.S.A. A257.2 140–D R.C. PIPE
CHAINAGE	0+720	0+700	0+680 · INT. STA. 0+672.979	0+660	0+640		0+620	0+600	0+580	0+560 · E.C. STA. 0+549.212	0+540	0+520 · 0+500 · B.C. STA. 0+498.948 · INT. STA. 0+488.270 · 0+480 · 0+460

No.	DATE	BY	REVISION
2	NOV.05		AS CONSTRUCTED REVISED
1	DEC.02	B.E.K.	AS CONSTRUCTED

Design	I.F.G.	Checked	B.I.	Date OCT. 1998
Drawn	BARRY	Checked	I.F.G.	

SCALE
HOR. 1:500
VERT. 1:50

APPROVALS

CITY of BURLINGTON
ORIGINAL SIGNED BY
A. MAGI
FOR DIRECTOR OF ENGINEERING
DATED AUG. 6, 2002

REGION of HALTON
DESIGN OF SANITARY & WATER SERVICES APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO HALTON REGION STANDARDS & SPECIFICATIONS & LOCATON APPROVAL FROM AREA MUNICIPALITY.
ORIGINAL SIGNED BY MARGARET SMITH DATED AUG. 13, 2002
PLANNING AND PUBLIC WORKS DEPARTMENT – HALTON REGION

REGISTERED PROFESSIONAL ENGINEER
CIVIL
BORIS IVANOV
PROVINCE OF ONTARIO

CONSULTANT
URBAN ENGINEERING CONSULTANTS
CONSULTING ENGINEERS – TORONTO
239–3051

MUNICIPALITY
REGIONAL MUNICIPALITY OF HALTON
CITY OF BURLINGTON
ENGINEERING DEPARTMENT

Monarch Construction Ltd.

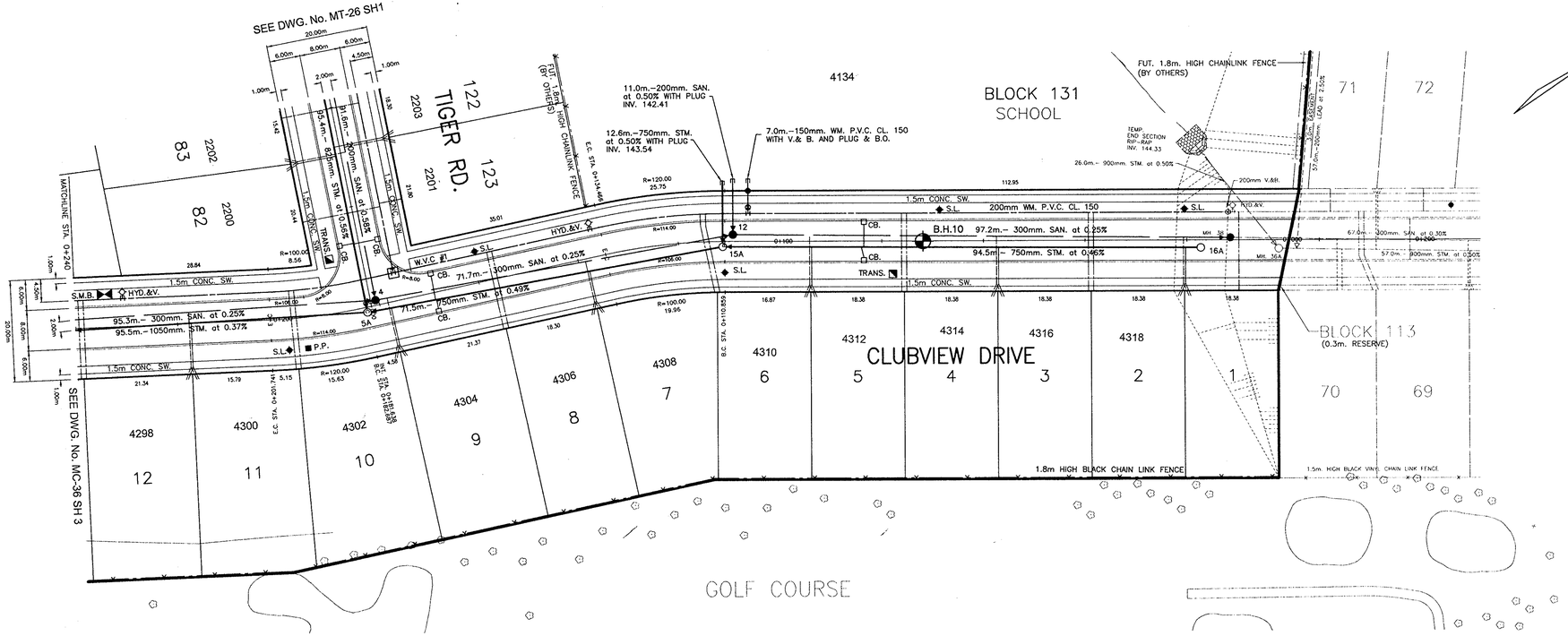
MILLCROFT Phase 2 E–2a

MILLCROFT PARK DRIVE

MUNICIPAL DRAWING No **MM-19_13A**
REGIONAL DRAWING No

CONTRACT No DB– 499

E–314–8
SHEET 1 OF 2



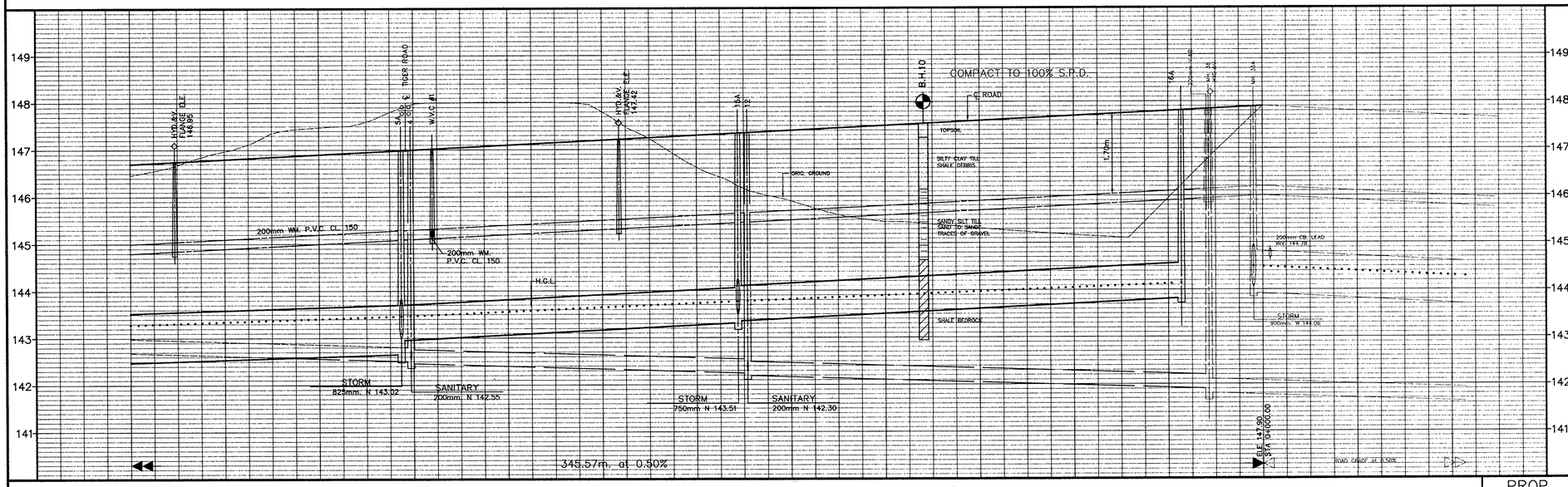
NOTE:
UTILITY LOCATIONS AS PER CITY STD. S-101-M

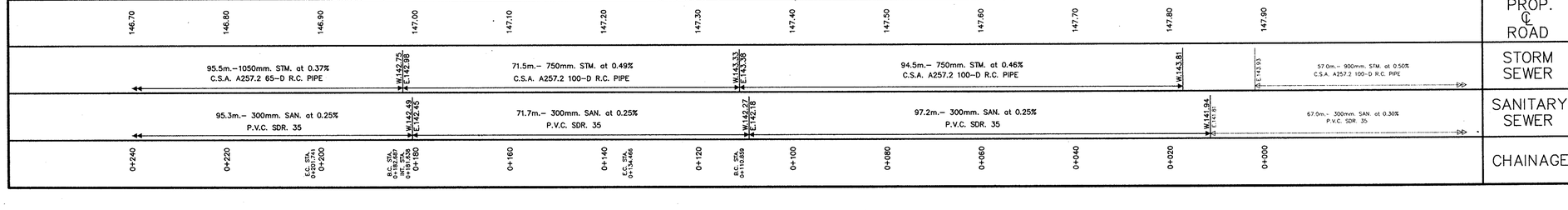
20m ROAD ALLOWANCE
8.0m PAVEMENT (S-101-M)
N.T.S.

NOTES:
1. FOR GENERAL NOTES SEE DWG. MSD-12/87-2E 2C
2. ALL SEWERS TO HAVE CLASS 'B' BEDDING UNLESS OTHERWISE NOTED.

ELEVATIONS REFER TO 1978 GEODETIC ADJUSTMENT

BM. 17 CONCRETE MONUMENT ON NORTHWEST SIDE OF UPPER MIDDLE ROAD, 0.32Km NORTHEAST OF WALKERS LINE, 3.66m NORTHEAST OF TRANSMISSION TOWER No. 113, 8.10m SOUTHWEST OF DRIVEWAY TO A BROWN BUNGALOW, 2.13m NORTHWEST OF EDGE OF HIGHWAY; TABLET IN TOP OF CONCRETE AT GROUND LEVEL. ESTABLISHED BY TOPOGRAPHICAL SURVEY No. 650048.
ELEV. 138.925m





No.	DATE	BY	REVISION
1	MAR/02		'AS CONSTRUCTED'

Design	I.F.G.	Checked	B.I.	Date MARCH. 1999
Drawn	BARRY	Checked	I.F.G.	

SCALE HOR. 1:500 VERT. 1:50 (0 10 20; 0 1 2)

APPROVALS

CITY of BURLINGTON
ORIGINAL SIGNED BY
A. MAGI
FOR DIRECTOR OF ENGINEERING
DATED OCT. 18, 2000

REGION of HALTON
DESIGN OF SANITARY & WATER SERVICES APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO HALTON REGION STANDARDS & SPECIFICATIONS & LOCATON APPROVAL FROM AREA MUNICIPALITY
ORIGINAL SIGNED BY: MARGARET SMITH DATED NOV. 22, 2000
PLANNING AND PUBLIC WORKS DEPARTMENT – HALTON REGION

REGISTERED PROFESSIONAL ENGINEER CIVIL BORIS NANOV Mar 6 2002 PROVINCE OF ONTARIO

CONSULTANT
URBAN ENGINEERING CONSULTANTS
CONSULTING ENGINEERS – TORONTO
239–3051

MUNICIPALITY
REGIONAL MUNICIPALITY OF HALTON
CITY OF BURLINGTON
ENGINEERING DEPARTMENT

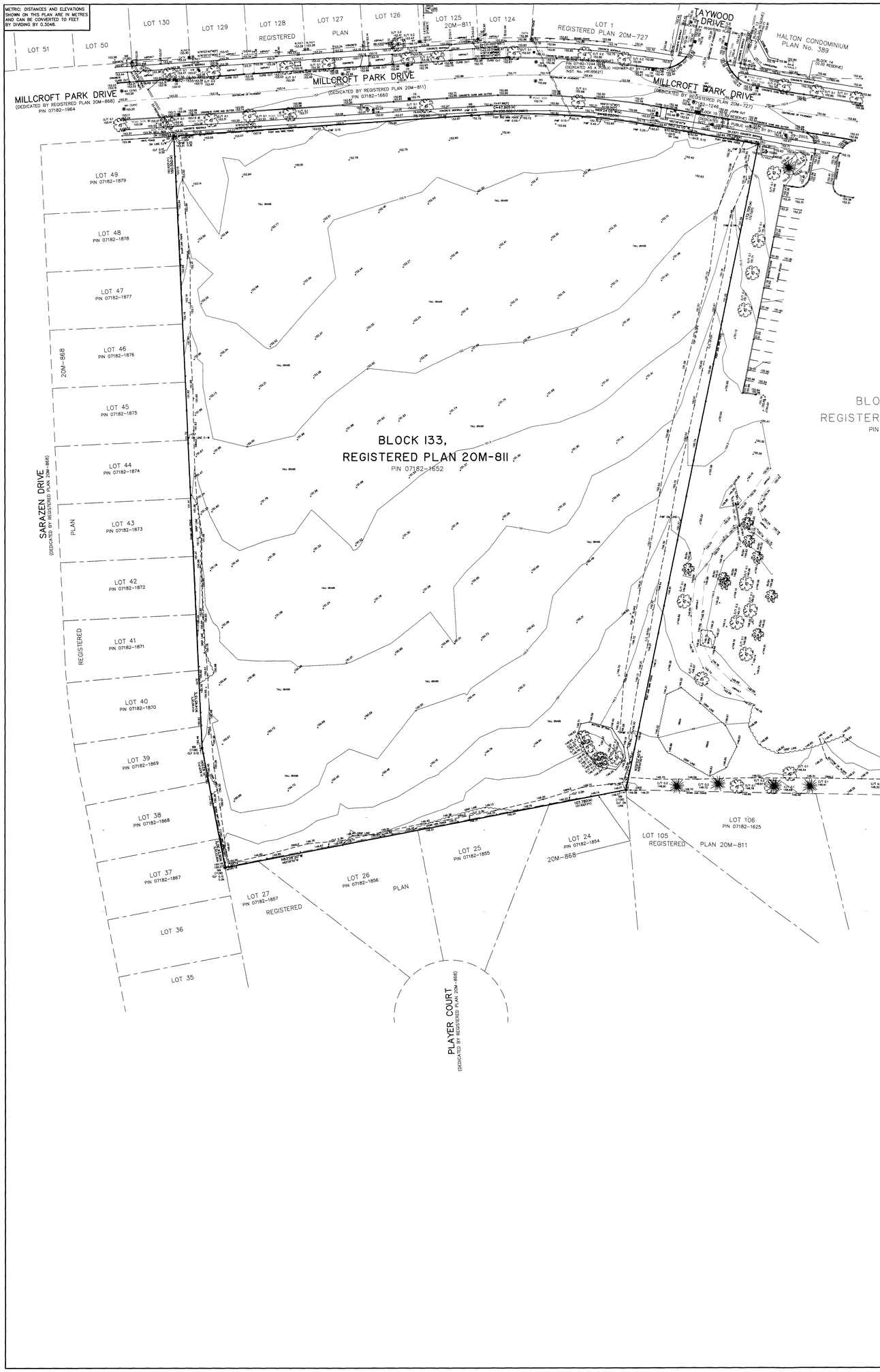
Monarch Construction Ltd.

MILLCROFT Phase 2 E–2c

CLUBVIEW DRIVE

MUNICIPAL DRAWING No	REGIONAL DRAWING No
MC-36	
CONTRACT No DB–0506	E–313–3 SHEET 2

METRIC: DISTANCES AND ELEVATIONS SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.



TOPOGRAPHIC PLAN OF SURVEY OF
BLOCK 133
REGISTERED PLAN 20M-811
CITY OF BURLINGTON
REGIONAL MUNICIPALITY OF HALTON
SCALE 1:300 (PLOTTING SCALE 1:400)

5 2.5 0 5 10 15 20 METRES

SCHAEFFER DZALDOV BENNETT LTD.
© COPYRIGHT

NOTES

●	DENOTES	FOUND MONUMENT
□	"	PLANTED MONUMENT
SIB	"	STANDARD IRON BAR
IB	"	19mm DIAMETER IRON BAR
IB	"	IRON BAR
WIT	"	WITNESS
P1	"	REGISTERED PLAN 20M-811
P2	"	REGISTERED PLAN 20M-727
P3	"	REGISTERED PLAN 20M-725
SCH	"	DAVID HOPWOOD LIMITED, O.L.S., SURVEY DATED APRIL 29, 2003
M	"	MEASURED
W	"	WITNESS
MMM	"	MSP GEOMATICS ONTARIO LIMITED
HOP	"	D.G. HOPWOOD, O.L.S.
OU	"	ORIGIN UNKNOWN
CF	"	CHAIN LINK FENCE
FWF	"	POST AND WIRE FENCE
VF	"	VINYL FENCE

BEARINGS ARE GRID DERIVED FROM 6° UTM COORDINATE SYSTEM, ZONE 17 NAD 83 (ORIGINAL).

TOPOGRAPHIC NOTES

BB	▣	DENOTES BELL BOX
CB	■	DENOTES CATCH BASIN
MH	●	DENOTES MANHOLE
MH (SAN)	●	DENOTES SANITARY MANHOLE
MH (STO)	●	DENOTES STORM MANHOLE
MH (WAT)	●	DENOTES WATER MANHOLE
HM	●	DENOTES HAND MELL
WV	⊣	DENOTES WATER VALVE
W/KEY	⊣	DENOTES WATER KEY
G/KEY	⊣	DENOTES GAS KEY
UP	●	DENOTES UTILITY POLE
FH	◇	DENOTES FIRE HYDRANT
CSP (500)		DENOTES CORRUGATED STEEL PIPE (500mm DIA.)
INV.	⊟	DENOTES CULVERT INVERT
CATV	▣	DENOTES CABLE TV BOX
L		DENOTES LIGHT
H		DENOTES HYDRO
D/T 0.10		DENOTES DECIDUOUS TREE 0.10m dia.
C/T 0.10		DENOTES CONIFEROUS TREE 0.10m dia.

EXTENT OF TOPOGRAPHIC DATA IS AS PER CONTRACT AND NOT MEANT TO BE COMPLETE PROPERTY

BENCHMARK

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF BURLINGTON MONUMENT No. 176 HAVING A PUBLISHED ELEVATION OF 148.534 METRES

CONTOUR INTERVAL 0.50m

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE REGULATIONS MADE UNDER THEM.

2. THE SURVEY WAS COMPLETED ON THE 10TH DAY OF AUGUST, 2021.

DATE : AUGUST 11, 2021

DAN DZALDOV
ONTARIO LAND SURVEYOR

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
2144679
THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED COPY OF THE ORIGINAL ISSUED BY THE SURVEYOR
In accordance with Regulation 1026, Section 29(3)

SCHAEFFER DZALDOV BENNETT LTD.
ONTARIO LAND SURVEYORS
64 JARDIN DRIVE CONCORD, ONTARIO L4K 3P3 TEL:(416)987-0101

CALC. JZ	DRAWN SAM/LW	CHECKED JZ	SCALE 1:300	JOB NO. 21-133-00

Ma, Dan

Sent:
To:
Subject:

From: Skrins, Tim <Tim.Skrins@halton.ca>
Sent: Friday, April 16, 2021 10:26 AM
To: Slama, Peter <pslama@geiconsultants.com>
Subject: [EXT] RE: 4375 Millcroft Park Dr., Burlington



H Peter,

We have concluded our modelling analysis of the proposal and have the following to offer:

The InfoWorks ICM Burlington_Halton_Base model was used with the SCS Type II – 24h – 10yr storm for wet weather flow (WWF) simulations. The development site flows to the Burlington Skyway WWTP.

- The development is proposing a potential townhouse development with an additional estimated population of 330 persons located at 4375 Millcroft Park Drive in Burlington (see request below).
- The above population was added to existing subcatchment ID 18906, assuming the proposed development will drain to the existing 525mm wastewater main along Millcroft Park Drive located within this subcatchment.
- The model shows that the proposed development contributes an additional 1.11 L/s to the wastewater system.
- Under existing WWF conditions (pre-development), no manholes along the flow route pose a flooding risk.
- Under existing WWF conditions (pre-development), 4 sewers located just upstream of the Skyway WWTP are surcharging.
- The proposed development resulted in negligible impacts to the wastewater system.

Based on the above modelling results, the proposed additional population of 330 persons for the potential townhouse development at 4375 Millcroft Park Drive should be able to be accommodated in the wastewater system.

I trust this satisfies your request. Should you have any further questions or concerns, please let me know.

Thanks,
Tim

From: Slama, Peter <pslama@geiconsultants.com>
Sent: Wednesday, March 31, 2021 2:17 PM
To: Skrins, Tim <Tim.Skrins@halton.ca>
Subject: RE: 4375 Millcroft Park Dr., Burlington

Hi again Tim, on second thought, I think it may be worthwhile if the Region would be willing to run a test scenario for a sewer modelling assessment on the existing 525mm diameter sewer downstream of this site.

The current 'as of right' population for the School Block (if it remained a School) is 2.44ha x 40pop/ha = 98 persons.
The potential re-development of the Block could see Townhouse units proposed, with a population of 2.44ha x 135 pop/ha = 330 persons.

If this site generates an additional 232 persons, would the Region see any concern from a sewer capacity perspective in the downstream system?

Thanks and please call me, if needed, to discuss any of these details.

GEI
PETER SLAMA, P. Eng.
Project Manager
416.627.7905
75 Tiverton Court, Unit 100, Markham, ON L3R 4M8

[redacted]

From: Slama, Peter
Sent: Tuesday, March 30, 2021 4:02 PM
To: Skrins, Tim <Tim.Skrins@halton.ca>
Subject: RE: 4375 Millcroft Park Dr., Burlington

Thanks Tim for offering the capacity assessment, but I don't want to take up the Region's time with such a task.
The School site has an 'as of right' for sewage from 2.44ha x 40pop/ha (or 98 persons) and I think the School Site would generate about the same equivalent population as an infill townhouse development, so I'm not too concerned about increasing sanitary flows to the sanitary pipe.

My question was really only probing if any existing sewer constraints are known downstream of the site that would prohibit any development on the property.
Or if the Region has any current allocation restrictions in this sewershed in the eastern part of Burlington. Thanks

GEI
PETER SLAMA, P. Eng.
Project Manager
416.627.7905
75 Tiverton Court, Unit 100, Markham, ON L3R 4M8

[redacted]

From: Skrins, Tim <Tim.Skrins@halton.ca>
Sent: Tuesday, March 30, 2021 2:16 PM
To: Slama, Peter <pslama@geiconsultants.com>
Subject: [EXT] RE: 4375 Millcroft Park Dr., Burlington

[redacted]

Appendix B

Engineering Drawings





KEY PLAN
SCALE: N.T.S

LEGEND

- ○ PROPOSED STORM MANHOLE
- ● PROPOSED SANITARY MANHOLE
- □ CATCH BASIN – NO ICD
- ⋈ PROPOSED VALVE & BOX
- PROPOSED HYDRANT & VALVE
- EXISTING STORM MANHOLE
- EXISTING SANITARY MANHOLE
- EX.CB. EXISTING CATCHBASIN
- EX.V&C EXISTING VALVE & CHAMBER
- EX.H&V EXISTING HYDRANT & VALVE
- SITE LIMIT

REFER TO DRAWING No. 100 FOR GENERAL NOTES

BENCHMARK

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF BURLINGTON MONUMENT No. 176 HAVING A PUBLISHED ELEVATION OF 148.534 METERS

No.	DESCRIPTION	DATE	BY	APPRVD. BY
1	FIRST SUBMISSION	10/19/2021	BA	PAS

REVISIONS

APPROVALS

MUNICIPAL	REGIONAL
MANAGER OF DESIGN AND CONSTRUCTION	COMMISSIONER OF PUBLIC WORKS
DATE	DIRECTOR OF DESIGN AND CONSTRUCTION

CITY OF Burlington

SALOTTO BUILDING GROUP INC.
4375 MILLCROFT PARK DR
CITY OF BURLINGTON
HALTON REGION

LICENSED PROFESSIONAL ENGINEER
P. A. SLAMA
100010210
Nov 5/21
PROVINCE OF ONTARIO

GENERAL PLAN

GEI Consultants
75 TIVERTON COURT, UNIT 100, MARKHAM, ONTARIO L3R4M8, 800.810.3281

DESIGN BY: BA	DRAWN BY: TS	PROJECT No. 2102761
SCALE: 1:1000	DATE: SEPTEMBER 2021	
		DRAWING No. 101
		CITY FILE No.:

File : B:\Working\ARMLAND GROUP\2102761 4375 Millcroft Park Dr\00_CAD\Design\Sheets\2102761 - GP.dwg, Date : Oct 18, 2021 - 6:03pm, Edit By : dma

NOT FOR CONSTRUCTION



KEY PLAN
SCALE: N.T.S

LEGEND

- 475.00 — EXISTING CONTOUR
- EXISTING STORM MANHOLE
- EXISTING CATCH BASIN
- PROPOSED STORM CATCH BASIN MANHOLE
- PROPOSED STORM MANHOLE
- PROPOSED CLEAN WATER COLLECTOR MANHOLE
- CATCH BASIN – NO ICD
- CATCH BASIN – WITH ICD TYPE "C"= 36.8 L/S
- PROPOSED STORM SEWER
- PROPOSED DITCH OR SWALE
- PROPOSED 3:1 MAX SLOPE
- PROPOSED STORM DRAINAGE AREA BOUNDARY
- MAJOR STORM DRAINAGE AREA BOUNDARY
- MAJOR OVERLAND FLOW DIRECTION
- SITE LIMIT

0.50 — RUN-OFF COEFFICIENT
0.71ha — PROP. DRAINAGE AREA (ha)

REFER TO DRAWING No. 100 FOR GENERAL NOTES

BENCHMARK

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF BURLINGTON MONUMENT No. 176 HAVING A PUBLISHED ELEVATION OF 148.534 METERS

No.	DESCRIPTION	DATE	BY	APPRVD. BY
1	FIRST SUBMISSION	10/19/2021	BA	PAS

REVISIONS

APPROVALS

MUNICIPAL	REGIONAL
MANAGER OF DESIGN AND CONSTRUCTION	COMMISSIONER OF PUBLIC WORKS
DATE	DIRECTOR OF DESIGN AND CONSTRUCTION

CITY OF Burlington

SALOTTO BUILDING GROUP INC.
4375 MILLCROFT PARK DR
CITY OF BURLINGTON
HALTON REGION

LICENSED PROFESSIONAL ENGINEER
P. A. SLAMA
100010210
Nov 5/21
PROVINCE OF ONTARIO

STORM DRAINAGE AREA PLAN

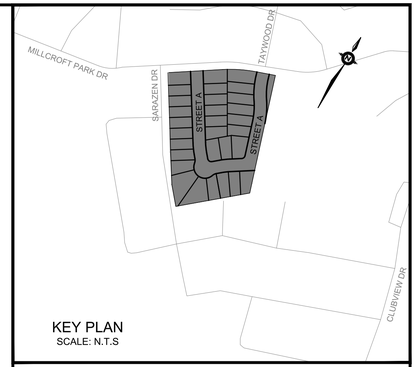
GEI Consultants
75 TIVERTON COURT, UNIT 100, MARKHAM, ONTARIO L3R4M8, 800.810.3281

DESIGN BY: BA	DRAWN BY: TS	PROJECT No. 2102761
SCALE: 1:1000	DATE: SEPTEMBER 2021	DRAWING No. 201
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KEY PLAN
SCALE: N.T.S

LEGEND

- EXISTING SANITARY MANHOLE
- PROPOSED SANITARY MANHOLE
- PROPOSED SANITARY SEWER
- PROPOSED SANITARY DRAINAGE AREA BOUNDARY

0.82 ha | 3.55
4 | 14

- PROP. DRAINAGE AREA (ha)
- PROP. POPULATION PER UNIT
- TRIBUTARY POPULATION
- UNIT COUNT
- SITE LIMIT

REFER TO DRAWING No. 100 FOR GENERAL NOTES

BENCHMARK

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF BURLINGTON MONUMENT No. 176 HAVING A PUBLISHED ELEVATION OF 148.534 METERS

No.	DESCRIPTION	DATE	BY	APPROVED BY
	REVISIONS			
1	FIRST SUBMISSION	10/19/2021	BA	PAS

APPROVALS

MUNICIPAL	REGIONAL
MANAGER OF DESIGN AND CONSTRUCTION	COMMISSIONER OF PUBLIC WORKS
DATE	DIRECTOR OF DESIGN AND CONSTRUCTION

CITY OF Burlington

SALOTTO BUILDING GROUP INC.
4375 MILLCROFT PARK DR
CITY OF BURLINGTON
HALTON REGION

LICENSED PROFESSIONAL ENGINEER
P. A. SLAMA
100010210
Nov 5/21
PROVINCE OF ONTARIO

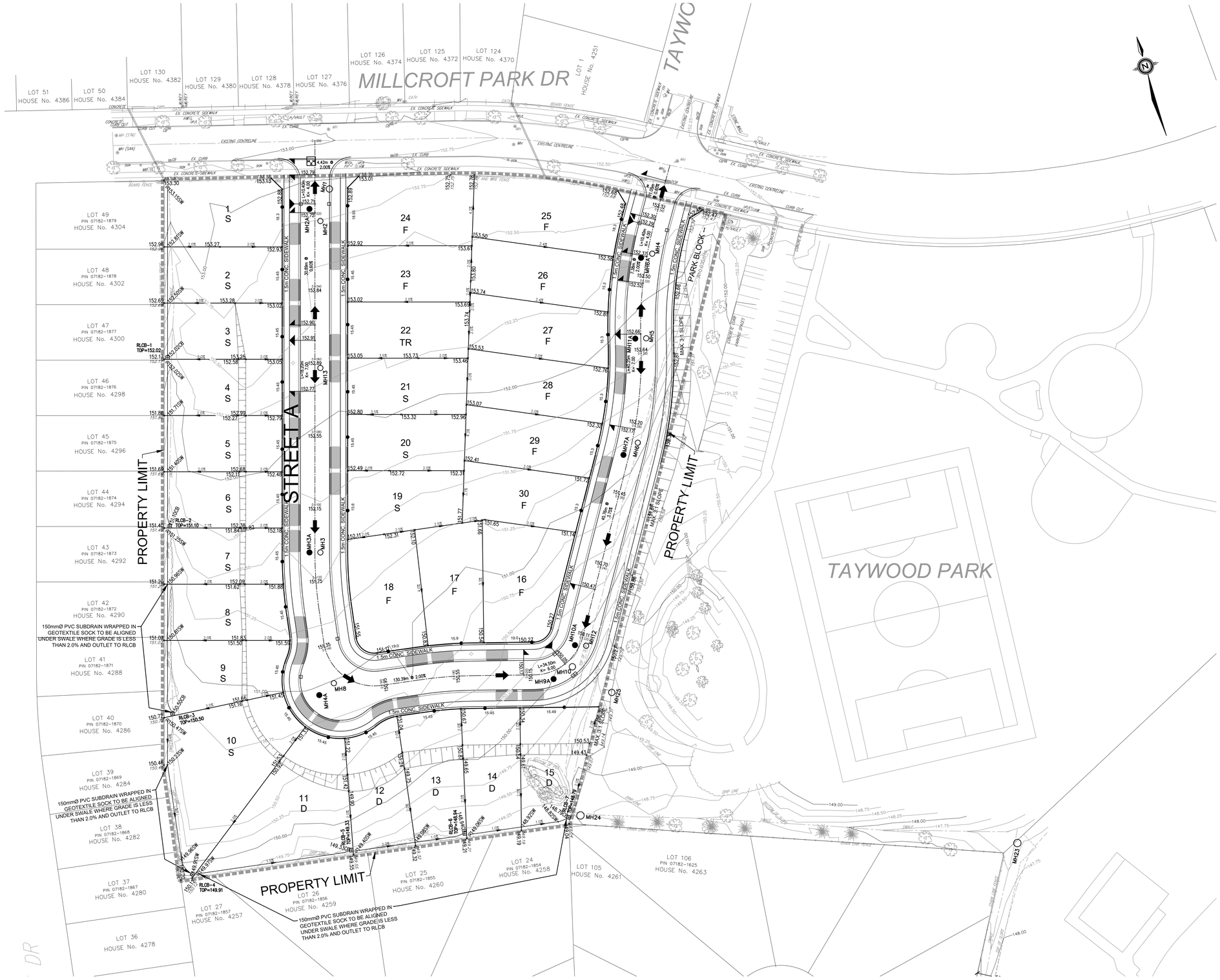
SANITARY DRAINAGE AREA PLAN

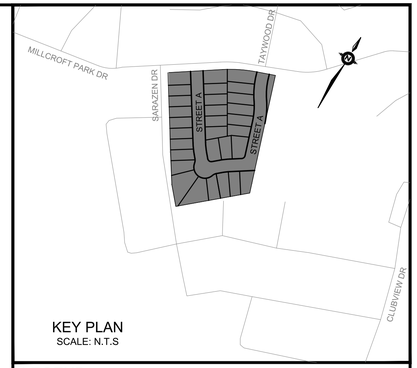
GEI Consultants
75 TIVERTON COURT, UNIT 100, MARKHAM, ONTARIO L3R4M8. 800.810.3281

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SCALE:	1:1000	DATE:	SEPTEMBER 2021	2102761
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KEY PLAN
SCALE: N.T.S

LEGEND

- EXISTING CONTOUR
- EXISTING GRADE
- PROPOSED GRADE
- PROPOSED EDGE OF PAVEMENT GRADE
- PROPOSED TOP OF CURB GRADE
- EXISTING STORM MANHOLE
- EXISTING SANITARY MANHOLE
- EXISTING CATCH BASIN
- PROPOSED STORM MANHOLE
- PROPOSD CLEAN WATER COLLECTOR MANHOLE
- PROPOSED SANITARY MANHOLE
- CATCH BASIN – NO ICD
- PROPOSED DOUBLE CATCH BASIN
- PROPOSED WATER VALVE/ VALVE AND BOX CHAMBER
- PROPOSED HYDRANT AND VALVE
- SITE LIMIT
- PROPOSED DITCH OR SWALE
- PROPOSED 3:1 SLOPE
- OVERLAND FLOW DIRECTION
- EXISTING OVERLAND FLOW DIRECTION
- CURB DEPRESSION

REFER TO DRAWING No. 100 FOR GENERAL NOTES

BENCHMARK

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF BURLINGTON MONUMENT No. 176 HAVING A PUBLISHED ELEVATION OF 148.534 METERS

No.	DESCRIPTION	DATE	BY	APPROVED BY
1	FIRST SUBMISSION	10/19/2021	BA	PAS

REVISIONS

APPROVALS

MUNICIPAL	REGIONAL
MANAGER OF DESIGN AND CONSTRUCTION	COMMISSIONER OF PUBLIC WORKS
DATE	DIRECTOR OF DESIGN AND CONSTRUCTION

CITY OF Burlington

SALOTTO BUILDING GROUP INC.
4375 MILLCROFT PARK DR
CITY OF BURLINGTON
HALTON REGION

LICENSED PROFESSIONAL ENGINEER
P. A. SLAMA
100010210
NOV 5/21
PROVINCE OF ONTARIO

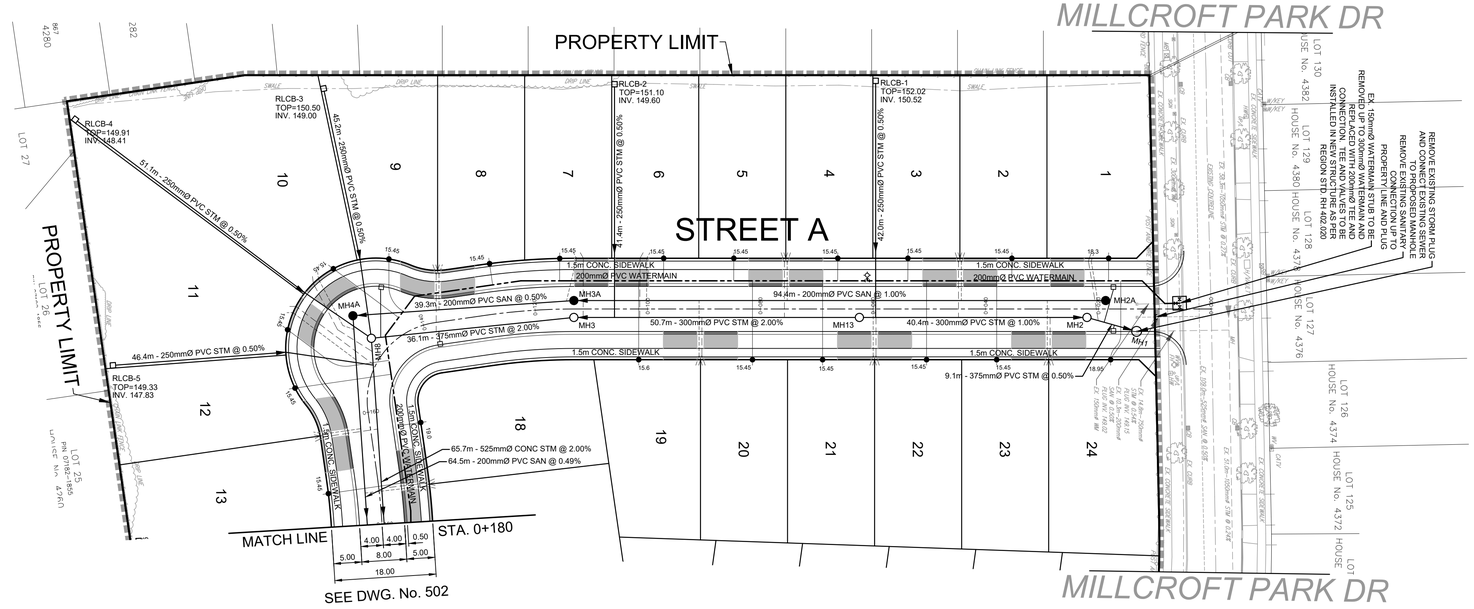
GRADING PLAN

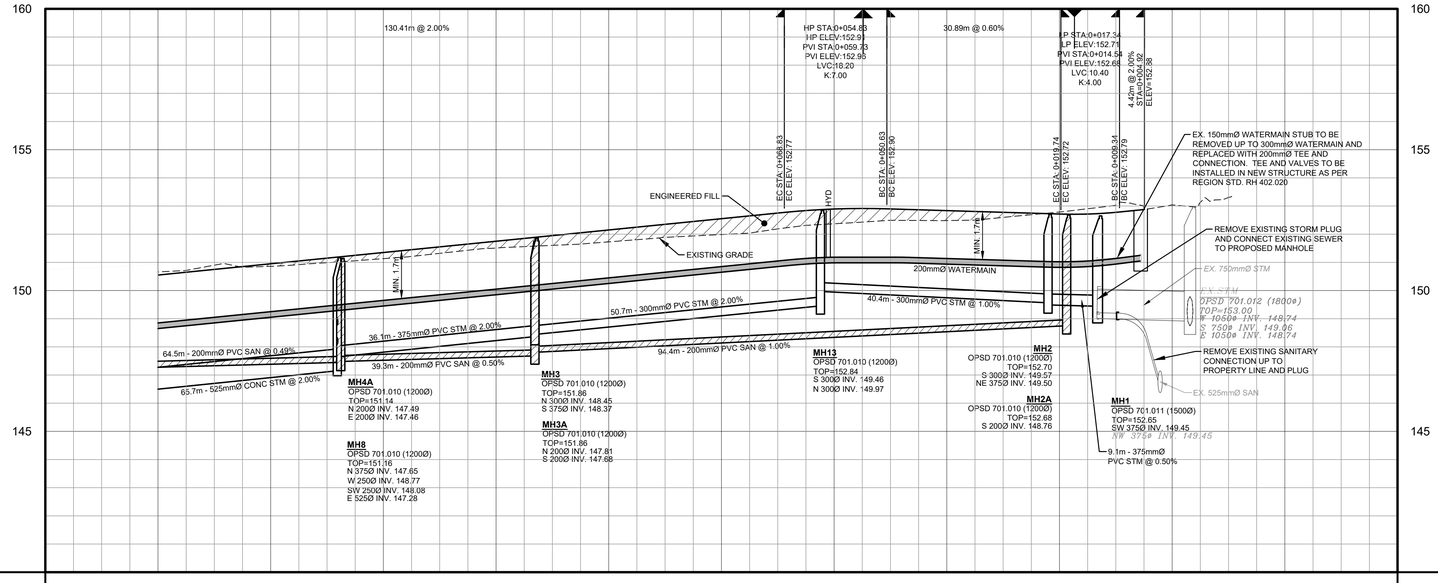
GEI Consultants
75 TIVERTON COURT, UNIT 100, MARKHAM, ONTARIO L3R4M8, 800.810.3281

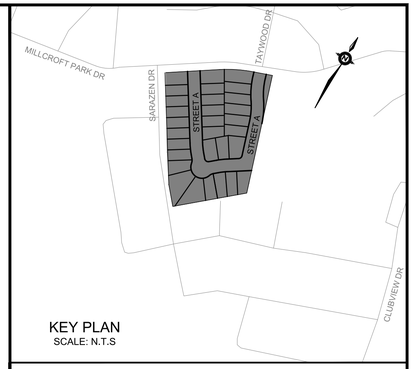
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KEY PLAN
SCALE: N.T.S

LEGEND

- PROPOSED STORM MAINTENANCE HOLE
- PROPOSED CLEAN WATER COLLECTOR MAINTENANCE
- PROPOSED SANITARY MAINTENANCE
- CATCH BASIN – NO ICD
- PROPOSED VALVE & CHAMBER
- PROPOSED VALVE & BOX
- PROPOSED HYDRANT & VALVE
- TEMPORARY FLUSHING STATION
- EXISTING STORM MANHOLE
- EXISTING SANITARY MANHOLE
- EX.CB. EXISTING CATCHBASIN
- EX.V&C EXISTING VALVE & CHAMBER
- EX.H&V EXISTING HYDRANT & VALVE
- LIMIT OF SITE
- PROPOSED CHAIN LINK FENCE

PROPOSED CENTRELINE ELEVATIONS	150.55	150.95	151.35	151.75	152.15	152.55	152.89	152.84	152.72		PROPOSED CENTRELINE ELEVATIONS
EXISTING CENTRELINE ELEVATIONS	150.66	150.86	151.13	151.51	151.73	151.99	152.37	152.48	152.79	153.04	EXISTING CENTRELINE ELEVATIONS
CENTRELINE CHAINAGE	0+180	0+160	0+140	0+120	0+100	0+080	0+060	0+040	0+020	0+000	CENTRELINE CHAINAGE

REFER TO DRAWING No. 100 FOR GENERAL NOTES

BENCHMARK

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF BURLINGTON MONUMENT No. 176 HAVING A PUBLISHED ELEVATION OF 148.534 METERS

No.	DESCRIPTION	DATE	BY	APPROVED BY
1	FIRST SUBMISSION	10/19/2021	BA	PAS

REVISIONS

APPROVALS

MUNICIPAL	REGIONAL
MANAGER OF DESIGN AND CONSTRUCTION	COMMISSIONER OF PUBLIC WORKS
DATE	DIRECTOR OF DESIGN AND CONSTRUCTION

CITY OF Burlington

SALOTTO BUILDING GROUP INC.
4375 MILLCROFT PARK DR
CITY OF BURLINGTON
HALTON REGION

LICENSED PROFESSIONAL ENGINEER
P. A. SLAMA
100010210
Nov 5/21
PROVINCE OF ONTARIO

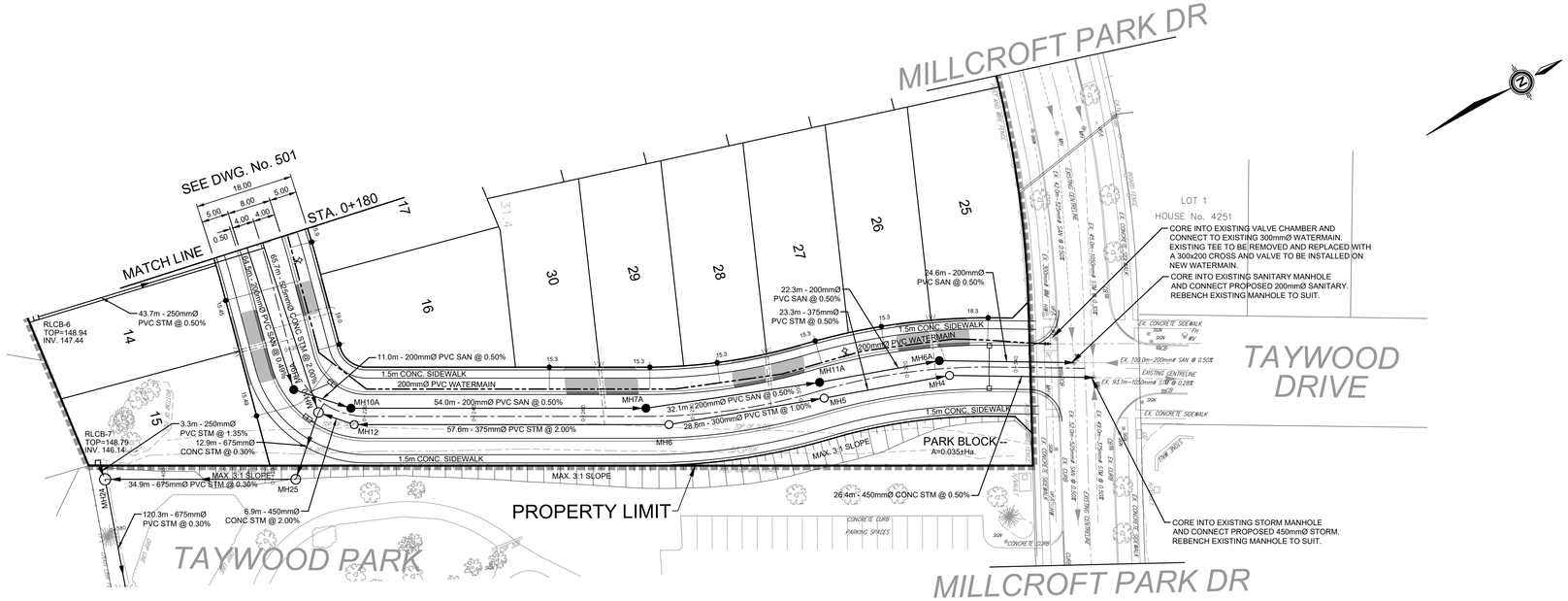
STREET A
STA 0+000 TO 0+180

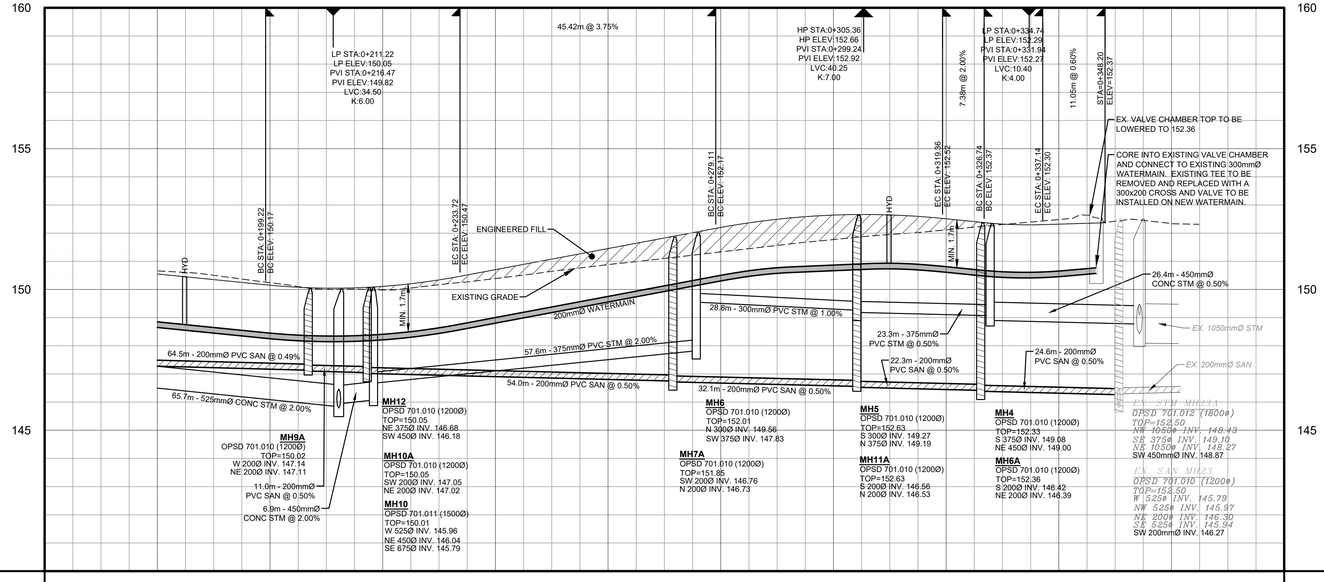
GEI Consultants
75 TIVERTON COURT, UNIT 100, MARKHAM, ONTARIO L3R4M8, 800.810.3281

DESIGN BY: BA	DRAWN BY: TS	PROJECT No. 2102761
SCALE: 1:500 (HORIZ) 1:100 (VERT)	DATE: SEPTEMBER 2021	DRAWING No. 501
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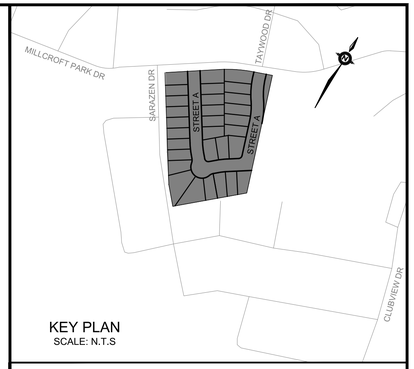
NOT FOR CONSTRUCTION

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PROPOSED CENTRELINE ELEVATIONS	150.55	150.15	150.11	150.70	151.45	152.20	152.64	152.51	152.32	PROPOSED CENTRELINE ELEVATIONS
EXISTING CENTRELINE ELEVATIONS	150.66	150.24	149.98	150.39	150.88	151.33	151.77	152.11	152.48	152.34	EXISTING CENTRELINE ELEVATIONS
CENTRELINE CHAINAGE	0+180	0+200	0+220	0+240	0+260	0+280	0+300	0+320	0+340	0+360	CENTRELINE CHAINAGE



KEY PLAN
SCALE: N.T.S

LEGEND

- PROPOSED STORM MAINTENANCE HOLE
- PROPOSED CLEAN WATER COLLECTOR MAINTENANCE
- PROPOSED SANITARY MAINTENANCE
- CATCH BASIN – NO ICD
- PROPOSED VALVE & CHAMBER
- PROPOSED VALVE & BOX
- PROPOSED HYDRANT & VALVE
- TEMPORARY FLUSHING STATION
- EXISTING STORM MANHOLE
- EXISTING SANITARY MANHOLE
- EX.CB. EXISTING CATCHBASIN
- EX.V&C EXISTING VALVE & CHAMBER
- EX.H&V EXISTING HYDRANT & VALVE
- LIMIT OF SITE
- PROPOSED CHAIN LINK FENCE

REFER TO DRAWING No. 100 FOR GENERAL NOTES

BENCHMARK

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF BURLINGTON MONUMENT No. 176 HAVING A PUBLISHED ELEVATION OF 148.534 METERS

No.	DESCRIPTION	DATE	BY	APPR'D. BY
1	FIRST SUBMISSION	10/19/2021	BA	PAS

REVISIONS

APPROVALS

MUNICIPAL	REGIONAL
MANAGER OF DESIGN AND CONSTRUCTION	COMMISSIONER OF PUBLIC WORKS
DATE	DIRECTOR OF DESIGN AND CONSTRUCTION

CITY OF Burlington

SALOTTO BUILDING GROUP INC.
4375 MILLCROFT PARK DR
CITY OF BURLINGTON
HALTON REGION

LICENSED PROFESSIONAL ENGINEER
P. A. SLAMA
100010210
Nov 5/21
PROVINCE OF ONTARIO

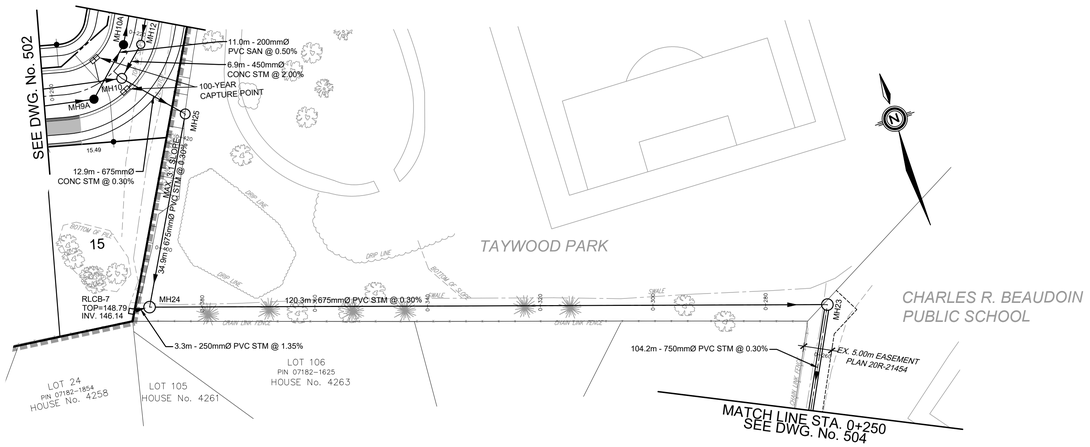
STREET A
STA 0+180 TO 0+360

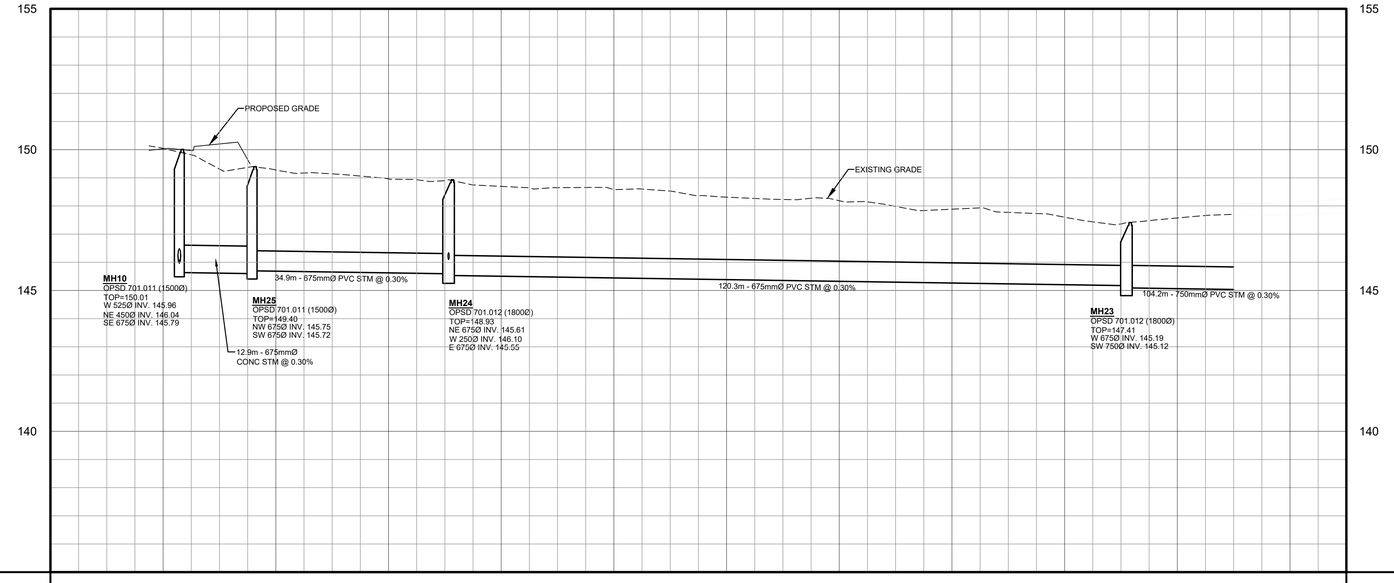
GEI Consultants
75 TIVERTON COURT, UNIT 100, MARKHAM, ONTARIO L3R4M8, 800.810.3281

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SCALE: 1:500 (HORIZ) 1:100 (VERT)	DATE: SEPTEMBER 2021	DRAWING No. 502
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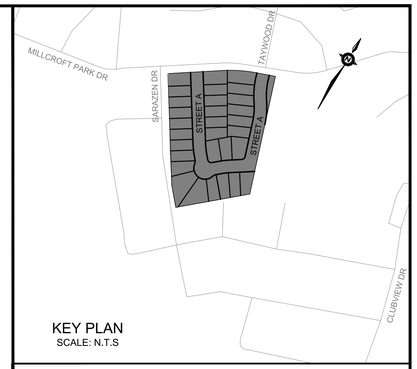
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PROPOSED CENTRELINE ELEVATIONS											PROPOSED CENTRELINE ELEVATIONS
EXISTING CENTRELINE ELEVATIONS	150.05	149.28	148.96	148.70	148.58	148.31	148.19	147.89	147.60	147.57	147.80	EXISTING CENTRELINE ELEVATIONS
CENTRELINE CHAINAGE	0+440	0+420	0+400	0+380	0+360	0+340	0+320	0+300	0+280	0+260	0+240	CENTRELINE CHAINAGE



KEY PLAN
SCALE: N.T.S

LEGEND

- PROPOSED STORM MAINTENANCE HOLE
- PROPOSED CLEAN WATER COLLECTOR MAINTENANCE
- PROPOSED SANITARY MAINTENANCE
- CATCH BASIN – NO ICD
- PROPOSED VALVE & CHAMBER
- PROPOSED VALVE & BOX
- PROPOSED HYDRANT & VALVE
- TEMPORARY FLUSHING STATION
- EXISTING STORM MANHOLE
- EXISTING SANITARY MANHOLE
- EX.CB. EXISTING CATCHBASIN
- EX.V&C EXISTING VALVE & CHAMBER
- EX.H&V EXISTING HYDRANT & VALVE
- LIMIT OF SITE
- PROPOSED CHAIN LINK FENCE

REFER TO DRAWING No. 100 FOR GENERAL NOTES

BENCHMARK
ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF BURLINGTON MONUMENT No. 176 HAVING A PUBLISHED ELEVATION OF 148.534 METERS

No.	DESCRIPTION	DATE	BY	APPR'D. BY
1	FIRST SUBMISSION	10/19/2021	BA	PAS

REVISIONS

APPROVALS

MUNICIPAL	REGIONAL
MANAGER OF DESIGN AND CONSTRUCTION	COMMISSIONER OF PUBLIC WORKS
DATE	DIRECTOR OF DESIGN AND CONSTRUCTION

CITY OF Burlington

SALOTTO BUILDING GROUP INC.
4375 MILLCROFT PARK DR
CITY OF BURLINGTON
HALTON REGION

LICENSED PROFESSIONAL ENGINEER
P. A. SLAMA
100010210
Nov 5/21
PROVINCE OF ONTARIO

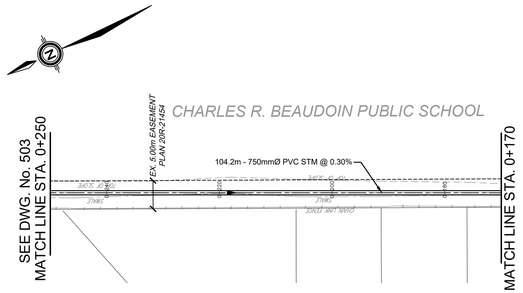
STORM OUTLET
STA 0+250 TO 0+430

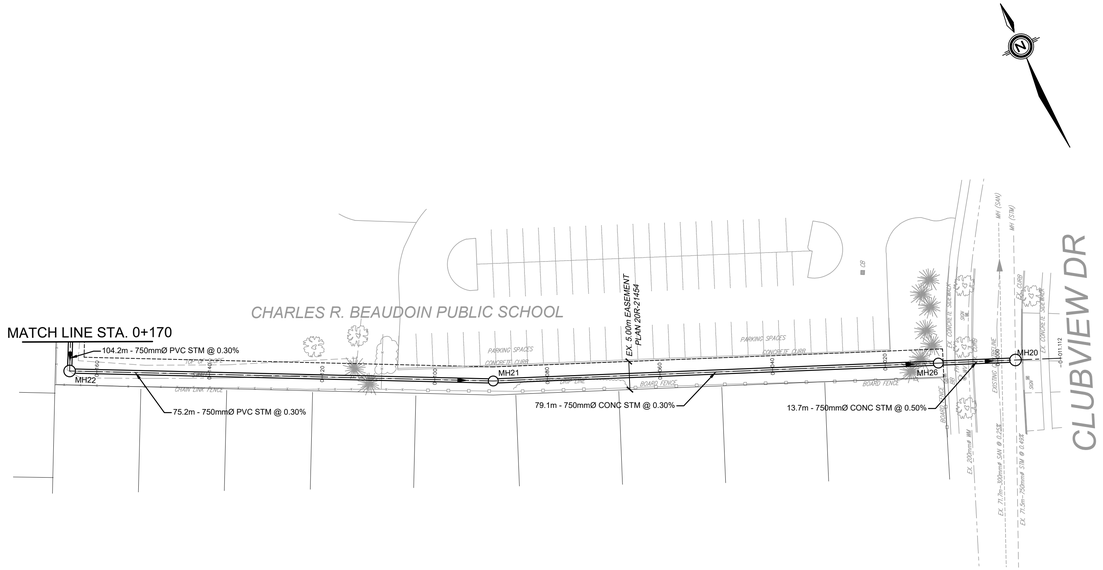
GEI Consultants
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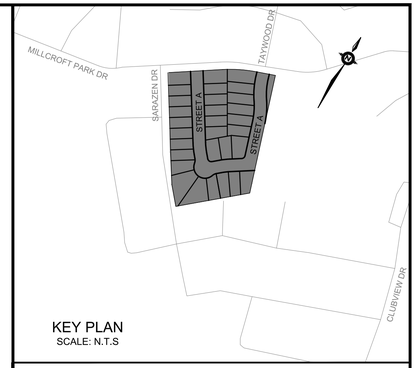
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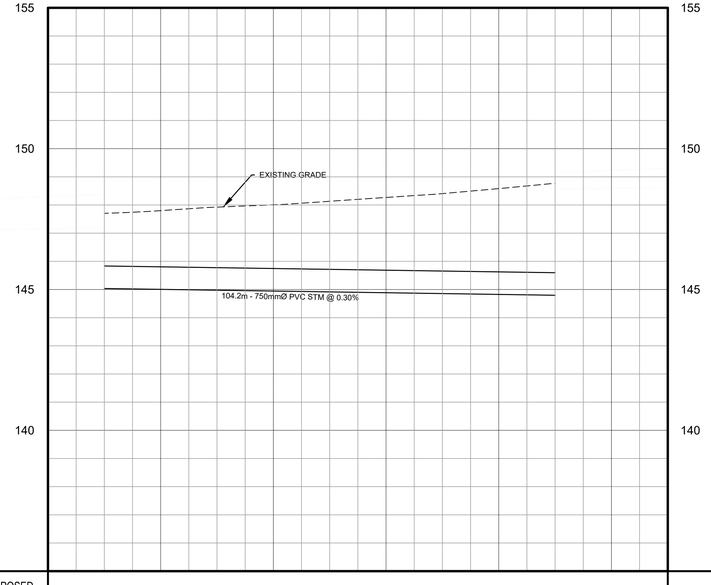


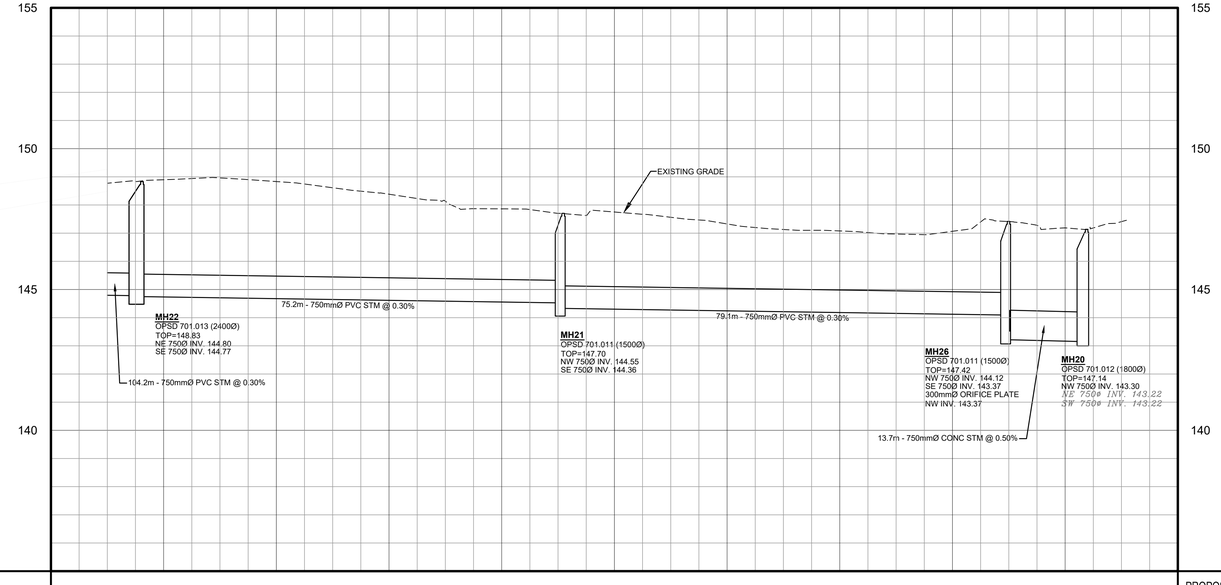


KEY PLAN
SCALE: N.T.S

LEGEND

- PROPOSED STORM MAINTENANCE HOLE
- PROPOSED CLEAN WATER COLLECTOR MAINTENANCE
- PROPOSED SANITARY MAINTENANCE
- CATCH BASIN – NO ICD
- PROPOSED VALVE & CHAMBER
- PROPOSED VALVE & BOX
- PROPOSED HYDRANT & VALVE
- TEMPORARY FLUSHING STATION
- EXISTING STORM MANHOLE
- EXISTING SANITARY MANHOLE
- EX.CB. EXISTING CATCHBASIN
- EX.V&C EXISTING VALVE & CHAMBER
- EX.H&V EXISTING HYDRANT & VALVE
- LIMIT OF SITE
- PROPOSED CHAIN LINK FENCE





PROPOSED CENTRELINE ELEVATIONS											PROPOSED CENTRELINE ELEVATIONS
EXISTING CENTRELINE ELEVATIONS	147.80	148.01	148.27	148.58	148.90	148.90	148.83	148.38	147.86	147.75	147.33	147.08	147.07	147.19	EXISTING CENTRELINE ELEVATIONS
CENTRELINE CHAINAGE	0+240	0+220	0+200	0+180	0+160	0+160	0+140	0+120	0+100	0+080	0+060	0+040	0+020	0+000	CENTRELINE CHAINAGE

REFER TO DRAWING No. 100 FOR GENERAL NOTES

BENCHMARK

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF BURLINGTON MONUMENT No. 176 HAVING A PUBLISHED ELEVATION OF 148.534 METERS

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MUNICIPAL	REGIONAL
MANAGER OF DESIGN AND CONSTRUCTION	COMMISSIONER OF PUBLIC WORKS
DATE	DIRECTOR OF DESIGN AND CONSTRUCTION

CITY OF Burlington

SALOTTO BUILDING GROUP INC.
4375 MILLCROFT PARK DR
CITY OF BURLINGTON
HALTON REGION

LICENSED PROFESSIONAL ENGINEER
P. A. SLAMA
100010210
Nov 5/21
PROVINCE OF ONTARIO

STORM OUTLET
STA 0+000 TO 0+250

GEI Consultants
75 TIVERTON COURT, UNIT 100, MARKHAM, ONTARIO L3R4M8, 800.810.3281

DESIGN BY: BA	DRAWN BY: TS	PROJECT No. 2102761
SCALE: 1:500 (HORIZ) 1:100 (VERT)	DATE: SEPTEMBER 2021	DRAWING No. 504
		CITY FILE No.:

NOT FOR CONSTRUCTION

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HRCA STANDARD NOTES

SECTION 1: SITE MANAGEMENT

1. EROSION AND SEDIMENT CONTROL (ESC) MEASURES WILL BE IMPLEMENTED PRIOR TO, AND MAINTAINED DURING THE CONSTRUCTION PHASES, TO PREVENT ENTRY OF SEDIMENT INTO THE WATER. ALL DAMAGED EROSION AND SEDIMENT CONTROL MEASURES SHOULD BE REPAIRED AND/OR REPLACED IMMEDIATELY.
2. DISTURBED AREAS WILL BE MINIMIZED TO THE EXTENT POSSIBLE, AND TEMPORARILY OR PERMANENTLY STABILIZED OR RESTORED AS THE WORK PROGRESSES.
3. ALL IN-WATER AND NEAR WATER WORKS WILL BE CONDUCTED IN THE DRY WITH APPROPRIATE EROSION AND SEDIMENT CONTROLS.
4. THE EROSION AND SEDIMENT CONTROL STRATEGIES OUTLINED ON THE PLANS ARE NOT STATIC AND MAY NEED TO BE UPGRADED/AMENDED AS SITE CONDITIONS CHANGE TO MINIMIZE SEDIMENT LADEN RUNOFF FROM LEAVING TO WORK AREAS. IF THE PRESCRIBED MEASURES ON THE PLANS ARE NOT EFFECTIVE IN PREVENTING THE RELEASE OF A DELETERIOUS SUBSTANCE, INCLUDING SEDIMENT, THEN ALTERNATIVE MEASURES MUST BE IMPLEMENTED IMMEDIATELY TO MINIMIZE POTENTIAL ECOLOGICAL IMPACTS. HRCA ENFORCEMENT OFFICER SHOULD BE IMMEDIATELY CONTACTED. ADDITIONAL ESC MEASURES TO BE KEPT ON SITE AND USED AS NECESSARY.
5. AN ENVIRONMENTAL MONITOR WILL ATTEND THE SITE TO INSPECT ALL NEW CONTROLS, AS WELL AS ON A REGULAR BASIS, OR FOLLOWING RAIN/SNOWMELT EVENT, TO MONITOR ALL WORKS, AND IN PARTICULAR WORKS RELATED TO EROSION AND SEDIMENT CONTROLS, DEWATERING OR UNWATERING, RESTORATION AND IN- OR NEAR- WATER WORKS. SHOULD CONCERNS ARISE ON SITE THE ENVIRONMENTAL MONITOR WILL CONTACT THE TRCA ENFORCEMENT OFFICER AS WELL AS THE PROPONENT.
6. ALL ACTIVITIES, INCLUDING MAINTENANCE PROCEDURES, WILL BE CONTROLLED TO PREVENT THE ENTRY OF PETROLEUM PRODUCTS, DEBRIS, RUBBLE, CONCRETE OR OTHER DELETERIOUS SUBSTANCES INTO THE WATER. VEHICULAR REFUELING AND MAINTENANCE WILL BE CONDUCTED A MINIMUM OF 30 METRES FROM THE WATER.
7. ALL GRADES WITHIN THE REGULATORY FLOOD PLAIN WILL BE MAINTAINED OR MATCHED, EXCEPT WHERE NOTED ON THE PLANS.
8. THE PROPONENT/CONTRACTOR SHALL MONITOR THE WEATHER SEVERAL DAYS IN ADVANCE OF THE ONSET OF THE PROJECT TO ENSURE THAT THE WORKS WILL BE CONDUCTED DURING FAVOURABLE WEATHER CONDITIONS. SHOULD AN UNEXPECTED STORM ARISE, THE CONTRACTOR WILL REMOVE ALL UNFIXED ITEMS FROM THE REGIONAL STORM FLOOD PLAIN THAT WOULD HAVE THE POTENTIAL TO CAUSE A SPILL OR AN OBSTRUCTION TO FLOW, E.G., FUEL TANKS, PORTA-POTTIES, MACHINERY, EQUIPMENT, CONSTRUCTION MATERIALS, ETC.
9. ALL DEWATERING / UNWATERING SHALL BE TREATED AND RELEASED TO THE ENVIRONMENT AT LEAST 30 METRES FROM A WATERCOURSE OR WETLAND AND ALLOWED TO DRAIN THROUGH A WELL-VEGETATED AREA. NO DEWATERING EFFLUENT SHALL BE SENT DIRECTLY TO ANY WATERCOURSE, WETLAND OR FOREST, OR ALLOWED TO DRAIN ONTO DISTURBED SOILS WITHIN THE WORK AREA. THESE CONTROL MEASURES SHALL BE MONITORED FOR EFFECTIVENESS AND MAINTAINED OR REVISED TO MEET THE OBJECTIVE OF PREVENTING THE RELEASE OF SEDIMENT LADEN WATER.
10. ALL ACCESS TO THE WORK SITE SHALL BE FROM EITHER SIDE OF THE WATERCOURSE. NO EQUIPMENT OR VEHICLES ARE PERMITTED TO CROSS THROUGH THE WATERCOURSE UNLESS APPROVED BY THE HRCA.

SECTION 2: CONSTRUCTION TIMING

1. IN ORDER TO COMPLY WITH THE MIGRATORY BIRDS CONVECTION ACT, HRCA RECOMMENDS THAT TREE REMOVALS BE COMPLETED BETWEEN AUGUST 1 AND APRIL 1. IN THE EVENT TREES MUST BE REMOVED OUTSIDE THIS TIME, A QUALIFIED ECOLOGIST MUST PERFORM A NEST CHECK.
2. TO PROTECT LOCAL FISH POPULATIONS DURING THEIR SPAWNING, NURSERY AND MIGRATORY PERIODS, UNLESS APPROVED BY MNR, ACTIVITIES IN REDSIDE DACE HABITAT MAY ONLY OCCUR BETWEEN JULY 1 AND SEPT 15.

SECTION 3: FISH AND WILDLIFE RELOCATION

1. FISH AND WILDLIFE STRANDED WITHIN THE WORK AREA SHALL BE CAPTURED AND RELEASED LIVE IN SUITABLE HABITAT UPSTREAM OF THE WORK AREA UNDER THE SUPERVISION OF A QUALIFIED AQUATIC BIOLOGIST. A PERMIT FROM THE MINISTRY OF NATURAL RESOURCES IS REQUIRED.

SECTION 4: ENVIRONMENTAL COMPLIANCE

1. PLEASE NOTIFY HRCA ENFORCEMENT OFFICER (_____ AT 905-XXX-XXXX EXT. XXXX) 48 HOURS PRIOR TO COMMENCING CONSTRUCTION.
2. AN ENVIRONMENTAL MONITOR WILL BE ON SITE, AND PROVIDE ADVICE TO ENSURE THAT ACTIVITIES THAT COULD HAVE A NEGATIVE IMPACT TO THE NATURAL ENVIRONMENT ARE EFFECTIVELY MITIGATED AS CONSTRUCTION PROCEEDS. THE ENVIRONMENTAL MONITOR SHALL NOTIFY THE HRCA ENFORCEMENT OFFICER AND PROJECT MANAGER IF AN ISSUE ARISES.

DUST CONTROL MEASURES

A DUST CONTROL PLAN IS TO BE PROVIDED BY THE CONTRACTOR AND WILL INCLUDE:

1. IDENTIFICATION OF ALL POTENTIAL DUST SOURCES;
2. A DESCRIPTION OF THE DUST CONTROL METHOD(S) TO BE USED FOR EACH SOURCE;
3. A SCHEDULE, RATE OF APPLICATION, CALCULATIONS OR SOME OTHER MEANS OF IDENTIFYING HOW OFTEN, HOW MUCH OR WHEN THE CONTROL METHOD IS TO BE USED;
4. PROVISIONS FOR MONITORING AND RECORD-KEEPING; A BACKUP PLAN IN CASE THE FIRST CONTROL PLAN DOES NOT WORK OR IS INSUFFICIENT;
5. THE CONTRACTOR WILL BE RESPONSIBLE FOR MAKING SURE THE PLAN IS IMPLEMENTED AND CAN BE CONTACTED IN THE EVENT OF A DUST COMPLAINT

PRE-GRADING PLANNING
1. TOPSOIL STRIPPING AND EARTHWORKS TO BE TIMED TO COINCIDE WITH EACH MUNICIPAL SERVICING AND/OR CONSTRUCTION PHASE; OR
2. STRIP TOPSOIL AND GRADE ENTIRE PROJECT AND APPLY VEGETATION GROUND COVER TO GRADED OR TOPSOIL STRIPPED AREAS WHERE CONSTRUCTION PHASE BEGINS MORE THAN 90 DAYS AFTER GRADING OR TOPSOIL STRIPPING OPERATIONS END.

WATERING (POST-GRADING)
1. WITHIN ACTIVE TOPSOIL STRIPPING, EARTH MOVING OR UNDERGROUND/ABOVEGROUND MUNICIPAL SERVICING AREAS, WATER TO BE APPLIED AT SUFFICIENT FREQUENCY AND QUANTITY TO PREVENT VISIBLE EMISSIONS FROM EXTENDING MORE THAN 30m FROM POINT OF ORIGIN.

TOPSOIL STOCKPILES
1. CONFINE LOAD IN/OUT PROCEDURES TO LEEWARD (DOWNWIND) SIDE OF THE MATERIAL. TOPSOIL PILES TO BE LOCATED DOWNWIND OF EXISTING RESIDENTIAL AREAS.
2. APPLY WATER TO HAUL ROADS AND STOCKPILE BY WAY OF WATER TRUCK.
3. GRADE AND VEGETATE TOPSOIL STOCKPILE TO PREVENT FUTURE WIND EROSION.

WIND FENCING
1. INSTALL 1.0m TO 1.5m HIGH BARRIERS WITH 50% OR LESS POROSITY LOCATED ADJACENT TO ROADWAYS OR URBAN AREAS TO REDUCE THE AMOUNT OF WINDBLOWN MATERIAL LEAVING THE SITE.

REDUCE VEHICLE SPEED
1. LIMIT VEHICLE SPEED TO 25 km/hr MAXIMUM. MAY NEED TO BE USED IN CONJUNCTION WITH WATERING TO PREVENT VISIBLE DUST EMISSIONS.

MINIMIZE DISRUPTED SURFACE AREAS
1. TO DISTURB ONLY THOSE AREAS ABSOLUTELY REQUIRED. VEGETATION LEFT IN PLACE DURING SITE WORK REDUCES THE AREA SUBJECT TO WIND EROSION.

RESTRICT ACTIVITIES DURING HIGH WIND PERIODS
1. RESCHEDULE WORK AROUND WINDY DAYS. THE HIGH VISIBILITY OF CERTAIN WORKS AND THE CLOSE PROXIMITY AND POPULATION IMPACTED SHOULD BE TAKEN INTO CONSIDERATION WHEN SCHEDULING DUST-PRODUCING WORK.

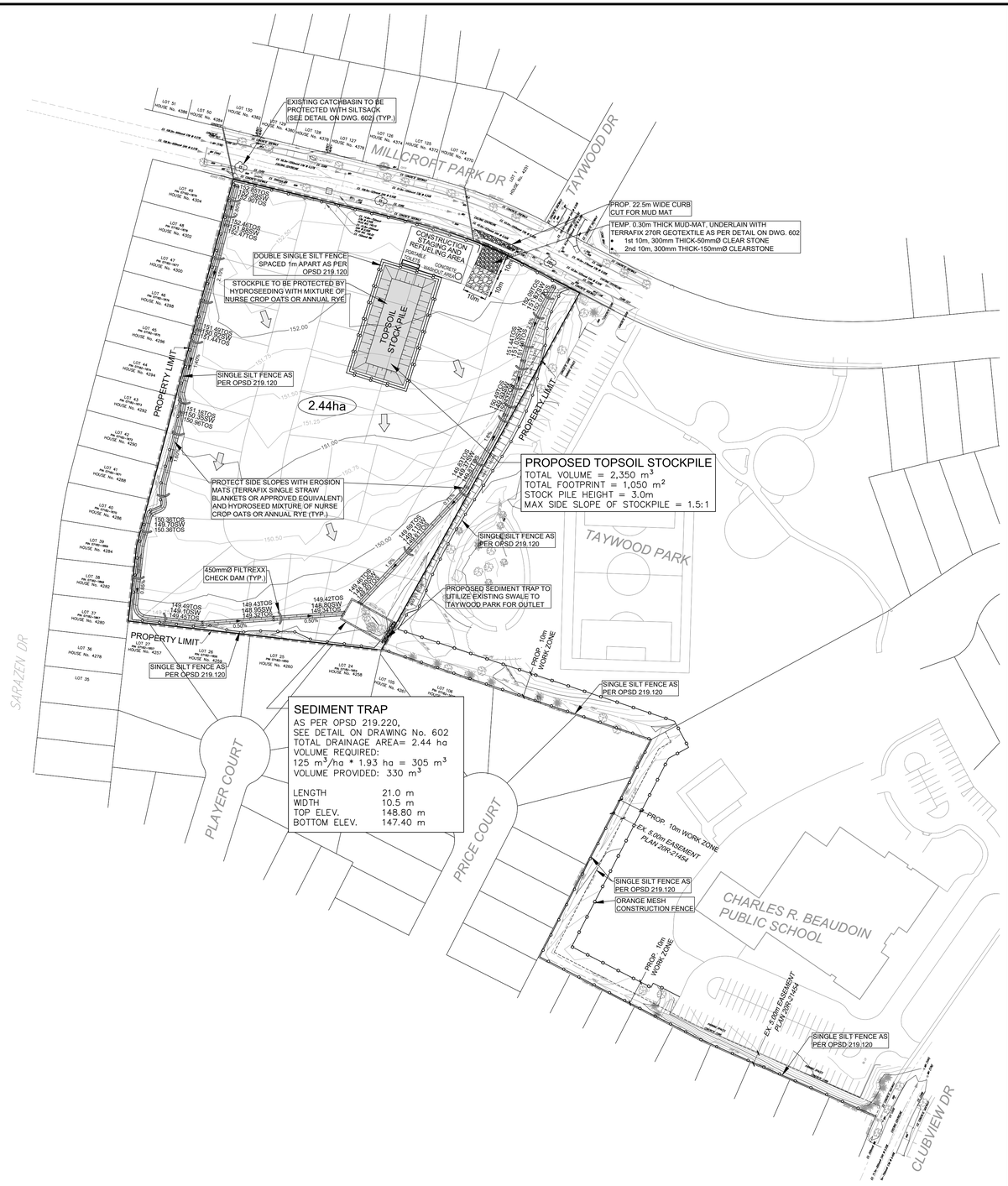
ROAD CLEANING
1. SPILLAGE, EROSION OR MATERIALS "TRACKED OUT" ON A ROAD TO BE CLEANED USING MECHANICAL STREET SWEEPERS OR FLUSHER TRUCK BY AT LEAST THE END OF THE WORKDAY AND IMMEDIATELY IF IT EXTENDS MORE THAN 15 METRES ALONG A PAVED PUBLIC ROADWAY.

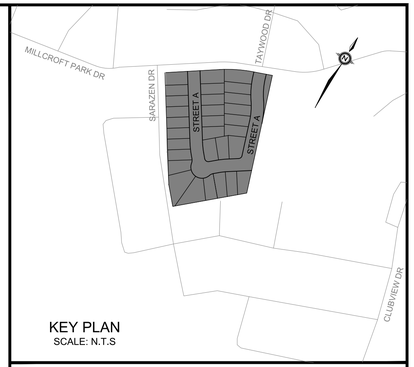
CONSTRUCTION STAGING

1. CONSTRUCT GRANULAR MUD MAT (TEMPORARY CONSTRUCTION ACCESS) OF MILLCROFT PARK DRIVE.
2. CLEAR AND GRUB EXISTING VEGETATION, INCLUDING TREES IDENTIFIED FOR REMOVAL.
3. ERECT SEDIMENT CONTROL FENCING RESPECTING EXISTING TREES DRIPLINE.
4. PROTECT EXISTING CB'S ALONG MILLCROFT PARK DRIVE.
5. CONSTRUCT TEMPORARY SEDIMENT POND WITH OUTLET STRUCTURES. APPLY STRAW MATTING AND HYDROSEED SLOPES AS DETAILED.
6. CONSTRUCT TEMPORARY CUT-OFF SWALES, APPLY EROSION MATS AND HYDROSEED. INSTALL ROCK CHECK DAMS WITHIN CUT-OFF SWALES.
7. STRIP AND STOCKPILE TOPSOIL AS PER DRAWING, EXPORT EXTRA TOPSOIL OFF SITE.

HOUSE KEEPING MEASURES - EROSION AND SEDIMENTATION CONTROL

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER INSTALLATION, MAINTENANCE AND REMOVAL OF ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER.
2. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES MAY BE REQUIRED AND SHALL BE DETERMINED BY THE ENGINEER.
3. SILT CONTROL FENCING SHALL BE INSTALLED ACCORDING TO THIS EROSION AND SEDIMENT CONTROL DRAWING No. 601 AND MAINTAINED UNTIL COMPLETION OF THE LANDSCAPING AND SITE STABILIZATION.
4. NO CONSTRUCTION ACTIVITY OR MACHINERY SHALL INTRUDE BEYOND THE SILT/SNOW FENCE OR LIMIT OF DEVELOPMENT. ALL CONSTRUCTION VEHICLES SHALL LEAVE THE SITE AT DESIGNATED LOCATIONS AS SHOWN ON THE PLANS. ALL MATERIAL AND EQUIPMENT SHALL BE STORED ON SITE IN A DESIGNATED AREA. NO MATERIAL OR EQUIPMENT SHALL BE STORED ON THE MUNICIPAL RIGHT OF WAY. NO CONSTRUCTION VEHICLES WILL PARK ON THE MUNICIPAL ROADS.
5. ALL EXPOSED SOILS SHALL BE IMMEDIATELY STABILIZED WITH A SEED AND MULCH APPLICATION AS DIRECTED BY THE ENGINEER.
6. STOCKPILES SHALL BE SET BACK FROM ANY WATERCOURSE AND STABILIZED AGAINST EROSION AS SOON AS POSSIBLE. A SETBACK OF AT LEAST 15M FROM ANY TOP OF BANK OR WATERCOURSE IS REQUIRED.
7. CLEANING AND REPAIRS OF CHECK DAMS, MUD MATS AND ANY OTHER TEMPORARY SEDIMENT CONTROL MEASURES SHALL BE DONE AS NECESSARY THROUGH REGULAR INSPECTION OR AS DIRECTED BY THE ENGINEER.
8. SEDIMENT/SILT SHALL BE REMOVED FROM THE SEDIMENT CONTROL DEVICES AND THE CATCHBASIN BUFFERS AFTER STORM EVENTS AND DISPOSED OF IN AREAS AS APPROVED BY THE ENGINEER.
9. ALL RE-GRADED AREAS WITHIN THE SITE WHICH ARE NOT OCCUPIED BY BUILDINGS, ROADWAYS, SIDEWALKS OR DRIVEWAYS SHALL BE TOPSOILED AND SODDED/SEEDED IMMEDIATELY AFTER COMPLETION OF FINAL GRADING OPERATIONS OR AS DIRECTED BY THE ENGINEER.
10. INSPECTION OF THE PROPOSED EROSION AND SEDIMENT CONTROL MEASURES WILL OCCUR ON A WEEKLY BASIS, AFTER SIGNIFICANT RAINFALL OR SNOW MELT EVENTS AND DAILY DURING EXTENDED RAIN OR SNOW MELT PERIODS.
11. MATERIALS TO REPAIR DAMAGED ESC MEASURES MUST BE KEPT ON-SITE AT ALL TIMES.
12. THE ESC STRATEGIES ON THESE PLANS ARE NOT STATIC AND MAY NEED TO BE UPGRADED / AMENDED AS SITE CONDITIONS CHANGE TO PREVENT SEDIMENT RELEASE TO THE NATURAL ENVIRONMENT. FAILED ESC MEASURES MUST BE REPAIRED IMMEDIATELY.
13. SERVICING OF CONSTRUCTION EQUIPMENT ON SITE IS PROHIBITED.
14. CLEANING OF EXISTING ROAD(S) AT SITE ACCESS POINTS SHALL BE DONE DAILY DURING CONSTRUCTION OR AS NECESSARY THROUGH REGULAR INSPECTION OR AS DIRECTED BY THE ENGINEER.
15. DUST CONTROL TO BE REVIEWED DAILY. WATER TRUCK TO BE PROVIDED ON-SITE AND ALL HAUL ROAD /WORKING AREAS TO BE SPRAYED WITH WATER AS REQUIRED TO ENSURE DUST IS CONTROLLED ON-SITE.
16. ROCK CHECK DAMS ARE TO BE CLEANED OF ALL ACCUMULATED SEDIMENT AS SOON AS SEDIMENT HAS ACCUMULATED TO A DEPTH GREATER THAN 50% OF THE UPSTREAM CHECK DAM.
17. ALL LITTER AND DEBRIS SHALL BE MONITORED AND DISPOSED OF DAILY OR AS NECESSARY THROUGH REGULAR INSPECTION.
18. THE SILT FENCE MUST BE INSPECTED WEEKLY AND IMMEDIATELY AFTER RAINFALL OR SIGNIFICANT SNOW MELT EVENTS FOR RIPS AND TEARS, BROKEN STAKES, BLOW OUTS (STRUCTURAL FAILURE) AND ACCUMULATION OF SEDIMENT. THE SILT FENCE MUST BE FIXED AND/OR REPLACED IMMEDIATELY WHEN DAMAGED. ACCUMULATED SEDIMENT MUST BE REMOVED FROM THE SILT FENCE WHEN ACCUMULATION REACHES 50% OF THE HEIGHT OF THE FENCE.
19. SILT SACKS (OR APPROVED EQUIVALENT) ARE TO BE INSTALLED AT ALL CATCHBASINS AND CATCHBASIN MANHOLES LOCATIONS UPON COMPLETION OF SERVICING.
20. SITE CONTACT FOR EROSION AND SEDIMENT MEASURES - GIANMARCO TAVANEILLO, TACC CONSTRUCTION (416)-989-8104.





KEY PLAN
SCALE: N.T.S

LEGEND

- SITE LIMIT
- EXISTING GROUND CONTOUR AND ELEVATION — 205.00
- EXISTING OVERLAND FLOW DIRECTION
- PROP. SINGLE SILT FENCE
- PROP. DOUBLE SILT FENCE
- PROP. ORANGE MESH CONSTRUCTION FENCE
- EX. CATCHBASINS TO BE PROTECTED WITH SILT SACK
- TRIBUTARY AREA TO EROSION CONTROL FEATURE — 2.44ha
- 450mmØ FILTREXX CHECK DAM

BENCHMARK

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF BURLINGTON MONUMENT No. 176 HAVING A PUBLISHED ELEVATION OF 148.534 METERS

No.	DESCRIPTION	DATE	BY	APPRVD BY
1	FIRST SUBMISSION	10/19/2021	BA	PAS

REVISIONS

APPROVALS

MUNICIPAL	REGIONAL
MANAGER OF DESIGN AND CONSTRUCTION	COMMISSIONER OF PUBLIC WORKS
DATE	DIRECTOR OF DESIGN AND CONSTRUCTION

CITY OF Burlington

SALOTTO BUILDING GROUP INC.
4375 MILLCROFT PARK DR
CITY OF BURLINGTON
HALTON REGION

LICENSED PROFESSIONAL ENGINEER
P. A. SLAMA
100010210
NOV 5/21
PROVINCE OF ONTARIO

EROSION & SEDIMENT CONTROL CONSTRUCTION MANAGEMENT AND MOBILITY PLAN

GEI Consultants
75 TIVERTON COURT, UNIT 100, MARKHAM, ONTARIO L3R4M8, 800.810.3281

DESIGN BY: B. A.	DRAWN BY: B. A.	PROJECT No. 2102761
SCALE: 1:1000	DATE: SEPTEMBER 2021	DRAWING No. 601
		CITY FILE No.:

NOT FOR CONSTRUCTION

File : B:\Working\ARMLAND GROUP\2102761 4375 Millcroft Park Dr\00_CAD\Design\Sheets\2102761 – ESC.dwg, Date : Oct 19, 2021 – 3:27pm, Edit By : dmo

EPA United States Environmental Protection Agency

Stormwater Best Management Practice
Concrete Washout

NPDES Permits for Clean Water

Minimum Measure
Construction Site Stormwater Runoff Control

Subcategory
Good Housekeeping/Materials Management

Description of Concrete Washout at Construction Sites

Concrete and its ingredients

Concrete is a mixture of cement, water, and aggregate material. Portland cement is made by heating a mixture of limestone and clay containing oxides of calcium, aluminum, silicon and other metals in a kiln and then pulverizing the resulting clinker. The fine aggregate particles are usually sand. Coarse aggregate is generally gravel or crushed stone. When cement is mixed with water, a chemical reaction called hydration occurs, which produces glue that binds the aggregates together to make concrete.

Concrete washout

After concrete is poured at a construction site, the chutes of ready mixed concrete trucks and concrete pumps/pump trucks must be washed out to remove the remaining concrete before it hardens. Equipment such as wheelbarrows and hand tools also need to be washed down. At the end of each work day, the drums of concrete trucks must be washed out. This is customarily done at the ready mixed batch plants, which are usually off-site facilities, however large or rural construction projects may have on-site batch plants. Cementitious (having the properties of cement) washwater and solids also come from using such construction materials as mortar, plaster, stucco, and grout.

Environmental and Human Health Impacts

Concrete washout water (or washwater) is a slurry containing toxic metals. It's also caustic and corrosive, having a pH near 12. In comparison, Drano liquid drain cleaner has a pH of 13.5. Caustic washwater can harm fish gills and eyes and interfere with reproduction. The safe pH ranges for aquatic life habitats are 6.5 – 9 for freshwater and 6.5 – 8.5 for saltwater.

Construction workers should handle wet concrete and washout water with care because it may cause skin irritation and eye damage. If the washwater is dumped on the ground (Fig. 1), it can run off the construction site to adjoining roads and enter roadside storm drains, which discharge to surface waters such as rivers, lakes, or estuaries. The red arrow in Figure 2 points to a ready mixed truck chute that's being washed out into a roll-off bin, which isn't watertight. Leaking washwater, shown in the foreground, will likely follow similar



Figure 1. *Chute washwater being dumped on the ground*



Figure 2. *Chute washwater leaking from a roll-off bin being used as a washout container*

paths to nearby surface waters. Rainfall may cause concrete washout containers that are uncovered to overflow and also transport the washwater to surface waters. Rainwater polluted with concrete washwater can percolate down through the soil and alter the soil chemistry, inhibit plant growth, and contaminate the groundwater. Its high pH can increase the toxicity of other substances in the surface waters and soils. Figures 1 and 2 illustrate the need for better washout management practices.

Best Management Practice Objectives

The best management practice objectives for concrete washout are to (a) collect and retain all the concrete washout water and solids in leak proof containers, so that this caustic material does not reach the soil surface and then migrate to surface waters or into the ground water, and (b) recycle 100 percent of the collected concrete washout water and solids. Another objective is to support the diversion of recyclable materials from landfills. Table 1 shows how concrete washout materials can be recycled and reused.

Table 1 – Recycling concrete washout materials

Uses of Recycled Materials	Concrete Washout Materials						
	Washwater	Cement fines[a]	Aggregate Fine	Aggregate Coarse	Hardened Concrete	Unused fresh concrete
Reused to washout additional mixer truck chutes or drums	X					
Reused as a ready mixed concrete ingredient	X		X[b]	X	X	
Reused as an ingredient of precast concrete products, e.g., highway barriers, retaining wall blocks, riprap	X		X	X	X	X
Reused as crushed concrete products, e.g., road base or fill			X	X	X	X
Reused to pave the yards of ready mixed concrete plants						X
Returned back to a surface water, e.g., river, lake, or estuary		X[c]				

a. Fine particles of cementitious material (e.g., Portland cement, slag cement, fly ash, silica fume)
b. Recyclable, if allowed by the concrete quality specifications
c. Treated to reduce the pH and remove metals, so it can be delivered to a municipal wastewater treatment plant, where it is treated further and then returned to a natural surface water

Washwater recycling, treatment, disposal

Washwater from concrete truck chutes, hand mixers, or other equipment can be passed through a system of weirs or filters to remove solids and then be reused to wash down more chutes and equipment at the construction site or as an ingredient for making additional concrete. A three chamber washout filter is shown in Figure 3. The first stage collects the coarse aggregate. The middle stage filters out the small grit and sand. The third stage has an array of tablets that filter out fines and reduces the pH. The filtered washwater is then discharged through a filter sock. An alternative is to pump the washout water out of the washout container (Fig 4) and treat the washwater off site to remove metals and reduce its pH, so it can be delivered to a publicly owned treatment works (POTW), also known as a municipal wastewater treatment plant, which provides additional treatment allowing the washwater to be discharged to a surface water. The POTW should be contacted to inquire about any pretreatment requirements, i.e., the National Pretreatment Standards for Prohibited Dischargers (40CFR 403.5) before discharging the washwater to the POTW. The washwater can also be retained in the washout container and allowed to evaporate, leaving only the hardened cementitious solids to be recycled.



Figure 3. *Concrete washout filter*



Figure 4. *Vacuuming washwater out of a washout container for treatment and reuse*

Solids recycling

The course aggregate materials that are washed off concrete truck chutes into a washout container can be either separated by a screen and placed in aggregate bins to be reused at the construction site or returned to the ready mixed plant and washed into a reclaimer (Fig. 5). When washed out into a reclaimer, the fine and course aggregates are separated out and placed in different piles or bins to be reused in making fresh concrete. Reclaimers with settling tanks separate cement fines from the washwater, and these fines can also be used in new concrete unless prohibited by the user's concrete quality specifications.



Figure 5. *Ready mixed truck washing out into a reclaimer*

Hardened concrete recycling

When the washwater in a construction site concrete washout container has been removed or allowed to evaporate, the hardened concrete that remains can be crushed (Fig. 6) and reused as a construction material. It makes an excellent aggregate for road base and can be used as fill at the construction site or delivered to a recycler. Concrete recyclers can be found at municipal solid waste disposal facilities, private recycling plants, or large construction sites.



Figure 6. *Crushed concrete stockpile and crusher*

Wet concrete recycling

Builders often order a little more ready mixed concrete than they actually need, so it is common for concrete trucks to have wet concrete remaining in their drum after a delivery. This unused concrete can be returned to the ready mixed plant and either (1) used to pour precast concrete products (e.g., highway barriers, retaining wall blocks, riprap), (2) used to pave the ready mixed plant's yard, (3) washed into a reclaimer, or (4) dumped on an impervious surface and allowed to harden, so it can be crushed and recycled as aggregate. Unused wet concrete should not be dumped on bare ground to harden at construction sites because this can contribute to ground water and surface water contamination.

Washout Containers

Different types of washout containers are available for collecting, retaining, and recycling the washwater and solids from washing down mixed truck chutes and pump truck hoppers at construction sites.

Chute washout box

A chute washout box is mounted on the back of the ready mixed truck. If the truck has three chutes, the following procedure is used to perform the washout from the top down: (1) after the pour is completed, the driver attaches the extension chute to the washout box, (2) the driver then rotates the main chute over the extension chute (Fig. 7) and washes down the hopper first then the main chute, (3) finally the driver washes down the top down chute and last the extension chute hanging on the box. All washwater and solids are captured in the box. After the wash down, washwater and solids are returned to the ready mixed plant for recycling. A filter basket near the top of the washout box separates out the coarse aggregates so they can be placed in a bin for reuse either at the construction site or back at the cement plant.



Figure 7. *Chute washout box*

Chute washout bucket and pump

After delivering ready mixed concrete and scraping the last of the customer's concrete down the chute, the driver hangs a washout bucket shown in Figure 8 (see red arrow) on the end of the truck's chute and secures the hose to insure no leaks. The driver then washes down the chute into the bucket to remove any cementitious material before it hardens. After washing out the chute, the driver pumps (yellow arrow points to the pump) the washwater, sand, and other fine solids from the bucket up into the truck's drum to be returned to the ready mixed plant, where it can be washed into a reclaimer. A removable screen at the bottom of the washout bucket prevents course aggregate from entering the pump. This course aggregate can also be returned to the plant and added to the coarse aggregate pile to be reused. All the materials are recycled.



Figure 8. *Chute washout bucket and pump*

Hay bale and plastic washout pit

A washout pit made with hay bales and a plastic lining is shown in Figure 9. Such pits can be dug into the ground or built above grade. The plastic lining should be free of tears or holes that would allow the washwater to escape (Fig. 10). After the pit is used to wash down the chutes of multiple ready mixed trucks and the washwater has evaporated or has been vacuumed off, the remaining hardened solids can be broken up and removed from the pit. This process may damage the hay bales and plastic lining. If damage occurs, the pit will need to be repaired and relined with new plastic. When the hardened solids are removed, they may be bound up with the plastic lining and have to be sent to a landfill, rather than recycled. Recyclers usually accept only unmixed material. If the pit is going to be emptied and repaired more than a few times, the hay bales and plastic will be generating additional solid waste. Ready mixed concrete



Figure 9. *Hay bale and plastic washout pit*

Figure 10. *Leaking washout pit that has not been well maintained*

trucks can use hay bale washout pits, but concrete pump trucks have a low hanging hopper in the back that may prevent their being washed out into bale-lined pits.

Vinyl washout container

The vinyl washout container (Fig. 11) is portable, reusable, and easier to install than a hay bale washout pit. The biodegradable filter bag (Fig. 12) assists in extracting the concrete solids and prolongs the life of the vinyl container. When the bag is lifted, the water is filtered out and the remaining concrete solids and the bag can be disposed of together in a landfill, or the hardened concrete can be delivered to a recycler. After the solids have been removed several times and the container is full of washwater, the washwater can be allowed to evaporate, so the container can be reused. The washwater can be removed more quickly by placing another filter bag in the container and spreading water gelling granules evenly across the water. In about five minutes, the water in the filter bag will turn into a gel that can be removed with the bag. Then the gel and filter bag can be disposed to together.



Figure 11. *Vinyl washout pit with filter bag*



Figure 12. *Extracting the concrete solids or gelled washwater*

Metal washout container

The metal roll-off bin (Fig. 13) is designed to securely contain concrete washwater and solids and is portable and reusable. It also has a ramp that allows concrete pump trucks to wash out their hoppers (Fig. 14). Roll-off providers offer recycling services, such as, picking up the roll-off bins after the washwater has evaporated and the solids have hardened, replacing them with empty washout bins, and delivering the hardened concrete to a recycler (Fig. 15), rather than a landfill. Some providers will vacuum off the washwater, treat it to remove metals and reduce the pH, deliver it to a wastewater treatment plant for additional treatment and subsequent discharge to a surface water. Everything is recycled or treated sufficiently to be returned to a natural surface water.



Figure 13. *Mixer truck being washed out into a roll-off bin*



Figure 14. *Pump truck using the ramp to wash out into a roll-off bin*



Figure 15. *Delivering hardened Concrete to a recycler*

Another metal, portable, washout container, which has a rain cover to prevent overflowing, is shown in Figure 16. It is accompanied by an onsite washwater treatment unit, which reduces the pH and uses a forced weir tank system to remove the coarse aggregate, fine aggregate, and cement fines. The washwater can then be reused at the construction site to wash out other mixer truck chutes and equipment. The solids are allowed to harden together and can be taken to a concrete recycler (Fig. 17) to be crushed and used as road base or aggregate for making precast products, such as retaining wall blocks. All materials are recycled.



Figure 16. *Washout container with a rain cover and onsite washwater treatment*



Figure 17. *Delivering hardened concrete to a recycler*

Siting Washout Facilities

Concrete washout facilities, such as washout pits and vinyl or metal washout containers, should be placed in locations that provide convenient access to concrete trucks, preferably near the area where concrete is being poured. However they

should not be placed within 50 feet of storm drains, open ditches, or waterbodies. Appropriate gravel or rock should cover approaches to concrete washout facilities when they are located on undeveloped property. On large sites with extensive concrete work, washouts should be placed at multiple locations for ease of use by ready mixed truck drivers. If the washout facility is not within view from the pour location, signage will be needed to direct the truck drivers.

Operating and Inspecting Washout Facilities

Concrete washout facilities should be inspected daily and after heavy rains to check for leaks, identify any plastic linings and sidewalls have been damaged by construction activities, and determine whether they have been filled to over 75 percent capacity. When the washout container is filled to over 75 percent of its capacity, the washwater should be vacuumed off or allowed to evaporate to avoid overflows. Then when the remaining cementitious solids have hardened, they should be removed and recycled. Damages to the container should be repaired promptly. Before heavy rains, the washout container's liquid level should be lowered or the container should be covered to avoid an overflow during the rain storm.

Educating Concrete Subcontractors

The construction site superintendent should make ready mixed truck drivers aware of washout facility locations and be watchful for improper dumping of cementitious material. In addition, concrete washout requirements should be included in contracts with concrete delivery companies.

Reference

NRMCA 2009. Environmental Management in the Ready Mixed Concrete Industry, 2PEMRM, 1st edition. By Gary M. Mullins. Silver Springs, MD: National Ready Mixed Concrete Association.

Websites and Videos

Construction Materials Recycling Association
www.concreterecycling.org

National Ready Mixed Concrete Association
www.nrmca.org

National Ready Mixed Concrete Research and Education Foundation
www.rmc-foundation.org

Additional information and videos on concrete washout containers and systems can be found by a web search for "concrete washout."

Photograph Credits

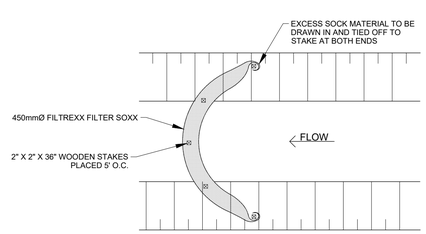
Figures 1, 2. *Mark Jenkins, Concrete Washout Systems, Inc.*
Figure 3. *Mark Shaw, Ultra Tech International, Inc.*
Figure 4. *Mark Jenkins, Concrete Washout Systems, Inc.*
Figure 5. *Christopher Crouch, CCI Consulting*
Figure 6. *William Turley, Construction Materials Recycling Association*
Figure 7. *Brad Burke, Innovative Concrete Solutions, LLC*
Figure 8. *Ron Lankester, Enviroguard*
Figures 9, 10. *Mark Jenkins, Concrete Washout Systems, Inc.*
Figures 11, 12. *Tom Card, RTC Supply*
Figures 13, 14, 15. *Mark Jenkins, Concrete Washout Systems, Inc.*
Figures 16, 17. *Rick Abney Sr., Waste Crete Systems, LLP*

Disclaimer
Please note that EPA has provided exremal links because they provide additional information that may be useful or interesting. EPA cannot attest to the accuracy of non-EPA information provided by these third-party websites and does not endorse any non'-government organizations or their products or services.

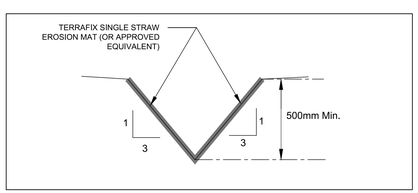
Office of Water, 4203M
www.epa.gov/npdes/pubs/concretewashout.pdf
www.epa.gov/npdes/stormwater/menuofbmps

EPA 833-F-11-006
February 2012

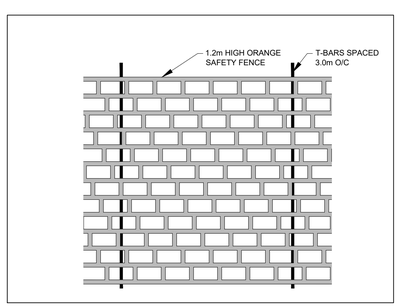
Figure B2-29: Design detail for mud mat for construction site vehicle access



FILTREXX CHECK DAM
N.T.S.



TYPICAL CUT-OFF SWALE CROSS SECTION
N.T.S.



TYPICAL CONSTRUCTION FENCE DETAIL

No.	DESCRIPTION	DATE	BY	APPRO'D. BY
	REVISIONS			
1	FIRST SUBMISSION	10/19/2021	BA	PAS
	APPROVALS			

MUNICIPAL
MANAGER OF DESIGN AND CONSTRUCTION
DATE

REGIONAL
COMMISSIONER OF PUBLIC WORKS
DIRECTOR OF DESIGN AND CONSTRUCTION

CITY OF Burlington

SALOTTO BUILDING GROUP INC.
4375 MILLCROFT PARK DR
CITY OF BURLINGTON
HALTON REGION

LICENSED PROFESSIONAL ENGINEER
P. A. SLAMA
100010210
Nov 5/21
PROVINCE OF ONTARIO

EROSION AND SEDIMENT CONTROL DETAILS

GEI Consultants
75 TIVERTON COURT, UNIT 100, MARKHAM, ONTARIO L3R4M8, 800.810.3281

DESIGN BY: B. A.	DRAWN BY: B. A.	PROJECT No.	2102761
SCALE: N.T.S.	DATE: SEPTEMBER 2021	DRAWING No.	602
		CITY FILE No.:	

NOT FOR CONSTRUCTION

File : B:\Working\ARMLAND GROUP\2102761 4375 Millcroft Park Dr\00_CAD\Design\Sheets\2102761 – ESC.dwg Date : Oct 19, 2021 – 4:01pm, Edit By : dma

Appendix C

Stormwater Management Analysis



LEGEND:

- PROPERTY LINE
- EXISTING STORM DRAINAGE AREA BOUNDARY
- EXISTING OVERLAND FLOW DIRECTION

A1PRE (STORM DRAINAGE AREA NUMBER)
0.74ha (DRAINAGE AREA IN HECTARES) 0.50 (RUNOFF COEFFICIENT)

4375 MILLCROFT PARK DRIVE
BURLINGTON, ONTARIO

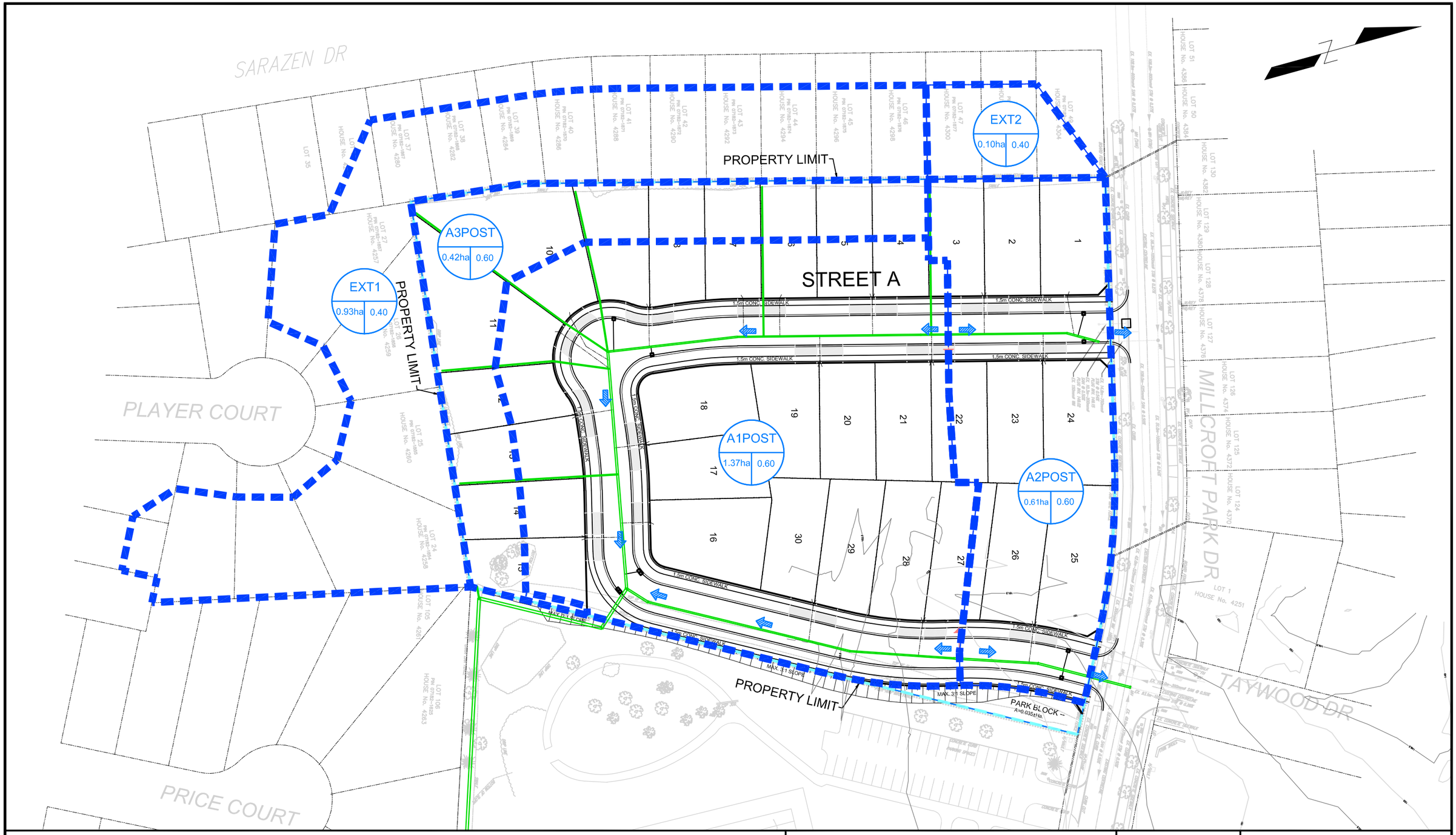
ARMLAND GROUP

GEI Consultants

PRE-DEVELOPMENT DRAINAGE AREA PLAN

2102761 | **OCTOBER 2021** | **DAP-1**

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LEGEND:

- PROPERTY LINE
- PROPOSED STORM DRAINAGE AREA BOUNDARY
- PROPOSED OVERLAND FLOW DIRECTION

A1POST (0.25ha | 0.50)

- DRAINAGE AREA IN HECTARES
- STORM DRAINAGE AREA NUMBER
- RUNOFF COEFFICIENT

4375 MILLCROFT PARK DRIVE
BURLINGTON, ONTARIO

ARMLAND GROUP

GEI Consultants

POST-DEVELOPMENT DRAINAGE AREA PLAN

2102761 | **OCTOBER 2021** | **DAP-2**

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Helen Peng

Pre Development Composite Runoff Coefficient

4375 Millcroft Park
Project #: 2102761
October 2021

Drainage Area A1

	(ha)	
Total Area:	1.80	
Composite C:	**0.75**	Former School Block
Percent Impervious	**79%**	

Drainage Area A2

	(ha)	
Total Area:	0.61	
Composite C:	**0.75**	Former School Block
Percent Impervious	**79%**	

GEI Consultants

Helen Peng

Rational Method
Pre-Development Flow Calculation

4375 Millcroft Park
Project #: 2102761
October 2021

Input Parameters

Area Number	Area (ha)	C, 2-Year	C, 25-Year	C, 50-Year	C, 100-Year	Tc (min.)
A1 Pre	1.80	0.75	0.83	0.99	0.94	10

Formula: $I = a(T+b)^c$

	a,b,c	Constants
	T	Time of concentration
	I	Rainfall intensity

Rational Method Calculations

IDF Data Set: City of Burlington
Event 2-Year
a = 681.52
b = 6.00
c = -0.7800

Area Number	A (ha)	C	AC	Tc (min.)	I (mm/h)	Q (m^3/s)	Q (L/s)
A1 Pre	1.80	0.75	1.35	10	78.4	0.293	293.1

IDF Data Set: City of Burlington
Event 5-Year
a = 802.04
b = 5.00
c = -0.7640

Area Number	A (ha)	C	AC	Tc (min.)	I (mm/h)	Q (m^3/s)	Q (L/s)
A1 Pre	1.80	0.75	1.35	10	101.3	0.379	378.9

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Post Development Site Imperviousness

4375 Millcroft Park
Project #: 2102761
October 2021

Combined Drainage Areas

		Runoff C			
	(ha)	2-year to 10-year	25-year	50-year	100-year
A1 Post	1.73	0.60	0.66	0.72	0.75
A3 Post + EXT 1	1.35	0.46	0.51	0.55	0.58

A1 Post

	(ha)	
Total Area:	1.37	
Imperviousness:	57%	
Runoff Coefficient	0.60	Single Family, Residential

A2 Post

	(ha)	
Total Area:	0.61	
Imperviousness:	57%	
Runoff Coefficient	0.60	Single Family, Residential

A3 Post

	(ha)	
Total Area:	0.42	
Imperviousness:	57%	
Runoff Coefficient	0.60	Single Family, Residential

EXT1

	(ha)	
Total Area:	0.93	
Imperviousness:	29%	
Runoff Coefficient	0.40	Rear Lot

EXT2

	(ha)	
Total Area:	0.10	
Imperviousness:	29%	
Runoff Coefficient	0.40	Rear Lot

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Modified Rational Method - 100-Year Storm
Site Flow and Storage Summary

4375 Millcroft Park
Project #: 2102761
October 2021

A3 Post + EXT1 5-Year Capture

Drainage Areas: A3 Post + EXT 1

Area=	1.35	ha
C =	0.46	
AC1=	0.62	
Tc =	10.0	min
Time Increment =	5.0	min

A1 Post 100-Year Capture

Drainage Area:	A1 Post	
Area =	1.37	ha
C =	0.75	*
AC2 =	1.03	
Tc =	10.0	min
Time Increment =	5.0	min

*Scaling factor of 1.25 applied to C

Peak Flow and Storage Summary

Total Allowable Flow =	**378.9**	**L/s**
Controlled Release Rate via Orifice (R) =	**376.7**	**L/s**
Max. Required Storage Volume =	**159.7**	**m^3**
Provided Storage Volume =	**170.0**	**m^3**

	5-Year Design Storm	100-Year Design Storm
A =	802.04	1281.34
B =	5.00	5.00
C =	0.764	0.761
I =	I = A/(T+B)^C	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Time (min)	**Rainfall Intensity (mm/hr)**	**Rainfall Intensity (mm/hr)**	**5-Year Storm Runoff (m^3/s)**	**5-Year Runoff Volume (m^3)**	**100-Year Storm Runoff (m^3/s)**	**100 Year Runoff Volume (m^3)**	**Total Storm Runoff Volume into Pipes (m^3)**	**Allowable Release Volume to SWM Pond (m^3)**	**Storage Volume (m^3)**
			(4) = AC1*(2) / 360	**(5) = 60*(1)*(4)**	**(6) = AC2*(3) / 360**	**(7) = 60*(1)*(6)**	**(8) = (5) + (7)**	**(9) = 60*(1)*(R)/1000**	**(10) = (8) - (9)**
10.0	101.3	163.2	0.176	105.4	0.467	280.3	385.7	226.0	159.7
15.0	81.3	131.1	0.141	126.9	0.375	337.8	464.7	339.0	125.6
20.0	68.6	110.6	0.119	142.7	0.317	380.0	522.7	452.0	70.7
25.0	59.7	96.3	0.103	155.1	0.276	413.5	568.6	565.0	3.6
30.0	53.0	85.6	0.092	165.5	0.245	441.3	606.8	678.0	0.0
35.0	47.9	77.4	0.083	174.3	0.221	465.1	639.4	791.1	0.0
40.0	43.8	70.7	0.076	182.1	0.202	485.9	668.1	904.1	0.0
45.0	40.4	65.3	0.070	189.0	0.187	504.6	693.6	1017.1	0.0
50.0	37.5	60.7	0.065	195.3	0.174	521.4	716.7	1130.1	0.0
55.0	35.1	56.8	0.061	201.0	0.163	536.8	737.8	1243.1	0.0
60.0	33.0	53.5	0.057	206.3	0.153	551.0	757.2	1356.1	0.0
65.0	31.2	50.5	0.054	211.1	0.145	564.2	775.3	1469.1	0.0
70.0	29.6	47.9	0.051	215.7	0.137	576.5	792.2	1582.1	0.0
75.0	28.2	45.6	0.049	220.0	0.131	588.1	808.1	1695.1	0.0
80.0	26.9	43.6	0.047	224.0	0.125	599.0	823.0	1808.1	0.0
85.0	25.8	41.7	0.045	227.9	0.119	609.3	837.2	1921.1	0.0
90.0	24.7	40.1	0.043	231.5	0.115	619.2	850.7	2034.1	0.0
95.0	23.8	38.5	0.041	235.0	0.110	628.6	863.5	2147.1	0.0
100.0	22.9	37.1	0.040	238.3	0.106	637.5	875.8	2260.2	0.0
105.0	22.1	35.8	0.038	241.5	0.103	646.1	887.6	2373.2	0.0
110.0	21.4	34.6	0.037	244.5	0.099	654.4	898.9	2486.2	0.0
115.0	20.7	33.5	0.036	247.5	0.096	662.3	909.8	2599.2	0.0
120.0	20.1	32.5	0.035	250.3	0.093	670.0	920.3	2712.2	0.0
125.0	19.5	31.5	0.034	253.0	0.090	677.4	930.4	2825.2	0.0
130.0	18.9	30.7	0.033	255.7	0.088	684.5	940.2	2938.2	0.0
135.0	18.4	29.8	0.032	258.2	0.085	691.4	949.7	3051.2	0.0
140.0	17.9	29.0	0.031	260.7	0.083	698.2	958.9	3164.2	0.0
145.0	17.4	28.3	0.030	263.1	0.081	704.7	967.8	3277.2	0.0
150.0	17.0	27.6	0.029	265.5	0.079	711.0	976.5	3390.2	0.0
155.0	16.6	26.9	0.029	267.7	0.077	717.2	984.9	3503.2	0.0
160.0	16.2	26.3	0.028	269.9	0.075	723.2	993.1	3616.2	0.0
165.0	15.9	25.7	0.027	272.1	0.074	729.0	1001.1	3729.3	0.0
170.0	15.5	25.2	0.027	274.2	0.072	734.7	1008.9	3842.3	0.0
175.0	15.2	24.6	0.026	276.3	0.071	740.3	1016.5	3955.3	0.0
180.0	14.9	24.1	0.026	278.3	0.069	745.7	1024.0	4068.3	0.0

GEI Consultants

Helen Peng

Orifice Control

4375 Millcroft Park
Project #: 2102761
October 2021

Orifice Equation

$$Q = C \times A \times \sqrt{2 \times g \times h}$$

Storm Event	Orifice Coefficient	Diameter of Orifice (mm)	Orifice Invert (m)	Headwater Elevation (m)	Total Head (m)	Area of Orifice (m^2)	Release Rate (L/s)
100-Year	0.61	300.00	143.37	147.41	3.89	0.07	377

GEI Consultants

Water Balance/Volume Control & Infiltration Trench Calculations

4375 Millcroft Park
Project #: 2102761
October 2021

Water Balance Criteria: Recharge 5mm depth of rainfall from the site to underlying groundwater system via infiltration.

Site Area =	24,360	m^2	
Target Rainfall Depth Detained on-site =	5.0	mm	
Total Water Balance Volume Required =	**122**	**m^3**	

Top Soil Infiltration Volume

Total Residential Area	17737	m^2	
Total Rear Lot Area	8868	m^2	*(Total Residential Area / 2)*
Total Roof Area	3750	m^2	*(Half Single Detached Roof Area x 30 Lots)*
Total Landscaped Rear Lot Area	5118	m^2	*(Total Rear Lot Area - Total Roof Area)*

Soil Properties

Topsoil Depth	0.3	m
Void Ratio	0.1	
Volume Provided via Topsoil	**154**	**m^3**

Appendix D

Water Demand Calculations

5-200 Connie Cres. Concord ON L4K 1M1 Phone 416-883-9777 Fax 905-303-6977

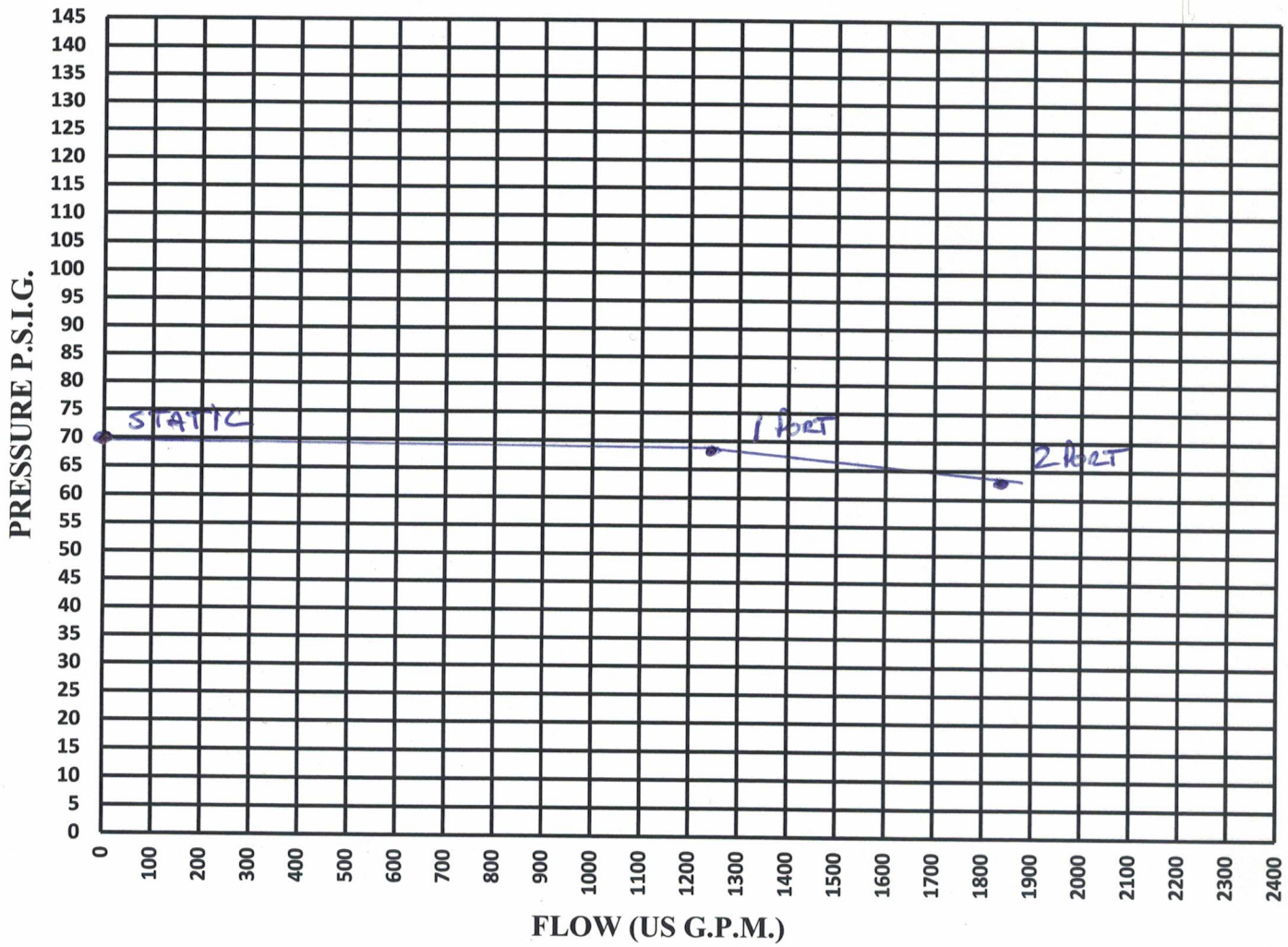
FLOW TEST REPORT

LOCATION OF RESIDUAL HYDRANT 4360 - 6 House Millcroft Park Dr McAuley 3-port

LOCATION OF FLOW HYDRANT 4374 Millcroft Park Dr CV - 3port.

TIME OF TEST 9:20AM WATERMAIN SIZE 300 mm STATIC PRESSURE 70

NUMBER OF OUTLETS	PITOT PRESSURE	FLOW (US G.P.M.)	RESIDUAL PRESSURE
One 2 ½" hydrant port	53	1241	68
Two 2 ½" hydrant port	30	1834	64



PROJECT LOCATION 4375 Millcroft Park Dr. - Burlington DATE Sept 27/21

COMPANY NAME SALOTTO Building Corp. AQUAZITION EMPLOYEE Earl Rowe

(PRINT NAME) C/O Armland Group (PRINT NAME)

DOMESTIC WATER DEMAND

GEI Consultants

Project Name:	Salotto Building Corp.	Project No.	2102761
Prepared by:	D. Ma		
Date:	October 4, 2021		

Note:
Based on the Town of Newmarket Design Criteria

	Site Component	Block 133, 20M-811					
Residential Occupancy Data	Single Family (Area - ha)	2.44					
	People per ha	*55*					
Commercial Occupancy Data							

Unit Quantity by Site Component	Water Demand	Units	Equivalent Population (persons)					
Residential Occupancies								
Apartments, Condominiums, Other Multi-family Dwellings	275	L/person/day	134.2	-	-	-	-	-
Not used	-	-	134.2	-	-	-	-	-
Not used	-	-	134.2	-	-	-	-	-
Other Occupancies			**Flow Rates (L/d)**					
Not used	-	-	-	-	-	-	-	-
Not used	-	-	-	-	-	-	-	-
Not used	-	-	-	-	-	-	-	-

		Daily Flow Rate (L/d)					
Residential Occupancies							
Apartments, Condominiums, Other Multi-family Dwellings		36,905.00	36,905.00				
Not used							
Not used							
Other Occupancies							
Not used		0	0				
Not used		0	0				
Not used		0	0				
		Total Flow					
Average day (L/d)		**36,905**	36,905				
Average day (L/s)		**0.43**	0.43				
Max. day (L/s)		**0.96**	0.96				
Min. hour (L/s)		**0.17**	0.17				
Peak hour (L/s)		**2**	1.71				

Peaking Factors			
Land Use	Minimum Hour	Peak Hour	Maximum Day
Residential	0.4	4.00	2.25
Commercial / Retail			

GEI Consultants

Watermain Residual Pressure
Fire Flow + Max. Daily Demand

Project Name:	Salotto Building Corp.
Project No.:	2102716
Prepared by:	D. Ma
Date:	October 4, 2021

$$Q = 0.278 \times C \times D2.63 \times (\frac{Hf}{L})0.54$$

Specified Data		
L = length of pipe	170	m
C = Hazen-Williams roughness constant	130	
C=130 for 100 dia to 400 dia		
Q = Flow (Max Day plus Fire Flow)	134.7	L/s
D = Watermain Diameter	200	mm
V = Velocity	4.29	m/s

1.

Calculated Pressure Loss - Friction				
H_f = Friction Head loss (m of head per 100 m pipe)	8.19	m		
H_f = Friction Head loss (kPa per 100 m pipe)	80.34	kPa		
Head loss (m of head)	13.92	m		
Head loss (due to friction)	**136.58**	**kPa**	**19.81**	psi

2.

Pressure Loss - Water Meter & Backflow Preventer				
H_f = Head Loss (DCVA Performance Curve)	**0.00**	**kPa**	**0.00**	psi
H_f = Head Loss (Water Meter Performance Curve)	**0.00**	**kPa**	**0.00**	psi

3.

Pressure Loss - Connection				
K-Value (Tee to site)	1.00			
Head loss (m of head)[A]	**0.94**	**kPa**	**0.14**	psi

[A]Head Loss calculated by $KV^2/(2g)$

4.

Pressure Change Due to Elevation				
Ground Elevation at Existing Hydrant	153.00	m		
Ground Elevation at Water Connection Point	150.70	m		
Elevation Change	-2.30	m		
Head loss (m H20)	-2.30	m		
Head loss	**-22.56**	kPa	**-3.27**	psi
Static Pressure at Existing Hydrant	**482.63**	KPa	**70**	psi
Hydraulic head at Existing Hydrant	**202.29**	m		

3.

Residual Pressure at Furthest Hydrant for Max Day + Fire Flow				
Pressure at Water Connection Point	**368.62**	KPa	**53.5**	psi

GEI Consultants

Watermain Residual Pressure
Minimum Hourly Demand

Project Name:	Marianneville Woodsprings Ltd.
Project No.:	2101715
Prepared by:	D. Ma
Date:	October 4, 2021

$$Q = 0.278 \times C \times D2.63 \times (\frac{Hf}{L})0.54$$

Specified Data		
L = length of pipe	170	m
C = Hazen-Williams roughness constant	130	
C=130 for 100 dia to 400 dia		
Q = Flow (Minimum Hour)	0.17	L/s
D = Watermain Diameter	200	mm
V = Velocity	0.01	m/s

1.

Calculated Pressure Loss - Friction				
H_f = Friction Head loss (m of head per 100 m pipe)	0.00	m		
H_f = Friction Head loss (kPa per 100 m pipe)	0.00	kPa		
Head loss (m of head)	0.00	m		
Head loss (due to friction)	**0.00**	**kPa**	**0.00**	psi

2.

Pressure Loss - Water Meter & Backflow Preventer				
H_f = Head Loss (DCVA Performance Curve)	**0.00**	**kPa**	**0.00**	psi
H_f = Head Loss (Water Meter Performance Curve)	**0.00**	**kPa**	**0.00**	psi

3.

Pressure Loss - Connection				
K-Value for Entrance	1.00			
Head loss (m of head)[A]	**0.00**	**kPa**	**0.00**	psi

[A]Head Loss calculated by $KV^2/2g$

4.

Pressure Change Due to Elevation				
Ground Elevation at Existing Hydrant	153.00	m		
Ground Elevation at Water Connection Point	150.70	m		
Elevation Change	-2.30	m		
Head loss (m H20)	-2.30	m		
Head loss	**-22.56**	kPa	**-3.27**	psi
Static Pressure at Existing Hydrant	**482.63**	KPa	**70**	psi
Hydraulic head at Existing Hydrant	**202.29**	m		

5.

Residual Pressure at Furthest Hydrant for Max Day + Fire Flow				
Pressure at Water Connection Point	**505.20**	KPa	**73.3**	psi