Appendix A – Civil Drawing Set

1. C00001 – General Notes & Detail Reference
2. CU1101 – Servicing Plan
3. CG1101 – Grading Plan (North)
4. CG1102 – Grading Plan (South)
5. CG1103 – Ponding Plan
6. CE1101 – Sediment and Erosion Plan
7. CD1101 – Details Plan 1
8. CD1102 – Details Plan 2
9. CM1101 – Foundation Drainage Plan

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE PROEJCT AGREEMENT (PA) AND ALL CODES, BY-LAWS, REGULATIONS AND STANDARDS INCLUDING ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD), THE NATIONAL BUILDING CODE, ONTARIO BUILDING CODE, THE "OCCUPATIONAL HEALTH AND SAFETY ACT", AS APPLICABLE.
2. ALL TRENCHING AND TUNNELING WORK SHALL BE DONE IN ACCORDANCE WITH THE ONTARIO HEALTH AND SAFETY ACT AND REGULATIONS.
3. THE CONTRACTOR IS RESPONSIBLE TO CO-ORDINATE HIS SCHEDULE AND WORK ACTIVITIES WITHIN THE AREA OF THE CONTRACT.
4. DO NOT USE LOCAL STREETS OR GRAVEL ROADS FOR STORAGE OF CONSTRUCTION MATERIAL UNLESS AUTHORIZED, IN WRITING, BY LOCAL MUNICIPALITY, ALL AUTHORITIES HAVING JURISDICTION AND MOBILINX CONSTRUCTION.
5. ALL TRENCH EXCAVATIONS SHALL BE BACKFILLED AS PER CONTRACT DOCUMENTS INCLUDING SPECIFICATIONS AND THE DESIGN DRAWINGS.
6. ALL EXCESS EXCAVATED MATERIAL SHALL BE DISPOSED OFF-SITE.
7. CONSTRUCTION LAYDOWN AREAS INCLUDING PARKING, TEMPORARY OFFICES, AND MATERIALS STORAGE SHALL HAVE A MINIMUM 150mm DEPTH 19mm CRUSHED STONE SURFACE. MAINTAIN EXISTING DRAINAGE. UPON COMPLETION OF CONTRACT, RESTORE AREA TO ORIGINAL CONDITION OR AS PER CONTRACT DOCUMENTS.
8. DURING NON-CONSTRUCTION PERIODS, ALL OPEN EXCAVATIONS ALONG THE STREETS TO BE COMPLETELY COVERED WITH ADEQUATE TIMBER OR STEEL BEAMS SUPPORTING STEEL PLATES DESIGNED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN ONTARIO AND SUBMITTED TO THE ENGINEER FOR REVIEW.
9. CONTRACTOR SHALL PREVENT CONSTRUCTION DEBRIS FROM ENTERING EXISTING CATCH BASINS, MAINTENANCE HOLES AND STORM AND SANITARY SEWERS WITHIN THE AREA OF THE CONTRACT. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL, IN A TIMELY MANNER, OF ANY CONSTRUCTION DEBRIS THAT ENTER THE EXISTING CATCH BASINS, MAINTENANCE HOLES AND STORM AND SANITARY SEWERS.
10. ACCESS TO PRIVATE AND PUBLIC PROPERTIES SHALL BE MAINTAINED AT ALL TIMES.
11. BLASTING IS NOT PERMITTED.
12. ORDER OF PRECEDENCE OF STANDARD DRAWINGS IS FIRSTLY THE AGENCY'S ENGINEERING STANDARDS, SECONDLY THE CITY OF OTTAWA AS APPICABLE, STANDARD DRAWINGS, AND THIRDLY ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD).
13. LENGTHS OF SERVICE LINES INDICATED ON DRAWINGS ARE NOT EXACT. THE CONTRACTOR SHALL CONFIRM TOTAL LENGTHS AND PROVIDE THE FULL EXTENT OF LINES (INCLUDING REQUIRED CONNECTIONS) EVEN IF ACTUAL LENGTHS VARY FROM DESIGN VALUES.
14. THE CONTRACTOR SHALL COORDINATE ITS SCHEDULE AND WORK ACTIVITIES WITH ALL OTHER STAKEHOLDERS IN THE PROJECT AREA.
15. PROVIDE FOR THE PROTECTION AND MAINTENANCE OF ALL EXISTING UTILITIES DURING EXECUTION OF WORK.
16. GRANULAR MATERIAL, USED FOR BACKFILL WHERE INDICATED ON THE DESIGN DRAWINGS, SHALL BE PLACED IN LAYERS 150mm IN DEPTH MAXIMUM AND BE COMPACTED TO 100% S.P.M.D.D. AND AS NOTED IN THE SPECIFICATIONS.
17. CONTRACTOR SHALL MAINTAIN FLOW IN ALL EXISTING SERVICES DURING CONSTRUCTION.
18. BENCHMARKS TO BE OBTAINED FROM THE CONTRACT DRAWINGS.
19. CATCH BASINS TO BE MAINTAINED DURING CONSTRUCTION UNLESS OTHERWISE SPECIFIED.
20. ALL MATERIALS AND CONSTRUCTION IS TO BE IN ACCORDANCE WITH THE CURRENT CITY OF OTTAWA STANDARD DRAWINGS & SPECIFICATIONS OR OPSD / OPSS IF CITY DRAWINGS AND SPECIFICATIONS DO NOT APPLY.
21. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING SERVICES AND UTILITIES PRIOR TO CONSTRUCTION AND SHALL PROTECT AND ASSUME RESPONSIBILITY OF ALL UTILITIES WHETHER OR NOT SHOW ON THESE DRAWINGS.
22. ALL SEWER SERVICE LATERALS DEEPER THAN 5.0m REQUIRE A CONTROLLED SETTLEMENT JOINT.
23. ALL EXISTING SITE SEWERS THAT WILL BE DECOMMISSIONED WILL BE REMOVED FROM SITE.

1.0 SANITARY

1.1 ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE ONTARIO BUILDING CODE.
1.2 ALL SANITARY SEWERS AND BUILDING SERVICES TO BE CSA CERTIFIED PVC SDR 35, BELL AND SPIGOT TYPE, WITH ELSATOMERIC GASKET AS PER OPSS 1841 AND CSA B182.2 M1990. ONLY FACTORY FITTINGS TO BE USED, SEWER TO BE INSTALLED AS PER OPSD 1005.01.
1.3 MINIMUM DEPTH OF COVER FOR SANITARY SEWER MAINS AND LATERALS IS 1.5m.
1.4 SANITARY LATERAL TO BE CONNECTED TO EXISTING SEWER WITH WYE FITTING AND A LONG RADIUS BEND.
1.5 CONTRACTOR TO VERIFY EXISTING SANITARY PIPE CONDITION, LOCATION, AND ELEVATION PRIOR TO CONSTRUCTION, AND TO PROVIDE GRAVITY DRAIN FOR PROPOSED BUILDING BASEMENT LEVELS.
1.6 EXISTING SANITARY SEWER SERVICES PROPOSED FOR REMOVAL SHALL BE DISCONNECTED AND ABANDONED AT THE MAIN (UNLESS OTHERWISE STATED) TO THE SATISFACTION OF CITY OF OTTAWA. A NOTIFICATION OF 48 HRS IN ADVANCED SHALL BE PROVIDED TO THE CITY OF OTTAWA PRIOR TO ANY CONSTRUCTION WORKS.

2.0 WATER

2.1 ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE ONTARIO BUILDING CODE.
2.2 WATERMAIN PIPE AND SERVICES TO BE PVC OR COPPER AS PER ONTARIO BUILDING CODE. ALL PIPE AND FITTINGS SHALL BE CERTIFIED CSA B137.3. PROVIDE A MINIMUM COVER OF 2.4m AND INSTALL AS PER OPSD 1102.02 TYPE 2. PROVIDE A MINIMUM OF 0.5m VERTICAL SEPARATION BETWEEN WATERMAIN CROWN AND SEWER INVERT AT ALL CROSSINGS.
2.3 WATER SERVICE TIE-IN (LIVE TAP) TO BE PERFORMED BY AUTHORIZED PERSONNEL AS PER APPROVAL OF CITY OF OTTAWA. ALL SITE WORKS FOR COMPLETION OF LIVE TAP ARE TO BE PERFORMED BY THE CITY, CONTRACTOR TO BACKFILL AND PROVIDE RESTORATIONS.
2.4 ALL VALVES TO COMPLY WITH CITY OF OTTAWA DESIGN GUIDELINES
2.5 THE PROPOSED WATER SERVICE PROVIDES DOMESTIC WATER SUPPLY ONLY. ALL PROPOSED BUILDING FIRE WATER SUPPLY AND PROTECTION MEASURES/SPRINKLER SYSTEMS ARE TO BE DESIGNED IN ACCORDANCE WITH BUILDING CODE REQUIREMENTS.
2.6 A NOTIFICATION OF 48 HRS IN ADVANCED SHALL BE PROVIDED TO CITY OF OTTAWA PRIOR TO ANY CONSTRUCTION WORKS.
2.7 WATER SERVICE LINE CONNECTION FROM WATERMAIN SHALL BE PVC DR18, AWWA C900 w/ STANDARD GATE VALVE SHUT OFF LOCATED AT PROPERTY LINE.
2.8 ALL CONNECTIONS TO EXISTING WATERMAINS ARE TO BE COMPLETED BY CITY FORCES. CONTRACTOR IS TO EXCAVATE, BACKFILL, COMPACTAND REINSTATE.

3.0 WATER SERVICE NOTE

3.1 WATER SERVICE LINE CONNECTION FROM WATERMAIN SHALL BE PVC DR18, AWWA C900 w/ STANDARD GATE VALVE SHUT OFF LOCATED AT PROPERTY LINE.

4.0 STORM

4.1 ALL STORM SEWER MAINS TO BE CSA CERTIFIED HDPE UNLESS OTHERWISE APPROVED/NOTED. ALL SEWERS TO BE INSTALLED AS PER MANUFACTURERS INSTRUCTIONS, USING ONLY FACTORY FITTINGS.
4.2 STORM MAINTENANCE HOLES TO BE AS PER OPSD 701.01 FOR 1.2mØ, OPSD 701.012 FOR 1.8mØ, OPSD 701.013 FOR 2.4mØ, ALL c/w BENCHING.
4.3 ALL CATCH BASINS TO BE AS PER OPSD 705.01, FRAME & GRATE AS PER 400.01, LEAD TO BE HDPE
4.4 STORM MH FRAMES AND COVERS TO BE OPEN TYPE, AS PER OPSD 401.01 TYPE B. CONTRACTOR TO INSTALL FILTER CLOTH UNDER STORM MH COVERS UNTIL THE BASE COURSE OF ASPHALT IS APPLIED.
4.5 STRAW BALE CHECK DAMS SHALL BE PLACED AROUND CB'S TEMPORARILY UNTIL SITE VEGETATION HAS BEEN STABLIZED.
4.6 ALL CB LEADS TO BE AT LEAST 0.5m FROM WATER AND SANITARY SEWER MAIN.
4.7 ALL PROPOSED CATCH BASIN COVER FRAMES (CB1, CB2 & CB3) LOCATED IN THE BIOSWALE NEED TO BE ANCHORED DIRECTLY TO THE TOP OF THE PRECAST CONCRETE AS PER S.P. No F-4070 TO PREVENT DISPLACEMENT.

TEMPORARY EROSION AND SEDIMENT CONTROLS

1. INSTALL SILT FENCE AT THE DOWNSLOPE SIDE OF DISTURBED AREAS AND SNOW FENCE ALONG PERIMETER OF THE DEVELOPMENT SITE, PRIOR TO THE START OF CONSTRUCTION.
2. STOCKPILE TOPSOIL AT DESIGNATED LOCATIONS NEAR THE NORTH-EAST REGION OF THE SITE. STOCKPILES WILL BE CONTAINED BY SILT FENCES ON THE DOWNSLOPE SIDE.
3. TEMPORARY SWALES WITH CHECK DAMS ARE TO BE CONSTRUCTED PRIOR TO THE BEGINNING OF SITE GRADING.
4. THE ACCUMULATED SILT SHALL BE REMOVED FROM ALL SEDIMENT CONTROL DEVICES AS REQUIRED DURING CONSTRUCTION AND DISPOSED IN THE LOCATIONS APPROVED BY THE CITY AND CRCA.
5. ALL EXPOSED SOILS ARE TO BE STABILIZED AND VEGETATED AS SOON AS POSSIBLE USING SEED AND MULCH APPLICATION ON 100mm OF TOPSOIL, AS DIRECTED BY THE ENGINEER.
6. ADDITIONAL EROSION/SEDIMENT CONTROLS MAY BE REQUIRED ON SITE AS DETERMINED BY THE ENGINEER.
7. NO CONSTRUCTION ACTIVITY/MACHINERY SHALL INTRUDE BEYOND THE SILT/SNOW FENCE OR PROPERTY LIMIT. EXCEPT, WHERE NECESSARY TO COMPLETE THE WORKS. ALL INTRUSIONS ARE TO BE KEEP TO A MINIMUM AND MUST BE APPROVED WITH THE ENGINEER PRIOR TO INTRUSION BEYOND SILT FENCE/PROPERTY LIMITS. ALL CONSTRUCTION VEHICLES SHALL ENTER AND LEAVE THE SITE VIA DESIGNATED ENTRANCES.
8. ALL REGRADED AREAS THAT ARE NOT OCCUPIED BY DWELLINGS, ROADS, SIDEWALKS, DRIVEWAYS, PARKS AND OTHER SERVICES SHALL BE COVERED BY 100mm TOPSOIL, AND SODDED/SEEDED IMMEDIATELY AFTER COMPLETION OF FINAL GRADING OPERATIONS, AS DIRECTED BY THE ENGINEER.
9. ALL TEMPORARY EROSION AND SEDIMENT CONTROLS MUST BE INSTALLED PRIOR TO THE COMMENCEMENT OF SITE GRADING, MUST BE INSPECTED ON A REGULAR BASIS AND AFTER EVERY RAINFALL EVENT, AND MUST BE CLEANED AND MAINTAINED AS REQUIRED TO PREVENT THE MIGRATION OF SEDIMENT FROM THE SITE.
10. ALL TEMPORARY EROSION AND SEDIMENT CONTROLS MUST BE REMOVED AFTER CONSTRUCTION ONCE THE DEVELOPMENT SITE HAS BEEN STABILIZED TO THE CITY'S SATISFACTION. ALL AREAS DISTURBED BY EROSION OR SEDIMENT CONTROL DEVICES ARE TO BE RESTORED WITH 100mm TOPSOIL AND SODDED/SEEDED AFTER CONSTRUCTION.
11. THE CONTRACTOR SHALL KEEP PUBLIC ROADWAYS FREE OF DEBRIS DURING CONSTRUCTION. ANY MATERIAL TRACKED FROM THE SITE SHALL BE PROMPTLY REMOVED FROM ROADWAYS AT THE CONTRACTOR'S EXPENSES.
12. PROPOSED WORKS WILL BE OCCURRING WITHIN THE REGULATED FLOOD PLAIN, THEREFORE IT IS IMPORTANT TO MONITOR THE WEATHER FOR LARGE STORM EVENTS BEFORE COMMENCING WORK.
13. CONSTRUCTION ACTIVITIES, INCLUDING MAINTENANCE PROCEDURES, WILL BE CONTROLLED TO PREVENT THE ENTRY OF PETROLEUM PRODUCTS, DEBRIS, RUBBLE, CONCRETE OR OTHER DELETERIOUS SUBSTANCE INTO THE EXISTING WATERCOURSE(S). VEHICULAR REFUELING AND MAINTENANCE WILL BE CONDUCTED 30 METERS FROM EXISTING WATERCOURSE.
14. ALL CONSTRUCTION MATERIALS, EQUIPMENT, VEHICLES AND MACHINERY ARE TO BE STORED OUTSIDE THE FLOODPLAIN LIMITS.
15. SILT FENCE TO BE ERECTED PRIOR TO EARTH WORKS BEING COMMENCED. SILT FENCE TO BE MAINTAINED UNTIL VEGETATION IS ESTABLISHED OR UNTILSTART OF SUBSEQUENT PHASE.
16. FABRIC TO BE PLACED AND MAINTAINED UNDER COVER OF ALL CATCHBASINS. GEOTEXTILE FABRIC IN STREET CBS TO REMAIN UNTIL ALL CURBS ARE CONSTRUCTED. GEOTEXTILE FABRIC IN RYCBS TO REMAIN UNTIL VEGETATION IS ESTABLISED. ALL CATCHBASINS TO BE REGULARLY INSPECTED AND CLEANED, AS NECESSARY, UNTIL SOD AND CURBS ARE CONSTRUCTED.
17. CONTRACTOR IS RESPONSIBLE TO KEEP THE ROADS FREE AND CLEAN FROM MUD OR DEBRIS.
18. THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATERCOURSE, DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
19. SEDIMENT AND EROSION CONTROL MEASURES MAY BE MODIFIED IN THE FIELD AT THE DISCRETION OF THE CITY OF OTTAWA SITE INSPECTOR OR CONSERVATION AUTHORITY.

GENERAL NOTES FOR LOT GRADING

1. ALL LOTS AND BLOCKS FOR PRIVATE USE ON THE LANDS CORRESPONDING TO THIS DESIGN ARE TO BE DEVELOPED IN ACCORDANCE WITH THE PLAN DETAILS AND THESE NOTES.
2. THE DEVELOPER SHALL NOT BE CONSIDERED RESPONSIBLE TO THE CONTRACTOR IN ANY RESPECT FOR THE AMOUNT OF GRADING OR EARTHWORK REQUIRED TO BE PERFORMED BY THE CONTRACTOR DUE TO THE INFORMATION PROVIDED ON THESE DRAWINGS EXCEPT WHERE REQUIRED TO PROMOTE INTERIM DRAINAGE.
3. ALL GROUND SURFACES SHALL BE EVENLY GRADED WITHOUT PONDING AREAS AND WITHOUT LOW POINTS EXCEPT WHERE APPROVED SWALES ARE PROVIDED.
4. THE CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE ALONG SIDE LOT LINES AS REQUIRED TO MAINTAIN THE INTENT OF THE GRADING PLAN. THE CONTRACTOR SHALL COMPLETE THE DRAINAGE SWALES IN THE LOCATIONS AND TO THE GRADES AND ELEVATIONS, DEPTHS AND SECTIONS SPECIFIED ON THE PLAN, PRIOR TO FINAL LANDSCAPING BY THE CONTRACTOR. THE CONTRACTOR SHALL ENSURE THAT THE REQUIRED SWALES ARE CONSTRUCTED IN ACCORDANCE WITH THE GRADING PLAN.
5. ANY EMBANKMENT REQUIRED FOR INTERNAL GRADING IS TO BE COMMENCED ALONG THE INSIDE EDGE OF THE PROPERTY.
6. THE GRADING OF ALL LOTS AND BLOCKS IS TO BE PERFORMED TO PROVIDE FINISHED PERIMETER SURFACES WHICH ARE FLUSH WITH GIVEN STREET LINE, REAR AND SIDE LINE ELEVATIONS.
7. FINAL PERIMETER GRADES FOR A LOT OR BLOCK WHERE NOT OTHERWISE SHOWN HEREON SHALL BE COINCIDENT WITH THE ADJOINING PERIMETER GRADES OF AN ADJACENT LOT OR BLOCK WHICH SHALL HAVE BEEN PREVIOUSLY ESTABLISHED BY, OR CONSTRUCTED IN ACCORDANCE WITH A MUNICIPAL SITE PLAN APPROVAL OR DEVELOPER GRADING APPROVAL.
8. MAXIMUM LOT OR BLOCK GRASS SURFACE GRADE AT ANY LOCATION SHALL BE 8.0% WITH EMBANKMENTS (3:1 MAX.) OR RETAINING STRUCTURES PROVIDED AS REQUIRED TO TAKE UP GRADE DIFFERENTIALS IN EXCESS OF SUCH SLOPES.
9. EMBANKMENTS FORMED DURING THE GRADING OF LOTS AND BLOCKS SHALL HAVE THE FOLLOWING MAXIMUM GRADES:
   (A) ADJACENT TO DRIVEWAYS OR SWALE SIDE SLOPES - 4:1 MAXIMUM
   (B) ELSEWHERE - 3:1 MAXIMUM
10. MAXIMUM DRIVEWAY GRADES TO BE 10.0%. MAXIMUM PARKING AREA PAVEMENT GRADES TO BE 6%.
11. UNLESS OTHERWISE INDICATED, THE LOT LINE AND CORNER ELEVATIONS SHOWN HEREON ARE GENERALLY THE MINIMUM ELEVATIONS FOR THE SPECIFIED DRAINAGE PATTERN. ANY ALTERATIONS REQUIRE THE WRITTEN APPROVAL OF THE DESIGN ENGINEER.
12. GIVEN THE PROPOSED BUILDING GRADES MAY BE RAISED TO COMPENSATE FOR DIFFERENCES BETWEEN ASSUMED AND ACTUAL BUILDING DIMENSIONS IN ACCORDANCE WITH THE ESTABLISHED CRITERIA FOR THE DRAINAGE PATTERN. REAR SPECIFIED BUILDING GRADE TO BE ESTABLISHED BY CONTRACTOR TO SUIT BUILDING TYPE HOWEVER ALL GRADING REQUIREMENTS IDENTIFIED ON THIS PLAN AND AS REQUIRED BY THE MUNICIPALITY SHALL BE CONFORMED TO.
13. GRADING AND SODDING OF ADJACENT ROADWAY BOULEVARDS WILL BE PERFORMED BY THE CONTRACTOR IN ACCORDANCE WITH MUNICIPAL SPECIFICATIONS.
14. CONTRACTOR IS RESPONSIBLE TO KEEP THE ROADS FREE AND CLEAN FROM MUD OR DEBRIS.

ENVIRONMENTAL NOTES

1. THE CONTRACTOR SHALL SUPPLY AND INSTALL ALL EROSION AND SEDIMENT CONTROLS (ESC) AS PER CONTRACT SPECIFICATIONS AND AT LOCATIONS AS DIRECTED BY THE ENGINEER. ALL DAMAGED EROSION AND SEDIMENT CONTROL MEASURES SHOULD BE REPAIRED AND/OR REPLACED WITHIN 48 HOURS OF THE INSPECTION.
2. CONTRACTOR TO PROVIDE SEDIMENT CONTROL MEASURES AND PRECAUTIONS TO PREVENT CONSTRUCTION DEBRIS FROM ENTERING EXISTING CATCH BASINS, MAINTENANCE HOLES, CULVERTS, CREEKS, ROAD SIDE DITCHES, AND STORM AND SANITARY SEWERS WITHIN THE AREA OF THE CONTRACT.
3. DISTURBED AREAS WILL BE MINIMIZED TO THE EXTENT POSSIBLE AND TEMPORARILY OR PERMANENTLY STABILIZED OR RESTORED AS THE WORK PROGRESSES.
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 THE 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. ADDITIONAL ESC MEASURES TO BE KEPT ON SITE AND PLACED AS INSTRUCTED BY THE ENGINEER.
5. SEDIMENT AND EROSION CONTROL MEASURES TO BE INSPECTED DAILY AND ANY REQUIRED REPAIRS DONE PROMPTLY.
6. ROADS ARE TO BE CLEANED AT A MINIMUM ONCE A WEEK OR AS INSTRUCTED BY THE ENGINEER. IT WILL NOT BE CONSIDERED ACCEPTABLE TO HAVE MUD AND DEBRIS ON THE ROADS.
7. RESTORATION OF ANY DISTURBED AREAS TO BE DONE IN ACCORDANCE WITH CONTRACT SPECIFICATIONS. RESTORATION OF DISTURBED GRASS AREAS WITHIN THE EXISTING RIGHT-OF-WAY TO CONSIST OF SODDING AS PER OPSS 803.
8. ALL DEWATERING DISCHARGE EFFLUENT SHALL BE TREATED TO MEET PROVINCIAL WATER QUALITY OBJECTIVES PRIOR TO BEING DISCHARGED TO THE NATURAL ENVIRONMENT. IN CASE WATER QUALITY IS NOT SUITABLE FOR DISCHARGE INTO THE STORM SEWER, THE CONTRACTOR SHALL ACQUIRE AGENCY APPROVAL PRIOR TO DISCHARGING EFFLUENT TO THE LOCAL SANITARY SEWER SYSTEM WITH ADDITIONAL COSTS BACKCHARGED TO THE CONTRACTOR PER CUBIC METER OF DISCHARGE.

SITE SURVEY NOTES

1. CONTRACTOR IS SOLELY RESPONSIBLE FOR SITE SURVEY AND CONSTRUCTION LAYOUT.
2. THE ACCURACY OF ALL BENCHMARKS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ANY DEVIATIONS ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.
3. CONTRACTOR IS RESPONSIBLE FOR PROVIDING SUFFICIENT SURVEY MARKERS AND GRADE SHEETS AS MAY BE REQUIRED FOR THE PROPER EXECUTION OF THE WORKS. ALL STAKES, MARKERS AND REFERENCE POINTS SHALL BE CAREFULLY PRESERVED BY THE CONTRACTOR THROUGHOUT THE CONSTRUCTION DURATION.
4. DRAWING STATIONS SHOWN ON PLAN VIEWS AND ALL LENGTHS OF PROPOSED INFRASTRUCTURE INDICATED ON THESE DRAWINGS ARE FOR DESIGN PURPOSES ONLY. THE CONTRACTOR IS RESPONSIBLE FOR CALCULATING THE EXACT LENGTHS AND SHOWING THESE ON THEIR SHOP DRAWINGS (INCLUDING REQUIRED CONNECTIONS) EVEN IF THE ACTUAL LENGTHS VARY FROM THE DESIGN VALUES.
5. THE UTILITY DESIGNS ARE BASED ON TOPOGRAPHICAL SURVEYS, BASE PLANS, AERIAL DIGITAL TERRAIN MODELS, TEST PITS , AND OTHER INFORMATION RELATED TO EXISTING INFRASTRUCTURE PROVIDED BY OTHERS. THE PERFORMING CONTRACTOR SHALL VERIFY THE ACCURACY OF THE INFORMATION PRIOR TO PROCEEDING WITH CONSTRUCTION AND REPORT ANY DISCREPANCIES TO THE ENGINEER.

UTILITIES NOTES

1. CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING UNDER/ABOVEGROUND UTILITIES PRIOR TO AND DURING CONSTRUCTION.
2. WHERE SERVICES CROSS EXISTING CONCRETE OR ASPHALT ROADWAYS OR WALKWAYS, CONTRACTOR TO SAWCUT SURFACE AND RESTORE TO PRE-CONSTRUCTION CONDITIONS.
3. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY OWNER OR ITS REPRESENTATIVES. THE CONTRACTOR, AS PART OF THEIR WORK SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES WITH THE UTILITY COMPANIES AT LEAST 48 HOURS PRIOR TO COMMENCING WORK AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MAY BE CAUSED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
4. THE CONTRACTOR IS REQUIRED TO OBTAIN STAKEOUTS OF ALL UTILITIES AND CONFIRM THE EX. SEWER INVERTS AS WELL AS THE DEPTH AND LOCATIONS OF UTILITIES IN THE FIELD PRIOR TO CONSTRUCTION.
5. EXISTING SEWER INVERTS AND UTILITY DEPTHS SHALL BE CONFIRMED BY THE CONTRACTOR PRIOR TO ISSUANCE OF SHOP DRAWINGS.
6. PERFORM TEST PIT EXCAVATIONS AT ALL LOCATIONS WHERE EXISTING UTILITIES MAY BE DISTURBED. HAND DIG AS REQUIRED TO PREVENT DAMAGE TO EXISTING UTILITIES. NOTIFY UTILITY OWNERS AND AGENCY'S DEPARTMENTS IN ADVANCE OF SCHEDULED WORK NEAR THESE UTILITIES. CONTRACTOR TO COORDINATE TIMING OF NOTIFICATION WITH EACH UTILITY OWNER AT TIME OF CONSTRUCTION.
7. REPORT LOCATION AND ELEVATIONS OF ALL EXISTING UTILITIES NOT SHOWN ON THE DRAWINGS TO THE ENGINEER FOR REVIEW PRIOR TO COMMENCING WORK.
8. THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY DAMAGED UTILITY. THE OWNER MAY, AT ITS DISCRETION AND AT THE CONTRACTOR'S EXPENSE, REPAIR THE DAMAGED UTILITY OR DIRECT THE CONTRACTOR TO REPAIR THE DAMAGED UTILITY.
9. THE CONTRACTOR SHALL ALLOW ACCESS BY UTILITY OWNERS TO THEIR UTILITIES FOR INSPECTON PURPOSES AT ALL TIMES DURING CONSTRUCTION.
10. WHERE UNSHRINKABLE FILL IS USED AS BACKFILL MATERIAL, ALL EXPOSED UNDERGROUND UTILITIES MUST BE PROTECTED BY PLACING CLEARSTONE AROUND THE UTILITY.
11. DUE TO UNKNOWN EMBEDMENT DEPTH OF UTILITY POLES, CONTRACTOR TO SUPPORT AS REQUIRED. CONTRACTOR TO MINIMIZE AMOUNT OF OPEN TRENCH IN THE VICINITY OF UTILITY POLES.
12. ABANDONED WET UTILITIES TO BE REMOVED AND DISPOSED OF OFF SITE IF LOCATED UNDER TREE ZONE WITH LESS THAN 2.0M CLEARANCE BETWEEN TOP OF OD TO FINAL BLVD GRADE
13. ONTARIO ONE CALL AT 1-800-400-2255 FOR LOCATE REQUIREMENTS.

STANDARD DETAILS AND REFERENCE

WATERMAIN	DETAIL / REFERENCE
WATERMAIN PIPE (150mm)	PVC DR18, C900/AWWA
WATERMAIN TRENCHING	W17 (CITY OF OTTAWA)
HYDRANT INSTALLATION	W19 (CITY OF OTTAWA)
WATERMAIN INSULATION	W22 (CITY OF OTTAWA)
WATERMAIN VALVE BOX ASSEMBLY	W24 (CITY OF OTTAWA)
WATERMAIN CROSSING BELOW SEWER	W25 (CITY OF OTTAWA)
WATERMAIN CROSSING OVER SEWER	W25.2 (CITY OF OTTAWA)
WATERMAIN THRUST BLOCK DETAILS	W25.3 (CITY OF OTTAWA)
WATERMAIN THRUST BLOCK DIMENSIONS	W25.4 (CITY OF OTTAWA)
PIPE RESTRAINTS DETAILS	W25.5 (CITY OF OTTAWA)
PIPE RESTRAINTS LENGTHS	W25.6 (CITY OF OTTAWA)
TRACER WIRE INSTALLATION	W36 (CITY OF OTTAWA)
CATHODIC PROTECTION	W40 (CITY OF OTTAWA)
ANODE INSTALLATION	W42 (CITY OF OTTAWA)
TRACER WIRE WATER PROOFING SPLICES	W47 (CITY OF OTTAWA)

STORMWATER	DETAIL / REFERENCE
STORM PIPE (150-450mm)	PVC DR35 / AWWA
MANHOLES (1200mm)	701.010 / OPSD
CATCH BASIN (600x600mm)	705.010 / OPSD
MANHOLE COVER	S24.1 (CITY OF OTTAWA)
MANHOLE CIRCULAR FRAME	S25 (CITY OF OTTAWA)
CATCH BASIN COVER	S19.1 (CITY OF OTTAWA)
VORTEX ICD INSTALLATION	S4.1 (CITY OF OTTAWA)
SEWER TRENCHING	S6 / S7 (CITY OF OTTAWA)

SANITARY	DETAIL / REFERENCE
SANITARY PIPE (150-200mm)	PVC DR35 / AWWA
MANHOLES (1200mm)	701.010 / OPSD
MANHOLE COVER	S24 (CITY OF OTTAWA)
MANHOLE CIRCULAR FRAME	S25 (CITY OF OTTAWA)
SEWER SERVICE CONNECTION	S11.1 (CITY OF OTTAWA)
SEWER INTERNAL DROP STRUCTURE	S12 (CITY OF OTTAWA)

ROAD / SURFACE WORKS	DETAIL / REFERENCE
BARRIER CURB	SC1.1 (CITY OF OTTAWA)
SIDEWALK	SC4 (CITY OF OTTAWA)
SIDEWALK CONSTRUCTION JOINT	SC5 (CITY OF OTTAWA)
SIDEWALK RAMP	SC6 (CITY OF OTTAWA)
TWSI DETAIL	SC7.3 (CITY OF OTTAWA)
STANDARD TRENCH REINSTATEMENT IN PAVED SURFACE	R10 (CITY OF OTTAWA)
ASPHALT REINSTATEMENT	R25 (CITY OF OTTAWA)

CLIENT
OTTAWA COMMUNITY HOUSING
39 Auriga Dr. Nepean, ON K2E 7Y8

ISSUES

No.	DESCRIPTION	DATE
1	FIRST SUBMISSION	2021-05-20
2	SECOND SUBMISSION	2021-08-24
3	BUILDING PERMIT SUBMISSION	2021-09-07
4	TENDER SUBMISSION	2021-10-05
5	TENDER RESUBMISSION	2021-11-03
6	TENDER RESUBMISSION	2021-11-09
7	L3101 SITE WORKS - ADDENDUM 1	2021-11-19
8	THIRD SUBMISSION	2021-11-23

FOR REVIEW

KEY PLAN

LICENSED PROFESSIONAL ENGINEER
November 24, 2021
W. L THOMAS
100528014
PROVINCE OF ONTARIO

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PROJECT
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CANADA K1K 2G8

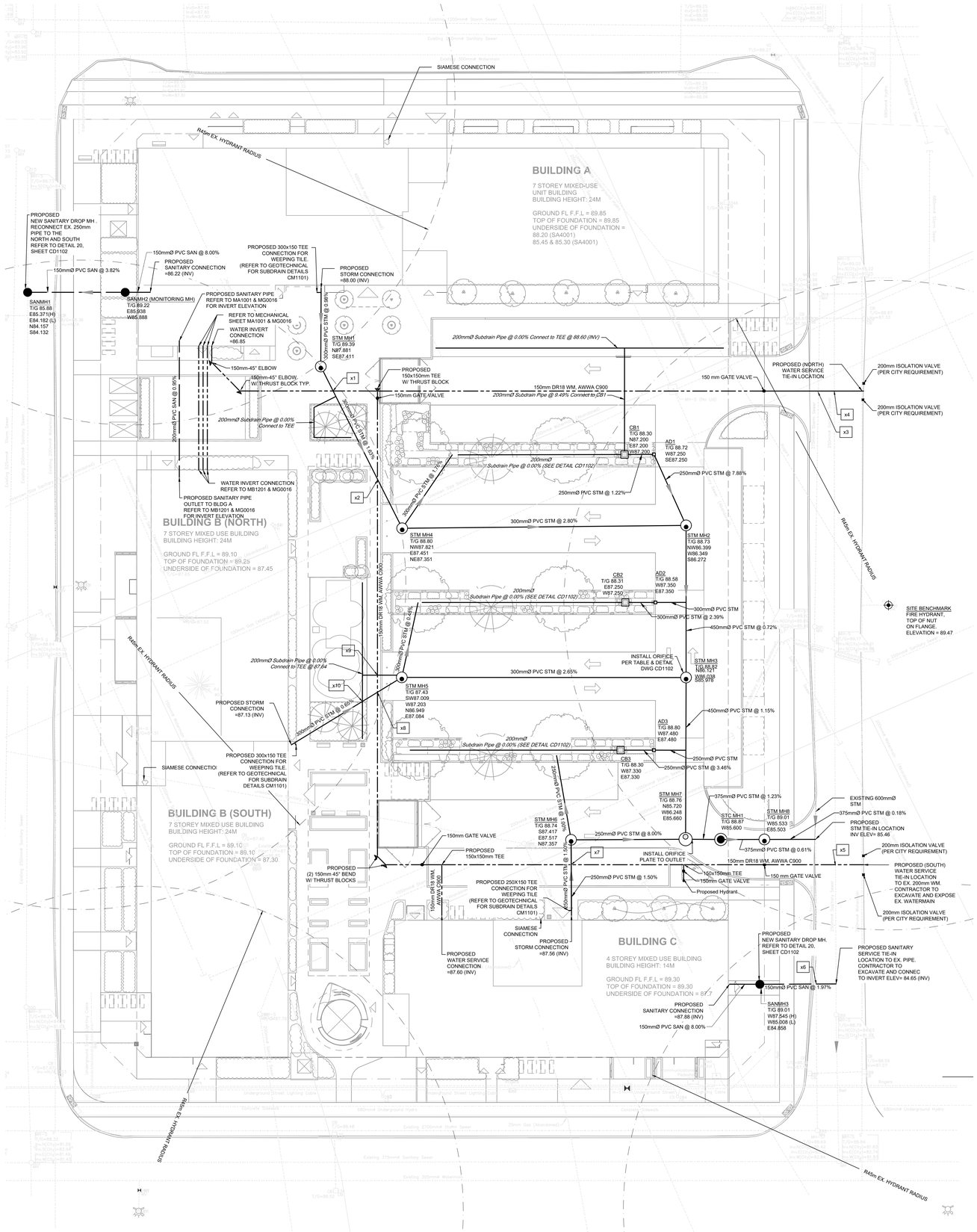
PROJECT NO:	SCALE:
125599	AS SHOWN
DRAWN BY: NA	CHECKED BY: BT
PROJECT MGR: CW	APPROVED BY: BT

SHEET TITLE
GENERAL NOTES
& STANDARD DETAIL
REFERENCE

SHEET NUMBER C00001 | ISSUE 8

#18454

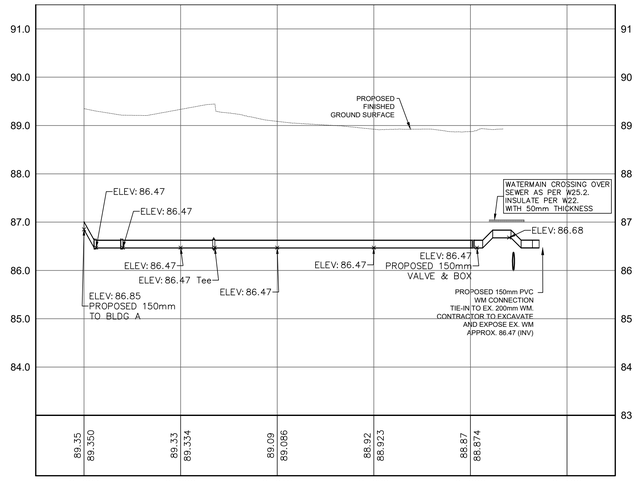
File Location: D:\125599_MikinakRedev\7.0_Production\7.03_Design\04_Civil\Sheets\C00001.dwg Last Saved: November 11, 2021 by nino.alvarez Plotted: Wednesday, November 24, 2021 9:02:44 AM by Nino Alvarez



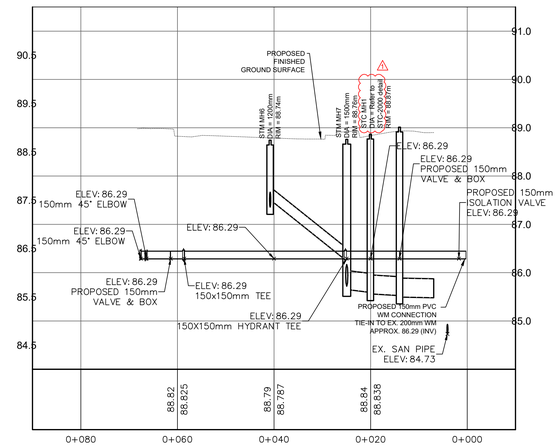
1:250

5 0 5 10 15 m

TABLE CROSSING					
CROSSING NO.	LOWER PIPE (INVERT)	LOWER PIPE (OBVERT)	HIGHER PIPE (INVERT)	HIGHER PIPE (OBVERT)	DISTANCE (m)
X1	86.47 (WTR)	86.62 (WTR)	87.55 (STM)	87.85 (STM)	0.93
X2	86.45 (WTR)	86.60 (WTR)	87.77 (STM)	88.07 (STM)	1.17
X3	85.99 (EX. STM)	86.36 (EX. STM)	86.71 (WTR)	86.86 (WTR)	0.35
X4	85.22 (EX. SAN)	85.47 (EX. SAN)	86.47 (WTR)	86.62 (WTR)	1.00
X5	84.72 (EX. SAN)	84.97 (EX. SAN)	86.29 (WTR)	86.44 (WTR)	1.32
X6	84.63 (SAN)	84.83 (SAN)	85.43 (EX. STM)	86.03 (EX. STM)	0.60
X7	86.29 (WTR)	86.44 (WTR)	87.46 (STM)	87.71 (STM)	1.02
X8	86.36 (WTR)	86.51 (WTR)	87.03 (STM)	87.33 (STM)	0.52
X9	86.38 (WTR)	86.53 (WTR)	87.55 (STM)	87.75 (STM)	1.02
X10	87.04 (STM)	87.34 (STM)	87.64 (STM)	87.84 (STM)	0.30



PROPOSED WATERMAIN NORTH CONNECTION FOR BLDG A & B



PROPOSED WATERMAIN SOUTH CONNECTION FOR BLDG C

ORIFICE CONTROL				
MANHOLE NO.	T/G	INVERT AT OUTLET	CENTERLINE ORIFICE ELEVATION	ORIFICE DIAMETER (mm)
STM MH3	88.82	85.978	86.04	122
STM MH7	88.730	85.660	85.720	118

NOTE:
PRIOR TO CONSTRUCTION REFER TO SHEET DETAIL II - CD1102 FOR REFERENCE OF PIPE SEGMENTS REQUIRING INSULATION.

True North

CLIENT

Ottawa Community Housing / Logement communautaire d'Ottawa

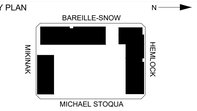
39 Auriga Dr. Nepean, ON K2E 7Y8

ISSUES

No.	DESCRIPTION	DATE
1	FIRST SUBMISSION	2021-05-20
2	SECOND SUBMISSION	2021-08-24
3	BUILDING PERMIT SUBMISSION	2021-09-07
4	TENDER SUBMISSION	2021-10-05
5	TENDER RESUBMISSION	2021-11-03
6	TENDER RESUBMISSION	2021-11-09
7	L3101 SITE WORKS - ADDENDUM 1	2021-11-19
8	THIRD SUBMISSION	2021-11-23

FOR REVIEW

KEY PLAN



LEGEND:

- PROPOSED SANITARY
- PROPOSED STORM
- PROPOSED WATERMAIN
- PROPOSED STORM MH
- PROPOSED CATCHBASIN
- PROPOSED OGS

LICENSED PROFESSIONAL ENGINEER
W. L. THOMAS
100528014
November 24, 2021
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PRIME CONSULTANT

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Unit 110 - 650 Dalton Avenue
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ibigroup.com

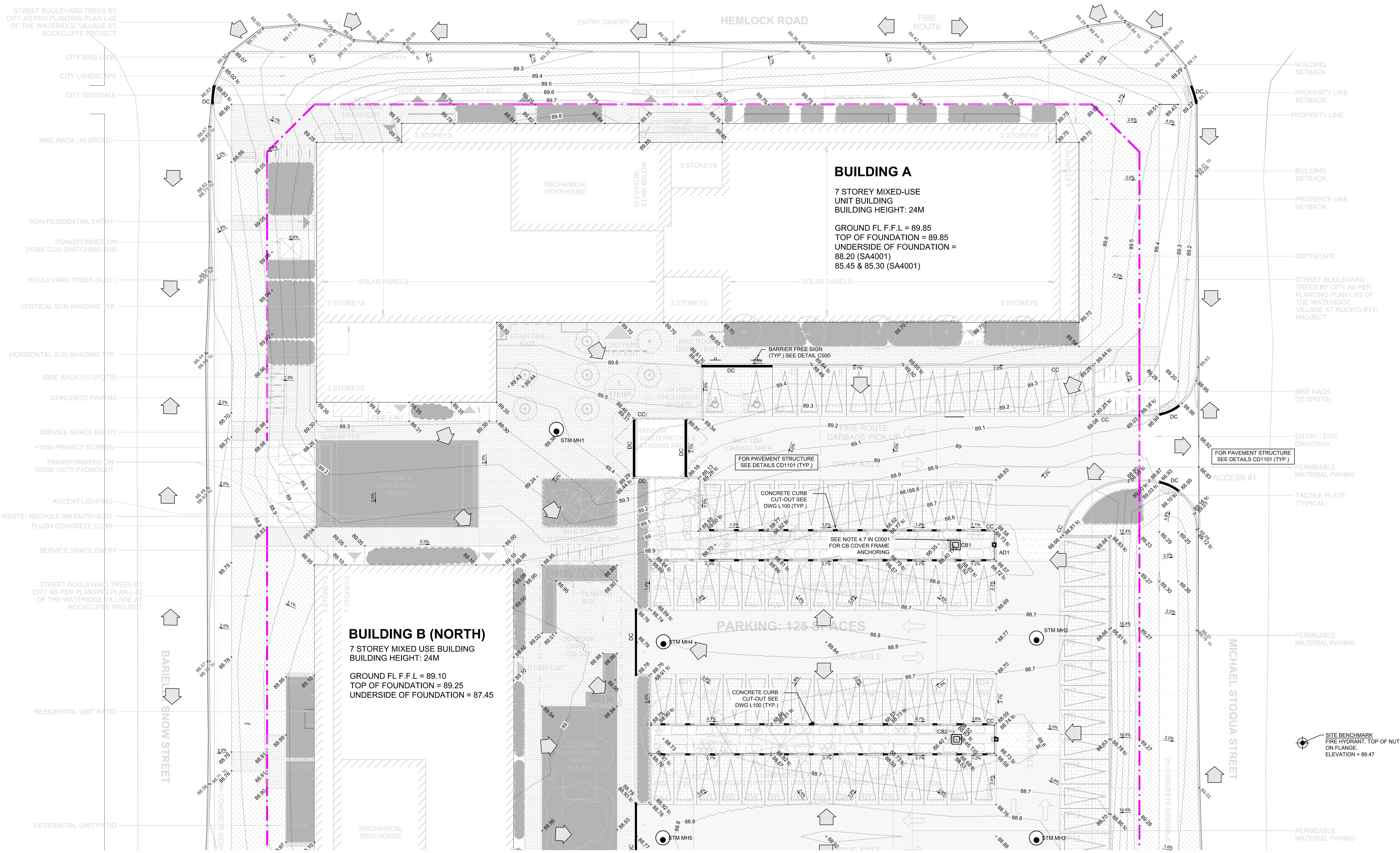
PROJECT
MIKINAK REDEVELOPMENT
715 MIKINAK ROAD, OTTAWA, ON
CANADA K1K 2G8

PROJECT NO: 125599	SCALE: AS SHOWN
DRAWN BY: NA	CHECKED BY: BT
PROJECT MGR: CW	APPROVED BY: BT

SHEET TITLE
SERVICING PLAN

SHEET NUMBER CU1101

ISSUE 8



CLIENT

39 Auriga Dr. Nepean, ON K2E 7Y8

ISSUES

No.	DESCRIPTION	DATE
1	FIRST SUBMISSION	2021-05-20
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4	TENDER SUBMISSION	2021-10-05
5	TENDER RESUBMISSION	2021-11-03
6	TENDER RESUBMISSION	2021-11-09
7	L3101 SITE WORKS - ADDENDUM 1	2021-11-19
8	THIRD SUBMISSION	2021-11-23

FOR REVIEW

KEY PLAN

BAREILLE-SNOW
MIKINAK
HEMLOCK
MICHAEL STOQUA

LEGEND:

- TRAFFIC FLOW
- PROPOSED ELEVATION
- PROPOSED TOP OF CURB ELEVATION
- EXISTING ELEVATION
- PROPOSED SLOPE
- MAJOR OVERLAND FLOW ROUTE
- PROPOSED CONTOUR
- DEPRESSED CONCRETE CURB
- CONCRETE BARRIER CURB PER SC1.1
- PROPOSED BIO-SWALE
- PROPOSED SOFTSCAPE
- PROPOSED HARDSCAPE
- PROPOSED BUILDING
- PERMEABLE PAVER
- ASPHALT PAVED AREA
- WASTE PICK-UP AREA CONCRETE PAD
- CONCRETE DRIVEWAY

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November 24, 2021
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PROJECT

MIKINAK REDEVELOPMENT

715 MIKINAK ROAD, OTTAWA, ON
CANADA K1K 2G8

PROJECT NO: 125599	SCALE: AS SHOWN
DRAWN BY: NA	CHECKED BY: BT
PROJECT MGR: CW	APPROVED BY: BT

SHEET TITLE

GRADING PLAN (NORTH)

SHEET NUMBER CG1101 | ISSUE 8

NOTE:
ALL PROPOSED FRAME COVER FOR CB1, CB2 & CB3 SHALL BE ANCHORED DIRECTLY TO THE TOP OF THE PRE-CAST CONCRETE TOP AS PER S.P. NO: F-4070 TO PREVENT DISPLACEMENT.

SITE BENCHMARK
FIRE HYDRANT ON TOP OF NUT OF FLANGE WITH AN ELEVATION OF 89.47, LOCATED ON MICHAEL STOQUA STREET EAST SIDE OF ROADWAY.

1:200

True North

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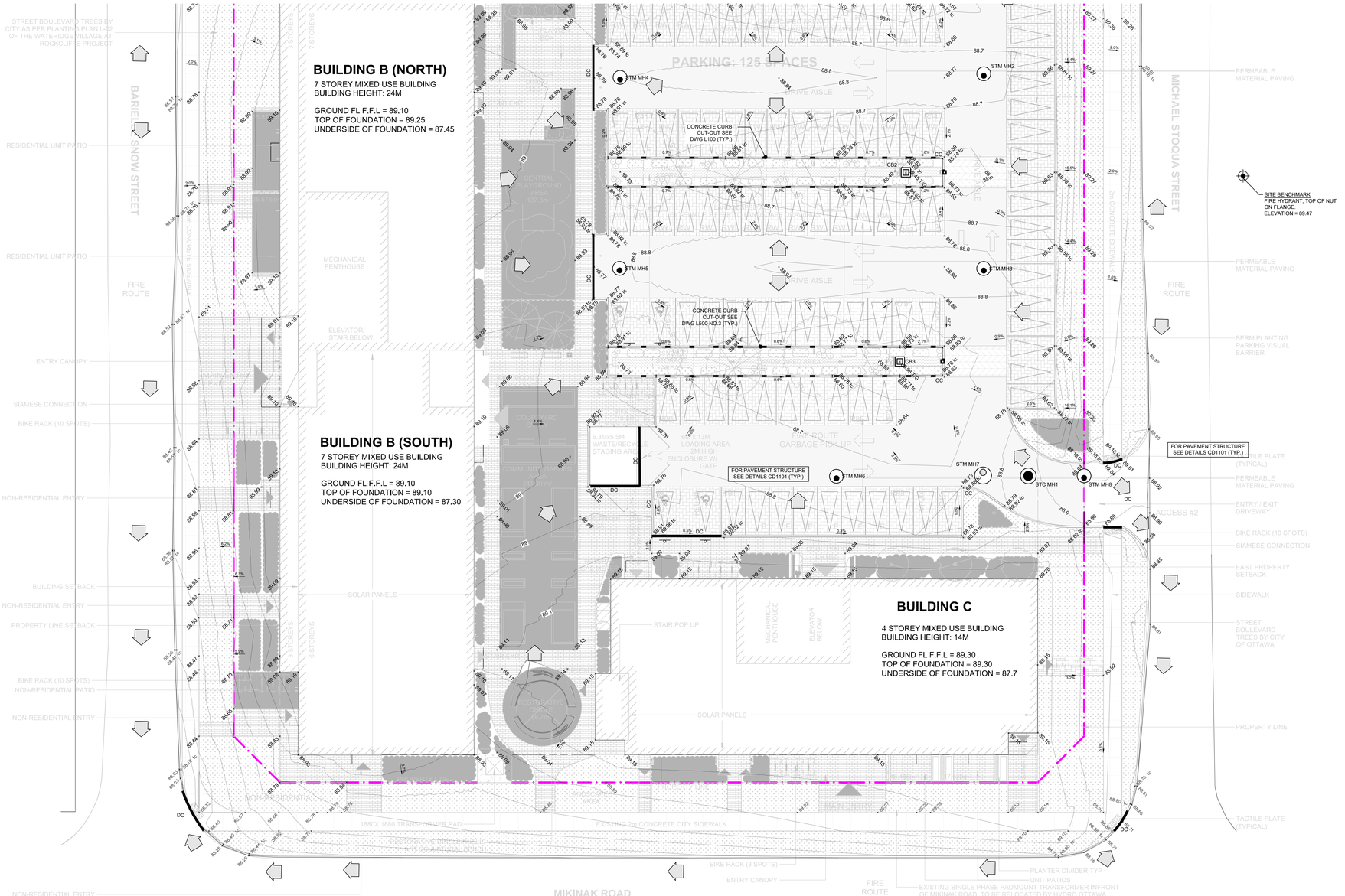

NOTE:
ALL PROPOSED FRAME COVER FOR CB1, CB2 & CB3 SHALL BE ANCHORED DIRECTLY TO THE TOP OF THE PRE-CAST CONCRETE TOP AS PER S.P. NO: F-4070 TO PREVENT DISPLACEMENT.

SITE BENCHMARK
FIRE HYDRANT ON TOP OF NUT OF FLANGE WITH AN ELEVATION OF 89.47, LOCATED ON MICHAEL STOQUOA STREET EAST SIDE OF ROADWAY.

1:200

5 0 5 10 m

True North

CLIENT

Ottawa Community Housing

39 Auriga Dr. Nepean, ON K2E 7Y8

ISSUES

No.	DESCRIPTION	DATE
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7	L3101 SITE WORKS - ADDENDUM 1	2021-11-19
8	THIRD SUBMISSION	2021-11-23

FOR REVIEW

KEY PLAN

LEGEND:

- TRAFFIC FLOW
- 89.84 PROPOSED ELEVATION
- 89.75 tc PROPOSED TOP OF CURB ELEVATION
- 89.04 EXISTING ELEVATION
- 1% PROPOSED SLOPE
- OVERLAND FLOW
- 89.5 PROPOSED CONTOUR
- DEPRESSED CONCRETE CURB
- CONCRETE BARRIER CURB PER OPSD 600.110
- PROPOSED BIO-SWALE
- PROPOSED SOFTSCAPE
- PROPOSED HARDSCAPE
- PROPOSED BUILDING
- PERMEABLE PAVER
- ASPHALT PAVED AREA
- WASTE PICK-UP AREA CONCRETE PAD
- CONCRETE DRIVEWAY

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November 24, 2021
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ibigroup.com

PROJECT
MIKINAK REDEVELOPMENT

715 MIKINAK ROAD, OTTAWA, ON
CANADA K1K 2G8

PROJECT NO.: 125599	SCALE: AS SHOWN
DRAWN BY: NA	CHECKED BY: BT
PROJECT MGR: CW	APPROVED BY: BT

SHEET TITLE
GRADING PLAN (SOUTH)

SHEET NUMBER
CG1102

ISSUE
8

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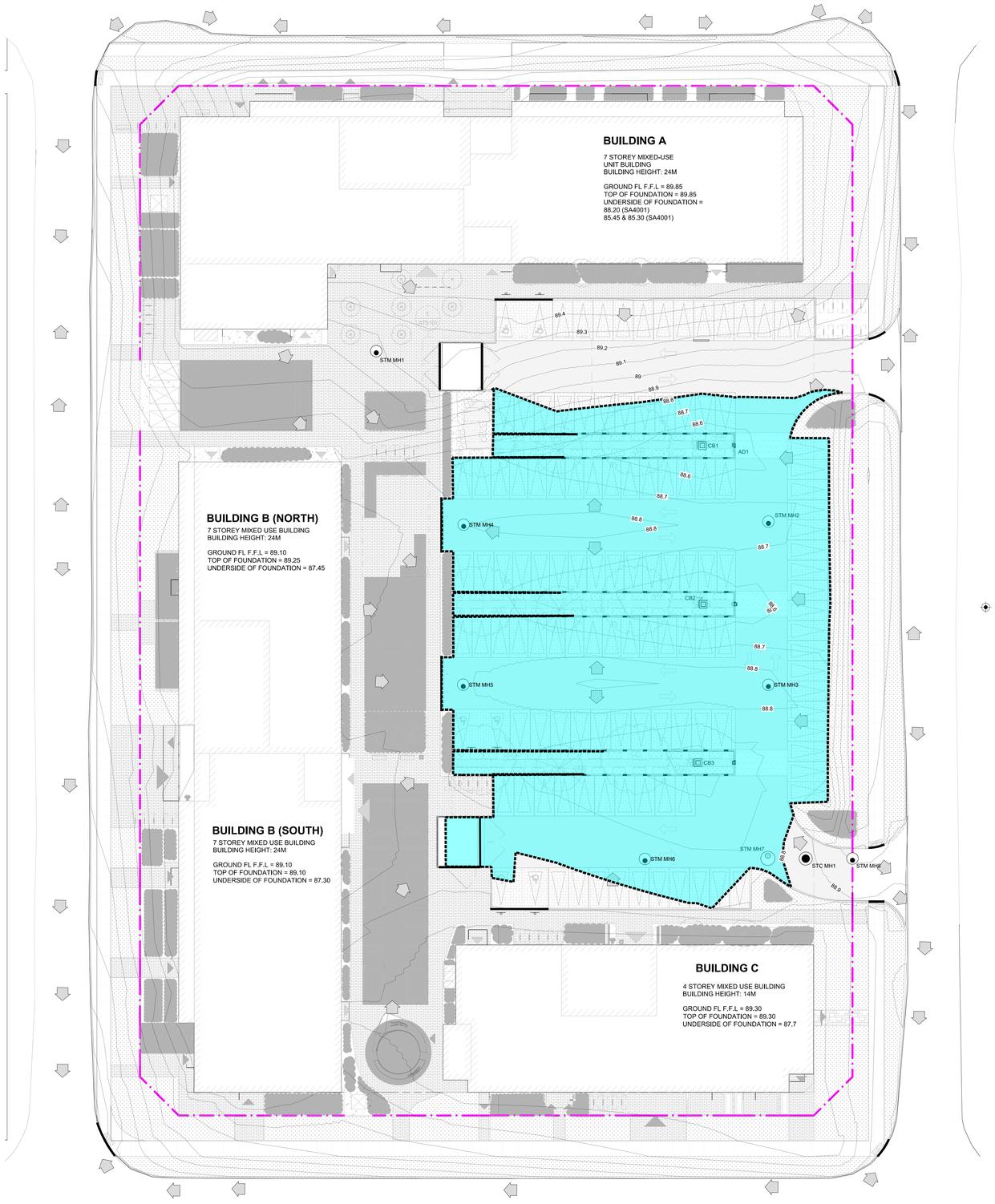

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5 0 5 10 15 m

True North

CLIENT

Ottawa Community Housing

39 Auriga Dr. Nepean, ON K2E 7Y8

ISSUES

No.	DESCRIPTION	DATE
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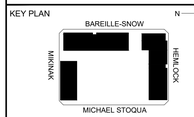
8	THIRD SUBMISSION	2021-11-23

FOR REVIEW

KEY PLAN



LEGEND:

- OVERLAND FLOW
- PROPOSED CONTOUR
- DEPRESSED CONCRETE CURB
- CONCRETE BARRIER CURB PER OPSD 600.110
- PONDING (100YR)
- PROPERTY LINE
- PROPOSED BIO-SWALE
- PROPOSED SOFTSCAPE
- PROPOSED HARDSCAPE
- PROPOSED BUILDING
- PERMEABLE PAVER
- ASPHALT PAVED AREA
- WASTE PICK-UP AREA CONCRETE PAD
- CONCRETE DRIVEWAY

LICENSED PROFESSIONAL ENGINEER
November 24, 2021
W. L. THOMAS
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PROJECT

MIKINAK REDEVELOPMENT

715 MIKINAK ROAD, OTTAWA, ON
CANADA K1K 2G8

PROJECT NO:	SCALE:
125599	AS SHOWN
DRAWN BY:	CHECKED BY:
NA	BT
PROJECT MGR:	APPROVED BY:
CW	BT

SHEET TITLE

PONDING PLAN

SHEET NUMBER

CG1103

ISSUE

8

#18454

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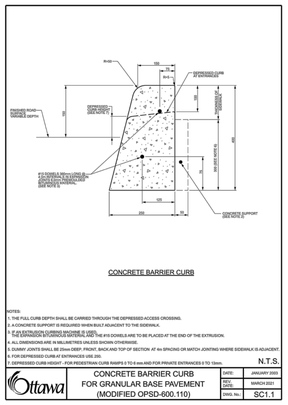
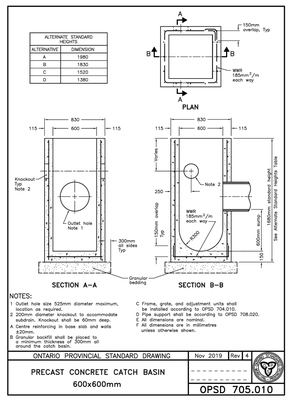


1 CONCRETE BARRIER CURB
Scale: N.T.S.



2 PRECAST CONCRETE CATCH BASIN
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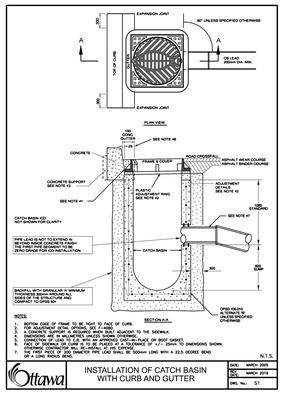
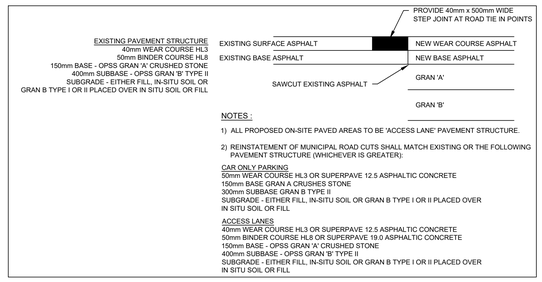


3 CATCH BASIN FLAT GRATE OPENINGS
Scale: N.T.S.



4 TYPICAL STEP JOINT & PAVEMENT STRUCTURE DETAIL
Scale: N.T.S.

NOTE:
ALL MATERIALS AND CONSTRUCTION IS TO BE IN ACCORDANCE WITH THE CURRENT CITY OF OTTAWA STANDARD DRAWINGS & SPECIFICATIONS OR OPSD/OPSS IF CITY DRAWINGS AND SPECIFICATIONS DO NOT APPLY.

PLEASE REFER TO DRAWING C0001 GENERAL NOTE AND SPECIFICATION REFERENCE FOR ADDITIONAL DETAILS FOR CITY OF OTTAWA STANDARD DRAWINGS.

5 CONCRETE SIDEWALK
Scale: N.T.S.

6 SIDEWALK RAMPS
Scale: N.T.S.

7 SIDEWALK AT DRIVEWAY ENTRANCE
Scale: N.T.S.

8 BARRIER FREE PARKING SIGN
Scale: N.T.S.

9 STOP SIGN
Scale: N.T.S.

10 PRECAST CONCRETE MANHOLE
Scale: N.T.S.

11 PRECAST MANHOLE COMPONENTS
Scale: N.T.S.

12 PRECAST MANHOLE ADJUSTMENT
Scale: N.T.S.

13 MANHOLE STEPS
Scale: N.T.S.

14 STORM MANHOLE LIDS
Scale: N.T.S.

CLIENT

OTTAWA COMMUNITY HOUSING
COMMENT COMMUNAUTAIRE D'OTTAWA

39 Auriga Dr. Nepean, ON K2E 7Y8

ISSUES

No.	DESCRIPTION	DATE
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7	L3101 SITE WORKS - ADDENDUM 1	2021-11-19
8	THIRD SUBMISSION	2021-11-23

FOR REVIEW

KEY PLAN

LICENSED PROFESSIONAL ENGINEER
November 24, 2021
W. L. THOMAS
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PROVINCE OF ONTARIO

PRIME CONSULTANT

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ibigroup.com

PROJECT
MIKINAK REDEVELOPMENT
715 MIKINAK ROAD, OTTAWA, ON
CANADA K1K 2G8

PROJECT NO: 125599	SCALE: AS SHOWN
DRAWN BY: NA	CHECKED BY: BT
PROJECT MGR: CW	APPROVED BY: BT

SHEET TITLE
DETAILS I

SHEET NUMBER
CD1101

ISSUE
8

DOT-12-21-0068

#18454

File Location: D:\125599_MikinakRedevt\7.0_Production\7.03_Design\Cut_Civil\Sheets\CD1101-CD1102.dwg Last Saved: November 19, 2021 by nano.alvarez Plotted: Wednesday, November 24, 2021 9:04:32 AM by Nino Alvarez

NOTE:
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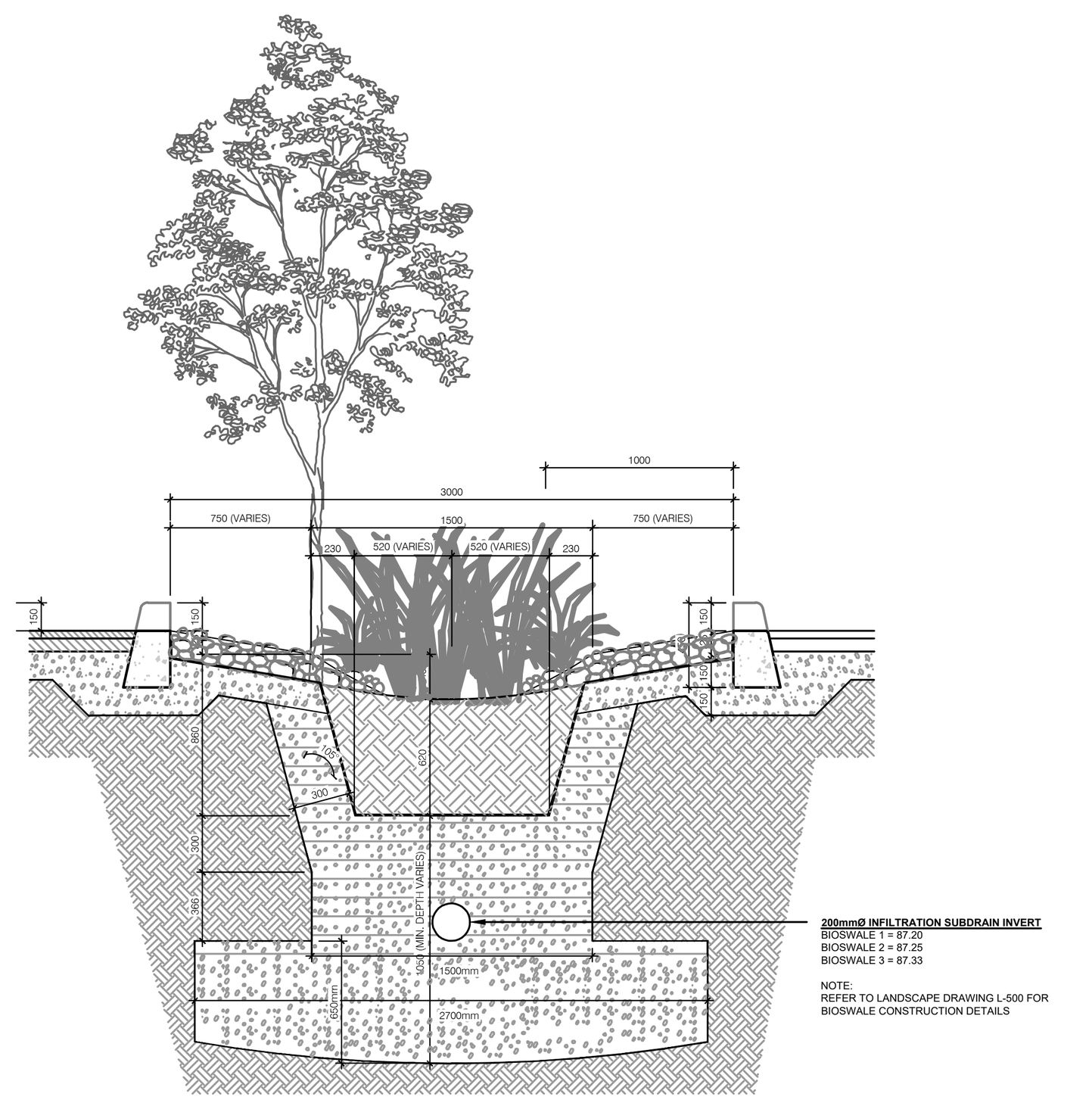
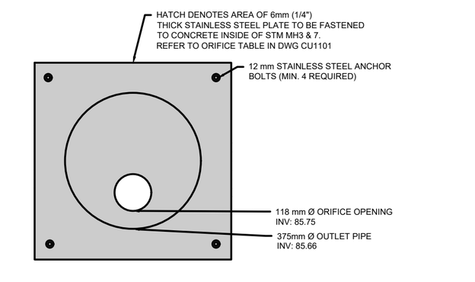
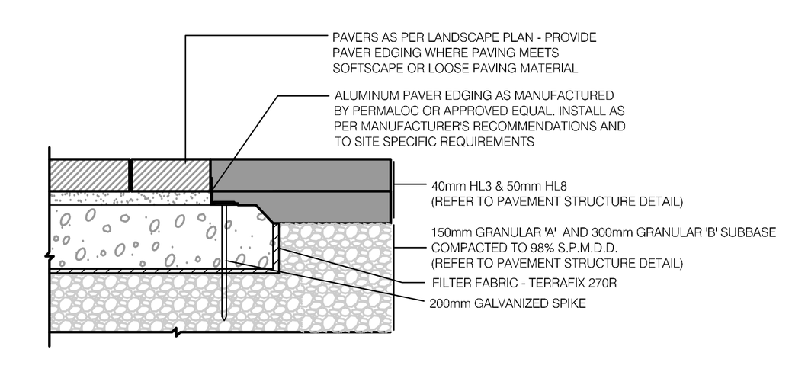
PLEASE REFER TO DRAWING C0001 GENERAL NOTE AND SPECIFICATION REFERENCE FOR ADDITIONAL DETAILS FOR CITY OF OTTAWA STANDARD DRAWINGS.



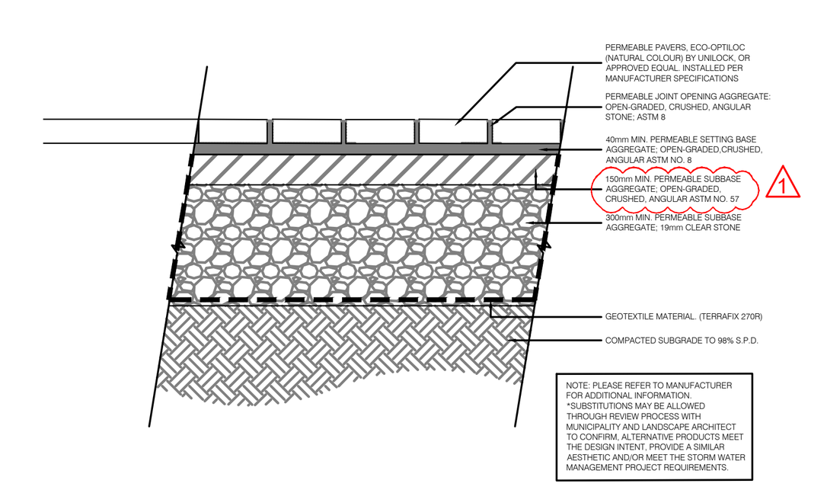
15 BIOSWALE
Scale: N.T.S.



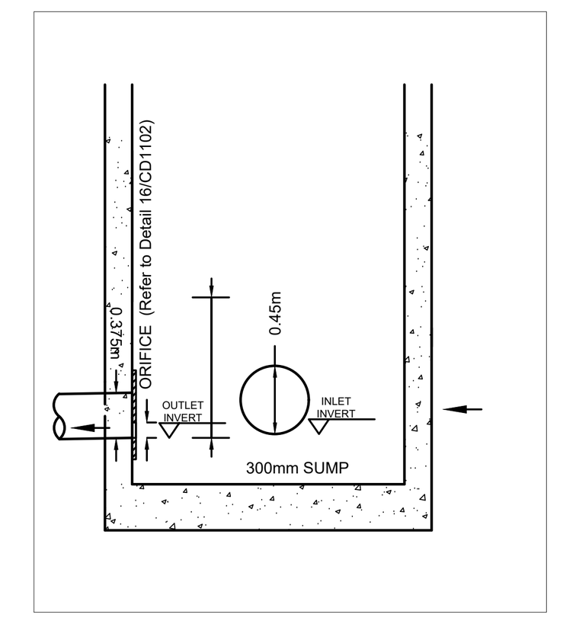
16 EXAMPLE ORIFICE PLATE DETAIL



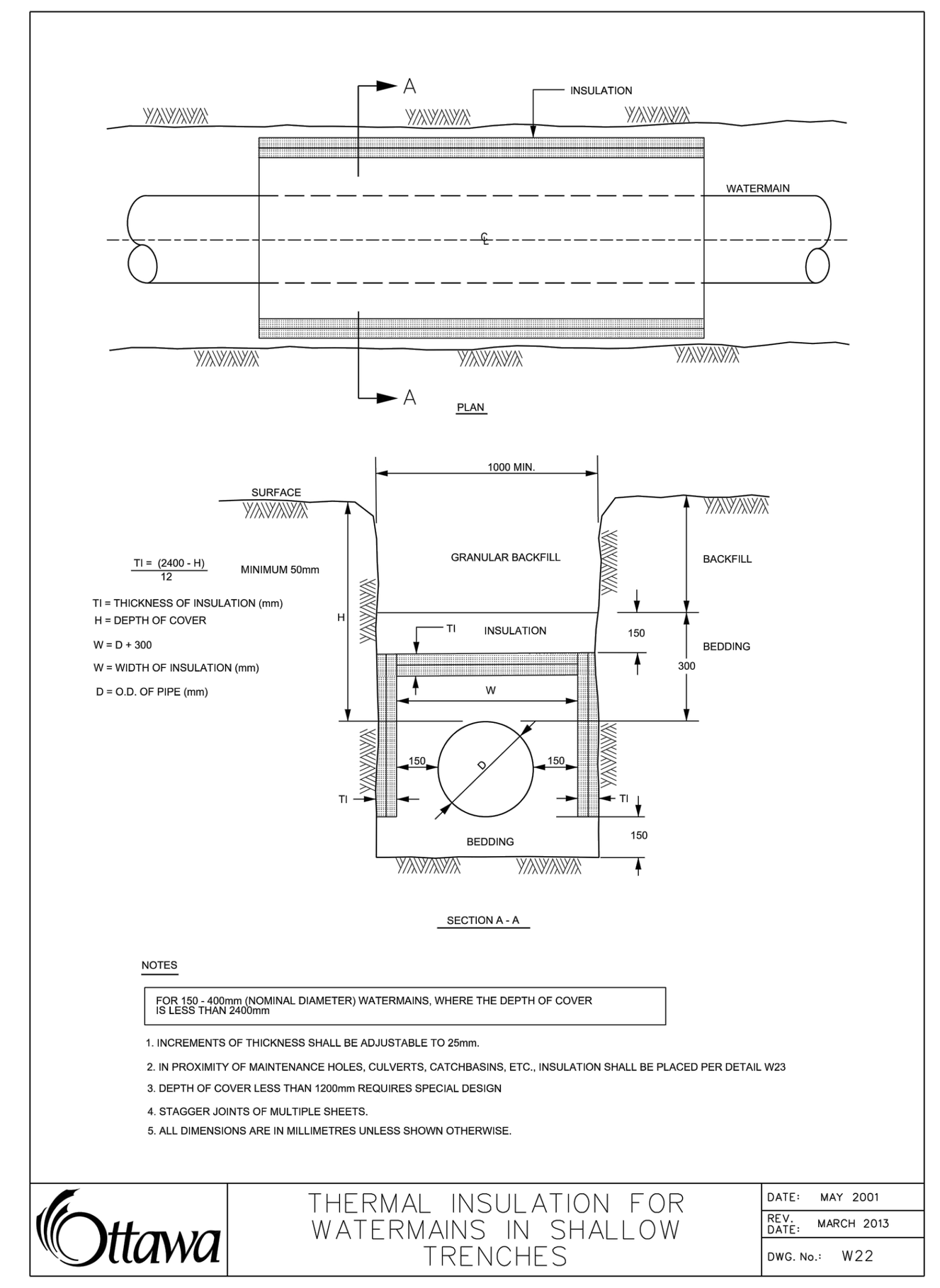
17.1 PERMEABLE PAVEMENT TO ASPHALT PAVEMENT DETAIL
Scale: N.T.S.



17.2 PERMEABLE PAVEMENT & SUBDRAIN DETAIL
Scale: N.T.S.

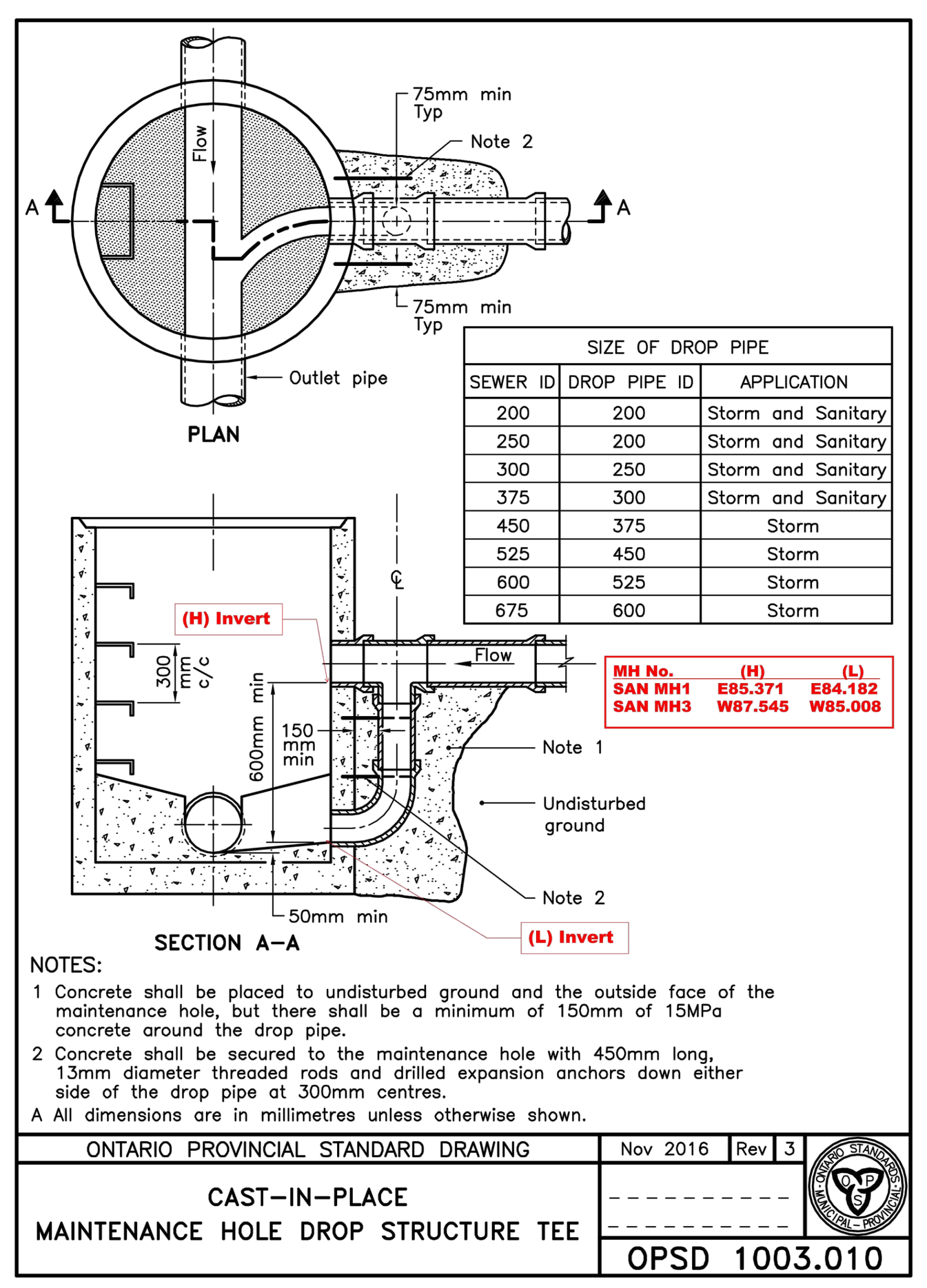


18 STM MH7 ORIFICE PLATE INSTALLATION
Scale: N.T.S.

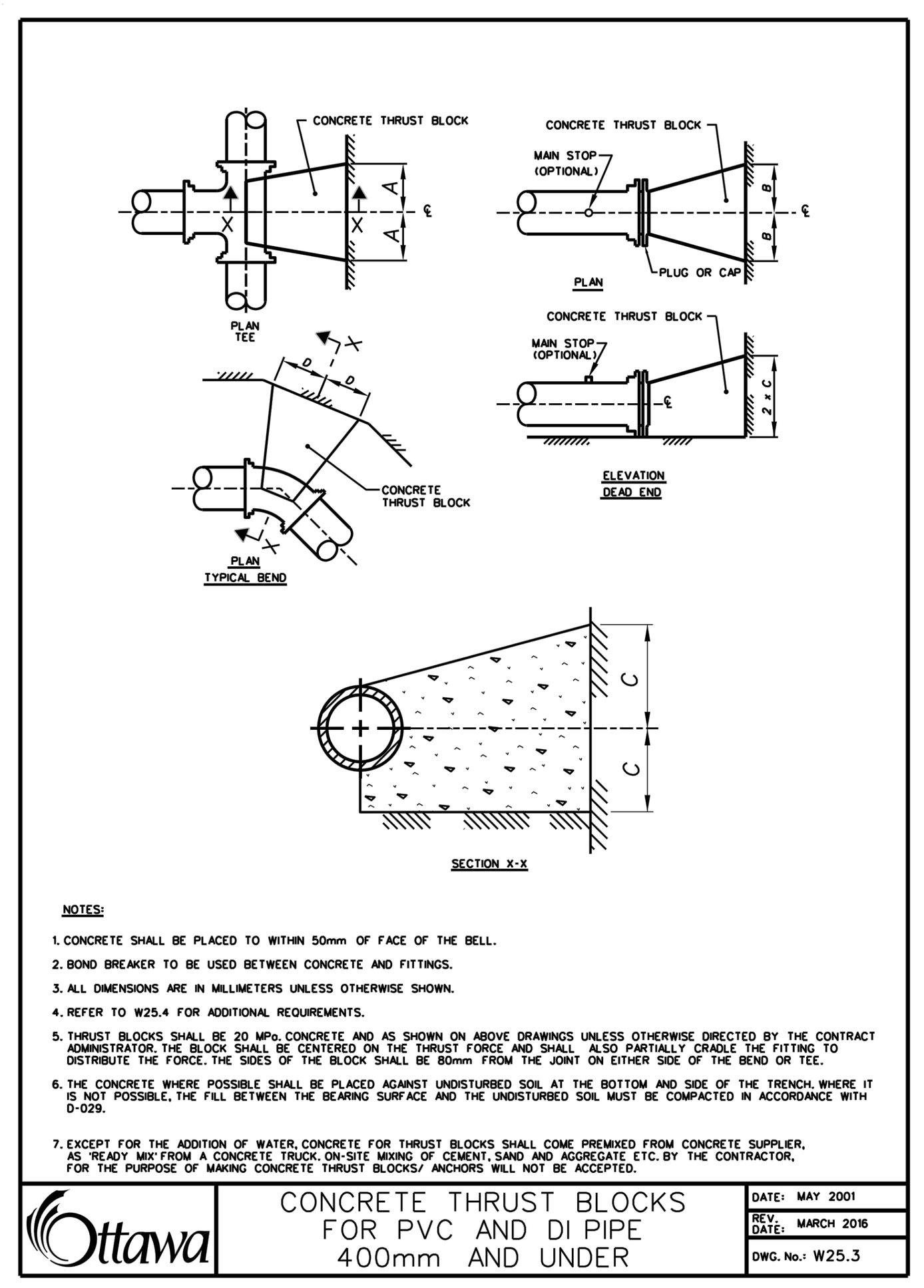


19 THERMAL INSULATION DETAIL
Scale: N.T.S.

PIPE SEGMENTS TO BE INSULATED PER W22 DETAIL				
UPSTREAM MH NO.	DNSTREAM MH NO.	LENGTH (m)	THICKNESS (mm)	TYPE
BLDG A	STM MH1	12.5	50	STORM
STM MH1	STM MH4	25.0	50	STORM
STM MH4	BIOSWALE1	12.3	50	STORM
STM MH4	STM MH2	39.4	75	STORM
AD1	STM MH2	10.8	75	STORM
STM MH2	STM MH3	21.1	50	STORM
BLDG B	STM MH5	18.5	75	STORM
STM MH5	BIOSWALE2	10.6	75	STORM
STM MH5	STM MH3	39.4	75	STORM
BLDG C	STM MH6	12.4	75	STORM
STM MH6	BIOSWALE3	11.7	75	STORM
STM MH6	STM MH7	17.9	75	STORM
BLDG A	BLDG B	20.0	50	SANITARY
BLDG C	150mm TEE	4.0	100	WATER
BLDG C	SAN MH3	4.2	125	SANITARY



20 MANHOLE DROP STRUCTURE
Scale: N.T.S.



21 CONCRETE THRUST BLOCK
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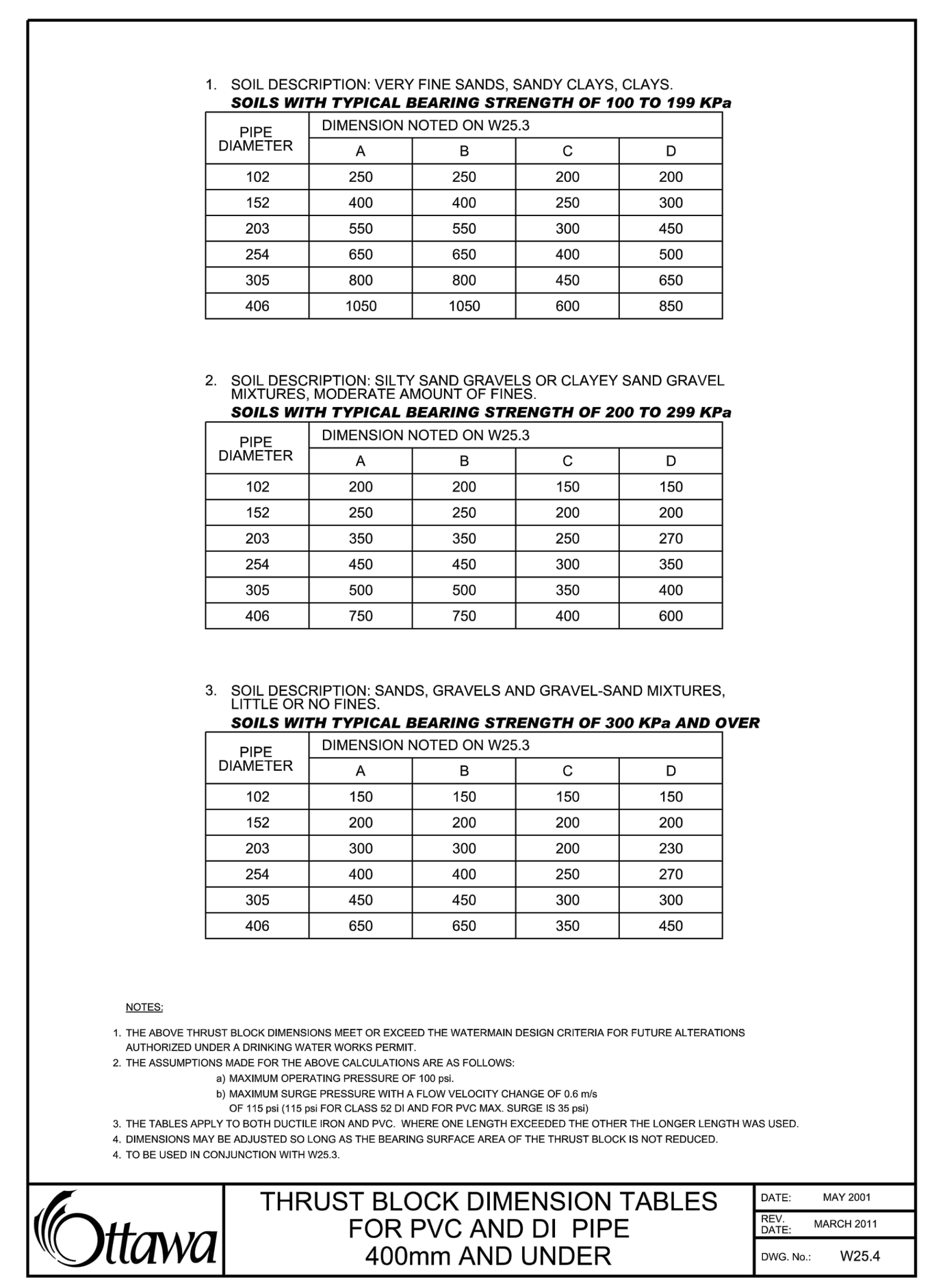
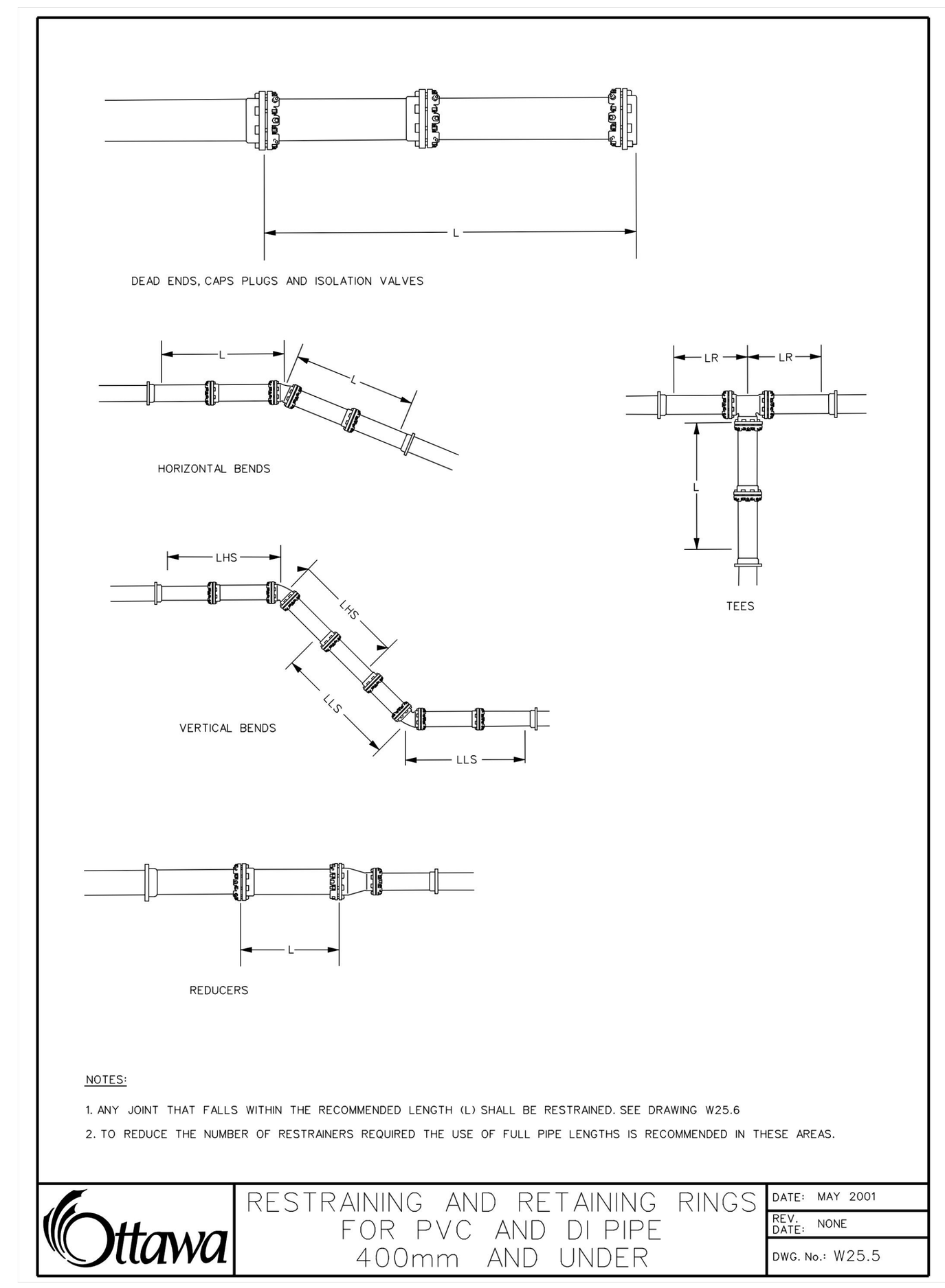
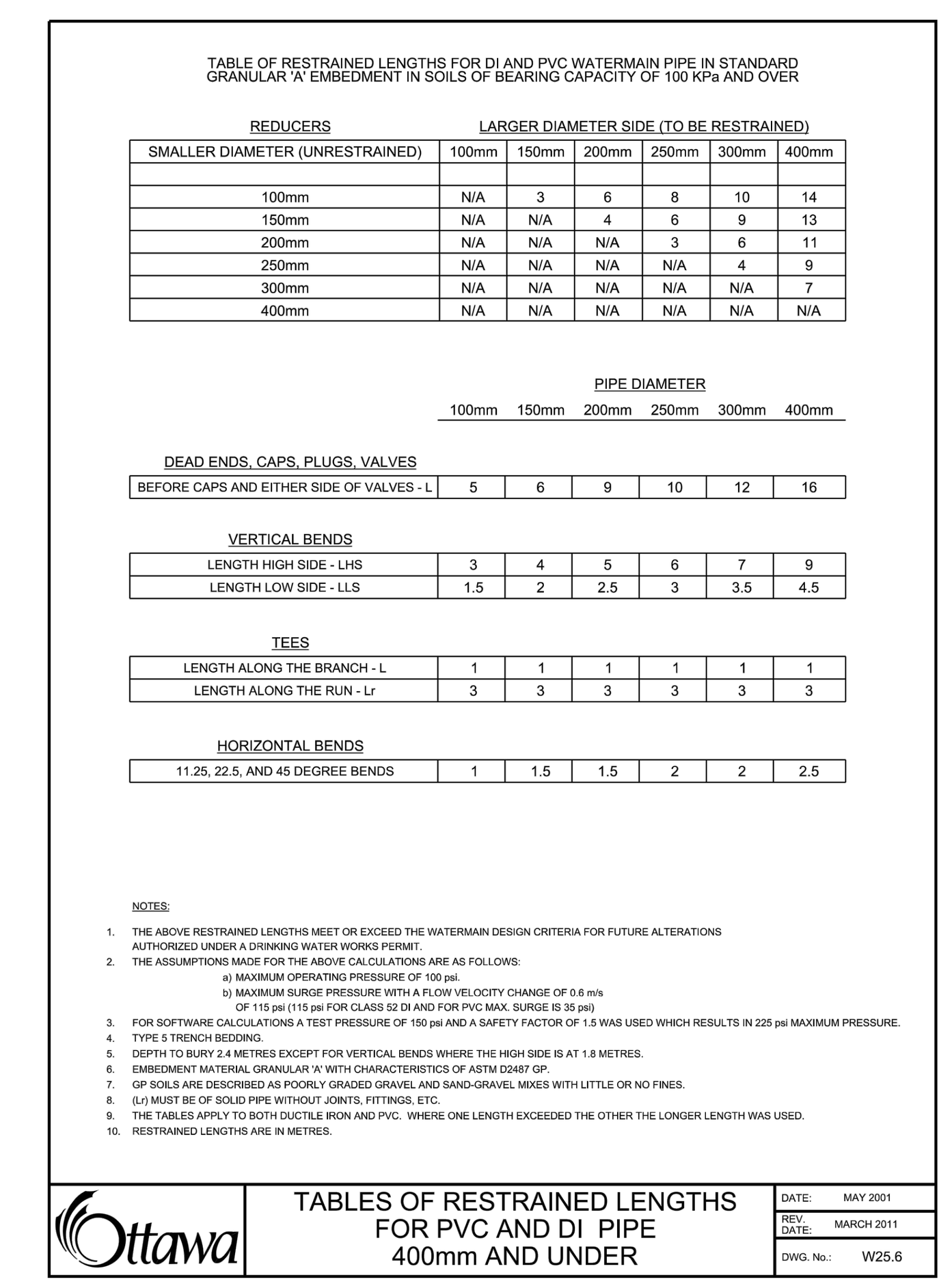


22 THRUST BLOCK DIMENSIONS
Scale: N.T.S.



23 WM RESTRAINT DETAILS
Scale: N.T.S.



24 RESTRAINT LENGTH TABLE
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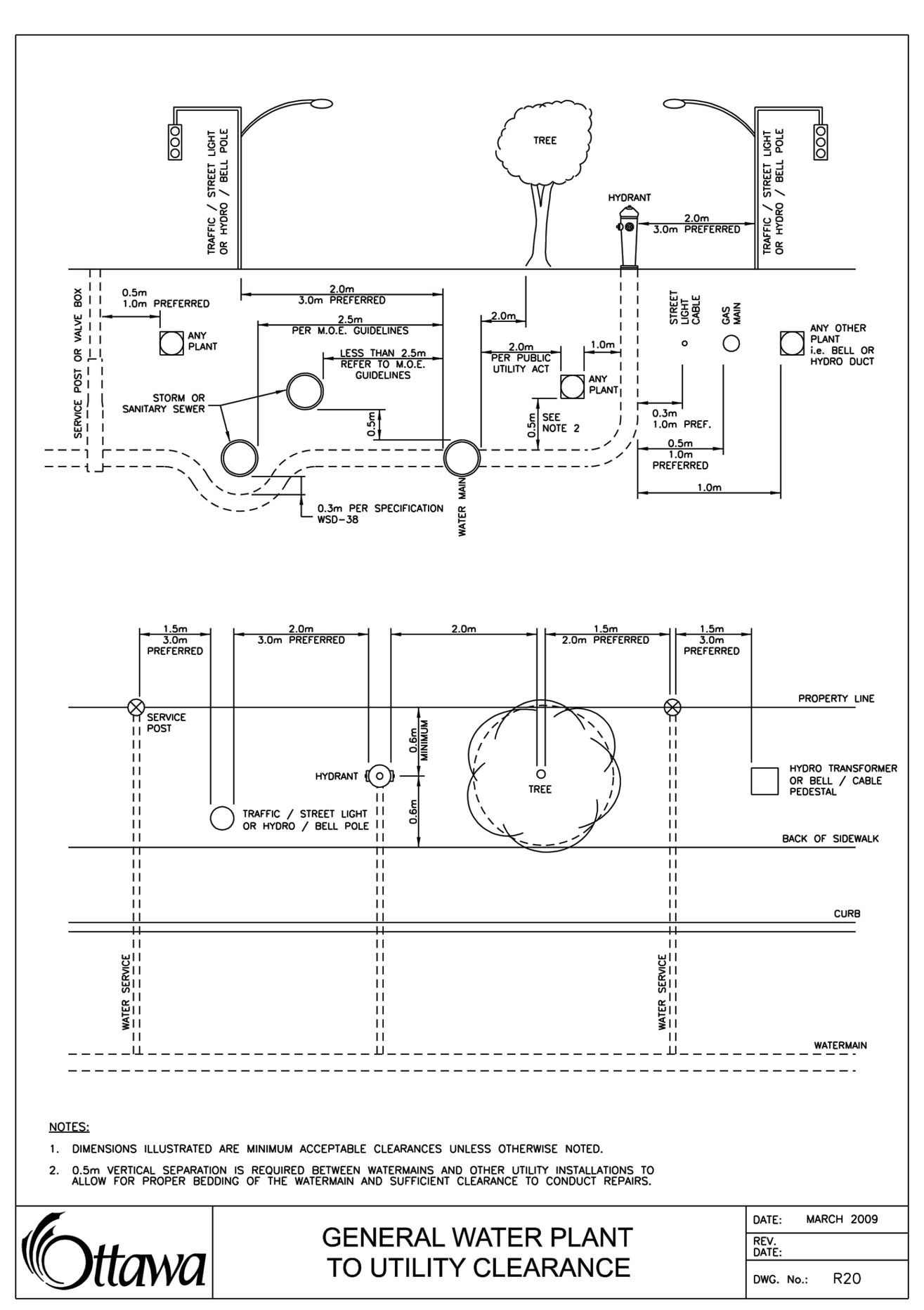
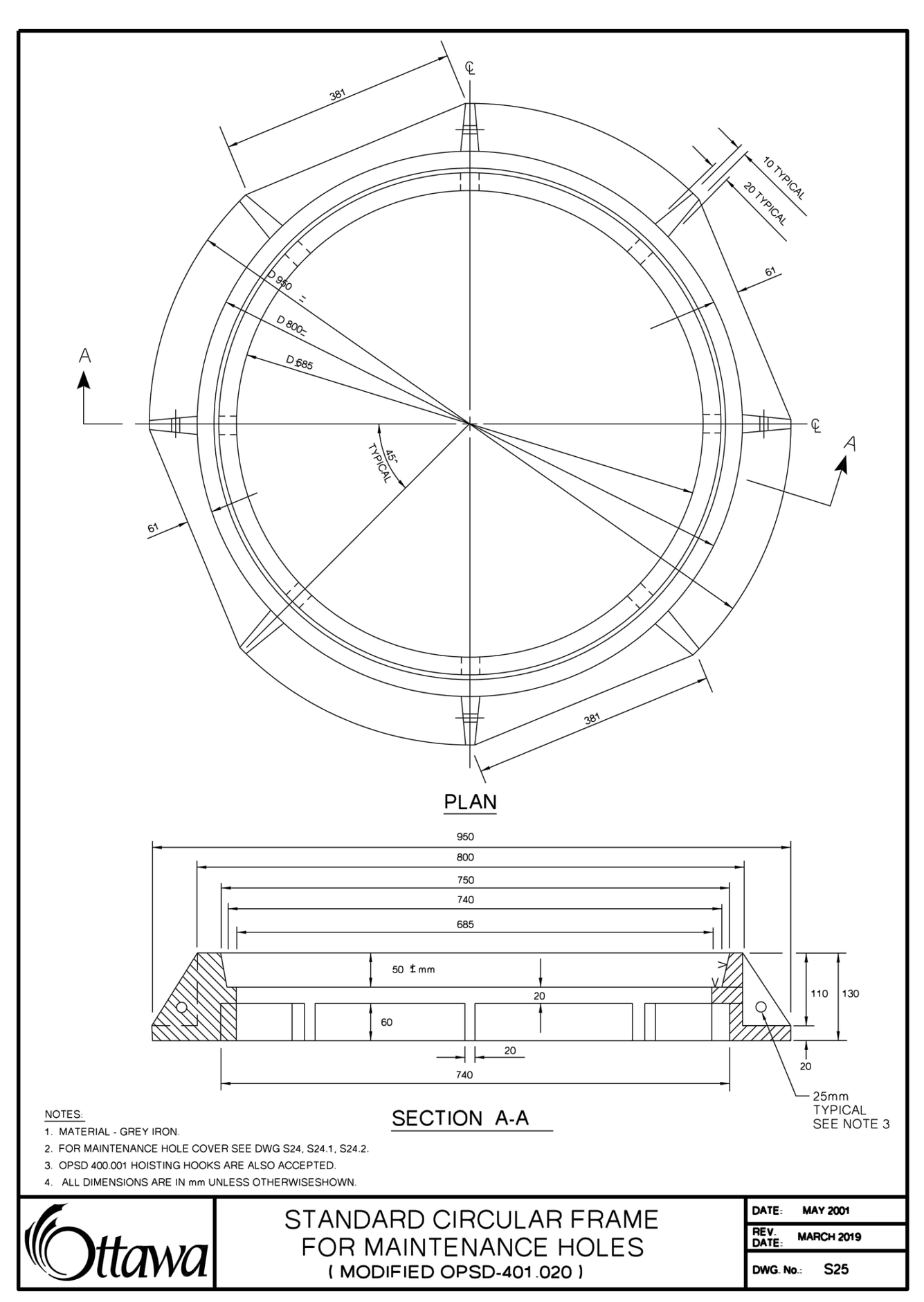
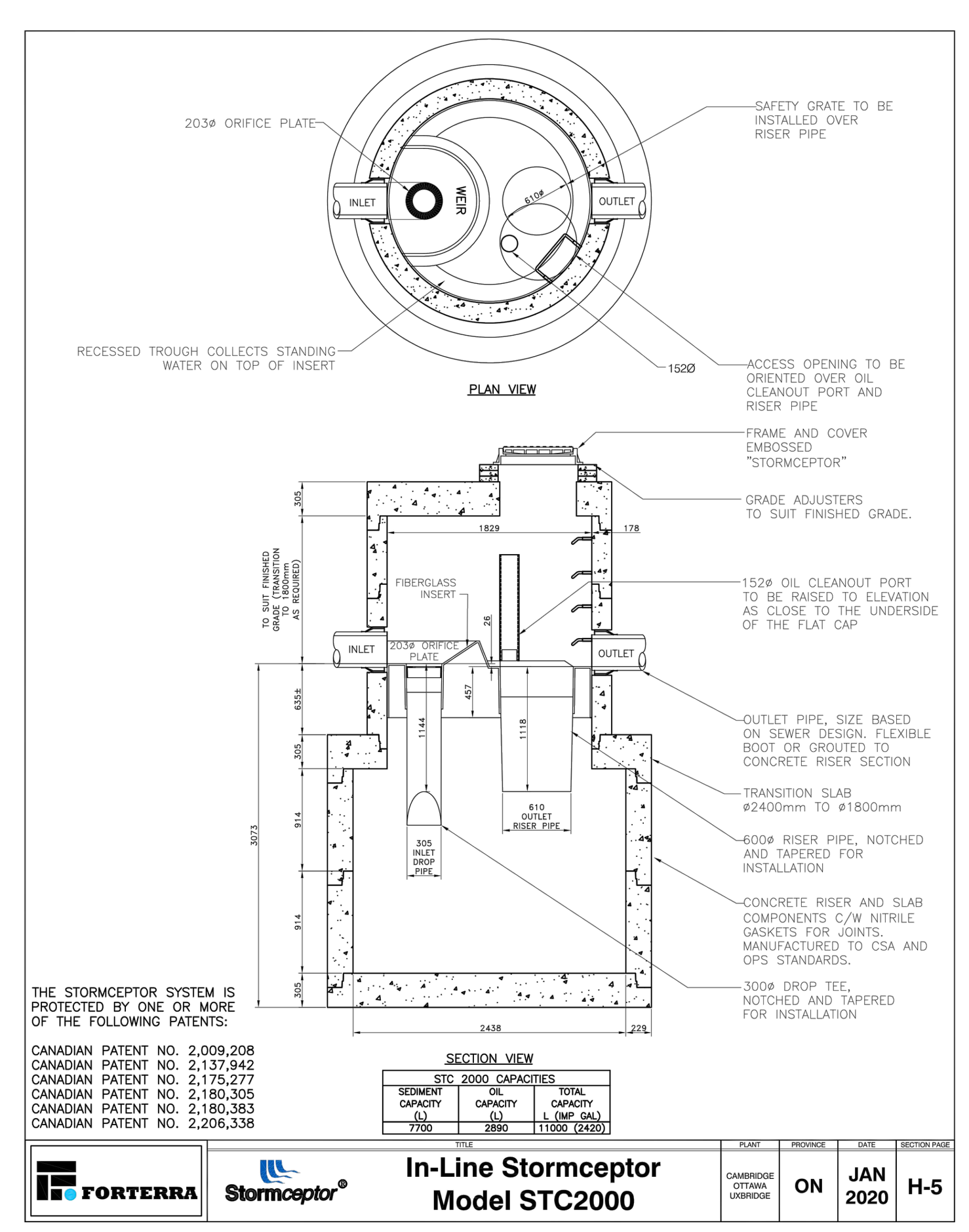


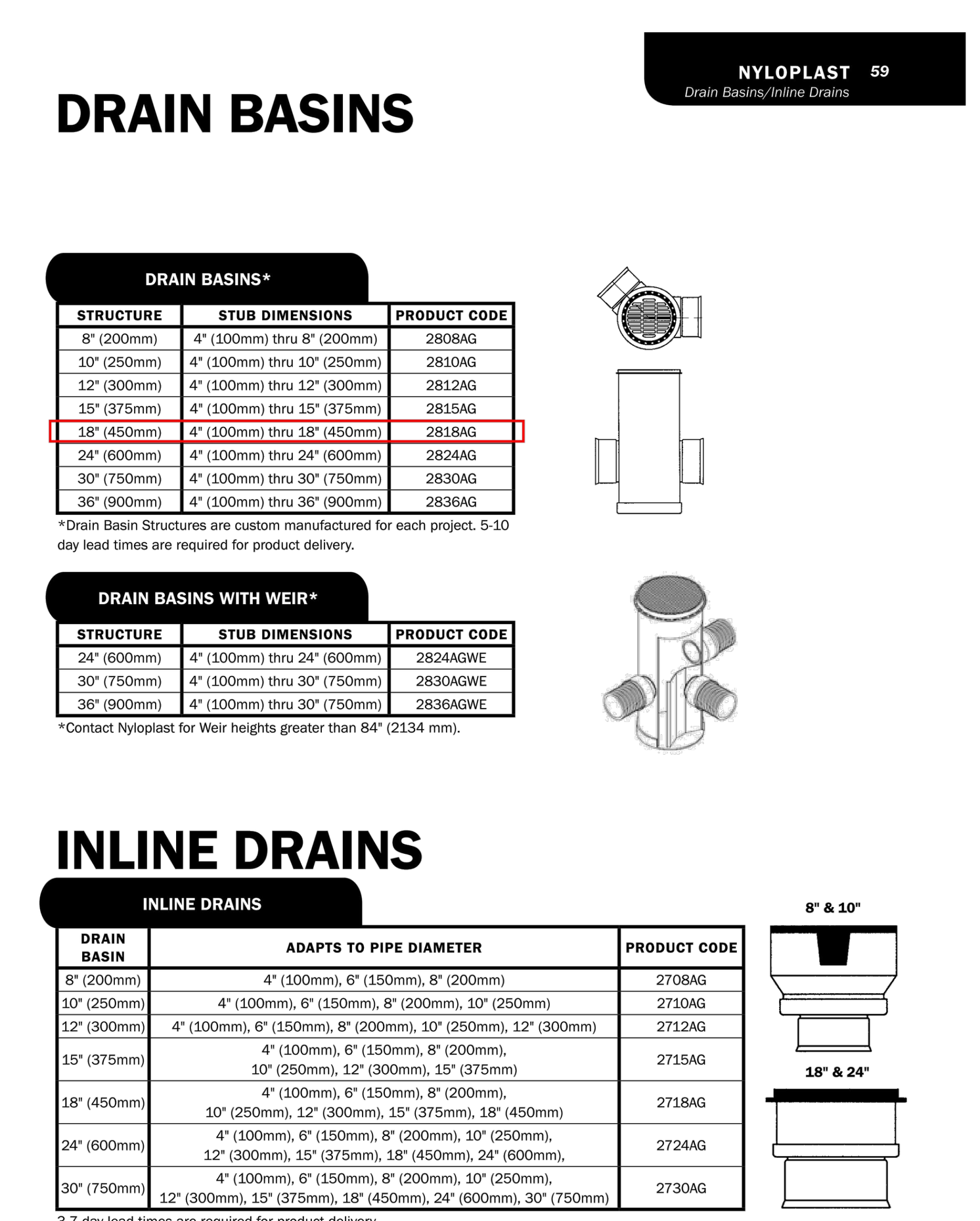
25 SEPARATION CLEARANCE
Scale: N.T.S.



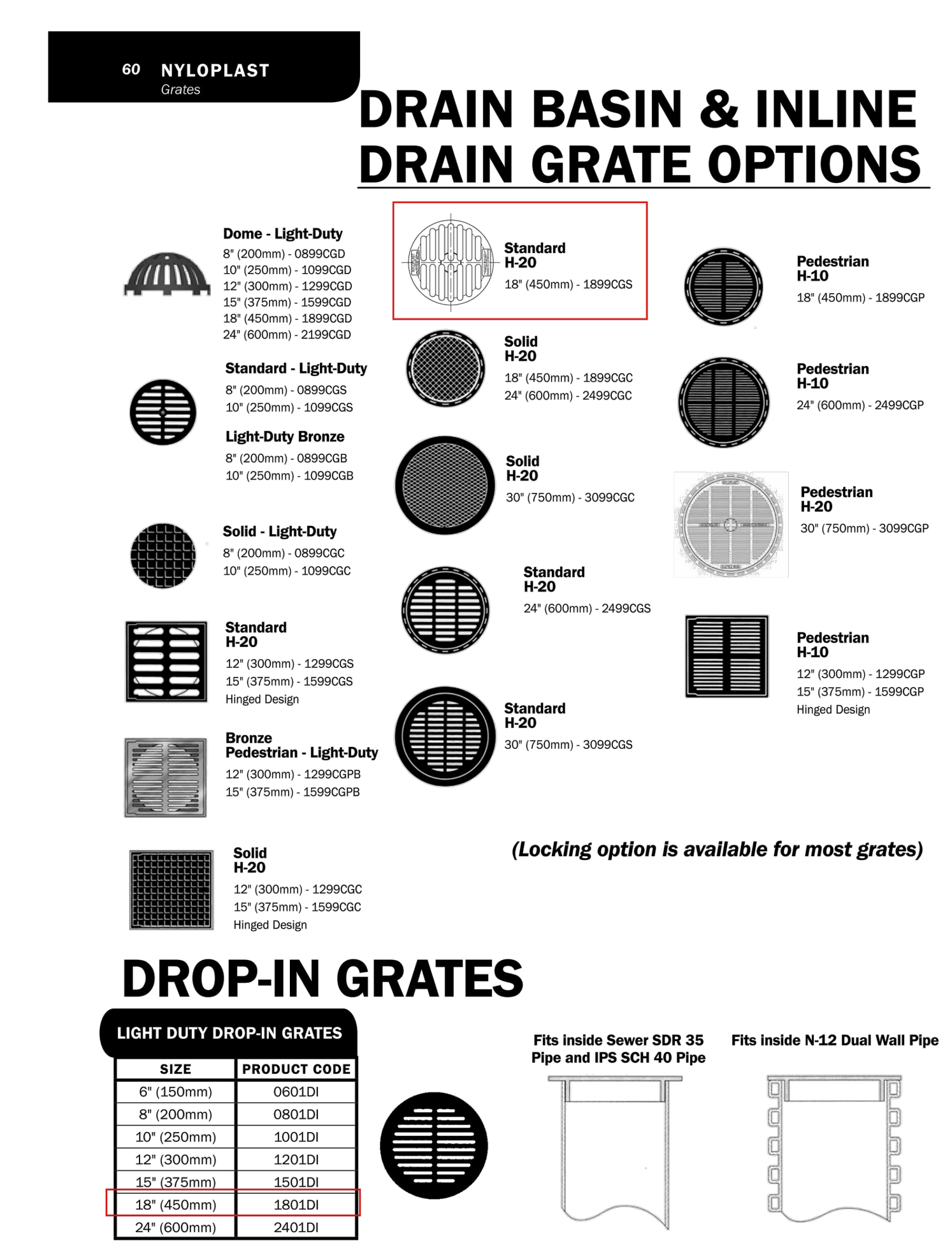
26 MANHOLE FRAME
Scale: N.T.S.



27 STC-2000
Scale: N.T.S.



28 AREA DRAIN BASIN
Scale: N.T.S.



29 DRAIN BASIN GRATE
Scale: N.T.S.

CLIENT

39 Auriga Dr. Nepean, ON K2E 7Y8

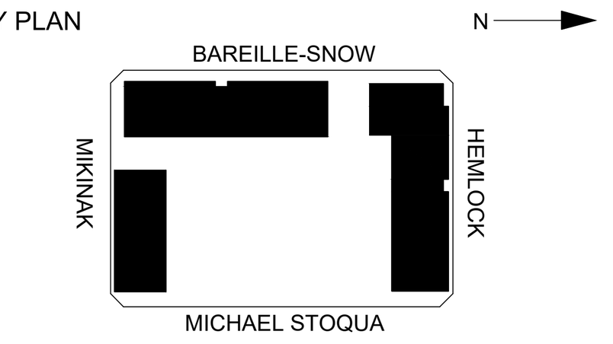
COPYRIGHT

ISSUES

No.	DESCRIPTION	DATE
1	FIRST SUBMISSION	2021-05-20
2	SECOND SUBMISSION	2021-08-24
3	BUILDING PERMIT SUBMISSION	2021-09-07
4	TENDER SUBMISSION	2021-10-05
5	TENDER RESUBMISSION	2021-11-03
6	TENDER RESUBMISSION	2021-11-09
7	L3101 SITE WORKS - ADDENDUM 1	2021-11-19
8	THIRD SUBMISSION	2021-11-23

FOR REVIEW

KEY PLAN



LICENSED PROFESSIONAL ENGINEER
November 24, 2021
W. L. THOMAS
100528014
PROVINCE OF ONTARIO

PRIME CONSULTANT

IBI GROUP
Unit 110 - 650 Dalton Avenue
Kingston ON K7M 8N7 Canada
tel 613 531 4440 fax 613 531 7789
ibigroup.com

PROJECT

MIKINAK REDEVELOPMENT

715 MIKINAK ROAD, OTTAWA, ON
CANADA K1K 2G8

PROJECT NO: 125599	SCALE: AS SHOWN
DRAWN BY: NA	CHECKED BY: BT
PROJECT MGR: CW	APPROVED BY: BT

SHEET TITLE

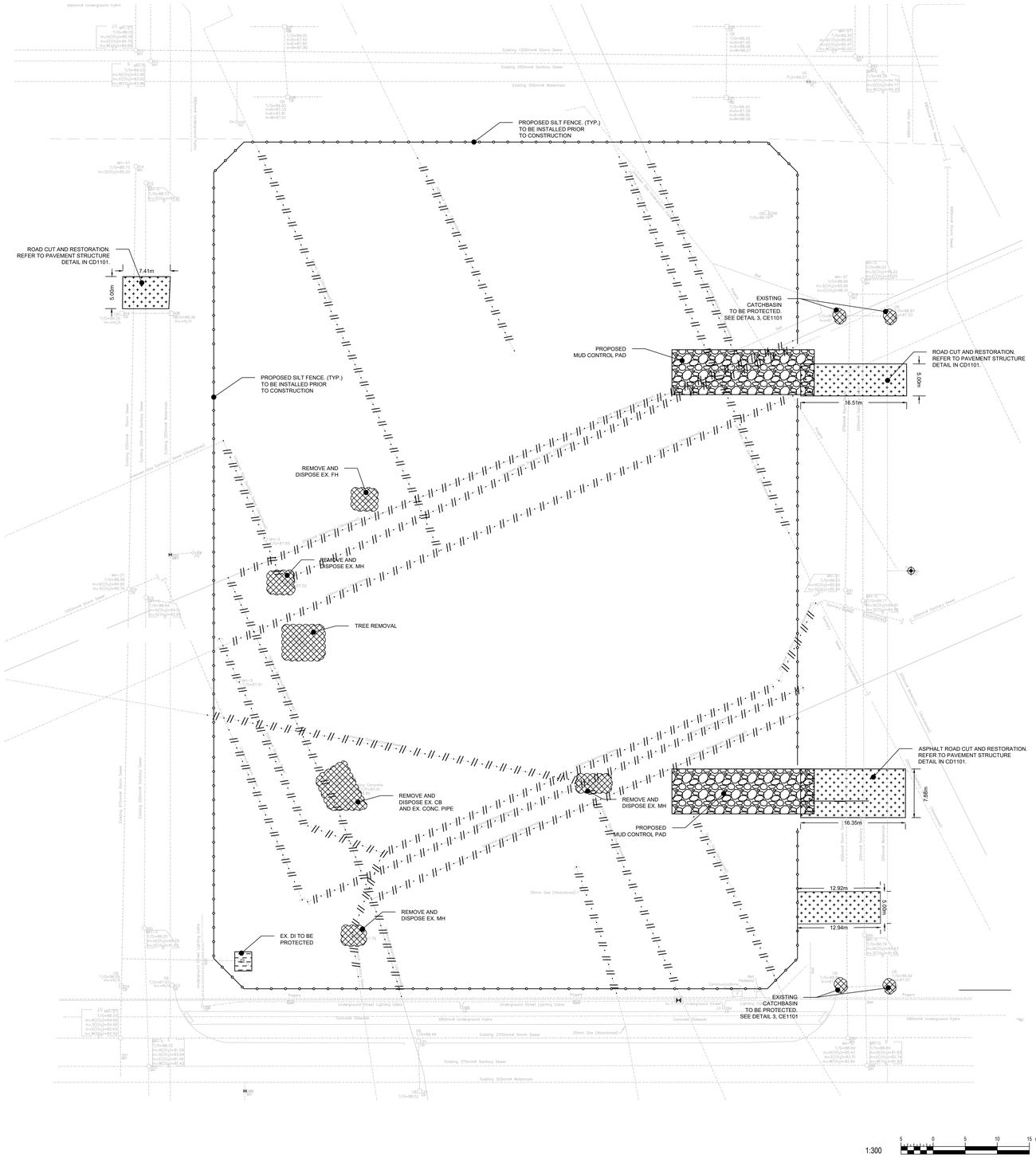
DETAILS II

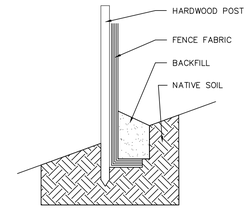
SHEET NUMBER CD1102 ISSUE 8

D07-12-21-0068

File Location: O:\125599_MikinakRedev\7.0_Production\7.03_Design\04_Civil\Sheets\CD1101-CD1102.dwg Last Saved: November 19, 2021, by nino.alvarez Plotted: Wednesday, November 24, 2021 9:04:51 AM by Nino Alvarez

#18454

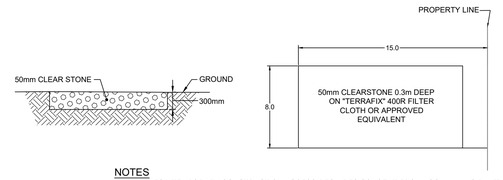




NOTES:

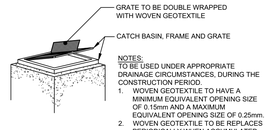
1. SILTATION FENCE FABRIC TO BE "TERRAFENCE" OR APPROVED EQUAL.
2. FABRIC WIDTH TO BE 0.6m MINIMUM.
3. WOOD POSTS TO BE 0.9m HIGH AND INSTALLED AT 2.3m MAXIMUM SPACING.
4. FENCE INSTALLATION TO BE IN ACCORDANCE WITH MANUFACTURES RECOMENDATIONS AND TO THE SATISFACTION OF THE C.R.C.A.
5. CONTRACTOR TO INSTALL FENCE UPON COMMENCEMENT OF CONSTRUCTION. FENCE SHALL BE MAINTAINED UNTIL DISTURBED AREAS HAVE BEEN REVEGITATED.

1 SILTATION FENCE DETAIL
Scale: N.T.S.



NOTES
REQUEST FOR TEMPORARY CONSTRUCTION ACCESS REQUIRES CONSENT FROM LOCAL MUNICIPALITY.

2 MUD MAT - TEMPORARY ACCESS DETAIL
Scale: N.T.S.



NOTES:
TO BE USED UNDER APPROPRIATE DRAINAGE CIRCUMSTANCES, DURING THE CONSTRUCTION PERIOD.

1. WOVEN GEOTEXTILE TO HAVE A MINIMUM EQUIVALENT OPENING SIZE OF 0.15mm AND A MAXIMUM EQUIVALENT OPENING SIZE OF 0.25mm.
2. WOVEN GEOTEXTILE TO BE REPLACES PERIODICALLY WHEN ACCUMULATED SEDIMENTS INTERFERE WITH DRAINAGE.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

3 CATCH BASIN SEDIMENT PROTECTION DETAIL
Scale: N.T.S.

True North

CLIENT

Ottawa Community Housing

39 Auriga Dr. Nepean, ON K2E 7Y8

ISSUES

No.	DESCRIPTION	DATE
1	FIRST SUBMISSION	2021-05-20
2	SECOND SUBMISSION	2021-08-24
3	BUILDING PERMIT SUBMISSION	2021-09-07
4	TENDER SUBMISSION	2021-10-05
5	TENDER RESUBMISSION	2021-11-03
6	TENDER RESUBMISSION	2021-11-09
7	L3101 SITE WORKS - ADDENDUM 1	2021-11-19
8	THIRD SUBMISSION	2021-11-23

FOR REVIEW

KEY PLAN

LEGEND

- PROPOSED PIPE REMOVAL
- PROPOSED SILT FENCE
- PROPOSED MUD CONTROL PAD
- ROAD CUT AND RESTORATION
- EXISTING TO BE PROTECTED
- REMOVE AND DISPOSE

LICENSED PROFESSIONAL ENGINEER
November 24, 2021
W. L. THOMAS
100528014
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PROJECT

MIKINAK REDEVELOPMENT

715 MIKINAK ROAD, OTTAWA, ON
CANADA K1K 2G8

PROJECT NO:	SCALE:
125599	AS SHOWN
DRAWN BY:	CHECKED BY:
NA	BT
PROJECT MGR:	APPROVED BY:
CW	BT

SHEET TITLE

SEDIMENT & EROSION CONTROL PLAN

SHEET NUMBER	ISSUE
CE1101	8

D07-10-21-0068

#18454

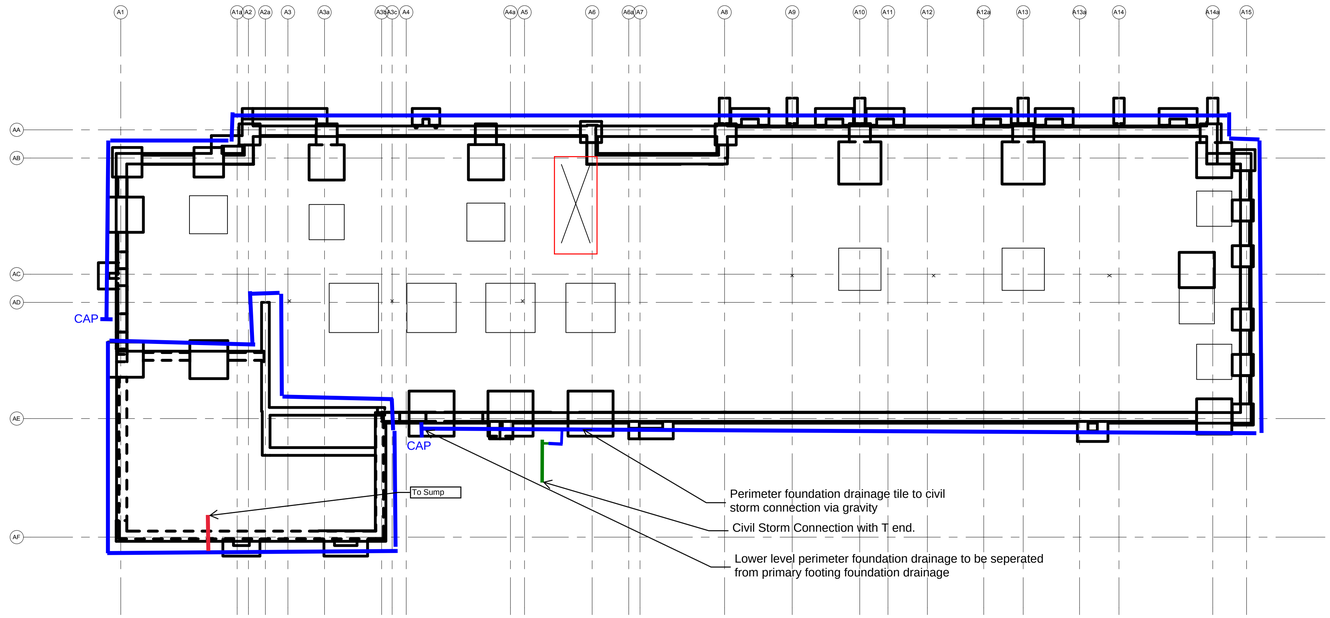
paterson group

Perimeter Drainage system consisting of 150 mm perforated drain pipe wrapped in non-woven geotextile and surrounded with 150 mm of 19 mm clear stone.

150 mm diameter drainage sleeves be cast in the footing or at the foundation wall/footing interface mechanically connected to the exterior perimeter drainage pipe

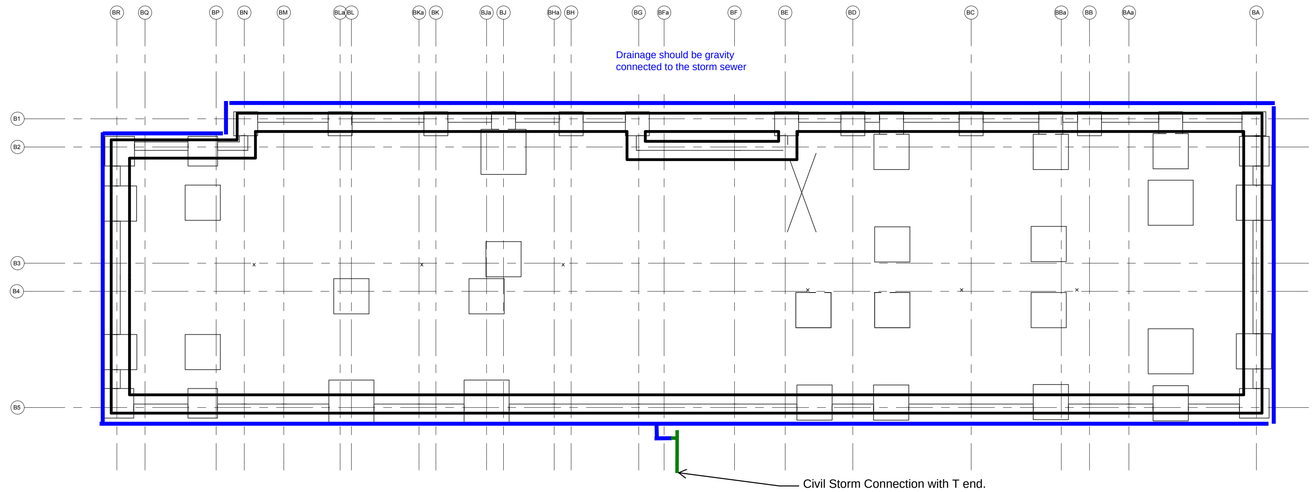
1 FOUNDATION DRAINAGE PLAN BLDG 'A'

Scale: 1:200



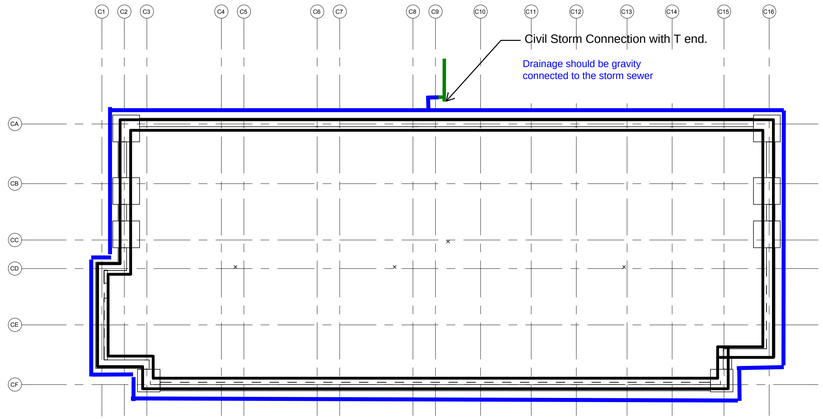
2 FOUNDATION DRAINAGE PLAN BLDG 'B'

Scale: 1:200



3 FOUNDATION DRAINAGE PLAN BLDG 'C'

Scale: 1:200



CLIENT

Ottawa Community Housing / Logement communautaire d'Ottawa

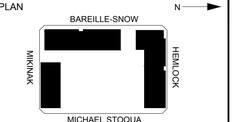
39 Auriga Dr. Nepean, ON K2E 7Y8

ISSUES

No.	DESCRIPTION	DATE
1	####	####

NOT FOR CONSTRUCTION

KEY PLAN



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PROJECT

MIKINAK REDEVELOPMENT

715 MIKINAK ROAD, OTTAWA, ON
CANADA K1K 2G8

PROJECT NO:	SCALE:
125599	as shown
DRAWN BY:	CHECKED BY:
PROJECT MGR:	APPROVED BY:

SHEET TITLE

FOUNDATION DRAINAGE PLAN

SHEET NUMBER	ISSUE
CM1101	1

D07-12-21-0068

File Location: O:\125599_MikinakRedev\7.0_Production\7.03_Design\04_Civil\Sheets\CM1101_SWM.dwg Last Saved: August 9, 2021 by nino.alvarez Plotted: Monday, August 9, 2021 1:59:08 PM by Nino Alvarez

#18454

Appendix B – Water Distribution

1. Water Demand Calculation Sheet
2. FUS Fire Flow Calculation

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WATERMAIN DEMAND CALCULATION SHEET

PROJECT : 715 MIKINAK RD
CLIENT : OTTAWA COMMUNITY HOUSING

FILE: 125599
DATE PRINTED: 21-Oct-21
DESIGN: N.A.
PAGE: 1 OF 1

NODE	RESIDENTIAL				NON-RESIDENTIAL (ICI)			AVERAGE DAILY DEMAND (l/s)			MAXIMUM DAILY DEMAND (l/s)			MAXIMUM HOURLY DEMAND (l/s)			FIRE DEMAND (l/min)
	STUDIO / 1 BEDROOM UNIT	2 BEDROOM UNITS	3 BEDROOM UNITS	POPULATION	INDUST. (ha)	COMM. (ha)	INSTIT. (ha)	RESIDENTIAL	ICI	TOTAL	RESIDENTIAL	ICI	TOTAL	RESIDENTIAL	ICI	TOTAL	
Building A	66	32	16	209		0.0083		0.68	0.0024	0.68	1.69	0.0036	1.70	3.73	0.0043	3.73	11,000
Building B	58	35	22	222.9		0.0083		0.72	0.0024	0.72	1.81	0.0036	1.81	3.97	0.0043	3.98	13,000
Building C	42	-	-	58.8		0.0073		0.19	0.0021	0.19	0.48	0.0032	0.48	1.05	0.0038	1.05	7,000
Total	166	67	38	491				1.59	0.0069	1.60	3.98	0.0104	3.99	8.75	0.0124	8.76	

POPULATION DENSITY

3 Bedroom Unit	3.1 persons/unit
2 Bedroom unit	2.1 persons/unit
Studio/1 Bedroom Unit	1.4 persons/unit

WATER DEMAND RATES

Residential	280 l/cap/day
Commercial Shopping Center	2,500 L/(1000m2)/day

PEAKING FACTORS

Maximum Daily	
Residential	2.5 x avg. day
Commercial	1.5 x avg. day
Maximum Hourly	
Residential	2.2 x avg. day
Commercial	1.8 x avg. day

FIRE DEMANDS

Single Family	10,000 l/min (166.7 l/s)
Semi Detached & Townhouse	10,000 l/min (166.7 l/s)
Medium Density	15,000 l/min (250 l/s)

NOTE

Person per/unit population based on COO Water Design Guidelines Table 4.1

IBI GROUP
650 Dalton Avenue
Kingston ON K7M 8N7 Canada
tel 613 531 4440
ibigroup.com

WATERMAIN DEMAND CALCULATION SHEET

PROJECT : 715 MIKINAK RD
CLIENT : OTTAWA COMMUNITY HOUSING

FILE: 125599
DATE PRINTED: 23-Aug-21
DESIGN: N.A.
PAGE: 1 OF 1

NODE	RESIDENTIAL				NON-RESIDENTIAL (ICI)			AVERAGE DAILY DEMAND (l/s)			MAXIMUM DAILY DEMAND (l/s)			MAXIMUM HOURLY DEMAND (l/s)			FIRE DEMAND (l/min)
	STUDIO / 1 BEDROOM UNIT	2 BEDROOM UNITS	3 BEDROOM UNITS	POPULATION	INDUST. (ha)	COMM. (ha)	INSTIT. (ha)	RESIDENTIAL	ICI	TOTAL	RESIDENTIAL	ICI	TOTAL	RESIDENTIAL	ICI	TOTAL	
Building A	66	32	16	267		0.0083		0.87	0.0024	0.87	2.16	0.0036	2.17	4.76	0.0043	4.76	11,000
Building B	58	35	22	291.0		0.0083		0.94	0.0024	0.95	2.36	0.0036	2.36	5.19	0.0043	5.19	13,000
Building C	42	-	-	63.0		0.0073		0.20	0.0021	0.21	0.51	0.0032	0.51	1.12	0.0038	1.13	7,000
Total	166	67	38	621				2.01	0.0069	2.02	5.03	0.0104	5.04	11.07	0.0124	11.08	

POPULATION DENSITY

3 Bedroom Unit	4.5 persons/unit
2 Bedroom unit	3.0 persons/unit
Studio/1 Bedroom Unit	1.5 persons/unit

WATER DEMAND RATES

Residential	280 l/cap/day
Commercial Shopping Center	2,500 L/(1000m2)/day

PEAKING FACTORS

Maximum Daily	
Residential	2.5 x avg. day
Commercial	1.5 x avg. day
Maximum Hourly	
Residential	2.2 x avg. day
Commercial	1.8 x avg. day

FIRE DEMANDS

Single Family	10,000 l/min (166.7 l/s)
Semi Detached & Townhouse	10,000 l/min (166.7 l/s)
Medium Density	15,000 l/min (250 l/s)

NOTE

Person per/unit population preferred and approved by OCH for design calculation and sizing.

Fire Flow Requirement from Fire Underwriters Survey - 715 Mikinak Street, Ottawa, ON

FLOOR AREA	BUILDING A
	sq.m
BASEMENT	185.3
LEVEL 1	1662.9
LEVEL 2	1662.9
LEVEL 3	1662.9
LEVEL 4	1414.9
LEVEL 5	1317.7
LEVEL 6	1317.7
LEVEL 7	625.2
PENTHOUSE	135.0
TOTAL GFA	9799.2

Proposed Building A

Floor Area of Largest building	1,663	m^2
Storeys	7	
Total Floor Area	9,799	m^2

1.0) F = 220C√A *(Fire Underwriters Survey)*

C	0.8	
A	9,799	m^2
F	17,422	l/min
use	**17,000**	l/min

C =	
1.5	wood frame
1.0	ordinary
0.8	non-combustible
0.6	fire-resistive

2.0) Occupancy Adjustment

Use	-25%	
Adjustment	-4356	l/min
Fire flow	**12,644**	l/min

-25%	non-combustible
-15%	limited combustible
0%	combustible
+15%	free burning
+25%	rapid burning

3.0) Sprinkler Adjustment

Use	-30%	
Adjustment	**3793**	l/min
Fire flow	**(8,851)**	l/min

-30%	system conforming to NFPA 13
-10%	Additional if water supply standard toboth system and fire department hose lines.
-50%	complete automatic system

4.0) Exposure Adjustment

Building Face	Separation (m)	Adjacent Exposed Wall Length	Stories	L*H Factor	Exposure Charge
north	>45	0.0	0	0	0%
east	>45	0.0	0	0	0%
south	17.3	21.0	7	147	15%
west	>45	0.0	0	0	0%
Total					15%
Adjustment			(1,328)	l/min	

0 to 3m	25%
3.1 to 10m	20%
10.1 to 20m	15%
20.1 to 30m	10%
30.1 to 45m	5%
45m>	0%

Maximum charge shall not exceed 75%

Fire flow	(10,179)	l/min
Use	**(10,000)**	**l/min**
	(167)	**l/s**

Fire Flow Requirement from Fire Underwriters Survey - 715 Mikinak Street, Ottawa, ON

Proposed Building B

Floor Area of Largest building	1,571	m^2
Storeys	7	
Total Floor Area	9,670	m^2

FLOOR AREA	BUILDING B
	sq.m
BASEMENT	na
LEVEL 1	1549.6
LEVEL 2	1570.9
LEVEL 3	1570.9
LEVEL 4	1403.2
LEVEL 5	1403.2
LEVEL 6	1403.2
LEVEL 7	631.1
PENTHOUSE	137.7
TOTAL GFA	9669.8

1.0) $F = 220C\sqrt{A}$ *(Fire Underwriters Survey)*

C	0.8	
A	9,670	m^2
F	17,307	l/min
use	**17,000**	l/min

C =	
1.5	wood frame
1.0	ordinary
0.8	non-combustible
0.6	fire-resistive

2.0) Occupancy Adjustment

Use	-25%	
Adjustment	-4250	l/min
Fire flow	**13,057**	l/min

-25%	non-combustible
-15%	limited combustible
0%	combustible
+15%	free burning
+25%	rapid burning

3.0) Sprinkler Adjustment

Use	-30%	
Adjustment	**3917**	l/min
Fire flow	**(9,140)**	l/min

-30%	system conforming to NFPA 13
-10%	Additional if water supply standard toboth system and fire department hose lines.
-50%	complete automatic system

4.0) Exposure Adjustment

Building Face	Separation (m)	Adjacent Exposed Wall Length	Stories	L*H Factor	Exposure Charge
north	17.3	21.0	7	147	15%
east	14.8	19.2	4	77	15%
south	>45	0.0	0	0	0%
west	>45	0.0	0	0	0%
Total					30%
Adjustment			(2,742)	l/min	

0 to 3m	25%
3.1 to 10m	20%
10.1 to 20m	15%
20.1 to 30m	10%
30.1 to 45m	5%
45m>	0%

Maximum charge shall not exceed 75%

Fire flow	(11,882)	l/min
Use	**(12,000)**	**l/min**
	(200)	**l/s**

Fire Flow Requirement from Fire Underwriters Survey - 715 Mikinak Street, Ottawa, ON

FLOOR AREA	BUILDING C
	sq.m
BASEMENT	na
LEVEL 1	805.4
LEVEL 2	805.4
LEVEL 3	805.4
LEVEL 4	805.4
LEVEL 5	na
LEVEL 6	na
LEVEL 7	na
PENTHOUSE	93.5
TOTAL GFA	3315.1

Proposed Building C

Floor Area of Largest building	805	m^2
Storeys	4	
Total Floor Area	3,315	m^2

1.0) F = 220C√A *(Fire Underwriters Survey)*

C	0.8	
A	3,315	m^2
F	10,134	l/min
use	**10,000**	l/min

C =

1.5	wood frame
1.0	ordinary
0.8	non-combustible
0.6	fire-resistive

2.0) Occupancy Adjustment

Use	-25%	
Adjustment	-2533	l/min
Fire flow	**7,467**	l/min

-25%	non-combustible
-15%	limited combustible
0%	combustible
+15%	free burning
+25%	rapid burning

3.0) Sprinkler Adjustment

Use	-30%	
Adjustment	**2240**	l/min
Fire flow	**(5,227)**	l/min

-30%	system conforming to NFPA 13
-10%	Additional if water supply standard toboth system and fire department hose lines.
-50%	complete automatic system

4.0) Exposure Adjustment

Building Face	Separation (m)	Adjacent Exposed Wall Length	Stories	L*H Factor	Exposure Charge
north	>45	0.0	0	0	0%
east	>45	0.0	0	0	0%
south	>45	0.0	0	0	0%
west	14.8	81.4	7	570	15%
Total					15%
Adjustment			(784)	l/min	

0 to 3m	25%
3.1 to 10m	20%
10.1 to 20m	15%
20.1 to 30m	10%
30.1 to 45m	5%
45m>	0%

Maximum charge shall not exceed 75%

Fire flow	(6,011)	l/min
Use	**(7,000)**	**l/min**
	(117)	**l/s**

Appendix C – Sanitary Sewer

1. Sanitary Sewer Design Sheet
2. Former CFB Rockcliffe Sanitary Sewer Design Sheet, CLC.
3. CFB Rockcliffe Master Servicing Study Wastewater Plan
4. CFB Rockcliffe Master Servicing Study Phase 1B Wastewater Plan

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Kingston ON K7M 8N7 Canada
tel 613 531 4440 fax 613 531 7789
ibigroup.com

SANITARY SEWER DESIGN SHEET

PROJECT: 125599
LOCATION: 715 MIKINAK ROAD, OTTAWA, ON
CLIENT: OTTAWA COMMUNITY HOUSING

LOCATION		Tributary Area		RESIDENTIAL								INSTITUTIONAL COMMERCIAL INDUSTRIAL							INFILTRATION ALLOWANCE			TOTAL FLOW	PROPOSED SEWER DESIGN							
				UNIT				POPULATION		FLOWS		AREA (ha)																		
Street	Area ID	From BLDG	To MH	Studio / 1 Bedroom	2 Bedroom	3 Bedroom	Area (Ha.)	INDIV.	CUM.	Peaking Factor	Peak Flow (l/s)	INSTITUITION Indiv	INSTITUITION Cumm.	COMMERCIAL Indiv	COMMERCIAL Cumm.	INDUSTRIAL Indiv	INDUSTRIAL Cumm.	Pk. Flow (l/s)	Incr. Area (Ha.)	Cum. Area (Ha.)	Flow (l/s)	(l/s)	Capacity (l/s)	Pipe Size (mm)	Length (m)	Slope (%)	Velocity @ Full Pipe (m/s)	Vel @ Design (m/s)	Avail. Cap. L/s	Avail. Cap. (%)
Existing sanitary sewer - Barielle-Snow Street		*MH-208A (Upstream)*	*MH-209A (Downstream)*																			*3.64*	*50.02*	*250*	*64.85*	*0.65*	*0.99*		*46.37*	*92.72*
Existing sanitary sewer - Michael Stoqua Street		*MH-211A (Upstream)*	*MH-166B (Downstream)*																			*1.91*	*50.02*	*250*	*52.19*	*0.65*	*0.98*		*48.11*	*96.18*
BLDG C	1	BLDG C	SAN MH3	42	0	0	0.24	58.8	59	4.00	0.76			0.0073					0.25	0.25	0.08	0.84	43.07	150	4.2	8.00	2.44	0.95	43.05	99.95
		SAN MH3	EX. MH																			0.84	21.37	150	11.4	1.97	1.21	0.58	21.35	99.91
BLDG B	2	Proposed	BLDG A	58	35	22	0.72	222.9	223	4.00	2.89			0.0083					0.73	0.73	0.24	3.13	15.23	150	20.0	1.00	0.86	0.68	12.10	79.44
BLDG A	3	BLDG A	SAN MH2	66	32	16	0.72	209.2	432	4.00	5.60			0.0083					0.73	0.73	0.24	5.84	43.07	150	3.6	8.00	2.44	1.70	37.23	86.44
		SAN MH 2	SAN MH 1						432	4.00	5.60								0.00	0.00	0.00	5.60	29.76	150	13.5	3.82	1.68	1.29	24.16	81.18

Designed: NA

Checked: BT

REVISION | DATE

Dwg Reference: CU1101 - Servicing Plan | **File Ref:** 125599 | **Date:** 2021-10-23 | **Sheet No.** 1 of 1

ICI Rates
Institution 30000
Commercial 50000
Industrial 35000

Pop. Per Bedroom (Studio / 1 Bedroom):	1.4	Bedroom/Unit
Pop. Per Bedroom (2 Bedroom):	2.1	Bedroom/Unit
Pop. Per Bedroom (3 Bedroom):	3.1	Bedroom/Unit
Avg. Per Capita Flow Rate:	280	L/day/cap
Infiltration Allowance:	0.33	l/sec/Ha
Assumed pipe loss ceofficient =	0.013	
Residential Peaking Factor:	4.00	

Person per/unit population based on Ottawa Design Guidelines Table 4.2

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SANITARY SEWER DESIGN SHEET

PROJECT: 125599
LOCATION: 715 MIKINAK ROAD, OTTAWA, ON
CLIENT: OTTAWA COMMUNITY HOUSING

LOCATION		Tributary Area		RESIDENTIAL								INSTITUTIONAL COMMERCIAL INDUSTRIAL							INFILTRATION ALLOWANCE			TOTAL FLOW	PROPOSED SEWER DESIGN							
				UNIT				POPULATION		FLOWS		AREA (ha)																		
Street	Area ID	From BLDG	To MH	Studio / 1 Bedroom	2 Bedroom	3 Bedroom	Area (Ha.)	INDIV.	CUM.	Peaking Factor	Peak Flow (l/s)	INSTITUITION Indiv	INSTITUITION Cumm.	COMMERCIAL Indiv	COMMERCIAL Cumm.	INDUSTRIAL Indiv	INDUSTRIAL Cumm.	Pk. Flow (l/s)	Incr. Area (Ha.)	Cum. Area (Ha.)	Flow (l/s)	(l/s)	Capacity (l/s)	Pipe Size (mm)	Length (m)	Slope (%)	Velocity @ Full Pipe (m/s)	Vel @ Design (m/s)	Avail. Cap. L/s	Avail. Cap. (%)
Existing sanitary sewer - Barielle-Snow Street		*MH-208A (Upstream)*	*MH-209A (Downstream)*																			*3.64*	*50.02*	*250*	*64.85*	*0.65*	*0.99*		*46.37*	*92.72*
Existing sanitary sewer - Michael Stoqua Street		*MH-211A (Upstream)*	*MH-166B (Downstream)*																			*1.91*	*50.02*	*250*	*52.19*	*0.65*	*0.98*		*48.11*	*96.18*
BLDG C	1	BLDG C	SAN MH3	42	0	0	0.24	63	63	4.00	0.82			0.0073					0.25	0.25	0.08	0.90	43.07	150	4.2	8.00	2.44	0.98	43.05	99.95
		SAN MH3	EX. MH																			0.90	21.37	150	11.4	1.97	1.21	0.60	21.35	99.91
BLDG B	2	Proposed	BLDG A	58	35	22	0.72	291	291	4.00	3.77			0.0083					0.73	0.73	0.24	4.01	15.23	150	20.0	1.00	0.86	0.73	11.22	73.66
BLDG A	3	BLDG A	SAN MH2	66	32	16	0.72	267	558	3.95	7.14			0.0083					0.73	0.73	0.24	7.38	43.07	150	3.6	8.00	2.44	1.82	35.69	82.87
		SAN MH 2	SAN MH 1						558	3.95	7.14								0.00	0.00	0.00	7.14	29.76	150	13.5	3.82	1.68	1.38	22.62	76.01

Designed: NA
Checked: BT
REVISION | DATE
Dwg Reference: CU1101 - Servicing Plan
File Ref: 125599
Date: 2021-10-25
Sheet No. 1 of 1

ICI Rates
Institution 30000
Commercial 50000
Industrial 35000

Pop. Per Bedroom (Studio / 1 Bedroom):	1.5	Bedroom/Unit
Pop. Per Bedroom (2 Bedroom):	3	Bedroom/Unit
Pop. Per Bedroom (3 Bedroom):	4.5	Bedroom/Unit
Avg. Per Capita Flow Rate:	280	L/day/cap
Infiltration Allowance:	0.33	l/sec/Ha
Assumed pipe loss ceofficient =	0.013	
Residential Peaking Factor:	4.00	

Person per/unit population preferred and approved by OCH for design calculation and sizing.

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SANITARY SEWER DESIGN SHEET

Former CFB Rockcliffe
City of Ottawa
Canada Lands Company

LOCATION				RESIDENTIAL										ICI AREAS							INFILTRATION ALLOWANCE			FIXED FLOW	TOTAL FLOW	PROPOSED SEWER DESIGN						
				AREA	UNIT TYPES				AREA	POPULATION		PEAK	PEAK	AREA (Ha)						PEAK	AREA (Ha)		FLOW			CAPACITY	LENGTH	DIA	SLOPE	VELOCITY	AVAILABLE CAPACITY	
														INSTITUTIONAL		COMMERCIAL		INDUSTRIAL													
STREET	AREA ID	FROM MH	TO MH	Phase 1B (Ha)	SF	SD	TH	APT	EXTERNAL (Ha)	IND	CUM	FACTOR	FLOW (L/s)	IND	CUM	IND	CUM	IND	CUM	FLOW (L/s)	IND	CUM	(L/s)	(L/s)	(L/s)	(L/s)	(m)	(mm)	(%)	(full) (m/s)	L/s	(%)
Phase 1A																																
croissant Squadron Crescent		*MH169A*	*MH165A*							0.0	3078.5	3.43	42.81		2.62		3.83		0.00	5.60	0.00	36.35	10.18	0.00	58.59	63.80	*27.00*	*300*	*0.40*	0.874	5.22	8.18%
Phase 1B																																
rue Moses Tennisco Street	212A	MH213A	MH212A	1.20						252.0	252.0	4.00	4.08		0.00		0.00		0.00	0.00	1.20	1.20	0.34	0.00	4.42	50.02	44.22	250	0.65	0.987	45.60	91.16%
rue Moses Tennisco Street	BLOCK 24	BLK212AE	MH212A	Design by Others																						62.04	10.00	250	1.00	1.224	62.04	100.00%
rue Moses Tennisco Street	213A	MH212A	*BULK165AN*	0.35						52.5	304.5	4.00	4.93		0.00		0.00		0.00	0.00	0.35	1.55	0.43	0.00	5.37	39.24	10.84	250	0.40	0.774	33.87	86.32%
Phase 1A																																
rue Moses Tennisco Street		*BULK165AN*	*MH165A*							0.0	304.5	4.00	4.93		0.00		0.00		0.00	0.00	0.00	1.55	0.43	0.00	5.37	39.24	*22.50*	*250*	*0.40*	0.774	33.87	86.32%
Phase 1B																																
rue Michael Stoqua Street	BLOCK 22	BLK210AE	MH210A	Design by Others																						62.04	10.00	250	1.00	1.224	62.04	100.00%
rue Michael Stoqua Street	210A	MH210A	MH211A	0.40						52.5	52.5	4.00	0.85		0.00		0.00		0.00	0.00	0.40	0.40	0.11	0.00	0.96	50.02	48.73	250	0.65	0.987	49.05	98.08%
rue Michael Stoqua Street	211A	MH211A	MH166B	0.35						52.5	105.0	4.00	1.70		0.00		0.00		0.00	0.00	0.35	0.75	0.21	0.00	1.91	50.02	52.19	250	0.65	0.987	48.11	96.18%
Phase 1A																																
rue Michael Stoqua Street		MH166B	*MH166A*							0.0	105.0	4.00	1.70		0.00		0.00		0.00	0.00	0.00	0.75	0.21	0.00	1.91	39.24	*21.10*	*250*	*0.40*	0.774	37.33	95.13%
Phase 1B																																
rue Bareille-Snow Street	208A	MH208A	MH209A	1.01						207.4	207.4	4.00	3.36		0.00		0.00		0.00	0.00	1.01	1.01	0.28	0.00	3.64	50.02	64.85	250	0.65	0.987	46.37	92.72%
rue Bareille-Snow Street	209A	MH209A	MH167B	0.35						52.6	260.0	4.00	4.21		0.00		0.00		0.00	0.00	0.35	1.36	0.38	0.00	4.59	50.02	52.87	250	0.65	0.987	45.42	90.82%
Phase 1A																																
rue Bareille-Snow Street		MH167B	*MH167A*							0.0	260.0	4.00	4.21		0.00		0.00		0.00	0.00	0.00	1.36	0.38	0.00	4.59	63.80	*20.43*	*300*	*0.40*	0.874	59.21	92.80%
Phase 1B																																
Codd's Road	230A	BLK231AN	MH231A						0.87	85.7	85.7	4.00	1.39		0.00		0.00		0.00	0.00	0.87	0.87	0.24	0.00	1.63	75.98	3.00	250	1.50	1.500	74.35	97.85%
Codd's Road	231A, EXPARK1	MH231A	*BULK176AN*						0.76	43.3	129.0	4.00	2.09		0.00		0.00		0.00	0.00	0.76	1.63	0.46	0.00	2.55	87.74	50.22	250	2.00	1.731	85.19	97.10%
Phase 1A																																
Codd's Road		*BULK176AN*	*MH176A*							0.0	129.0	4.00	2.09		0.00		0.00		0.00	0.00	0.00	1.63	0.46	0.00	2.55	55.49	*23.23*	*250*	*0.80*	1.095	52.94	95.41%

Design Parameters:

Residential			ICI Areas			
						Peak Factor
SF	3.4	p/p/u				
TH/SD	2.7	p/p/u	INST	50,000	L/Ha/day	1.5
APT	1.8	p/p/u	COM	50,000	L/Ha/day	1.5
Other	60	p/p/Ha	IND	35,000	L/Ha/day	MOE Chart
				17000	L/Ha/day	

Notes:
1. Mannings coefficient (n) = 0.013
2. Demand (per capita): 350 L/day 300 L/day
3. Infiltration allowance: 0.28 L/s/Ha
4. Residential Peaking Factor:
Harmon Formula = 1+(14/(4+P^0.5))
where P = population in thousands

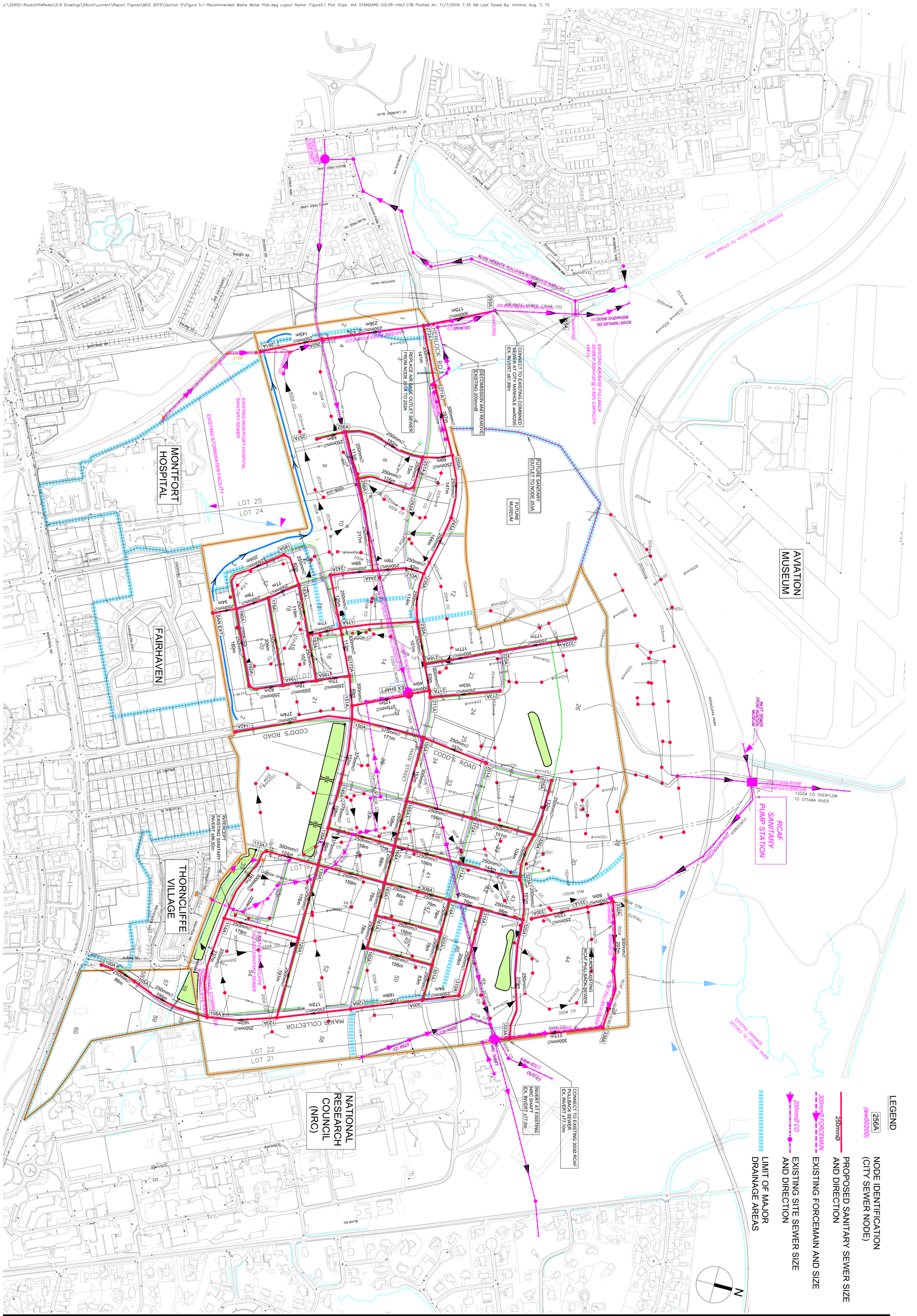
Designed: WY

Checked: JIM

Dwg. Reference: 38298-501

No.	Revision	Date
1.	City submission No. 1	2016-07-08
2.	City submission No. 2	2016-11-04
3.	City submission No. 3	2017-01-25
4.	Revised as per Mattamy's Design	2017-12-08

File Reference:	Date:	Sheet No:
38298.5.7.1	2016-07-08	2 of 2



Sheet No.

FIGURE 5.1

Drawing Title

RECOMMENDED WASTEWATER PLAN

Project Title

FORMER CFB ROCKCLIFFE MASTER SERVICING STUDY

Scale

IBI

LEGEND

250mmØ PROPOSED SANITARY SEWER SIZE AND DIRECTION

EXISTING SEWER AND DIRECTION

CODD'S ROAD SHAFT (2400mmØ CO)

CONNECT TO EXISTING CODD'S ROAD SHAFT INVERT 76.80m

OR OUTFALL

6750 CO

MH231A MH176A MH207A MH206A MH205A MH204A MH203A MH202A MH201A MH200A MH208A MH209A MH210A MH211A MH212A MH213A MH214A MH167A MH166A MH165A MH153A

MH169A MH215A MH216A MH222A MH221A MH220A MH219A MH218B MH217A MH218A MH154A MH158A MH157A MH147C MH147A MH146A MH145A MH144A MH143A

EXISTING THORNCLIFFE VILLAGE SANITARY SEWER (TO BE ABANDONNED)

INTERCEPT EXISTING SANITARY

N

Scale 0 100 200

Project Title
DESIGN BRIEF
WATERIDGE VILLAGE
AT ROCKCLIFFE
PHASE 1B

Drawing Title
RECOMMENDED
WASTEWATER PLAN

Sheet No.
FIGURE 3.1

J:\38298-CFB\Rockcliffe\5.0 Drawings\50civil\current Ph1B\Design Brief\Figure 3.1 Recommended Wastewater Plan.dwg Layout Name: FIGURE 3.1 Plot Style: AIA STANDARD COLOR-HALF.CTB Plot Scale: 1:0.989 Plotted At: 11/4/2016 4:11 PM Last Saved By: mmilne Last Saved At: Nov. 4, 16

Appendix D – Stormwater

1. Storm Sewer Design Sheet
2. SWM Pre-Post Figures
3. Storage Volume Calculations
4. Orifice Plate Calculation
5. Stormceptor STC-2000
6. Ponding Plan
7. Storm HGL Calculation Sheet
8. Wateridge Village Ph1B – Michael Stoqua St.

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WEIGHTED RUNOFF COEFFICIENTS

PROJECT: 125599
LOCATION: 715 MIKINAK ROAD, OTTAWA, ON
CLIENT: OTTAWA COMMUNITY HOUSING

Drainage Area		Weighted Runoff Coefficient					
		Grass		Pavers		Bldg/Asphalt/Concrete	
ID	Total Area (m^2)	0.25	0.40	0.60	0.80	0.90	Cw
Existing - See SWM1							
100	12,184	12,184	0	0	0	0	0.25
Total.-	12,184	12,184	0	0	0	0	0.25
Proposed - See SWM2							
UNC1	180	59	0	0	0	107	0.62
UNC2	633	410	0	0	0	198	0.44
BLDG A	1,879	0	0	0	0	1,879	0.90
100	2,409	603	0	1,230	0	576	0.58
BLDG B	1,742	0	0	0	0	1,742	0.90
UNC3	646	439	0	94	0	115	0.42
200	1,242	262	0	587	0	393	0.62
300	2,300	562	0	1,136	0	600	0.59
BLDG C	929	0	0	0	0	929	0.90
UNC4	223	137	0	0	0	86	0.50
Total.-	12,184	2,472	0	3,047	0	6,625	0.69

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EXISTING MINOR STORM EVENT

PROJECT: 125599
LOCATION: 715 MIKINAK ROAD, OTTAWA, ON
CLIENT: OTTAWA COMMUNITY HOUSING

Drainage Area			AREA (ha)						RATIONAL DESIGN FLOW					
CP	Area ID	Area	C= 0.25	C= 0.40	C= 0.60	C= 0.80	C= 0.90	Cw	Indiv. 2.78AC	Accum. 2.78AC	Inlet (min.)	Total Time (min.)	I (mm/Hr)	Peak Flow (L/s)
CP # 1	100	1.22	1.22	0.00	0.00	0.00	0.00	0.25	0.85	0.85	15.00	15.00	83.56	**70.8**

Designed:
NA

Checked:
BT

Dwg. Reference:
FIGURE SWM1 - EXISTING DRAINAGE EXHIBIT

Revision

Sheet No:	Date
1 of 1	2021-08-23

Q = 2.78AIC, where:
Q = Peak Flow in Litres per Second (l/s)
A = Area in Hectares (ha.)
I = Rainfall Intensity in Millimeters per Hour (mm/hr)
[I=998.071/(tc+6.053)^0.814] 5yr

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EXISTING MAJOR STORM EVENT

PROJECT: 125599
LOCATION: 715 MIKINAK ROAD, OTTAWA, ON
CLIENT: OTTAWA COMMUNITY HOUSING

Drainage Area			AREA (ha)						RATIONAL DESIGN FLOW					
CP	Area ID	Area	C= 0.25	C= 0.40	C= 0.60	C= 0.80	C= 0.90	Cw	Indiv. 2.78AC	Accum. 2.78AC	Inlet (min.)	Total Time (min.)	I (mm/Hr)	Peak Flow (L/s)
CP # 1	100	1.22	1.22	0.00	0.00	0.00	0.00	0.25	0.85	0.85	15.00	15.00	142.89	**121.0**

Designed:
NA

Checked:
BT

Dwg. Reference:
FIGURE SWM1 - EXISTING DRAINAGE EXHIBIT

Revision

Sheet No: 1 of 1

Date 2021-05-12

Q = 2.78AIC, where:
Q = Peak Flow in Litres per Second (l/s)
A = Area in Hectares (ha.)
I = Rainfall Intensity in Millimeters per Hour (mm/hr)
[I=1735.688/(tc+6.014)^0.820]

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STORM SEWER DESIGN - MINOR STORM

PROJECT: 125599
LOCATION: 715 MIKINAK ROAD, OTTAWA, ON
CLIENT: OTTAWA COMMUNITY HOUSING

LOCATION					AREA (ha)								RATIONAL DESIGN FLOW							SEWER DATA							
Concentration Point	Area ID	FROM MH	TO MH	Area (ha)	C= 0.25	C= 0.40	C= 0.60	C= 0.80	C= 0.90	Cw	Indiv. 2.78AC	Accum. 2.78AC	Inlet (min.)	Time In Pipe (min.)	Total Time (min.)	I (2YR) (mm/Hr)	I (5YR) (mm/Hr)	Peak Flow (2YR) (L/s)	Peak Flow (5YR) (L/s)	Cap. (L/s)	Length (m)	Pipe Dia. (mm)	Slope (%)	Full Pipe Vel. (m/s)	Design Vel. (m/s)	Avail. Cap. (L/s)	Avail. Cap. (%)
Proposed																											
	UNC1	Site	Ex. CB	0.0180	0.006	0.000	0.000	0.000	0.011	0.616	0.031	0.031	15.00	0.00	15.00	61.77	83.56	1.9	2.6								
	UNC2	Site	Ex. CB	0.0633	0.041	0.000	0.000	0.000	0.020	0.443	0.078	0.078	15.00	0.00	15.00	61.77	83.56	4.8	6.5								
	100	BLDG A	STMMH1	0.1879	0.000	0.000	0.000	0.000	0.188	0.900	0.470	0.470	15.00	0.16	15.16	61.77	83.56	29.0	39.3	98.4	12.6	300	0.95	1.35	1.27	59.08	60.1%
	100	STMMH1	STMMH4									0.470	15.00	0.27	15.27	61.77	83.56	29.0	39.3	128.8	25.1	300	1.63	1.77	1.55	89.50	69.5%
	100	STMMH4	BIO SWALE1									**0.470**	15.00	0.13	15.13	61.77	83.56	29.0	39.3	133.8	12.3	300	1.76	1.83	1.59	94.54	70.6%
	100	STMMH4	STMMH2									0.470	15.00	0.34	15.34	61.77	83.56	29.0	39.3	173.3	39.4	300	2.95	2.38	1.92	134.01	77.3%
	100	CB1	AD1	0.2409	0.066	0.000	0.062	0.000	0.113	0.644	0.431	0.431	15.00	0.05	15.05	61.77	83.56	26.6	36.0	68.5	4.1	250	1.22	1.35	1.37	32.49	47.4%
	100	AD1	STMMH2									**0.431**	15.00	0.07	15.07	61.77	83.56	26.6	36.0	174.2	10.8	250	7.88	3.44	2.71	138.14	79.3%
	200	BLDG B	STMMH5	0.1742	0.000	0.000	0.000	0.000	0.174	0.900	0.436	0.436	15.00	0.27	15.27	61.77	83.56	26.9	36.4	81.4	17.4	300	0.65	1.12	1.08	44.94	55.2%
	200	STMMH5	BIO SWALE 2									**0.436**	15.00	0.18	15.18	61.77	83.56	26.9	36.4	69.9	10.6	300	0.48	0.96	0.97	33.49	47.9%
	200	STMMH5	STMMH3									0.436	15.00	0.36	15.36	61.77	83.56	26.9	36.4	166.4	39.4	300	2.72	2.28	1.82	129.95	78.1%
	200	CB2	AD2	0.1242	0.031	0.000	0.045	0.000	0.049	0.632	0.218	**0.654**	15.00	0.04	15.04	61.77	83.56	40.4	54.7	155.9	4.2	300	2.39	2.14	1.95	101.28	65.0%
	200	AD2	TEE									**0.654**	15.00	0.02	15.02	61.77	83.56	40.4	54.7	285.4	4.2	300	8.00	3.91	3.01	230.72	80.8%
	UNC3	Site	Ex. CB	0.0646	0.044	0.000	0.009	0.000	0.011	0.417	0.075	0.075	15.00	0.00	15.00	61.77	83.56	4.6	6.3								
		STMMH2	**STMMH3**									**0.634**	**15.00**	**0.29**	**15.29**	61.77	83.56	**39.2**	**53.0**	252.3	21.1	450	0.72	1.54	1.21	199.33	79.0%
	300	CB3	AD3	0.2300	0.067	0.000	0.060	0.000	0.103	0.632	0.404	0.404	15.00	0.04	15.04	61.77	83.56	25.0	33.8	115.4	4.3	250	3.46	2.28	1.98	81.59	70.7%
	300	AD3	TEE									**0.404**	15.00	0.03	15.03	61.77	83.56	25.0	33.8	175.5	4.4	250	8.00	3.46	2.67	141.69	80.7%
	300	BLDG C	STMMH6	0.0929	0.000	0.000	0.000	0.000	0.093	0.900	0.233	0.233	15.00	0.15	15.15	61.77	83.56	14.4	19.4	73.1	10.6	250	1.39	1.44	1.22	53.69	73.4%
	300	STMMH6	BIO SWALE 3									**0.233**	15.00	0.18	15.18	61.77	83.56	14.4	19.4	62.0	11.9	250	1.00	1.22	1.08	42.59	68.7%
	300	STMMH6	STMMH7									0.233	15.00	0.12	15.12	61.77	83.56	14.4	19.4	175.5	15.9	250	8.00	3.46	2.28	156.05	88.9%
	300	**STMMH3**	**STMMH7**									**0.634**	**15.00**	**0.26**	**15.26**	61.77	83.56	**39.2**	**53.0**	319.0	22.4	450	1.15	1.94	1.43	265.99	83.4%
	300	**STMMH7**	**STC MH1**									**0.634**	**15.00**	**0.05**	**15.05**	61.77	83.56	**39.2**	**53.0**	202.8	4.9	375	1.23	1.78	1.50	149.82	73.9%
	300	**STC MH1**	**STMMH8**									**0.634**	**15.00**	**0.09**	**15.09**	61.77	83.56	**39.2**	**53.0**	142.9	6.0	375	0.61	1.25	1.16	89.85	62.9%
		STMMH8	EX. STM									**0.634**	**15.00**	**0.16**	**15.16**	61.77	83.56	**39.2**	**53.0**	77.6	7.1	375	0.18	0.68	0.73	24.64	31.7%
	UNC4	Site	Ex. CB	0.0223	0.014	0.000	0.000	0.000	0.009	0.501	0.031	0.031	15.00	0.00	15.00	61.77	83.56	1.9	2.6								

Designed:
NA

Checked:
BT

Dwg. Reference:
FIGURE SWM 2 - POST DEV. DRAINAGE EXHIBIT

Revision	Date

File Ref:	Date:	Sheet No:
125599	2021-11-02	1 of 1

Q = 2.78AIC, where:
Q = Peak Flow in Liters per Second (l/s)
A = Area in Hectares (ha.)
I = Rainfall Intensity in Millimeters per Hour (mm/hr)
[I=732.951/(tc+6.199)^0.810] 2yr
[I=998.071/(tc+6.053)^0.814] 5yr
* A minimum tc of 15 minutes was used for design development

Manning's Coefficient (n) = 0.013

Max Velocity @Design Flow = 6.0 m/s
Min. Velocity @ Design Flow = 0.75 m/s
Flow limit controlled with Orifice Plate at 53.0 L/s

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tel 613 531 4440 fax 613 531 7789
ibigroup.com

STORM SEWER DESIGN - MAJOR STORM

PROJECT: 125599
LOCATION: 715 MIKINAK ROAD, OTTAWA, ON
CLIENT: OTTAWA COMMUNITY HOUSING

LOCATION					AREA (ha)								RATIONAL DESIGN FLOW					SEWER DATA							
Concentration Point	Area ID	FROM MH	TO MH	Area (ha)	C= 0.25	C= 0.40	C= 0.60	C= 0.80	C= 0.90	Cw	Indiv. 2.78AC	Accum. 2.78AC	Inlet (min.)	Time In Pipe (min.)	Total Time (min.)	I (mm/Hr)	Peak Flow (L/s)	Cap. (L/s)	Length (m)	Pipe Dia. (mm)	Slope (%)	Full Pipe Vel. (m/s)	Design Vel. (m/s)	Avail. Cap. (L/s)	Avail. Cap. (%)
Proposed																									
	UNC1	Site	Ex. CB	0.0180	0.006	0.000	0.000	0.000	0.011	0.616	0.031	0.031	15.00	0.00	15.00	142.89	4.4								
	UNC2	Site	Ex. CB	0.0633	0.041	0.000	0.000	0.000	0.020	0.443	0.078	0.078	15.00	0.00	15.00	142.89	11.1								
	100	BLDG A	STMMH1	0.1879	0.000	0.000	0.000	0.000	0.188	0.900	0.470	0.470	15.00	0.14	15.14	142.89	67.2	98.4	12.6	300	0.95	1.35	1.45	31.18	31.7%
	100	STMMH1	STMMH4									0.470	15.00	0.23	15.23	142.89	67.2	128.8	25.1	300	1.63	1.77	1.78	61.61	47.8%
	100	STMMH4	BIO SWALE1									**0.470**	15.00	0.11	15.11	142.89	67.2	133.8	12.3	300	1.76	1.83	1.83	66.64	49.8%
	100	STMMH4	STMMH2									0.470	15.00	0.29	15.29	142.89	67.2	173.3	39.4	300	2.95	2.38	2.22	106.12	61.2%
	100	CB1	AD1	0.2409	0.066	0.000	0.062	0.000	0.113	0.644	0.431	0.431	15.00	0.04	15.04	142.89	61.6	68.5	4.1	250	1.22	1.35	1.53	6.91	10.1%
	100	AD1	STMMH2									**0.431**	15.00	0.06	15.06	142.89	61.6	174.2	10.8	250	7.88	3.44	3.14	112.56	64.6%
	200	BLDG B	STMMH5	0.1742	0.000	0.000	0.000	0.000	0.174	0.900	0.436	0.436	15.00	0.24	15.24	142.89	62.3	81.4	17.4	300	0.65	1.12	1.23	19.08	23.5%
	200	STMMH5	BIO SWALE 2									**0.436**	15.00	0.16	15.16	142.89	62.3	69.9	10.6	300	0.48	0.96	1.08	7.63	10.9%
	200	STMMH5	STMMH3									0.436	15.00	0.31	15.31	142.89	62.3	166.4	39.4	300	2.72	2.28	2.11	104.09	62.6%
	200	CB2	AD2	0.1242	0.031	0.000	0.045	0.000	0.049	0.632	0.218	**0.654**	15.00	0.03	15.03	142.89	93.5	155.9	4.2	300	2.39	2.14	2.23	62.47	40.1%
	200	AD2	TEE									**0.654**	15.00	0.02	15.02	142.89	93.5	285.4	4.2	300	8.00	3.91	3.49	191.91	67.2%
	UNC3	Site	Ex. CB	0.0646	0.044	0.000	0.009	0.000	0.011	0.417	0.075	0.075	15.00	0.00	15.00	142.89	10.7								
		STMMH2	**STMMH3**									**0.371**	**15.00**	**0.29**	**15.29**	142.89	**53.0**	252.3	21.1	450	0.72	1.54	1.21	199.33	79.0%
	300	CB3	AD3	0.2300	0.067	0.000	0.060	0.000	0.103	0.632	0.404	0.404	15.00	0.03	15.03	142.89	57.8	115.4	4.3	250	3.46	2.28	2.28	57.60	49.9%
	300	AD3	TEE									**0.404**	15.00	0.02	15.02	142.89	57.8	175.5	4.4	250	8.00	3.46	3.10	117.69	67.1%
	300	BLDG C	STMMH6	0.0929	0.000	0.000	0.000	0.000	0.093	0.900	0.233	0.233	15.00	0.12	15.12	142.89	33.2	76.0	10.6	250	1.50	1.50	1.45	42.78	56.3%
	300	STMMH6	BIO SWALE 3									**0.233**	15.00	0.16	15.16	142.89	33.2	62.0	11.9	250	1.00	1.22	1.24	28.80	46.4%
	300	STMMH6	STMMH7									0.233	15.00	0.10	15.10	142.89	33.2	175.5	15.9	250	8.00	3.46	2.66	142.25	81.1%
	300	**STMMH3**	**STMMH7**									**0.371**	**15.00**	**0.26**	**15.26**	142.89	**53.0**	319.0	22.4	450	1.15	1.94	1.43	265.99	83.4%
	300	**STMMH7**	**STC MH1**									**0.371**	**15.00**	**0.05**	**15.05**	142.89	53.0	202.8	4.9	375	1.23	1.78	1.50	149.81	73.9%
	300	**STC MH1**	**STMMH8**									**0.371**	**15.00**	**0.10**	**15.10**	142.89	53.0	114.0	6.0	375	0.61	1.00	0.98	61.00	53.5%
		STMMH8	EX. STM									**0.371**	**15.00**	**0.15**	**15.15**	142.89	53.0	82.1	7.1	375	0.18	0.72	0.77	29.07	35.4%
	UNC4	Site	Ex. CB	0.0223	0.014	0.000	0.000	0.000	0.009	0.501	0.031	0.031	15.00	0.00	15.00	142.89	4.4								

Designed:
NA

Checked:
BT

Revision	Date

Dwg. Reference:
FIGURE SWM 2 - POST DEV. DRAINAGE EXHIBIT

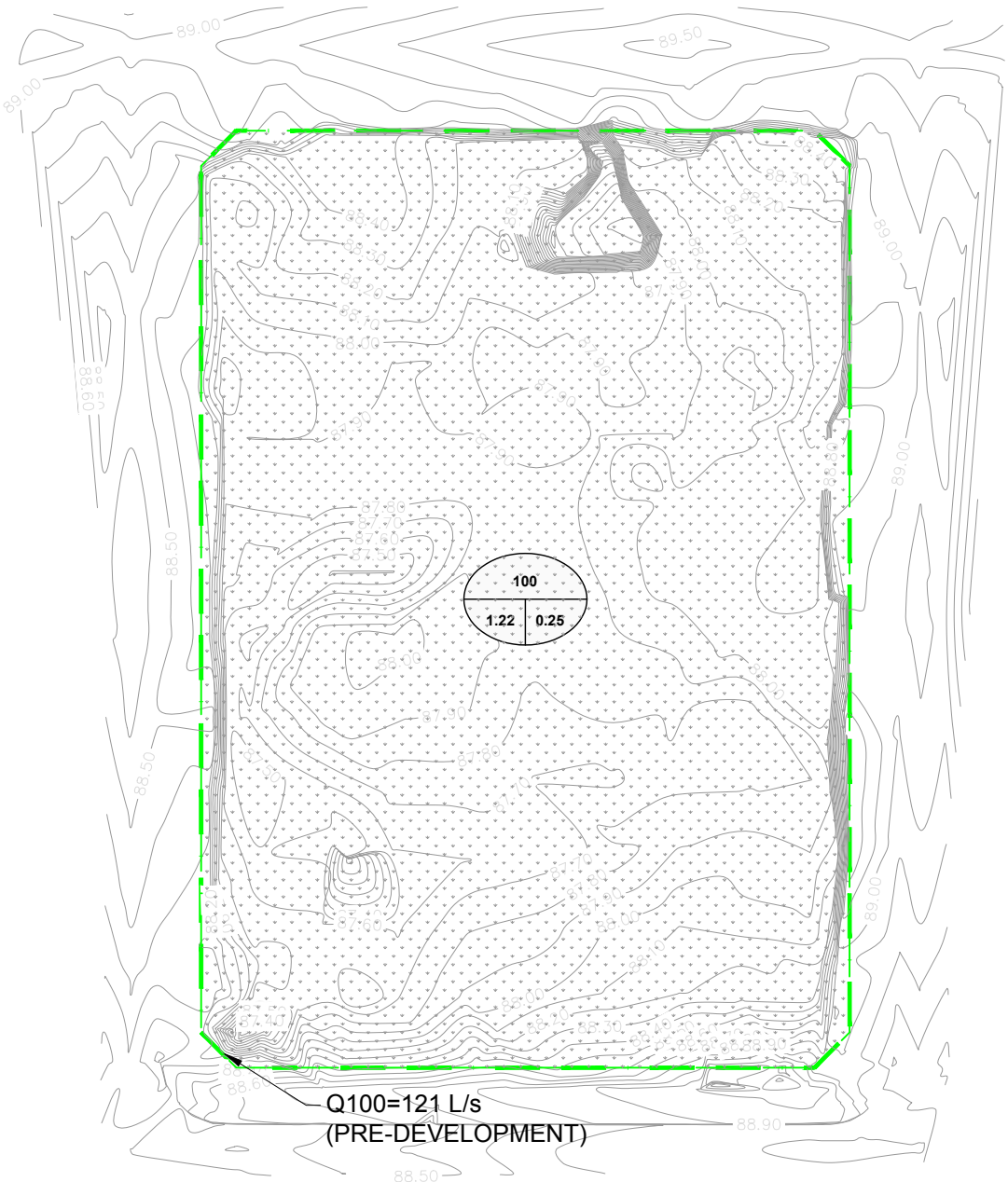
File Ref: 125599
Date: 2021-11-02
Sheet No: 1 of 1

Q = 2.78AIC, where:
Q = Peak Flow in Liters per Second (l/s)
A = Area in Hectares (ha.)
I = Rainfall Intensity in Millimeters per Hour (mm/hr)
[I=1735.688/(tc+6.014)^0.820] 100yr

* A minimum tc of 15 minutes was used for design development

Manning's Coefficient (n) = 0.013

Max Velocity @Design Flow = 6.0 m/s
Min. Velocity @ Design Flow = 0.75 m/s
Flow limit controlled with Orifice Plate at 53.0 L/s



LEGEND

EX. LANDSCAPED AREA

DRAINAGE AREA LABEL — 1 / 0.75 | 0.90 — AREA (ha.) / RUNOFF COEFFICIENT

EX. CATCHMENT AREA

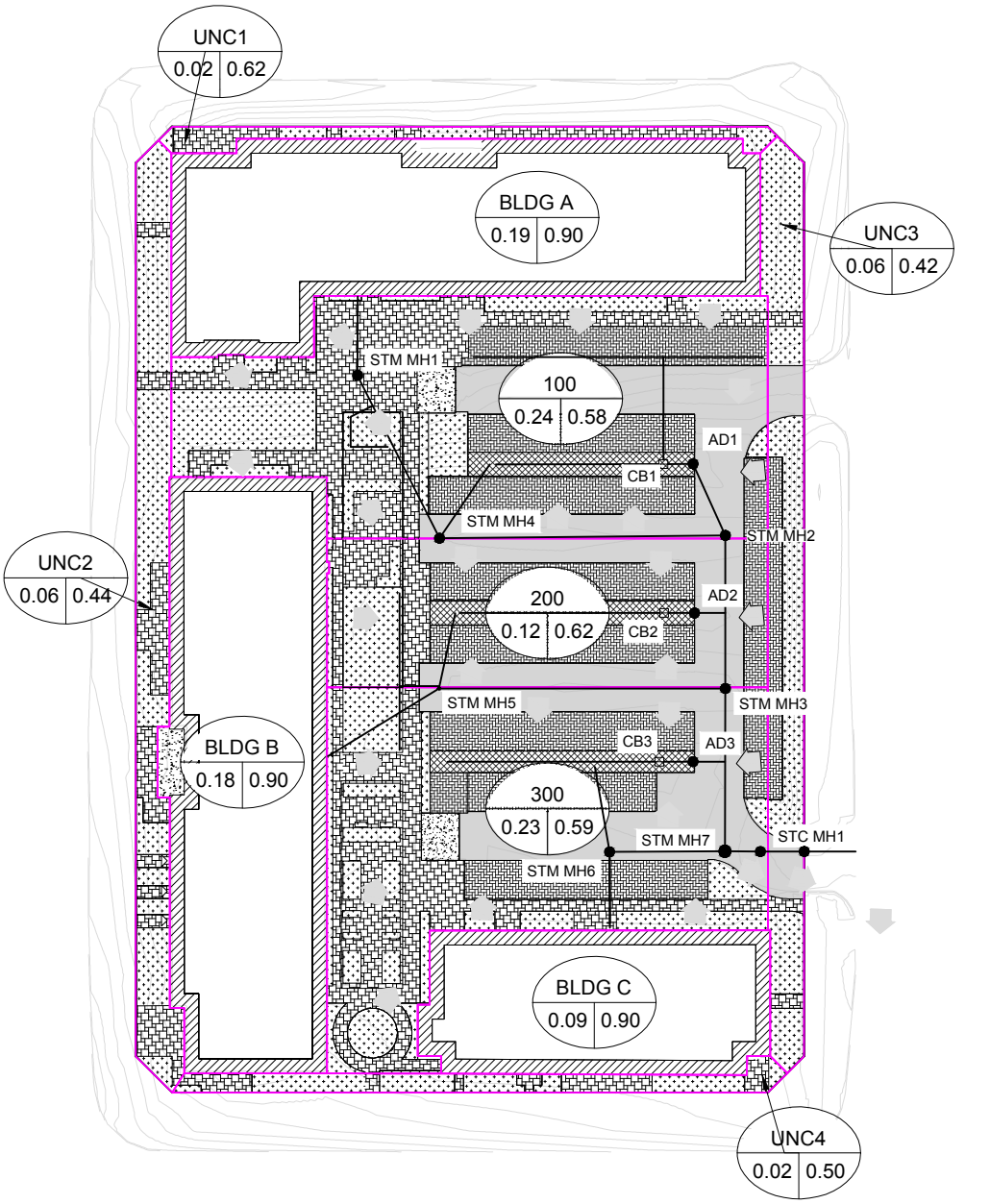
1:1000

10 0 10 20 30 40 50 60 70 m

CLIENT: OTTAWA COMMUNITY HOUSING (OCH) 39 Auriga Dr. Nepean, ON K2E 7Y8	PROJECT NAME: MIKINAK REDEVELOPMENT 715 MIKINAK ROAD OTTAWA, ON	PRIME CONSULTANT: IBI GROUP Unit 110 - 650 Dalton Avenue Kingston ON K7M 8N7 Canada tel 613 531 4440 fax 613 531 7789 ibigroup.com	
SCALE: 1:1000 / DATE: 2021-04-21		FIGURE NAME: EXISTING DRAINAGE EXHIBIT	FIGURE NO.: SWM1 / REVISION: 0
PROJECT ENG: B.T. / DRAWN BY: N.A.			
CHECKED BY: B.T. / APPROVED BY: B.T.			
PROJECT NO: 125599			

SCALE CHECK 1 in 10mm

File Location: O:\125599_MikinakRedev\7.0_Production\7.03_Design\04_Civil\Sheets\125599_SWM-Pre.dwg Last Saved: April 27, 2021, by nino.alvarez Plotted: Wednesday, May 12, 2021 6:46:42 PM by Nino Alvarez



LEGEND

- LANDSCAPED AREA
- ASPHALT/CONCRETE
- STAMPED CONCRETE
- PERMEABLE PAVERS
- BIO-SWALE AREA
- BUILDING
- CATCHMENT AREA

DRAINAGE AREA LABEL — 1 | 0.75 | 0.90 — AREA (ha.) — RUNOFF COEFFICIENT

MAJOR OVERLAND FLOW ROUTE

1:1000

10 0 10 20 30 40 50 60 70 m

CLIENT
OTTAWA COMMUNITY HOUSING (OCH)

PROJECT NAME
MIKINAK REDEVELOPMENT
715 MIKINAK ROAD
OTTAWA, ON

PRIME CONSULTANT
IBI GROUP
Unit 110 - 650 Dalton Avenue
Kingston ON K7M 8N7 Canada
tel 613 531 4440 fax 613 531 7789
ibigroup.com

SCALE:	DATE:
1:1000	2021-05-12
PROJECT ENG:	DRAWN BY:
B.T.	N.A.
CHECKED BY:	APPROVED BY:
B.T.	B.T.
PROJECT NO:	
125599	

FIGURE NAME
POST DEVELOPMENT DRAINAGE EXHIBIT

FIGURE NO.	REVISION
SWM2	0

SCALE CHECK 1 in 10mm

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STORAGE ATTENUATION CALCULATIONS

PROJECT: 125599
LOCATION: CITY OF OTTAWA
CLIENT: OCH

1.0 SITE DESCRIPTION

PRE DEVELOPMENT DRAINAGE

External Catchment Area	0.000 ha
Onsite Catchment Area	1.22 ha
Total Catchment Area	**1.22 ha**

Detailed Drainage Areas:

Drainage Area ID	Area (ha)	Cw
100	1.22	0.25
TOTAL	**1.22**	0.25

POST DEVELOPMENT DRAINAGE

External Catchment Area	0.00 ha
Onsite Catchment Area	1.22 ha
Total Catchment Area	**1.22 ha**

Attenuated Drainage Areas:

Drainage Area ID	Area (ha)	Cw
100	0.2409	0.58
200	0.1242	0.62
300	0.2300	0.59
BLDG A	0.1879	0.90
BLDG B	0.1742	0.90
BLDG C	0.0929	0.90
TOTAL ATTENUATED	**1.05**	0.73

Unattenuated Drainage Areas:

Drainage Area ID	Area (ha)	Cw
UNC1	0.0180	0.62
UNC2	0.0633	0.44
UNC3	0.0646	0.42
UNC4	0.0223	0.50
TOTAL UNATTENUATED	**0.17**	0.39
TOTAL	**1.22**	0.68

2.0 ALLOWABLE POST DEVELOPMENT FLOW

Runoff analysis

For a Minor Storm event, the 5-yr Ottawa formula for intensity equation is used:

[I=998.071/(tc+6.053)^0.814]

For the Major Storm event, 100-yr, the Ottawa formula for intensity equation is used:

[I=1735.688/(tc+6.014)^0.820]

Post development flows from the site during the post development Minor and 100 year storm events are to be controlled to predevelopment flow rates reduced by 25% as recommended under "Former CFB Rockcliffe Master Servicing Study" prepared by IBI GROUP

with Tc = 15 minutes for pre development event.

Qpre = AIR/360, where R = runoff coefficient = 0.25
I = Rainfall Intensity for a Minor Stm. = 83.6 mm/hr
Tc = 15 minutes
A = area of the site = 1.22 ha
Qpre = 70.7 L/sec
Qpre (reduced) = Qpre * 0.75

Therefore, during the Minor storm event, post development flows are to be controlled to **53.0** L/sec

Qpre = AIR/360, where R = runoff coefficient = 0.25

I = Rainfall Intensity for a 100 yr. Stm. = 142.9 mm/hr

Tc = 15 minutes

A = area of the site = 1.22 ha

Qpre = 120.9 L/sec

Qpre (reduced) = Qpre * 0.75

Therefore, during the 100 year storm event, post development flows are to be controlled to 90.7 L/sec

3.0 STORAGE REQUIRED

STORAGE REQUIRED TO CONTROL FLOWS DURING THE MINOR STORM (5YR) EVENT TO PREDEVELOPMENT LEVELS

Rainfall Duration min.	s	Minor Storm Rainfall Intensity (I) mm/h	Attenuated Flow From Site m^3/s	Unattenuated Flow From Site m^3/s	Total Runoff From Site m^3/s	Allowable Release Rate m^3/s	Required Storage Rate m^3/s	Aprox. Detention Volumes m^3
15	900	83.6	0.1772	0.0153	0.1772	0.053	0.1242	111.8
20	**1200**	**70.3**	**0.1490**	**0.0129**	**0.1490**	**0.053**	**0.0960**	**115.2**
25	1500	60.9	0.1292	0.0112	0.1292	0.053	0.0761	114.2
30	1800	53.9	0.1144	0.0099	0.1144	0.053	0.0614	110.4
40	2400	44.2	0.0937	0.0081	0.0937	0.053	0.0407	97.7
50	3000	37.7	0.0799	0.0069	0.0799	0.053	0.0268	80.5
60	3600	32.9	0.0699	0.0060	0.0699	0.053	0.0168	60.7
65	3900	31.0	0.0658	0.0057	0.0658	0.053	0.0128	50.0
70	4200	29.4	0.0623	0.0054	0.0623	0.053	0.0093	39.0
75	4500	27.9	0.0592	0.0051	0.0592	0.053	0.0061	27.6

Minor Storm Event

Volume Required: **115.2 cu.m**

STORAGE REQUIRED TO CONTROL FLOWS DURING THE 100 YEAR STORM EVENT TO 100 YEAR PREDEVELOPMENT LEVELS

Rainfall Duration min.	s	100 Year Rainfall Intensity (I) mm/h	Attenuated Flow From Site m^3/s	Unattenuated Flow From Site m^3/s	Total Runoff From Site m^3/s	Allowable Release Rate m^3/s	Required Storage Rate m^3/s	Aprox. Detention Volumes m^3
15	900	142.89	0.3031	0.0262	0.3031	0.0530	0.2501	225.0
20	1200	119.95	0.2544	0.0220	0.2544	0.0530	0.2014	241.7
25	1500	103.85	0.2203	0.0191	0.2203	0.0530	0.1672	250.9
30	1800	91.87	0.1949	0.0169	0.1949	0.0530	0.1418	255.3
35	**2100**	**82.58**	**0.1751**	**0.0152**	**0.1751**	**0.0530**	**0.1221**	**256.5**
40	2400	75.15	0.1594	0.0138	0.1594	0.0530	0.1064	255.3
50	3000	63.95	0.1356	0.0117	0.1356	0.0530	0.0826	247.9
60	3600	55.89	0.1186	0.0103	0.1186	0.0530	0.0655	235.9
65	3900	52.65	0.1117	0.0097	0.1117	0.0530	0.0586	228.7
70	4200	49.79	0.1056	0.0091	0.1056	0.0530	0.0526	220.8
80	4800	44.99	0.0954	0.0083	0.0954	0.0530	0.0424	203.5
90	5400	41.11	0.0872	0.0075	0.0872	0.0530	0.0342	184.5
		84	0.1772	0.0153	0.177	0.0530	0.1242	111.8

100 Year Storm

Max Volume Required: **256.5 cu.m**

4.0 STORAGE PROVIDED

DETENTION VOLUME AVAILABLE WITHIN THE STORM PIPES

From	To	Diameter (mm)	Length (m)	Volume (m^3)
BLDG A	STM MH 1	300	12.55	**0.887**
STM MH 1	STM MH 4	300	25.04	**1.770**
STM MH 4	BIO SWALE1	300	12.37	**0.874**
STM MH 4	STM MH 2	300	39.47	**2.790**
CB1	AD1	250	4.09	**0.201**
AD1	STM MH 2	250	10.81	**0.531**
STM MH 2	STM MH 3	450	21.08	**3.353**
BLDG B	STM MH 5	300	17.46	**1.234**
STM MH 5	BIO SWALE2	300	10.89	**0.770**
STM MH 5	STM MH 3	300	40.55	**2.866**
CB2	AD2	300	4.18	**0.295**
AD2	TEE	300	4.24	**0.300**
STM MH 3	STM MH 7	450	23.13	**3.679**
CB3	AD3	250	4.33	0.21
AD3	TEE	250	4.41	0.22
BLDG C	STM MH 6	250	10.60	0.52
STM MH 6	BIO SWALE3	250	12.31	0.60
STM MH 6	STM MH 7	250	17.91	0.88

Total Pipe Storage: **21.98 m^3**

DETENTION VOLUME AVAILABLE WITHIN THE PARKING LOT PONDING AREAS

Structure	Grate Elevation	Ponding Elevation	Area (m^2)	Max Depth (m)	Volume (m^3)
CB1	88.52	88.80		0.28	
CB2	88.53	88.80	2925.52	0.27	171.49
CB3	88.56	88.80		0.24	

Total Ponding Surface Volume: **171.49 m^3**

DETENTION VOLUME AVAILABLE WITHIN THE PERMEABLE PAVERS

Based on the foregoing calculations, a permeable paver stone area with a total infiltration surface of 1203.503 m², and a depth of 0.3 m within the parking area filled with river rock that provide 30% voids, will provide total storage volume of **108.32** m³

DETENTION VOLUME AVAILABLE WITHIN THE BIO-SWALES

Based on the foregoing calculations, a Bio-swale with a cross-sectional area of 2.22 m², and a length of storage media of 36.2 m filled with river rock with 30% voids, will provide a total storage volume of 24.1 m³. Based on three proposed bio-swales located along the parking lot the total volume amounts to **72.33 m³**

TOTAL ATTENUATION VOLUME

Storage	Volume (m^3)
Detention Volume Available Within the Storm Pipes	22.0
Detention Volume Available Within the Parking Lot Ponding Areas	171.50
Detention Volume Available Within the Permeable Pavers	108.3
Detention Volume Available Within the Bio-Swales	72.3

Total attenuation volume provided is: **374.1 m^3**

According to the calculation for the major storm event, the max volume required is **256.5 m^3**
Therefore, the provided attenuation volume amounts to a total of **146%**

5.0 ORIFICE CONTROL

An orifice plate will be installed over the outlet of the STM MH3 outfall that will control peak flows during the Minor Storm and the 100 year storm events to the predevelopment flow rates.

5.1 ORIFICE CALCULATION - MINOR STORM EVENT

Determine the diameter of the orifice required to control the flow from the site during the Minor Storm to less than 53.0 l/sec.

STM MH3 Invert at controlled outlet = 85.98 m

Ponding Elev. during Minor Storm = 88.80 m
Centreline Orifice Elevation = 86.04 m

Maximum Head on Orifice (H) 2.76 m

Orifice Equation: $Qa = (CA*(2gh)^{1/2})$

WHERE **C** co-efficient of discharge (-) **g** gravitational constant ($9.81 m/s^2$)
A cross-sectional area (sq.m.) **h** distance between the orifice centreline and the HWL
Qa orifice discharge flow (m^3/s)

Head (H) =	2.76 m	**Area (A) =**	0.012 m^2	**g =**	9.81
Discharge (Q) =	0.0533 m^3/s	**Diameter =**	122 mm.	**C =**	0.62

Therefore, a 122 mm orifice will control the Minor Storm post development flows to approximately 53.3 l/sec.
which is equivalent to the maximum allowable control flow of: 53.0 l/sec.

5.2 ORIFICE CALCULATION - MAJOR STORM EVENT

The controlled flow rate with the selected orifice based on 100 yr ponding elevation is as follows:

STM MH3 Invert at controlled outlet = 85.98 m.
Ponding Elev. during 1:100 yr. storm = 88.80 m
Centreline Orifice Elevation = 86.04 m

Maximum Head on Orifice (H) 2.76 m

Head (H) =	2.76 m	**Area (A) =**	0.012 m^2	**g =**	9.81
Discharge (Q) =	0.0533 m^3/s	**Diameter =**	122 mm	**C =**	0.62

Therefore, a 122 mm orifice will control post development flows to approximately 53.3 l/sec.
which is less than the maximum allowable control flow of: 90.7 L/s

5.2 ORIFICE CALCULATION - MAJOR STORM EVENT

The controlled flow rate with the selected orifice based on 100 yr ponding elevation is as follows:

STM MH7 Invert at controlled outlet = 85.66 m.
Ponding Elev. during 1:100 yr. storm = 88.80 m
Centreline Orifice Elevation = 85.75 m

Maximum Head on Orifice (H) 3.05 m

Head (H) =	3.05 m	**Area (A) =**	0.011 m^2	**g =**	9.81
Discharge (Q) =	0.0524 m^3/s	**Diameter =**	118 mm	**C =**	0.62

Therefore, a 118 mm orifice will control post development flows to approximately 52.4 l/sec.
which is less than the maximum allowable control flow of: 90.7 L/s

Detailed Stormceptor Sizing Report – OCH

Project Information & Location			
Project Name	OCH	**Project Number**	125599
City	Ottawa	**State/ Province**	Ontario
Country	Canada	**Date**	5/18/2021
Designer Information		**EOR Information (optional)**	
Name	Nino Alvarez	**Name**	
Company	IBI Group	**Company**	
Phone #	613-531-4440	**Phone #**	
Email	nino.alvarez@ibigroup.com	**Email**	

Stormwater Treatment Recommendation

The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	OCH
Recommended Stormceptor Model	STC 2000
Target TSS Removal (%)	80.0
TSS Removal (%) Provided	80
PSD	Fine Distribution
Rainfall Station	OTTAWA MACDONALD-CARTIER INT'L A

The recommended Stormceptor model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary		
Stormceptor Model	**% TSS Removal Provided**	**% Runoff Volume Captured Provided**
STC 300	64	80
STC 750	75	90
STC 1000	76	90
STC 1500	77	90
STC 2000	80	95
STC 3000	82	95
STC 4000	85	98
STC 5000	86	98
STC 6000	88	99
STC 9000	91	100
STC 10000	91	100
STC 14000	93	100
StormceptorMAX	Custom	Custom

Stormceptor
The Stormceptor oil and sediment separator is sized to treat stormwater runoff by removing pollutants through gravity separation and flotation. Stormceptor's patented design generates positive TSS removal for each rainfall event, including large storms. Significant levels of pollutants such as heavy metals, free oils and nutrients are prevented from entering natural water resources and the re-suspension of previously captured sediment (scour) does not occur.
Stormceptor provides a high level of TSS removal for small frequent storm events that represent the majority of annual rainfall volume and pollutant load. Positive treatment continues for large infrequent events, however, such events have little impact on the average annual TSS removal as they represent a small percentage of the total runoff volume and pollutant load.

Design Methodology
Stormceptor is sized using PCSWMM for Stormceptor, a continuous simulation model based on US EPA SWMM. The program calculates hydrology using local historical rainfall data and specified site parameters. With US EPA SWMM's precision, every Stormceptor unit is designed to achieve a defined water quality objective. The TSS removal data presented follows US EPA guidelines to reduce the average annual TSS load. The Stormceptor's unit process for TSS removal is settling. The settling model calculates TSS removal by analyzing:
• Site parameters
• Continuous historical rainfall data, including duration, distribution, peaks & inter-event dry periods
• Particle size distribution, and associated settling velocities (Stokes Law, corrected for drag)
• TSS load
• Detention time of the system

Hydrology Analysis
PCSWMM for Stormceptor calculates annual hydrology with the US EPA SWMM and local continuous historical rainfall data. Performance calculations of Stormceptor are based on the average annual removal of TSS for the selected site parameters. The Stormceptor is engineered to capture sediment particles by treating the required average annual runoff volume, ensuring positive removal efficiency is maintained during each rainfall event, and preventing negative removal efficiency (scour). Smaller recurring storms account for the majority of rainfall events and average annual runoff volume, as observed in the historical rainfall data analyses presented in this section.

Rainfall Station			
State/Province	Ontario	**Total Number of Rainfall Events**	4093
Rainfall Station Name	OTTAWA MACDONALD-CARTIER INT'L A	**Total Rainfall (mm)**	20978.1
Station ID #	6000	**Average Annual Rainfall (mm)**	567.0
Coordinates	45°19'N, 75°40'W	**Total Evaporation (mm)**	1223.9
Elevation (ft)	370	**Total Infiltration (mm)**	7742.3
Years of Rainfall Data	37	**Total Rainfall that is Runoff (mm)**	12011.9

Notes
• Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules. • Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed. • For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

Drainage Area	
Total Area (ha)	1.22
Imperviousness %	63.00

Water Quality Objective	
TSS Removal (%)	80.0
Runoff Volume Capture (%)	62.00
Oil Spill Capture Volume (L)	
Peak Conveyed Flow Rate (L/s)	247.00
Water Quality Flow Rate (L/s)	156.00

Up Stream Storage	
Storage (ha-m)	Discharge (cms)
0.000	0.091

Up Stream Flow Diversion	
Max. Flow to Stormceptor (cms)	

Design Details	
Stormceptor Inlet Invert Elev (m)	85.65
Stormceptor Outlet Invert Elev (m)	85.60
Stormceptor Rim Elev (m)	86.51
Normal Water Level Elevation (m)	
Pipe Diameter (mm)	450
Pipe Material	PVC - plastic
Multiple Inlets (Y/N)	No
Grate Inlet (Y/N)	No

Particle Size Distribution (PSD)

Removing the smallest fraction of particulates from runoff ensures the majority of pollutants, such as metals, hydrocarbons and nutrients are captured. The table below identifies the Particle Size Distribution (PSD) that was selected to define TSS removal for the Stormceptor design.

Fine Distribution		
Particle Diameter (microns)	Distribution %	Specific Gravity
20.0	20.0	1.30
60.0	20.0	1.80
150.0	20.0	2.20
400.0	20.0	2.65
2000.0	20.0	2.65

Site Name	OCH

Site Details

Drainage Area

Total Area (ha)	1.22
Imperviousness %	63.00

Surface Characteristics

Width (m)	221.00
Slope %	2
Impervious Depression Storage (mm)	0.508
Pervious Depression Storage (mm)	5.08
Impervious Manning's n	0.015
Pervious Manning's n	0.25

Maintenance Frequency

Maintenance Frequency (months) >	12

Infiltration Parameters

Horton's equation is used to estimate infiltration

Max. Infiltration Rate (mm/hr)	61.98
Min. Infiltration Rate (mm/hr)	10.16
Decay Rate (1/sec)	0.00055
Regeneration Rate (1/sec)	0.01

Evaporation

Daily Evaporation Rate (mm/day)	2.54

Dry Weather Flow

Dry Weather Flow (lps)	0

Winter Months

Winter Infiltration	0

TSS Loading Parameters

TSS Loading Function	

Buildup/Wash-off Parameters

Target Event Mean Conc. (EMC) mg/L	
Exponential Buildup Power	
Exponential Washoff Exponent	

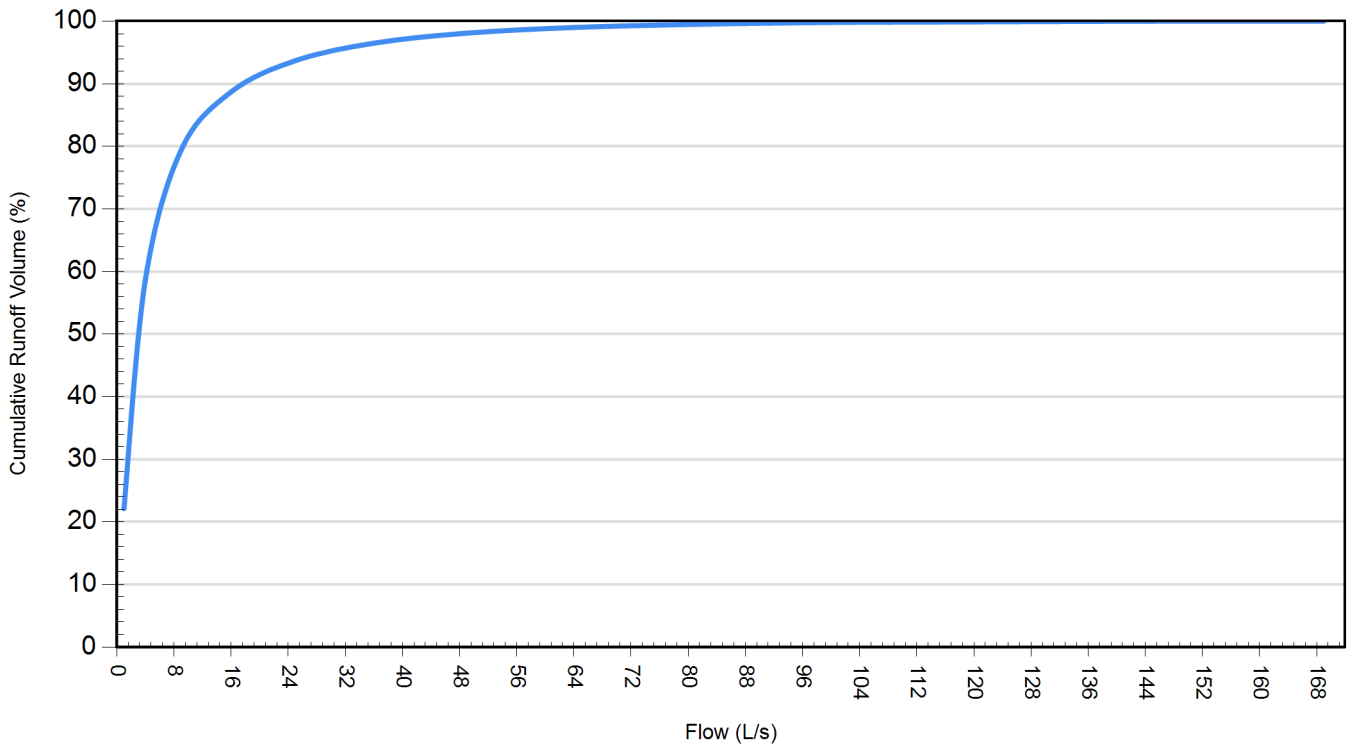
TSS Availability Parameters

Availability Constant A	
Availability Factor B	
Availability Exponent C	
Min. Particle Size Affected by Availability (micron)	

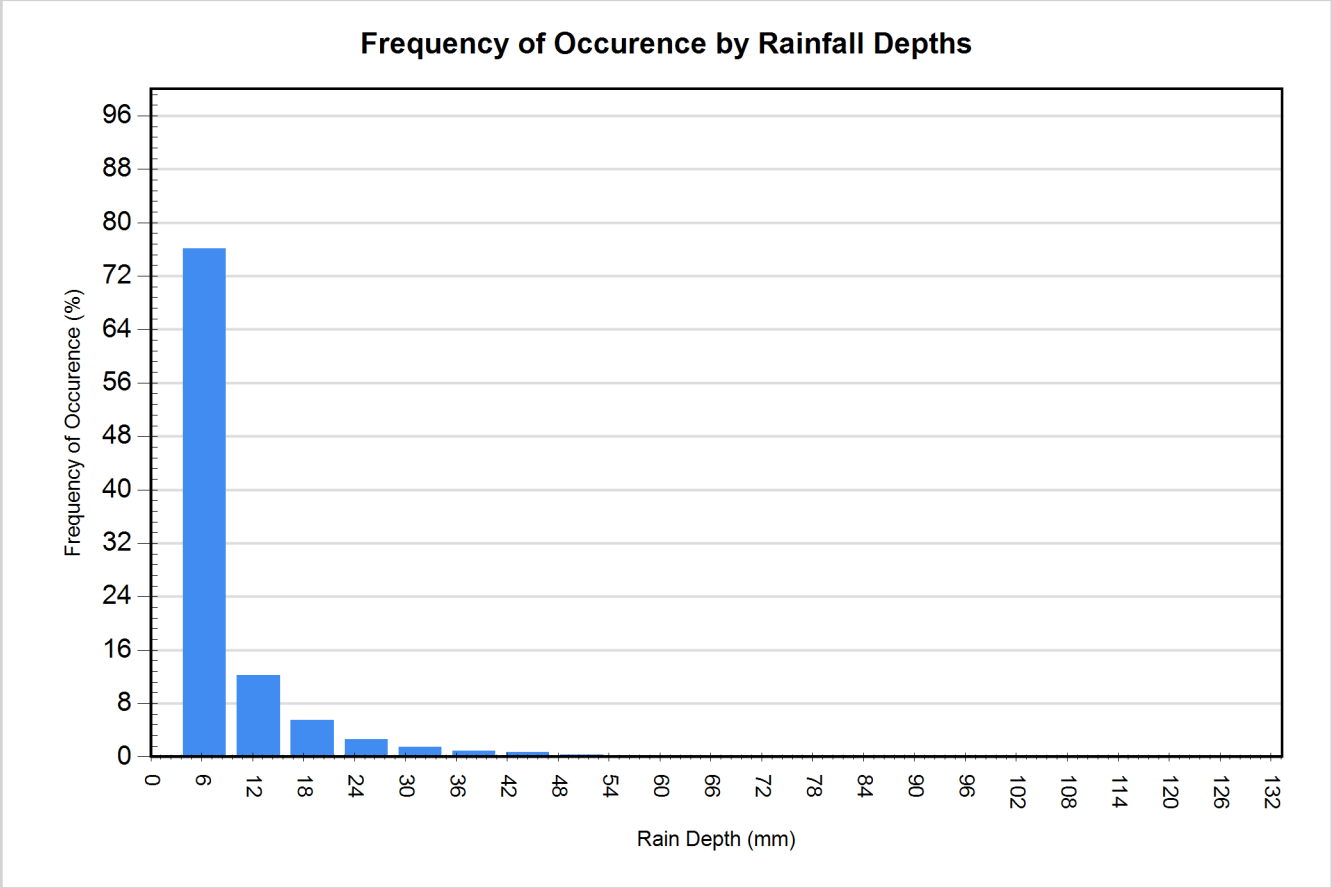
Cumulative Runoff Volume by Runoff Rate			
Runoff Rate (L/s)	**Runoff Volume (m³)**	**Volume Over (m³)**	**Cumulative Runoff Volume (%)**
1	32611	114868	22.1
4	86643	60830	58.7
9	117092	30400	79.4
16	130870	16609	88.7
25	138215	9266	93.7
36	142256	5223	96.5
49	144621	2858	98.1
64	145949	1530	99.0
81	146786	692	99.5
100	147199	279	99.8
121	147380	99	99.9
144	147459	20	100.0
169	147479	0	100.0

Cumulative Runoff Volume by Runoff Rate

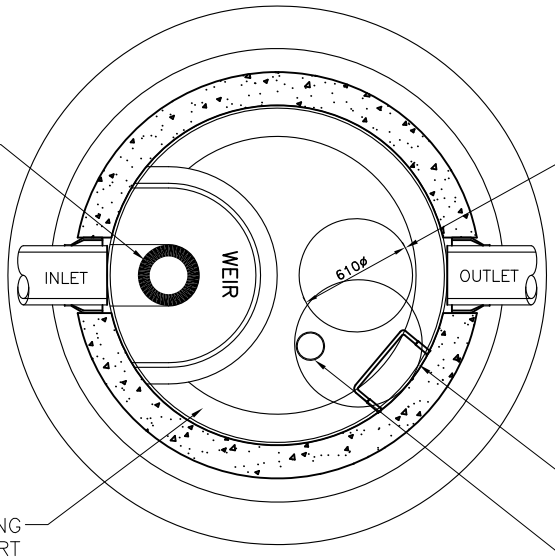
For area: 1.22(ha), imperviousness: 63.00%, rainfall station: OTTAWA MACDONALD-CARTIER INT'L A



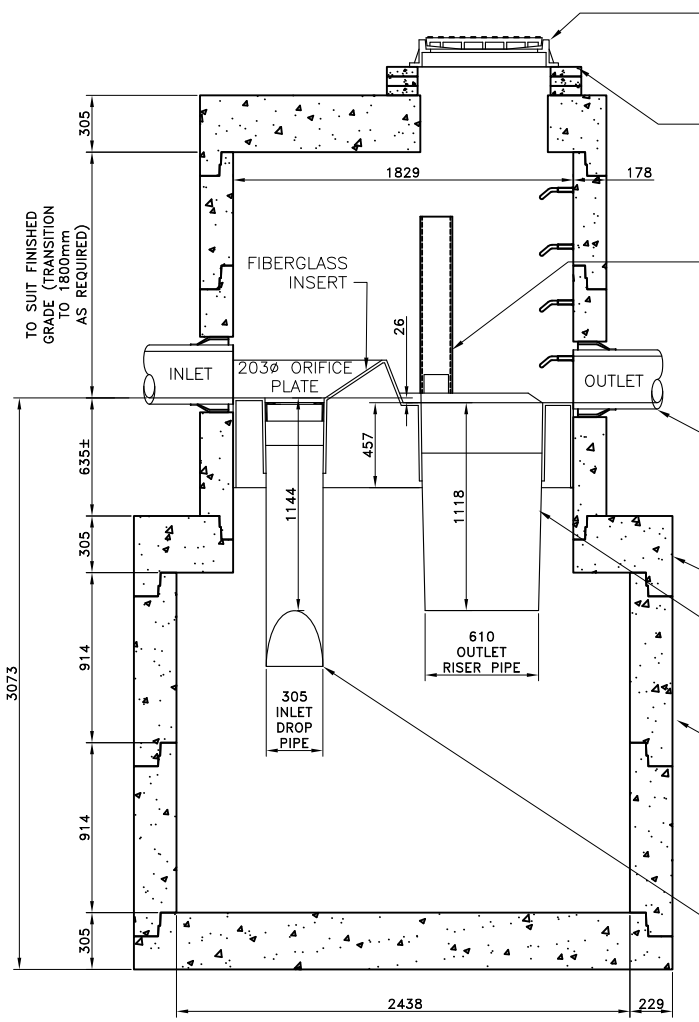
Rainfall Event Analysis				
Rainfall Depth (mm)	**No. of Events**	**Percentage of Total Events (%)**	**Total Volume (mm)**	**Percentage of Annual Volume (%)**
6.35	3113	76.1	5230	24.9
12.70	501	12.2	4497	21.4
19.05	225	5.5	3469	16.5
25.40	105	2.6	2317	11.0
31.75	62	1.5	1765	8.4
38.10	35	0.9	1206	5.8
44.45	28	0.7	1163	5.5
50.80	12	0.3	557	2.7
57.15	7	0.2	378	1.8
63.50	1	0.0	63	0.3
69.85	1	0.0	64	0.3
76.20	1	0.0	76	0.4
82.55	0	0.0	0	0.0
88.90	1	0.0	84	0.4
95.25	0	0.0	0	0.0
101.60	0	0.0	0	0.0
107.95	0	0.0	0	0.0
114.30	1	0.0	109	0.5
120.65	0	0.0	0	0.0
127.00	0	0.0	0	0.0



For Stormceptor Specifications and Drawings Please Visit:
http://www.imbriumsystems.com/technical-specifications



PLAN VIEW



SECTION VIEW

STC 2000 CAPACITIES		
SEDIMENT CAPACITY (L)	OIL CAPACITY (L)	TOTAL CAPACITY L (IMP GAL)
7700	2890	11000 (2420)

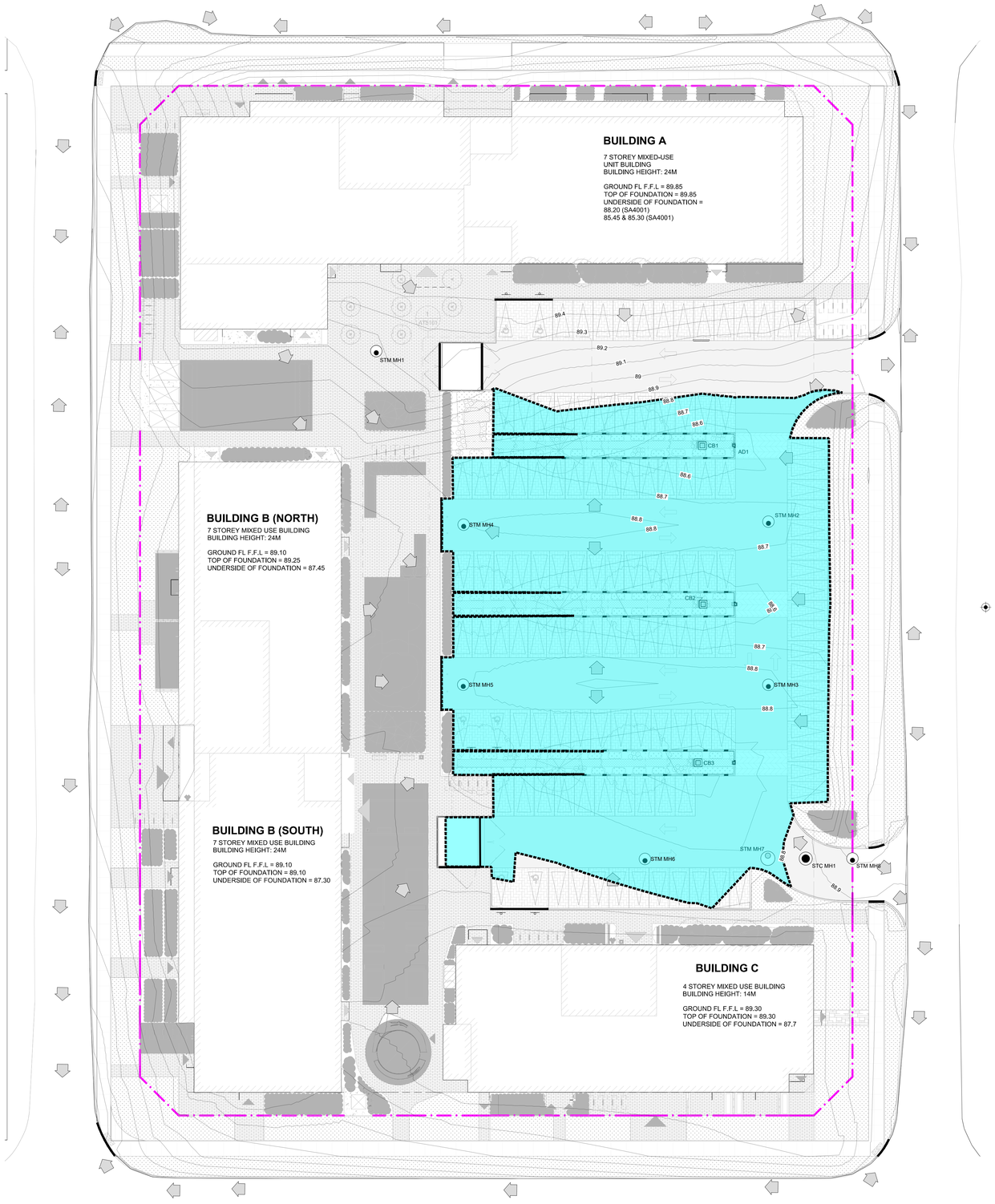
FORTERRA

Stormceptor®

TITLE

In-Line Stormceptor Model STC2000

PLANT	PROVINCE	DATE	SECTION PAGE
CAMBRIDGE OTTAWA UXBRIDGE	ON	JAN 2020	H-5



1:250

5 0 5 10 15 m

True North

CLIENT

Ottawa Community Housing

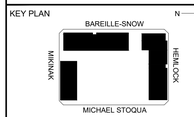
39 Auriga Dr. Nepean, ON K2E 7Y8

ISSUES

No.	DESCRIPTION	DATE
1	FIRST SUBMISSION	2021-05-20
2	SECOND SUBMISSION	2021-08-24
3	BUILDING PERMIT SUBMISSION	2021-09-07
4	TENDER SUBMISSION	2021-10-05
5	TENDER RESUBMISSION	2021-11-03
6	TENDER RESUBMISSION	2021-11-09
7	L3101 SITE WORKS - ADDENDUM 1	2021-11-19
8	THIRD SUBMISSION	2021-11-23

FOR REVIEW

KEY PLAN



LEGEND:

- OVERLAND FLOW
- PROPOSED CONTOUR
- DEPRESSED CONCRETE CURB
- CONCRETE BARRIER CURB PER OPSD 600.110
- PONDING (100YR)
- PROPERTY LINE
- PROPOSED BIO-SWALE
- PROPOSED SOFTSCAPE
- PROPOSED HARDSCAPE
- PROPOSED BUILDING
- PERMEABLE PAVER
- ASPHALT PAVED AREA
- WASTE PICK-UP AREA CONCRETE PAD
- CONCRETE DRIVEWAY

LICENSED PROFESSIONAL ENGINEER
November 24, 2021
W. L. THOMAS
100528014
PROVINCE OF ONTARIO

PRIME CONSULTANT

IBI GROUP
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Kingston ON K7M 8N7 Canada
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PROJECT

MIKINAK REDEVELOPMENT

715 MIKINAK ROAD, OTTAWA, ON
CANADA K1K 2G8

PROJECT NO:	SCALE:
125599	AS SHOWN
DRAWN BY:	CHECKED BY:
NA	BT
PROJECT MGR:	APPROVED BY:
CW	BT

SHEET TITLE

PONDING PLAN

SHEET NUMBER

CG1103

ISSUE

8

#18454

File Location: O:\125599_MikinakRedev\7.0_Production\7.03_Design\04_Civil\Sheets\CG1101-CD1103.dwg Last Saved: November 24, 2021, by nino.alvarez Plotted: Wednesday, November 24, 2021 9:03:49 AM by Nino Alvarez

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STORM HYDRAULIC GRADE LINE DESIGN SHEET (MAJOR STORM)
MIKINAK REDEVELOPMENT
CITY OF OTTAWA
OTTAWA COMMUNITY HOUSING

PROJECT #: 125599
DATE: 2021-10-25
DESIGN: NA
CHECKED: BT
REV #: -

FRICTION LOSS	FROM MH	TO MH	PIPE ID
	Ex	**TIE-IN**	
INVERT ELEVATION (m)	85.445	85.491	
OBVERT ELEVATION (m)	86.045	86.091	
DIAMETER (mm)			600
LENGTH (m)			55.7
FLOW (l/s)			53.00
HGL (m) ***	**85.940**	**85.944**	**0.004**
MANHOLE COEF K= 0.75	LOSS (m)	0.001	
TOTAL HGL (m)		**85.945**	
MAX. SURCHARGE (mm)		**-145**	

MANNING FORMULA - FLOWING FULL

DIA (m)	Area (m2)	Perim. (m)	Slope (%)	Hyd.R. (m)	Vel. (m/s)	Q (l/s)
0.6	0.28	1.88	0.080	0.15	0.62	175.40

HYDRAULIC SLOPE = 0.01 %
DESIGN FLOW TO FULL FLOW RATIO (Q/Qf) 0.302
DESIGN FLOW DEPTH = 0.222

Head loss in manhole simplified method p. 71 (MWDM)
fig1.7.1, Kratio = 0.75 for 45 bends K_L=0.75
Velocity = Flow / Area = 0.19 m/s
HL = K_L * V^2/ 2g

FRICTION LOSS	FROM MH	TO MH	PIPE ID
	TIE-IN	**STM MH8**	
INVERT ELEVATION (m)	85.460	85.503	
OBVERT ELEVATION (m)	85.835	85.878	
DIAMETER (mm)			375
LENGTH (m)			6.0
FLOW (l/s)			53.00
HGL (m) ***	**85.944**	**85.950**	**0.006**
MANHOLE COEF K= 0.75	LOSS (m)	0.009	
TOTAL HGL (m)		**85.958**	
MAX. SURCHARGE (mm)		**80**	

MANNING FORMULA - FLOWING FULL

DIA (m)	Area (m2)	Perim. (m)	Slope (%)	Hyd.R. (m)	Vel. (m/s)	Q (l/s)
0.375	0.11	1.18	0.610	0.09	1.34	147.86

HYDRAULIC SLOPE = 0.24 %
DESIGN FLOW TO FULL FLOW RATIO (Q/Qf) 0.358
DESIGN FLOW DEPTH = 0.154

Head loss in manhole simplified method p. 71 (MWDM)
fig1.7.1, Kratio = 0.75 for 45 bends K_L=0.75
Velocity = Flow / Area = 0.48 m/s
HL = K_L * V^2/ 2g

FRICTION LOSS	FROM MH	TO MH	PIPE ID
	STM MH8	**STC MH1**	
INVERT ELEVATION (m)	85.533	85.570	
OBVERT ELEVATION (m)	85.908	85.945	
DIAMETER (mm)			375
LENGTH (m)			6.0
FLOW (l/s)			53.00
HGL (m) ***	**85.958**	**85.964**	**0.006**
MANHOLE COEF K= 0.75	LOSS (m)	0.009	
TOTAL HGL (m)		**85.973**	
MAX. SURCHARGE (mm)		**28**	

MANNING FORMULA - FLOWING FULL

DIA (m)	Area (m2)	Perim. (m)	Slope (%)	Hyd.R. (m)	Vel. (m/s)	Q (l/s)
0.375	0.11	1.18	0.610	0.09	1.24	137.16

HYDRAULIC SLOPE = 0.24 %
DESIGN FLOW TO FULL FLOW RATIO (Q/Qf) 0.386
DESIGN FLOW DEPTH = 0.161

Head loss in manhole simplified method p. 71 (MWDM)
fig1.7.1, Kratio = 0.75 for 45 bends K_L=0.75
Velocity = Flow / Area = 0.48 m/s
HL = K_L * V^2/ 2g

FRICTION LOSS	FROM MH	TO MH	PIPE ID
	STC MH1	**STM MH7**	
INVERT ELEVATION (m)	85.600	85.660	
OBVERT ELEVATION (m)	85.975	86.035	
DIAMETER (mm)			375
LENGTH (m)			4.9
FLOW (l/s)			53.00
HGL (m) ***	**85.973**	**85.977**	**0.004**
MANHOLE COEF K= 0.05	LOSS (m)	0.001	
TOTAL HGL (m)		**85.978**	
MAX. SURCHARGE (mm)		**-57**	

MANNING FORMULA - FLOWING FULL

DIA (m)	Area (m2)	Perim. (m)	Slope (%)	Hyd.R. (m)	Vel. (m/s)	Q (l/s)
0.375	0.11	1.18	1.230	0.09	1.76	193.92

HYDRAULIC SLOPE = 0.10 %
DESIGN FLOW TO FULL FLOW RATIO (Q/Qf) 0.273
DESIGN FLOW DEPTH = 0.131

Head loss in manhole simplified method p. 71 (MWDM)
straight through K_L=0.05
Velocity = Flow / Area = 0.48 m/s
HL = K_L * V^2/ 2g

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STORM HYDRAULIC GRADE LINE DESIGN SHEET (MAJOR STORM)
MIKINAK REDEVELOPMENT
CITY OF OTTAWA
OTTAWA COMMUNITY HOUSING

PROJECT #: 125599
DATE: 2021-10-25
DESIGN: NA
CHECKED: BT
REV #: -

FRICTION LOSS	FROM MH	TO MH	PIPE ID
	STM MH7	**STM MH3**	
INVERT ELEVATION (m)	85.720	85.978	
OBVERT ELEVATION (m)	86.170	86.428	
DIAMETER (mm)			450
LENGTH (m)			22.4
FLOW (l/s)			**53.00**
HGL (m) ***	**85.978**	**85.986**	**0.008**
MANHOLE COEF K= 0.05	LOSS (m)	0.000	
TOTAL HGL (m)		86.104	
MAX. SURCHARGE (mm)		-324	

MANNING FORMULA - FLOWING FULL

DIA (m)	Area (m2)	Perim. (m)	Slope (%)	Hyd.R. (m)	Vel. (m/s)	Q (l/s)
0.45	0.16	1.41	1.150	0.11	1.92	305.82

HYDRAULIC SLOPE = 0.56 %
DESIGN FLOW TO FULL FLOW RATIO (Q/Qf) 0.173
DESIGN FLOW DEPTH = 0.126

Head loss in manhole simplified method p. 71 (MWDM)
straight through K_L=0.05
Velocity = Flow / Area = 0.33 m/s
$HL = K_L * V^2/ 2g$

Flow restriction installed at STM MH7 (OUTLET) = 53.0 L/s

FRICTION LOSS	FROM MH	TO MH	PIPE ID
	STM MH3	**STM MH2**	
INVERT ELEVATION (m)	86.121	86.272	
OBVERT ELEVATION (m)	86.571	86.722	
DIAMETER (mm)			450
LENGTH (m)			21.1
FLOW (l/s)			**53.00**
HGL (m) ***	**86.104**	**86.111**	**0.007**
MANHOLE COEF K= 0.05	LOSS (m)	0.000	
TOTAL HGL (m)		86.412	
MAX. SURCHARGE (mm)		-311	

MANNING FORMULA - FLOWING FULL

DIA (m)	Area (m2)	Perim. (m)	Slope (%)	Hyd.R. (m)	Vel. (m/s)	Q (l/s)
0.45	0.16	1.41	0.720	0.11	1.52	241.18

HYDRAULIC SLOPE = 1.46 %
DESIGN FLOW TO FULL FLOW RATIO (Q/Qf) 0.220
DESIGN FLOW DEPTH = 0.140

Head loss in manhole simplified method p. 71 (MWDM)
straight through K_L=0.05
Velocity = Flow / Area = 0.33 m/s
$HL = K_L * V^2/ 2g$

Flow restriction installed at STM MH3 (OUTLET) = 53.0 L/s

FRICTION LOSS	FROM MH	TO MH	PIPE ID
	STM MH2	**STM MH4**	
INVERT ELEVATION (m)	86.349	87.511	
OBVERT ELEVATION (m)	86.649	87.811	
DIAMETER (mm)			300
LENGTH (m)			39.4
FLOW (l/s)			67.20
HGL (m) ***	**86.412**	**86.602**	**0.190**
MANHOLE COEF K= 0.05	LOSS (m)	0.002	
TOTAL HGL (m)		87.643	
MAX. SURCHARGE (mm)		-168	

MANNING FORMULA - FLOWING FULL

DIA (m)	Area (m2)	Perim. (m)	Slope (%)	Hyd.R. (m)	Vel. (m/s)	Q (l/s)
0.3	0.07	0.94	2.950	0.08	2.35	166.09

HYDRAULIC SLOPE = 3.13 %
DESIGN FLOW TO FULL FLOW RATIO (Q/Qf) 0.405
DESIGN FLOW DEPTH = 0.132

Head loss in manhole simplified method p. 71 (MWDM)
straight through K_L=0.05
Velocity = Flow / Area = 0.95 m/s
$HL = K_L * V^2/ 2g$

FRICTION LOSS	FROM MH	TO MH	PIPE ID
	STM MH4	**STM MH1**	
INVERT ELEVATION (m)	87.821	87.411	
OBVERT ELEVATION (m)	88.121	87.711	
DIAMETER (mm)			300
LENGTH (m)			25.1
FLOW (l/s)			67.20
HGL (m) ***	**87.643**	**87.764**	**0.121**
MANHOLE COEF K= 0.05	LOSS (m)	0.002	
TOTAL HGL (m)		#NUM!	
MAX. SURCHARGE (mm)		#NUM!	

MANNING FORMULA - FLOWING FULL

DIA (m)	Area (m2)	Perim. (m)	Slope (%)	Hyd.R. (m)	Vel. (m/s)	Q (l/s)
0.3	0.07	0.94	1.630	0.08	#NUM!	#NUM!

HYDRAULIC SLOPE = #NUM! %
DESIGN FLOW TO FULL FLOW RATIO (Q/Qf) #NUM!
DESIGN FLOW DEPTH = #NUM!

Head loss in manhole simplified method p. 71 (MWDM)
straight through K_L=0.05
Velocity = Flow / Area = 0.95 m/s
$HL = K_L * V^2/ 2g$

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STORM HYDRAULIC GRADE LINE DESIGN SHEET (MINOR STORM)
MIKINAK REDEVELOPMENT
CITY OF OTTAWA
OTTAWA COMMUNITY HOUSING

PROJECT #: 132870
DATE: 2021-10-25
DESIGN: NA
CHECKED: BT
REV #: -

FRICTION LOSS	FROM MH	TO MH	PIPE ID
	Ex.	**TIE-IN**	
INVERT ELEVATION (m)	85.445	85.491	
OBVERT ELEVATION (m)	86.045	86.091	
DIAMETER (mm)			600
LENGTH (m)			55.7
FLOW (l/s)			53.00
HGL (m) ***	**85.940**	**85.944**	**0.004**
MANHOLE COEF K= 0.75	LOSS (m)	0.001	
TOTAL HGL (m)		**85.945**	
MAX. SURCHARGE (mm)		**-145**	

MANNING FORMULA - FLOWING FULL

DIA (m)	Area (m2)	Perim. (m)	Slope (%)	Hyd.R. (m)	Vel. (m/s)	Q (l/s)
0.6	0.28	1.88	0.080	0.15	0.62	175.40

HYDRAULIC SLOPE = 0.01 %
DESIGN FLOW TO FULL FLOW RATIO (Q/Qf) = 0.302
DESIGN FLOW DEPTH = 0.222

Head loss in manhole simplified method p. 71 (MWDM)
fig1.7.1, Kratio = 0.75 for 45 bends — K_L=0.75
Velocity = Flow / Area = 0.19 m/s
HL = K_L * V^2/ 2g

FRICTION LOSS	FROM MH	TO MH	PIPE ID
	TIE-IN	**STM MH8**	
INVERT ELEVATION (m)	85.460	85.503	
OBVERT ELEVATION (m)	85.835	85.878	
DIAMETER (mm)			375
LENGTH (m)			6.0
FLOW (l/s)			53.00
HGL (m) ***	**85.944**	**85.950**	**0.006**
MANHOLE COEF K= 0.75	LOSS (m)	0.009	
TOTAL HGL (m)		**85.958**	
MAX. SURCHARGE (mm)		**80**	

MANNING FORMULA - FLOWING FULL

DIA (m)	Area (m2)	Perim. (m)	Slope (%)	Hyd.R. (m)	Vel. (m/s)	Q (l/s)
0.375	0.11	1.18	0.610	0.09	1.34	147.86

HYDRAULIC SLOPE = 0.24 %
DESIGN FLOW TO FULL FLOW RATIO (Q/Qf) = 0.358
DESIGN FLOW DEPTH = 0.154

Head loss in manhole simplified method p. 71 (MWDM)
fig1.7.1, Kratio = 0.75 for 45 bends — K_L=0.75
Velocity = Flow / Area = 0.48 m/s
HL = K_L * V^2/ 2g

FRICTION LOSS	FROM MH	TO MH	PIPE ID
	TIE-IN	**STC MH1**	
INVERT ELEVATION (m)	85.533	85.570	
OBVERT ELEVATION (m)	85.908	85.945	
DIAMETER (mm)			375
LENGTH (m)			6.0
FLOW (l/s)			53.00
HGL (m) ***	**85.945**	**85.951**	**0.005**
MANHOLE COEF K= 0.75	LOSS (m)	0.009	
TOTAL HGL (m)		**85.960**	
MAX. SURCHARGE (mm)		**15**	

MANNING FORMULA - FLOWING FULL

DIA (m)	Area (m2)	Perim. (m)	Slope (%)	Hyd.R. (m)	Vel. (m/s)	Q (l/s)
0.375	0.11	1.18	0.610	0.09	1.25	137.61

HYDRAULIC SLOPE = 0.24 %
DESIGN FLOW TO FULL FLOW RATIO (Q/Qf) = 0.385
DESIGN FLOW DEPTH = 0.161

Head loss in manhole simplified method p. 71 (MWDM)
fig1.7.1, Kratio = 0.75 for 45 bends — K_L=0.75
Velocity = Flow / Area = 0.48 m/s
HL = K_L * V^2/ 2g

FRICTION LOSS	FROM MH	TO MH	PIPE ID
	STC MH1	**STM MH7**	
INVERT ELEVATION (m)	85.600	85.660	
OBVERT ELEVATION (m)	85.975	86.035	
DIAMETER (mm)			375
LENGTH (m)			4.9
FLOW (l/s)			53.00
HGL (m) ***	**85.960**	**85.964**	**0.004**
MANHOLE COEF K= 0.05	LOSS (m)	0.001	
TOTAL HGL (m)		**85.965**	
MAX. SURCHARGE (mm)		**-70**	

MANNING FORMULA - FLOWING FULL

DIA (m)	Area (m2)	Perim. (m)	Slope (%)	Hyd.R. (m)	Vel. (m/s)	Q (l/s)
0.375	0.11	1.18	1.230	0.09	1.76	193.92

HYDRAULIC SLOPE = 0.10 %
DESIGN FLOW TO FULL FLOW RATIO (Q/Qf) = 0.273
DESIGN FLOW DEPTH = 0.131

Head loss in manhole simplified method p. 71 (MWDM)
straight through — K_L=0.05
Velocity = Flow / Area = 0.48 m/s
HL = K_L * V^2/ 2g

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STORM HYDRAULIC GRADE LINE DESIGN SHEET (MINOR STORM)
MIKINAK REDEVELOPMENT
CITY OF OTTAWA
OTTAWA COMMUNITY HOUSING

PROJECT #: 132870
DATE: 2021-10-25
DESIGN: NA
CHECKED: BT
REV #: -

FRICTION LOSS	FROM MH	TO MH	PIPE ID
	STM MH7	**STM MH3**	
INVERT ELEVATION (m)	85.720	85.978	
OBVERT ELEVATION (m)	86.170	86.428	
DIAMETER (mm)			450
LENGTH (m)			22.4
FLOW (l/s)			**53.00**
HGL (m) ***	**85.965**	**85.973**	**0.008**
MANHOLE COEF K= 0.05	LOSS (m)	0.000	
TOTAL HGL (m)		**86.104**	
MAX. SURCHARGE (mm)		**-324**	

MANNING FORMULA - FLOWING FULL

DIA (m)	Area (m2)	Perim. (m)	Slope (%)	Hyd.R. (m)	Vel. (m/s)	Q (l/s)
0.45	0.16	1.41	1.150	0.11	1.92	305.82

HYDRAULIC SLOPE = 0.62 %
DESIGN FLOW TO FULL FLOW RATIO (Q/Qf) = 0.173
DESIGN FLOW DEPTH = 0.126

Head loss in manhole simplified method p. 71 (MWDM)
straight through K_L=0.05
Velocity = Flow / Area = 0.33 m/s
HL = K_L * V^2/ 2g

Flow restriction installed at STM MH7 (OUTLET) = 53.0 L/s

FRICTION LOSS	FROM MH	TO MH	PIPE ID
	STM MH3	**STM MH2**	
INVERT ELEVATION (m)	86.121	86.272	
OBVERT ELEVATION (m)	86.571	86.722	
DIAMETER (mm)			450
LENGTH (m)			21.0
FLOW (l/s)			**53.00**
HGL (m) ***	**86.104**	**86.111**	**0.007**
MANHOLE COEF K= 0.05	LOSS (m)	0.000	
TOTAL HGL (m)		**86.412**	
MAX. SURCHARGE (mm)		**-311**	

MANNING FORMULA - FLOWING FULL

DIA (m)	Area (m2)	Perim. (m)	Slope (%)	Hyd.R. (m)	Vel. (m/s)	Q (l/s)
0.45	0.16	1.41	0.720	0.11	1.52	241.64

HYDRAULIC SLOPE = 1.46 %
DESIGN FLOW TO FULL FLOW RATIO (Q/Qf) = 0.219
DESIGN FLOW DEPTH = 0.140

Head loss in manhole simplified method p. 71 (MWDM)
straight through K_L=0.05
Velocity = Flow / Area = 0.33 m/s
HL = K_L * V^2/ 2g

Flow restriction installed at STM MH7 (OUTLET) = 53.0 L/s

FRICTION LOSS	FROM MH	TO MH	PIPE ID
	STM MH2	**STM MH4**	
INVERT ELEVATION (m)	86.349	87.511	
OBVERT ELEVATION (m)	86.649	87.811	
DIAMETER (mm)			300
LENGTH (m)			39.4
FLOW (l/s)			39.30
HGL (m) ***	**86.412**	**86.477**	**0.065**
MANHOLE COEF K= 0.05	LOSS (m)	0.001	
TOTAL HGL (m)		**87.610**	
MAX. SURCHARGE (mm)		**-201**	

MANNING FORMULA - FLOWING FULL

DIA (m)	Area (m2)	Perim. (m)	Slope (%)	Hyd.R. (m)	Vel. (m/s)	Q (l/s)
0.3	0.07	0.94	2.950	0.08	2.35	165.98

HYDRAULIC SLOPE = 3.04 %
DESIGN FLOW TO FULL FLOW RATIO (Q/Qf) = 0.237
DESIGN FLOW DEPTH = 0.099

Head loss in manhole simplified method p. 71 (MWDM)
straight through K_L=0.05
Velocity = Flow / Area = 0.56 m/s
HL = K_L * V^2/ 2g

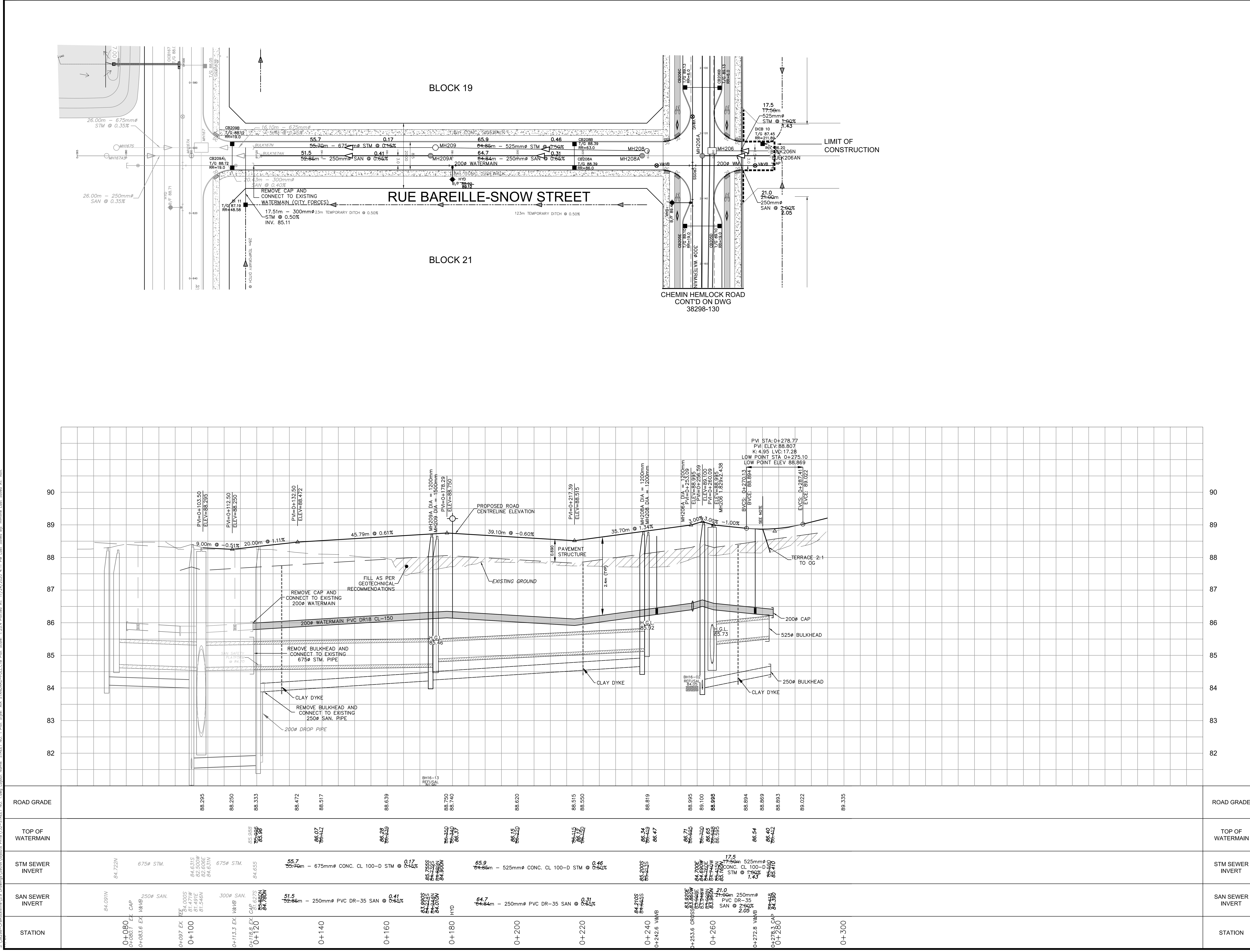
FRICTION LOSS	FROM MH	TO MH	PIPE ID
	STM MH4	**STM MH1**	
INVERT ELEVATION (m)	87.821	87.411	
OBVERT ELEVATION (m)	88.121	87.711	
DIAMETER (mm)			300
LENGTH (m)			25.1
FLOW (l/s)			39.30
HGL (m) ***	**87.610**	**87.651**	**0.041**
MANHOLE COEF K= 0.05	LOSS (m)	0.001	
TOTAL HGL (m)		**#NUM!**	
MAX. SURCHARGE (mm)		**#NUM!**	

MANNING FORMULA - FLOWING FULL

DIA (m)	Area (m2)	Perim. (m)	Slope (%)	Hyd.R. (m)	Vel. (m/s)	Q (l/s)
0.3	0.07	0.94	1.630	0.08	#NUM!	#NUM!

HYDRAULIC SLOPE = #NUM! %
DESIGN FLOW TO FULL FLOW RATIO (Q/Qf) = #NUM!
DESIGN FLOW DEPTH = #NUM!

Head loss in manhole simplified method p. 71 (MWDM)
straight through K_L=0.05
Velocity = Flow / Area = 0.56 m/s
HL = K_L * V^2/ 2g



REVIEWED BY
DEVELOPMENT REVIEW SERVICES BRANCH

Signed ____________________

Date ____________________ 2017

Plan Number ____________________

NOTE:
FROM ±STA. 0+278-FUTURE ROAD CENTRE LINE PROFILE IS PROVIDED FOR CONTINUITY.

No.	REVISIONS	By	Date
14			
13			
12			
11			
10	RECORD DRAWING	J.I.M.	2020:11:17
9	AS BUILT	J.I.M.	2018:06:15
8	ISSUED FOR CONSTRUCTION	J.I.M.	2017:08:02
7	REVISED PER CITY COMMENTS	J.I.M.	2017:06:16
6	REVISED PER MOECC COMMENTS	J.I.M.	2017:06:07
5	ISSUED FOR TENDER	J.I.M.	2017:03:23
4	SUBMISSION FOR MOECC APPROVAL	J.I.M.	2017:02:16
3	SUBMISSION No.3 FOR CITY REVIEW	J.I.M.	2017:01:25
2	SUBMISSION No.2 FOR CITY REVIEW	J.I.M.	2016:11:04
1	SUBMISSION No.1 FOR CITY REVIEW	J.I.M.	2016:07:08

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Project Title

WATERIDGE VILLAGE AT ROCKCLIFFE
PHASE 1B

LICENSED PROFESSIONAL ENGINEER
J. I. MOFFATT
2020/11/17
PROVINCE OF ONTARIO

Drawing Title

BARIELLE-SNOW STREET

MIKINAK ROAD TO HEMLOCK ROAD

Scale
HORIZ. SCALE 1 : 500
VERT. SCALE 1 : 50

Design	Date
J.I.M.	MAY 2016
Drawn	**Checked**
M.M.	J.I.M.
Project No.	**Drawing No.**
38298	132

D07-16-15-0003

#17063

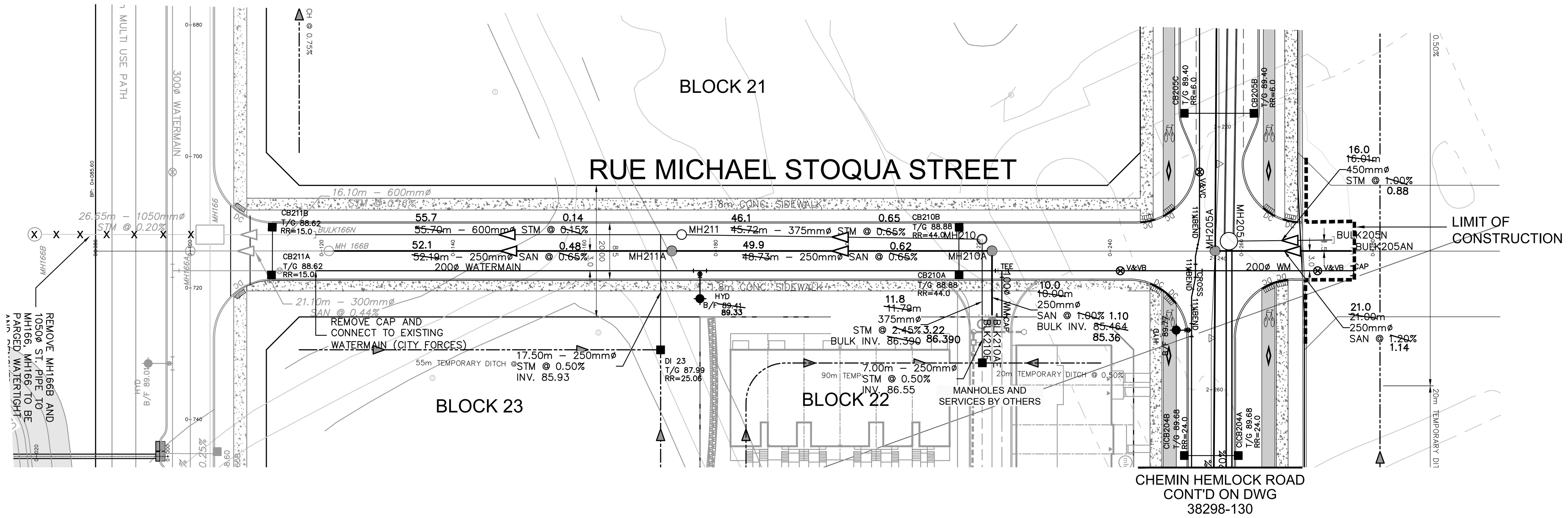
REVIEWED BY
DEVELOPMENT REVIEW SERVICES BRANCH

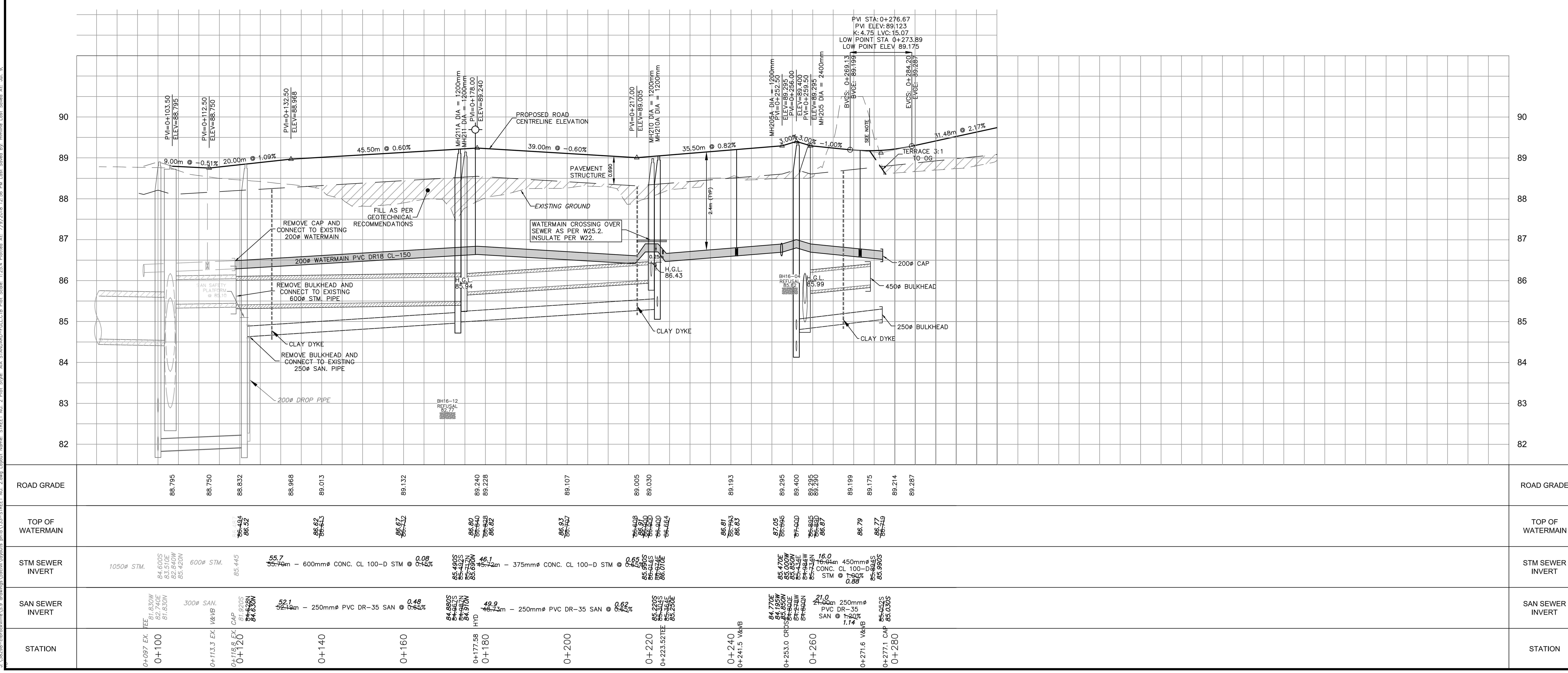
Signed ______________________

Date ______________________ 2017

Plan Number ______________________

NOTE:
FROM ±STA. 0+277-FUTURE ROAD CENTRE LINE PROFILE IS PROVIDED FOR CONTINUITY.





No.	REVISIONS	By	Date
14			
13			
12			
11			
10	AS BUILT	J.I.M.	2018:06:15
9	REVISED PER MATTAMY DESIGN FOR BLOCKS 22, 24 AND 15	J.I.M.	2017:09:15
8	ISSUED FOR CONSTRUCTION	J.I.M.	2017:08:02
7	REVISED PER CITY COMMENTS	J.I.M.	2017:06:16
6	REVISED PER MOECC COMMENTS	J.I.M.	2017:06:07
5	ISSUED FOR TENDER	J.I.M.	2017:03:23
4	SUBMISSION FOR MOECC APPROVAL	J.I.M.	2017:02:16
3	SUBMISSION No.3 FOR CITY REVIEW	J.I.M.	2017:01:25
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Project Title

WATERIDGE VILLAGE AT ROCKCLIFFE

PHASE 1B

LICENSED PROFESSIONAL ENGINEER
J. I. MOFFATT
18/06/15
PROVINCE OF ONTARIO

N

Drawing Title

MICHAEL STOQUA STREET

MIKINAK ROAD TO HEMLOCK ROAD

Scale
HORIZ. SCALE 1 : 500
VERT. SCALE 1 : 50

Design	Date
J.I.M.	MAY 2016
Drawn	**Checked**
M.M.	J.I.M.
Project No.	**Drawing No.**
38298	133

D07-16-15-0003

#17063