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Provence Orleans Realty Investments Inc.

Phase 5A - Provence Orleans Subdivision
2128 Trim Road, Ottawa, Ontario

Site Servicing and Stormwater Management Design Brief

PHASE 5A
PROVENCE ORLEANS SUBDIVISION
OTTAWA, ONTARIO

SITE SERVICING AND STORMWATER MANAGEMENT DESIGN BRIEF

Prepared for:

Provence Orleans Realty Investments Inc.

Prepared by:

NOVATECH
Suite 200, 240 Michael Cowpland Drive
Kanata, Ontario
K2M 1P6

July 2024

Novatech File No. 117155
Ref: R-2024-047

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Engineers, Planners & Landscape Architects

July 23, 2024

Planning, Infrastructure and Economic Development
City of Ottawa
110 Laurier Ave. West, 4th Floor
Ottawa, Ontario
K1P 1J1

Attention: Kelly Livingstone, RPP, MCIP

Dear Mr. Livingstone:

Re: Phase 5A: Provence Orleans Subdivision
Site Servicing and Stormwater Management Design Brief
City File No.: D07-16-18-0021
Novatech File No.: 117155

Please find enclosed the digital copy of the report entitled, "Phase 5A: Provence Orleans Subdivision – Site Servicing and Stormwater Management Design Brief". This report outlines the detailed servicing design for the proposed development with respect to water distribution, sanitary servicing, and stormwater drainage, as well as the approach to stormwater management.

This report is submitted in support of City of Ottawa and MECP approvals and registration in accordance with the conditions of draft approval.

If you have any questions, please contact the undersigned.

Sincerely,

NOVATECH

Trevor McKay, P.Eng.
Senior Project Manager | Land Development

cc: Evan Garfinkel, Provence Orleans Realty Investments Inc.

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 Fax: 613.254.5867 www.novatech-eng.com

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

LIST OF DRAWINGS

Layout Plan, 117155-LP5A
Notes and Legend Plan, 117155- N&L5A
Cross Sections Plan, 117155-XS5A
General Plan of Services - Phase 5A, 117155-GP5A
Plan and Profiles, 117155-PR11, 117155-PR12
Grading Plan - Phase 5A, 117155-GR5A
Storm Drainage Area Plan, 117155-STM5A
Geometric Road Design Drawing - Phase 5A, 117155-GRDD5A
Erosion and Sediment Control & Removals Plan, 117155-ESC5A
Composite Utility Plan – Phase 5A, 117155-U5A
Composite Utility Plan Details – Phase 5A, 117155-U5AD
Landscape Plan – Phase 5A, 117155-L5A
Detail Sheets – Phase 5A, 117155-D15, 117155-D16, 117155-D17, 117155-D18, 117155-D19

ACCOMPANYING DIGITAL FILES

SWM Modelling Files (input and output)

1.0 INTRODUCTION

Novatech has been retained to prepare a Site Servicing and Stormwater Management Design Brief in support of an application for final approval and registration for Phase 5A of the Provence Orleans Subdivision, located at 2128 Trim Road, in the City of Ottawa. The site is being developed by Provence Orleans Realty Investments Inc.

1.1 Report Objective

This report outlines the detailed servicing design for the proposed development with respect to water distribution, sanitary servicing, and storm drainage, as well as the approach to stormwater management. This report is submitted in support of final approval and registration in accordance with the conditions of draft approval located in **Appendix A** (D07-16-18-0021 dated July 5, 2019).

Depending on the timing of approval from the City of Ottawa, this report will be included in a transfer of review Environmental Compliance Application (ECA) with the Ministry of the Environment, Conservation and Parks. At this time, an ECA is required for storm drainage.

1.2 Site Location and Description

Provence Orleans Subdivision is a 27.7ha residential development. The Key Plan (**Figure 1**) indicates the subdivision location. This report describes the development of Phase 5A. Development of the subdivision commenced in 2019, with Phases 1, 2, 3, 4A and 4B having previously received detailed design approval.

Phase 1 is completed and has received final acceptance. Phases 2 & 3 have been serviced, and preliminary road construction and the majority of housing construction has been completed. Phases 4A and 4B have been serviced and preliminary road construction has been completed, and housing construction has started. Phase 5A and Phase 5B lands are currently vacant and are being used for material stockpiling and agricultural purposes.

As described in the Tree Conservation Report and Environmental Impact Statement prepared by Muncaster Environmental Planning, under existing conditions, the subdivision lands were dominated by cultivated agricultural fields with scattered trees on portions of the periphery. Phase 5A is bounded by future Phase 5B and Provence Avenue to the west, Phase 4A and Phase 4B lands (currently under construction) to the east, Phase 3 lands (currently under construction) to the south and an existing school property to the north. Refer to the Existing Conditions Plan (**Figure 2**).

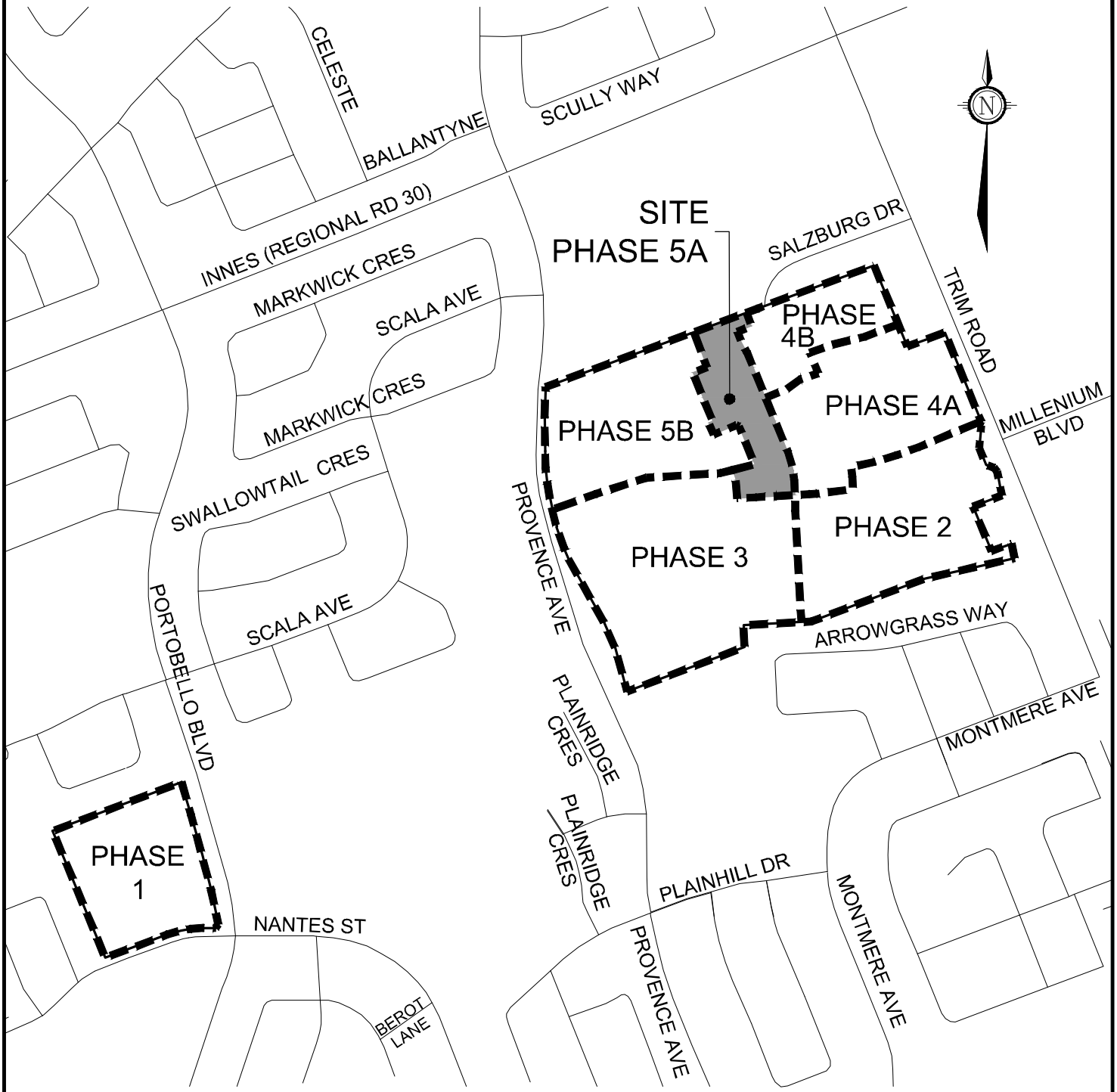
1.3 Proposed Development

Montrichard Road will be extended by approximately 80m to the west from existing Montjay Road. Dick Brown Street will connect to Ventoux Avenue (Phase 3) at the south end of Phase 5A and terminate at the extension of Montrichard Road.

Montrichard Road will be extended west from two connections to Dick Brown Street as part of the future Phase 5B development.

The proposed development of Phase 5A consists of the following, as shown on the Concept Plan (**Figure 3**):

- 20 Single-family dwelling units;
- 22 Townhouse dwelling units;
- One pathway connection to existing Phase 4A lands (Block 21).



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CITY OF OTTAWA
PROVENCE ORLEANS SUBDIVISION
(2128 TRIM ROAD)

KEY PLAN

DATE	JOB	FIGURE
JUL 2024	117155	FIGURE 1

SHT8X11.DWG - 216mmx279mm

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SERVICING WORKS CONSTRUCTED, HOUSING CONSTRUCTION ONGOING

CITY OF OTTAWA
PROVENCE ORLEANS SUBDIVISION (2128 TRIM ROAD)

EXISTING CONDITIONS PLAN

SCALE 1 : 3750 (0 30 60 90 120 150)

DATE JUL 2024 | JOB 117155 | FIGURE FIGURE 2

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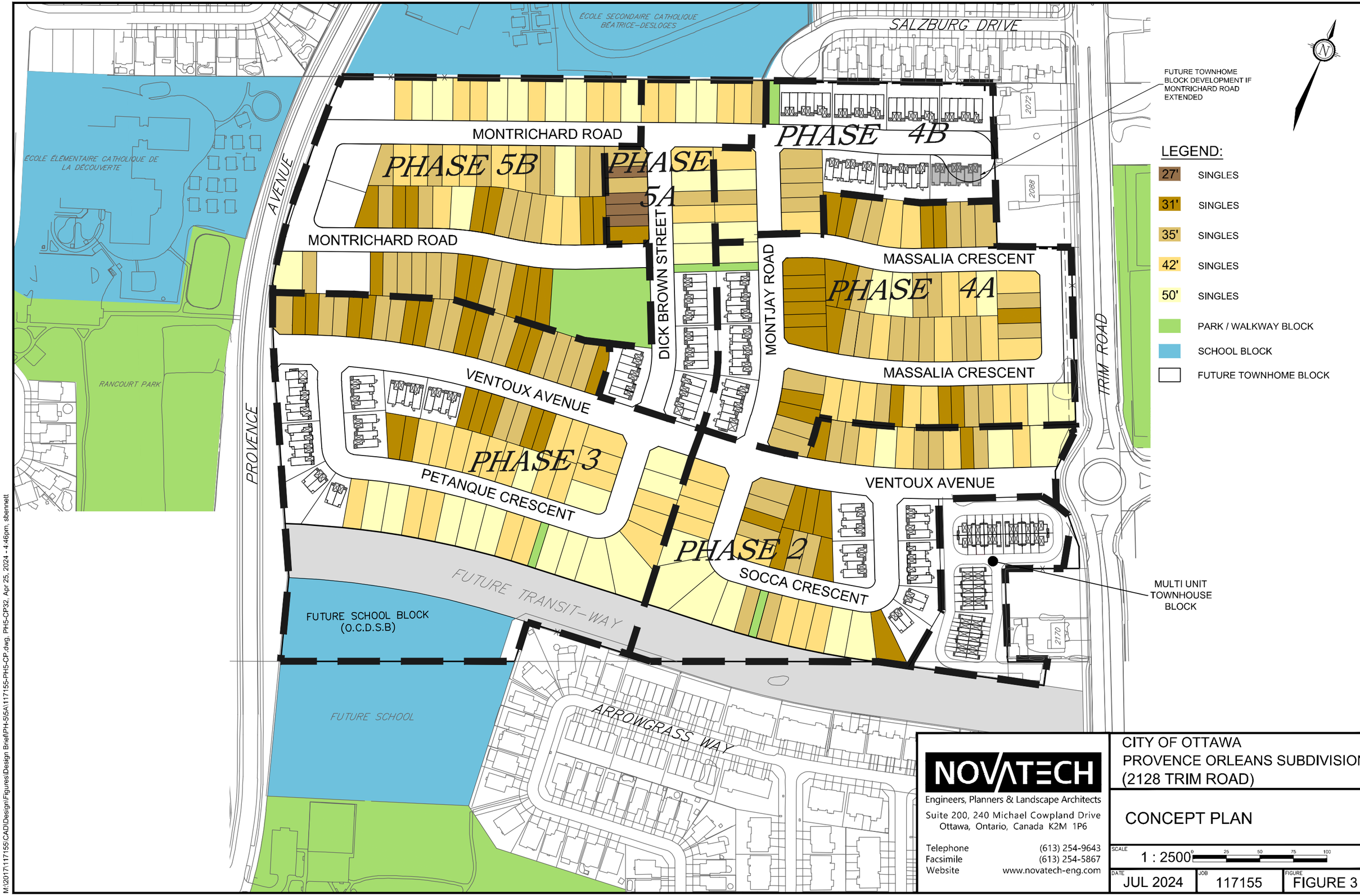

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CITY OF OTTAWA
PROVENCE ORLEANS SUBDIVISION
(2128 TRIM ROAD)

CONCEPT PLAN

SCALE 1 : 2500 (0 25 50 75 100)

DATE JUL 2024 | JOB 117155 | FIGURE FIGURE 3

SHT11X17.DWG - 279mmX432mm

The engineering design for the proposed grading, water supply, sanitary servicing, storm drainage, stormwater management, erosion & sediment control, utilities, and landscape for the development is shown on the following drawings, provided in **Appendix G**:

- Layout Plan, 117155-LP5A
- Notes and Legend Plan, 117155-N&L5A
- Cross Sections Plan, 117155-XS5A
- General Plan of Services - Phase 5A, 117155-GP5A
- Plan and Profiles, 117155-PR11, 117155-PR12
- Grading Plan - Phase 5A, 117155-GR5A
- Storm Drainage Area Plan, 117155-STM5A
- Geometric Road Design Drawing - Phase 5A, 117155-GRDD5A
- Erosion and Sediment Control & Removals Plan, 117155-ESC5A
- Composite Utility Plan – Phase 5A, 117155-U5A
- Composite Utility Plan Details, 117155-U5AD
- Landscape Plan – Phase 5A, 117155-L5A
- Landscape Details, 117155-L5AD
- Detail Sheets, 117155-D15, 117155-D16, 117155-D17, 117155-D18, 117155-D19

1.4 City of Ottawa Checklist

The City of Ottawa - Servicing Study Guidelines for Development Applications require that a Development Servicing Study Checklist be completed to confirm that each applicable item is deemed complete and ready for review by the City of Ottawa's Planning Infrastructure and Economic Development Department. A completed checklist is included in **Appendix B**.

1.5 Supporting Studies

The following supporting documents were utilized in the preparation of this report:

- Proposed Geometric Road Design Memorandum, Provence Orleans Phase 5A, prepared by Novatech, dated July 23, 2024;
- Site Servicing and Stormwater Management Design Brief (R-2020-018), Provence Orleans Subdivision – Phase 2 & 3, Ottawa, Ontario, prepared by Novatech, dated November 2020;
- Site Servicing and Stormwater Management Design Brief (R-2021-117, Revision 3), Provence Orleans Subdivision – Phase 4A & 4B, Ottawa, Ontario, prepared by Novatech, dated September 2022;
- Master Servicing Study, Gloucester and Cumberland East Urban Community Expansion Area and Bilberry Creek Industrial Park Master Servicing Update, prepared by Stantec, dated September 2013;
- Greater Cardinal Creek Subwatershed Management Plan, prepared by AECOM, dated August 11, 2014;
- Geotechnical Investigation, Proposed Residential Development, Provence Orleans Subdivision, 2128 Trim Road – Ottawa, prepared by Paterson Group Inc., dated September 22, 2022 (PG4278-1, Revision 5);
- Site Servicing and Stormwater Management Design Brief (R-2018-095), Provence Orleans Subdivision, 2128 Trim Road, Ottawa, Ontario, prepared by Novatech in support of Draft Approval, dated March 31, 2019;
- Tree Conservation Report and Environmental Impact Statement – Revised prepared by Muncaster Environmental Planning Inc., dated September 10, 2018.

1.6 Geotechnical Investigations

Based on the proposed grading and servicing requirements, the development will be filled above the original grade. The Geotechnical Investigation prepared by Paterson indicates the maximum permissible grade raises of 1.1m, 1.6m and 1.9m, as depicted on the Lightweight Fill Plan (**Figure 4)**.

Portions of the site will exceed the maximum permissible grade raise and will require mitigation measures. In particular, the majority of the lots on Dick Brown Street will exceed the maximum permissible grade raise. In areas where proposed elevations exceed the maximum permissible grade raise, site specific mitigation measures such as preloading (surcharging), and/or lightweight fill will be used in the garage and around the houses.

Approximate limits of grade raise mitigation measures (lightweight fill and/or surcharging) are shown on the Lightweight Fill Plan (**Figure 4)**. A grading plan review and corresponding grade raise matrix for home construction will be completed by Paterson and submitted under separate cover as required as part of the building permit process.

The proposed pavement structures for the local roads, as recommended by Paterson, are included on the engineering drawings.

2.0 WATER SUPPLY SYSTEM

The proposed water supply system in Phase 5A has two connection points to existing watermains. The first connection point is a 250mm diameter stub on Dick Brown Street connecting to a 300mm diameter watermain on Ventoux Avenue to the south. This 300mm diameter watermain connects to 400mm diameter watermains on Trim Road and Provence Avenue. The second connection point is a 200mm diameter watermain stub on Montrichard Road to the east. This watermain is ultimately connected to the 400mm diameter watermains on Trim Road and Provence Avenue by 200mm diameter watermains on Montjay Road and Salzburg Drive and the 300mm diameter watermain on Ventoux Avenue.

A 250mm dia. watermain will be provided on Dick Brown Street and a 200mm dia. watermain will be provided on Montrichard Road through Phase 5A, connecting to the existing watermains. The existing watermain on Ventoux Avenue and at the Montrichard Road/Montjay Road intersection will provide looping for the proposed Phase 5A watermain. The proposed Phase 5A watermain will ultimately provide looping for the future Phase 5B watermain on Montrichard Road. Refer to Watermain Layout/Watermain Node Locations (**Figure 5**) for the proposed watermain layout, size, and node locations.

Hydraulic analysis was completed using EPANET 2.2 and boundary conditions provided by the City of Ottawa. Refer to **Appendix C** for boundary conditions. The watermain design is consistent with the master servicing study completed for the area (Stantec, 2013). Relevant excerpts from the master servicing study have been included in **Appendix C**.

The water demands were estimated using the City of Ottawa's Water Distribution Design Guidelines (July 2010) and the Ministry of the Environment Design Guidelines for Drinking-Water Systems (2008).

LEGEND:

* INFORMATION FROM: GEOTECHNICAL INVESTIGATION, PREPARED BY PATERSON GROUP INC, DATED SEPTEMBER 22, 2022 (PG4278-1, REV. 5)

- PERMISSIBLE GRADE RAISE = UP TO 1.1m
- PERMISSIBLE GRADE RAISE = UP TO 1.6m
- PERMISSIBLE GRADE RAISE = UP TO 1.9m
- * PHASE 5A UNITS WHERE GRADE RAISE MITIGATION MEASURES ARE ANTICIPATED TO BE REQUIRED
- FUTURE RESIDENTIAL (PHASE 5B)
- EXISTING RESIDENTIAL (PHASES 2, 3 & 4)

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CITY OF OTTAWA
PROVENCE ORLEANS SUBDIVISION
(2128 TRIM ROAD)

PHASE 5A
LIGHTWEIGHT FILL PLAN

SCALE 1 : 1500

DATE JUL 2024 | JOB 117155 | FIGURE 4

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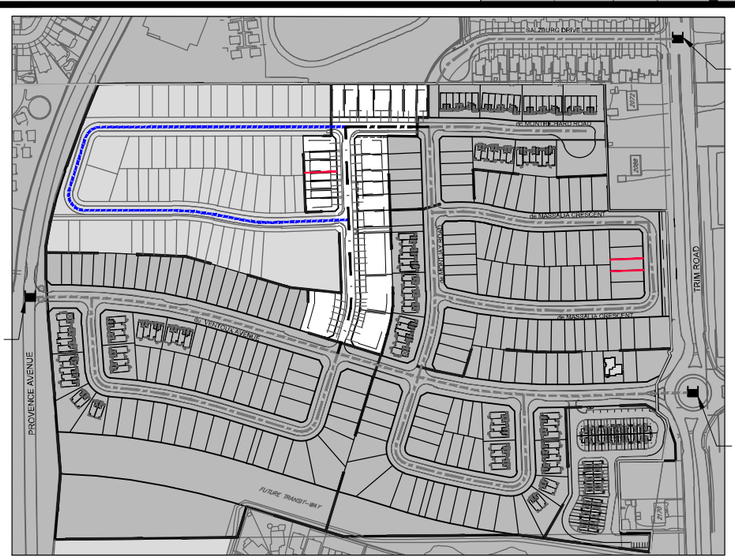
LEGEND

- PROPOSED 200mmØ WATERMAIN PIPE
- PROPOSED 250mmØ WATERMAIN PIPE
- EXISTING 200mmØ WATERMAIN PIPE
- EXISTING 300mmØ WATERMAIN PIPE
- 500 PROPOSED WATERMAIN NODE
- 213 EXISTING WATERMAIN NODE
- R1 RESERVOIR
- FUTURE PHASE 5B DEVELOPMENT
- EXISTING DEVELOPMENT
- PROPOSED PHASE 5A DEVELOPMENT
- FIREFLOWS THAT CANNOT BE CAPPED AS PER TECHNICAL BULLETIN ISDTB-2014-02
- FUTURE 200mmØ WATERMAIN PIPE
- 3m BUILDING SEPARATION OR 2 HOUR FIREWALL REQUIRED



NOT TO SCALE

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CITY OF OTTAWA
PROVENCE ORLEANS SUBDIVISION
(2128 TRIM ROAD)

PHASE 5A - WATERMAIN LAYOUT/WATERMAIN NODE LOCATIONS

SCALE 1 : 1500 (0, 15, 30, 45, 60)

DATE JUL 2024 | JOB 117155 | FIGURE FIGURE 5

2.1 Domestic Water Demand

The design criteria used to determine the size of the watermains required to service the subdivision are as follows:

Parameter	Design Criteria
Average Day Demand	280L/cap/day
Single-family Density	3.4 people per single
Townhouse/Semi Density	2.7 people per townhouse
Maximum Day Demand	2.5 x Average Day Demand
Peak Hour Demand	2.2 x Maximum Day Demand
200mm & 250mm Diameter C Factors	110

The design criteria used to determine the size of the watermains required to service the subdivision are based on an approach that considers four scenarios, as follows:

Maximum Allowable Pressure	552kPa (80psi)
Minimum Allowable Pressure (excluding fire flow conditions)	275kPa (40psi)
Minimum Allowable Pressure (including fire flow conditions)	140kPa (20psi)
Maximum Age	24 hours (on-site)

2.2 Fire Flow Demand

The City of Ottawa requires that proposed watermain networks meet Fire Underwriters Survey (FUS) fire flow requirements for units without adequate spacing. Adequate spacing implies a minimum separation of 10m between the back of adjacent units for typical single family and townhome units, as per the City of Ottawa's Technical Bulletin ISDTB-2014-02. The building area for the townhouses and singles without adequate spacing includes the building area of all adjacent units without adequate spacing (3m or more between units). Building areas are reduced where fire walls (2hr) are included. The required fire flow for singles and townhouses with adequate spacing is 167 L/s (per ISDTB-2014-02). Where adequate spacing is not achieved based on minimum zoning setbacks, the fire flows have been calculated in accordance with the FUS methodology for two scenarios. The first scenario provides for a minimum building separation of 3m at critical locations, i.e. between Lots 4 and 5. The second provides a 2-hr firewall at the same location. The maximum fire flow from the two scenarios was utilized for the watermain analysis. The fire flows for all units in Phase 5A subject to 3m minimum separation or 2-hr fire walls are listed below in **Table 2.1**:

Table 2.1: Calculated Fire Flow for Phase 5A Units Without Adequate Spacing

Type	Lots	Fire Flow Demand (FUS)		3m Building Separation or 2-hr Fire Walls		
		3m Spacing	2hr Fire Wall	Required	Number	Location
Singles	1-4	217L/s*	183L/s	Yes	1	4/5
Singles	5-7	217L/s*	183L/s	Yes	1	4/5

* Indicates the larger minimum required fire flow to be used in hydraulic analysis.

The required fire flow demand for all units in Phase 5A are listed below in **Table 2.2**:

Table 2.2: Required Fire Flow Demand for Phase 5A

Type	Lots	Adequate Rear Separation	Required Fire Flow Demand	
			FUS	ISDTB-2014-02
Singles	1-4	No	217L/s	N/A
Singles	5-7	No	217L/s	N/A
Singles	8-20	Yes	N/A	167L/s
Townhouse Block	22-24	Yes	N/A	167L/s
Townhouse Block	25	No	183L/s	N/A

Refer to **Figure 5** for node locations and **Appendix C** for boundary conditions, fire flow calculations, and supporting documents.

2.3 Watermain Analysis

The hydraulic analysis of the proposed development was completed by analyzing the average day, peak hour, and maximum day plus fire flow conditions. The results are summarized in **Table 2.3** below.

Table 2.3: Phase 5A Water Operating Conditions

Condition	Demand (L/s)	Minimum/Maximum Allowable Pressure (kPa/psi)	Critical Operating Pressure (kPa/psi)
High Pressure	0.53	552/80 (max)	404.7/58.7
Maximum Day Demand (c/w Fire Flow)	1.31	140/20 (min)	293.7/42.6
Peak Hour Demand	2.89	275/40 (min)	356.5/51.7

Based on the findings of the hydraulic analysis, there is capacity to provide both the required domestic and fire flows in the proposed Phase 5A. Additionally, the maximum age of the water on-site is 9.6hrs (Node 504).

Refer to the General Plan of Services (**117155-GP5A**) for watermain layout and for the proposed 2-hour firewall (or 3m building separation) locations. Refer to **Appendix C** for complete hydraulic analysis results.

3.0 SANITARY SEWER SYSTEM

It is proposed to provide sanitary sewer service to Phase 5A of the Provence Orleans subdivision with 200mm diameter gravity sewers outletting to the existing 250mm diameter sanitary sewer on Ventoux Avenue. Phase 5B will connect to the Phase 5A sanitary sewers in the future. The analysis will account for the future flows. The 250mm diameter sanitary sewer on Ventoux Avenue was constructed as part of Phases 2 and 3 of the subdivision and outlets to the existing 525mm diameter sanitary sewer on Trim Road. The proposed sanitary layout within the subdivision is shown on the Sanitary Drainage Area Plan (**117155-SAN5A**). The Sanitary Drainage Area Plan and the sanitary sewer design sheet are included in **Appendix D**.

3.1 Sanitary Sewer Design Criteria

The design criteria used to determine the size of the sanitary sewers required to service the subdivision are obtained from the City of Ottawa Sewer Design Guidelines (October 2012) and Technical Bulletin ISTB-2018-01, and are summarized as follows:

Parameter	Design Criteria
Residential Average Flow	280L/cap/day
Single-family Density	3.4 people per single
Townhouse Density	2.7 people per townhouse
Residential Peaking Factor	4.0 from Harmon Equation (maximum)
Infiltration Allowance	0.33 L/s/ha
Minimum Diameter	200 mm
Minimum Slope (200mm Diameter)	0.32%

3.2 Sanitary Sewer Analysis

Sanitary service within Phase 5A will be provided by 200mm diameter pipes outletting to the existing 250mm diameter sanitary sewer on Ventoux Avenue. Phase 5B will connect to the 200mm diameter sewers on Dick Brown Street (Phase 5A) in the future.

The theoretical peak flow for Phase 5A of the subdivision development is calculated to be 2.21L/s. The theoretical peak flow for both Phase 5A and Phase 5B of the subdivision development is calculated to be 6.95L/s, based on the current development concept available for Phase 5B. The flow accounted for in the Phase 2 and 3 Design Brief (Novatech, 2020) from Phase 5 was 6.50L/s. A Rational Method analysis was completed for the downstream sanitary sewers within the development (Ventoux Avenue) using the as-built information for the existing sewers to ensure there is adequate capacity to convey the additional 0.45L/s of theoretical peak flow from Phase 5. An updated sanitary design sheet for the Ventoux Avenue sanitary sewers has been provided in **Appendix D**.

The total theoretical peak flow leaving the development at the Trim Road outlet from Phases 2-5 is calculated to be 24.26L/s. The approved theoretical peak flow the whole development to the outlet at Trim Road in the Draft Plan of Subdivision application is 26.16L/s (Novatech, 2019). Therefore, the increased peak flow from Phase 5 will not result in an exceedance of the approved sanitary flow from the site.

The proposed pipe sizes and slopes meet the minimum requirements set out by the City of Ottawa Sewer Design Guidelines Design. The proposed Phase 5 flows are consistent with the sanitary flows indicated in the approved master servicing report.

Refer to the enclosed Sanitary Drainage Area Plan (**117155-SAN5A**) and the sanitary sewer design sheet provided in **Appendix D** for details. Refer to the General Plan of Services (**117155-GP5A**) for the sanitary sewer layout.

4.0 STORMWATER DRAINAGE

It is proposed to service Phase 5A of the Provence Orleans subdivision with a gravity storm sewer connecting to the existing 900mm diameter storm sewer stub located at Dick Brown Street and Ventoux Avenue. Phase 5B will connect to the Phase 5A storm sewers in the future. The analysis will account for the future flows. The 900mm diameter stub connects to the existing storm sewer on Ventoux Avenue which was approved and constructed as part of Phase 2 and 3 of the Provence Orleans Subdivision. The Phase 2 and 3 storm sewers outlet to the 2550mm diameter storm sewer on Provence Avenue, which ultimately outlets to the Cardinal Creek stormwater management facility. The proposed storm layout within the subdivision is shown on the General

Plan of Services (**117155-GP5A**) and the Storm Drainage Area Plan (**117155-STM5A**). The Storm Drainage Area Plan and storm sewer design sheets are included in **Appendix E**.

Storm servicing for the subdivision will be provided using a dual drainage system; runoff from frequent events will be conveyed by storm sewers (minor system), while flows from large storm events which exceed the capacity of the minor system will be conveyed overland along defined overland flow routes (major system). The Cardinal Creek stormwater management facility is the ultimate outlet for the minor system. Major flows will be generally contained within the site limits except for a small amount of flow which leaves the site along the emergency overland flow outlet, located on Trim Road, from the northeast corner of the Massalia Crescent right-of-way (Phase 4A).

4.1 Existing Conditions

The existing site is relatively flat and is situated lower than the surrounding roadways and developed areas. There is an existing ditch located on the northern edge of the site which intercepts and conveys flows originating from the site. The majority of this ditch outlets to a ditch inlet catchbasin (DICB) located in the Salzburg Drive right-of-way. This DICB was denoted as temporary on the as-built design drawing for the Salzburg Drive development (Plan & Profile – Salzburg Drive, **Appendix E**). A small portion of the ditch outlets to a ditch inlet catchbasin (DICB) located in the northwest corner of Phase 5B (Plan & Profile I – Station 10+000 to 10+260, Provence Avenue – From Scala Avenue to 250m North of Plainhill Drive, **Appendix E**).

4.2 Stormwater Drainage Criteria

The stormwater drainage criteria used in the design of the subdivision were developed based on the Master Servicing Study prepared by Stantec which references the applicable portions of *Update to Master Drainage Plan East Urban Community Expansion Area* (Cumming Cockburn Ltd., September 11, 2000) and have been adapted through discussions with the City throughout the previously approved phases of this development. Relevant drawing excerpts from the report (Storm Collector Sewers and Drainage Areas, STM2, and Macro Grading Plan, GRD2) have been included in **Appendix E**.

The storm sewer system is to be designed using the Rational Method to convey peak design flows and must adhere to the following criteria:

Description	**Design Criteria**
Local Roads	2-year return period
Storm Sewer Design	Rational Method / Modelling
IDF Rainfall Data	City of Ottawa Sewer Design Guidelines
Initial Time of Concentration (Tc)	10 minutes
Minimum Velocity	0.8 m/s
Maximum Velocity	3.0 m/s
Minimum Diameter	250 mm
Minimum Slope (250mm Diameter)	0.432%

In addition to the above noted criteria, the following also apply:

4.2.1 Minor System (Storm Sewers)

- Inlet control devices (ICDs) will be installed in road and rear yard catchbasins to control inflows to the storm sewers to an average of 70 L/s/ha;
- Perforated pipes will be installed in the rear yard swales (between landscape catchbasins) to promote infiltration of storm runoff;
- The 100-year hydraulic grade line in the storm sewer shall be at least 0.3m below the underside of footing (USF) elevations for the proposed development.

4.2.2 Major System (Overland Flow)

The major system criteria include:

- Minimum on-site detention storage provided by the major system is 150 m^3/ha. On-site storage can include:
    - Road storage (maximum depth of 0.35m);
    - Rear yard storage (maximum static depth of 0.40m);
- Maximum depth of flow (static + dynamic) on local and collector streets shall not exceed 0.35m. The depth of flow may extend adjacent to the right-of-way, provided that the water level does not touch any part of the building envelope and remains below the lowest building opening during the stress test event (100-year+20%);
    - There must be at least 0.15m of vertical clearance between the spill elevation on the street and the ground elevation at the building envelope in the proximity of a flow route or ponding area;
    - There must be at least 0.30m of vertical clearance between the spill elevation and the ground elevation at the adjacent building envelope in the rear yards;
- Storm runoff that exceeds the capacity of the minor system is to be stored within rear yard and road sags and conveyed overland along defined major system flow routes;
- The product of the 100-year flow depth (m) on street and flow velocity (m/s) shall not exceed 0.60.

4.3 Storm Sewer Design (Minor System)

Roadside curbs and catchbasins will be installed throughout the development to convey minor systems flows into the storm sewers. Phase 5A of the development will be serviced by storm sewers ranging in size from 375mm to 900mm diameter. The storm sewers will connect to the existing 900mm diameter storm sewer stub on Dick Brown Street.

4.4 Overland Flow Path (Major System)

The site will be graded to provide an overland flow route (major system) for large, infrequent storms or if the storm sewer system becomes obstructed. The flows which exceed the capacity of the major system (known as emergency flows) will ultimately be directed to Trim Road as shown on the Overland Flow Route and Macro Grading Plan (**Figure 6**) via the outlet at the northeast corner of Massalia Crescent. The majority of the emergency flows from Phase 5A will be directed to the outlet through Phase 4. A small portion of the emergency flows on Dick Brown Street will be directed through Phases 3, 2 and 4, respectively, to the outlet. The overland drainage on Trim Road flows north towards Innes Road from the site.

The design of the major system conforms to the design standards outlined in Section 5.5 (Major System Considerations) of the City of Ottawa Sewer Design Guidelines (October 2012) and is consistent with the Master Servicing Study. Refer to the Grading Plan (**117155-GR5A**) for details.

ÉCOLE SECONDAIRE CATHOLIQUE BÉATRICE-DESLOGES

ÉCOLE ÉLÉMENTAIRE CATHOLIQUE DE LA DÉCOUVERTE

RANCOURT PARK

FUTURE SCHOOL

FUTURE TRANSIT-WAY

PROVENCE AVENUE

TRIM ROAD

DICK BROWN STREET

MONTJAY ROAD

MONTRICHARD ROAD

VENTOUX AVENUE

MASSALIA CRESCENT

PETANQUE CRESCENT

SOCCA CRESCENT

PHASE 5B

PHASE 5A

PHASE 4B

PHASE 4A

PHASE 3

PHASE 2

2072

2088

2170

89.88 89.70 89.55 89.45 89.37 89.46 89.50 89.82

89.80 89.72 89.63 89.55 89.61 89.30 89.22 89.15 89.05

89.79 89.73 89.66 89.53 89.31 89.38 89.24 89.19 89.15 89.22 89.97

88.55 89.88 89.73 89.63 89.46 89.56 89.63 89.05

89.54 89.65

OVERLAND FLOW OUTLET

LEGEND:

- PHASE LIMITS
- 89.60 PROPOSED GRADE
- 89.00 EXISTING GRADE
- OVERLAND FLOW ARROW
- FUTURE RESIDENTIAL (PHASE 5B)
- EXISTING RESIDENTIAL (PHASES 2, 3 & 4)

NOVATECH
Engineers, Planners & Landscape Architects
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Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

CITY OF OTTAWA
PROVENCE ORLEANS SUBDIVISION
(2128 TRIM ROAD)

OVERLAND FLOW ROUTE AND MACRO GRADING

SCALE 1 : 2500 (0 25 50 75 100)
DATE JUL 2024
JOB 117155
FIGURE FIGURE 6

SHT11X17.DWG 279mmX432mm

M:\2017\117155\CAD\Design\Figures\Design Brief\PH-5\5A\117155-PH5-OFLOW.dwg, PH-5-OVR-LND-FLOW, Apr 18, 2024 - 1:56pm, sbennett

4.5 Storm Sewer Analysis

The overall development will be serviced by storm sewers ranging in size from 300mm to 1500mm diameter. The proposed storm sewers connect to the existing 2550mm diameter storm sewer on Provence Avenue. The theoretical allowable peak flow for the subdivision development area (Phases 2, 3, 4 and 5) was calculated to be 1,542 L/s. As per the Phase 4A & 4B Design Brief (Novatech, 2022), an ultimate allowable release rate of 1,595 L/s to the existing storm sewer on Provence Avenue accounts for the development of the existing lands at 2072 and 2088 Trim Road being developed and controlled to 70 L/s/ha.

The proposed pipe sizes and slopes meet the minimum requirements set out by the City of Ottawa Sewer Design Guidelines Design. The proposed Phase 5A and 5B flows are consistent with the overall storm design indicated in the approved master servicing report and the Phase 2 and 3 Design Brief (Novatech, 2020).

Refer to the enclosed Storm Drainage Area Plan (**117155-STM5A**) and the Storm Sewer Design Sheet provided in **Appendix E** for details. Refer to the General Plan of Services (**117155-GP5A**) for the storm sewer layout.

5.0 STORMWATER MANAGEMENT

Phase 5A of the Provence Orleans subdivision is located within the Rideau Valley Conservation Authority jurisdiction. The stormwater drainage criteria used in the design of the subdivision were developed based on the *Greater Cardinal Creek Subwatershed Management Plan* (AECOM, August 11, 2014) and the Master Servicing Study (Stantec, September 2013) which references the applicable portions of *Update to Master Drainage Plan East Urban Community Expansion Area* and have been adapted through discussions with the City of Ottawa.

The City of Ottawa Sewer Design Guidelines require hydrologic and hydraulic modelling for all dual drainage systems. The performance of the proposed storm drainage system for the subject site was evaluated using the PCSWMM hydrologic/ hydraulic model. The Cardinal Creek stormwater management facility is the ultimate outlet for the minor system. The major system flows will be contained within the site limits where grading permits the on-site capture and storage of runoff. To provide accurate modelling for the entire development, Phase 5A has been modeled with the previously approved Phase 2, 3, 4A and 4B as well as the future Phase 5B.

The PCSWMM model schematics and 100-year model output are provided in **Appendix F**. Digital copies of the modelling files and model output for all storm events are provided with this submission package.

5.1 Stormwater Management Design Criteria

The following stormwater management criteria were used in the development of the design:

<u>Water Quality</u>

- An '*Enhanced'* level of water quality treatment (80% long-term TSS removal) is required for the proposed phase of the development:
    - The site outlets to the Provence Avenue storm sewer and ultimately the Cardinal Creek stormwater management facility, which has been designed to provide a '*Normal*' level of water quality treatment (70% long-term TSS removal).

- Additional on-site stormwater water quality treatment is to be provided by a water quality treatment unit.
- The combined treatment is to provide an overall '*Enhanced'* water quality treatment (80% *total* long-term TSS removal) prior to discharging to Cardinal Creek.

Water Quantity

- On-site stormwater water quantity is to be controlled to the allowable release rate of 70 L/s/ha.
  - As per the Phase 4A & 4B Design Brief (Novatech, 2022), the interim allowable release rate for Provence Orleans Subdivision is 1,591 L/s to account for the controlled flows from 2072 & 2088 Trim.
  - The ultimate allowable release rate to the receiving system on Provence Avenue is 1,595 L/s which accounts for the future development of 2072 & 2088 Trim controlled to 70 L/s/ha, as per the Phase 4A & 4B Design Brief (Novatech, 2022).
  - For the purposes of this report, the interim allowable release rate of 1,591 L/s will be used.
- Lot level and Conveyance Best Management Practices should be implemented to promote infiltration and treatment of storm runoff.

5.2 Water Quality

To provide '*Enhanced*' stormwater water quality treatment for Phase 5A and 5B, a water quality treatment unit is proposed (MH 300A) at the outlet of the storm sewer prior to connecting to the existing Ventoux Avenue storm sewer.

The treatment unit (OGS) was required to be sized so that when used in series with the Cardinal Creek stormwater management facility, a total suspended solids (TSS) removal of 80% is achieved. The minimum required treatment efficiency of the on-site unit to achieve an overall '*Enhanced*' stormwater treatment level is 34%, as shown by the following example calculation. The example calculation uses an initial sediment load of 100 mg/L. The calculated removal efficiency percentage would be the same regardless of the initial sediment load.

Initial Sediment Loading Upstream of Phase 5 OGS	=	100 mg/L
Minimum TSS Removal to be provided by Phase 5 OGS	=	34%
Remaining sediment load downstream of Phase 5 OGS	=	66 mg/L
Removal efficiency of the SWMF	=	70%
Remaining sediment load downstream of SWMF	=	20 mg/L
Overall treatment provided (OGS + SWMF)	=	$\frac{(100\frac{mg}{L} - 20\frac{mg}{L})}{100\,mg/L} = 80\%$

Based on discussions with the City of Ottawa, a Vortechs hydrodynamic separator is the preferred type of OGS unit for this project. As there is not sufficient space to install a high-flow bypass for the OGS unit, an in-line model will be required. The limiting factor for sizing the Vortechs unit was based on the required flow rate for the in-line application, resulting in a higher on-site treatment efficiency (85%) then required. The proposed Vortechs 9000 unit will be able to provide an 'Enhanced' level of water quality treatment without consideration to the additional treatment provided by the Cardinal Creek stormwater management facility. Sizing information and product details for the Vortechs 9000 are provided in **Appendix F**.

5.3 Retention of the First 5mm of Rainfall

The *Greater Cardinal Creek Subwatershed Management Plan* (AECOM, August 11, 2014) requires, to the extent possible, the on-site retention of the first 5mm of all rainfall events for infill development within the watershed. Wherever practical, measures have been implemented to retain the first 5mm of rainfall on-site, including the use of infiltration trenches in the rear yards.

Due to the perviousness of the rear yards and the depression storage and infiltration capacity within the grassed areas of the rear yards, there will be no runoff generated from the rear yards from the first 5mm of a rain event. In addition, the infiltration trenches provided within the rear yards will provide some infiltration potential to retain runoff from the adjacent building roofs during the 5mm event.

Within the right-of-way, it is not possible to provide for the retention of the first 5mm of rainfall from the hard surfaced areas. The City of Ottawa has indicated that due to the low permeability of the soils on-site, low impact development measures such as infiltration trenches within the right-of-way for Phase 5A are not practical due to the increased maintenance requirements and decreased functionality of these measures in low permeability soils.

5.4 Stormwater Management Model Development

The PCSWMM model has been developed to account for both minor and major system flows from the subdivision and ensure no adverse impacts on the downstream watercourses and wetland areas. The results of the analysis were used to:

- Determine the total major and minor system runoff from the site;
- Size the ICDs for each inlet to the storm sewer system;
- Calculate the storm sewer hydraulic grade line for the 100-year storm event; and
- Evaluate overland flow depths and ponding volumes during the 100-year event.

Both Phase 5A and 5B were included in the PCSWMM model since Phase 5B will flow through Phase 5A. Phase 5B was modeled based on the Draft Plan approved street layout and preliminary grading and pipe information. This will be confirmed during the detailed design of Phase 5B and the modelling updated at that time as required.

5.5 Design Storms

The hydrologic analysis was completed using the following synthetic design storm events. The IDF parameters used to generate the design storms were taken from the City of Ottawa Sewer Design Guidelines.

Chicago Storms	*12 Hour SCS Type II Storms*
25mm 4hr Chicago storm	2-year 12-hour SCS Type II Storm
2-year 3hr Chicago storm	5-year 12-hour SCS Type II Storm
5-year 3hr Chicago storm	100-year 12-hour SCS Type II Storm
100-year 3hr Chicago storm	

The 3-hour Chicago distribution generated the highest peak flows for both the minor and major systems during the Phase 2 and 3 analysis (Novatech, 2020) and was determined to be the critical storm distribution for the design of the storm drainage system.

The proposed drainage system has been stress-tested using a 3-hour Chicago design storm that has a 20% higher intensity and total volume compared to the 100-year event as per the requirements of the City of Ottawa Sewer Design Guidelines. The July 1st, 1979 historical event was also run as a stress-test scenario for the proposed development and compared to the 100-year+20% event. The 100-year+20% produced higher ponding depths and HGL elevations, and results for this scenario are reported as the worst-case scenario.

5.6 Model Parameters

Storm Drainage Areas

For modelling purposes, the site has been divided into subcatchments based on the drainage areas tributary to each inlet of the proposed storm sewer system. The catchment areas are shown on the Storm Drainage Area Plan (**117155-STM5A**). Refer to the Grading Plan (**117155-GR5A**) and the General Plan of Services (**117155-GP5A**) for the location of high points and low points, and the storm sewer layout, respectively.

The hydrologic parameters for each subcatchment were developed based on the Grading Plan (**117155-GR5A**) and the Storm Drainage Area Plan (**117155-STM5A**). An overview of the drainage area parameters for each phase is provided in **Table 5.2**.

Table 5.1 Hydrologic Model Parameters

Area ID	Catchment Area (ha)	Runoff Coeff. (C)	Percent Imperv. (%)	No Depression (%)	Flow Path Length (m)	Equivalent Width (m)	Average Slope (%)
Phases 2 & 3							
2-00	1.239	0.65	64%	50%	44.5	278.6	0.5%
2-01A	0.084	0.68	69%	30%	27.4	30.7	3.0%
2-01B	0.162	0.67	67%	30%	27.4	59.2	3.0%
2-02	0.230	0.69	70%	25%	24.8	92.7	3.0%
2-03	0.173	0.41	30%	100%	20.8	83.1	3.0%
2-04	0.464	0.64	63%	39%	23.8	195.4	3.0%
2-05	0.339	0.66	66%	26%	26.6	127.5	3.5%
2-06	0.173	0.43	33%	100%	16.8	103.3	3.3%
2-07	0.160	0.46	37%	100%	15.7	101.6	3.5%
2-08	0.265	0.36	23%	100%	30.1	88.0	2.5%
2-09	0.411	0.64	63%	39%	24.1	170.5	3.5%
2-10	0.133	0.36	23%	100%	29.9	44.5	2.5%
2-11	0.417	0.63	61%	44%	25.7	162.2	3.5%
2-12	0.280	0.55	50%	100%	22.3	125.4	3.0%
2-13	0.146	0.67	67%	0%	9.9	147.0	0.8%
3-01	0.280	0.55	50%	100%	43.0	65.1	2.5%
3-02	0.433	0.65	64%	41%	21.9	197.5	3.5%
3-03	0.508	0.65	64%	36%	25.3	200.9	3.0%
3-04	0.349	0.55	50%	100%	13.7	253.9	2.5%
3-05	0.617	0.65	64%	36%	25.7	240.3	3.5%
3-06	0.313	0.55	50%	100%	14.1	221.9	2.5%
3-07	0.425	0.65	64%	40%	23.7	179.3	3.5%
3-08	0.324	0.55	50%	100%	23.3	139.4	2.5%

Area ID	Catchment Area (ha)	Runoff Coeff. (C)	Percent Imperv. (%)	No Depression (%)	Flow Path Length (m)	Equivalent Width (m)	Average Slope (%)
3-09	0.410	0.65	64%	42%	23.2	177.0	3.5%
3-10	0.232	0.55	50%	100%	35.8	64.7	3.0%
3-11	0.440	0.65	64%	48%	24.7	177.8	3.0%
3-12	0.346	0.55	50%	100%	40.1	86.4	2.0%
3-13.1	0.157	0.55	50%	100%	23.2	67.5	2.0%
3-13.2	0.068	0.55	50%	100%	17.7	38.5	2.0%
3-13.3	0.104	0.55	50%	100%	18.8	55.3	2.0%
3-13.4	0.066	0.55	50%	100%	16.7	39.6	2.0%
3-13.6	0.043	0.55	50%	100%	15.9	27.1	2.0%
3-14	0.120	0.65	64%	28%	25.0	48.0	4.5%
Phase 4							
4A-01	0.319	0.68	69%	40%	24.8	128.8	4.0%
4A-02	0.521	0.59	56%	100%	18.0	289.9	3.0%
4A-03	0.420	0.70	71%	50%	23.9	175.9	4.0%
4A-04	0.363	0.70	71%	45%	24.4	148.5	4.0%
4A-05	0.262	0.56	51%	25%	24.6	106.4	4.0%
4A-06	0.320	0.63	61%	40%	25.3	126.7	4.0%
4A-07	0.265	0.57	53%	100%	16.9	156.9	3.5%
4A-08	0.302	0.56	51%	100%	15.4	195.8	3.0%
4A-09	0.386	0.68	69%	50%	24.6	157.1	3.5%
4A-10	0.384	0.56	51%	100%	16.4	233.5	3.5%
4A-11	0.376	0.55	50%	100%	15.3	245.5	3.5%
4A-12	0.267	0.66	66%	40%	25.6	104.2	4.0%
4A-13	0.386	0.60	57%	100%	15.1	254.8	3.0%
4A-14	0.339	0.69	70%	45%	24.4	138.7	4.0%
4B-01A	0.223	0.72	74%	55%	26.8	83.3	3.5%
4B-01B	0.213	0.69	70%	25%	22.9	93.1	4.0%
4B-02	0.264	0.63	61%	100%	17.6	149.7	4.0%
4B-03	0.311	0.70	71%	45%	23.0	135.5	3.5%
4B-04	0.353	0.68	69%	45%	25.1	140.6	4.0%
4B-05	0.279	0.56	51%	100%	15.9	175.5	3.5%
DR-1	0.025	0.34	20%	0%	24.7	10.1	3.0%
DR-2	0.039	0.20	0%	0%	4.5	86.8	12.0%
Phase 5A							
5A-01	0.262	0.70	71%	35%	39.7	66.0	4.0%
5A-02	0.310	0.58	54%	100%	16.2	191.5	4.5%
5A-03	0.382	0.71	73%	40%	24.2	157.8	3.5%
5A-04	0.426	0.57	53%	100%	23.8	178.9	3.0%
5A-05	0.219	0.68	69%	30%	37.0	59.2	3.5%
5A-06	0.136	0.61	59%	100%	19.4	70.1	5.0%
5A-07	0.269	0.71	73%	45%	23.1	116.4	4.0%

Area ID	Catchment Area (ha)	Runoff Coeff. (C)	Percent Imperv. (%)	No Depression (%)	Flow Path Length (m)	Equivalent Width (m)	Average Slope (%)
Phase 5B							
5B-01	0.355	0.66	66%	45%	22.3	159.4	4.5%
5B-02	0.204	0.58	54%	100%	16.3	125.4	6.0%
5B-03	0.423	0.70	71%	50%	25.5	165.7	4.5%
5B-04	0.363	0.71	73%	45%	23.5	154.4	4.0%
5B-05	0.315	0.66	66%	35%	42.7	73.8	3.0%
5B-06	0.386	0.72	74%	45%	22.8	169.1	4.5%
5B-07	0.386	0.56	51%	100%	21.1	183.1	4.0%
5B-08	0.460	0.71	73%	50%	27.7	166.2	5.0%
5B-09	0.215	0.67	67%	30%	28.4	75.8	4.5%
5B-10	0.401	0.30	14%	0%	55.9	71.7	0.5%
Subtotal:	***22.04***						
Offsite Areas (Drain into Phase 4)							
OS-1	0.529	0.32	17%	40%	32.9	160.6	3.0%
Subtotal:	***0.53***						
TOTAL:	**22.57**						

The future Phase 5B area has been included in the analysis for Phase 5A as it is tributary to the storm sewers within Phase 5A and Ventoux Avenue and the ultimate outlet to the sewer on Provence Avenue.

Slopes

Slopes for each subcatchment area are based on the average slope along the flow path based on the grading plan (**117155-GR5A**). For front yards, this is the average slope from the front of the house towards the edge of pavement. For rear yards, this is the average slope from the back of the house towards the center of the rear yard swale.

Infiltration

Infiltration losses for all catchment areas were modeled using Horton's infiltration equation, which defines the infiltration capacity of the soil over the duration of a precipitation event using a decay function that ranges from an initial maximum infiltration rate to a minimum rate as the storm progresses. The default values for the City of Ottawa were used for all catchments.

Horton's Equation:
$f(t) = f_c + (f_o - f_c)e^{-k(t)}$

Initial infiltration rate: f_o = 76.2 mm/hr
Final infiltration rate: f_c = 13.2 mm/hr
Decay Coefficient: k = 4.14/hr

Depression Storage

The default values for depression storage in the City of Ottawa were used for all catchments.

- Depression Storage (pervious areas): 4.67 mm
- Depression Storage (impervious areas): 1.57 mm

Residential rooftops are assumed to provide no depression storage and all rainfall is converted to runoff.

Equivalent Width

Equivalent width refers to the width of the sub-catchment flow path. The width for each subcatchment was assigned as twice the gutter length (or rear yard swale length) for double loaded roads and rear yards. For single loaded rear yards the equivalent width was assumed to be the gutter or rear yard swale length. This parameter is calculated as described in Section 5.4.5.6 of the City of Ottawa Sewer Design Guidelines.

Impervious Values

The runoff coefficients for Phase 5A and 5B were determined for each of the subcatchment areas based on the minimum zoning setback requirements for the proposed lot sizes. Refer to **117155-STM5A** for layout. Sample calculations and measured areas used for runoff coefficient calculations have been included in **Appendix E**.

Runoff coefficients were converted to Percent Impervious (%IMP) values for each subcatchment area using the equation:

$$\%IMP = \frac{C-0.2}{0.7}$$

5.7 Minor System

Inflows to the minor system will be controlled using inlet control devices (ICDs) designed to control inflows to the storm sewer system to 70 L/s/ha, on average, for all storm events up to and including the 100-year event. Each road catchbasin will have an individual connection to the storm sewer, catchbasin pairs will not be interconnected. Rear yard landscape catchbasins will be connected in series with an ICD at the outlet of the downstream catchbasin or catchbasin maintenance hole structure, located in the right-of-way.

ICDs will be either round orifice plates or vortex-type inlets, as approved by the City of Ottawa per Material Specification 18.4-3. The required ICD sizes will be standard City of Ottawa orifice sizes, including 83mm in standard sizes, and the IPEX Tempest LMF vortex-type 75mm to 105mm. The proposed ICDs will control flows to approximately 7 L/s to 21 L/s during the 100-year storm event. Standard ICD curves and specifications for the Tempest LMF vortex-type ICD have been provided in **Appendix F**.

Inflows to the storm sewer were modeled based on the ICD specified for the inlet and the maximum depth of ponding. Storage volumes within the right-of-way are based on the grading design. ICD parameters are outlined as follows in **Table 5.3**. The Maximum Head and Maximum Capture rates are based on a ponding depth of 0.35m above the top of grate in the roadways and 0.40m above the top of grate in the rear yards. During the 100-year storm, ponding depths in some cases are lower than the maximum. Ponding depths and capture rates for all storm events are provided in an expanded table in **Appendix F**.

Table 5.2: Inlet Control Device Parameters

Area ID	CB/CBMH ID / ICD Location	ICD Size	Max. Head* (m)	Max. Capture Rate** (L/s)	100-yr Head (m)	100-yr Capture Rate*** (L/s)	Drainage Area (ha)	Flow Rate**** (L/s/ha)
Roadway Catchbasins								
5A-07	CB32	LMF90	1.68	10	1.67	10	0.135	74
	CB33	LMF90	1.68	10	1.67	10	0.135	74
5A-05	CB34	LMF75	1.64	7	1.59	7	0.110	62
	CB35	LMF75	1.64	7	1.59	7	0.110	62
5A-03	CB36	83mm	1.52	18	1.47	18	0.191	93
	CB37	LMF105	1.52	13	1.47	13	0.191	66
5A-01	CB90	LMF85	1.67	8	1.65	8	0.131	63
	CB91	LMF85	1.67	8	1.65	8	0.131	63
Rear Yard Catchbasins								
5A-06	CB-5-01	LMF90	2.23	12	1.73	10	0.136	74
5A-02	CBMH-5-03	LMF85	2.90	11	1.81	9	0.310	28
5A-04	CB-5-05	83mm	2.16	22	1.98	21	0.426	49

**Max head is calculated as the T/G elevation plus 0.35m for roadway CB and 0.40m for rear yard CBs*

*** Max capture rate is calculated using the orifice equation, based on the max head*

**** From PCSWMM 100-year 3-hour Chicago Storm event*

***** Calculated from 100-year Capture Rate*

As the allowable release rate of 70 L/s/ha is less than the 2-year peak flows, there will be some ponding during the 2-year storm event. This ponding will last for an average of 35 minutes at each low point and will be clear by the end of the 2-year storm event. For a 2-year, 3-hour Chicago Storm Distribution, ponding will typically begin around 1 hour from the beginning of the storm event, ending around 1 hour and 35 minutes from the beginning of the storm event. While this is contrary to the current City of Ottawa Stormwater Criteria outlined in Technical Bulletin PIEDTB-2016-01, the allowance for 2-year ponding for the Provence Development has been discussed with the City of Ottawa and approved as part of the Phase 2 and 3 report (Novatech, 2020). Supporting correspondence has been provided in **Appendix F**.

Refer to **Table 5.4** for the ponding times, for each storm event, for each catchbasin pair in the right-of-way and for all rear yard catchbasins. An expanded table has been included in **Appendix F**.

Table 5.3: Ponding Duration

ICD/CB	Ponding Duration* (h:mm)		
	2-year	5-year	100-year
rue Dick Brown Street			
CB32-33	0:33	0:55	1:51
CB34-35	0:39	1:04	2:26
CB36-37	0:30	0:50	1:50
de Montrichard Road			
CB90-91	0:40	1:05	2:35

ICD/CB	Ponding Duration* (h:mm)		
	2-year	5-year	100-year
Rear Yard Catchbasins			
LCB-5-01	0:00	0:00	1:02
LCB-5-02	0:00	0:00	0:58
LCB-5-03	0:00	0:00	1:07
LCB-5-08**	0:00	0:00	2:34
LCB-5-09**	0:00	0:00	2:34
LCB-5-10**	0:00	0:00	2:34
LCB-5-11	0:00	0:00	2:34
LCB-5-12	0:00	0:00	2:34
LCB-5-13	0:00	0:00	2:34
LCB-5-14**	0:00	0:07	1:06
LCB-5-15**	0:00	0:07	1:06
LCB-5-17	0:00	0:07	1:06
LCB-5-18	0:00	0:07	1:06

** Ponding starts at approximately the same time as the storm peak, ending when water levels drop below the top of grate.*

*** CBs located in Phase 5B. Ponding times to be confirmed at detailed design of Phase 5B.*

5.8 Future Phase 5B

Stormwater flows from the future Phase 5B have been included in the PCSWMM analysis of the proposed Phase 5A development as it is tributary to the storm sewers within Phase 5A, on Ventoux Avenue and the receiving storm sewer on Provence Avenue.

Phase 5B has been modeled based on Draft Plan approved street layout and preliminary sewer and grading information. Phase 5B was modeled as detailed subcatchments with rear yards and road catchbasins modeled. The ICDs were sized to control the Provence Orleans Subdivision to the allowable release rate of 1,591 L/s. The stormwater modeling assumptions for Phase 5B will be confirmed during the detailed design of Phase 5B and the model updated as required.

5.9 Hydraulic Grade line

The results of the analysis were used to demonstrate that a minimum freeboard of 0.30m is provided between the 100-year hydraulic grade line (HGL) and the designed underside of footing (USF) elevations. The 100-year HGL is indicated on the Plan and Profile Drawings (**117155-PR11** and **117155-PR12**). The HGL analysis confirms that all dwellings within the subdivision will have at least 0.30m of freeboard between the modeled hydraulic grade line and the nearest USF. The HGL elevations for a 20% increase (rainfall intensity and total precipitation) in the 100-year storm event were also reviewed to ensure the HGL is below the USF.

Table 5.5 provides a summary of the 100-year HGL elevation at each storm maintenance hole within the proposed development. The 100-year+20% HGL elevations have been provided in **Appendix F**.

Based on HGL information provided by the City and Stantec (refer to Provence Avenue Plan and Profile Sta. 4+550 to Sta. 4+850, Dwg. No. 12775-4, As built, located in **Appendix E**), boundary conditions have been applied at the outlet to the Provence sewer (node MH098) for the 100-year storm events:

- 100-year boundary condition HGL = 84.82m

Table 5.4: 100-year Hydraulic Grade line Elevations

Manhole ID	MH Invert Elevation (m)	T/G Elevation (m)	HGL Elevation 100yr-3hr (m)	Design USF (m)	Clearance (m)
MH300	85.27	89.34	85.60	87.85	2.25
MH300A	84.72	89.32	85.21	87.83	2.62
MH302	85.60	89.49	85.92	87.45	1.53
MH304	86.23	89.38	86.46	87.28	0.82

5.10 Major System – Overland Flow

During larger storm events, the available static storage for all road sags will be fully utilized and cascading overland flow will occur within the right-of-way. Storage in rear yard sags will be used to provide additional attenuation of both minor and major system flows. Refer to **Figure 6** – Overland Flow Route and Macro Grading for details. The major system network was evaluated using the PCSWMM model to ensure that the flow depths and velocities conform to City standards.

The results of the modelling indicate that the overland flow depths on all streets will not exceed 0.35m, and the product of the 100-year flow depth (m) and flow velocity (m/s) within the right-of-way shall not exceed 0.60. The flow depths and velocities at all road catchbasins and high points are summarized in **Table 5.6**.

Table 5.5: Major System Flow Depths and Velocities

Location	100-year					100-year +20%			
	Peak Flow (m^3/s)	Velocity (m/s)	Static Depth (m)	Total Depth (static + dynamic) (m)	Velocity x Depth (m^2/s)	Peak Flow (m^3/s)	Velocity (m/s)	Total Depth (m)	Velocity x Depth (m^2/s)
Phase 5A									
Catchbasins at Low Points									
CB32-33	0.126	0.03	0.29	0.34	0.01	0.154	0.07	0.37	0.03
CB34-35	0.097	0.01	0.35	0.30	0.00	0.121	0.01	0.39	0.00
CB36-37	0.178	0.11	0.25	0.30	0.03	0.218	0.11	0.34	0.04
CB90-91	0.129	0.07	0.24	0.33	0.02	0.347	0.20	0.40	0.08
High Points									
03+013	0.023	0.45	-	0.05	0.02	0.097	0.67	0.08	0.05
03+065	0.000	0.00	-	0.00	0.00	0.000	0.00	0.00	0.00
03+125	0.001	0.05	-	0.01	0.00	0.013	0.15	0.04	0.01
03+137	0.037	0.11	-	0.05	0.01	0.145	0.15	0.08	0.01
07+591	0.024	0.28	-	0.06	0.02	0.150	0.47	0.11	0.05
07+605	0.058	0.28	-	0.05	0.01	0.282	0.47	0.09	0.04
07+670	0.058	0.29	-	0.09	0.03	0.329	0.54	0.16	0.09

The model results indicate that during the 100-year storm event, the overland flow depths on all streets will not exceed 0.35m and during the stress-test scenario, flows will not touch any part of the building envelope.

Overland flows from Phases 2, 3 and 5 to the emergency outlet for the site in Phase 4A were accounted for previously in the detailed modelling. The model has been evaluated and there are no negative impacts to Phases 2, 3 or 4 from the overland flows from Phase 5. All the ponding depths within the Phase 2, 3 and 4 right-of-ways do not exceed the maximum ponding depth of 0.35m in the 100-year event.

The 100-year model results along the primary overland flow path are summarized in **Table 5.7**. Refer to **Appendix F** for the full table of results from all storm events (2-year to 100-year+20%). Note that for roadway catchbasins, the catchbasin pairs are modeled as a single node using the lowest of the two T/G elevations.

The spill elevations (max static ponding) are based on the ultimate spill point along the major system flow path. In the roadway this is typically the lowest of the high points that define the drainage area to catchbasin pairs in a road sag. In the rear yards, it is the highest downstream spill point in the direction of the major flow path. This is due to the rear yards having interconnected ponding areas controlled by a single downstream ICD.

Table 5.6: Overland Flow and Ponding Results

Structure	T/G*	Max. Static Ponding (Spill Depth)		100-year Event (3hr)			
		Elev.**	Depth	Elev.	Depth	Cascading	Cascade Depth (m)
	(m)	(m)	(m)	(m)	(m)	Flow?	
Roadway CB							
CB32-33	89.11	89.40	0.29	89.45	0.34	Y	0.05
CB34-35	89.05	89.40	0.35	89.35	0.30	N	0.00
CB36-37	89.02	89.27	0.25	89.32	0.30	Y	0.05
CB90-91	88.95	89.19	0.24	89.28	0.33	Y	0.09
RYCB							
LCB-5-01	89.25	89.55	0.30	89.54	0.29	N	0.00
LCB-5-02	89.31	89.55	0.24	89.54	0.23	N	0.00
LCB-5-03	89.15	89.55	0.40	89.54	0.39	N	0.00
LCB-5-08***	88.50	88.85	0.35	88.83	0.33	N	0.00
LCB-5-09***	88.50	88.85	0.35	88.83	0.33	N	0.00
LCB-5-10***	88.50	88.85	0.35	88.83	0.33	N	0.00
LCB-5-11	88.50	88.85	0.35	88.83	0.33	N	0.00
LCB-5-12	88.50	88.85	0.35	88.83	0.33	N	0.00
LCB-5-13	88.50	88.85	0.35	88.83	0.33	N	0.00
LCB-5-14***	89.18	89.50	0.32	89.58	0.40	Y	0.08
LCB-5-15***	89.18	89.46	0.28	89.58	0.40	Y	0.12
LCB-5-17	89.18	89.46	0.28	89.58	0.40	Y	0.12
LCB-5-18	89.18	89.42	0.24	89.58	0.40	Y	0.16

** Note that for some CB pairs, the T/G elevations differ between the two structures. The lower of the two has been used in the model.*

*** For some highpoints, one side of the road is higher than the other. The lower of the two has been used in the model. For rear yard areas, the highest downstream spill point was used since the ICD on the rear yards causes a lumped ponding area that is interconnected through the pipe system.*

****CB located in Phase 5B. Ponding depths to be confirmed at detailed design of Phase 5B.*

5.11 Storage Volumes

A total volume of approximately 418 m^3 (or 207 m^3/ha) for the 2.00 ha of tributary drainage area is provided by the low-points at all roadway catchbasins as shown in **Table 5.8** and in the rear-yard swales as shown in **Table 5.9**, within Phases 5A. This exceeds the requirement of 150 m^3/ha as outlined in the MSS. While current City of Ottawa storm design criteria stipulates that rear-yard storage is not to be accounted for, the design of this subdivision follows the criteria from the City of Cumberland Update to Master Drainage Plan and is consistent with discussions held with City staff. Refer to **Appendix E** for an excerpt of this report.

This volume of ponding is calculated based on the total (static + dynamic) ponding and flow depths in the rear yards and the right-of-ways, refer to **Table 5.6** for dynamic flow depths. While there is spill over high points during larger storm events, there is still a measurable volume of dynamic storage provided by the major system within the boundary of the proposed subdivision. Refer to figure PND-CALC in **Appendix F.**

Additional storage was required in the rear yards to meet the allowable release rate. To achieve a maximum of 40cm of rear yard ponding, the pipes upstream of the rear yard ICDs were oversized to 300mm and 600mm diameter pipes to provide additional storage capacity. The rear yard pipes were sized as 300mm diameter pipes for pipe runs between side lots due to space constraints and all other rear yard pipes were selected as 600mm diameter pipes. The underground / pipe storage for the rear yards is presented in **Table 5.9** and detailed storage calculations are provided in **Appendix F.**

Table 5.7: Roadway Ponding Volumes

Area ID	CB	Available Static Ponding Volume (m^3)	100-year Ponding Volume (m^3)
5A-07	CB32-33	38.9	66.4
5A-05	CB34-35	77.0	48.2
5A-03	CB36-37	50.4	87
5A-01	CB90-91	37.6	99.7
Roadway Catchbasins Subtotal		**203.9**	**301.3**

Table 5.8: Rear Yard Storage Volumes

Area ID	LCB	100-year Ponding Volume (m^3)	Underground Storage (m^3)
5A-06	LCB5-01, LCB5-02, LCB5-03	12.7	13.3
5A-02*	LCB5-08**, LCB5-09**, LCB5-10**, LCB5-11, LCB5-12, LCB5-13	40.2	49.1
5A-04*	LCB5-14**, LCB5-15**, LCB5-17, LCB5-18	60.6	31.9
Rear Yard Catchbasins Subtotal		**113.5**	**94.3**

**Subcatchment is partially located in Phase 5B*

***CB located in Phase 5B. Ponding volumes to be confirmed at detailed design of Phase 5B*

Total 100-year Ponding (Roadways and Rear Yards) = 414.8 m^3

5.12 Peak Flows

For all storm events, the allowable release rate is 1,591 L/s as per the Phase 4A & 4B Design Brief (Novatech, 2022). Peak flows for each storm event are outlined in the following tables.

Table 5.9: Minor System Peak Flows

Storm Distribution->	3hr Chicago					12hr SCS		
Return Period->	25mm	2yr	5yr	100-year	100yr+ 20%	2yr	5yr	100yr
MH98 (Provence)	1,037	1,196	1,397	1,611	1,653	1,142	1,358	1,595

Table 5.10: Major System Peak Flows

Storm Distribution->	3hr Chicago					12hr SCS		
Return Period->	25mm	2yr	5yr	100-year	100yr+ 20%	2yr	5yr	100yr
Provence (from Ph 2&3)	2	4	18	126	215	1	2	68
Trim (from Ph 2&3)	<1	<1	2	34	67	<1	<1	1
Trim (from Ph 4)	0	0	0	31	285	0	0	0
Salzburg (from Ph 4)	0	0	0	<1	13	0	0	0
Provence (from Ph 5)	0	0	0	0	3	0	0	0
Salzburg (from Ph 5)	0	0	0	0	18	0	0	0
Salzburg (Direct Runoff)	0	<1	2	9	12	<1	2	5
Trim (Direct Runoff)	0	<1	7	17	21	<1	3	7

During large, infrequent storm events (≥100-year), peak flows from the proposed development will exceed the allowable release rate to the minor system by 20 L/s or 1.2%, with the overall release rate at 70.9 L/s/ha. This increase is not expected to have an adverse impact on the downstream infrastructure during these infrequent events. During more frequent events, the release rate will be below the allowable 70 L/s/ha.

As determined in the Phase 4A & 4B Design Brief (Novatech, 2022), during nearly all storm events, there will be some overland flow directed from Phase 2 and 3 of the subdivision to Provence Avenue and Trim Road, as the catchbasins at the intersections are on-grade and will not capture all storm runoff. In larger storm events, overland flow from Phase 5A will be directed through Phases 4A and 4B to Trim Road via the overland flow route outlet on Massalia Crescent (Phase 4A) when flows exceed the available on-site storage capacity. The major flows from the rear-yard areas of Lots 8-14 in Phase 5A will be directed to the Salzburg Drive right-of-way. There are no major system flows to the Salzburg Drive right-of-way during storms up to and including the 100-year storm. As the site is at the upstream end of the catchment area for the end-of-pipe SWM facility, there should be minimal impact on the downstream major system due to the slight increase in overland flow directed to Provence Avenue or Trim Road. During the 100-year storm event, the major system flow depth to both Trim Road and Provence at Ventoux Avenue from Phase 2 and 3 is approximately 0.05m. The approximate depth of flow to Trim Road from the overland flow swale on Massalia Crescent during the 100-year storm event is 0.02m.

5.13 Stormwater Management Conclusions

The Cardinal Creek stormwater management facility is the ultimate outlet for the minor system from Phase 5A. The major system flows will be contained within the site except flows which exceed the on-site storage capacity in large events which are directed to the overland spill location to Trim Road. The performance of the proposed storm drainage system for the subject site was evaluated using the PCSWMM hydrologic/hydraulic model. The PCSWMM model schematics and 100-year model output are provided in **Appendix F**. Digital copies of the modelling files and model output for all storm events, are provided with this submission. The stormwater management flows will be controlled through a combination of inlet control devices and above grade storage to limit the rate of stormwater discharge to the existing storm sewers to slightly above the allowable release rate of 70 L/s/ha.

An '*Enhanced*' level of water quality treatment (80% long-term TSS removal) will be provided for the Phase 5A development. A Vortechs 9000 will provide 85% long-term TSS removal and the downstream Cardinal Creek stormwater management facility will provide 70% long-term TSS removal. The level of treatment provided by the treatment train of the Vortechs 9000 and stormwater management facility will provide at least 80% long-term TSS removal for Phase 5A and Phase 5B.

6.0 EROSION AND SEDIMENT CONTROL

Erosion and sediment control measures will be implemented during construction in accordance with the "Guidelines on Erosion and Sediment Control for Urban Construction Sites" (Government of Ontario, May 1987). Typical erosion and sediment control measures recommended include, but are not limited to, the use of silt fences around perimeter of site, filter fabric or inserts under catchbasin/maintenance hole lids, heavy duty silt fence barrier, straw bale check dams, rock check dams, turbidity curtain, dewatering trap, temporary water passage system, riprap, mud mats, silt bags for dewatering operations, topsoil and sod to disturbed areas and natural grassed waterways. Dewatering and sediment control techniques will be developed for the individual situations based on the above guidelines and utilizing typical measures to ensure erosion and sediment control is controlled in an acceptable manner and there is no negative impact to adjacent lands, water bodies or water treatment/conveyance facilities.

It will be the responsibility of the contractor to submit a detailed construction schedule and appropriate staging, dewatering and erosion and sediment control plans to the Contract Administrator for review and approval prior to the commencement of work. City of Ottawa Special Provision F-1005 will become part of any contract and which outlines the contractual requirements which includes preparation of a detailed erosion and sediment control plan.

- All erosion and sediment control measures are to be installed to the satisfaction of the engineer, the municipality and the conservation authority prior to undertaking any site alterations (filling, grading, removal of vegetation, etc.) and remain present during all phases of site preparation and construction.
- A qualified inspector should conduct daily visits during construction to ensure that the contractor is working in accordance with the design drawings and that mitigation measures are being implemented as specified.
    - A light duty silt fence barrier is to be installed in the locations shown on the Erosion and Sediment Control & Removals Plan (**117155-ESC5A**).
    - Straw bale barriers or rock flow check dams are to be installed in drainage ditches that will remain open as part of initial development.

- Catchbasin inlet protection measures are to be established for all proposed and existing catchbasins and structures.
- After complete build-out, all sewers are to be inspected and cleaned and all sediment and construction fencing is to be removed.

- The contractor shall ensure that proper dust control is provided with the application of water (and if required, calcium chloride) during dry periods.
- The contractor shall immediately report to the engineer or inspector any accidental discharges of sediment material into any ditch or sewer system. Appropriate response measures shall be carried out by the contractor without delay.
- The contractor acknowledges that failure to implement erosion and sediment control measures may result in penalties imposed by any applicable regulatory agency.

Temporary erosion and sediment control measures would be implemented both prior to commencement and during construction in accordance with the "Guidelines on Erosion and Sediment Control for Urban Construction Sites", (Government of Ontario, May 1987).

7.0 UTILITIES

The development will be serviced by hydro, phone, gas, and cable by extending the existing service stubs on Dick Brown Street from Ventoux Avenue (Phase 3) and Montrichard Road (Phase 4B). A preliminary composite utility plan and streetlight design have been completed. The preliminary composite utility plans have been included with this submission (**117155-U5A** and **117155-U5AD**). The preliminary composite utility plans are pending final Hydro One design approval and will be re-submitted under a separate cover when finalized. The streetlighting design will be submitted under a separate cover directly to the City of Ottawa Street Light Department.

8.0 PROPOSED GEOMETRIC ROAD DESIGN

Novatech has prepared the proposed geometric road design memorandum and associated drawing for Phase 5A of the Provence Orleans subdivision. The memorandum (July 23, 2024) includes the Geometric Road Design Drawing (**117155-GRDD5A)** for Phase 5A.

The local roadways for this phase of the development have been designed with an asphalt width of 8.0m (refer to **117155-XS5A**). The proposed cross sections are consistent with the previously approved subdivision phases (Phases 2, 3 and 4). The reduced asphalt width from the City standard of 8.5m for local roadways was developed in response to City of Ottawa requests to provide additional clearance from roadways and sidewalks to tree planting locations. The reduced asphalt width is also anticipated to provide additional traffic calming benefits.

9.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the detailed analysis, it is proposed that the Phase 5A Provence Orleans Subdivision development be serviced as follows:

Water Supply System

- The proposed watermain will form a loop between the existing watermains on Montrichard Road (Phase 4B) and Ventoux Avenue (Phase 3) with a 250mm dia. watermain on Dick Brown Street and a 200mm dia. watermain on Montrichard Road.
- Based on the findings of the hydraulic analysis, there is capacity to provide both the required domestic and fire flows. 3m building separation or 2-hour fire walls will be required at the location indicated on **117155-GP5A**.

Sanitary Sewer System

- Sanitary service within Phase 5A will be provided by 200mm diameter pipes connecting to the existing 250mm diameter sanitary sewer on Ventoux Avenue and ultimately outletting to the existing 525mm diameter sanitary sewer on Trim Road. The theoretical peak flow this phase is calculated to be 2.21L/s.

Stormwater Drainage

- Phase 5A will be serviced by storm sewers ranging in size from 375mm to 900mm diameter. The storm sewers will connect to the existing 900mm diameter storm sewer stub on Dick Brown Street at Ventoux Avenue. The peak flow from the overall subdivision development (Phases 2, 3, 4A, 4B, 5A and 5B) during the 100-year event to the existing Provence Avenue storm sewer was calculated to be 1,612 L/s.

Stormwater Management

- The Cardinal Creek stormwater management facility is the ultimate outlet for the minor system.
- Water quality will be provided by an on-site Vortechs unit and the downstream Cardinal Creek stormwater management facility.
- The first 5mm of rainfall will be retained on-site where feasible through infiltration and depression storage in the rear yards.
- The major system flows will be accommodated on-site, while emergency flows will be directed to Trim Road.
- The stormwater management flows will be controlled through a combination of inlet control devices and above grade storage to limit the rate of stormwater discharge to the existing storm sewers to acceptable levels.
- The 100-year hydraulic grade line in the storm sewer will be at least 0.3m below the underside of footing elevations for the proposed development.

Servicing of Future Lands

- The Phase 5A infrastructure has been designed to accommodate the demands and flows from future Phase 5B based on the current concept plan and the approved draft plan of subdivision.

Erosion and Sediment Control

- Temporary erosion and sediment control measures would be implemented both prior to commencement and during construction in accordance with the "Guidelines on Erosion and Sediment Control for Urban Construction Sites", (Government of Ontario, May 1987).

The subdivision design is generally consistent with the Site Servicing and Stormwater Management Design Brief (R-2020-018), Provence Orleans Subdivision – Phase 2 & 3, prepared by Novatech, dated November 2020 and the Master Servicing Study prepared by Stantec, dated September 2013 except as noted in this report. This report has been prepared in support of final approval and registration of Phase 5A of the Provence Orleans Subdivision in accordance with the conditions of draft approval.

NOVATECH

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Appendix A

Draft Conditions

File: D07-16-18-0021

CONDITIONS
FOR DRAFT APPROVAL
PROVENCE ORLEANS REALTY INVESTMENTS INC.
2128 TRIM ROAD AND 705 AQUAVIEW DRIVE

DRAFT APPROVED 05 JULY 2019

The City of Ottawa's conditions applying to the draft approval of Provence Orleans Realty Investments Inc. Subdivision (File No. D07-16-18-0021), 2128 Trim Road and 705 Aquaview Drive, are as follows:

		This approval applies to the draft plan certified by Annis, O'Sullivan, Vollebekk Ltd, Ontario Land Surveyor, dated February 1st, 2019, showing 295 Residential Lots, 17 Residential Blocks, 10 streets, # residential blocks, 3 pathway blocks, 1 park blocks, 2 Transit corridor blocks, and 1 school block. This approval applies to the approved conceptual plans and reports in support of the draft plan as follows: 1) Planning Rationale, Design Brief & Integrated Environmental Review Statement (IERS) in Support of Applications for Subdivision & Zoning By-law Amendment, Notting Hill Subdivision, 2128 Trim Road, prepared by Novatech, Revision 3, dated November 9, 2018 2) Transportation Impact Assessment, prepared by Novatech, Revision 2, dated November 13, 2018. 3) Geotechnical Investigation, prepared by Paterson Group, dated July 5, 2018. 4) Phase 1 Environmental Site Assessment, prepared by Paterson Group, dated January 20, 2018. 5) Tree Conservation Report and Environmental Impact Statement, prepared by Muncaster Environmental Planning Inc., Revision 2, dated September 10, 2018. 6) Site Servicing and Stormwater Management Design Brief, prepared by Novatech, Revision 4, dated March 31, 2019. 7) Stage 1 Archaeological Assessment, prepared by Paterson Group, dated March 15, 2018. 8) Stage 2 Archaeological Assessment, prepared by Paterson Group, dated June 20, 2018. 9) Noise Impact Feasibility Report, prepared by Novatech, dated June 29, 2018.	

		Subject to the conditions below, these plans and reports may require updating and/or additional details prior to final approval.	
		The Owner agrees, by entering into a Subdivision Agreement, to satisfy all terms, conditions and obligations, financial and otherwise, of the City of Ottawa, at the Owner's sole expense, all to the satisfaction of the City.	**Clearing Agency**[i]
		General	
1.	**G1**	Prior to the issuance of a Commence Work Notification, the Owner shall obtain such permits as may be required from Municipal or Provincial authorities and shall file copies thereof with the General Manager, Planning, Infrastructure and Economic Development Department.	**OTTAWA Planning**
2.	**G2**	Prior to commencing construction, the Owner shall enter into a subdivision agreement with the City. The subdivision agreement shall, among other matters, require that the Owner post securities in a format approved by the City Solicitor, in an amount of 100% of the estimated cost of all works, save and except non-municipal buildings. The aforementioned security for site works shall be for works on both private and public property and shall include, but not be limited to, lot grading and drainage, landscaping and driveways, roads and road works, road drainage, underground infrastructure and services (storm, sanitary, watermains), streetlights, stormwater management works and park works. The amount secured by the City shall be determined by the General Manager, Planning, Infrastructure and Economic Development Department, based on current City tender costs, which costs shall be reviewed and adjusted annually. Securities for on-site works may be at a reduced rate subject to the approval of the General Manager, Planning, Infrastructure and Economic Development Department. Engineering, Inspection and Review fees will be collected based on the estimated cost of the works (+HST) and a park review and inspection fee will be based on 4% (+HST) of the total value of the park works as noted herein and in accordance with the City's Fees By-law for planning applications (By-law No. 2018-24 or as amended).	**OTTAWA Planning**
3.	**G3**	The Owner acknowledges and agrees that any residential blocks for street-oriented dwelling units on the final Plan shall be configured to ensure that there will be no more than 25 units per block.	**OTTAWA Planning**
4.	**G4**	The Owner acknowledges and agrees that any person who, prior to the draft plan approval, entered into a purchase and sale agreement with respect to lots or blocks created by this Subdivision, shall be permitted to	**OTTAWA Legal**

		withdraw from such agreement without penalty and with full refund of any deposit paid, up until the acknowledgement noted above has been executed. The Owner agrees to provide to the General Manager, Planning, Infrastructure and Economic Development Department an acknowledgement from those purchasers who signed a purchase and sale agreement before this Subdivision was draft approved, that the Subdivision had not received draft approval by the City. The Owner agrees that the purchase and sale agreements signed prior to draft approval shall be amended to contain a clause to notify purchasers of this fact, and to include any special warning clauses, such as but not limited to Noise Warnings and easements.	
5.	**G5**	All prospective purchasers shall be informed through a clause in the agreements of purchase and sale of the presence of lightweight fill on the lands, and that the presence of such lightweight fill may result in specific restrictions on landscaping, pools, additions, decks and fencing	**OTTAWA Legal**
6.	**G6**	The Owner, or his agents, shall not commence or permit the commencement of any site related works until such time as a pre-construction meeting has been held with Planning, Infrastructure and Economic Development Department staff and until the City issues a Commence Work Notification.	**OTTAWA Planning**
7.		**Shop Drawings** The Owner acknowledges and agrees that their contractor is required to provide Shop Drawings for any special structures typically not available as per the City detail standards and product listing to the satisfaction of the General Manager, Planning, Infrastructure & Economic Development Department prior to installations of those works. Shop drawings shall be stamped and signed by a professional Engineer licensed in the Province of Ontario. All costs for Shop Drawings shall be borne by the Owner or his contractors.	**OTTAWA Planning**
8.		The Owner acknowledges and agrees that their contractor is required to provide Shop Drawings for TWSI's as per the City S.P. No. F-3512 to the City to the satisfaction of the General Manager, Planning, Infrastructure & Economic Development Department.	**OTTAWA Planning**
		Zoning	
9.	**Z1**	The Owner agrees that prior to registration of the Plan of Subdivision, the Owner shall ensure that the proposed Plan of Subdivision shall conform	**OTTAWA Planning**

		with a Zoning By-law approved under the requirements of the *Planning Act*, with all possibility of appeal to the Local Planning Appeal Tribunal exhausted.	
10.	**Z2**	The Owner undertakes and agrees that prior to the registration of the Plan of Subdivision, the Owner shall deliver to the City a certificate executed by an Ontario Land Surveyor showing that the area and frontage of all lots and blocks within the Subdivision are in accordance with the applicable Zoning By-law.	**OTTAWA Planning**
		Roadway Modifications	
11.	**RM1**	The Owner shall pay all expenses associated with all works related to roadway modifications, and shall provide financial security in the amount of 100% of the cost of implementing the required works.	**OTTAWA Planning**
12.	**RM2**	The Owner agrees to provide a Development Information Form and Geometric Plan indicating: a) Road Signage and Pavement Marking for the subdivision; b) Intersection control measure at new internal intersections; and c) location of depressed curbs and TWSIs; prior to the earlier of registration of the Agreement or early servicing. Such form and plan shall be to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development Department.	**OTTAWA Planning Transpo Plg**
13.	**RM7**	Where traffic calming is identified, the Owner acknowledges and agrees to implement traffic calming measures on roads within the limits of their subdivision to limit vehicular speed and improve pedestrian safety. The Owner further acknowledges and agrees that the detailed design for new roads will include the recommendation(s) from the required supporting transportation studies. The Owner agrees that traffic calming measures shall reference best management practices from the Canadian Guide to Neighbourhood Traffic Calming, published by the Transportation Association of Canada, and/or Ontario Traffic Manual. These measures may include either vertical or horizontal features (such measures shall not interfere with stormwater management and overland flow routing), including but not limited to: • intersection or mid block narrowings, chicanes, medians; • speed humps, speed tables, raised intersections, raised pedestrian crossings; • road surface alterations; • pavement markings/signage; and	**OTTAWA Planning**

		• temporary/seasonal installations such as flexi posts or removable bollards. These measures will be installed at the following locations as well as the approaches to these locations to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development. (i) Easterly intersection of Street No. 1 and Street No. 4; (ii) Intersection of Street No. 3, Street No. 1 and Street No. 5; (iii) Street No. 3 and the southern leg of Street No. 7 (Park Block) (iv) Provence Avenue	
14.		The Owner acknowledges and agrees to install a pedestrian crossing (PXO) Type B, C or D and may provide a raised crossing at the intersection of Street No. 1 and Provence Avenue and at the north leg of Street No. 7 at Provence Avenue to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development.	**OTTAWA Planning**
		Highways/Roads	
15.	**HR1**	The Owner acknowledges and agrees that all supporting transportation studies and design of all roads and intersections shall be to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development Department.	**OTTAWA Planning**
16.	**HR2**	The Owner shall retain a licensed or registered professional with expertise in the field of transportation planning and/or traffic operations to prepare a Transportation Impact Assessment. The study shall comply with the City of Ottawa's Transportation Impact Assessment Guidelines. The Owner agrees to revise the Draft Plan in accordance with the recommendations of the study.	**OTTAWA Planning**
17.	**HR3**	The Owner shall provide for temporary turnarounds for all streets terminating at the edge of any phase of development, prior to registration of the Plan. The Owner agrees that it will convey to the City at no cost any temporary easements that may be required in order to establish the temporary turnarounds. For any portion of the temporary turn-around easements that do not form part of the permanent road allowance, the easements shall be released at the expense of the Owner when the easements are no longer required by the City. Furthermore, 30cm reserves shall be provided and any lots impacted by these turn-arounds shall have an inhibiting order and be frozen from development until such time as the new phase is registered and adjacent lands are developed.	**OTTAWA Planning**
18.	**HR4**	If required, the Owner shall convey to the City, at no cost to the City, an unencumbered road widening along Trim Road, adjacent to the subdivision	**OTTAWA Planning**

		lands, in accordance with the Official Plan. The required widening shall be illustrated on the Draft M-Plan and Final Plan of Subdivision as a dimension from the existing centerline of the public highway to the required widened limit. If it is determined that a widening is not required, the Owner's Surveyor shall illustrate the distance from the existing centerline of the Public Highway to the existing road limit on the Draft M-Plan and the Final Plan of Subdivision. All of which will be to the satisfaction of the City Surveyor.	**Surveys**
19.	**HR5**	Any dead ends and/or open spaces of road allowances created by this plan of subdivision may be terminated in 0.3 metre reserves.	**OTTAWA Planning Legal**
20.	**HR6**	The Owner shall provide site triangles at the following locations on the final plan: • Streets No. 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10	**OTTAWA Planning Legal**
21.	**HR7**	A 0.3 m reserve shall be indicated on the plan submitted for registration and conveyed at no cost to the City at the following locations: • along streets, lots and blocks adjacent to Trim road, Provence Avenue, Portobello Boulevard and the Transit Corridor lands	**OTTAWA Planning Legal**
22.	**HR9**	The Owner agrees to provide a construction traffic management plan for the subdivision prior to the earlier of registration of the Agreement or early servicing. Such plan shall be to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development Department.	**OTTAWA Planning**
24.	**HR11**	All streets shall be named to the satisfaction of the Director of Building Code Services and in accordance with the Municipal Addressing By-law or the Private Roadways By-law as applicable.	**OTTAWA Planning BCS**
25.	**HR12**	Where land has been dedicated for road widening purposes as part of the planning process, where the Owner receives no financial compensation or in-kind consideration in exchange for the widening, and where the City deems that the land is no longer required for that purpose, the lands may be conveyed back to the original Owner, or its successor in title, for $1.00. The Owner shall be responsible for all costs to complete said conveyance, including administrative fees, unless otherwise determined by the General Manager, Planning, Infrastructure and Economic Development Department.	**OTTAWA Planning**

27.	**HR14**	Development on Private Streets - Block 310 The Owner covenants and agrees to: a) obtain approval for a condominium, or other agreement as deemed appropriate, which condominium or other agreement once registered on title, will set out the obligations between the co-Owners of the common elements for the operation and maintenance of the private streets, private watermains, private hydrants and private water services, such agreement to be to the satisfaction of the City Solicitor. b) design all private watermains within the subdivision to the satisfaction of the City, and it will pay all related costs, including the cost of connection, inspection, and disinfection by City personnel. c) install the private infrastructure services in accordance with the staging schedule approved by the City.	**OTTAWA Planning Legal**
28.	**HR15**	The Owner acknowledges that the construction of buildings may be restricted on certain lots and/or blocks until such time as road connections are made so that snow plow turning and garbage collection can be implemented.	**OTTAWA Planning**
30.		**Pavement Markings** The Owner shall be responsible for 100% of the cost of temporary and final pavement markings. The City will apply the final pavement markings on the top lift of asphalt where applications are scheduled between 15 May and 15 November. Before 15 May or after 15 November the contractor is responsible for applying the final makings. The contractor, at all times, is responsible for applying and removing any temporary pavement markings required during construction, as well as installing all markings (including final markings) applied on base course asphalt.	**OTTAWA Planning**
31.		**Signage** The Owner shall be responsible for 100% of the cost of all temporary and permanent street name signs and traffic signs that may be required in accordance with City specifications. All temporary signs shall be installed and located by the Owner to the satisfaction of the City and installed prior to the City's acceptance of the roads within the subdivision. All permanent signs shall be installed and located by City forces.	**OTTAWA Planning**

		Public Transit	
33.	**PT1**	The Owner shall design and construct, at its expense, Street No. 1, which has/have been identified as a transit service route, to Transportation Association of Canada standards, including right-of-way width, horizontal and vertical geometry. The Owner shall design and construct, at its expense, the determined locations for transit passenger standing areas and shelter pads, to the specifications of the General Manager, Planning, Infrastructure and Economic Development Department. The locations for transit passenger standing areas and shelter pads are: • On the north side of Street No. 1 between Streets No. 2 and 3 • On the south side of Street No. 1 between Streets No. 4 and 5	**OTTAWA Planning Transit**
34.	**PT2**	The Owner shall ensure that the staging of the Subdivision, including the construction of dwellings, roadways, walkways, and paved passenger standing areas, or shelter pads, shall occur in a sequence that permits the operation of an efficient, high quality transit service at all stages of development.	**OTTAWA Transit**
35.	**PT3**	The Owner shall orient dwellings and vehicular accesses in the vicinity of bus stops in such a manner as to avoid traffic conflicts and visual intrusion. Prior to the earlier of early servicing or registration, the Owner shall submit plans to Planning, Infrastructure and Economic Development Department for approval indicating the orientation of all dwellings and private accesses in the vicinity of all bus stop locations.	**OTTAWA Planning Transit**
36.	**PT4**	The Owner shall inform all prospective purchasers, through a clause in all agreements of Purchase and Sale and indicate on all plans used for marketing purposes, those streets identified for potential transit services, the location of the bus stops, paved passenger standing areas, or shelters pads and shelters, any of which may be located in front of or adjacent to the purchaser's lot at any time. The Owner will also ensure all prospective purchasers are advised of the location of the corridor within this development reserved for future transit.	**OTTAWA Transit**
37.	**PT5**	If deemed necessary, the Owner agrees to implement a Transit Service Strategy in accordance with the Official Plan. The Owner, together with the City, will determine the method and means by which the developments, as well as adjacent areas, can be efficiently and effectively serviced by transit. The Owner shall enter into an agreement with the Transit Services Branch, prior to the registration of the subdivision, to outline the provision of interim bus service. Said agreement shall include, but not be limited to, the following: establishment of routes and stops and levels of service and	**OTTAWA Transit**

		provision and maintenance of stops and turnarounds. The agreement may include: funding and cost-sharing arrangements and timing and triggers for the transfer of responsibility to City.	
38.	**PT6**	In accordance with the City's Official Plan, the Owner covenants and agrees to convey Blocks 315, 316 and 320 to the City at no cost for the transit right-of-way and grade separation at Trim Road. The alignment of the transit corridor on the final plan shall be to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development Department and the General Manager, Transportation Services.	**OTTAWA Planning Transit**
		Geotechnical	
39.		The Owner acknowledges and agrees that it shall retain the services of a geotechnical engineer, licensed in the Province of Ontario, to ensure that the recommendations of the Geotechnical Investigation Report, referenced in the list of approved reports herein, are fully implemented. The Owner further acknowledges and agrees that it shall provide the General Manager, Planning, Infrastructure and Economic Development Department with confirmation issued by the geotechnical engineer that the Owner has complied with all recommendations and provisions of the Report, prior to construction of the foundation and at the completion of the Works, which confirmation shall be to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development Department.	**OTTAWA Planning**
40.	**GT1**	Where special soils conditions exist, the Owner covenants and agrees that the following clause shall be incorporated into all agreements of purchase and sale for all lots and blocks, and included in the municipal covenant agreement against the title: "The Owner acknowledges that special soils conditions exist on this lot which will require: (a) a geotechnical engineer licensed in the Province of Ontario to approve any proposal or design for a swimming pool installation or other proposal requiring an additional building permit on this lot prior to applying for a pool enclosure permit or installing the pool; and (b) the Owner to submit a copy of the geotechnical engineer's or geoscientists report to the General Manager, Planning, Infrastructure and Economic Development Department at the time of the application for the pool enclosure or additional building permit. The Owner also acknowledges that said engineer or geoscientist will be required to certify that the construction has been completed in accordance with his/her recommendation and that a copy of the certification or report will be submitted to the General Manager, Planning, Infrastructure and Economic Development Department.	**OTTAWA Planning**

41.	**GT2**	The Owner shall submit a geotechnical report prepared in accordance with the City's Geotechnical Investigation and Reporting Guidelines and/or Slope Stability Guidelines for Development Applications by a geotechnical engineer or geoscientist, licensed in the Province of Ontario, containing detailed information on applicable geotechnical matters and recommendations to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development which include, but are not limited to: a) existing sub-surface soils, groundwater conditions; b) slope stability (including an assessment during seismic loading) and erosion protection, in addition to any building construction requirements adjacent to unstable slope; c) clearly indicate orientation of any cross-sections used in slope stability analysis and location of center of the slip circle; d) grade raise restrictions on the site and, if appropriate, the impacts this will have on the slope stability; e) design and construction of underground services to the building, including differential settlement near any buildings or structures; f) design and construction of roadway, fire routes and parking lots; g) design and construction of retaining walls and/or slope protection; h) design and construction of engineered fill; i) design and construction of building foundations; j) site dewatering; k) design and construction of swimming pools; l) design and construction of park blocks for its intended uses; and m) in areas of sensitive marine clay soils:	**OTTAWA Planning**
42.	**GT3**	Sensitive marine clay soils a) The Owner agrees to any restrictions to landscaping, in particular the type and size of trees and the proximity of these to structures/buildings due to the presence of sensitive marine clay soils, as per the City's Tree Planting in Sensitive Marine Clay Soils – 2017 Guidelines. b) If trees are to be planted at less than 7.5 m from a building foundation, the Owner agrees to provide the following tests, data, and information prior to zoning approval, in order to determine the sensitivity of the clay soils and how it will impact street tree planting and potentially front yard setbacks: i. Shear Vane analysis including remolded values per ASTM D2573. ii. Atterberg Limit testing per ASTM D4318; With the following data clearly identified, Natural water content (W), Plastic Limit (PL), Plasticity Index (PI), Liquidity Index (LI), and Activity (A).	**OTTAWA Planning**

		iii. Shrinkage Limit testing per ASTM D4943 with Shrinkage Limit (SL). iv. A separate section within the geotechnical report on sensitive marine clay soils, which will include a signed letter and corresponding map that confirms the locations of low, medium sensitivity (generally <40% plasticity) or high sensitivity clay soils (generally >40% plasticity), as determined by the above tests and data. v. The report identifies that foundation walls are to be reinforced at least nominally, with a minimum of two upper and two lower 15M (rebar size) bars in the foundation wall. c) In locations where all six conditions in the Tree Planting in Sensitive Marine Clay Soils – 2017 Guidelines cannot be met (e.g. if soils are generally >40% plasticity) the 2005 Clay Soils Policy will apply, meaning only small, low-water demand trees can be planted at a minimum separation distance of 7.5m from a building foundation. In these cases, the Zoning By-law will be used to ensure sufficient front yard setbacks to accommodate street trees in the right-of-way. For example, if street trees are planted in the right-of-way at a distance of 2m from the front lot line, then the minimum front yard setback would be 5.5m (7.5m – 2m).	
43.	**GT4**	The Owner agrees to provide a clause in the Purchase and Sale Agreement advising that this area contains sensitive marine clay soils where trees must be planted at least 7.5 metres from the building foundation in accordance with the approved Geotechnical Report.	**OTTAWA Forestry**
		Pathways, Sidewalks, Walkways, Fencing, and Noise Barriers	
44.	**S1**	The Owner acknowledges and agrees that all pathways, sidewalks, walkways, fencing, and noise barriers are to be designed and constructed in accordance with City specifications and Accessibility Design Standards, at no cost to the City, and to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development Department.	
45.	**S2**	The Owner shall construct a 3.0 metre wide multi-use pathway as well as fencing along the perimeter of the walkway block(s) and plantings in accordance with SC19 at the following locations: • within Blocks 317 and 318 Both multi-use pathways will be constructed and extended to connect to the existing Trans-Orléans pathway along the Transit corridor.	**OTTAWA Planning**

46.	**S3**	The Owner agrees to design and construct 1.8 metre wide sidewalks (unless otherwise noted) at the following locations: • On the east side of Street No. 2 • On the west side of Street No. 3 • On the north side of Street No. 6 (north leg) • Along the south leg and on the south side of Streets No. 7 and Street No. 8 between Streets No. 2 and 3 • On both sides of Street No. 1 (2.0 metre wide sidewalks)	**OTTAWA Planning**
47.	**S4**	The Owner agrees to design and construct, fully accessible, a 10.0 metre wide servicing block, a 2.0 metre walkway connecting to the existing sidewalk on Salzburg Drive and related works through the length of the public lands, as identified on the Draft Plan in the following locations: • Block 319	**OTTAWA Planning**
48.	**S5**	The Owner agrees to connect all new pathways, sidewalks, walkways to the existing pathways, sidewalks, walkways located at the following locations: • Salzburg Drive • Provence Avenue • Trim Road	**OTTAWA Planning**
49.	**S6**	**<u>Chain Link Fencing</u>** a) The Owner agrees to design and construct 1.5 metre black vinyl-coated chain link fences in accordance with the Fence By-law to be determined at the time of registration at the following locations: - At the rear of Lots 11 to 21, Lots 42 to 53 and Lots 273 to 282, Blocks 297, 298 and 310 abutting the Transitway Corridor (Blocks 315 and 316). All chain link fencing that separate public lands and residential lots and blocks shall have a maximum opening (the diamond shape area) of no greater than 37 mm in order to comply with the applicable part of the "Pool Enclosure By-Law". b) The Owner agrees that any vinyl-coated chain link fence required to be installed with the exception of parks fencing shall be located a minimum of 0.15 metres inside the property line of the private property.	**OTTAWA Planning**

50.		**Other Fencing** The Owner agrees to design and construct a 1.5 metre black vinyl-coated chain link or a 1.8 metre wood privacy fences or similar in a location to be determined at the time of registration with the adjacent landowner to the north (Conseil des écoles catholiques du Centre-Est) in accordance with the Fence By-law at the following locations: - At the rear of Lots 153 to 172 and Block 303. All chain link fencing that separate public lands and residential lots and blocks shall have a maximum opening (the diamond shape area) of no greater than 37 mm in order to comply with the applicable part of the "Pool Enclosure By-Law".	**OTTAWA Planning**
51.	**S7**	**Park Fencing** a) The Owner agrees to design and construct 1.5 metre black vinyl-coated chain link fences in accordance with the Fence By-law at the following locations: • All lots abutting Park Block 313 All chain link fencing that separate public lands and residential lots and blocks shall have a maximum opening (the diamond shape area) of no greater than 37 mm in order to comply with the applicable part of the "Pool Enclosure By-Law". b) The Owner agrees that any vinyl-coated chain link fence required to be installed shall be located a minimum of 0.15 metres inside the property line of the park. Refer to Parks condition P13 for details.	**OTTAWA Planning Parks**
52.	**S8**	**Wood Privacy Fencing** a) The Owner agrees to design and construct a 1.8 metre wood privacy fences, to be determined at registration of each phase, in accordance with the Fence By-law at the following locations: • All of Block 310 abutting residential uses • Lots 173 to 176 and Blocks 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311 and 312 abutting single detached residential uses or abutting existing residential uses.	**OTTAWA Planning**

		b) The Owner agrees that any wood privacy fence required to be installed shall be located a minimum of 0.15 metres inside the property line of the private property.	
53.	**S9**	**<u>Noise attenuation barriers</u>** a) The Owner agrees to design and erect at no cost to the City, noise attenuation barriers in accordance with City specifications and the Noise Control Study at the following locations: • Lots 1, 2 and 35 and Blocks 311 and 312 abutting Aquaview Drive; • Lots 21 and 22 and Block 311 abutting Portobello Boulevard; • Lots 36 to 42 and Blocks 300, 301 and 303 abutting Provence Avenue; • Lots 84, 190, 191, 251, 266 and 292 and Blocks 296, 297, 298 and 299 abutting Street No. 1; • Lot 265 and Blocks 304, 305, 306 and 309 abutting Trim Road or residential lots along Trim Road. b) The Owner agrees that any noise attenuation barrier required to be installed under this Agreement, shall be located a minimum of 0.30 metres inside the property line of the private property, and the location of the fence shall be verified by an Ontario Land Surveyor, prior to the release of securities for the noise attenuation barrier.	**OTTAWA Planning**
54.	**S10**	The Owner shall insert a clause in each agreement of purchase and sale and shall be registered as a notice on title in respect of all lands which fences have been constructed stating that: “Purchasers are advised that they must maintain all fences in good repair, including those as constructed by the Owner along the boundary of this land, to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development Department. The Purchaser agrees to include this clause in any future purchase and sale agreements”.	**OTTAWA Planning**
		<u>Landscaping/Streetscaping</u>	
55.	**LS1**	The Owner agrees, prior to registration or early servicing to have a landscape plan(s) for the draft plan of subdivision prepared by a Landscape Architect, in accordance with the recommendations contained in the geotechnical report(s), the Tree Conservation Report, and/or the Environmental Impact Statement (if appropriate).	**OTTAWA Planning Forestry**

		The landscape plan(s) shall include detailed planting locations, plant lists which include species, plant form and sizes, details of planting methods, pathway widths and materials, access points, fencing requirements and fencing materials, other landscape features and gateway features where required. The Owner agrees to implement the approved landscape plan(s) and bear all costs and responsibility for the preparation and implementation of the plan(s). The Owner agrees that where marine clay soils are present, and the geotechnical report has satisfied the applicable conditions of the Tree Planting in Sensitive Marine Clay Soils - 2017 Guidelines, confirmation of adequate soil volumes in accordance with the subject guidelines shall be provided by a Landscape Architect prior to zoning approval. All of the aforementioned are to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development Department and	
56.	**LS2**	The Owner agrees that for all single detached and semi-detached lots, a minimum of 1 tree per interior lot and 2 trees per exterior side yard lots (i.e. corner lots) shall be provided on the landscape plan(s). Along park frontages, the Landscape Plan shall locate trees at a 6-8 metre on-centre separation distance along the full extent of the road right-of-way abutting any park block(s). Should specific site constraints prevent the required allocation of trees, the remaining number of required trees shall be provided within any proposed park(s), open space or environmental blocks, non-residential road right-of-way frontages, stormwater management facility(s), or other suitable alternative locations, to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development Department.	**OTTAWA Planning Forestry**
57.	**LS3**	In areas of sensitive marine clay soils where the six conditions of the Tree Planting in Sensitive Marine Clay Soils – 2017 Guidelines have been met, the following shall be provided: a) The landscape plan shall include a note indicating that is has been developed as per the listed approved Geotechnical Report(s), to the satisfaction of the General Manager, Planning Infrastructure and Economic Development. b) At the time of tree planting, in addition to providing an F1 inspection form, the Landscape Architect will provide a signed letter indicating that trees have been planted with appropriate soil volume in accordance	**OTTAWA Planning**

		with the approved Landscape Plan, to the satisfaction of the General Manager, Planning Infrastructure and Economic Development.	
		Tree Conservation	
58.	**TC1**	The Owner acknowledges and agrees to abide by the Urban Tree Conservation By-law, 2009-200, and that any trees to be removed from the site shall be in accordance with an approved Tree Permit. The Owner agrees to implement the measures recommended in the supporting tree conservation report to ensure preservation of the trees identified for protection, in accordance with the City's tree protection requirements listed within the Urban Tree Conservation By-law, 2009-200. All of which are to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development Department.	**OTTAWA Planning**
59.	**TC3**	The Owner agrees to maintain the tree protection measures until construction is complete and/or the City has provided written permission to remove them.	**OTTAWA Planning**
		Gateway Features	
60.	**GF1**	Community or Primary Neighbourhood Gateway Features on public land The Owner acknowledges and agrees that any proposed Community Gateway Features and Primary Neighbourhood Gateway Features shall be designed, constructed and certified by a qualified professional and shall be in accordance with the City's Design Guidelines for Development Application Gateway Features, applicable by-laws and policies. Prior to the earlier of registration or installation, the Owner shall deposit security to meet the on-going maintenance obligations of the Feature(s) by the Owner for a one-year period after the construction of the Feature. The security will not be reduced or released until the expiration of the one-year period and until the time a certification by a qualified professional confirming that the Feature is constructed in accordance with the Guidelines and approved plans and is in a good state of repair is provided. During the warranty period, the Owner shall be solely responsible for the on-going upkeep and maintenance of the Gateway Feature(s). The Owner shall, prior to registration, make a financial contribution (+HST) to the "Maintenance Fund" in accordance with the City's Design Guidelines for Development Application Gateway Features. All of the aforementioned are to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development Department.	**OTTAWA Planning**

61.	**GF2**	Secondary Neighbourhood Gateway Features on public land The Owner acknowledges and agrees that any proposed Secondary Neighbourhood Gateway Feature(s) is **temporary only**, and shall be designed, constructed and certified by a qualified professional and shall be in accordance with the City's Design Guidelines for Development Application Gateway Features, applicable by-laws and policies. Prior to the earlier of registration or installation, the Owner shall deposit security to guarantee on-going maintenance and removal of the Secondary Neighbourhood Gateway Feature(s). The Owner shall be solely responsible for the on-going upkeep and maintenance of the Secondary Neighbourhood Gateway Feature until it is removed, upon which time the security may be released. All of the aforementioned are to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development Department.	**OTTAWA Planning**
62.	**GF3**	Private/Condo Gateway Features The Owner acknowledges and agrees that any proposed Private/Condo Gateway Feature(s) shall be designed, constructed and certified by a qualified professional and shall be in accordance with the City's Design Guidelines for Development Application Gateway Features, applicable by-laws and policies. The Private/Condo Gateway Feature shall be subject to the approval of the Chief Building Official. Prior to the earlier of registration or installation, the Owner shall deposit security to meet the on-going maintenance obligations of the Feature by the Owner for a one-year period after the construction of the Feature. The security will not be reduced or released until the expiration of the one-year period and until the time a certification by a qualified professional confirming that the Feature is constructed in accordance with the Guidelines and approved plans and is in a good state of repair is provided. The Owner shall be required to maintain the Private/Condo Gateway Feature in a state of good repair at all times and in perpetuity, at no cost to the City. A maintenance clause will be required in the Condo or Common Elements agreement(s) to reflect the foregoing. All of the aforementioned are to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development Department.	**OTTAWA Planning**

		Parks	
63.	**P1**	In accordance with the *Planning Act* and the City of Ottawa Parkland Dedication By-law, the Owner shall convey Block 313 to the City for parkland purposes all to the satisfaction of the General Manager, Recreation, Cultural and Facility Services Department.	**OTTAWA Parks**
64.	**P2**	The Owner covenants and agrees that Block 313 will be conveyed to the City, at no cost, as dedicated parkland. The size and configuration of the Park Block 313 on the Final Plan shall be to the satisfaction of the General Manager, Recreation, Cultural and Facility Services Department. The Owner covenants and agrees that the parkland dedication requirement has been calculated at a rate of one hectare per 300 units (residential >18units/ha), but for apartments, as defined by the zoning by-law this parkland conveyance will not exceed a maximum of 10% of the land area of the site being developed. Based on the estimated number of 535 units for this subdivision, there is a parkland dedication requirement of 1.78 hectares, as shown in the calculation below: **Parkland Dedication Required:** Residential Units: 535 **Total:** / Calculation / Parkland Required Unit Sub-Totals: 535 — **535** — 1 / 300 — 1.783 **Parkland REQUIRED Total *(ha)* : 1.783** **Parkland Dedicated:** Block 313: 0.400 Previously dedicated parkland Part 2 on 4R-16710: 1.210 **Parkland DEDICATED Total *(ha)* : 1.610** **Parkland Over-Dedication *(ha)* : -0.173** The Owner acknowledges and agrees that there is a parkland under-dedication of 0.173 hectares. The under dedication in the amount of 0.173 hectares will be transferred to any future draft plan of subdivision on the property municipally known as 2065 Portobello Blvd (PIN #145640003). In the event that the number of units change, the required parkland dedication will also change. The Owner acknowledges and agrees that based on the final unit count and the area parkland calculations, should the parkland conveyed be in	**OTTAWA Parks**

		excess of the requirements under s.51 of the *Planning Act*, the City shall not compensate the Owner.	
65.	**P3**	The Owner acknowledges and agrees to design and construct the parkland, identified as Block 313, in accordance with City specifications and standards. The Owner further agrees to provide design plans and documents as detailed in the Park Development Manual 2nd edition 2017 (and as amended) for the park(s). The plans and documents will detail the designs, costs and amenities to be provided in each park. The expected cost of the design, construction, review and inspection of these parks will be in accordance with the rate per hectare and indexing rate utilized for park development by the City at the time of registration of each phase of development. The design plans and documents as well as the final budget for design, construction, review and inspection shall be subject to approval by the City, all to the satisfaction of the General Manager, Recreation, Cultural and Facility Services Department.	**OTTAWA Parks**
66.	**P4**	All Owner obligations associated with the Park Block(s) must be completed to the satisfaction of the General Manager, Recreation, Cultural and Facility Services Department within two years of registration. If the Park Block(s) is not tendered and under construction within two years of registration, the Owner agrees that the park development budget shall be based on the park development rate per hectare in effect at the time of the commencement of the park construction and that the Owner is required to pay the applicable Park Development rate for the current year that the park is to be built and those funds will be added to the park budget for construction.	**OTTAWA Parks**
67.	**P5**	The Owner acknowledges and agrees that no stormwater management facilities, encumbrances such as retaining walls, utility lines or easements of any kind shall be located on, or in front of, dedicated park blocks without the written approval of the General Manager, Recreation, Cultural and Facility Services Department.	**OTTAWA Parks**
68.	**P6**	The Owner acknowledges and agrees that any encumbrances which are not solely for the benefit of the park, such as retaining walls, utility lines or easements of any kind on lands, or portion thereof encumbering the design and function of future Park Block 313, will not form part of the *Planning Act* parkland dedication requirements without the written approval of the General Manager the General Manager, Recreation, Cultural and Facility Services Department.	**OTTAWA Parks**

69.	**P7**	The Owner agrees the park block(s) must be fully developable for its intended use based on a geotechnical report. If any constraints to development of the park block(s) are found the measures necessary to mitigate the constraints and to provide a subgrade suitable for the intended park(s) uses as identified in the Facility Fit Plan, or if a Facility Fit Plan has not yet been prepared for intended park uses as identified by Parks planning staff, will be undertaken by the Owner. The Owner is solely responsible for the costs of any necessary mitigation measures in addition to the Park Budget. All of the aforementioned are to the satisfaction of the General Manager, Recreation, Cultural and Facility Services Department.	**OTTAWA Parks**
70.	**P8**	Once a Facility Fit Plan is submitted and after tree protection fencing has been installed accordingly, both as approved by the General Manager, Recreation, Cultural and Facility Services Department, the Owner may remove vegetation, trees and topsoil from the park(s) to facilitate rough grading of the area. The Owner agrees that they may stockpile the topsoil either on or off the park(s). If the removal of the native topsoil is required, the Owner agrees to provide replacement topsoil at a sufficient depth and quality for the park(s) as per City Standards for park topsoil. All work shall proceed in accordance with the applicable By-laws.	**OTTAWA Parks**
71.	**P9**	The City acknowledges and agrees that the Owner may use the Park(s) outside of the protected park areas for the stockpiling of materials or staging as needed. The Owner agrees to conduct the stockpiling of soils in accordance with the future excess soils regulation, as amended. The Owner agrees contaminated soils shall not be stockpiled on future park areas. The Owner agrees to provide to the City documentation of the source and quality of the soils temporarily stored on the future park areas. The Owner acknowledges and agrees that in the event that the Owner chooses to use the parkland for stockpiling or staging, once this use of the parkland is completed, all materials will be removed from the parkland and a geotechnical report by a qualified and licensed engineer or geoscientist will be submitted. The geotechnical report shall confirm that the subgrade is suitable for its intended use and that no contaminants have been deposited on the parkland. The geotechnical report must indicate the level of soil compaction on the site and conform to City Standards, to the satisfaction of the General Manager, Recreation, Cultural and Facility Services Department. The Owner agrees that any remediation required to the parkland as result of the owners use of the parkland will be at the Owner's expense and will	**OTTAWA Parks**

		be in addition to the estimated park budget calculated at the per hectare rate as indexed and such remediation work shall be completed to the satisfaction of the General Manager, Recreation, Cultural and Facility Services Department.	
72.	**P10**	The Owner further agrees to prepare and submit upon registration, for approval all park plans and documents required as noted in the Park Development Manual 2017 based on the approved Facility Fit Plan, all to the satisfaction of the General Manager, Recreation, Cultural and Facility Services Department	**OTTAWA Parks**
73.	**P11**	Filling and rough grade the park block(s) a) Any fill imported to the future park block must be conducted in accordance with the future excess soils regulation, as amended. Documentation of the source and quality of the fill to be imported must be approved by a Qualified Person. Soils must be tested to the minimum parameter list as specified in the excess soils regulation. Importation of soils with no chemical testing will not be permitted. Additional testing may be required by the Qualified Persons as defined in the regulation. b) Copies of all records related to all soils imported to the future park areas must be provided to the City. It is the responsibility of the Owner to fill and rough grade the park where necessary, with clean earth borrow, compacted and leveled within the park block accordingly, to provide for positive surface drainage as per the City Standards for Park Fill and rough grading as per the approved subdivision grading plan. All at the expense of the Owner. All works and fill materials are to be approved by the General Manager, Planning, Infrastructure and Economic Development Department prior to being placed on site.	**OTTAWA Planning Parks**
74.	**P12**	Servicing and final grading of park blocks It is the responsibility of the Owner to undertake final grading of the park block as per the park working drawings /grading and drainage plan. This final grading will be covered by the park budget to a maximum of 10% of the park construction cost. Additional grading beyond 10% of park construction cost will be at the Owner's expense. All works and design drawings are subject to the approval of the General Manager, Recreation, Cultural and Facility Services Department and the General Manager, Planning, Infrastructure and Economic Development Department. Unless otherwise specified the Owner shall provide the following services and utilities to all Park Blocks:	**OTTAWA Planning Parks**

		Serviced park a) A 300mm diameter storm sewer and CB/MH at 2m inside the park property line. b) A 50mm diameter water line complete with standpost at 2m inside the park property line. A city standard park water vault chamber, standard detail W31.1 latest version, must also be installed as part of parks water works. The park water vault will be funded from the park budget. Co-ordination of all park water works including water vault and meter installation is an Owner responsibility. c) 150mm diameter sanitary sewer and MH at 2m inside the park property line. d) A 120/240 volt, 200 amperes single phase hydro service at 2m inside the park property line. The Owner is responsible for making all arrangements and coordinating the connection of the new hydro (electrical) service, including costs and inspections, with the respective hydro (electricity) agencies. The Owner is also responsible to ensure the park electricity service(s) is included on the approved CUP drawings.	
75.	**P13**	The Owner shall install fencing of uniform appearance and quality, with a minimum height of five feet (5') (1.5m) along the common boundary of all residential lots and other lots which abut Park Blocks. Fences shall be installed 0.15m on the park property side of the common property line, and the location of the fence shall be verified by an Ontario Land Surveyor. All fences must adhere to the City's fence By-law 2003-462. Fence materials will be of commercial grade and consist of 6-gauge black vinyl coated chain link material and black powder coated schedule 40 pipe rails and posts or an approved alternative.	**OTTAWA Parks**
76.	**P15**	Gates Permitted No access from private property to active public property will be allowed without the prior written approval of the General Manager, Planning, Infrastructure and Economic Development Department. The Owner shall place the following clause in each Agreement of Purchase and Sale and shall be registered as a notice on title in respect of all Lots and Blocks: "The Transferee for himself/herself, his/her heirs, executors, administers, successors and assigns acknowledges being advised that gates accessing public property are not permitted in the fences without the express written permission of the General Manager, Recreation, Cultural and Facility Services Department."	**OTTAWA Parks**

77.	**P16**	The Owner shall include a clause in each Agreement of Purchase and Sale and shall be registered as a notice on title in respect of all Lots and Blocks which shall provide notification to all purchasers of lands within the Subdivision that parkland within this subdivision and/or already existing in the vicinity of the subdivision may have: a) active hard surface and soft surface recreational facilities b) active lighted sports fields c) recreation and leisure facilities d) potential community centre e) library f) day care g) other potential public buildings/facilities.	**OTTAWA Parks**
78.	**P17**	The Owner acknowledges and agrees that, if the approved park concept design contains amenities proposed by the Owner that exceed the standard park design and construction budget, and if securities are not retained by the City for these items, the City shall not be responsible for these items in the event that the City must complete the park.	**OTTAWA Parks**
79.	**P18**	The Owner acknowledges and agrees that, following registration of this agreement, all park blocks will be transferred to the City. Notwithstanding said transfer, the Owner acknowledges and agrees that, prior to the assumption of the park by the City, the Owner will retain all liability for the transferred blocks and that said transfer will in no way exonerate the Owner from its responsibility to design and construct the park pursuant to the terms of this agreement.	**OTTAWA Parks**
82.	**P21**	The Owner acknowledges and agrees to erect at its expense on the park block(s) at a location selected by the General Manager, Recreation, Cultural and Facility Services a professionally painted sign indicating: Future Parkland No Dumping No Removal of soils or Vegetation	**OTTAWA Parks**
83.	**P22**	Upon registration of the subdivision and transfer of ownership of the park block to the city, the Owner agrees to provide: • a certificate of insurance that names the City of Ottawa as Additional Insured, and • a letter of credit which covers the full amount of the park construction cost to ensure the work is completed,	**OTTAWA Parks**

		the Owner will hereby be granted consent to enter at no cost to complete the work. All is to the satisfaction of the General Manager of Recreation Culture and Facility Services,	
84.	**P23**	The Owner acknowledges and agrees that no work within the ROW in front of, or around, any boundary of the park will be a park cost. All ROW work including, tree planting, topsoil and sod, and all hard surface work will be at the Owners' expense. Where a park plaza or landscape feature extends into the ROW as a continual element of the park development, this work may be considered park work at the discretion of the General Manager, Recreation, Cultural and Facility Services.	**OTTAWA Parks**
85.	**P24**	The Owner acknowledges and agrees that the total consulting costs including all prime consulting, sub-consulting and testing fees, for the design and development of the Park Blocks shall not exceed the percentage of the Park Construction Budget as recommended, by type of project, by the *Ontario Association of Landscape Architects Fee Guide for Landscape Architectural Services*, current (at time of Work) version, and shall be to the satisfaction of the General Manager, Recreation, Cultural & Facility Services.	**OTTAWA Parks**
86.	**P25**	The Owner and the General Manager of Recreation, Culture and Facility Services may, if it is mutually beneficial to both parties, enter into an agreement whereby the Owner will provide funding (+HST) to the City for the design and the construction of the park block(s). The City will proceed to design and construction of the park as per the typical city-build park process as described in the Parks Development Manual. The timing of the park construction will be at the discretion of the City. The expected cost of the park(s) works to be paid to the City will be based on the rate per hectare and indexing rate utilized for the park development by the City at the time of registration of the phase of development, which includes the park block(s) plus a 5% administrative fee for City forces to execute the project. The funding for park works will be paid to the city at the time of registration for the phase of development, which includes the park block. All standard subdivision conditions associated with the park, including, but not limited to: fencing, fill and rough grading, tree removal and services stubbed to within 2.0 m inside the park block(s) will remain a subdivision cost to be covered by the Owner separate from the park funding.	**OTTAWA Parks**
		<u>Environmental Constraints</u>	
87.	**EC1**	The Owner shall prepare and implement an Integrated Environmental Review and/or an Environmental Impact Statement, in accordance with the policies of the Official Plan, to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development Department.	**OTTAWA Planning CA**

88.	**EC2**	The Owner agrees that prior to registration, early servicing, or other works that would alter the vegetative characteristics of the site, the Owner shall have the environmental impact statement updated as necessary to reflect the final plan as approved, and to address any changes to the anticipated impacts and recommended mitigation measures that may be required as a result of changes to the draft plan, changes in the regulatory context with respect to species at risk, or changes in the known environmental context of the site. This update shall be to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development Department.	**OTTAWA Planning**
89.	**EC3**	The Owner acknowledges and agrees that the construction of the subdivision shall be in accordance with the recommendations of the approved Tree Conservation Report and Environmental Impact Statement.	**OTTAWA Planning CA**
90.	**EC4**	The Owner agrees to abide by all appropriate regulations associated with Provincial and Federal statutes for the protection of wildlife, including migratory birds and species at risk.	**OTTAWA Planning**
91.	**EC12**	Where required, the Owner shall prepare, to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development Department, an Owner Awareness Package (OAP) highlighting the advantages and responsibilities of a homeowner living in or adjacent to a natural area. The OAP shall describe the natural attributes of the community and the importance of good stewardship practices to ensure the long-term health and sustainability of the Natural Heritage System. Topics to be discussed include, but are not limited to, reducing environmental impacts from common household activities (e.g., water conservation, yard waste disposal, chemical use and storage, etc.), avoiding human-wildlife conflicts, and recommendations of locally appropriate native species for landscaping. The OAP shall be distributed to all purchasers with the Agreement of Purchase and Sale.	**OTTAWA Planning CA**
92.		**Contaminants** The Owner agrees and acknowledges that should buried materials such as refuse, concrete and asphalt or undesirable cobbles and materials be excavated on site they shall be removed from the excavations and be removed off site as per the direction of the on-site geotechnical engineer.	**OTTAWA Planning**
		Schools	
93.	**SC1**	The Owner acknowledges and agrees to reserve Block 314 on the draft plan of subdivision as an elementary school site for the Ottawa-Carleton	**OCDSB**

		District School Board. The final size, configuration and servicing for the school site shall be to the satisfaction of the Ottawa-Carleton District School Board and the General Manager, Planning, Infrastructure and Economic Development Department.	
94.	**SC2**	The Owner agrees to reserve the designated school site for a period of up to seven years from the date of registration of the plan that contains the school site. The school board may apply for a two-year extension of the seven year terms by notifying the developer at least six months prior to the end of the seven years.	**OCDSB**
95.	**SC3**	The Owner agrees to enter into a legal agreement with the Ottawa-Carleton District School Board for the reservation of the designated elementary school site known as Block 314 on the draft plan of subdivision for a period of up to seven years from the date of registration of the plan which contains the subject school site.	**OCDSB**
96.		The Owner agrees that no uses, such as, but not limited to stormwater ponds or utility lines or easements, or any kind shall be located on designated school site blocks without the express written concurrence of the Ottawa-Carleton District School Board.	**OCDSB**
97.	**SC4**	That the Owner be required to erect an uninterrupted, 1.5 metre high chain link, (no gates) between the Ottawa-Carleton District School Board's future school site and any future residential or non-residential properties. The fence should be placed approximately 0.15m on the inside of the Ottawa-Carleton District School Board's property line.	**OCDSB**
98.	**SC5**	That the Owner shall neither deposit nor permit to be deposited fill, debris, building materials or equipment, nor allow vehicle access for any purpose on the designated school block lands of the subdivision, and furthermore, the owner shall neither remove nor permit to be removed, any fill, top soil, trees or shrubs from the said lands without the express written concurrence of the Ottawa-Carleton District School Board.	**OCDSB**
99.	**SC6**	That the Owner agrees to rough grade the Ottawa-Carleton District School Board future elementary school site to match the proposed surrounding grades and drainage pattern as noted on the subdivision grade plan. If fill is required to achieve these grades, it is the responsibility of the owner to fill, compact and level the school block accordingly, providing for positive surface drainage.	**OCDSB**
		Archaeology	
100.	**ARC1**	Where the Owner is required to undertake an archaeological assessment:	**OTTAWA Planning**

		i. The Owner acknowledges having been required to retain a licensed consultant archaeologist to undertake an archaeological assessment of the entire property, including 1:10,000 scale mapping, "Archaeological Site Record" and report(s); ii. The Owner agrees to implement the recommendations of the approved assessment, including mitigation, through preservation or removal and documentation of archaeological resources; and iii. The Owner agrees that no site works shall take place until any archaeological resource conservation concerns have been addressed. All of the above noted conditions shall be to the satisfaction of the Ministry of Tourism and Culture and the General Manager, Planning, Infrastructure and Economic Development Department.	**MTCS** (Ministry provides written clearance to the City prior to registration, usually at the request of the applicant.)
101.	**ARC2**	The Owner acknowledges and agrees that should deeply buried deposits be found on this property during any construction activities, the Ministry of Tourism and Culture will be notified immediately.	**OTTAWA Planning**
102.	**ARC3**	The Owner acknowledges and agrees that in the event human remains are encountered during the construction activities, both the Ministry of Tourism and Culture and the Registrar of the Cemeteries Regulations Unit of the Ministry of Small Business and Consumer Relations will be notified immediately.	**OTTAWA Planning**
		<u>Stormwater Management</u>	
103.	**SW1**	The Owner shall provide any and all stormwater reports that may be required by the City for approval prior to the commencement of any works in any phase of the Plan of Subdivision. Such reports shall be in accordance with any watershed or subwatershed studies, conceptual stormwater reports, City or Provincial standards, specifications and guidelines. The reports shall include, but not be limited to, the provision of erosion and sedimentation control measures, implementation or phasing requirements of interim or permanent measures, and all stormwater monitoring and testing requirements. All reports and plans shall be to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development Department.	**OTTAWA Planning CA**
104.	**SW2**	(a) Prior to the commencement of construction of any phase of this Subdivision (roads, utilities, any off site work, etc.) the Owner shall:	**OTTAWA Planning CA**

		i. have a Stormwater Management Plan and an Erosion and Sediment Control Plan prepared by a Professional Engineer in accordance with current best management practices; ii. (if appropriate) provide all digital models and modelling analysis in an acceptable format; iii. have said plans approved by the General Manager, Planning, Infrastructure and Economic Development Department, and iv. provide certification through a Professional Engineer licensed in the province of Ontario that the plans have been implemented. (b) All submissions and any changes made to the Plan shall be submitted to the satisfaction to the City and the Rideau Valley Conservation Authority. (c) The Owner shall implement an inspection and monitoring plan to maintain erosion control measures.	
105.	**SW3**	On completion of all stormwater works, the Owner agrees to provide certification to the General Manager, Planning, Infrastructure and Economic Development Department through a Professional Engineer, licensed in the province of Ontario, that all measures have been implemented in conformity with the approved Stormwater Site Management Plan.	**OTTAWA Planning**
107.	**SW6**	The Owner agrees that the development of the Subdivision shall be undertaken in such a manner as to prevent any adverse effects, and to protect, enhance or restore any of the existing or natural environment, through the preparation of any storm water management reports, as required by the City.	**OTTAWA Planning**
108.	**SW7**	The Owner covenants and agrees that the following clause shall be incorporated into all agreements of purchase and sale for the whole, or any part, of a lot or block on the Plan of Subdivision, and registered separately against the title: “The Owner acknowledges that some of the rear yards within this subdivision are used for on-site storage of infrequent storm events. Pool installation and/or grading alterations and/or coach houses on some of the lots may not be permitted and/or revisions to the approved Subdivision Stormwater Management Plan Report may be required to study the possibility of modification on any individual lot. The Owner must obtain approval of the General Manager, Planning, Infrastructure and Economic Development Department of the City of Ottawa prior to undertaking any grading alterations.”	**OTTAWA Legal**

		Sanitary Services	
110.	**SS1**	The Owner agrees to submit detailed municipal servicing plans, prepared by a Professional Civil Engineer licensed in the Province of Ontario, to the General Manager, Planning, Infrastructure and Economic Development Department.	**OTTAWA Planning**
111.	**SS3**	As the Owner proposes a road allowance(s) of less than 20 metres, and if the Owner also proposed boulevards between 4.0 and 5.0 metres wide, the Owner shall meet the following requirements: a) extend water, sanitary, and storm services a minimum of 2.0 metres onto private property during installation before being capped; b) install high voltage electrical cable through the transformer foundations to maintain adequate clearance from the gas main; c) provide and install conduits as required by each utility; d) provide and install transformer security walls when a 3.0 metres clearance, as required by the Electrical Code, cannot be maintained. The design and location of the security wall must be approved by the local hydro utility; and e) install all road-crossing ducts at a depth not to exceed 1.2 metres from top of duct to final grade.	**OTTAWA Planning**
112.		**Sewer Flow Management Plan** The Owner agrees and acknowledges that their contractor is required to provide a Sewer Flow Management Plan (SFMP) as per City Standard S.P. No: F1007 for any bypass sewage pumping and discharge.	**OTTAWA Planning**
113.		**Abandonment of existing Sewer Infrastructure** The Owner acknowledges and agrees that their contractor is required to remove or abandon existing sewer infrastructure as per the City S.P. No. F-4104 to the City to the satisfaction of the General Manager, Planning, Infrastructure & Economic Development Department.	**OTTAWA Planning**
		Water Services	
114.	**W1**	The Owner agrees to design and construct all necessary watermains and the details of water servicing and metering for the lots abutting the watermains within the subject lands. The Owner shall pay all related costs, including the cost of connection, inspection and sterilization by City personnel, as well as the supply and installation of water meters by the City.	**OTTAWA Planning**

115.	**W2**	The Owner shall prepare, at its cost, a hydraulic network analysis of the proposed water plant within the Plan of Subdivision and as it relates to the existing infrastructure. This analysis shall be submitted for review and approval as part of the water plant design submission.	**OTTAWA Planning**
116.	**W3**	The Owner acknowledges and agrees not to permit any occupancy of buildings on the individual Lots and Blocks on the Draft Plan of Subdivision until the water plant has been installed, sterilized and placed in service to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development Department.	**OTTAWA Planning**
117.	**W4**	The Owner further acknowledges and agrees that the service post, which is the fitting located near the property line that allows access to the shutoff valve, must be visible, raised to finished grade and in working condition in order for the City to turn on the service.	**OTTAWA Planning**
118.	**W5**	The Owner acknowledges and agrees to provide a Water Age Analysis prior to registration which reflects their proposed phasing and scheduling. Where required, through this analysis or through testing, the Owner acknowledges and agrees that flushing infrastructure will be installed at no cost to the City, and that the Owner will be responsible for all costs associated with the consumption and disposal of water, as required, to ensure that adequate chlorine residual is maintained throughout the water system, all to the satisfaction of the General Manager, Public Works and Environmental Services	**OTTAWA Planning**
119.	**W6**	The Owner acknowledges and agrees not to apply for, nor shall the City issue, building permits for more than 50 dwelling units (or the equivalent) where the watermain for such units is not looped. Any unit serviced by an looped watermain that is not looped shall be required to have sufficient fire protection, to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development Department.	**OTTAWA Planning**
		Serviced Lands	
121.	**SL1**	The Owner shall be responsible for the provisions of the following works, including oversizing and over depth (where appropriate), at its cost, in accordance with plans approved by the General Manager, Planning, Infrastructure and Economic Development Department, and/or the Province: a. Watermains; b. Sanitary Sewers; c. Storm Sewers; d. Roads and traffic plant(s);	**OTTAWA Planning**

		e. Street Lights; f. Sidewalks; g. Landscaping; h. Street name, municipal numbering, and traffic signs; i. Stormwater management facilities; and j. Grade Control and Drainage.	
122.	**SL2**	The Owner shall not commence construction of any Works or cause or permit the commencement of any Works until the City issues a Commence Work Notification, and only then in accordance with the conditions contained therein.	**OTTAWA Planning**
123.	**SL4**	The Owner shall not be entitled to a building permit, early servicing, or commencement of work construction until they can demonstrate that there is adequate road, sanitary, storm, and watermain capacity and any Environmental Compliance Approvals (ECA) necessary are approved. All are to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development Department.	**OTTAWA Planning**
124.		The Owner acknowledges and agrees to service each residential development lot within the subdivision to the property line to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development.	**OTTAWA Planning**
125.		The Owner acknowledges and agrees that the plan will be registered in phases. Phase 1 contains Street No. 10 connecting to Aquaview Drive. All other phases are situated between Provence Avenue and Trim Road. Street No. 1 will be constructed with sewers and watermain with the servicing of Phase 2 of this development for watermain redundancy and to provide construction access. Such works shall be to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development.	**OTTAWA Planning**
126.		**Existing Well(s) Monitoring** (a) The Owner acknowledges and agrees to submit to the City prior to commencement of on-site works of the Phase 2 and 4 of this subdivision a hydrogeology risk brief, completed and reviewed by a qualified hydrogeologist. The Owner agrees that the brief shall assess the risk to the groundwater on adjacent lands that may result from the migration of contaminated materials and from the lowering of the piezometric surface of the groundwater. The brief shall be to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development Department.	**OTTAWA Planning**

		(b) If permission is granted, the Owner further acknowledges and agrees to sample and test the existing wells of 2072, 2088 and 2170 Trim Road and any other wells on abutting properties. (c) The Owner further agrees to supply potable water to any residence described in paragraph 9(b) equivalent in quantity and quality in the event that it has been determined that the groundwater supply has been negatively disturbed by the development of the subdivision. (d) The Owner shall provide a temporary water supply immediately following a validated complaint from a resident described in paragraph 9(b) if directed by the City. The Owner shall retain a professional hydrogeologist to investigate the cause of the problem and shall submit a report to the City for review. Should the General Manager, Planning, Infrastructure and Economic Development Department, determine that the cause of the problem is the subdivision, the Owner shall provide the residence with a new water supply, consisting of either: i. a new well, complete with a pump, pipe and all appurtenances required to provide potable water to the house, including the abandonment of the existing well; ii. if possible, connection to municipal water, including all associate cost to bring the service to the house. The temporary water supply shall remain in place until the permanent water supply has been provided or the City has determined that the Owner is not responsible. (e) The Owner acknowledges and agrees that the City shall retain or hold back securities in the amount of 100% of the value of construction of the three wells, to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development Department. The securities shall be released and the Owner relieved of the obligations in paragraph (c) and (d) upon final acceptance of the subdivision works.	
127.		**<u>Future development</u>** The Owner further acknowledges and agrees 2072, 2088 and 2170 Trim Road and the lot described as Part of Part 1 on Plan 50R5323 (Part Lot 2, Concession 9) on Trim Road will be serviced internally to the subdivision and not Trim Road if acquired by the Owner for development.	**OTTAWA Planning**

128.		**Approvals** The Owner acknowledges and agrees that if temporary dewatering is required in excess of 50,000 litres per day on site for approved works that they shall apply to the MECP for a permit to take water. Furthermore, all cost shall be borne by the Owner.	**OTTAWA Planning**
		Utilities	
129.	**U1**	The Owner is hereby advised that prior to commencing any work within the subdivision, the Owner must confirm that sufficient wire-line communication /telecommunication infrastructure is currently available to the proposed development to provide communication/telecommunication service to the proposed development. In the event that such infrastructure is not available, the Owner is hereby advised that the Owner shall ensure, at no cost to the City, the connection to and/or extension of the existing communication / telecommunication infrastructure. The Owner shall be required to demonstrate to the municipality that sufficient communication /telecommunication infrastructure facilities are available within the proposed development to enable, at a minimum, the effective delivery of communication /telecommunication for emergency management services (i.e. 911 Emergency Services).	**OTTAWA Planning**
130.		The Owner acknowledges and agrees that Canada Post will provide mail delivery service to the subdivision through centralized Community Mail Boxes (CMB's). The CMB's location will be determined at the time of the preliminary Composite Utility Plan. If the development includes plans for (a) multi-unit building(s) with a common indoor entrance, the Owner must supply, install and maintain the mail delivery equipment with parcels compartments within these buildings to Canada Post's specifications (Lock Box Assembly's).	**Canada Post**
131.		**Hydro One** The Owner acknowledges and agrees that Hydro One has infrastructure in the area around the Phase 1 proposed development at Portobello Boulevard and Aquaview Drive. However, there is limited servicing capacity for Phases 2 to 5 between Provence Avenue and Trim Road. Hydro One infrastructure was not installed along Provence Avenue at the time it was extended north/south, west of this plan of subdivision. This major Hydro link is required to be completed by the Owner for those connections to service these lands. The Owner agrees to contact Hydro One to begin the infrastructure design at subdivision@hydroone.com	**Hydro One**

132.	**H8**	The Owner shall ensure that any landscaping or surface finishing does not encroach into existing or proposed Hydro One's overhead or underground assets or easement. When proposing to place plantings in proximity of existing power lines, the Owner shall refer to Hydro One's guidelines "Planting Under or Around Powerlines & Electrical Equipment". The shrub or tree location and expected growth must be considered. If any Hydro One related activity requires the trimming, cutting or removal of vegetation, or removal of other landscaping or surface finishing, the activity and the re-instatement shall be at the Owner's expense.	**Hydro One**
133.	**H9**	The Owner is advised that there are high voltage overhead lines along the Trim Road side of the property. The Owner shall ensure that the minimum building setback from the Trim Road property limit will be 4.8 metres on Lot 265, Blocks 309 and 310 in accordance with Electrical Safety Authority (ESA) and Hydro One regulations.	**Hydro One**
134.	**H10**	The Owner acknowledges and agrees that prior to commencing Works identified within the Draft Plan; it shall confirm the proposed development is sufficiently serviced by all necessary utilities. The Owner further agrees to comply with all relevant and existing utility Conditions of Service, construction processes and guidelines. The Owner further agrees it shall be responsible for engaging the providers of any necessary utilities to determine servicing for the proposed development and that it shall be responsible for all costs relating to the relocation, placement and/or upgrade of existing or future utility infrastructure for the proposed development. The Owner shall be required to demonstrate to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development that sufficient utility servicing and infrastructure exist to service the proposed development and that communication / telecommunication infrastructure facilities are available, at a minimum, for the delivery of emergency management services. The Owner acknowledges and agrees to convey, at their cost, any easements as may be required by the necessary utilities and agrees to abide by all conditions of the City's inhibiting order. The Owner further acknowledges and agrees that such easements shall not be granted on any lands being conveyed to the City, or those proposed to be conveyed to the City. Should any lands owned or proposed to be owned by the City be encumbered as a result of these conditions, the Owner shall bear the sole responsibility and costs associated with correcting such actions, including but not limited to the conveyance of additional lands, the relocation of any such easements or infrastructure as may be deemed appropriate by the General Manager, Planning, Infrastructure and Economic Development Department.	**Utilities**

135.		The Owner acknowledges and agrees that it will grant to Bell Canada any easements that may be required, which may include a blanket easement, for communication/telecommunication infrastructure. In the event of any conflict with existing Bell Canada facilities or easements, the Owner shall be responsible for the relocation of such facilities or easements.	**Bell**
136.		That the Owner shall transfer such new easements and maintenance agreements as are deemed necessary by Rogers Communications Canada Inc. to service this subdivision, to our satisfaction and that of the appropriate authority and at no cost to us. The owner is also to ensure that these easement documents are registered on title immediately following registration of the final plan, and the affected agencies duly notified.	**Rogers**
137.		That the Owner be required, in the Subdivision Agreement, to coordinate the preparation of an overall utility distribution plan. This plan would be showing the locations (shared or otherwise) and the installation timing and phasing of all required utilities (on-ground, below ground) through liaison with the appropriate electrical, gas, water, telephone and cablevision authority. Such location plan being to the satisfaction of all affected authorities.	**Rogers**
138.		That the Owner agrees with Rogers Communications Canada Inc. to arrange for and pay the cost of the relocation of any existing services which is made necessary because of this subdivision, to the satisfaction of the authority having jurisdiction.	**Rogers**
139.		The Owner acknowledges and agrees that any relocation of existing Enbridge Gas Distribution infrastructure as a result of changes in the alignment or grade of future road allowances or for temporary gas pipe installations pertaining to phase construction, will be at their cost.	**Enbridge**
140.		The Owner acknowledges and agrees to provide Enbridge Gas Distribution any easement(s) required to service this development and any future adjacent developments. The Owner will provide such easements at no cost to Enbridge Gas Distribution. The inhibiting order will not be lifted until such time as the Owner has met all of Enbridge Gas Distribution's requirements.	**Enbridge**
141.		The Owner agrees to contact Enbridge Gas Distribution for service and meter installation details and to ensure all gas piping is installed prior to the commencement of site landscaping (including, but not limited to, tree planting, silva cells, and/or soil trenches) and/or asphalt paving.	**Enbridge**

142.		The Owner agrees that in the event that a pressure reducing regulator is required, they shall provide a 3 metre by 3 metre exclusive use location that cannot project into the municipal road allowance. The final size and location of the regulator station will be confirmed by Enbridge Gas Distribution.	**Enbridge**
143.		The Owner acknowledges and agrees to grade all road allowances to as close to final elevation as possible, provide necessary field survey information and all approved municipal road cross sections, identifying all utility locations prior to the installation of the gas piping.	**Enbridge**
		Fire Services	
144.	**FUS1**	The Owner acknowledges and agrees that if two-hour firewalls, active fire protection measures such as sprinkler systems, and/or minimum building separations are required to comply with the FUS calculation as per the City Design Guidelines for water distribution systems, the Owner shall note any such requirements on the grading plan. The Owner shall, prior to registration, provide certified plans demonstrating the locations of such oversized services and/or oversized plumbing to compensate for low peak hour pressures in the local water distribution system. All are to the satisfaction of the General Manager of Planning, Infrastructure and Economic Development Department.	**OTTAWA Planning**
145.	**FUS2**	The Owner acknowledges and agrees that measures which include, but are not limited to, active fire protection measures such as sprinkler systems, two-hour firewalls that compartmentalize the structure into separate fire areas, and oversized services and/or oversized plumbing shall require the posting of securities to guarantee their installation, prior to registration. The securities will be released upon receiving a letter signed and sealed by a Professional Engineer licensed in the Province of Ontario certifying that construction was carried out in accordance with the approved drawing(s)/plan(s). All are to the satisfaction of the General Manager of Planning, Infrastructure and Economic Development Department.	**OTTAWA Planning**
146.	**FUS3**	The Owner shall insert a clause in each agreement of purchase and sale and Deed for lands wherein the dwelling contains, or intends to contain, a sprinkler system as follows: “Purchasers are advised that they must maintain the sprinkler system in working order to the satisfaction of the City’s Fire Department. The Purchaser agrees to include this clause in any future purchase and sale agreements.”	**OTTAWA Planning**

147.	**FUS4**	The Owner acknowledges and agrees that it shall, in the case of insufficient fire flow availability or excessive water age and loss of water disinfectant residual, provide active fire protection options such as sprinkler systems, two-hour firewalls or fire breaks that compartmentalize the structures into separate fire areas, as may be required, to limit the sizing of crescent, dead-end, and other distribution mains to a nominal size of no more that 200mm. All are to be determined by and to the satisfaction of the General Manager of Planning, Infrastructure and Economic Development Department.	**OTTAWA Planning**
		Noise Attenuation	
148.	**N1**	The Owner shall have a Noise Study undertaken related to noise assessment and land use planning with respect to noises generated by moving and stationary sources prepared by a Professional Engineer, licensed in the province of Ontario to the satisfaction and approval of the General Manager, Planning, Infrastructure and Economic Development Department. The Study shall comply with: i. the City of Ottawa's Environmental Noise Control Guidelines, as amended; and ii. address, and be in accordance with, the current version of the Association of Professional Engineers of Ontario Guidelines for Professional Engineers providing Acoustical Engineering Services in Land Use Planning. The study shall provide all specific details on the methods and measures required to attenuate any noise that exceeds the allowable noise limits in locations as determined by the recommendations of the Noise Assessment Study.	**OTTAWA Planning**
149.	**N2**	Where structural mitigation measures are required as a result of the Noise Assessment Study, the Owner shall provide, prior to final building inspection, certification to the General Manager, Planning, Infrastructure and Economic Development Department, through a Professional Engineer, that the noise control measures have been implemented in accordance with the approved study.	**OTTAWA Planning**
151.	**N4**	The Owner agrees that all purchase and sale agreements, and the Deed(s) for the whole or any part of the lot/block on the Plan of Subdivision deemed to be affected by noise shall contain the following clauses that shall be incorporated in all Transfers/Deeds from the Owner so that the clauses shall be covenants running with the lands in the Subdivision and registered separately against the title:	**OTTAWA Planning Legal**

		"Purchasers/tenants are advised that sound levels due to increasing road traffic may occasionally interfere with some outdoor activities as the sound levels may exceed the sound level limits of the City of Ottawa. To help address the need for sound attenuation this development has been designed so as to provide an outdoor amenity area and indoor environment that is within City of Ottawa guidelines. The measures for sound attenuation utilized an acoustic barrier to be owned and maintained by the private homeowner."	
		Land Transfers	
152.	**LT1**	The Owner shall convey, at no cost to the City, all lands required for public purposes, including but not limited to, reserves, road widenings, daylighting triangles, walkway blocks, open space blocks, and lands required for parks (or cash-in-lieu thereof), transit and for stormwater management. In particular, the Owner agrees to convey the following lands: i. Pathway, Walkway or Servicing Blocks – Blocks 317, 318 and 319 ii. Open Space Blocks – n/a iii. Watercourses (buffer strips/riparian corridors) – n/a iv. Park Blocks – Block 313 v. Storm Water Management Blocks – n/a vi. Road Widening Blocks – Trim Road (if required) vii. 0.3 m Reserve Blocks – to be shown on 4M-Plan viii. Daylighting Triangles – Streets 1 to 10 ix. Transit Corridors – Blocks 315 and 316 x. Trim Road future transitway grade separation – Block 320 xi. Wetlands – n/a	**OTTAWA Planning Legal**
153.	**LT2**	The Owner agrees to convey, at no cost to the City, any easements that may be required for the provision of water and wastewater systems, in addition to underground or overland stormwater drainage systems.	**OTTAWA Planning Legal**
		Blasting	
154.	**B1**	The Owner agree that all blasting activities will conform to the City of Ottawa's standard S.P. No: F-1201 Use of Explosives. Prior to any blasting activities, a pre-blast survey shall be prepared as per F-1201, at the Owner expense for all buildings, utilities, structures, water wells, and facilities likely to be affected by the blast and those within 75 m of the location where explosives are to be used. The standard inspection procedure shall include the provision of an explanatory letter to the owner or occupant and owner with a formal request for permission to carry out an inspection.	**OTTAWA Planning**

		The Owner agree to provide a Notification Letter in compliance with City specification F-1201. Specification indicates that a minimum of 15 Business days prior to blasting the Contractor shall provide written notice to all owner(s) and tenants of buildings or facilities within a minimum of 150m of the blasting location. The Owner agrees to submit a copy of the Notification Letter to the City.	
		Street Townhouses	
155.		The Owner acknowledges and agrees to install at its expense, between all townhouse blocks, a barrier in the form of a 1.8 meter high wood privacy fence.	**OTTAWA Planning**
156.		The Owner acknowledges and agrees to install at its expense, between townhouse units within a block, a barrier in the form of a 1.8 meter high wood privacy fence for a distance of 3.0m from the rear wall of the unit.	**OTTAWA Planning**
157.		The Owner acknowledges and agrees to install, at its expense, where the side of an end unit of a townhouse abuts a street, a barrier in the form of a 1.8 meter high wood privacy fence from the rear property line extending along the side lot line and wrapped around to the front wall of the house.	**OTTAWA Planning**
158.		The Owner acknowledges and agrees that double fencing will not be permitted on the whole or any part of townhouse blocks inclusive within this development. Double fencing is defined as providing fencing on both sides of an access right-of-way which has the effect of providing a walkway between two fences. The Owner covenants and agrees that it will advise all prospective lot purchasers in the agreement of purchase and sale and all Transfers/Deeds of this requirement.	**OTTAWA Planning**
159.		The Owner acknowledges and agrees that prior to the issuance of a building permit for all townhouse blocks on the Plan, the Owner shall ensure that the noise wall design will not obstruct the access to the rear yards for the units adjacent to Trim Road, Provence Avenue, Aquaview Drive, Portobello Boulevard and Street No. 1, all to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development.	**OTTAWA Planning**
160.		The Owner covenants and agrees that it shall provide at the time of on-street townhouse lot creation (part lot control or severance), an unobstructed rear yard access easement having a minimum width of 1.2 metres for all interior on-street townhouse lots (multiple and attached dwellings). This easement shall have regard for and be set back from either the chain link fence, noise attenuation fence or berm whichever is applicable. The creation of this access easement shall be to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development.	**OTTAWA Planning**

		Development Charges By-law	
161.	**DC1**	The Owner acknowledges that some of the works of the Subdivision are eligible for development charges revenues pursuant to the City's applicable Development Charges By-law and background study, as well as budget approval by City Council where required. Such contributions are to be determined and agreed to by the City, prior to the commencement of the associated Works or as agreed to by the City. The Owner agrees to enter into any agreements that may be required pursuant to the applicable Development Charges By-law.	**OTTAWA Planning Legal**
162.	**DC2**	The Owner shall inform the purchaser after registration of each lot or block of the development charges that have been paid or which are still applicable to the lot or block. The applicable development charges shall be as stated as of the time of the conveyance of the relevant lot or block and the statement shall be provided at the time of the conveyance. The statement of the Owner of the applicable development charges shall also contain the statement that the development charges are subject to changes in accordance with the *Development Charges Act, 1997* and the *Education Development Charges Act.*	**OTTAWA Planning Legal**
163.	**DC4**	The Owner acknowledges that for building permits issued after January 15, 2010, payment of non-residential development charges, excluding development charges for institutional developments, may be calculated in two installments at the option of the Owner, such option to be exercised by the Owner at the time of the application for the building permit. The non-discounted portion of the development charge shall be paid at the time of issuance of the building permit and the discounted portion of the development charge shall be payable a maximum of two years from the date of issuance of the initial building permit subject to the following conditions: a) a written acknowledgement from the Owner of the obligation to pay the discounted portion of the development charges; b) no reduction in the Letter of Credit below the amount of the outstanding discounted development charges; and c) indexing of the development charges in accordance with the provisions of the Development Charges By-law. The Owner further acknowledges that Council may terminate the eligibility for this two-stage payment at any time without notice, including for the lands subject to this agreement and including for a building permit for which an application has been filed but not yet issued.	**OTTAWA Planning Legal**

		For the purposes of this provision, “discounted portion” means the costs of eligible services, except fire, police and engineered services that are subject to 90% cost recovery of growth-related net capital costs for purposes of funding from development charges. The 10% discounted portion, for applicable services, must be financed from non-development charge revenue sources. “Non-discounted portion” means the costs of eligible services, fire, police and engineered services, that are subject to 100% cost recovery of growth-related net capital costs for purposes of funding from development charges.	
164.		The Owner acknowledges and agrees to pay all applicable development charges and stormwater charges, including but not limited to Provence Avenue, Millenium Park, Cardinal Creek charges, for their development upon the issuance of all building permits.	**OTTAWA Planning**
166.		The Owner agrees to pay the City a $170.00 per dwelling unit benefiting area charge for the Rock Knoll Area land purchase. The Owner agrees to include a clause in all agreements of purchase and sale for the subdivision lands which notifies that the $170.00 per dwelling unit Rock Knoll Area purchase charge is payable at the time of registration of each phase.The total amount owing for this subdivision at full development is estimated at $90,950.00 based on the development of 535 units (535 units x $170.00/unit). This amount will be adjusted at the time of registration based on the final number of units. The Owner acknowledges and agrees that the above area charge will be held as securities, in the form of a Letter of Credit or Cash, until such time as the Owner dedicates a minimum 2.02 hectare parcel of Rock Knoll (Nantes Woods) as parkland dedication through future draft plan of subdivision on the property municipally known as 2065 Portobello Blvd (PIN #145640003). The size and configuration of the Rock Knoll park block on the final plan shall be to the satisfaction of the General Manager, Recreation, Cultural and Facility Services Department.	**OTTAWA Planning**
		Survey Requirements	
167.	**Surv1**	The Owner shall provide the final plan intended for registration in a digital format that is compatible with the City’s computerized system.	**OTTAWA Planning**
168.	**Surv2**	The Plan of Subdivision shall be referenced to the Horizontal Control Network in accordance with the City requirements and guidelines for referencing legal surveys.	**OTTAWA Surveys**

169.	**Surv3**	The distance from the travelled Centreline of all existing adjacent roads to the subdivision boundary should be set out in the Plan of Subdivision.	**OTTAWA Surveys**
		Closing Conditions	
170.	**C1**	The City Subdivision Agreement shall state that the conditions run with the land and are binding on the Owner's, heirs, successors and assigns.	**OTTAWA Legal**
171.	**C2**	At any time prior to final approval of this plan for registration, the City may, in accordance with Section 51 (44) of the *Planning Act*, amend, delete or add to the conditions and this may include the need for amended or new studies.	**OTTAWA Legal**
172.	**C3**	The owner shall pay any outstanding taxes owing to the City of Ottawa prior to registration.	**OTTAWA Planning Revenue**
173.	**C4**	Prior to registration of the Plan of Subdivision, the City is to be satisfied that conditions 1 to 172 have been fulfilled.	**OTTAWA Planning**
174.	**C5**	The Owner covenants and agrees that should damage be caused to any of the Works in this Subdivision by any action or lack of any action whatsoever on its part, the General Manager, Planning, Infrastructure and Economic Development Department may serve notice to the Owner to have the damage repaired and if such notification is without effect for a period of two full days after such notice, the General Manager, Planning, Infrastructure and Economic Development Department may cause the damage to be repaired and shall recover the costs of the repair plus the Management Fees under Section 427, of the *Municipal Act*, *2001*, like manner as municipal taxes.	**OTTAWA Planning**
175.	**C6**	If the Plan(s) of Subdivision, including all phases within the draft approved plan of subdivision, has not been registered by 5 July 2022, the draft approval shall lapse pursuant to Section 51 (32) of the *Planning Act*. Extensions may only be granted under the provisions of Section 51 (33) of said *Planning Act* prior to the lapsing date.	**OTTAWA Planning**

[i] For Clearing Agencies:
"Planning" refers to Planning Services.
"LG" refers to applicable landowners group, such as Kanata North (KNLG), Kanata West (KWLG), Fernbank (FLG), East Urban (EULG), Manotick SDA (MLG), and Barrhaven South (BSLG).
"CA" refers to applicable conservation authorities, including RVCA, MVCA, and SNCA.
"Legal" refers to Legal Services.
"Parks" refers to Parks and Facilities Planning Services.
"BCS" refers to Building Code Services.
"Transit" refers to Transit Planning.

"Transpo Plg" refers to Transportation Planning.
"Forestry" refers to Forest Management.
"MTCS" refers to the Ministry of Tourism, Culture and Sport.
"Revenue" refers to Revenue Services.
"Surveys" refers to Surveys & Mapping/City Surveyor.

Appendix B

Development Servicing Study Checklist

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Development Servicing Study Checklist

4.1 General Content	Addressed (Y/N/NA)	Section	Comments
Executive Summary (for larger reports only).	N		
Date and revision number of the report.	Y	N/A	Site Servicing and Stormwater Management Design Brief (Design Brief) - Cover Page
Location map and plan showing municipal address, boundary, and layout of proposed development.	Y	1.2	Design Brief - Figure 1
Plan showing the site and location of all existing services.	Y	1.2 Appendix G	Design Brief - Figure 2 Engineering Drawings
Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.	Y	N/A	Information included as part of the Zoning Application.
Summary of Pre-consultation Meetings with City and other approval agencies.	Y	N/A	Design Brief follows report approved as part of the Draft Approval and is consistent with the approved detailed design for Phases 2 & 3 and Phases 4A & 4B.
Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.	Y	1.5	The Design Brief generally conforms with all previously approved reports and design criteria. All relative reports are referenced.
Statement of objectives and servicing criteria.	Y	1.1, 2.1, 3.1, 4.2, 5.1	Objectives and servicing criteria stated in each section of the Design Brief
Identification of existing and proposed infrastructure available in the immediate area.	Y	1.2 Appendix G	Design Brief - Figure 2 Engineering Drawings
Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).	N/A	N/A	There are none
Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighboring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.	Y	Figure 6 Appendix G	Overland Flow Route and Macro Grading Engineering Drawings
Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.	N/A		All adjacent properties are serviced by municipal services which are not anticipated to be impacted by this development.
Proposed phasing of the development, if applicable.	Y	Appendix G	Engineering Drawings - Layout Plan (117155-LP5A)
Reference to geotechnical studies and recommendations concerning servicing.	Y	1.6	
All preliminary and formal site plan submissions should have the following information:		Appendix G	Engineering Drawings
Metric scale	Y		
North arrow (including construction North)	Y		
Key plan	Y		

Development Servicing Study Checklist

Name and contact information of applicant and property owner	Y		
Property limits including bearings and dimensions	Y		
Existing and proposed structures and parking areas	Y		
Easements, road widening and rights-of-way	Y		
Adjacent street names	Y		

4.2 Water	**Addressed (Y/N/NA)**	**Section**	**Comments**
Confirm consistency with Master Servicing Study, if available.	Y	Appendix C	
Availability of public infrastructure to service proposed development.	Y	2	
Identification of system constraints.	Y	2	
Identify boundary conditions.	Y	2, Appendix C	
Confirmation of adequate domestic supply and pressure.	Y	2	
Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.	Y	2, Appendix C	
Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.	Y	2, Appendix C	All operating pressures remain below the requirement for pressure reducing valves.
Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design.	Y	2	
Address reliability requirements such as appropriate location of shut-off valves.	Y	2, Appendix G	Engineering Drawings - General Plan of Services (117155-GP5A)
Check on the necessity of a pressure zone boundary modification.	N/A		
Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range.	Y	2	
Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.	Y	2 Appendix G	Figure 5 Engineering Drawings - General Plan of Services (117155-GP5A)
Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.	N/A		
Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Y	2	
Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	Y	2 Appendix C	Figure 5

Development Servicing Study Checklist

4.3 Wastewater	Addressed (Y/N/NA)	Section	Comments
Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).	Y	3	
Confirm consistency with Master Servicing Study and/or justifications for deviations.	Y	3	
Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.	N/A		
Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Y	3	
Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable).	Y	1.5, 3	See the Master Servicing Study, Gloucester and Cumberland East Urban Community Expansion Area and Bilberry Creek Industrial Park Master Servicing Update, prepared by Stantec (2013)
Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	Y	3 Appendix D	Design Sheet
Description of proposed sewer network including sewers, pumping stations, and forcemains.	Y	3 Appendix G	Engineering Drawings - General Plan of Services (117155-GP5A)
Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).	N/A		
Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	N/A		
Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	N/A		
Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	N/A		
Special considerations such as contamination, corrosive environment etc.	N/A		

Development Servicing Study Checklist

4.4 Stormwater	Addressed (Y/N/NA)	Section	Comments
Description of drainage outlets and downstream constraints including legality of outlet (i.e. municipal drain, right-of-way, watercourse, or private property).	Y	1, 4	
Analysis of the available capacity in existing public infrastructure.	Y	4	
A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns and proposed drainage patterns.	Y	Appendix G	Engineering Drawings
Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.	Y	5	
Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Y	5	
Description of stormwater management concept with facility locations and descriptions with references and supporting information.	Y	5	
Set-back from private sewage disposal systems.	N/A		
Watercourse and hazard lands setbacks.	N/A		
Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	N		Pre-consultation as part of Draft Approval
Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	Y	1.5, 5	
Storage requirements (complete with calcs) and conveyance capacity for 5 yr and 100 yr events.	Y	5	
Identification of watercourse within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	Y	4.1	
Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.	Y	5	Site Servicing and Stormwater Management Design Brief - Appendix F
Any proposed diversion of drainage catchment areas from one outlet to another.	Y	5.1	
Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and SWM facilities.	Y	5 Appendix G	
If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.	N/A		

Development Servicing Study Checklist

4.5 Approval and Permit Requirements	Addressed (Y/N/NA)	Section	Comments
Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.	N/A		
Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.	Y	1.1	An application for a ECA will be submitted
Changes to Municipal Drains.	N/A		No changes to a municipal drain
Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)	N/A		

4.6 Conclusion	Addressed (Y/N/NA)	Section	Comments
Clearly stated conclusions and recommendations.	Y	9	
Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.	N/A		
All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario.	Y	9	

Appendix C

Watermain Design

Provence Orleans Subdivision Phase 5A
Watermain Demand Calculations

Phase	Node		Units		Pop.	Demand (L/s)		
	No.	Elev (m)	Single	Town / Semis		High Pres.	Max Daily	Peak Hour
Phase 2	110	88.8	0	0	0	0.00	0.00	0.00
	111	88.9	14	0	48	0.19	0.49	1.07
	112	89.0	11	0	38	0.15	0.38	0.85
	113	88.9	0	4	11	0.04	0.11	0.25
	114	89.0	0	17	46	0.19	0.47	1.02
	115	89.1	6	0	21	0.09	0.21	0.47
	116	89.2	6	0	21	0.09	0.21	0.47
	117	89.1	0	0	0	0.00	0.00	0.00
	118	88.9	5	0	17	0.07	0.17	0.38
	119	89.0	0	39	106	0.43	1.07	2.36
					Phase 2	**1.25**	**3.12**	**6.86**
Phase 3	101	89.9	8	0	28	0.11	0.28	0.62
	102	89.5	0	19	52	0.21	0.53	1.16
	103	89.2	2	4	18	0.07	0.18	0.40
	104	89.1	20	0	68	0.28	0.69	1.52
	105	89.0	5	0	17	0.07	0.17	0.38
	106	89.1	8	0	28	0.11	0.28	0.62
	107	89.2	7	8	46	0.19	0.47	1.02
	108	89.3	18	0	62	0.25	0.63	1.38
	109	89.2	0	0	0	0.00	0.00	0.00
					Phase 3	**1.29**	**3.23**	**7.11**

NOVATECH
Engineers, Planners & Landscape Architects

PROVENCE ORLEANS
HYDRAULIC ANALYSIS

Job No. 117155

Provence Orleans Subdivision Phase 5A
Watermain Demand Calculations

Phase	Node		Units		Pop.	Demand (L/s)		
	No.	Elev (m)	Single	Town / Semis		High Pres.	Max Daily	Peak Hour
Phase 4	201	89.1	5	6	34	0.14	0.34	0.76
	202	89.4	0	6	17	0.07	0.17	0.38
	203	89.1	6	6	37	0.15	0.37	0.82
	204	89.2	14	0	48	0.19	0.49	1.07
	205	88.9	12	0	41	0.17	0.42	0.91
	206	89.1	5	0	17	0.07	0.17	0.38
	207	89.0	12	0	41	0.17	0.42	0.91
	208	89.2	9	0	31	0.13	0.31	0.69
	209	89.3	1	0	4	0.02	0.04	0.09
	210	89.0	10	0	34	0.14	0.34	0.76
	211	89.4	0	0	0	0.00	0.00	0.00
	212	89.4	0	18	49	0.20	0.50	1.09
	213	89.2	0	12	33	0.13	0.33	0.74
	214	89.2	0	5	14	0.06	0.14	0.31
					Phase 4	**1.62**	**4.05**	**8.91**
Salzburg Drive	21	88.1	0	30	81	0.33	0.82	1.80
	22	88.2	0	21	57	0.23	0.58	1.27
					Salzburg	**0.56**	**1.40**	**3.07**
Proposed Phase 5A	500			16	44	0.18	0.45	0.99
	501		1	6	20	0.08	0.20	0.45
	502		12		41	0.17	0.42	0.91
	503		2		7	0.03	0.07	0.16
	504		5		17	0.07	0.17	0.38
					Phase 5A	**0.53**	**1.31**	**2.89**
Future Phase 5B	505		27	6	108	0.44	1.09	2.41
	506			8	22	0.09	0.22	0.49
	507		31	6	122	0.49	1.24	2.72
					Future Phase 5B	**1.02**	**2.55**	**5.61**

1. Population density: 3.4 people/single, 2.7 people/town, & 1.8 people/apartment
2. High Pressure demand = 350L/s/p/d
3. Maximum Daily demand = 2.5 x High Pressure Demand
4. Peak Hour Demand = 2.2 x Maximum Daily Demand
5. Existing watermain
6. Future Watermain

Prepared By:
NOVATECH
Date: July 23, 2024

Provence Orleans Subdivision Phase 5A
High Pressure Condition

Phase	Node		Demand	Head	Pressure		Age
	No.	Elev (m)	(LPS)	(m)	(m)	(psi)	(hrs)
Phase 5A	500	89.6	0.18	130.2	40.6	58.0	5.1
	501	89.6	0.08	130.2	40.7	58.1	6.4
	502	89.2	0.17	130.2	41.0	58.6	7.4
	503	89.5	0.03	130.2	40.8	58.2	8.7
	504	89.1	0.07	130.2	41.1	58.7	9.6
Boundary Conditions	R1	-	-	130.2	-	-	-
	R2	-	-	130.2	-	-	-
	R3	-	-	130.2	-	-	-

NOVATECH
Engineers, Planners & Landscape Architects

PROVENCE ORLEANS PHASE 5A
Project Number 117155

Prepared By:
NOVATECH
Created:
July 23, 2024

Provence Orleans Subdivision Phase 5A
Max Daily Demand & Fire Flow at Node 500

Phase	Node		Demand	Head	Pressure	
	No.	Elev (m)	(LPS)	(m)	(m)	(psi)
Phase 2/3	109	89.4	25.00	124.4	35.0	50.0
Phase 5A	500	89.6	95.45	122.6	33.0	47.1
	501	89.6	0.20	122.5	33.0	47.1
	502	89.2	63.72	122.5	33.3	47.6
	503	89.5	0.07	122.7	33.3	47.5
	504	89.1	0.17	123.4	34.3	49.0
Boundary Conditions	R1	-	-	125.4	-	-
	R2	-	-	125.9	-	-
	R3	-	-	126.2	-	-

Provence Orleans Subdivision Phase 5A
Max Daily Demand & Fire Flow at Node 502

Phase	Node		Demand	Head	Pressure	
	No.	Elev (m)	(LPS)	(m)	(m)	(psi)
Phase 5A	500	89.6	63.75	120.6	31.0	44.3
	501	89.6	0.20	119.8	30.2	43.2
	502	89.2	95.42	119.2	30.0	42.9
	503	89.5	0.07	119.3	29.8	42.6
	504	89.1	58.57	119.5	30.4	43.4
Boundary Conditions	R1	-	-	124.3	-	-
	R2	-	-	125.0	-	-
	R3	-	-	125.5	-	-

NOVATECH
Engineers, Planners & Landscape Architects

PROVENCE ORLEANS PHASE 5A
Project Number 117155

Prepared By:
NOVATECH
Created:
July 23, 2024

Provence Orleans Subdivision Phase 5A
Max Daily Demand & Fire Flow at Node 504

Phase	Node		Demand	Head	Pressure	
	No.	Elev (m)	(LPS)	(m)	(m)	(psi)
Phase 4B	211	89.4	71.70	121.6	32.2	45.9
Phase 5A	500	89.6	0.45	124.6	35.0	50.0
	501	89.6	0.20	123.9	34.3	49.0
	502	89.2	0.42	123.4	34.2	48.8
	503	89.5	0.07	122.9	33.5	47.8
	504	89.1	95.17	121.3	32.2	46.1
Boundary Conditions	R1	-	-	126.4	-	-
	R2	-	-	125.9	-	-
	R3	-	-	126.6	-	-

Prepared By:
NOVATECH
Created: July 23, 2024

Provence Orleans Subdivision Phase 5A
Peak Hour Condition

Phase	Node		Demand	Head	Pressure	
	No.	Elev (m)	(LPS)	(m)	(m)	(psi)
Phase 5	500	89.6	0.98	125.8	36.2	51.7
	501	89.6	0.45	125.8	36.2	51.7
	502	89.2	0.91	125.8	36.6	52.2
	503	89.5	0.16	125.8	36.3	51.9
	504	89.1	0.38	125.8	36.7	52.4
Boundary Conditions	R1	-	-	125.8	-	-
	R2	-	-	125.8	-	-
	R3	-	-	125.8	-	-

Boundary Conditions
Provence Orleans - Phase 4

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	298	4.96
Maximum Daily Demand	745	12.41
Peak Hour	1,639	27.31
Fire Flow Demand #1	10,000	166.67
Fire Flow Demand #2	13,000	216.67
Fire Flow Demand #3	16,000	266.67
Fire Flow Demand #4	18,000	300.00

Location

Results

Connection 1 – Trim Rd.

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	130.2	57.6
Peak Hour	125.8	51.3
Max Day plus Fire 1	126.4	52.1
Max Day plus Fire 2	125.0	50.2
Max Day plus Fire 3	124.1	48.8
Max Day plus Fire 4	123.3	47.7

Ground Elevation = 89.7 m

Connection 2 – Provence Ave.

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	130.2	58.9
Peak Hour	125.8	52.7
Max Day plus Fire 1	125.9	52.8
Max Day plus Fire 2	124.3	50.5
Max Day plus Fire 3	122.9	48.6
Max Day plus Fire 4	121.9	47.1

Ground Elevation = 88.8 m

Connection 3 – Trim Rd.

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	130.2	58.5
Peak Hour	125.8	52.3
Max Day plus Fire 1	126.6	53.5
Max Day plus Fire 2	125.5	51.8
Max Day plus Fire 3	124.7	50.7
Max Day plus Fire 4	124.0	49.8

Ground Elevation = 89.0 m

Disclaimer

The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 117155
Project Name: Provence Orleans Phase 5A
Date: 23/07/2024
Input By: Mark Bowen
Reviewed By: Trevor McKay, P. Eng.
Drawing Reference: 117155-GP5A

Legend: Input by User
No Input Required
Reference: Fire Underwriter's Survey Guideline (2020)
Formula Method

Building Description: Block 25 w/ less than 10m rear separation
Type V - Wood frame

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction C	Type V - Wood frame	Yes	1.5	1.5	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction		0.8		
		Type I - Fire resistive construction (2 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	577			
		Number of Floors/Storeys	2			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**1,154**	
	F	**Base fire flow without reductions**				**11,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%		
		Limited combustible	Yes	-15%	-15%	**9,350**
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		**0**
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)	2500	217%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	>30m		0%	**1,870**
		East Side	>30m		0%	
		South Side	>30m		0%	
		West Side	3.1 - 10 m		20%	
				Cumulative Total	**20%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**11,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**183**
				or	USGPM	2,906

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 117155
Project Name: Provence Orleans Phase 5A
Date: 23/07/2024
Input By: Mark Bowen
Reviewed By: Trevor McKay, P. Eng.
Drawing Reference: 117155-GP5A

Legend: Input by User
No Input Required
Reference: Fire Underwriter's Survey Guideline (2020)
Formula Method

Building Description: Lots 5-7: Singles w/ less than 10m rear separation and 2hr fire wall separating Lots 4 & 5
Type V - Wood frame

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction C	Type V - Wood frame	Yes	1.5	1.5	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction	No	0.8		
		Type I - Fire resistive construction (2 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	481			
		Number of Floors/Storeys	2			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**962**	
	F	**Base fire flow without reductions**				**10,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%		
		Limited combustible	Yes	-15%		
		Combustible		0%	-15%	**8,500**
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		**0**
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)	2500	260%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	20.1 - 30 m		10%	
		East Side	>30m		0%	
		South Side	2Hr Firewall		0%	**2,550**
		West Side	3.1 - 10 m		20%	
				Cumulative Total	**30%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**11,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**183**
				or	USGPM	2,906

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 117155
Project Name: Provence Orleans Phase 5A
Date: 23/07/2024
Input By: Mark Bowen
Reviewed By: Trevor McKay, P. Eng.
Drawing Reference: 117155-GP5A

Legend: Input by User
No Input Required
Reference: Fire Underwriter's Survey Guideline (2020)
Formula Method

Building Description: Lots 5-7: Singles w/ less than 10m rear separation and more than 3m side separation between Lots 4 & 5
Type V - Wood frame

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction **C**	Type V - Wood frame	Yes	1.5	1.5	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction	Yes	0.8		
		Type I - Fire resistive construction (2 hrs.)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	481			
		Number of Floors/Storeys	2			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**962**	
	F	**Base fire flow without reductions**				**10,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%		
		Limited combustible	Yes	-15%	-15%	**8,500**
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		**0**
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)	2500	260%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	20.1 - 30 m		10%	**4,250**
		East Side	>30m		0%	
		South Side	3.1 - 10 m		20%	
		West Side	3.1 - 10 m		20%	
				Cumulative Total	**50%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**13,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**217**
				or	USGPM	3,435

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 117155
Project Name: Provence Orleans Phase 5A
Date: 23/07/2024
Input By: Mark Bowen
Reviewed By: Trevor McKay, P. Eng.
Drawing Reference: 117155-GP5A

Legend: Input by User
No Input Required
Reference: Fire Underwriter's Survey Guideline (2020)
Formula Method

Building Description: Lots 1-4: Singles w/ less than 10m rear separation and 2hr firewall separating Lots 4 & 5
Type V - Wood frame

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction C	Type V - Wood frame	Yes	1.5	1.5	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction	No	0.8		
		Type I - Fire resistive construction (2 hrs.)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	537			
		Number of Floors/Storeys	2			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**1,074**	
	F	**Base fire flow without reductions**				**11,000**
		$F = 220\ C\ (A)^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%		
		Limited combustible	Yes	-15%		
		Combustible		0%	-15%	**9,350**
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		**0**
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)	2500	233%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	2Hr Firewall		0%	
		East Side	>30m		0%	
		South Side	>30m		0%	**1,870**
		West Side	3.1 - 10 m		20%	
				Cumulative Total	**20%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**11,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**183**
				or	USGPM	2,906

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 117155
Project Name: Provence Orleans Phase 5A
Date: 23/07/2024
Input By: Mark Bowen
Reviewed By: Trevor McKay, P. Eng.
Drawing Reference: 117155-GP5A

Legend: Input by User
No Input Required
Reference: Fire Underwriter's Survey Guideline (2020)
Formula Method

Building Description: Lots 1-4: Singles w/ less than 10m rear separation and more than 3m side separation between Lots 4 & 5
Type V - Wood frame

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction C	Type V - Wood frame	Yes	1.5	1.5	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction		0.8		
		Type I - Fire resistive construction (2 hrs.)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	537			
		Number of Floors/Storeys	2			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**1,074**	
	F	**Base fire flow without reductions**				**11,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%		
		Limited combustible	Yes	-15%	-15%	**9,350**
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		**0**
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)	2500	233%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	3.1 - 10 m		20%	**3,740**
		East Side	>30m		0%	
		South Side	>30m		0%	
		West Side	3.1 - 10 m		20%	
				Cumulative Total	**40%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**13,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**217**
				or	USGPM	3,435

Appendix D

Sanitary Sewer Design

SANITARY SEWER DESIGN SHEET
Provence Orleans Subdivision - 2128 Trim Road
Phase 5A
Developer: Provence Orleans Realty Investment Inc. c/o Regional Group of Companies

NOVATECH
Engineers, Planners & Landscape Architects

PROJECT # : 117155
DESIGNED BY : SAB/BM
CHECKED BY : TJM
DATE PREPARED : 23/07/2024

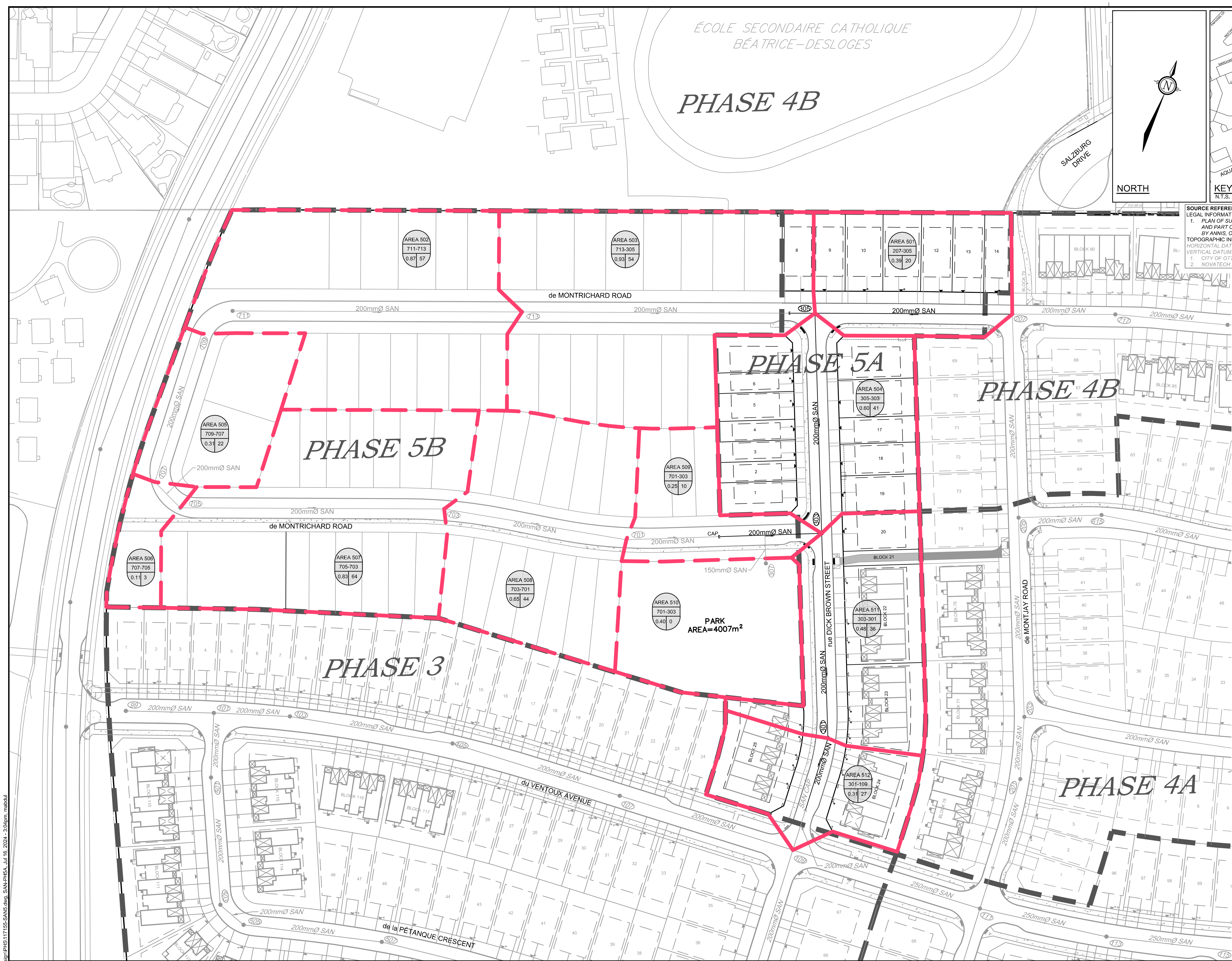
LOCATION				RESIDENTIAL						PARK			INFILTRATION			FLOW	PROPOSED SEWER							
STREET	FROM MH	TO MH	Area	Single Units	Townhouse Units	Population (in 1000's)	Accu. Population (in 1000's)	PEAK FACTOR M	POPULATION FLOW Q(p) (L/s)	AREA (ha.)	Accu. AREA (ha.)	PARK FLOW Qc(p) (L/s)	Total AREA (ha.)	Accu. Total AREA (ha.)	PEAK EXTRAN. FLOW Q(i) (L/s)	PEAK DESIGN FLOW Q(d) (L/s)	LENGTH (m)	PIPE SIZE (mm)	PIPE ID (mm)	TYPE OF PIPE	GRADE %	CAPACITY (L/s)	FULL FLOW VELOCITY (m/s)	Qpeak/ Qcap
Montrichard Rd.	207	305	501	6		0.0204	0.020	4.0	0.26	0.00	0.00	0.00	0.39	0.39	0.13	0.39	80.0	200	203.20	DR 35	1.23	37.9	1.17	1%
Montrichard Rd.	*711*	*713*	*502*	*12*	*6*	*0.0570*	*0.057*	*4.0*	*0.74*	*0.00*	*0.00*	*0.00*	*0.87*	*0.87*	*0.29*	*1.03*	*117.4*	*200*	*203.20*	*DR 35*	*0.35*	*20.2*	*0.62*	*5%*
Montrichard Rd.	*713*	*305*	*503*	*16*		*0.0544*	*0.111*	*4.0*	*1.44*	*0.00*	*0.00*	*0.00*	*0.93*	*1.80*	*0.59*	*2.04*	*118.9*	*200*	*203.20*	*DR 35*	*0.35*	*20.2*	*0.62*	*10%*
Dick Brown St.	305	303	504	12		0.0408	0.173	4.0	2.24	0.00	0.00	0.00	0.60	2.79	0.92	3.16	89.3	200	203.20	DR 35	0.35	20.2	0.62	16%
Montrichard Rd.	*709*	*707*	*505*		*8*	*0.0216*	*0.022*	*4.0*	*0.28*	*0.00*	*0.00*	*0.00*	*0.31*	*0.31*	*0.10*	*0.38*	*63.1*	*200*	*203.20*	*DR 35*	*0.65*	*27.6*	*0.85*	*1%*
Montrichard Rd.	*707*	*705*	*506*	*1*		*0.0034*	*0.025*	*4.0*	*0.32*	*0.00*	*0.00*	*0.00*	*0.11*	*0.42*	*0.14*	*0.46*	*14.7*	*200*	*203.20*	*DR 35*	*0.40*	*21.6*	*0.67*	*2%*
Montrichard Rd.	*705*	*703*	*507*	*14*	*6*	*0.0638*	*0.089*	*4.0*	*1.15*	*0.00*	*0.00*	*0.00*	*0.83*	*1.25*	*0.41*	*1.56*	*107.0*	*200*	*203.20*	*DR 35*	*0.35*	*20.2*	*0.62*	*8%*
Montrichard Rd.	*703*	*701*	*508*	*13*		*0.0442*	*0.133*	*4.0*	*1.72*	*0.00*	*0.00*	*0.00*	*0.65*	*1.90*	*0.63*	*2.35*	*75.0*	*200*	*203.20*	*DR 35*	*0.35*	*20.2*	*0.62*	*12%*
Montrichard Rd.	*701*	*303*	*509*	*3*		*0.0102*	*0.143*	*4.0*	*1.86*	*0.00*	*0.00*	*0.00*	*0.25*	*2.15*	*0.71*	*2.71*	*79.2*	*200*	*203.20*	*DR 35*	*0.35*	*20.2*	*0.62*	*13%*
			510			*0.0000*	*0.143*	*4.0*	*1.86*	*0.40*	*0.40*	*0.02*	*0.40*	*2.55*	*0.84*									
Dick Brown St.	303	301	511	1	12	0.0358	0.352	4.0	4.56	0.00	0.40	0.02	0.48	5.82	1.92	6.50	83.1	200	203.20	DR 35	0.35	20.2	0.62	32%
Dick Brown St.	301	109	512		10	0.0270	0.379	4.0	4.91	0.00	0.40	0.02	0.31	6.13	2.02	6.95	30.5	200	203.20	DR 35	0.33	19.7	0.61	35%

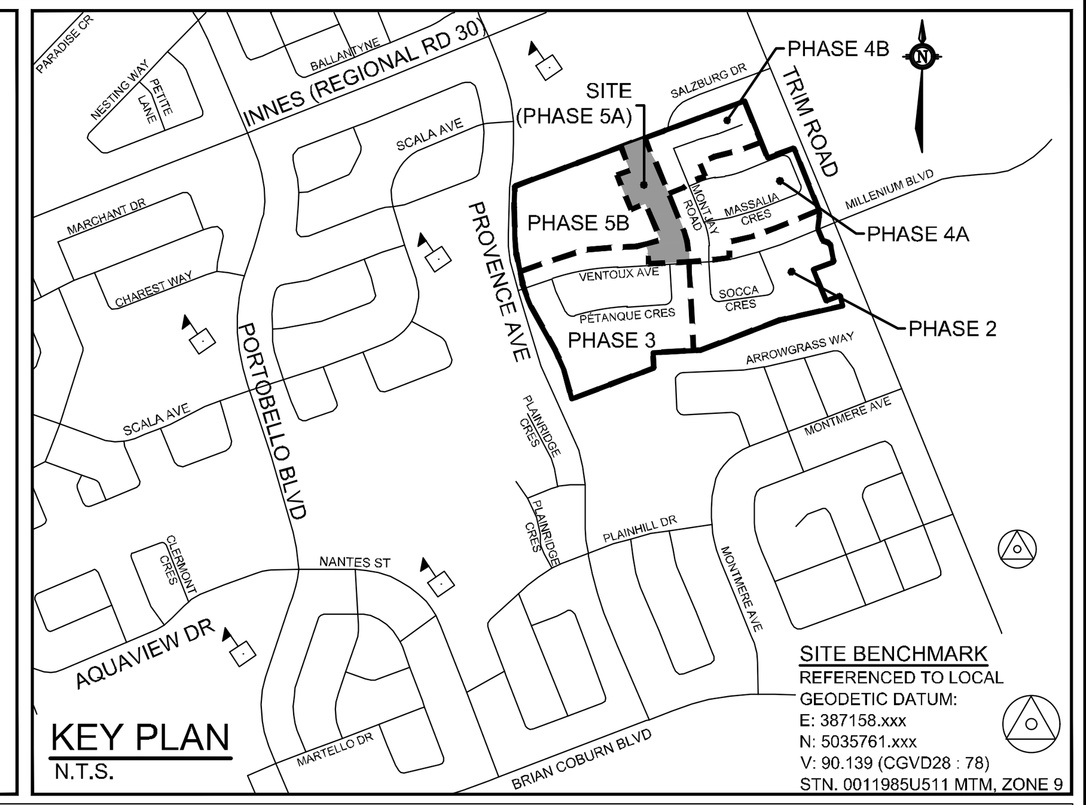
Notes:
1. **Q(d) = Q(p) + Q(i)**
2. **Q(i) = 0.33 L/sec/ha**
3. **Q(p) = (PxqxM/86,400)**

Definitions:
Q(d) = Design Flow (L/sec)
Q(p) = Population Flow (L/sec)
Q(i) = Extraneous Flow (L/sec)

Future Phase 5B - Future Development Area subject to future detailed design submission

P = Population (3.4 persons/single unit, 2.7 persons/townhouse, 1.8 persons/apartment)
q = Average per capita flow = 280 L/cap/day - Residential
M = Harmon Formula (maximum of 4.0)
Qc(p) = Park flow = Average per gross ha. flow = 20L/day/cap x 185 cap/ha = 3700L/gross ha./day - per City of Ottawa Sewer Design Guidelines Appendix 4-A
Min pipe size 200mm @ min. slope 0.32%





SITE BENCHMARK
REFERENCED TO LOCAL
GEODETIC DATUM:
E: 387158.xxx
N: 5035761.xxx
V: 90.139 (CGVD28 : 78)
STN. 0011985U511 MTM, ZONE 9

SOURCE REFERENCE:
LEGAL INFORMATION:
1. *PLAN OF SUBDIVISION OF PART OF LOT 2, CONCESSION 9, GEOGRAPHIC TOWNSHIP OF CUMBERLAND AND PART OF BLOCK 130 (0.30 RESERVE), REGISTERED PLAN 4M-1678 CITY OF OTTAWA PREPARED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD, REVISION 4, APRIL 24, 2024.*

TOPOGRAPHIC INFORMATION:
HORIZONTAL DATUM: NAD 83 (ORIGINAL), MTM - ZONE 9
VERTICAL DATUM: CGVD 28:78
1. *CITY OF OTTAWA 1:1000 MAPPING*
2. *NOVATECH SURVEY*

LEGEND

- AREA 401 — AREA ID
- 721-719 — MAINTENANCE HOLE TO MAINTENANCE HOLE
- 62 — POPULATION
- 0.73 — AREA (IN HECTARES)
- PHASE BOUNDARY
- SANITARY DRAINAGE AREA BOUNDARY - PHASE 5A
- SANITARY DRAINAGE AREA BOUNDARY - FUTURE PHASE 5B
- 101 PROPOSED SANITARY SEWER AND MAINTENANCE HOLE
- 101 EXISTING SANITARY SEWER AND MAINTENANCE HOLE
- 101 FUTURE SANITARY SEWER AND MAINTENANCE HOLE

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

PROVENCE
ORLÉANS

No.	REVISION	DATE	BY
1.	ISSUED FOR REVIEW	JUL 23/24	TJM

SCALE 1:750

1:750 (0 10 20 30)

DESIGN	SAB
CHECKED	TJM
DRAWN	BM
CHECKED	SAB
APPROVED	TJM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
T. J. MCKAY
100195434
July 23, 2024
PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
PROVENCE ORLEANS SUBDIVISION (2128 TRIM ROAD)

DRAWING NAME
PHASE 5A
SANITARY DRAINAGE
AREA PLAN

PROJECT No. 117155-00
REV REV # 1
DRAWING No. 117155-SAN5A

D07-16-18-0021

PLANA1.DWG - 841mmx594mm
#18004

SANITARY SEWER DESIGN SHEET
Provence Orleans Subdivision - 2128 Trim Road
Phase 5A - Existing Sewer Analysis
Developer: Provence Orleans Realty Investment Inc. c/o Regional Group of Companies

NOVATECH
Engineers, Planners & Landscape Architects

PROJECT # : 117155
DESIGNED BY : SAB/BM
CHECKED BY : TJM
DATE PREPARED : 23/07/2024

LOCATION				RESIDENTIAL						PARK			INFILTRATION			FLOW	*EXISTING SEWER*							
STREET	FROM MH	TO MH	Area	Single Units	Townhouse Units	Population (in 1000's)	Accu. Population (in 1000's)	PEAK FACTOR M	POPULATION FLOW Q(p) (L/s)	AREA (ha.)	Accu. AREA (ha.)	PARK FLOW Qc(p) (L/s)	Total AREA (ha.)	Accu. Total AREA (ha.)	PEAK EXTRAN. FLOW Q(i) (L/s)	PEAK DESIGN FLOW Q(d) (L/s)	LENGTH (m)	PIPE SIZE (mm)	PIPE ID (mm)	TYPE OF PIPE	GRADE %	CAPACITY (L/s)	FULL FLOW VELOCITY (m/s)	Qpeak/ Qcap
Phase 5	-	109	-			0.3786	0.379	4.0	4.91	0.40	0.40	0.02	6.13	6.13	2.02	6.95	-	-	-	-	-	-	-	-
Phase 4	-	*111*	-			*0.0298*	*0.395*	*4.0*	*5.12*	*0.00*	*0.00*	*0.00*	*0.39*	*6.090*	*2.01*	*7.13*	-	-	-	-	-	-	-	-
Petanque Cres.	-	*101*	-			*0.0081*	*0.059*	*4.0*	*0.77*	*0.00*	*0.00*	*0.00*	*0.13*	*0.76*	*0.25*	*1.02*	-	-	-	-	-	-	-	-
Petanque Cres.	-	*109*	-			*0.0272*	*0.118*	*4.0*	*1.53*	*0.00*	*0.00*	*0.00*	*0.50*	*2.27*	*0.75*	*2.28*	-	-	-	-	-	-	-	-
Socca Cres.	-	*111*	-			*0.0340*	*0.061*	*4.0*	*0.79*	*0.00*	*0.00*	*0.00*	*0.56*	*1.16*	*0.38*	*1.18*	-	-	-	-	-	-	-	-
Socca Cres.	-	*115*	-			*0.0513*	*0.081*	*4.0*	*1.04*	*0.00*	*0.00*	*0.00*	*0.63*	*1.19*	*0.39*	*1.44*	-	-	-	-	-	-	-	-
Ventoux Ave.	*99*	*101*	*1*	*4*		*0.0136*	*0.014*	*4.0*	*0.18*	*0.00*	*0.00*	*0.00*	*0.23*	*0.23*	*0.08*	*0.25*	*35.7*	*200*	*203.20*	*DR 35*	*0.70*	*28.6*	*0.88*	*1%*
Ventoux Ave.	*101*	*103*	*5*	*3*		*0.0102*	*0.083*	*4.0*	*1.08*	*0.00*	*0.00*	*0.00*	*0.16*	*1.15*	*0.38*	*1.46*	*30.9*	*200*	*203.20*	*DR 35*	*0.55*	*25.4*	*0.78*	*6%*
Ventoux Ave.	*103*	*105*	*6*	*7*	*7*	*0.0427*	*0.126*	*4.0*	*1.63*	*0.00*	*0.00*	*0.00*	*0.56*	*1.71*	*0.56*	*2.20*	*66.9*	*200*	*203.20*	*DR 35*	*0.31*	*19.1*	*0.59*	*12%*
Ventoux Ave.	*105*	*107*	*7*	*13*	*1*	*0.0469*	*0.173*	*4.0*	*2.24*	*0.00*	*0.00*	*0.00*	*0.63*	*2.34*	*0.77*	*3.01*	*71.0*	*200*	*203.20*	*DR 35*	*0.32*	*19.4*	*0.60*	*16%*
Ventoux Ave.	*107*	*109*	*8*	*6*		*0.0204*	*0.193*	*4.0*	*2.50*	*0.00*	*0.00*	*0.00*	*0.38*	*2.72*	*0.90*	*3.40*	*72.6*	*200*	*203.20*	*DR 35*	*0.33*	*19.7*	*0.61*	*17%*
Ventoux Ave.	*109*	*111*	*26*			*0.0000*	*0.690*	*3.9*	*8.72*	*0.00*	*0.40*	*0.02*	0.15	*11.27*	*3.72*	*12.45*	*79.5*	*250*	*254.00*	*DR 35*	*0.32*	*35.1*	*0.69*	*35%*
Ventoux Ave.	*111*	*113*	*44*	*1*		*0.0034*	*1.149*	*3.8*	*14.01*	*0.00*	*0.40*	*0.02*	0.13	*18.65*	*6.15*	*20.18*	*52.5*	*250*	*254.00*	*DR 35*	*0.35*	*36.7*	*0.72*	*55%*
Ventoux Ave.	*113*	*115*	*45*	*7*		*0.0238*	*1.173*	*3.8*	*14.27*	*0.00*	*0.40*	*0.02*	0.38	*19.03*	*6.28*	*20.57*	*52.1*	*250*	*254.00*	*DR 35*	*0.29*	*33.4*	*0.66*	*62%*
Ventoux Ave.	*115*	*117*	*49*	*3*		*0.0102*	*1.264*	*3.7*	*15.29*	*0.00*	*0.40*	*0.02*	*0.20*	*20.42*	*6.74*	*22.04*	*46.0*	*250*	*254.00*	*DR 35*	*0.35*	*36.7*	*0.72*	*60%*
Multi-Unit Block	*1*	*117*	*50*		*48*	*0.1296*	*0.130*	*4.0*	*1.68*	*0.00*	*0.00*	*0.00*	*1.23*	*1.23*	*0.41*	*2.09*	*17.2*	*200*	*203.20*	*DR 35*	*1.00*	*34.2*	*1.06*	*6%*
Ventoux Ave.	*117*	*119*	*51*	*6*		*0.0204*	*1.414*	*3.7*	*16.94*	*0.00*	*0.40*	*0.02*	*0.47*	*22.12*	*7.30*	*24.26*	*77.7*	*250*	*254.00*	*DR 35*	*0.40*	*39.2*	*0.77*	*62%*
Ventoux Ave.	*119*	*121*	*52*			*0.0000*	*1.414*	*3.7*	*16.94*	*0.00*	*0.40*	*0.02*	*0.06*	*22.18*	*7.32*	*24.28*	*29.5*	*250*	*254.00*	*DR 35*	*0.88*	*58.2*	*1.15*	*42%*

Notes:
1. **Q(d) = Q(p) + Q(i)**
2. **Q(i) = 0.33 L/sec/ha**
3. **Q(p) = (PxqxM/86,400)**

Definitions:
Q(d) = Design Flow (L/sec)
Q(p) = Population Flow (L/sec)
Q(i) = Extraneous Flow (L/sec)

P = Population (3.4 persons/single unit, 2.7 persons/townhouse, 1.8 persons/apartment)
q = Average per capita flow = 280 L/cap/day - Residential
M = Harmon Formula (maximum of 4.0)
Qc(p) = Park flow = Average per gross ha. flow = 20L/day/cap x 185 cap/ha = 3700L/gross ha./day - per City of Ottawa Sewer Design Guidelines Appendix 4-A
Min pipe size 200mm @ min. slope 0.32%

LICENSED PROFESSIONAL ENGINEER
T. J. MCKAY
100195434
July 23, 2024
PROVINCE OF ONTARIO

Appendix E

Storm Sewer Design

Provence Orleans Subdivision - 2128 Trim Road
Phase 5A and 5B
Storm Sewer Design Sheet

NOVATECH
Engineers, Planners & Landscape Architects

LOCATION			AREA			FLOW						PROPOSED SEWER							
Location	From Node	To Node	Catchment Area ID	Area (A)	Runoff Coefficient (R)	Indivi 2.78 AR	Accum 2.78 AR	Time of Concentration	Rain Intensity (mm/hr) 2yr	Peak Flow	Total Uncontrolled Peak Flow (Q)	Pipe	Size	Grade	Length	Capacity	Full Flow Velocity	Time of Flow	Q/Qfull
Montrichard Road	*206*	304	5A-1	0.26	0.70	0.51	0.51	10.00	76.81	38.9	**38.9**	PVC	375	0.43	77.0	119.9	1.05	1.22	32.4%
Montrichard Road	*710*	*712*	*5B-1*	*0.36*	*0.66*	*0.66*	*0.66*	*10.00*	*76.81*	*50.7*	***138.3***	*CONC*	*450*	*0.25*	*117.9*	*148.7*	*0.91*	*2.17*	*93.0%*
			5B-2	*0.20*	*0.58*	*0.32*	*0.98*	*10.00*	*76.81*	*75.5*									
			5B-3	*0.42*	*0.70*	*0.82*	*1.80*	*10.00*	*76.81*	*138.3*									
Montrichard Road	*712*	*304*	*5B-4*	*0.36*	*0.71*	*0.71*	*2.51*	*12.17*	*69.37*	*174.2*	***208.9***	*CONC*	*525**	*0.20*	*118.3*	*200.6*	*0.90*	*2.20*	*104.1%**
			5A-2	0.31	0.58	0.50	3.01	12.17	69.37	208.9									
Dick Brown Street	304	302	5A-3	0.38	0.71	0.75	4.27	14.37	63.31	270.1	**270.1**	CONC	675	0.40	92.2	554.6	1.50	1.02	48.7%
Montrichard Road	*708*	*706*	*5B-5*	*0.32*	*0.66*	*0.59*	*0.59*	*10.00*	*76.81*	*45.1*	***45.1***	*PVC*	*375*	*0.35*	*67.0*	*108.2*	*0.95*	*1.18*	*41.7%*
Montrichard Road	*706*	*704*	-	-	-	-	*0.59*	*11.18*	*72.56*	*42.6*	***42.6***	*PVC*	*375*	*0.45*	*16.0*	*122.7*	*1.08*	*0.25*	*34.7%*
Montrichard Road	*704*	*702*	*5B-6*	*0.39*	*0.72*	*0.78*	*1.37*	*11.42*	*71.74*	*98.1*	***141.7***	*CONC*	*525*	*0.25*	*104.6*	*224.3*	*1.00*	*1.74*	*63.2%*
			5B-7	*0.39*	*0.56*	*0.61*	*1.97*	*11.42*	*71.74*	*141.7*									
Montrichard Road	*702*	*700*	*5B-8*	*0.46*	*0.71*	*0.91*	*2.88*	*13.16*	*66.48*	*191.6*	***191.6***	*CONC*	*600*	*0.20*	*76.1*	*286.5*	*0.98*	*1.29*	*66.9%*
Montrichard Road	*700*	*302*	*5B-9*	*0.22*	*0.67*	*0.41*	*3.29*	*14.45*	*63.09*	*207.7*	***271.8***	*CONC*	*675*	*0.20*	*82.7*	*392.2*	*1.06*	*1.30*	*69.3%*
			5B-10	*0.40*	*0.30*	*0.33*	*3.63*	*14.45*	*63.09*	*228.8*									
			5A-4	0.43	0.57	0.68	4.31	14.45	63.09	271.8									
Dick Brown Street	302	300	5A-5	0.22	0.68	0.42	8.31	15.75	60.05	498.9	**513.2**	CONC	900	0.40	83.4	1194.4	1.82	0.76	43.0%
			5A-6	0.14	0.61	0.24	8.55	15.75	60.05	513.2									
Dick Brown Street	300	300A	5A-7	0.27	0.71	0.53	9.08	16.52	58.41	530.3	**530.3**	CONC	900	0.40	24.5	1194.4	1.82	0.22	44.4%
Dick Brown Street	300A	*108*	-	-	-	-	9.08	16.74	57.94	526.1	**526.1**	CONC	900	0.14	14.3	706.6	1.08	0.22	74.4%

Q = 2.78 AIR

WHERE : Q = PEAK FLOW IN LITRES PER SECOND (L/s)
A = AREA IN HECTARES (ha)
R = RUNOFF COEFFICIENT
I = RAINFALL INTENSITY IN MILLIMETERS PER HOUR (mm/hr)
Rainfall Intensity (I) is based on City of Ottawa IDF data presented in the City of Ottawa Sewer Design Guidelines (Oct. 2012)

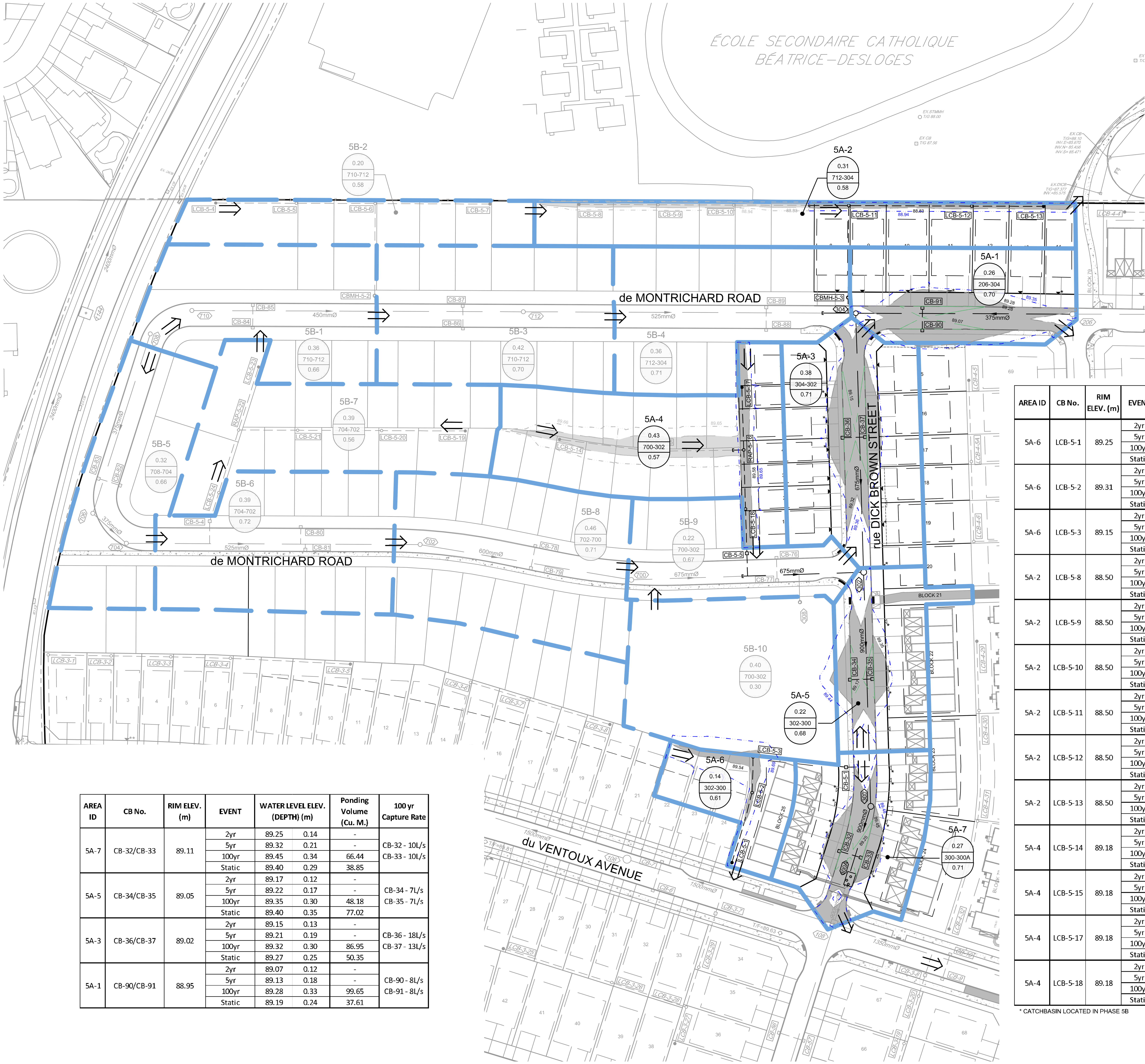
Q full= (1/n) A R^(2/3)So^(1/2)

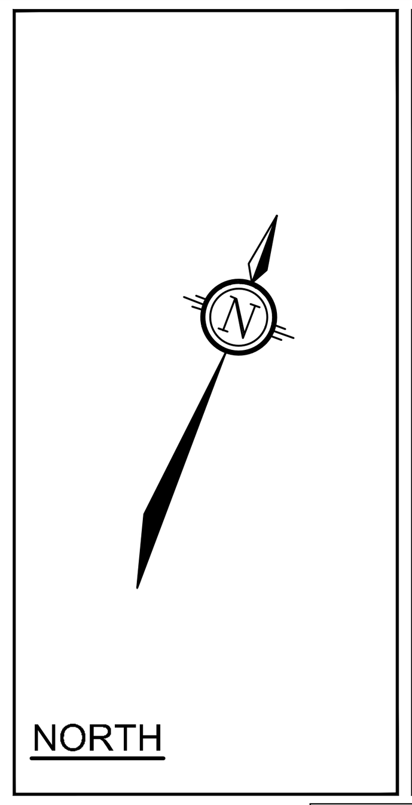
WHERE : Q full = CAPACITY (L/s)
n = MANNING COEFFICIENT OF ROUGHNESS (0.013)
A = FLOW AREA (m^2)

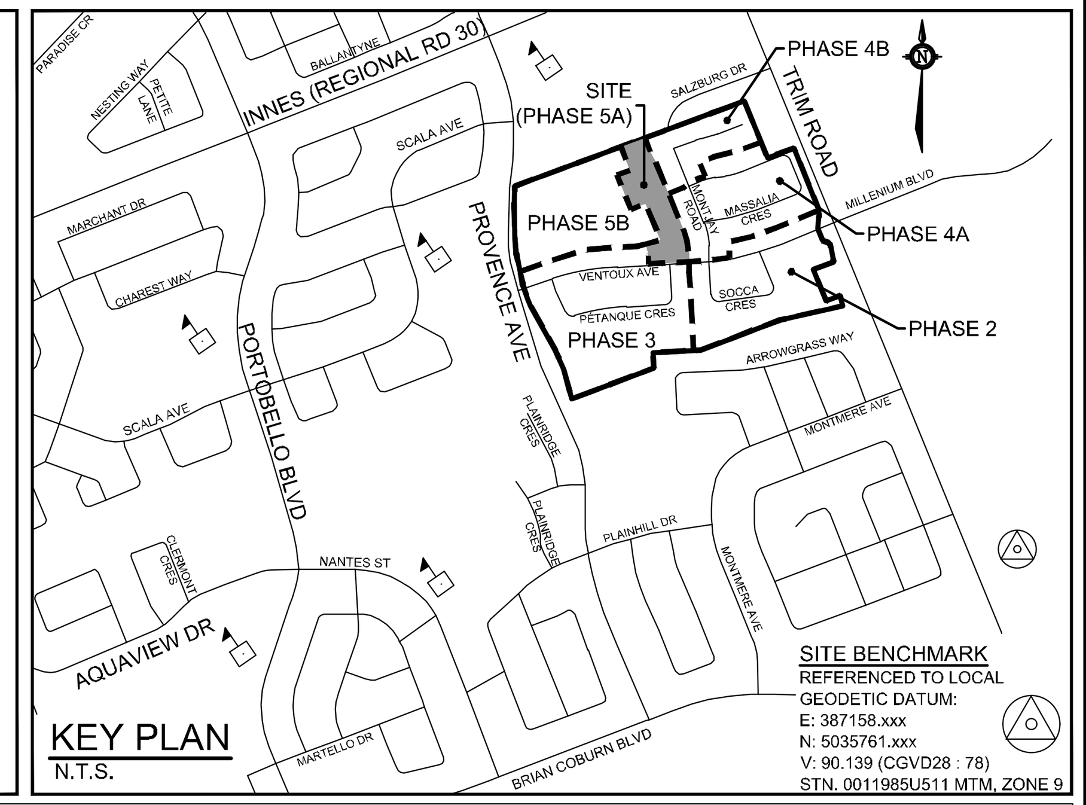
Designed: SAB/BM
Checked: TJM
Date: 23-Jul-24

Future Phase 5B - Future Development Area subject to future detailed design submission

* - Proposed pipe size for pipe run from MH 712 to MH 304 to be reviewed using stormwater modelling (PCSWMM) to confirm acceptability.







AREA ID	CB No.	RIM ELEV. (m)	EVENT	WATER LEVEL ELEV. (DEPTH) (m)		Ponding Volume (Cu. M.)	100 yr Capture Rate
5A-7	CB-32/CB-33	89.11	2yr	89.25	0.14	-	CB-32 - 10L/s CB-33 - 10L/s
			5yr	89.32	0.21	-	
			100yr	89.45	0.34	66.44	
			Static	89.40	0.29	38.85	
5A-5	CB-34/CB-35	89.05	2yr	89.17	0.12	-	CB-34 - 7L/s CB-35 - 7L/s
			5yr	89.22	0.17	-	
			100yr	89.35	0.30	48.18	
			Static	89.40	0.35	77.02	
5A-3	CB-36/CB-37	89.02	2yr	89.15	0.13	-	CB-36 - 18L/s CB-37 - 13L/s
			5yr	89.21	0.19	-	
			100yr	89.32	0.30	86.95	
			Static	89.27	0.25	50.35	
5A-1	CB-90/CB-91	88.95	2yr	89.07	0.12	-	CB-90 - 8L/s CB-91 - 8L/s
			5yr	89.13	0.18	-	
			100yr	89.28	0.33	99.65	
			Static	89.19	0.24	37.61	

AREA ID	CB No.	RIM ELEV. (m)	EVENT	WATER LEVEL ELEV. (DEPTH) (m)		Ponding Volume (Cu. M.)
5A-6	LCB-5-1	89.25	2yr	88.36	-	Includes 5-1, 5-2, 5-3
			5yr	88.69	-	
			100yr	89.54	0.29	12.71
			Static	89.55	0.30	-
5A-6	LCB-5-2	89.31	2yr	88.36	-	-
			5yr	88.69	-	-
			100yr	89.54	0.23	-
			Static	89.55	0.24	-
5A-6	LCB-5-3	89.15	2yr	88.36	-	-
			5yr	88.69	-	-
			100yr	89.54	0.39	-
			Static	89.55	0.40	-
5A-2	LCB-5-8	88.50	2yr	87.59	-	Includes 5-8*, 5-9*, 5-10*, 5-11, 5-12, 5-13
			5yr	87.83	-	
			100yr	88.83	0.33	40.17
			Static	88.85	0.35	-
5A-2	LCB-5-9	88.50	2yr	87.59	-	-
			5yr	87.83	-	-
			100yr	88.83	0.33	-
			Static	88.85	0.35	
5A-2	LCB-5-10	88.50	2yr	87.59	-	-
			5yr	87.83	-	-
			100yr	88.83	0.33	-
			Static	88.85	0.35	-
5A-2	LCB-5-11	88.50	2yr	87.59	-	-
			5yr	87.83	-	-
			100yr	88.83	0.33	-
			Static	88.85	0.35	-
5A-2	LCB-5-12	88.50	2yr	87.59	-	-
			5yr	87.83	-	-
			100yr	88.83	0.33	-
			Static	88.85	0.35	-
5A-2	LCB-5-13	88.50	2yr	87.59	-	-
			5yr	87.83	-	-
			100yr	88.83	0.33	-
			Static	88.85	0.35	-
5A-4	LCB-5-14	89.18	2yr	88.31	-	Includes 5-14*, 5-15*, 5-17, 5-18
			5yr	89.20	0.02	
			100yr	89.58	0.40	60.61
			Static	89.50	0.32	-
5A-4	LCB-5-15	89.18	2yr	88.30	-	-
			5yr	89.20	0.02	-
			100yr	89.58	0.40	-
			Static	89.46	0.28	-
5A-4	LCB-5-17	89.18	2yr	88.30	-	-
			5yr	89.20	0.02	-
			100yr	89.58	0.40	-
			Static	89.46	0.28	-
5A-4	LCB-5-18	89.18	2yr	88.30	-	-
			5yr	89.20	0.02	-
			100yr	89.58	0.40	-
			Static	89.42	0.24	-

* CATCHBASIN LOCATED IN PHASE 5B

SOURCE REFERENCE:

LEGAL INFORMATION:

1. *PLAN OF SUBDIVISION OF PART OF LOT 2, CONCESSION 9, GEOGRAPHIC TOWNSHIP OF CUMBERLAND AND PART OF BLOCK 130 (0.30 RESERVE), REGISTERED PLAN 4M-1678 CITY OF OTTAWA PREPARED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD, REVISION 4, APRIL 24, 2024.*

TOPOGRAPHIC INFORMATION:

HORIZONTAL DATUM: NAD 83 (ORIGINAL), MTM - ZONE 9

VERTICAL DATUM: CGVD 28:78

1. *CITY OF OTTAWA 1:1000 MAPPING*
2. *NOVATECH SURVEY*

LEGEND

- PHASE BOUNDARY
- PROPOSED STORM SEWER AND MAINTENANCE HOLE
- PROPOSED VORTECHS (9000)
- PROPOSED CATCHBASIN & LEAD
- PROPOSED CATCHBASIN MAINTENANCE HOLE & LEAD
- PROPOSED REAR YARD ACCESS POINT & PERFORATED PIPE
- PROPOSED REAR YARD ELBOW & 450mmØ PERFORATED PIPE
- PROPOSED REAR YARD TEE & 450mmØ PERFORATED PIPE
- EXISTING STORM SEWER AND MAINTENANCE HOLE
- EXISTING VORTECHS (11000)
- EXISTING CATCHBASIN & LEAD
- EXISTING CATCHBASIN MAINTENANCE HOLE & LEAD
- EXISTING REAR YARD ELBOW & 450mmØ PERFORATED PIPE
- EXISTING REAR YARD TEE & 450mmØ PERFORATED PIPE
- FUTURE STORM SEWER AND MAINTENANCE HOLE
- FUTURE CATCHBASIN & LEAD
- FUTURE CATCHBASIN MAINTENANCE HOLE & LEAD
- PROPOSED REAR YARD ACCESS POINT & PERFORATED PIPE
- FUTURE REAR YARD ELBOW & 450mmØ PERFORATED PIPE
- FUTURE REAR YARD TEE & 450mmØ PERFORATED PIPE
- DRAINAGE AREA BOUNDARY - PHASE 5A
- DRAINAGE AREA BOUNDARY - PHASE 5B (FUTURE DEVELOPMENT)
- 5A-2 — AREA ID; 0.31 — CATCHMENT AREA; 712-304 — MAINTENANCE HOLE TO MAINTENANCE HOLE; 0.58 — RUNOFF COEFFICIENT
- 5B-1 — AREA ID (FUTURE); 0.31 — CATCHMENT AREA; 712-304 — MAINTENANCE HOLE TO MAINTENANCE HOLE; 0.58 — RUNOFF COEFFICIENT
- MAJOR OVERLAND FLOW DIRECTION
- 1:2yr PONDING AREA AND ELEVATION
- 1:100yr PONDING AREA AND ELEVATION
- 1:100yr + 20% PONDING AREA AND ELEVATION
- ANTICIPATED 1:100yr PONDING AREA AND ELEVATION
- ANTICIPATED 1:100yr + 20% PONDING AREA AND ELEVATION

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

PROVENCE ORLÉANS

No.	REVISION	DATE	BY
1.	ISSUED FOR REVIEW	JUL 23/24	TJM

SCALE 1:750

DESIGN SAB — CHECKED TJM — DRAWN BM — CHECKED SAB — APPROVED TJM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER — T. J. MCKAY — 100195434 — July 23, 2024 — PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
PROVENCE ORLEANS SUBDIVISION (2128 TRIM ROAD)

DRAWING NAME
PHASE 5A STORM DRAINAGE AREA PLAN

PROJECT No. 117155
REV # 1
DRAWING No. 117155-STM5A

D07-16-18-0021

PLANA1.DWG - 841mmx594mm

#18004

M:\2017\117155\CAD\Design\PH5\117155-STM5.dwg, STM-PH5A, Jul 25, 2024 - 5:10pm, tmckay

Provence Orleans Subdivision - 2128 Trim Road
Phase 5
Runoff Coefficient Calculations

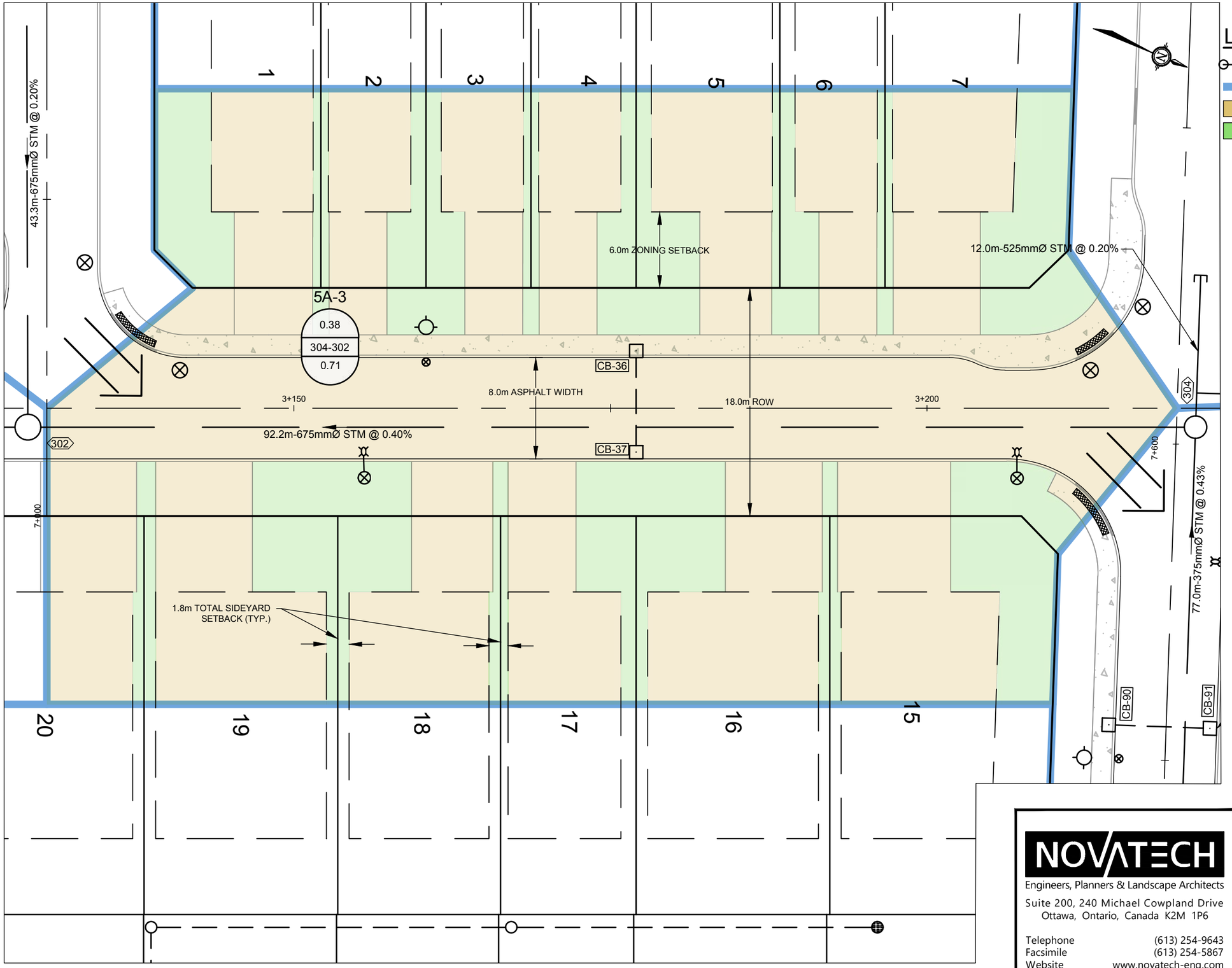
NOVATECH
Engineers, Planners & Landscape Architects

Location	Area ID	Total Area (A_{TOTAL}) (m^2)	Pervious Area (A_{PER}) (m^2)	Impervious Area (A_{IMP}) (m^2)	Runoff Coefficient (C)
Montrichard Road	5A-1	2625	740.45	1884.17	0.70
Montrichard Road	5B-1	3552	1209.09	2342.45	0.66
Rearyard	5B-2	2038	920.41	1117.30	0.58
Montrichard Road	5B-3	4227	1185.52	3041.07	0.70
Montrichard Road	5B-4	3631	999.79	2631.63	0.71
Rearyard	5A-2	3101	1410.72	1690.15	0.58
Dick Brown Street	5A-3	3820	1028.57	2791.78	0.71
Montrichard Road	5B-5	3150	1095.63	2054.59	0.66
Montrichard Road	5B-6	3857	990.60	2866.72	0.72
Rearyard	5B-7	3860	1866.21	1993.93	0.56
Montrichard Road	5B-8	4600	1233.71	3366.39	0.71
Montrichard Road	5B-9	2150	703.95	1446.17	0.67
Park	5B-10	4007	-	-	0.30
Rearyard	5A-4	4260	1988.60	2271.53	0.57
Dick Brown Street	5A-5	2193	684.77	1507.89	0.68
Rearyard	5A-6	1364	564.55	799.62	0.61
Dick Brown Street	5A-7	2694	719.87	1973.96	0.71

NOTES:

C_{IMP} = 0.9
C_{PER} = 0.2
C_{PARK} = 0.30
$C = (C_{IMP}*A_{IMP} + C_{PER}*A_{PER})/A_{TOTAL}$
Areas calculated using CAD
Area calculations based on zoning (6m front and rear yard setbacks, 4.5m exterior sideyard setbacks, and 1.8m total interior sideyard setback).

DATE: July 23, 2024



LEGEND

- PROPOSED STORM SEWER
- DRAINAGE AREA BOUNDARY
- IMPERVIOUS AREA
- PERVIOUS AREA

5A-3 — AREA ID

0.38 — CATCHMENT AREA

304-302 — MH TO MH

0.71 — RUNOFF COEFFICIENT

AREA 5A-3

$$C = \frac{(A_{IMP} \times C_{IMP}) + (A_{PERV} \times C_{PERV})}{A_{TOTAL}}$$

$A_{IMP} = 2811.5m^2$

$A_{PERV} = 1008.8m^2$

$A_{TOTAL} = 3820.3m^2$

$C_{IMP} = 0.9$

$C_{PERV} = 0.2$

$$C = \frac{(2811.5 \times 0.9) + (1008.8 \times 0.2)}{3820.3}$$

$C = 0.71$

NOTES:

1. AREAS CALCULATED IN CAD.
2. IMPERVIOUS LOT AREAS BASED ON MINIMUM ZONING SETBACKS.

NOVATECH
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Website www.novatech-eng.com

CITY OF OTTAWA
PROVENCE ORLEANS SUBDIVISION
(2128 TRIM ROAD)

PHASE 5
TYPICAL DRAINAGE AREA RUNOFF COEFFICIENT CALCULATION

SCALE 1 : 300 (0 3 6 9 12)

DATE JUL 2024 | JOB 117155 | FIGURE 117155-RC-DA

SHT11X17.DWG - 279mmX432mm

M:\2017\117155\CAD\Design\Figures\Design Brief\PH-5\117155-PH5-STM-C-zoning-DA.dwg, PH5-RC-DA, Apr 19, 2024 - 9:26am, tmckay

Provence Orleans Subdivision - 2128 Trim Road
Phase 5A
Storm Sewer Design Sheet - Rear Yard CB Leads

NOVATECH
Engineers, Planners & Landscape Architects

LOCATION			AREA			FLOW					PROPOSED SEWER							
Location	From Node	To Node	Catchment Area ID	Area (A)	Runoff Coefficient (R)	Indivi 2.78 AR	Time of Concentration	Rain Intensity (mm/hr) 2yr	Peak Flow	Total Uncontrolled Peak Flow (Q)	Pipe	Size	Grade	Length	Capacity	Full Flow Velocity	Time of Flow	Q/Qfull
				(ha)			(min.)		(L/s)	(L/s)	Type	(mm)	(%)	(m)	(l/s)	(m/s)	(min.)	(%)
Montrichard Road	LCB-5-11	CBMH-5-3	5A-2	0.31	0.58	0.50	10.00	76.81	38.4	**38.4**	PVC	300	0.50	32.8	71.3	0.98	0.56	53.8%
Montrichard Road	LCB-5-18	CB-5-5	5A-4	0.43	0.57	0.68	10.00	76.81	52.3	**52.3**	PVC	300	0.40	15.2	63.8	0.87	0.29	82.0%
Dick Brown Street	LCB-5-3	CB-5-1	5A-6	0.14	0.61	0.24	10.00	76.81	18.2	**18.2**	PVC	300	0.50	33.9	71.3	0.98	0.58	25.6%
Montrichard Road	LCB-5-6	CBMH-5-2	5B-2	0.20	0.58	0.32	10.00	76.81	24.8	**24.8**	PVC	300	0.50	32.8	71.3	0.98	0.56	34.7%
Montrichard Road	LCB-5-24	CB-5-4	5B-7	0.39	0.56	0.61	10.00	76.81	46.6	**46.6**	PVC	300	0.50	10.7	71.3	0.98	0.18	65.4%

Q = 2.78 AIR

WHERE : Q = PEAK FLOW IN LITRES PER SECOND (L/s)
A = AREA IN HECTARES (ha)
R = RUNOFF COEFFICIENT
I = RAINFALL INTENSITY IN MILLIMETERS PER HOUR (mm/hr)
Rainfall Intensity (I) is based on City of Ottawa IDF data presented in the City of Ottawa Sewer Design Guidelines (Oct. 2012)

Q full= (1/n) A R^(2/3)So^(1/2)

WHERE : Q full = CAPACITY (L/s)
n = MANNING COEFFICIENT OF ROUGHNESS (0.013)
A = FLOW AREA (m^2)

Designed: SAB
Checked: TJM
Date: 23-Jul-24

5.2 Stormwater Management Criteria

The stormwater management criteria used in the design of the Provence Orleans Subdivision were developed based on the Master Servicing Study (*Gloucester and Cumberland East Urban Community Expansion Area and Bilberry Creek Industrial Park Master Servicing Update* by Stantec dated September 2013) which references the applicable portions of *Update to Master Drainage Plan East Urban Community Expansion Area* (Cumming Cockburn Ltd., September 11, 2000) and have been adapted through discussions with the City.

Minor System (Storm Sewers)

- Storm sewers are to be designed using the Rational Method for the 1:5-year return period;
- On an average basis, inflows to the storm sewer system are to be limited to 70 L/s/ha;

Note, as discussed with Planning, Infrastructure and Economic Development staff these two criteria may need to be reviewed at detailed design and increased to account for any reduction of surface storage required for the major system. Changes may potentially include an increase in inflows to the storm sewer system and/or a change in the storm return period to a 1:2 year storm for the design in sewers.

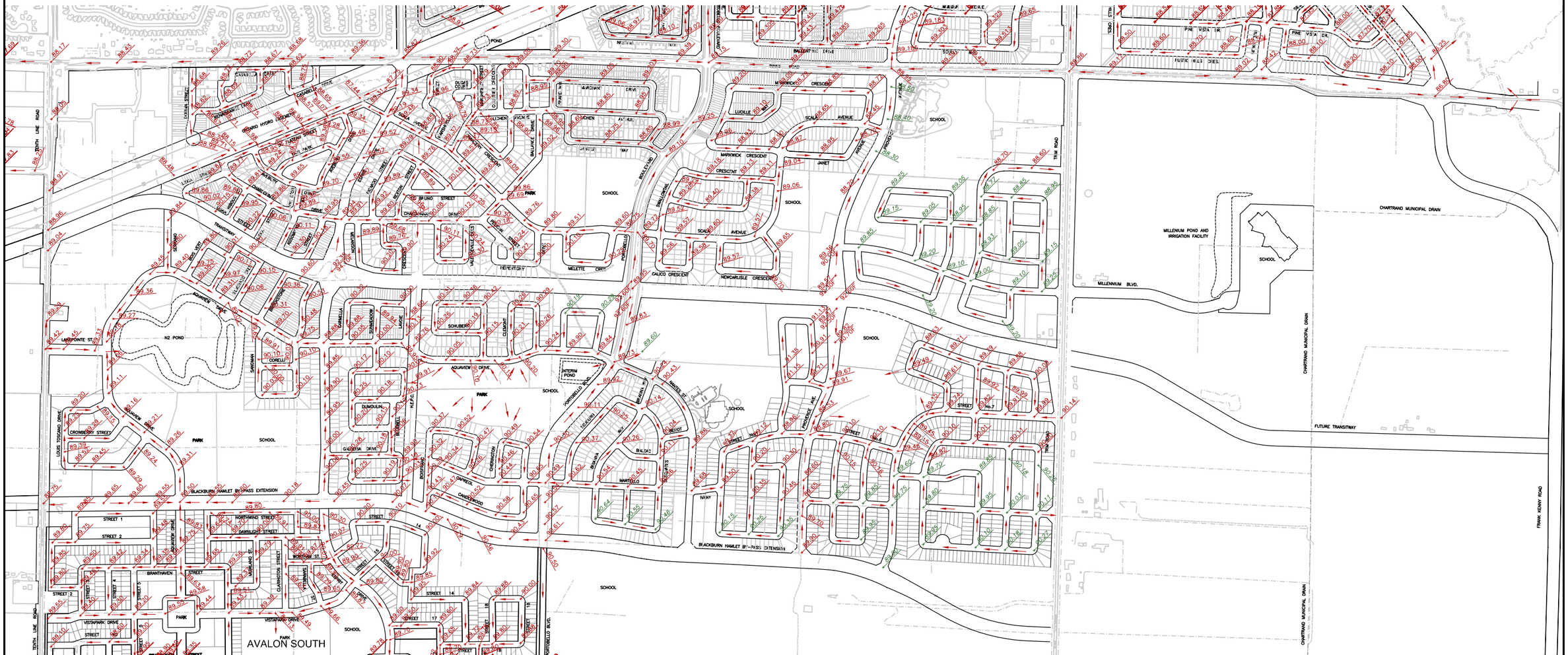
- Inlet control devices (ICDs) will be installed in road and rearyard catchbasins to control inflows to the storm sewers;
    - Catchbasins are not to be interconnected;
- The 100-year hydraulic grade line in the storm sewer shall be at least 0.3 m below the underside of footing (USF) elevations for the proposed development;
    - The HGL will be analyzed at the detailed design stage, when detailed grading and USF elevations have been determined.

Major System (Overland Flow)

- Minimum on-site detention storage provided by the major system is to be approximately 150 m^3/ha;

Note, as discussed with Planning, Infrastructure and Economic Development staff these criteria has historically been difficult to achieve and increase in flow into the minor system may be required at detailed design and increased to account for any reduction of surface storage.

- Maximum depth of flow (static + dynamic) on local and collector streets shall not exceed 0.35 m. The depth of flow may extend adjacent to the right-of-way, provided that the water level does not touch any part of the building envelope and remains below the lowest building opening during the stress test event (100-year+20%);
    - There must be at least 0.15m of vertical clearance between the spill elevation on the street and the ground elevation at the building envelope in the proximity of a flow route or ponding area;
- Storm runoff that exceeds the capacity of the minor system is to be stored within road sags and conveyed overland along defined major system flow routes;
- As per the Master Servicing Study (Stantec, 2013), major system storage in backyards at a depth of 0.4m will be included/accounted for in design computations;
- The product of the 100-year flow depth (m) on street and flow velocity (m/s) shall not exceed 0.60;



MACRO GRADING PLAN

FIRST SUBMISSION:		FEB., 2004	GRD2
REVISION No.:	5	JUNE, 2006	

Stantec

NO.	REVISIONS	BY	DATE
	AS RECORDED	G.C.	09.05.11

NO.	REVISIONS	BY	DATE
	ISSUED FOR REVIEW	G.C.	04.10.27
	ISSUED FOR UTILITY CIRCULATION	G.C.	04.12.01
	ISSUED FOR TENDER	G.C.	05.02.04
	RE-ISSUED FOR TENDER	G.C.	05.11.25
	ISSUED FOR CONSTRUCTION	G.C.	06.02.13

NOTE:
The location of the utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned.
The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage

PROVENCE / VALIN TRUNK STORM SEWER PHASE II

PROVENCE AVENUE PLAN AND PROFILE Sta.4+550 to Sta.4+850

Ottawa

CONTRACT NO. ISBN04-2045

DWG. NO. 12775-4

SHEET 4 OF 8

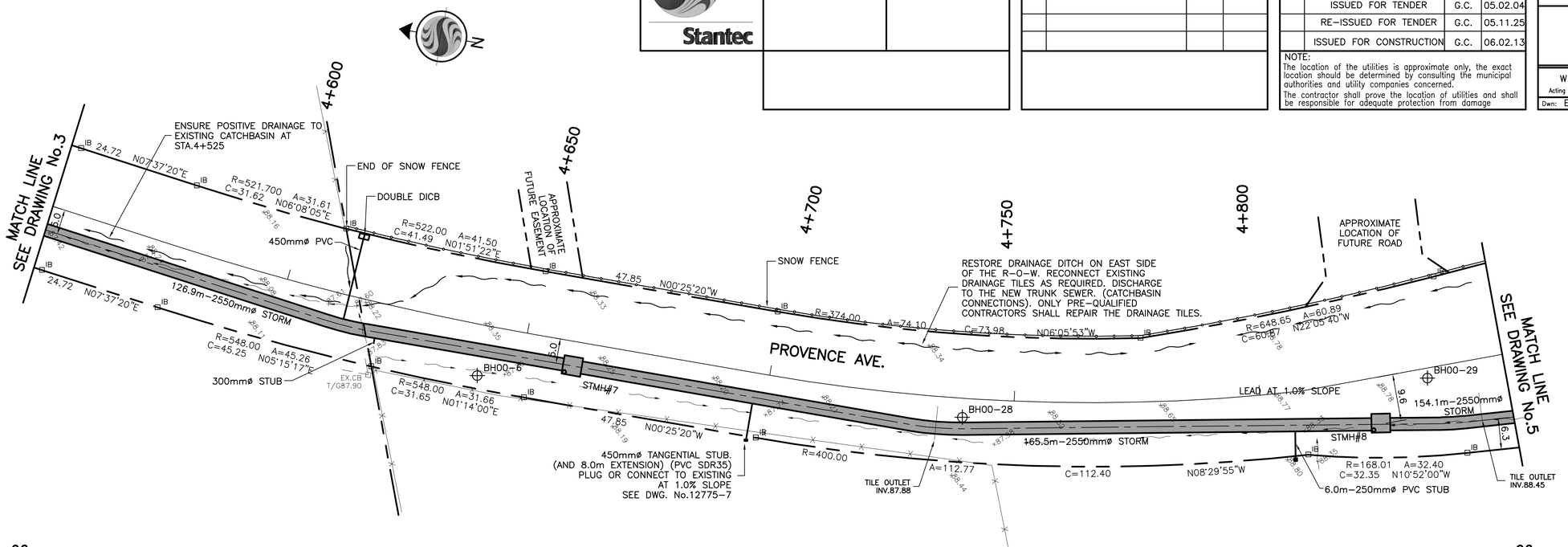
Date: 05.11.25

Scale: 1:500H 0 5 10; 1:100V 0 1 2

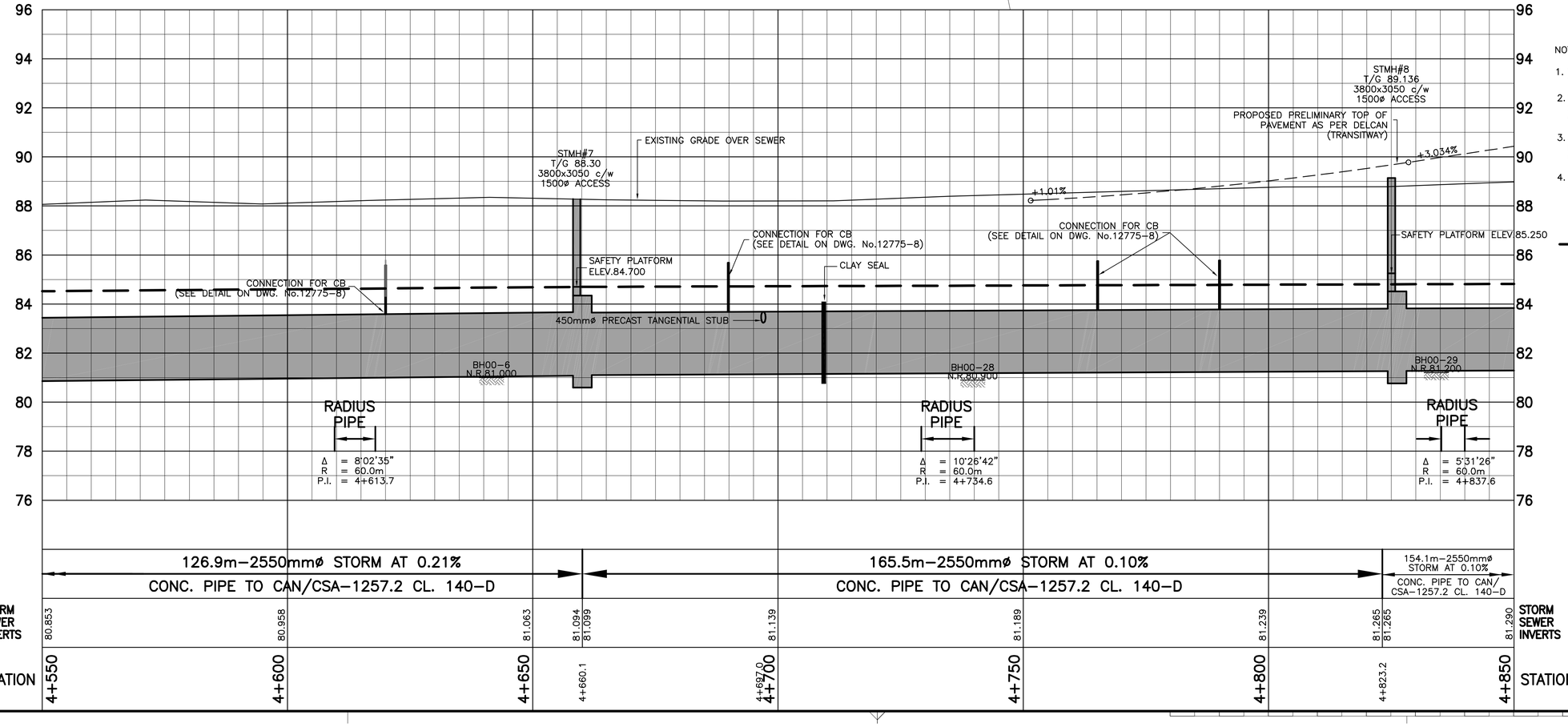
W. NEWELL, P.ENG.		W. CLOUTHIER, P.ENG.	
Acting Director Infrastructure Services		Manager Construction Services-Development	
Dwn: E.C.	Chkd: G.C.	Des: G.C.	Chkd: J.V.G.

Record Drawing

These drawings have been prepared based on information provided by others. Stantec Consulting Ltd. has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result.



MANHOLE CO-ORDINATES		
NO.	CO-ORDINATES	
	NORTHING	EASTING
STMH#7	5036513.123	386119.979
STMH#8	5036349.149	386136.861



NOTE:

1. THE CONTRACTOR IS TO PROVIDE UNINTERRUPTED ACCESS TO SCHOOLS AND RESIDENCES AT ALL TIMES.
2. REINSTATE ALL DISTURBED CATCHBASINS, STORM PIPES AND SWALES TO ORIGINAL CONDITIONS. ENSURE POSITIVE DRAINAGE OF ADJACENT AREAS DURING CONSTRUCTION.
3. ALL DISTURBED AREAS OUTSIDE PROVENCE R-O-W ARE TO BE RESTORED WITH 100mm TOPSOIL, SEED AND MULCH UNLESS DIRECTED OTHERWISE.
4. PROVIDE CONCRETE BENCHING IN ALL STORM MANHOLES (NO SUMPS).

HYDRAULIC GRADE LINE FOR JULY 1st, 1979 STORM EVENT

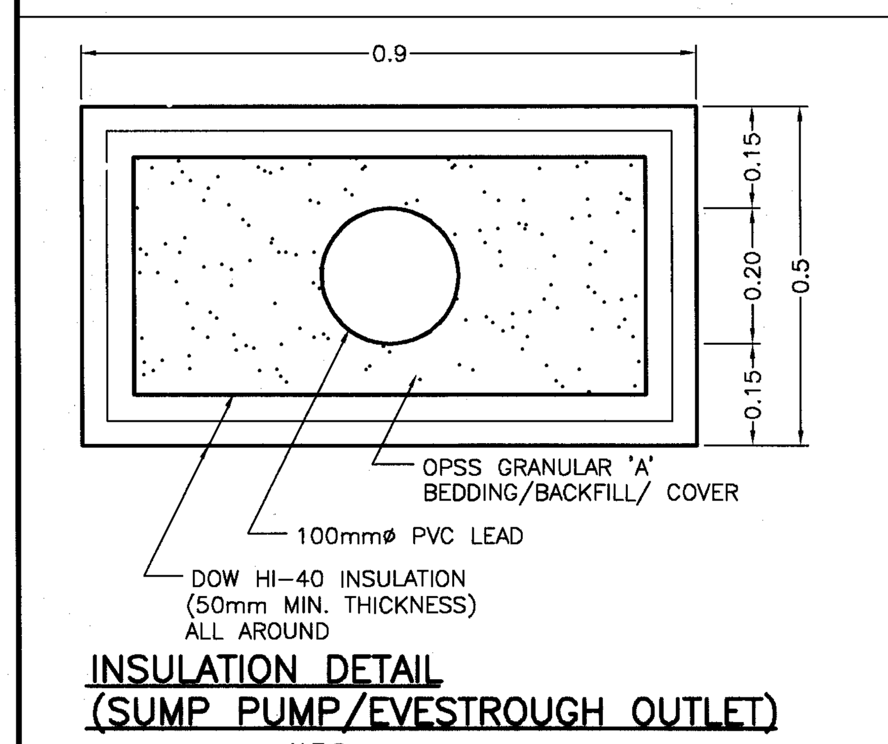
C:\active\134_49240_design_provence_stm.sw\design\drawing\Contract_2\As Recorded\C2-D-04.dwg
2009-05-13 01:04PM By: ecoberry

GEOTECHNICAL REPORT DATED FEBRUARY 4, 2005

1. REFER TO MCROSTIE, GENEST, ST-LOUIS & ASSOCIATES LTD. SUBSURFACE INVESTIGATION REPORT NO. SF-4908, DATED FEBRUARY 4, 2005 FOR DESIGN INFORMATION RELATING TO DIFFERENTIAL SETTLEMENTS, REDUCED BEARING PRESSURES AND DESIGN DETAILS WITH RESPECT TO THE VERTICAL TRENCH INFLUENCE ZONE OF THE PROPOSED 600mmø STORM SEWER ADJACENT TO UNIT NUMBER 27.

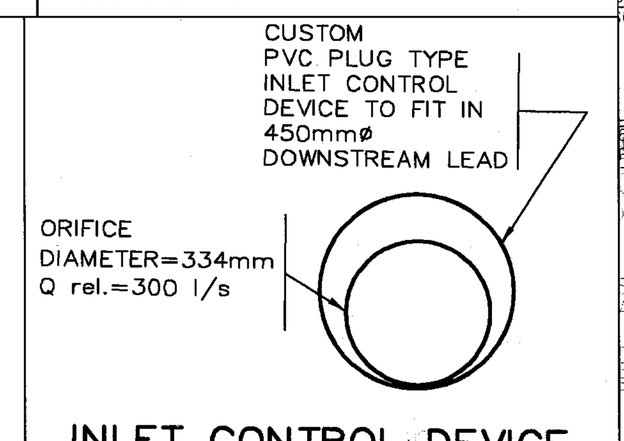
NOTE:

1. EXCAVATION TO BE CONTAINED WITHIN THE LIMITS OF THE EASEMENT WIDTH TO ENSURE NO CONFLICT WITH FUTURE RESIDENTIAL BUILDING FOOTINGS/ FOUNDATIONS.
2. BACKFILL WITH SELECT SUBGRADE MATERIAL COMPACTED TO 100% SPD TO 0.5m BELOW EXISTING GRADE FOR FULL TRENCH WIDTH OF DISTURBED AREA ALONG THE UNIT 5m PAST FRONT & REAR OF UNIT.
3. APPLICABLE TO ALL RY CB LEADS ALONG UNITS.



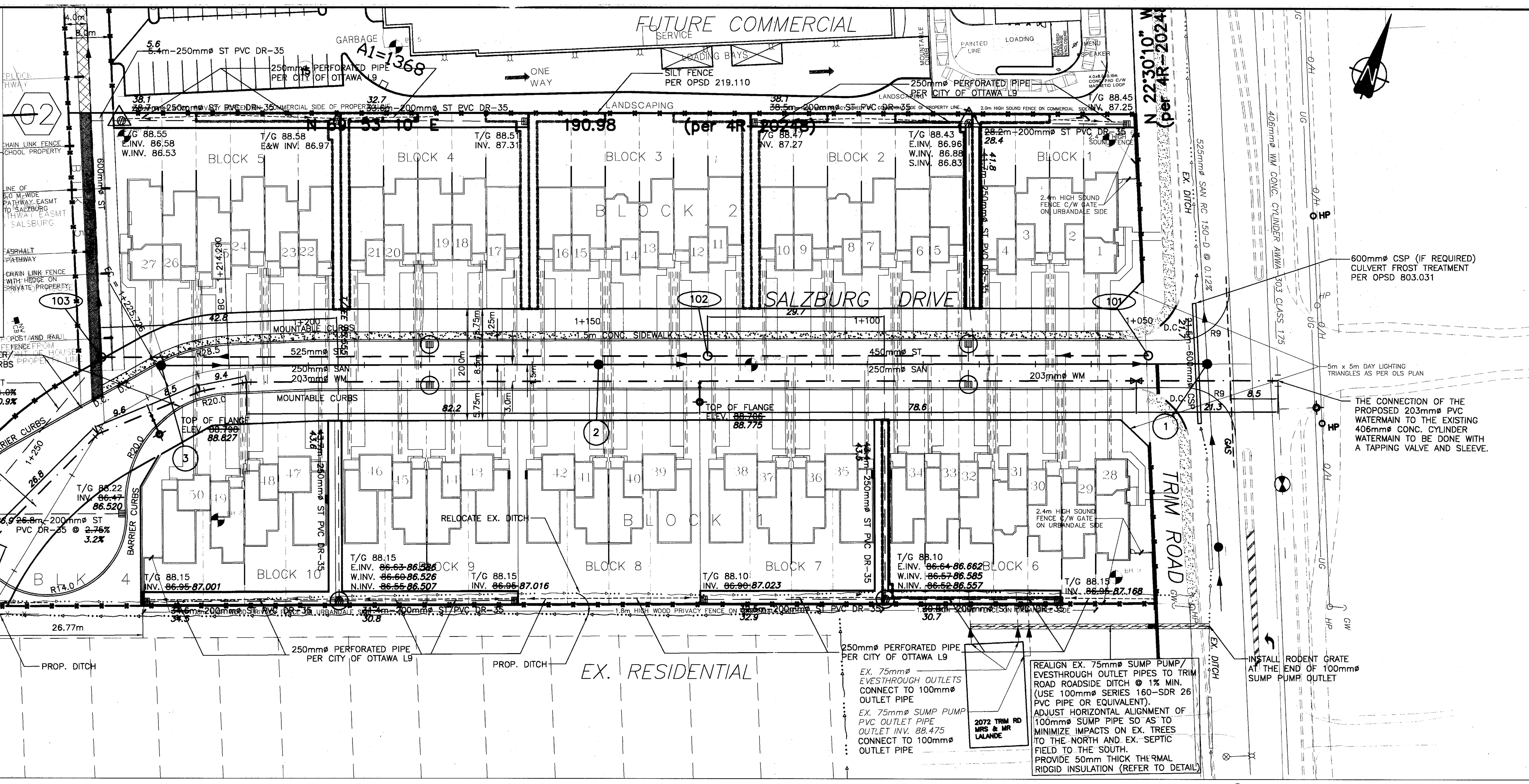
INSULATION DETAIL (SUMP PUMP/EVESTROUGH OUTLET)

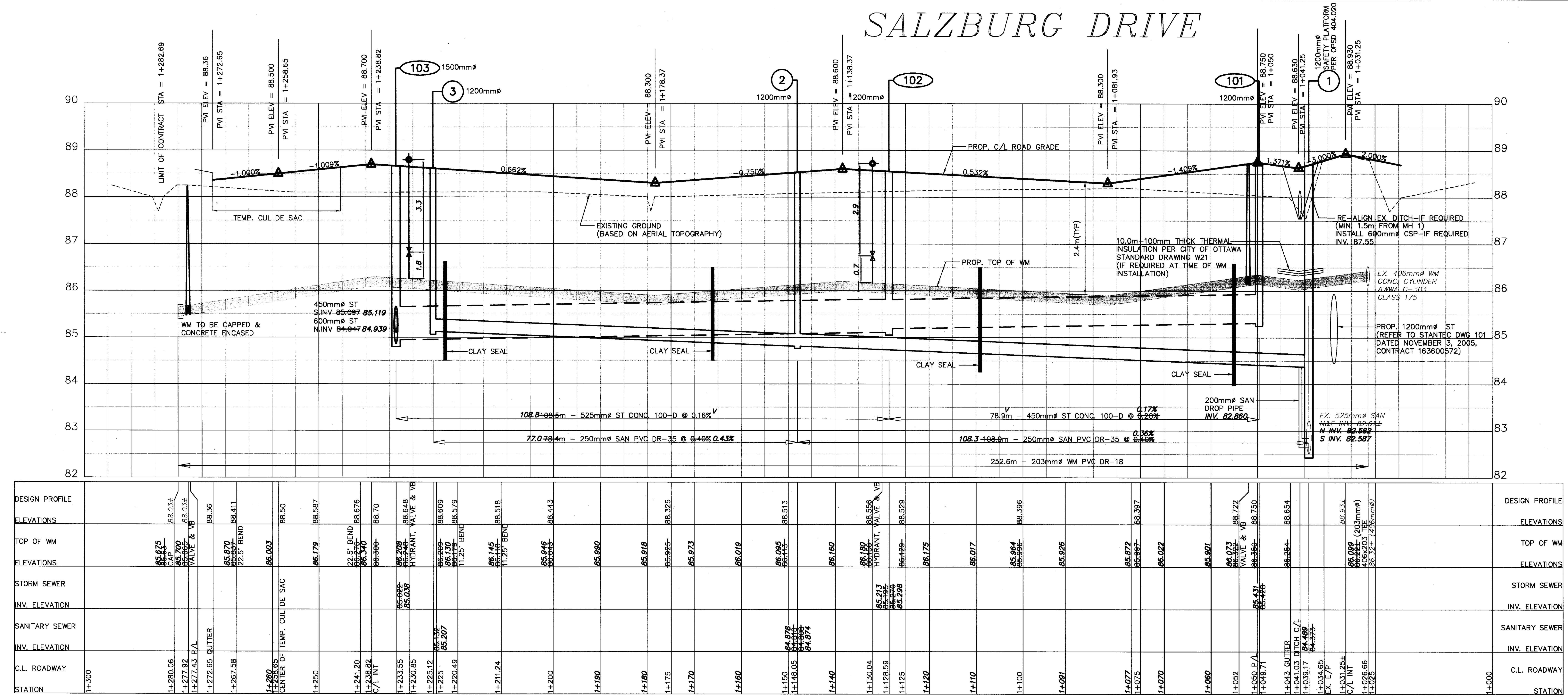
N.T.S.



INLET CONTROL DEVICE

N.T.S.





LEGEND

- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- CURB INLET TYPE CATCH BASIN
- CATCH BASIN / MANHOLE
- CB C/W CUSTOM MADE 13.4 L/S ICD (BY IPEX)
- 1200mmø CBMH C/W CUSTOM MADE 13.4 L/S ICD (BY IPEX)
- CB C/W 19.8 L/S IPEX TYPE "A" ICD
- 1200mmø CBMH C/W CUSTOM MADE 19.8 L/S ICD (BY IPEX)
- CURB INLET CB C/W 19.8 L/S IPEX TYPE "A" ICD
- PROPOSED CATCH BASIN & LEAD
- PROPOSED SANITARY SEWER & MANHOLE
- PROPOSED STORM SEWER & MANHOLE
- PROPOSED WATERMAIN, VALVE & HYDRANT
- EXISTING SANITARY SEWER & MANHOLE
- EXISTING STORM SEWER & MANHOLE
- EXISTING WATERMAIN, VALVE & HYDRANT
- VALVE CHAMBER
- PROPOSED SILT FENCE
- DRAINAGE EASEMENT
- CLAY SEAL — CLAY SEAL PER CITY OF OTTAWA STANDARD DWG. S8 AND MCROSTIE, GENEST, ST-LOUIS & ASSOCIATES LTD. SUBSURFACE INVESTIGATION REPORT No. SF-4908, DATED FEB. 4, 2005.
- INSULATION FOR SUMP PUMP/ EVESTROUGH OUTLET

AS CONSTRUCTED INFORMATION
PRODUCED FROM INFORMATION PROVIDED BY FIELD INSPECTOR
date: DEC. 23, 2007 T.S.
J.L. RICHARDS & ASSOCIATES LIMITED

NOTE: SEE SITE & LANDSCAPE PLAN FOR PRIVACY FENCE, PATHWAY FENCE AND NOISE BARRIER DETAIL.

NO.	REVISION	DATE
8	AS CONSTRUCTED INFO ADDED	23/01/07
7	REVISED PER CITY COMMENTS	24/03/06
6	SIDEWALK ADDED ON NORTH SIDE OF SALZBURG DR. AS PER CITY	30/01/06
5	ISSUED FOR CONSTRUCTION	10/01/06
4	REVISED PER CITY SITE PLAN COMMENTS	16/12/05
3	ISSUED FOR SITE PLAN SUBMISSION / MINOR R.O.W. REVISIONS	30/08/05
2	REVISED PER CITY COMMENTS	05/07/05
1	ISSUED FOR CITY APPROVAL	31/03/05

URBANDALE CORPORATION

J.L.Richards
ENGINEERS·ARCHITECTS·PLANNERS
J.L. Richards & Associates Limited
864 Lady Ellen Place
Ottawa, ON Canada
K1Z 5M2
Tel: 613 728 3571
Fax: 613 728 6012

PROJECT:

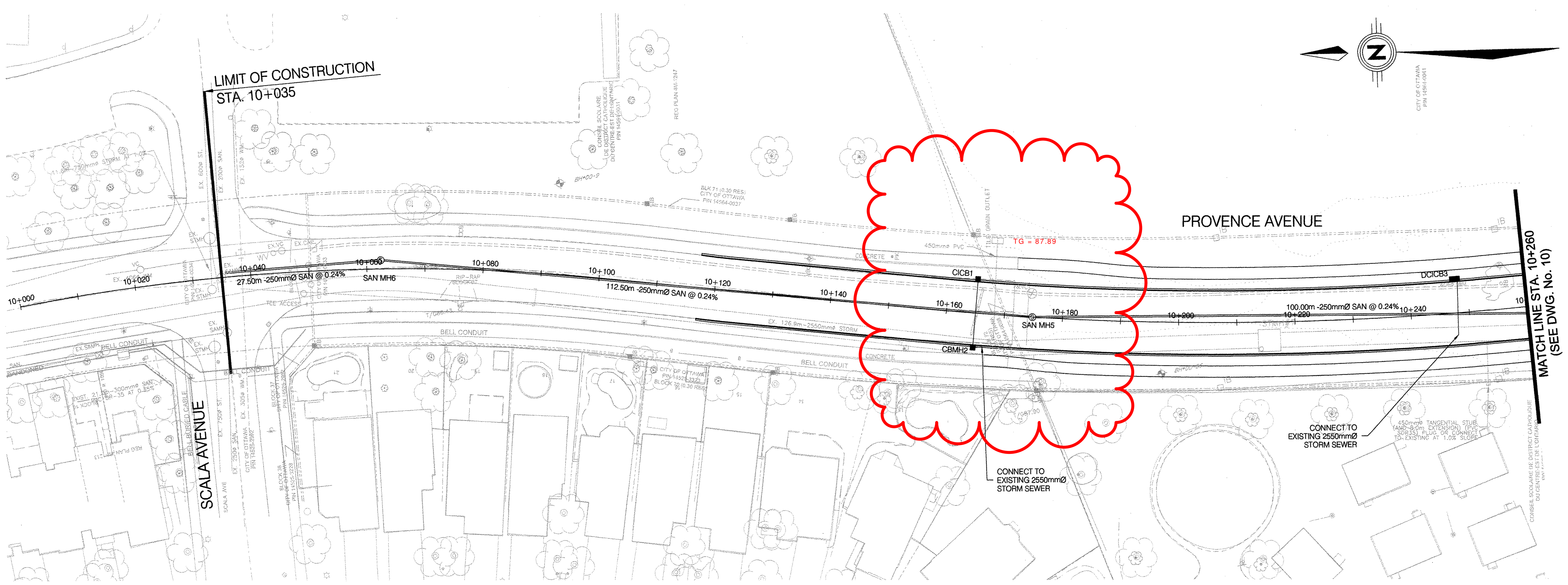
CITY OF OTTAWA URBANDALE CORPORATION EAST URBAN COMMUNITY PHASE 5C

DRAWING: V:\12912-06.LD\1291206 C 01-02.dwg

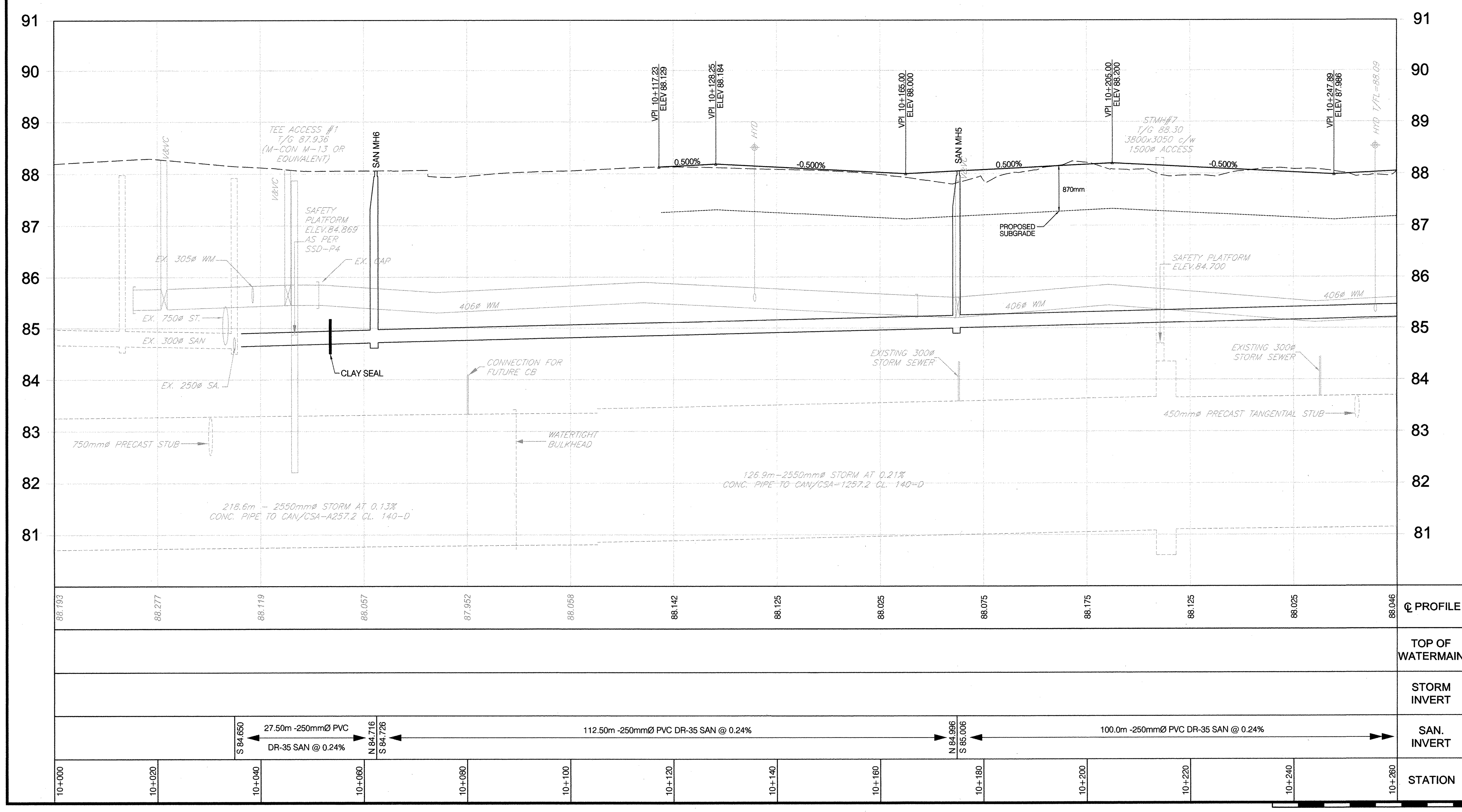
PLAN & PROFILE SALZBURG DRIVE

DESIGN:	DL	REVISION NO.:	
DRAWN:	TS	DRAWING NO.:	01
CHECKED:	LND		
DATE:	MARCH 2005		
SCALE:	1:500	JOB NO.:	12912-06

13708



AS BUILT



PROVENCE AVENUE

FROM SCALA AVENUE TO 250m NORTH OF PLAINHILL DRIVE

PLAN AND PROFILE I

STA: 10+000 TO 10+260

W. R. NEWELL, P.ENG.
General Manager
Infrastructure Services Department

DEREK LOUGHER-GOODEY, P.ENG.
Sr. Project Manager

IBI GROUP

Ottawa

Contract No. ISD12-5253	Dwg. No. 16265-09
Sheet 09 of 20	
Asset No. ———	
Asset Group ISD	
Des. -	Chk'd. -
Dwn. -	Chk'd. -
Utility Circ. No. 1210323	Index No. ___
Const. Inspector ___	

Scale: HORIZONTAL 0m 5 10 20; VERTICAL 0m 1 2

NOTE: The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

REVISIONS

No.	Description	By	Date (dd/mm/yy)
1	DETAILED DESIGN CIRCULATION	D.O.	11/12/2012
2.	ISSUED FOR TENDER	D.O.	08/03/2013
3.	RE-ISSUED FOR TENDER	D.O.	26/04/2013
4.	ISSUED FOR CONSTRUCTION	D.O.	14/06/2013
5.	RE-ISSUED FOR CONSTRUCTION	D.O.	11/07/2013
6.	AS-BUILT	PSR	05/01/2015

NOTE:

1. ALL HYDRANTS O/S 6.9m LT

CATCH BASIN DATA

NO.	STATION	OFFSET	COVER	STRUCTURE	ELEVATION	
					GUTTER	LOW/INV.
CICB1	10+165.00	5.50 LT	S22/S23	OPSD 705.010	87.890	86.490
CBMH2	10+165.00	5.50 RT	S22/S23	OPSD 701.010	87.890	86.390
DCICB3	10+247.89	5.50 LT	2 x S22/S23	OPSD 705.020	87.892	86.492

OFFSETS ARE FROM CONTROL LINE TO FACE OF CURB FOR CATCH BASINS

CATCH BASIN CONNECTION

LOCATION	DIA. (mm)	TYPE	LENGTH (m)	INVERT ELEVATIONS	
				UPSTR.	DOWNSTR.
CICB1 - CBMH2	200	PVC SDR35	11.90	86.490	86.431
CBMH2 - PIPE	300	PVC SDR35	1.61	86.390	83.330
DCICB3 - PIPE	375	PVC SDR35	9.70	86.492	83.307

LENGTH OF CATCH BASIN LEADS ARE FROM CENTRE OF CATCH BASINS TO CENTRE OF SEWERS

ICD DATA

LOCATION	CB LEAD DIA. (mm)	HEAD (m)*	FLOW (l/s)	INLET CONTROL DEVICE SIZING	
CBMH2	300	1.25	81	CUSTOM DIAMOND 164mm x 164mm	CUSTOM CIRCULAR 185mm Ø
DCICB3	375	1.21	297	CUSTOM DIAMOND 316mm x 316mm	CUSTOM CIRCULAR 357mm Ø

*HEAD FROM CENTRE OF CB LEAD TO TOP OF GRATE

SANITARY MAINTENANCE HOLE DATA

NO.	STATION	OFFSET	COVER	STRUCTURE	ELEVATION	
					T/GRATE	LOW/INV.
SAN MH6	10+062.40	1.50 LT	*S24	OPSD 701.010	88.026	84.716
SAN MH5	10+174.81	0.00	*S24	OPSD 701.010	88.049	84.996

OFFSETS ARE FROM CONTROL LINE TO CENTRE OF STRUCTURE
STATIONS AND T/GRATE ELEVATIONS ARE FROM THE CENTRE OF STRUCTURE

16265

Appendix F

Stormwater Management

Kallie Auld

From: Kallie Auld
Sent: Tuesday, July 28, 2020 3:11 PM
To: Kallie Auld
Subject: FW: Provence -2nd round of comments

From: Melanie Riddell <m.riddell@novatech-eng.com>
Sent: Thursday, August 29, 2019 2:32 PM
To: Kallie Auld <k.auld@novatech-eng.com>
Subject: Fwd: Provence -2nd round of comments

FYI

Melanie E. Riddell, P.Eng., Senior Project Manager | Land Development
NOVATECH
Tel: 613.254.9643 x 240 | Cell: 613.276.7240

Sent from my iPhone

Begin forwarded message:

From: "Warnock, Charles" <Charles.Warnock@ottawa.ca>
Date: August 29, 2019 at 2:14:48 PM EDT
To: Melanie Riddell <m.riddell@novatech-eng.com>
Cc: Trevor McKay <t.mcKay@novatech-eng.com>, "Lebrun, Julie (Planning)" <Julie.Lebrun@ottawa.ca>, "Curry, William" <William.Curry@ottawa.ca>, "Erin O'Connor" <eoconnor@regionalgroup.com>, "Mashaie, Sara" <sara.mashaie@ottawa.ca>
Subject: Provence -2nd round of comments

Sorry, one other thing we spoke about that I forgot to put in the email below.
We do not want to have an ICD on the City storm sewer.
We expect with the criteria below this will no longer be necessary.
Thank you.
Charles

From: Warnock, Charles
Sent: August 29, 2019 2:09 PM
To: 'Melanie Riddell' <m.riddell@novatech-eng.com>
Cc: Trevor McKay <t.mcKay@novatech-eng.com>; Lebrun, Julie (Planning) <Julie.Lebrun@ottawa.ca>; Curry, William <William.Curry@ottawa.ca>; Erin O'Connor <eoconnor@regionalgroup.com>; Mashaie, Sara <sara.mashaie@ottawa.ca>
Subject: Provence -2nd round of comments

Hi Melanie, the following is a summary of our conversation this afternoon.
Please let me know if I have missed anything, not clear, or not same as we discussed.

The restriction of 70 L/s/ha is less than the 2 year peak flow for the development area.
Preferably we would like to be able to boost the minor flows to the 2 year level. However this could be a problem as it was designed for 70 L/s/ha.

If you have a computer model that verifies that the input to the minor system can be increased from70 L/s/ha cities that would be the preferred option.

We will accept a design that limits the flow to 70 L/s/ha and ponds on the surface during the 2 year storm. The pipe design should follow the rational mthod design process (2, 5, and 10 year storms). Please include the following in your report and drawings:

- The 2 year ponding limits shown on the ponding plan.
- The actual L/s/ha capture rate for each individual ICD and the corresponding rational design flow for the same inlet in L/s/ha. We would like to have a consistent ponding frequency throughout the development.
- Provide a table that shows the length of time for surface ponding during the 2 year event.

The area also has a prescribed major storage requirement (cu.m./ha). This was to ensure the 100 year was self-contained within the subdivision. This storage requirement is not easily obtained without going to elaborate designs. Therefore please provide us information on the following for the major overland flow:

- Overflow points from the subdivision.
- The approximate return period of when the major overland flow exits the site.
- The flow and volume of water overflowing from the site in the 100 year storm.

Thank you.
Charles

VORTECHS SYSTEM® ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION
BASED ON AN AVERAGE PARTICLE SIZE OF TYPICAL MICRONS

Province P5
Ottawa
VORTECHS 9000
-

Design Ratio[1] = $\frac{\text{(5.51 hectares) x (0.63) x (2.775)}}{\text{(5.9 m2)}}$ **= 1.62**

Rainfall Intensity mm/hr	Operating Rate[2] % of capacity	Flow Treated (l/s)	% Total Rainfall Volume[3]	Rmvl. Effcy[4] (%)	Rel. Effcy (%)
0.5	1.2	4.7	9.2%	98.0%	9.0%
1.0	2.4	9.5	10.6%	98.0%	10.4%
1.5	3.6	14.2	9.9%	98.0%	9.7%
2.0	4.8	18.9	8.4%	98.0%	8.2%
2.5	6.0	23.6	7.7%	98.0%	7.5%
3.0	7.2	28.4	5.9%	97.6%	5.8%
3.5	8.4	33.1	4.4%	96.9%	4.2%
4.0	9.5	37.8	4.7%	96.3%	4.5%
4.5	10.7	42.6	3.3%	96.0%	3.2%
5.0	11.9	47.3	3.0%	95.3%	2.9%
6.0	14.3	56.8	5.4%	92.8%	5.0%
7.0	16.7	66.2	4.4%	90.6%	3.9%
8.0	19.1	75.7	3.5%	88.0%	3.1%
9.0	21.5	85.1	2.8%	86.8%	2.4%
10.0	23.9	94.6	2.2%	85.7%	1.9%
15.0	35.8	141.9	7.0%	79.4%	5.5%
20.0	47.7	189.2	4.5%	67.7%	3.1%
25.0	59.6	236.5	1.4%	58.7%	0.8%
30.0	71.6	283.8	0.7%	47.9%	0.3%
35.0	83.5	331.1	0.5%	30.1%	0.1%
40.0	95.4	378.4	0.5%	12.8%	0.1%
					91.8%

Predicted Annual Runoff Volume Treated = 93.5%
Assumed Removal Efficiency of remaining % = 0.0%
Removal Efficiency Adjustment[5] = 6.5%
Predicted Net Annual Load Removal Efficiency = **85%**

1 - Design Ratio = (Total Drainage Area) x (Runoff Coefficient) x (Rational Method Conversion) / Grit Chamber Area
- The Total Drainage Area and Runoff Coefficient are specified by the site engineer.
- The rational method conversion based on the units in the above equation is 2.775.

2 - Operating Rate (% of capacity) = percentage of peak operating rate of 68 l/s/m^2.

3 - Based on 42 years of hourly rainfall data from Canadian Station 6105976, Ottawa CDA, ON

4 - Based on Contech Construction Products laboratory verified removal of an average particle size of TYPICAL microns (see Technical Bulletin #1).

5- Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

Calculated by:	NP	2-MAY-24	Checked by:

VORTECHS SYSTEM® ESTIMATED FLOW CALCULATIONS

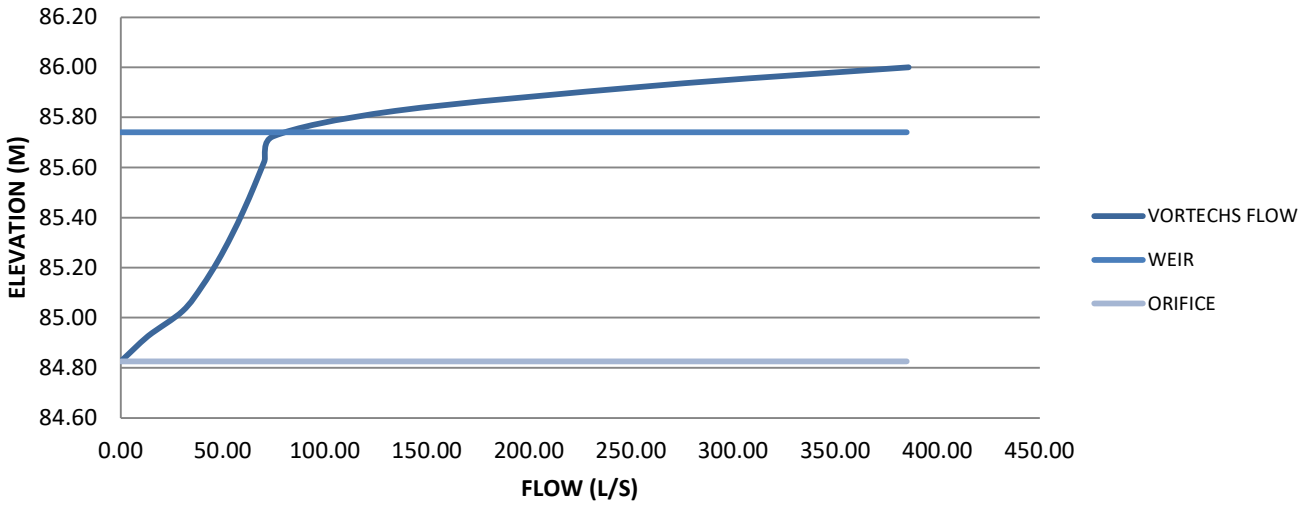
Province P5
Ottawa
MODEL NAME VORTECHS 9000
SITE DESIGNATION -

Vortechs Orifice		Weir	
Cd =	0.56	Cd =	3.3
A (m^2) =	0.033	Weir Crest Length (m) =	1.219
Crest Elevation (m) =	84.83	Crest Elevation (m) =	85.74

Head (m)	Elevation (m)	Orifice Flow (l/s)	Weir Flow (l/s)	Total Flow (l/s)
0.00	84.83	0.00	0.00	0.00
0.10	84.93	13.44	0.00	13.44
0.20	85.03	30.29	0.00	30.29
0.30	85.13	39.86	0.00	39.86
0.40	85.23	47.55	0.00	47.55
0.50	85.33	54.16	0.00	54.16
0.60	85.43	60.04	0.00	60.04
0.70	85.53	65.40	0.00	65.40
0.80	85.63	70.35	0.00	70.35
0.90	85.73	74.97	0.00	74.97
1.00	85.83	79.33	55.29	134.62
1.10	85.93	83.46	177.08	260.54
1.17	86.00	86.53	299.35	385.87

Calculated by: NP | 2-MAY-24

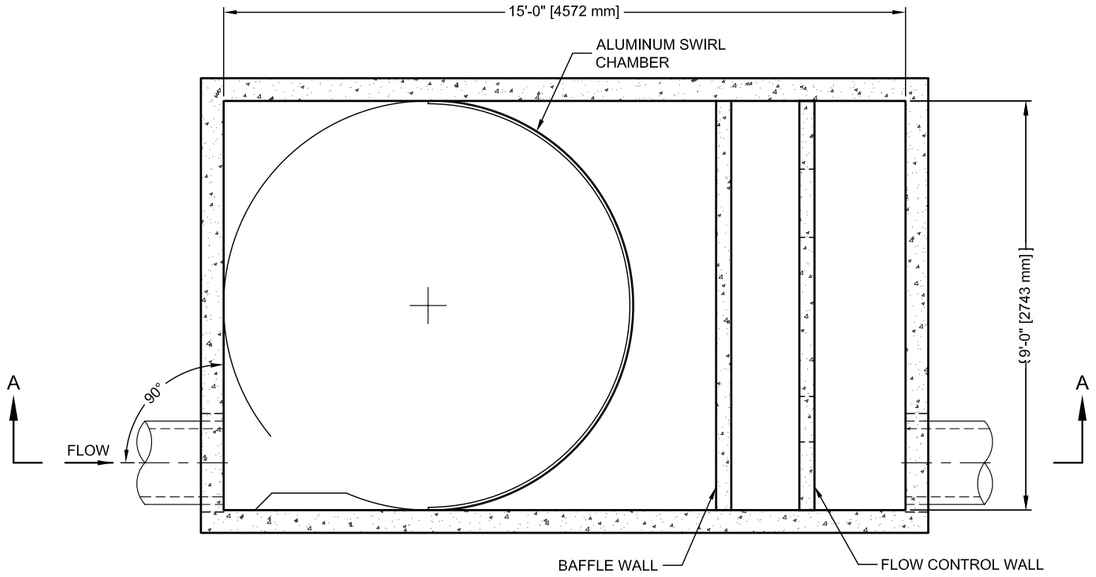
VORTECHS STAGE DISCHARGE CURVE



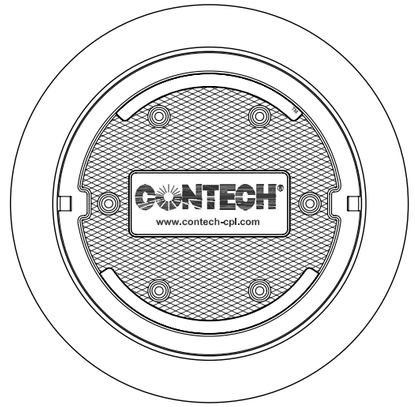
VORTECHS 9000 DESIGN NOTES

VORTECHS 9000 RATED TREATMENT CAPACITY IS 14 CFS, OR PER LOCAL REGULATIONS. IF THE SITE CONDITIONS EXCEED RATED TREATMENT CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

THE STANDARD INLET/OUTLET CONFIGURATION IS SHOWN. FOR OTHER CONFIGURATION OPTIONS , PLEASE CONTACT YOUR CONTECH REPRESENTATIVE. www.contechES.com



SECTION B-B



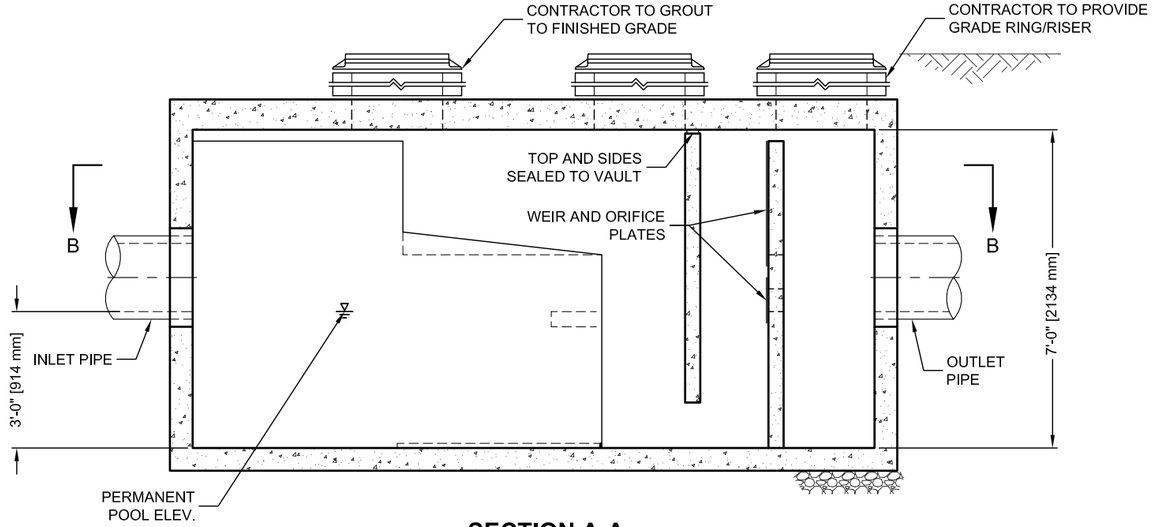
FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID			*
WATER QUALITY FLOW RATE (CFS)			*
PEAK FLOW RATE (CFS)			*
RETURN PERIOD OF PEAK FLOW (YRS)			*
PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*
RIM ELEVATION			*
ANTI-FLOTATION BALLAST		WIDTH	HEIGHT
		*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD



SECTION A-A

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH REPRESENTATIVE. www.contechES.com
4. VORTECHS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET AASHTO M306 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
6. INLET PIPE(S) MUST BE PERPEDICULAR TO THE VAULT AND AT THE CORNER TO INTRODUCE THE FLOW TANGENTIALLY TO THE SWIRL CHAMBER. DUAL INLETS NOT TO HAVE OPPOSING TANGENTIAL FLOW DIRECTIONS.
7. OUTLET PIPE(S) MUST BE DOWN STREAM OF THE FLOW CONTROL BAFFLE AND MAY BE LOCATED ON THE SIDE OR END OF THE VAULT. THE FLOW CONTROL WALL MAY BE TURNED TO ACCOMODATE OUTLET PIPE KNOCKOUTS ON THE SIDE OF THE VAULT.

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE VORTECHS STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

Vortechs®

CONTECH® ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

VORTECHS 9000 STANDARD DETAIL

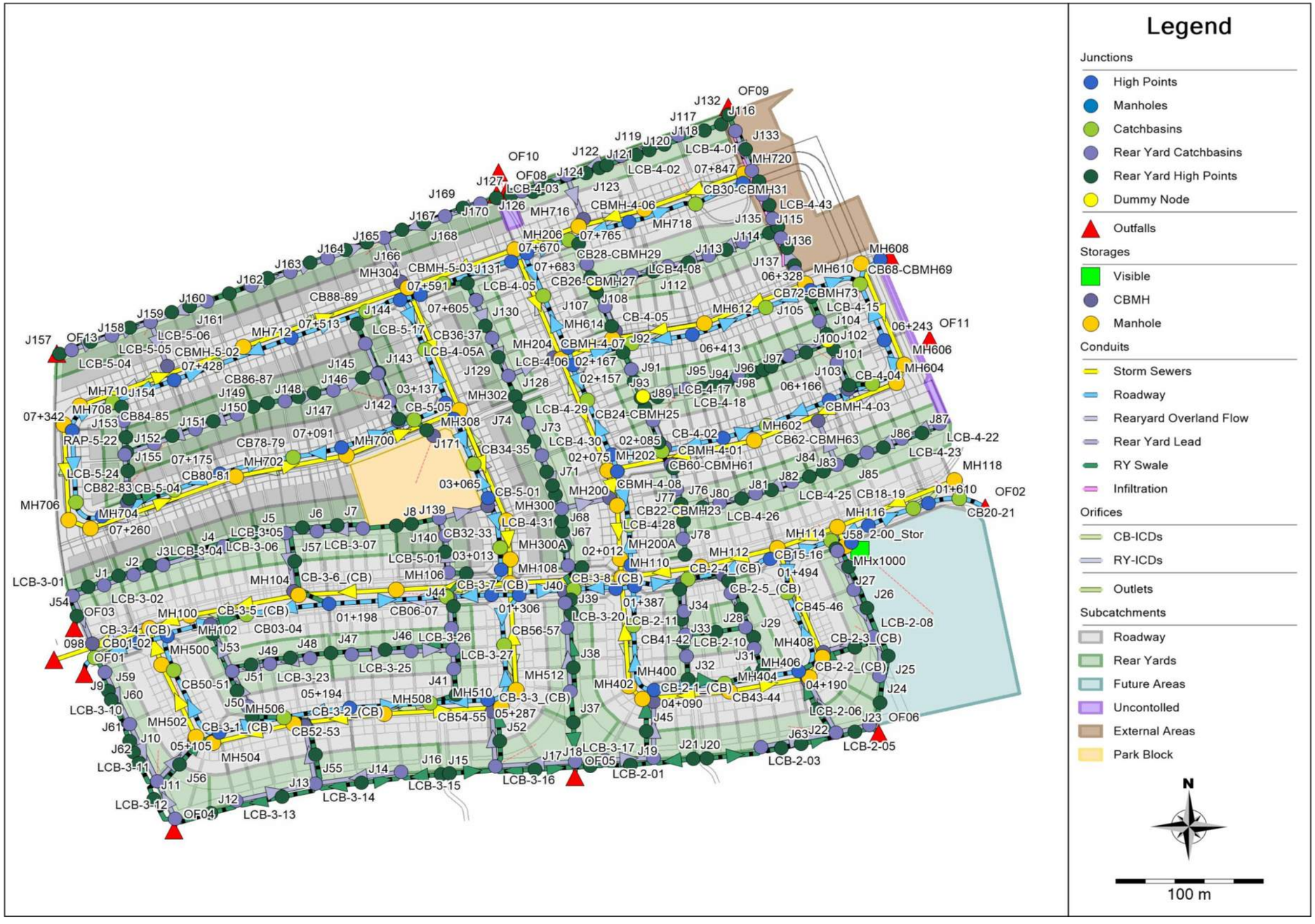
Provence Orleans Phase 5A
Post-Development Model Parameters

NOVATECH
Engineers, Planners & Landscape Architects

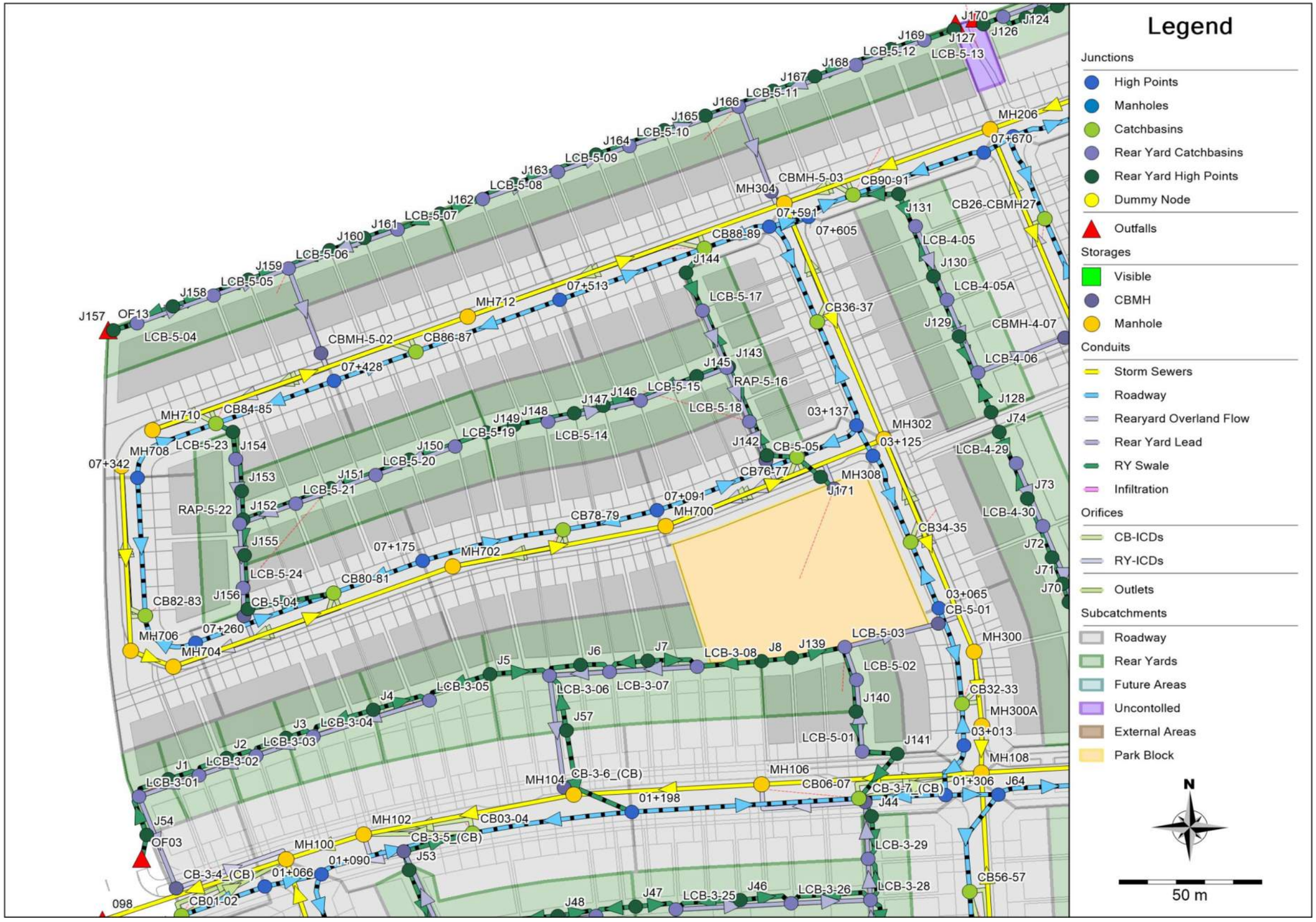
Area ID	Catchment Area (ha)	Runoff Coeff. (C)	Percent Imperv. (%)	No Depression (%)	Flow Path Length (m)	Equivalent Width (m)	Average Slope (%)
Phases 2 & 3							
2-00	1.239	0.65	64%	50%	44.5	278.6	0.5%
2-01A	0.084	0.68	69%	30%	27.4	30.7	3.0%
2-01B	0.162	0.67	67%	30%	27.4	59.2	3.0%
2-02	0.230	0.69	70%	25%	24.8	92.7	3.0%
2-03	0.173	0.41	30%	100%	20.8	83.1	3.0%
2-04	0.464	0.64	63%	39%	23.8	195.4	3.0%
2-05	0.339	0.66	66%	26%	26.6	127.5	3.5%
2-06	0.173	0.43	33%	100%	16.8	103.3	3.3%
2-07	0.160	0.46	37%	100%	15.7	101.6	3.5%
2-08	0.265	0.36	23%	100%	30.1	88.0	2.5%
2-09	0.411	0.64	63%	39%	24.1	170.5	3.5%
2-10	0.133	0.36	23%	100%	29.9	44.5	2.5%
2-11	0.417	0.63	61%	44%	25.7	162.2	3.5%
2-12	0.280	0.55	50%	100%	22.3	125.4	3.0%
2-13	0.146	0.67	67%	0%	9.9	147.0	0.8%
3-01	0.280	0.55	50%	100%	43.0	65.1	2.5%
3-02	0.433	0.65	64%	41%	21.9	197.5	3.5%
3-03	0.508	0.65	64%	36%	25.3	200.9	3.0%
3-04	0.349	0.55	50%	100%	13.7	253.9	2.5%
3-05	0.617	0.65	64%	36%	25.7	240.3	3.5%
3-06	0.313	0.55	50%	100%	14.1	221.9	2.5%
3-07	0.425	0.65	64%	40%	23.7	179.3	3.5%
3-08	0.324	0.55	50%	100%	23.3	139.4	2.5%
3-09	0.410	0.65	64%	42%	23.2	177.0	3.5%
3-10	0.232	0.55	50%	100%	35.8	64.7	3.0%
3-11	0.440	0.65	64%	48%	24.7	177.8	3.0%
3-12	0.346	0.55	50%	100%	40.1	86.4	2.0%
3-13_1	0.157	0.55	50%	100%	23.2	67.5	2.0%
3-13_2	0.068	0.55	50%	100%	17.7	38.5	2.0%
3-13_3	0.104	0.55	50%	100%	18.8	55.3	2.0%
3-13_4	0.066	0.55	50%	100%	16.7	39.6	2.0%
3-13_6	0.043	0.55	50%	100%	15.9	27.1	2.0%
3-14	0.120	0.65	64%	28%	25.0	48.0	4.5%
Phase 4							
4A-01	0.319	0.68	69%	40%	24.8	128.8	4.0%
4A-02	0.521	0.59	56%	100%	18.0	289.9	3.0%
4A-03	0.420	0.70	71%	50%	23.9	175.9	4.0%
4A-04	0.363	0.70	71%	45%	24.4	148.5	4.0%
4A-05	0.262	0.56	51%	25%	24.6	106.4	4.0%
4A-06	0.320	0.63	61%	40%	25.3	126.7	4.0%
4A-07	0.265	0.57	53%	100%	16.9	156.9	3.5%
4A-08	0.302	0.56	51%	100%	15.4	195.8	3.0%
4A-09	0.386	0.68	69%	50%	24.6	157.1	3.5%
4A-10	0.384	0.56	51%	100%	16.4	233.5	3.5%
4A-11	0.376	0.55	50%	100%	15.3	245.5	3.5%
4A-12	0.267	0.66	66%	40%	25.6	104.2	4.0%
4A-13	0.386	0.60	57%	100%	15.1	254.8	3.0%
4A-14	0.339	0.69	70%	45%	24.4	138.7	4.0%
4B-01A	0.223	0.72	74%	55%	26.8	83.3	3.5%
4B-01B	0.213	0.69	70%	25%	22.9	93.1	4.0%
4B-02	0.264	0.63	61%	100%	17.6	149.7	4.0%
4B-03	0.311	0.70	71%	45%	23.0	135.5	3.5%
4B-04	0.353	0.68	69%	45%	25.1	140.6	4.0%
4B-05	0.279	0.56	51%	100%	15.9	175.5	3.5%
DR-1	0.025	0.34	20%	0%	24.7	10.1	3.0%
DR-2	0.039	0.20	0%	0%	4.5	86.8	12.0%
Phase 5A							
5A-01	0.262	0.70	71%	35%	39.7	66.0	4.0%
5A-02	0.310	0.58	54%	100%	16.2	191.5	4.5%
5A-03	0.382	0.71	73%	40%	24.2	157.8	3.5%
5A-04	0.426	0.57	53%	100%	23.8	178.9	3.0%
5A-05	0.219	0.68	69%	30%	37.0	59.2	3.5%
5A-06	0.136	0.61	59%	100%	19.4	70.1	5.0%
5A-07	0.269	0.71	73%	45%	23.1	116.4	4.0%
Phase 5B							
5B-01	0.355	0.66	66%	45%	22.3	159.4	4.5%
5B-02	0.204	0.58	54%	100%	16.3	125.4	6.0%
5B-03	0.423	0.70	71%	50%	25.5	165.7	4.5%
5B-04	0.363	0.71	73%	45%	23.5	154.4	4.0%
5B-05	0.315	0.66	66%	35%	42.7	73.8	3.0%
5B-06	0.386	0.72	74%	45%	22.8	169.1	4.5%
5B-07	0.386	0.56	51%	100%	21.1	183.1	4.0%
5B-08	0.460	0.71	73%	50%	27.7	166.2	5.0%
5B-09	0.215	0.67	67%	30%	28.4	75.8	4.5%
5B-10	0.401	0.30	14%	0%	55.9	71.7	0.5%
Subtotal:	***22.04***						
Offsite Areas (Drain into Phase 4)							
OS-1	0.529	0.32	17%	40%	32.9	160.6	3.0%
Subtotal:	***0.53***						
TOTAL:	**22.57**						

Provence Orleans Phase 5A
Overall Model Schematic

NOVATECH
Engineers, Planners & Landscape Architects



NOVATECH
Engineers, Planners & Landscape Architects



Provence Orleans Phase 5A
Inlet Control Device Parameters

NOVATECH
Engineers, Planners & Landscape Architects

Area ID	CB/ ICD ID	ICD Size	Invert (m)	T/G (m)	Max. Head* (m)	Max. Capture Rate** (L/s)	100-yr Water Level*** (m)	100-yr Head (m)	100-year Approach Flow*** (L/s)	100-year Approach Flow*** (L/s/ha)	100-year Rational Method Flow (L/s)	100-year Rational Method Flow (L/s/ha)	100-year Capture Rate*** (L/s)	Drainage Area (ha)	Flow Rate (L/s/ha)****
PHASE 5A															
Roadway Catchbasins															
5A-07	CB32	LMF90	87.75	89.11	1.68	10	89.45	1.67	126	937	59	442	10	0.135	74
	CB33	LMF90	87.75	89.11	1.68	10	89.45	1.67					10	0.135	74
5A-05	CB34	LMF75	87.73	89.05	1.64	7	89.35	1.59	97	887	46	423	7	0.110	62
	CB35	LMF75	87.73	89.05	1.64	7	89.35	1.59					7	0.110	62
5A-03	CB36	83mm	87.81	89.02	1.52	18	89.32	1.47	178	932	84	442	18	0.191	93
	CB37	LMF105	87.81	89.02	1.52	13	89.32	1.47					13	0.191	66
5A-01	CB90	LMF85	87.60	88.95	1.67	8	89.28	1.65	118	898	57	435	8	0.131	63
	CB91	LMF85	87.60	88.95	1.67	8	89.28	1.65					8	0.131	63
Rear Yard Catchbasins															
5A-06	CB-5-01	LMF90	87.77	89.63	2.23	12	89.53	1.73	65	475	52	379	10	0.136	74
5A-02	CBMH-5-03	LMF85	86.99	89.52	2.90	11	88.83	1.81	146	471	112	361	9	0.310	28
5A-04	CB-5-05	83mm	87.56	89.36	2.16	22	89.58	1.98	196	460	151	355	21	0.426	49

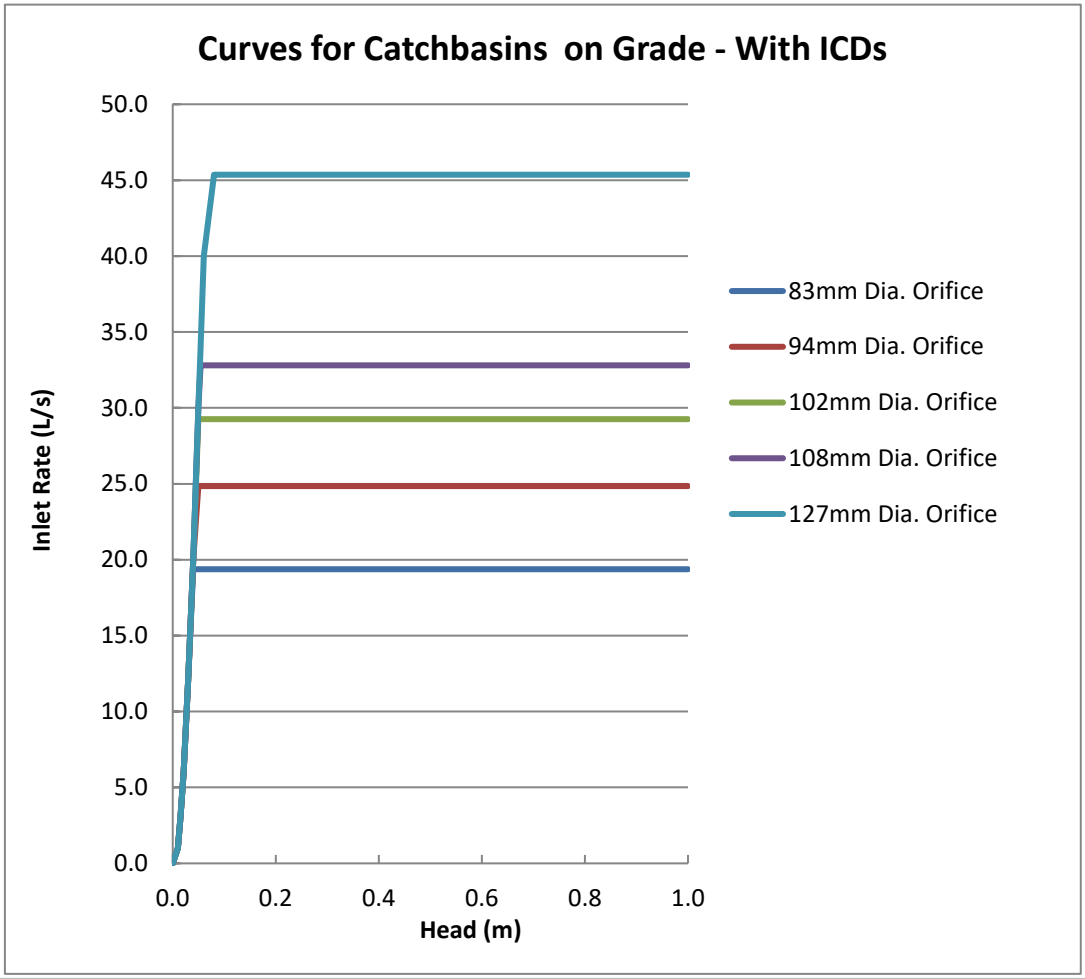
Max head is calculated as the T/G elevation plus 0.35m for roadway CBs and 0.40m for rear yard CBs

** Max capture rate is calculated using the orifice equation, based on the max head*

*** From PCSWMM 100-yr 3-hour Chicago Storm event*

**** Calculated from 100-year Capture Rate*

Provence Orlease Phase 5A
Catchbasin (On-Grade) with ICD Curves



Curb Inlet Catchbasins on Continuous Grade

Depth vs. Captured Flow Curve

A standard depth vs. captured flow curve for catch basins on a continuous grade was provided to Novatech by City staff for use in a dual-drainage model of an existing residential neighbourhood. This standard curve was derived using the inlet curves in Appendix 7A of the Ottawa Sewer Design Guidelines.

Novatech reviewed the methodology used to create this standard curve (described below) and determined that it was suitable for general use in other dual-drainage models.

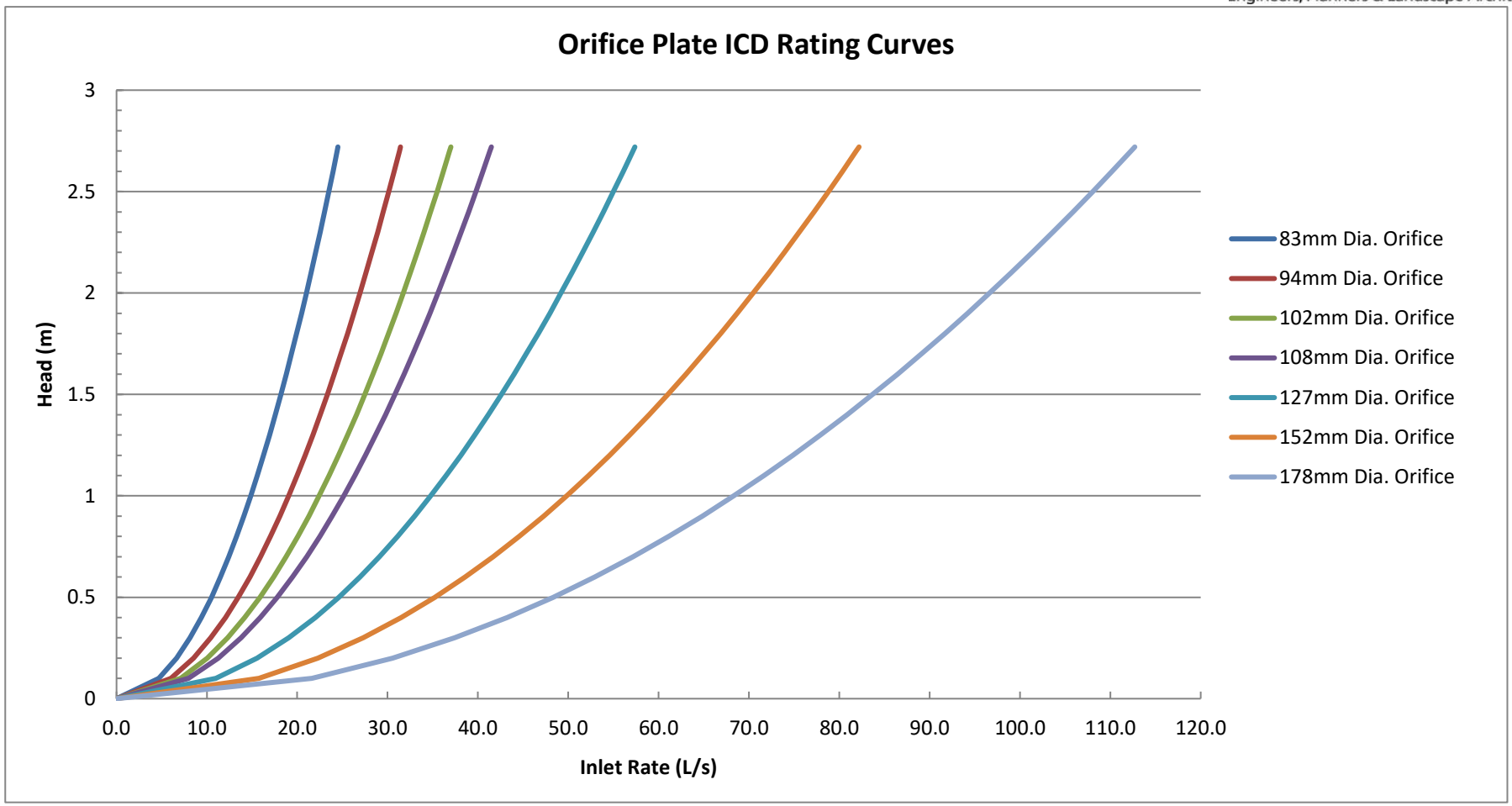
- MTO Design Chart 4.04 provides the relationship between the gutter flow rate (Q_t) and flow spread (T) for Barrier Curb.
- MTO Design Chart 4.12 provides the relationship between flow spread (T) and flow depth (D).
- The relationship between the gutter flow rate (Q_t) and flow depth (D) was determined for different road slopes using the above charts and Manning's equation (refer to pages 58-60 of the MTO Drainage Management Manual – Part 2);
- The relationship between approach flow (Q_t) and captured flow (Q_c) was determined for different road slopes using the design chart for Barrier Curb with Gutter (Appendix 7-A.2).
- Using the above information, a family of curves was developed to characterize the relationship between flow depth and captured flow for curb inlet catchbasins on different road slopes. The results of this exercise can be summarized as follows:
    - For a given flow depth, the gutter flow rate (Q_t) increases as the road slope increases.
    - The capture efficiency (Q_c) of curb inlet catchbasins decrease as the road slope increases.
    - The net result is that the relationship between flow depth and capture rate is largely independent of road slope: While approach flow vs. captured flow (Q_t vs. Q_c) varies significantly with road grade, flow depth vs. captured flow (D vs. Q_c) does not.

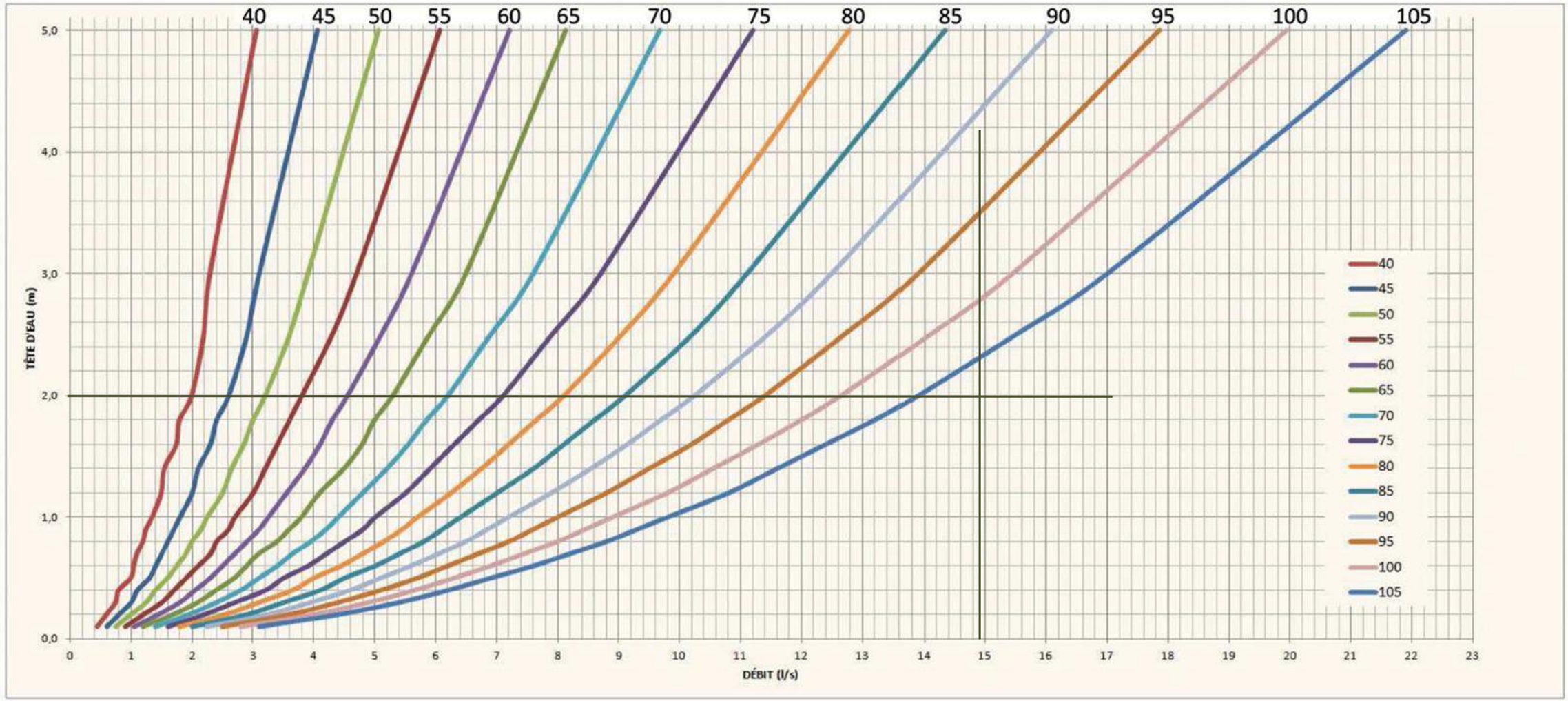
Since there was very little difference in the flow depth vs. captured flow curves for different road slopes, this family of curves was averaged to create a single standard curve for use in dual-drainage models.

Inlet Control Devices

The standard depth vs. capture flow curve was modified to account for the installation of ICDs in curb inlet catchbasins on continuous grade. Separate inlet curves were created for each standard ICD orifice size by capping the inlet rate on the depth vs. capture flow curve at the maximum flow rate through the ICD at a head of 1.2m (depth from centerline of CB lead to top of CICB frame).

Provence Orleans Phase 5A
ICD Rating Curves




40
45
50
55
60
65
70
75
80
85
90
95
100
105
5,0
4,0
3,0
2,0
1,0
0,0
TÊTE D'EAU (m)
0
1
2
3
4
5
6
7
8
9
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23
DÉBIT (l/s)

Provence Orleans Phase 5A
HGL Elevations

NOVATECH
Engineers, Planners & Landscape Architects

Manhole ID	MH Invert Elevation (m)	T/G Elevation (m)	HGL Elevation - 100yr3hr (m)	HGL Elevation - 100yr3hr+20% (m)	Design USF (m)	Clearance (100yr) (m)	Clearance (100yr+20%) (m)
Phase 5A							
MH300	85.27	89.34	85.60	85.60	87.85	2.25	2.25
MH300A	84.72	89.32	85.21	85.21	87.83	2.62	2.62
MH302	85.60	89.49	85.92	85.92	87.45	1.53	1.53
MH304	86.23	89.38	86.46	86.46	87.28	0.82	0.82

Provence Orleans Phase 5A

Ponding in Road Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Structure	T/G*	Max. Static Ponding (Spill Depth)		2-yr Event (3hr)				5-yr Event (3hr)				100-yr Event (3hr)				100-yr Event (+20%) (3hr)			
		Elev.**	Depth	Elev.	Depth	Cascading	Cascade	Elev.	Depth	Cascading	Cascade	Elev.	Depth	Cascading	Cascade	Elev.	Depth	Cascading	Cascade
	(m)	(m)	(m)	(m)	(m)	Flow?	Depth (m)	(m)	(m)	Flow?	Depth (m)	(m)	(m)	Flow?	Depth (m)	(m)	(m)	Flow?	Depth (m)
Phase 5A																			
Roadway CB																			
CB32-33	89.11	89.40	0.29	89.25	0.14	N	0.00	89.32	0.21	N	0.00	89.45	0.34	Y	0.05	89.48	0.37	Y	0.08
CB34-35	89.05	89.40	0.35	89.17	0.12	N	0.00	89.22	0.17	N	0.00	89.35	0.30	N	0.00	89.44	0.39	Y	0.04
CB36-37	89.02	89.27	0.25	89.15	0.13	N	0.00	89.21	0.19	N	0.00	89.32	0.30	Y	0.05	89.36	0.34	Y	0.09
CB90-91	88.95	89.19	0.24	89.07	0.12	N	0.00	89.13	0.18	N	0.00	89.28	0.33	Y	0.09	89.35	0.40	Y	0.16
RYCB																			
LCB-5-01	89.25	89.55	0.30	88.36	0.00	N	0.00	88.69	0.00	N	0.00	89.54	0.29	N	0.00	89.69	0.44	Y	0.14
LCB-5-02	89.31	89.55	0.24	88.36	0.00	N	0.00	88.69	0.00	N	0.00	89.54	0.23	N	0.00	89.69	0.38	Y	0.14
LCB-5-03	89.15	89.55	0.40	88.36	0.00	N	0.00	88.69	0.00	N	0.00	89.54	0.39	N	0.00	89.69	0.54	Y	0.14
LCB-5-08	88.50	88.85	0.35	87.59	0.00	N	0.00	87.83	0.00	N	0.00	88.83	0.33	N	0.00	88.94	0.44	Y	0.09
LCB-5-09	88.50	88.85	0.35	87.59	0.00	N	0.00	87.83	0.00	N	0.00	88.83	0.33	N	0.00	88.94	0.44	Y	0.09
LCB-5-10	88.50	88.85	0.35	87.59	0.00	N	0.00	87.83	0.00	N	0.00	88.83	0.33	N	0.00	88.94	0.44	Y	0.09
LCB-5-11	88.50	88.85	0.35	87.59	0.00	N	0.00	87.83	0.00	N	0.00	88.83	0.33	N	0.00	88.94	0.44	Y	0.09
LCB-5-12	88.50	88.85	0.35	87.59	0.00	N	0.00	87.83	0.00	N	0.00	88.83	0.33	N	0.00	88.94	0.44	Y	0.09
LCB-5-13	88.50	88.85	0.35	87.59	0.00	N	0.00	87.83	0.00	N	0.00	88.83	0.33	N	0.00	88.94	0.44	Y	0.09
LCB-5-14	89.18	89.50	0.32	88.31	0.00	N	0.00	89.20	0.02	N	0.00	89.58	0.40	Y	0.08	89.66	0.48	Y	0.16
LCB-5-15	89.18	89.46	0.28	88.30	0.00	N	0.00	89.20	0.02	N	0.00	89.58	0.40	Y	0.12	89.65	0.47	Y	0.19
LCB-5-17	89.18	89.46	0.28	88.30	0.00	N	0.00	89.20	0.02	N	0.00	89.58	0.40	Y	0.12	89.65	0.47	Y	0.19
LCB-5-18	89.18	89.42	0.24	88.30	0.00	N	0.00	89.20	0.02	N	0.00	89.58	0.40	Y	0.16	89.65	0.47	Y	0.23

** Note that for some CB/CBMH pairs, the T/G elevations differs between the two structures. The lower of the two has been used in the model.*

*** For some highpoints, one side of the road is higher than the other. The lower of the two has been used in the model. For rear yard areas, the highest downstream spill point was used since the ICD on the rear yards causes a lumped ponding area that is interconnected through the pipe system.*

Provence Orleans Phase 5A
ICD Ponding Flow Rates

ICD/ CB	Drainage Area* (ha)	T/G (m)	Invert (m)	Max Head** (m)	Calculated Max Flow Rate		2yr ICD Flow			5yr ICD Flow			100yr ICD Flow		
					L/s	L/s/ha	L/s	L/s/ha	Ponding Time*** (h:mm)	L/s	L/s/ha	Ponding Time*** (h:mm)	L/s	L/s/ha	Ponding Time*** (h:mm)
Phase 5A															
Roadway Catchbasins															
CB32	0.13	89.11	87.75	1.73	10	76	9	69	0:33	10	71	0:55	10	74	1:51
CB33	0.13	89.11	87.75	1.73	10	76	9	69		10	71		10	74	
CB34	0.11	89.05	87.73	1.69	7	64	6	58	0:39	6	59	1:04	7	62	2:26
CB35	0.11	89.05	87.73	1.69	7	64	6	58		6	59		7	62	
CB36	0.19	89.02	87.81	1.57	19	97	17	88	0:30	17	90	0:50	18	93	1:50
CB37	0.19	89.02	87.81	1.58	13	69	12	63		12	64		13	66	
CB90	0.13	88.95	87.60	1.72	9	65	8	59	0:40	8	60	1:05	8	63	2:35
CB91	0.13	88.95	87.60	1.72	9	65	8	59		8	60		8	63	
Rear Yard Catchbasins															
CB-5-01	0.14	89.63	87.77	2.18	11	84	6	42	N/A	7	53	N/A	10	74	N/A
CBMH-5-03	0.31	89.52	86.99	2.85	11	36	5	16	N/A	6	19	N/A	9	28	N/A
CB-5-05	0.43	89.36	87.56	2.11	22	51	12	29	N/A	19	44	N/A	21	49	N/A

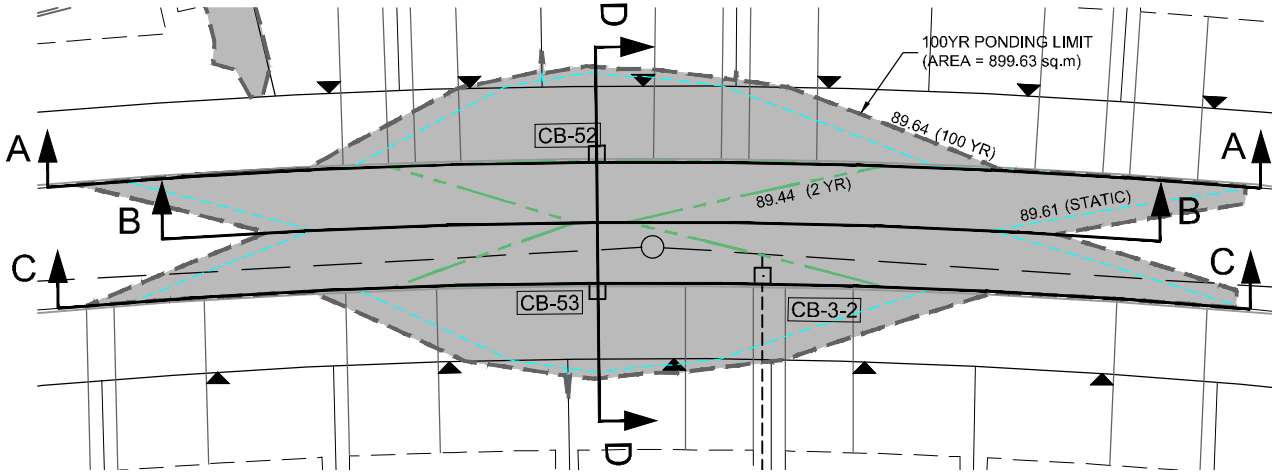
**Drainage area is the total area tributary to each catchbasin pair, divded by two for each ICD*

***Max head assumed at 0.35m of ponding above the T/G of each CB, 0.40m above RYCB*

****Ponding time occurs during the peak for the 3-hour storm event. Ponding is cleared by the end of the smaller storm events (<100-year)*

Provence Orleans Phase 5A
Rear Yard Underground Storage Volume

STM Area ID	Location of ICD (CB ID)	300mm dia. Pipe Storage Dimensions				450mm dia. Pipe Storage Dimensions				600mm dia. Pipe Storage Dimensions				Total Available Storage (m^3)
		Length (m)	Pipe Dia. (mm)	Area (m^2)	Volume (m^3)	Length (m)	Pipe Dia. (mm)	Area (m^2)	Volume (m^3)	Length (m)	Pipe Dia. (mm)	Area (m^2)	Volume (m^3)	
5A-06	CB-5-1	33.9	300	0.07	2.4	0.0	450	0.16	0.0	38.6	600	0.28	10.9	13.3
5A-02	CBMH-5-3	32.8	300	0.07	2.3	0.0	450	0.16	0.0	165.3	600	0.28	46.7	49.1
5A-04	CB-5-5	15.2	300	0.07	1.1	0.0	450	0.16	0.0	109.1	600	0.28	30.8	31.9
TOTAL (Rear Yards)		**81.9**	**-**	**-**	**5.8**	**0.0**	**-**	**-**	**0.0**	**313.0**	**-**	**-**	**88.5**	**94.3**

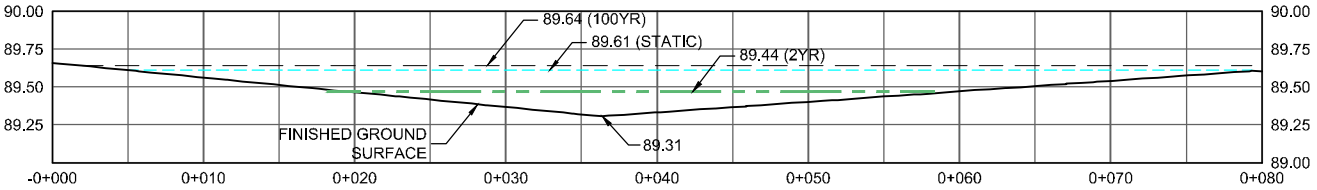


Ponding volumes calculated using Civil 3D composite method. The composite method triangulates a new volume surface, based on points from both the finished ground and ponding surfaces.

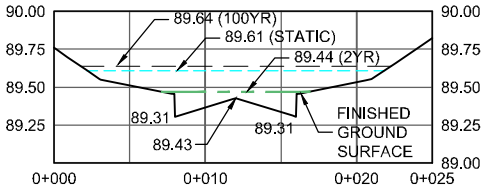
This method uses the points from both surfaces, as well as any location where the edges of the triangles between the two surfaces intersect to create prismoidal segments from composite TIN lines.

The new composite surface elevations are calculated based on the difference between the elevations of the finished ground and ponding surfaces.

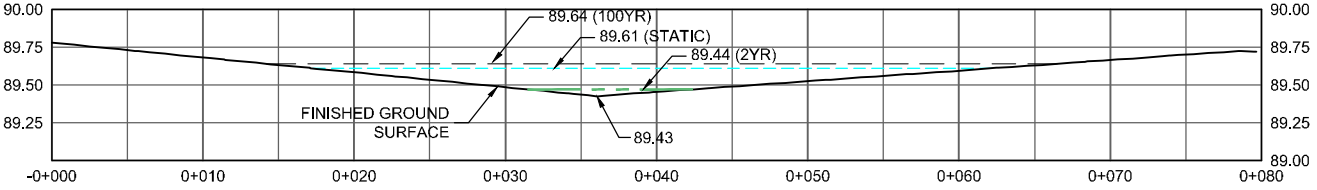
This method gives accurate volume measurements between the two surface definitions.



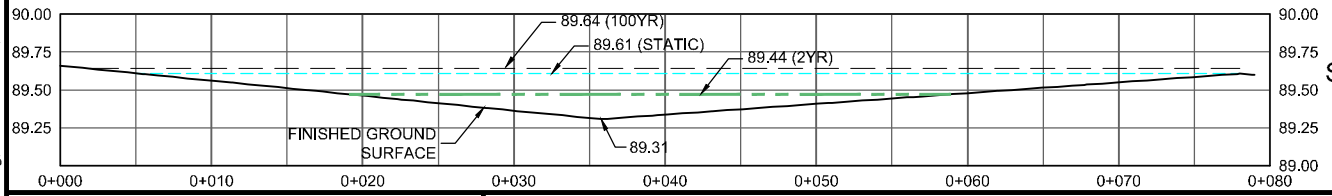
SECTION A-A



SECTION D-D



SECTION B-B



SECTION C-C

100YR PONDING VOLUME CHECK CALCULATION
(FOR ONE LANE OF STREET)

AREA OF PONDING = 899.63 sq.m / 2 = 449.81 sq.m
MAX DEPTH = 0.33m (89.64-89.31)

VOLUME = (A*D)/3
=(449.81*0.33)/3
=49.48cu.m

TOTAL FOR CB 52 & 53 =98.96

CIVIL 3D VOLUME FOR CB 52 & 53 = 99.96 cu.m

NOVATECH
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Facsimile (613) 254-5867
Website www.novatech-eng.com

PROVENCE ORLEANS (2128 TRIM ROAD)

SAMPLE PONDING VOLUME CALCULATION

SCALE 1 : 500 (0, 5m, 10m, 20m)

DATE NOV 2020 | JOB 117155 | FIGURE PND-CALC

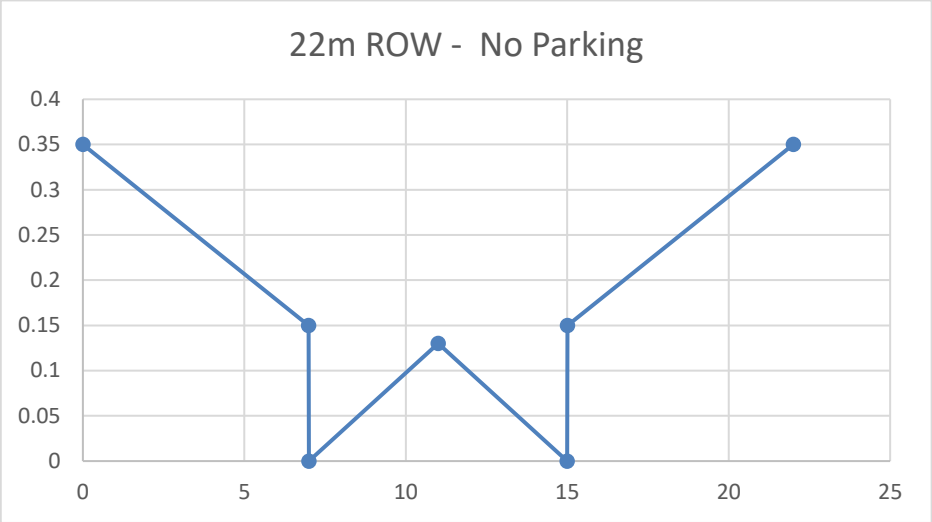
SHT8X11.DWG - 216mmx279mm

M:\2017\117155\CAD\Design\PH2-3\117155-STM2.dwg, PND-calc-PET, Nov 27, 2020 - 5:54pm, channa

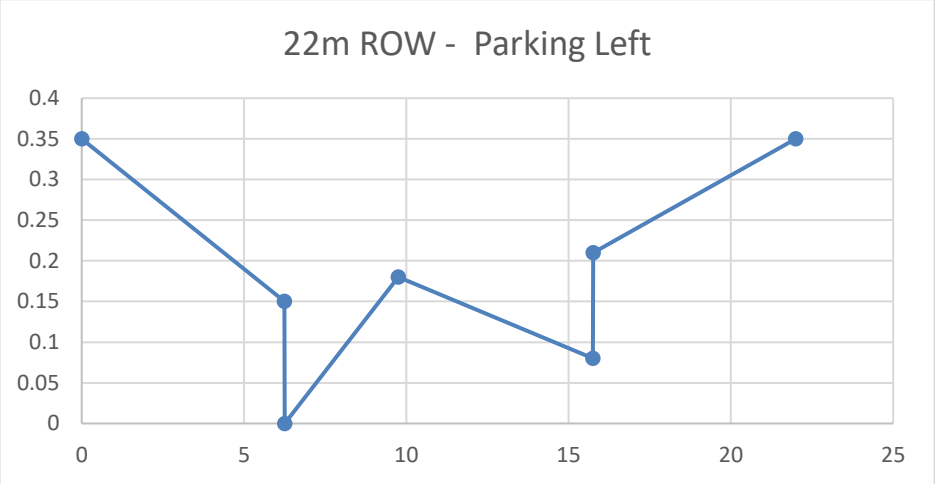
Provence Orleans Phase 5A
Roadway Cross-Sections (PCSWMM Model)

Engineers, Planners & Landscape Architects

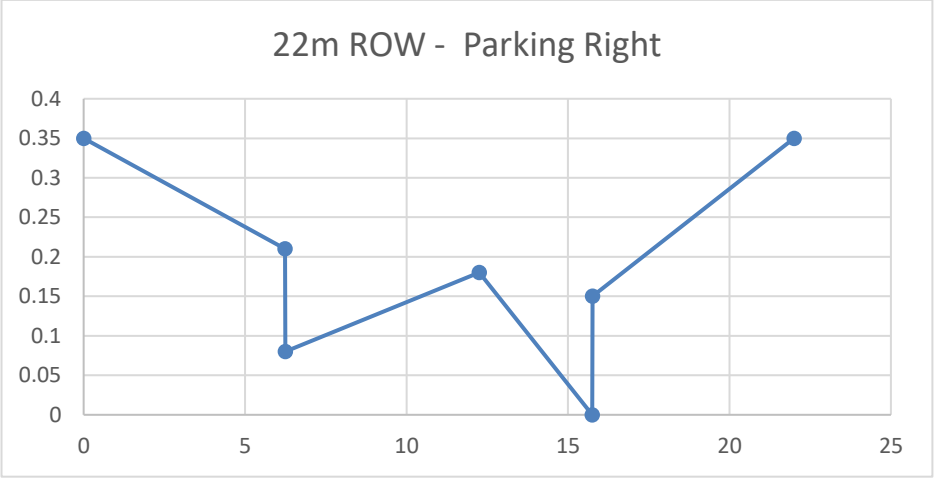
22m ROW - No Parking	
0	0.35
6.99	0.15
7	0
11	0.13
15	0
15.01	0.15
22	0.35



22m ROW - Parking Left	
0	0.35
6.24	0.15
6.25	0
9.75	0.18
15.75	0.08
15.76	0.21
22	0.35

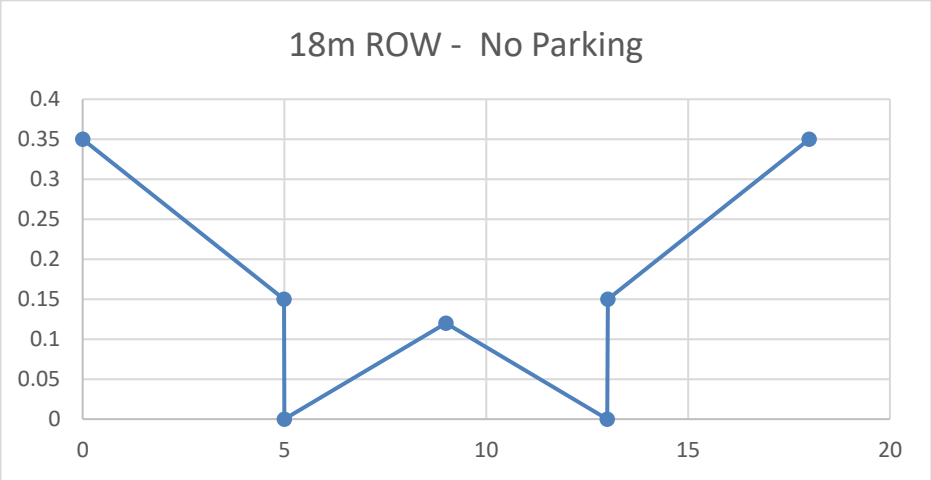


22m ROW - Parking Right	
0	0.35
6.24	0.21
6.25	0.08
12.25	0.18
15.75	0
15.76	0.15
22	0.35



Provence Orleans Phase 5A
Roadway Cross-Sections (PCSWMM Model)

18m ROW - No Parking	
0	0.35
4.99	0.15
5	0
9	0.12
13	0
13.01	0.15
18	0.35



Provence Orleans Phase 5A
Design Storm Time Series Data
Chicago Design Storms

NOVATECH
Engineers, Planners & Landscape Architects

C5mm-4.stm		C25mm-4.stm		C2-3.stm	
Duration	Intensity	Duration	Intensity	Duration	Intensity
min	mm/hr	min	mm/hr	min	mm/hr
0:00	0	0:00	0	0:00	0
0:10	0.3	0:10	1.51	0:10	2.81
0:20	0.35	0:20	1.75	0:20	3.5
0:30	0.41	0:30	2.07	0:30	4.69
0:40	0.52	0:40	2.58	0:40	7.3
0:50	0.69	0:50	3.46	0:50	18.21
1:00	1.08	1:00	5.39	1:00	76.81
1:10	2.69	1:10	13.44	1:10	24.08
1:20	11.33	1:20	56.67	1:20	12.36
1:30	3.55	1:30	17.77	1:30	8.32
1:40	1.82	1:40	9.12	1:40	6.3
1:50	1.23	1:50	6.14	1:50	5.09
2:00	0.93	2:00	4.65	2:00	4.29
2:10	0.75	2:10	3.76	2:10	3.72
2:20	0.63	2:20	3.17	2:20	3.29
2:30	0.55	2:30	2.74	2:30	2.95
2:40	0.49	2:40	2.43	2:40	2.68
2:50	0.44	2:50	2.18	2:50	2.46
3:00	0.4	3:00	1.98	3:00	2.28
3:10	0.36	3:10	1.81		
3:20	0.34	3:20	1.68		
3:30	0.31	3:30	1.56		
3:40	0.29	3:40	1.47		
3:50	0.28	3:50	1.38		
4:00	0.26	4:00	1.31		

Provence Orleans Phase 5A
Design Storm Time Series Data
Chicago Design Storms

NOVATECH
Engineers, Planners & Landscape Architects

C5-3.stm		C100-3.stm		C100-3+20%.stm	
Duration	Intensity	Duration	Intensity	Duration	Intensity
min	mm/hr	min	mm/hr	min	mm/hr
0:00	0	0:00	0	0:00	0
0:10	3.68	0:10	6.05	0:10	6:14
0:20	4.58	0:20	7.54	0:20	9.05
0:30	6.15	0:30	10.16	0:30	12.19
0:40	9.61	0:40	15.97	0:40	19.16
0:50	24.17	0:50	40.65	0:50	48.78
1:00	104.19	1:00	178.56	1:00	214.27
1:10	32.04	1:10	54.05	1:10	64.86
1:20	16.34	1:20	27.32	1:20	32.78
1:30	10.96	1:30	18.24	1:30	21.89
1:40	8.29	1:40	13.74	1:40	16.49
1:50	6.69	1:50	11.06	1:50	13.27
2:00	5.63	2:00	9.29	2:00	11.15
2:10	4.87	2:10	8.02	2:10	9.62
2:20	4.3	2:20	7.08	2:20	8.5
2:30	3.86	2:30	6.35	2:30	7.62
2:40	3.51	2:40	5.76	2:40	6.91
2:50	3.22	2:50	5.28	2:50	6.34
3:00	2.98	3:00	4.88	3:00	5.86

Provence Orleans Phase 5A
Design Storm Time Series Data
SCS Design Storms

NOVATECH
Engineers, Planners & Landscape Architects

S2-12.stm		S5-12.stm		S100-12.stm	
Duration	Intensity	Duration	Intensity	Duration	Intensity
min	mm/hr	min	mm/hr	min	mm/hr
0:00	0.00	0:00	0	0:00	0
0:30	1.27	0:30	1.69	0:30	2.82
1:00	0.59	1:00	0.79	1:00	1.31
1:30	1.10	1:30	1.46	1:30	2.44
2:00	1.10	2:00	1.46	2:00	2.44
2:30	1.44	2:30	1.91	2:30	3.19
3:00	1.27	3:00	1.69	3:00	2.82
3:30	1.69	3:30	2.25	3:30	3.76
4:00	1.69	4:00	2.25	4:00	3.76
4:30	2.29	4:30	3.03	4:30	5.07
5:00	2.88	5:00	3.82	5:00	6.39
5:30	4.57	5:30	6.07	5:30	10.14
6:00	36.24	6:00	48.08	6:00	80.38
6:30	9.23	6:30	12.25	6:30	20.47
7:00	4.06	7:00	5.39	7:00	9.01
7:30	2.71	7:30	3.59	7:30	6.01
8:00	2.37	8:00	3.15	8:00	5.26
8:30	1.86	8:30	2.47	8:30	4.13
9:00	1.95	9:00	2.58	9:00	4.32
9:30	1.27	9:30	1.69	9:30	2.82
10:00	1.02	10:00	1.35	10:00	2.25
10:30	1.44	10:30	1.91	10:30	3.19
11:00	0.93	11:00	1.24	11:00	2.07
11:30	0.85	11:30	1.12	11:30	1.88
12:00	0.85	12:00	1.12	12:00	1.88

Provence Orleans Phase 5A (117155)
PCSWMM Model Results (100-year 3-hour Chicago Event)

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EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)
--------------------------------------------------------------

Legault Phase 2 & 3 detailed design
Added Phase 4 detailed design
Added Phase 5 detailed design

WARNING 04: minimum elevation drop used for Conduit C167
WARNING 04: minimum elevation drop used for Conduit C170
WARNING 04: minimum elevation drop used for Conduit C29
WARNING 08: elevation drop exceeds length for Conduit C351
WARNING 02: maximum depth increased for Node 01+090
WARNING 02: maximum depth increased for Node 01+412
WARNING 02: maximum depth increased for Node CB03-04
WARNING 02: maximum depth increased for Node CB06-07
WARNING 02: maximum depth increased for Node CB09-10
WARNING 02: maximum depth increased for Node CB15-16
WARNING 02: maximum depth increased for Node CB22-CBMH23
WARNING 02: maximum depth increased for Node CB24-CBMH25
WARNING 02: maximum depth increased for Node CB28-CBMH29
WARNING 02: maximum depth increased for Node CB30-CBMH31
WARNING 02: maximum depth increased for Node CB32-33
WARNING 02: maximum depth increased for Node CB36-37
WARNING 02: maximum depth increased for Node CB43-44
WARNING 02: maximum depth increased for Node CB45-46
WARNING 02: maximum depth increased for Node CB52-53
WARNING 02: maximum depth increased for Node CB76-77
WARNING 02: maximum depth increased for Node CB78-79
WARNING 02: maximum depth increased for Node CB80-81
WARNING 02: maximum depth increased for Node CB82-83
WARNING 02: maximum depth increased for Node CB84-85
WARNING 02: maximum depth increased for Node CB88-89
WARNING 02: maximum depth increased for Node CB90-91
WARNING 02: maximum depth increased for Node LCB-2-03
WARNING 02: maximum depth increased for Node LCB-2-05
WARNING 02: maximum depth increased for Node LCB-2-06
WARNING 02: maximum depth increased for Node LCB-2-07
WARNING 02: maximum depth increased for Node LCB-2-08
WARNING 02: maximum depth increased for Node LCB-2-09
WARNING 02: maximum depth increased for Node LCB-2-09A
```

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WARNING 02: maximum depth increased for Node LCB-2-11
WARNING 02: maximum depth increased for Node LCB-2-12
WARNING 02: maximum depth increased for Node LCB-3-01
WARNING 02: maximum depth increased for Node LCB-3-03
WARNING 02: maximum depth increased for Node LCB-3-04
WARNING 02: maximum depth increased for Node LCB-3-05
WARNING 02: maximum depth increased for Node LCB-3-06
WARNING 02: maximum depth increased for Node LCB-3-07
WARNING 02: maximum depth increased for Node LCB-3-08
WARNING 02: maximum depth increased for Node LCB-3-09
WARNING 02: maximum depth increased for Node LCB-3-11
WARNING 02: maximum depth increased for Node LCB-3-12
WARNING 02: maximum depth increased for Node LCB-3-13
WARNING 02: maximum depth increased for Node LCB-3-15
WARNING 02: maximum depth increased for Node LCB-3-16
WARNING 02: maximum depth increased for Node LCB-3-17
WARNING 02: maximum depth increased for Node LCB-3-18
WARNING 02: maximum depth increased for Node LCB-3-19
WARNING 02: maximum depth increased for Node LCB-3-20
WARNING 02: maximum depth increased for Node LCB-3-24
WARNING 02: maximum depth increased for Node LCB-3-25
WARNING 02: maximum depth increased for Node LCB-3-29
WARNING 02: maximum depth increased for Node LCB-4-01
WARNING 02: maximum depth increased for Node LCB-4-02
WARNING 02: maximum depth increased for Node LCB-4-03
WARNING 02: maximum depth increased for Node LCB-4-04
WARNING 02: maximum depth increased for Node LCB-4-05
WARNING 02: maximum depth increased for Node LCB-4-05A
WARNING 02: maximum depth increased for Node LCB-4-06
WARNING 02: maximum depth increased for Node LCB-4-07
WARNING 02: maximum depth increased for Node LCB-4-08A
WARNING 02: maximum depth increased for Node LCB-4-15
WARNING 02: maximum depth increased for Node LCB-4-21
WARNING 02: maximum depth increased for Node LCB-4-22
WARNING 02: maximum depth increased for Node LCB-4-23
WARNING 02: maximum depth increased for Node LCB-4-23A
WARNING 02: maximum depth increased for Node LCB-4-24
WARNING 02: maximum depth increased for Node LCB-4-25
WARNING 02: maximum depth increased for Node LCB-4-25A
WARNING 02: maximum depth increased for Node LCB-4-26
WARNING 02: maximum depth increased for Node LCB-4-27
```

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WARNING 02: maximum depth increased for Node LCB-4-28
WARNING 02: maximum depth increased for Node LCB-4-29
WARNING 02: maximum depth increased for Node LCB-4-42
WARNING 02: maximum depth increased for Node LCB-4-43
WARNING 02: maximum depth increased for Node LCB-4-45
WARNING 02: maximum depth increased for Node LCB-5-02
WARNING 02: maximum depth increased for Node LCB-5-11
WARNING 02: maximum depth increased for Node LCB-5-17
WARNING 02: maximum depth increased for Node LCB-5-19
WARNING 02: maximum depth increased for Node LCB-5-21
WARNING 02: maximum depth increased for Node LCB-5-24
WARNING 02: maximum depth increased for Node CB-2-4_(CB)
WARNING 02: maximum depth increased for Node CB-3-5_(CB)

*************
Element Count
*************
Number of rain gages ...... 1
Number of subcatchments ... 73
Number of nodes ........... 452
Number of links ........... 653
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                 Data       Recording
Name                 Data Source                 Type       Interval
----------------------------------------------------------------------
Raingage1            03-C100yr-3hr               INTENSITY   10 min.


********************
Subcatchment Summary
********************
Name                        Area     Width   %Imperv    %Slope Rain Gage            Outlet
-------------------------------------------------------------------------------------------------
2-00                        1.24    278.55     64.00    0.5000 Raingage1            2-00_Stor
2-01A                       0.08     30.70     69.00    3.0000 Raingage1            CB20-21
```

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2-01B                       0.16     59.21     67.00    3.0000 Raingage1            CB18-19
2-02                        0.23     92.74     70.00    3.0000 Raingage1            CB15-16
2-03                        0.17     83.13     30.00    3.0000 Raingage1            LCB-2-08
2-04                        0.46    195.36     63.00    3.0000 Raingage1            CB45-46
2-05                        0.34    127.49     66.00    3.5000 Raingage1            CB12-13
2-06                        0.17    103.26     33.00    3.3000 Raingage1            LCB-2-14
2-07                        0.16    101.64     37.00    3.5000 Raingage1            LCB-2-11
2-08                        0.27     88.02     23.00    2.5000 Raingage1            LCB-2-05
2-09                        0.41    170.50     63.00    3.5000 Raingage1            CB43-44
2-10                        0.13     44.45     23.00    2.5000 Raingage1            LCB-2-02
2-11                        0.42    162.19     61.00    3.5000 Raingage1            CB41-42
2-12                        0.28    125.43     50.00    3.0000 Raingage1            LCB-3-19
2-13                        0.15    146.96     67.00    0.8000 Raingage1            CB09-10
3-01                        0.28     65.09     50.00    2.5000 Raingage1            LCB-3-16
3-02                        0.43    197.53     64.00    3.5000 Raingage1            CB56-57
3-03                        0.51    200.93     64.00    3.0000 Raingage1            CB06-07
3-04                        0.35    253.88     50.00    2.5000 Raingage1            LCB-3-28
3-05                        0.62    240.33     64.00    3.5000 Raingage1            CB03-04
3-06                        0.31    221.87     50.00    2.5000 Raingage1            LCB-3-21
3-07                        0.42    179.34     64.00    3.5000 Raingage1            CB54-55
3-08                        0.32    139.35     50.00    2.5000 Raingage1            LCB-3-14
3-09                        0.41    176.99     64.00    3.5000 Raingage1            CB52-53
3-10                        0.23     64.73     50.00    3.0000 Raingage1            LCB-3-11
3-11                        0.44    177.82     64.00    3.0000 Raingage1            CB50-51
3-12                        0.35     86.37     50.00    2.0000 Raingage1            LCB-3-06
3-13_1                      0.16     67.53     50.00    2.0000 Raingage1            J4
3-13_2                      0.07     38.46     50.00    2.0000 Raingage1            LCB-3-03
3-13_3                      0.10     55.32     50.00    2.0000 Raingage1            LCB-3-04
3-13_4                      0.07     39.55     50.00    2.0000 Raingage1            LCB-3-02
3-13_6                      0.04     27.06     50.00    2.0000 Raingage1            LCB-3-01
3-14                        0.12     48.02     64.00    4.5000 Raingage1            CB01-02
4A-01                       0.32    128.82     69.00    4.0000 Raingage1            CB74-CBMH75
4A-02                       0.52    289.87     56.00    3.0000 Raingage1            LCB-4-12
4A-03                       0.42    175.92     71.00    4.0000 Raingage1            CB72-CBMH73
4A-04                       0.36    148.54     71.00    4.0000 Raingage1            CB24-CBMH25
4A-05                       0.26    106.43     51.00    4.0000 Raingage1            CB68-CBMH69
4A-06                       0.32    126.66     61.00    4.0000 Raingage1            CB64-CBMH65
4A-07                       0.27    156.86     53.00    3.5000 Raingage1            LCB-4-16
4A-08                       0.30    195.83     51.00    3.0000 Raingage1            LCB-4-24
4A-09                       0.39    157.06     69.00    3.5000 Raingage1            CB62-CBMH63
4A-10                       0.38    233.53     51.00    3.5000 Raingage1            LCB-4-21
```

4A-11	0.38	245.48	50.00	3.5000	Raingage1	LCB-4-27
4A-12	0.27	104.21	66.00	4.0000	Raingage1	CB60-CBMH61
4A-13	0.39	254.82	57.00	3.0000	Raingage1	LCB-4-31
4A-14	0.34	138.66	70.00	4.0000	Raingage1	CB22-CBMH23
4B-01A	0.22	83.30	74.00	3.5000	Raingage1	CB30-CBMH31
4B-01B	0.21	93.13	70.00	4.0000	Raingage1	CB30-CBMH31
4B-02	0.26	149.70	61.00	4.0000	Raingage1	LCB-4-03
4B-03	0.31	135.49	71.00	3.5000	Raingage1	CB28-CBMH29
4B-04	0.35	140.56	69.00	4.0000	Raingage1	CB26-CBMH27
4B-05	0.28	175.53	51.00	3.5000	Raingage1	LCB-4-06
5A-01	0.26	66.04	71.00	4.0000	Raingage1	CB90-91
5A-02	0.31	191.52	54.00	4.5000	Raingage1	LCB-5-11
5A-03	0.38	157.81	73.00	3.5000	Raingage1	CB36-37
5A-04	0.43	178.94	53.00	3.0000	Raingage1	LCB-5-18
5A-05	0.22	59.20	69.00	3.5000	Raingage1	CB34-35
5A-06	0.14	70.06	59.00	5.0000	Raingage1	LCB-5-03
5A-07	0.27	116.42	73.00	4.0000	Raingage1	CB32-33
5B-01	0.35	159.35	66.00	4.5000	Raingage1	CB84-85
5B-02	0.20	125.36	54.00	6.0000	Raingage1	LCB-5-06
5B-03	0.42	165.66	71.00	4.5000	Raingage1	CB86-87
5B-04	0.36	154.44	73.00	4.0000	Raingage1	CB88-89
5B-05	0.32	73.77	66.00	3.0000	Raingage1	CB82-83
5B-06	0.39	169.13	74.00	4.5000	Raingage1	CB80-81
5B-07	0.39	183.08	51.00	4.0000	Raingage1	LCB-5-24
5B-08	0.46	166.22	73.00	5.0000	Raingage1	CB78-79
5B-09	0.22	75.77	67.00	4.5000	Raingage1	CB76-77
5B-10	0.40	71.75	14.00	0.5000	Raingage1	MH308
DR-1	0.03	10.11	20.00	3.0000	Raingage1	OF10
DR-2	0.04	86.85	0.00	12.0000	Raingage1	OF11
OS-1	0.53	160.59	17.00	3.0000	Raingage1	DICB-4-40

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
01+066	JUNCTION	89.61	0.35	0.0	
01+090	JUNCTION	89.54	0.35	0.0	
01+198	JUNCTION	89.48	0.35	0.0	
01+306	JUNCTION	89.37	0.35	0.0	
01+387	JUNCTION	89.30	0.35	0.0	
01+412	JUNCTION	89.27	0.35	0.0	
01+494	JUNCTION	89.36	0.35	0.0	
01+517	JUNCTION	89.36	0.35	0.0	
01+568	JUNCTION	89.45	0.35	0.0	
01+610	JUNCTION	89.09	0.35	0.0	
02+012	JUNCTION	89.28	0.35	0.0	
02+075	JUNCTION	89.20	0.35	0.0	
02+085	JUNCTION	89.18	0.35	0.0	
02+157	JUNCTION	89.13	0.35	0.0	
02+167	JUNCTION	89.13	0.35	0.0	
03+013	JUNCTION	89.40	0.35	0.0	
03+065	JUNCTION	89.49	0.35	0.0	
03+125	JUNCTION	89.40	0.35	0.0	
03+137	JUNCTION	89.36	0.35	0.0	
04+090	JUNCTION	89.42	0.35	0.0	
04+190	JUNCTION	89.53	0.35	0.0	
05+105	JUNCTION	89.76	0.35	0.0	
05+194	JUNCTION	89.61	0.35	0.0	
05+287	JUNCTION	89.51	0.35	0.0	
06+089	JUNCTION	89.12	0.35	0.0	
06+166	JUNCTION	89.07	0.35	0.0	
06+243	JUNCTION	89.03	0.35	0.0	
06+328	JUNCTION	89.03	0.35	0.0	
06+413	JUNCTION	89.10	0.35	0.0	
07+091	JUNCTION	89.51	0.35	0.0	
07+175	JUNCTION	89.60	0.35	0.0	
07+260	JUNCTION	89.68	0.35	0.0	
07+342	JUNCTION	89.76	0.35	0.0	
07+428	JUNCTION	89.58	0.35	0.0	
07+513	JUNCTION	89.43	0.35	0.0	
07+591	JUNCTION	89.30	0.35	0.0	
07+605	JUNCTION	89.27	0.35	0.0	
07+670	JUNCTION	89.19	0.35	0.0	
07+683	JUNCTION	89.19	0.35	0.0	
07+765	JUNCTION	89.34	0.35	0.0	
07+847	JUNCTION	89.38	0.35	0.0	
CB01-02	JUNCTION	88.72	0.35	0.0	
CB03-04	JUNCTION	87.97	1.58	0.0	
CB06-07	JUNCTION	87.91	1.54	0.0	

CB09-10	JUNCTION	87.84	1.60	0.0
CB12-13	JUNCTION	87.78	1.59	0.0
CB15-16	JUNCTION	87.91	1.55	0.0
CB18-19	JUNCTION	87.76	1.65	0.0
CB20-21	JUNCTION	88.89	0.35	0.0
CB22-CBMH23	JUNCTION	87.50	1.75	0.0
CB24-CBMH25	JUNCTION	87.50	1.69	0.0
CB26-CBMH27	JUNCTION	87.50	1.73	0.0
CB28-CBMH29	JUNCTION	87.58	1.67	0.0
CB30-CBMH31	JUNCTION	87.58	1.79	0.0
CB32-33	JUNCTION	87.75	1.71	0.0
CB34-35	JUNCTION	87.73	1.67	0.0
CB36-37	JUNCTION	87.81	1.56	0.0
CB41-42	JUNCTION	87.78	1.59	0.0
CB43-44	JUNCTION	87.91	1.56	0.0
CB45-46	JUNCTION	87.93	1.56	0.0
CB50-51	JUNCTION	88.09	1.50	0.0
CB52-53	JUNCTION	88.10	1.56	0.0
CB54-55	JUNCTION	88.01	1.55	0.0
CB56-57	JUNCTION	87.91	1.51	0.0
CB60-CBMH61	JUNCTION	87.49	1.66	0.0
CB62-CBMH63	JUNCTION	87.41	1.69	0.0
CB64-CBMH65	JUNCTION	87.41	1.68	0.0
CB68-CBMH69	JUNCTION	87.41	1.68	0.0
CB72-CBMH73	JUNCTION	87.43	1.67	0.0
CB74-CBMH75	JUNCTION	87.43	1.73	0.0
CB76-77	JUNCTION	87.76	1.70	0.0
CB78-79	JUNCTION	87.87	1.70	0.0
CB80-81	JUNCTION	87.94	1.75	0.0
CB82-83	JUNCTION	87.96	1.70	0.0
CB84-85	JUNCTION	87.93	1.75	0.0
CB86-87	JUNCTION	87.78	1.70	0.0
CB88-89	JUNCTION	87.68	1.73	0.0
CB90-91	JUNCTION	87.60	1.70	0.0
DICB-4-40	JUNCTION	86.81	1.47	0.0
HP-2-00_Stor	JUNCTION	89.70	0.35	0.0
J1	JUNCTION	88.85	0.40	0.0
J10	JUNCTION	89.57	0.40	0.0
J100	JUNCTION	88.95	0.40	0.0
J101	JUNCTION	89.16	0.40	0.0
J102	JUNCTION	88.94	0.40	0.0
J103	JUNCTION	89.15	0.40	0.0
J104	JUNCTION	88.94	0.40	0.0
J105	JUNCTION	89.25	0.40	0.0
J106	JUNCTION	89.30	0.40	0.0
J107	JUNCTION	89.07	0.40	0.0
J108	JUNCTION	89.28	0.40	0.0
J109	JUNCTION	89.05	0.40	0.0
J11	JUNCTION	89.58	0.40	0.0
J110	JUNCTION	89.27	0.40	0.0
J111	JUNCTION	89.06	0.40	0.0
J112	JUNCTION	89.07	0.40	0.0
J113	JUNCTION	89.07	0.40	0.0
J114	JUNCTION	89.07	0.40	0.0
J115	JUNCTION	89.35	0.40	0.0
J116	JUNCTION	88.82	0.40	0.0
J117	JUNCTION	88.64	0.40	0.0
J118	JUNCTION	88.48	0.40	0.0
J119	JUNCTION	88.75	0.40	0.0
J12	JUNCTION	89.60	0.40	0.0
J120	JUNCTION	88.47	0.40	0.0
J121	JUNCTION	88.75	0.40	0.0
J122	JUNCTION	88.49	0.40	0.0
J123	JUNCTION	88.50	0.40	0.0
J124	JUNCTION	88.50	0.40	0.0
J125	JUNCTION	88.75	0.40	0.0
J126	JUNCTION	88.44	0.40	0.0
J127	JUNCTION	88.75	0.40	0.0
J128	JUNCTION	89.33	0.40	0.0
J129	JUNCTION	89.13	0.40	0.0
J13	JUNCTION	89.60	0.40	0.0
J130	JUNCTION	89.16	0.40	0.0
J131	JUNCTION	89.27	0.40	0.0
J132	JUNCTION	88.13	0.40	0.0
J133	JUNCTION	87.95	0.40	0.0
J134	JUNCTION	87.92	0.40	0.0
J135	JUNCTION	87.92	0.40	0.0
J136	JUNCTION	88.39	0.40	0.0
J137	JUNCTION	88.42	0.40	0.0
J138	JUNCTION	88.30	0.40	0.0
J139	JUNCTION	89.39	0.40	0.0
J14	JUNCTION	89.70	0.40	0.0

J140	JUNCTION	89.55	0.40	0.0
J141	JUNCTION	89.55	0.40	0.0
J142	JUNCTION	89.42	0.40	0.0
J143	JUNCTION	89.46	0.40	0.0
J144	JUNCTION	89.50	0.40	0.0
J145	JUNCTION	89.36	0.40	0.0
J146	JUNCTION	89.50	0.40	0.0
J147	JUNCTION	89.33	0.40	0.0
J148	JUNCTION	89.45	0.40	0.0
J149	JUNCTION	89.69	0.40	0.0
J15	JUNCTION	89.72	0.40	0.0
J150	JUNCTION	89.59	0.40	0.0
J151	JUNCTION	89.59	0.40	0.0
J152	JUNCTION	89.60	0.40	0.0
J153	JUNCTION	89.43	0.40	0.0
J154	JUNCTION	89.56	0.40	0.0
J155	JUNCTION	89.46	0.40	0.0
J156	JUNCTION	89.76	0.40	0.0
J157	JUNCTION	88.95	0.40	0.0
J158	JUNCTION	88.82	0.40	0.0
J159	JUNCTION	88.80	0.40	0.0
J16	JUNCTION	89.66	0.40	0.0
J160	JUNCTION	88.71	0.40	0.0
J161	JUNCTION	88.83	0.40	0.0
J162	JUNCTION	88.85	0.40	0.0
J163	JUNCTION	88.66	0.40	0.0
J164	JUNCTION	88.67	0.40	0.0
J165	JUNCTION	88.72	0.40	0.0
J166	JUNCTION	88.60	0.40	0.0
J167	JUNCTION	88.61	0.40	0.0
J168	JUNCTION	88.73	0.40	0.0
J169	JUNCTION	88.65	0.40	0.0
J17	JUNCTION	89.45	0.40	0.0
J170	JUNCTION	88.85	0.40	0.0
J171	JUNCTION	89.75	0.40	0.0
J18	JUNCTION	89.40	0.45	0.0
J19	JUNCTION	89.40	0.45	0.0
J2	JUNCTION	89.20	0.40	0.0
J20	JUNCTION	89.60	0.40	0.0
J21	JUNCTION	89.61	0.44	0.0
J22	JUNCTION	89.40	0.45	0.0
J23	JUNCTION	89.40	0.45	0.0
J24	JUNCTION	89.40	0.45	0.0
J25	JUNCTION	89.45	0.40	0.0
J26	JUNCTION	89.45	0.40	0.0
J27	JUNCTION	89.45	0.40	0.0
J28	JUNCTION	89.57	0.40	0.0
J29	JUNCTION	89.57	0.40	0.0
J3	JUNCTION	89.55	0.40	0.0
J30	JUNCTION	89.58	0.40	0.0
J31	JUNCTION	89.55	0.40	0.0
J32	JUNCTION	89.48	0.40	0.0
J33	JUNCTION	89.50	0.40	0.0
J34	JUNCTION	89.52	0.40	0.0
J35	JUNCTION	89.52	0.40	0.0
J36	JUNCTION	89.58	0.40	0.0
J37	JUNCTION	89.45	0.40	0.0
J38	JUNCTION	89.45	0.40	0.0
J39	JUNCTION	89.30	0.40	0.0
J4	JUNCTION	89.60	0.40	0.0
J40	JUNCTION	89.45	0.40	0.0
J41	JUNCTION	89.45	0.40	0.0
J42	JUNCTION	89.94	0.40	0.0
J43	JUNCTION	90.00	0.40	0.0
J44	JUNCTION	89.50	0.40	0.0
J45	JUNCTION	89.93	0.40	0.0
J46	JUNCTION	89.47	0.40	0.0
J47	JUNCTION	89.50	0.40	0.0
J48	JUNCTION	89.63	0.40	0.0
J49	JUNCTION	89.62	0.40	0.0
J5	JUNCTION	89.59	0.40	0.0
J50	JUNCTION	89.60	0.40	0.0
J51	JUNCTION	89.61	0.40	0.0
J52	JUNCTION	89.95	0.40	0.0
J53	JUNCTION	89.80	0.40	0.0
J54	JUNCTION	88.60	0.40	0.0
J55	JUNCTION	90.05	0.40	0.0
J56	JUNCTION	90.24	0.40	0.0
J57	JUNCTION	89.99	0.40	0.0
J58	JUNCTION	89.46	0.40	0.0
J59	JUNCTION	89.30	0.40	0.0
J6	JUNCTION	89.57	0.40	0.0

J60	JUNCTION	89.35	0.40	0.0
J61	JUNCTION	89.35	0.40	0.0
J62	JUNCTION	89.35	0.40	0.0
J63	JUNCTION	89.18	0.40	0.0
J64	JUNCTION	89.34	0.35	0.0
J65	JUNCTION	89.05	0.35	0.0
J66	JUNCTION	89.38	0.40	0.0
J67	JUNCTION	89.20	0.40	0.0
J68	JUNCTION	89.41	0.40	0.0
J69	JUNCTION	89.19	0.40	0.0
J7	JUNCTION	89.56	0.40	0.0
J70	JUNCTION	89.19	0.40	0.0
J71	JUNCTION	89.44	0.40	0.0
J72	JUNCTION	89.20	0.40	0.0
J73	JUNCTION	89.47	0.40	0.0
J74	JUNCTION	89.50	0.40	0.0
J75	JUNCTION	89.18	0.40	0.0
J76	JUNCTION	88.97	0.40	0.0
J77	JUNCTION	89.01	0.40	0.0
J78	JUNCTION	89.19	0.40	0.0
J79	JUNCTION	89.25	0.40	0.0
J8	JUNCTION	89.55	0.40	0.0
J80	JUNCTION	89.19	0.40	0.0
J81	JUNCTION	88.99	0.40	0.0
J82	JUNCTION	89.00	0.40	0.0
J83	JUNCTION	89.20	0.40	0.0
J84	JUNCTION	88.98	0.40	0.0
J85	JUNCTION	88.99	0.40	0.0
J86	JUNCTION	89.00	0.40	0.0
J87	JUNCTION	89.25	0.40	0.0
J88	JUNCTION	89.30	0.40	0.0
J89	JUNCTION	88.97	0.40	0.0
J9	JUNCTION	89.50	0.40	0.0
J90	JUNCTION	89.21	0.40	0.0
J91	JUNCTION	88.95	0.40	0.0
J92	JUNCTION	89.20	0.40	0.0
J93	JUNCTION	89.01	0.40	0.0
J94	JUNCTION	88.96	0.40	0.0
J95	JUNCTION	89.22	0.40	0.0
J96	JUNCTION	88.95	0.40	0.0
J97	JUNCTION	88.97	0.40	0.0
J98	JUNCTION	89.23	0.40	0.0
J99	JUNCTION	88.96	0.40	0.0
LCB-2-01	JUNCTION	88.10	1.35	0.0
LCB-2-02	JUNCTION	87.94	1.51	0.0
LCB-2-03	JUNCTION	88.15	1.31	0.0
LCB-2-05	JUNCTION	87.89	1.57	0.0
LCB-2-06	JUNCTION	88.00	1.90	0.0
LCB-2-07	JUNCTION	88.19	1.31	0.0
LCB-2-08	JUNCTION	87.94	1.61	0.0
LCB-2-09	JUNCTION	88.20	1.35	0.0
LCB-2-09A	JUNCTION	88.08	1.47	0.0
LCB-2-10	JUNCTION	88.09	1.49	0.0
LCB-2-11	JUNCTION	88.02	1.58	0.0
LCB-2-12	JUNCTION	87.94	1.68	0.0
LCB-2-13	JUNCTION	88.10	1.55	0.0
LCB-2-14	JUNCTION	88.02	1.66	0.0
LCB-2-15	JUNCTION	87.89	1.81	0.0
LCB-3-01	JUNCTION	87.50	1.38	0.0
LCB-3-02	JUNCTION	87.72	1.33	0.0
LCB-3-03	JUNCTION	87.83	1.57	0.0
LCB-3-04	JUNCTION	87.94	1.66	0.0
LCB-3-05	JUNCTION	87.97	1.66	0.0
LCB-3-06	JUNCTION	87.85	1.75	0.0
LCB-3-07	JUNCTION	88.00	1.60	0.0
LCB-3-08	JUNCTION	88.16	1.44	0.0
LCB-3-09	JUNCTION	88.20	1.60	0.0
LCB-3-10	JUNCTION	88.09	1.56	0.0
LCB-3-11	JUNCTION	87.91	1.74	0.0
LCB-3-12	JUNCTION	88.20	1.85	0.0
LCB-3-13	JUNCTION	88.20	1.51	0.0
LCB-3-14	JUNCTION	87.92	1.80	0.0
LCB-3-15	JUNCTION	88.21	1.51	0.0
LCB-3-16	JUNCTION	87.78	1.74	0.0
LCB-3-17	JUNCTION	88.05	1.90	0.0
LCB-3-18	JUNCTION	87.95	1.60	0.0
LCB-3-19	JUNCTION	87.73	1.83	0.0
LCB-3-20	JUNCTION	87.64	1.91	0.0
LCB-3-21	JUNCTION	87.98	1.72	0.0
LCB-3-22	JUNCTION	88.12	1.58	0.0
LCB-3-23	JUNCTION	88.01	1.69	0.0
LCB-3-24	JUNCTION	88.24	1.45	0.0

LCB-3-25	JUNCTION	88.15	1.45	0.0
LCB-3-26	JUNCTION	87.95	1.62	0.0
LCB-3-27	JUNCTION	87.86	1.72	0.0
LCB-3-28	JUNCTION	87.72	2.08	0.0
LCB-3-29	JUNCTION	87.65	1.92	0.0
LCB-4-01	JUNCTION	87.42	1.35	0.0
LCB-4-02	JUNCTION	87.33	1.44	0.0
LCB-4-03	JUNCTION	87.25	1.52	0.0
LCB-4-04	JUNCTION	87.32	1.45	0.0
LCB-4-05	JUNCTION	87.73	1.73	0.0
LCB-4-05A	JUNCTION	87.61	1.85	0.0
LCB-4-06	JUNCTION	87.50	1.96	0.0
LCB-4-07	JUNCTION	88.04	1.37	0.0
LCB-4-08	JUNCTION	87.92	1.48	0.0
LCB-4-08A	JUNCTION	87.82	1.58	0.0
LCB-4-09	JUNCTION	87.78	1.62	0.0
LCB-4-11	JUNCTION	87.68	1.72	0.0
LCB-4-12	JUNCTION	87.55	1.86	0.0
LCB-4-13	JUNCTION	87.76	1.53	0.0
LCB-4-15	JUNCTION	87.71	1.58	0.0
LCB-4-16	JUNCTION	87.58	1.71	0.0
LCB-4-17	JUNCTION	87.88	1.43	0.0
LCB-4-18	JUNCTION	87.74	1.57	0.0
LCB-4-20	JUNCTION	87.70	1.61	0.0
LCB-4-21	JUNCTION	87.55	1.77	0.0
LCB-4-22	JUNCTION	87.72	1.61	0.0
LCB-4-23	JUNCTION	87.61	1.72	0.0
LCB-4-23A	JUNCTION	87.51	1.82	0.0
LCB-4-24	JUNCTION	87.42	1.91	0.0
LCB-4-25	JUNCTION	87.86	1.46	0.0
LCB-4-25A	JUNCTION	87.77	1.55	0.0
LCB-4-26	JUNCTION	87.67	1.65	0.0
LCB-4-27	JUNCTION	87.50	1.82	0.0
LCB-4-28	JUNCTION	87.64	1.68	0.0
LCB-4-29	JUNCTION	88.02	1.52	0.0
LCB-4-30	JUNCTION	87.92	1.62	0.0
LCB-4-31	JUNCTION	87.76	1.78	0.0
LCB-4-32	JUNCTION	87.93	1.60	0.0
LCB-4-41	JUNCTION	86.87	1.41	0.0
LCB-4-42	JUNCTION	86.85	1.43	0.0
LCB-4-43	JUNCTION	86.89	1.39	0.0
LCB-4-44	JUNCTION	86.92	1.83	0.0
LCB-4-45	JUNCTION	86.97	1.33	0.0
LCB-5-01	JUNCTION	88.15	1.50	0.0
LCB-5-02	JUNCTION	88.05	1.66	0.0
LCB-5-03	JUNCTION	88.00	1.55	0.0
LCB-5-04	JUNCTION	87.65	1.35	0.0
LCB-5-05	JUNCTION	87.58	1.42	0.0
LCB-5-06	JUNCTION	87.51	1.49	0.0
LCB-5-07	JUNCTION	87.65	1.35	0.0
LCB-5-08	JUNCTION	87.40	1.50	0.0
LCB-5-09	JUNCTION	87.34	1.56	0.0
LCB-5-10	JUNCTION	87.29	1.61	0.0
LCB-5-11	JUNCTION	87.21	1.69	0.0
LCB-5-12	JUNCTION	87.33	1.57	0.0
LCB-5-13	JUNCTION	87.40	1.50	0.0
LCB-5-14	JUNCTION	88.08	1.50	0.0
LCB-5-15	JUNCTION	87.95	1.63	0.0
LCB-5-17	JUNCTION	87.91	1.67	0.0
LCB-5-18	JUNCTION	87.68	1.90	0.0
LCB-5-19	JUNCTION	88.21	1.50	0.0
LCB-5-20	JUNCTION	88.09	1.62	0.0
LCB-5-21	JUNCTION	87.97	1.74	0.0
LCB-5-23	JUNCTION	87.98	1.73	0.0
LCB-5-24	JUNCTION	87.74	1.97	0.0
RAP-5-16	JUNCTION	87.76	2.09	0.0
RAP-5-22	JUNCTION	87.83	2.16	0.0
RYT-4-10	JUNCTION	87.62	2.06	0.0
RYT-4-14	JUNCTION	87.65	1.89	0.0
RYT-4-19	JUNCTION	87.62	1.98	0.0
RYT-4-27A	JUNCTION	87.56	1.85	0.0
098	OUTFALL	81.27	2.71	0.0
OF01	OUTFALL	88.64	0.35	0.0
OF02	OUTFALL	88.88	0.35	0.0
OF03	OUTFALL	88.67	0.40	0.0
OF04	OUTFALL	89.25	0.40	0.0
OF05	OUTFALL	89.10	0.40	0.0
OF06	OUTFALL	89.05	0.41	0.0
OF07	OUTFALL	88.97	0.13	0.0
OF08	OUTFALL	88.71	0.40	0.0
OF09	OUTFALL	88.25	0.40	0.0
OF10	OUTFALL	88.60	0.00	0.0

OF11	OUTFALL	89.00	0.00	0.0
OF12	OUTFALL	88.71	0.40	0.0
OF13	OUTFALL	87.14	0.40	0.0
2-00_Stor	STORAGE	87.95	1.75	0.0
CB-2-1_(CB)	STORAGE	87.69	1.73	0.0
CB-2-2_(CB)	STORAGE	87.71	1.81	0.0
CB-2-3_(CB)	STORAGE	87.70	1.73	0.0
CB-2-4_(CB)	STORAGE	87.38	2.24	0.0
CB-2-5_(CB)	STORAGE	87.50	2.24	0.0
CB-3-1_(CB)	STORAGE	87.66	2.09	0.0
CB-3-2_(CB)	STORAGE	87.66	1.73	0.0
CB-3-3_(CB)	STORAGE	87.53	1.96	0.0
CB-3-4_(CB)	STORAGE	87.26	1.70	0.0
CB-3-5_(CB)	STORAGE	87.44	2.53	0.0
CB-3-6_(CB)	STORAGE	87.59	2.02	0.0
CB-3-7_(CB)	STORAGE	87.49	2.31	0.0
CB-3-8_(CB)	STORAGE	87.54	2.13	0.0
CB-4-02	STORAGE	87.23	1.78	0.0
CB-4-04	STORAGE	87.30	1.77	0.0
CB-4-05	STORAGE	87.42	1.65	0.0
CB-5-01	STORAGE	87.77	2.26	0.0
CB-5-04	STORAGE	87.63	2.51	0.0
CB-5-05	STORAGE	87.56	2.20	0.0
CBMH-4-01	STORAGE	86.75	2.31	0.0
CBMH-4-03	STORAGE	86.68	2.49	0.0
CBMH-4-06	STORAGE	86.85	2.32	0.0
CBMH-4-07	STORAGE	86.77	2.57	0.0
CBMH-4-08	STORAGE	86.77	2.41	0.0
CBMH-5-02	STORAGE	87.34	2.84	0.0
CBMH-5-03	STORAGE	86.99	2.93	0.0
MH100	STORAGE	82.59	7.03	0.0
MH102	STORAGE	82.64	6.80	0.0
MH104	STORAGE	82.76	6.70	0.0
MH106	STORAGE	82.87	6.48	0.0
MH108	STORAGE	83.00	6.44	0.0
MH110	STORAGE	84.59	4.78	0.0
MH112	STORAGE	85.22	3.98	0.0
MH114	STORAGE	85.39	4.13	0.0
MH116	STORAGE	85.54	3.80	0.0
MH118	STORAGE	86.34	2.70	0.0
MH200	STORAGE	85.15	3.93	0.0
MH200A	STORAGE	85.07	4.06	0.0
MH202	STORAGE	85.29	4.00	0.0
MH204	STORAGE	85.64	3.60	0.0
MH206	STORAGE	85.98	3.32	0.0
MH300	STORAGE	85.27	4.07	0.0
MH300A	STORAGE	84.72	4.60	0.0
MH302	STORAGE	85.60	3.89	0.0
MH304	STORAGE	86.23	3.15	0.0
MH308	STORAGE	86.96	2.89	0.0
MH400	STORAGE	86.44	2.91	0.0
MH402	STORAGE	86.58	2.82	0.0
MH404	STORAGE	86.82	2.38	0.0
MH406	STORAGE	86.65	2.89	0.0
MH408	STORAGE	86.50	2.94	0.0
MH500	STORAGE	85.91	3.45	0.0
MH502	STORAGE	86.07	3.58	0.0
MH504	STORAGE	86.20	3.56	0.0
MH506	STORAGE	86.37	3.05	0.0
MH508	STORAGE	86.62	2.89	0.0
MH510	STORAGE	86.55	2.93	0.0
MH512	STORAGE	86.40	2.95	0.0
MH602	STORAGE	85.80	3.11	0.0
MH604	STORAGE	86.09	2.77	0.0
MH606	STORAGE	86.31	2.63	0.0
MH608	STORAGE	86.65	2.37	0.0
MH610	STORAGE	86.56	2.53	0.0
MH612	STORAGE	86.11	3.01	0.0
MH614	STORAGE	85.96	2.96	0.0
MH700	STORAGE	86.02	3.54	0.0
MH702	STORAGE	86.24	3.37	0.0
MH704	STORAGE	86.57	3.03	0.0
MH706	STORAGE	86.80	2.80	0.0
MH708	STORAGE	87.03	2.75	0.0
MH710	STORAGE	86.98	2.63	0.0
MH712	STORAGE	86.61	2.71	0.0
MH716	STORAGE	86.16	2.88	0.0
MH718	STORAGE	86.37	2.97	0.0
MH720	STORAGE	86.60	2.89	0.0
MHx1000	STORAGE	85.72	3.63	0.0

Provence Orleans Phase 5A (117155)
PCSWMM Model Results (100-year 3-hour Chicago Event)

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Link Summary
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Name	From Node	To Node	Type	Length	%Slope	Roughness
100-098	MH100	098	CONDUIT	66.0	0.1971	0.0130
102-100	MH102	MH100	CONDUIT	28.6	0.1398	0.0130
104-102	MH104	MH102	CONDUIT	75.0	0.1468	0.0130
106-104	MH106	MH104	CONDUIT	66.1	0.1514	0.0130
108-106	MH108	MH106	CONDUIT	77.1	0.1555	0.0130
110-108	MH110	MH108	CONDUIT	75.5	0.1457	0.0130
112-110	MH112	MH110	CONDUIT	54.2	0.1660	0.0130
114-112	MH114	MH112	CONDUIT	53.1	0.1505	0.0130
116-114	MH116	MH114	CONDUIT	42.9	0.1631	0.0130
118-116	MH118	MH116	CONDUIT	85.7	0.5015	0.0130
200-200A	MH200	MH200A	CONDUIT	37.4	0.1337	0.0130
200A-110	MH200A	MH110	CONDUIT	13.0	0.2307	0.0130
202-200	MH202	MH200	CONDUIT	25.2	0.1984	0.0130
204-202	MH204	MH202	CONDUIT	83.8	0.2387	0.0130
206-204	MH206	MH204	CONDUIT	82.6	0.1936	0.0130
206-304	MH206	MH304	CONDUIT	77.0	0.4413	0.0130
300-300A	MH300	MH300A	CONDUIT	24.3	0.4111	0.0130
300A-108	MH300A	MH108	CONDUIT	14.5	0.1379	0.0130
302-300	MH302	MH300	CONDUIT	83.4	0.3958	0.0130
304-302	MH304	MH302	CONDUIT	92.2	0.4013	0.0130
400-110	MH400	MH110	CONDUIT	76.2	0.5775	0.0130
402-400	MH402	MH400	CONDUIT	12.9	0.4668	0.0130
404-402	MH404	MH402	CONDUIT	59.1	0.3386	0.0130
404-408	MH404	MH406	CONDUIT	54.7	0.4022	0.0130
406-408	MH406	MH408	CONDUIT	16.6	0.4819	0.0130
408-114	MH408	MH114	CONDUIT	82.1	0.6089	0.0130
500-100	MH500	MH100	CONDUIT	26.6	0.2628	0.0130
502-500	MH502	MH500	CONDUIT	55.3	0.2531	0.0130
504-502	MH504	MH502	CONDUIT	12.3	0.4867	0.0130
508-504	MH506	MH504	CONDUIT	56.1	0.2498	0.0130
508-506	MH508	MH506	CONDUIT	61.6	0.2921	0.0130
508-510	MH508	MH510	CONDUIT	79.3	0.3658	0.0130
510-512	MH510	MH512	CONDUIT	15.6	0.4483	0.0130
512-108	MH512	MH108	CONDUIT	74.6	0.5495	0.0130
602-202	MH602	MH202	CONDUIT	101.2	0.1976	0.0130
604-602	MH604	MH602	CONDUIT	104.0	0.2019	0.0130
606-604	MH606	MH604	CONDUIT	13.7	0.5122	0.0130
608-606	MH608	MH606	CONDUIT	76.5	0.3399	0.0130
610-612	MH610	MH612	CONDUIT	73.6	0.3938	0.0130
612-614	MH612	MH614	CONDUIT	63.0	0.1904	0.0130
614-204	MH614	MH204	CONDUIT	37.6	0.2128	0.0130
700-302	MH700	MH302	CONDUIT	82.7	0.2055	0.0130
702-700	MH702	MH700	CONDUIT	76.1	0.1970	0.0130
704-702	MH704	MH702	CONDUIT	104.6	0.2487	0.0130
706-704	MH706	MH704	CONDUIT	16.0	0.5012	0.0130
708-706	MH708	MH706	CONDUIT	67.0	0.3431	0.0130
710-712	MH710	MH712	CONDUIT	117.9	0.2460	0.0130
712-304	MH712	MH304	CONDUIT	118.3	0.1944	0.0130
716-206	MH716	MH206	CONDUIT	46.2	0.1948	0.0130
718-716	MH718	MH716	CONDUIT	45.8	0.3058	0.0130
720-718	MH720	MH718	CONDUIT	71.9	0.3198	0.0130
C1	01+066	CB01-02	CONDUIT	31.0	2.8694	0.0160
C10	05+105	CB50-51	CONDUIT	57.0	0.9123	0.0160
C100	J27	LCB-2-09	CONDUIT	14.5	2.0648	0.0350
C101	J54	OF03	CONDUIT	8.9	-0.7897	0.0350
C102	J54	LCB-3-01	CONDUIT	15.4	0.7798	0.0350
C103	J1	LCB-3-01	CONDUIT	13.5	2.7479	0.0350
C104	J1	LCB-3-02	CONDUIT	11.6	1.7220	0.0350
C105	J2	LCB-3-02	CONDUIT	13.0	4.2477	0.0350
C106	J2	LCB-3-03	CONDUIT	11.2	1.7897	0.0350
C107	J3	LCB-3-03	CONDUIT	13.9	3.9717	0.0350
C108	J3	LCB-3-04	CONDUIT	10.6	3.3040	0.0350
C109	J4	LCB-3-04	CONDUIT	24.6	1.6262	0.0350
C11	05+105	CB52-53	CONDUIT	45.0	1.0011	0.0160
C110	J4	LCB-3-05	CONDUIT	20.7	1.7888	0.0350
C111	J5	LCB-3-05	CONDUIT	24.4	1.4769	0.0350
C112	J5	LCB-3-06	CONDUIT	21.8	1.7926	0.0350
C113	J6	LCB-3-06	CONDUIT	13.1	2.8215	0.0350
C114	J6	LCB-3-07	CONDUIT	11.5	3.2275	0.0350
C115	J7	LCB-3-07	CONDUIT	15.2	2.3749	0.0350
C116	J7	LCB-3-08	CONDUIT	18.2	1.9748	0.0350
C117	J8	LCB-3-08	CONDUIT	22.6	1.5462	0.0350
C118	J57	LCB-3-06	CONDUIT	21.3	3.7108	0.0350
C119	J57	01+198	CONDUIT	42.7	1.1948	0.0350
C12	05+194	CB52-53	CONDUIT	45.2	0.6633	0.0160
C120	J21	LCB-2-03	CONDUIT	39.7	1.3868	0.0350
C121	J53	CB-3-5_(CB)	CONDUIT	6.9	3.3207	0.0350

C122	J53	LCB-3-21	CONDUIT	29.8	1.6758	0.0350
C123	J49	LCB-3-21	CONDUIT	14.4	2.2208	0.0350
C124	J51	LCB-3-21	CONDUIT	14.7	2.1066	0.0350
C125	J51	LCB-3-22	CONDUIT	14.5	2.1434	0.0350
C126	J50	LCB-3-22	CONDUIT	7.5	3.9952	0.0350
C127	J50	CB52-53	CONDUIT	21.3	1.3634	0.0350
C128	J49	LCB-3-23	CONDUIT	13.7	2.3422	0.0350
C129	J48	LCB-3-23	CONDUIT	15.7	2.1021	0.0350
C13	05+194	CB54-55	CONDUIT	54.1	0.7394	0.0160
C130	J48	LCB-3-24	CONDUIT	14.1	2.4093	0.0350
C131	J47	LCB-3-24	CONDUIT	15.5	1.3591	0.0350
C132	J47	LCB-3-25	CONDUIT	15.1	1.9885	0.0350
C133	J46	LCB-3-25	CONDUIT	23.4	1.1540	0.0350
C134	J46	LCB-3-26	CONDUIT	19.0	1.5809	0.0350
C135	LCB-3-28	LCB-3-26	CONDUIT	30.0	0.7656	0.0350
C136	LCB-3-28	LCB-3-27	CONDUIT	17.0	1.2967	0.0350
C137	J41	LCB-3-27	CONDUIT	18.0	1.5024	0.0350
C138	J41	CB54-55	CONDUIT	18.7	1.2840	0.0350
C139	LCB-3-28	LCB-3-29	CONDUIT	16.6	1.3873	0.0350
C14	05+287	CB54-55	CONDUIT	39.0	0.7700	0.0160
C140	J44	LCB-3-29	CONDUIT	16.2	2.0391	0.0350
C141	J44	CB-3-7_(CB)	CONDUIT	5.6	1.7940	0.0350
C142	J56	05+105	CONDUIT	35.3	1.3592	0.0350
C143	J56	LCB-3-11	CONDUIT	20.3	4.8747	0.0350
C144	J55	CB52-53	CONDUIT	41.0	1.8072	0.0350
C145	J55	LCB-3-14	CONDUIT	21.2	3.5343	0.0350
C146	J58	LCB-2-09	CONDUIT	2.1	15.2143	0.0350
C147	J58	CB15-16	CONDUIT	6.3	5.6007	0.0350
C148	LCB-3-12	OF04	CONDUIT	8.3	4.8220	0.0350
C149	LCB-3-17	OF05	CONDUIT	10.8	4.1796	0.0350
C15	05+287	CB56-57	CONDUIT	46.3	0.9502	0.0160
C150	LCB-2-06	OF06	CONDUIT	8.7	5.0488	0.0350
C151	02+075	CB22-CBMH23	CONDUIT	38.8	0.7742	0.0160
C151_1	03+013	01+306	CONDUIT	21.0	0.1426	0.0160
C152	02+075	02+085	CONDUIT	12.5	0.1595	0.0160
C153	02+085	CB60-CBMH61	CONDUIT	34.3	1.1093	0.0160
C154	06+089	CB60-CBMH61	CONDUIT	42.5	0.7532	0.0160
C155	06+089	CB62-CBMH63	CONDUIT	30.8	1.2013	0.0160
C156	06+166	CB62-CBMH63	CONDUIT	45.6	0.7013	0.0160
C157	06+166	CB64-CBMH65	CONDUIT	31.2	1.0569	0.0160
C158	06+243	CB64-CBMH65	CONDUIT	39.8	0.7291	0.0160
C159	06+243	CB68-CBMH69	CONDUIT	42.4	0.6843	0.0160
C16	04+090	CB41-42	CONDUIT	52.6	0.7611	0.0160
C160	06+328	CB68-CBMH69	CONDUIT	36.4	0.7958	0.0160
C161	06+328	CB72-CBMH73	CONDUIT	32.3	0.8677	0.0160
C162	06+413	CB72-CBMH73	CONDUIT	53.2	0.6576	0.0160
C163	06+413	CB74-CBMH75	CONDUIT	41.4	0.7009	0.0160
C164	02+157	CB74-CBMH75	CONDUIT	43.4	0.7368	0.0160
C165	02+085	CB24-CBMH25	CONDUIT	41.4	0.8218	0.0160
C166	02+157	CB24-CBMH25	CONDUIT	26.7	1.0848	0.0160
C167	02+167	02+157	CONDUIT	12.8	0.0024	0.0160
C168	02+167	CB26-CBMH27	CONDUIT	40.0	0.6251	0.0160
C169	07+683	CB26-CBMH27	CONDUIT	32.4	0.9555	0.0160
C17	04+090	CB43-44	CONDUIT	47.9	0.6262	0.0160
C170	07+670	07+683	CONDUIT	13.1	0.0023	0.0160
C171	07+683	CB28-CBMH29	CONDUIT	30.1	0.9624	0.0160
C172	07+765	CB28-CBMH29	CONDUIT	42.3	1.0399	0.0160
C173	07+765	CB30-CBMH31	CONDUIT	47.4	0.6751	0.0160
C174	07+847	CB30-CBMH31	CONDUIT	35.3	1.0198	0.0160
C175	J65	CB68-CBMH69	CONDUIT	23.8	1.3024	0.0350
C176	J65	OF07	CONDUIT	7.0	1.1449	0.0350
C177	J66	CB09-10	CONDUIT	23.0	1.4787	0.0350
C178	J66	LCB-4-32	CONDUIT	9.7	2.5864	0.0350
C179	J67	LCB-4-32	CONDUIT	14.1	0.4976	0.0350
C18	04+190	CB43-44	CONDUIT	50.8	0.8068	0.0160
C180	J68	J67	CONDUIT	10.1	2.0739	0.0350
C181	J68	J69	CONDUIT	7.3	3.0035	0.0350
C182	J69	LCB-4-31	CONDUIT	9.6	0.5211	0.0350
C183	J70	LCB-4-31	CONDUIT	11.1	0.4491	0.0350
C184	J71	J70	CONDUIT	7.0	3.5493	0.0350
C185	J71	J72	CONDUIT	10.1	2.3671	0.0350
C186	J72	LCB-4-30	CONDUIT	12.1	0.4969	0.0350
C187	J73	LCB-4-30	CONDUIT	11.9	2.7646	0.0350
C188	J73	LCB-4-29	CONDUIT	13.7	2.4061	0.0350
C189	J74	LCB-4-29	CONDUIT	13.1	2.7443	0.0350
C19	04+190	CB45-46	CONDUIT	63.2	0.6169	0.0160
C190	J75	CB60-CBMH61	CONDUIT	14.8	2.5615	0.0350
C191	J75	LCB-4-27	CONDUIT	15.4	1.6845	0.0350
C192	J76	LCB-4-27	CONDUIT	11.3	0.4408	0.0350
C193	J77	J76	CONDUIT	5.4	0.7365	0.0350
C194	J78	J77	CONDUIT	6.4	2.8273	0.0350
C195	J78	LCB-4-28	CONDUIT	13.0	2.0844	0.0350

C196	J79	LCB-4-28	CONDUIT	12.0	2.7552	0.0350
C197	J80	J77	CONDUIT	13.5	1.3296	0.0350
C198	J80	LCB-4-26	CONDUIT	12.9	2.0886	0.0350
C199	J81	LCB-4-26	CONDUIT	14.9	0.4688	0.0350
C2	01+090	CB03-04	CONDUIT	55.7	0.6108	0.0160
C20	01+517	CB15-16	CONDUIT	31.5	0.7929	0.0160
C200	J81	LCB-4-25A	CONDUIT	10.6	0.6580	0.0350
C201	J82	LCB-4-25A	CONDUIT	11.5	0.6948	0.0350
C202	J82	LCB-4-25	CONDUIT	15.1	0.5293	0.0350
C203	J83	LCB-4-25	CONDUIT	13.0	2.1575	0.0350
C204	J83	J84	CONDUIT	10.1	2.1697	0.0350
C205	J84	LCB-4-24	CONDUIT	10.5	0.4770	0.0350
C206	J85	LCB-4-24	CONDUIT	10.5	0.5725	0.0350
C207	J85	LCB-4-23A	CONDUIT	12.4	0.4826	0.0350
C208	J86	LCB-4-23A	CONDUIT	12.4	0.5666	0.0350
C209	J86	LCB-4-23	CONDUIT	14.1	0.4952	0.0350
C21	01+568	CB15-16	CONDUIT	27.1	1.2546	0.0160
C210	J87	LCB-4-23	CONDUIT	14.8	2.1647	0.0350
C211	J87	LCB-4-22	CONDUIT	14.5	2.2123	0.0350
C212	J88	CB60-CBMH61	CONDUIT	6.8	7.4113	0.0350
C213	J88	LCB-4-21	CONDUIT	16.8	2.2675	0.0350
C214	J89	LCB-4-21	CONDUIT	11.3	0.4443	0.0350
C215	J90	J89	CONDUIT	7.3	3.2976	0.0350
C216	J90	J91	CONDUIT	12.1	2.1432	0.0350
C217	J91	LCB-4-20	CONDUIT	9.2	0.4346	0.0350
C218	J92	LCB-4-20	CONDUIT	13.1	2.2156	0.0350
C219	J92	CB74-CBMH75	CONDUIT	8.7	4.4744	0.0350
C22	01+568	CB18-19	CONDUIT	32.9	1.4894	0.0160
C220	J90	J93	CONDUIT	11.0	1.8132	0.0350
C221	J93	LCB-4-18	CONDUIT	21.4	0.4663	0.0350
C222	J94	LCB-4-18	CONDUIT	11.5	0.4357	0.0350
C223	J95	J94	CONDUIT	8.6	3.0099	0.0350
C224	J95	J96	CONDUIT	9.0	3.0007	0.0350
C225	J96	LCB-4-17	CONDUIT	9.4	0.4240	0.0350
C226	J97	LCB-4-17	CONDUIT	13.2	0.4553	0.0350
C227	J98	J97	CONDUIT	5.6	4.6856	0.0350
C228	J98	J99	CONDUIT	5.4	4.9914	0.0350
C229	J99	LCB-4-13	CONDUIT	15.0	0.4668	0.0350
C23	J8	J139	CONDUIT	10.6	1.5146	0.0350
C23_1	01+610	CB18-19	CONDUIT	10.6	1.2222	0.0160
C23_2	01+610	CB20-21	CONDUIT	21.4	0.9357	0.0160
C23_3	J139	LCB-5-03	CONDUIT	19.1	1.2557	0.0350
C23_4	LCB-5-02	LCB-5-03	CONDUIT	13.5	1.1856	0.0350
C23_5	J140	LCB-5-02	CONDUIT	11.9	2.0199	0.0350
C23_6	J140	LCB-5-01	CONDUIT	14.8	2.0303	0.0350
C23_7	J141	LCB-5-01	CONDUIT	12.1	2.4776	0.0350
C23_8	J141	CB06-07	CONDUIT	21.0	2.3837	0.0350
C230	J100	LCB-4-13	CONDUIT	13.2	0.4556	0.0350
C231	J101	J100	CONDUIT	18.5	1.1382	0.0350
C232	J101	J102	CONDUIT	6.7	3.2761	0.0350
C233	J102	LCB-4-16	CONDUIT	11.2	0.4462	0.0350
C234	J103	LCB-4-16	CONDUIT	18.0	1.4431	0.0350
C235	J103	CB64-CBMH65	CONDUIT	15.8	2.5968	0.0350
C236	J101	J104	CONDUIT	4.6	4.7923	0.0350
C237	J104	LCB-4-15	CONDUIT	11.3	0.4424	0.0350
C238	J105	LCB-4-15	CONDUIT	18.2	1.9757	0.0350
C239	J105	06+328	CONDUIT	4.9	4.5017	0.0350
C24	01+066	01+090	CONDUIT	20.3	0.3452	0.0160
C240	J106	CB74-CBMH75	CONDUIT	20.0	2.4489	0.0350
C241	J106	LCB-4-12	CONDUIT	15.0	1.9376	0.0350
C242	J107	LCB-4-12	CONDUIT	12.5	0.4812	0.0350
C243	J108	J107	CONDUIT	5.1	4.0842	0.0350
C244	J108	J109	CONDUIT	5.7	4.0526	0.0350
C245	J109	LCB-4-11	CONDUIT	10.7	0.4673	0.0350
C246	J110	LCB-4-11	CONDUIT	14.9	1.8119	0.0350
C247	J110	CB28-CBMH29	CONDUIT	7.0	5.2705	0.0350
C248	J108	J111	CONDUIT	13.7	1.6058	0.0350
C249	J111	LCB-4-09	CONDUIT	13.1	0.4577	0.0350
C25	01+090	CB50-51	CONDUIT	25.1	1.1975	0.0160
C250	J112	LCB-4-09	CONDUIT	15.2	0.4617	0.0350
C251	J112	LCB-4-08A	CONDUIT	10.9	0.6409	0.0350
C252	J113	LCB-4-08A	CONDUIT	14.9	0.4709	0.0350
C253	J113	LCB-4-08	CONDUIT	15.3	0.4582	0.0350
C254	J114	LCB-4-08	CONDUIT	12.9	0.5408	0.0350
C255	J114	LCB-4-07	CONDUIT	13.1	0.4580	0.0350
C256	J115	LCB-4-07	CONDUIT	19.5	1.7458	0.0350
C257	J116	J117	CONDUIT	12.2	1.4745	0.0350
C258	J117	LCB-4-01	CONDUIT	19.6	1.3743	0.0350
C259	J118	LCB-4-01	CONDUIT	13.1	0.8373	0.0350
C26	CB-3-5_(CB)	CB03-04	CONDUIT	25.0	1.4802	0.0350
C26_1	02+012	01+412	CONDUIT	26.6	0.0376	0.0160
C26_2	J64	CB56-57	CONDUIT	39.0	0.6926	0.0160

C260	J119	J118	CONDUIT	10.7	2.5213	0.0350
C261	J119	J120	CONDUIT	9.6	2.9314	0.0350
C262	J120	LCB-4-02	CONDUIT	11.8	0.8508	0.0350
C263	J122	LCB-4-02	CONDUIT	13.5	0.8893	0.0350
C264	J121	J122	CONDUIT	5.2	5.0540	0.0350
C265	J121	J123	CONDUIT	9.9	2.5235	0.0350
C266	J123	LCB-4-03	CONDUIT	14.3	0.9084	0.0350
C267	J124	LCB-4-03	CONDUIT	15.0	0.8643	0.0350
C268	J125	J124	CONDUIT	6.3	3.9563	0.0350
C269	J125	J126	CONDUIT	5.6	5.5363	0.0350
C27	01+412	CB41-42	CONDUIT	28.0	0.8937	0.0160
C270	J126	LCB-4-04	CONDUIT	9.3	0.7488	0.0350
C271	J127	LCB-4-04	CONDUIT	7.5	5.0651	0.0350
C272	J127	OF08	CONDUIT	3.5	1.1275	0.0350
C273	J128	LCB-4-06	CONDUIT	15.7	1.7224	0.0350
C274	J129	LCB-4-06	CONDUIT	15.1	0.4641	0.0350
C275	J129	LCB-4-05A	CONDUIT	14.2	0.4918	0.0350
C276	J130	LCB-4-05A	CONDUIT	10.3	0.9738	0.0350
C277	J130	LCB-4-05	CONDUIT	19.7	0.5084	0.0350
C278	J131	LCB-4-05	CONDUIT	13.8	1.5205	0.0350
C279	J131	CB90-91	CONDUIT	37.7	0.8499	0.0350
C28	01+517	CB45-46	CONDUIT	26.5	0.8312	0.0160
C280	J132	OF09	CONDUIT	5.2	-2.3267	0.0350
C281	J132	LCB-4-41	CONDUIT	12.3	2.0328	0.0350
C282	J133	LCB-4-41	CONDUIT	15.4	0.4550	0.0350
C283	J133	DICB-4-40	CONDUIT	16.2	0.4310	0.0350
C284	J134	DICB-4-40	CONDUIT	9.4	0.4256	0.0350
C285	J134	LCB-4-42	CONDUIT	10.1	0.3945	0.0350
C286	J135	LCB-4-42	CONDUIT	9.3	0.4295	0.0350
C287	J135	LCB-4-43	CONDUIT	9.9	0.4038	0.0350
C288	J136	LCB-4-43	CONDUIT	7.7	6.6138	0.0350
C289	J136	LCB-4-44	CONDUIT	8.2	0.4870	0.0350
C29	01+494	01+517	CONDUIT	12.2	0.0025	0.0160
C290	J137	LCB-4-44	CONDUIT	9.1	0.7709	0.0350
C291	J137	J138	CONDUIT	13.1	0.9137	0.0350
C292	J138	LCB-4-45	CONDUIT	5.1	7.8134	0.0350
C293	2-00_Stor	HP-2-00_Stor	CONDUIT	3.0	-11.7469	0.0160
C294	HP-2-00_Stor	CB15-16	CONDUIT	3.0	20.0584	0.0160
C295	LCB-4-41	DICB-4-40	CONDUIT	30.0	0.2000	0.0300
C296	LCB-4-42	DICB-4-40	CONDUIT	18.0	0.2222	0.0300
C297	LCB-4-43	LCB-4-42	CONDUIT	18.0	0.2222	0.0300
C298	LCB-4-44	LCB-4-43	CONDUIT	14.5	0.2072	0.0300
C299	LCB-4-45	LCB-4-44	CONDUIT	26.0	0.1923	0.0300
C3	01+198	CB03-04	CONDUIT	56.4	0.4964	0.0160
C30	01+387	01+412	CONDUIT	12.9	0.2328	0.0160
C300	03+013	CB32-33	CONDUIT	15.2	1.9089	0.0160
C301	03+065	CB32-33	CONDUIT	35.7	1.0634	0.0160
C302	03+065	CB34-35	CONDUIT	26.0	1.6911	0.0160
C303	03+125	CB34-35	CONDUIT	34.3	1.0198	0.0160
C304	03+125	03+137	CONDUIT	12.4	0.3214	0.0160
C305	03+137	CB36-37	CONDUIT	40.2	0.8452	0.0160
C306	07+605	CB36-37	CONDUIT	39.5	0.6332	0.0160
C307	03+137	CB76-77	CONDUIT	24.6	1.2182	0.0160
C308	07+091	CB76-77	CONDUIT	52.7	0.8536	0.0160
C309	07+091	CB78-79	CONDUIT	33.6	0.8622	0.0160
C31	CB-3-7_(CB)	CB06-07	CONDUIT	25.0	1.4001	0.0350
C310	07+175	CB78-79	CONDUIT	50.5	0.7524	0.0160
C311	07+175	CB80-81	CONDUIT	33.3	0.9297	0.0160
C312	07+260	CB80-81	CONDUIT	51.7	0.7537	0.0160
C313	07+260	CB82-83	CONDUIT	24.5	1.5093	0.0160
C314	07+342	CB82-83	CONDUIT	50.1	0.8989	0.0160
C315	07+342	CB84-85	CONDUIT	36.9	1.3023	0.0160
C316	07+428	CB84-85	CONDUIT	44.1	0.6800	0.0160
C317	07+428	CB86-87	CONDUIT	30.7	1.4677	0.0160
C318	07+513	CB86-87	CONDUIT	53.8	0.5572	0.0160
C319	07+513	CB88-89	CONDUIT	54.1	0.7769	0.0160
C32	CB20-21	OF02	CONDUIT	18.9	0.0528	0.0160
C320	07+591	CB88-89	CONDUIT	24.6	1.1801	0.0160
C321	07+591	07+605	CONDUIT	14.1	0.2129	0.0160
C322	07+605	CB90-91	CONDUIT	17.9	1.7903	0.0160
C323	07+670	CB90-91	CONDUIT	48.6	0.4941	0.0160
C324	J142	CB76-77	CONDUIT	10.5	3.4401	0.0350
C325	J142	LCB-5-18	CONDUIT	14.4	1.6684	0.0350
C326	J143	LCB-5-18	CONDUIT	21.9	1.2803	0.0350
C327	J143	LCB-5-17	CONDUIT	22.7	1.2354	0.0350
C328	J144	LCB-5-17	CONDUIT	15.1	2.1264	0.0350
C329	J144	CB88-89	CONDUIT	10.9	4.4954	0.0350
C33	CB01-02	OF01	CONDUIT	15.0	0.5350	0.0160
C330	J143	J145	CONDUIT	11.8	0.8508	0.0350
C331	J145	LCB-5-15	CONDUIT	22.1	0.8144	0.0350
C332	J146	LCB-5-15	CONDUIT	13.8	2.3148	0.0350
C333	J146	J147	CONDUIT	10.6	1.6058	0.0350

C334	J147	LCB-5-14	CONDUIT	10.3	1.4602	0.0350
C335	J148	LCB-5-14	CONDUIT	12.5	2.1595	0.0350
C336	J149	J148	CONDUIT	10.2	2.3568	0.0350
C337	J149	LCB-5-19	CONDUIT	12.3	3.0791	0.0350
C338	J150	LCB-5-19	CONDUIT	17.2	1.6314	0.0350
C339	J150	LCB-5-20	CONDUIT	13.7	2.0398	0.0350
C34	LCB-3-09	CB01-02	CONDUIT	12.1	6.0426	0.0100
C34_1	J9	J59	CONDUIT	6.4	3.1477	0.0350
C34_2	J59	LCB-3-09	CONDUIT	14.1	0.7109	0.0350
C340	J151	LCB-5-20	CONDUIT	16.9	1.6618	0.0350
C341	J151	LCB-5-21	CONDUIT	14.0	2.0063	0.0350
C342	J152	LCB-5-21	CONDUIT	19.9	1.4578	0.0350
C343	J152	J153	CONDUIT	10.4	1.6336	0.0350
C344	J153	LCB-5-23	CONDUIT	12.3	0.9777	0.0350
C345	J154	LCB-5-23	CONDUIT	9.8	2.5448	0.0350
C346	J154	CB84-85	CONDUIT	6.8	4.1505	0.0350
C347	J152	J155	CONDUIT	13.0	1.0785	0.0350
C348	J155	LCB-5-24	CONDUIT	12.5	1.1974	0.0350
C349	J156	LCB-5-24	CONDUIT	8.4	5.3521	0.0350
C35	CB-3-8_(CB)	CB09-10	CONDUIT	6.5	3.5390	0.0350
C35_1	J9	J60	CONDUIT	7.2	2.0795	0.0350
C35_2	J60	LCB-3-10	CONDUIT	16.0	0.6233	0.0350
C350	J156	CB80-81	CONDUIT	30.7	1.5288	0.0350
C351	J157	OF13	CONDUIT	1.7	105.6626	0.0350
C352	J157	LCB-5-04	CONDUIT	8.7	4.0369	0.0350
C353	J158	LCB-5-04	CONDUIT	14.7	1.4946	0.0350
C354	J158	LCB-5-05	CONDUIT	15.5	1.4180	0.0350
C355	J159	LCB-5-05	CONDUIT	14.1	1.4162	0.0350
C356	J159	LCB-5-06	CONDUIT	15.3	1.3094	0.0350
C357	J160	LCB-5-06	CONDUIT	16.5	0.6650	0.0350
C358	J161	J160	CONDUIT	12.8	0.9351	0.0350
C359	J161	LCB-5-07	CONDUIT	13.0	1.7695	0.0350
C36	CB-2-4_(CB)	CB12-13	CONDUIT	4.4	4.5616	0.0300
C36_1	J10	J61	CONDUIT	8.4	2.6300	0.0350
C36_2	J61	LCB-3-10	CONDUIT	13.3	0.7512	0.0350
C360	J162	LCB-5-07	CONDUIT	15.8	1.5776	0.0350
C361	J162	LCB-5-08	CONDUIT	15.9	2.2057	0.0350
C362	J163	LCB-5-08	CONDUIT	13.1	1.2211	0.0350
C363	J163	LCB-5-09	CONDUIT	16.6	0.9635	0.0350
C364	J164	LCB-5-09	CONDUIT	15.7	1.0839	0.0350
C365	J164	LCB-5-10	CONDUIT	12.9	1.3202	0.0350
C366	J165	LCB-5-10	CONDUIT	14.1	1.5551	0.0350
C367	J165	J166	CONDUIT	15.3	0.7866	0.0350
C368	J166	LCB-5-11	CONDUIT	13.0	0.7712	0.0350
C369	J167	LCB-5-11	CONDUIT	14.0	0.7839	0.0350
C37	CB-2-5_(CB)	CB12-13	CONDUIT	23.8	1.3436	0.0300
C37_1	J10	J62	CONDUIT	8.2	2.6891	0.0350
C37_2	J62	LCB-3-11	CONDUIT	20.7	0.4833	0.0350
C370	J168	J167	CONDUIT	15.4	0.7768	0.0350
C371	J168	LCB-5-12	CONDUIT	15.7	1.4651	0.0350
C372	J169	LCB-5-12	CONDUIT	14.2	1.0550	0.0350
C373	J169	LCB-5-13	CONDUIT	13.0	1.1521	0.0350
C374	J170	LCB-5-13	CONDUIT	11.3	3.1101	0.0350
C375	J170	OF12	CONDUIT	2.1	6.8218	0.0350
C376	J171	MH308	CONDUIT	6.3	4.7666	0.0350
C377	J171	CB76-77	CONDUIT	11.1	6.2492	0.0350
C38	J11	LCB-3-11	CONDUIT	15.3	2.1585	0.0350
C39	J11	LCB-3-12	CONDUIT	22.8	1.4947	0.0350
C4	01+198	CB06-07	CONDUIT	79.6	0.5400	0.0160
C40	J12	LCB-3-12	CONDUIT	25.9	1.3895	0.0350
C41	J12	LCB-3-13	CONDUIT	20.7	1.4016	0.0350
C42	J13	LCB-3-13	CONDUIT	32.9	0.8811	0.0350
C43	J13	LCB-3-14	CONDUIT	26.5	1.0551	0.0350
C44	J14	LCB-3-14	CONDUIT	32.6	1.1647	0.0350
C45	J14	LCB-3-15	CONDUIT	29.4	1.2943	0.0350
C46	J15	LCB-3-15	CONDUIT	29.7	1.3489	0.0350
C47	J16	LCB-3-16	CONDUIT	32.3	1.6702	0.0350
C48	J17	LCB-3-16	CONDUIT	28.9	1.1434	0.0350
C49	J17	LCB-3-17	CONDUIT	29.0	1.2060	0.0350
C5	01+306	CB06-07	CONDUIT	34.1	0.9388	0.0160
C50	J18	LCB-3-17	CONDUIT	12.4	2.4167	0.0350
C51	J18	LCB-2-01	CONDUIT	11.9	2.9380	0.0350
C52	J19	LCB-2-01	CONDUIT	19.0	1.8424	0.0350
C53	J19	LCB-2-02	CONDUIT	17.9	1.9590	0.0350
C54	J20	LCB-2-02	CONDUIT	28.5	1.9277	0.0350
C55	J37	LCB-3-17	CONDUIT	27.6	1.2684	0.0350
C56	J37	LCB-3-18	CONDUIT	21.8	1.3733	0.0350
C57	J38	LCB-3-18	CONDUIT	17.7	1.6995	0.0350
C58	J38	LCB-3-19	CONDUIT	28.6	1.0152	0.0350
C59	J39	LCB-3-19	CONDUIT	12.0	1.1693	0.0350
C6	01+306	J64	CONDUIT	18.5	0.1619	0.0160
C6_2	J64	CB09-10	CONDUIT	37.5	0.7999	0.0160

C60	J39	LCB-3-20	CONDUIT	8.1	1.8492	0.0350
C61	J40	LCB-3-20	CONDUIT	4.3	7.0715	0.0350
C62	J40	CB-3-8_(CB)	CONDUIT	6.6	2.7483	0.0350
C63	J32	CB43-44	CONDUIT	25.0	1.4416	0.0350
C64	J32	LCB-2-10	CONDUIT	16.3	1.8401	0.0350
C65	J33	LCB-2-10	CONDUIT	10.5	3.0351	0.0350
C66	J33	LCB-2-11	CONDUIT	5.8	5.1811	0.0350
C67	J28	LCB-2-11	CONDUIT	20.9	1.7732	0.0350
C68	J28	LCB-2-14	CONDUIT	19.9	1.4574	0.0350
C69	J29	LCB-2-14	CONDUIT	9.8	2.9529	0.0350
C7	01+387	CB09-10	CONDUIT	28.8	0.9034	0.0160
C70	J29	LCB-2-13	CONDUIT	9.0	3.5432	0.0350
C71	J31	LCB-2-13	CONDUIT	16.0	1.8740	0.0350
C72	J31	CB43-44	CONDUIT	27.5	1.5658	0.0350
C73	J30	LCB-2-14	CONDUIT	13.4	2.2447	0.0350
C74	J30	LCB-2-15	CONDUIT	14.5	1.9363	0.0350
C75	J36	LCB-2-15	CONDUIT	9.8	2.8730	0.0350
C76	J35	LCB-2-12	CONDUIT	16.2	1.8472	0.0350
C77	J34	LCB-2-12	CONDUIT	6.6	4.5564	0.0350
C78	J34	LCB-2-11	CONDUIT	11.3	2.8405	0.0350
C79	J35	CB-2-4_(CB)	CONDUIT	5.2	5.8249	0.0350
C8	01+412	CB12-13	CONDUIT	36.8	0.6797	0.0160
C80	J36	CB-2-5_(CB)	CONDUIT	5.6	4.2516	0.0350
C81	J52	LCB-3-16	CONDUIT	18.7	11.6819	0.0350
C82	J52	05+287	CONDUIT	31.1	1.4158	0.0350
C83	J45	LCB-2-02	CONDUIT	20.3	9.8573	0.0350
C84	J45	04+090	CONDUIT	30.3	1.6834	0.0350
C85	02+012	CB22-CBMH23	CONDUIT	27.7	1.3706	0.0160
C85_1	J22	J63	CONDUIT	13.6	1.6142	0.0350
C85_2	J63	LCB-2-03	CONDUIT	14.9	0.8043	0.0350
C86	J22	LCB-2-05	CONDUIT	26.0	1.3056	0.0350
C87	J23	LCB-2-05	CONDUIT	14.0	2.4375	0.0350
C88	J23	LCB-2-06	CONDUIT	12.2	2.7884	0.0350
C89	J24	LCB-2-06	CONDUIT	18.7	1.8188	0.0350
C9	01+494	CB12-13	CONDUIT	57.8	0.5881	0.0160
C90	J24	LCB-2-07	CONDUIT	19.7	1.5265	0.0350
C91	J25	LCB-2-07	CONDUIT	16.5	2.1225	0.0350
C92	J25	LCB-2-08	CONDUIT	19.5	1.5375	0.0350
C93	J42	LCB-2-08	CONDUIT	15.5	12.9975	0.0350
C94	J42	04+190	CONDUIT	41.5	0.9880	0.0350
C95	J43	LCB-2-05	CONDUIT	21.8	4.3527	0.0350
C96	J43	04+190	CONDUIT	29.0	1.6193	0.0350
C97	J26	LCB-2-08	CONDUIT	22.5	1.3363	0.0350
C98	J26	LCB-2-09A	CONDUIT	17.6	1.7054	0.0350
C99	J27	LCB-2-09A	CONDUIT	19.8	1.5172	0.0350
CB-100_(CB)	LCB-3-25	LCB-3-26	CONDUIT	40.4	0.4946	0.0130
CB-101_(CB)	LCB-3-26	LCB-3-28	CONDUIT	27.9	1.0035	0.0130
CB-102_(CB)	LCB-3-27	LCB-3-28	CONDUIT	13.6	1.0279	0.0130
CB-103_(CB)	LCB-3-28	LCB-3-29	CONDUIT	14.9	0.4711	0.0130
CB-104_(CB)	LCB-3-29	CB-3-7_(CB)	CONDUIT	20.6	0.4849	0.0130
CB-105_(CB)	LCB-3-09	LCB-3-10	CONDUIT	40.0	0.3997	0.0130
CB-106_(CB)	LCB-3-11	CB-3-1_(CB)	CONDUIT	37.8	0.5020	0.0130
CB-108_(CB)	LCB-3-12	LCB-3-11	CONDUIT	28.8	1.0055	0.0130
CB-109_(CB)	LCB-3-10	LCB-3-11	CONDUIT	43.8	0.3880	0.0130
CB-112_(CB)	LCB-3-14	CB-3-2_(CB)	CONDUIT	41.1	0.4866	0.0130
CB-116_(CB)	LCB-3-17	LCB-3-16	CONDUIT	54.0	0.4997	0.0130
CB-117_(CB)	LCB-3-16	CB-3-3_(CB)	CONDUIT	38.3	0.4964	0.0130
CB-119_(CB)	LCB-3-18	LCB-3-19	CONDUIT	44.2	0.4977	0.0130
CB-120_(2)_(CB)	LCB-3-20	CB-3-8_(CB)	CONDUIT	7.3	0.5503	0.0130
CB-120_(CB)	LCB-3-19	LCB-3-20	CONDUIT	17.6	0.5102	0.0130
CB-122_(CB)	LCB-2-01	LCB-2-02	CONDUIT	32.9	0.4862	0.0130
CB-123_(CB)	LCB-2-02	CB-2-1_(CB)	CONDUIT	39.0	0.4869	0.0130
CB-125_(CB)	LCB-2-10	LCB-2-11	CONDUIT	15.0	0.4680	0.0130
CB-126_(CB)	LCB-2-11	LCB-2-12	CONDUIT	16.5	0.4853	0.0130
CB-127_(CB)	LCB-2-12	CB-2-4_(CB)	CONDUIT	20.1	0.4983	0.0130
CB-130_(CB)	LCB-2-03	LCB-2-05	CONDUIT	51.8	0.5018	0.0130
CB-131_(CB)	LCB-2-05	CB-2-2_(CB)	CONDUIT	41.0	0.5854	0.0130
CB-133_(2)_(CB)	LCB-2-07	LCB-2-08	CONDUIT	28.6	0.6300	0.0130
CB-134_(CB)	LCB-2-08	CB-2-3_(CB)	CONDUIT	35.5	0.5068	0.0130
CB-136_(2)_(CB)	LCB-2-09A	LCB-2-08	CONDUIT	35.3	0.3965	0.0130
CB-136_(CB)	LCB-2-09	LCB-2-09A	CONDUIT	29.4	0.4082	0.0130
CB-138_(CB)	LCB-3-01	CB-3-4_(CB)	CONDUIT	35.8	0.5025	0.0130
CB-140_(2)_(1)_(CB)	LCB-3-02	LCB-3-01	CONDUIT	22.4	0.9821	0.0130
CB-140_(2)_(CB)	LCB-3-03	LCB-3-02	CONDUIT	21.2	0.5187	0.0130
CB-140_(CB)	LCB-3-04	LCB-3-03	CONDUIT	21.2	0.5181	0.0130
CB-141_(CB)	LCB-3-05	LCB-3-04	CONDUIT	42.8	0.4912	0.0130
CB-144_(CB)	LCB-3-06	CB-3-6_(CB)	CONDUIT	40.9	0.4892	0.0130
CB-149_(CB)	LCB-3-08	LCB-3-07	CONDUIT	30.8	0.4867	0.0130
CB-150_(CB)	LCB-3-07	LCB-3-06	CONDUIT	21.0	0.7133	0.0130
CB-153_(CB)	LCB-5-03	CB-5-01	CONDUIT	33.9	0.5021	0.0130
CB-159_(3)_(CB)	LCB-5-02	LCB-5-03	CONDUIT	12.7	0.3944	0.0130
CB-159_(CB)	LCB-5-01	LCB-5-02	CONDUIT	25.9	0.3856	0.0130

CB-160_(CB)	LCB-3-15	LCB-3-14	CONDUIT	58.1	0.4992	0.0130
CB-161_(CB)	LCB-3-13	LCB-3-14	CONDUIT	55.2	0.5071	0.0130
CB-164_(2)_(CB)	LCB-4-25A	LCB-4-26	CONDUIT	24.9	0.4019	0.0130
CB-164_(CB)	LCB-4-25	LCB-4-25A	CONDUIT	25.6	0.3509	0.0130
CB-166_(CB)	LCB-4-26	RYT-4-27A	CONDUIT	27.3	0.4024	0.0130
CB-168_(CB)_1	LCB-4-28	RYT-4-27A	CONDUIT	19.7	0.4057	0.0130
CB-168_(CB)_2	RYT-4-27A	LCB-4-27	CONDUIT	15.1	0.3981	0.0130
CB-170_(CB)	LCB-4-27	CBMH-4-01	CONDUIT	17.9	0.3913	0.0130
CB-175_(2)_(CB)	LCB-4-23A	LCB-4-24	CONDUIT	21.9	0.4110	0.0130
CB-175_(CB)	LCB-4-23	LCB-4-23A	CONDUIT	25.7	0.3891	0.0130
CB-177_(CB)	LCB-4-24	CBMH-4-03	CONDUIT	33.0	0.5147	0.0130
CB-180_(CB)	LCB-3-21	CB-3-5_(CB)	CONDUIT	35.9	0.5009	0.0130
CB-185_(CB)	LCB-2-13	LCB-2-14	CONDUIT	16.1	0.4975	0.0130
CB-187_(CB)	LCB-2-14	LCB-2-15	CONDUIT	25.6	0.5087	0.0130
CB-189_(CB)	LCB-2-15	CB-2-5_(CB)	CONDUIT	13.9	0.5024	0.0130
CB-209_(CB)	LCB-4-22	LCB-4-23	CONDUIT	27.6	0.3983	0.0130
CB-211_(CB)	LCB-3-24	LCB-3-23	CONDUIT	27.3	0.5123	0.0130
CB-215_(CB)	LCB-2-06	LCB-2-05	CONDUIT	23.1	0.4763	0.0130
CB-228_(CB)	LCB-4-17	LCB-4-18	CONDUIT	36.2	0.3864	0.0130
CB-229_(CB)	LCB-4-18	RYT-4-19	CONDUIT	29.6	0.4051	0.0130
CB-230_(CB)	RYT-4-19	LCB-4-21	CONDUIT	17.9	0.3901	0.0130
CB-231_(CB)	LCB-4-21	CB-4-02	CONDUIT	20.4	0.3917	0.0130
CB-233_(CB)	LCB-4-20	RYT-4-19	CONDUIT	20.5	0.3911	0.0130
CB-234_(CB)	LCB-4-13	RYT-4-14	CONDUIT	28.5	0.3862	0.0130
CB-235_(CB)	LCB-4-15	RYT-4-14	CONDUIT	14.4	0.4164	0.0130
CB-236_(CB)	RYT-4-14	LCB-4-16	CONDUIT	17.3	0.4050	0.0130
CB-237_(CB)	LCB-4-16	CB-4-04	CONDUIT	19.7	0.4063	0.0130
CB-239_(1)_(1)_(CB)	LCB-4-08A	LCB-4-09	CONDUIT	25.1	0.1592	0.0130
CB-239_(1)_(CB)	LCB-4-08	LCB-4-08A	CONDUIT	28.9	0.3458	0.0130
CB-239_(CB)	LCB-4-07	LCB-4-08	CONDUIT	24.7	0.4851	0.0130
CB-240_(CB)	LCB-4-09	RYT-4-10	CONDUIT	25.1	0.5970	0.0130
CB-245_(1)_(CB)	LCB-4-12	CB-4-05	CONDUIT	18.2	0.3853	0.0130
CB-245_(CB)	RYT-4-10	LCB-4-12	CONDUIT	17.0	0.4114	0.0130
CB-253_(CB)	LCB-4-01	LCB-4-02	CONDUIT	41.4	0.2175	0.0130
CB-257_(CB)	LCB-4-02	LCB-4-03	CONDUIT	38.9	0.2054	0.0130
CB-264_(CB)	LCB-4-03	CBMH-4-06	CONDUIT	32.7	0.4891	0.0130
CB-268_(CB)	LCB-4-04	LCB-4-03	CONDUIT	32.5	0.2156	0.0130
CB-271_(1)_(CB)	LCB-4-05A	LCB-4-06	CONDUIT	28.4	0.3868	0.0130
CB-271_(CB)	LCB-4-05	LCB-4-05A	CONDUIT	28.9	0.4151	0.0130
CB-273_(CB)	LCB-4-06	CBMH-4-07	CONDUIT	33.0	0.4849	0.0130
CB-280_(1)_(CB)	LCB-4-30	LCB-4-31	CONDUIT	39.4	0.3807	0.0130
CB-280_(CB)	LCB-4-29	LCB-4-30	CONDUIT	24.7	0.4049	0.0130
CB-284_(CB)	LCB-4-32	LCB-4-31	CONDUIT	39.8	0.4273	0.0130
CB-288_(CB)	LCB-4-31	CBMH-4-08	CONDUIT	33.0	0.4846	0.0130
CB-294_(CB)	LCB-4-11	RYT-4-10	CONDUIT	15.3	0.3916	0.0130
CB-386_(CB)	LCB-5-04	LCB-5-05	CONDUIT	28.7	0.2441	0.0130
CB-387_(CB)	LCB-5-05	LCB-5-06	CONDUIT	28.0	0.2496	0.0130
CB-388_(CB)	LCB-5-07	LCB-5-06	CONDUIT	40.8	0.3428	0.0130
CB-391_(CB)	LCB-5-08	LCB-5-09	CONDUIT	28.1	0.2135	0.0130
CB-397_(CB)	LCB-5-09	LCB-5-10	CONDUIT	26.9	0.1859	0.0130
CB-398_(CB)	LCB-5-10	LCB-5-11	CONDUIT	40.9	0.1956	0.0130
CB-406_(CB)	LCB-5-12	LCB-5-11	CONDUIT	43.8	0.2742	0.0130
CB-408_(CB)	LCB-5-13	LCB-5-12	CONDUIT	25.6	0.2736	0.0130
CB-411_(CB)	LCB-5-23	RAP-5-22	CONDUIT	23.5	0.3826	0.0130
CB-413_(CB)	RAP-5-22	LCB-5-24	CONDUIT	23.4	0.3853	0.0130
CB-416_(CB)	LCB-5-17	RAP-5-16	CONDUIT	22.3	0.4028	0.0130
CB-418_(CB)	RAP-5-16	LCB-5-18	CONDUIT	21.0	0.3807	0.0130
CB-421_(CB)	LCB-5-19	LCB-5-20	CONDUIT	29.8	0.4031	0.0130
CB-423_(CB)	LCB-5-20	LCB-5-21	CONDUIT	29.9	0.4017	0.0130
CB-424_(CB)	LCB-5-21	RAP-5-22	CONDUIT	21.0	0.3806	0.0130
CB-427_(CB)	LCB-5-14	LCB-5-15	CONDUIT	33.5	0.3885	0.0130
CB-430_(CB)	LCB-5-15	RAP-5-16	CONDUIT	32.3	0.4023	0.0130
CB-432_(CB)	LCB-5-24	CB-5-04	CONDUIT	10.7	0.4679	0.0130
CB-436_(CB)	LCB-5-18	CB-5-05	CONDUIT	15.2	0.3945	0.0130
CB-439_(CB)	LCB-5-06	CBMH-5-02	CONDUIT	32.8	0.4881	0.0130
CB-444_(CB)	LCB-5-11	CBMH-5-03	CONDUIT	32.8	0.4885	0.0130
CB-98_(CB)	LCB-3-22	LCB-3-21	CONDUIT	26.9	0.5205	0.0130
CB-99_(CB)	LCB-3-23	LCB-3-21	CONDUIT	26.2	0.4964	0.0130
LCB-1_(86)	LCB-4-41	DICB-4-40	CONDUIT	30.0	0.2000	0.0130
LCB-1_(87)	LCB-4-42	DICB-4-40	CONDUIT	18.0	0.2222	0.0130
LCB-1_(88)	LCB-4-43	LCB-4-42	CONDUIT	18.0	0.2222	0.0130
LCB-1_(89)	LCB-4-44	LCB-4-43	CONDUIT	14.5	0.2072	0.0130
LCB-1_(89)_(1)	LCB-4-45	LCB-4-44	CONDUIT	26.0	0.1923	0.0130
x1000-116	MHx1000	MH116	CONDUIT	14.5	0.2763	0.0130
OCB03	CB03-04	MH102	ORIFICE			
OCB04	CB03-04	MH102	ORIFICE			
OCB06	CB06-07	MH108	ORIFICE			
OCB07	CB06-07	MH108	ORIFICE			
OCB09	CB09-10	MH110	ORIFICE			
OCB10	CB09-10	MH110	ORIFICE			
OCB12	CB12-13	MH112	ORIFICE			
OCB13	CB12-13	MH112	ORIFICE			

OCB15	CB15-16	MH116	ORIFICE
OCB16	CB15-16	MH116	ORIFICE
OCB18	CB18-19	MH118	ORIFICE
OCB19	CB18-19	MH118	ORIFICE
OCB22-CBMH23	CB22-CBMH23	MH200	ORIFICE
OCB24-CBMH25	CB24-CBMH25	MH204	ORIFICE
OCB26-CBMH27	CB26-CBMH27	MH206	ORIFICE
OCB28-CBMH29	CB28-CBMH29	MH716	ORIFICE
OCB30-CBMH31	CB30-CBMH31	MH720	ORIFICE
OCB32	CB32-33	MH300	ORIFICE
OCB33	CB32-33	MH300	ORIFICE
OCB34	CB34-35	MH302	ORIFICE
OCB35	CB34-35	MH302	ORIFICE
OCB36	CB36-37	MH304	ORIFICE
OCB37	CB36-37	MH304	ORIFICE
OCB41	CB41-42	MH400	ORIFICE
OCB42	CB41-42	MH400	ORIFICE
OCB43	CB43-44	MH404	ORIFICE
OCB44	CB43-44	MH404	ORIFICE
OCB45	CB45-46	MH408	ORIFICE
OCB46	CB45-46	MH408	ORIFICE
OCB50	CB50-51	MH500	ORIFICE
OCB51	CB50-51	MH500	ORIFICE
OCB52	CB52-53	MH506	ORIFICE
OCB53	CB52-53	MH506	ORIFICE
OCB54	CB54-55	MH508	ORIFICE
OCB55	CB54-55	MH508	ORIFICE
OCB56	CB56-57	MH512	ORIFICE
OCB57	CB56-57	MH512	ORIFICE
OCB60-CBMH61	CB60-CBMH61	MH602	ORIFICE
OCB62-CBMH63	CB62-CBMH63	MH604	ORIFICE
OCB64-CBMH65	CB64-CBMH65	MH604	ORIFICE
OCB68-CBMH69	CB68-CBMH69	MH608	ORIFICE
OCB72-CBMH73	CB72-CBMH73	MH612	ORIFICE
OCB74-CBMH75	CB74-CBMH75	MH612	ORIFICE
OCB76	CB76-77	MH700	ORIFICE
OCB77	CB76-77	MH700	ORIFICE
OCB78	CB78-79	MH702	ORIFICE
OCB79	CB78-79	MH702	ORIFICE
OCB80	CB80-81	MH704	ORIFICE
OCB81	CB80-81	MH704	ORIFICE

OCB82	CB82-83	MH708	ORIFICE
OCB83	CB82-83	MH708	ORIFICE
OCB84	CB84-85	MH710	ORIFICE
OCB85	CB84-85	MH710	ORIFICE
OCB86	CB86-87	MH710	ORIFICE
OCB87	CB86-87	MH710	ORIFICE
OCB88	CB88-89	MH712	ORIFICE
OCB89	CB88-89	MH712	ORIFICE
OCB90	CB90-91	MH304	ORIFICE
OCB91	CB90-91	MH304	ORIFICE
OCBMH02-01	CB-2-1_(CB)	MH402	ORIFICE
OCBMH02-02	CB-2-2_(CB)	MH406	ORIFICE
OCBMH02-03	CB-2-3_(CB)	MH408	ORIFICE
OCBMH02-04	CB-2-4_(CB)	MH112	ORIFICE
OCBMH02-05	CB-2-5_(CB)	MH112	ORIFICE
OCBMH03-01	CB-3-1_(CB)	MH502	ORIFICE
OCBMH03-02	CB-3-2_(CB)	MH506	ORIFICE
OCBMH03-03	CB-3-3_(CB)	MH510	ORIFICE
OCBMH03-04	CB-3-4_(CB)	MH100	ORIFICE
OCBMH03-05	CB-3-5_(CB)	MH102	ORIFICE
OCBMH03-06	CB-3-6_(CB)	MH104	ORIFICE
OCBMH03-07	CB-3-7_(CB)	MH106	ORIFICE
OCBMH03-08	CB-3-8_(CB)	MH110	ORIFICE
OCBMH04-01	CBMH-4-01	MH602	ORIFICE
OCBMH04-02	CB-4-02	MH602	ORIFICE
OCBMH04-03	CBMH-4-03	MH604	ORIFICE
OCBMH04-04	CB-4-04	MH604	ORIFICE
OCBMH04-05	CB-4-05	MH612	ORIFICE
OCBMH04-06	CBMH-4-06	MH718	ORIFICE
OCBMH04-07	CBMH-4-07	MH206	ORIFICE
OCBMH04-08	CBMH-4-08	MH202	ORIFICE
OCBMH05-1	CB-5-01	MH302	ORIFICE
OCBMH05-2	CBMH-5-02	MH710	ORIFICE
OCBMH05-3	CBMH-5-03	MH304	ORIFICE
OCBMH05-4	CB-5-04	MH704	ORIFICE
OCBMH05-5	CB-5-05	MH700	ORIFICE
ODICB4-40	DICB-4-40	MH720	ORIFICE
OPark	MH308	MH700	ORIFICE
PH2	2-00_Stor	MHx1000	ORIFICE
OCB01	CB01-02	MH100	OUTLET
OCB02	CB01-02	MH100	OUTLET

OCB20	CB20-21	MH118	OUTLET
OCB21	CB20-21	MH118	OUTLET

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Cross Section Summary
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Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
100-098	CIRCULAR	1.52	1.82	0.38	1.52	1	3274.17
102-100	CIRCULAR	1.52	1.82	0.38	1.52	1	2757.64
104-102	CIRCULAR	1.52	1.82	0.38	1.52	1	2825.32
106-104	CIRCULAR	1.52	1.82	0.38	1.52	1	2869.46
108-106	CIRCULAR	1.52	1.82	0.38	1.52	1	2908.66
110-108	CIRCULAR	1.37	1.48	0.34	1.37	1	2127.30
112-110	CIRCULAR	0.84	0.55	0.21	0.84	1	609.75
114-112	CIRCULAR	0.76	0.46	0.19	0.76	1	450.66
116-114	CIRCULAR	0.69	0.37	0.17	0.69	1	354.44
118-116	CIRCULAR	0.30	0.07	0.08	0.30	1	71.57
200-200A	CIRCULAR	0.99	0.77	0.25	0.99	1	855.74
200A-110	CIRCULAR	0.99	0.77	0.25	0.99	1	1124.26
202-200	CIRCULAR	0.91	0.66	0.23	0.91	1	840.30
204-202	CIRCULAR	0.76	0.46	0.19	0.76	1	567.49
206-204	CIRCULAR	0.61	0.29	0.15	0.61	1	282.39
206-304	CIRCULAR	0.38	0.11	0.10	0.38	1	121.51
300-300A	CIRCULAR	0.91	0.66	0.23	0.91	1	1209.57
300A-108	CIRCULAR	0.91	0.66	0.23	0.91	1	700.63
302-300	CIRCULAR	0.91	0.66	0.23	0.91	1	1186.89
304-302	CIRCULAR	0.69	0.37	0.17	0.69	1	555.96
400-110	CIRCULAR	0.46	0.16	0.11	0.46	1	225.77
402-400	CIRCULAR	0.38	0.11	0.10	0.38	1	124.98
404-402	CIRCULAR	0.38	0.11	0.10	0.38	1	106.44
404-408	CIRCULAR	0.30	0.07	0.08	0.30	1	64.09
406-408	CIRCULAR	0.30	0.07	0.08	0.30	1	70.16
408-114	CIRCULAR	0.38	0.11	0.10	0.38	1	142.74
500-100	CIRCULAR	0.53	0.22	0.13	0.53	1	229.55
502-500	CIRCULAR	0.53	0.22	0.13	0.53	1	225.27
504-502	CIRCULAR	0.46	0.16	0.11	0.46	1	207.28
508-504	CIRCULAR	0.46	0.16	0.11	0.46	1	148.48
508-506	CIRCULAR	0.38	0.11	0.10	0.38	1	98.86
508-510	CIRCULAR	0.38	0.11	0.10	0.38	1	110.64
510-512	CIRCULAR	0.38	0.11	0.10	0.38	1	122.47
512-108	CIRCULAR	0.46	0.16	0.11	0.46	1	220.24
602-202	CIRCULAR	0.69	0.37	0.17	0.69	1	390.09
604-602	CIRCULAR	0.61	0.29	0.15	0.61	1	288.35
606-604	CIRCULAR	0.46	0.16	0.11	0.46	1	212.63
608-606	CIRCULAR	0.38	0.11	0.10	0.38	1	106.64
610-612	CIRCULAR	0.38	0.11	0.10	0.38	1	114.79
612-614	CIRCULAR	0.53	0.22	0.13	0.53	1	195.39
614-204	CIRCULAR	0.53	0.22	0.13	0.53	1	206.55
700-302	CIRCULAR	0.69	0.37	0.17	0.69	1	397.83
702-700	CIRCULAR	0.61	0.29	0.15	0.61	1	284.82
704-702	CIRCULAR	0.53	0.22	0.13	0.53	1	223.30
706-704	CIRCULAR	0.38	0.11	0.10	0.38	1	129.50
708-706	CIRCULAR	0.38	0.11	0.10	0.38	1	107.15
710-712	CIRCULAR	0.46	0.16	0.11	0.46	1	147.34
712-304	CIRCULAR	0.53	0.22	0.13	0.53	1	197.43
716-206	CIRCULAR	0.53	0.22	0.13	0.53	1	197.63
718-716	CIRCULAR	0.46	0.16	0.11	0.46	1	164.29
720-718	CIRCULAR	0.46	0.16	0.11	0.46	1	168.03
C1	22m-RightParking	0.35	3.40	0.17	22.00	1	10893.94
C10	18m-NoParking	0.35	3.32	0.20	18.00	1	6745.24
C100	TRIANGULAR	0.40	0.48	0.19	2.40	1	650.75
C101	TRIANGULAR	0.40	0.48	0.19	2.40	1	402.45
C102	TRIANGULAR	0.40	0.48	0.19	2.40	1	399.89
C103	TRIANGULAR	0.40	0.48	0.19	2.40	1	750.70
C104	TRIANGULAR	0.40	0.48	0.19	2.40	1	594.27
C105	TRIANGULAR	0.40	0.48	0.19	2.40	1	933.34
C106	TRIANGULAR	0.40	0.48	0.19	2.40	1	605.83
C107	TRIANGULAR	0.40	0.48	0.19	2.40	1	902.51
C108	TRIANGULAR	0.40	0.48	0.19	2.40	1	823.16
C109	TRIANGULAR	0.40	0.48	0.19	2.40	1	577.51
C11	18m-NoParking	0.35	3.32	0.20	18.00	1	7066.22
C110	TRIANGULAR	0.40	0.48	0.19	2.40	1	605.69
C111	TRIANGULAR	0.40	0.48	0.19	2.40	1	550.35
C112	TRIANGULAR	0.40	0.48	0.19	2.40	1	606.32
C113	TRIANGULAR	0.40	0.48	0.19	2.40	1	760.68
C114	TRIANGULAR	0.40	0.48	0.19	2.40	1	813.58
C115	TRIANGULAR	0.40	0.48	0.19	2.40	1	697.89
C116	TRIANGULAR	0.40	0.48	0.19	2.40	1	636.40
C117	TRIANGULAR	0.40	0.48	0.19	2.40	1	563.12

C118	TRIANGULAR	0.40	0.48	0.19	2.40	1	872.37
C119	TRIANGULAR	0.35	0.42	0.17	2.40	1	399.39
C12	18m-NoParking	0.35	3.32	0.20	18.00	1	5751.89
C120	TRIANGULAR	0.40	0.48	0.19	2.40	1	533.31
C121	TRIANGULAR	0.40	0.48	0.19	2.40	1	825.25
C122	TRIANGULAR	0.40	0.48	0.19	2.40	1	586.25
C123	TRIANGULAR	0.40	0.48	0.19	2.40	1	674.87
C124	TRIANGULAR	0.40	0.48	0.19	2.40	1	657.29
C125	TRIANGULAR	0.40	0.48	0.19	2.40	1	663.01
C126	TRIANGULAR	0.40	0.48	0.19	2.40	1	905.18
C127	TRIANGULAR	0.35	0.42	0.17	2.40	1	426.63
C128	TRIANGULAR	0.40	0.48	0.19	2.40	1	693.08
C129	TRIANGULAR	0.40	0.48	0.19	2.40	1	656.59
C13	18m-NoParking	0.35	3.32	0.20	18.00	1	6072.80
C130	TRIANGULAR	0.40	0.48	0.19	2.40	1	702.93
C131	TRIANGULAR	0.40	0.48	0.19	2.40	1	527.95
C132	TRIANGULAR	0.40	0.48	0.19	2.40	1	638.60
C133	TRIANGULAR	0.40	0.48	0.19	2.40	1	486.49
C134	TRIANGULAR	0.40	0.48	0.19	2.40	1	569.40
C135	TRIANGULAR	0.40	0.48	0.19	2.40	1	396.26
C136	TRIANGULAR	0.40	0.48	0.19	2.40	1	515.70
C137	TRIANGULAR	0.40	0.48	0.19	2.40	1	555.09
C138	TRIANGULAR	0.35	0.42	0.17	2.40	1	414.03
C139	TRIANGULAR	0.40	0.48	0.19	2.40	1	533.41
C14	18m-NoParking	0.35	3.32	0.20	18.00	1	6197.22
C140	TRIANGULAR	0.40	0.48	0.19	2.40	1	646.67
C141	TRIANGULAR	0.40	0.48	0.19	2.40	1	606.57
C142	TRIANGULAR	0.35	0.42	0.17	2.40	1	425.97
C143	TRIANGULAR	0.40	0.48	0.19	2.40	1	999.87
C144	TRIANGULAR	0.35	0.42	0.17	2.40	1	491.20
C145	TRIANGULAR	0.40	0.48	0.19	2.40	1	851.37
C146	TRIANGULAR	0.40	0.48	0.19	2.40	1	1766.42
C147	TRIANGULAR	0.35	0.42	0.17	2.40	1	864.71
C148	TRIANGULAR	0.40	0.48	0.19	2.40	1	994.44
C149	TRIANGULAR	0.40	0.48	0.19	2.40	1	925.84
C15	18m-NoParking	0.35	3.32	0.20	18.00	1	6884.18
C150	TRIANGULAR	0.40	0.48	0.19	2.40	1	1017.56
C151	18m-NoParking	0.35	3.32	0.20	18.00	1	6213.99
C151_1	18m-NoParking	0.35	3.32	0.20	18.00	1	2666.53
C152	18m-NoParking	0.35	3.32	0.20	18.00	1	2820.48
C153	18m-NoParking	0.35	3.32	0.20	18.00	1	7438.13
C154	18m-NoParking	0.35	3.32	0.20	18.00	1	6129.19
C155	18m-NoParking	0.35	3.32	0.20	18.00	1	7740.33
C156	18m-NoParking	0.35	3.32	0.20	18.00	1	5914.25
C157	18m-NoParking	0.35	3.32	0.20	18.00	1	7260.35
C158	18m-NoParking	0.35	3.32	0.20	18.00	1	6030.15
C159	18m-NoParking	0.35	3.32	0.20	18.00	1	5842.02
C16	18m-NoParking	0.35	3.32	0.20	18.00	1	6160.96
C160	18m-NoParking	0.35	3.32	0.20	18.00	1	6300.05
C161	18m-NoParking	0.35	3.32	0.20	18.00	1	6578.30
C162	18m-NoParking	0.35	3.32	0.20	18.00	1	5726.75
C163	18m-NoParking	0.35	3.32	0.20	18.00	1	5912.62
C164	18m-NoParking	0.35	3.32	0.20	18.00	1	6061.78
C165	18m-NoParking	0.35	3.32	0.20	18.00	1	6401.95
C166	18m-NoParking	0.35	3.32	0.20	18.00	1	7355.48
C167	18m-NoParking	0.35	3.32	0.20	18.00	1	344.41
C168	18m-NoParking	0.35	3.32	0.20	18.00	1	5583.42
C169	18m-NoParking	0.35	3.32	0.20	18.00	1	6903.40
C17	18m-NoParking	0.35	3.32	0.20	18.00	1	5588.51
C170	18m-NoParking	0.35	3.32	0.20	18.00	1	341.08
C171	18m-NoParking	0.35	3.32	0.20	18.00	1	6928.08
C172	18m-NoParking	0.35	3.32	0.20	18.00	1	7201.79
C173	18m-NoParking	0.35	3.32	0.20	18.00	1	5802.70
C174	18m-NoParking	0.35	3.32	0.20	18.00	1	7131.65
C175	TRAPEZOIDAL	0.13	0.66	0.11	6.08	1	482.96
C176	TRAPEZOIDAL	0.13	0.66	0.11	6.08	1	452.82
C177	TRIANGULAR	0.40	0.48	0.19	2.40	1	550.69
C178	TRIANGULAR	0.40	0.48	0.19	2.40	1	728.31
C179	TRIANGULAR	0.40	0.48	0.19	2.40	1	319.46
C18	18m-NoParking	0.35	3.32	0.20	18.00	1	6343.32
C180	TRIANGULAR	0.40	0.48	0.19	2.40	1	652.17
C181	TRIANGULAR	0.40	0.48	0.19	2.40	1	784.84
C182	TRIANGULAR	0.40	0.48	0.19	2.40	1	326.90
C183	TRIANGULAR	0.40	0.48	0.19	2.40	1	303.49
C184	TRIANGULAR	0.40	0.48	0.19	2.40	1	853.18
C185	TRIANGULAR	0.40	0.48	0.19	2.40	1	696.74
C186	TRIANGULAR	0.40	0.48	0.19	2.40	1	319.24
C187	TRIANGULAR	0.40	0.48	0.19	2.40	1	752.99
C188	TRIANGULAR	0.40	0.48	0.19	2.40	1	702.47
C189	TRIANGULAR	0.40	0.48	0.19	2.40	1	750.21
C19	18m-NoParking	0.35	3.32	0.20	18.00	1	5546.70
C190	TRIANGULAR	0.35	0.42	0.17	2.40	1	584.78

C191	TRIANGULAR	0.40	0.48	0.19	2.40	1	587.76
C192	TRIANGULAR	0.40	0.48	0.19	2.40	1	300.66
C193	TRIANGULAR	0.40	0.48	0.19	2.40	1	388.65
C194	TRIANGULAR	0.40	0.48	0.19	2.40	1	761.47
C195	TRIANGULAR	0.40	0.48	0.19	2.40	1	653.82
C196	TRIANGULAR	0.40	0.48	0.19	2.40	1	751.69
C197	TRIANGULAR	0.40	0.48	0.19	2.40	1	522.19
C198	TRIANGULAR	0.40	0.48	0.19	2.40	1	654.48
C199	TRIANGULAR	0.40	0.48	0.19	2.40	1	310.07
C2	22m-LeftParking	0.35	3.40	0.17	22.00	1	5026.02
C20	22m-RightParking	0.35	3.40	0.17	22.00	1	5726.54
C200	TRIANGULAR	0.40	0.48	0.19	2.40	1	367.34
C201	TRIANGULAR	0.40	0.48	0.19	2.40	1	377.49
C202	TRIANGULAR	0.40	0.48	0.19	2.40	1	329.47
C203	TRIANGULAR	0.40	0.48	0.19	2.40	1	665.18
C204	TRIANGULAR	0.40	0.48	0.19	2.40	1	667.06
C205	TRIANGULAR	0.40	0.48	0.19	2.40	1	312.78
C206	TRIANGULAR	0.40	0.48	0.19	2.40	1	342.65
C207	TRIANGULAR	0.40	0.48	0.19	2.40	1	314.61
C208	TRIANGULAR	0.40	0.48	0.19	2.40	1	340.89
C209	TRIANGULAR	0.40	0.48	0.19	2.40	1	318.69
C21	22m-LeftParking	0.35	3.40	0.17	22.00	1	7203.57
C210	TRIANGULAR	0.40	0.48	0.19	2.40	1	666.30
C211	TRIANGULAR	0.40	0.48	0.19	2.40	1	673.58
C212	TRIANGULAR	0.35	0.42	0.17	2.40	1	994.70
C213	TRIANGULAR	0.40	0.48	0.19	2.40	1	681.93
C214	TRIANGULAR	0.40	0.48	0.19	2.40	1	301.86
C215	TRIANGULAR	0.40	0.48	0.19	2.40	1	822.37
C216	TRIANGULAR	0.40	0.48	0.19	2.40	1	662.98
C217	TRIANGULAR	0.40	0.48	0.19	2.40	1	298.53
C218	TRIANGULAR	0.40	0.48	0.19	2.40	1	674.09
C219	TRIANGULAR	0.35	0.42	0.17	2.40	1	772.88
C22	22m-RightParking	0.35	3.40	0.17	22.00	1	7848.79
C220	TRIANGULAR	0.40	0.48	0.19	2.40	1	609.80
C221	TRIANGULAR	0.40	0.48	0.19	2.40	1	309.23
C222	TRIANGULAR	0.40	0.48	0.19	2.40	1	298.91
C223	TRIANGULAR	0.40	0.48	0.19	2.40	1	785.68
C224	TRIANGULAR	0.40	0.48	0.19	2.40	1	784.47
C225	TRIANGULAR	0.40	0.48	0.19	2.40	1	294.90
C226	TRIANGULAR	0.40	0.48	0.19	2.40	1	305.58
C227	TRIANGULAR	0.40	0.48	0.19	2.40	1	980.28
C228	TRIANGULAR	0.40	0.48	0.19	2.40	1	1011.76
C229	TRIANGULAR	0.40	0.48	0.19	2.40	1	309.41
C23	TRIANGULAR	0.40	0.48	0.19	2.40	1	557.34
C23_1	22m-RightParking	0.35	3.40	0.17	22.00	1	7110.01
C23_2	22m-RightParking	0.35	3.40	0.17	22.00	1	6220.90
C23_3	TRIANGULAR	0.40	0.48	0.19	2.40	1	507.46
C23_4	TRIANGULAR	0.40	0.48	0.19	2.40	1	493.11
C23_5	TRIANGULAR	0.40	0.48	0.19	2.40	1	643.63
C23_6	TRIANGULAR	0.40	0.48	0.19	2.40	1	645.28
C23_7	TRIANGULAR	0.40	0.48	0.19	2.40	1	712.83
C23_8	TRIANGULAR	0.40	0.48	0.19	2.40	1	699.18
C230	TRIANGULAR	0.40	0.48	0.19	2.40	1	305.67
C231	TRIANGULAR	0.40	0.48	0.19	2.40	1	483.14
C232	TRIANGULAR	0.40	0.48	0.19	2.40	1	819.68
C233	TRIANGULAR	0.40	0.48	0.19	2.40	1	302.52
C234	TRIANGULAR	0.40	0.48	0.19	2.40	1	544.01
C235	TRIANGULAR	0.35	0.42	0.17	2.40	1	588.80
C236	TRIANGULAR	0.40	0.48	0.19	2.40	1	991.37
C237	TRIANGULAR	0.40	0.48	0.19	2.40	1	301.21
C238	TRIANGULAR	0.40	0.48	0.19	2.40	1	636.54
C239	TRIANGULAR	0.35	0.42	0.17	2.40	1	775.24
C24	22m-LeftParking	0.35	3.40	0.17	22.00	1	3778.68
C240	TRIANGULAR	0.35	0.42	0.17	2.40	1	571.78
C241	TRIANGULAR	0.40	0.48	0.19	2.40	1	630.37
C242	TRIANGULAR	0.40	0.48	0.19	2.40	1	314.14
C243	TRIANGULAR	0.40	0.48	0.19	2.40	1	915.21
C244	TRIANGULAR	0.40	0.48	0.19	2.40	1	911.66
C245	TRIANGULAR	0.40	0.48	0.19	2.40	1	309.56
C246	TRIANGULAR	0.40	0.48	0.19	2.40	1	609.58
C247	TRIANGULAR	0.35	0.42	0.17	2.40	1	838.82
C248	TRIANGULAR	0.40	0.48	0.19	2.40	1	573.87
C249	TRIANGULAR	0.40	0.48	0.19	2.40	1	306.38
C25	18m-NoParking	0.35	3.32	0.20	18.00	1	7728.02
C250	TRIANGULAR	0.40	0.48	0.19	2.40	1	307.73
C251	TRIANGULAR	0.40	0.48	0.19	2.40	1	362.55
C252	TRIANGULAR	0.40	0.48	0.19	2.40	1	310.76
C253	TRIANGULAR	0.40	0.48	0.19	2.40	1	306.56
C254	TRIANGULAR	0.40	0.48	0.19	2.40	1	333.03
C255	TRIANGULAR	0.40	0.48	0.19	2.40	1	306.46
C256	TRIANGULAR	0.40	0.48	0.19	2.40	1	598.37
C257	TRIANGULAR	0.40	0.48	0.19	2.40	1	549.90

C258	TRIANGULAR	0.40	0.48	0.19	2.40	1	530.90
C259	TRIANGULAR	0.40	0.48	0.19	2.40	1	414.39
C26	TRIANGULAR	0.35	0.42	0.17	2.40	1	444.53
C26_1	18m-NoParking	0.35	3.32	0.20	18.00	1	1369.20
C26_2	18m-NoParking	0.35	3.32	0.20	18.00	1	5877.45
C260	TRIANGULAR	0.40	0.48	0.19	2.40	1	719.09
C261	TRIANGULAR	0.40	0.48	0.19	2.40	1	775.36
C262	TRIANGULAR	0.40	0.48	0.19	2.40	1	417.72
C263	TRIANGULAR	0.40	0.48	0.19	2.40	1	427.05
C264	TRIANGULAR	0.40	0.48	0.19	2.40	1	1018.09
C265	TRIANGULAR	0.40	0.48	0.19	2.40	1	719.40
C266	TRIANGULAR	0.40	0.48	0.19	2.40	1	431.62
C267	TRIANGULAR	0.40	0.48	0.19	2.40	1	421.03
C268	TRIANGULAR	0.40	0.48	0.19	2.40	1	900.76
C269	TRIANGULAR	0.40	0.48	0.19	2.40	1	1065.56
C27	18m-NoParking	0.35	3.32	0.20	18.00	1	6676.26
C270	TRIANGULAR	0.40	0.48	0.19	2.40	1	391.89
C271	TRIANGULAR	0.40	0.48	0.19	2.40	1	1019.20
C272	TRIANGULAR	0.40	0.48	0.19	2.40	1	480.86
C273	TRIANGULAR	0.40	0.48	0.19	2.40	1	594.34
C274	TRIANGULAR	0.40	0.48	0.19	2.40	1	308.52
C275	TRIANGULAR	0.40	0.48	0.19	2.40	1	317.59
C276	TRIANGULAR	0.40	0.48	0.19	2.40	1	446.88
C277	TRIANGULAR	0.40	0.48	0.19	2.40	1	322.91
C278	TRIANGULAR	0.40	0.48	0.19	2.40	1	558.42
C279	TRIANGULAR	0.35	0.42	0.17	2.40	1	336.84
C28	18m-NoParking	0.35	3.32	0.20	18.00	1	6438.45
C280	TRIANGULAR	0.40	0.48	0.19	2.40	1	690.77
C281	TRIANGULAR	0.40	0.48	0.19	2.40	1	645.67
C282	TRIANGULAR	0.40	0.48	0.19	2.40	1	305.48
C283	TRIANGULAR	0.40	0.48	0.19	2.40	1	297.32
C284	TRIANGULAR	0.40	0.48	0.19	2.40	1	295.43
C285	TRIANGULAR	0.40	0.48	0.19	2.40	1	284.43
C286	TRIANGULAR	0.40	0.48	0.19	2.40	1	296.79
C287	TRIANGULAR	0.40	0.48	0.19	2.40	1	287.76
C288	TRIANGULAR	0.40	0.48	0.19	2.40	1	1164.64
C289	TRIANGULAR	0.40	0.48	0.19	2.40	1	316.03
C29	22m-NoParking	0.35	3.68	0.18	22.00	1	361.46
C290	TRIANGULAR	0.40	0.48	0.19	2.40	1	397.61
C291	TRIANGULAR	0.40	0.48	0.19	2.40	1	432.88
C292	TRIANGULAR	0.40	0.48	0.19	2.40	1	1265.87
C293	RECT_OPEN	0.35	1.05	0.28	3.00	1	9713.64
C294	RECT_OPEN	0.35	1.05	0.28	3.00	1	12693.13
C295	RECT_CLOSED	0.95	0.41	0.15	0.43	1	170.39
C296	RECT_CLOSED	0.95	0.41	0.15	0.43	1	179.62
C297	RECT_CLOSED	0.95	0.41	0.15	0.43	1	179.62
C298	RECT_CLOSED	0.95	0.41	0.15	0.43	1	173.45
C299	RECT_CLOSED	0.95	0.41	0.15	0.43	1	167.08
C3	22m-NoParking	0.35	3.68	0.18	22.00	1	5093.25
C30	22m-NoParking	0.35	3.68	0.18	22.00	1	3487.75
C300	18m-NoParking	0.35	3.32	0.20	18.00	1	9757.26
C301	18m-NoParking	0.35	3.32	0.20	18.00	1	7282.77
C302	18m-NoParking	0.35	3.32	0.20	18.00	1	9183.89
C303	18m-NoParking	0.35	3.32	0.20	18.00	1	7131.69
C304	18m-NoParking	0.35	3.32	0.20	18.00	1	4003.81
C305	18m-NoParking	0.35	3.32	0.20	18.00	1	6492.58
C306	18m-NoParking	0.35	3.32	0.20	18.00	1	5619.72
C307	18m-NoParking	0.35	3.32	0.20	18.00	1	7794.74
C308	18m-NoParking	0.35	3.32	0.20	18.00	1	6524.72
C309	18m-NoParking	0.35	3.32	0.20	18.00	1	6557.69
C31	TRIANGULAR	0.35	0.42	0.17	2.40	1	432.35
C310	18m-NoParking	0.35	3.32	0.20	18.00	1	6125.72
C311	18m-NoParking	0.35	3.32	0.20	18.00	1	6809.38
C312	18m-NoParking	0.35	3.32	0.20	18.00	1	6131.29
C313	18m-NoParking	0.35	3.32	0.20	18.00	1	8676.24
C314	18m-NoParking	0.35	3.32	0.20	18.00	1	6695.57
C315	18m-NoParking	0.35	3.32	0.20	18.00	1	8059.15
C316	18m-NoParking	0.35	3.32	0.20	18.00	1	5823.54
C317	18m-NoParking	0.35	3.32	0.20	18.00	1	8555.82
C318	18m-NoParking	0.35	3.32	0.20	18.00	1	5271.65
C319	18m-NoParking	0.35	3.32	0.20	18.00	1	6224.67
C32	22m-NoParking	0.35	3.68	0.18	22.00	1	1661.59
C320	18m-NoParking	0.35	3.32	0.20	18.00	1	7671.97
C321	18m-NoParking	0.35	3.32	0.20	18.00	1	3258.24
C322	18m-NoParking	0.35	3.32	0.20	18.00	1	9449.35
C323	18m-NoParking	0.35	3.32	0.20	18.00	1	4964.11
C324	TRIANGULAR	0.40	0.48	0.19	2.40	1	839.95
C325	TRIANGULAR	0.40	0.48	0.19	2.40	1	584.95
C326	TRIANGULAR	0.40	0.48	0.19	2.40	1	512.41
C327	TRIANGULAR	0.40	0.48	0.19	2.40	1	503.34
C328	TRIANGULAR	0.40	0.48	0.19	2.40	1	660.38
C329	TRIANGULAR	0.40	0.48	0.19	2.40	1	960.18

C33	22m-NoParking	0.35	3.68	0.18	22.00	1	5287.44
C330	TRIANGULAR	0.40	0.48	0.19	2.40	1	417.72
C331	TRIANGULAR	0.40	0.48	0.19	2.40	1	408.68
C332	TRIANGULAR	0.40	0.48	0.19	2.40	1	689.00
C333	TRIANGULAR	0.40	0.48	0.19	2.40	1	573.87
C334	TRIANGULAR	0.40	0.48	0.19	2.40	1	547.22
C335	TRIANGULAR	0.40	0.48	0.19	2.40	1	665.49
C336	TRIANGULAR	0.40	0.48	0.19	2.40	1	695.23
C337	TRIANGULAR	0.40	0.48	0.19	2.40	1	794.66
C338	TRIANGULAR	0.40	0.48	0.19	2.40	1	578.43
C339	TRIANGULAR	0.40	0.48	0.19	2.40	1	646.78
C34	TRIANGULAR	0.35	0.42	0.17	2.40	1	3143.59
C34_1	TRIANGULAR	0.40	0.48	0.19	2.40	1	803.46
C34_2	TRIANGULAR	0.40	0.48	0.19	2.40	1	381.83
C340	TRIANGULAR	0.40	0.48	0.19	2.40	1	583.78
C341	TRIANGULAR	0.40	0.48	0.19	2.40	1	641.45
C342	TRIANGULAR	0.40	0.48	0.19	2.40	1	546.79
C343	TRIANGULAR	0.40	0.48	0.19	2.40	1	578.81
C344	TRIANGULAR	0.40	0.48	0.19	2.40	1	447.79
C345	TRIANGULAR	0.40	0.48	0.19	2.40	1	722.43
C346	TRIANGULAR	0.40	0.48	0.19	2.40	1	922.61
C347	TRIANGULAR	0.40	0.48	0.19	2.40	1	470.30
C348	TRIANGULAR	0.40	0.48	0.19	2.40	1	495.55
C349	TRIANGULAR	0.40	0.48	0.19	2.40	1	1047.68
C35	TRIANGULAR	0.35	0.42	0.17	2.40	1	687.37
C35_1	TRIANGULAR	0.40	0.48	0.19	2.40	1	653.04
C35_2	TRIANGULAR	0.40	0.48	0.19	2.40	1	357.53
C350	TRIANGULAR	0.40	0.48	0.19	2.40	1	559.94
C351	TRIANGULAR	0.40	0.48	0.19	2.40	1	4655.08
C352	TRIANGULAR	0.40	0.48	0.19	2.40	1	909.90
C353	TRIANGULAR	0.40	0.48	0.19	2.40	1	553.65
C354	TRIANGULAR	0.40	0.48	0.19	2.40	1	539.27
C355	TRIANGULAR	0.40	0.48	0.19	2.40	1	538.92
C356	TRIANGULAR	0.40	0.48	0.19	2.40	1	518.20
C357	TRIANGULAR	0.40	0.48	0.19	2.40	1	369.30
C358	TRIANGULAR	0.40	0.48	0.19	2.40	1	437.93
C359	TRIANGULAR	0.40	0.48	0.19	2.40	1	602.41
C36	TRIANGULAR	0.35	0.42	0.17	2.40	1	910.44
C36_1	TRIANGULAR	0.40	0.48	0.19	2.40	1	734.42
C36_2	TRIANGULAR	0.40	0.48	0.19	2.40	1	392.50
C360	TRIANGULAR	0.40	0.48	0.19	2.40	1	568.80
C361	TRIANGULAR	0.40	0.48	0.19	2.40	1	672.57
C362	TRIANGULAR	0.40	0.48	0.19	2.40	1	500.43
C363	TRIANGULAR	0.40	0.48	0.19	2.40	1	444.52
C364	TRIANGULAR	0.40	0.48	0.19	2.40	1	471.48
C365	TRIANGULAR	0.40	0.48	0.19	2.40	1	520.34
C366	TRIANGULAR	0.40	0.48	0.19	2.40	1	564.73
C367	TRIANGULAR	0.40	0.48	0.19	2.40	1	401.65
C368	TRIANGULAR	0.40	0.48	0.19	2.40	1	397.68
C369	TRIANGULAR	0.40	0.48	0.19	2.40	1	400.97
C37	TRIANGULAR	0.35	0.42	0.17	2.40	1	494.11
C37_1	TRIANGULAR	0.40	0.48	0.19	2.40	1	742.63
C37_2	TRIANGULAR	0.40	0.48	0.19	2.40	1	314.82
C370	TRIANGULAR	0.40	0.48	0.19	2.40	1	399.13
C371	TRIANGULAR	0.40	0.48	0.19	2.40	1	548.16
C372	TRIANGULAR	0.40	0.48	0.19	2.40	1	465.15
C373	TRIANGULAR	0.40	0.48	0.19	2.40	1	486.08
C374	TRIANGULAR	0.40	0.48	0.19	2.40	1	798.65
C375	TRIANGULAR	0.40	0.48	0.19	2.40	1	1182.82
C376	TRIANGULAR	0.40	0.48	0.19	2.40	1	988.71
C377	TRIANGULAR	0.40	0.48	0.19	2.40	1	1132.08
C38	TRIANGULAR	0.40	0.48	0.19	2.40	1	665.34
C39	TRIANGULAR	0.40	0.48	0.19	2.40	1	553.66
C4	22m-LeftParking	0.35	3.40	0.17	22.00	1	4725.85
C40	TRIANGULAR	0.40	0.48	0.19	2.40	1	533.82
C41	TRIANGULAR	0.40	0.48	0.19	2.40	1	536.14
C42	TRIANGULAR	0.40	0.48	0.19	2.40	1	425.09
C43	TRIANGULAR	0.40	0.48	0.19	2.40	1	465.17
C44	TRIANGULAR	0.40	0.48	0.19	2.40	1	488.73
C45	TRIANGULAR	0.40	0.48	0.19	2.40	1	515.21
C46	TRIANGULAR	0.40	0.48	0.19	2.40	1	525.97
C47	TRIANGULAR	0.40	0.48	0.19	2.40	1	585.27
C48	TRIANGULAR	0.40	0.48	0.19	2.40	1	484.25
C49	TRIANGULAR	0.40	0.48	0.19	2.40	1	497.33
C5	22m-NoParking	0.35	3.68	0.18	22.00	1	7004.23
C50	TRIANGULAR	0.40	0.48	0.19	2.40	1	704.02
C51	TRIANGULAR	0.40	0.48	0.19	2.40	1	776.23
C52	TRIANGULAR	0.40	0.48	0.19	2.40	1	614.70
C53	TRIANGULAR	0.40	0.48	0.19	2.40	1	633.84
C54	TRIANGULAR	0.40	0.48	0.19	2.40	1	628.76
C55	TRIANGULAR	0.40	0.48	0.19	2.40	1	510.04
C56	TRIANGULAR	0.40	0.48	0.19	2.40	1	530.70

C57	TRIANGULAR	0.40	0.48	0.19	2.40	1	590.37
C58	TRIANGULAR	0.40	0.48	0.19	2.40	1	456.29
C59	TRIANGULAR	0.40	0.48	0.19	2.40	1	489.70
C6	22m-NoParking	0.35	3.68	0.18	22.00	1	2908.63
C6_2	22m-NoParking	0.35	3.68	0.18	22.00	1	6465.37
C60	TRIANGULAR	0.40	0.48	0.19	2.40	1	615.83
C61	TRIANGULAR	0.40	0.48	0.19	2.40	1	1204.26
C62	TRIANGULAR	0.40	0.48	0.19	2.40	1	750.75
C63	TRIANGULAR	0.35	0.42	0.17	2.40	1	438.71
C64	TRIANGULAR	0.40	0.48	0.19	2.40	1	614.31
C65	TRIANGULAR	0.40	0.48	0.19	2.40	1	788.96
C66	TRIANGULAR	0.40	0.48	0.19	2.40	1	1030.81
C67	TRIANGULAR	0.40	0.48	0.19	2.40	1	603.05
C68	TRIANGULAR	0.40	0.48	0.19	2.40	1	546.72
C69	TRIANGULAR	0.40	0.48	0.19	2.40	1	778.21
C7	22m-NoParking	0.35	3.68	0.18	22.00	1	6871.10
C70	TRIANGULAR	0.40	0.48	0.19	2.40	1	852.44
C71	TRIANGULAR	0.40	0.48	0.19	2.40	1	619.95
C72	TRIANGULAR	0.35	0.42	0.17	2.40	1	457.21
C73	TRIANGULAR	0.40	0.48	0.19	2.40	1	678.50
C74	TRIANGULAR	0.40	0.48	0.19	2.40	1	630.17
C75	TRIANGULAR	0.40	0.48	0.19	2.40	1	767.60
C76	TRIANGULAR	0.40	0.48	0.19	2.40	1	615.49
C77	TRIANGULAR	0.40	0.48	0.19	2.40	1	966.67
C78	TRIANGULAR	0.40	0.48	0.19	2.40	1	763.25
C79	TRIANGULAR	0.40	0.48	0.19	2.40	1	1092.98
C8	22m-RightParking	0.35	3.40	0.17	22.00	1	5302.26
C80	TRIANGULAR	0.40	0.48	0.19	2.40	1	933.78
C81	TRIANGULAR	0.40	0.48	0.19	2.40	1	1547.83
C82	TRIANGULAR	0.35	0.42	0.17	2.40	1	434.76
C83	TRIANGULAR	0.40	0.48	0.19	2.40	1	1421.82
C84	TRIANGULAR	0.35	0.42	0.17	2.40	1	474.06
C85	18m-NoParking	0.35	3.32	0.20	18.00	1	8267.85
C85_1	TRIANGULAR	0.40	0.48	0.19	2.40	1	575.36
C85_2	TRIANGULAR	0.40	0.48	0.19	2.40	1	406.14
C86	TRIANGULAR	0.40	0.48	0.19	2.40	1	517.45
C87	TRIANGULAR	0.40	0.48	0.19	2.40	1	707.03
C88	TRIANGULAR	0.40	0.48	0.19	2.40	1	756.22
C89	TRIANGULAR	0.40	0.48	0.19	2.40	1	610.74
C9	22m-LeftParking	0.35	3.40	0.17	22.00	1	4931.73
C90	TRIANGULAR	0.40	0.48	0.19	2.40	1	559.52
C91	TRIANGULAR	0.40	0.48	0.19	2.40	1	659.76
C92	TRIANGULAR	0.40	0.48	0.19	2.40	1	561.54
C93	TRIANGULAR	0.40	0.48	0.19	2.40	1	1632.66
C94	TRIANGULAR	0.35	0.42	0.17	2.40	1	363.18
C95	TRIANGULAR	0.40	0.48	0.19	2.40	1	944.82
C96	TRIANGULAR	0.35	0.42	0.17	2.40	1	464.96
C97	TRIANGULAR	0.40	0.48	0.19	2.40	1	523.50
C98	TRIANGULAR	0.40	0.48	0.19	2.40	1	591.39
C99	TRIANGULAR	0.40	0.48	0.19	2.40	1	557.82
CB-100_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	41.82
CB-101_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.57
CB-102_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	60.29
CB-103_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	40.82
CB-104_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	41.41
CB-105_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	37.60
CB-106_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	42.14
CB-108_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.63
CB-109_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	37.04
CB-112_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	41.48
CB-116_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	42.04
CB-117_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	41.90
CB-119_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	41.96
CB-120_(2)_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	44.12
CB-120_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	42.48
CB-122_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	41.47
CB-123_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	41.50
CB-125_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	40.69
CB-126_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	41.43
CB-127_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	41.98
CB-130_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	42.13
CB-131_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	45.50
CB-133_(2)_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	47.20
CB-134_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	42.34
CB-136_(2)_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	37.45
CB-136_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	38.00
CB-138_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	42.16
CB-140_(2)_(1)_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	58.94
CB-140_(2)_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	42.83
CB-140_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	42.81
CB-141_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	41.68
CB-144_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	41.60

CB-149_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	41.49
CB-150_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	50.23
CB-153_(CB)	CIRCULAR	0.30	0.07	0.08	0.30	1	71.62
CB-159_(3)_(CB)	CIRCULAR	0.61	0.29	0.15	0.61	1	403.00
CB-159_(CB)	CIRCULAR	0.61	0.29	0.15	0.61	1	398.47
CB-160_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	42.02
CB-161_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	42.35
CB-164_(2)_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	188.35
CB-164_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	176.00
CB-166_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	188.46
CB-168_(CB)_1	CIRCULAR	0.46	0.16	0.11	0.46	1	189.25
CB-168_(CB)_2	CIRCULAR	0.46	0.16	0.11	0.46	1	187.46
CB-170_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	185.84
CB-175_(2)_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	190.46
CB-175_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	185.33
CB-177_(CB)	CIRCULAR	0.30	0.07	0.08	0.30	1	72.51
CB-180_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	42.09
CB-185_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	41.95
CB-187_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	42.41
CB-189_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	42.15
CB-209_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	187.50
CB-211_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	42.57
CB-215_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	41.05
CB-228_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	184.69
CB-229_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	189.11
CB-230_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	185.57
CB-231_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	185.95
CB-233_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	185.80
CB-234_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	184.64
CB-235_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	191.72
CB-236_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	189.08
CB-237_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	189.38
CB-239_(1)_(1)_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	118.55
CB-239_(1)_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	174.70
CB-239_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	206.94
CB-240_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	229.57
CB-245_(1)_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	184.43
CB-245_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	190.56
CB-253_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	138.56
CB-257_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	134.67
CB-264_(CB)	CIRCULAR	0.30	0.07	0.08	0.30	1	70.68
CB-268_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	137.96
CB-271_(1)_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	184.77
CB-271_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	191.42
CB-273_(CB)	CIRCULAR	0.30	0.07	0.08	0.30	1	70.37
CB-280_(1)_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	183.32
CB-280_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	189.06
CB-284_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	194.22
CB-288_(CB)	CIRCULAR	0.30	0.07	0.08	0.30	1	70.35
CB-294_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	185.92
CB-386_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	146.79
CB-387_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	148.45
CB-388_(CB)	CIRCULAR	0.46	0.16	0.11	0.46	1	173.95
CB-391_(CB)	CIRCULAR	0.61	0.29	0.15	0.61	1	296.53
CB-397_(CB)	CIRCULAR	0.61	0.29	0.15	0.61	1	276.67
CB-398_(CB)	CIRCULAR	0.61	0.29	0.15	0.61	1	283.81
CB-406_(CB)	CIRCULAR	0.61	0.29	0.15	0.61	1	336.04
CB-408_(CB)	CIRCULAR	0.61	0.29	0.15	0.61	1	335.68
CB-411_(CB)	CIRCULAR	0.61	0.29	0.15	0.61	1	396.95
CB-413_(CB)	CIRCULAR	0.61	0.29	0.15	0.61	1	398.33
CB-416_(CB)	CIRCULAR	0.61	0.29	0.15	0.61	1	407.28
CB-418_(CB)	CIRCULAR	0.61	0.29	0.15	0.61	1	395.97
CB-421_(CB)	CIRCULAR	0.61	0.29	0.15	0.61	1	407.41
CB-423_(CB)	CIRCULAR	0.61	0.29	0.15	0.61	1	406.74
CB-424_(CB)	CIRCULAR	0.61	0.29	0.15	0.61	1	395.92
CB-427_(CB)	CIRCULAR	0.61	0.29	0.15	0.61	1	399.97
CB-430_(CB)	CIRCULAR	0.61	0.29	0.15	0.61	1	407.02
CB-432_(CB)	CIRCULAR	0.30	0.07	0.08	0.30	1	69.13
CB-436_(CB)	CIRCULAR	0.30	0.07	0.08	0.30	1	63.48
CB-439_(CB)	CIRCULAR	0.30	0.07	0.08	0.30	1	70.61
CB-444_(CB)	CIRCULAR	0.30	0.07	0.08	0.30	1	70.64
CB-98_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	42.91
CB-99_(CB)	CIRCULAR	0.25	0.05	0.06	0.25	1	41.90
LCB-1_(86)	CIRCULAR	0.46	0.16	0.11	0.46	1	132.86
LCB-1_(87)	CIRCULAR	0.46	0.16	0.11	0.46	1	140.06
LCB-1_(88)	CIRCULAR	0.46	0.16	0.11	0.46	1	140.06
LCB-1_(89)	CIRCULAR	0.46	0.16	0.11	0.46	1	135.25
LCB-1_(89)_(1)	CIRCULAR	0.46	0.16	0.11	0.46	1	130.28
x1000-116	CIRCULAR	0.53	0.22	0.13	0.53	1	226.07

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Transect Summary
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Transect 18m-NoParking
Area:
            0.0005     0.0020     0.0044     0.0079     0.0123
            0.0177     0.0241     0.0315     0.0399     0.0492
            0.0596     0.0709     0.0832     0.0965     0.1108
            0.1261     0.1423     0.1592     0.1761     0.1930
            0.2099     0.2269     0.2445     0.2630     0.2821
            0.3020     0.3226     0.3440     0.3661     0.3889
            0.4125     0.4368     0.4618     0.4876     0.5141
            0.5413     0.5693     0.5980     0.6275     0.6577
            0.6886     0.7202     0.7526     0.7858     0.8196
            0.8542     0.8896     0.9256     0.9625     1.0000
Hrad:
            0.0171     0.0342     0.0513     0.0684     0.0855
            0.1026     0.1197     0.1368     0.1539     0.1710
            0.1881     0.2052     0.2223     0.2394     0.2565
            0.2736     0.2907     0.3220     0.3555     0.3890
            0.4223     0.4556     0.4875     0.5175     0.5461
            0.5731     0.5989     0.6235     0.6471     0.6696
            0.6913     0.7121     0.7322     0.7515     0.7702
            0.7884     0.8060     0.8231     0.8397     0.8559
            0.8717     0.8871     0.9022     0.9170     0.9315
            0.9456     0.9596     0.9733     0.9867     1.0000
Width:
            0.0260     0.0520     0.0779     0.1039     0.1299
            0.1559     0.1818     0.2078     0.2338     0.2598
            0.2858     0.3117     0.3377     0.3637     0.3897
            0.4156     0.4416     0.4454     0.4454     0.4455
            0.4455     0.4566     0.4760     0.4955     0.5149
            0.5343     0.5537     0.5731     0.5925     0.6119
            0.6313     0.6507     0.6701     0.6895     0.7089
            0.7283     0.7477     0.7671     0.7865     0.8059
            0.8254     0.8448     0.8642     0.8836     0.9030
            0.9224     0.9418     0.9612     0.9806     1.0000

Transect 22m-LeftParking
Area:
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```
            0.0002     0.0010     0.0022     0.0039     0.0060
            0.0087     0.0118     0.0154     0.0195     0.0241
            0.0292     0.0348     0.0414     0.0489     0.0575
            0.0670     0.0775     0.0890     0.1015     0.1150
            0.1295     0.1450     0.1619     0.1803     0.2001
            0.2213     0.2432     0.2656     0.2884     0.3116
            0.3357     0.3608     0.3870     0.4143     0.4427
            0.4722     0.5028     0.5345     0.5673     0.6011
            0.6361     0.6722     0.7093     0.7476     0.7869
            0.8273     0.8689     0.9115     0.9552     1.0000
Hrad:
            0.0203     0.0406     0.0610     0.0813     0.1016
            0.1219     0.1422     0.1626     0.1829     0.2032
            0.2235     0.2431     0.2597     0.2747     0.2891
            0.3036     0.3183     0.3333     0.3488     0.3647
            0.3809     0.3975     0.4132     0.4283     0.4428
            0.4391     0.4746     0.5095     0.5435     0.5768
            0.6091     0.6393     0.6677     0.6945     0.7199
            0.7440     0.7670     0.7889     0.8099     0.8300
            0.8494     0.8682     0.8863     0.9038     0.9209
            0.9375     0.9537     0.9694     0.9849     1.0000
Width:
            0.0106     0.0213     0.0319     0.0425     0.0531
            0.0638     0.0744     0.0850     0.0956     0.1063
            0.1169     0.1339     0.1557     0.1775     0.1993
            0.2211     0.2428     0.2646     0.2864     0.3082
            0.3300     0.3574     0.3891     0.4208     0.4525
            0.4780     0.4880     0.4979     0.5079     0.5178
            0.5419     0.5660     0.5901     0.6143     0.6384
            0.6625     0.6866     0.7107     0.7348     0.7589
            0.7830     0.8071     0.8312     0.8553     0.8795
            0.9036     0.9277     0.9518     0.9759     1.0000

Transect 22m-NoParking
Area:
            0.0004     0.0016     0.0037     0.0066     0.0103
            0.0148     0.0201     0.0263     0.0332     0.0410
            0.0496     0.0591     0.0693     0.0804     0.0923
            0.1050     0.1185     0.1329     0.1480     0.1632
            0.1785     0.1939     0.2101     0.2273     0.2454
            0.2644     0.2844     0.3052     0.3271     0.3498
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            0.3735     0.3981     0.4236     0.4501     0.4775
            0.5058     0.5351     0.5653     0.5964     0.6284
            0.6614     0.6953     0.7301     0.7659     0.8026
            0.8402     0.8788     0.9182     0.9587     1.0000
Hrad:
            0.0192     0.0384     0.0577     0.0769     0.0961
            0.1153     0.1345     0.1538     0.1730     0.1922
            0.2114     0.2306     0.2499     0.2691     0.2883
            0.3075     0.3267     0.3460     0.3731     0.4109
            0.4485     0.4859     0.5208     0.5530     0.5828
            0.6106     0.6364     0.6606     0.6833     0.7048
            0.7250     0.7443     0.7626     0.7802     0.7970
            0.8132     0.8288     0.8439     0.8586     0.8728
            0.8867     0.9002     0.9135     0.9265     0.9392
            0.9517     0.9641     0.9762     0.9882     1.0000
Width:
            0.0196     0.0392     0.0589     0.0785     0.0981
            0.1177     0.1374     0.1570     0.1766     0.1962
            0.2159     0.2355     0.2551     0.2747     0.2943
            0.3140     0.3336     0.3532     0.3644     0.3645
            0.3645     0.3773     0.3995     0.4217     0.4440
            0.4662     0.4885     0.5107     0.5329     0.5552
            0.5774     0.5997     0.6219     0.6441     0.6664
            0.6886     0.7109     0.7331     0.7553     0.7776
            0.7998     0.8221     0.8443     0.8666     0.8888
            0.9110     0.9333     0.9555     0.9778     1.0000

Transect 22m-RightParking
Area:
            0.0002     0.0010     0.0022     0.0039     0.0060
            0.0087     0.0118     0.0154     0.0195     0.0241
            0.0292     0.0348     0.0414     0.0489     0.0575
            0.0670     0.0775     0.0890     0.1015     0.1150
            0.1295     0.1450     0.1619     0.1803     0.2001
            0.2213     0.2432     0.2656     0.2884     0.3116
            0.3357     0.3608     0.3870     0.4143     0.4427
            0.4722     0.5028     0.5345     0.5673     0.6011
            0.6361     0.6722     0.7093     0.7476     0.7869
            0.8273     0.8689     0.9115     0.9552     1.0000
Hrad:
            0.0203     0.0406     0.0610     0.0813     0.1016
```

```
            0.1219     0.1422     0.1626     0.1829     0.2032
            0.2235     0.2431     0.2597     0.2747     0.2891
            0.3036     0.3183     0.3333     0.3488     0.3647
            0.3809     0.3975     0.4132     0.4283     0.4428
            0.4391     0.4746     0.5095     0.5435     0.5768
            0.6091     0.6393     0.6677     0.6945     0.7199
            0.7440     0.7670     0.7889     0.8099     0.8300
            0.8494     0.8682     0.8863     0.9038     0.9209
            0.9375     0.9537     0.9694     0.9849     1.0000
Width:
            0.0106     0.0213     0.0319     0.0425     0.0531
            0.0638     0.0744     0.0850     0.0956     0.1063
            0.1169     0.1339     0.1557     0.1775     0.1993
            0.2211     0.2428     0.2646     0.2864     0.3082
            0.3300     0.3574     0.3891     0.4208     0.4525
            0.4780     0.4880     0.4979     0.5079     0.5178
            0.5419     0.5660     0.5901     0.6143     0.6384
            0.6625     0.6866     0.7107     0.7348     0.7589
            0.7830     0.8071     0.8312     0.8553     0.8795
            0.9036     0.9277     0.9518     0.9759     1.0000


**********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
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***************
Analysis Options
***************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... HORTON
```

Provence Orleans Phase 5A (117155)
PCSWMM Model Results (100-year 3-hour Chicago Event)

```
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 02/20/2020 00:00:00
Ending Date .............. 02/21/2020 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 2.00 sec
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 4
Head Tolerance ........... 0.001500 m
```

Runoff Quantity Continuity	Volume hectare-m	Depth mm
Initial LID Storage	0.009	0.388
Total Precipitation	1.617	71.667
Evaporation Loss	0.000	0.000
Infiltration Loss	0.450	19.949
Surface Runoff	1.169	51.813
Final Storage	0.009	0.388
Continuity Error (%)	-0.133	

Flow Routing Continuity	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	1.169	11.694
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.001	0.008
External Outflow	1.170	11.697
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.064	0.636
Final Stored Volume	0.064	0.637

```
Continuity Error (%) .....         0.033
```

```
*************************
Highest Continuity Errors
*************************
Node 04+090 (32.34%)
Node 01+090 (8.07%)
Node 01+198 (5.59%)
Node 01+306 (3.51%)
Node J139 (2.89%)
```

```
**************************
Time-Step Critical Elements
**************************
None
```

```
*******************************
Highest Flow Instability Indexes
*******************************
Link CB-418_(CB) (2)
Link CB-416_(CB) (2)
Link CB-430_(CB) (1)
Link CB-294_(CB) (1)
Link CB-245_(CB) (1)
```

```
************************
Routing Time Step Summary
************************
Minimum Time Step           :     0.50 sec
Average Time Step           :     2.00 sec
Maximum Time Step           :     2.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     2.04
Percent Not Converging      :     0.16
Time Step Frequencies       :
    2.000 -  1.516 sec      :    99.87 %
    1.516 -  1.149 sec      :     0.08 %
```

```
      1.149 -  0.871 sec      :     0.04 %
      0.871 -  0.660 sec      :     0.01 %
      0.660 -  0.500 sec      :     0.00 %


  **************************
  Subcatchment Runoff Summary
  **************************

  ------------------------------------------------------------------------------------------------------------------
-------------
                          Total      Total      Total      Total     Imperv       Perv      Total      Total
Peak  Runoff
                         Precip      Runon       Evap      Infil     Runoff     Runoff     Runoff     Runoff
Runoff   Coeff
  Subcatchment             mm         mm         mm         mm         mm         mm         mm   10^6 ltr
LPS
  ------------------------------------------------------------------------------------------------------------------
-------------
  2-00                   71.67       0.00       0.00      16.67      55.04       9.14      55.04       0.68
454.68   0.768
  2-01A                  71.67       0.00       0.00      13.68      58.08       8.56      58.08       0.05
37.98   0.810
  2-01B                  71.67       0.00       0.00      14.57      57.18       9.10      57.18       0.09
72.45   0.798
  2-02                   71.67       0.00       0.00      13.21      58.55       8.31      58.55       0.13
105.23   0.817
  2-03                   71.67       0.00       0.00      34.44      21.53      37.32      37.32       0.06
69.90   0.521
  2-04                   71.67       0.00       0.00      16.33      55.43      10.21      55.43       0.26
205.62   0.773
  2-05                   71.67       0.00       0.00      15.00      56.76       9.39      56.76       0.19
152.14   0.792
  2-06                   71.67       0.00       0.00      33.17      23.68      38.60      38.60       0.07
74.73   0.539
  2-07                   71.67       0.00       0.00      31.62      26.56      40.16      40.16       0.06
71.23   0.560
  2-08                   71.67       0.00       0.00      37.50      16.51      34.23      34.23       0.09
84.61   0.478
  2-09                   71.67       0.00       0.00      16.32      55.44      10.23      55.44       0.23
183.16   0.774
  2-10                   71.67       0.00       0.00      37.49      16.51      34.24      34.24       0.05
42.58   0.478
```

```
  2-11                   71.67       0.00       0.00      17.23      54.53      10.74      54.53       0.23
182.71   0.761
  2-12                   71.67       0.00       0.00      26.57      35.89      45.21      45.21       0.13
127.77   0.631
  2-13                   71.67       0.00       0.00      14.50      57.26       9.17      57.26       0.08
66.97   0.799
  3-01                   71.67       0.00       0.00      26.89      35.88      44.86      44.86       0.13
113.13   0.626
  3-02                   71.67       0.00       0.00      15.85      55.91       9.98      55.91       0.24
195.42   0.780
  3-03                   71.67       0.00       0.00      15.90      55.86       9.92      55.86       0.28
225.03   0.779
  3-04                   71.67       0.00       0.00      26.47      35.89      45.32      45.32       0.16
162.38   0.632
  3-05                   71.67       0.00       0.00      15.88      55.87       9.94      55.87       0.34
274.86   0.780
  3-06                   71.67       0.00       0.00      26.47      35.89      45.31      45.31       0.14
145.52   0.632
  3-07                   71.67       0.00       0.00      15.87      55.90       9.96      55.90       0.24
190.64   0.780
  3-08                   71.67       0.00       0.00      26.61      35.89      45.16      45.16       0.15
146.15   0.630
  3-09                   71.67       0.00       0.00      15.86      55.90       9.97      55.90       0.23
184.26   0.780
  3-10                   71.67       0.00       0.00      26.75      35.89      45.02      45.02       0.10
99.76   0.628
  3-11                   71.67       0.00       0.00      15.89      55.86       9.93      55.86       0.25
195.36   0.779
  3-12                   71.67       0.00       0.00      26.92      35.88      44.83      44.83       0.16
138.22   0.626
  3-13_1                 71.67       0.00       0.00      26.65      35.89      45.12      45.12       0.07
69.94   0.630
  3-13_2                 71.67       0.00       0.00      26.56      35.89      45.22      45.22       0.03
31.10   0.631
  3-13_3                 71.67       0.00       0.00      26.58      35.89      45.20      45.20       0.05
47.34   0.631
  3-13_4                 71.67       0.00       0.00      26.54      35.89      45.24      45.24       0.03
30.30   0.631
  3-13_6                 71.67       0.00       0.00      26.53      35.89      45.25      45.25       0.02
19.80   0.631
  3-14                   71.67       0.00       0.00      15.85      55.91       9.98      55.91       0.07
54.13   0.780
  4A-01                  71.67       0.00       0.00      13.63      58.13       8.61      58.13       0.19
146.65   0.811
```

4A-02	71.67	0.00	0.00	23.92	40.20	47.87	47.87	0.25
245.06 0.668								
4A-03	71.67	0.00	0.00	12.74	59.03	8.07	59.03	0.25
195.05 0.824								
4A-04	71.67	0.00	0.00	12.74	59.03	8.07	59.03	0.21
168.37 0.824								
4A-05	71.67	0.00	0.00	21.69	50.06	13.45	50.06	0.13
109.39 0.698								
4A-06	71.67	0.00	0.00	17.21	54.55	10.77	54.55	0.17
141.37 0.761								
4A-07	71.67	0.00	0.00	25.22	38.05	46.58	46.58	0.12
124.14 0.650								
4A-08	71.67	0.00	0.00	26.06	36.61	45.73	45.73	0.14
140.80 0.638								
4A-09	71.67	0.00	0.00	13.64	58.12	8.60	58.12	0.22
176.85 0.811								
4A-10	71.67	0.00	0.00	26.05	36.61	45.74	45.74	0.18
179.09 0.638								
4A-11	71.67	0.00	0.00	26.46	35.89	45.33	45.33	0.17
175.22 0.633								
4A-12	71.67	0.00	0.00	14.97	56.79	9.42	56.79	0.15
120.83 0.792								
4A-13	71.67	0.00	0.00	23.44	40.92	48.35	48.35	0.19
182.52 0.675								
4A-14	71.67	0.00	0.00	13.18	58.58	8.34	58.58	0.20
156.61 0.817								
4B-01A	71.67	0.00	0.00	11.43	60.34	7.23	60.34	0.13
103.90 0.842								
4B-01B	71.67	0.00	0.00	13.17	58.59	8.35	58.59	0.12
98.72 0.818								
4B-02	71.67	0.00	0.00	21.55	43.79	50.25	50.25	0.13
125.70 0.701								
4B-03	71.67	0.00	0.00	12.74	59.03	8.07	59.03	0.18
144.22 0.824								
4B-04	71.67	0.00	0.00	13.63	58.13	8.61	58.13	0.21
162.16 0.811								
4B-05	71.67	0.00	0.00	26.05	36.61	45.74	45.74	0.13
130.23 0.638								
5A-01	71.67	0.00	0.00	12.83	58.92	7.97	58.92	0.15
117.62 0.822								
5A-02	71.67	0.00	0.00	24.76	38.76	47.04	47.04	0.15
145.96 0.656								
5A-03	71.67	0.00	0.00	11.86	59.91	7.51	59.91	0.23
178.07 0.836								

5A-04	71.67	0.00	0.00	25.31	38.04	46.47	46.47	0.20
196.03 0.648								
5A-05	71.67	0.00	0.00	13.73	58.02	8.51	58.02	0.13
97.12 0.810								
5A-06	71.67	0.00	0.00	22.51	42.35	49.29	49.29	0.07
64.55 0.688								
5A-07	71.67	0.00	0.00	11.84	59.92	7.53	59.92	0.16
126.00 0.836								
5B-01	71.67	0.00	0.00	14.94	56.83	9.46	56.83	0.20
162.78 0.793								
5B-02	71.67	0.00	0.00	24.74	38.76	47.06	47.06	0.10
96.18 0.657								
5B-03	71.67	0.00	0.00	12.74	59.03	8.07	59.03	0.25
196.36 0.824								
5B-04	71.67	0.00	0.00	11.85	59.92	7.53	59.92	0.22
169.92 0.836								
5B-05	71.67	0.00	0.00	15.16	56.58	9.22	56.58	0.18
133.54 0.789								
5B-06	71.67	0.00	0.00	11.39	60.38	7.26	60.38	0.23
181.86 0.842								
5B-07	71.67	0.00	0.00	26.09	36.61	45.69	45.69	0.18
178.90 0.638								
5B-08	71.67	0.00	0.00	11.85	59.91	7.52	59.91	0.28
214.88 0.836								
5B-09	71.67	0.00	0.00	14.54	57.22	9.14	57.22	0.12
97.44 0.798								
5B-10	71.67	0.00	0.00	44.96	10.05	26.73	26.73	0.11
41.35 0.373								
DR-1	71.67	0.00	0.00	38.29	14.35	33.45	33.45	0.01
8.60 0.467								
DR-2	71.67	0.00	0.00	43.60	0.00	28.20	28.20	0.01
16.63 0.394								
OS-1	71.67	0.00	0.00	39.75	12.20	31.97	31.97	0.17
153.65 0.446								

****
Node Depth Summary
****

	Average Depth	Maximum Depth	Maximum HGL	Time of Max Occurrence	Reported Max Depth

Provence Orleans Phase 5A (117155)
PCSWMM Model Results (100-year 3-hour Chicago Event)

Node	Type	Meters	Meters	Meters	days	hr:min	Meters
01+066	JUNCTION	0.00	0.00	89.61	0	00:00	0.00
01+090	JUNCTION	0.00	0.04	89.58	0	01:22	0.04
01+198	JUNCTION	0.00	0.04	89.52	0	01:21	0.04
01+306	JUNCTION	0.00	0.03	89.40	0	01:31	0.03
01+387	JUNCTION	0.00	0.08	89.38	0	01:24	0.08
01+412	JUNCTION	0.00	0.09	89.36	0	01:33	0.09
01+494	JUNCTION	0.00	0.05	89.41	0	01:24	0.05
01+517	JUNCTION	0.00	0.07	89.43	0	01:19	0.07
01+568	JUNCTION	0.00	0.00	89.45	0	00:00	0.00
01+610	JUNCTION	0.00	0.05	89.14	0	01:10	0.05
02+012	JUNCTION	0.00	0.04	89.32	0	01:33	0.04
02+075	JUNCTION	0.00	0.05	89.25	0	01:37	0.05
02+085	JUNCTION	0.00	0.03	89.21	0	01:39	0.03
02+157	JUNCTION	0.00	0.06	89.19	0	01:34	0.06
02+167	JUNCTION	0.00	0.10	89.23	0	01:31	0.10
03+013	JUNCTION	0.00	0.05	89.45	0	01:20	0.05
03+065	JUNCTION	0.00	0.00	89.49	0	00:00	0.00
03+125	JUNCTION	0.00	0.01	89.41	0	01:33	0.01
03+137	JUNCTION	0.00	0.05	89.41	0	01:30	0.05
04+090	JUNCTION	0.00	0.01	89.43	0	01:30	0.01
04+190	JUNCTION	0.00	0.00	89.53	0	00:00	0.00
05+105	JUNCTION	0.00	0.00	89.76	0	00:00	0.00
05+194	JUNCTION	0.00	0.03	89.64	0	01:25	0.03
05+287	JUNCTION	0.00	0.04	89.55	0	01:26	0.04
06+089	JUNCTION	0.00	0.03	89.15	0	01:38	0.03
06+166	JUNCTION	0.00	0.03	89.10	0	01:22	0.03
06+243	JUNCTION	0.00	0.06	89.09	0	01:40	0.06
06+328	JUNCTION	0.00	0.06	89.09	0	01:43	0.06
06+413	JUNCTION	0.00	0.06	89.16	0	01:35	0.06
07+091	JUNCTION	0.00	0.04	89.55	0	01:20	0.04
07+175	JUNCTION	0.00	0.02	89.62	0	01:24	0.02
07+260	JUNCTION	0.00	0.00	89.68	0	00:00	0.00
07+342	JUNCTION	0.00	0.00	89.76	0	00:00	0.00
07+428	JUNCTION	0.00	0.04	89.62	0	01:26	0.04
07+513	JUNCTION	0.00	0.04	89.47	0	01:30	0.04
07+591	JUNCTION	0.00	0.06	89.36	0	01:30	0.06
07+605	JUNCTION	0.00	0.05	89.32	0	01:31	0.05
07+670	JUNCTION	0.00	0.09	89.28	0	01:31	0.09
07+683	JUNCTION	0.00	0.06	89.25	0	01:25	0.06
07+765	JUNCTION	0.00	0.03	89.37	0	01:21	0.03
07+847	JUNCTION	0.00	0.00	89.38	0	00:00	0.00
CB01-02	JUNCTION	0.00	0.06	88.78	0	01:10	0.06
CB03-04	JUNCTION	0.10	1.55	89.52	0	01:23	1.55
CB06-07	JUNCTION	0.15	1.49	89.40	0	01:32	1.49
CB09-10	JUNCTION	0.16	1.54	89.38	0	01:24	1.54
CB12-13	JUNCTION	0.10	1.58	89.36	0	01:30	1.58
CB15-16	JUNCTION	0.09	1.52	89.43	0	01:21	1.52
CB18-19	JUNCTION	0.03	1.38	89.14	0	01:10	1.38
CB20-21	JUNCTION	0.00	0.08	88.97	0	01:10	0.08
CB22-CBMH23	JUNCTION	0.16	1.75	89.25	0	01:37	1.75
CB24-CBMH25	JUNCTION	0.17	1.69	89.19	0	01:34	1.69
CB26-CBMH27	JUNCTION	0.16	1.73	89.23	0	01:31	1.73
CB28-CBMH29	JUNCTION	0.16	1.67	89.25	0	01:26	1.67
CB30-CBMH31	JUNCTION	0.16	1.79	89.37	0	01:20	1.79
CB32-33	JUNCTION	0.13	1.70	89.45	0	01:21	1.70
CB34-35	JUNCTION	0.16	1.62	89.35	0	01:30	1.62
CB36-37	JUNCTION	0.12	1.51	89.32	0	01:31	1.51
CB41-42	JUNCTION	0.13	1.58	89.36	0	01:33	1.58
CB43-44	JUNCTION	0.15	1.52	89.43	0	01:30	1.52
CB45-46	JUNCTION	0.11	1.50	89.43	0	01:20	1.50
CB50-51	JUNCTION	0.12	1.49	89.58	0	01:22	1.49
CB52-53	JUNCTION	0.15	1.54	89.64	0	01:24	1.54
CB54-55	JUNCTION	0.14	1.54	89.55	0	01:25	1.54
CB56-57	JUNCTION	0.12	1.48	89.39	0	01:23	1.48
CB60-CBMH61	JUNCTION	0.19	1.66	89.15	0	01:39	1.66
CB62-CBMH63	JUNCTION	0.17	1.69	89.10	0	01:23	1.69
CB64-CBMH65	JUNCTION	0.20	1.68	89.09	0	01:40	1.68
CB68-CBMH69	JUNCTION	0.26	1.68	89.09	0	01:41	1.68
CB72-CBMH73	JUNCTION	0.17	1.66	89.09	0	01:42	1.66
CB74-CBMH75	JUNCTION	0.18	1.73	89.16	0	01:35	1.73
CB76-77	JUNCTION	0.21	1.65	89.41	0	01:29	1.65
CB78-79	JUNCTION	0.14	1.68	89.55	0	01:20	1.68
CB80-81	JUNCTION	0.16	1.68	89.62	0	01:23	1.68
CB82-83	JUNCTION	0.18	1.68	89.64	0	01:31	1.68
CB84-85	JUNCTION	0.17	1.69	89.62	0	01:25	1.69
CB86-87	JUNCTION	0.17	1.69	89.47	0	01:30	1.69
CB88-89	JUNCTION	0.16	1.68	89.36	0	01:30	1.68
CB90-91	JUNCTION	0.18	1.68	89.28	0	01:30	1.68
DICB-4-40	JUNCTION	0.04	1.07	87.88	0	01:25	1.07
HP-2-00_Stor	JUNCTION	0.00	0.00	89.70	0	00:00	0.00

J1	JUNCTION	0.00	0.17	89.02	0	01:11	0.17
J10	JUNCTION	0.00	0.07	89.64	0	01:25	0.07
J100	JUNCTION	0.01	0.34	89.29	0	01:16	0.34
J101	JUNCTION	0.00	0.13	89.29	0	01:16	0.13
J102	JUNCTION	0.01	0.35	89.29	0	01:16	0.35
J103	JUNCTION	0.00	0.12	89.27	0	01:16	0.12
J104	JUNCTION	0.01	0.35	89.29	0	01:16	0.35
J105	JUNCTION	0.00	0.04	89.29	0	01:16	0.04
J106	JUNCTION	0.00	0.10	89.40	0	01:11	0.10
J107	JUNCTION	0.01	0.33	89.40	0	01:11	0.33
J108	JUNCTION	0.00	0.12	89.40	0	01:15	0.12
J109	JUNCTION	0.01	0.35	89.40	0	01:15	0.35
J11	JUNCTION	0.00	0.06	89.64	0	01:25	0.06
J110	JUNCTION	0.00	0.11	89.38	0	01:15	0.11
J111	JUNCTION	0.01	0.34	89.40	0	01:14	0.34
J112	JUNCTION	0.01	0.33	89.40	0	01:14	0.33
J113	JUNCTION	0.01	0.33	89.40	0	01:14	0.33
J114	JUNCTION	0.01	0.33	89.40	0	01:13	0.33
J115	JUNCTION	0.00	0.05	89.40	0	01:13	0.05
J116	JUNCTION	0.00	0.00	88.82	0	00:00	0.00
J117	JUNCTION	0.01	0.13	88.77	0	01:32	0.13
J118	JUNCTION	0.02	0.29	88.77	0	01:33	0.29
J119	JUNCTION	0.00	0.02	88.77	0	01:33	0.02
J12	JUNCTION	0.00	0.11	89.71	0	01:21	0.11
J120	JUNCTION	0.02	0.30	88.77	0	01:33	0.30
J121	JUNCTION	0.00	0.02	88.77	0	01:30	0.02
J122	JUNCTION	0.02	0.28	88.77	0	01:32	0.28
J123	JUNCTION	0.02	0.27	88.77	0	01:30	0.27
J124	JUNCTION	0.02	0.27	88.77	0	01:31	0.27
J125	JUNCTION	0.00	0.02	88.77	0	01:30	0.02
J126	JUNCTION	0.02	0.33	88.77	0	01:30	0.33
J127	JUNCTION	0.00	0.02	88.77	0	01:30	0.02
J128	JUNCTION	0.00	0.10	89.43	0	01:14	0.10
J129	JUNCTION	0.01	0.30	89.43	0	01:14	0.30
J13	JUNCTION	0.00	0.11	89.71	0	01:21	0.11
J130	JUNCTION	0.01	0.27	89.43	0	01:14	0.27
J131	JUNCTION	0.01	0.14	89.41	0	01:15	0.14
J132	JUNCTION	0.00	0.00	88.13	0	00:00	0.00
J133	JUNCTION	0.00	0.00	87.95	0	00:00	0.00
J134	JUNCTION	0.00	0.00	87.92	0	00:00	0.00
J135	JUNCTION	0.00	0.00	87.92	0	00:00	0.00
J136	JUNCTION	0.00	0.00	88.39	0	00:00	0.00
J137	JUNCTION	0.00	0.00	88.42	0	00:00	0.00
J138	JUNCTION	0.00	0.00	88.30	0	00:00	0.00
J139	JUNCTION	0.01	0.15	89.54	0	01:25	0.15
J14	JUNCTION	0.00	0.02	89.72	0	01:20	0.02
J140	JUNCTION	0.00	0.00	89.55	0	00:00	0.00
J141	JUNCTION	0.00	0.00	89.55	0	00:00	0.00
J142	JUNCTION	0.00	0.14	89.56	0	01:15	0.14
J143	JUNCTION	0.00	0.12	89.58	0	01:15	0.12
J144	JUNCTION	0.00	0.08	89.58	0	01:15	0.08
J145	JUNCTION	0.01	0.22	89.58	0	01:15	0.22
J146	JUNCTION	0.00	0.08	89.58	0	01:15	0.08
J147	JUNCTION	0.01	0.25	89.58	0	01:14	0.25
J148	JUNCTION	0.00	0.13	89.58	0	01:14	0.13
J149	JUNCTION	0.00	0.00	89.69	0	01:21	0.00
J15	JUNCTION	0.00	0.00	89.72	0	00:00	0.00
J150	JUNCTION	0.00	0.10	89.69	0	01:21	0.10
J151	JUNCTION	0.00	0.10	89.69	0	01:20	0.10
J152	JUNCTION	0.00	0.09	89.69	0	01:20	0.09
J153	JUNCTION	0.01	0.26	89.69	0	01:20	0.26
J154	JUNCTION	0.00	0.12	89.68	0	01:20	0.12
J155	JUNCTION	0.01	0.23	89.69	0	01:20	0.23
J156	JUNCTION	0.00	0.00	89.76	0	00:00	0.00
J157	JUNCTION	0.00	0.00	88.95	0	00:00	0.00
J158	JUNCTION	0.01	0.12	88.94	0	01:23	0.12
J159	JUNCTION	0.01	0.14	88.94	0	01:22	0.14
J16	JUNCTION	0.00	0.00	89.66	0	00:00	0.00
J160	JUNCTION	0.01	0.23	88.94	0	01:23	0.23
J161	JUNCTION	0.00	0.11	88.94	0	01:23	0.11
J162	JUNCTION	0.00	0.09	88.94	0	01:22	0.09
J163	JUNCTION	0.01	0.17	88.83	0	01:52	0.17
J164	JUNCTION	0.01	0.16	88.83	0	01:51	0.16
J165	JUNCTION	0.01	0.11	88.83	0	01:51	0.11
J166	JUNCTION	0.02	0.23	88.83	0	01:51	0.23
J167	JUNCTION	0.02	0.22	88.83	0	01:51	0.22
J168	JUNCTION	0.01	0.10	88.83	0	01:51	0.10
J169	JUNCTION	0.01	0.18	88.83	0	01:51	0.18
J17	JUNCTION	0.00	0.04	89.49	0	01:24	0.04
J170	JUNCTION	0.00	0.00	88.85	0	00:00	0.00
J171	JUNCTION	0.00	0.00	89.75	0	01:38	0.00
J18	JUNCTION	0.00	0.08	89.48	0	01:27	0.08

J19	JUNCTION	0.00	0.00	89.40	0	00:00	0.00
J2	JUNCTION	0.00	0.10	89.30	0	01:11	0.10
J20	JUNCTION	0.00	0.00	89.60	0	00:00	0.00
J21	JUNCTION	0.00	0.00	89.61	0	00:00	0.00
J22	JUNCTION	0.00	0.06	89.46	0	01:32	0.06
J23	JUNCTION	0.00	0.06	89.46	0	01:32	0.06
J24	JUNCTION	0.00	0.06	89.46	0	01:31	0.06
J25	JUNCTION	0.00	0.00	89.45	0	00:00	0.00
J26	JUNCTION	0.00	0.00	89.45	0	00:00	0.00
J27	JUNCTION	0.00	0.00	89.45	0	00:00	0.00
J28	JUNCTION	0.00	0.04	89.61	0	01:13	0.04
J29	JUNCTION	0.00	0.04	89.61	0	01:13	0.04
J3	JUNCTION	0.00	0.05	89.60	0	01:12	0.04
J30	JUNCTION	0.00	0.03	89.61	0	01:13	0.03
J31	JUNCTION	0.00	0.06	89.61	0	01:13	0.06
J32	JUNCTION	0.00	0.04	89.52	0	01:12	0.04
J33	JUNCTION	0.00	0.02	89.52	0	01:12	0.02
J34	JUNCTION	0.00	0.00	89.52	0	00:00	0.00
J35	JUNCTION	0.00	0.00	89.52	0	00:00	0.00
J36	JUNCTION	0.00	0.00	89.58	0	00:00	0.00
J37	JUNCTION	0.00	0.09	89.54	0	01:12	0.09
J38	JUNCTION	0.00	0.09	89.54	0	01:12	0.09
J39	JUNCTION	0.01	0.23	89.53	0	01:11	0.23
J4	JUNCTION	0.01	0.14	89.74	0	01:10	0.14
J40	JUNCTION	0.00	0.07	89.52	0	01:11	0.07
J41	JUNCTION	0.01	0.14	89.59	0	01:15	0.14
J42	JUNCTION	0.00	0.00	89.94	0	00:00	0.00
J43	JUNCTION	0.00	0.00	90.00	0	00:00	0.00
J44	JUNCTION	0.00	0.10	89.60	0	01:15	0.10
J45	JUNCTION	0.00	0.00	89.93	0	00:00	0.00
J46	JUNCTION	0.00	0.15	89.62	0	01:15	0.15
J47	JUNCTION	0.00	0.13	89.63	0	01:13	0.13
J48	JUNCTION	0.00	0.08	89.71	0	01:12	0.07
J49	JUNCTION	0.00	0.11	89.73	0	01:11	0.11
J5	JUNCTION	0.00	0.04	89.63	0	01:13	0.04
J50	JUNCTION	0.00	0.13	89.73	0	01:11	0.13
J51	JUNCTION	0.00	0.12	89.73	0	01:11	0.12
J52	JUNCTION	0.00	0.00	89.95	0	00:00	0.00
J53	JUNCTION	0.00	0.00	89.80	0	00:00	0.00
J54	JUNCTION	0.01	0.32	88.92	0	01:12	0.32
J55	JUNCTION	0.00	0.00	90.05	0	00:00	0.00
J56	JUNCTION	0.00	0.00	90.24	0	00:00	0.00
J57	JUNCTION	0.00	0.00	89.99	0	00:00	0.00
J58	JUNCTION	0.00	0.00	89.46	0	00:00	0.00
J59	JUNCTION	0.01	0.21	89.51	0	01:27	0.21
J6	JUNCTION	0.00	0.03	89.60	0	01:15	0.03
J60	JUNCTION	0.01	0.22	89.57	0	01:27	0.22
J61	JUNCTION	0.01	0.22	89.57	0	01:27	0.22
J62	JUNCTION	0.01	0.29	89.64	0	01:25	0.29
J63	JUNCTION	0.01	0.28	89.46	0	01:32	0.28
J64	JUNCTION	0.00	0.05	89.39	0	01:25	0.05
J65	JUNCTION	0.00	0.03	89.08	0	01:41	0.03
J66	JUNCTION	0.00	0.14	89.52	0	01:14	0.14
J67	JUNCTION	0.01	0.33	89.53	0	01:14	0.33
J68	JUNCTION	0.00	0.12	89.53	0	01:14	0.12
J69	JUNCTION	0.01	0.35	89.54	0	01:14	0.35
J7	JUNCTION	0.00	0.04	89.60	0	01:18	0.04
J70	JUNCTION	0.01	0.35	89.54	0	01:14	0.35
J71	JUNCTION	0.00	0.10	89.54	0	01:14	0.10
J72	JUNCTION	0.01	0.34	89.54	0	01:14	0.34
J73	JUNCTION	0.00	0.07	89.54	0	01:14	0.07
J74	JUNCTION	0.00	0.04	89.54	0	01:14	0.04
J75	JUNCTION	0.00	0.12	89.30	0	01:21	0.12
J76	JUNCTION	0.01	0.35	89.32	0	01:20	0.35
J77	JUNCTION	0.01	0.31	89.32	0	01:20	0.31
J78	JUNCTION	0.00	0.13	89.32	0	01:20	0.13
J79	JUNCTION	0.00	0.07	89.32	0	01:20	0.07
J8	JUNCTION	0.00	0.05	89.60	0	01:18	0.05
J80	JUNCTION	0.00	0.13	89.32	0	01:21	0.13
J81	JUNCTION	0.01	0.33	89.32	0	01:21	0.33
J82	JUNCTION	0.01	0.32	89.32	0	01:21	0.32
J83	JUNCTION	0.00	0.12	89.32	0	01:21	0.12
J84	JUNCTION	0.01	0.35	89.33	0	01:21	0.35
J85	JUNCTION	0.01	0.34	89.33	0	01:21	0.34
J86	JUNCTION	0.01	0.33	89.33	0	01:21	0.33
J87	JUNCTION	0.00	0.08	89.33	0	01:20	0.08
J88	JUNCTION	0.00	0.02	89.32	0	01:15	0.02
J89	JUNCTION	0.01	0.35	89.32	0	01:14	0.35
J9	JUNCTION	0.00	0.06	89.56	0	01:27	0.06
J90	JUNCTION	0.00	0.10	89.31	0	01:14	0.10
J91	JUNCTION	0.02	0.36	89.31	0	01:14	0.36
J92	JUNCTION	0.00	0.10	89.30	0	01:14	0.10

Provence Orleans Phase 5A (117155)
PCSWMM Model Results (100-year 3-hour Chicago Event)

J93	JUNCTION	0.01	0.30	89.31	0	01:15	0.30
J94	JUNCTION	0.02	0.35	89.31	0	01:15	0.35
J95	JUNCTION	0.00	0.09	89.31	0	01:15	0.09
J96	JUNCTION	0.02	0.36	89.31	0	01:16	0.36
J97	JUNCTION	0.01	0.34	89.31	0	01:16	0.34
J98	JUNCTION	0.00	0.08	89.31	0	01:16	0.08
J99	JUNCTION	0.01	0.33	89.29	0	01:16	0.33
LCB-2-01	JUNCTION	0.07	1.15	89.25	0	01:40	1.15
LCB-2-02	JUNCTION	0.09	1.31	89.25	0	01:40	1.31
LCB-2-03	JUNCTION	0.09	1.31	89.46	0	01:32	1.31
LCB-2-05	JUNCTION	0.22	1.57	89.46	0	01:31	1.57
LCB-2-06	JUNCTION	0.11	1.46	89.46	0	01:31	1.46
LCB-2-07	JUNCTION	0.09	1.19	89.38	0	01:43	1.19
LCB-2-08	JUNCTION	0.13	1.44	89.38	0	01:43	1.44
LCB-2-09	JUNCTION	0.09	1.18	89.38	0	01:43	1.18
LCB-2-09A	JUNCTION	0.11	1.30	89.38	0	01:43	1.30
LCB-2-10	JUNCTION	0.06	1.43	89.52	0	01:12	1.43
LCB-2-11	JUNCTION	0.07	1.50	89.52	0	01:11	1.50
LCB-2-12	JUNCTION	0.07	1.49	89.43	0	01:12	1.49
LCB-2-13	JUNCTION	0.04	1.51	89.61	0	01:12	1.51
LCB-2-14	JUNCTION	0.04	1.59	89.61	0	01:13	1.59
LCB-2-15	JUNCTION	0.04	1.62	89.51	0	01:13	1.62
LCB-3-01	JUNCTION	0.04	1.43	88.93	0	01:11	1.43
LCB-3-02	JUNCTION	0.04	1.33	89.05	0	01:11	1.33
LCB-3-03	JUNCTION	0.04	1.49	89.32	0	01:11	1.49
LCB-3-04	JUNCTION	0.04	1.66	89.60	0	01:12	1.65
LCB-3-05	JUNCTION	0.21	1.66	89.63	0	01:13	1.66
LCB-3-06	JUNCTION	0.04	1.75	89.60	0	01:14	1.75
LCB-3-07	JUNCTION	0.03	1.60	89.60	0	01:18	1.60
LCB-3-08	JUNCTION	0.03	1.44	89.60	0	01:18	1.44
LCB-3-09	JUNCTION	0.15	1.31	89.51	0	01:27	1.31
LCB-3-10	JUNCTION	0.12	1.48	89.57	0	01:27	1.48
LCB-3-11	JUNCTION	0.15	1.73	89.64	0	01:24	1.73
LCB-3-12	JUNCTION	0.11	1.45	89.65	0	01:25	1.45
LCB-3-13	JUNCTION	0.07	1.51	89.71	0	01:21	1.51
LCB-3-14	JUNCTION	0.09	1.80	89.72	0	01:20	1.80
LCB-3-15	JUNCTION	0.07	1.51	89.72	0	01:21	1.51
LCB-3-16	JUNCTION	0.10	1.71	89.49	0	01:24	1.71
LCB-3-17	JUNCTION	0.07	1.43	89.48	0	01:26	1.43
LCB-3-18	JUNCTION	0.06	1.59	89.54	0	01:12	1.59
LCB-3-19	JUNCTION	0.08	1.81	89.54	0	01:11	1.81
LCB-3-20	JUNCTION	0.08	1.89	89.53	0	01:11	1.88
LCB-3-21	JUNCTION	0.06	1.76	89.74	0	01:11	1.76
LCB-3-22	JUNCTION	0.05	1.61	89.73	0	01:11	1.61
LCB-3-23	JUNCTION	0.15	1.70	89.71	0	01:12	1.70
LCB-3-24	JUNCTION	0.05	1.41	89.65	0	01:13	1.41
LCB-3-25	JUNCTION	0.10	1.47	89.62	0	01:14	1.47
LCB-3-26	JUNCTION	0.11	1.66	89.61	0	01:14	1.66
LCB-3-27	JUNCTION	0.08	1.75	89.61	0	01:15	1.75
LCB-3-28	JUNCTION	0.08	1.89	89.61	0	01:15	1.89
LCB-3-29	JUNCTION	0.08	1.96	89.61	0	01:15	1.96
LCB-4-01	JUNCTION	0.11	1.35	88.77	0	01:32	1.35
LCB-4-02	JUNCTION	0.12	1.44	88.77	0	01:31	1.44
LCB-4-03	JUNCTION	0.13	1.52	88.77	0	01:31	1.52
LCB-4-04	JUNCTION	0.12	1.45	88.77	0	01:30	1.45
LCB-4-05	JUNCTION	0.08	1.70	89.43	0	01:14	1.70
LCB-4-05A	JUNCTION	0.09	1.82	89.43	0	01:15	1.82
LCB-4-06	JUNCTION	0.10	1.93	89.43	0	01:14	1.93
LCB-4-07	JUNCTION	0.06	1.36	89.40	0	01:13	1.36
LCB-4-08	JUNCTION	0.07	1.48	89.40	0	01:14	1.48
LCB-4-08A	JUNCTION	0.08	1.58	89.40	0	01:14	1.58
LCB-4-09	JUNCTION	0.08	1.62	89.40	0	01:14	1.62
LCB-4-11	JUNCTION	0.09	1.72	89.40	0	01:15	1.72
LCB-4-12	JUNCTION	0.10	1.85	89.40	0	01:11	1.85
LCB-4-13	JUNCTION	0.08	1.53	89.29	0	01:16	1.53
LCB-4-15	JUNCTION	0.09	1.58	89.29	0	01:16	1.58
LCB-4-16	JUNCTION	0.10	1.71	89.29	0	01:16	1.71
LCB-4-17	JUNCTION	0.08	1.43	89.31	0	01:15	1.43
LCB-4-18	JUNCTION	0.09	1.57	89.31	0	01:15	1.57
LCB-4-20	JUNCTION	0.09	1.61	89.31	0	01:14	1.61
LCB-4-21	JUNCTION	0.11	1.77	89.32	0	01:14	1.77
LCB-4-22	JUNCTION	0.09	1.61	89.33	0	01:20	1.61
LCB-4-23	JUNCTION	0.10	1.72	89.33	0	01:20	1.72
LCB-4-23A	JUNCTION	0.11	1.82	89.33	0	01:20	1.82
LCB-4-24	JUNCTION	0.11	1.91	89.33	0	01:21	1.91
LCB-4-25	JUNCTION	0.06	1.46	89.32	0	01:21	1.46
LCB-4-25A	JUNCTION	0.07	1.55	89.32	0	01:21	1.55
LCB-4-26	JUNCTION	0.08	1.65	89.32	0	01:21	1.65
LCB-4-27	JUNCTION	0.09	1.82	89.32	0	01:20	1.82
LCB-4-28	JUNCTION	0.08	1.68	89.32	0	01:20	1.68
LCB-4-29	JUNCTION	0.06	1.52	89.54	0	01:14	1.52
LCB-4-30	JUNCTION	0.07	1.62	89.54	0	01:15	1.62

LCB-4-31	JUNCTION	0.08	1.78	89.54	0	01:14	1.78
LCB-4-32	JUNCTION	0.06	1.60	89.53	0	01:14	1.60
LCB-4-41	JUNCTION	0.03	1.01	87.88	0	01:25	1.01
LCB-4-42	JUNCTION	0.03	1.03	87.88	0	01:25	1.03
LCB-4-43	JUNCTION	0.03	0.99	87.88	0	01:25	0.99
LCB-4-44	JUNCTION	0.03	0.96	87.88	0	01:25	0.96
LCB-4-45	JUNCTION	0.02	0.91	87.88	0	01:24	0.91
LCB-5-01	JUNCTION	0.08	1.39	89.54	0	01:25	1.39
LCB-5-02	JUNCTION	0.09	1.49	89.54	0	01:25	1.49
LCB-5-03	JUNCTION	0.09	1.54	89.54	0	01:25	1.54
LCB-5-04	JUNCTION	0.12	1.29	88.94	0	01:22	1.29
LCB-5-05	JUNCTION	0.14	1.36	88.94	0	01:23	1.36
LCB-5-06	JUNCTION	0.15	1.43	88.94	0	01:22	1.43
LCB-5-07	JUNCTION	0.12	1.29	88.94	0	01:22	1.29
LCB-5-08	JUNCTION	0.21	1.43	88.83	0	01:51	1.43
LCB-5-09	JUNCTION	0.22	1.49	88.83	0	01:52	1.49
LCB-5-10	JUNCTION	0.24	1.54	88.83	0	01:52	1.54
LCB-5-11	JUNCTION	0.26	1.62	88.83	0	01:51	1.62
LCB-5-12	JUNCTION	0.22	1.50	88.83	0	01:50	1.50
LCB-5-13	JUNCTION	0.21	1.43	88.83	0	01:50	1.43
LCB-5-14	JUNCTION	0.08	1.50	89.58	0	01:14	1.50
LCB-5-15	JUNCTION	0.09	1.63	89.58	0	01:15	1.63
LCB-5-17	JUNCTION	0.09	1.67	89.58	0	01:15	1.67
LCB-5-18	JUNCTION	0.12	1.90	89.58	0	01:15	1.90
LCB-5-19	JUNCTION	0.10	1.48	89.69	0	01:21	1.48
LCB-5-20	JUNCTION	0.11	1.60	89.69	0	01:21	1.60
LCB-5-21	JUNCTION	0.13	1.72	89.69	0	01:20	1.72
LCB-5-23	JUNCTION	0.13	1.71	89.69	0	01:20	1.71
LCB-5-24	JUNCTION	0.16	1.95	89.69	0	01:20	1.95
RAP-5-16	JUNCTION	0.11	1.82	89.58	0	01:15	1.82
RAP-5-22	JUNCTION	0.15	1.86	89.69	0	01:20	1.86
RYT-4-10	JUNCTION	0.10	1.78	89.40	0	01:15	1.78
RYT-4-14	JUNCTION	0.09	1.64	89.29	0	01:16	1.64
RYT-4-19	JUNCTION	0.10	1.69	89.31	0	01:14	1.69
RYT-4-27A	JUNCTION	0.08	1.76	89.32	0	01:20	1.76
098	OUTFALL	3.55	3.55	84.82	0	00:00	3.55
OF01	OUTFALL	0.00	0.05	88.69	0	01:10	0.05
OF02	OUTFALL	0.00	0.05	88.93	0	01:10	0.05
OF03	OUTFALL	0.00	0.18	88.85	0	01:12	0.18
OF04	OUTFALL	0.00	0.00	89.25	0	00:00	0.00
OF05	OUTFALL	0.00	0.00	89.10	0	00:00	0.00
OF06	OUTFALL	0.00	0.00	89.05	0	00:00	0.00
OF07	OUTFALL	0.00	0.02	88.99	0	01:41	0.02
OF08	OUTFALL	0.00	0.01	88.72	0	01:30	0.01
OF09	OUTFALL	0.00	0.00	88.25	0	00:00	0.00
OF10	OUTFALL	0.00	0.00	88.60	0	00:00	0.00
OF11	OUTFALL	0.00	0.00	89.00	0	00:00	0.00
OF12	OUTFALL	0.00	0.00	88.71	0	00:00	0.00
OF13	OUTFALL	0.00	0.00	87.14	0	00:00	0.00
2-00_Stor	STORAGE	0.15	1.71	89.66	0	01:31	1.71
CB-2-1_(CB)	STORAGE	0.12	1.55	89.24	0	01:40	1.55
CB-2-2_(CB)	STORAGE	0.13	1.74	89.45	0	01:32	1.74
CB-2-3_(CB)	STORAGE	0.16	1.68	89.38	0	01:43	1.68
CB-2-4_(CB)	STORAGE	0.10	1.99	89.37	0	01:23	1.98
CB-2-5_(CB)	STORAGE	0.05	1.96	89.46	0	01:14	1.96
CB-3-1_(CB)	STORAGE	0.18	1.97	89.63	0	01:25	1.97
CB-3-2_(CB)	STORAGE	0.10	1.98	89.64	0	01:20	1.98
CB-3-3_(CB)	STORAGE	0.11	1.92	89.45	0	01:24	1.92
CB-3-4_(CB)	STORAGE	0.05	1.50	88.76	0	01:12	1.50
CB-3-5_(CB)	STORAGE	0.08	2.19	89.63	0	01:12	2.19
CB-3-6_(CB)	STORAGE	0.04	1.59	89.18	0	01:15	1.59
CB-3-7_(CB)	STORAGE	0.09	2.03	89.52	0	01:15	2.03
CB-3-8_(CB)	STORAGE	0.08	1.87	89.41	0	01:11	1.87
CB-4-02	STORAGE	0.14	2.08	89.31	0	01:14	2.08
CB-4-04	STORAGE	0.12	1.99	89.29	0	01:16	1.99
CB-4-05	STORAGE	0.11	1.98	89.40	0	01:11	1.98
CB-5-01	STORAGE	0.11	1.76	89.53	0	01:25	1.76
CB-5-04	STORAGE	0.17	2.06	89.69	0	01:20	2.06
CB-5-05	STORAGE	0.13	2.02	89.58	0	01:15	2.01
CBMH-4-01	STORAGE	0.14	2.57	89.32	0	01:20	2.57
CBMH-4-03	STORAGE	0.18	2.64	89.32	0	01:21	2.64
CBMH-4-06	STORAGE	0.18	1.91	88.76	0	01:31	1.91
CBMH-4-07	STORAGE	0.15	2.66	89.43	0	01:09	2.65
CBMH-4-08	STORAGE	0.14	2.74	89.51	0	01:14	2.73
CBMH-5-02	STORAGE	0.18	1.60	88.94	0	01:23	1.60
CBMH-5-03	STORAGE	0.32	1.84	88.83	0	01:51	1.84
MH100	STORAGE	2.24	2.31	84.90	0	01:23	2.31
MH102	STORAGE	2.19	2.27	84.91	0	01:20	2.27
MH104	STORAGE	2.07	2.18	84.94	0	01:20	2.18
MH106	STORAGE	1.96	2.10	84.97	0	01:20	2.10
MH108	STORAGE	1.83	1.99	84.99	0	01:20	1.99
MH110	STORAGE	0.26	0.57	85.16	0	01:22	0.57

MH112	STORAGE	0.04	0.38	85.60	0	01:18	0.38
MH114	STORAGE	0.04	0.35	85.74	0	01:17	0.35
MH116	STORAGE	0.03	0.31	85.85	0	01:17	0.31
MH118	STORAGE	0.01	0.19	86.53	0	01:11	0.19
MH200	STORAGE	0.06	0.54	85.69	0	01:29	0.54
MH200A	STORAGE	0.07	0.57	85.64	0	01:29	0.57
MH202	STORAGE	0.05	0.47	85.76	0	01:29	0.47
MH204	STORAGE	0.04	0.37	86.01	0	01:28	0.37
MH206	STORAGE	0.03	0.32	86.30	0	01:28	0.32
MH300	STORAGE	0.05	0.33	85.60	0	01:30	0.33
MH300A	STORAGE	0.14	0.49	85.21	0	01:30	0.49
MH302	STORAGE	0.05	0.32	85.92	0	01:30	0.32
MH304	STORAGE	0.04	0.23	86.46	0	01:32	0.23
MH308	STORAGE	0.13	2.79	89.75	0	01:37	2.79
MH400	STORAGE	0.02	0.17	86.61	0	01:34	0.17
MH402	STORAGE	0.02	0.13	86.71	0	01:38	0.13
MH404	STORAGE	0.02	0.12	86.94	0	01:30	0.12
MH406	STORAGE	0.01	0.10	86.75	0	01:32	0.10
MH408	STORAGE	0.02	0.17	86.67	0	01:29	0.17
MH500	STORAGE	0.04	0.33	86.24	0	01:25	0.33
MH502	STORAGE	0.03	0.24	86.31	0	01:25	0.24
MH504	STORAGE	0.02	0.22	86.42	0	01:24	0.22
MH506	STORAGE	0.03	0.25	86.62	0	01:24	0.25
MH508	STORAGE	0.02	0.15	86.77	0	01:26	0.15
MH510	STORAGE	0.01	0.11	86.66	0	01:25	0.11
MH512	STORAGE	0.02	0.16	86.56	0	01:26	0.16
MH602	STORAGE	0.04	0.35	86.15	0	01:27	0.35
MH604	STORAGE	0.03	0.23	86.32	0	01:28	0.23
MH606	STORAGE	0.01	0.08	86.39	0	01:42	0.08
MH608	STORAGE	0.02	0.09	86.74	0	01:43	0.09
MH610	STORAGE	0.00	0.00	86.56	0	00:00	0.00
MH612	STORAGE	0.03	0.25	86.36	0	01:22	0.25
MH614	STORAGE	0.03	0.28	86.24	0	01:22	0.28
MH700	STORAGE	0.04	0.33	86.35	0	01:27	0.33
MH702	STORAGE	0.03	0.24	86.48	0	01:23	0.24
MH704	STORAGE	0.03	0.19	86.76	0	01:23	0.19
MH706	STORAGE	0.01	0.10	86.90	0	01:33	0.10
MH708	STORAGE	0.01	0.11	87.14	0	01:32	0.11
MH710	STORAGE	0.03	0.19	87.17	0	01:24	0.19
MH712	STORAGE	0.04	0.27	86.88	0	01:30	0.27
MH716	STORAGE	0.03	0.34	86.50	0	01:27	0.34
MH718	STORAGE	0.02	0.25	86.62	0	01:26	0.25
MH720	STORAGE	0.02	0.22	86.82	0	01:26	0.22
MHx1000	STORAGE	0.02	0.21	85.93	0	01:31	0.21

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Node Inflow Summary
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Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days	hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent	
01+066	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
01+090	JUNCTION	0.00	39.36	0	01:11	0	0.0129	8.777	
01+198	JUNCTION	0.00	62.58	0	01:11	0	0.0177	5.917	
01+306	JUNCTION	0.00	14.62	0	01:16	0	0.0134	3.635	
01+387	JUNCTION	0.00	64.30	0	01:23	0	0.0721	0.123	
01+412	JUNCTION	0.00	79.56	0	01:22	0	0.102	0.347	
01+494	JUNCTION	0.00	21.47	0	01:21	0	0.0234	1.720	
01+517	JUNCTION	0.00	65.99	0	01:10	0	0.0503	-0.681	
01+568	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
01+610	JUNCTION	0.00	22.86	0	01:10	0	0.00697	2.081	
02+012	JUNCTION	0.00	28.60	0	01:33	0	0.0418	0.992	
02+075	JUNCTION	0.00	28.65	0	01:11	0	0.0275	0.829	
02+085	JUNCTION	0.00	14.35	0	01:37	0	0.0254	2.374	
02+157	JUNCTION	0.00	71.35	0	01:31	0	0.137	0.071	
02+167	JUNCTION	0.00	72.94	0	01:30	0	0.124	0.261	
03+013	JUNCTION	0.00	23.02	0	01:09	0	0.0127	-1.296	
03+065	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
03+125	JUNCTION	0.00	1.11	0	01:28	0	0.000468	35.920	
03+137	JUNCTION	0.00	37.39	0	01:26	0	0.045	0.998	
04+090	JUNCTION	0.00	14.88	0	01:20	0	0.00175	47.799	
04+190	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
05+105	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
05+194	JUNCTION	0.00	29.57	0	01:15	0	0.0101	7.721	
05+287	JUNCTION	0.00	34.98	0	01:14	0	0.026	2.524	
06+089	JUNCTION	0.00	18.12	0	01:24	0	0.0114	4.483	
06+166	JUNCTION	0.00	25.91	0	01:13	0	0.0146	2.501	

06+243	JUNCTION	0.00	41.82	0	01:21	0	0.0485	-0.380
06+328	JUNCTION	0.00	61.96	0	01:38	0	0.105	-0.396
06+413	JUNCTION	0.00	64.02	0	01:33	0	0.121	0.654
07+091	JUNCTION	0.00	79.97	0	01:10	0	0.0342	-1.383
07+175	JUNCTION	0.00	20.44	0	01:13	0	0.00719	10.270
07+260	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
07+342	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
07+428	JUNCTION	0.00	34.83	0	01:19	0	0.0415	1.071
07+513	JUNCTION	0.00	61.30	0	01:11	0	0.0478	1.817
07+591	JUNCTION	0.00	24.45	0	01:30	0	0.039	0.542
07+605	JUNCTION	0.00	58.21	0	01:09	0	0.0868	0.173
07+670	JUNCTION	0.00	58.20	0	01:29	0	0.11	0.346
07+683	JUNCTION	0.00	88.61	0	01:25	0	0.138	0.338
07+765	JUNCTION	0.00	39.54	0	01:12	0	0.0151	2.757
07+847	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB01-02	JUNCTION	54.13	54.13	0	01:10	0.0671	0.118	-0.014
CB03-04	JUNCTION	274.86	275.70	0	01:10	0.345	0.362	-0.574
CB06-07	JUNCTION	225.03	230.17	0	01:10	0.284	0.32	0.088
CB09-10	JUNCTION	66.97	131.58	0	01:14	0.0836	0.212	0.130
CB12-13	JUNCTION	152.14	270.20	0	01:41	0.192	0.319	-0.222
CB15-16	JUNCTION	105.23	120.96	0	01:10	0.135	0.16	0.238
CB18-19	JUNCTION	72.45	72.45	0	01:10	0.0926	0.0927	0.036
CB20-21	JUNCTION	37.98	56.18	0	01:10	0.0488	0.0555	-0.196
CB22-CBMH23	JUNCTION	156.61	156.61	0	01:10	0.199	0.242	-0.146
CB24-CBMH25	JUNCTION	168.37	168.37	0	01:10	0.214	0.235	-0.205
CB26-CBMH27	JUNCTION	162.16	162.16	0	01:10	0.205	0.338	-0.119
CB28-CBMH29	JUNCTION	144.22	158.95	0	01:10	0.184	0.244	-0.043
CB30-CBMH31	JUNCTION	202.61	202.62	0	01:10	0.259	0.261	-0.086
CB32-33	JUNCTION	126.00	126.00	0	01:10	0.161	0.162	0.021
CB34-35	JUNCTION	97.12	97.12	0	01:10	0.127	0.127	-0.056
CB36-37	JUNCTION	178.07	178.07	0	01:10	0.229	0.273	-0.218
CB41-42	JUNCTION	182.71	182.71	0	01:10	0.227	0.256	-0.179
CB43-44	JUNCTION	183.16	183.17	0	01:10	0.228	0.23	-0.043
CB45-46	JUNCTION	205.62	205.62	0	01:10	0.257	0.259	-0.048
CB50-51	JUNCTION	195.36	195.36	0	01:10	0.246	0.248	-0.028
CB52-53	JUNCTION	184.26	194.43	0	01:10	0.229	0.242	-0.022
CB54-55	JUNCTION	190.64	206.60	0	01:10	0.238	0.287	-0.160
CB56-57	JUNCTION	195.42	195.42	0	01:10	0.242	0.268	-0.212
CB60-CBMH61	JUNCTION	120.83	122.87	0	01:10	0.152	0.208	-0.066
CB62-CBMH63	JUNCTION	176.85	176.85	0	01:10	0.224	0.237	-0.211
CB64-CBMH65	JUNCTION	141.37	149.42	0	01:10	0.175	0.244	-0.035
CB68-CBMH69	JUNCTION	109.39	109.56	0	01:10	0.131	0.264	0.486
CB72-CBMH73	JUNCTION	195.05	195.05	0	01:10	0.248	0.373	-0.153
CB74-CBMH75	JUNCTION	146.65	164.01	0	01:10	0.185	0.362	0.048
CB76-77	JUNCTION	97.44	106.34	0	01:15	0.123	0.21	0.417
CB78-79	JUNCTION	214.88	214.88	0	01:10	0.276	0.282	-0.225
CB80-81	JUNCTION	181.86	181.86	0	01:10	0.233	0.234	-0.053
CB82-83	JUNCTION	133.54	133.54	0	01:10	0.178	0.178	0.038
CB84-85	JUNCTION	162.78	162.78	0	01:10	0.202	0.246	-0.050
CB86-87	JUNCTION	196.36	196.36	0	01:10	0.25	0.292	-0.200
CB88-89	JUNCTION	169.92	169.92	0	01:10	0.218	0.271	-0.120
CB90-91	JUNCTION	117.62	128.90	0	01:10	0.154	0.274	-0.022
DICB-4-40	JUNCTION	153.65	153.65	0	01:10	0.169	0.227	-0.030
HP-2-00_Stor	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
J1	JUNCTION	0.00	71.38	0	01:11	0	0.0552	-0.066
J10	JUNCTION	0.00	6.01	0	01:24	0	0.00463	-0.052
J100	JUNCTION	0.00	21.47	0	01:08	0	0.00998	1.098
J101	JUNCTION	0.00	14.87	0	01:16	0	0.0154	0.114
J102	JUNCTION	0.00	19.52	0	01:10	0	0.0192	0.389
J103	JUNCTION	0.00	37.13	0	01:16	0	0.0434	-0.221
J104	JUNCTION	0.00	16.45	0	01:07	0	0.00875	0.857
J105	JUNCTION	0.00	3.08	0	01:11	0	0.00163	0.569
J106	JUNCTION	0.00	20.26	0	01:10	0	0.0166	-0.935
J107	JUNCTION	0.00	38.25	0	01:10	0	0.0172	0.656
J108	JUNCTION	0.00	35.56	0	01:10	0	0.0225	-0.359
J109	JUNCTION	0.00	21.69	0	01:11	0	0.0201	0.471
J11	JUNCTION	0.00	5.36	0	01:23	0	0.00393	1.128
J110	JUNCTION	0.00	37.18	0	01:15	0	0.0405	-0.078
J111	JUNCTION	0.00	18.97	0	01:08	0	0.0116	1.560
J112	JUNCTION	0.00	40.96	0	01:10	0	0.0248	0.545
J113	JUNCTION	0.00	28.40	0	01:11	0	0.0183	0.801
J114	JUNCTION	0.00	17.05	0	01:09	0	0.0119	0.916
J115	JUNCTION	0.00	4.78	0	01:11	0	0.000369	5.884
J116	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
J117	JUNCTION	0.00	4.55	0	01:11	0	0.00123	1.867
J118	JUNCTION	0.00	8.97	0	01:09	0	0.00312	1.170
J119	JUNCTION	0.00	0.60	0	01:22	0	0.000162	4.613
J12	JUNCTION	0.00	16.57	0	01:19	0	0.017	-0.123
J120	JUNCTION	0.00	8.17	0	01:09	0	0.00293	1.152
J121	JUNCTION	0.00	0.46	0	01:22	0	0.000154	2.200
J122	JUNCTION	0.00	6.54	0	01:10	0	0.00248	1.241
J123	JUNCTION	0.00	8.67	0	01:09	0	0.00283	1.269

J124	JUNCTION	0.00	8.09	0	01:09	0	0.00266	1.397	
J125	JUNCTION	0.00	0.37	0	01:24	0	0.000147	1.566	
J126	JUNCTION	0.00	9.69	0	01:08	0	0.00247	1.296	
J127	JUNCTION	0.00	0.24	0	01:21	0	6.73e-05	1.991	
J128	JUNCTION	0.00	4.83	0	01:09	0	0.000539	2.745	
J129	JUNCTION	0.00	32.32	0	01:10	0	0.0158	1.196	
J13	JUNCTION	0.00	18.20	0	01:11	0	0.0125	-0.110	
J130	JUNCTION	0.00	22.50	0	01:10	0	0.0134	0.918	
J131	JUNCTION	0.00	32.41	0	01:13	0	0.032	-0.702	
J132	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J133	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J134	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J135	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J136	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J137	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J138	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J139	JUNCTION	0.00	4.85	0	01:11	0	0.00165	2.977	
J14	JUNCTION	0.00	2.46	0	01:13	0	0.000344	38.898	
J140	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J141	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J142	JUNCTION	0.00	48.53	0	01:14	0	0.0527	-0.170	
J143	JUNCTION	0.00	18.44	0	01:10	0	0.00754	1.192	
J144	JUNCTION	0.00	12.85	0	01:14	0	0.00809	-0.093	
J145	JUNCTION	0.00	23.41	0	01:10	0	0.00449	2.749	
J146	JUNCTION	0.00	7.31	0	01:10	0	0.00177	1.085	
J147	JUNCTION	0.00	14.73	0	01:09	0	0.00314	0.871	
J148	JUNCTION	0.00	6.85	0	01:10	0	0.000888	1.312	
J149	JUNCTION	0.00	0.35	0	01:18	0	1.88e-05	5.694	ltr
J15	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J150	JUNCTION	0.00	8.97	0	01:11	0	0.00315	0.742	
J151	JUNCTION	0.00	9.19	0	01:11	0	0.00424	0.548	
J152	JUNCTION	0.00	8.73	0	01:11	0	0.00465	0.787	
J153	JUNCTION	0.00	14.72	0	01:10	0	0.00608	0.642	
J154	JUNCTION	0.00	36.08	0	01:20	0	0.044	0.001	
J155	JUNCTION	0.00	11.59	0	01:11	0	0.00417	0.629	
J156	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J157	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J158	JUNCTION	0.00	6.35	0	01:10	0	0.00292	0.656	
J159	JUNCTION	0.00	7.25	0	01:10	0	0.0039	0.578	
J16	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J160	JUNCTION	0.00	12.89	0	01:10	0	0.00501	1.036	
J161	JUNCTION	0.00	3.82	0	01:11	0	0.00308	0.510	
J162	JUNCTION	0.00	11.32	0	01:22	0	0.0167	-1.125	
J163	JUNCTION	0.00	2.34	0	01:19	0	0.0032	0.476	
J164	JUNCTION	0.00	2.38	0	01:20	0	0.00182	0.726	
J165	JUNCTION	0.00	1.47	0	01:26	0	0.00175	0.881	
J166	JUNCTION	0.00	3.20	0	01:20	0	0.00344	0.145	
J167	JUNCTION	0.00	3.03	0	01:21	0	0.00347	0.148	
J168	JUNCTION	0.00	1.49	0	01:22	0	0.00172	1.009	
J169	JUNCTION	0.00	2.59	0	01:20	0	0.00309	0.409	
J17	JUNCTION	0.00	4.41	0	01:18	0	0.0011	8.222	
J170	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J171	JUNCTION	0.00	0.23	0	01:33	0	1.67e-05	7.005	ltr
J18	JUNCTION	0.00	9.63	0	01:26	0	0.00864	0.165	
J19	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J2	JUNCTION	0.00	25.44	0	01:11	0	0.0125	0.316	
J20	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J21	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J22	JUNCTION	0.00	2.68	0	01:24	0	0.00272	1.360	
J23	JUNCTION	0.00	3.53	0	01:30	0	0.00311	0.483	
J24	JUNCTION	0.00	4.32	0	01:30	0	0.00511	-0.844	
J25	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J26	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J27	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J28	JUNCTION	0.00	5.47	0	01:10	0	0.000505	17.505	
J29	JUNCTION	0.00	4.40	0	01:10	0	0.000357	3.918	
J3	JUNCTION	0.00	6.35	0	01:10	0	0.000654	6.226	
J30	JUNCTION	0.00	2.49	0	01:10	0	0.000196	10.063	
J31	JUNCTION	0.00	7.95	0	01:10	0	0.00141	0.030	
J32	JUNCTION	0.00	6.05	0	01:10	0	0.000602	2.012	
J33	JUNCTION	0.00	2.56	0	01:10	0	0.000119	10.385	
J34	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J35	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J36	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J37	JUNCTION	0.00	12.29	0	01:12	0	0.00318	-5.679	
J38	JUNCTION	0.00	13.41	0	01:10	0	0.00358	1.809	
J39	JUNCTION	0.00	66.25	0	01:10	0	0.0542	0.089	
J4	JUNCTION	69.94	69.94	0	01:10	0.0708	0.0708	0.395	
J40	JUNCTION	0.00	8.44	0	01:11	0	0.00241	0.117	
J41	JUNCTION	0.00	38.32	0	01:13	0	0.0491	0.103	
J42	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J43	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr

J44	JUNCTION	0.00	15.99	0	01:13	0	0.0112	0.121	
J45	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J46	JUNCTION	0.00	28.32	0	01:12	0	0.0219	0.316	
J47	JUNCTION	0.00	33.56	0	01:13	0	0.0275	-0.117	
J48	JUNCTION	0.00	10.47	0	01:12	0	0.00233	0.895	
J49	JUNCTION	0.00	28.66	0	01:09	0	0.0081	-0.338	
J5	JUNCTION	0.00	8.24	0	01:11	0	0.000807	17.452	
J50	JUNCTION	0.00	33.87	0	01:10	0	0.0124	-0.709	
J51	JUNCTION	0.00	31.86	0	01:09	0	0.00718	0.445	
J52	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J53	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J54	JUNCTION	0.00	87.48	0	01:11	0	0.0725	0.154	
J55	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J56	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J57	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J58	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J59	JUNCTION	0.00	6.19	0	01:27	0	0.00768	0.362	
J6	JUNCTION	0.00	4.18	0	01:12	0	0.000492	5.654	
J60	JUNCTION	0.00	6.34	0	01:25	0	0.00761	0.291	
J61	JUNCTION	0.00	6.00	0	01:25	0	0.00575	0.377	
J62	JUNCTION	0.00	14.96	0	01:10	0	0.00778	1.225	
J63	JUNCTION	0.00	4.82	0	01:12	0	0.00442	0.627	
J64	JUNCTION	0.00	63.54	0	01:10	0	0.0459	-0.113	
J65	JUNCTION	0.00	32.02	0	01:41	0	0.0607	0.002	
J66	JUNCTION	0.00	36.58	0	01:14	0	0.0338	-0.720	
J67	JUNCTION	0.00	20.76	0	01:08	0	0.0109	1.108	
J68	JUNCTION	0.00	13.20	0	01:13	0	0.00858	0.153	
J69	JUNCTION	0.00	18.84	0	01:10	0	0.0111	0.570	
J7	JUNCTION	0.00	4.23	0	01:14	0	0.000752	10.204	
J70	JUNCTION	0.00	18.98	0	01:08	0	0.00838	0.986	
J71	JUNCTION	0.00	8.38	0	01:13	0	0.00504	0.217	
J72	JUNCTION	0.00	22.69	0	01:08	0	0.00685	1.394	
J73	JUNCTION	0.00	8.26	0	01:10	0	0.0024	1.009	
J74	JUNCTION	0.00	3.33	0	01:11	0	0.000223	5.005	
J75	JUNCTION	0.00	35.22	0	01:20	0	0.0418	-0.265	
J76	JUNCTION	0.00	32.94	0	01:08	0	0.0261	0.291	
J77	JUNCTION	0.00	20.98	0	01:08	0	0.0213	0.126	
J78	JUNCTION	0.00	5.84	0	01:11	0	0.00694	0.233	
J79	JUNCTION	0.00	1.68	0	01:11	0	0.000283	2.899	
J8	JUNCTION	0.00	4.36	0	01:14	0	0.00107	4.419	
J80	JUNCTION	0.00	10.89	0	01:13	0	0.0111	0.233	

J81	JUNCTION	0.00	21.54	0	01:08	0	0.0238	0.520	
J82	JUNCTION	0.00	17.49	0	01:08	0	0.0194	0.556	
J83	JUNCTION	0.00	23.07	0	01:17	0	0.0263	0.111	
J84	JUNCTION	0.00	23.92	0	01:15	0	0.0283	0.240	
J85	JUNCTION	0.00	32.10	0	01:10	0	0.0177	0.666	
J86	JUNCTION	0.00	23.38	0	01:08	0	0.013	1.028	
J87	JUNCTION	0.00	7.26	0	01:11	0	0.00234	0.976	
J88	JUNCTION	0.00	1.46	0	01:13	0	0.00014	5.102	
J89	JUNCTION	0.00	26.24	0	01:07	0	0.0127	0.787	
J9	JUNCTION	0.00	6.20	0	01:27	0	0.00638	0.018	
J90	JUNCTION	0.00	19.53	0	01:11	0	0.0124	-0.216	
J91	JUNCTION	0.00	26.19	0	01:07	0	0.0126	0.839	
J92	JUNCTION	0.00	28.78	0	01:14	0	0.0306	-0.178	
J93	JUNCTION	0.00	21.95	0	01:09	0	0.0065	2.759	
J94	JUNCTION	0.00	15.60	0	01:10	0	0.00674	1.114	
J95	JUNCTION	0.00	6.34	0	01:11	0	0.0029	0.365	
J96	JUNCTION	0.00	14.26	0	01:07	0	0.00458	1.267	
J97	JUNCTION	0.00	16.14	0	01:12	0	0.0136	0.517	
J98	JUNCTION	0.00	13.84	0	01:15	0	0.0113	0.083	
J99	JUNCTION	0.00	13.80	0	01:16	0	0.0143	0.604	
LCB-2-01	JUNCTION	0.00	9.57	0	01:27	0	0.0102	-0.017	
LCB-2-02	JUNCTION	42.58	42.58	0	01:10	0.0455	0.0557	0.223	
LCB-2-03	JUNCTION	0.00	25.08	0	01:07	0	0.0204	-0.091	
LCB-2-05	JUNCTION	84.61	84.61	0	01:10	0.0907	0.117	0.280	
LCB-2-06	JUNCTION	0.00	15.56	0	01:10	0	0.0124	-0.073	
LCB-2-07	JUNCTION	0.00	6.88	0	01:06	0	0.00869	0.682	
LCB-2-08	JUNCTION	69.90	69.90	0	01:10	0.0646	0.0835	0.203	
LCB-2-09	JUNCTION	0.00	9.37	0	01:07	0	0.00309	0.121	
LCB-2-09A	JUNCTION	0.00	15.89	0	01:07	0	0.0134	-0.021	
LCB-2-10	JUNCTION	0.00	19.29	0	01:04	0	0.0062	-0.049	
LCB-2-11	JUNCTION	71.23	71.23	0	01:10	0.0643	0.0704	-0.036	
LCB-2-12	JUNCTION	0.00	49.75	0	02:15	0	0.0645	-0.701	
LCB-2-13	JUNCTION	0.00	17.70	0	01:07	0	0.00723	0.190	
LCB-2-14	JUNCTION	74.73	74.73	0	01:10	0.0668	0.0732	-0.067	
LCB-2-15	JUNCTION	0.00	78.26	0	01:41	0	0.0656	-1.129	
LCB-3-01	JUNCTION	19.80	130.36	0	01:11	0.0195	0.198	-0.009	
LCB-3-02	JUNCTION	30.30	117.78	0	01:10	0.0299	0.178	-0.024	
LCB-3-03	JUNCTION	31.10	94.45	0	01:10	0.0308	0.148	-0.004	
LCB-3-04	JUNCTION	47.34	87.92	0	01:10	0.047	0.118	-0.007	
LCB-3-05	JUNCTION	0.00	35.59	0	01:04	0	0.0369	-0.349	
LCB-3-06	JUNCTION	138.22	138.22	0	01:10	0.155	0.176	0.143	

LCB-3-07	JUNCTION	0.00	33.57	0	01:10	0	0.0314	0.003
LCB-3-08	JUNCTION	0.00	20.46	0	01:05	0	0.0112	-0.522
LCB-3-09	JUNCTION	0.00	28.68	0	01:27	0	0.0566	-0.364
LCB-3-10	JUNCTION	0.00	36.55	0	01:05	0	0.073	0.718
LCB-3-11	JUNCTION	99.76	99.76	0	01:10	0.104	0.147	0.168
LCB-3-12	JUNCTION	0.00	23.11	0	01:10	0	0.0251	0.313
LCB-3-13	JUNCTION	0.00	31.02	0	01:12	0	0.0296	0.396
LCB-3-14	JUNCTION	146.15	146.15	0	01:10	0.146	0.176	0.407
LCB-3-15	JUNCTION	0.00	29.93	0	01:05	0	0.0159	0.062
LCB-3-16	JUNCTION	113.13	113.13	0	01:10	0.126	0.14	0.179
LCB-3-17	JUNCTION	0.00	28.27	0	01:12	0	0.023	0.964
LCB-3-18	JUNCTION	0.00	34.52	0	01:03	0	0.0143	0.121
LCB-3-19	JUNCTION	127.77	127.77	0	01:10	0.127	0.139	0.142
LCB-3-20	JUNCTION	0.00	83.35	0	01:10	0	0.124	0.014
LCB-3-21	JUNCTION	145.52	145.52	0	01:10	0.142	0.161	0.238
LCB-3-22	JUNCTION	0.00	40.19	0	01:10	0	0.0182	-0.381
LCB-3-23	JUNCTION	0.00	52.05	0	01:10	0	0.0437	0.757
LCB-3-24	JUNCTION	0.00	37.09	0	01:12	0	0.0319	-0.444
LCB-3-25	JUNCTION	0.00	35.26	0	01:11	0	0.0374	-0.755
LCB-3-26	JUNCTION	0.00	60.11	0	01:10	0	0.0704	0.281
LCB-3-27	JUNCTION	0.00	204.35	0	02:00	0	0.148	-0.091
LCB-3-28	JUNCTION	162.38	210.44	0	02:02	0.158	0.323	0.207
LCB-3-29	JUNCTION	0.00	65.61	0	01:09	0	0.153	0.156
LCB-4-01	JUNCTION	0.00	38.18	0	01:04	0	0.0216	0.206
LCB-4-02	JUNCTION	0.00	72.49	0	01:04	0	0.0639	-0.117
LCB-4-03	JUNCTION	125.70	125.70	0	01:10	0.133	0.191	0.018
LCB-4-04	JUNCTION	0.00	21.71	0	01:08	0	0.0138	0.126
LCB-4-05	JUNCTION	0.00	44.17	0	01:10	0	0.0415	-0.033
LCB-4-05A	JUNCTION	0.00	77.36	0	01:04	0	0.0683	-0.102
LCB-4-06	JUNCTION	130.23	130.23	0	01:10	0.128	0.156	0.197
LCB-4-07	JUNCTION	0.00	86.66	0	01:04	0	0.0162	0.200
LCB-4-08	JUNCTION	0.00	118.18	0	01:04	0	0.0537	-0.256
LCB-4-08A	JUNCTION	0.00	134.10	0	01:04	0	0.0946	0.012
LCB-4-09	JUNCTION	0.00	154.69	0	01:04	0	0.138	-0.082
LCB-4-11	JUNCTION	0.00	39.07	0	01:14	0	0.0496	0.114
LCB-4-12	JUNCTION	245.06	245.06	0	01:10	0.249	0.328	0.022
LCB-4-13	JUNCTION	0.00	56.79	0	01:08	0	0.036	-0.198
LCB-4-15	JUNCTION	0.00	35.10	0	01:06	0	0.0187	0.308
LCB-4-16	JUNCTION	124.14	124.14	0	01:10	0.123	0.175	0.043
LCB-4-17	JUNCTION	0.00	64.03	0	01:04	0	0.0317	-0.107
LCB-4-18	JUNCTION	0.00	108.49	0	01:04	0	0.0755	-0.214
LCB-4-20	JUNCTION	0.00	39.04	0	01:07	0	0.0423	0.085
LCB-4-21	JUNCTION	179.09	179.09	0	01:10	0.176	0.231	0.058
LCB-4-22	JUNCTION	0.00	43.70	0	01:04	0	0.00948	0.712
LCB-4-23	JUNCTION	0.00	77.90	0	01:04	0	0.0393	-0.084
LCB-4-23A	JUNCTION	0.00	88.26	0	01:04	0	0.0804	-0.095
LCB-4-24	JUNCTION	140.80	140.80	0	01:10	0.138	0.191	0.147
LCB-4-25	JUNCTION	0.00	57.63	0	01:05	0	0.0375	0.116
LCB-4-25A	JUNCTION	0.00	98.13	0	01:05	0	0.0662	-0.184
LCB-4-26	JUNCTION	0.00	111.06	0	01:04	0	0.101	0.008
LCB-4-27	JUNCTION	175.22	175.22	0	01:10	0.17	0.262	0.083
LCB-4-28	JUNCTION	0.00	28.20	0	01:07	0	0.0126	0.787
LCB-4-29	JUNCTION	0.00	32.73	0	01:07	0	0.0111	0.450
LCB-4-30	JUNCTION	0.00	81.58	0	01:04	0	0.0453	-0.133
LCB-4-31	JUNCTION	182.52	182.52	0	01:10	0.187	0.237	0.118
LCB-4-32	JUNCTION	0.00	50.08	0	01:09	0	0.0487	-0.046
LCB-4-41	JUNCTION	0.00	22.95	0	01:10	0	0.0121	0.244
LCB-4-42	JUNCTION	0.00	85.10	0	01:09	0	0.08	0.000
LCB-4-43	JUNCTION	0.00	66.74	0	01:09	0	0.0566	0.008
LCB-4-44	JUNCTION	0.00	49.94	0	01:08	0	0.0344	0.020
LCB-4-45	JUNCTION	0.00	27.14	0	01:08	0	0.0116	0.401
LCB-5-01	JUNCTION	0.00	19.73	0	01:06	0	0.00876	0.386
LCB-5-02	JUNCTION	0.00	40.59	0	01:05	0	0.031	-0.088
LCB-5-03	JUNCTION	64.55	64.55	0	01:09	0.067	0.0909	0.044
LCB-5-04	JUNCTION	0.00	18.99	0	01:05	0	0.00955	0.413
LCB-5-05	JUNCTION	0.00	39.95	0	01:04	0	0.0333	0.019
LCB-5-06	JUNCTION	96.18	96.18	0	01:10	0.096	0.131	-0.096
LCB-5-07	JUNCTION	0.00	26.42	0	01:05	0	0.0261	0.088
LCB-5-08	JUNCTION	0.00	23.79	0	01:04	0	0.0264	0.883
LCB-5-09	JUNCTION	0.00	53.08	0	01:08	0	0.0476	-0.002
LCB-5-10	JUNCTION	0.00	75.60	0	01:05	0	0.0802	0.003
LCB-5-11	JUNCTION	145.96	145.96	0	01:10	0.146	0.242	-0.061
LCB-5-12	JUNCTION	0.00	49.84	0	01:07	0	0.0464	0.033
LCB-5-13	JUNCTION	0.00	25.25	0	01:09	0	0.0117	0.140
LCB-5-14	JUNCTION	0.00	67.48	0	01:06	0	0.0193	0.149
LCB-5-15	JUNCTION	0.00	127.27	0	01:06	0	0.0642	0.000
LCB-5-17	JUNCTION	0.00	53.52	0	01:08	0	0.0235	0.480
LCB-5-18	JUNCTION	196.03	196.03	0	01:10	0.198	0.269	0.030
LCB-5-19	JUNCTION	0.00	45.46	0	01:06	0	0.0144	0.352
LCB-5-20	JUNCTION	0.00	104.94	0	01:07	0	0.0519	0.005
LCB-5-21	JUNCTION	0.00	133.74	0	01:07	0	0.0953	0.083
LCB-5-23	JUNCTION	0.00	36.41	0	01:20	0	0.056	0.136

Provence Orleans Phase 5A (117155)
PCSWMM Model Results (100-year 3-hour Chicago Event)

LCB-5-24	JUNCTION	178.90	178.90	0	01:10	0.176	0.247	0.020	
RAP-5-16	JUNCTION	0.00	141.39	0	01:05	0	0.132	-0.746	
RAP-5-22	JUNCTION	0.00	147.63	0	01:06	0	0.174	-0.619	
RYT-4-10	JUNCTION	0.00	162.62	0	01:04	0	0.18	-0.402	
RYT-4-14	JUNCTION	0.00	81.08	0	01:08	0	0.0692	-1.003	
RYT-4-19	JUNCTION	0.00	121.43	0	01:08	0	0.134	-0.481	
RYT-4-27A	JUNCTION	0.00	118.95	0	01:04	0	0.126	-0.479	
098	OUTFALL	0.00	1610.84	0	01:24	0	11.5	0.000	
OF01	OUTFALL	0.00	39.63	0	01:10	0	0.0565	0.000	
OF02	OUTFALL	0.00	34.48	0	01:10	0	0.0156	0.000	
OF03	OUTFALL	0.00	86.56	0	01:12	0	0.0719	0.000	
OF04	OUTFALL	0.00	0.00	0	00:00	0	0	0.000	ltr
OF05	OUTFALL	0.00	0.00	0	00:00	0	0	0.000	ltr
OF06	OUTFALL	0.00	0.00	0	00:00	0	0	0.000	ltr
OF07	OUTFALL	0.00	31.41	0	01:41	0	0.0605	0.000	
OF08	OUTFALL	0.00	0.06	0	01:30	0	4e-05	0.000	
OF09	OUTFALL	0.00	0.00	0	00:00	0	0	0.000	ltr
OF10	OUTFALL	8.60	8.60	0	01:10	0.00836	0.00836	0.000	
OF11	OUTFALL	16.63	16.63	0	01:10	0.011	0.011	0.000	
OF12	OUTFALL	0.00	0.00	0	00:00	0	0	0.000	ltr
OF13	OUTFALL	0.00	0.00	0	00:00	0	0	0.000	ltr
2-00_Stor	STORAGE	454.68	454.68	0	01:10	0.682	0.682	0.047	
CB-2-1_(CB)	STORAGE	0.00	17.90	0	01:05	0	0.054	-0.244	
CB-2-2_(CB)	STORAGE	0.00	29.04	0	01:05	0	0.0853	-0.230	
CB-2-3_(CB)	STORAGE	0.00	21.79	0	01:04	0	0.0694	-0.192	
CB-2-4_(CB)	STORAGE	0.00	77.03	0	02:15	0	0.0808	-0.096	
CB-2-5_(CB)	STORAGE	0.00	132.75	0	01:41	0	0.066	-0.250	
CB-3-1_(CB)	STORAGE	0.00	24.64	0	01:03	0	0.07	-0.152	
CB-3-2_(CB)	STORAGE	0.00	41.76	0	01:07	0	0.129	-0.260	
CB-3-3_(CB)	STORAGE	0.00	27.93	0	01:10	0	0.119	-0.169	
CB-3-4_(CB)	STORAGE	0.00	46.82	0	01:05	0	0.125	-0.244	
CB-3-5_(CB)	STORAGE	0.00	46.93	0	01:05	0	0.104	-0.494	
CB-3-6_(CB)	STORAGE	0.00	65.87	0	01:07	0	0.154	-0.218	
CB-3-7_(CB)	STORAGE	0.00	54.85	0	01:13	0	0.152	-0.164	
CB-3-8_(CB)	STORAGE	0.00	82.48	0	01:11	0	0.135	-0.427	
CB-4-02	STORAGE	0.00	55.55	0	01:05	0	0.134	-0.127	
CB-4-04	STORAGE	0.00	52.25	0	01:05	0	0.0901	-0.125	
CB-4-05	STORAGE	0.00	68.19	0	01:05	0	0.193	-0.056	
CB-5-01	STORAGE	0.00	21.91	0	01:07	0	0.0679	-0.095	
CB-5-04	STORAGE	0.00	28.53	0	01:07	0	0.134	-0.023	
CB-5-05	STORAGE	0.00	43.55	0	01:07	0	0.138	-0.039	

CBMH-4-01	STORAGE	0.00	62.41	0	01:06	0	0.155	-0.189	
CBMH-4-03	STORAGE	0.00	44.13	0	01:02	0	0.111	-0.320	
CBMH-4-06	STORAGE	0.00	28.37	0	01:05	0	0.132	-0.119	
CBMH-4-07	STORAGE	0.00	44.77	0	01:02	0	0.0953	-0.372	
CBMH-4-08	STORAGE	0.00	55.06	0	01:02	0	0.152	-0.287	
CBMH-5-02	STORAGE	0.00	21.25	0	01:01	0	0.0793	-0.011	
CBMH-5-03	STORAGE	0.00	24.28	0	01:01	0	0.162	-0.039	
MH100	STORAGE	0.00	1610.81	0	01:23	0	11.5	-0.000	
MH102	STORAGE	0.00	1435.96	0	01:23	0	10.4	-0.000	
MH104	STORAGE	0.00	1350.95	0	01:23	0	9.93	-0.000	
MH106	STORAGE	0.00	1290.62	0	01:23	0	9.77	-0.000	
MH108	STORAGE	0.00	1259.56	0	01:23	0	9.64	-0.005	
MH110	STORAGE	0.00	844.74	0	01:22	0	6.1	0.001	
MH112	STORAGE	0.00	280.23	0	01:17	0	1.72	-0.014	
MH114	STORAGE	0.00	212.73	0	01:17	0	1.35	-0.061	
MH116	STORAGE	0.00	161.62	0	01:17	0	0.963	0.195	
MH118	STORAGE	0.00	51.09	0	01:10	0	0.126	-0.004	
MH200	STORAGE	0.00	481.17	0	01:29	0	3.67	0.007	
MH200A	STORAGE	0.00	481.16	0	01:29	0	3.67	-0.020	
MH202	STORAGE	0.00	456.59	0	01:28	0	3.45	0.004	
MH204	STORAGE	0.00	269.01	0	01:28	0	2	-0.005	
MH206	STORAGE	0.00	158.03	0	01:27	0	1.07	-0.013	
MH300	STORAGE	0.00	329.81	0	01:30	0	2.85	-0.000	
MH300A	STORAGE	0.00	329.81	0	01:30	0	2.85	-0.001	
MH302	STORAGE	0.00	310.00	0	01:30	0	2.7	-0.000	
MH304	STORAGE	0.00	137.79	0	01:32	0	1.31	-0.002	
MH308	STORAGE	41.35	41.35	0	01:20	0.107	0.107	0.043	
MH400	STORAGE	0.00	60.44	0	01:33	0	0.499	-0.002	
MH402	STORAGE	0.00	29.23	0	01:38	0	0.26	-0.005	
MH404	STORAGE	0.00	25.50	0	01:30	0	0.228	0.065	
MH406	STORAGE	0.00	14.62	0	01:32	0	0.108	-0.250	
MH408	STORAGE	0.00	51.73	0	01:28	0	0.391	0.032	
MH500	STORAGE	0.00	120.44	0	01:24	0	0.92	0.018	
MH502	STORAGE	0.00	90.14	0	01:24	0	0.684	-0.047	
MH504	STORAGE	0.00	82.68	0	01:24	0	0.614	-0.001	
MH506	STORAGE	0.00	82.69	0	01:23	0	0.613	-0.129	
MH508	STORAGE	0.00	30.86	0	01:25	0	0.254	0.389	
MH510	STORAGE	0.00	20.17	0	01:24	0	0.119	-0.037	
MH512	STORAGE	0.00	50.35	0	01:25	0	0.351	0.008	
MH602	STORAGE	0.00	157.00	0	01:24	0	1.31	-0.038	
MH604	STORAGE	0.00	87.59	0	01:26	0	0.821	0.136	

MH606	STORAGE	0.00	13.43	0	01:43	0	0.192	-0.003
MH608	STORAGE	0.00	13.43	0	01:41	0	0.192	-0.003
MH610	STORAGE	0.00	0.00	0	00:00	0	0	0.000 ltr
MH612	STORAGE	0.00	86.92	0	01:21	0	0.706	0.145
MH614	STORAGE	0.00	86.92	0	01:22	0	0.705	-0.065
MH700	STORAGE	0.00	148.67	0	01:25	0	1.2	-0.025
MH702	STORAGE	0.00	90.33	0	01:22	0	0.789	0.297
MH704	STORAGE	0.00	58.05	0	01:23	0	0.539	-0.219
MH706	STORAGE	0.00	18.18	0	01:32	0	0.178	0.024
MH708	STORAGE	0.00	18.18	0	01:31	0	0.178	-0.025
MH710	STORAGE	0.00	55.20	0	01:27	0	0.529	-0.099
MH712	STORAGE	0.00	82.02	0	01:28	0	0.762	0.030
MH716	STORAGE	0.00	116.82	0	01:26	0	0.761	0.011
MH718	STORAGE	0.00	92.76	0	01:26	0	0.548	0.046
MH720	STORAGE	0.00	78.45	0	01:25	0	0.415	-0.039
MHx1000	STORAGE	0.00	84.24	0	01:31	0	0.682	-0.002

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Node Surcharge Summary
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Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
CB22-CBMH23	JUNCTION	0.05	0.000	0.000
CB24-CBMH25	JUNCTION	0.13	0.002	0.000
CB28-CBMH29	JUNCTION	0.19	0.005	0.000
CB30-CBMH31	JUNCTION	0.05	0.001	0.000
CB64-CBMH65	JUNCTION	0.04	0.002	0.000
CB68-CBMH69	JUNCTION	0.06	0.001	0.000
CB74-CBMH75	JUNCTION	0.19	0.003	0.000
LCB-2-03	JUNCTION	0.13	0.003	0.000
LCB-2-05	JUNCTION	0.12	0.002	0.000
LCB-3-01	JUNCTION	0.17	0.048	0.000
LCB-3-05	JUNCTION	0.03	0.003	0.000
LCB-3-06	JUNCTION	0.03	0.002	0.000
LCB-3-08	JUNCTION	0.01	0.000	0.000
LCB-3-13	JUNCTION	0.07	0.003	0.000
LCB-3-21	JUNCTION	0.09	0.039	0.000
LCB-3-22	JUNCTION	0.08	0.034	0.000
LCB-3-23	JUNCTION	0.03	0.006	0.000
LCB-3-25	JUNCTION	0.15	0.023	0.000
LCB-3-26	JUNCTION	0.24	0.044	0.000
LCB-3-27	JUNCTION	0.20	0.027	0.000
LCB-3-29	JUNCTION	0.23	0.035	0.000
LCB-4-13	JUNCTION	0.09	0.003	0.000
LCB-4-15	JUNCTION	0.08	0.003	0.000
LCB-4-16	JUNCTION	0.07	0.002	0.000
LCB-4-17	JUNCTION	0.09	0.004	0.000
LCB-4-18	JUNCTION	0.09	0.004	0.000
LCB-4-20	JUNCTION	0.07	0.004	0.000
LCB-4-25	JUNCTION	0.01	0.000	0.000
LCB-4-32	JUNCTION	0.07	0.004	0.000
LCB-5-14	JUNCTION	0.05	0.004	0.000
LCB-5-15	JUNCTION	0.04	0.003	0.000
LCB-5-17	JUNCTION	0.04	0.002	0.000
LCB-5-18	JUNCTION	0.03	0.001	0.000
RAP-5-16	JUNCTION	1.49	1.152	0.268
RAP-5-22	JUNCTION	1.98	1.194	0.296
RYT-4-10	JUNCTION	1.49	1.311	0.282
RYT-4-14	JUNCTION	1.49	1.186	0.247
RYT-4-19	JUNCTION	1.60	1.237	0.286
RYT-4-27A	JUNCTION	1.29	1.301	0.092
CB-2-1_(CB)	STORAGE	2.76	1.243	0.177
CB-2-2_(CB)	STORAGE	2.25	1.427	0.073
CB-2-3_(CB)	STORAGE	3.43	1.368	0.052
CB-3-2_(CB)	STORAGE	1.57	1.667	0.000
CB-3-3_(CB)	STORAGE	1.95	1.609	0.041
CB-4-02	STORAGE	1.77	1.388	0.000
CB-4-04	STORAGE	1.64	1.335	0.000
CB-4-05	STORAGE	1.64	1.464	0.000
CBMH-4-01	STORAGE	1.40	1.429	0.000
CBMH-4-03	STORAGE	2.01	1.763	0.000
CBMH-4-06	STORAGE	2.84	1.365	0.410
CBMH-4-07	STORAGE	1.72	1.780	0.000
CBMH-4-08	STORAGE	1.45	1.600	0.000

Provence Orleans Phase 5A (117155)
PCSWMM Model Results (100-year 3-hour Chicago Event)

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Node Flooding Summary
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No nodes were flooded.

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Storage Volume Summary
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Storage Unit	Average Volume 1000 m3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
2-00_Stor	0.014	4	0	0	0.279	78	0 01:31	84.24
CB-2-1_(CB)	0.000	7	0	0	0.002	90	0 01:40	6.60
CB-2-2_(CB)	0.000	7	0	0	0.002	96	0 01:32	11.78
CB-2-3_(CB)	0.000	9	0	0	0.002	97	0 01:43	6.87
CB-2-4_(CB)	0.000	4	0	0	0.002	89	0 01:23	116.25
CB-2-5_(CB)	0.000	2	0	0	0.002	87	0 01:14	255.60
CB-3-1_(CB)	0.000	9	0	0	0.002	94	0 01:25	7.45
CB-3-2_(CB)	0.000	5	0	0	0.002	100	0 01:08	26.22
CB-3-3_(CB)	0.000	6	0	0	0.002	98	0 01:24	20.17
CB-3-4_(CB)	0.000	3	0	0	0.002	88	0 01:12	41.24
CB-3-5_(CB)	0.000	3	0	0	0.002	87	0 01:12	31.88
CB-3-6_(CB)	0.000	2	0	0	0.002	79	0 01:15	60.66
CB-3-7_(CB)	0.000	4	0	0	0.002	88	0 01:15	54.47
CB-3-8_(CB)	0.000	4	0	0	0.002	88	0 01:11	98.26
CB-4-02	0.000	7	0	0	0.002	100	0 01:06	21.04
CB-4-04	0.000	7	0	0	0.002	100	0 01:06	14.65
CB-4-05	0.000	6	0	0	0.002	100	0 01:05	34.59
CB-5-01	0.000	5	0	0	0.002	78	0 01:25	10.13
CB-5-04	0.000	7	0	0	0.002	82	0 01:20	14.91
CB-5-05	0.000	6	0	0	0.002	92	0 01:15	20.68
CBMH-4-01	0.000	6	0	0	0.003	100	0 01:07	29.96
CBMH-4-03	0.000	7	0	0	0.003	100	0 01:09	16.89
CBMH-4-06	0.000	8	0	0	0.002	82	0 01:31	14.34
CBMH-4-07	0.000	6	0	0	0.003	100	0 01:09	16.92
CBMH-4-08	0.000	5	0	0	0.003	100	0 01:07	31.17
CBMH-5-02	0.000	6	0	0	0.002	56	0 01:23	6.70
CBMH-5-03	0.000	11	0	0	0.002	63	0 01:51	8.69
MH100	0.010	32	0	0	0.010	33	0 01:23	1610.84
MH102	0.010	32	0	0	0.010	33	0 01:20	1436.01
MH104	0.009	31	0	0	0.010	33	0 01:20	1351.03
MH106	0.009	30	0	0	0.009	32	0 01:20	1290.70
MH108	0.008	28	0	0	0.009	31	0 01:20	1259.54
MH110	0.001	5	0	0	0.003	12	0 01:22	844.82
MH112	0.000	1	0	0	0.001	9	0 01:18	280.16
MH114	0.000	1	0	0	0.001	8	0 01:17	212.69
MH116	0.000	1	0	0	0.001	8	0 01:17	161.60
MH118	0.000	0	0	0	0.000	7	0 01:11	51.06
MH200	0.000	2	0	0	0.001	14	0 01:29	481.16
MH200A	0.000	2	0	0	0.003	14	0 01:29	481.16
MH202	0.000	1	0	0	0.001	12	0 01:29	456.57
MH204	0.000	1	0	0	0.001	10	0 01:28	269.01
MH206	0.000	1	0	0	0.001	10	0 01:28	158.00
MH300	0.000	1	0	0	0.001	8	0 01:30	329.81
MH300A	0.000	3	0	0	0.001	11	0 01:30	329.81
MH302	0.000	1	0	0	0.001	8	0 01:30	310.00
MH304	0.000	1	0	0	0.000	7	0 01:32	137.79
MH308	0.001	2	0	0	0.021	65	0 01:37	24.63
MH400	0.000	1	0	0	0.000	6	0 01:34	60.44
MH402	0.000	1	0	0	0.000	5	0 01:38	29.23
MH404	0.000	1	0	0	0.000	5	0 01:30	25.49
MH406	0.000	0	0	0	0.000	3	0 01:32	14.62
MH408	0.000	1	0	0	0.000	6	0 01:29	51.73
MH500	0.000	1	0	0	0.000	9	0 01:25	120.44
MH502	0.000	1	0	0	0.000	7	0 01:25	90.14
MH504	0.000	1	0	0	0.000	6	0 01:24	82.68
MH506	0.000	1	0	0	0.000	8	0 01:24	82.68
MH508	0.000	1	0	0	0.000	5	0 01:26	30.86
MH510	0.000	0	0	0	0.000	4	0 01:25	20.16
MH512	0.000	1	0	0	0.000	5	0 01:26	50.35
MH602	0.000	1	0	0	0.001	11	0 01:27	156.97
MH604	0.000	1	0	0	0.000	8	0 01:28	87.59
MH606	0.000	1	0	0	0.000	3	0 01:42	13.43
MH608	0.000	1	0	0	0.000	4	0 01:43	13.43
MH610	0.000	0	0	0	0.000	0	0 00:00	0.00
MH612	0.000	1	0	0	0.000	8	0 01:22	86.92
MH614	0.000	1	0	0	0.000	9	0 01:22	86.92

MH700	0.000	1	0	0	0.001	9	0	01:27	148.66
MH702	0.000	1	0	0	0.000	7	0	01:23	90.32
MH704	0.000	1	0	0	0.000	6	0	01:23	58.04
MH706	0.000	0	0	0	0.000	4	0	01:33	18.18
MH708	0.000	1	0	0	0.000	4	0	01:32	18.18
MH710	0.000	1	0	0	0.000	7	0	01:24	55.21
MH712	0.000	1	0	0	0.000	10	0	01:30	82.02
MH716	0.000	1	0	0	0.000	12	0	01:27	116.80
MH718	0.000	1	0	0	0.000	8	0	01:26	92.73
MH720	0.000	1	0	0	0.000	8	0	01:26	78.43
MHx1000	0.000	1	0	0	0.000	6	0	01:31	84.24

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Outfall Loading Summary
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Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
098	97.25	137.31	1610.84	11.481
OF01	12.31	5.36	39.63	0.056
OF02	6.44	2.84	34.48	0.016
OF03	2.07	40.41	86.56	0.072
OF04	0.00	0.00	0.00	0.000
OF05	0.00	0.00	0.00	0.000
OF06	0.00	0.00	0.00	0.000
OF07	4.27	16.39	31.41	0.060
OF08	0.84	0.04	0.06	0.000
OF09	0.00	0.00	0.00	0.000
OF10	5.55	1.76	8.60	0.008
OF11	3.53	3.68	16.63	0.011
OF12	0.00	0.00	0.00	0.000
OF13	0.00	0.00	0.00	0.000
System	9.45	207.79	1691.65	11.705

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Link Flow Summary
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Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
100-098	CONDUIT	1610.84	0 01:24	0.88	0.49	1.00
102-100	CONDUIT	1436.01	0 01:24	0.79	0.52	1.00
104-102	CONDUIT	1351.03	0 01:24	0.74	0.48	1.00
106-104	CONDUIT	1290.70	0 01:24	0.71	0.45	1.00
108-106	CONDUIT	1259.54	0 01:23	0.69	0.43	1.00
110-108	CONDUIT	844.82	0 01:22	1.58	0.40	0.39
112-110	CONDUIT	280.16	0 01:18	1.31	0.46	0.41
114-112	CONDUIT	212.69	0 01:18	1.18	0.47	0.42
116-114	CONDUIT	161.60	0 01:17	1.13	0.46	0.42
118-116	CONDUIT	51.06	0 01:11	1.11	0.71	0.60
200-200A	CONDUIT	481.16	0 01:29	1.13	0.56	0.54
200A-110	CONDUIT	481.16	0 01:30	1.30	0.43	0.48
202-200	CONDUIT	456.57	0 01:29	1.39	0.54	0.50
204-202	CONDUIT	269.01	0 01:29	1.35	0.47	0.45
206-204	CONDUIT	158.00	0 01:28	1.16	0.56	0.47
206-304	CONDUIT	0.00	0 00:00	0.00	0.00	0.00
300-300A	CONDUIT	329.81	0 01:30	1.57	0.27	0.36
300A-108	CONDUIT	329.81	0 01:30	1.16	0.47	0.45
302-300	CONDUIT	310.00	0 01:30	1.49	0.26	0.35
304-302	CONDUIT	137.79	0 01:33	1.26	0.25	0.34
400-110	CONDUIT	60.44	0 01:34	1.12	0.27	0.36
402-400	CONDUIT	29.23	0 01:38	0.88	0.23	0.33
404-402	CONDUIT	22.65	0 01:30	0.78	0.21	0.30
404-408	CONDUIT	2.84	0 01:30	0.44	0.04	0.18
406-408	CONDUIT	14.62	0 01:32	0.74	0.21	0.32
408-114	CONDUIT	51.73	0 01:29	1.11	0.36	0.43
500-100	CONDUIT	120.44	0 01:25	1.02	0.52	0.52
502-500	CONDUIT	90.14	0 01:25	0.80	0.40	0.51
504-502	CONDUIT	82.68	0 01:24	1.15	0.40	0.45
508-504	CONDUIT	82.68	0 01:24	1.03	0.56	0.49
508-506	CONDUIT	30.86	0 01:26	0.80	0.31	0.43
508-510	CONDUIT	0.00	0 00:00	0.00	0.00	0.09
510-512	CONDUIT	20.16	0 01:25	0.79	0.16	0.27

512-108	CONDUIT	50.35	0	01:26	1.05	0.23	0.33
602-202	CONDUIT	156.97	0	01:27	1.03	0.40	0.43
604-602	CONDUIT	87.59	0	01:28	0.85	0.30	0.41
606-604	CONDUIT	13.43	0	01:43	0.71	0.06	0.18
608-606	CONDUIT	13.43	0	01:43	0.67	0.13	0.23
610-612	CONDUIT	0.00	0	00:00	0.00	0.00	0.12
612-614	CONDUIT	86.92	0	01:22	0.85	0.44	0.47
614-204	CONDUIT	86.92	0	01:23	0.91	0.42	0.44
700-302	CONDUIT	148.66	0	01:27	1.02	0.37	0.42
702-700	CONDUIT	90.32	0	01:23	0.90	0.32	0.41
704-702	CONDUIT	58.04	0	01:24	0.89	0.26	0.33
706-704	CONDUIT	18.18	0	01:33	0.79	0.14	0.26
708-706	CONDUIT	18.18	0	01:32	0.71	0.17	0.28
710-712	CONDUIT	55.21	0	01:27	0.89	0.37	0.42
712-304	CONDUIT	82.02	0	01:31	0.89	0.42	0.43
716-206	CONDUIT	116.80	0	01:27	0.96	0.59	0.54
718-716	CONDUIT	92.73	0	01:26	0.97	0.56	0.57
720-718	CONDUIT	78.43	0	01:26	0.93	0.47	0.51
C1	CHANNEL	0.00	0	00:00	0.00	0.00	0.08
C10	CHANNEL	0.00	0	00:00	0.00	0.00	0.48
C100	CONDUIT	0.00	0	00:00	0.00	0.00	0.29
C101	CONDUIT	86.56	0	01:12	0.48	0.22	0.61
C102	CONDUIT	87.48	0	01:11	0.23	0.22	0.89
C103	CONDUIT	71.19	0	01:11	0.30	0.09	0.71
C104	CONDUIT	71.38	0	01:11	0.30	0.12	0.71
C105	CONDUIT	25.27	0	01:11	0.13	0.03	0.63
C106	CONDUIT	25.44	0	01:11	0.19	0.04	0.53
C107	CONDUIT	2.77	0	01:12	0.10	0.00	0.46
C108	CONDUIT	6.35	0	01:10	0.10	0.01	0.55
C109	CONDUIT	33.90	0	01:10	0.60	0.06	0.65
C11	CHANNEL	0.00	0	00:00	0.00	0.00	0.46
C110	CONDUIT	35.55	0	01:10	0.63	0.06	0.65
C111	CONDUIT	8.24	0	01:11	0.10	0.01	0.55
C112	CONDUIT	1.64	0	01:13	0.09	0.00	0.55
C113	CONDUIT	4.18	0	01:12	0.09	0.01	0.54
C114	CONDUIT	1.52	0	01:18	0.09	0.00	0.54
C115	CONDUIT	4.23	0	01:14	0.10	0.01	0.55
C116	CONDUIT	1.75	0	01:18	0.08	0.00	0.55
C117	CONDUIT	4.36	0	01:14	0.07	0.01	0.56
C118	CONDUIT	0.00	0	00:00	0.00	0.00	0.50
C119	CONDUIT	0.00	0	00:00	0.00	0.00	0.06
C12	CHANNEL	29.57	0	01:15	0.04	0.01	0.50
C120	CONDUIT	0.00	0	00:00	0.00	0.00	0.50
C121	CONDUIT	0.00	0	00:00	0.00	0.00	0.08
C122	CONDUIT	0.00	0	00:00	0.00	0.00	0.50
C123	CONDUIT	28.66	0	01:09	0.16	0.04	0.64
C124	CONDUIT	31.86	0	01:09	0.17	0.05	0.66
C125	CONDUIT	22.27	0	01:10	0.11	0.03	0.66
C126	CONDUIT	33.87	0	01:10	0.23	0.04	0.66
C127	CONDUIT	28.96	0	01:11	0.20	0.07	0.59
C128	CONDUIT	23.17	0	01:11	0.12	0.03	0.64
C129	CONDUIT	10.47	0	01:12	0.09	0.02	0.59
C13	CHANNEL	6.43	0	01:25	0.10	0.00	0.52
C130	CONDUIT	8.28	0	01:12	0.07	0.01	0.54
C131	CONDUIT	33.56	0	01:13	0.19	0.06	0.61
C132	CONDUIT	33.10	0	01:13	0.16	0.05	0.66
C133	CONDUIT	28.32	0	01:12	0.13	0.06	0.68
C134	CONDUIT	27.19	0	01:12	0.12	0.05	0.68
C135	CONDUIT	43.08	0	01:11	0.18	0.11	0.76
C136	CONDUIT	204.35	0	02:00	0.65	0.40	0.81
C137	CONDUIT	38.32	0	01:13	0.22	0.07	0.68
C138	CONDUIT	37.28	0	01:15	0.21	0.09	0.67
C139	CONDUIT	48.70	0	01:13	0.21	0.09	0.76
C14	CHANNEL	34.98	0	01:14	0.04	0.01	0.54
C140	CONDUIT	15.99	0	01:13	0.09	0.02	0.63
C141	CONDUIT	15.58	0	01:15	0.44	0.03	0.27
C142	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C143	CONDUIT	0.00	0	00:00	0.00	0.00	0.49
C144	CONDUIT	0.00	0	00:00	0.00	0.00	0.46
C145	CONDUIT	0.00	0	00:00	0.00	0.00	0.50
C146	CONDUIT	0.00	0	00:00	0.00	0.00	0.29
C147	CONDUIT	0.00	0	00:00	0.00	0.00	0.45
C148	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C149	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C15	CHANNEL	23.43	0	01:26	0.05	0.00	0.51
C150	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C151	CHANNEL	28.65	0	01:11	0.04	0.00	0.57
C151_1	CHANNEL	14.62	0	01:16	0.45	0.01	0.11
C152	CHANNEL	14.35	0	01:37	0.48	0.01	0.11
C153	CHANNEL	7.49	0	01:39	0.05	0.00	0.53
C154	CHANNEL	18.12	0	01:24	0.02	0.00	0.53
C155	CHANNEL	8.00	0	01:38	0.06	0.00	0.52

C156	CHANNEL	25.91	0	01:13	0.05	0.00	0.53
C157	CHANNEL	9.02	0	01:22	0.03	0.00	0.53
C158	CHANNEL	41.82	0	01:21	0.09	0.01	0.59
C159	CHANNEL	38.27	0	01:25	0.04	0.01	0.59
C16	CHANNEL	0.27	0	01:30	0.05	0.00	0.49
C160	CHANNEL	60.15	0	01:37	0.05	0.01	0.59
C161	CHANNEL	61.95	0	01:38	0.11	0.01	0.57
C162	CHANNEL	62.06	0	01:35	0.09	0.01	0.57
C163	CHANNEL	64.02	0	01:33	0.06	0.01	0.59
C164	CHANNEL	65.37	0	01:34	0.05	0.01	0.59
C165	CHANNEL	6.45	0	01:39	0.05	0.00	0.54
C166	CHANNEL	67.70	0	01:10	0.08	0.01	0.59
C167	CHANNEL	71.35	0	01:31	0.35	0.21	0.23
C168	CHANNEL	72.94	0	01:30	0.09	0.01	0.64
C169	CHANNEL	85.28	0	01:25	0.07	0.01	0.59
C17	CHANNEL	14.88	0	01:20	0.03	0.00	0.45
C170	CHANNEL	57.57	0	01:30	0.29	0.17	0.22
C171	CHANNEL	34.37	0	01:23	0.06	0.00	0.59
C172	CHANNEL	13.20	0	01:21	0.06	0.00	0.54
C173	CHANNEL	39.54	0	01:12	0.05	0.01	0.54
C174	CHANNEL	0.00	0	00:00	0.00	0.00	0.50
C175	CONDUIT	32.02	0	01:41	0.08	0.07	0.63
C176	CONDUIT	31.41	0	01:41	0.29	0.07	0.20
C177	CONDUIT	36.15	0	01:14	0.28	0.07	0.58
C178	CONDUIT	36.58	0	01:14	0.17	0.05	0.68
C179	CONDUIT	20.76	0	01:08	0.27	0.06	0.92
C18	CHANNEL	0.00	0	00:00	0.00	0.00	0.44
C180	CONDUIT	12.29	0	01:13	0.08	0.02	0.57
C181	CONDUIT	13.20	0	01:13	0.09	0.02	0.59
C182	CONDUIT	18.84	0	01:10	0.27	0.06	0.93
C183	CONDUIT	18.98	0	01:08	0.27	0.06	0.93
C184	CONDUIT	8.00	0	01:13	0.07	0.01	0.55
C185	CONDUIT	8.38	0	01:13	0.06	0.01	0.54
C186	CONDUIT	22.69	0	01:08	0.25	0.07	0.92
C187	CONDUIT	6.16	0	01:10	0.06	0.01	0.58
C188	CONDUIT	5.72	0	01:12	0.05	0.01	0.58
C189	CONDUIT	3.33	0	01:11	0.06	0.00	0.55
C19	CHANNEL	0.00	0	00:00	0.00	0.00	0.41
C190	CONDUIT	35.18	0	01:21	0.23	0.06	0.63
C191	CONDUIT	35.22	0	01:20	0.17	0.06	0.65
C192	CONDUIT	32.94	0	01:08	0.29	0.11	0.93
C193	CONDUIT	20.98	0	01:08	0.33	0.05	0.82
C194	CONDUIT	5.84	0	01:11	0.10	0.01	0.55
C195	CONDUIT	4.86	0	01:23	0.05	0.01	0.66
C196	CONDUIT	1.68	0	01:11	0.06	0.00	0.58
C197	CONDUIT	9.11	0	01:16	0.11	0.02	0.55
C198	CONDUIT	10.89	0	01:13	0.07	0.02	0.66
C199	CONDUIT	19.98	0	01:10	0.20	0.06	0.91
C2	CHANNEL	7.94	0	01:22	0.09	0.00	0.51
C20	CHANNEL	36.82	0	01:13	0.11	0.01	0.55
C200	CONDUIT	18.91	0	01:16	0.19	0.05	0.91
C201	CONDUIT	15.75	0	01:16	0.18	0.04	0.90
C202	CONDUIT	17.02	0	01:13	0.16	0.05	0.90
C203	CONDUIT	22.56	0	01:17	0.12	0.03	0.65
C204	CONDUIT	23.07	0	01:17	0.15	0.03	0.58
C205	CONDUIT	23.92	0	01:15	0.27	0.08	0.93
C206	CONDUIT	32.10	0	01:10	0.25	0.09	0.92
C207	CONDUIT	18.36	0	01:10	0.19	0.06	0.92
C208	CONDUIT	20.54	0	01:10	0.21	0.06	0.91
C209	CONDUIT	11.49	0	01:08	0.19	0.04	0.91
C21	CHANNEL	0.00	0	00:00	0.00	0.00	0.45
C210	CONDUIT	3.86	0	01:11	0.04	0.01	0.59
C211	CONDUIT	4.62	0	01:11	0.05	0.01	0.59
C212	CONDUIT	0.29	0	01:15	0.00	0.00	0.50
C213	CONDUIT	1.46	0	01:13	0.01	0.00	0.52
C214	CONDUIT	26.24	0	01:07	0.30	0.09	0.93
C215	CONDUIT	19.53	0	01:11	0.15	0.02	0.56
C216	CONDUIT	12.75	0	01:14	0.08	0.02	0.58
C217	CONDUIT	26.19	0	01:07	0.33	0.09	0.95
C218	CONDUIT	28.78	0	01:14	0.15	0.04	0.63
C219	CONDUIT	28.64	0	01:15	0.21	0.04	0.62
C22	CHANNEL	0.00	0	00:00	0.00	0.00	0.26
C220	CONDUIT	10.09	0	01:12	0.10	0.02	0.51
C221	CONDUIT	21.43	0	01:09	0.19	0.07	0.88
C222	CONDUIT	15.60	0	01:10	0.26	0.05	0.94
C223	CONDUIT	6.34	0	01:11	0.07	0.01	0.56
C224	CONDUIT	4.55	0	01:13	0.03	0.01	0.57
C225	CONDUIT	14.26	0	01:07	0.25	0.05	0.96
C226	CONDUIT	16.14	0	01:12	0.21	0.05	0.93
C227	CONDUIT	13.84	0	01:15	0.10	0.01	0.53
C228	CONDUIT	13.80	0	01:16	0.11	0.01	0.52
C229	CONDUIT	14.18	0	01:16	0.23	0.05	0.92

C23	CONDUIT	2.22	0	01:18	0.11	0.00	0.23
C23_1	CHANNEL	22.86	0	01:10	0.11	0.00	0.33
C23_2	CHANNEL	21.26	0	01:10	0.30	0.00	0.19
C23_3	CONDUIT	4.85	0	01:11	0.07	0.01	0.67
C23_4	CONDUIT	2.62	0	01:27	0.02	0.01	0.77
C23_5	CONDUIT	0.00	0	00:00	0.00	0.00	0.28
C23_6	CONDUIT	0.00	0	00:00	0.00	0.00	0.36
C23_7	CONDUIT	0.00	0	00:00	0.00	0.00	0.36
C23_8	CONDUIT	0.00	0	00:00	0.00	0.00	0.44
C230	CONDUIT	21.47	0	01:08	0.26	0.07	0.93
C231	CONDUIT	9.36	0	01:14	0.06	0.02	0.59
C232	CONDUIT	14.81	0	01:16	0.11	0.02	0.61
C233	CONDUIT	19.52	0	01:10	0.25	0.06	0.94
C234	CONDUIT	37.13	0	01:16	0.18	0.07	0.65
C235	CONDUIT	37.00	0	01:16	0.22	0.06	0.65
C236	CONDUIT	6.86	0	01:17	0.04	0.01	0.61
C237	CONDUIT	16.45	0	01:07	0.26	0.05	0.94
C238	CONDUIT	3.08	0	01:11	0.03	0.00	0.55
C239	CONDUIT	2.72	0	01:16	0.47	0.00	0.12
C24	CHANNEL	0.00	0	00:00	0.00	0.00	0.05
C240	CONDUIT	18.70	0	01:11	0.18	0.03	0.60
C241	CONDUIT	20.26	0	01:10	0.12	0.03	0.61
C242	CONDUIT	38.25	0	01:10	0.29	0.12	0.91
C243	CONDUIT	35.56	0	01:10	0.26	0.04	0.56
C244	CONDUIT	21.69	0	01:11	0.16	0.02	0.58
C245	CONDUIT	21.29	0	01:07	0.28	0.07	0.93
C246	CONDUIT	37.18	0	01:15	0.19	0.06	0.63
C247	CONDUIT	37.03	0	01:15	0.24	0.04	0.64
C248	CONDUIT	14.98	0	01:11	0.13	0.03	0.57
C249	CONDUIT	17.93	0	01:08	0.23	0.06	0.92
C25	CHANNEL	39.36	0	01:11	0.05	0.01	0.53
C250	CONDUIT	40.96	0	01:10	0.20	0.13	0.91
C251	CONDUIT	28.48	0	01:11	0.19	0.08	0.91
C252	CONDUIT	28.40	0	01:11	0.20	0.09	0.91
C253	CONDUIT	14.01	0	01:14	0.17	0.05	0.91
C254	CONDUIT	12.97	0	01:11	0.18	0.04	0.91
C255	CONDUIT	9.28	0	01:14	0.19	0.03	0.90
C256	CONDUIT	4.78	0	01:11	0.06	0.01	0.55
C257	CONDUIT	0.00	0	00:00	0.00	0.00	0.16
C258	CONDUIT	4.55	0	01:11	0.06	0.01	0.66
C259	CONDUIT	8.97	0	01:09	0.16	0.02	0.86
C26	CONDUIT	4.24	0	01:12	0.04	0.01	0.52
C26_1	CHANNEL	28.60	0	01:33	0.21	0.02	0.18
C26_2	CHANNEL	63.54	0	01:10	0.10	0.01	0.52
C260	CONDUIT	0.60	0	01:22	0.01	0.00	0.38
C261	CONDUIT	0.46	0	01:21	0.01	0.00	0.39
C262	CONDUIT	8.17	0	01:09	0.18	0.02	0.87
C263	CONDUIT	6.54	0	01:10	0.14	0.02	0.84
C264	CONDUIT	0.46	0	01:22	0.01	0.00	0.37
C265	CONDUIT	0.40	0	01:30	0.01	0.00	0.35
C266	CONDUIT	8.67	0	01:09	0.14	0.02	0.83
C267	CONDUIT	8.09	0	01:09	0.13	0.02	0.83
C268	CONDUIT	0.33	0	01:23	0.01	0.00	0.35
C269	CONDUIT	0.37	0	01:24	0.00	0.00	0.43
C27	CHANNEL	56.40	0	01:10	0.11	0.01	0.61
C270	CONDUIT	9.69	0	01:08	0.20	0.02	0.90
C271	CONDUIT	0.24	0	01:21	0.01	0.00	0.52
C272	CONDUIT	0.06	0	01:30	0.11	0.00	0.03
C273	CONDUIT	4.83	0	01:09	0.06	0.01	0.58
C274	CONDUIT	32.32	0	01:10	0.25	0.10	0.83
C275	CONDUIT	20.90	0	01:10	0.20	0.07	0.83
C276	CONDUIT	22.50	0	01:10	0.22	0.05	0.79
C277	CONDUIT	12.85	0	01:14	0.16	0.04	0.79
C278	CONDUIT	32.41	0	01:13	0.20	0.06	0.64
C279	CONDUIT	31.71	0	01:15	0.19	0.09	0.66
C28	CHANNEL	65.99	0	01:10	0.09	0.01	0.51
C280	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C281	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C282	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C283	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C284	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C285	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C286	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C287	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C288	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C289	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C29	CHANNEL	21.47	0	01:21	0.24	0.06	0.17
C290	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C291	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C292	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C293	CONDUIT	0.00	0	00:00	0.00	0.00	0.44
C294	CONDUIT	0.00	0	00:00	0.00	0.00	0.45

C295	CONDUIT	8.25	0	01:10	0.15	0.05	1.00
C296	CONDUIT	29.68	0	01:10	0.22	0.17	1.00
C297	CONDUIT	23.92	0	01:09	0.23	0.13	1.00
C298	CONDUIT	19.27	0	01:08	0.28	0.11	1.00
C299	CONDUIT	11.68	0	01:08	0.22	0.07	0.98
C3	CHANNEL	62.58	0	01:11	0.11	0.01	0.51
C30	CHANNEL	62.85	0	01:24	0.34	0.02	0.23
C300	CHANNEL	23.02	0	01:09	0.03	0.00	0.56
C301	CHANNEL	0.00	0	00:00	0.00	0.00	0.49
C302	CHANNEL	0.00	0	00:00	0.00	0.00	0.43
C303	CHANNEL	0.14	0	01:33	0.01	0.00	0.44
C304	CHANNEL	1.11	0	01:28	0.05	0.00	0.07
C305	CHANNEL	34.60	0	01:30	0.11	0.01	0.49
C306	CHANNEL	58.21	0	01:09	0.09	0.01	0.49
C307	CHANNEL	37.39	0	01:26	0.05	0.00	0.56
C308	CHANNEL	29.25	0	01:20	0.03	0.00	0.55
C309	CHANNEL	79.97	0	01:10	0.11	0.01	0.54
C31	CONDUIT	23.22	0	01:15	0.15	0.05	0.64
C310	CHANNEL	4.27	0	01:24	0.05	0.00	0.51
C311	CHANNEL	20.44	0	01:13	0.03	0.00	0.50
C312	CHANNEL	0.00	0	00:00	0.00	0.00	0.47
C313	CHANNEL	0.00	0	00:00	0.00	0.00	0.47
C314	CHANNEL	0.00	0	00:00	0.00	0.00	0.47
C315	CHANNEL	0.00	0	00:00	0.00	0.00	0.49
C316	CHANNEL	34.83	0	01:19	0.04	0.01	0.55
C317	CHANNEL	31.60	0	01:26	0.07	0.00	0.55
C318	CHANNEL	61.30	0	01:11	0.07	0.01	0.56
C319	CHANNEL	28.29	0	01:30	0.11	0.00	0.56
C32	CHANNEL	34.48	0	01:10	0.27	0.02	0.18
C320	CHANNEL	24.45	0	01:30	0.02	0.00	0.57
C321	CHANNEL	24.20	0	01:30	0.28	0.01	0.15
C322	CHANNEL	48.16	0	01:31	0.04	0.01	0.54
C323	CHANNEL	58.20	0	01:29	0.07	0.01	0.61
C324	CONDUIT	48.41	0	01:15	0.40	0.06	0.58
C325	CONDUIT	48.53	0	01:14	0.22	0.08	0.67
C326	CONDUIT	10.98	0	01:10	0.11	0.02	0.65
C327	CONDUIT	7.52	0	01:10	0.08	0.01	0.65
C328	CONDUIT	12.85	0	01:14	0.08	0.02	0.60
C329	CONDUIT	12.45	0	01:15	0.11	0.01	0.51
C33	CHANNEL	39.63	0	01:10	0.44	0.01	0.15
C330	CONDUIT	4.75	0	01:14	0.08	0.01	0.43
C331	CONDUIT	22.19	0	01:10	0.18	0.05	0.78
C332	CONDUIT	5.31	0	01:10	0.06	0.01	0.60
C333	CONDUIT	3.89	0	01:12	0.06	0.01	0.42
C334	CONDUIT	14.73	0	01:09	0.15	0.03	0.82
C335	CONDUIT	6.85	0	01:10	0.09	0.01	0.67
C336	CONDUIT	0.01	0	01:21	0.02	0.00	0.17
C337	CONDUIT	0.35	0	01:18	0.01	0.00	0.49
C338	CONDUIT	4.62	0	01:11	0.06	0.01	0.61
C339	CONDUIT	4.35	0	01:11	0.06	0.01	0.61
C34	CONDUIT	28.68	0	01:27	2.81	0.01	0.16
C34_1	CONDUIT	6.19	0	01:27	0.11	0.01	0.35
C34_2	CONDUIT	6.18	0	01:27	0.13	0.02	0.66
C340	CONDUIT	6.23	0	01:13	0.05	0.01	0.61
C341	CONDUIT	5.25	0	01:11	0.07	0.01	0.61
C342	CONDUIT	4.29	0	01:14	0.04	0.01	0.60
C343	CONDUIT	5.35	0	01:19	0.09	0.01	0.45
C344	CONDUIT	14.72	0	01:10	0.18	0.03	0.81
C345	CONDUIT	36.08	0	01:20	0.19	0.05	0.63
C346	CONDUIT	36.05	0	01:20	0.23	0.04	0.57
C347	CONDUIT	2.57	0	01:17	0.09	0.01	0.41
C348	CONDUIT	11.59	0	01:11	0.16	0.02	0.77
C349	CONDUIT	0.00	0	00:00	0.00	0.00	0.48
C35	CONDUIT	93.53	0	02:24	0.94	0.14	0.64
C35_1	CONDUIT	6.20	0	01:27	0.10	0.01	0.36
C35_2	CONDUIT	6.34	0	01:25	0.11	0.02	0.68
C350	CONDUIT	0.00	0	00:00	0.00	0.00	0.41
C351	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C352	CONDUIT	0.00	0	00:00	0.00	0.00	0.43
C353	CONDUIT	3.67	0	01:10	0.07	0.01	0.58
C354	CONDUIT	2.68	0	01:10	0.05	0.00	0.58
C355	CONDUIT	3.20	0	01:10	0.07	0.01	0.60
C356	CONDUIT	4.21	0	01:11	0.09	0.01	0.60
C357	CONDUIT	12.89	0	01:10	0.18	0.03	0.72
C358	CONDUIT	2.75	0	01:20	0.03	0.01	0.43
C359	CONDUIT	3.57	0	01:10	0.07	0.01	0.56
C36	CONDUIT	113.57	0	02:16	0.95	0.12	0.68
C36_1	CONDUIT	6.00	0	01:25	0.10	0.01	0.36
C36_2	CONDUIT	5.72	0	01:26	0.11	0.01	0.68
C360	CONDUIT	11.32	0	01:22	0.08	0.02	0.53
C361	CONDUIT	11.23	0	01:22	0.27	0.02	0.48
C362	CONDUIT	1.44	0	01:21	0.05	0.00	0.62

C363	CONDUIT	1.18	0	01:19	0.04	0.00	0.62
C364	CONDUIT	1.71	0	01:23	0.04	0.00	0.61
C365	CONDUIT	1.03	0	01:19	0.04	0.00	0.61
C366	CONDUIT	1.47	0	01:26	0.03	0.00	0.55
C367	CONDUIT	0.52	0	01:33	0.02	0.00	0.42
C368	CONDUIT	3.20	0	01:20	0.09	0.01	0.70
C369	CONDUIT	3.03	0	01:21	0.08	0.01	0.69
C37	CONDUIT	252.83	0	01:41	0.86	0.51	0.84
C37_1	CONDUIT	6.01	0	01:24	0.06	0.01	0.44
C37_2	CONDUIT	14.96	0	01:10	0.19	0.05	0.85
C370	CONDUIT	0.62	0	01:55	0.02	0.00	0.40
C371	CONDUIT	1.24	0	01:22	0.02	0.00	0.54
C372	CONDUIT	1.35	0	01:18	0.04	0.00	0.64
C373	CONDUIT	1.77	0	01:18	0.05	0.00	0.64
C374	CONDUIT	0.00	0	00:00	0.00	0.00	0.41
C375	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C376	CONDUIT	0.23	0	01:33	0.01	0.00	0.38
C377	CONDUIT	0.00	0	01:38	0.00	0.00	0.43
C38	CONDUIT	5.16	0	01:25	0.03	0.01	0.57
C39	CONDUIT	5.36	0	01:23	0.04	0.01	0.58
C4	CHANNEL	8.29	0	01:21	0.08	0.00	0.55
C40	CONDUIT	16.33	0	01:21	0.09	0.03	0.64
C41	CONDUIT	16.57	0	01:19	0.10	0.03	0.64
C42	CONDUIT	12.34	0	01:16	0.07	0.03	0.64
C43	CONDUIT	18.20	0	01:11	0.14	0.04	0.64
C44	CONDUIT	2.46	0	01:13	0.06	0.01	0.52
C45	CONDUIT	1.67	0	01:18	0.06	0.00	0.52
C46	CONDUIT	0.00	0	00:00	0.00	0.00	0.50
C47	CONDUIT	0.00	0	00:00	0.00	0.00	0.47
C48	CONDUIT	4.41	0	01:18	0.06	0.01	0.52
C49	CONDUIT	1.27	0	01:24	0.06	0.00	0.53
C5	CHANNEL	6.55	0	01:23	0.03	0.00	0.55
C50	CONDUIT	9.63	0	01:26	0.06	0.01	0.57
C51	CONDUIT	9.57	0	01:27	0.55	0.01	0.31
C52	CONDUIT	0.00	0	00:00	0.00	0.00	0.25
C53	CONDUIT	0.00	0	00:00	0.00	0.00	0.25
C54	CONDUIT	0.00	0	00:00	0.00	0.00	0.25
C55	CONDUIT	9.72	0	01:12	0.36	0.02	0.51
C56	CONDUIT	12.29	0	01:12	0.07	0.02	0.60
C57	CONDUIT	10.80	0	01:11	0.06	0.02	0.60
C58	CONDUIT	13.41	0	01:10	0.10	0.03	0.59
C59	CONDUIT	66.25	0	01:10	0.27	0.14	0.76
C6	CHANNEL	6.09	0	01:31	0.14	0.00	0.11
C6_2	CHANNEL	27.91	0	01:25	0.04	0.00	0.55
C60	CONDUIT	63.90	0	01:11	0.24	0.10	0.75
C61	CONDUIT	8.44	0	01:11	0.06	0.01	0.56
C62	CONDUIT	8.38	0	01:11	0.24	0.01	0.27
C63	CONDUIT	1.51	0	01:12	0.02	0.00	0.46
C64	CONDUIT	6.05	0	01:10	0.07	0.01	0.48
C65	CONDUIT	1.49	0	01:11	0.02	0.00	0.45
C66	CONDUIT	2.56	0	01:10	0.03	0.00	0.42
C67	CONDUIT	0.99	0	01:13	0.02	0.00	0.44
C68	CONDUIT	5.47	0	01:10	0.07	0.01	0.45
C69	CONDUIT	4.40	0	01:10	0.06	0.01	0.45
C7	CHANNEL	64.30	0	01:23	0.05	0.01	0.59
C70	CONDUIT	1.27	0	01:14	0.01	0.00	0.49
C71	CONDUIT	7.95	0	01:10	0.23	0.01	0.51
C72	CONDUIT	3.36	0	01:13	0.04	0.01	0.48
C73	CONDUIT	2.49	0	01:10	0.03	0.00	0.44
C74	CONDUIT	0.45	0	01:13	0.04	0.00	0.29
C75	CONDUIT	0.00	0	00:00	0.00	0.00	0.26
C76	CONDUIT	0.00	0	00:00	0.00	0.00	0.26
C77	CONDUIT	0.00	0	00:00	0.00	0.00	0.26
C78	CONDUIT	0.00	0	00:00	0.00	0.00	0.40
C79	CONDUIT	0.00	0	00:00	0.00	0.00	0.18
C8	CHANNEL	42.12	0	01:29	0.11	0.01	0.61
C80	CONDUIT	0.00	0	00:00	0.00	0.00	0.15
C81	CONDUIT	0.00	0	00:00	0.00	0.00	0.50
C82	CONDUIT	0.00	0	00:00	0.00	0.00	0.06
C83	CONDUIT	0.00	0	00:00	0.00	0.00	0.50
C84	CONDUIT	0.00	0	00:00	0.00	0.00	0.01
C85	CHANNEL	28.00	0	01:33	0.04	0.00	0.56
C85_1	CONDUIT	2.01	0	01:24	0.03	0.00	0.43
C85_2	CONDUIT	4.82	0	01:12	0.11	0.01	0.85
C86	CONDUIT	2.68	0	01:24	0.04	0.01	0.58
C87	CONDUIT	3.53	0	01:30	0.03	0.00	0.58
C88	CONDUIT	3.25	0	01:30	0.03	0.00	0.58
C89	CONDUIT	4.32	0	01:30	0.04	0.01	0.58
C9	CHANNEL	17.51	0	01:24	0.10	0.00	0.55
C90	CONDUIT	3.87	0	01:31	0.05	0.01	0.42
C91	CONDUIT	0.00	0	00:00	0.00	0.00	0.35
C92	CONDUIT	0.00	0	00:00	0.00	0.00	0.29

C93	CONDUIT	0.00	0	00:00	0.00	0.00	0.50
C94	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C95	CONDUIT	0.00	0	00:00	0.00	0.00	0.50
C96	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C97	CONDUIT	0.00	0	00:00	0.00	0.00	0.29
C98	CONDUIT	0.00	0	00:00	0.00	0.00	0.29
C99	CONDUIT	0.00	0	00:00	0.00	0.00	0.29
CB-100_(CB)	CONDUIT	32.83	0	01:04	0.67	0.78	1.00
CB-101_(CB)	CONDUIT	54.38	0	02:06	1.11	0.91	1.00
CB-102_(CB)	CONDUIT	190.12	0	02:04	3.87	3.15	1.00
CB-103_(CB)	CONDUIT	59.99	0	02:06	1.22	1.47	1.00
CB-104_(CB)	CONDUIT	44.67	0	01:05	0.91	1.08	1.00
CB-105_(CB)	CONDUIT	23.39	0	01:06	0.50	0.62	1.00
CB-106_(CB)	CONDUIT	24.64	0	01:03	0.68	0.58	1.00
CB-108_(CB)	CONDUIT	23.11	0	01:10	0.47	0.39	1.00
CB-109_(CB)	CONDUIT	36.55	0	01:05	0.75	0.99	1.00
CB-112_(CB)	CONDUIT	41.76	0	01:07	0.85	1.01	1.00
CB-116_(CB)	CONDUIT	19.76	0	01:06	0.44	0.47	1.00
CB-117_(CB)	CONDUIT	27.93	0	01:10	0.74	0.67	1.00
CB-119_(CB)	CONDUIT	34.52	0	01:03	0.72	0.82	1.00
CB-120_(2)_(CB)	CONDUIT	74.09	0	01:11	1.51	1.68	1.00
CB-120_(CB)	CONDUIT	44.18	0	01:05	0.90	1.04	1.00
CB-122_(CB)	CONDUIT	7.71	0	01:07	0.25	0.19	1.00
CB-123_(CB)	CONDUIT	17.90	0	01:05	0.62	0.43	1.00
CB-125_(CB)	CONDUIT	27.34	0	02:15	0.56	0.67	1.00
CB-126_(CB)	CONDUIT	49.75	0	02:15	1.01	1.20	1.00
CB-127_(CB)	CONDUIT	77.03	0	02:15	1.61	1.83	1.00
CB-130_(CB)	CONDUIT	25.08	0	01:07	0.53	0.60	1.00
CB-131_(CB)	CONDUIT	29.04	0	01:05	0.76	0.64	1.00
CB-133_(2)_(CB)	CONDUIT	6.88	0	01:06	0.21	0.15	1.00
CB-134_(CB)	CONDUIT	21.79	0	01:04	0.67	0.51	1.00
CB-136_(2)_(CB)	CONDUIT	15.89	0	01:07	0.41	0.42	1.00
CB-136_(CB)	CONDUIT	9.37	0	01:07	0.30	0.25	1.00
CB-138_(CB)	CONDUIT	46.82	0	01:05	0.95	1.11	1.00
CB-140_(2)_(1)_(CB)	CONDUIT	57.86	0	01:06	1.18	0.98	1.00
CB-140_(2)_(CB)	CONDUIT	67.73	0	01:09	1.38	1.58	1.00
CB-140_(CB)	CONDUIT	67.96	0	01:13	1.38	1.59	1.00
CB-141_(CB)	CONDUIT	25.36	0	01:19	0.52	0.61	1.00
CB-144_(CB)	CONDUIT	65.87	0	01:07	1.34	1.58	1.00
CB-149_(CB)	CONDUIT	20.46	0	01:05	0.48	0.49	1.00
CB-150_(CB)	CONDUIT	33.57	0	01:10	0.68	0.67	1.00

CB-153_(CB)	CONDUIT	21.91	0	01:07	0.54	0.31	1.00
CB-159_(3)_(CB)	CONDUIT	40.59	0	01:05	0.39	0.10	1.00
CB-159_(CB)	CONDUIT	19.73	0	01:06	0.34	0.05	1.00
CB-160_(CB)	CONDUIT	29.93	0	01:05	0.62	0.71	1.00
CB-161_(CB)	CONDUIT	30.01	0	01:04	0.63	0.71	1.00
CB-164_(2)_(CB)	CONDUIT	98.13	0	01:05	0.64	0.52	1.00
CB-164_(CB)	CONDUIT	57.63	0	01:05	0.56	0.33	1.00
CB-166_(CB)	CONDUIT	111.06	0	01:04	0.69	0.59	1.00
CB-168_(CB)_1	CONDUIT	28.20	0	01:07	0.43	0.15	1.00
CB-168_(CB)_2	CONDUIT	118.95	0	01:04	0.73	0.63	1.00
CB-170_(CB)	CONDUIT	62.41	0	01:06	0.87	0.34	1.00
CB-175_(2)_(CB)	CONDUIT	88.26	0	01:04	0.62	0.46	1.00
CB-175_(CB)	CONDUIT	77.90	0	01:04	0.64	0.42	1.00
CB-177_(CB)	CONDUIT	44.13	0	01:02	0.86	0.61	1.00
CB-180_(CB)	CONDUIT	46.93	0	01:05	0.96	1.11	1.00
CB-185_(CB)	CONDUIT	34.89	0	01:41	0.71	0.83	1.00
CB-187_(CB)	CONDUIT	78.26	0	01:41	1.59	1.85	1.00
CB-189_(CB)	CONDUIT	132.75	0	01:41	2.70	3.15	1.00
CB-209_(CB)	CONDUIT	43.70	0	01:04	0.52	0.23	1.00
CB-211_(CB)	CONDUIT	29.76	0	01:03	0.61	0.70	1.00
CB-215_(CB)	CONDUIT	15.56	0	01:10	0.32	0.38	1.00
CB-228_(CB)	CONDUIT	64.03	0	01:04	0.55	0.35	1.00
CB-229_(CB)	CONDUIT	108.49	0	01:04	0.67	0.57	1.00
CB-230_(CB)	CONDUIT	121.43	0	01:08	0.74	0.65	1.00
CB-231_(CB)	CONDUIT	55.55	0	01:05	0.66	0.30	1.00
CB-233_(CB)	CONDUIT	39.04	0	01:07	0.42	0.21	1.00
CB-234_(CB)	CONDUIT	56.79	0	01:08	0.40	0.31	1.00
CB-235_(CB)	CONDUIT	35.10	0	01:06	0.34	0.18	1.00
CB-236_(CB)	CONDUIT	81.08	0	01:08	0.58	0.43	1.00
CB-237_(CB)	CONDUIT	52.25	0	01:05	0.60	0.28	1.00
CB-239_(1)_(1)_(CB)	CONDUIT	134.10	0	01:04	0.89	1.13	1.00
CB-239_(1)_(CB)	CONDUIT	118.18	0	01:04	0.89	0.68	1.00
CB-239_(CB)	CONDUIT	86.66	0	01:04	0.71	0.42	1.00
CB-240_(CB)	CONDUIT	154.69	0	01:04	0.94	0.67	1.00
CB-245_(1)_(CB)	CONDUIT	68.19	0	01:05	0.60	0.37	1.00
CB-245_(CB)	CONDUIT	162.62	0	01:04	0.99	0.85	1.00
CB-253_(CB)	CONDUIT	38.18	0	01:04	0.46	0.28	1.00
CB-257_(CB)	CONDUIT	72.49	0	01:04	0.52	0.54	1.00
CB-264_(CB)	CONDUIT	28.37	0	01:05	0.68	0.40	1.00
CB-268_(CB)	CONDUIT	21.71	0	01:08	0.32	0.16	1.00
CB-271_(1)_(CB)	CONDUIT	77.36	0	01:04	0.63	0.42	1.00

CB-271_(CB)	CONDUIT	39.88	0	01:04	0.50	0.21	1.00
CB-273_(CB)	CONDUIT	44.77	0	01:02	0.85	0.64	1.00
CB-280_(1)_(CB)	CONDUIT	81.58	0	01:04	0.54	0.44	1.00
CB-280_(CB)	CONDUIT	32.72	0	01:07	0.42	0.17	1.00
CB-284_(CB)	CONDUIT	50.08	0	01:09	0.41	0.26	1.00
CB-288_(CB)	CONDUIT	55.06	0	01:02	0.94	0.78	1.00
CB-294_(CB)	CONDUIT	37.83	0	01:07	0.29	0.20	1.00
CB-386_(CB)	CONDUIT	18.99	0	01:05	0.38	0.13	1.00
CB-387_(CB)	CONDUIT	39.95	0	01:04	0.46	0.27	1.00
CB-388_(CB)	CONDUIT	26.42	0	01:05	0.32	0.15	1.00
CB-391_(CB)	CONDUIT	23.79	0	01:04	0.41	0.08	1.00
CB-397_(CB)	CONDUIT	53.08	0	01:08	0.50	0.19	1.00
CB-398_(CB)	CONDUIT	75.60	0	01:05	0.46	0.27	1.00
CB-406_(CB)	CONDUIT	49.84	0	01:07	0.40	0.15	1.00
CB-408_(CB)	CONDUIT	25.25	0	01:09	0.34	0.08	1.00
CB-411_(CB)	CONDUIT	36.02	0	01:11	0.36	0.09	1.00
CB-413_(CB)	CONDUIT	147.63	0	01:06	0.51	0.37	1.00
CB-416_(CB)	CONDUIT	53.52	0	01:08	0.37	0.13	1.00
CB-418_(CB)	CONDUIT	141.39	0	01:05	0.50	0.36	1.00
CB-421_(CB)	CONDUIT	45.46	0	01:06	0.42	0.11	1.00
CB-423_(CB)	CONDUIT	104.94	0	01:07	0.49	0.26	1.00
CB-424_(CB)	CONDUIT	133.74	0	01:07	0.46	0.34	1.00
CB-427_(CB)	CONDUIT	67.48	0	01:06	0.42	0.17	1.00
CB-430_(CB)	CONDUIT	127.27	0	01:06	0.48	0.31	1.00
CB-432_(CB)	CONDUIT	28.53	0	01:07	0.55	0.41	1.00
CB-436_(CB)	CONDUIT	43.55	0	01:07	0.60	0.69	1.00
CB-439_(CB)	CONDUIT	21.25	0	01:01	0.49	0.30	1.00
CB-444_(CB)	CONDUIT	24.28	0	01:01	0.55	0.34	1.00
CB-98_(CB)	CONDUIT	20.44	0	01:03	0.43	0.48	1.00
CB-99_(CB)	CONDUIT	42.32	0	01:03	0.86	1.01	1.00
LCB-1_(86)	CONDUIT	14.71	0	01:10	0.26	0.11	1.00
LCB-1_(87)	CONDUIT	55.76	0	01:09	0.43	0.40	1.00
LCB-1_(88)	CONDUIT	43.54	0	01:10	0.42	0.31	1.00
LCB-1_(89)	CONDUIT	32.88	0	01:10	0.46	0.24	1.00
LCB-1_(89)_(1)	CONDUIT	16.25	0	01:10	0.37	0.12	1.00
x1000-116	CONDUIT	84.24	0	01:31	1.11	0.37	0.38
OCB03	ORIFICE	27.19	0	01:23			1.00
OCB04	ORIFICE	30.46	0	01:23			1.00
OCB06	ORIFICE	17.74	0	01:32			1.00
OCB07	ORIFICE	17.74	0	01:32			1.00
OCB09	ORIFICE	6.57	0	01:24			1.00
OCB10	ORIFICE	6.57	0	01:24			1.00
OCB12	ORIFICE	23.36	0	01:30			1.00
OCB13	ORIFICE	23.36	0	01:30			1.00
OCB15	ORIFICE	9.38	0	01:21			1.00
OCB16	ORIFICE	17.89	0	01:21			1.00
OCB18	ORIFICE	17.05	0	01:10			1.00
OCB19	ORIFICE	17.05	0	01:10			1.00
OCB22-CBMH23	ORIFICE	24.64	0	01:38			1.00
OCB24-CBMH25	ORIFICE	24.21	0	01:34			1.00
OCB26-CBMH27	ORIFICE	24.48	0	01:31			1.00
OCB28-CBMH29	ORIFICE	24.09	0	01:26			1.00
OCB30-CBMH31	ORIFICE	29.32	0	01:20			1.00
OCB32	ORIFICE	9.95	0	01:21			1.00
OCB33	ORIFICE	9.95	0	01:21			1.00
OCB34	ORIFICE	6.75	0	01:30			1.00
OCB35	ORIFICE	6.75	0	01:30			1.00
OCB36	ORIFICE	17.82	0	01:31			1.00
OCB37	ORIFICE	12.70	0	01:31			1.00
OCB41	ORIFICE	13.01	0	01:33			1.00
OCB42	ORIFICE	18.25	0	01:33			1.00
OCB43	ORIFICE	12.75	0	01:30			1.00
OCB44	ORIFICE	12.75	0	01:30			1.00
OCB45	ORIFICE	17.76	0	01:20			1.00
OCB46	ORIFICE	12.66	0	01:20			1.00
OCB50	ORIFICE	12.62	0	01:22			1.00
OCB51	ORIFICE	17.70	0	01:22			1.00
OCB52	ORIFICE	12.82	0	01:24			1.00
OCB53	ORIFICE	12.82	0	01:24			1.00
OCB54	ORIFICE	12.84	0	01:25			1.00
OCB55	ORIFICE	18.02	0	01:25			1.00
OCB56	ORIFICE	12.57	0	01:24			1.00
OCB57	ORIFICE	17.63	0	01:24			1.00
OCB60-CBMH61	ORIFICE	18.70	0	01:39			1.00
OCB62-CBMH63	ORIFICE	24.18	0	01:23			1.00
OCB64-CBMH65	ORIFICE	18.85	0	01:40			1.00
OCB68-CBMH69	ORIFICE	13.43	0	01:41			1.00
OCB72-CBMH73	ORIFICE	28.21	0	01:42			1.00
OCB74-CBMH75	ORIFICE	24.51	0	01:35			1.00
OCB76	ORIFICE	6.80	0	01:29			1.00
OCB77	ORIFICE	6.80	0	01:29			1.00
OCB78	ORIFICE	18.87	0	01:20			1.00

OCB79	ORIFICE	13.45	0	01:20	1.00
OCB80	ORIFICE	13.43	0	01:23	1.00
OCB81	ORIFICE	11.59	0	01:23	1.00
OCB82	ORIFICE	8.30	0	01:31	1.00
OCB83	ORIFICE	9.87	0	01:31	1.00
OCB84	ORIFICE	9.91	0	01:25	1.00
OCB85	ORIFICE	11.63	0	01:25	1.00
OCB86	ORIFICE	13.49	0	01:30	1.00
OCB87	ORIFICE	13.49	0	01:30	1.00
OCB88	ORIFICE	13.41	0	01:30	1.00
OCB89	ORIFICE	13.41	0	01:30	1.00
OCB90	ORIFICE	8.31	0	01:30	1.00
OCB91	ORIFICE	8.31	0	01:30	1.00
OCBMH02-01	ORIFICE	6.60	0	01:41	1.00
OCBMH02-02	ORIFICE	11.78	0	01:32	1.00
OCBMH02-03	ORIFICE	6.87	0	01:43	1.00
OCBMH02-04	ORIFICE	10.76	0	01:23	1.00
OCBMH02-05	ORIFICE	10.67	0	01:14	1.00
OCBMH03-01	ORIFICE	7.45	0	01:25	1.00
OCBMH03-02	ORIFICE	26.22	0	01:20	1.00
OCBMH03-03	ORIFICE	20.17	0	01:24	1.00
OCBMH03-04	ORIFICE	41.24	0	01:12	1.00
OCBMH03-05	ORIFICE	27.64	0	01:12	1.00
OCBMH03-06	ORIFICE	60.66	0	01:15	1.00
OCBMH03-07	ORIFICE	31.25	0	01:15	1.00
OCBMH03-08	ORIFICE	19.92	0	01:11	1.00
OCBMH04-01	ORIFICE	29.96	0	01:20	1.00
OCBMH04-02	ORIFICE	21.04	0	01:14	1.00
OCBMH04-03	ORIFICE	16.89	0	01:21	1.00
OCBMH04-04	ORIFICE	14.65	0	01:16	1.00
OCBMH04-05	ORIFICE	34.59	0	01:11	1.00
OCBMH04-06	ORIFICE	14.34	0	01:31	1.00
OCBMH04-07	ORIFICE	16.92	0	01:14	1.00
OCBMH04-08	ORIFICE	31.17	0	01:07	1.00
OCBMH05-1	ORIFICE	10.13	0	01:25	1.00
OCBMH05-2	ORIFICE	6.70	0	01:23	1.00
OCBMH05-3	ORIFICE	8.69	0	01:51	1.00
OCBMH05-4	ORIFICE	14.91	0	01:20	1.00
OCBMH05-5	ORIFICE	20.68	0	01:15	1.00
ODICB4-40	ORIFICE	49.15	0	01:25	1.00
OPark	ORIFICE	24.42	0	01:37	1.00

PH2	ORIFICE	84.24	0	01:31	1.00
OCB01	DUMMY	7.00	0	01:00	
OCB02	DUMMY	7.00	0	01:00	
OCB20	DUMMY	8.50	0	01:01	
OCB21	DUMMY	8.50	0	01:01	

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Flow Classification Summary
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	Adjusted	Fraction of Time in Flow Class								
	/Actual		Up	Down	Sub	Sup	Up	Down	Norm	Inlet
Conduit	Length	Dry	Dry	Dry	Crit	Crit	Crit	Crit	Ltd	Ctrl
100-098	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
102-100	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
104-102	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
106-104	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
108-106	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
110-108	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
112-110	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
114-112	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
116-114	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.00	0.00
118-116	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
200-200A	1.00	0.00	0.00	0.00	0.15	0.00	0.00	0.85	0.00	0.00
200A-110	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
202-200	1.00	0.00	0.00	0.00	0.09	0.00	0.00	0.91	0.00	0.00
204-202	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.00	0.00
206-204	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
206-304	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300-300A	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
300A-108	1.00	0.00	0.00	0.00	0.87	0.00	0.00	0.13	0.00	0.00
302-300	1.00	0.00	0.09	0.00	0.89	0.02	0.00	0.00	0.83	0.00
304-302	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
400-110	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
402-400	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
404-402	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.00	0.00
404-408	1.00	0.88	0.01	0.00	0.09	0.00	0.00	0.02	0.95	0.00
406-408	1.00	0.00	0.00	0.00	0.08	0.00	0.00	0.92	0.01	0.00

Provence Orleans Phase 5A (117155)
PCSWMM Model Results (100-year 3-hour Chicago Event)

408-114	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
500-100	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
502-500	1.00	0.00	0.00	0.00	0.14	0.00	0.00	0.86	0.08	0.00
504-502	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
508-504	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
508-506	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.08	0.00
508-510	1.00	0.91	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
510-512	1.00	0.00	0.00	0.00	0.01	0.00	0.00	0.99	0.01	0.00
512-108	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
602-202	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
604-602	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.06	0.00
606-604	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
608-606	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
610-612	1.00	0.89	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
612-614	1.00	0.00	0.00	0.00	0.13	0.00	0.00	0.87	0.00	0.00
614-204	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
700-302	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
702-700	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.05	0.00
704-702	1.00	0.00	0.00	0.00	0.08	0.00	0.00	0.92	0.00	0.00
706-704	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
708-706	1.00	0.00	0.00	0.00	0.99	0.00	0.00	0.00	0.86	0.00
710-712	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.00	0.00
712-304	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
716-206	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
718-716	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.04	0.00
720-718	1.00	0.00	0.04	0.00	0.96	0.00	0.00	0.00	0.98	0.00
C1	1.00	0.81	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C10	1.00	0.92	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C100	1.00	0.94	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C101	1.00	0.00	0.98	0.00	0.02	0.00	0.00	0.00	0.93	0.00
C102	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.00	0.00
C103	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.02	0.00
C104	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.01	0.00
C105	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.02	0.00
C106	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.00	0.00
C107	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.02	0.00
C108	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.01	0.00
C109	1.00	0.00	0.00	0.00	0.01	0.00	0.00	0.99	0.01	0.00
C11	1.00	0.90	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C110	1.00	0.00	0.00	0.00	0.01	0.00	0.00	0.99	0.01	0.00
C111	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.01	0.00
C112	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.02	0.00
C113	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.02	0.00
C114	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.02	0.00
C115	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.02	0.00
C116	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.02	0.00
C117	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.01	0.00
C118	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C119	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C12	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.08	0.00
C120	1.00	0.93	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C121	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C122	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C123	1.00	0.00	0.00	0.00	0.03	0.00	0.00	0.97	0.02	0.00
C124	1.00	0.00	0.00	0.00	0.03	0.00	0.00	0.97	0.02	0.00
C125	1.00	0.00	0.00	0.00	0.03	0.00	0.00	0.97	0.02	0.00
C126	1.00	0.00	0.00	0.00	0.03	0.00	0.00	0.97	0.02	0.00
C127	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.08	0.00
C128	1.00	0.00	0.00	0.00	0.03	0.00	0.00	0.97	0.03	0.00
C129	1.00	0.00	0.00	0.00	0.03	0.00	0.00	0.97	0.02	0.00
C13	1.00	0.00	0.00	0.00	0.09	0.00	0.00	0.91	0.09	0.00
C130	1.00	0.00	0.00	0.00	0.03	0.00	0.00	0.97	0.03	0.00
C131	1.00	0.00	0.00	0.00	0.03	0.00	0.00	0.97	0.01	0.00
C132	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.04	0.00
C133	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.01	0.00
C134	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.02	0.00
C135	1.00	0.96	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00
C136	1.00	0.96	0.00	0.00	0.03	0.00	0.01	0.00	0.00	0.00
C137	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.02	0.00
C138	1.00	0.00	0.00	0.00	0.09	0.00	0.00	0.91	0.07	0.00
C139	1.00	0.96	0.00	0.00	0.03	0.00	0.00	0.00	0.93	0.00
C14	1.00	0.00	0.00	0.00	0.09	0.00	0.00	0.91	0.07	0.00
C140	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.02	0.00
C141	1.00	0.00	0.00	0.00	0.03	0.00	0.00	0.97	0.03	0.00
C142	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C143	1.00	0.93	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C144	1.00	0.90	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C145	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C146	1.00	0.94	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C147	1.00	0.94	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C148	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C149	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

C15	1.00	0.00	0.00	0.00	0.08	0.00	0.00	0.92	0.08	0.00
C150	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C151	1.00	0.00	0.00	0.00	0.09	0.00	0.00	0.91	0.06	0.00
C151_1	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.94	0.00
C152	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.91	0.00
C153	1.00	0.00	0.00	0.00	0.12	0.00	0.00	0.88	0.12	0.00
C154	1.00	0.00	0.00	0.00	0.12	0.00	0.00	0.88	0.09	0.00
C155	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.10	0.00
C156	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.08	0.00
C157	1.00	0.00	0.00	0.00	0.12	0.00	0.00	0.88	0.11	0.00
C158	1.00	0.00	0.00	0.00	0.12	0.00	0.00	0.88	0.07	0.00
C159	1.00	0.00	0.00	0.00	0.16	0.00	0.00	0.84	0.12	0.00
C16	1.00	0.00	0.00	0.00	0.08	0.00	0.00	0.92	0.08	0.00
C160	1.00	0.00	0.00	0.00	0.16	0.00	0.00	0.84	0.12	0.00
C161	1.00	0.00	0.00	0.00	0.11	0.00	0.00	0.89	0.06	0.00
C162	1.00	0.00	0.00	0.00	0.11	0.00	0.00	0.89	0.11	0.00
C163	1.00	0.00	0.00	0.00	0.11	0.00	0.00	0.89	0.07	0.00
C164	1.00	0.00	0.00	0.00	0.11	0.00	0.00	0.89	0.11	0.00
C165	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.10	0.00
C166	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.06	0.00
C167	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C168	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.05	0.00
C169	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.09	0.00
C17	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.09	0.00
C170	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C171	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.06	0.00
C172	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.10	0.00
C173	1.00	0.00	0.00	0.00	0.09	0.00	0.00	0.91	0.07	0.00
C174	1.00	0.91	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C175	1.00	0.84	0.07	0.00	0.10	0.00	0.00	0.00	0.90	0.00
C176	1.00	0.90	0.00	0.00	0.10	0.00	0.00	0.00	0.85	0.00
C177	1.00	0.00	0.00	0.00	0.11	0.00	0.00	0.89	0.11	0.00
C178	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.01	0.00
C179	1.00	0.00	0.00	0.00	0.03	0.00	0.00	0.97	0.00	0.00
C18	1.00	0.90	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C180	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.93	0.00
C181	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.94	0.00
C182	1.00	0.00	0.00	0.00	0.03	0.00	0.00	0.97	0.00	0.00
C183	1.00	0.00	0.00	0.00	0.03	0.00	0.00	0.97	0.00	0.00
C184	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.94	0.00
C185	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.94	0.00
C186	1.00	0.00	0.00	0.00	0.03	0.00	0.00	0.97	0.00	0.00
C187	1.00	0.00	0.00	0.00	0.03	0.00	0.00	0.97	0.03	0.00
C188	1.00	0.00	0.00	0.00	0.03	0.00	0.00	0.97	0.02	0.00
C189	1.00	0.00	0.00	0.00	0.03	0.00	0.00	0.97	0.03	0.00
C19	1.00	0.93	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C190	1.00	0.00	0.00	0.00	0.12	0.00	0.00	0.88	0.96	0.00
C191	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.01	0.00
C192	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.00	0.00
C193	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.92	0.00
C194	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.93	0.00
C195	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.02	0.00
C196	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.02	0.00
C197	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.93	0.00
C198	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.02	0.00
C199	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.00	0.00
C2	1.00	0.00	0.00	0.00	0.06	0.00	0.00	0.94	0.06	0.00
C20	1.00	0.00	0.00	0.00	0.06	0.00	0.00	0.94	0.04	0.00
C200	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.00	0.00
C201	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.00	0.00
C202	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.00	0.00
C203	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.03	0.00
C204	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.92	0.00
C205	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
C206	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
C207	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
C208	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
C209	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
C21	1.00	0.94	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C210	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.03	0.00
C211	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.03	0.00
C212	1.00	0.00	0.00	0.00	0.12	0.00	0.00	0.88	0.96	0.00
C213	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.95	0.00
C214	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
C215	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.93	0.00
C216	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.93	0.00
C217	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
C218	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.02	0.00
C219	1.00	0.00	0.00	0.00	0.11	0.00	0.00	0.89	0.96	0.00
C22	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C220	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.93	0.00
C221	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00

C222	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
C223	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.94	0.00
C224	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.93	0.00
C225	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
C226	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
C227	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.93	0.00
C228	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.95	0.00
C229	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
C23	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.95	0.00
C23_1	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.01	0.00
C23_2	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.99	0.00
C23_3	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.01	0.00
C23_4	1.00	0.95	0.01	0.00	0.04	0.00	0.00	0.00	0.00	0.00
C23_5	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C23_6	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C23_7	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C23_8	1.00	0.90	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C230	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
C231	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.93	0.00
C232	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.93	0.00
C233	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
C234	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.02	0.00
C235	1.00	0.00	0.00	0.00	0.12	0.00	0.00	0.88	0.96	0.00
C236	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.93	0.00
C237	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
C238	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.04	0.00
C239	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.95	0.00
C24	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C240	1.00	0.00	0.00	0.00	0.11	0.00	0.00	0.89	0.11	0.00
C241	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.02	0.00
C242	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
C243	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.93	0.00
C244	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.93	0.00
C245	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
C246	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.02	0.00
C247	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.96	0.00
C248	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.93	0.00
C249	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
C25	1.00	0.00	0.00	0.00	0.08	0.00	0.00	0.92	0.06	0.00
C250	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
C251	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
C252	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
C253	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
C254	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
C255	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
C256	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.04	0.00
C257	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C258	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.03	0.00
C259	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.01	0.00
C26	1.00	0.94	0.05	0.00	0.01	0.00	0.00	0.00	0.95	0.00
C26_1	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.91	0.00
C26_2	1.00	0.00	0.00	0.00	0.08	0.00	0.00	0.92	0.05	0.00
C260	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.94	0.00
C261	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.95	0.00
C262	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.01	0.00
C263	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.01	0.00
C264	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.94	0.00
C265	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.94	0.00
C266	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.01	0.00
C267	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.01	0.00
C268	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.94	0.00
C269	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.94	0.00
C27	1.00	0.00	0.00	0.00	0.08	0.00	0.00	0.92	0.04	0.00
C270	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.00	0.00
C271	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.94	0.00
C272	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C273	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.02	0.00
C274	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.00	0.00
C275	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.00	0.00
C276	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.00	0.00
C277	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.00	0.00
C278	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.01	0.00
C279	1.00	0.00	0.00	0.00	0.11	0.00	0.00	0.89	0.11	0.00
C28	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.04	0.00
C280	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C281	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C282	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C283	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C284	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C285	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C286	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C287	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

C288	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C289	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C29	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C290	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C291	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C292	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C293	1.00	0.91	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C294	1.00	0.94	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C295	1.00	0.60	0.26	0.00	0.14	0.00	0.00	0.00	0.89	0.00
C296	1.00	0.60	0.01	0.00	0.39	0.00	0.00	0.00	0.84	0.00
C297	1.00	0.61	0.06	0.00	0.33	0.00	0.00	0.00	0.88	0.00
C298	1.00	0.67	0.05	0.00	0.28	0.00	0.00	0.00	0.90	0.00
C299	1.00	0.72	0.11	0.00	0.18	0.00	0.00	0.00	0.90	0.00
C3	1.00	0.00	0.00	0.00	0.06	0.00	0.00	0.94	0.04	0.00
C30	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.93	0.00
C300	1.00	0.00	0.00	0.00	0.08	0.00	0.00	0.92	0.05	0.00
C301	1.00	0.92	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C302	1.00	0.90	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C303	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.10	0.00
C304	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.94	0.00
C305	1.00	0.00	0.00	0.00	0.08	0.00	0.00	0.92	0.08	0.00
C306	1.00	0.00	0.00	0.00	0.08	0.00	0.00	0.92	0.04	0.00
C307	1.00	0.00	0.00	0.00	0.13	0.00	0.00	0.87	0.10	0.00
C308	1.00	0.00	0.00	0.00	0.13	0.00	0.00	0.87	0.13	0.00
C309	1.00	0.00	0.00	0.00	0.08	0.00	0.00	0.92	0.06	0.00
C31	1.00	0.90	0.07	0.00	0.03	0.00	0.00	0.00	0.95	0.00
C310	1.00	0.00	0.00	0.00	0.08	0.00	0.00	0.92	0.08	0.00
C311	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.08	0.00
C312	1.00	0.90	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C313	1.00	0.89	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C314	1.00	0.89	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C315	1.00	0.90	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C316	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.08	0.00
C317	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.10	0.00
C318	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.07	0.00
C319	1.00	0.00	0.00	0.00	0.09	0.00	0.00	0.91	0.09	0.00
C32	1.00	0.81	0.00	0.00	0.19	0.00	0.00	0.00	0.00	0.00
C320	1.00	0.00	0.00	0.00	0.09	0.00	0.00	0.91	0.06	0.00
C321	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.92	0.00
C322	1.00	0.00	0.00	0.00	0.11	0.00	0.00	0.89	0.11	0.00
C323	1.00	0.00	0.00	0.00	0.11	0.00	0.00	0.89	0.06	0.00
C324	1.00	0.00	0.00	0.00	0.13	0.00	0.00	0.87	0.96	0.00
C325	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.02	0.00
C326	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.03	0.00
C327	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.02	0.00
C328	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.03	0.00
C329	1.00	0.00	0.00	0.00	0.09	0.00	0.00	0.91	0.96	0.00
C33	1.00	0.81	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00
C330	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.93	0.00
C331	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.01	0.00
C332	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.03	0.00
C333	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.94	0.00
C334	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.01	0.00
C335	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.02	0.00
C336	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.95	0.00
C337	1.00	0.00	0.00	0.00	0.06	0.00	0.00	0.94	0.95	0.00
C338	1.00	0.00	0.00	0.00	0.06	0.00	0.00	0.94	0.03	0.00
C339	1.00	0.00	0.00	0.00	0.06	0.00	0.00	0.94	0.03	0.00
C34	1.00	0.81	0.15	0.00	0.00	0.04	0.00	0.00	0.91	0.00
C34_1	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.95	0.00
C34_2	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.01	0.00
C340	1.00	0.00	0.00	0.00	0.06	0.00	0.00	0.94	0.03	0.00
C341	1.00	0.00	0.00	0.00	0.06	0.00	0.00	0.94	0.03	0.00
C342	1.00	0.00	0.00	0.00	0.06	0.00	0.00	0.94	0.03	0.00
C343	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.93	0.00
C344	1.00	0.00	0.00	0.00	0.06	0.00	0.00	0.94	0.01	0.00
C345	1.00	0.00	0.00	0.00	0.06	0.00	0.00	0.94	0.03	0.00
C346	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.95	0.00
C347	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.93	0.00
C348	1.00	0.00	0.00	0.00	0.06	0.00	0.00	0.94	0.01	0.00
C349	1.00	0.94	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C35	1.00	0.89	0.05	0.00	0.03	0.00	0.03	0.00	0.01	0.00
C35_1	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.93	0.00
C35_2	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.01	0.00
C350	1.00	0.90	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C351	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C352	1.00	0.92	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C353	1.00	0.00	0.00	0.00	0.08	0.00	0.00	0.92	0.03	0.00
C354	1.00	0.00	0.00	0.00	0.08	0.00	0.00	0.92	0.03	0.00
C355	1.00	0.00	0.00	0.00	0.08	0.00	0.00	0.92	0.02	0.00
C356	1.00	0.00	0.00	0.00	0.08	0.00	0.00	0.92	0.03	0.00
C357	1.00	0.00	0.00	0.00	0.08	0.00	0.00	0.92	0.01	0.00

C358	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.95	0.00
C359	1.00	0.00	0.00	0.00	0.08	0.00	0.00	0.92	0.03	0.00
C36	1.00	0.94	0.01	0.00	0.04	0.00	0.01	0.00	0.01	0.00
C36_1	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.95	0.00
C36_2	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.01	0.00
C360	1.00	0.00	0.00	0.00	0.08	0.00	0.00	0.92	0.04	0.00
C361	1.00	0.00	0.00	0.00	0.11	0.00	0.00	0.89	0.11	0.00
C362	1.00	0.00	0.00	0.00	0.11	0.00	0.00	0.89	0.02	0.00
C363	1.00	0.00	0.00	0.00	0.11	0.00	0.00	0.89	0.02	0.00
C364	1.00	0.00	0.00	0.00	0.11	0.00	0.00	0.89	0.03	0.00
C365	1.00	0.00	0.00	0.00	0.11	0.00	0.00	0.89	0.03	0.00
C366	1.00	0.00	0.00	0.00	0.11	0.00	0.00	0.89	0.04	0.00
C367	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.88	0.00
C368	1.00	0.00	0.00	0.00	0.11	0.00	0.00	0.89	0.01	0.00
C369	1.00	0.00	0.00	0.00	0.11	0.00	0.00	0.89	0.01	0.00
C37	1.00	0.94	0.04	0.00	0.02	0.00	0.01	0.00	0.02	0.00
C37_1	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.94	0.00
C37_2	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.01	0.00
C370	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.88	0.00
C371	1.00	0.00	0.00	0.00	0.11	0.00	0.00	0.89	0.04	0.00
C372	1.00	0.00	0.00	0.00	0.11	0.00	0.00	0.89	0.02	0.00
C373	1.00	0.00	0.00	0.00	0.11	0.00	0.00	0.89	0.02	0.00
C374	1.00	0.89	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C375	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C376	1.00	0.05	0.02	0.00	0.03	0.00	0.00	0.91	0.02	0.00
C377	1.00	0.04	0.03	0.00	0.11	0.00	0.00	0.83	0.94	0.00
C38	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.07	0.00
C39	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.06	0.00
C4	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.10	0.00
C40	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.07	0.00
C41	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.02	0.00
C42	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.02	0.00
C43	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.02	0.00
C44	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.04	0.00
C45	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.04	0.00
C46	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C47	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C48	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.03	0.00
C49	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.04	0.00
C5	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.08	0.00
C50	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.02	0.00
C51	1.00	0.00	0.00	0.00	0.03	0.00	0.00	0.97	0.03	0.00
C52	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C53	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C54	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C55	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.04	0.00
C56	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.03	0.00
C57	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.03	0.00
C58	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.03	0.00
C59	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.01	0.00
C6	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.99	0.00
C6_2	1.00	0.00	0.00	0.00	0.11	0.00	0.00	0.89	0.11	0.00
C60	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.01	0.00
C61	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.95	0.00
C62	1.00	0.00	0.00	0.00	0.03	0.00	0.00	0.97	0.95	0.00
C63	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.10	0.00
C64	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.04	0.00
C65	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.95	0.00
C66	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.95	0.00
C67	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.04	0.00
C68	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.02	0.00
C69	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.02	0.00
C7	1.00	0.00	0.00	0.00	0.11	0.00	0.00	0.89	0.07	0.00
C70	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.02	0.00
C71	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.02	0.00
C72	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.10	0.00
C73	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.02	0.00
C74	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.02	0.00
C75	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C76	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C77	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C78	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C79	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C8	1.00	0.00	0.00	0.00	0.06	0.00	0.00	0.94	0.04	0.00
C80	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C81	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C82	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C83	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C84	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C85	1.00	0.00	0.00	0.00	0.09	0.00	0.00	0.91	0.09	0.00
C85_1	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.93	0.00
C85_2	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.01	0.00

C86	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.05	0.00
C87	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.04	0.00
C88	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.04	0.00
C89	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.04	0.00
C9	1.00	0.00	0.00	0.00	0.06	0.00	0.00	0.94	0.06	0.00
C90	1.00	0.00	0.00	0.00	0.06	0.00	0.00	0.94	0.06	0.00
C91	1.00	0.94	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C92	1.00	0.94	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C93	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C94	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C95	1.00	0.93	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C96	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C97	1.00	0.94	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C98	1.00	0.94	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C99	1.00	0.94	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CB-100_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.91	0.00
CB-101_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.91	0.00
CB-102_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.91	0.00
CB-103_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.90	0.00
CB-104_(CB)	1.00	0.00	0.00	0.00	0.06	0.00	0.00	0.94	0.00	0.00
CB-105_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.85	0.00
CB-106_(CB)	1.00	0.00	0.00	0.00	0.14	0.00	0.00	0.86	0.01	0.00
CB-108_(CB)	1.00	0.00	0.85	0.00	0.15	0.00	0.00	0.00	0.84	0.00
CB-109_(CB)	1.00	0.00	0.00	0.00	0.14	0.00	0.00	0.86	0.02	0.00
CB-112_(CB)	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.00	0.00
CB-116_(CB)	1.00	0.00	0.87	0.00	0.13	0.00	0.00	0.00	0.88	0.00
CB-117_(CB)	1.00	0.00	0.00	0.00	0.09	0.00	0.00	0.91	0.00	0.00
CB-119_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.91	0.00
CB-120_(2)_(CB)	1.00	0.00	0.00	0.00	0.06	0.00	0.00	0.94	0.00	0.00
CB-120_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.90	0.00
CB-122_(CB)	1.00	0.00	0.84	0.00	0.16	0.00	0.00	0.00	0.85	0.00
CB-123_(CB)	1.00	0.00	0.00	0.00	0.13	0.00	0.00	0.87	0.01	0.00
CB-125_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.91	0.00
CB-126_(CB)	1.00	0.00	0.04	0.00	0.96	0.00	0.00	0.00	0.91	0.00
CB-127_(CB)	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
CB-130_(CB)	1.00	0.00	0.76	0.00	0.24	0.00	0.00	0.00	0.87	0.00
CB-131_(CB)	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.01	0.00
CB-133_(2)_(CB)	1.00	0.00	0.00	0.00	0.14	0.00	0.00	0.86	0.02	0.00
CB-134_(CB)	1.00	0.00	0.00	0.00	0.15	0.00	0.00	0.85	0.01	0.00
CB-136_(2)_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.82	0.00
CB-136_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.83	0.00

CB-138_(CB)	1.00	0.00	0.00	0.00	0.04	0.00	0.00	0.96	0.00	0.00
CB-140_(2)_(1)_(CB)	1.00	0.00	0.84	0.00	0.15	0.01	0.00	0.00	0.92	0.00
CB-140_(2)_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.84	0.00
CB-140_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.93	0.00
CB-141_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.93	0.00
CB-144_(CB)	1.00	0.00	0.00	0.00	0.03	0.00	0.00	0.97	0.00	0.00
CB-149_(CB)	1.00	0.00	0.00	0.00	0.03	0.00	0.00	0.97	0.00	0.00
CB-150_(CB)	1.00	0.00	0.91	0.00	0.09	0.00	0.00	0.00	0.93	0.00
CB-153_(CB)	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.01	0.00
CB-159_(3)_(CB)	1.00	0.00	0.88	0.00	0.12	0.00	0.00	0.00	0.86	0.00
CB-159_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.87	0.00
CB-160_(CB)	1.00	0.00	0.88	0.00	0.12	0.00	0.00	0.00	0.90	0.00
CB-161_(CB)	1.00	0.00	0.88	0.00	0.12	0.00	0.00	0.00	0.90	0.00
CB-164_(2)_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.90	0.00
CB-164_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.90	0.00
CB-166_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.89	0.00
CB-168_(CB)_1	1.00	0.88	0.03	0.00	0.09	0.00	0.00	0.00	0.89	0.00
CB-168_(CB)_2	1.00	0.00	0.88	0.00	0.12	0.00	0.00	0.00	0.89	0.00
CB-170_(CB)	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.00	0.00
CB-175_(2)_(CB)	1.00	0.00	0.88	0.00	0.12	0.00	0.00	0.00	0.87	0.00
CB-175_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.88	0.00
CB-177_(CB)	1.00	0.00	0.00	0.00	0.09	0.00	0.00	0.91	0.00	0.00
CB-180_(CB)	1.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00	0.00
CB-185_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.93	0.00
CB-187_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.93	0.00
CB-189_(CB)	1.00	0.00	0.00	0.00	0.03	0.00	0.00	0.97	0.00	0.00
CB-209_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.88	0.00
CB-211_(CB)	1.00	0.00	0.00	0.00	0.11	0.00	0.00	0.89	0.92	0.00
CB-215_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
CB-228_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.88	0.00
CB-229_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.88	0.00
CB-230_(CB)	1.00	0.00	0.04	0.00	0.96	0.00	0.00	0.00	0.87	0.00
CB-231_(CB)	1.00	0.00	0.00	0.00	0.09	0.00	0.00	0.91	0.00	0.00
CB-233_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.87	0.00
CB-234_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.88	0.00
CB-235_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.87	0.00
CB-236_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.88	0.00
CB-237_(CB)	1.00	0.00	0.00	0.00	0.09	0.00	0.00	0.91	0.00	0.00
CB-239_(1)_(1)_(CB)	1.00	0.00	0.87	0.00	0.13	0.00	0.00	0.00	0.89	0.00
CB-239_(1)_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.89	0.00
CB-239_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.89	0.00

CB-240_(CB)	1.00	0.00	0.00	0.00	0.08	0.00	0.00	0.92	0.01	0.00
CB-245_(1)_(CB)	1.00	0.00	0.00	0.00	0.08	0.00	0.00	0.92	0.00	0.00
CB-245_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.88	0.00
CB-253_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.84	0.00
CB-257_(CB)	1.00	0.00	0.82	0.00	0.18	0.00	0.00	0.00	0.84	0.00
CB-264_(CB)	1.00	0.00	0.00	0.00	0.13	0.00	0.00	0.87	0.00	0.00
CB-268_(CB)	1.00	0.00	0.82	0.00	0.18	0.00	0.00	0.00	0.84	0.00
CB-271_(1)_(CB)	1.00	0.00	0.88	0.00	0.12	0.00	0.00	0.00	0.89	0.00
CB-271_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.89	0.00
CB-273_(CB)	1.00	0.00	0.00	0.00	0.08	0.00	0.00	0.92	0.00	0.00
CB-280_(1)_(CB)	1.00	0.00	0.00	0.00	0.09	0.00	0.00	0.91	0.03	0.00
CB-280_(CB)	1.00	0.00	0.92	0.00	0.08	0.00	0.00	0.00	0.90	0.00
CB-284_(CB)	1.00	0.00	0.83	0.00	0.17	0.00	0.00	0.00	0.90	0.00
CB-288_(CB)	1.00	0.00	0.00	0.00	0.06	0.00	0.00	0.94	0.00	0.00
CB-294_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.07	0.00
CB-386_(CB)	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.79	0.00
CB-387_(CB)	1.00	0.00	0.79	0.00	0.21	0.00	0.00	0.00	0.79	0.00
CB-388_(CB)	1.00	0.00	0.80	0.00	0.20	0.00	0.00	0.00	0.79	0.00
CB-391_(CB)	1.00	0.70	0.01	0.00	0.28	0.00	0.00	0.00	0.70	0.00
CB-397_(CB)	1.00	0.69	0.01	0.00	0.30	0.00	0.00	0.00	0.68	0.00
CB-398_(CB)	1.00	0.00	0.69	0.00	0.31	0.00	0.00	0.00	0.68	0.00
CB-406_(CB)	1.00	0.00	0.70	0.00	0.30	0.00	0.00	0.00	0.68	0.00
CB-408_(CB)	1.00	0.70	0.02	0.00	0.28	0.00	0.00	0.00	0.70	0.00
CB-411_(CB)	1.00	0.00	0.00	0.00	0.14	0.00	0.00	0.86	0.01	0.00
CB-413_(CB)	1.00	0.00	0.84	0.00	0.16	0.00	0.00	0.00	0.82	0.00
CB-416_(CB)	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.00	0.00
CB-418_(CB)	1.00	0.00	0.83	0.00	0.17	0.00	0.00	0.00	0.86	0.00
CB-421_(CB)	1.00	0.86	0.01	0.00	0.13	0.00	0.00	0.00	0.85	0.00
CB-423_(CB)	1.00	0.00	0.86	0.00	0.14	0.00	0.00	0.00	0.84	0.00
CB-424_(CB)	1.00	0.00	0.00	0.00	0.14	0.00	0.00	0.86	0.01	0.00
CB-427_(CB)	1.00	0.00	0.88	0.00	0.12	0.00	0.00	0.00	0.87	0.00
CB-430_(CB)	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.01	0.00
CB-432_(CB)	1.00	0.00	0.00	0.00	0.14	0.00	0.00	0.86	0.00	0.00
CB-436_(CB)	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.90	0.00	0.00
CB-439_(CB)	1.00	0.00	0.00	0.00	0.19	0.00	0.00	0.81	0.01	0.00
CB-444_(CB)	1.00	0.00	0.00	0.00	0.29	0.00	0.00	0.71	0.01	0.00
CB-98_(CB)	1.00	0.00	0.88	0.00	0.12	0.00	0.00	0.00	0.91	0.00
CB-99_(CB)	1.00	0.00	0.89	0.00	0.11	0.00	0.00	0.00	0.91	0.00
LCB-1_(86)	1.00	0.60	0.26	0.00	0.14	0.00	0.00	0.00	0.89	0.00
LCB-1_(87)	1.00	0.60	0.01	0.00	0.39	0.00	0.00	0.00	0.89	0.00
LCB-1_(88)	1.00	0.61	0.06	0.00	0.33	0.00	0.00	0.00	0.90	0.00
LCB-1_(89)	1.00	0.67	0.05	0.00	0.28	0.00	0.00	0.00	0.90	0.00
LCB-1_(89)_(1)	1.00	0.72	0.11	0.00	0.18	0.00	0.00	0.00	0.90	0.00
x1000-116	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00

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Conduit Surcharge Summary
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Conduit	Hours Full: Both Ends	Hours Full: Upstream	Hours Full: Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
100-098	24.00	24.00	24.00	0.01	0.01
102-100	24.00	24.00	24.00	0.01	0.01
104-102	24.00	24.00	24.00	0.01	0.01
106-104	24.00	24.00	24.00	0.01	0.01
108-106	24.00	24.00	24.00	0.01	0.01
C102	0.01	0.01	0.17	0.01	0.01
C103	0.01	0.01	0.17	0.01	0.01
C110	0.01	0.01	0.03	0.01	0.01
C111	0.01	0.01	0.03	0.01	0.01
C112	0.01	0.01	0.03	0.01	0.01
C113	0.01	0.01	0.03	0.01	0.01
C116	0.01	0.01	0.01	0.01	0.01
C117	0.01	0.01	0.01	0.01	0.01
C123	0.01	0.01	0.09	0.01	0.01
C124	0.01	0.01	0.09	0.01	0.01
C125	0.01	0.01	0.08	0.01	0.01
C126	0.01	0.01	0.08	0.01	0.01
C128	0.01	0.01	0.03	0.01	0.01
C129	0.01	0.01	0.03	0.01	0.01
C132	0.01	0.01	0.15	0.01	0.01
C133	0.01	0.01	0.15	0.01	0.01
C134	0.01	0.01	0.24	0.01	0.01
C135	0.01	0.01	0.24	0.01	0.01
C136	0.01	0.01	0.20	0.01	0.01
C137	0.01	0.01	0.20	0.01	0.01
C139	0.01	0.01	0.23	0.01	0.01
C140	0.01	0.01	0.23	0.01	0.01

C151	0.01	0.01	0.05	0.01	0.01
C157	0.01	0.01	0.03	0.01	0.01
C158	0.01	0.01	0.03	0.01	0.01
C159	0.01	0.01	0.06	0.01	0.01
C160	0.01	0.01	0.06	0.01	0.01
C163	0.01	0.01	0.19	0.01	0.01
C164	0.01	0.01	0.19	0.01	0.01
C165	0.01	0.01	0.13	0.01	0.01
C166	0.01	0.01	0.13	0.01	0.01
C171	0.01	0.01	0.19	0.01	0.01
C172	0.01	0.01	0.19	0.01	0.01
C173	0.01	0.01	0.05	0.01	0.01
C175	0.01	0.01	22.57	0.01	0.01
C178	0.01	0.01	0.07	0.01	0.01
C179	0.01	0.01	0.07	0.01	0.01
C202	0.01	0.01	0.01	0.01	0.01
C203	0.01	0.01	0.01	0.01	0.01
C217	0.01	0.01	0.07	0.01	0.01
C218	0.01	0.01	0.07	0.01	0.01
C219	0.01	0.01	0.19	0.01	0.01
C221	0.01	0.01	0.08	0.01	0.01
C222	0.01	0.01	0.08	0.01	0.01
C225	0.01	0.01	0.09	0.01	0.01
C226	0.01	0.01	0.09	0.01	0.01
C229	0.01	0.01	0.09	0.01	0.01
C230	0.01	0.01	0.09	0.01	0.01
C233	0.01	0.01	0.07	0.01	0.01
C234	0.01	0.01	0.07	0.01	0.01
C235	0.01	0.01	0.03	0.01	0.01
C237	0.01	0.01	0.08	0.01	0.01
C238	0.01	0.01	0.08	0.01	0.01
C240	0.01	0.01	0.19	0.01	0.01
C247	0.01	0.01	0.19	0.01	0.01
C295	0.21	0.21	0.29	0.01	0.01
C296	0.24	0.24	0.29	0.01	0.01
C297	0.17	0.17	0.24	0.01	0.01
C298	0.07	0.07	0.17	0.01	0.01
C299	0.01	0.01	0.07	0.01	0.01
C31	0.01	0.01	0.25	0.01	0.01
C325	0.01	0.01	0.03	0.01	0.01
C326	0.01	0.01	0.03	0.01	0.01
C327	0.01	0.01	0.04	0.01	0.01
C328	0.01	0.01	0.04	0.01	0.01
C331	0.01	0.01	0.04	0.01	0.01
C332	0.01	0.01	0.04	0.01	0.01
C334	0.01	0.01	0.05	0.01	0.01
C335	0.01	0.01	0.05	0.01	0.01
C39	0.01	0.01	0.11	0.01	0.01
C4	0.01	0.01	0.25	0.01	0.01
C40	0.01	0.01	0.11	0.01	0.01
C41	0.01	0.01	0.07	0.01	0.01
C42	0.01	0.01	0.07	0.01	0.01
C5	0.01	0.01	0.25	0.01	0.01
C85	0.01	0.01	0.05	0.01	0.01
C85_2	0.01	0.01	0.13	0.01	0.01
C86	0.01	0.01	0.12	0.01	0.01
C87	0.01	0.01	0.12	0.01	0.01
C88	0.01	0.01	0.11	0.01	0.01
C89	0.01	0.01	0.11	0.01	0.01
CB-100_(CB)	0.98	0.98	1.10	0.01	0.01
CB-101_(CB)	1.10	1.10	1.25	0.01	0.01
CB-102_(CB)	1.21	1.21	1.25	0.16	0.17
CB-103_(CB)	1.25	1.25	1.27	0.09	0.09
CB-104_(CB)	1.27	1.27	1.31	0.01	0.02
CB-105_(CB)	2.31	2.31	2.51	0.01	0.01
CB-106_(CB)	2.84	2.84	3.14	0.01	0.01
CB-108_(CB)	2.38	2.38	2.83	0.01	0.01
CB-109_(CB)	2.51	2.51	2.82	0.01	0.01
CB-112_(CB)	1.45	1.45	1.57	0.01	0.01
CB-116_(CB)	1.57	1.57	1.81	0.01	0.01
CB-117_(CB)	1.81	1.81	1.95	0.01	0.01
CB-119_(CB)	1.15	1.15	1.26	0.01	0.01
CB-120_(2)_(CB)	1.30	1.30	1.32	0.27	0.26
CB-120_(CB)	1.26	1.26	1.30	0.01	0.01
CB-122_(CB)	2.09	2.09	2.41	0.01	0.01
CB-123_(CB)	2.41	2.41	2.76	0.01	0.01
CB-125_(CB)	1.20	1.20	1.20	0.01	0.01
CB-126_(CB)	1.20	1.20	1.21	0.09	0.09
CB-127_(CB)	1.20	1.21	1.22	0.09	0.08
CB-130_(CB)	1.91	1.91	2.14	0.01	0.01
CB-131_(CB)	2.02	2.02	2.25	0.01	0.01
CB-133_(2)_(CB)	2.46	2.46	2.87	0.01	0.01

CB-134_(CB)	3.05	3.05	3.43	0.01	0.01
CB-136_(2)_(CB)	2.69	2.69	3.05	0.01	0.01
CB-136_(CB)	2.44	2.44	2.69	0.01	0.01
CB-138_(CB)	0.82	0.82	0.87	0.08	0.08
CB-140_(2)_(1)_(CB)	0.77	0.77	0.82	0.01	0.01
CB-140_(2)_(CB)	0.74	0.74	0.77	0.39	0.38
CB-140_(CB)	0.71	0.71	0.74	0.36	0.36
CB-141_(CB)	0.64	0.64	0.71	0.01	0.01
CB-144_(CB)	0.67	0.67	0.71	0.54	0.54
CB-149_(CB)	0.59	0.59	0.62	0.01	0.01
CB-150_(CB)	0.63	0.63	0.67	0.01	0.01
CB-153_(CB)	1.90	1.90	2.18	0.01	0.01
CB-159_(3)_(CB)	1.42	1.42	1.47	0.01	0.01
CB-159_(CB)	1.35	1.35	1.42	0.01	0.01
CB-160_(CB)	1.27	1.27	1.44	0.01	0.01
CB-161_(CB)	1.28	1.28	1.44	0.01	0.01
CB-164_(2)_(CB)	1.18	1.18	1.22	0.01	0.01
CB-164_(CB)	1.16	1.16	1.18	0.01	0.01
CB-166_(CB)	1.22	1.22	1.29	0.01	0.01
CB-168_(CB)_1	1.24	1.24	1.29	0.01	0.01
CB-168_(CB)_2	1.29	1.29	1.34	0.01	0.01
CB-170_(CB)	1.34	1.34	1.40	0.01	0.01
CB-175_(2)_(CB)	1.64	1.64	1.72	0.01	0.01
CB-175_(CB)	1.57	1.57	1.64	0.01	0.01
CB-177_(CB)	1.88	1.88	2.01	0.01	0.01
CB-180_(CB)	1.03	1.03	1.11	0.02	0.02
CB-185_(CB)	0.65	0.65	0.65	0.01	0.01
CB-187_(CB)	0.65	0.65	0.66	0.02	0.02
CB-189_(CB)	0.66	0.66	0.66	0.02	0.01
CB-209_(CB)	1.52	1.52	1.57	0.01	0.01
CB-211_(CB)	0.91	0.91	0.96	0.01	0.01
CB-215_(CB)	2.03	2.03	2.15	0.01	0.01
CB-228_(CB)	1.45	1.45	1.51	0.01	0.01
CB-229_(CB)	1.51	1.51	1.60	0.01	0.01
CB-230_(CB)	1.60	1.60	1.67	0.01	0.01
CB-231_(CB)	1.67	1.67	1.77	0.01	0.01
CB-233_(CB)	1.54	1.54	1.60	0.01	0.01
CB-234_(CB)	1.44	1.44	1.49	0.01	0.01
CB-235_(CB)	1.46	1.46	1.49	0.01	0.01
CB-236_(CB)	1.49	1.49	1.55	0.01	0.01
CB-237_(CB)	1.55	1.55	1.64	0.01	0.01
CB-239_(1)_(1)_(CB)	1.35	1.35	1.38	0.02	0.01
CB-239_(1)_(CB)	1.30	1.30	1.35	0.01	0.01
CB-239_(CB)	1.26	1.26	1.30	0.01	0.01
CB-240_(CB)	1.38	1.38	1.49	0.01	0.01
CB-245_(1)_(CB)	1.57	1.57	1.64	0.01	0.01
CB-245_(CB)	1.50	1.50	1.57	0.01	0.01
CB-253_(CB)	2.10	2.10	2.18	0.01	0.01
CB-257_(CB)	2.18	2.18	2.26	0.01	0.01
CB-264_(CB)	2.52	2.52	2.84	0.01	0.01
CB-268_(CB)	2.18	2.18	2.26	0.01	0.01
CB-271_(1)_(CB)	1.37	1.37	1.45	0.01	0.01
CB-271_(CB)	1.32	1.32	1.37	0.01	0.01
CB-273_(CB)	1.59	1.59	1.72	0.01	0.01
CB-280_(1)_(CB)	1.12	1.12	1.20	0.01	0.01
CB-280_(CB)	1.08	1.08	1.12	0.01	0.01
CB-284_(CB)	1.11	1.11	1.21	0.01	0.01
CB-288_(CB)	1.34	1.34	1.45	0.01	0.01
CB-294_(CB)	1.46	1.46	1.50	0.01	0.01
CB-386_(CB)	2.51	2.51	2.62	0.01	0.01
CB-387_(CB)	2.62	2.62	2.77	0.01	0.01
CB-388_(CB)	2.51	2.51	2.77	0.01	0.01
CB-391_(CB)	3.46	3.46	3.59	0.01	0.01
CB-397_(CB)	3.59	3.59	3.71	0.01	0.01
CB-398_(CB)	3.71	3.71	3.96	0.01	0.01
CB-406_(CB)	3.61	3.61	3.96	0.01	0.01
CB-408_(CB)	3.46	3.46	3.61	0.01	0.01
CB-411_(CB)	1.86	1.86	1.98	0.01	0.01
CB-413_(CB)	2.09	2.09	2.29	0.01	0.01
CB-416_(CB)	1.41	1.41	1.49	0.01	0.01
CB-418_(CB)	1.56	1.56	1.68	0.01	0.01
CB-421_(CB)	1.67	1.67	1.76	0.01	0.01
CB-423_(CB)	1.76	1.76	1.87	0.01	0.01
CB-424_(CB)	1.87	1.87	1.98	0.01	0.01
CB-427_(CB)	1.31	1.31	1.38	0.01	0.01
CB-430_(CB)	1.38	1.38	1.49	0.01	0.01
CB-432_(CB)	3.04	3.04	3.13	0.01	0.01
CB-436_(CB)	2.20	2.20	2.27	0.01	0.01
CB-439_(CB)	3.28	3.28	3.96	0.01	0.01
CB-444_(CB)	5.63	5.63	6.54	0.01	0.01
CB-98_(CB)	0.97	0.97	1.03	0.01	0.01
CB-99_(CB)	0.96	0.96	1.03	0.01	0.01

LCB-1_(86)	0.74	0.74	0.80	0.01	0.01
LCB-1_(87)	0.76	0.76	0.80	0.01	0.01
LCB-1_(88)	0.72	0.72	0.76	0.01	0.01
LCB-1_(89)	0.69	0.69	0.72	0.01	0.01
LCB-1_(89)_(1)	0.64	0.64	0.69	0.01	0.01

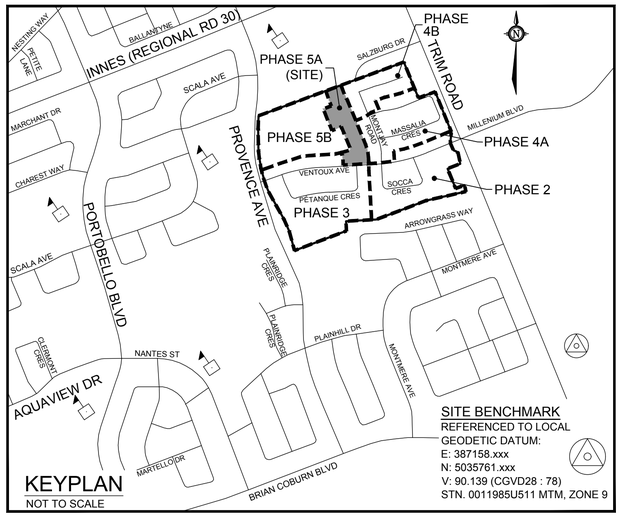
Analysis begun on: Thu May 2 16:55:32 2024
Analysis ended on: Thu May 2 16:55:40 2024
Total elapsed time: 00:00:08

Appendix G

Drawings

PROVENCE ORLEANS SUBDIVISION
PHASE 5A
(2128 TRIM ROAD)
CITY OF OTTAWA
ROADS, SEWERS AND WATERMAINS

PROVENCE
ORLÉANS



NOVATECH
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Facsimile (613) 254-5867
Website www.novatech-eng.com

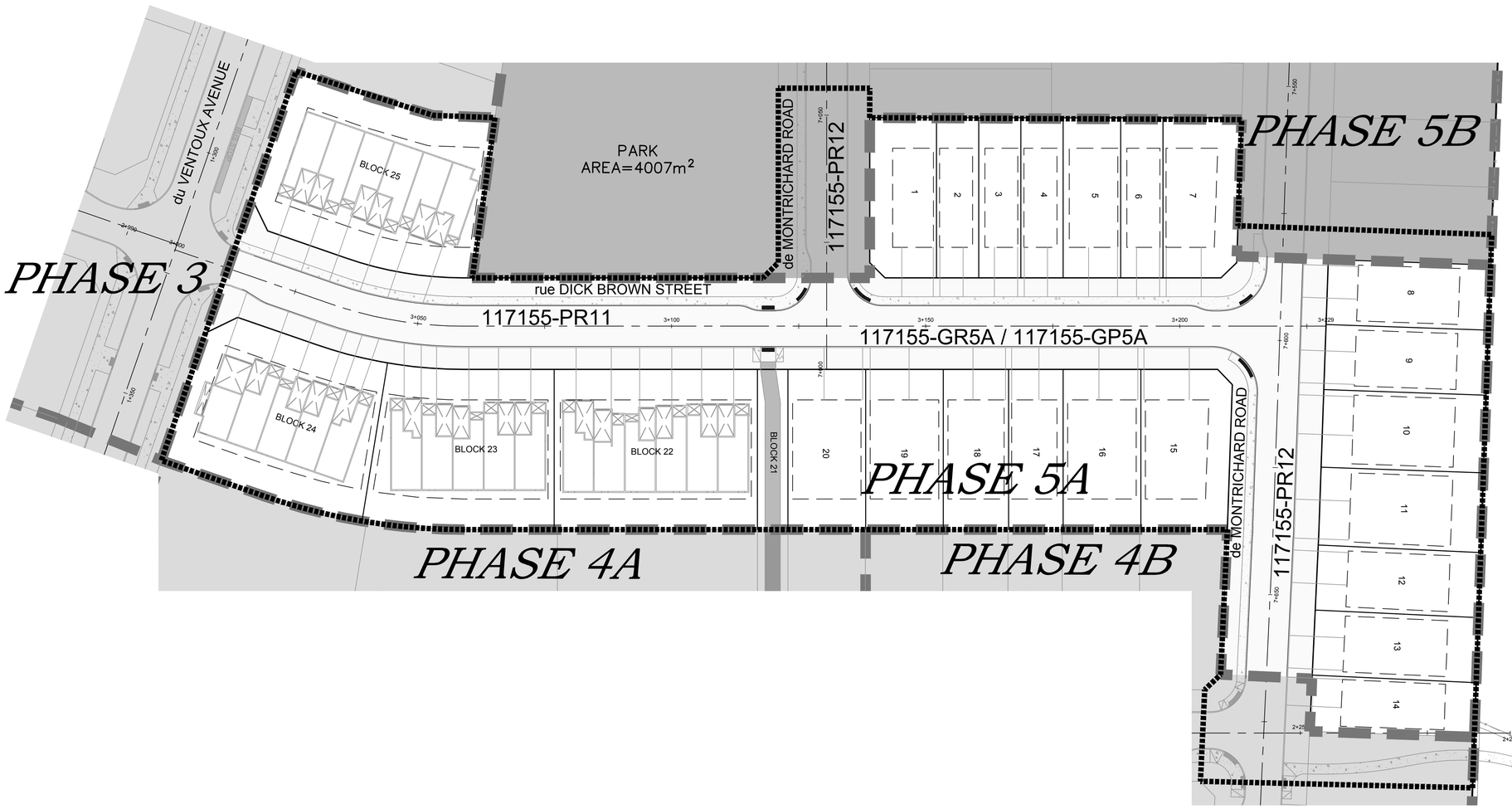
INDEX

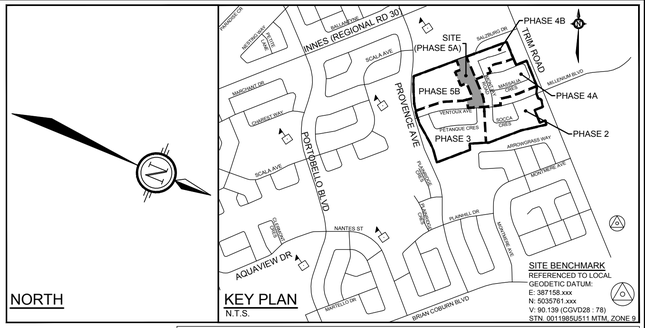
ISSUED FOR REVIEW

PROJECT No. 117155

JULY 2024

D07-16-18-0021





SOURCE REFERENCE:

LEGAL INFORMATION:

1. *PLAN OF SUBDIVISION OF PART OF LOT 2, CONCESSION 9, GEOGRAPHIC TOWNSHIP OF CUMBERLAND AND PART OF BLOCK 130 (0.30 RESERVE), REGISTERED PLAN 4M-1678 CITY OF OTTAWA PREPARED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD, REVISION 4, APRIL 24, 2024.*

TOPOGRAPHIC INFORMATION:

HORIZONTAL DATUM: NAD 83 (ORIGINAL), MTM - ZONE 9

VERTICAL DATUM: CGVD 28:78

1. *CITY OF OTTAWA 1:1000 MAPPING*
2. *NOVATECH SURVEY*

LEGEND

- SITE BOUNDARY
- MINIMUM ZONING SETBACK
- LOT LINE
- EASEMENT
- PHASING BOUNDARY
- PROPOSED DEPRESSED CURB
- PROPOSED CURB
- PROPOSED TACTILE WALKING SURFACE INDICATOR (TWSI)
- PROPOSED CONCRETE SIDEWALK
- PROPOSED ASPHALT SIDEWALK
- PREVIOUSLY APPROVED/CONSTRUCTED PHASES
- FUTURE PHASES
- LAYOUT WINDOW EXTENTS

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

PROVENCE ORLÉANS

No.	REVISION	DATE	BY
1.	ISSUED FOR REVIEW	JUL 23/24	TJM

SCALE 1:500

1:500
0 5 10 15 20

DESIGN SAB
CHECKED TJM
DRAWN SAB
CHECKED TJM
APPROVED TJM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
T. J. MCKAY
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July 23, 2024
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LOCATION
CITY OF OTTAWA
PROVENCE ORLEANS SUBDIVISION (2128 TRIM ROAD)

DRAWING NAME
PHASE 5A
LAYOUT PLAN

PROJECT No. 117155
REV REV # 1
DRAWING No. 117155-LP5A

D07-16-18-0021

#18004

M:\2017\117155\CAD\Design\PH5\117155-LP5A.dwg, LP-PH5A, Jul 17, 2024 - 3:04pm, stennett

PLANS1.DWG - 841mm x 594mm

GENERAL

1. COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
2. DETERMINE THE EXACT LOCATION, SIZE, MATERIAL, AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THIS DRAWING.
3. OBTAIN AND PAY ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF OTTAWA BEFORE COMMENCING CONSTRUCTION.
4. ALL DIMENSIONS AND INVERTS MUST BE VERIFIED PRIOR TO CONSTRUCTION. IF THERE IS ANY DISCREPANCY THE CONTRACTOR IS TO NOTIFY THE ENGINEER PROMPTLY.
5. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL UTILITIES DURING CONSTRUCTION. GAS, HYDRO, TELEPHONE OR ANY OTHER UTILITY THAT MAY EXIST ON SITE OR WITHIN THE STREETLINES MUST BE LOCATED BY ITS OWN UTILITIES AND VERIFIED PRIOR TO CONSTRUCTION.
6. RESTORE ALL DISTURBED AREAS ON-SITE AND OFF-SITE, INCLUDING TRENCHES AND SURFACES ON PUBLIC ROAD ALLOWANCES TO EXISTING OR BETTER TO THE SATISFACTION OF THE CITY OF OTTAWA AND ENGINEER.
7. REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL, ORGANIC MATERIAL AND DEBRIS UNLESS OTHERWISE INSTRUCTED BY ENGINEER. EXCAVATE AND REMOVE FROM SITE ANY CONTAMINATED MATERIAL. ALL CONTAMINATED MATERIAL SHALL BE DISPOSED OF AT A LICENSED LANDFILL FACILITY.
8. ALL UNDERGROUND SERVICES MATERIALS AND INSTALLATIONS TO BE IN ACCORDANCE WITH THE CURRENT STANDARDS AND CODES OF THE MUNICIPALITY.
9. WHEREVER PIPES ARE PASSING THROUGH UNCOMPACTED FILL AREA, THE BEDDING TRENCH SHALL BE EXCAVATED TO THE UNDISTURBED GROUND LEVEL AND BACKFILLED WITH GRANULAR "A" COMPACTED TO A MINIMUM 98% STANDARD PROCTOR DENSITY.
10. THE OWNER SHALL BE RESPONSIBLE TO SUPPLY A CIVIL ENGINEERING FIRM FOR FULL TIME INSPECTION FOR ALL WORKS UNDERTAKEN WITHIN THE CITY ROAD ALLOWANCE. THE CIVIL ENGINEERING FIRM SHALL BE RESPONSIBLE FOR SUPPLYING WITHIN 48 HOURS OF REINSTATEMENT, A WRITTEN REPORT DETAILING THE WORKS WITHIN THE CITY'S ROAD ALLOWANCE. THIS REPORT SHALL CONFIRM THAT THE REINSTATEMENT HAS BEEN IN ACCORDANCE WITH THE CITY STANDARDS, SPECIFICATIONS AND BY-LAWS. FAILURE TO COMPLY SHALL MEAN SEIZURE OF SECURITIES TO COVER COSTS INCURRED BY THE CITY TO INVESTIGATE AND WHERE REQUIRED UNDERTAKE REINSTATEMENT TO THE SATISFACTION OF THE MUNICIPALITY.
11. BEFORE COMMENCING CONSTRUCTION CONTRACTOR TO PROVIDE PROOF OF COMPREHENSIVE ALL RISK AND OPERATIONAL LIABILITY INSURANCE INCLUDING BLASTING (ONLY IF REQUIRED). INSURANCE POLICY TO NAME THE OWNER, ENGINEER AND ARCHITECT AS CO-INSURED. AMOUNT OF INSURANCE TO BE SPECIFIED BY OWNERS AGENT.
12. CONNECTION TO EXISTING SYSTEMS AS DETAILED, INCLUDING ALL RESTORATION WORK NECESSARY TO REINSTATE SURFACES TO THE CONDITION THAT EXISTED PRIOR TO CONSTRUCTION OR BETTER.
13. STANDARD ROAD CUT SHALL BE IN ACCORDANCE WITH CITY STANDARD R10. SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN LOCATIONS AS PER CITY OF OTTAWA STANDARDS.
14. EXISTING BOULEVARDS SHALL BE REINSTATED WITH 150mm OF TOPSOIL, SEED AND MULCH.
15. INVESTIGATION REPORT FOR SUBSURFACE INFORMATION PREPARED BY THE GEOTECHNICAL CONSULTANT. INTERPRETATION OF INFORMATION IS THE RESPONSIBILITY OF THE CONTRACTOR. NO RECYCLED GEOTECHNICAL MATERIAL SHALL BE PERMITTED FOR USE ONSITE.
16. REMOVE AND STOCKPILE ONSITE IN A SUITABLE LOCATION ALL TOPSOIL.
17. TOPSOIL IN FILL AREA TO BE STRIPPED AND APPROVED CLEAN FILL TO BE PLACED AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.
18. CONTRACTOR IS RESPONSIBLE FOR ALL LAYOUT FOR CONSTRUCTION PURPOSES.
19. THE ORIGINAL TOPOGRAPHY AND GROUND ELEVATIONS, SERVICING AND SURVEY DATA SHOWN ON THIS PLAN ARE SUPPLIED FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE ACCURACY OF ALL INFORMATION OBTAINED FROM THESE PLANS.
20. THICKNESS OF GRANULAR MATERIAL AND ASPHALT LAYERS SHALL BE IN ACCORDANCE WITH CITY STANDARD ROAD CROSS SECTION AND THE GEOTECHNICAL REPORT.
21. ALL ELEVATIONS ARE GEODETIC AND UTILIZE METRIC UNITS. ALL MEASUREMENTS UTILIZE METRIC UNITS.
22. CONTRACTOR TO PROVIDE THE ENGINEER WITH A GENERAL PLAN OF SERVICES INDICATING ALL SERVICING AS-BUILT INFORMATION SHOWN ON THIS PLAN. AS-BUILT INFORMATION MUST INDICATE: PIPE MATERIAL, SIZES, LENGTHS, SLOPES, INVERT AND T/G ELEVATIONS, STRUCTURE LOCATIONS, VALVE AND HYDRANTS LOCATIONS, T/WM ELEVATIONS AND ANY ALIGNMENT CHANGES, ETC. THE DRAWING SHALL ALSO INCLUDE THE AS-BUILT LOCATION AND INVERTS OF ALL SERVICE STUBS.

WATERMAINS

1. GENERAL:

ITEM	DETAIL. No.	REFERENCE
WATERMAIN TRENCHING	W17	CITY OF OTTAWA
HYDRANT	W18, W19	CITY OF OTTAWA
THERMAL INSULATION IN SHALLOW TRENCHES	W22, W23	CITY OF OTTAWA
WATERMAIN CROSSING BELOW SEWER / OVER SEWER	W25 / W25.2	CITY OF OTTAWA
VALVE BOX	W24	CITY OF OTTAWA

2. THE WATERMAIN SHALL BE PVCO (BIONAX, OR APPROVED EQUIVALENT) IN ACCORDANCE WITH MATERIAL SPECIFICATION MW-18.1, UNLESS OTHERWISE INDICATED.
3. CONSTRUCT ALL WATERMAINS AND APPURTENANCES IN ACCORDANCE WITH CITY OF OTTAWA STANDARDS AND SPECIFICATIONS. EXCAVATION, INSTALLATION, BACKFILL AND RESTORATION OF ALL WATERMAINS BY CONTRACTOR. CONNECTION TO EXISTING WATERMAIN BY CITY OF OTTAWA. NO WORK TO COMMENCE UNLESS A CITY OF OTTAWA WATER DEPARTMENT INSPECTOR IS ON SITE.
4. WATERMAIN MUST HAVE A MINIMUM VERTICAL CLEARANCE OF 0.25m OVER AND 0.50m UNDER SEWERS AND ALL OTHER UTILITIES WHEN CROSSING.
5. WATERMAINS AND/OR WATER SERVICE ARE TO HAVE A MINIMUM COVER OF 2.4m WITH A MINIMUM HORIZONTAL SPACING OF 2.0m FROM THEMSELVES AND OTHER UTILITIES, AS PER CITY OF OTTAWA STANDARD R20.
6. CATHODIC PROTECTION REQUIRED FOR ALL IRON FITTINGS CITY OF OTTAWA STANDARD DETAILS W40 AND W42.
7. PROVIDE THERMAL INSULATION FOR WATERMAIN AT OPEN STRUCTURES PER CITY OF OTTAWA STANDARD DETAIL W23.
8. WATERMAINS TO BE INSTALLED TO GRADE AS SHOWN, COPY OF GRADE SHEET MUST BE SUPPLIED TO INSPECTOR PRIOR TO COMMENCEMENT OF WORK WHERE REQUESTED BY THE INSPECTOR. CONTRACTOR TO PROVIDE AS-BUILT ELEVATIONS OF TOP OF WATERMAIN.
9. IF WATERMAIN MUST BE DEFLECTED TO MEET ALIGNMENT, ENSURE THAT THE AMOUNT OF DEFLECTION USED IS LESS THAN HALF THAT RECOMMENDED BY THE MANUFACTURER.
10. WATERMAIN TRENCHING AND BEDDING TO CONFORM TO CITY OF OTTAWA STANDARD DETAIL W17.
11. VALVES AND VALVE BOXES TO CONFORM WITH CITY OF OTTAWA STANDARD DETAIL W24.
12. FIRE HYDRANT C/W GATE VALVE AND VALVE BOX SHALL CONFORM TO CITY OF OTTAWA STANDARD DETAIL W19 AND CONTRACT SPECIFIC DETAILS.
13. CONCRETE THRUST BLOCKS TO CONFORM TO W25.3 AND W25.4.
14. ALL WATERMAIN SERVICE INSTALLATIONS AT SEWER CROSSINGS PER CITY OF OTTAWA STANDARD DETAIL W38.
15. RESTRAINING RINGS TO BE INSTALLED ON ALL CAPS, TEES, CROSSES, HORIZONTAL AND VERTICAL BENDS, REDUCERS, SLEEVES, COUPLINGS, CURB-STUBS, AUXILIARY, ISOLATION/LINE/BRANCH VALVES, TAPPING VALVES, HYDRANTS, OTHER FITTINGS THAT STOP FLOW OR CHANGE DIRECTION AND PUSH ON JOINTS WITHIN RESTRAINED LENGTH AS PER CITY OF OTTAWA DETAIL W25.5 AND W25.6.
16. WATER SERVICES ARE TO BE CONSTRUCTED TO 2.0m PAST PROPERTY LINE WITH REMAINING PIPE COILED FOR BUILDER EXTENSION.
17. WATERMAIN TESTING REQUIRED AS PER CITY OF OTTAWA SPECIFICATIONS F-4491 INCLUDING THE USE OF CHLORINATION NOZZLE AS PER CITY OF OTTAWA W46.
18. HYDRANT VALVES TO BE LOCATED WITHIN THE ROADWAY ASPHALT LIMITS AS PER W19 WHERE EVER POSSIBLE. CONTRACTOR IS TO ENSURE THAT THE VALVE IS NOT LOCATED WITHIN THE PROPOSED CURB LINE. VALVE TO BE LOCATED WITHIN THE BOULEVARD WHERE IT IS NOT POSSIBLE TO LOCATE WITHIN THE ASPHALT LIMITS.

SEWERS

1. SPECIFICATIONS:

ITEM	SPEC. No.	REFERENCE
CATCH BASIN (600x600mm)	705.010	OPSD
STORM / SANITARY MAINTENANCE HOLE (1200Ø)	701.010	OPSD
STORM / SANITARY MAINTENANCE HOLE (1500Ø)	701.011	OPSD
STORM / SANITARY MAINTENANCE HOLE (1800Ø)	701.012	OPSD
ROADSIDE CB, FRAME & COVER	S2 & S19	CITY of OTTAWA
CURB INLET CB, FRAME & COVER	S3, S22 & S23	CITY of OTTAWA
STORM / SANITARY MH FRAME & COVER	S24.1 / S24 & S25	CITY of OTTAWA
STORM SEWER	PVC DR 35 OR CONC. 100-D	
SANITARY SEWER	PVC DR 35	
RYCB PIPE AND CB LEAD	HDPE, 320kPa (min.)	
CATCH BASIN LEAD	PVC DR 35	
BEDDING - CLASS "B"	S5, S6 AND S7	

2. ALL SEWER MATERIALS AND CONSTRUCTION METHODS TO BE IN ACCORDANCE WITH CITY OF OTTAWA AND ONTARIO PROVINCIAL STANDARDS. PIPE BEDDING, COVER AND BACKFILL ARE TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY. THE USE OF CLEAR CRUSHED STONE AS A BEDDING LAYER SHALL NOT BE PERMITTED.
3. REARYARD SUBDRAIN SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STANDARD DETAILS S29, S30 AND S31 AND CONTRACT SPECIFIC DETAILS (SEE 117155-XS5A).
4. ALL ROAD CATCH BASINS SHALL INCLUDE THE CONNECTION OF THE CONTINUOUS ROADWAY SUBDRAIN.
5. ALL PROPOSED FOUNDATION DRAINS SHALL BE CONNECTED TO STORM SEWER.
6. SANITARY MAINTENANCE HOLE BENCHING SHALL FOLLOW OPSD 701.021.
7. ALL WORKS SHALL BE PERFORMED AS APPLICABLE IN ACCORDANCE WITH CITY OF OTTAWA STANDARD SPECIFICATIONS, AND ONTARIO PROVINCIAL STANDARD SPECIFICATIONS 407 AND 410.
8. ALL STORM AND SANITARY SERVICES ARE TO BE THE SIZES INDICATED AND THE MATERIAL SHALL BE PVC DR-28 @ 1.0% MINIMUM. SEWER SERVICE CONNECTIONS PER CITY OF OTTAWA DETAILS S11 AND S11.1.
9. INSULATE ALL STORM AND SANITARY SEWERS THAT HAVE LESS THAN 1.5m OF COVER WITH THERMAL INSULATION AS PER W22. PROVIDE 150mm OF CLEARANCE BETWEEN PIPE AND INSULATION.
10. SUPPLY AND INSTALLATION OF ALL PIPING AND APPURTENANCES AS SHOWN AND DETAILED TO 2.0m PAST PROPERTY LINE, UNLESS OTHERWISE NOTED. ALL SERVICE AND FUTURE MAINLINE STUBS ARE TO BE CAPPED USING MANUFACTURER APPROVED END CAPS.
11. THE SITE SERVICING CONTRACTOR SHALL PERFORM FIELD TESTS FOR QUALITY CONTROL OF ALL SANITARY SEWERS. LEAKAGE TESTING SHALL BE COMPLETED IN ACCORDANCE WITH OPSS 410.07.16 AND 407.07.24. DYE TESTING IS TO BE COMPLETED ON ALL SANITARY SERVICES TO CONFIRM PROPER CONNECTION TO THE SANITARY SEWER MAIN WHEN REQUIRED BY CITY OF OTTAWA INSPECTOR. THE FIELD TESTS SHALL BE PERFORMED IN THE PRESENCE OF THE ENGINEER.
12. STORM MAINTENANCE HOLES AND CATCHBASIN MAINTENANCE HOLES FOR PIPE SIZES LESS THEN 900mmØ SHALL HAVE 300mm SUMPS UNLESS OTHERWISE INDICATED. STORM MAINTENANCE HOLES AND CATCHBASIN MAINTENANCE HOLES FOR PIPE SIZES OF 900mmØ OR GREATER SHALL BE BENCHED IN ACCORDANCE WITH S12.2.
13. CONTRACTOR TO TELEVISE (CCTV) ALL PROPOSED SEWERS 200mmØ OR GREATER PRIOR TO BASE COURSE ASPHALT. UPON COMPLETION OF CONTRACT, THE CONTRACTOR IS RESPONSIBLE TO FLUSH AND CLEAN ALL SEWERS & APPURTENANCES.
14. PRIOR TO THE START OF CONSTRUCTION, TEMPORARY 30mmØ PLUG TYPE ICD C/W TRASH BASKET TO BE INSTALLED IN THE OUTLET PIPE OF SANITARY MAINTENANCE HOLE 301. TEMPORARY INLET CONTROL DEVICE TO BE REMOVED PRIOR TO CONNECTION OF SANITARY SERVICE LATERALS.
15. FLEXIBLE CONNECTIONS ARE REQUIRED FOR ALL CONNECTIONS TO CONCRETE PIPES AND CONNECTIONS TO MAINTENANCE HOLES OF PIPES 825mmØ OR LESS. CONTRACTOR TO USE KOR-N-SEAL OR EQUIVALENT. PIPES GREATER THAN 825mmØ ARE TO BE CONNECTED TO MAINTENANCE HOLES AS PER MUNICIPAL STANDARDS.
16. SEWER TRENCHES TO BE BACKFILLED WITH NATIVE SOIL TO MATCH THE EXISTING SOIL PROFILE, IN ORDER TO MINIMIZE THE DIFFERENTIAL FROST HEAVING OVER THE SERVICES.
17. ALL SEWER PIPES INSTALLED TO A GRADIENT OF 0.50% OR LOWER USING A LASER DEVICE SHALL BE CHECKED WITH A LEVEL INSTRUMENT PRIOR TO BACKFILLING.
18. CONTRACTOR TO INSTALL CLAY SEALS IN SERVICE TRENCHES WHERE INDICATED. CLAY SEALS PER CITY OF OTTAWA STANDARD S8 AND MUST BE A MINIMUM LENGTH OF 1.5m.
19. ALL ROADWAY CATCH BASIN LEADS SHALL BE 200mm DIA. UNLESS OTHERWISE NOTED ON THE DRAWINGS.
20. WHERE START OF RUN STORM MAINTENANCE HOLES ARE NOT LOCATED WITHIN PONDING AREAS, THEY SHALL HAVE A PERFORATED COVER AS PER S28.1.

TYPICAL SEMI-DETACHED & TOWNHOUSE LOT SERVICING NOTES

1. NO HORIZONTAL BENDS IN RIGHT-OF-WAY UNLESS OTHERWISE APPROVED BY THE CITY. MAXIMUM OF TWO 22.5° HORIZONTAL BENDS FOR SANITARY AND STORM SERVICES.
2. 1.0% MINIMUM SANITARY AND STORM SERVICE GRADIENT WITH 2% PREFERRED.
3. STORM SERVICE LATERAL SHALL BE LOCATED TO THE LEFT OF SANITARY SERVICE LATERAL WHEN LOOKING AT THE STRUCTURE FROM THE STREET AS PER CITY OF OTTAWA STANDARD S11.3. SERVICE SIZES IN CONFORMANCE WITH CITY OF OTTAWA STANDARD S11.
4. SEE CITY OF OTTAWA STANDARD S6 AND S7 FOR PIPE FOUNDATION, EMBEDMENT AND FINAL BACKFILL REQUIREMENTS.
5. MULTIPLE TAPS WITH SADDLES IN PVC WATERMAIN SHALL BE STAGGERED AND BE A MINIMUM OF 600mm APART.
6. ELEVATION OF SERVICES VARIABLE DEPENDING ON GRADIENT AND/OR DEPTH OF COVER.
7. GRADE AND/OR FILL BEHIND PROPOSED CURB AND BETWEEN BUILDINGS AND CURBS, WHERE REQUIRED TO PROVIDE POSITIVE DRAINAGE.
8. SEE CITY OF OTTAWA STANDARD W27 FOR ADDITIONAL WATER SERVICING SCENARIOS.

GRADING

1. FINISHED LOT GRADING WILL NOT ADVERSELY AFFECT DRAINAGE PATTERNS OF ADJACENT LANDS.
2. ALL GRADES TO BE WITHIN 33% MAX. (3:1) SLOPE AT PROPERTY LINE AND WITHIN THE SITE, UNLESS OTHERWISE NOTED.
3. MATCH EXISTING ELEVATIONS AT ALL PROPERTY LINES, UNLESS OTHERWISE NOTED. ENSURE POSITIVE DRAINAGE WHETHER INDICATED OR NOT.
4. WHERE EXISTING GRADE IS FOUND TO BE MORE THAN 300mm BELOW THE GRADES INDICATED ON THIS GRADING PLAN, CONTACT ENGINEER IMMEDIATELY.
5. SWALES LESS THAN 1.5% SHALL HAVE A SUBDRAIN AS PER CITY OF OTTAWA STANDARD S29, S30 AND S31.
6. CURBS ARE BARRIER TYPE, AS NOTED ON DRAWINGS. CONSTRUCTION OF CURBS PER CITY OF OTTAWA DETAILS SC1.1.
7. ALL TOPSOIL, ORGANICS AND ANY SOFT, WET OR DELETERIOUS MATERIAL MUST BE ENTIRELY REMOVED FROM BENEATH THE PROPOSED PAVED AREAS AS DIRECTED BY THE SITE ENGINEER OR GEOTECHNICAL ENGINEER IN PREPARATION OF THE SUBGRADE.
8. ALL EXCESS EXCAVATED MATERIAL TO BE STOCKPILED OR SPREAD ONSITE AS DIRECTED BY THE ENGINEER. ALL ORGANIC MATERIAL AND DEBRIS TO BE USED OR STOCKPILED ONSITE AS INSTRUCTED BY THE ENGINEER.
9. EXPOSED SUBGRADES IN PROPOSED PAVED AREAS SHOULD BE PROOF ROLLED WITH A LARGE STEEL DRUM ROLLER AND INSPECTED BY THE GEOTECHNICAL ENGINEER PRIOR TO THE PLACEMENT OF GRANULARS.
10. ANY SOFT AREAS EVIDENT FROM THE PROOF ROLLING SHOULD BE SUB-EXCAVATED AND REPLACED WITH SUITABLE MATERIAL THAT IS FROST COMPATIBLE WITH THE EXISTING SOILS AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
11. THE GRANULAR BASE SHOULD BE COMPACTED TO AT LEAST 98% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE. ANY ADDITIONAL GRANULAR FILL USED BELOW THE PROPOSED PAVEMENT SHOULD BE COMPACTED TO AT LEAST 98% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE.
12. PRIOR TO CONSTRUCTION ALL SUBGRADE SURFACES FOR FOOTING AND PAVEMENT STRUCTURES ARE TO BE INSPECTED BY A GEOTECHNICAL ENGINEER LICENSED IN THE PROVINCE OF ONTARIO.
13. ROADWAY SUBGRADE TO BE INSPECTED BY THE GEOTECHNICAL ENGINEER AT THE TIME OF CONSTRUCTION TO REVIEW THE GRANULAR 'B' DEPTH AND FOR THE NECESSITY OF A WOVEN GEOTEXTILE BELOW THE GRANULAR MATERIALS.
14. ALL ROADWAYS TO HAVE 3% CROSSFALL INCLUDING SUBGRADE AND GRANULAR BASE UNLESS OTHERWISE NOTED ON THE DRAWINGS.
15. MINIMUM OF 2% GRADE FOR ALL GRASS AREAS UNLESS OTHERWISE NOTED.
16. ALL GRADES BY CURBS ARE EDGE OF PAVEMENT GRADES UNLESS OTHERWISE INDICATED.
17. ALL ROADWAYS TO HAVE CONTINUOUS 150mm DIA. PERFORATED SUBDRAIN INSTALLED ALONG THE EDGE OF PAVEMENT AS PER CITY OF OTTAWA DETAIL R1.

EROSION AND SEDIMENT CONTROL NOTES

1. THE OWNER AGREES TO PREPARE AND IMPLEMENT AN EROSION AND SEDIMENT CONTROL PLAN TO THE SATISFACTION OF THE CITY OF OTTAWA, PRIOR TO UNDERTAKING ANY SITE ALTERATIONS AND DURING ALL PHASES OF THE SITE PREPARATION AND CONSTRUCTION IN ACCORDANCE WITH THE CURRENT BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL SUCH AS BUT NOT LIMITED TO INSTALLING FILTER CLOTHS ACROSS MAINTENANCE HOLES & REARYARD CATCHBASINS, INLET PROTECTION FOR CATCHBASINS/CATCHBASIN MAINTENANCE HOLES AND INSTALLING AND MAINTAINING LIGHT DUTY SILT FENCE BARRIERS AND ROCK FLOW CHECK DAMS AS REQUIRED.
2. CONDITIONS OF THE EROSION AND SEDIMENT CONTROL MEASURES TO BE INSPECTED REGULARLY AND REPLACED OR REPAIRED AS REQUIRED OR AS INSTRUCTED BY THE ENGINEER.
3. THE CONTRACTOR SHALL ENSURE THAT ROADS ARE KEPT CLEAN AT ALL TIMES USING SUCH PRACTICES AS WASHING DOWN TRUCK TIRES, ROAD SWEEPING AND FLUSHING ETC.
4. THE CONTRACTOR ACKNOWLEDGES THAT SURFACE EROSION AND SEDIMENT RUNOFF RESULTING FROM HIS CONSTRUCTION OPERATIONS WILL HAVE A DETRIMENTAL IMPACT TO ANY DOWNSTREAM WATERCOURSE OR SEWER, AND THAT ALL CONSTRUCTION OPERATIONS THAT MAY IMPACT UPON WATER QUALITY SHALL BE CARRIED OUT IN A MANNER THAT STRICTLY MEETS THE REQUIREMENTS OF ALL APPLICABLE LEGISLATION AND REGULATIONS.
5. AS SUCH, THE CONTRACTOR SHALL BE RESPONSIBLE FOR CARRYING OUT HIS OPERATIONS, AND SUPPLYING AND INSTALLING ANY APPROPRIATE CONTROL MEASURES, SO AS TO PREVENT SEDIMENT LADEN RUNOFF FROM ENTERING ANY SEWER OR WATERCOURSE WITHIN DOWNSTREAM OF THE WORKING AREA.
6. FOR THIS PROJECT THE SUGGESTED ON-SITE MEASURES SHALL INCLUDE BUT SHALL NOT BE LIMITED TO THE FOLLOWING METHODS:
   - CATCHBASIN INLET PROTECTION
   - MAINTENANCE HOLE AND REAR YARD CATCHBASIN INLET PROTECTION
   - LIGHT DUTY SILT FENCE
   - MUD MATS
   - ROCK FLOW CHECK DAMS
7. SPECIFIC MEASURES SHALL BE INSTALLED AT THE SPECIFIED LOCATIONS AND IN ACCORDANCE WITH THE REQUIREMENTS OF OPSS 805 WHERE APPROPRIATE, OR IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
8. WHERE, IN THE OPINION OF THE CONTRACT ADMINISTRATOR OR ANY REGULATORY AGENCY, THE INSTALLED CONTROL MEASURES FAIL TO PERFORM ADEQUATELY, THE CONTRACTOR SHALL SUPPLY AND INSTALL ADDITIONAL OR ALTERNATIVE MEASURES AS DIRECTED BY THE CONTRACT ADMINISTRATOR OR THE REGULATORY AGENCY. AS SUCH, THE CONTRACTOR SHALL HAVE ADDITIONAL CONTROL MATERIALS ON SITE AT ALL TIMES WHICH ARE EASILY ACCESSIBLE AND MAY BE IMPLEMENTED BY THE CONTRACTOR AT A MOMENTS NOTICE.
9. THE CONTRACTOR SHALL ENSURE THAT ALL WORKERS, INCLUDING SUB-CONTRACTORS, IN THE WORKING AREA ARE AWARE OF THE IMPORTANCE OF THE EROSION AND SEDIMENT CONTROL MEASURES AND INFORMED OF THE CONSEQUENCES OF THE FAILURE TO COMPLY WITH THE REQUIREMENTS OF ALL REGULATORY AGENCIES AND THE SPECIFICATIONS DETAILED HEREIN.
10. THE CONTRACTOR SHALL PERIODICALLY, OR WHEN REQUESTED BY THE CONTRACT ADMINISTRATOR, CLEAN OUT ACCUMULATED SEDIMENT DEPOSITS AS REQUIRED AT THE SEDIMENT CONTROL DEVICES, INCLUDING THOSE DEPOSITS THAT MAY ORIGINATE FROM OUTSIDE THE CONSTRUCTION AREA. ACCUMULATED SEDIMENT SHALL BE REMOVED IN SUCH A MANNER THAT PREVENTS THE DEPOSITION OF THIS MATERIAL INTO ANY SEWER OR WATERCOURSE AND AVOIDS DAMAGE TO THE CONTROL MEASURE. THE SEDIMENT SHALL BE REMOVED FROM THE SITE AT THE CONTRACTOR'S EXPENSE AND MANAGED IN COMPLIANCE WITH THE REQUIREMENTS FOR EXCESS EARTH MATERIAL, AS SPECIFIED ELSEWHERE IN THE CONTRACT.
11. TO LIMIT EROSION: MINIMIZE THE AMOUNT OF EXPOSED SOILS AT ANY GIVEN TIME, RE-VEGETATE EXPOSED AREAS AND SLOPES AS SOON AS POSSIBLE AND PROTECT EXPOSED SLOPES WITH NATURAL OR SYNTHETIC MULCHES.
12. ANY ONSITE STOCKPILES SHALL BE LOCATED IN AREAS TO BE DESIGNATED BY THE ENGINEER AND WELL AWAY FROM DRAINAGE SWALES AND OUTLET DITCHES.
13. EROSION AND SEDIMENT CONTROL MEASURES WILL BE IMPLEMENTED DURING CONSTRUCTION IN ACCORDANCE WITH THE "GUIDELINES ON EROSION AND SEDIMENT CONTROL FOR URBAN CONSTRUCTION SITES" (GOVERNMENT OF ONTARIO, MAY 1987). THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MEETING ALL REGULATORY AGENCY REQUIREMENTS.
14. A VISUAL INSPECTION OF THE SEDIMENT CONTROL MEASURES WILL BE PERFORMED DAILY BY THE CONTRACTOR. THE CONTRACTOR SHALL SUBMIT TO THE CONTRACT ADMINISTRATOR WEEKLY INSPECTION REPORTS DETAILING AND PROVING THE SPECIFIED AND REQUIRED PERFORMANCE OF THE INSTALLED MEASURES. THE CONTRACTOR SHALL PERIODICALLY, AND WHEN REQUESTED BY THE ENGINEER, CLEAN OUT ACCUMULATED SEDIMENT DEPOSITS AS REQUIRED AT THE SEDIMENT CONTROL DEVICES WITHOUT DAMAGING THE DEVICES OR CAUSING DISCHARGE INTO THE SEWERS OR NEARBY WATERCOURSES.
15. THE SEDIMENT CONTROL MEASURES SHALL ONLY BE REMOVED WHEN, IN THE OPINION OF THE ENGINEER, THE MEASURE OR MEASURES, IS NO LONGER REQUIRED. NO CONTROL MEASURE MAY BE PERMANENTLY REMOVED WITHOUT PRIOR AUTHORIZATION FROM THE ENGINEER.
16. THE CONTRACTOR SHALL IMMEDIATELY REPORT TO THE ENGINEER ANY ACCIDENTAL DISCHARGES OF SEDIMENT MATERIAL INTO ANY DITCH OR STORM SEWER SYSTEM. APPROPRIATE RESPONSE MEASURES, INCLUDING ANY REPAIRS TO EXISTING CONTROL MEASURES OR THE IMPLEMENTATION OF ADDITIONAL CONTROL MEASURES, SHALL BE CARRIED OUT BY THE CONTRACTOR WITHOUT DELAY.
17. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
18. THE CONTRACTOR SHALL MONITOR ALL WEATHER FORECASTS AND SCHEDULE THE WORK IN ORDER TO MINIMIZE THE RISK OF SEDIMENT-LADEN RUNOFF ENTERING ANY WATERCOURSE OR SEWER SYSTEM.
19. THE CONTRACTOR SHALL KEEP MATERIAL FOR ADDITIONAL EROSION AND SEDIMENT CONTROLS ONSITE AT ALL TIMES. THESE MATERIALS INCLUDE BUT ARE NOT LIMITED TO: SILT FENCES, STRAW BALES, SEDIMENT BAGS AND CLEAR STONE. A CONTINGENCY PLAN TO INCLUDE THE PROVISION OF ADDITIONAL LABOUR, EQUIPMENT OR MATERIALS TO INSTALL ADDITIONAL CONTROL MEASURES, AS WELL AS PROVIDE AN EMERGENCY RESPONSE PLAN IN CASE OF AN ACCIDENTAL EVENT. AS SUCH, THE CONTRACTOR SHALL HAVE ADDITIONAL CONTROL MATERIALS ON SITE AT ALL TIMES WHICH ARE EASILY ACCESSIBLE AND MAY BE IMPLEMENTED AT A MOMENTS NOTICE.
20. IN ADDITION TO ANY OTHER REMEDY AND/OR PENALTY PROVIDED BY LAW, WHERE THERE HAS BEEN DEFAULT OR NON-COMPLIANCE WITH ANY OF THE TERMS SPECIFIED HEREIN AND THE CONTRACTOR REFUSES TO PERFORM OR RECTIFY WITHIN FORTY-EIGHT (48) HOURS OF THE RECEIPT OF THE WRITTEN DEMAND OF THE CONTRACT ADMINISTRATOR TO DO SO, THE OWNER IS HEREBY ENTITLED TO ENTER UPON THE WORKING AREA AND EITHER COMPLETE THE WORK IN CONFORMANCE WITH THE CONTRACT OR HAVE THE WORK DONE THAT IT CONSIDERS NECESSARY TO COMPLETE THE WORK TO ITS INTENDED CONDITION, WHICHEVER, IN THE OWNER'S SOLE OPINION, IS THE MOST REASONABLE COURSE OF ACTION. THE CONTRACTOR AND THE OWNER FURTHER AGREE THAT THE COST INCURRED FOR ANY SUCH WORK SHALL BE RETAINED BY THE OWNER FROM MONIES OTHERWISE DUE TO THE CONTRACTOR.
21. ENSURE PROPER DUST CONTROL WITH (AT MINIMUM) THE APPLICATION OF WATER (AND IF REQUIRED, CALCIUM CHLORIDE OR OTHER APPROVED ALTERNATIVE) DURING DRY PERIODS.
22. EROSION AND SEDIMENT CONTROL MEASURES MAY BE MODIFIED IN THE FIELD AT THE DISCRETION OF CITY OF OTTAWA SITE INSPECTOR OR CONSERVATION AUTHORITY.

GEOTECHNICAL REFERENCE

1. REFER TO GEOTECHNICAL INVESTIGATION (REPORT #PG4278-1, REVISION 5, DATED SEPTEMBER 22, 2022) BY PATERSON GROUP.

CLAY SEALS

1. INSTALL CLAY SEALS (SEEPAGE BARRIERS) AS PER CITY OF OTTAWA DETAIL S8.
2. CLAY SEALS SHALL EXTEND FROM TRENCH WALL TO TRENCH WALL AND FROM SEWER SUB GRADE LEVEL.
3. CLAY SEALS SHALL CONSIST OF 1.5m WIDE WEATHER DRIED (COMPATIBLE) SILTY CLAY, COMPACTED IN THIN LIFTS TO AT LEAST 95% STANDARD PROCTOR DENSITY.
4. REFER TO PLAN AND PROFILE DRAWINGS FOR LOCATION OF SEEPAGE BARRIERS.
5. CLAY SEALS TO BE INSTALLED AT NO MORE THAN 60m INTERVALS.

PAVEMENT STRUCTURE

LOCAL ROADS

40mm SUPERPAVE 12.5 LEVEL B PG 58-34
50mm SUPERPAVE 19.0 LEVEL B PG 58-34
150mm GRANULAR "A"
450mm GRANULAR "B" TYPE II
690mm

LEGEND

SITE BOUNDARY
MINIMUM ZONING SETBACK
LOT LINE
EASEMENT
PHASING BOUNDARY
D.C. — PROPOSED DEPRESSED CURB
PROPOSED CURB
PROPOSED TACTILE WALKING SURFACE INDICATOR (TWSI)
PROPOSED CONCRETE SIDEWALK
PROPOSED ASPHALT SIDEWALK
PROPOSED 2.2m HIGH NOISE BARRIER
PROPOSED 1.5m BLACK VINYL CHAINLINK FENCE
PROPOSED 1.8m BLACK VINYL CHAINLINK FENCE
PROPOSED 1.8m WOOD PRIVACY FENCE
PROPOSED POST AND RAIL FENCE
104.62 — PROPOSED ELEVATION
104.62VPI — PROPOSED VERTICAL POINT OF INTERSECTION
103.31TF — PROPOSED TOP OF NOISE BARRIER ELEVATION
103.11BF — PROPOSED BOTTOM OF NOISE BARRIER ELEVATION
104.00(S) — PROPOSED SWALE ELEVATION
104.00(S)TG — PROPOSED SWALE/TOP OF GRATE ELEVATION
104.00(S)HP — PROPOSED SWALE HIGH POINT
104.00 — EXISTING ELEVATION
102.76 — PROPOSED TERRACE ELEVATION
PROPOSED TERRACING (MAXIMUM 3:1 SLOPE)
FUTURE TERRACING (MAXIMUM 3:1 SLOPE)
1.3% — PROPOSED SLOPE
FF — PROPOSED FINISHED FLOOR ELEVATION
TF — PROPOSED TOP OF FOUNDATION
USF — PROPOSED UNDERSIDE OF FOOTING
MUSF — MINIMUM SERVICEABLE UNDERSIDE OF FOOTING
DE — PROPOSED DROPPED ENTRY UNIT TYPE
PROPOSED SWALE
PROPOSED BERM LIMITS
PROPOSED TOP OF SLOPE
MAJOR OVERLAND FLOW
MAJOR OVERLAND FLOW
96.98 — 1:100yr + 20% PONDING AREA AND ELEVATION
96.96 — 1:100yr PONDING AREA AND ELEVATION
96.72 — 1:2yr PONDING AREA AND ELEVATION
PROPOSED TOWNHOUSE SERVICE LOCATION
PROPOSED SERVICE LOCATION IN DRIVEWAY
PROPOSED TOWNHOUSE DUAL SERVICE LOCATION
PROPOSED SINGLE HOUSE SERVICE LOCATION
PROPOSED DIRECTION OF FLOW
301 — PROPOSED SANITARY MAINTENANCE HOLE & SEWER
300 — PROPOSED STORM MAINTENANCE HOLE & SEWER
CAP — PROPOSED SANITARY SEWER CAP
CAP — PROPOSED STORM SEWER CAP
300A — PROPOSED VORTECHS (9000)
CB-2 — PROPOSED CATCHBASIN & LEAD
CBMH-2 — PROPOSED CATCHBASIN MAINTENANCE HOLE & LEAD
DICB-2 — PROPOSED DITCH INLET CATCHBASIN & LEAD
LCB-2-1 — PROPOSED REAR YARD ELBOW & PERFORATED PIPE
LCB-2-2 — PROPOSED REAR YARD TEE & PERFORATED PIPE
RYAP-4-10 — PROPOSED REAR YARD ACCESS POINT & PERFORATED PIPE
200mmØ — PROPOSED WATERMAIN
CAP — PROPOSED WATERMAIN CAP
VVB — PROPOSED VALVE & VALVE BOX LOCATION
HYD — PROPOSED FIRE HYDRANT C/W LEAD
45° — PROPOSED WATERMAIN HORIZONTAL BEND
3m BUILDING SEPARATION OR 2 HOUR FIREWALL REQUIRED (BY BUILDER)
SB — CLAY SEEPAGE BARRIER
PROPOSED STREETLIGHT
PROPOSED STREETLIGHT WITH GROUNDING
FUTURE STREETLIGHT
PROPOSED HYDRO ONE TRANSFORMER AND BASE
B — PROPOSED BELL PEDESTAL
PROPOSED ROGERS NODE AND PEDESTAL
PROPOSED NAP ROGERS PEDESTAL
SD — PROPOSED STREET LIGHT DISCONNECT
GLB — BELL GRADE LEVEL BOX

GM — PROPOSED GAS METER LOCATION
HM — PROPOSED INDIVIDUAL HYDRO METER LOCATION
HM 3 — PROPOSED MULTI UNIT HYDRO METER LOCATION NUMBER INDICATES THE AMOUNT OF UNITS CONNECTED
B — PROPOSED BELL END WALL PANEL
R — PROPOSED ROGERS END WALL PANEL
PROPOSED PRIMARY JOINT UTILITY TRENCH (JUT)
PROPOSED STREET LIGHT CONDUIT
CMB — PROPOSED COMMUNITY MAIL BOX
PROPOSED DUCT ROAD CROSSING
2H — HYDRO (2 DUCTS)
1C — CABLE TELEVISION (1 DUCT)
1SL — STREETLIGHT (1 DUCT)
1B — BELL (1 DUCT)
2S — SPARE (2 DUCT)
PROPOSED DECIDUOUS TREE
EXISTING DEPRESSED CURB
EXISTING CURB
EXISTING TACTILE WALKING SURFACE INDICATOR (TWSI)
EXISTING STAMPED CONCRETE
EXISTING STREETLIGHT
EXISTING DOUBLE HEAD STREETLIGHT
EXISTING 2.2m HIGH NOISE BARRIER
EXISTING WIRE FENCE
89.47 — *EXISTING ELEVATION*
89.47(D) — *EXISTING CENTERLINE OF DITCH ELEVATION*
89.66 — *EXISTING TERRACE ELEVATION*
EXISTING TOWNHOUSE DUAL SERVICE LOCATION
EXISTING TOWNHOUSE SERVICE LOCATION
EXISTING SERVICE LOCATION IN DRIVEWAY
EXISTING SINGLE HOUSE SERVICE LOCATION
EX SAN MH, 450mmØ — *EXISTING SANITARY MAINTENANCE HOLE & SEWER*
450mmØ — *EXISTING STORM MAINTENANCE HOLE & SEWER*
CAP — *EXISTING CAP*
EX STM MH — *EXISTING STORM BOX MAINTENANCE HOLE*
EX CB — *EXISTING CATCHBASIN & LEAD*
EX DICB — *EXISTING DITCH INLET CATCHBASIN & LEAD*
EX LCB — *EXISTING LANDSCAPE CATCHBASIN & PERFORATED PIPE*
T/G — *EXISTING TOP OF GRATE*
300mmØ — *EXISTING WATERMAIN*
HYD — *EXISTING FIRE HYDRANT C/W LEAD*
VVB — *EXISTING VALVE & VALVE BOX LOCATION*
EXISTING TREES
EXISTING HYDRO TRANSFORMER
123 2x200A 2x600A — *EXISTING 3 PHASE PAD-MOUNTED SF6 SWITCHGEAR, NUMBER AND CONFIGURATION*
B — *EXISTING BELL PEDESTAL*
EXISTING ROGERS PEDESTAL
EXISTING NAP ROGERS PEDESTAL
SD — *EXISTING STREET LIGHT DISCONNECT*
GLB — *EXISTING BELL GRADE LEVEL BOX*
EXISTING UTILITY POLE
EXISTING JOINT UTILITY TRENCH
EXISTING STREET LIGHT CONDUIT
OHW — *EXISTING OVERHEAD WIRES*
B — *EXISTING BELL CONDUIT*
R — *EXISTING ROGERS CONDUIT*
H — *EXISTING HYDRO CONDUIT*
2G — *EXISTING 50mm GAS CONDUIT*
G — *EXISTING 100mm GAS CONDUIT*
EXISTING HANDHOLE
EXISTING STREET LIGHT
CMB — *EXISTING COMMUNITY MAILBOX*

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

PROVENCE ORLÉANS

No.	REVISION	DATE	BY
1.	ISSUED FOR REVIEW	JUL 23/24	TJM

SCALE: N.T.S.

DESIGN: SAB
CHECKED: TJM
DRAWN: SAB
CHECKED: TJM
APPROVED: TJM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
T. J. MCKAY
100195434
July 23, 2024
PROVINCE OF ONTARIO

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LOCATION
CITY OF OTTAWA
PROVENCE ORLEANS SUBDIVISION (2128 TRIM ROAD)

DRAWING NAME
PHASE 5A
NOTES & LEGEND

PROJECT No. 117155-00
REV: REV # 1
DRAWING No. 117155-N&L5A

D07-16-18-0021

PLANA1.DWG - 841mmx594mm
#18004

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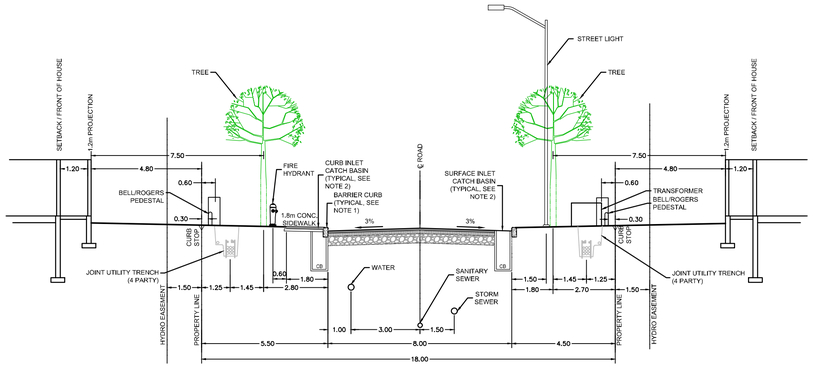
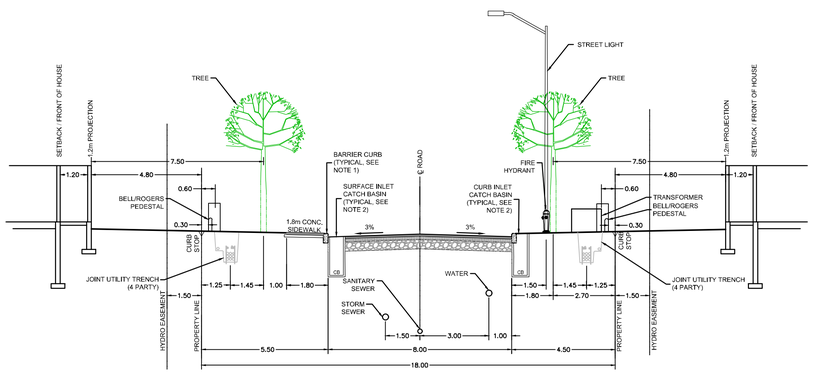
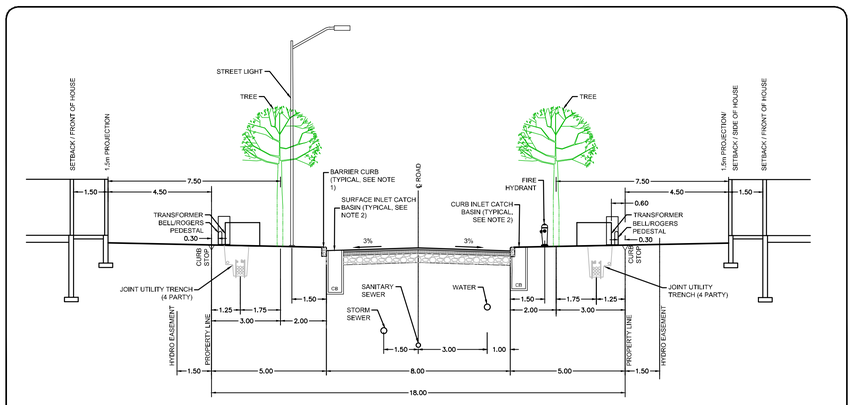


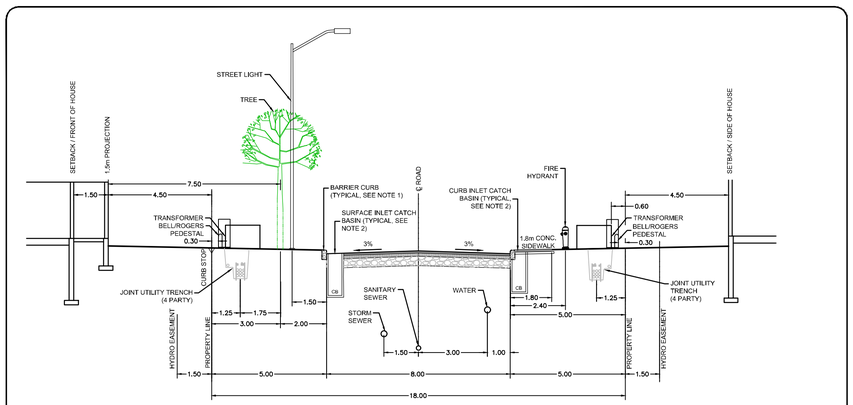
RESIDENTIAL ROAD 18m ROW (WITH SIDEWALK) TYPICAL CROSS SECTION
rue DICK BROWN STREET (STA. 3+020 TO 3+215)
N.T.S.
4-PARTY JOINT UTILITY TRENCH



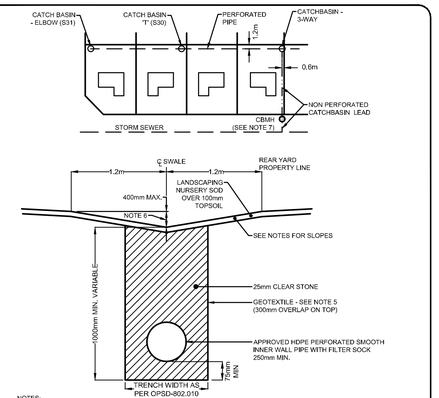
RESIDENTIAL ROAD 18m ROW (WITH SIDEWALK) TYPICAL CROSS SECTION
de MONTRICHARD ROAD (STA. 7+020 to 7+265)
N.T.S.
4-PARTY JOINT UTILITY TRENCH



RESIDENTIAL ROAD 18m ROW (NO SIDEWALK) TYPICAL CROSS SECTION
de MONTRICHARD ROAD (STA. 7+355 to 7+600)
N.T.S.



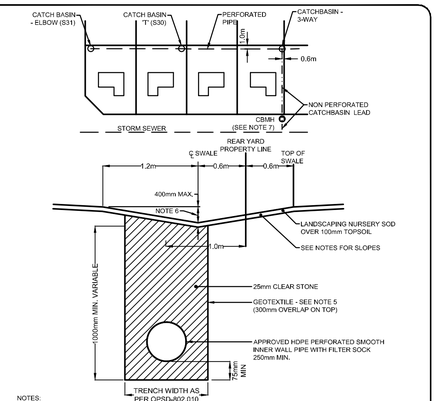
RESIDENTIAL ROAD 18m ROW (WITH SIDEWALK) TYPICAL CROSS SECTION
de MONTRICHARD ROAD (STA. 7+600 to 7+675)
N.T.S.



NOTES:

1. SIDE SLOPE OF SWALE - MIN. 1.5%, MAX 3:1
2. LONGITUDINAL SLOPE OF SWALE WITHOUT PERFORATED PIPE 1.5% MIN.
3. LONGITUDINAL SLOPE OF SWALE WITH PERFORATED PIPE 0.5% MIN. WITH 1% OR GREATER PREFERRED.
4. UNDER DRIVEWAYS NON PERFORATED PIPE TO BE USED WITH 75mm BEDDING AND BACKFILLED WITH APPROVED NATIVE MATERIAL.
5. GEOTEXTILE SHALL BE APPROVED NON-WOVEN CLASS 1 OR AS SPECIFIED.
6. MAXIMUM REAR YARD WATER DEPTH IS 400mm.
7. A STANDARD CATCHBASIN NO DEEPER THAN 2.4m OR A CATCHBASIN MAINTENANCE HOLE. STANDARD FRAMES C:W PERFORATED OR SOLID COVER AS SPECIFIED. STANDARD ICD'S AS SPECIFIED.

REARYARD TYPICAL CROSS SECTION 'A'
PERFORATED PIPE INSTALLATION FOR REARYARD AND LANDSCAPING APPLICATIONS, EXERNAL PROPERTY LINES AND SIDE YARD PROPERTY LINES
N.T.S.



NOTES:

1. SIDE SLOPE OF SWALE - MIN. 1.5%, MAX 3:1
2. LONGITUDINAL SLOPE OF SWALE WITHOUT PERFORATED PIPE 1.5% MIN.
3. LONGITUDINAL SLOPE OF SWALE WITH PERFORATED PIPE 0.5% MIN. WITH 1% OR GREATER PREFERRED.
4. UNDER DRIVEWAYS NON PERFORATED PIPE TO BE USED WITH 75mm BEDDING AND BACKFILLED WITH APPROVED NATIVE MATERIAL.
5. GEOTEXTILE SHALL BE APPROVED NON-WOVEN CLASS 1 OR AS SPECIFIED.
6. MAXIMUM REAR YARD WATER DEPTH IS 400mm.
7. A STANDARD CATCHBASIN NO DEEPER THAN 2.4m OR A CATCHBASIN MAINTENANCE HOLE. STANDARD FRAMES C:W PERFORATED OR SOLID COVER AS SPECIFIED. STANDARD ICD'S AS SPECIFIED.

REARYARD TYPICAL CROSS SECTION 'B'
PERFORATED PIPE INSTALLATION FOR REAR YARD AND LANDSCAPING APPLICATIONS, INTERNAL PROPERTY LINES (REAR YARD TO REAR YARD)
N.T.S.

NOTES:
1. BARRIER CURB TO BE INSTALLED.
2. CATCH BASINS TO BE CURB INLET TYPE ON WATERMAIN SIDE AND SURFACE INLET ON STORM SEWER SIDE (TYPICAL). REFER TO GENERAL PLAN OF SERVICES (117155-GP5A).
3. HYDRO EASEMENTS AT TRANSFORMER LOCATIONS ONLY.
4. UTILITY EASEMENTS LOCATED WHERE REQUIRED. REFER TO LEGAL PLANS.
5. TRANSFORMERS TO BE LOCATED ON THE OPPOSITE SIDE OF SIDEWALKS WHENEVER POSSIBLE.
6. ALL DIMENSIONS IN METERS UNLESS OTHERWISE INDICATED.

REFER TO 117155-N&L5A FOR ADDITIONAL NOTES

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

PROVENCE ORLÉANS

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SCALE

DESIGN SAB
CHECKED TJM
DRAWN SAB
CHECKED TJM
APPROVED TJM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
T. J. MCKAY
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July 23, 2024
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Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
PROVENCE ORLEANS SUBDIVISION (2128 TRIM ROAD)

DRAWING NAME
PHASE 5A
CROSS SECTIONS

PROJECT No. 117155-00
REV REV # 1
DRAWING No. 117155-XS5A

D07-16-18-0021

#18004

PLAN47.DWG

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PHASE 5A STRUCTURE DATA

SANITARY MAINTENANCE HOLE TABLE

MANHOLE ID	STATION	SIZE (mm)	T/G ELEV (m)	INVERT (m)
301[a]	3+047.48	1,200 mm dia	89.41	S=84.99 N=85.02
303	3+130.49	1,200 mm dia	89.55	S=85.31 W=85.37 N=85.34
305	3+219.75	1,200 mm dia	89.45	S=85.65 W=85.71 E=85.71

a - MAINTENANCE HOLE FRAME AND COVER TO BE WATERTIGHT, "CAMPRESSION" (#41420049W01) BY EJ.

STORM MAINTENANCE HOLE TABLE

MANHOLE ID	STATION	SIZE (mm)	T/G ELEV (m)	INVERT (m)
300A[a]	2+018.87	4,877 mm x 3,048 mm	89.33	N=85.17
300[a]	3+045.98	1,800 mm dia	89.34	S=85.27 N=85.27
302	3+128.99	1,800 mm dia	89.49	S=85.60 W=85.85 N=85.86
304	3+221.20	1,500 mm dia	89.38	S=86.23 W=86.38 E=86.58

a - MAINTENANCE HOLE FRAME AND COVER TO BE WATERTIGHT, "CAMPRESSION" (#41420050W01) BY EJ.

CATCHBASIN TABLE

CB ID	STATION	SIZE (mm)	T/G ELEV (m)	INVERT (m)	ICD DIA (mm)	100yr CAPTURE RATE (L/s)
CB-5-1	3+059.81	600	89.63	87.83 87.77	LMF90	10
CB-5-5	7+048.30	600	89.36	87.62 87.56	83mm	21
CB-32***	3+027.81	600	89.11	87.75	LMF90	10
CB-33	3+027.92	600	89.11	87.75	LMF90	10
CB-34***	3+090.92	600	89.05	87.73	LMF75	7
CB-35	3+090.92	600	89.05	87.73	LMF75	7
CB-36***	3+177.03	600	89.02	87.98	83mm	18
CB-37	3+177.03	600	89.02	87.81	LMF105	13
CB-90***	7+622.35	600	88.95	87.60	LMF85	8
CB-91	7+622.35	600	88.95	87.60	LMF85	8

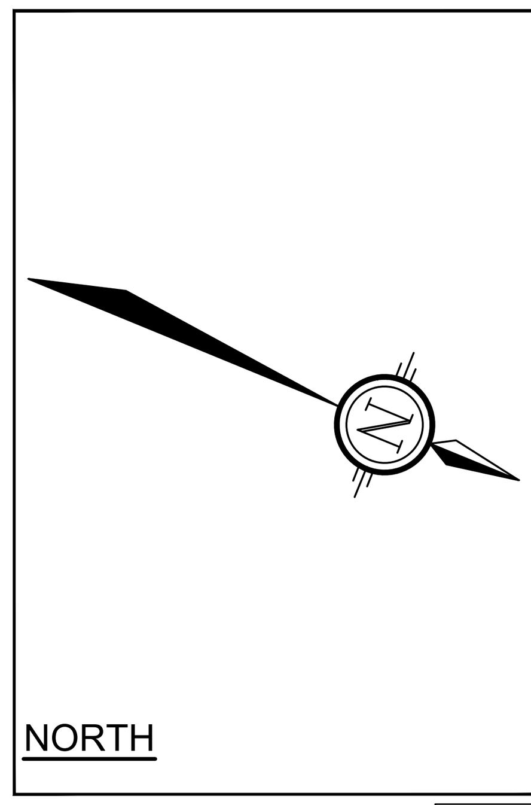
*** - CB TO BE CURB INLET TYPE AS PER S3 C/W 200mm DIA. CB LEAD.

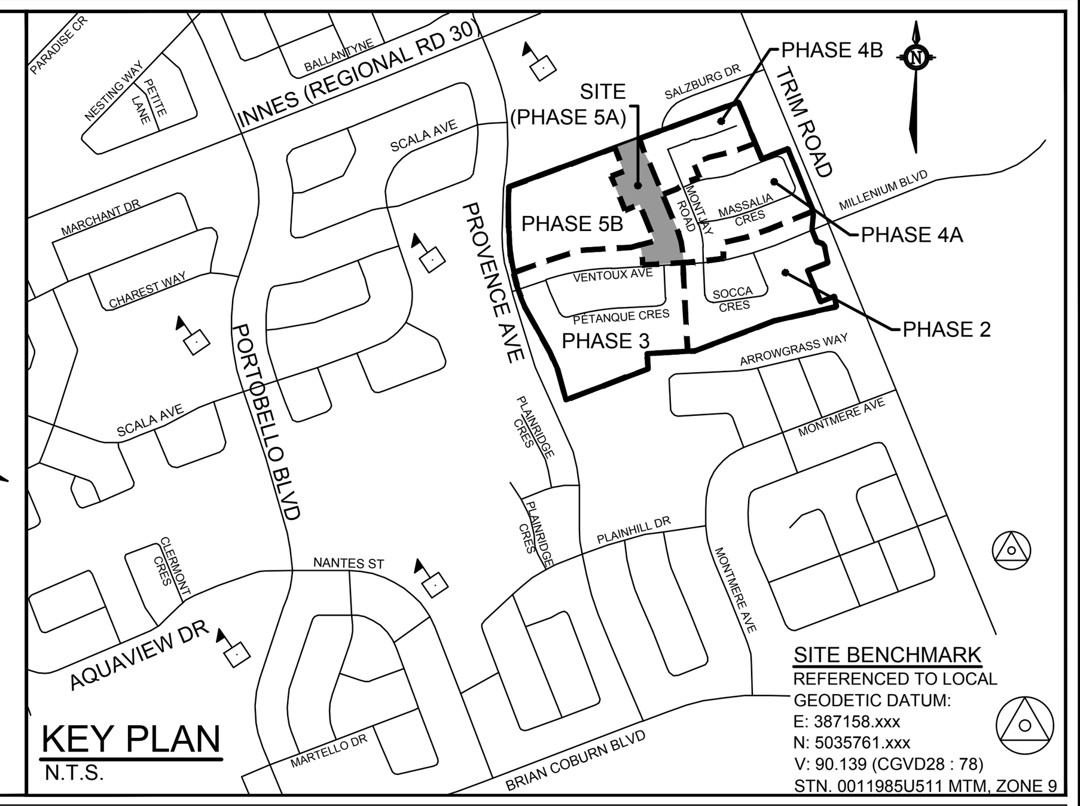
CATCHBASIN MAINTENANCE HOLE TABLE

CBMH ID	STATION	SIZE (mm)	T/G ELEV (m)	INVERT (m)	ICD DIA (mm)	100yr CAPTURE RATE (L/s)
CBMH-5-3	7+595.89	1200	89.52	N=87.05 S=86.99	LMF85	9

REARYARD CATCHBASIN TABLE

MANHOLE ID	STATION	SIZE (mm)	T/G ELEV (m)	INVERT (m)
LCB-5-1	1+280.41	300	89.25	N=88.15
LCB-5-2	1+279.81	300	89.31	S=88.05 N=88.05
LCB-5-3	1+276.37	300	89.15	E=88.00 S=88.00
LCB-5-11	7+595.92	300	88.50	W=87.21 E=87.21 S=87.21
LCB-5-12	7+639.21	300	88.50	W=87.33 E=87.33
LCB-5-13	7+664.79	300	88.50	W=87.40
LCB-5-17	7+558.21	300	89.18	S=87.91
LCB-5-18	7+048.30	300	89.18	N=87.68 S=87.68
RAP-5-16	7+048.30	300	89.45	N=87.82 S=87.76 W=87.82





KEY PLAN

N.T.S.

SITE BENCHMARK

REFERENCED TO LOCAL GEODETIC DATUM:
E: 387158.xxx
N: 5035761.xxx
V: 90.139 (CGVD28 : 78)
STN. 0011985U511 MTM, ZONE 9

SOURCE REFERENCE:

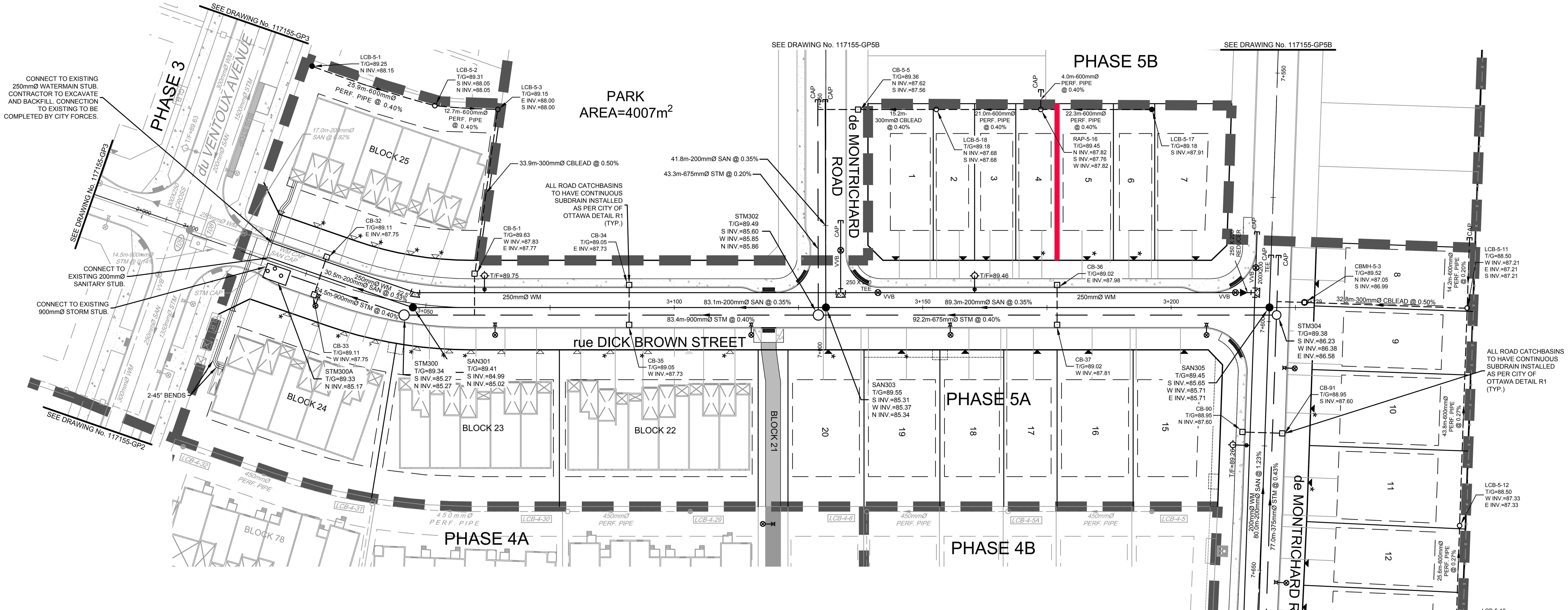
LEGAL INFORMATION:

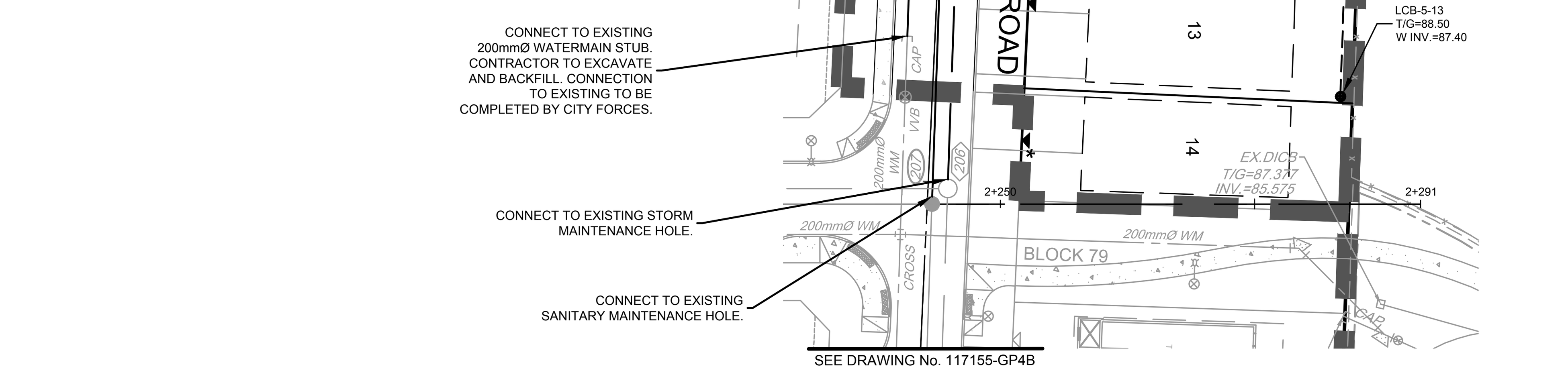
1. *PLAN OF SUBDIVISION OF PART OF LOT 2, CONCESSION 9, GEOGRAPHIC TOWNSHIP OF CUMBERLAND AND PART OF BLOCK 130 (0.30 RESERVE), REGISTERED PLAN 4M-1678 CITY OF OTTAWA PREPARED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD, REVISION 4, APRIL 24, 2024.*

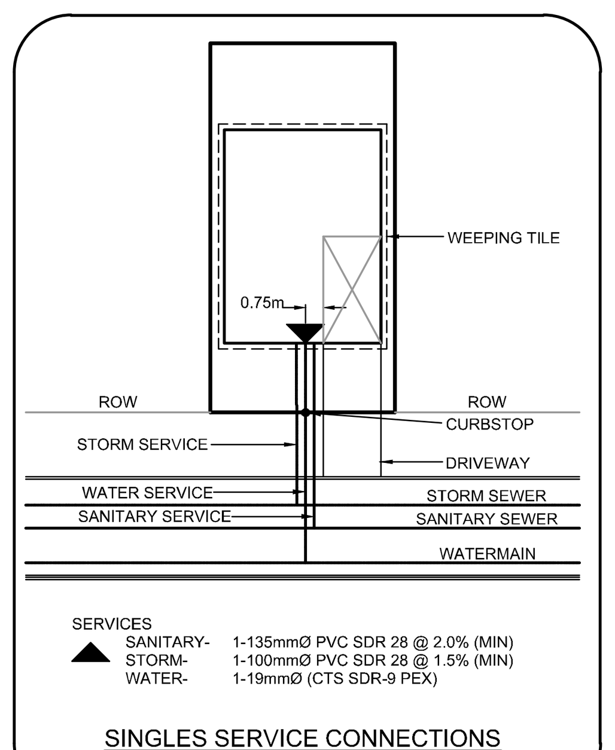
TOPOGRAPHIC INFORMATION:

HORIZONTAL DATUM: NAD 83 (ORIGINAL), MTM - ZONE 9
VERTICAL DATUM: CGVD 28:78

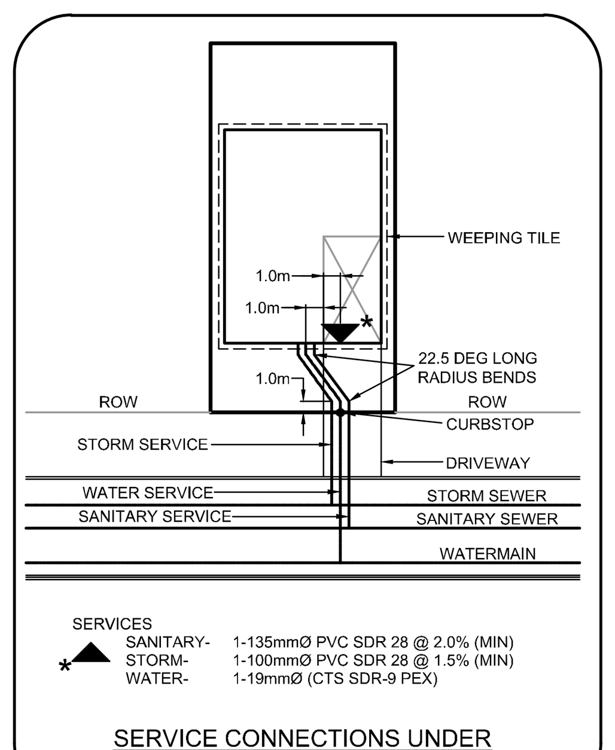
1. *CITY OF OTTAWA 1:1000 MAPPING*
2. *NOVATECH SURVEY*



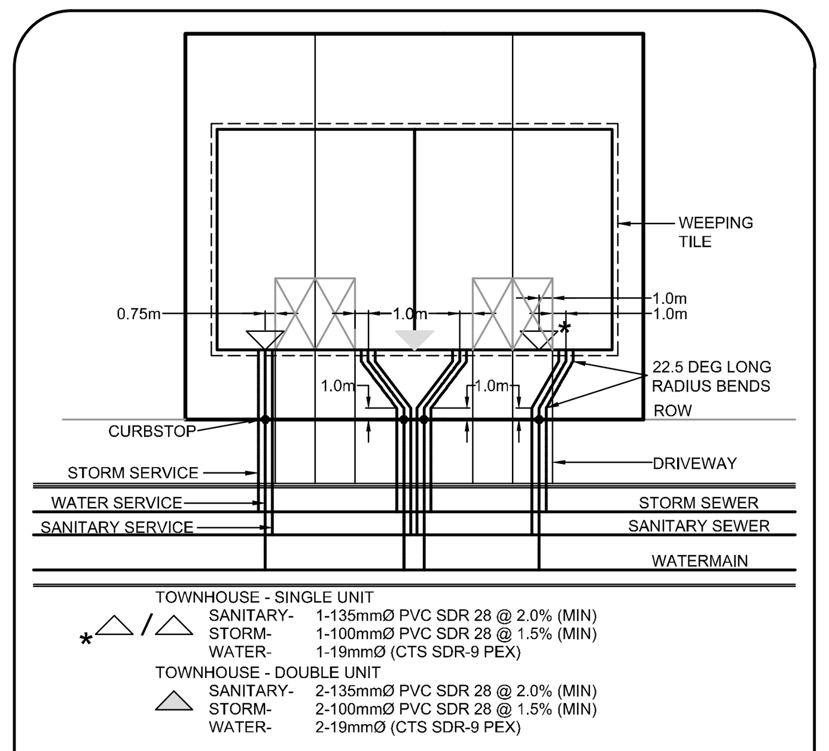




SINGLES SERVICE CONNECTIONS
N.T.S.



SERVICE CONNECTIONS UNDER DRIVEWAYS
N.T.S.



TOWNHOUSE SERVICE CONNECTIONS
N.T.S.

LEGEND

- SITE BOUNDARY
- MINIMUM ZONING SETBACK
- LOT LINE
- EASEMENT
- PHASING BOUNDARY
- PROPOSED DEPRESSED CURB
- PROPOSED CURB
- PROPOSED TACTILE WALKING SURFACE INDICATOR (TWSI)
- PROPOSED CONCRETE SIDEWALK
- PROPOSED RETAINING WALL & 1.8m WOOD PRIVACY FENCE
- PROPOSED TOWNHOUSE SERVICE LOCATION
- PROPOSED SERVICE LOCATION IN DRIVEWAY
- PROPOSED TOWNHOUSE DUAL SERVICE LOCATION
- PROPOSED SINGLE HOUSE SERVICE LOCATION
- PROPOSED DIRECTION OF FLOW
- PROPOSED SANITARY MAINTENANCE HOLE & SEWER
- PROPOSED STORM MAINTENANCE HOLE & SEWER
- CAP — PROPOSED SANITARY SEWER CAP
- CAP — PROPOSED STORM SEWER CAP
- PROPOSED CATCHBASIN & LEAD
- PROPOSED CATCHBASIN MAINTENANCE HOLE & LEAD
- PROPOSED DITCH INLET CATCHBASIN & LEAD
- PROPOSED REAR YARD ELBOW & PERFORATED PIPE
- PROPOSED REAR YARD TEE & PERFORATED PIPE
- PROPOSED REAR YARD ACCESS POINT & PERFORATED PIPE
- 300A — PROPOSED VORTECHS (9000)
- 200mmØ — PROPOSED WATERMAIN
- CAP — PROPOSED WATERMAIN CAP
- VVB — PROPOSED VALVE & VALVE BOX LOCATION
- HYD — PROPOSED FIRE HYDRANT C/W LEAD
- 45° — PROPOSED WATERMAIN HORIZONTAL BEND
- 3m BUILDING SEPARATION OR 2 HOUR FIREWALL REQUIRED (BY BUILDER)
- PROPOSED STREETLIGHT
- *EXISTING DEPRESSED CURB*
- *EXISTING CURB*
- *EXISTING TACTILE WALKING SURFACE INDICATOR (TWSI)*
- *EXISTING STREETLIGHT*
- *EXISTING WIRE FENCE*
- EX SAN MH 450mmØ — *EXISTING SANITARY MAINTENANCE HOLE & SEWER*
- EX STM MH 450mmØ — *EXISTING STORM MAINTENANCE HOLE & SEWER*
- CAP — *EXISTING CAP*
- EX CB — *EXISTING CATCHBASIN & LEAD*
- EX DICB — *EXISTING DITCH INLET CATCHBASIN & LEAD*
- EX LCB — *EXISTING LANDSCAPE CATCHBASIN & PERFORATED PIPE*
- T/G — *EXISTING TOP OF GRATE*
- 300mmØ — *EXISTING WATERMAIN*
- HYD — *EXISTING FIRE HYDRANT C/W LEAD*
- VVB — *EXISTING VALVE & VALVE BOX LOCATION*
- *EXISTING HYDRO TRANSFORMER*
- *EXISTING 3 PHASE PAD-MOUNTED SF6 SWITCHGEAR*
- GLB — *EXISTING BELL GRADE LEVEL BOX*
- *EXISTING ROGERS NODE AND PEDESTAL*
- *EXISTING LCP ROGERS PEDESTAL*

REFER TO 117155-N&L5A FOR ADDITIONAL NOTES & LEGEND

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

PROVENCE ORLÉANS

No.	REVISION	DATE	BY
1.	ISSUED FOR REVIEW	JUL 23/24	TJM

SCALE 1:500

DESIGN	SAB
CHECKED	TJM
DRAWN	SAB
CHECKED	TJM
APPROVED	TJM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER — T. J. MCKAY — 100195434 — July 23, 2024 — PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
PROVENCE ORLEANS SUBDIVISION (2128 TRIM ROAD)

DRAWING NAME
PHASE 5A
GENERAL PLAN OF SERVICES

PROJECT No. 117155
REV: REV # 1
DRAWING No. 117155-GP5A

D07-16-18-0021

PLANA1.DWG - 841mmx594mm
#18004

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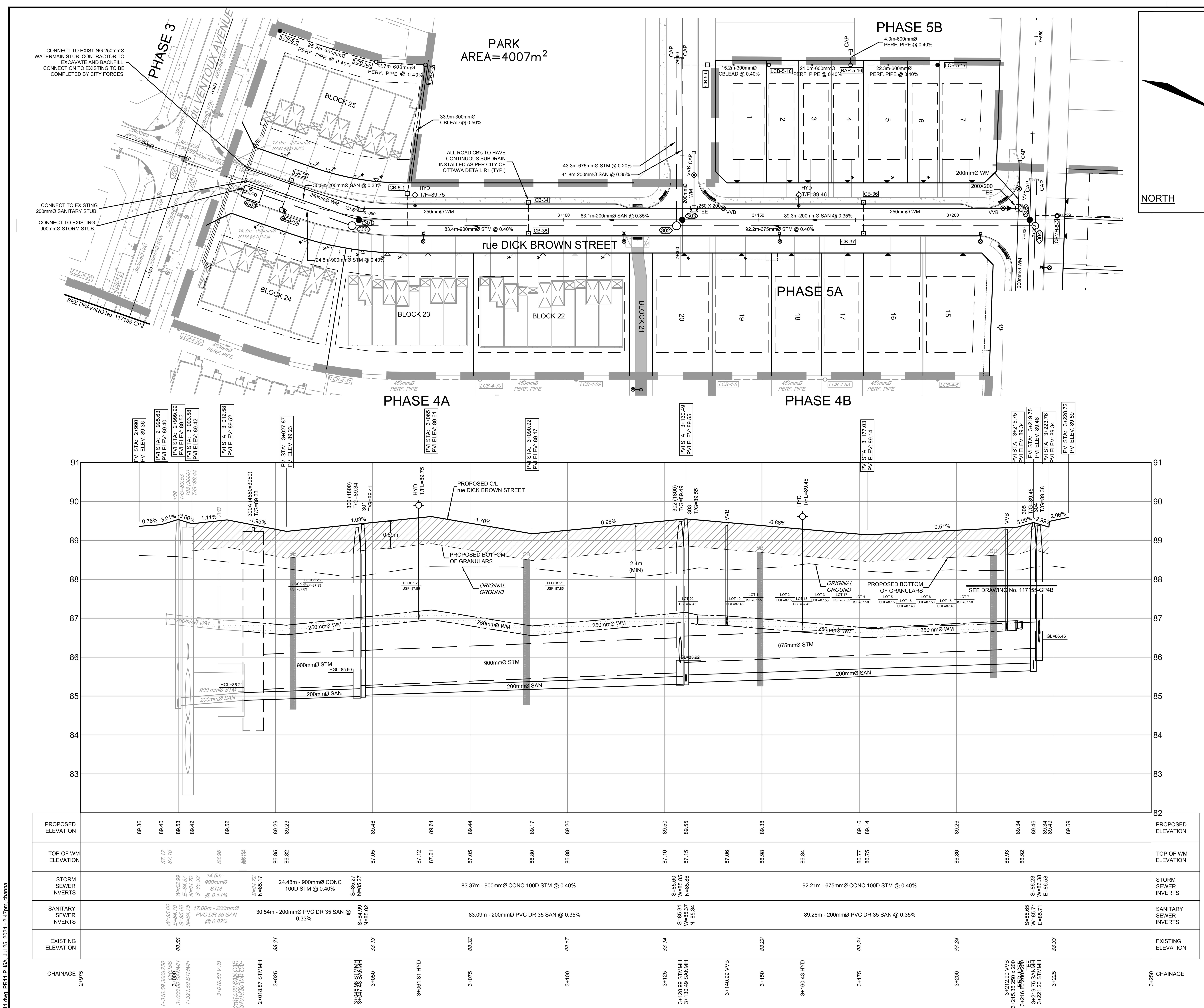

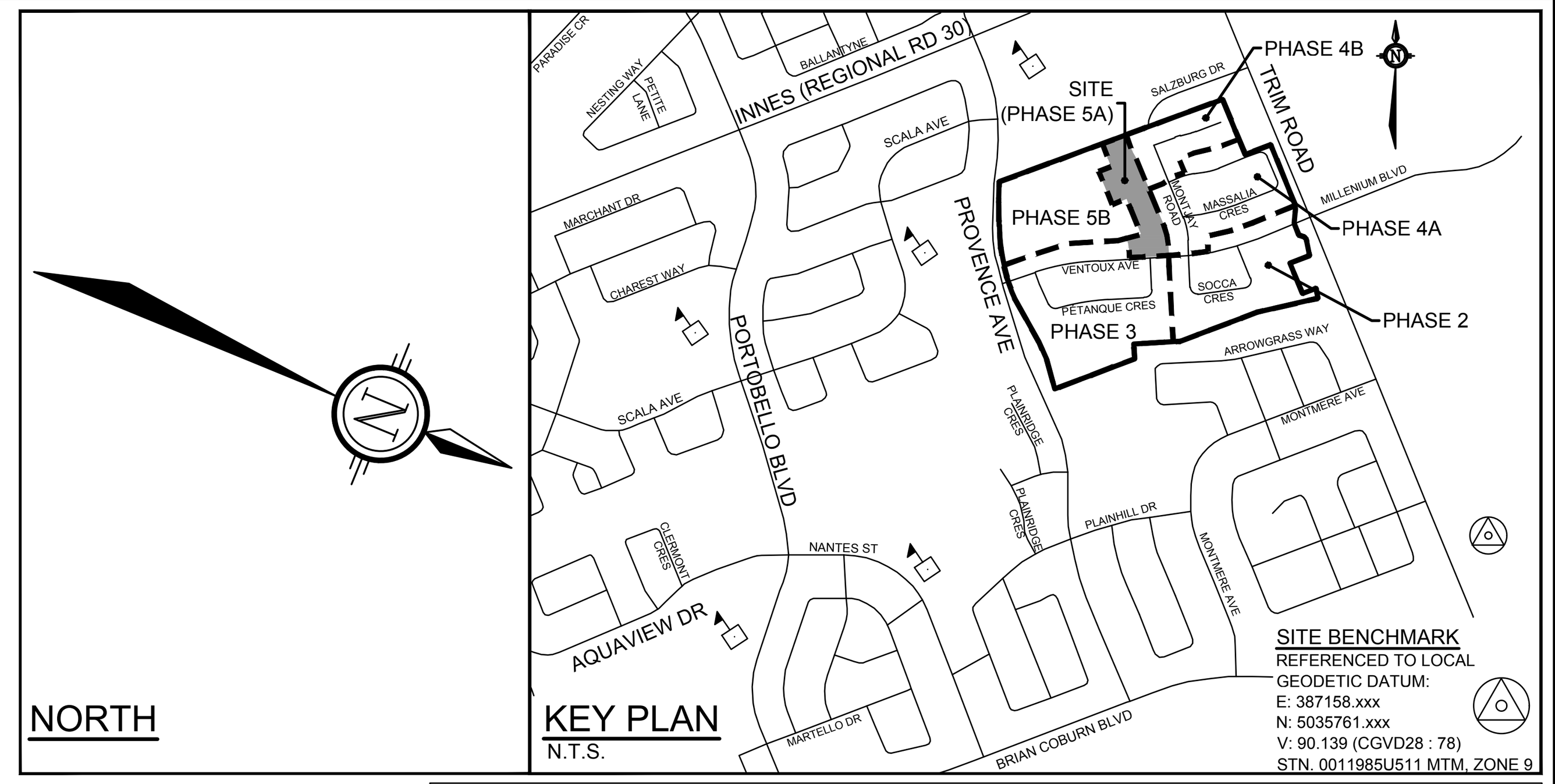

SOURCE REFERENCE:

LEGAL INFORMATION:

1. PLAN OF SUBDIVISION OF PART OF LOT 2, CONCESSION 9, GEOGRAPHIC TOWNSHIP OF CUMBERLAND AND PART OF BLOCK 130 (0.30 RESERVE), REGISTERED PLAN 4M-1678 CITY OF OTTAWA PREPARED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD, REVISION 4, APRIL 24, 2024.

TOPOGRAPHIC INFORMATION:

HORIZONTAL DATUM: NAD 83 (ORIGINAL), MTM - ZONE 9

VERTICAL DATUM: CGVD 28:78

1. CITY OF OTTAWA 1:1000 MAPPING
2. NOVATECH SURVEY

LEGEND

- SITE BOUNDARY
- MINIMUM ZONING SETBACK
- LOT LINE
- EASEMENT
- PHASING BOUNDARY
- PROPOSED DEPRESSED CURB
- PROPOSED CURB
- PROPOSED TACTILE WALKING SURFACE INDICATOR (TWSI)
- PROPOSED CONCRETE SIDEWALK
- PROPOSED ASPHALT SIDEWALK
- PROPOSED TOWNHOUSE SERVICE LOCATION
- PROPOSED SERVICE LOCATION IN DRIVEWAY
- PROPOSED TOWNHOUSE DUAL SERVICE LOCATION
- PROPOSED SINGLE HOUSE SERVICE LOCATION
- PROPOSED DIRECTION OF FLOW
- (101) PROPOSED SANITARY MAINTENANCE HOLE & SEWER
- (100) PROPOSED STORM MAINTENANCE HOLE & SEWER
- CAP PROPOSED SANITARY SEWER CAP
- CAP PROPOSED STORM SEWER CAP
- (300A) PROPOSED VORTECHS (9000)
- CB-2 PROPOSED CATCHBASIN & LEAD
- CBMH-2 PROPOSED CATCHBASIN MAINTENANCE HOLE & LEAD
- DICB-2 PROPOSED DITCH INLET CATCHBASIN & LEAD
- LCB-2-1 PROPOSED REAR YARD ELBOW & PERFORATED PIPE
- LCB-2-2 PROPOSED REAR YARD TEE & PERFORATED PIPE
- RAP-4-10 PROPOSED REAR YARD ACCESS POINT & PERFORATED PIPE
- 200mmØ PROPOSED WATERMAIN
- CAP PROPOSED WATERMAIN CAP
- VVB PROPOSED VALVE AND VALVE BOX LOCATION
- HYD PROPOSED FIRE HYDRANT C/W LEAD
- 45° PROPOSED WATERMAIN HORIZONTAL BEND
- SB CLAY SEEPAGE BARRIER
- PROPOSED STREETLIGHT
- FUTURE STREETLIGHT
- EXISTING TACTILE WALKING SURFACE INDICATOR (TWSI)
- EXISTING STREETLIGHT
- EXISTING DEPRESSED CURB
- EXISTING CURB
- EXISTING SERVICE LOCATION C/W SLEEVE
- EXISTING SINGLE HOUSE SERVICE LOCATION
- EX SANMH 450mmØ EXISTING SANITARY MAINTENANCE HOLE & SEWER
- EX STMMH 450mmØ EXISTING STORM MAINTENANCE HOLE & SEWER
- CAP EXISTING CAP
- EXISTING STORM BOX MAINTENANCE HOLE
- EX CB EXISTING CATCHBASIN & LEAD
- 300mmØ EXISTING WATERMAIN
- HYD EXISTING FIRE HYDRANT C/W LEAD
- V&VB EXISTING VALVE & VALVE BOX LOCATION

REFER TO 117155-N&L5A FOR ADDITIONAL NOTES & LEGEND

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

PROVENCE ORLÉANS

No.	REVISION	DATE	BY
1.	ISSUED FOR REVIEW	JUL 23/24	TJM

SCALE
1:500 HORIZONTAL
1:50 VERTICAL

DESIGN	SAB
CHECKED	TJM
DRAWN	SAB
CHECKED	TJM
APPROVED	TJM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
T. J. MCKAY
100195434
July 23, 2024
PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
PROVENCE ORLEANS SUBDIVISION (2128 TRIM ROAD)

DRAWING NAME
PHASE 5A
PLAN AND PROFILE
rue DICK BROWN STREET
STA. 2+975 TO STA. 3+250

PROJECT No. 117155
REV # 1
DRAWING No. 117155-PR11

D07-16-18-0021

#18004

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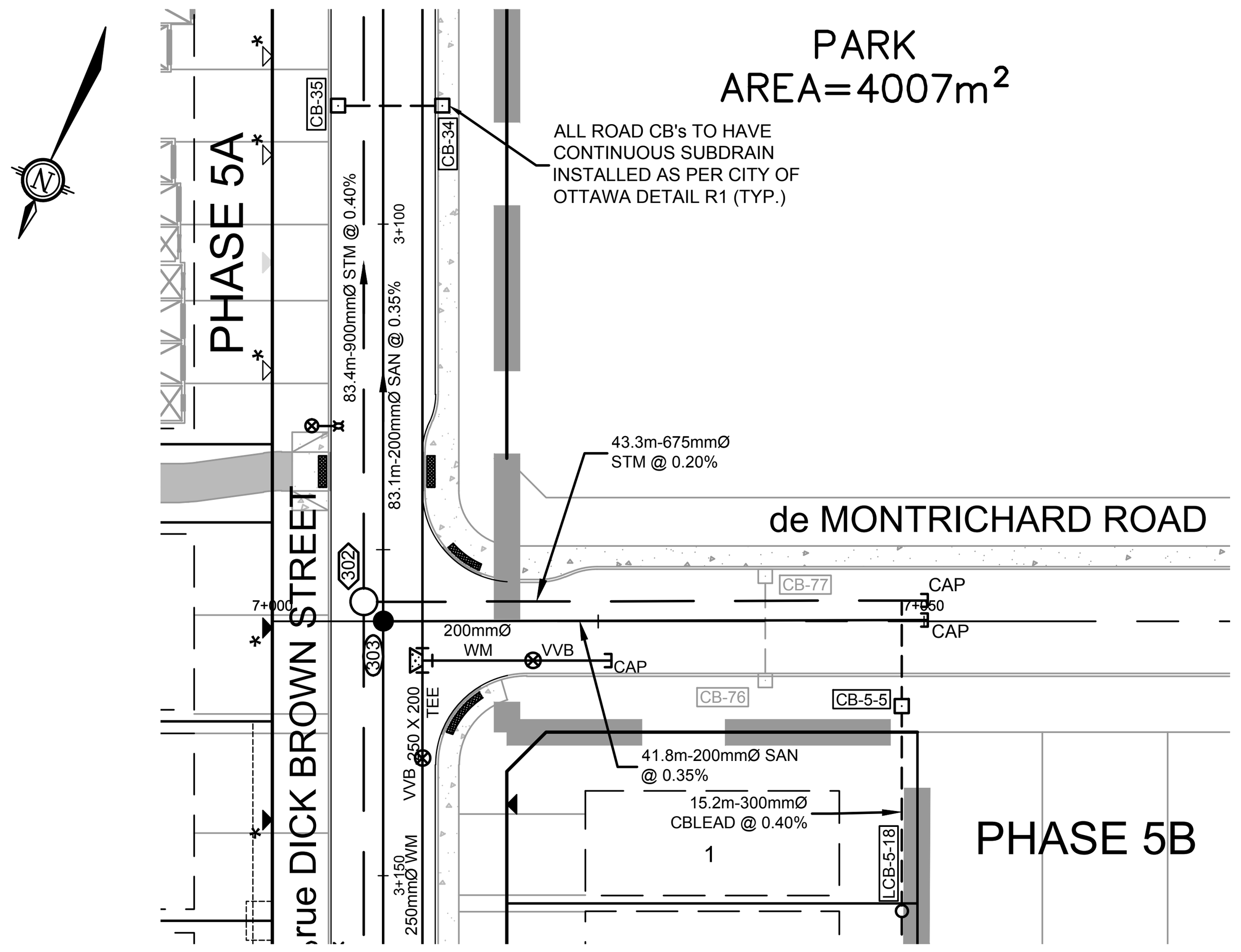
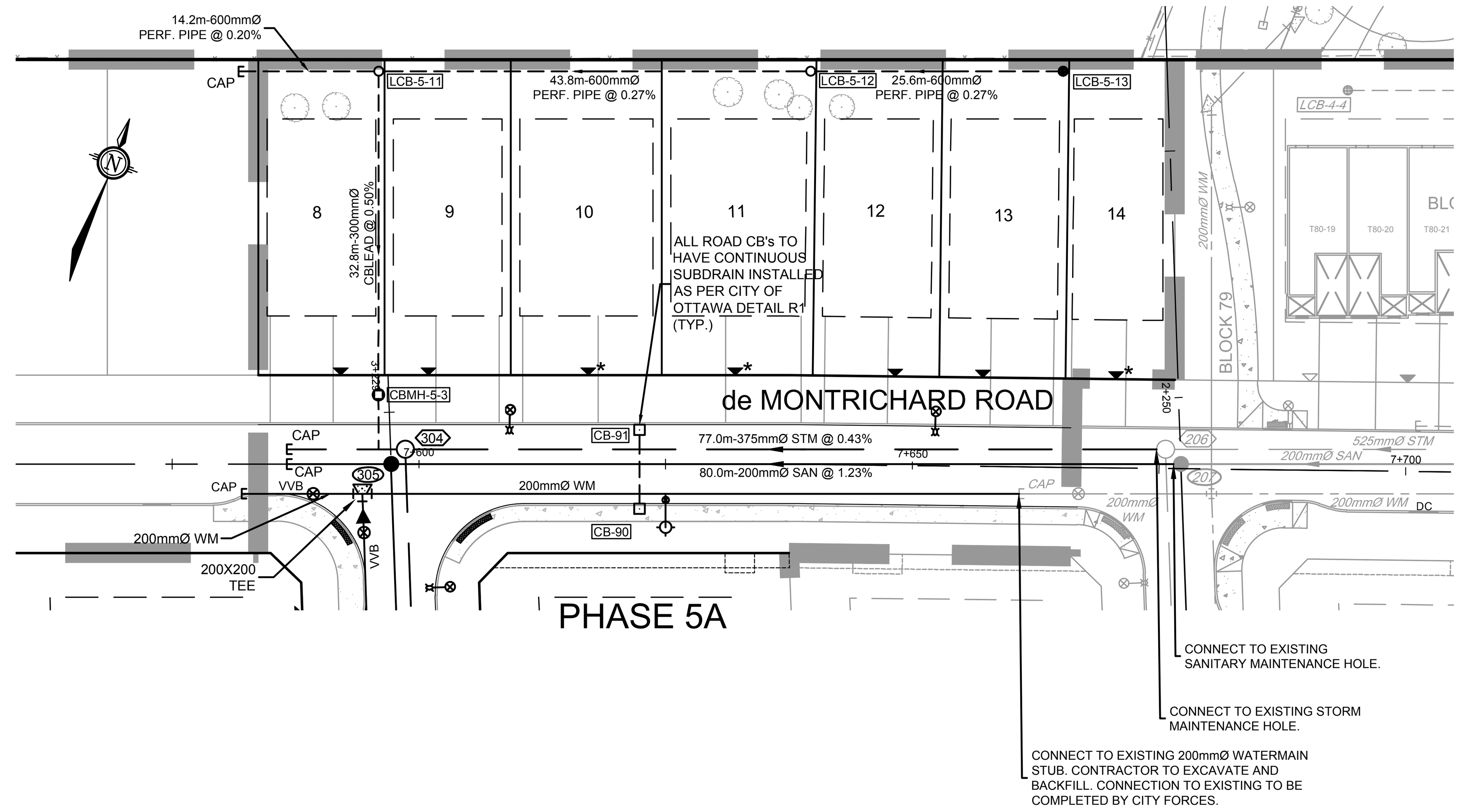
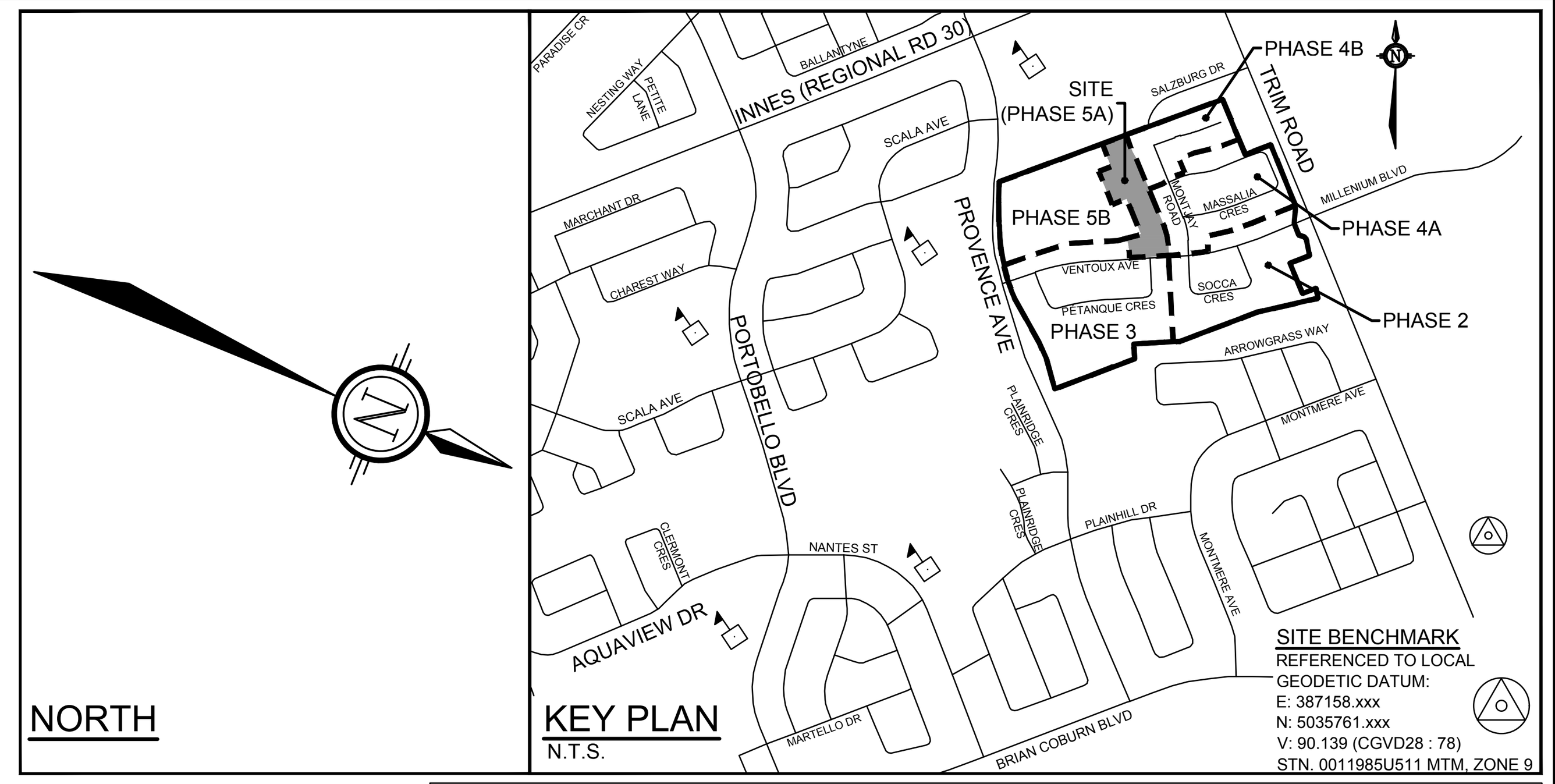




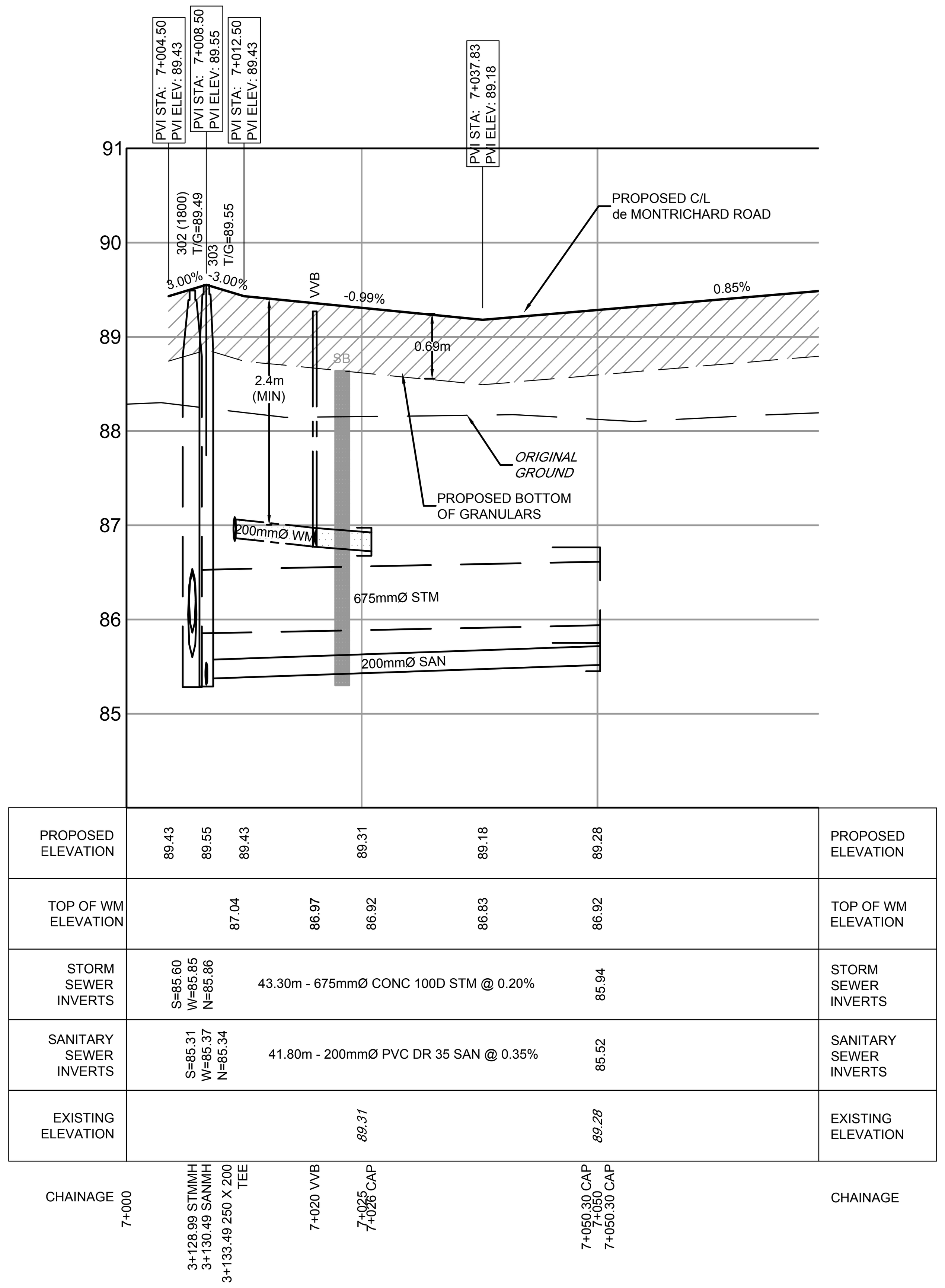


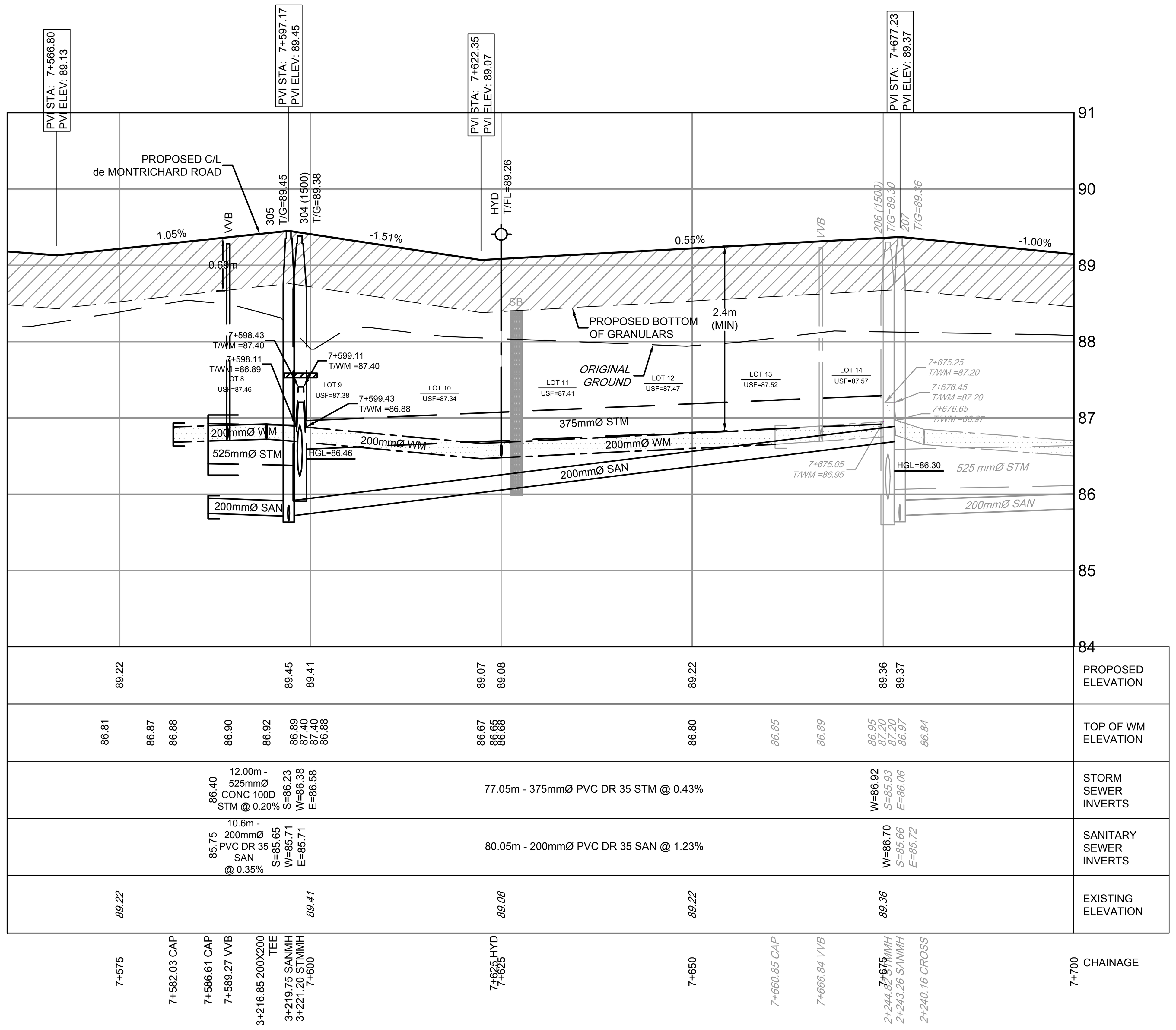
SOURCE REFERENCE:
LEGAL INFORMATION:
1. PLAN OF SUBDIVISION OF PART OF LOT 2, CONCESSION 9, GEOGRAPHIC TOWNSHIP OF CUMBERLAND AND PART OF BLOCK 130 (0.30 RESERVE), REGISTERED PLAN 4M-1678 CITY OF OTTAWA PREPARED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD, REVISION 4, APRIL 24, 2024.

TOPOGRAPHIC INFORMATION:
HORIZONTAL DATUM: NAD 83 (ORIGINAL), MTM - ZONE 9
VERTICAL DATUM: CGVD 28:78
1. CITY OF OTTAWA 1:1000 MAPPING
2. NOVATECH SURVEY

LEGEND

- SITE BOUNDARY
- MINIMUM ZONING SETBACK
- LOT LINE
- EASEMENT
- PHASING BOUNDARY
- PROPOSED DEPRESSED CURB
- PROPOSED CURB
- PROPOSED TACTILE WALKING SURFACE INDICATOR (TWSI)
- PROPOSED CONCRETE SIDEWALK
- PROPOSED ASPHALT SIDEWALK
- PROPOSED TOWNHOUSE SERVICE LOCATION
- PROPOSED SERVICE LOCATION IN DRIVEWAY
- PROPOSED TOWNHOUSE DUAL SERVICE LOCATION
- PROPOSED SINGLE HOUSE SERVICE LOCATION
- PROPOSED DIRECTION OF FLOW
- PROPOSED SANITARY MAINTENANCE HOLE & SEWER
- PROPOSED STORM MAINTENANCE HOLE & SEWER
- PROPOSED SANITARY SEWER CAP
- PROPOSED STORM SEWER CAP
- PROPOSED VORTECHS (9000)
- PROPOSED CATCHBASIN & LEAD
- PROPOSED CATCHBASIN MAINTENANCE HOLE & LEAD
- PROPOSED DITCH INLET CATCHBASIN & LEAD
- PROPOSED REAR YARD ELBOW & PERFORATED PIPE
- PROPOSED REAR YARD TEE & PERFORATED PIPE
- PROPOSED REAR YARD ACCESS POINT & PERFORATED PIPE
- PROPOSED WATERMAIN
- PROPOSED WATERMAIN CAP
- PROPOSED VALVE AND VALVE BOX LOCATION
- PROPOSED FIRE HYDRANT C/W LEAD
- PROPOSED WATERMAIN HORIZONTAL BEND
- CLAY SEEPAGE BARRIER
- PROPOSED STREETLIGHT
- FUTURE STREETLIGHT
- EXISTING TACTILE WALKING SURFACE INDICATOR (TWSI)
- EXISTING STREETLIGHT
- EXISTING DEPRESSED CURB
- EXISTING CURB
- EXISTING SERVICE LOCATION C/W SLEEVE
- EXISTING SINGLE HOUSE SERVICE LOCATION
- EXISTING SANITARY MAINTENANCE HOLE & SEWER
- EXISTING STORM MAINTENANCE HOLE & SEWER
- EXISTING CAP
- EXISTING STORM BOX MAINTENANCE HOLE
- EXISTING CATCHBASIN & LEAD
- PROPOSED REAR YARD ELBOW & PERFORATED PIPE
- PROPOSED REAR YARD TEE & PERFORATED PIPE
- EXISTING WATERMAIN
- EXISTING FIRE HYDRANT C/W LEAD
- EXISTING VALVE & VALVE BOX LOCATION
- EXISTING UTILITY POLE





REFER TO 117155-N&L5A FOR ADDITIONAL NOTES & LEGEND

NOTE:
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PROVENCE ORLÉANS

No.	REVISION	DATE	BY
1.	ISSUED FOR REVIEW	JUL 23/24	TJM

SCALE
1:500 HORIZONTAL
1:50 VERTICAL

DESIGN	SAB
CHECKED	TJM
DRAWN	SAB
CHECKED	TJM
APPROVED	TJM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
T. J. MCKAY
100195434
July 23, 2024
PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

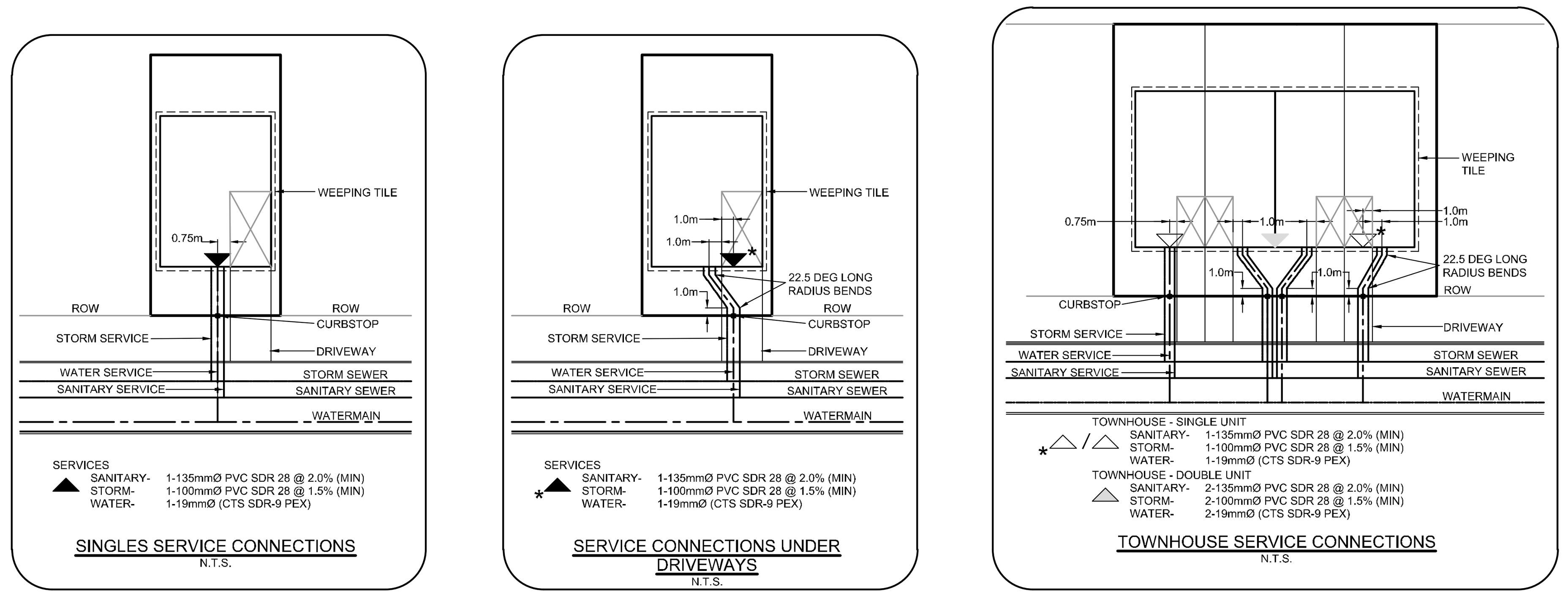
LOCATION
CITY OF OTTAWA
PROVENCE ORLEANS SUBDIVISION (2128 TRIM ROAD)

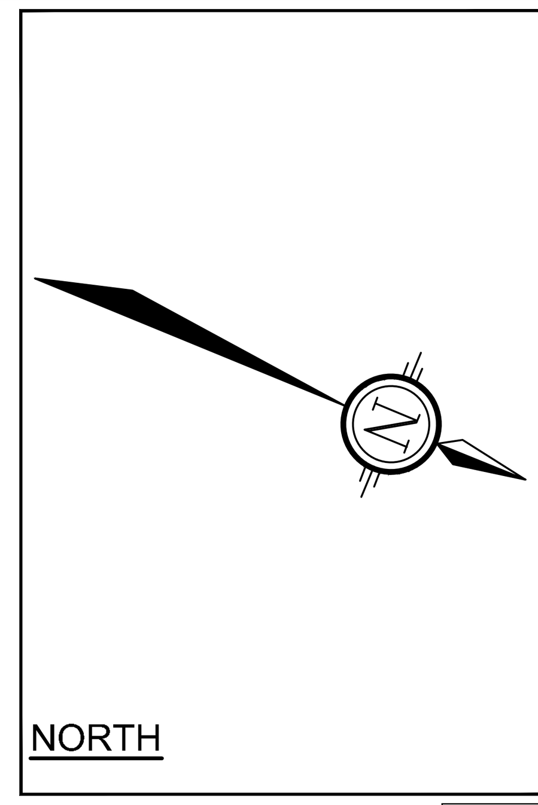
DRAWING NAME
PHASE 5A
PLAN AND PROFILE
de MONTRICHARD ROAD
STA. 7+000 TO STA. 7+075
AND STA. 7+565 TO 7+700

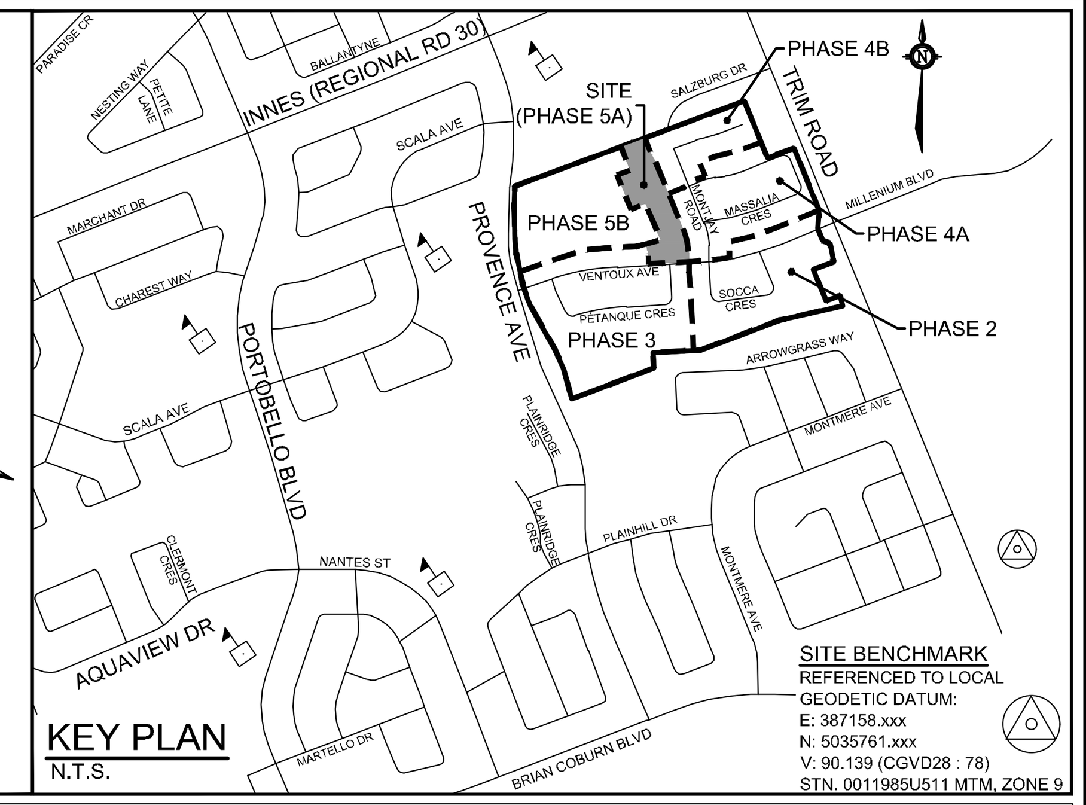
PROJECT No. 117155
REV # 1
DRAWING No. 117155-PR12

D07-16-18-0021

#18004







SOURCE REFERENCE:

LEGAL INFORMATION:

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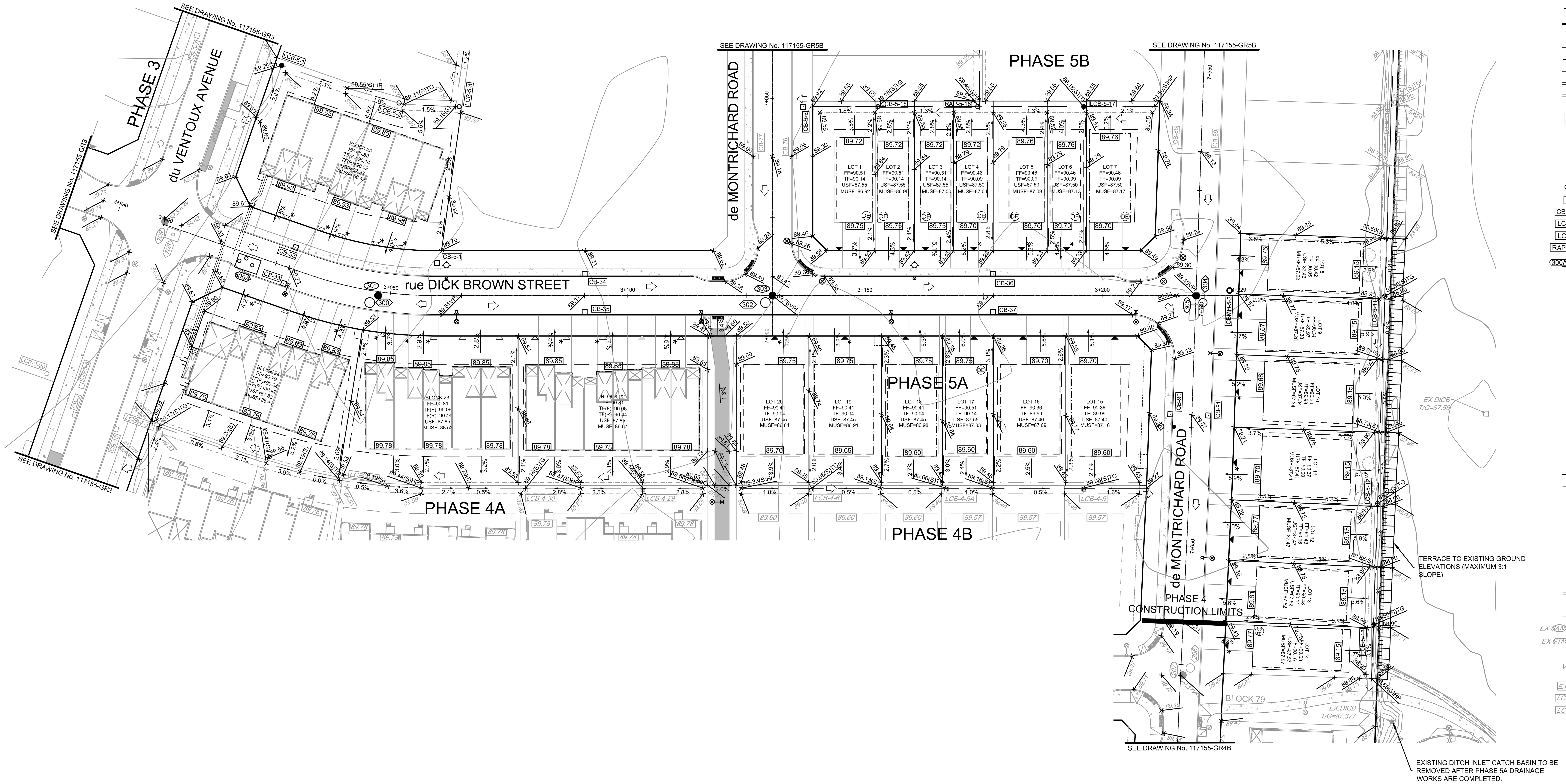
TOPOGRAPHIC INFORMATION:

HORIZONTAL DATUM: NAD 83 (ORIGINAL), MTM - ZONE 9

VERTICAL DATUM: CGVD 28:78

1. *CITY OF OTTAWA 1:1000 MAPPING*
2. *NOVATECH SURVEY*



LEGEND

- SITE BOUNDARY
- MINIMUM ZONING SETBACK
- MAXIMUM EQ HOMES UNIT FOOTPRINT
- LOT LINE
- EASEMENT
- PROPOSED DEPRESSED CURB
- PROPOSED CURB
- PROPOSED TACTILE WALKING SURFACE INDICATOR (TWSI)
- PROPOSED CONCRETE SIDEWALK
- PROPOSED TOWNHOUSE SERVICE LOCATION
- PROPOSED SERVICE LOCATION IN DRIVEWAY
- PROPOSED TOWNHOUSE DUAL SERVICE LOCATION
- PROPOSED SINGLE HOUSE SERVICE LOCATION
- 101 PROPOSED SANITARY MAINTENANCE HOLE
- 100 PROPOSED STORM MAINTENANCE HOLE
- CB-2 PROPOSED CATCHBASIN
- CBMH-2 PROPOSED CATCHBASIN MAINTENANCE HOLE
- LCB-2-1 PROPOSED LANDSCAPE CATCHBASIN ELBOW
- LCB-2-2 PROPOSED LANDSCAPE CATCHBASIN TEE
- RAP-4-14 PROPOSED REAR YARD ACCESS POINT
- 300A PROPOSED VORTECHS (9000)
- V&VB PROPOSED VALVE & VALVE BOX LOCATION
- HYD PROPOSED FIRE HYDRANT
- 104.62 PROPOSED ELEVATION
- 104.62(VPI) PROPOSED VERTICAL POINT OF INTERSECTION
- 104.00(S) PROPOSED SWALE ELEVATION
- 104.00(S)TG PROPOSED SWALE/ TOP OF GRATE ELEVATION
- 104.00(S)HP PROPOSED SWALE HIGH POINT
- EXISTING ELEVATION
- 104.62 PROPOSED TERRACE ELEVATION
- PROPOSED TERRACING (MAXIMUM 3:1 SLOPE)
- 1.3% PROPOSED SLOPE
- FF PROPOSED FINISHED FLOOR ELEVATION
- TF PROPOSED TOP OF FOUNDATION
- USF PROPOSED UNDERSIDE OF FOOTING
- MUSF MINIMUM SERVICEABLE UNDERSIDE OF FOOTING
- PROPOSED DROPPED ENTRY UNIT TYPE
- PROPOSED SWALE
- PROPOSED TOP OF SLOPE
- MAJOR OVERLAND FLOW
- PROPOSED STREETLIGHT
- FUTURE SWALE ELEVATION
- FUTURE SWALE/ TOP OF GRATE ELEVATION
- FUTURE SWALE HIGH POINT
- FUTURE TERRACING (MAXIMUM 3:1 SLOPE)
- *EXISTING TACTILE WALKING SURFACE INDICATOR (TWSI)*
- *EXISTING DEPRESSED CURB*
- *EXISTING CURB*
- *EXISTING STREETLIGHT*
- *EXISTING WIRE FENCE*
- EX SANMH *EXISTING SANITARY MAINTENANCE HOLE*
- EX STMMH *EXISTING STORM MAINTENANCE HOLE*
- *EXISTING STORM BOX MAINTENANCE HOLE*
- V&VB *EXISTING VALVE AND VALVE BOX*
- *EXISTING FIRE HYDRANT*
- EX.CB *EXISTING CATCHBASIN*
- LCB-2-1 *EXISTING LANDSCAPE CATCHBASIN ELBOW*
- LCB-2-2 *EXISTING LANDSCAPE CATCHBASIN TEE*
- 104.62 *EXISTING TERRACE ELEVATION*
- *EXISTING TREES*

REFER TO 117155-N&L5A FOR ADDITIONAL NOTES & LEGEND. REFER TO 117155-L5A FOR FENCE LOCATIONS.

NOTE:
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PROVENCE
ORLÉANS

No.	REVISION	DATE	BY
1.	ISSUED FOR REVIEW	JUL 23/24	TJM

SCALE 1:500

DESIGN	SAB
CHECKED	TJM
DRAWN	SAB
CHECKED	TJM
APPROVED	TJM

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LICENSED PROFESSIONAL ENGINEER
T. J. MCKAY
100195434
July 23, 2024
PROVINCE OF ONTARIO

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Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
PROVENCE ORLEANS SUBDIVISION (2128 TRIM ROAD)

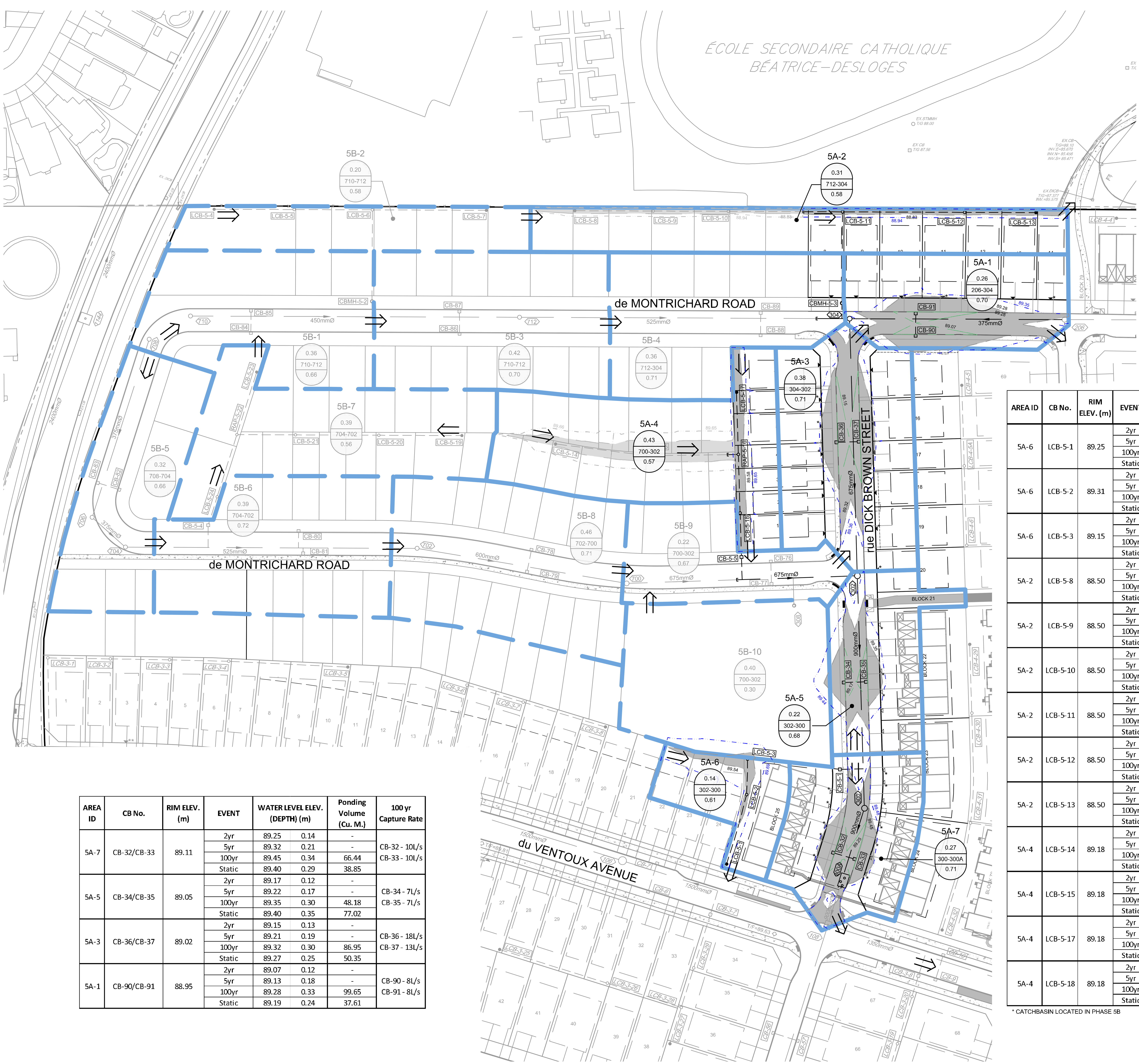
DRAWING NAME
PHASE 5A
GRADING PLAN

PROJECT No. 117155
REV: REV # 1
DRAWING No. 117155-GR5A

D07-16-18-0021

PLANA1.DWG - 841mmx594mm

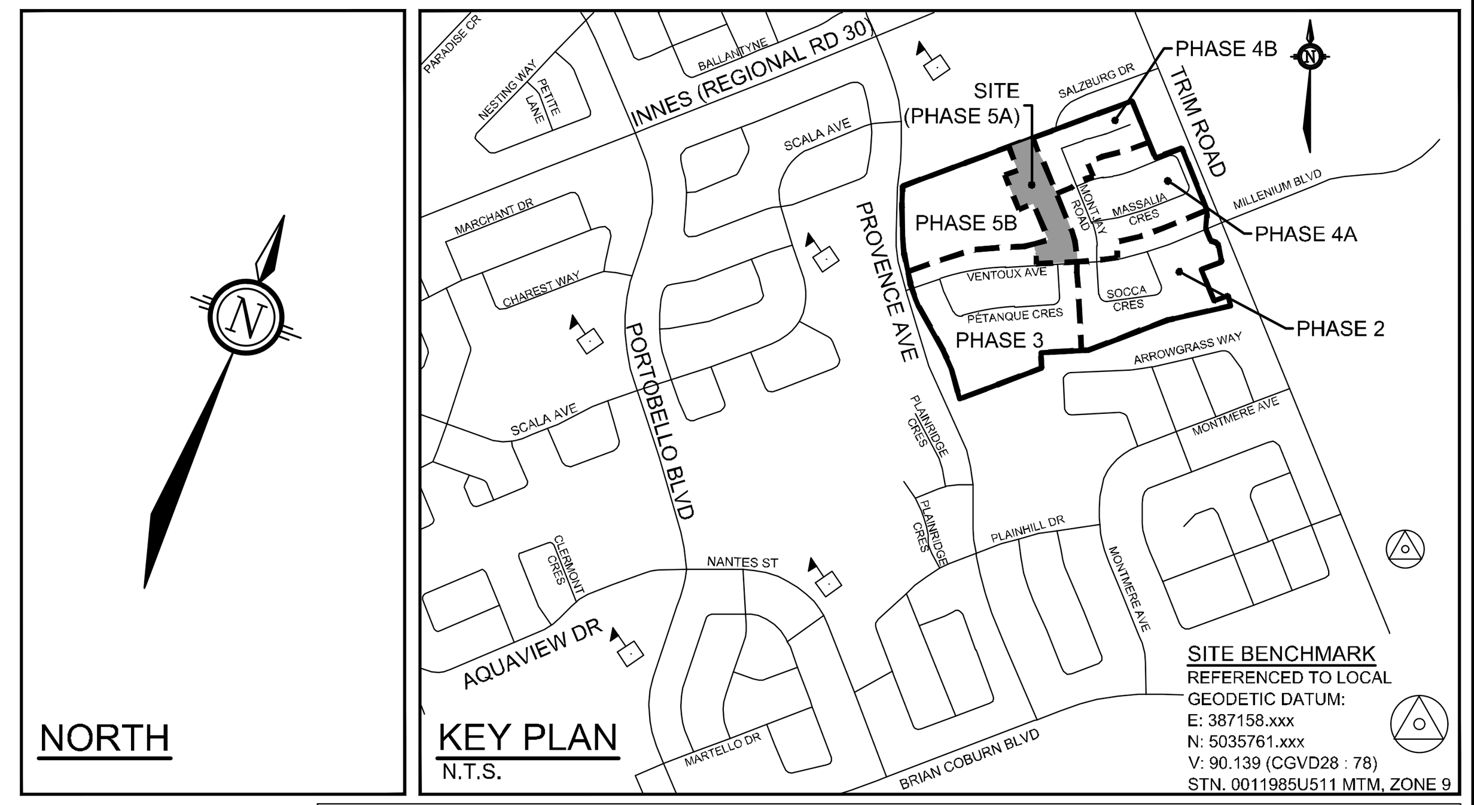
#18004



AREA ID	CB No.	RIM ELEV. (m)	EVENT	WATER LEVEL ELEV. (DEPTH) (m)		Ponding Volume (Cu. M.)	100 yr Capture Rate
5A-7	CB-32/CB-33	89.11	2yr	89.25	0.14	-	CB-32 - 10L/s CB-33 - 10L/s
			5yr	89.32	0.21	-	
			100yr	89.45	0.34	66.44	
			Static	89.40	0.29	38.85	
5A-5	CB-34/CB-35	89.05	2yr	89.17	0.12	-	CB-34 - 7L/s CB-35 - 7L/s
			5yr	89.22	0.17	-	
			100yr	89.35	0.30	48.18	
			Static	89.40	0.35	77.02	
5A-3	CB-36/CB-37	89.02	2yr	89.15	0.13	-	CB-36 - 18L/s CB-37 - 13L/s
			5yr	89.21	0.19	-	
			100yr	89.32	0.30	86.95	
			Static	89.27	0.25	50.35	
5A-1	CB-90/CB-91	88.95	2yr	89.07	0.12	-	CB-90 - 8L/s CB-91 - 8L/s
			5yr	89.13	0.18	-	
			100yr	89.28	0.33	99.65	
			Static	89.19	0.24	37.61	

AREA ID	CB No.	RIM ELEV. (m)	EVENT	WATER LEVEL ELEV. (DEPTH) (m)		Ponding Volume (Cu. M.)
5A-6	LCB-5-1	89.25	2yr	88.36	-	Includes 5-1, 5-2, 5-3
			5yr	88.69	-	
			100yr	89.54	0.29	12.71
			Static	89.55	0.30	-
5A-6	LCB-5-2	89.31	2yr	88.36	-	-
			5yr	88.69	-	-
			100yr	89.54	0.23	-
			Static	89.55	0.24	-
5A-6	LCB-5-3	89.15	2yr	88.36	-	-
			5yr	88.69	-	-
			100yr	89.54	0.39	-
			Static	89.55	0.40	-
5A-2	LCB-5-8	88.50	2yr	87.59	-	Includes 5-8*, 5-9*, 5-10*, 5-11, 5-12, 5-13
			5yr	87.83	-	
			100yr	88.83	0.33	40.17
			Static	88.85	0.35	-
5A-2	LCB-5-9	88.50	2yr	87.59	-	-
			5yr	87.83	-	-
			100yr	88.83	0.33	-
			Static	88.85	0.35	
5A-2	LCB-5-10	88.50	2yr	87.59	-	-
			5yr	87.83	-	-
			100yr	88.83	0.33	-
			Static	88.85	0.35	-
5A-2	LCB-5-11	88.50	2yr	87.59	-	-
			5yr	87.83	-	-
			100yr	88.83	0.33	-
			Static	88.85	0.35	-
5A-2	LCB-5-12	88.50	2yr	87.59	-	-
			5yr	87.83	-	-
			100yr	88.83	0.33	-
			Static	88.85	0.35	-
5A-2	LCB-5-13	88.50	2yr	87.59	-	-
			5yr	87.83	-	-
			100yr	88.83	0.33	-
			Static	88.85	0.35	-
5A-4	LCB-5-14	89.18	2yr	88.31	-	Includes 5-14*, 5-15*, 5-17, 5-18
			5yr	89.20	0.02	
			100yr	89.58	0.40	60.61
			Static	89.50	0.32	-
5A-4	LCB-5-15	89.18	2yr	88.30	-	-
			5yr	89.20	0.02	-
			100yr	89.58	0.40	-
			Static	89.46	0.28	-
5A-4	LCB-5-17	89.18	2yr	88.30	-	-
			5yr	89.20	0.02	-
			100yr	89.58	0.40	-
			Static	89.46	0.28	-
5A-4	LCB-5-18	89.18	2yr	88.30	-	-
			5yr	89.20	0.02	-
			100yr	89.58	0.40	-
			Static	89.42	0.24	-

* CATCHBASIN LOCATED IN PHASE 5B



SITE BENCHMARK
REFERENCED TO LOCAL GEODETIC DATUM:
E: 387158.xxx
N: 5035761.xxx
V: 90.139 (CGVD28 : 78)
STN. 0011985U511 MTM, ZONE 9

SOURCE REFERENCE:
LEGAL INFORMATION:
1. *PLAN OF SUBDIVISION OF PART OF LOT 2, CONCESSION 9, GEOGRAPHIC TOWNSHIP OF CUMBERLAND AND PART OF BLOCK 130 (0.30 RESERVE), REGISTERED PLAN 4M-1678 CITY OF OTTAWA PREPARED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD, REVISION 4, APRIL 24, 2024.*

TOPOGRAPHIC INFORMATION:
HORIZONTAL DATUM: NAD 83 (ORIGINAL), MTM - ZONE 9
VERTICAL DATUM: CGVD 28:78
1. *CITY OF OTTAWA 1:1000 MAPPING*
2. *NOVATECH SURVEY*

LEGEND

- PHASE BOUNDARY
- PROPOSED STORM SEWER AND MAINTENANCE HOLE
- PROPOSED VORTECHS (9000)
- PROPOSED CATCHBASIN & LEAD
- PROPOSED CATCHBASIN MAINTENANCE HOLE & LEAD
- PROPOSED REAR YARD ACCESS POINT & PERFORATED PIPE
- PROPOSED REAR YARD ELBOW & 450mmØ PERFORATED PIPE
- PROPOSED REAR YARD TEE & 450mmØ PERFORATED PIPE
- EXISTING STORM SEWER AND MAINTENANCE HOLE
- EXISTING VORTECHS (11000)
- EXISTING CATCHBASIN & LEAD
- EXISTING CATCHBASIN MAINTENANCE HOLE & LEAD
- EXISTING REAR YARD ELBOW & 450mmØ PERFORATED PIPE
- EXISTING REAR YARD TEE & 450mmØ PERFORATED PIPE
- FUTURE STORM SEWER AND MAINTENANCE HOLE
- FUTURE CATCHBASIN & LEAD
- FUTURE CATCHBASIN MAINTENANCE HOLE & LEAD
- PROPOSED REAR YARD ACCESS POINT & PERFORATED PIPE
- FUTURE REAR YARD ELBOW & 450mmØ PERFORATED PIPE
- FUTURE REAR YARD TEE & 450mmØ PERFORATED PIPE
- DRAINAGE AREA BOUNDARY - PHASE 5A
- DRAINAGE AREA BOUNDARY - PHASE 5B (FUTURE DEVELOPMENT)
- 5A-2 — AREA ID; 0.31 — CATCHMENT AREA; 712-304 — MAINTENANCE HOLE TO MAINTENANCE HOLE; 0.58 — RUNOFF COEFFICIENT
- 5B-1 — AREA ID (FUTURE); 0.31 — CATCHMENT AREA; 712-304 — MAINTENANCE HOLE TO MAINTENANCE HOLE; 0.58 — RUNOFF COEFFICIENT
- MAJOR OVERLAND FLOW DIRECTION
- 1:2yr PONDING AREA AND ELEVATION
- 1:100yr PONDING AREA AND ELEVATION
- 1:100yr + 20% PONDING AREA AND ELEVATION
- ANTICIPATED 1:100yr PONDING AREA AND ELEVATION
- ANTICIPATED 1:100yr + 20% PONDING AREA AND ELEVATION

NOTE:
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PROVENCE
ORLÉANS

No.	REVISION	DATE	BY
1.	ISSUED FOR REVIEW	JUL 23/24	TJM

SCALE 1:750

DESIGN	SAB
CHECKED	TJM
DRAWN	BM
CHECKED	SAB
APPROVED	TJM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
T. J. MCKAY
100195434
July 23, 2024
PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

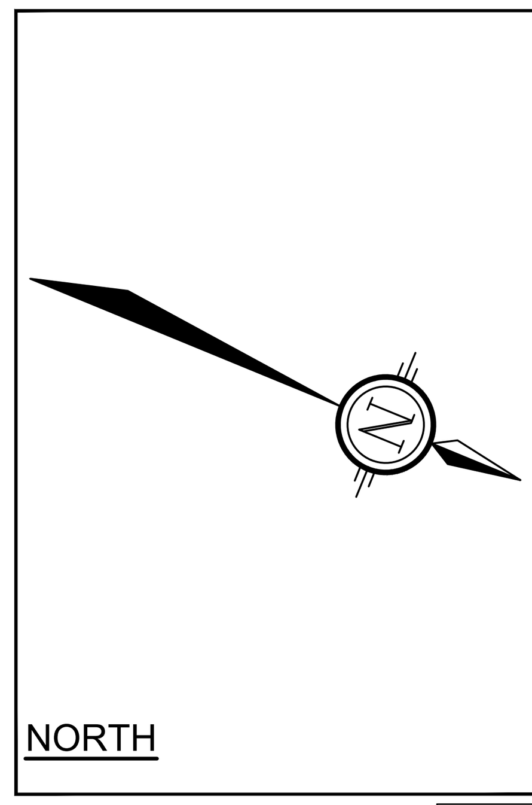
LOCATION
CITY OF OTTAWA
PROVENCE ORLEANS SUBDIVISION (2128 TRIM ROAD)

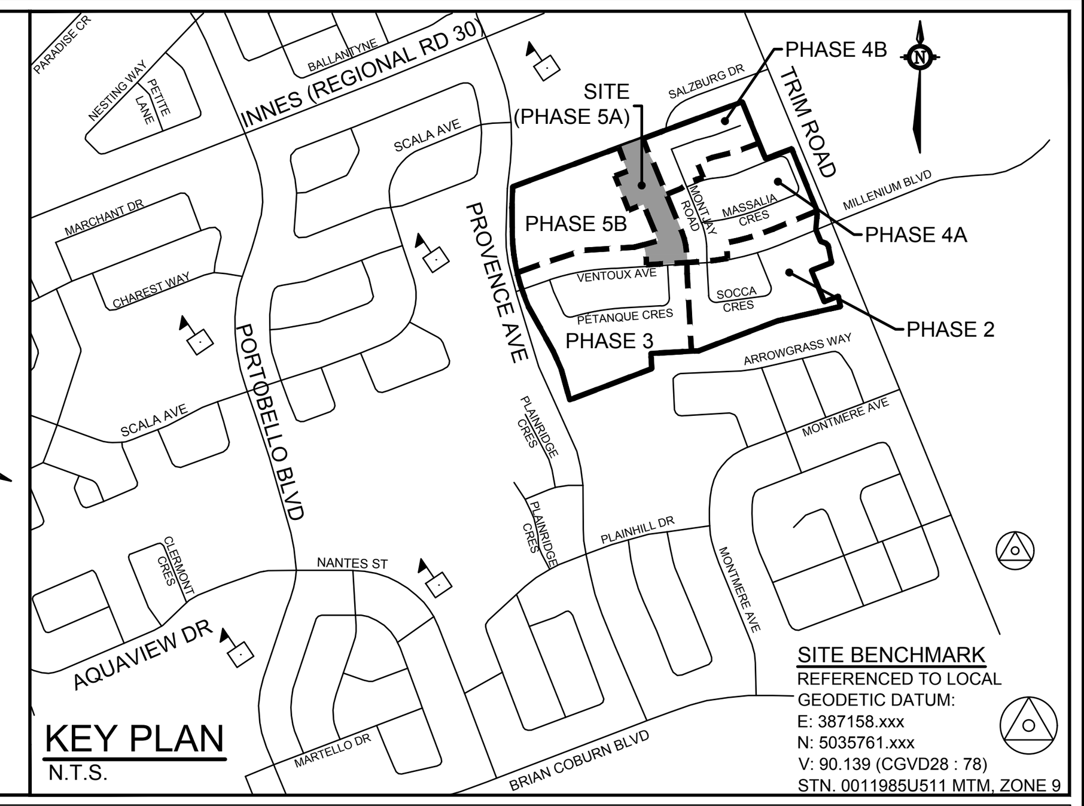
DRAWING NAME
PHASE 5A STORM DRAINAGE AREA PLAN

PROJECT No. 117155
REV: REV # 1
DRAWING No. 117155-STM5A

D07-16-18-0021

PLANA1.DWG - 841mmx594mm
#18004

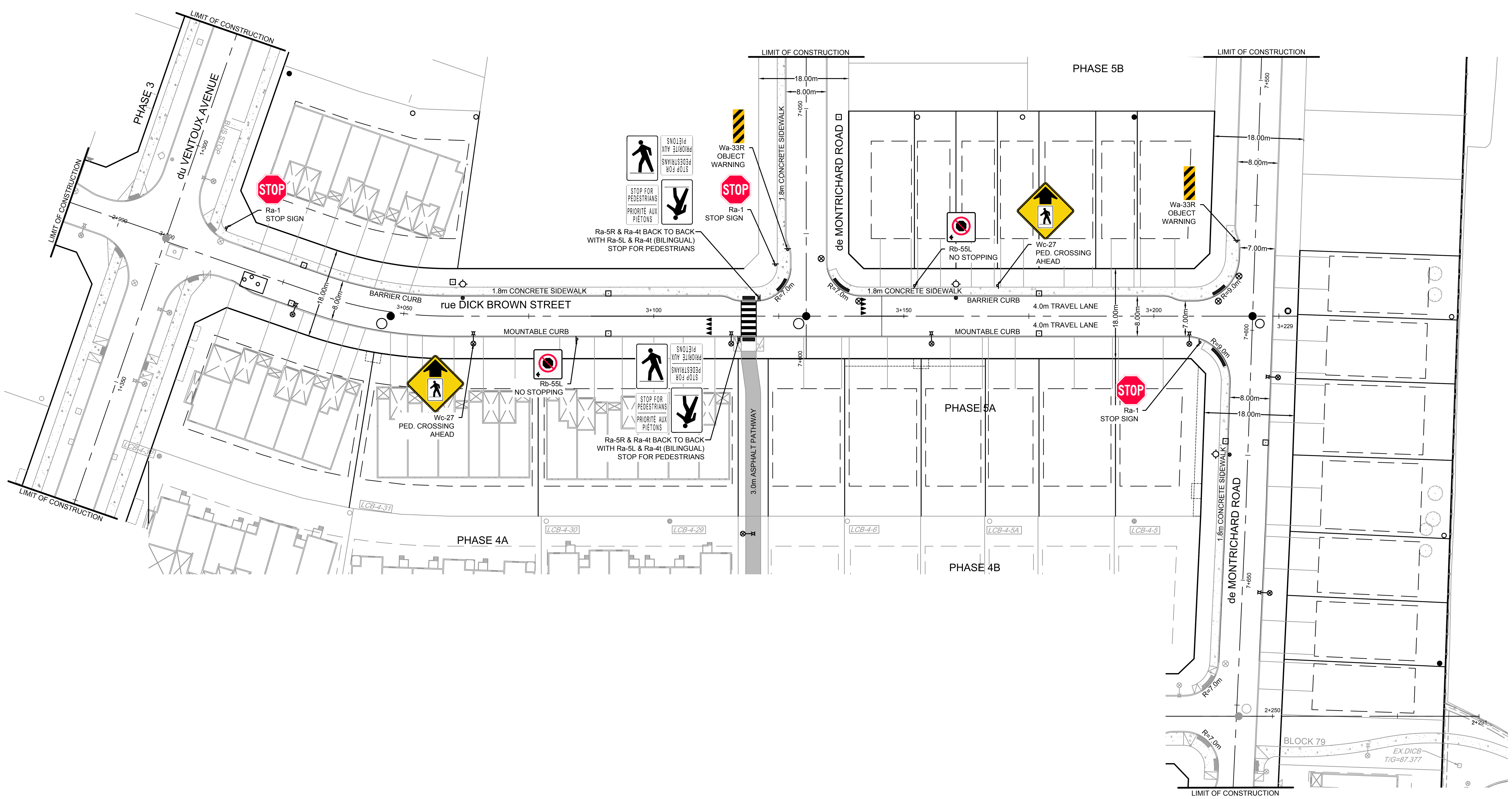


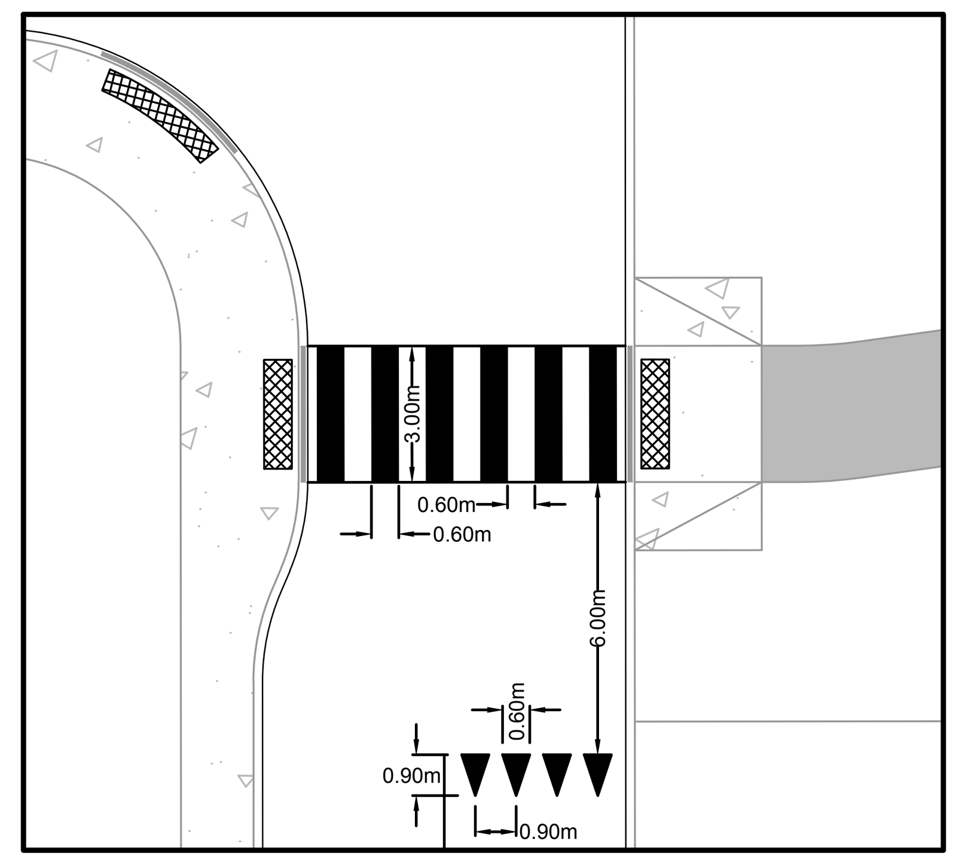


SOURCE REFERENCE:
LEGAL INFORMATION:
1. PLAN OF SUBDIVISION OF PART OF LOT 2, CONCESSION 9, GEOGRAPHIC TOWNSHIP OF CUMBERLAND AND PART OF BLOCK 130 (0.30 RESERVE), REGISTERED PLAN 4M-1678 CITY OF OTTAWA PREPARED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD, REVISION 4, APRIL 24, 2024.
TOPOGRAPHIC INFORMATION:
HORIZONTAL DATUM: NAD 83 (ORIGINAL), MTM - ZONE 9
VERTICAL DATUM: CGVD 28:78
1. CITY OF OTTAWA 1:1000 MAPPING
2. NOVATECH SURVEY

LEGEND

- SITE BOUNDARY
- MINIMUM ZONING SETBACK
- LOT LINE
- EASEMENT
- PROPOSED DEPRESSED CURB
- PROPOSED CURB
- PROPOSED TACTILE WALKING SURFACE INDICATOR (TWSI)
- PROPOSED CONCRETE SIDEWALK
- PROPOSED SANITARY MAINTENANCE HOLE
- PROPOSED STORM MAINTENANCE HOLE
- CB-2 PROPOSED CATCHBASIN
- CBMH-2 PROPOSED CATCHBASIN MAINTENANCE HOLE
- LCB-2-1 PROPOSED LANDSCAPE CATCHBASIN ELBOW
- LCB-2-2 PROPOSED LANDSCAPE CATCHBASIN TEE
- RAP-4-14 PROPOSED REAR YARD ACCESS POINT
- PROPOSED VORTECHS (11000)
- V&VB PROPOSED VALVE & VALVE BOX LOCATION
- HYD PROPOSED FIRE HYDRANT
- PROPOSED SWALE
- PROPOSED STREETLIGHT
- EXISTING TACTILE WALKING SURFACE INDICATOR (TWSI)
- EXISTING DEPRESSED CURB
- EXISTING CURB
- EXISTING STREETLIGHT
- EXISTING WIRE FENCE
- EX SANMH EXISTING SANITARY MAINTENANCE HOLE
- EX STMMH EXISTING STORM MAINTENANCE HOLE
- EXISTING STORM BOX MAINTENANCE HOLE
- V&VB EXISTING VALVE AND VALVE BOX
- EXISTING FIRE HYDRANT
- EX CB EXISTING CATCHBASIN
- EXISTING LANDSCAPE CATCHBASIN ELBOW
- EXISTING LANDSCAPE CATCHBASIN TEE
- EXISTING TERRACE ELEVATION
- EXISTING TREES





CROSSWALK AND "SHARKS TEETH" MARKINGS
SCALE 1:150

REFER TO 117155-N&L5A FOR ADDITIONAL NOTES & LEGEND. REFER TO 117155-L5A FOR FENCE LOCATIONS

NOTE:
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No.	REVISION	DATE	BY
1.	ISSUED FOR REVIEW	JUL 26/24	TJM

SCALE 1:500

DESIGN	RCH
CHECKED	JRA
DRAWN	RCH
CHECKED	JRA
APPROVED	JLL

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER T. J. MCKAY 100195434 July 23, 2024 PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
PROVENCE ORLEANS SUBDIVISION (2128 TRIM ROAD)

DRAWING NAME
PHASE 5A
GEOMETRIC ROADWAY DESIGN DRAWING

PROJECT No. 117155
REV # 1
DRAWING No. 117155-GRDD5A

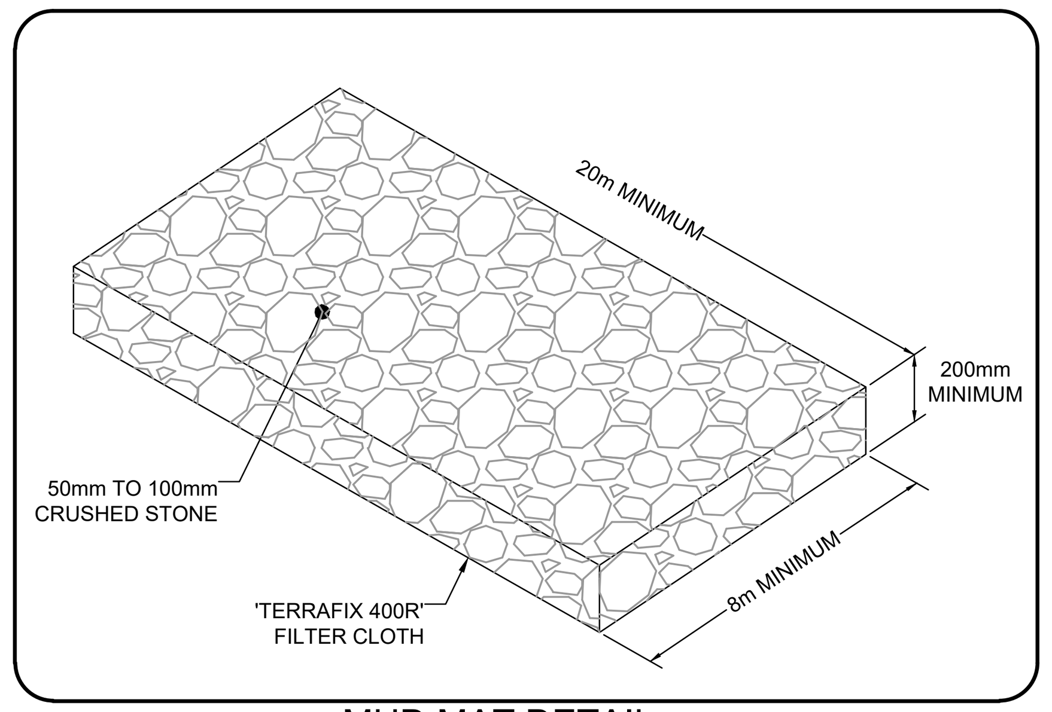
D07-16-18-0021

#18004

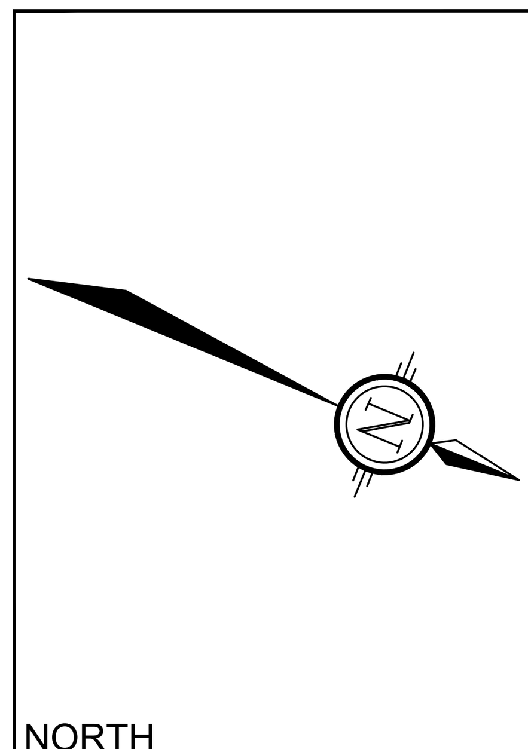
C:\temp\AcPublish_5025\117155-GRDD-PH5A.dwg, GRDD5A, Jul 25, 2024 - 3:56pm, rhiller

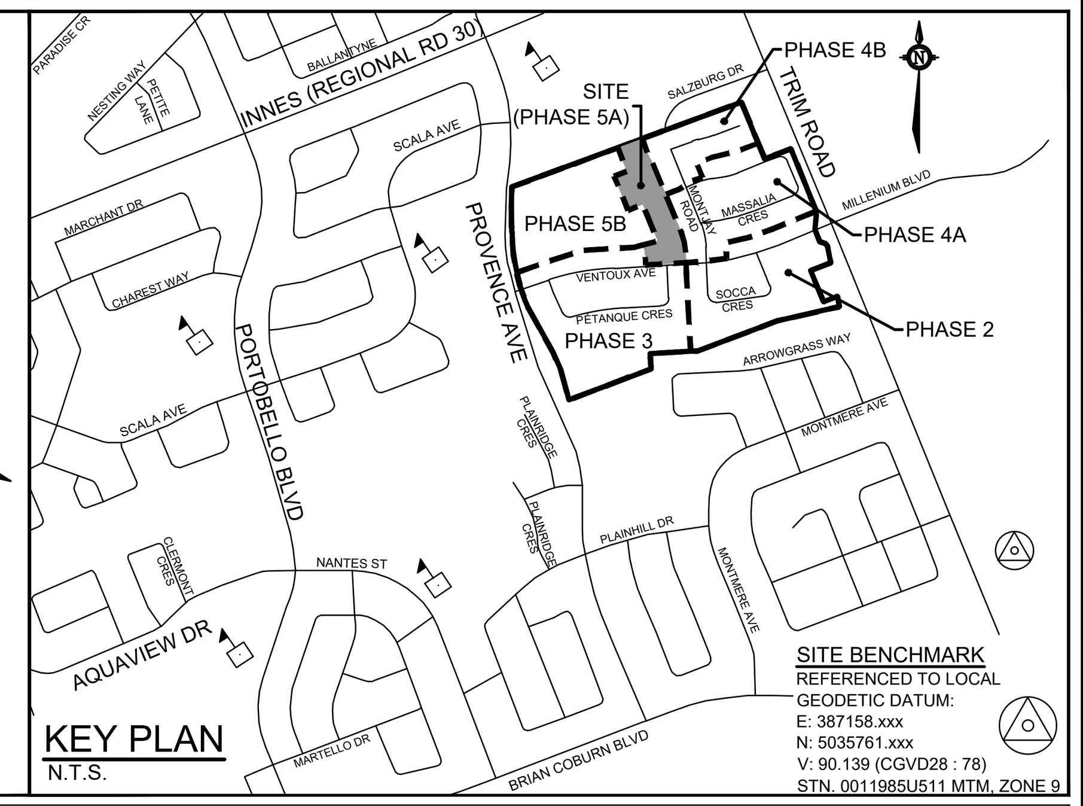
Minimum Erosion and Sediment Control Responsibilities:

	ESC Measure	Symbol	OPSD No.	During Construction: Installation Responsibility	During Construction: Inspection Responsibility	After Construction Prior to Final Acceptance: Inspection/Maintenance Responsibility	After Construction Prior to Final Acceptance: Removal Responsibility	After Final Acceptance: Inspection/Maintenance Responsibility
Temporary Measures	Inlet Protection Measures	N/A See Note 2	Erosion and Sediment Control Notes & Detail	Developer's Contractor	Developer's Contractor	Developer's Contractor	Developer's Contractor	N/A
	Silt Fence		219.110	Developer's Contractor	Developer's Contractor	Developer	Developer	N/A
	Rock Check Dam		219.210	Developer's Contractor	Developer's Contractor	Developer	Developer	N/A
	Mud Mat		N/A	Developer's Contractor	Developer's Contractor	N/A	N/A	N/A



MUD MAT DETAIL





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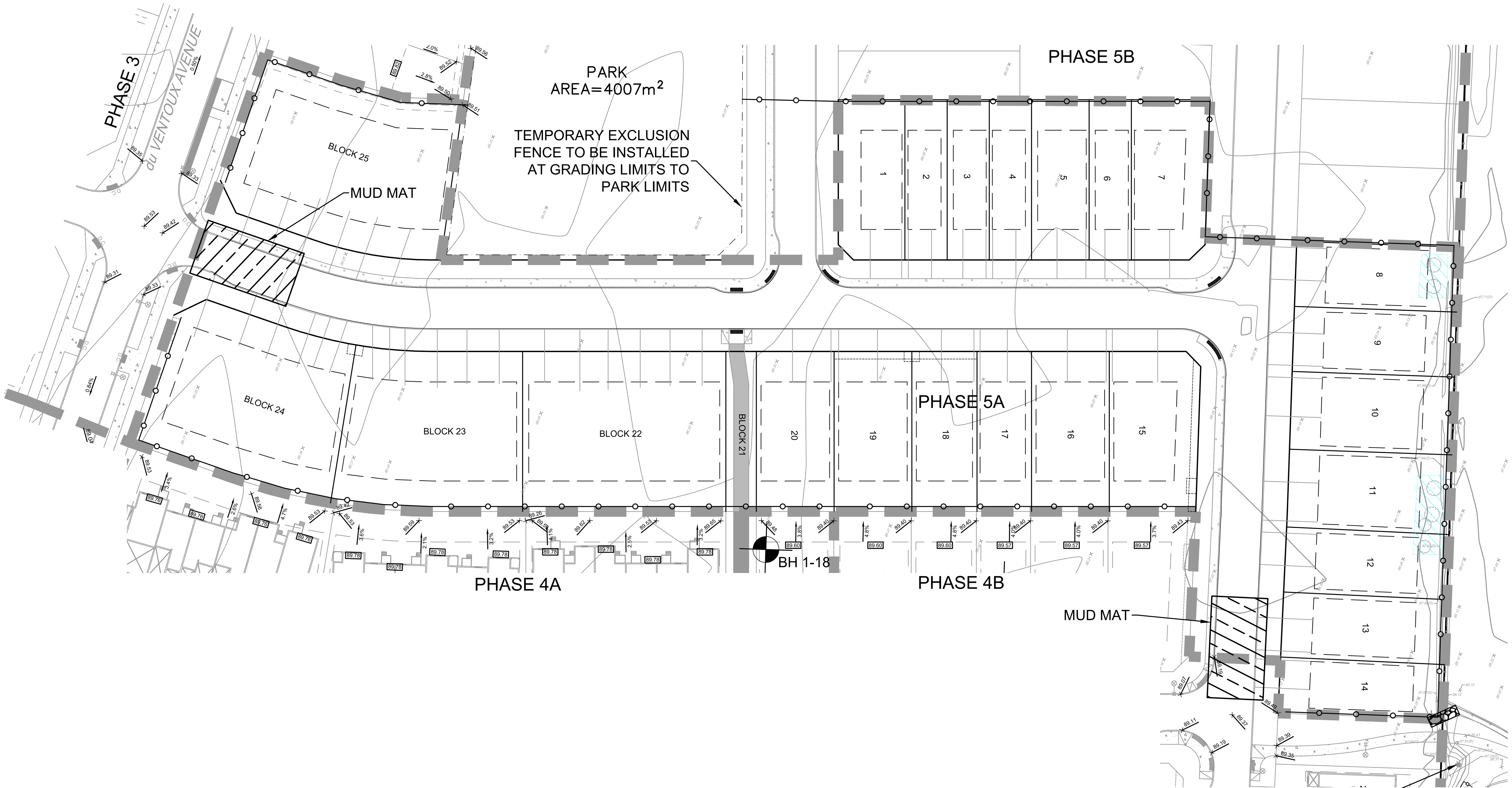
TOPOGRAPHIC INFORMATION:
HORIZONTAL DATUM: NAD 83 (ORIGINAL), MTM - ZONE 9
VERTICAL DATUM: CGVD 28:78
1. CITY OF OTTAWA 1:1000 MAPPING
2. NOVATECH SURVEY

LEGEND:

- SITE BOUNDARY
- MINIMUM ZONING SETBACK
- LOT LINE
- EASEMENT
- PHASING BOUNDARY
- PROPOSED DEPRESSED CURB
- PROPOSED CURB
- PROPOSED TACTILE WALKING SURFACE INDICATOR (TWSI)
- PROPOSED CONCRETE SIDEWALK
- PROPOSED ASPHALT SIDEWALK
- BOREHOLE
- TREE PROTECTION FENCE
- AREA TO BE CLEARED
- PREVIOUSLY APPROVED GRADING
- EXISTING ELEVATION
- EXISTING CENTERLINE OF DITCH ELEVATION
- EXISTING TREES
- EXISTING WIRE FENCE
- EXISTING STREET LIGHT



PER PHASE 4B APPROVALS, EXISTING TEMPORARY DICB TO BE REMOVED AFTER PHASE 5 REAR YARD DRAINAGE CONSTRUCTION. EXISTING LEAD TO BE BLANKED AS PER F-4104.

EROSION AND SEDIMENT CONTROL NOTES:

1) THE CONTRACTOR SHALL PREPARE AND IMPLEMENT AN EROSION AND SEDIMENT CONTROL PLAN TO THE SATISFACTION OF THE MUNICIPALITY, APPROPRIATE TO THE SITE CONDITIONS, PRIOR TO UNDERTAKING ANY SITE ALTERATIONS (FILLING, GRADING, REMOVAL OF VEGETATION, ETC.) AND DURING ALL PHASES OF SITE PREPARATION AND CONSTRUCTION IN ACCORDANCE WITH THE CURRENT BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL.

2) THE CONTRACTOR SHALL PROVIDE APPROPRIATE INLET PROTECTION MEASURES ON ALL INSTALLED AND EXISTING CATCHBASINS AND CATCHBASIN MAINTENANCE HOLES FOR THE DURATION OF CONSTRUCTION AND WILL REMAIN IN PLACE DURING ALL PHASES OF CONSTRUCTION. PROPOSED INLET PROTECTION MEASURES ARE TO BE APPROVED BY CONTRACT ADMINISTRATOR PRIOR TO IMPLEMENTATION.

3) SILT FENCING, AS REQUIRED FOR THE PERIMETER OF SITE, SHALL BE UTILIZED TO CONTROL EROSION FROM THE SITE DURING CONSTRUCTION. SILT FENCING IS TO BE ESTABLISHED AT THE GRADING LIMITS AS PER THE APPROVED GRADING PLAN. EXACT LIMITS TO BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON STATUS OF ADJACENT DEVELOPMENT.

4) THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.

5) CONTRACTOR TO INSPECT ALL EROSION AND SEDIMENT CONTROL MEASURES DAILY AND IMMEDIATELY AFTER EVERY RAINFALL EVENT AND REPAIR ANY DAMAGED OR NON FUNCTIONING MEASURES IMMEDIATELY.

6) THIS PLAN IS TO BE CONSIDERED A 'LIVING DOCUMENT' WHICH MAY BE MODIFIED IN THE EVENT THE EROSION AND SEDIMENT CONTROL MEASURES ARE INSUFFICIENT.

REFER TO 117155-N&L5A FOR ADDITIONAL NOTES AND LEGEND

* INFORMATION FROM: GEOTECHNICAL INVESTIGATION, PREPARED BY PATERSON GROUP INC., DATED SEPTEMBER 22, 2022 (PG4278-1, REV.5)

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

PROVENCE ORLÉANS

No.	REVISION	DATE	BY
1.	ISSUED FOR REVIEW	JUL 23/24	TJM

SCALE 1:500

DESIGN	SAB
CHECKED	TJM
DRAWN	SAB
CHECKED	TJM
APPROVED	TJM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER T. J. MCKAY 100195434 July 23, 2024 PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
PROVENCE ORLEANS SUBDIVISION (2128 TRIM ROAD)

DRAWING NAME
PHASE 5A
EROSION AND SEDIMENT CONTROL AND REMOVALS PLAN

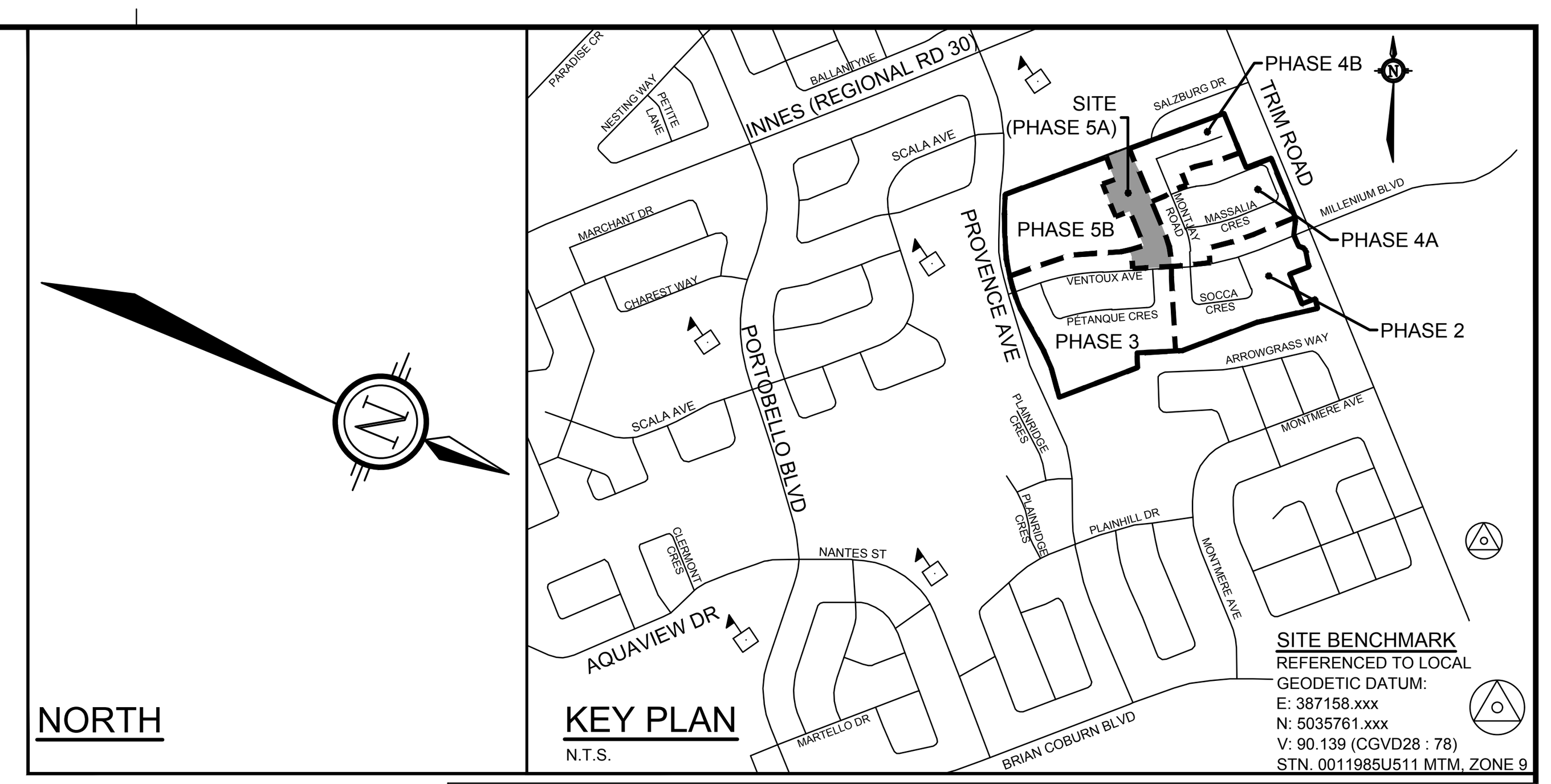
PROJECT No. 117155
REV # 1
DRAWING No. 117155-ESC5A

D07-16-18-0021

#18004

LEGEND

- RIGHT OF WAY
- MINIMUM ZONING SETBACK
- LOT LINE
- EASEMENT
- PHASING BOUNDARY
- D.C. PROPOSED DEPRESSED CURB
- PROPOSED CURB
- PROPOSED TACTILE WALKING SURFACE INDICATOR (TWSI)
- PROPOSED CONCRETE SIDEWALK
- PROPOSED TOWNHOUSE SERVICE LOCATION
- PROPOSED SERVICE LOCATION IN DRIVEWAY
- PROPOSED TOWNHOUSE DUAL SERVICE LOCATION
- PROPOSED SINGLE HOUSE SERVICE LOCATION
- SANITARY MAINTENANCE HOLE & SEWER
- STORM MAINTENANCE HOLE & SEWER
- CATCHBASIN & LEAD
- WATERMAIN
- WATERMAIN CAP
- VALVE & VALVE BOX LOCATION
- FIRE HYDRANT C/W LEAD
- WATERMAIN HORIZONTAL BEND
- PROPOSED STREETLIGHT
- PROPOSED STREETLIGHT WITH GROUNDING
- PROPOSED HYDRO ONE TRANSFORMER AND BASE
- SD PROPOSED STREET LIGHT DISCONNECT
- GLB BELL GRADE LEVEL BOX
- GM PROPOSED GAS METER LOCATION
- HM PROPOSED INDIVIDUAL HYDRO METER LOCATION
- HM 3 PROPOSED MULTI UNIT HYDRO METER LOCATION NUMBER INDICATES THE AMOUNT OF UNITS CONNECTED
- B PROPOSED BELL END WALL PANEL
- R PROPOSED ROGERS END WALL PANEL
- PROPOSED PRIMARY JOINT UTILITY TRENCH (JUT)
- PROPOSED STREET LIGHT CONDUIT
- CMB PROPOSED COMMUNITY MAIL BOX
- PROPOSED ROAD CROSSING
- 2H HYDRO (2 DUCTS)
- 1C CABLE TELEVISION (1 DUCT)
- 1SL STREETLIGHT (1 DUCT)
- 1B BELL (1 DUCT)
- 2S SPARE (2 DUCT)
- PROPOSED DECIDUOUS TREE



SOURCE REFERENCE:
LEGAL INFORMATION:
1. PLAN OF SUBDIVISION OF PART OF LOT 2, CONCESSION 9, GEOGRAPHIC TOWNSHIP OF CUMBERLAND AND PART OF BLOCK 130 (0.30 RESERVE), REGISTERED PLAN 4M-1678 CITY OF OTTAWA PREPARED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD, REVISION 4, APRIL 24, 2024.

TOPOGRAPHIC INFORMATION:
HORIZONTAL DATUM: NAD 83 (ORIGINAL), MTM - ZONE 9
VERTICAL DATUM: CGVD 28:78
1. CITY OF OTTAWA 1:1000 MAPPING
2. NOVATECH SURVEY

REFER TO 117155-XS5A FOR TYPICAL CROSS SECTIONS
REFER TO 117155-U5AD FOR ADDITIONAL NOTES AND DETAILS

NOTE:
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PROVENCE ORLÉANS

No.	REVISION	DATE	BY
2.	ISSUED FOR REVIEW	JUL 23/24	MWB
1.	ISSUED FOR PHASE 5A CUP CIRCULATION	FEB 16/24	MWB

SCALE 1:500

DESIGN	MWB
CHECKED	TJM
DRAWN	SAM
CHECKED	TJM
APPROVED	MWB

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER T. J. MCKAY 100195434 July 23, 2024 PROVINCE OF ONTARIO

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Website www.novatech-eng.com

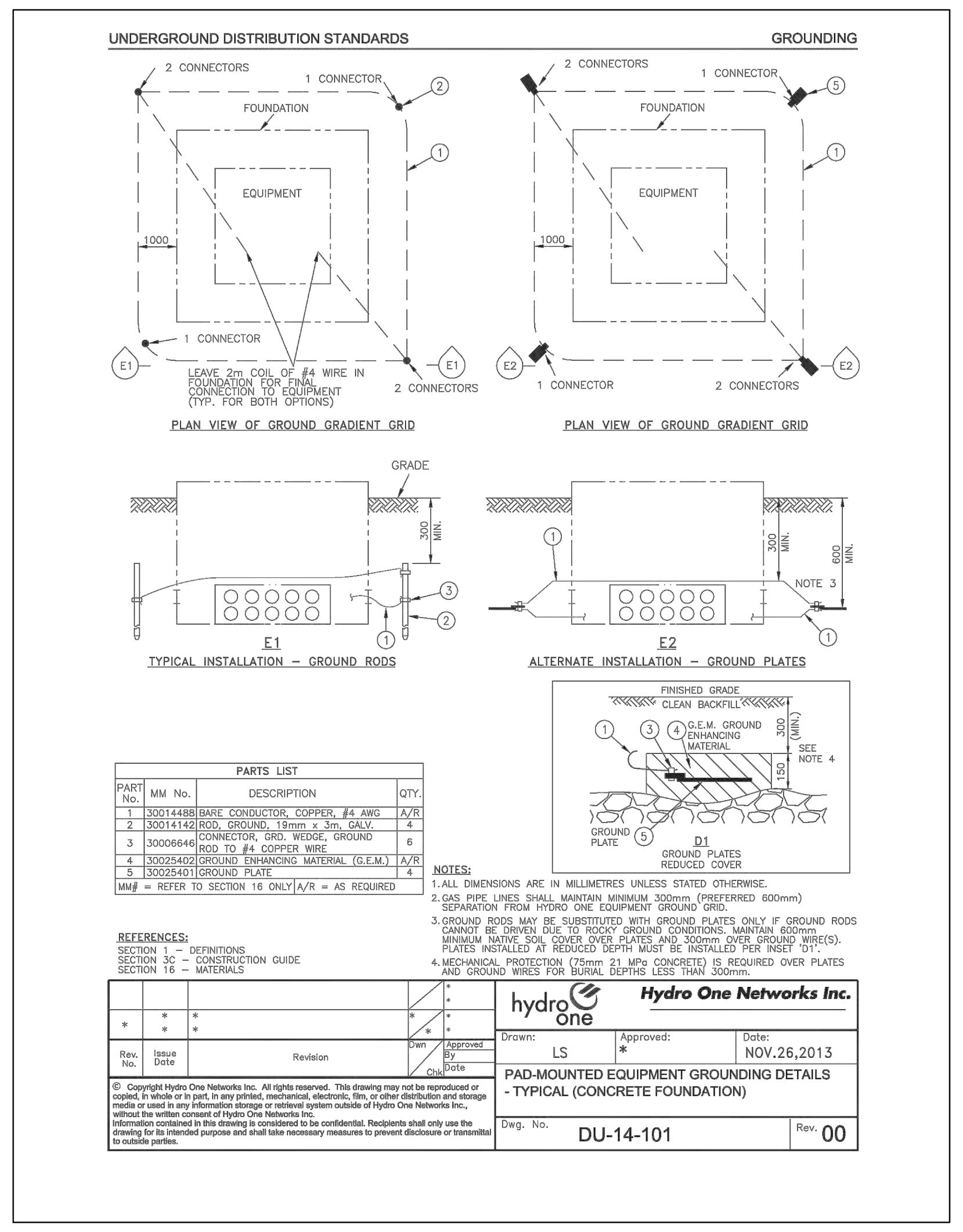
LOCATION
CITY OF OTTAWA
PROVENCE ORLEANS SUBDIVISION (2128 TRIM ROAD)

DRAWING NAME
PHASE 5A
COMPOSITE UTILITY PLAN

PROJECT No. 117155
REV # 2
DRAWING No. 117155-U5A

D07-16-18-0021

#18004


UNDERGROUND DISTRIBUTION STANDARDS
GROUNDING
PLAN VIEW OF GROUND GRADIENT GRID
TYPICAL INSTALLATION – GROUND RODS
ALTERNATE INSTALLATION – GROUND PLATES
PARTS LIST
Hydro One Networks Inc.
PAD-MOUNTED EQUIPMENT GROUNDING DETAILS – TYPICAL (CONCRETE FOUNDATION)
NOV.26,2013
DU-14-101
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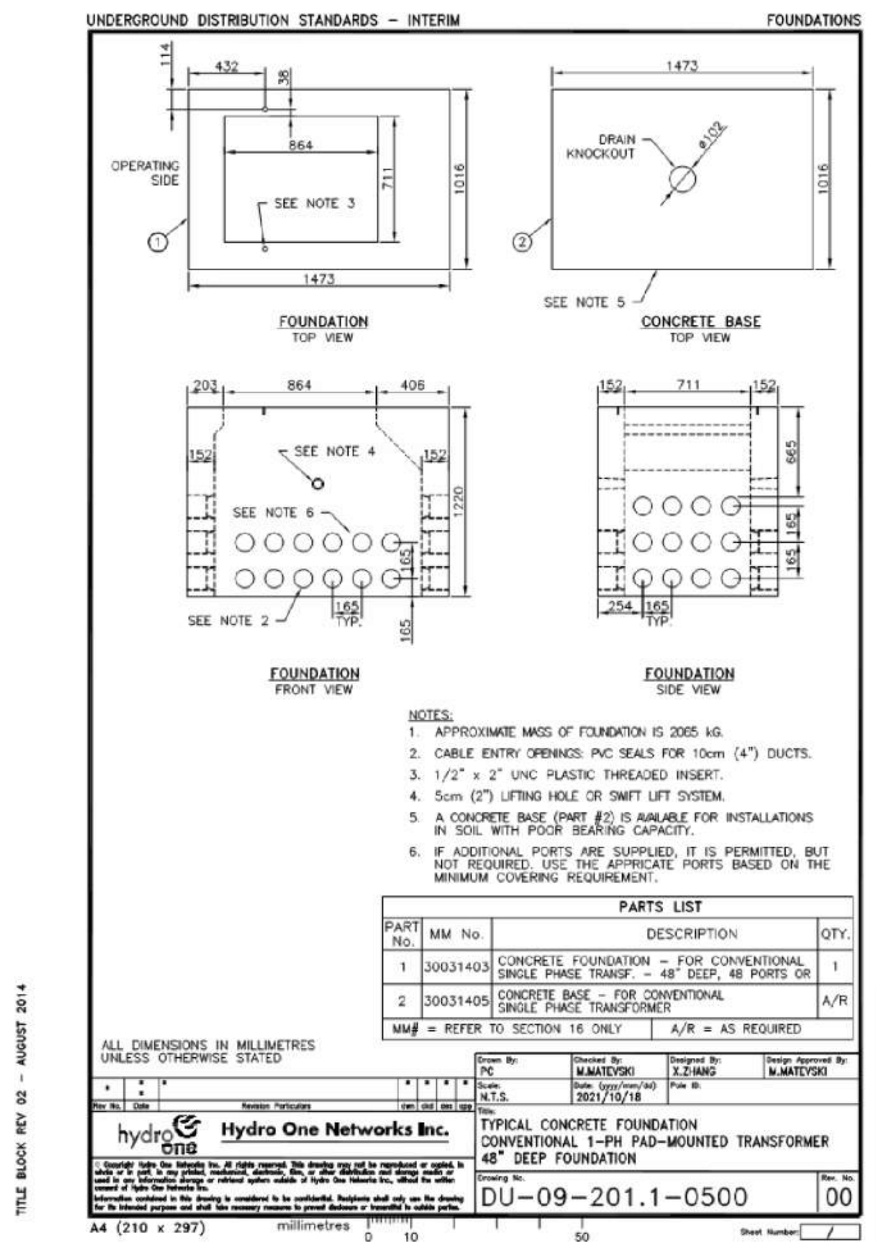
UNDERGROUND DISTRIBUTION STANDARDS – INTERIM
FOUNDATIONS
FOUNDATION
TOP VIEW
CONCRETE BASE
TOP VIEW
FOUNDATION
FRONT VIEW
FOUNDATION
SIDE VIEW
PARTS LIST
ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED
Hydro One Networks Inc.
TYPICAL CONCRETE FOUNDATION CONVENTIONAL 1-PH PAD-MOUNTED TRANSFORMER 48" DEEP FOUNDATION
DU-09-201.1-0500
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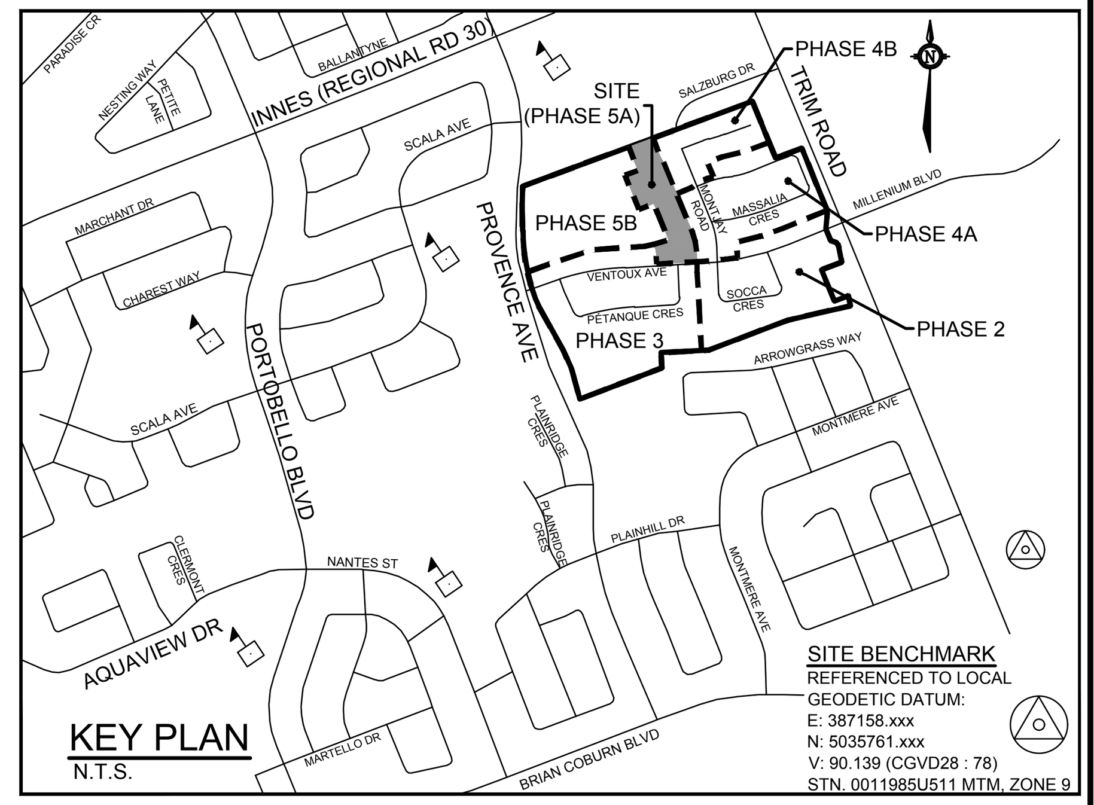
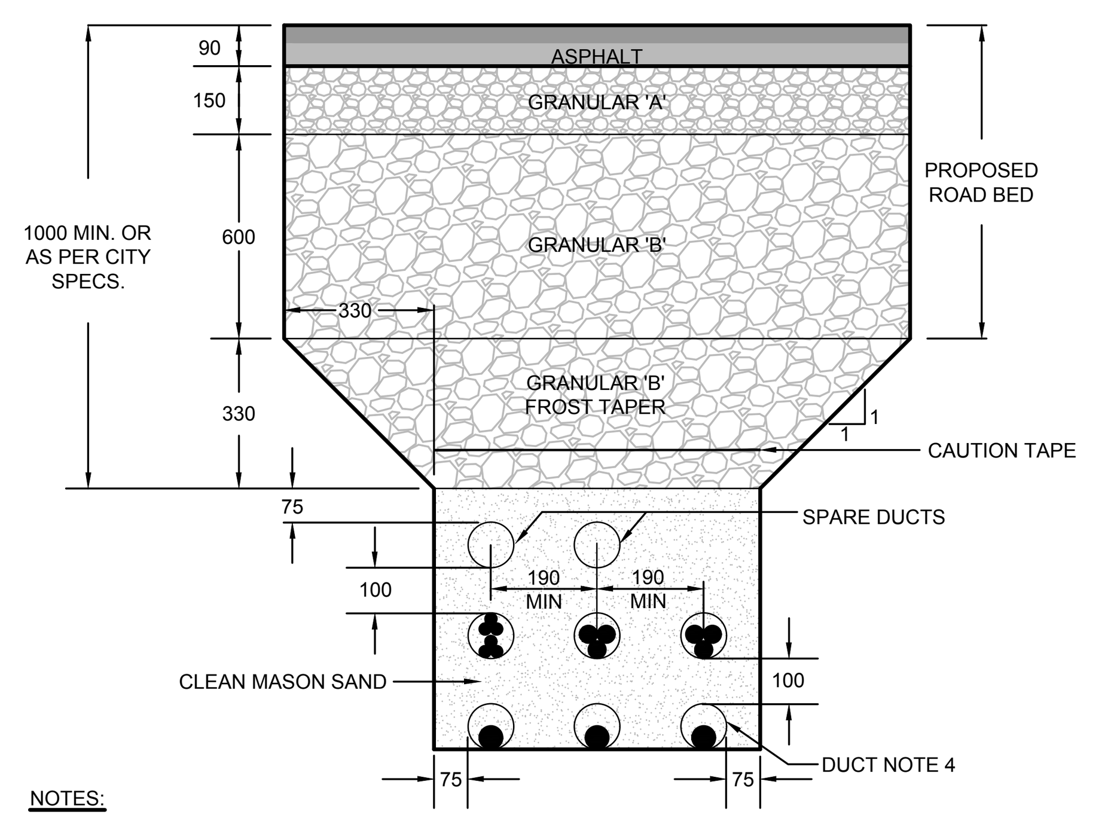

INNES (REGIONAL RD 30)
SITE (PHASE 5A)
PHASE 4B
TRIM ROAD
PHASE 5B
PHASE 4A
PHASE 3
PHASE 2
PROVENCE AVE
PORTOBELLO BLVD
AQUAVIEW DR
BRIAN COBURN BLVD
SITE BENCHMARK
REFERENCED TO LOCAL GEODETIC DATUM:
E: 387158.xxx
N: 5035781.xxx
V: 90.139 (CGVD28 : 78)
STN. 0011965U511.MTM, ZONE 9

KEY PLAN
N.T.S.

NOTES:

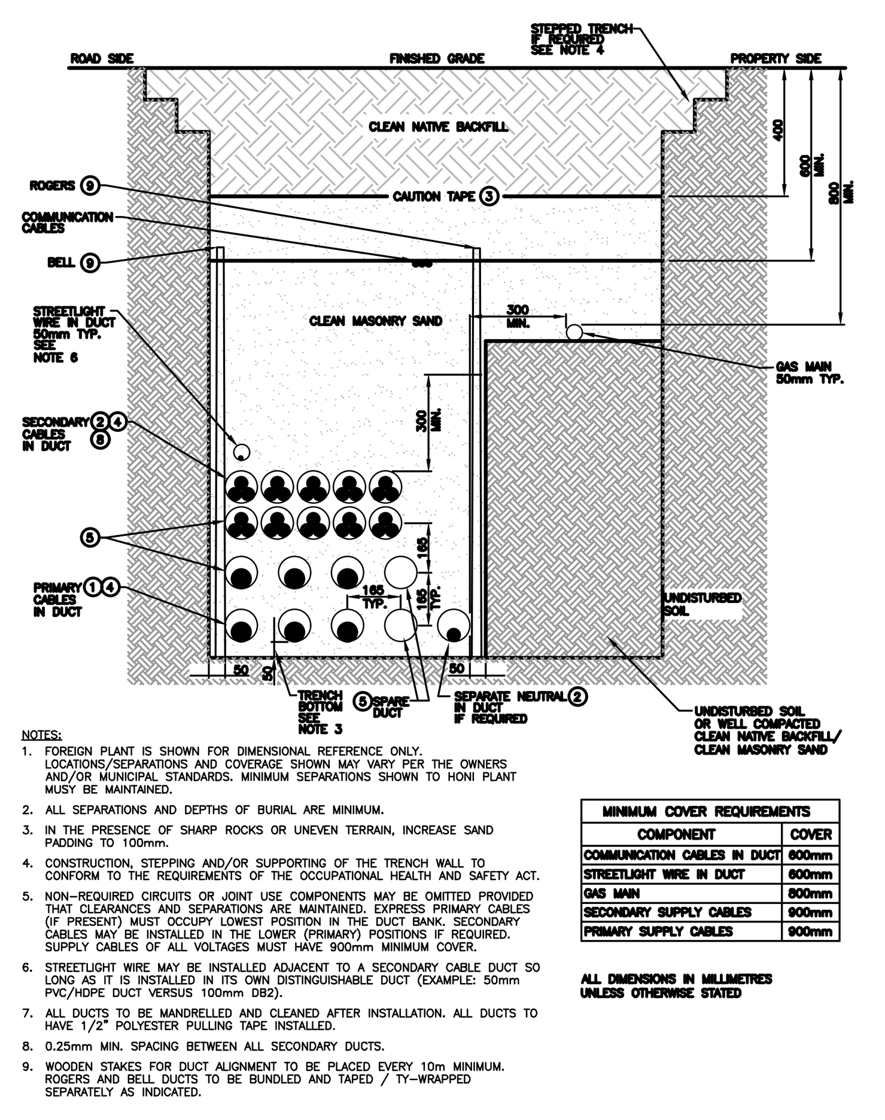
1. ALL PEDESTALS, TRANSFORMERS, AND ALL OTHER UTILITY FURNITURE ARE TO BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE CITY OF OTTAWA'S "GUIDELINES FOR UTILITY PEDESTALS WITHIN THE RIGHT-OF-WAY".
2. REFER TO 117155-XS5A FOR TYPICAL CROSS SECTIONS.



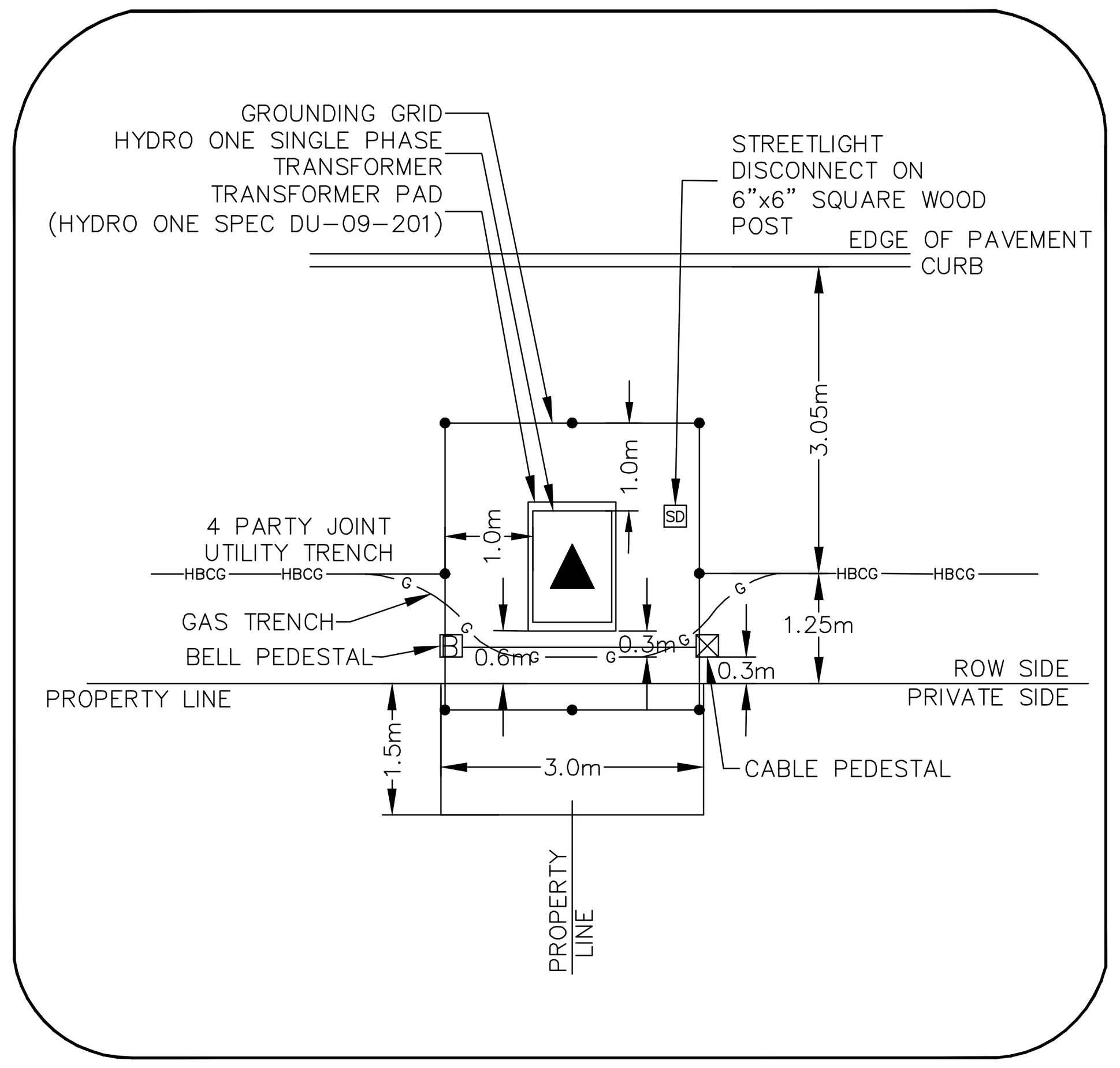
NOTES:

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. ALL SEPARATIONS AND DEPTHS OF BURIAL ARE MINIMUM.
3. IF MINIMUM DEPTH OF COVER AS NOTED IN THE ABOVE TRENCH PROFILES IS EXCEEDED, SLOPING OF TRENCH WALLS AND/OR SHORING SHALL CONFORM TO THE REQUIREMENTS SPECIFIED IN THE OCCUPATIONAL HEALTH AND SAFETY ACT.

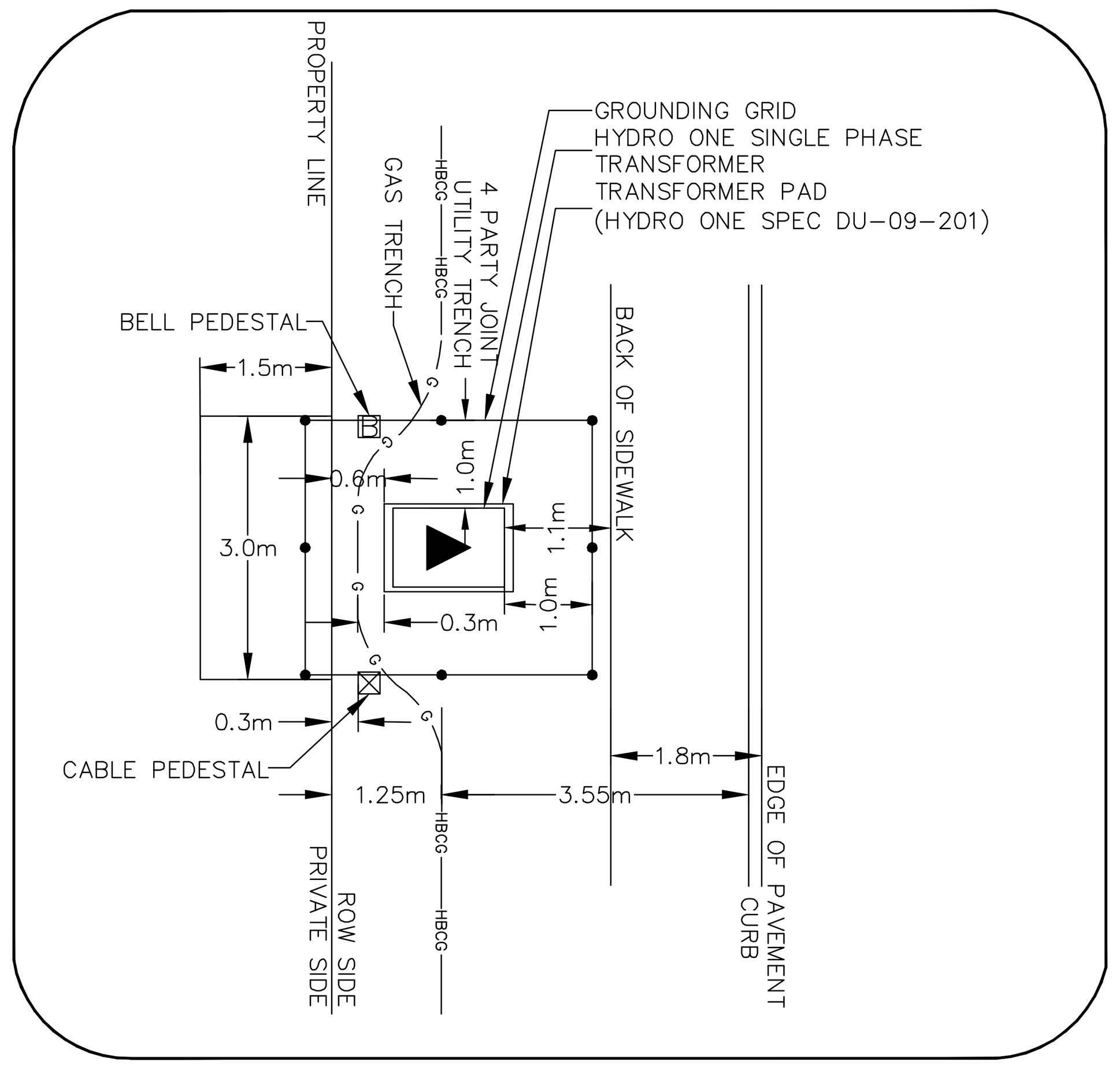
STANDARD STREET CROSSING LOCAL ROADWAY
N.T.S.



STANDARD 4 PARTY TRENCH
N.T.S.


GROUNDING GRID
HYDRO ONE SINGLE PHASE TRANSFORMER
TRANSFORMER PAD
(HYDRO ONE SPEC DU-09-201)
STREETLIGHT DISCONNECT ON 6"x6" SQUARE WOOD POST
EDGE OF PAVEMENT CURB
3.05m
1.0m
1.0m
4 PARTY JOINT UTILITY TRENCH
GAS TRENCH
BELL PEDESTAL
0.6m
0.3m
0.3m
1.25m
ROW SIDE
PRIVATE SIDE
PROPERTY LINE
1.5m
3.0m
CABLE PEDESTAL
PROPERTY LINE

TYPICAL PLAN VIEW OF SINGLE PHASE TRANSFORMER IN 18m ROW (Rue Dick Brown Street)
N.T.S.


PROPERTY LINE
GAS TRENCH
4 PARTY JOINT UTILITY TRENCH
GROUNDING GRID
HYDRO ONE SINGLE PHASE TRANSFORMER
TRANSFORMER PAD
(HYDRO ONE SPEC DU-09-201)
BACK OF SIDEWALK
BELL PEDESTAL
1.5m
0.6m
1.0m
3.0m
1.1m
1.0m
0.3m
0.3m
CABLE PEDESTAL
1.25m
3.55m
1.8m
ROW SIDE
PRIVATE SIDE
EDGE OF PAVEMENT CURB

TYPICAL PLAN VIEW OF SINGLE PHASE TRANSFORMER IN 18m ROW (de Montrichard Road)
N.T.S.

REFER TO 117155-XS5A FOR TYPICAL CROSS SECTIONS

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

PROVENCE ORLÉANS

No.	REVISION	DATE	BY
1.	ISSUED FOR REVIEW	JUL 23/24	MWB

SCALE: AS SHOWN

DESIGN: MWB
CHECKED: TJM
DRAWN: SAM
CHECKED: TJM
APPROVED: MWB

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
T. J. MCKAY
100195434
July 23, 2024
PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
PROVENCE ORLEANS SUBDIVISION (2128 TRIM ROAD)

DRAWING NAME
PHASE 5A
COMPOSITE UTILITY PLAN DETAILS

PROJECT No. 117155
REV: REV # 1
DRAWING No. 117155-U5AD

D07-16-18-0021

#18004

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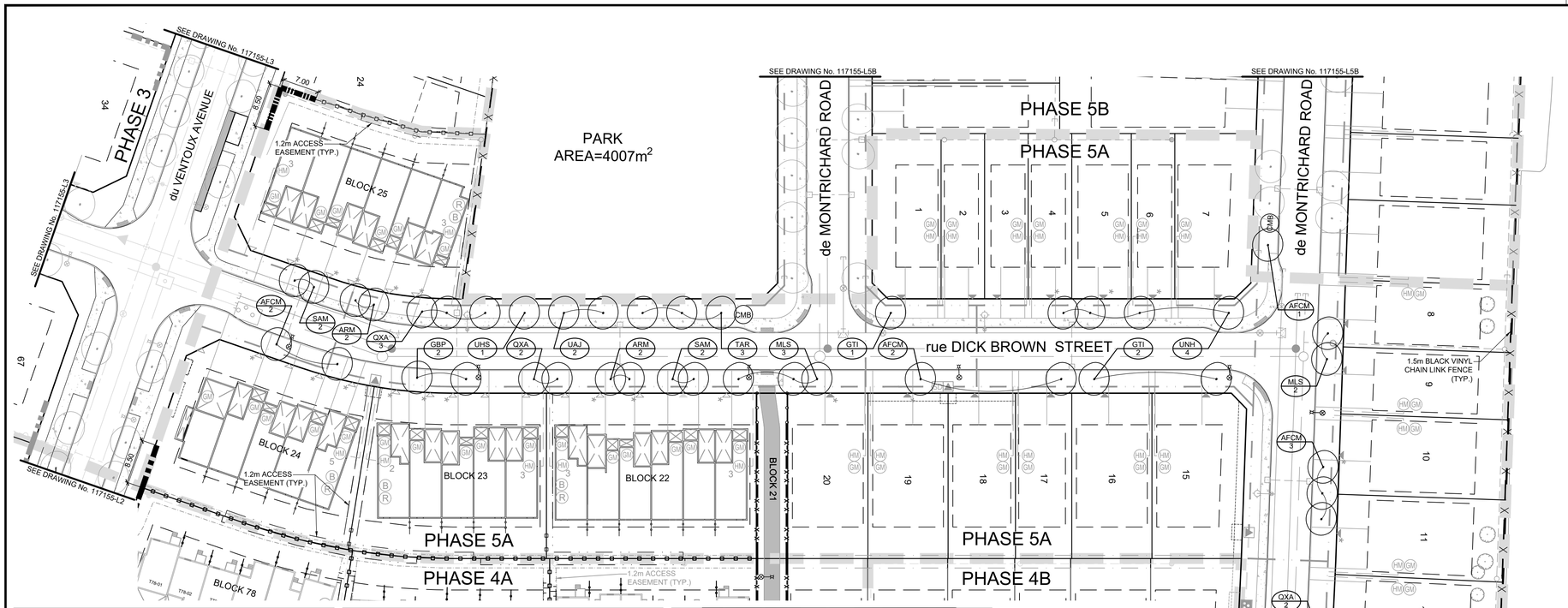
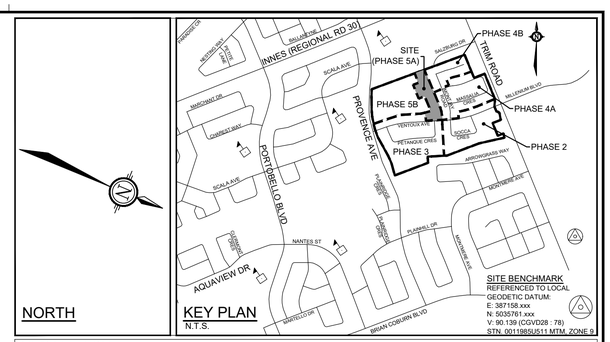




SOURCE REFERENCE:
LEGAL INFORMATION:
1. *PLAN OF SUBDIVISION OF PART OF LOT 2, CONCESSION 9, GEOGRAPHIC TOWNSHIP OF CUMBERLAND AND PART OF BLOCK 130 (0.30 RESERVE), REGISTERED PLAN 4M-1678 CITY OF OTTAWA PREPARED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD, REVISION 4, APRIL 24, 2024.*

TOPOGRAPHIC INFORMATION:
HORIZONTAL DATUM: NAD 83 (ORIGINAL), MTM - ZONE 9
VERTICAL DATUM: CGVD 28:78
1. *CITY OF OTTAWA 1:1000 MAPPING*
2. *NOVATECH SURVEY*

LEGEND

- PROPOSED DECIDUOUS TREE
- KEY ## — SPECIES (SEE PLANT LIST) / QUANTITY
- PROPOSED 1.5m BLACK VINYL CHAINLINK FENCE
- PROPOSED 1.8m BLACK VINYL CHAINLINK FENCE
- PROPOSED 1.8m WOOD PRIVACY FENCE
- PROPOSED POST AND RAIL FENCE
- PROPOSED 2.2m HIGH NOISE BARRIER

CITY DETAILS

Related details from City of Ottawa Standard Tender Documents Volume No. 2 Standard Detail Drawings.

D2. Chain Link Fence
D4. Post and Rail Fence

NOVATECH DETAILS

Found on Sheet 117155-L5C.

D1. Standard Deciduous Tree Planting
D3. Wood Screen

DETAILS BY OTHERS

Found on Sheet 117155-L5C.

D5. Noise Barrier

TREE PLANTING IN SENSITIVE CLAY

The landscape plans have been developed in accordance with the Geotechnical Investigation (Report #PG4278-1, Revision 5, Paterson Group Inc, September 22, 2022) which includes the letter/memo, and map (Test Hole Location Plan, December 2017) that confirms the categories and locations of clay soils.

1. The following City of Ottawa clay soils guideline applies: Guidelines for Tree Planting in Sensitive Marine Clay Soils (2017).
2. The soil volumes provided are sufficient for a reasonable chance of tree survival. Unless otherwise noted, all new trees on City property meet the minimum soil volume requirements of the following, based on a depth of 1.5m below finished grade, and subtracting the volume of utility trenches.
   a. Small tree (mature height up to 7.5m) - 25m3/ minimum soil volume provided.
   b. Medium tree (mature height 7.5-14m) - 30m3/ minimum soil volume provided.

   Where trees share a continuous greenspace:

   c. Two (2) small trees - 15m3/ minimum soil volume provided per tree.
   d. Two (2) medium trees - 18m3/ minimum soil volume provided per tree.

GENERAL

1. Read and interpret this drawing/ drawing set in conjunction with all the contract details and specifications, including related civil, utility, structural, architectural, mechanical, electrical, environmental, geotechnical, and survey information.
2. The Contractor is to determine the exact location, size, material, and elevation of all existing utilities prior to commencing construction. Protect and assume responsibility for all existing utilities regardless of being shown on the drawings.
3. It is essential to use the plans and details in conjunction with the specifications and notes.
4. Do not scale drawings. Work to dimensions only.
5. Protect all existing and retained vegetation for the duration of construction according to the contract details and specifications.
6. Reinstate all areas and items damaged or disturbed, beyond the Limit of Work, because of construction activities, including but not limited to construction staging areas, haul roads, stockpile areas, etc. to the satisfaction of the Consultant. Unless otherwise noted, Contractor is to reinstate all areas to pre-construction condition or better to the satisfaction of the Contract Administrator.

PLANTING

1. Plant material to be No. 1 Grade and is to comply with Canadian Standards for Nursery Stock (latest edition) published by the Canadian Nursery Landscape Association.
2. Use structurally sound plant material with strong fibrous root system free of disease, defects, and injuries. Use trees with straight trunks, well and characteristically branched for species. Obtain approval from consultant of plant material at source prior to digging. All trees and shrubs to be container grown, potted, W/B or B/B, as indicated on Plant List. Bare root plants are only acceptable for certain species and as approved by the Landscape Architect.
3. Plant material substitutions are not be permitted without the written approval from the Consultant, **with 48 hours notice**, prior to shipping plant material.
4. Plant locations are schematic / approximate only. **Contractor is to stake out locations on site for approval by the Landscape Architect prior to installation.**
5. The illustrated number of plants shown in the Planting Plan supersedes the estimated number in the Plant List. Contractor to report any discrepancies to the Landscape Architect prior to installation. Contractor will assume full responsibility if the Landscape Architect is not notified.
6. Ensure trees are thoroughly watered following planting. Monitor material and ensure adequate moisture until acceptance.
7. In heavy clay or poorly drained soils, set root ball with root collar 75-100mm higher than finished grade.
8. Approved topsoil depths are as follows:
   a. Plant Beds - **450mm** continuous depth. Applies to shrubs, perennials, vines, and groundcovers.
   b. Sod/ Seed Areas - **100mm** depth.
   c. Reforestation - **300mm** depth.
9. Sod to be No. 1 Kentucky Bluegrass Sod grown from minimum mixture of 3 Kentucky Bluegrass cultivars. Quality and source are to comply with Canadian Standards for Nursery Stock, Section 17, (latest edition) published by the Canadian Nursery Landscape Nursery Landscape Association.
10. Apply the following mineral fertilizer unless soil tests show other requirements:
    a. Plant Beds - (8-32-16), i.e. 8% Nitrogen, 32% Phosphorus, 16% Potash per manufacturer specifications.
    b. Sod Areas - (8-32-16), i.e. 8% Nitrogen, 32% Phosphorus, 16% Potash at a rate of 350kg/ha.
11. Where applicable, for any plant areas with a mix of species/ cultivars notes, Contractor is to cluster like plants in groups of 3-5 and evenly distribute these in the noted area.

PLANT LIST

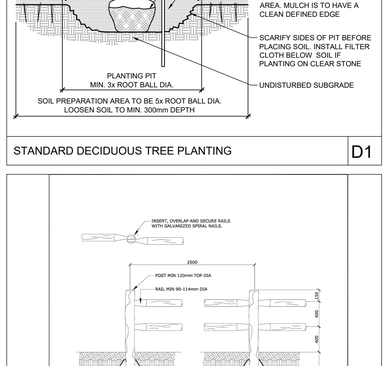
117155 - Phase 5A - Plant List

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	COND	SPACING
Deciduous Trees						
ARM	4	*Acer rubrum 'Armstrong Gold'*	Armstrong Gold Red Maple	50mm Cal	WB	As Shown
AFCM	8	*Acer x freemanii 'Celzam'*	Celebration Maple	50mm Cal	WB	As Shown
GBP	2	*Ginkgo biloba 'Princeton Sentry'*	Princeton Sentry Ginkgo	50mm Cal	WB	As Shown
GTI	5	*Gleditsia triacanthos var. inermis 'Impcole'*	Imperial Honeylocust	50mm Cal	WB	As Shown
MLS	5	*Malus 'Spring Snow'*	Spring Snow Crabapple	50mm Cal	WB	As Shown
QXA	7	*Quercus x bilba x robur 'Streetspire'(JFS-KW1QX)*	Streetspire Oak	50mm Cal	WB	As Shown
SAM	4	*Sorbus aucuparia 'Michred'*	Cardinal Royal Mountain Ash	50mm Cal	WB	As Shown
TAR	3	*Tilia americana 'Redmond'*	Redmond Linden	50mm Cal	WB	As Shown
UAJ	2	*Ulmus americana 'Jefferson'*	Jefferson American Elm	50mm Cal	WB	As Shown
UHS	1	*Ulmus x 'Homestead'*	Homestead Elm	50mm Cal	WB	As Shown
UNH	4	*Ulmus x 'New Horizon'*	New Horizon Elm	50mm Cal	WB	As Shown

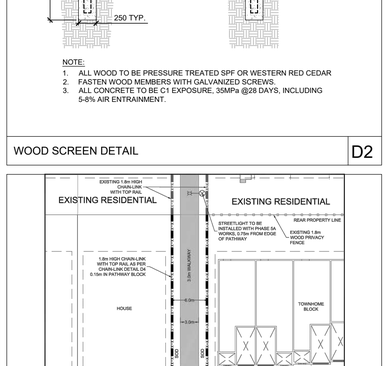
TREE QUANTITY NOTES

PHASE 5A UNITS = 42
PHASE 5A END UNITS = 3
(Blocks 24 & 25 side yards accounted for in Phase 3)

TOTAL TREES REQUIRED FOR PHASE 5A = 45
TOTAL TREES PROVIDED IN PHASE 5A = 45

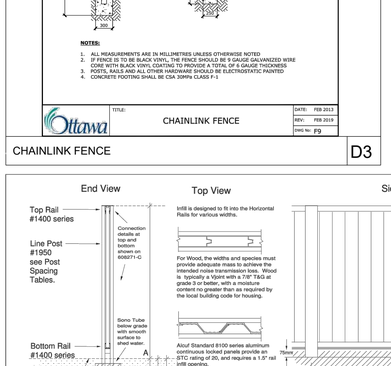


STANDARD DECIDUOUS TREE PLANTING — D1

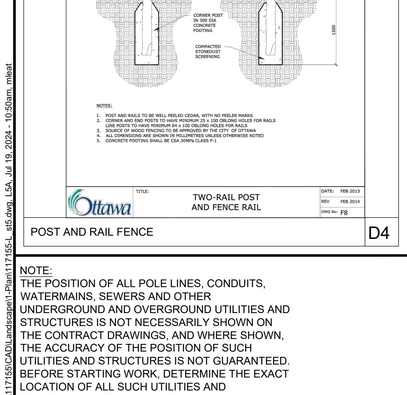


NOTE:
1. ALL WOOD TO BE PRESSURE TREATED SPF OR WESTERN RED CEDAR
2. FASTEN WOOD MEMBERS WITH GALVANIZED SCREWS.
3. ALL CONCRETE TO BE C1 EXPOSURE, 35MPa @28 DAYS, INCLUDING 5-8% AIR ENTRAINMENT.

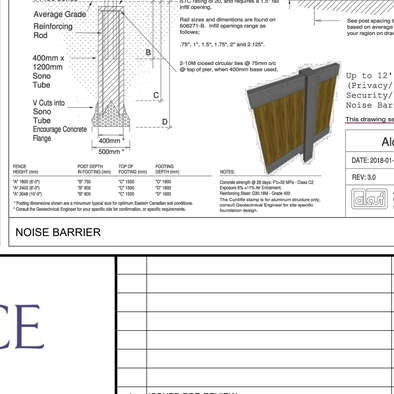
WOOD SCREEN DETAIL — D2



CHAINLINK FENCE — D3



6.0m WALKWAY PLAN — D5



NOISE BARRIER — D6

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

PROVENCE ORLÉANS

No.	REVISION	DATE	BY
1.	ISSUED FOR REVIEW	JULY 23/24	RGJ

SCALE: 1:500
1:500
0 5 10 15 20

DESIGN: MEL
CHECKED: KEW
DRAWN: MEL
CHECKED: KEW
APPROVED: RGJ

FOR REVIEW ONLY

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
PROVENCE ORLEANS SUBDIVISION (2128 TRIM ROAD)

DRAWING NAME
PHASE 5A
LANDSCAPE PLAN

PROJECT No. 117155-00
REV # 1
DRAWING No. 117155-L5A

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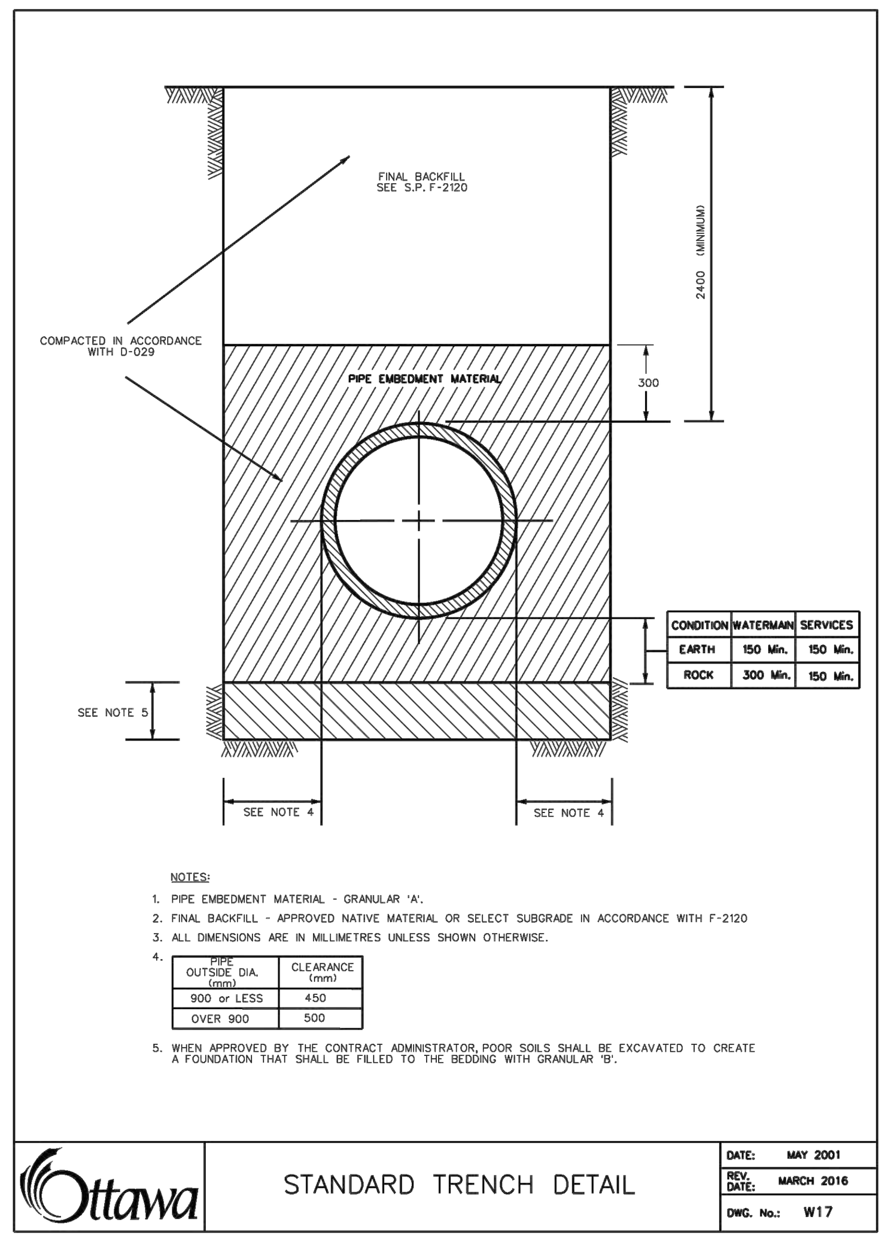
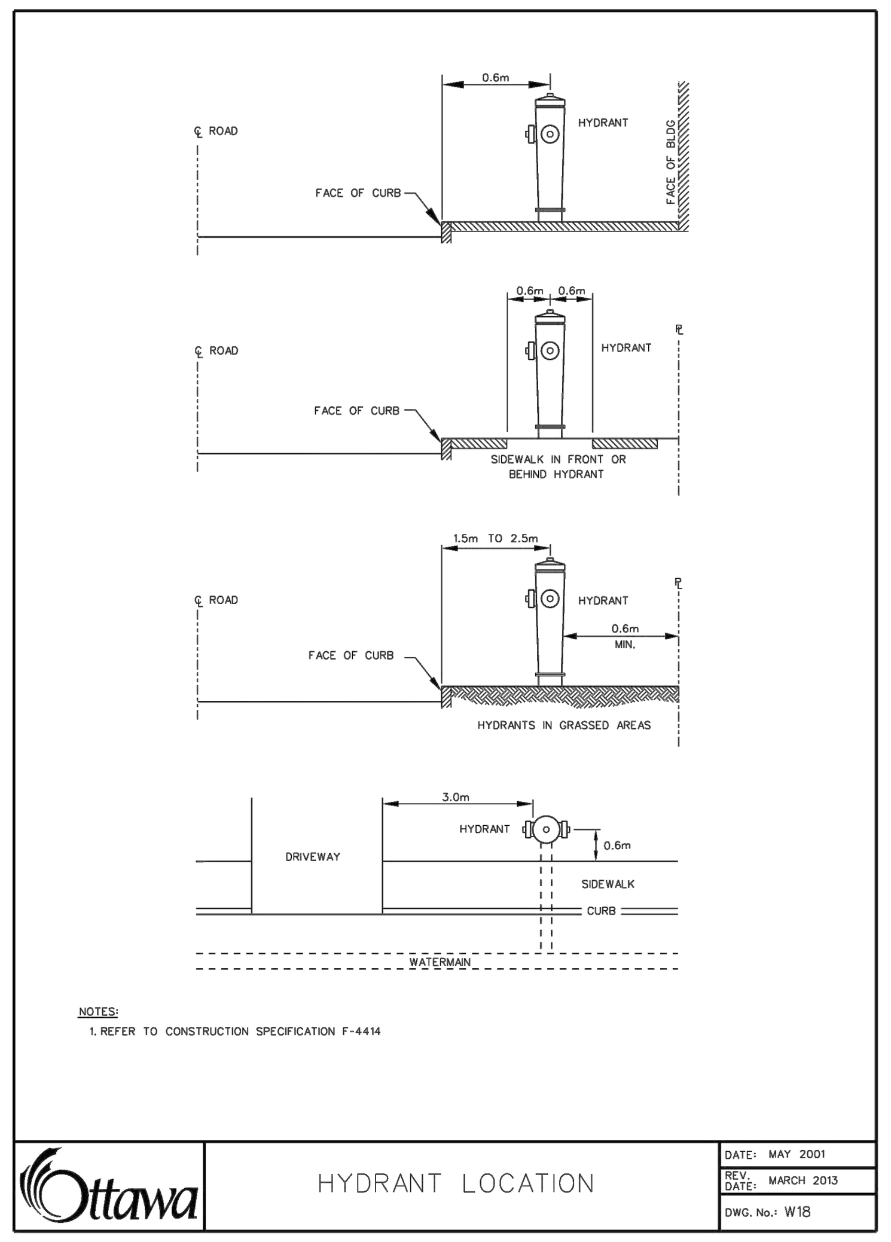
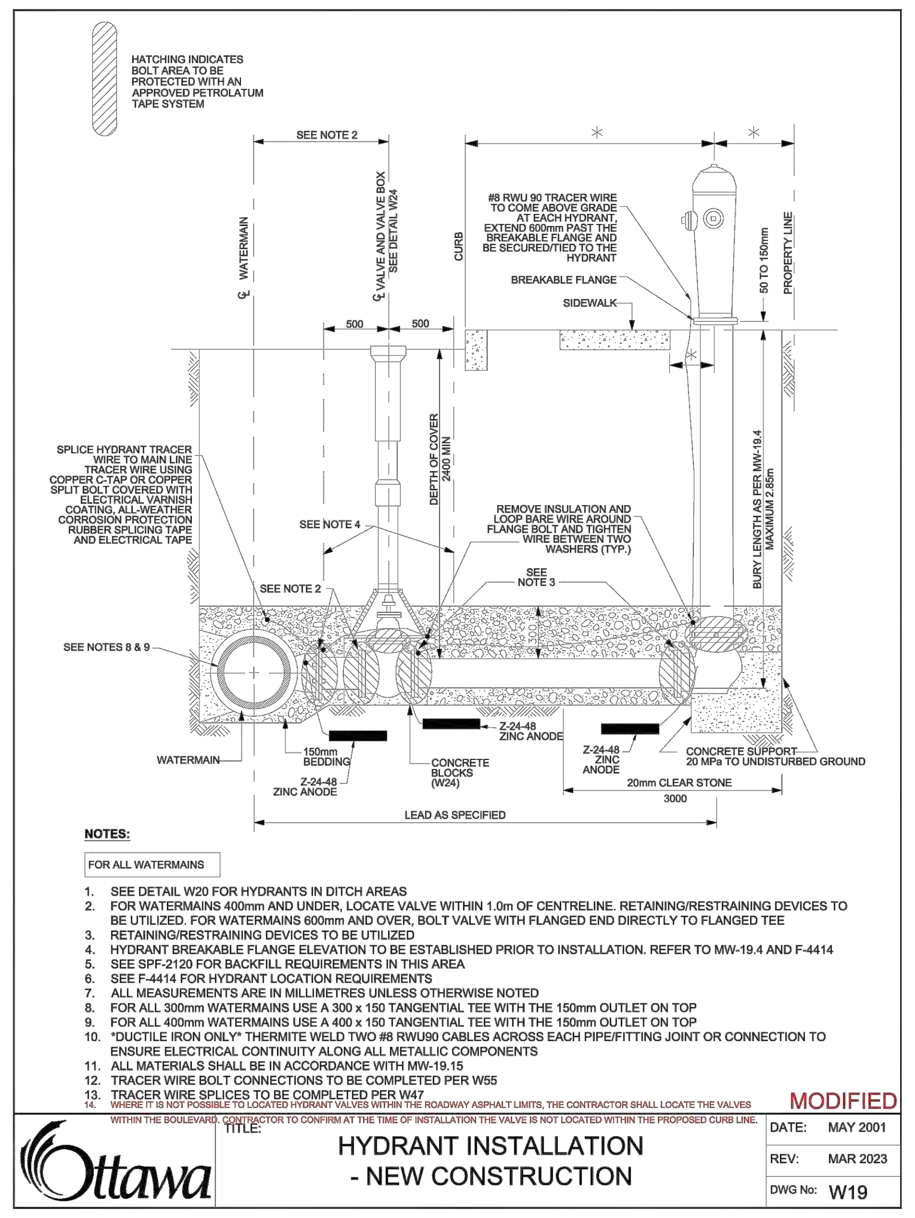
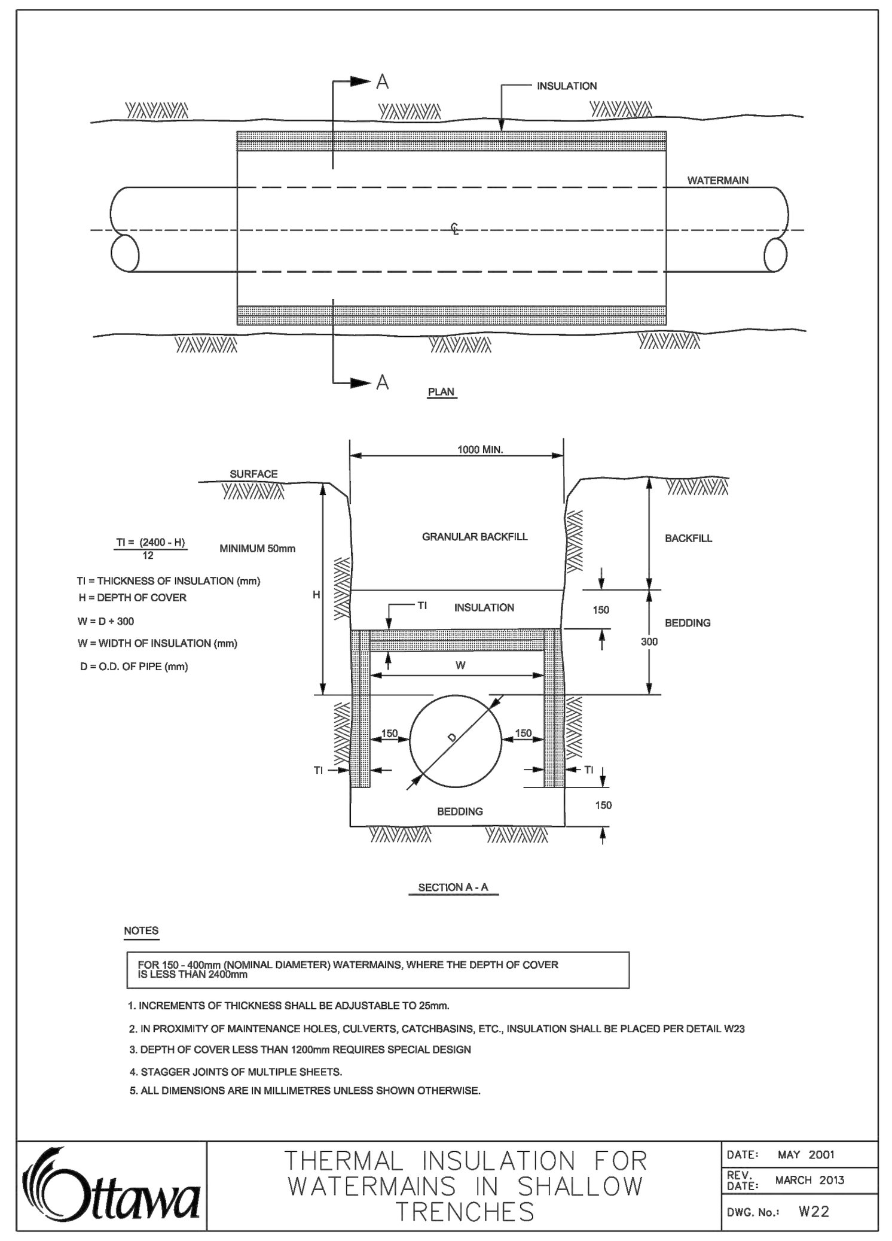
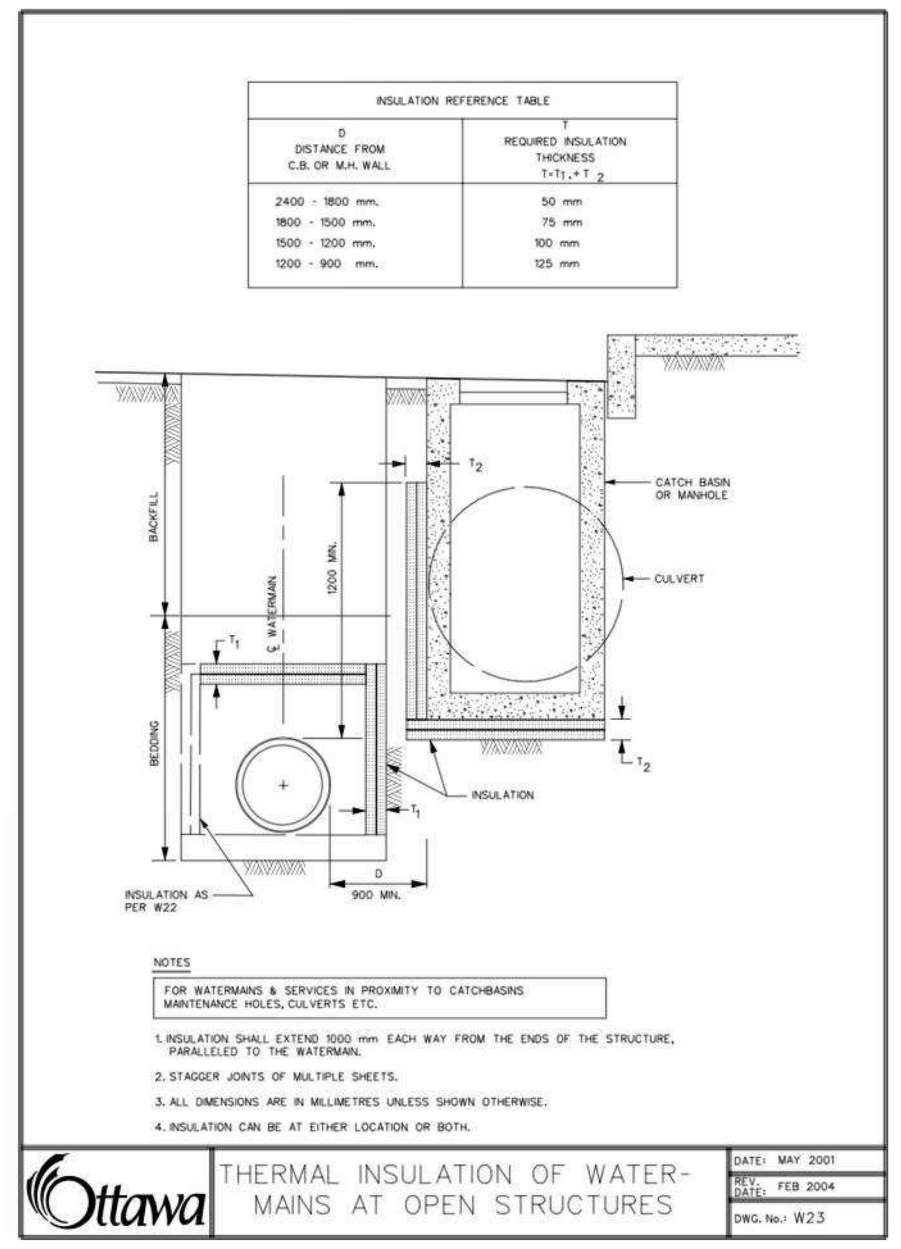
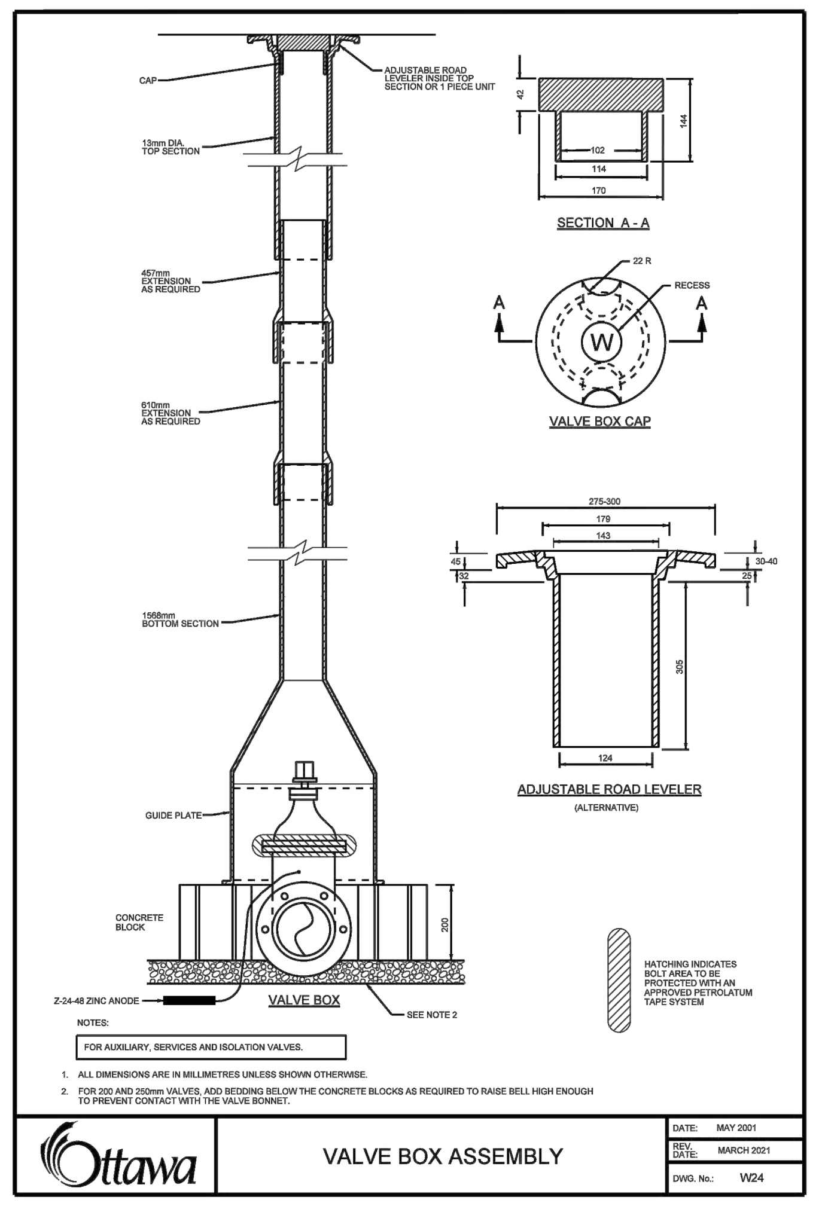


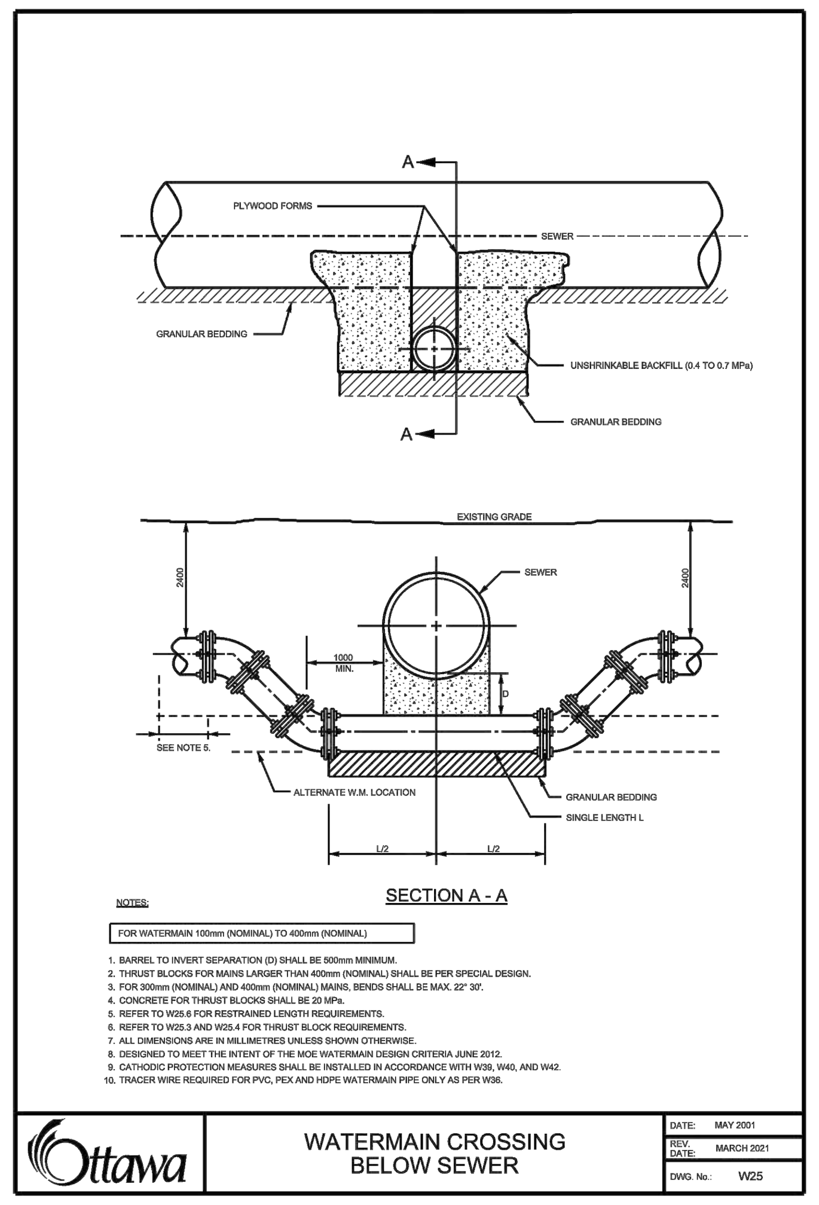


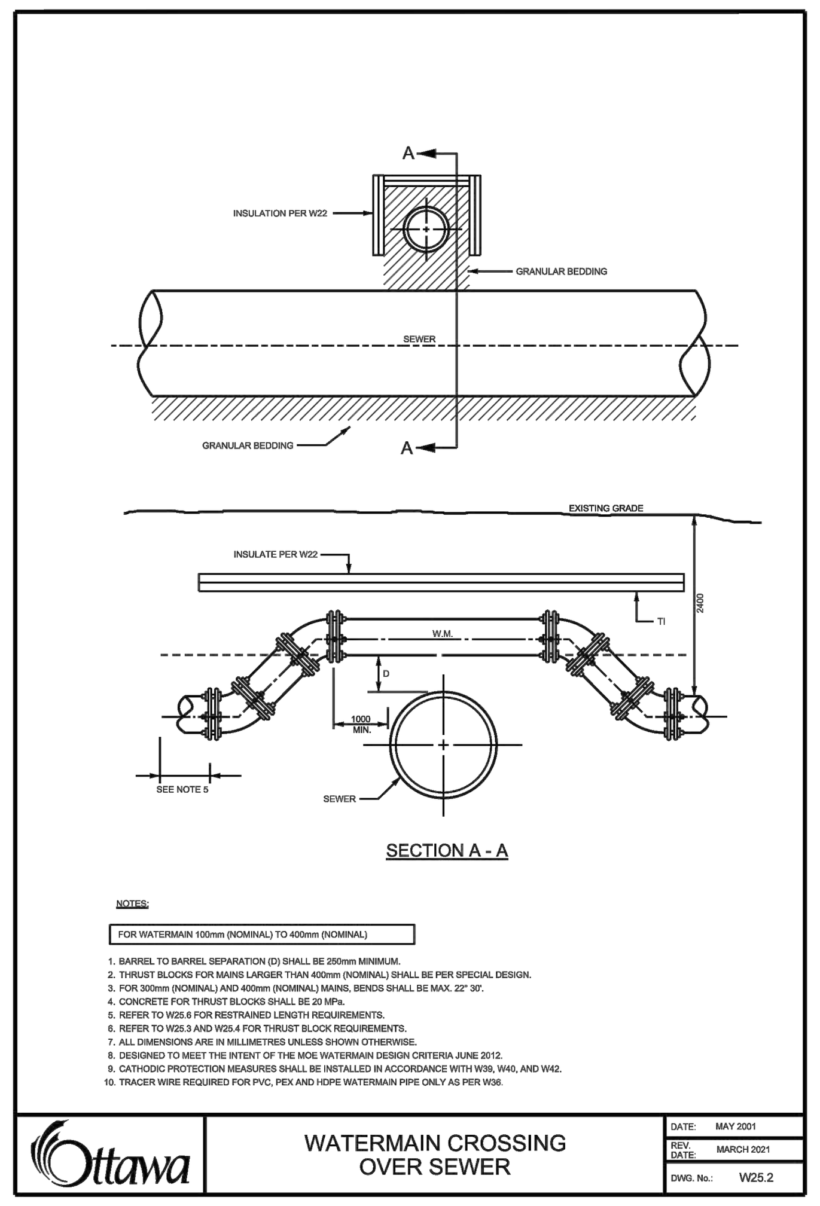


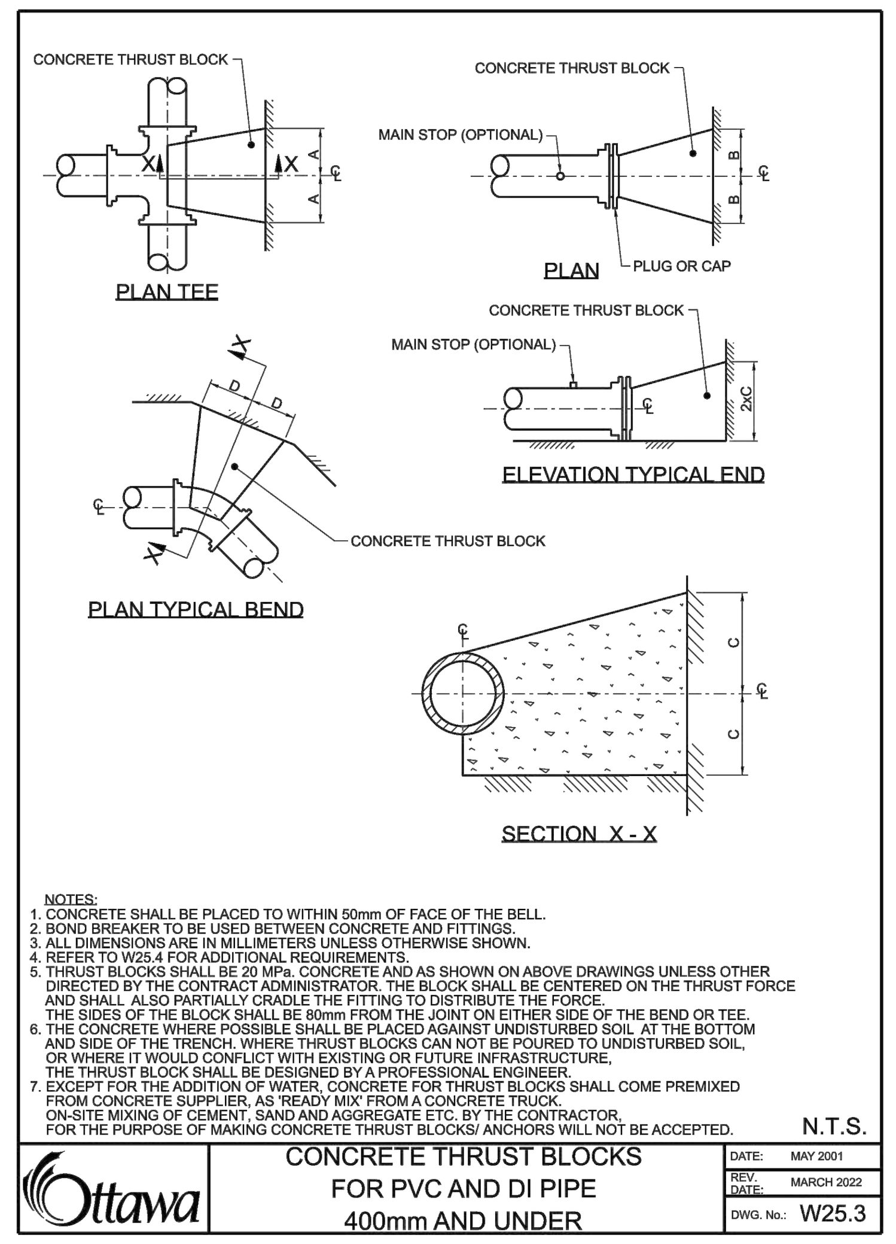












1. SOIL DESCRIPTION: VERY FINE SANDS, SANDY CLAYS, CLAYS.
SOILS WITH TYPICAL BEARING STRENGTH OF 100 TO 199 KPa

PIPE DIAMETER	DIMENSION NOTED ON W25.3			
	A	B	C	D
102	250	250	200	200
152	400	400	250	300
203	550	550	300	450
254	650	650	400	500
305	800	800	450	650
406	1050	1050	600	850

2. SOIL DESCRIPTION: SILTY SAND GRAVELS OR CLAYEY SAND GRAVEL MIXTURES, MODERATE AMOUNT OF FINES.
SOILS WITH TYPICAL BEARING STRENGTH OF 200 TO 299 KPa

PIPE DIAMETER	DIMENSION NOTED ON W25.3			
	A	B	C	D
102	200	200	150	150
152	250	250	200	200
203	350	350	250	270
254	450	450	300	350
305	500	500	350	400
406	750	750	400	600

3. SOIL DESCRIPTION: SANDS, GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES.
SOILS WITH TYPICAL BEARING STRENGTH OF 300 KPa AND OVER

PIPE DIAMETER	DIMENSION NOTED ON W25.3			
	A	B	C	D
102	150	150	150	150
152	200	200	200	200
203	300	300	200	230
254	400	400	250	270
305	450	450	300	300
406	650	650	350	450

NOTES:

1. THE ABOVE THRUST BLOCK DIMENSIONS MEET OR EXCEED THE WATERMAIN DESIGN CRITERIA FOR FUTURE ALTERATIONS AUTHORIZED UNDER A DRINKING WATER WORKS PERMIT.
2. THE ASSUMPTIONS MADE FOR THE ABOVE CALCULATIONS ARE AS FOLLOWS:
   a) MAXIMUM OPERATING PRESSURE OF 100 psi.
   b) MAXIMUM SURGE PRESSURE WITH A FLOW VELOCITY CHANGE OF 0.6 m/s OF 115 psi (115 psi FOR CLASS 52 DI AND FOR PVC MAX. SURGE IS 35 psi)
3. THE TABLES APPLY TO BOTH DUCTILE IRON AND PVC. WHERE ONE LENGTH EXCEEDED THE OTHER THE LONGER LENGTH WAS USED.
4. DIMENSIONS MAY BE ADJUSTED SO LONG AS THE BEARING SURFACE AREA OF THE THRUST BLOCK IS NOT REDUCED.
4. TO BE USED IN CONJUNCTION WITH W25.3.

THRUST BLOCK DIMENSION TABLES FOR PVC AND DI PIPE 400mm AND UNDER — DWG. No.: W25.4

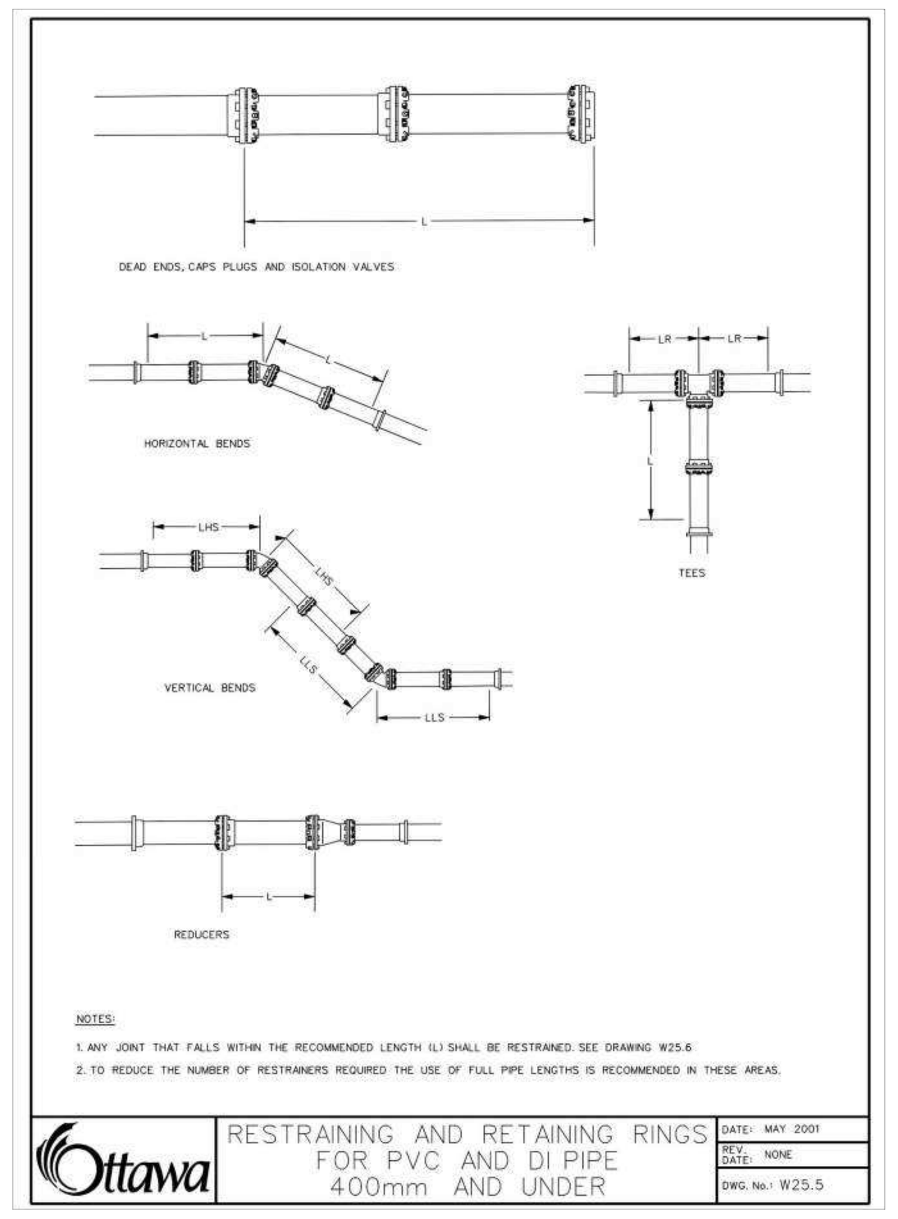


TABLE OF RESTRAINED LENGTHS FOR DI AND PVC WATERMAIN PIPE IN STANDARD GRANULAR 'A' EMBEDMENT IN SOILS OF BEARING CAPACITY OF 100 KPa AND OVER

REDUCERS — LARGER DIAMETER SIDE (TO BE RESTRAINED)

SMALLER DIAMETER (UNRESTRAINED)	100mm	150mm	200mm	250mm	300mm	400mm
100mm	N/A	3	6	8	10	14
150mm	N/A	N/A	4	6	9	13
200mm	N/A	N/A	N/A	3	6	11
250mm	N/A	N/A	N/A	N/A	4	9
300mm	N/A	N/A	N/A	N/A	N/A	7
400mm	N/A	N/A	N/A	N/A	N/A	N/A

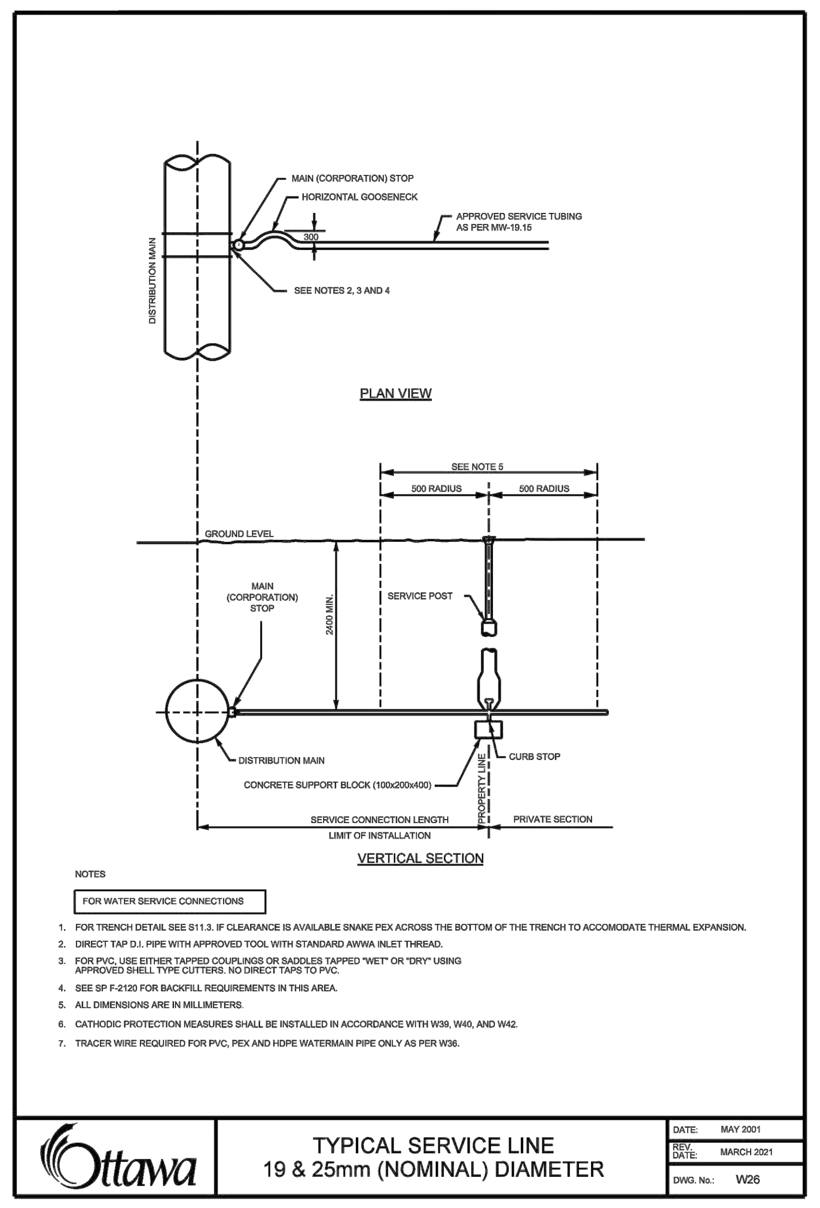
PIPE DIAMETER

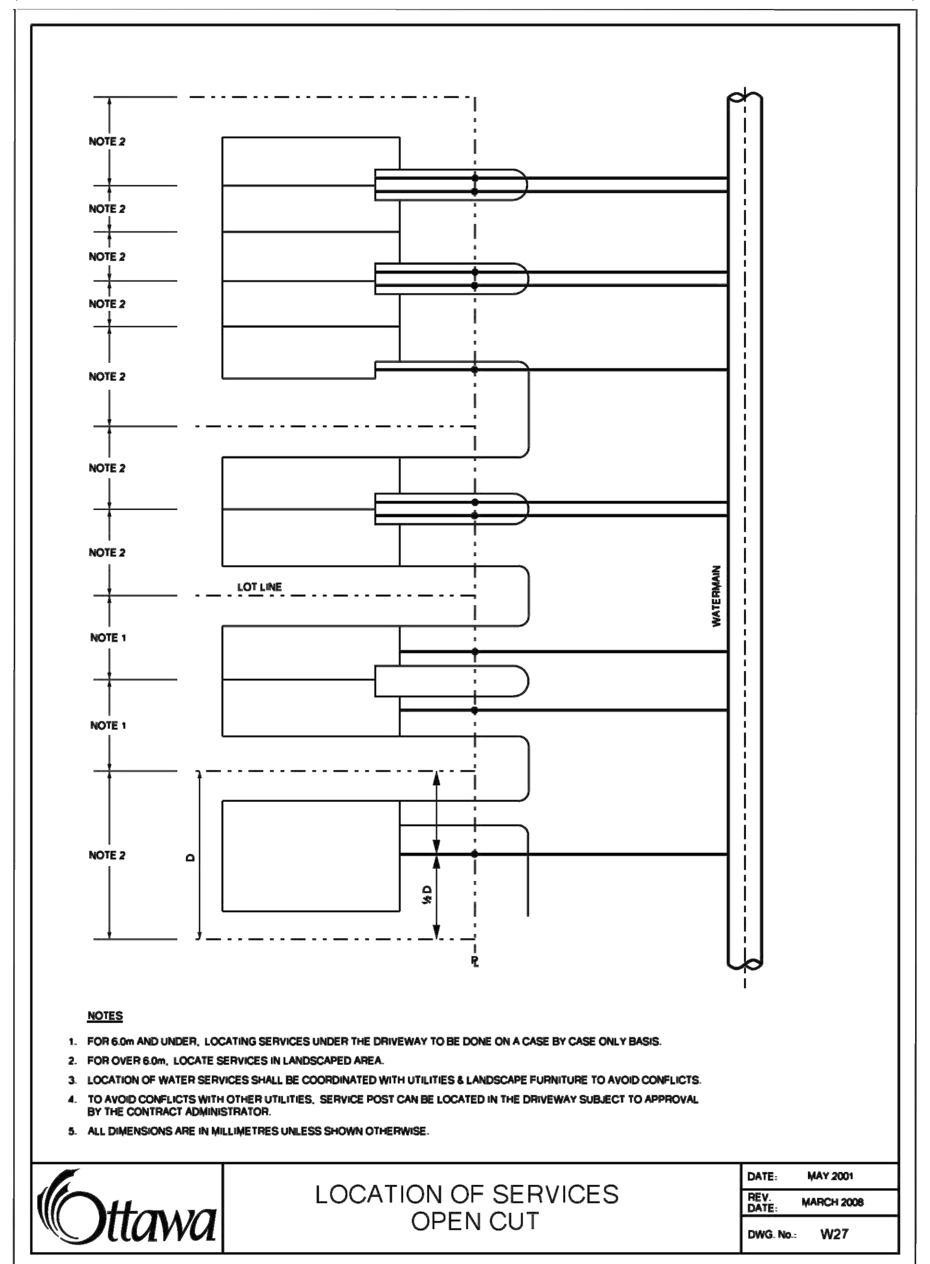
	100mm	150mm	200mm	250mm	300mm	400mm
DEAD ENDS, CAPS, PLUGS, VALVES						
BEFORE CAPS AND EITHER SIDE OF VALVES - L	5	6	9	10	12	16
VERTICAL BENDS						
LENGTH HIGH SIDE - LHS	3	4	5	6	7	9
LENGTH LOW SIDE - LLS	1.5	2	2.5	3	3.5	4.5
TEES						
LENGTH ALONG THE BRANCH - L	1	1	1	1	1	1
LENGTH ALONG THE RUN - Lr	3	3	3	3	3	3
HORIZONTAL BENDS						
11.25, 22.5, AND 45 DEGREE BENDS	1	1.5	1.5	2	2	2.5

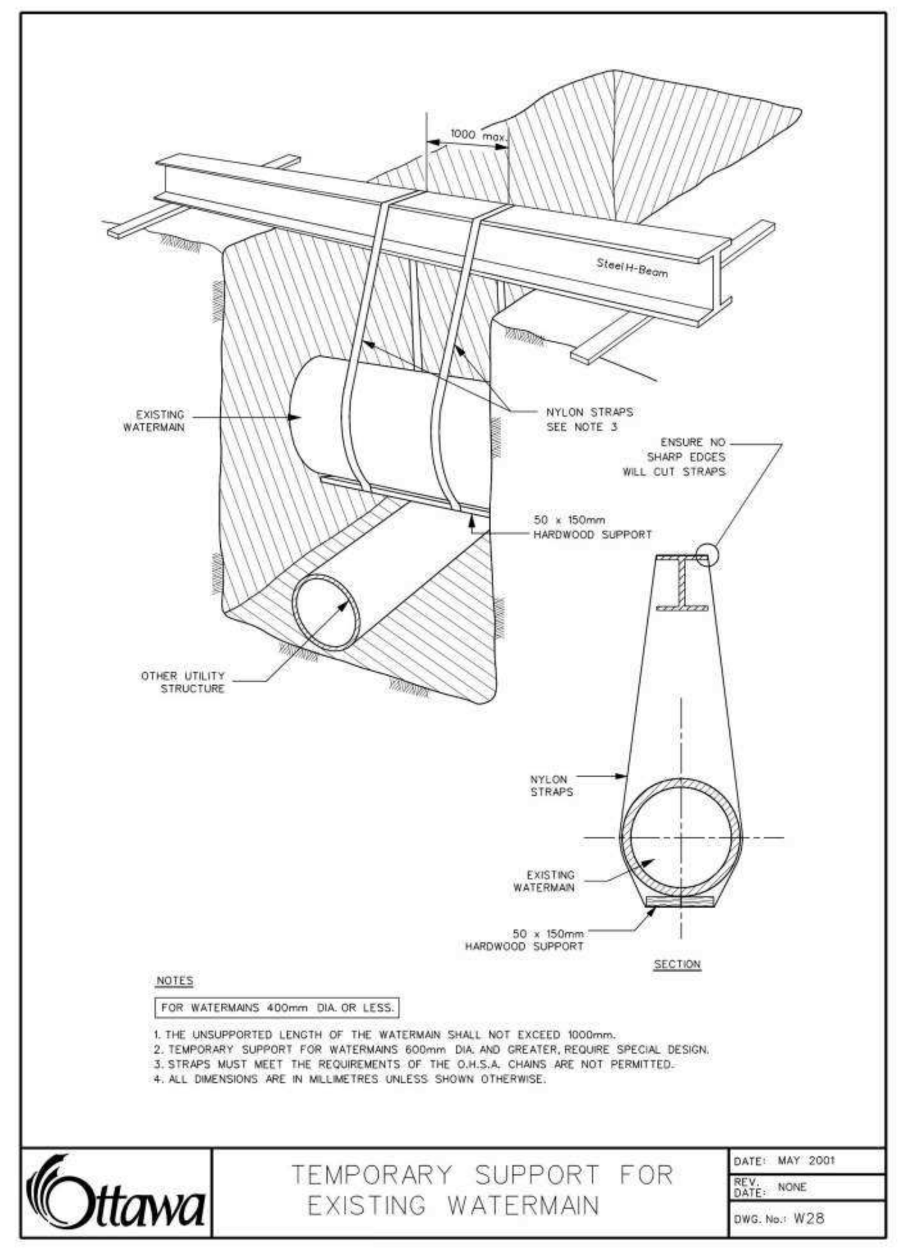
NOTES:

1. THE ABOVE RESTRAINED LENGTHS MEET OR EXCEED THE WATERMAIN DESIGN CRITERIA FOR FUTURE ALTERATIONS AUTHORIZED UNDER A DRINKING WATER WORKS PERMIT.
2. THE ASSUMPTIONS MADE FOR THE ABOVE CALCULATIONS ARE AS FOLLOWS:
   a) MAXIMUM OPERATING PRESSURE OF 100 psi.
   b) MAXIMUM SURGE PRESSURE WITH A FLOW VELOCITY CHANGE OF 0.6 m/s OF 115 psi (115 psi FOR CLASS 52 DI AND FOR PVC MAX. SURGE IS 35 psi)
3. FOR SOFTWARE CALCULATIONS A TEST PRESSURE OF 150 psi AND A SAFETY FACTOR OF 1.5 WAS USED WHICH RESULTS IN 225 psi MAXIMUM PRESSURE.

TABLES FOR RESTRAINED LENGTHS FOR PVC AND DI PIPE 400mm AND UNDER — DATE: MAY 2001 — REV. DATE: MARCH 2011 — DWG. No.: W25.6







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PROVENCE
ORLÉANS

No.	REVISION	DATE	BY
1.	ISSUED FOR REVIEW	JUL 23/24	TJM

SCALE: N.T.S.

DESIGN / CHECKED / DRAWN / CHECKED / APPROVED

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
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LOCATION
CITY OF OTTAWA
PROVENCE ORLEANS SUBDIVSION (2128 TRIM ROAD)

DRAWING NAME
PHASE 5A
DETAIL SHEET

PROJECT No. 117155-00
REV: REV # 1
DRAWING No. 117155-D15

D07-16-18-0021

#18004

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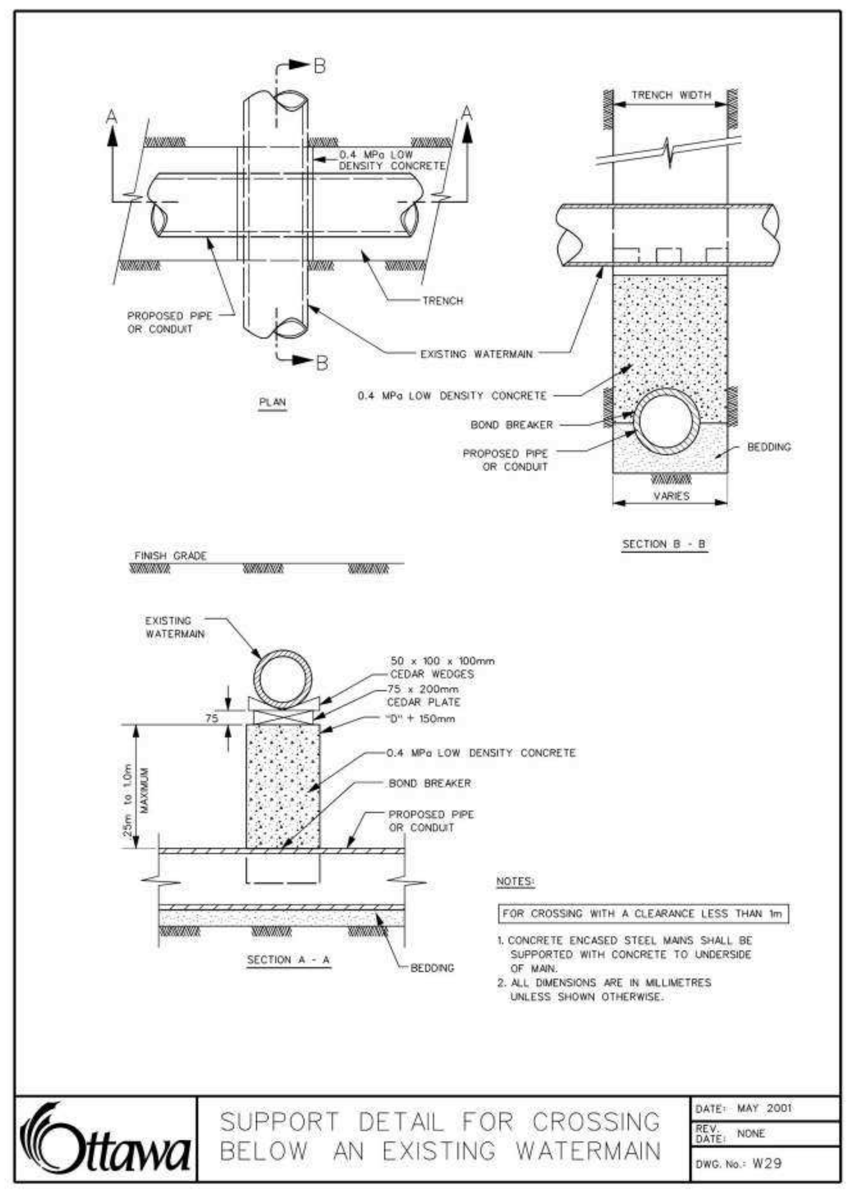

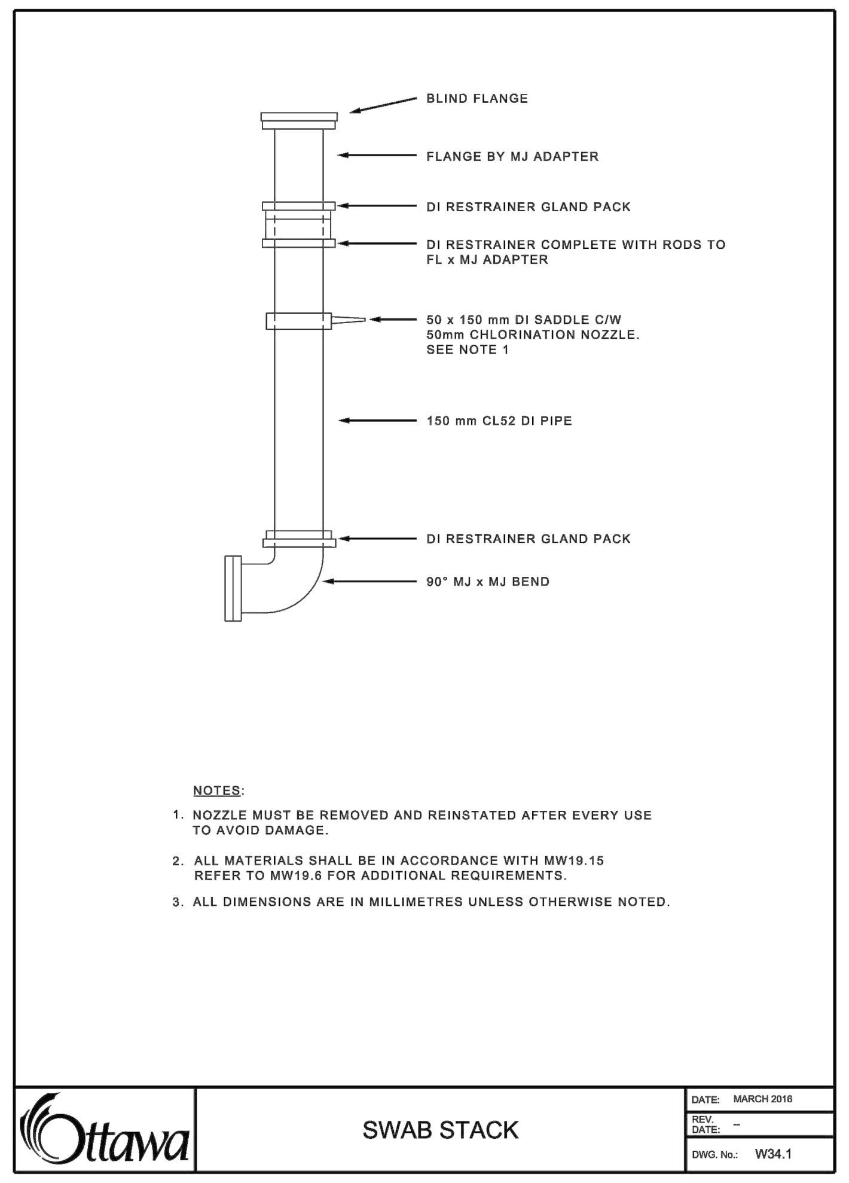

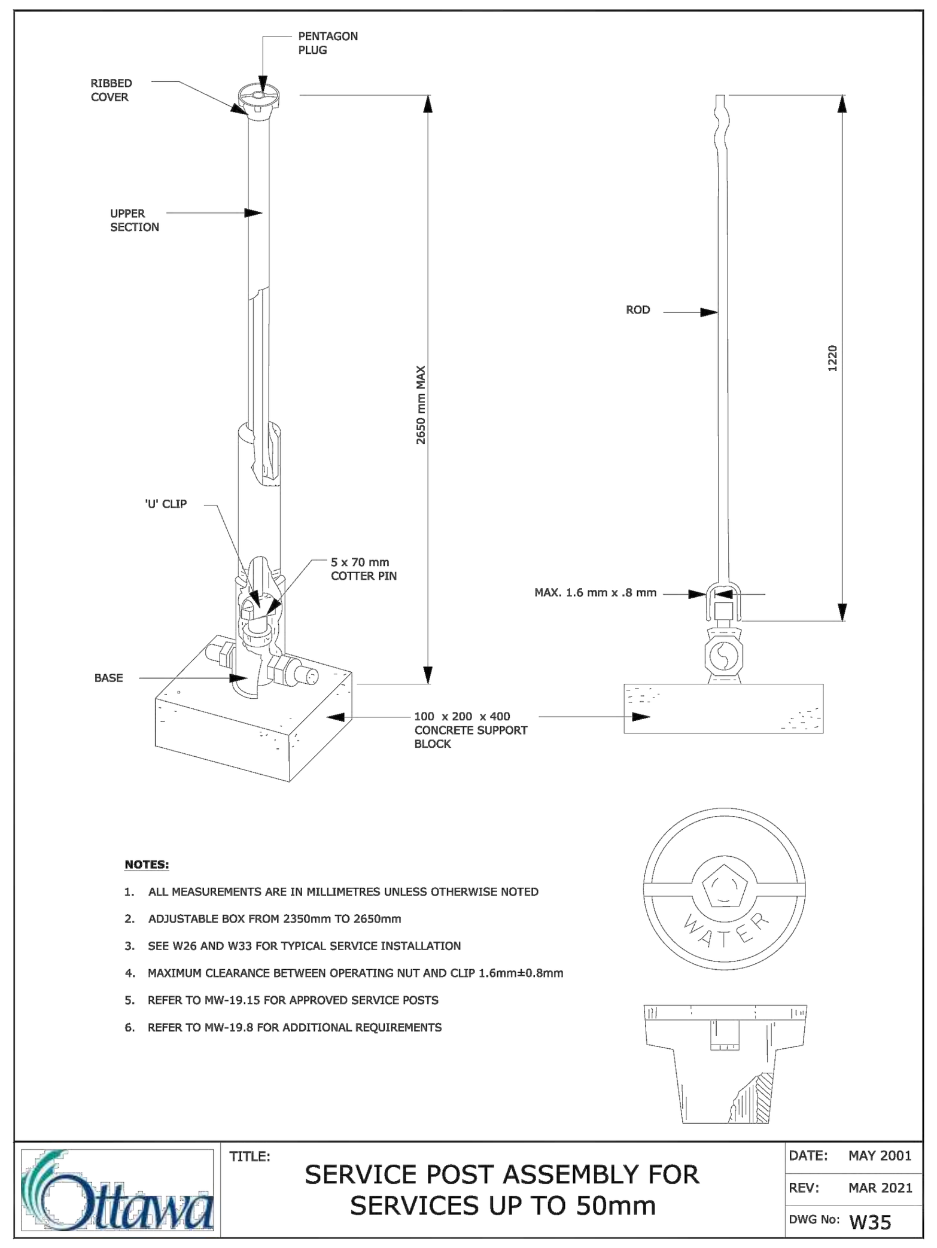

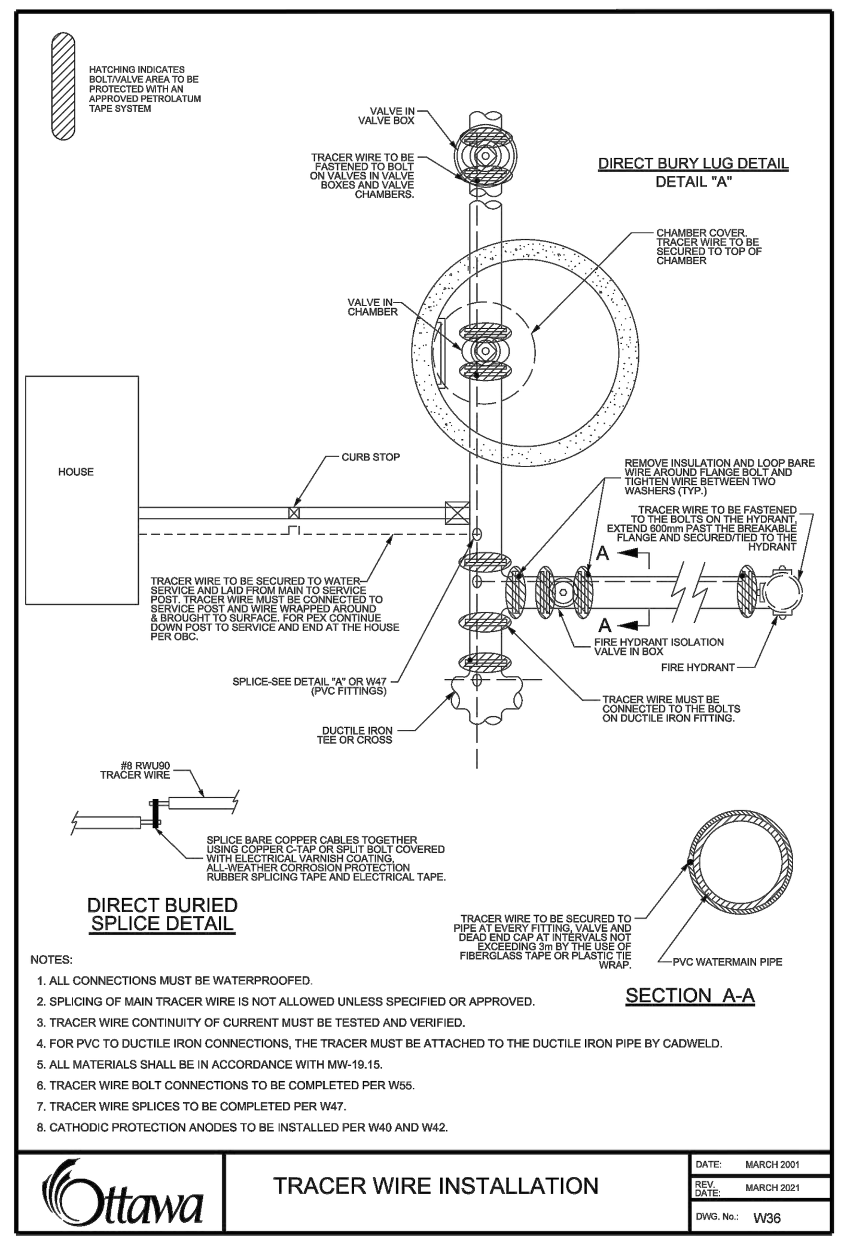

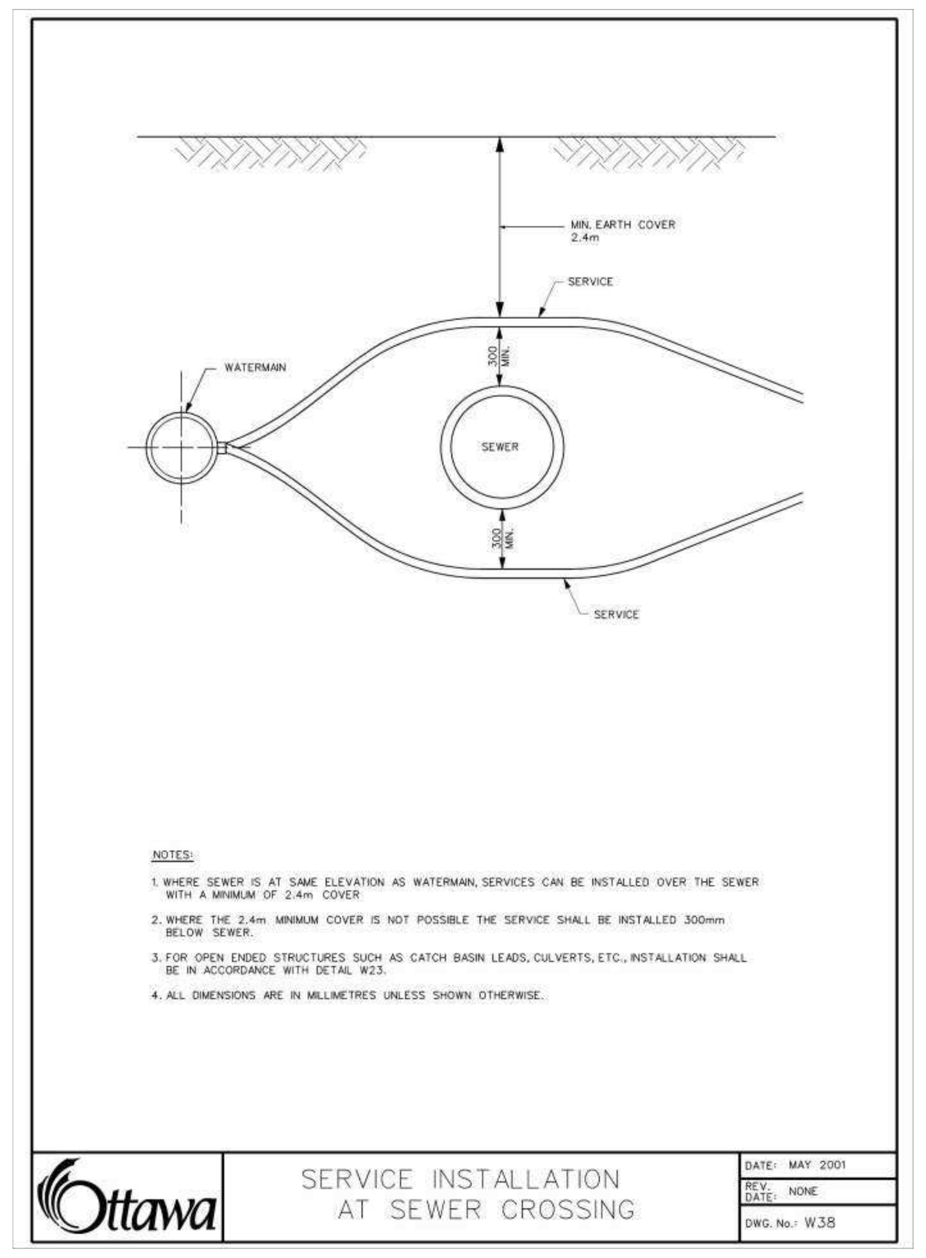

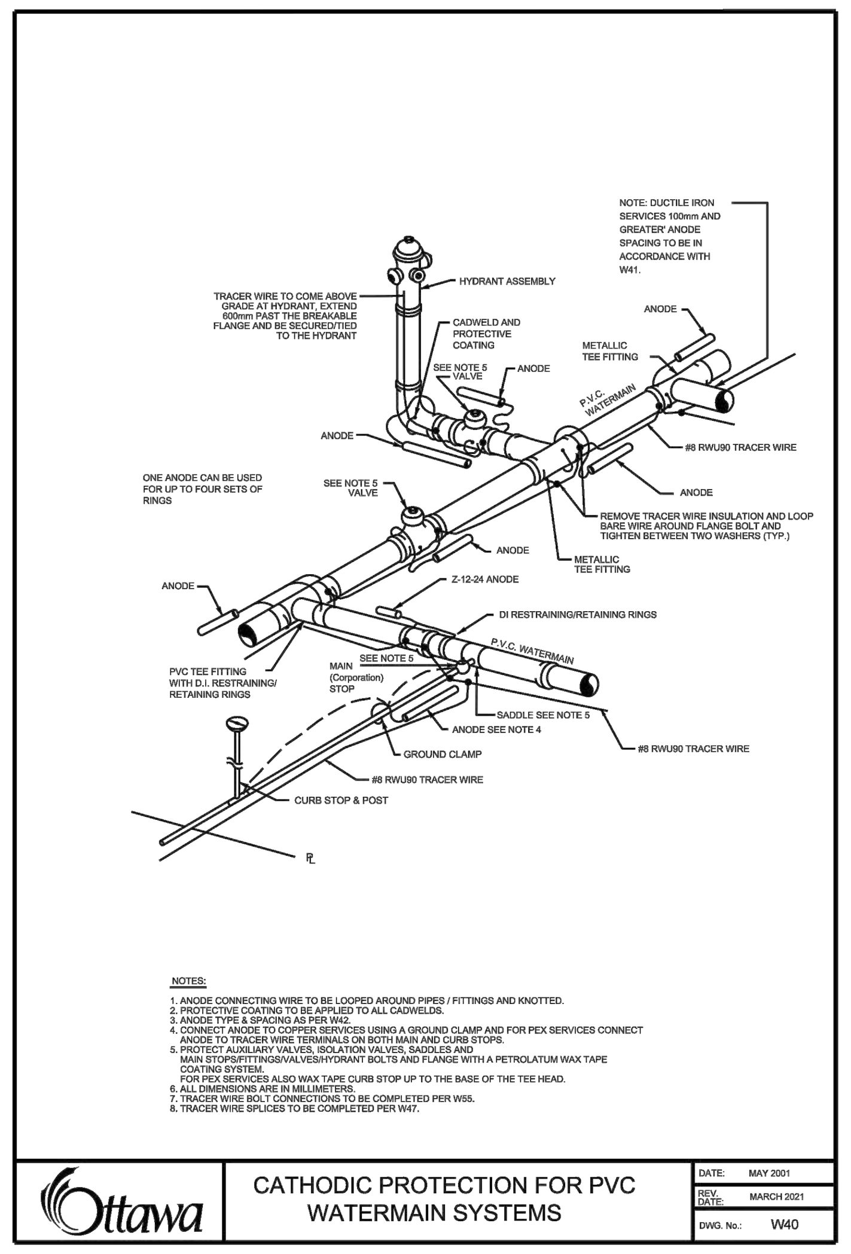

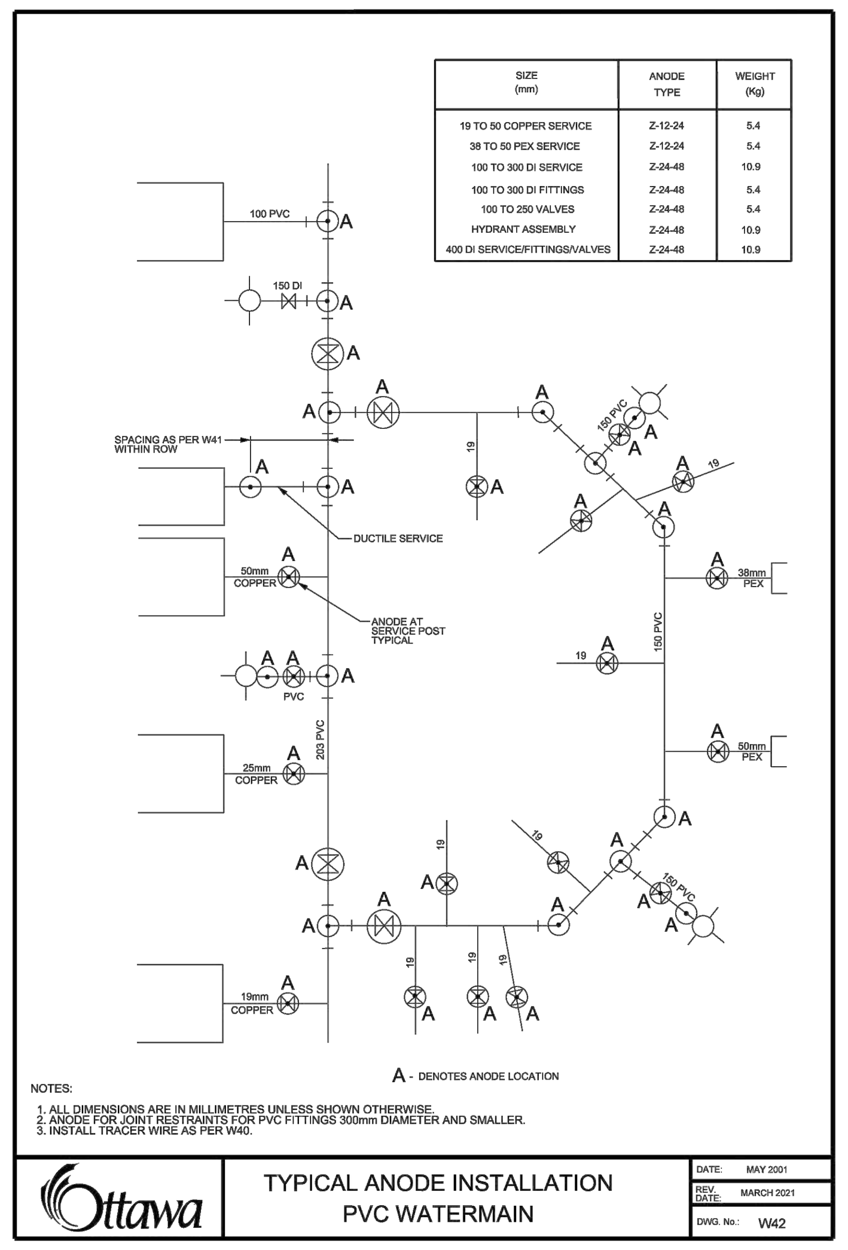

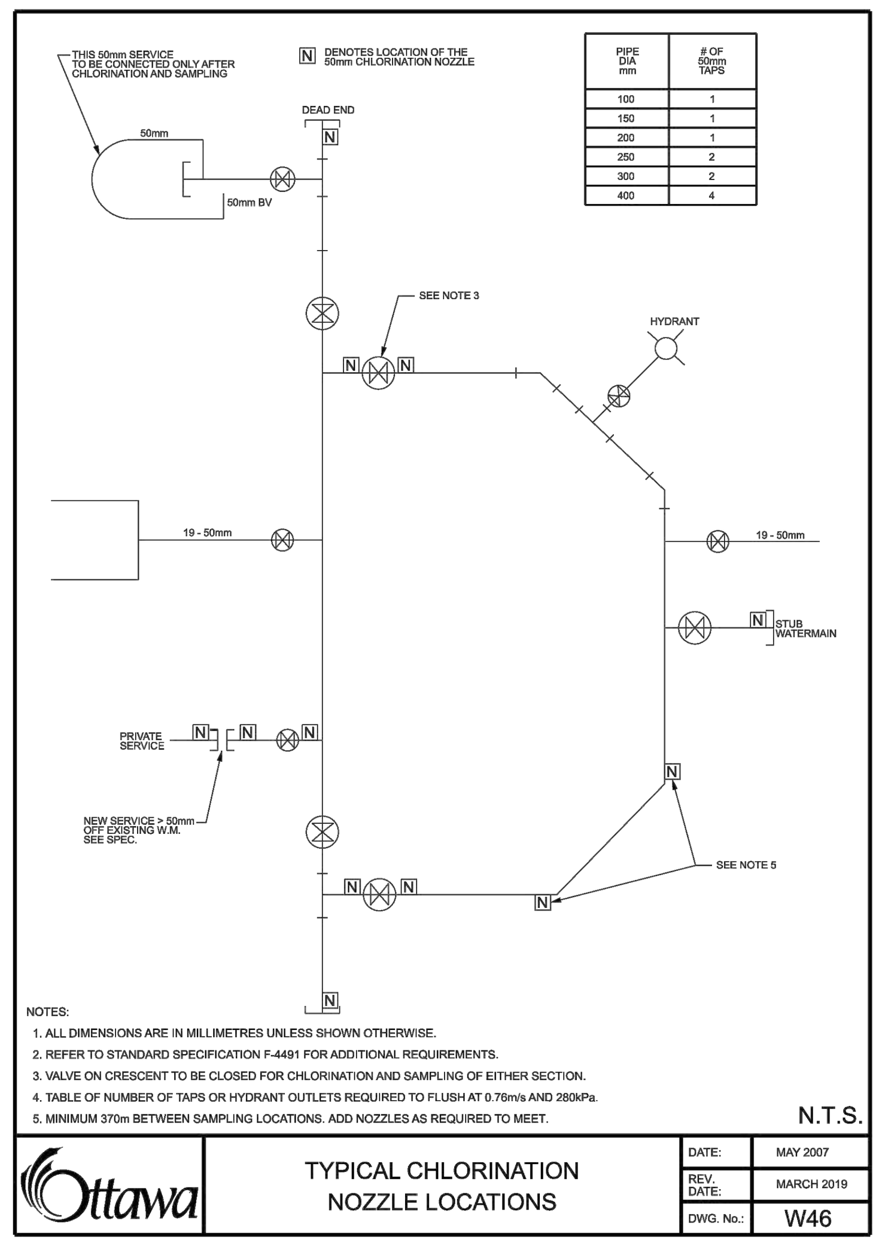

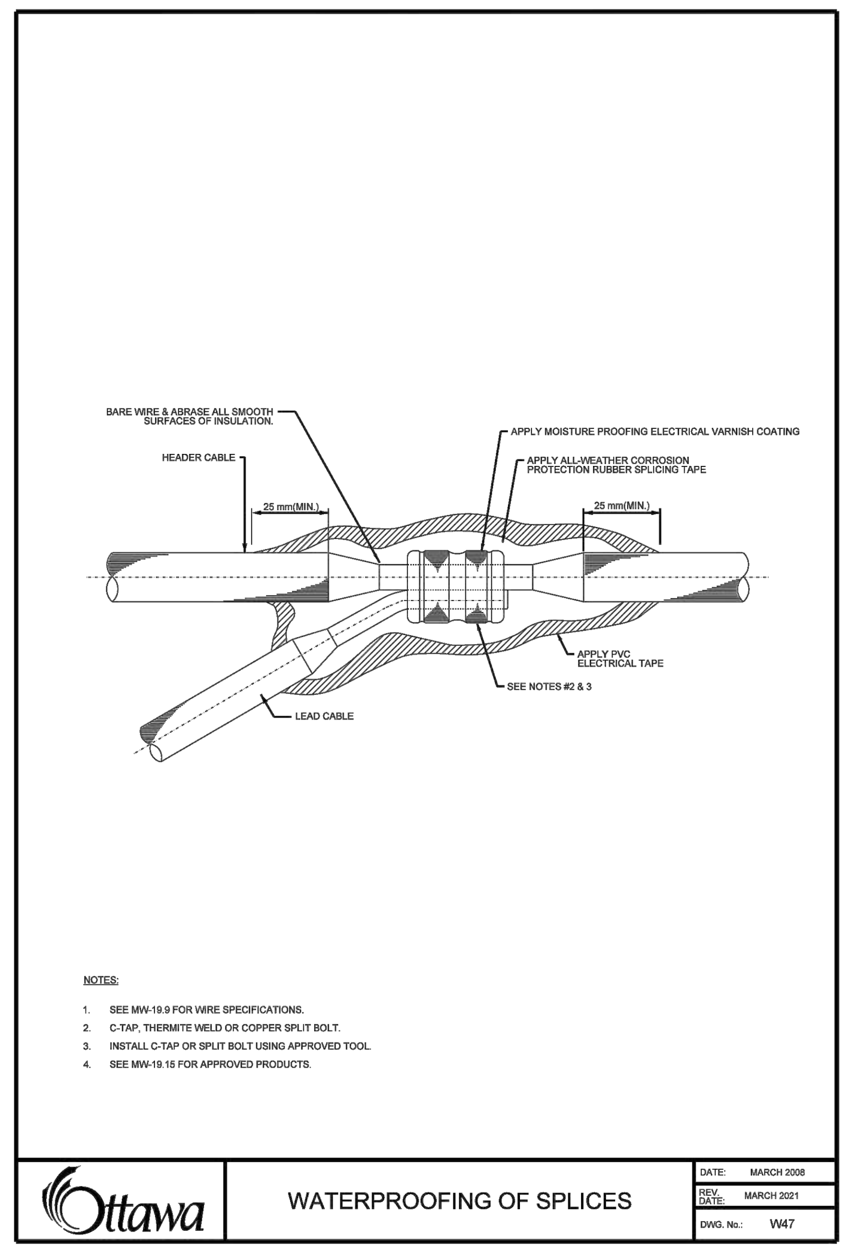

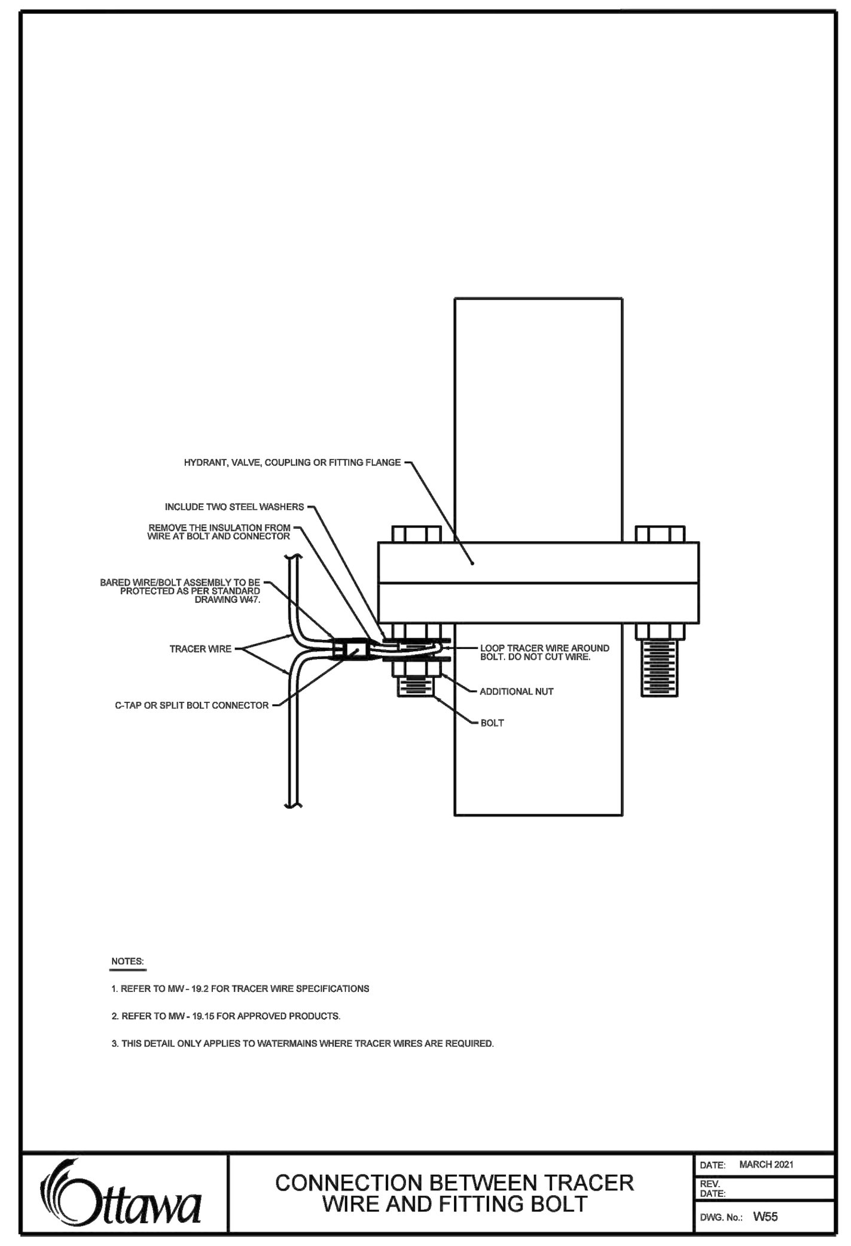

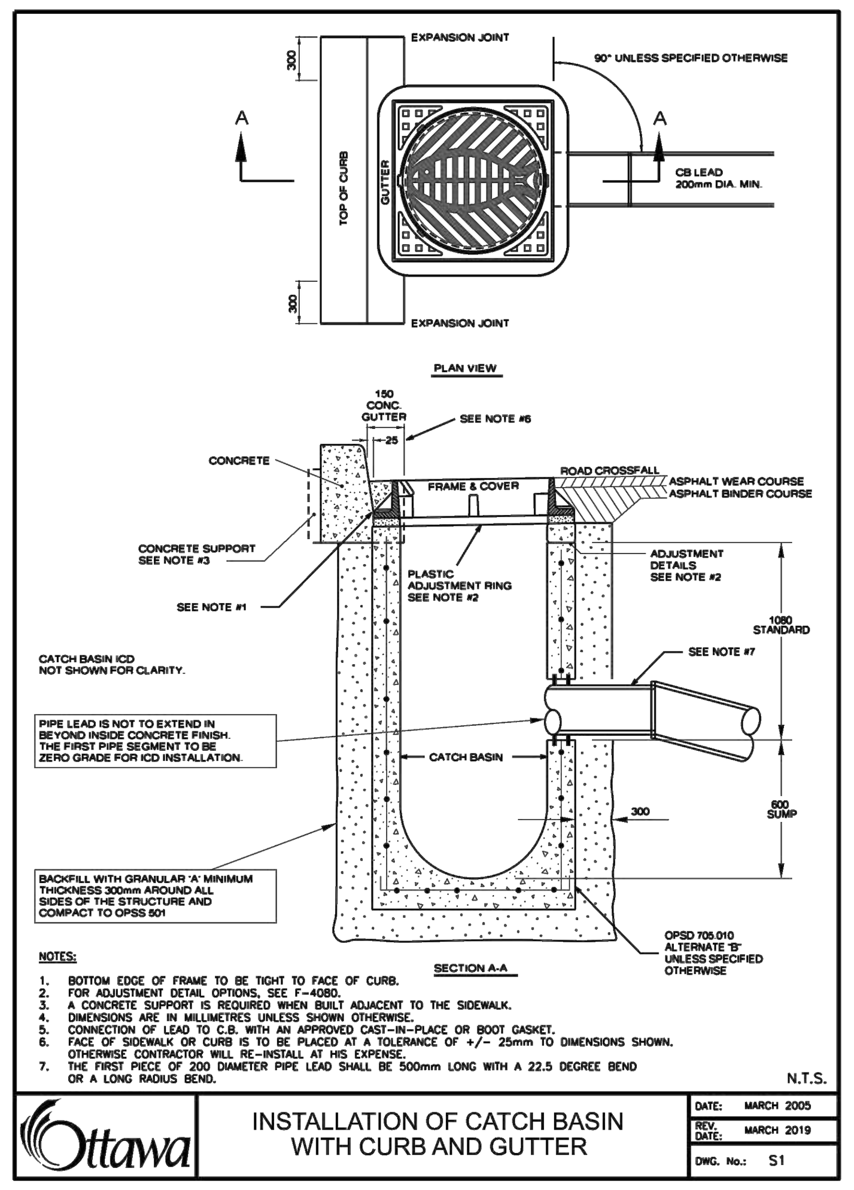

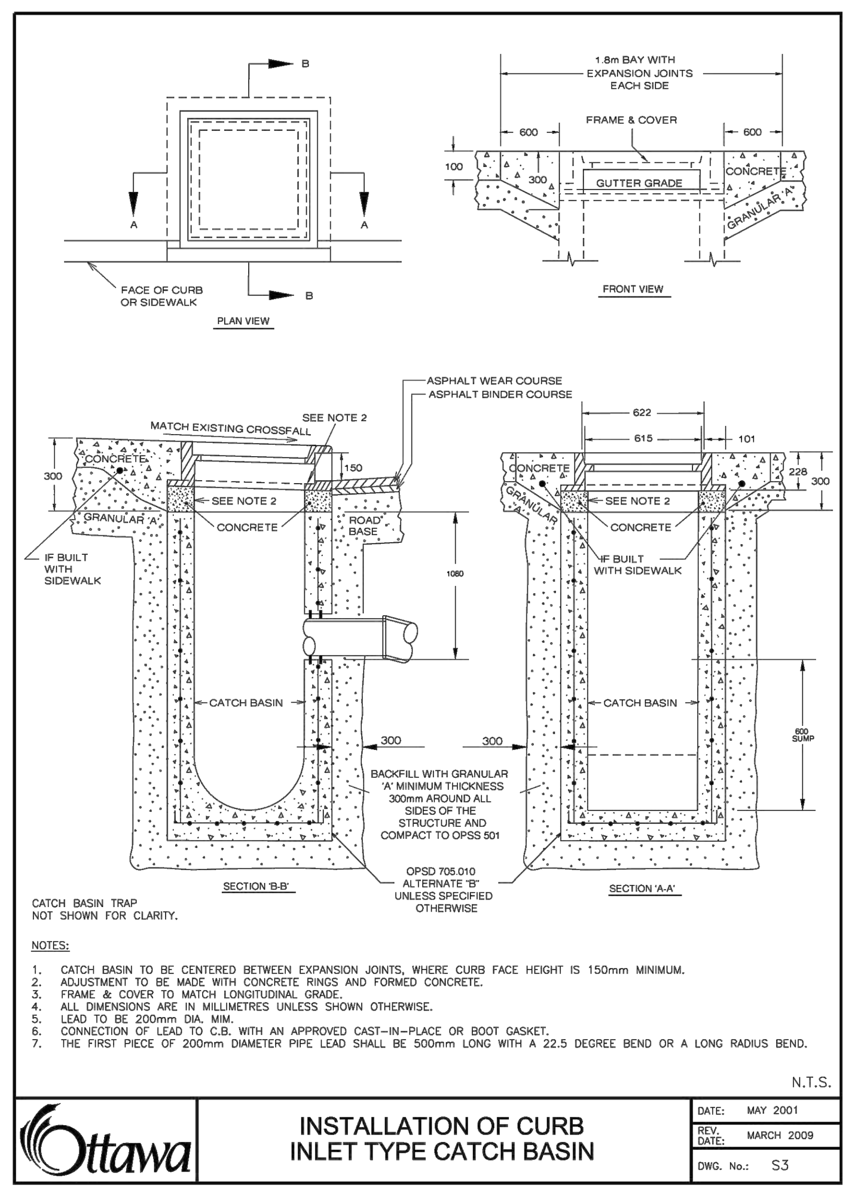

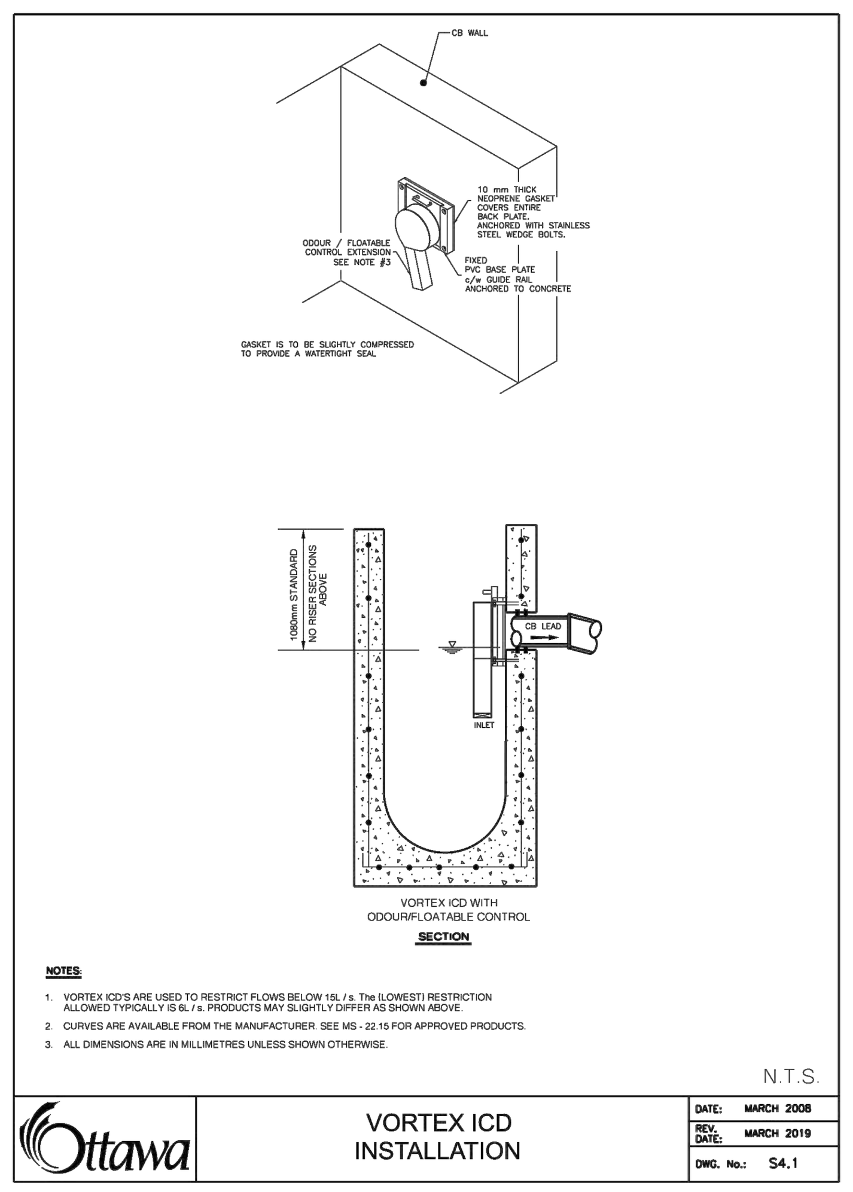

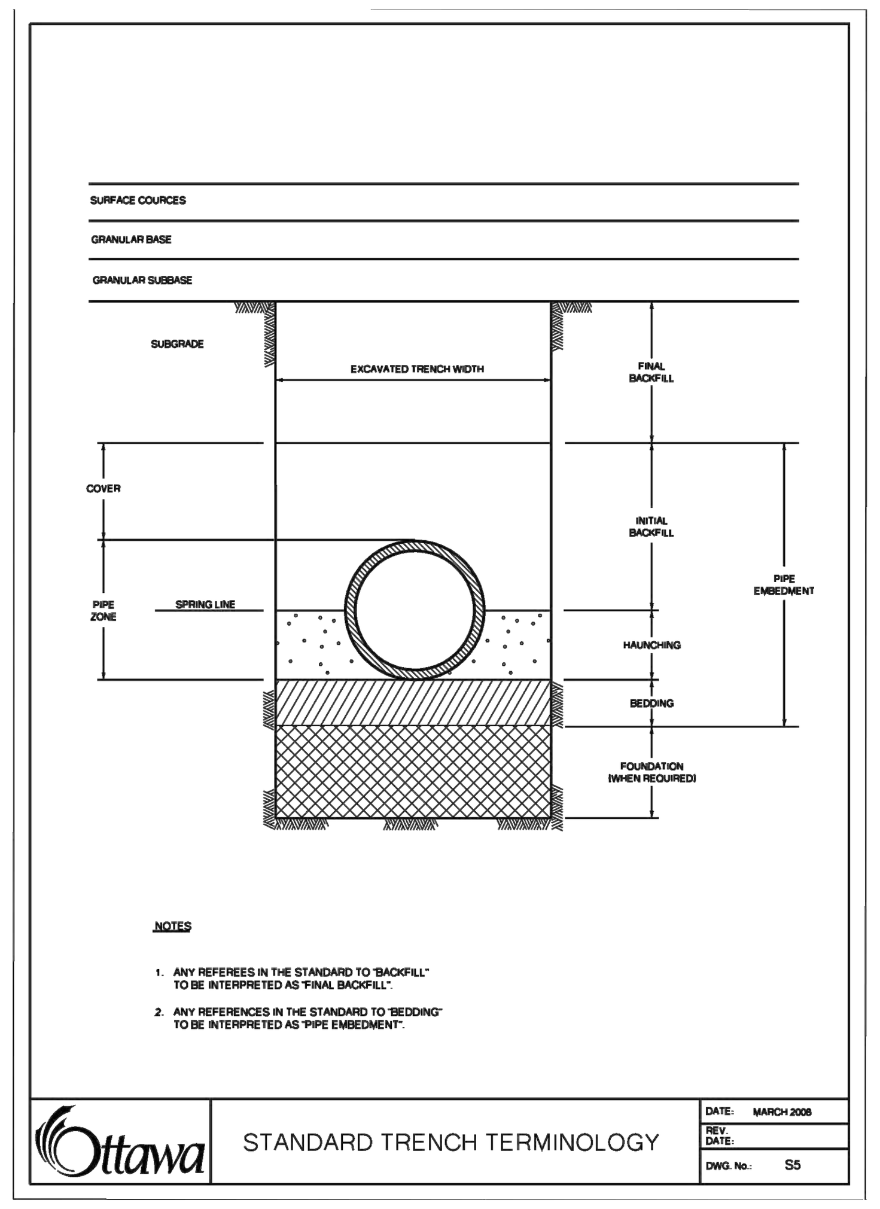

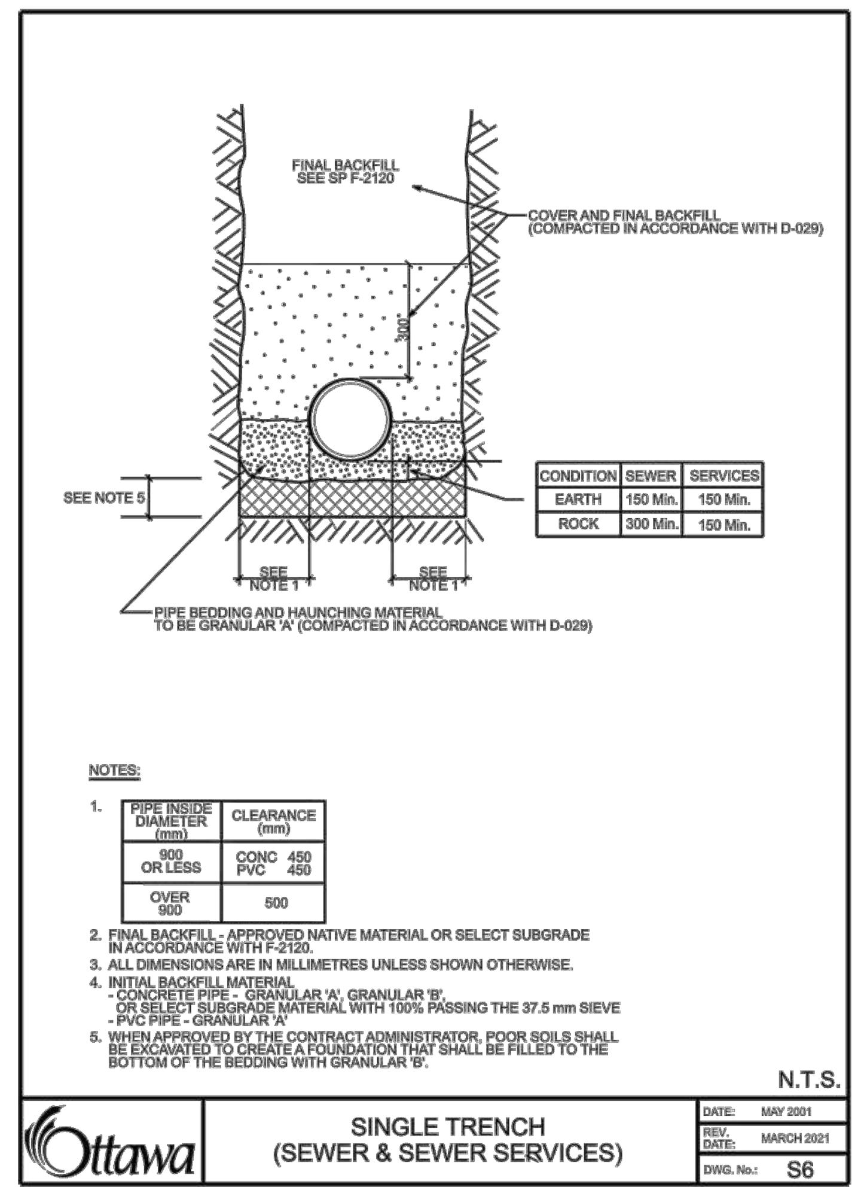

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DETAIL SHEET

PROJECT No. 117155-00
REV: REV # 1
DRAWING No. 117155-D16

D07-16-18-0021

#18004

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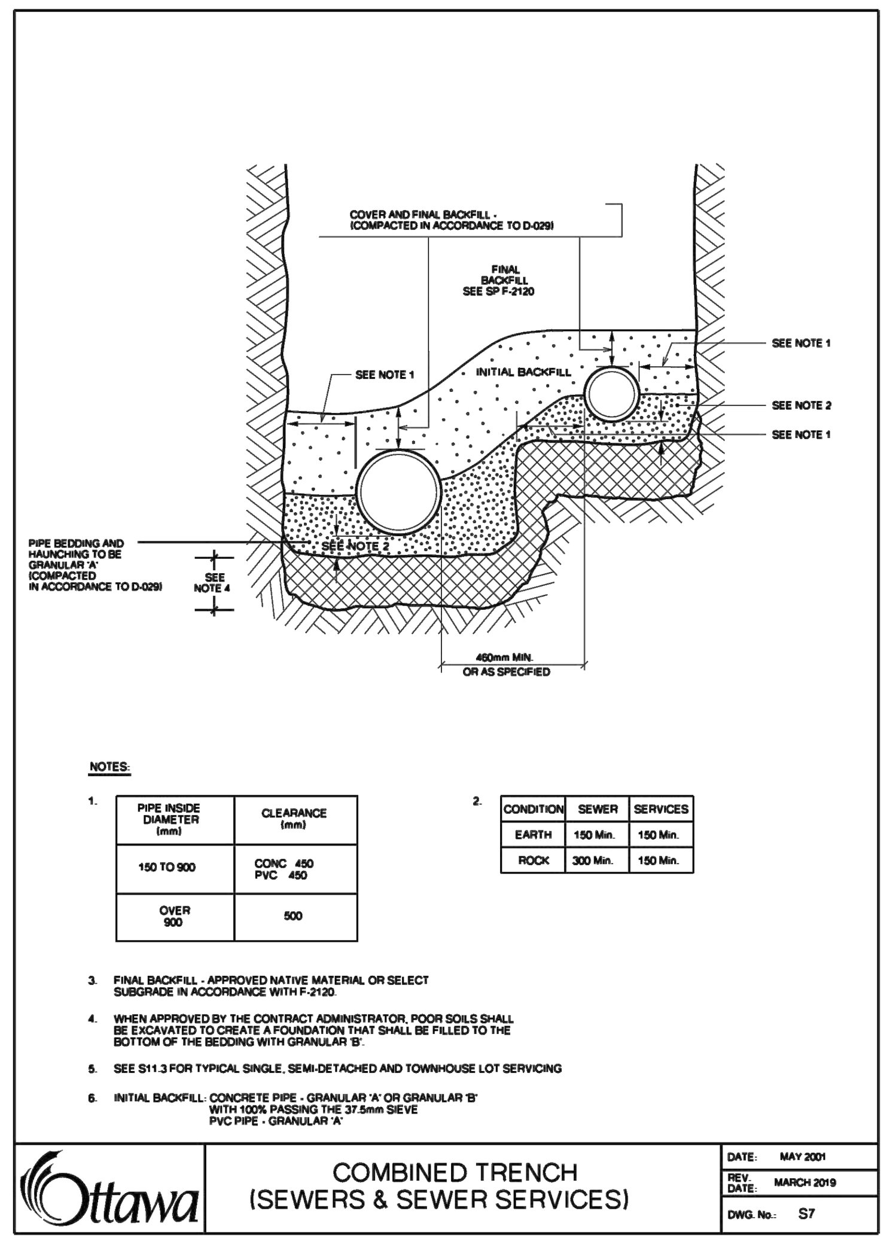
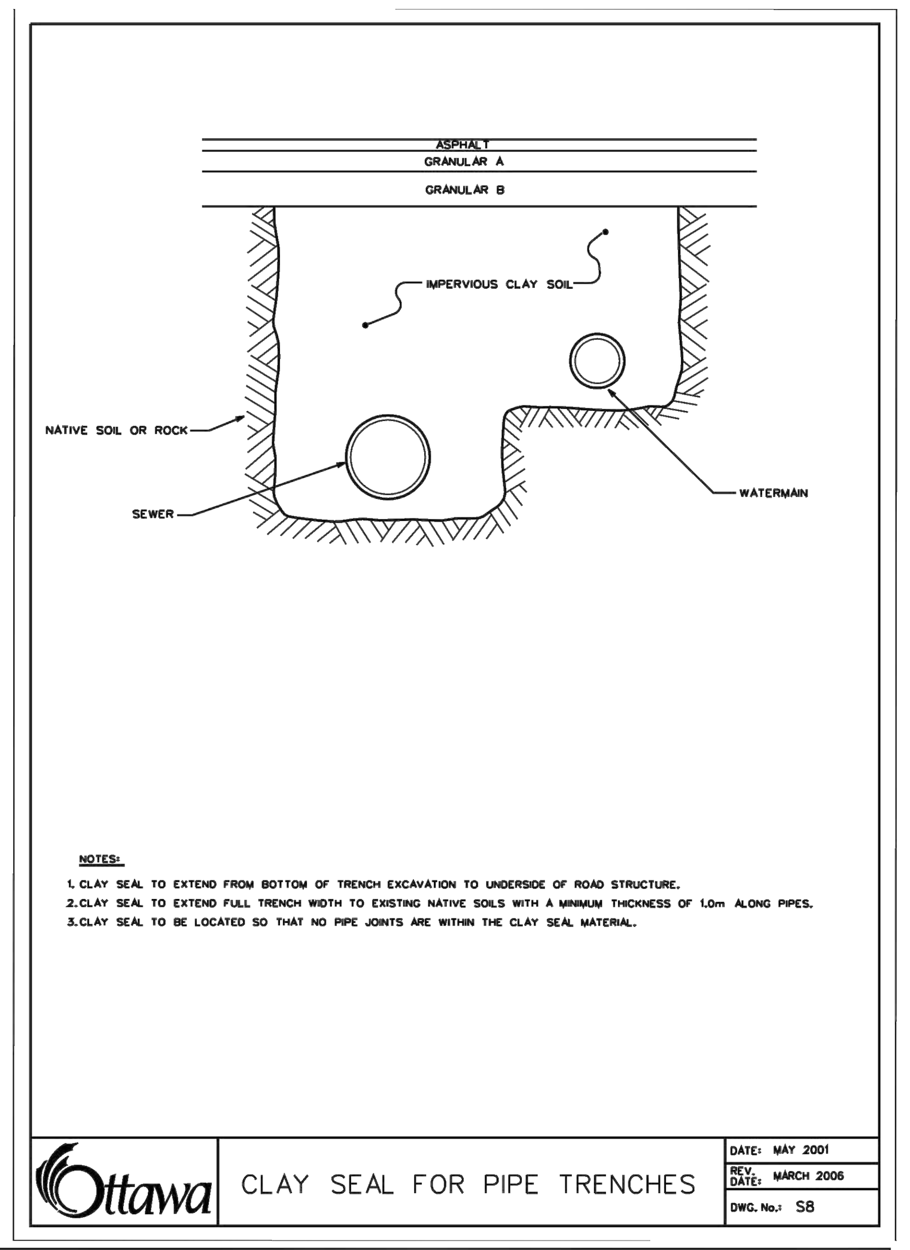
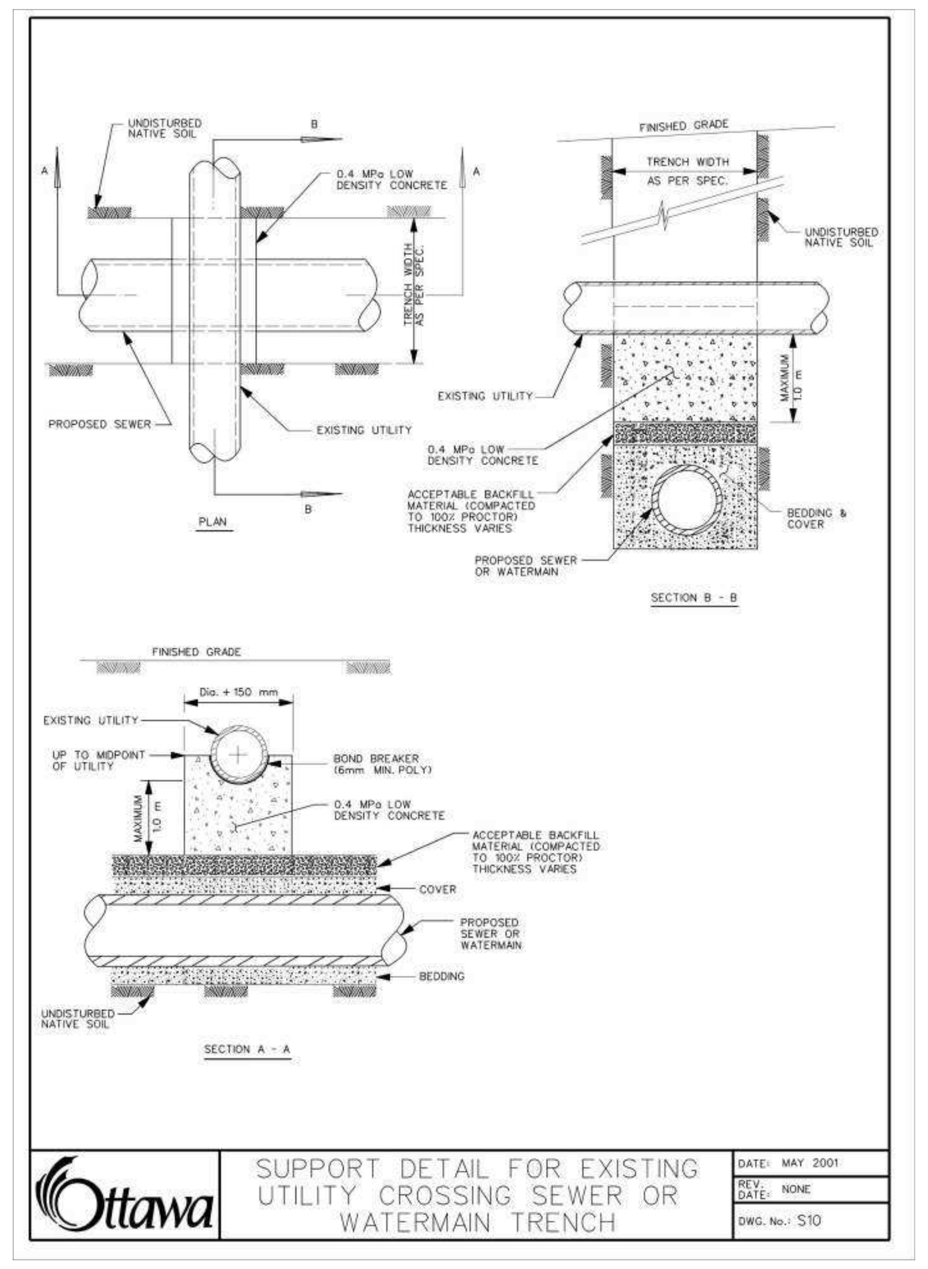


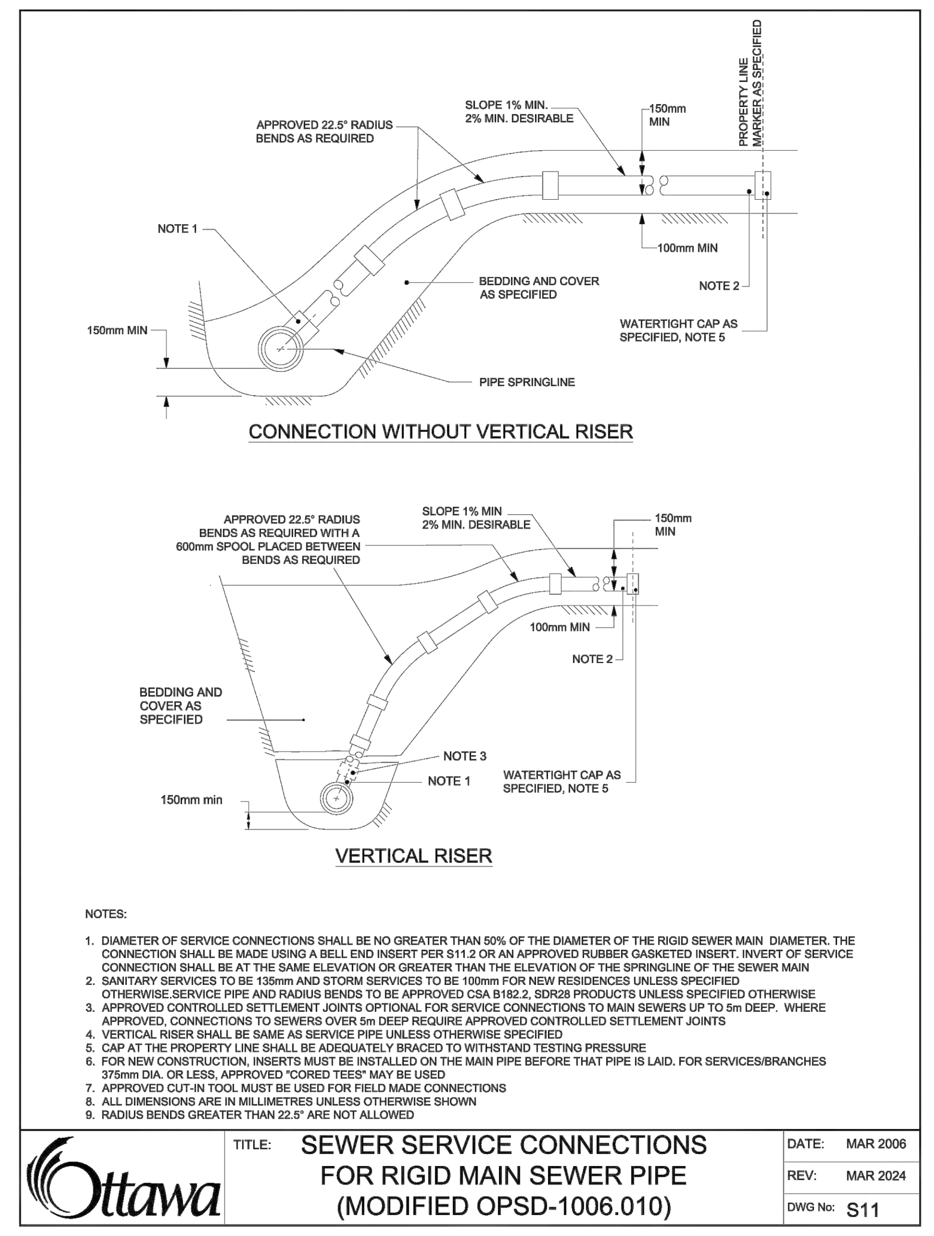
COMBINED TRENCH (SEWERS & SEWER SERVICES) — DWG. No.: S7



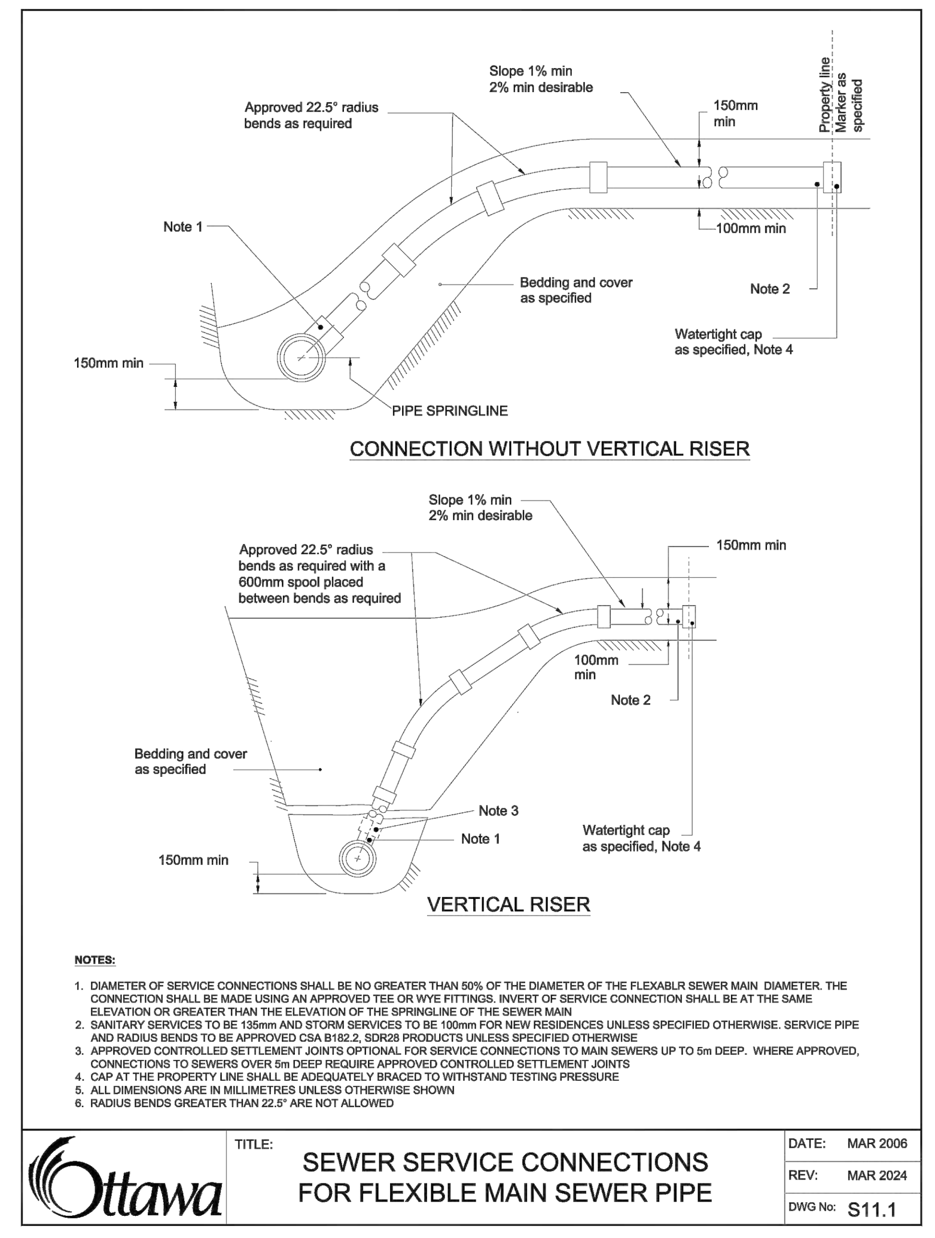
CLAY SEAL FOR PIPE TRENCHES — DWG. No.: S8



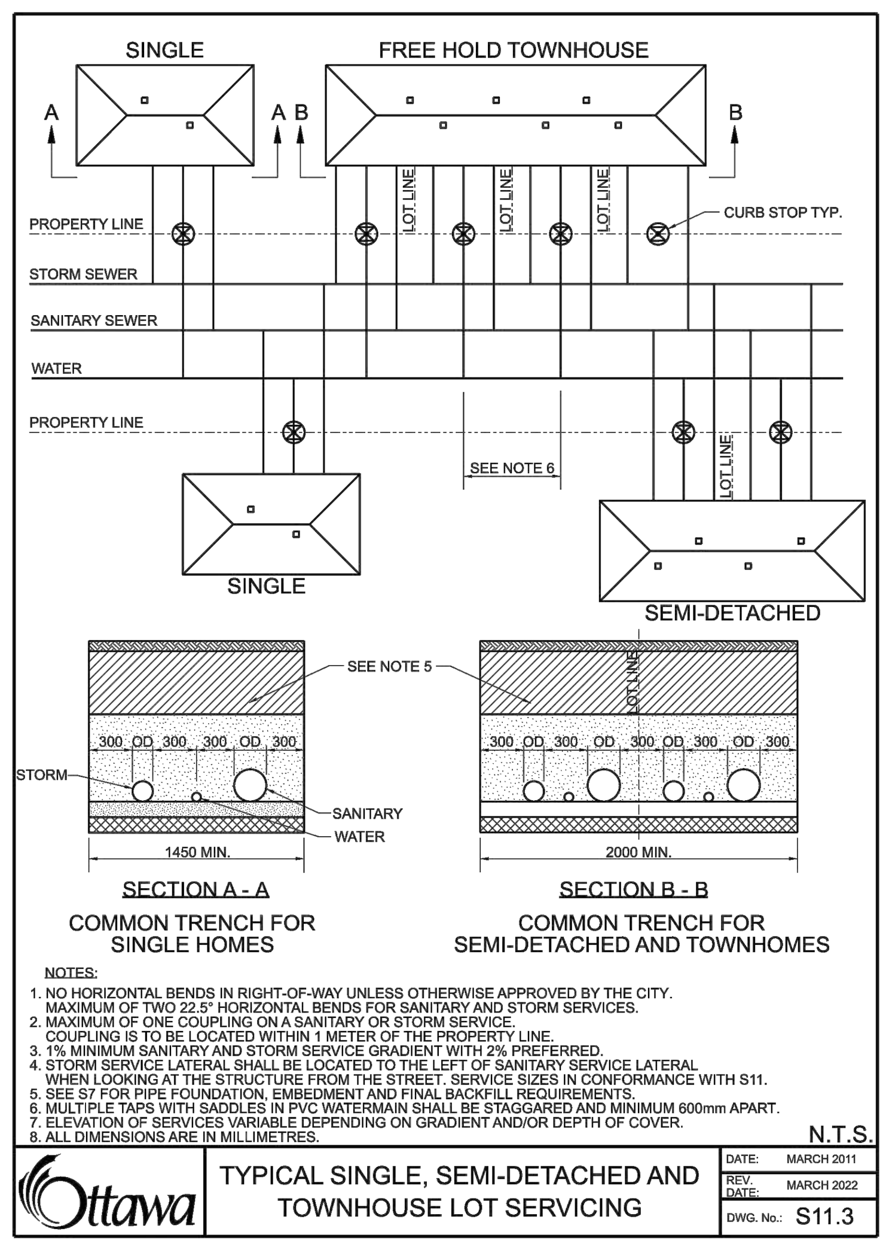
SUPPORT DETAIL FOR EXISTING UTILITY CROSSING SEWER OR WATERMAIN TRENCH — DWG. No.: S10



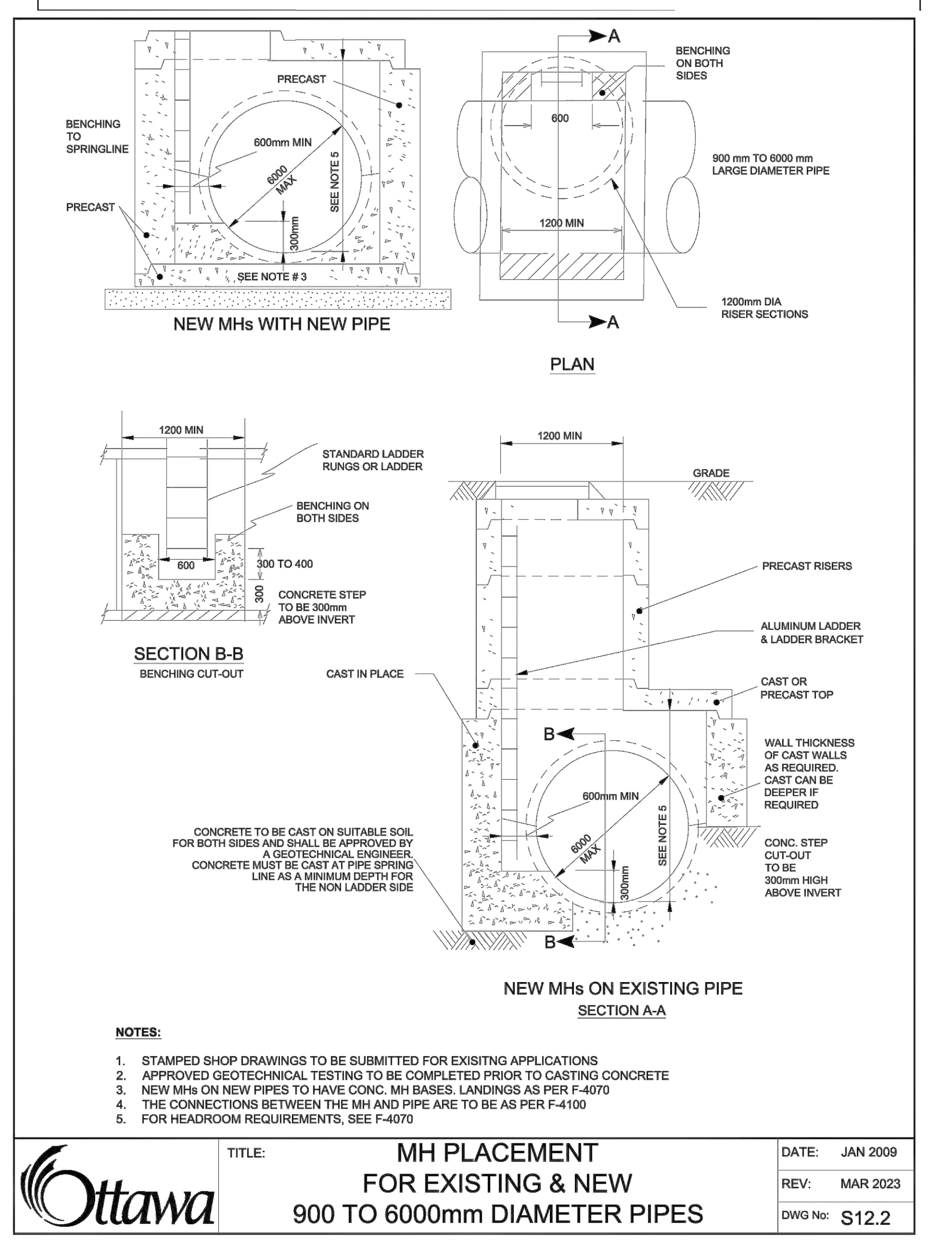
SEWER SERVICE CONNECTIONS FOR RIGID MAIN SEWER PIPE (MODIFIED OPSD-1006.010) — DWG. No.: S11



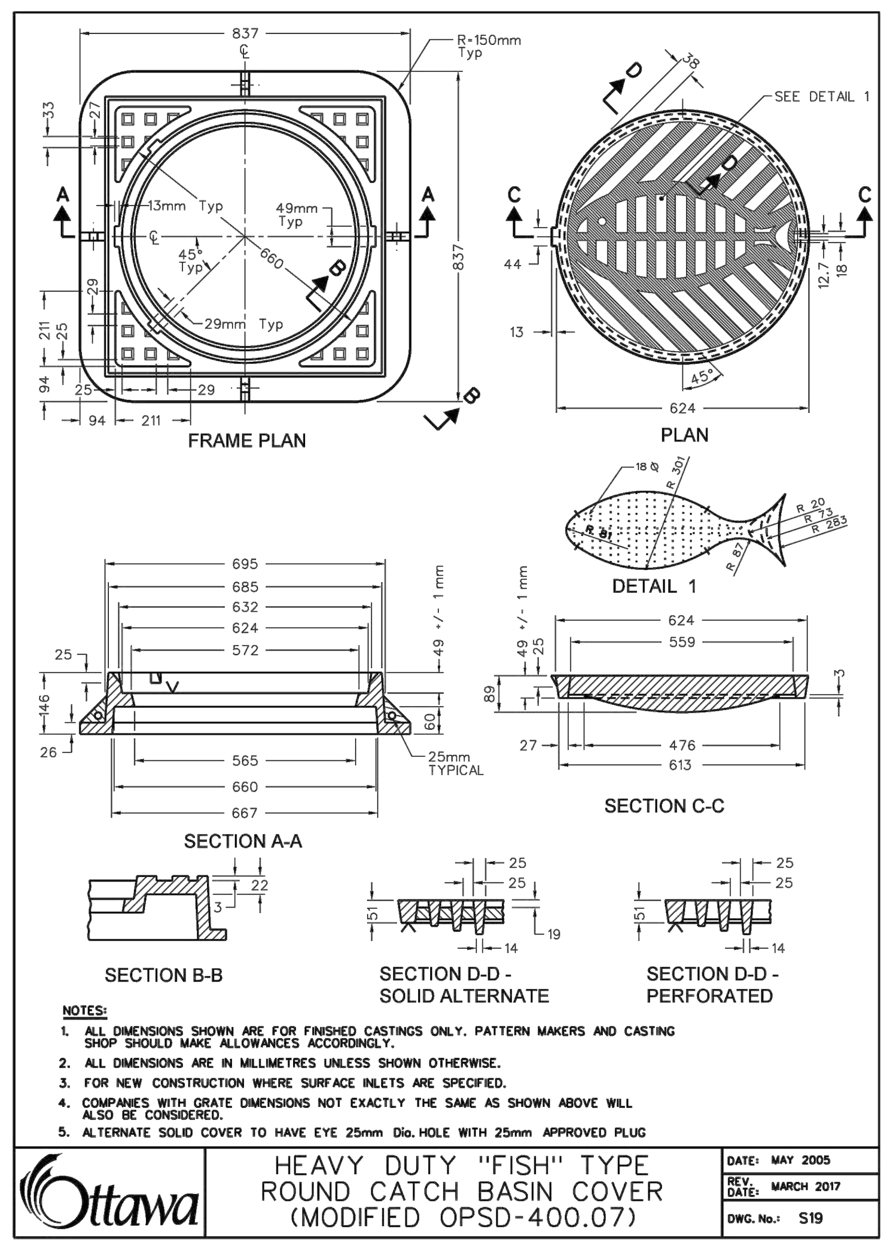
SEWER SERVICE CONNECTIONS FOR FLEXIBLE MAIN SEWER PIPE — DWG. No.: S11.1



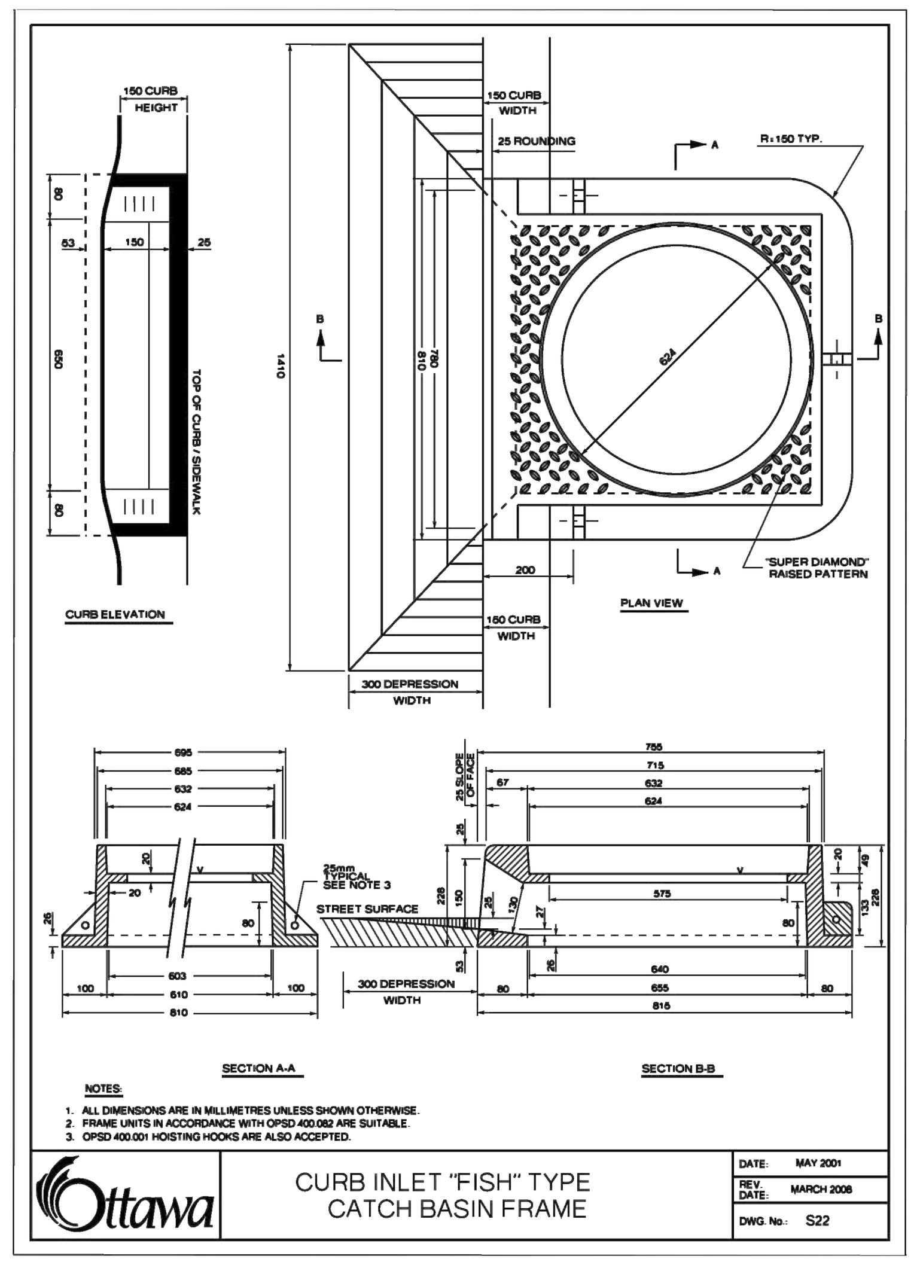
TYPICAL SINGLE, SEMI-DETACHED AND TOWNHOUSE LOT SERVICING — DWG. No.: S11.3



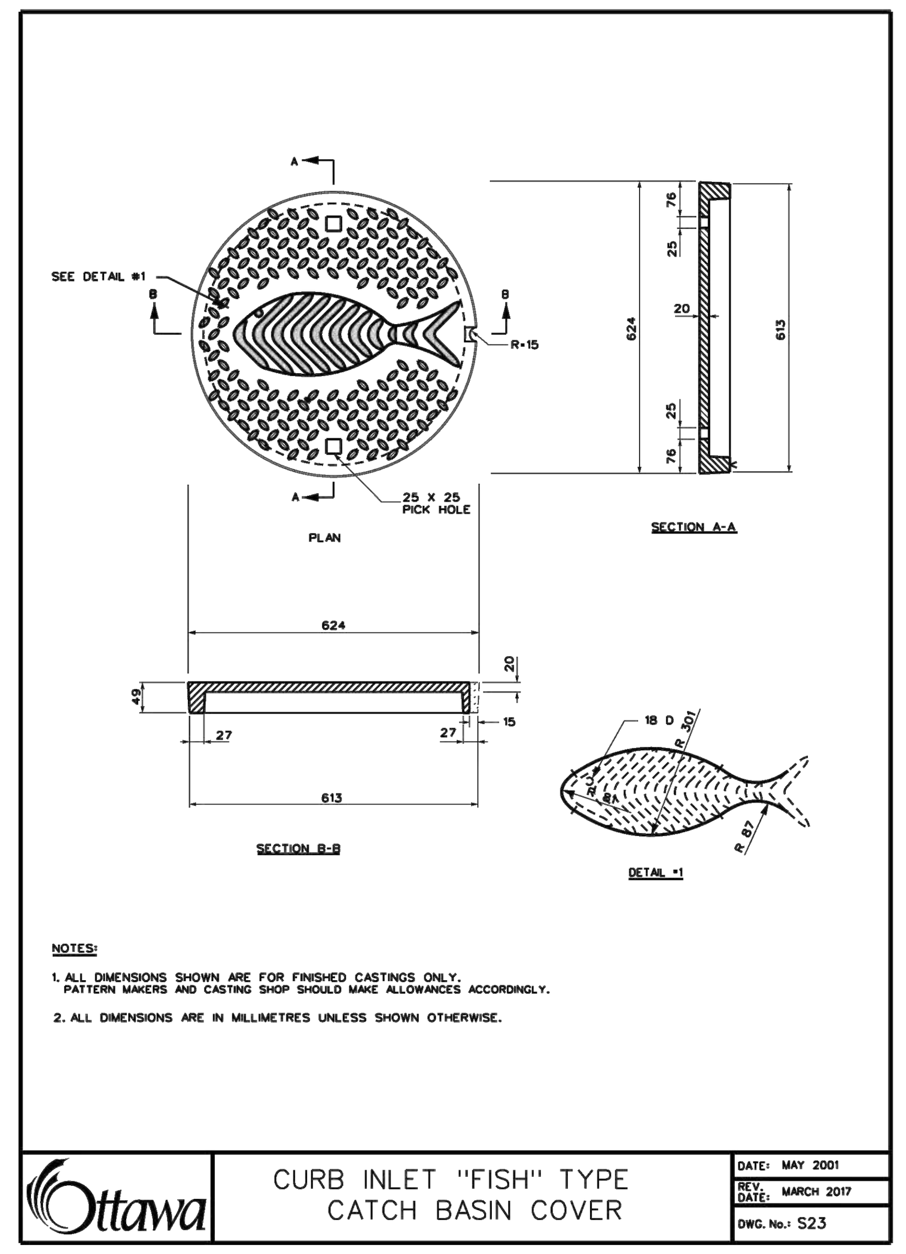
MH PLACEMENT FOR EXISTING & NEW 900 TO 6000mm DIAMETER PIPES — DWG. No.: S12.2



HEAVY DUTY "FISH" TYPE ROUND CATCH BASIN COVER (MODIFIED OPSD-400.07) — DWG. No.: S19



CURB INLET "FISH" TYPE CATCH BASIN FRAME — DWG. No.: S22



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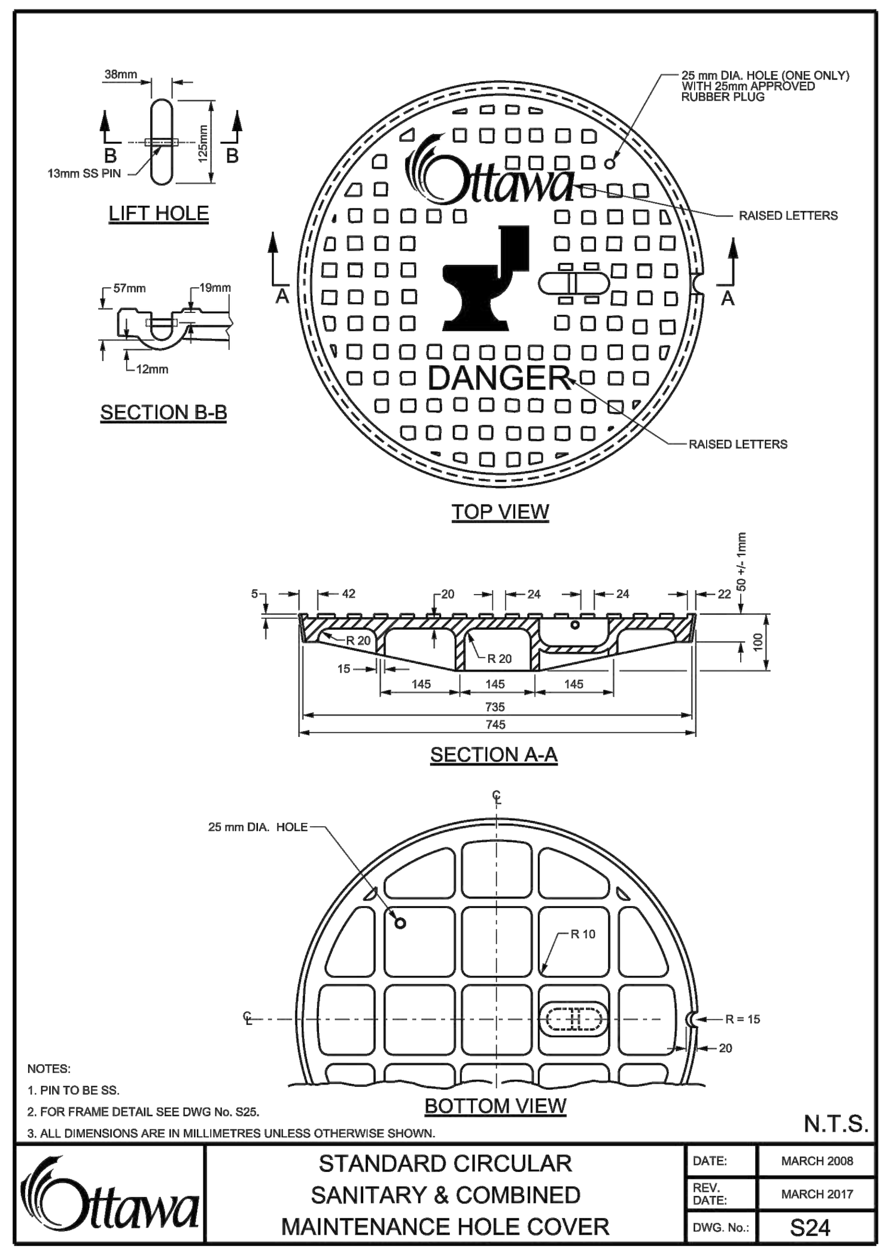
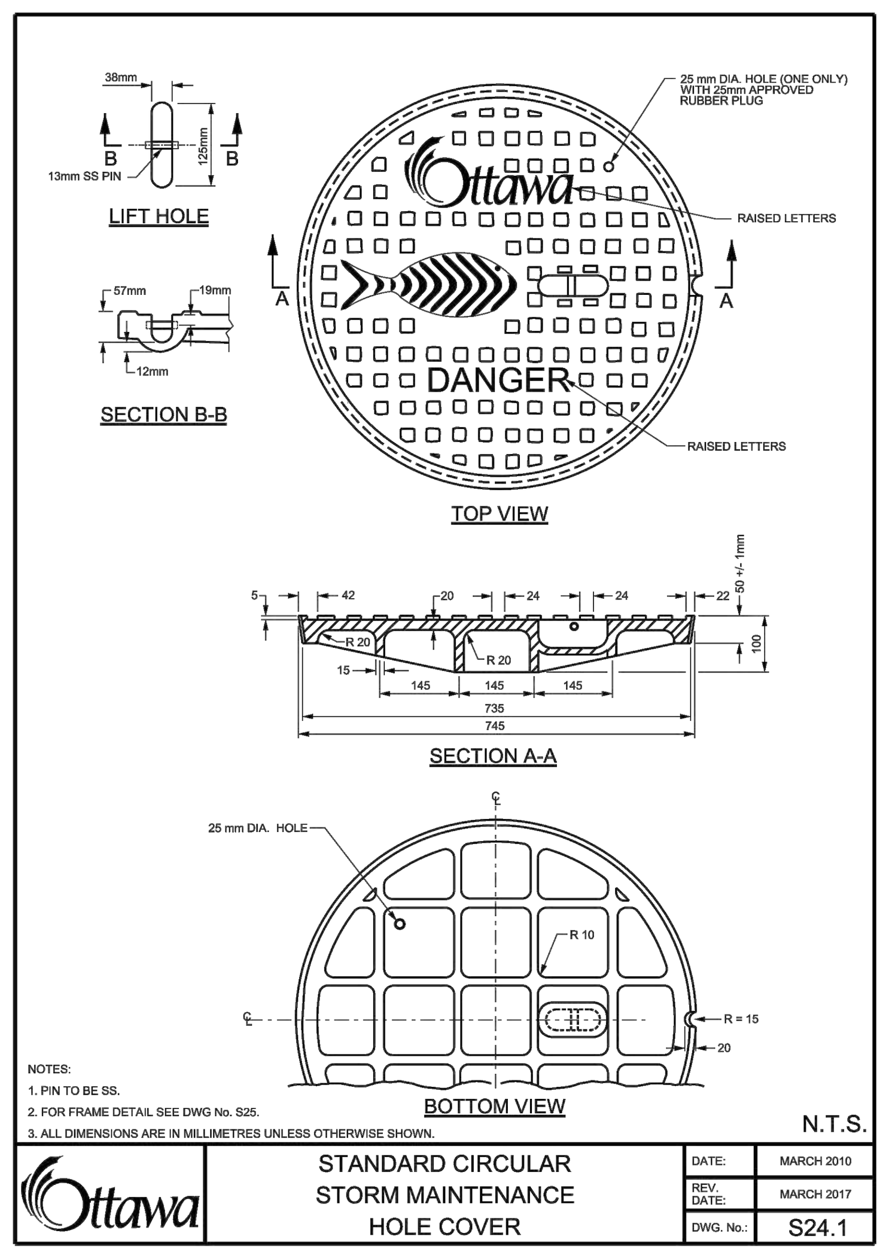
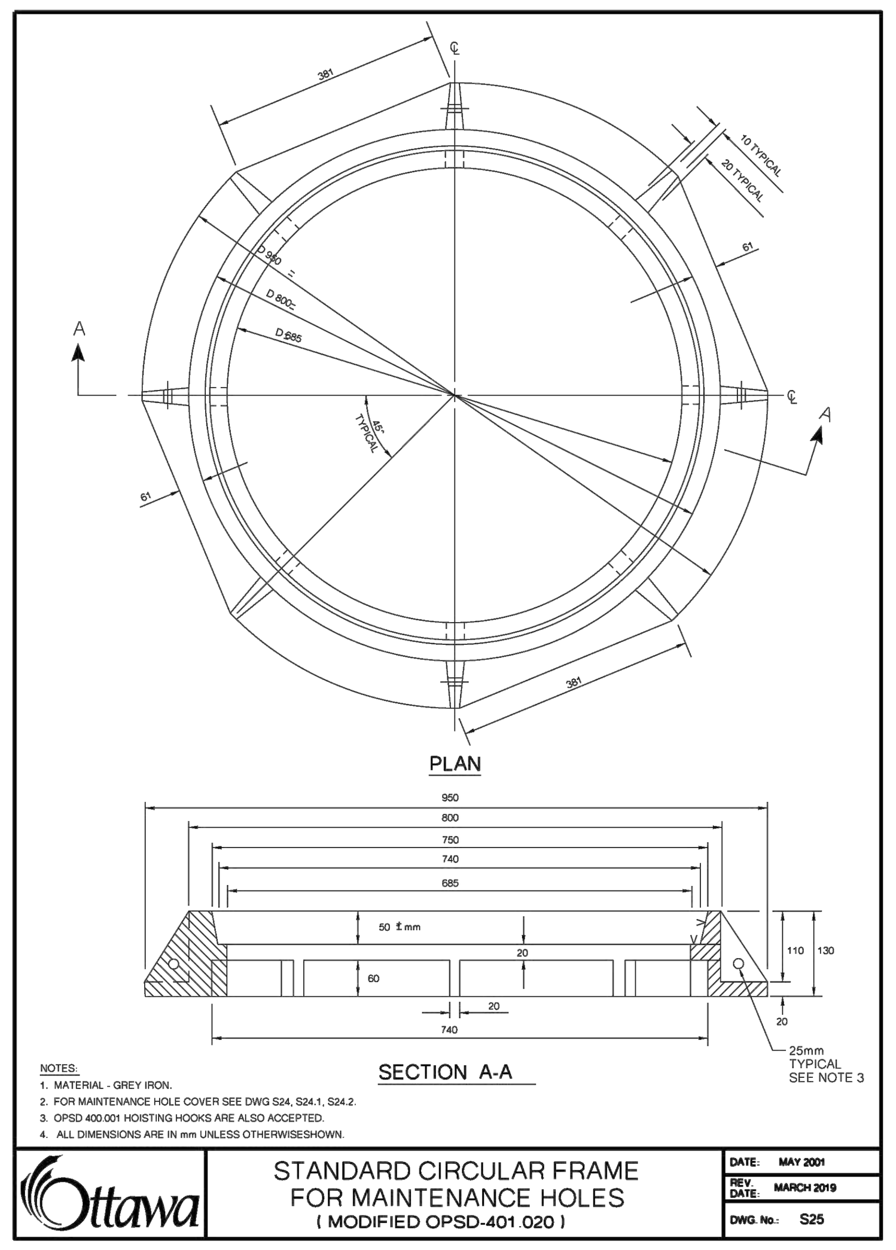


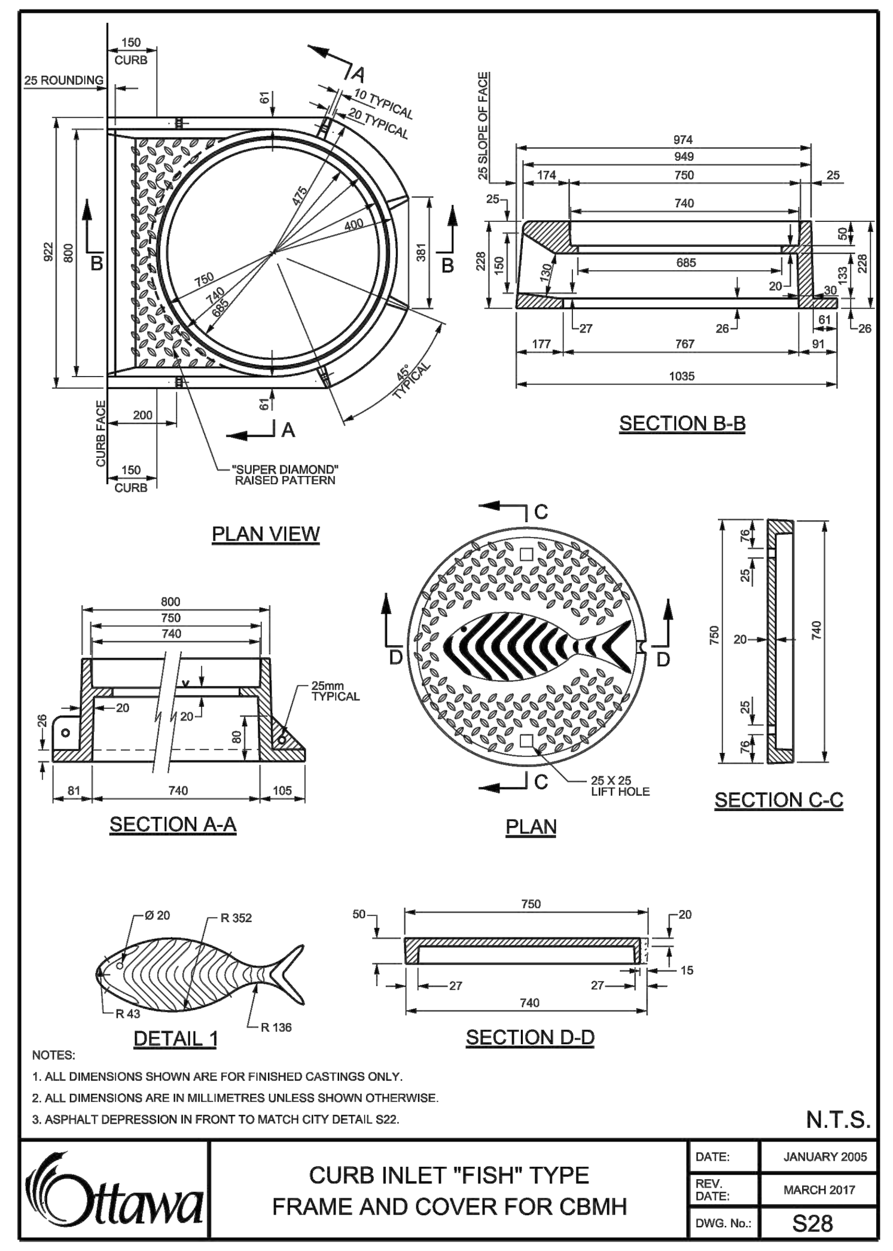
STANDARD CIRCULAR SANITARY & COMBINED MAINTENANCE HOLE COVER — DWG. No.: S24



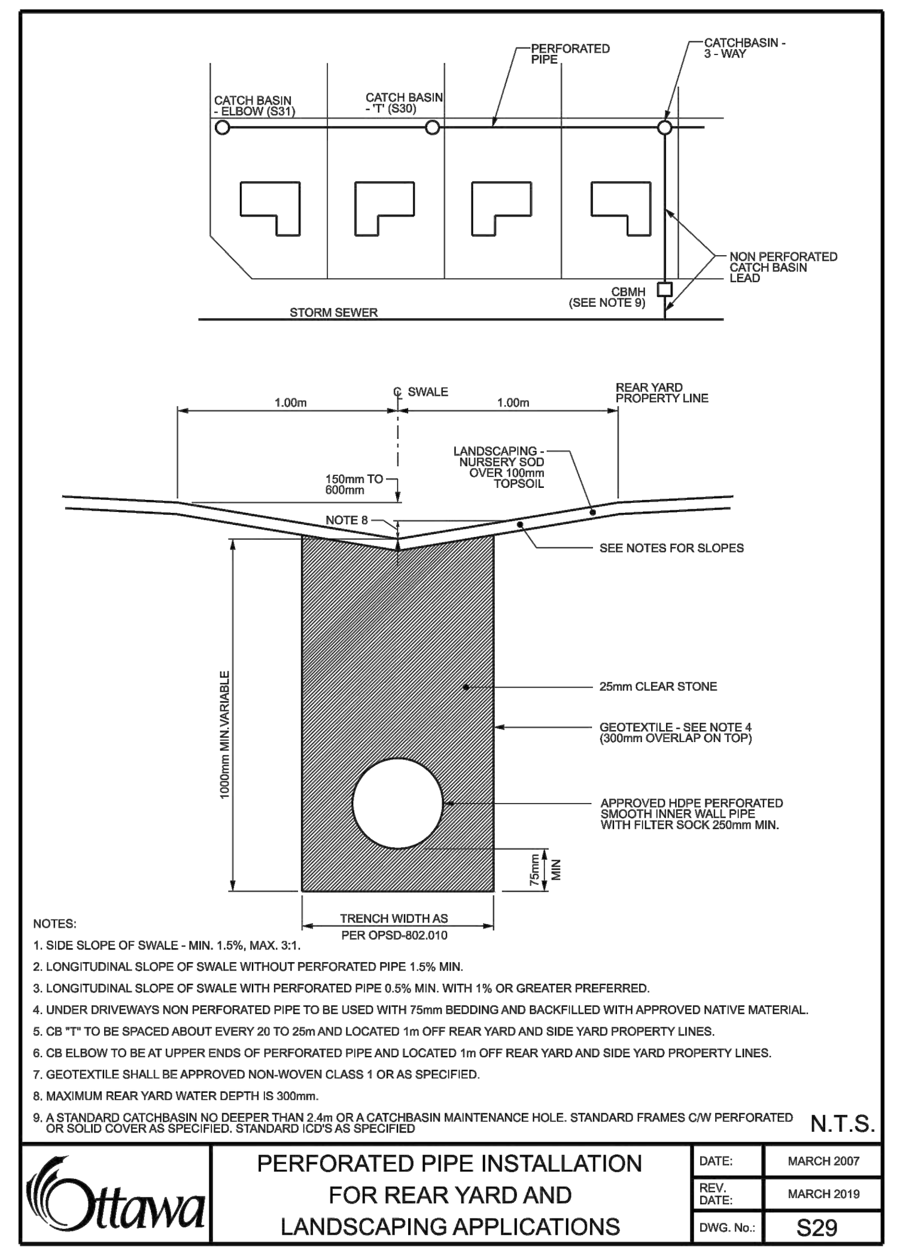
STANDARD CIRCULAR STORM MAINTENANCE HOLE COVER — DWG. No.: S24.1



STANDARD CIRCULAR FRAME FOR MAINTENANCE HOLES (MODIFIED OPSD-401.020) — DWG. No.: S25



CURB INLET "FISH" TYPE FRAME AND COVER FOR CBMH — DWG. No.: S28



PERFORATED PIPE INSTALLATION FOR REAR YARD AND LANDSCAPING APPLICATIONS — DWG. No.: S29

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DRAWING No. 117155-D17

D07-16-18-0021

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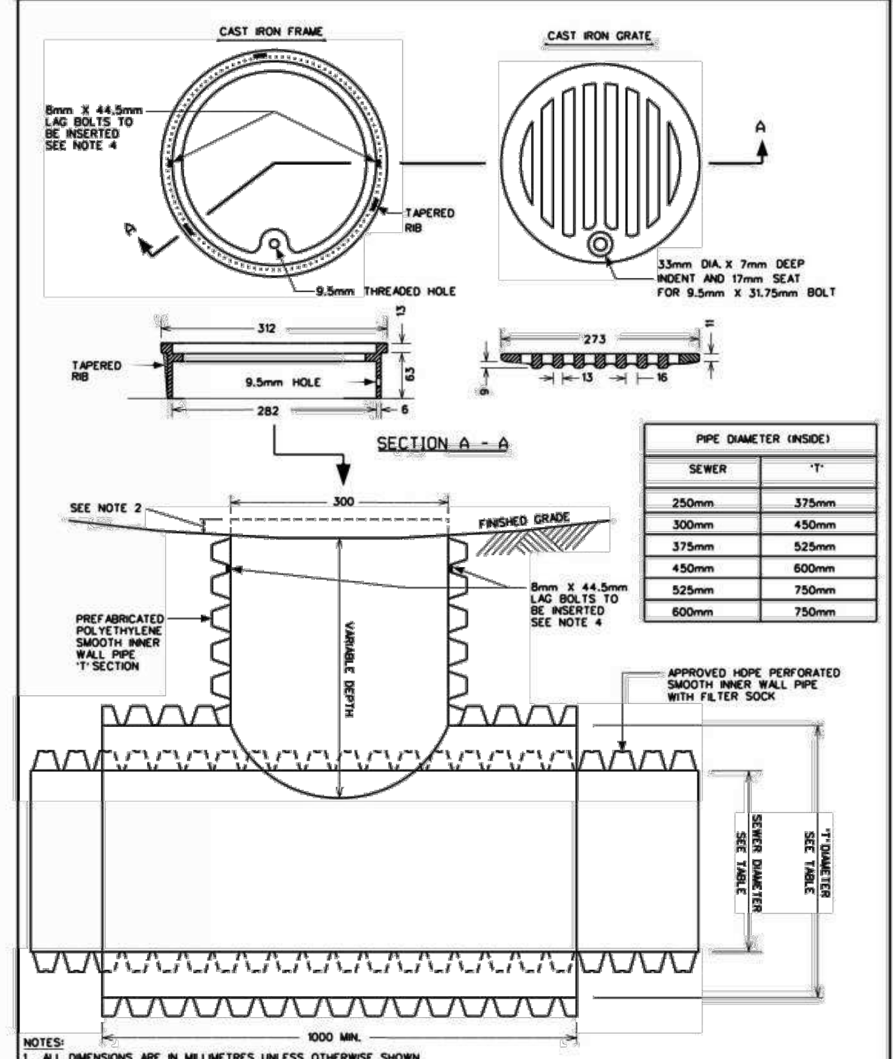
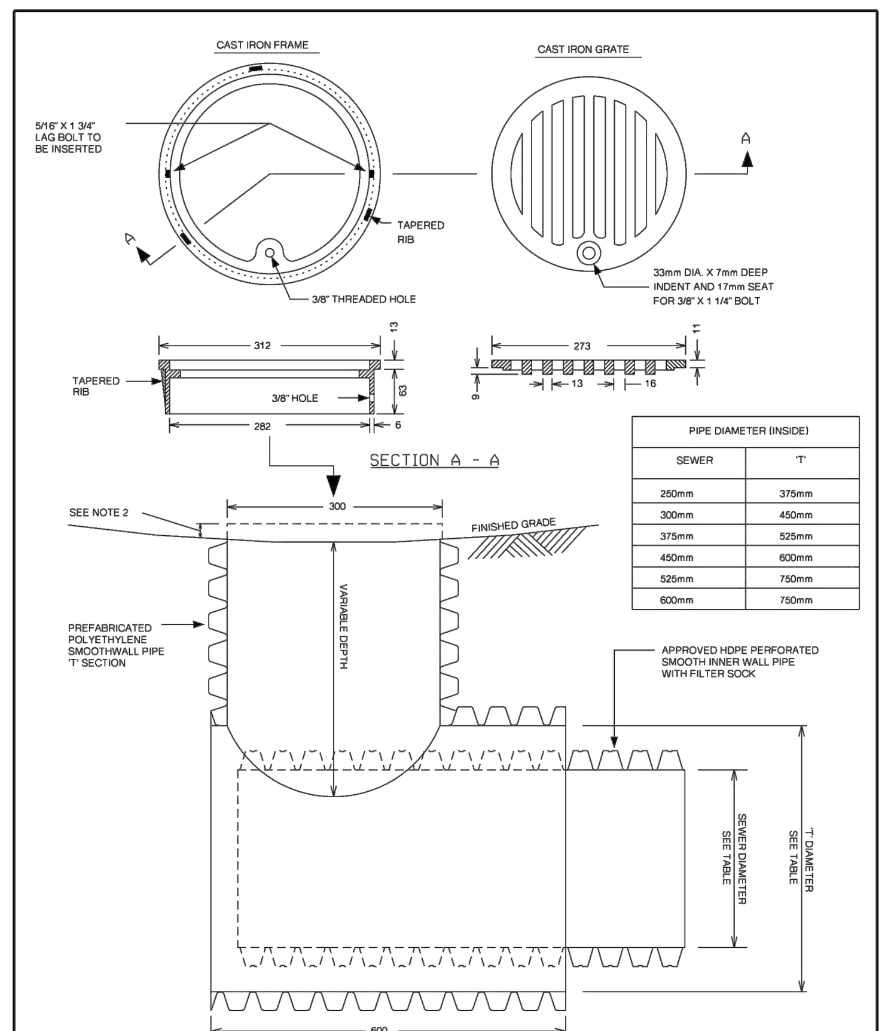


PIPE DIAMETER (INSIDE)	
SEWER	'T'
250mm	375mm
300mm	450mm
375mm	525mm
450mm	600mm
525mm	750mm
600mm	750mm

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
2. FOR DITCHED PIPE APPLICATIONS, TOP OF CB SHALL BE MIN. 5cm ABOVE BOTTOM OF THE DITCH/SWALE AND BE LOCATED MIN. 2m FROM EDGE OF PAVEMENT.
3. WHEN NON PERFORATED PIPE IS USED, MATCH THE 'T's HORIZONTAL OPENING DIAMETERS TO THE PIPE DIAMETER AND CONNECT WITH MANUFACTURER RECOMMENDED CONNECTION SLEEVE.
4. CAST IRON FRAME TO BE SECURED TO PIPE WITH 2 LAG BOLTS AS SHOWN.

Ottawa — CATCH BASIN - 'T' FOR REAR YARD, DITCHED PIPE AND LANDSCAPING APPLICATIONS — DATE: MARCH 2007 — REV. DATE: MARCH 2021 — DWG. No.: S30



PIPE DIAMETER (INSIDE)	
SEWER	'T'
250mm	375mm
300mm	450mm
375mm	525mm
450mm	600mm
525mm	750mm
600mm	750mm

NOTES:
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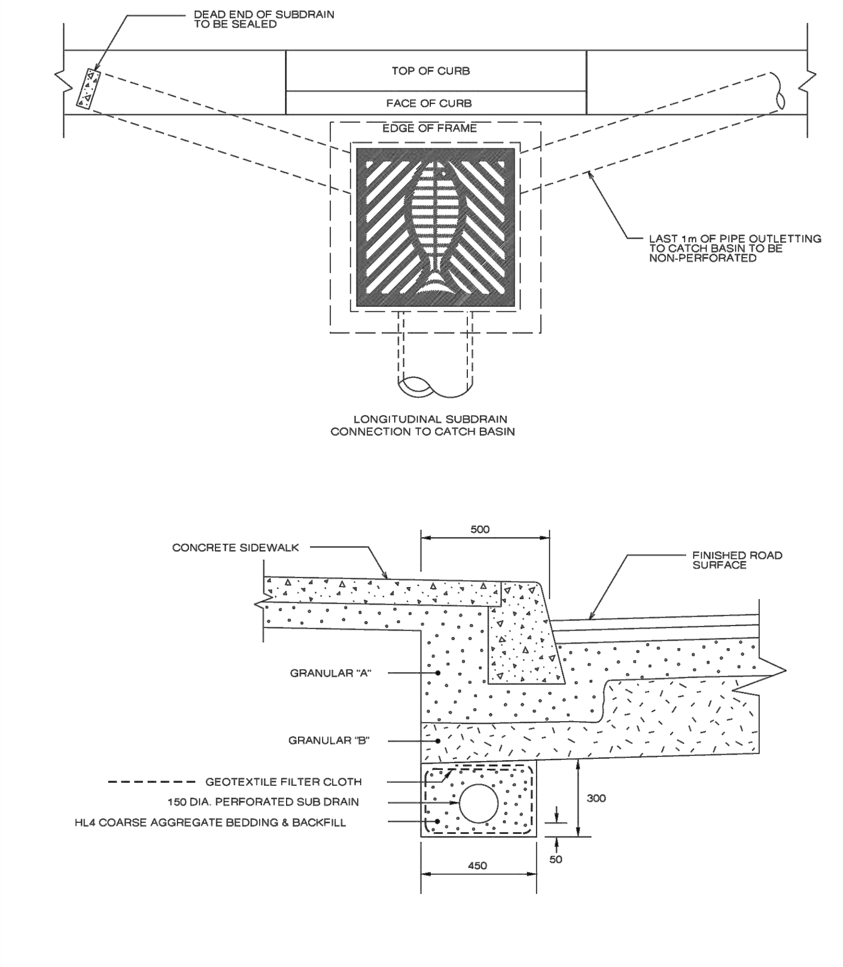
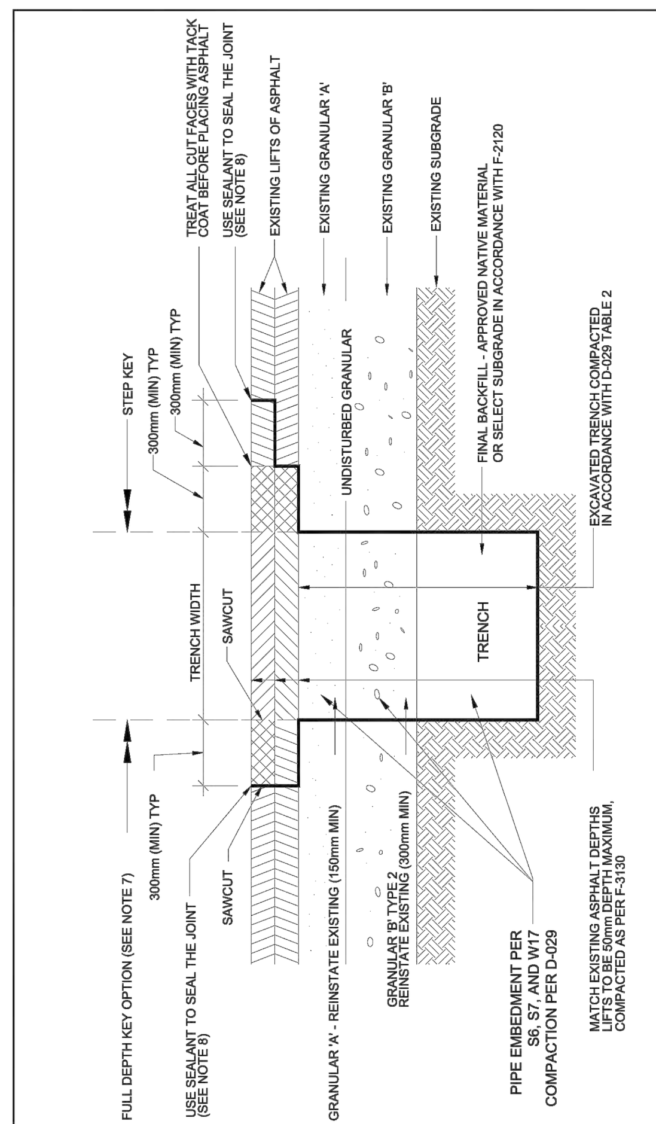
2. FOR DITCHED PIPE APPLICATIONS, TOP OF CB SHALL BE MIN. 5cm ABOVE BOTTOM OF THE DITCH/SWALE AND BE LOCATED MIN. 2m FROM EDGE OF PAVEMENT.
3. WHEN NON PERFORATED PIPE IS USED, MATCH THE 'T's HORIZONTAL OPENING DIAMETERS TO THE PIPE DIAMETER AND CONNECT WITH MANUFACTURER RECOMMENDED CONNECTION SLEEVE.
4. SEE MS-22.15 FOR ALTERNATE APPROVED FITTING MANUFACTURERS.

Ottawa — CATCH BASIN - ELBOW FOR REAR YARD, DITCHED PIPE AND LANDSCAPING APPLICATIONS — DATE: MARCH 2007 — REV. DATE: MARCH 2019 — DWG. No.: S31



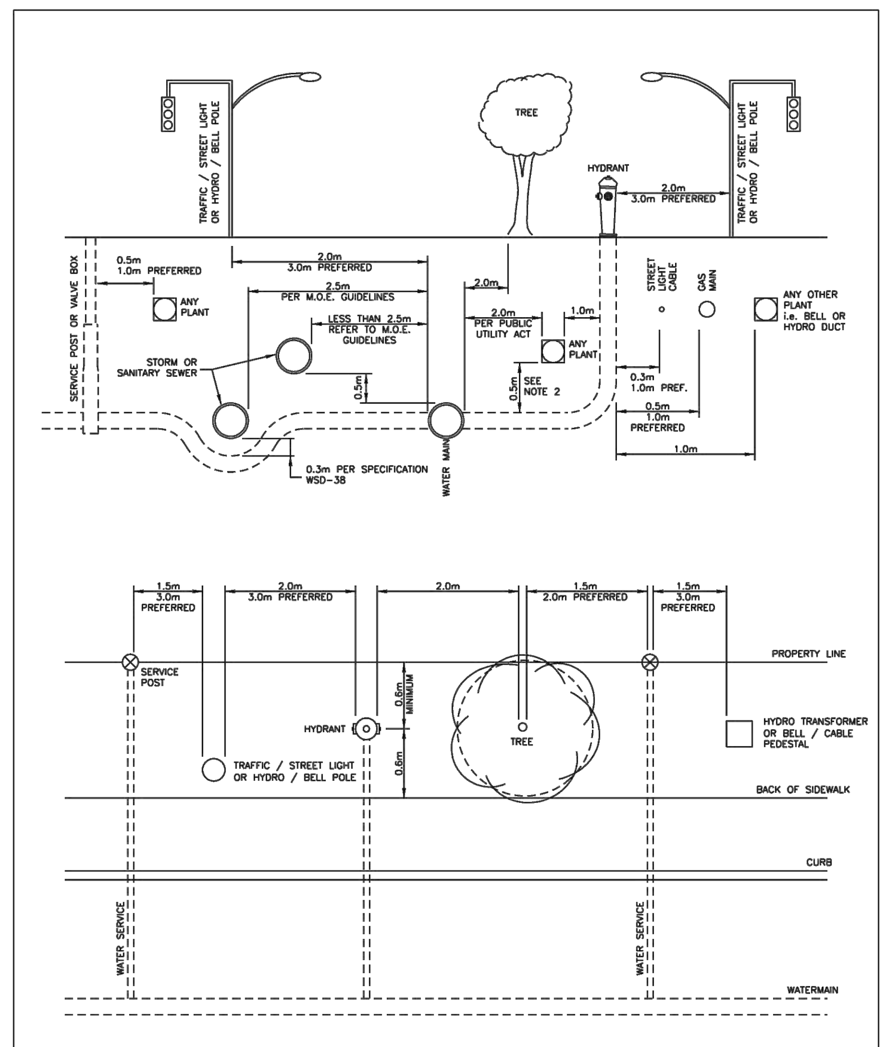
NOTES:
1. ALL CONECTIONS TO BE MADE ON BOTH SIDES OF THE CATCH BASIN AND TO BE MORTARED AT THE INSIDE AND OUTSIDE OF THE CATCH BASIN WALLS. THE SUBDRAIN SHALL BE PLUGGED WITH A MANUFACTURED PLUG AT THE HIGH POINT WHERE THERE IS NO CATCH BASIN.
2. APPROVED NON-WOVEN CLASS 1 GEOTEXTILE AS PER MS-22.15.
3. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.
4. ALL SUBDRAIN TO PROVIDE POSITIVE DRAINAGE.

Ottawa — SUBDRAIN INSTALLATION DETAIL — DATE: MAY 2001 — REV. DATE: MARCH 2009 — DWG. No.: R1



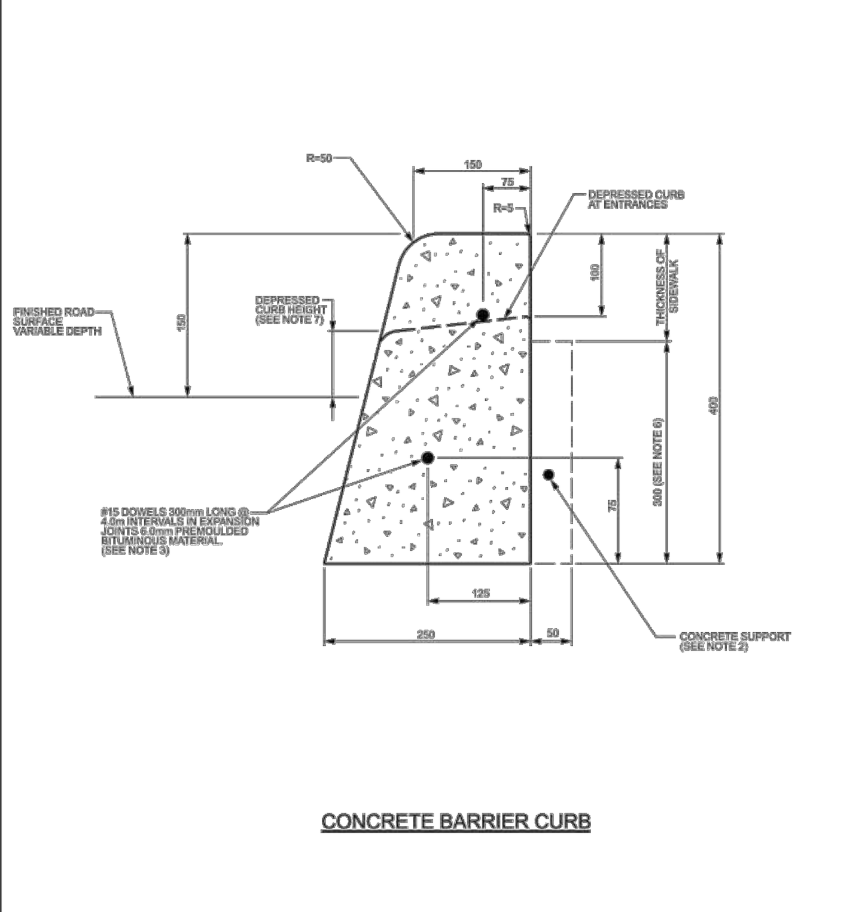
NOTES:
1. ALL EXISTING ASPHALT TO BE SAW CUT.
2. UNLESS SPECIFIED ELSEWHERE, SURFACE COURSE ASPHALT SUPERPAVE 12.5mm, AND BASE COURSE ASPHALT SUPERPAVE 19.0mm IS TO BE USED.
3. UNLESS SPECIFIED ELSEWHERE, ASPHALT MIX SHALL BE LEVEL B (PG58-34) FOR NON-BUS LOCAL ROADS, AND LEVEL D (PG64-34) FOR ALL OTHER ROADS
4. UNLESS SPECIFIED ELSEWHERE, WHERE EXISTING PAVEMENT STRUCTURE EXCEEDS 150mm IN DEPTH, ASPHALT REINSTATEMENT SHALL BE 150mm AND GRANULAR 'A' FOR THE REMAINDER
5. UNLESS SPECIFIED ELSEWHERE, WHERE AN UNDERLYING LAYER OF CONCRETE PAVEMENT EXISTS REINSTATEMENT SHALL CONSIST OF 150mm OF SUPERPAVE 19.00mm COMPACTED IN LIFTS
6. UNLESS SPECIFIED ELSEWHERE, HOT MIX ASPHALT PLACEMENT AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH F-3130
7. STEP KEY REINSTATEMENT UNLESS FULL DEPTH KEY OPTION APPROVED BY THE CITY
8. ALL EDGES TO BE ROUTED AND SEALED WITH A BEAD OF HOT RUBBERIZED ASPHALT JOINT SEALING COMPOUND

Ottawa — TITLE: STANDARD TRENCH REINSTATEMENT IN PAVED SURFACE — DATE: MAY 2001 — REV: MAR 2023 — DWG No: R10



NOTES:
1. DIMENSIONS ILLUSTRATED ARE MINIMUM ACCEPTABLE CLEARANCES UNLESS OTHERWISE NOTED.
2. 0.5m VERTICAL SEPARATION IS REQUIRED BETWEEN WATERMAINS AND OTHER UTILITY INSTALLATIONS TO ALLOW FOR PROPER BEDDING OF THE WATERMAIN AND SUFFICIENT CLEARANCE TO CONDUCT REPAIRS.

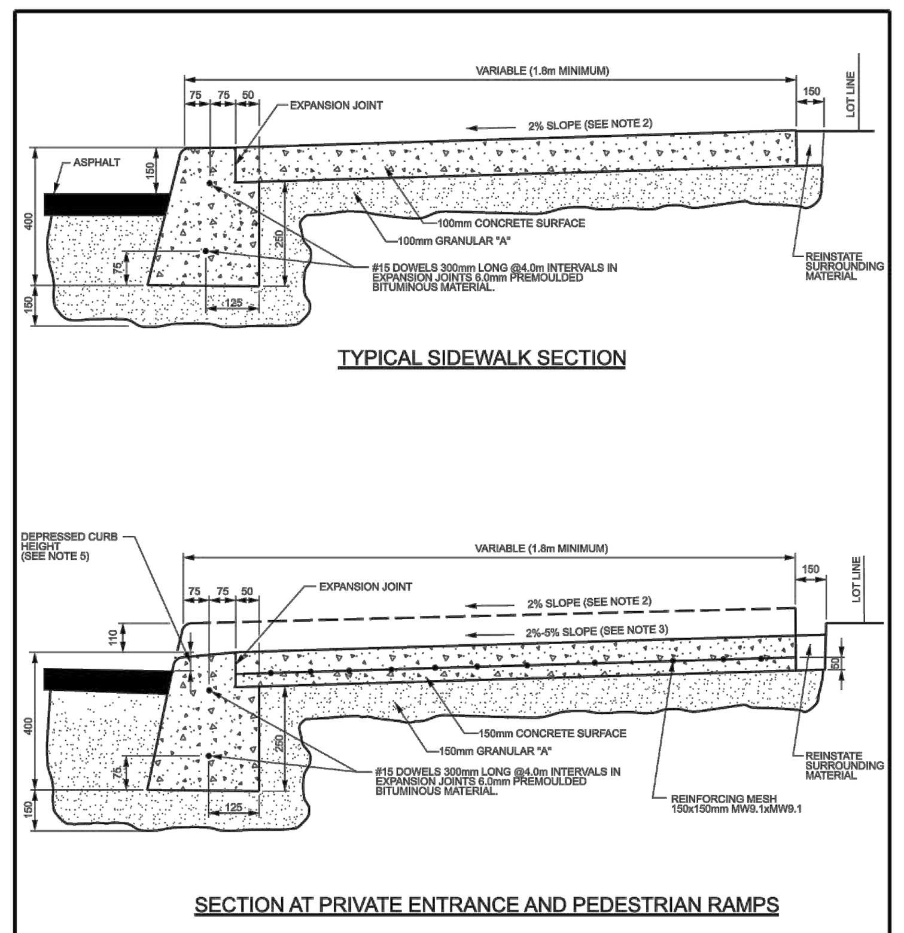
Ottawa — GENERAL WATER PLANT TO UTILITY CLEARANCE — DATE: MARCH 2009 — REV. DATE: — DWG. No.: R20



NOTES:
1. THE FULL CURB DEPTH SHALL BE CARRIED THROUGH THE DEPRESSED ACCESS CROSSING.
2. A CONCRETE SUPPORT IS REQUIRED WHEN BUILT ADJACENT TO THE SIDEWALK.
3. IF AN EXTRUSION CURBING MACHINE IS USED, THE EXPANSION BITUMINOUS MATERIAL AND THE #15 DOWELS ARE TO BE PLACED AT THE END OF THE EXTRUSION.
4. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
5. DUMMY JOINTS SHALL BE 25mm DEEP, FRONT, BACK AND TOP OF SECTION AT 4m SPACING OR MATCH JOINTING WHERE SIDEWALK IS ADJACENT.
6. FOR DEPRESSED CURB AT ENTRANCES USE 250.
7. DEPRESSED CURB HEIGHT - FOR PEDESTRIAN CURB RAMPS 0 TO 6 mm AND FOR PRIVATE ENTRANCES 0 TO 13mm.

N.T.S.

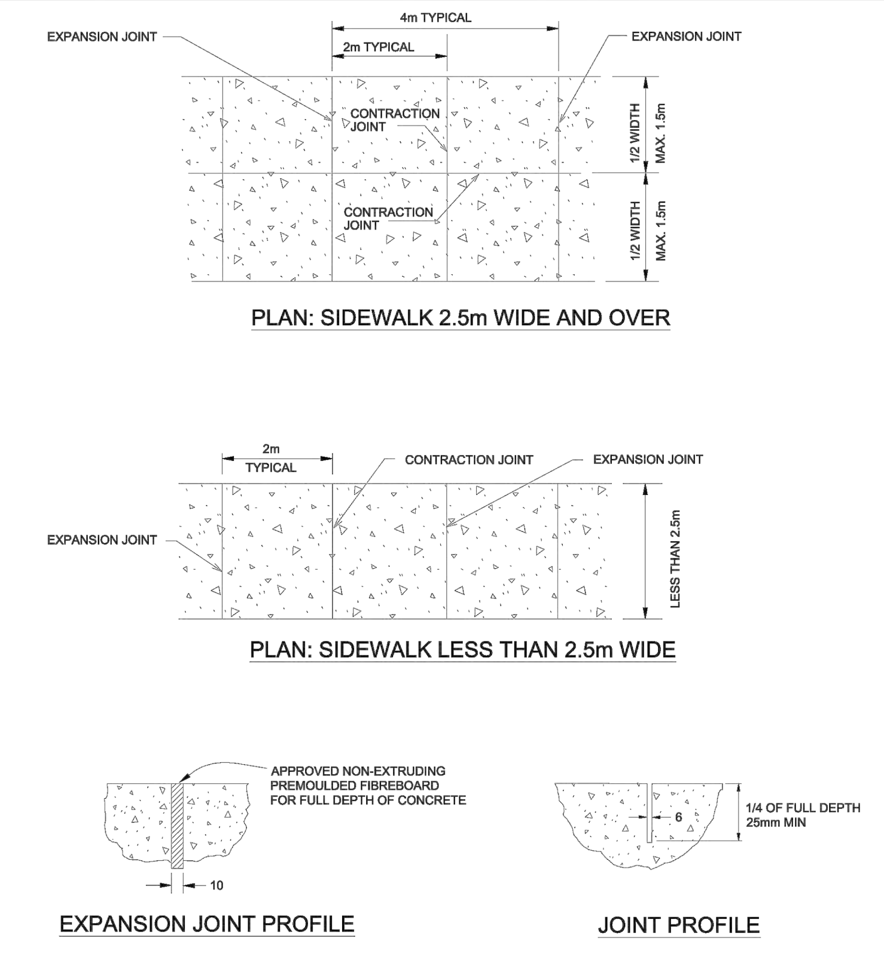
Ottawa — CONCRETE BARRIER CURB FOR GRANULAR BASE PAVEMENT (MODIFIED OPSD-600.110) — DATE: JANUARY 2003 — REV. DATE: MARCH 2021 — DWG. No.: SC1.1



NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. THE MAXIMUM SLOPE IS NOT TO EXCEED 2%.
3. FOR CURB RAMPS, SLOPE OF 2% TO 5%, MAXIMUM 8%..
4. EXPANSION AND DUMMY JOINTS AS PER SC5.
5. DEPRESSED CURB HEIGHT - FOR PEDESTRIAN CURB RAMPS 0 TO 6 mm AND FOR PRIVATE ENTRANCES 0 TO 13 mm.

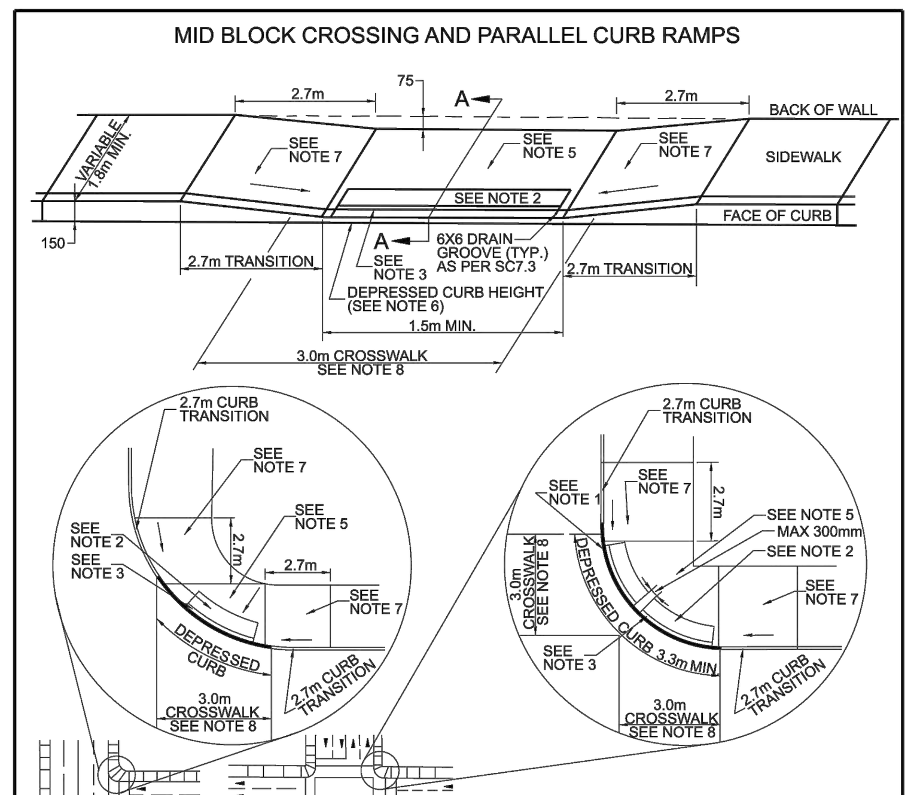
N.T.S.

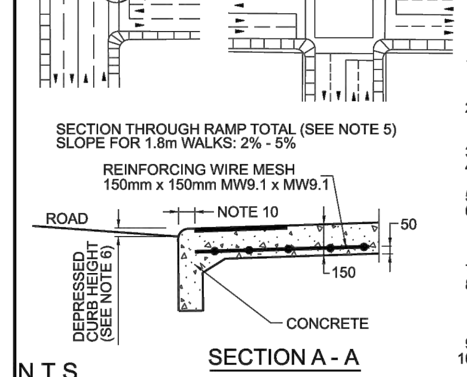
Ottawa — CONCRETE BARRIER CURB WITH SIDEWALK — DATE: JANUARY 2003 — REV. DATE: MAY 2021 — DWG. No.: SC1.4



NOTES:
1. EXPANSION JOINTS IN SIDEWALK SHALL BE IN LINE WITH EXPANSION JOINTS IN CURB
2. TRANSVERSE EXPANSION JOINTS ARE REQUIRED AT THE ENDS, THE MIDPOINT, AT INTERVALS OF 4m MAXIMUM, AND ALSO TO ISOLATE OBSTRUCTIONS FROM SIDEWALK, HYDRANTS, POLES, BUILDINGS, ETC.
3. EDGES ARE TO BE FINISHED WITH A 75mm EDGING TOOL
4. ALL CONCRETE SIDEWALKS ARE TO HAVE A BROOM FINISH UNLESS OTHERWISE SPECIFIED
5. ALL MEASUREMENTS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED
6. INSTALL TRANSVERSE JOINTS AS REQUIRED SO THERE IS A MAXIMUM SPACING OF 2m BETWEEN ALL JOINTS
7. CONTRACTION JOINTS ARE TO BE SAWCUTTING WITH A GREEN SAW OR BY HANDTOOLING

Ottawa — TITLE: SIDEWALK CONSTRUCTION JOINTS — DATE: MAY 2001 — REV: MAR 2024 — DWG No: SC5

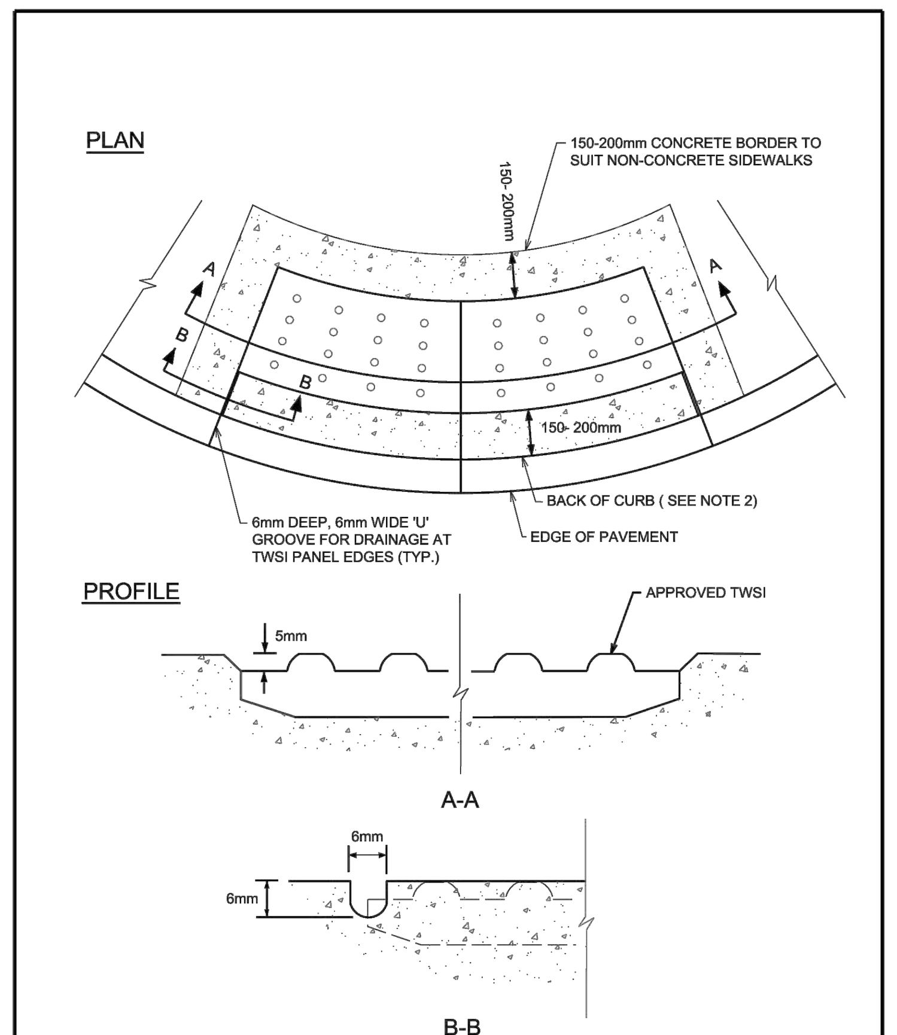




NOTES:
1. DOUBLE RAMP WIDTH SHOULD MATCH SIDEWALK WIDTH, BE A MINIMUM OF 3.3m WIDE AND PERMIT WHEELCHAIRS TO ENTER CROSSING AT RIGHT ANGLES.
2. APPROVED 610 x WIDTH OF CURB RAMP (1500 MIN.) TACTILE WALKING SURFACE INDICATOR, RADIUS TO MATCH CURB.
3. 150 TO 200 GAP
4. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
5. FOR TRANSITIONARE, MAXIMUM SLOPE OF 2%.
6. DEPRESSED CURB HEIGHT SHALL BE 0 TO 6mm FOR PEDESTRIAN CURB RAMPS AND 0 TO 25mm FOR PRIVATE ENTRANCES, OR EQUAL HEIGHT OF CROSSWALK WHERE APPLICABLE.
7. FOR CURB RAMPS SLOPE OF 2% TO 5% MAXIMUM 8%.
8. REFER TO R15 AND R15.1 FOR RAISED CROSSWALK AND R15.2 FOR AT - GRADE CONCRETE CROSSWALK. SUBJECT TO AVOIDANCE OF MEDIANS, CROSSWALK LINES TO CENTRED ON THE CURB RAMP.
9. FOR RETROFIT APPLICATIONS ONLY.
10. FOR MONOLITHIC SIDEWALK, TWISI SHALL BE 300 TO 350mm BACK FROM CURB FACE.

N.T.S.

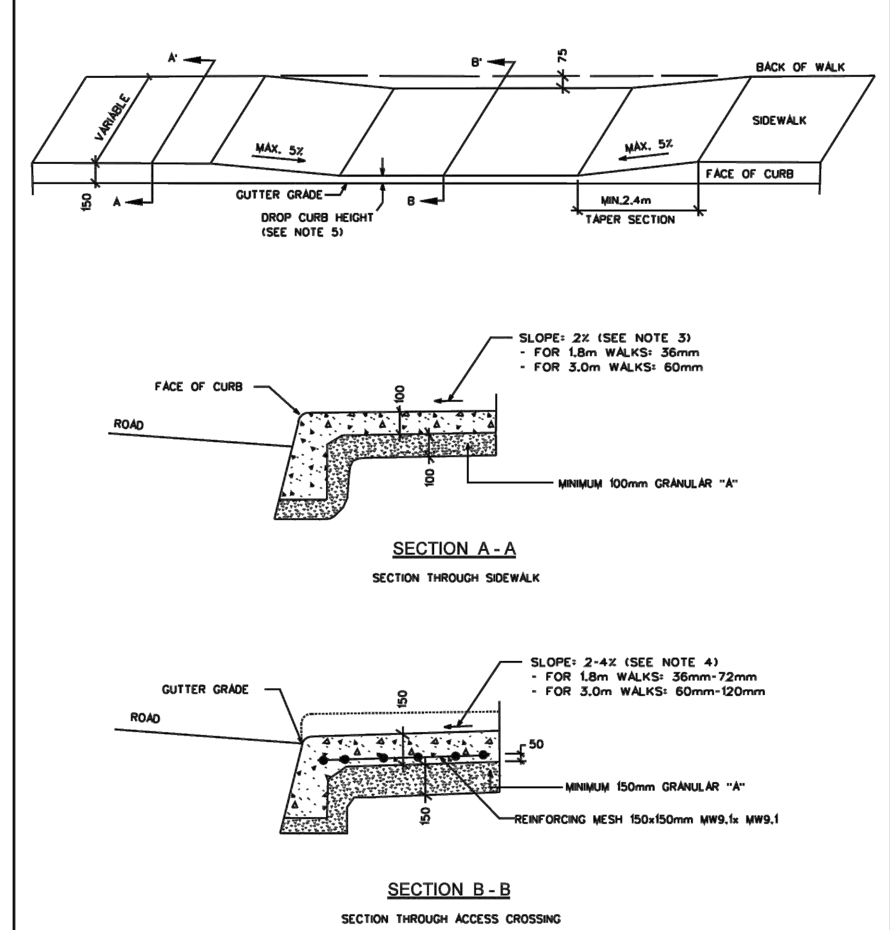
Ottawa — PEDESTRIAN CURB RAMP WITHOUT BOULEVARD — DATE: MAY 2001 — REV. DATE: MARCH 2022 — DWG. No.: SC6



NOTES:
1. TOPS OF TWSI'S (TACTILE WALKING SURFACE INDICATOR) SHALL BE ALIGNED & LEVEL WITH THE ADJACENT CONCRETE SURFACE & INSTALLATION IN WET CONCRETE SHALL BE EFFECTIVE IN PERMANENTLY SECURING THE TWSI IN PLACE ONCE DRY.
2. FOR MONOLITHIC SIDEWALKS, TWSI SHALL BE 300 TO 350mm BACK FROM THE CURB FACE.

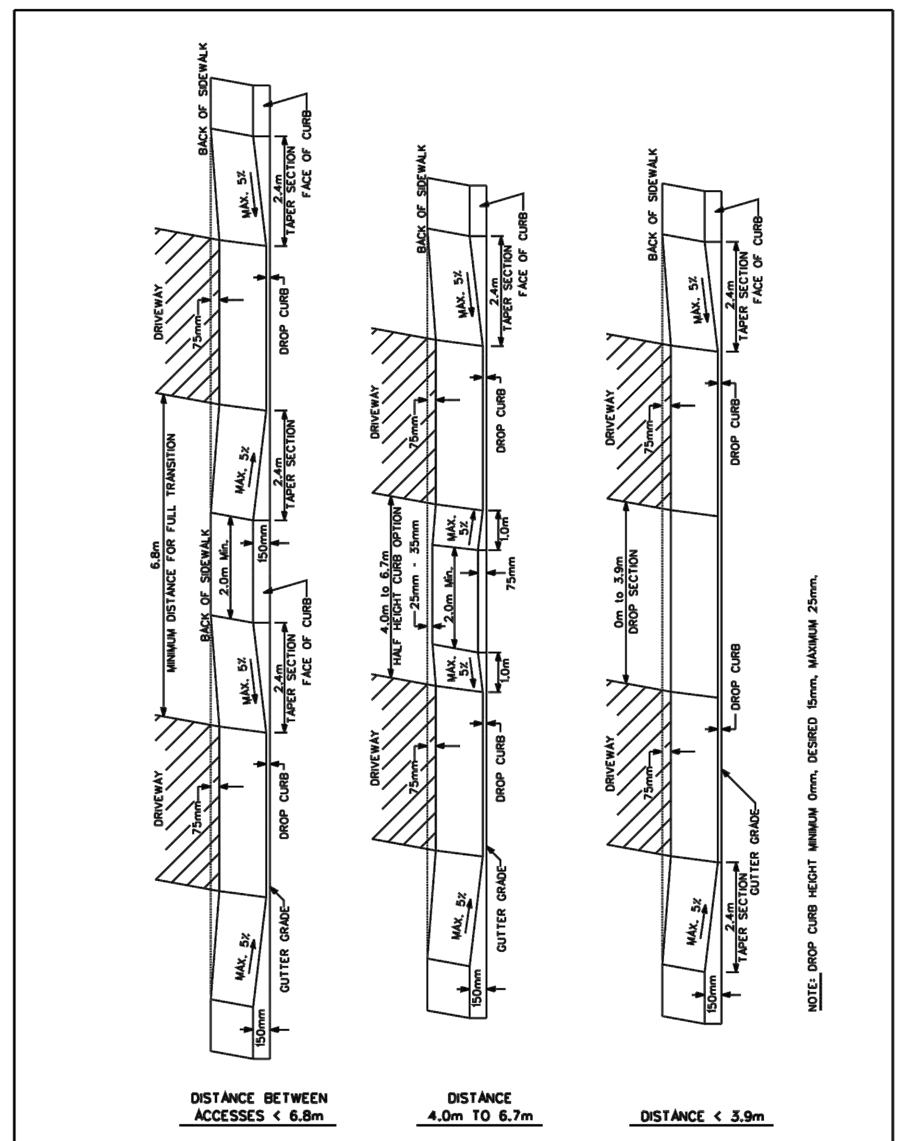
N.T.S.

Ottawa — TWSI DETAIL — DATE: MARCH 2015 — REV. DATE: MARCH 2016 — DWG. No.: SC7.3

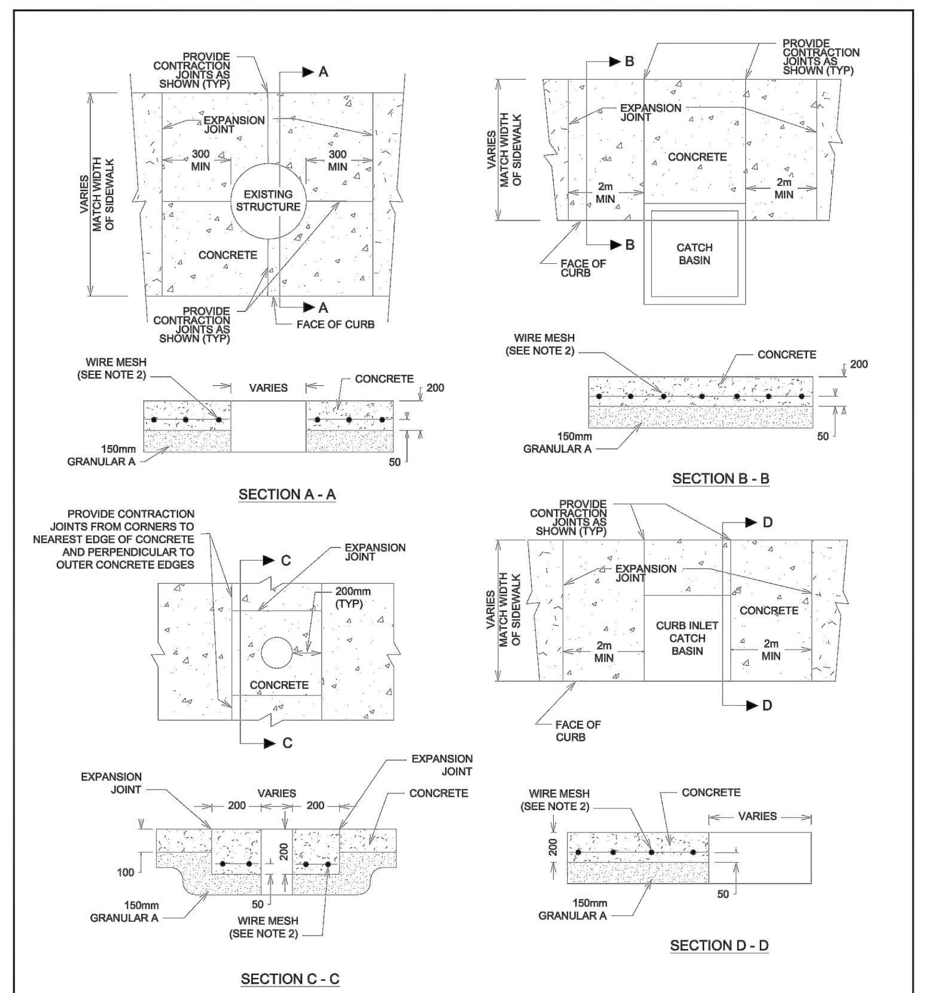


NOTES:
1. IN ALL DEPRESSED ACCESS CROSSINGS, INCLUDING TAPER SECTION, CONCRETE SLABS SHALL BE 150mm IN DEPTH WITH 150x150mm, MW9.1 x MW9.1 REINFORCING MESH ON 150mm GRANULAR 'A'.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
3. THE MAXIMUM SLOPE IS NOT TO EXCEED 2%.
4. THE MAXIMUM SLOPE IS NOT TO EXCEED 4% FOR VEHICLE ACCESS RAMPS.
5. DROP CURB HEIGHT MINIMUM 0mm, DESIRED 15mm, MAXIMUM 25mm.

Ottawa — TRADITIONAL VEHICLE ACCESS CROSSING — DATE: MAY 2001 — REV. DATE: MARCH 2007 — DWG. No.: SC8

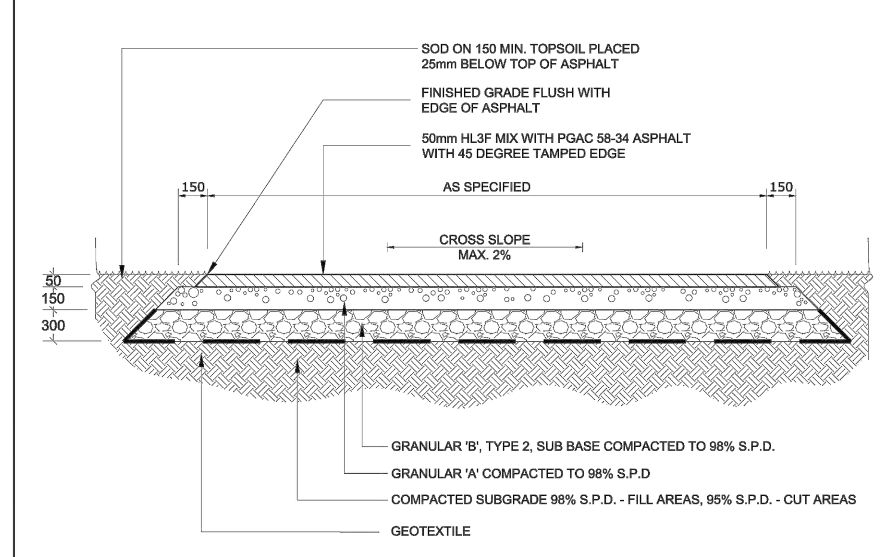


Ottawa — TRADITIONAL VEHICLE ACCESS CROSSING TRANSITIONS FOR VARIOUS DISTANCES BETWEEN ACCESSES — DATE: MARCH 2005 — REV. DATE: MARCH 2007 — DWG. No.: SC8.1



NOTES:
1. ALL MEASUREMENTS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED
2. WIRE MESH SHALL BE 150 x1 50mm MW9.1xMW9.1
3. FOR DETAILS OF JOINTS AND FINISHING SEE SC5.

Ottawa — TITLE: SIDEWALK JOINTS — DATE: MAR 2007 — REV: MAR 2024 — DWG No: SC14



NOTES:

ALL MEASUREMENTS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED

EXCAVATION: EXCAVATE TO 500mm MIN. DEPTH OR DEEPER, AS REQUIRED. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF ANY UNSUITABLE SUBGRADE MATERIAL SUCH AS TOPSOIL. ALL SOFT SPOTS AND/OR ORGANIC MATTER AND REPLACEMENT WITH CLEAN SUBSOIL FILL. SUBGRADE SHALL BE CONSOLIDATED TO A 98% S.P.D. REMOVE EXCAVATED MATERIAL OFF SITE UNLESS OTHERWISE DIRECTED

GRANULAR BASE: GRANULAR 'A' - 100% STANDARD PROCTOR DENSITY MIN., GRANULAR B, TYPE 2, SUB BASE GRANULARS TO OPSS

ASPHALT: 50mm TOP SURFACE LAYER (AFTER COMPACTION) OF HL3F MIX WITH PGAC 58-34 OR IN ACCORDANCE WITH O.P.S.S. STANDARDS

EDGE TREATMENT: ASPHALT EDGE TO BE 45 DEGREES WELL TAMPED TO FORM UNIFORMLY SMOOTH, CLEAN EDGES WITHOUT LATERAL DEVIATIONS. SOD TO FEATHER IN WITH EXISTING SOD AND GRADES AT A MAXIMUM SLOPE OF 4:1. ALL SODDED AREAS SHALL BE 25mm BELOW THE ASPHALT SURFACE. REPLACE ALL TOPSOIL AND SOD AS DIRECTED IN CUT AND FILL SITUATIONS

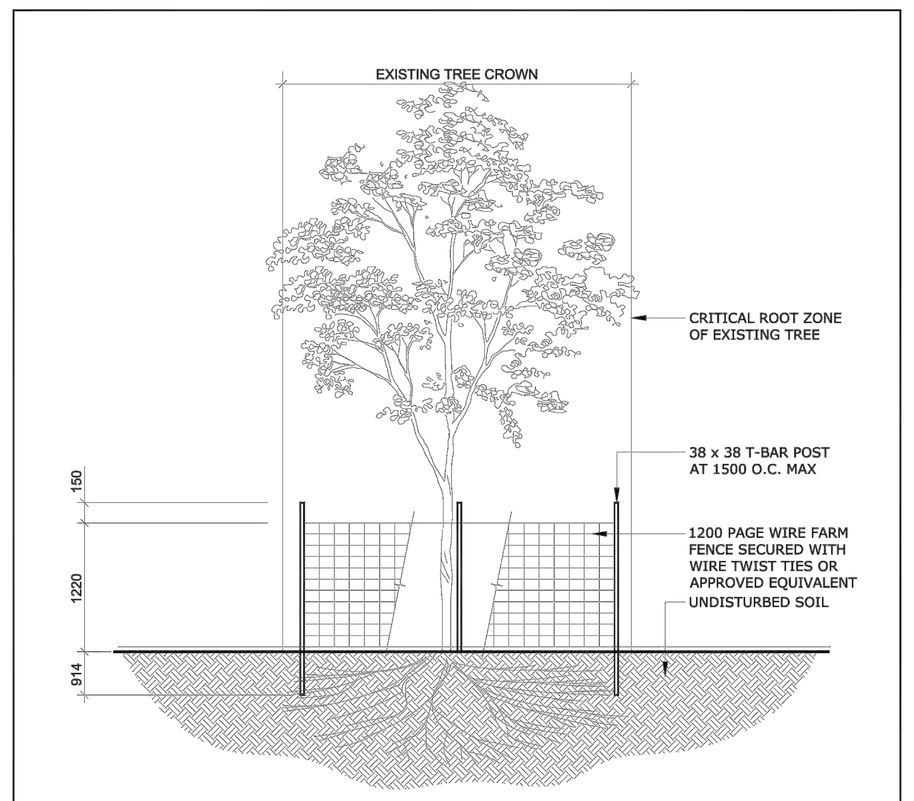
DRAINAGE: SLOPE TO BE A MINIMUM OF 2% ON CROWNED OR CROSS SLOPED PATHS AS DIRECTED ON SITE OR AS SHOWN IN DRAWINGS

SODDING: ALL DISTURBED AREAS ALONG ASPHALT WALKWAYS SHALL BE SODDED OVER 150mm TOPSOIL FOR A MINIMUM DISTANCE OF 900mm

GEOTEXTILE: GEOTEXTILE SHALL BE APPROVED NON-WOVEN CLASS 1 GEOTEXTILE AS PER MS-22.15 WHEN WARRANTED BY SOIL CONDITIONS, SUBJECT TO APPROVAL BY THE CONTRACT ADMINISTRATOR

NOTE: TO BE CONFIRMED WITH SOIL INVESTIGATIONS AND MODIFIED ACCORDINGLY

Ottawa — TITLE: ASPHALT PATHWAY/ SERVICE ACCESS — DATE: FEB 2013 — REV: ~~FEB~~ MARCH 2024 — DWG No: SC21



NOTES:
1. ALL MEASUREMENTS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED
2. THE AREA WITHIN THE CRITICAL ROOT ZONE OF ALL EXISTING TREES SHALL BE PROPERLY PROTECTED WITH TEMPORARY FENCING AS PER THE APPROVED LANDSCAPE PLAN
3. THE SURVEY SHALL SHOW EXISTING ELEVATION AT BASE OF ALL TREES TO BE PRESERVED AS SHOWN BY "+"
4. THE AREA WITHIN THE PROTECTED FENCING SHALL REMAIN UNDISTURBED AND SHALL NOT BE USED FOR THE STORAGE OF BUILDING MATERIALS OR EQUIPMENT. REMOVE ALL DEBRIS
5. PRUNE BRANCHES TO REMOVE DAMAGED OR OBJECTIONABLE BRANCHES. DO NOT PRUNE LEADERS
6. TREE PROTECTION SHALL REMAIN UNTIL SUBSTANTIAL PERFORMANCE OF THE PROJECT
7. IF CUTTING OF ROOTS OR CHANGING OF GRADES AROUND EXISTING TREES IS CALLED FOR, FOLLOW APPROPRIATE DETAILS AS DIRECTED BY LANDSCAPE ARCHITECT
8. IF TREES ARE BEING AFFECTED BY CONSTRUCTION, A WATER AND FERTILIZING PROGRAM WILL BE REQUIRED TO THE SATISFACTION OF THE CITY

Ottawa — TITLE: TREE PRESERVATION PROTECTION FENCE — DATE: FEB 2013 — REV: FEB2017 — DWG No: F7

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

PROVENCE ORLÉANS

No.	REVISION	DATE	BY
1.	ISSUED FOR REVIEW	JUL 23/24	TJM

SCALE: N.T.S.

DESIGN / CHECKED / DRAWN / CHECKED / APPROVED

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER — T. J. MCKAY — 100195434 — July 23, 2024 — PROVINCE OF ONTARIO

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LOCATION
CITY OF OTTAWA
PROVENCE ORLEANS SUBDIVSION (2128 TRIM ROAD)

DRAWING NAME
PHASE 5A
DETAIL SHEET

PROJECT No. 117155-00
REV: REV # 1
DRAWING No. 117155-D18

D07-16-18-0021

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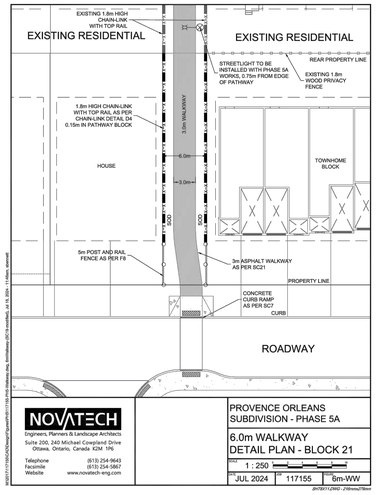
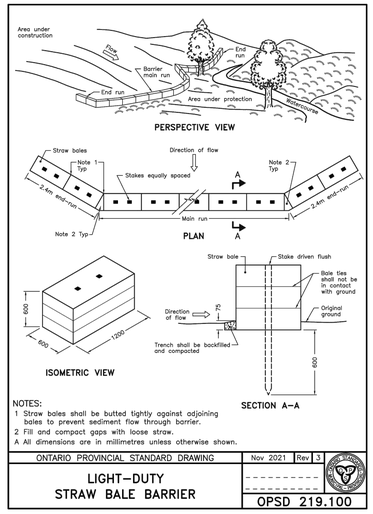
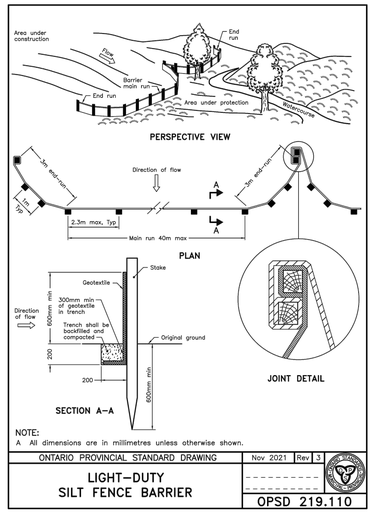




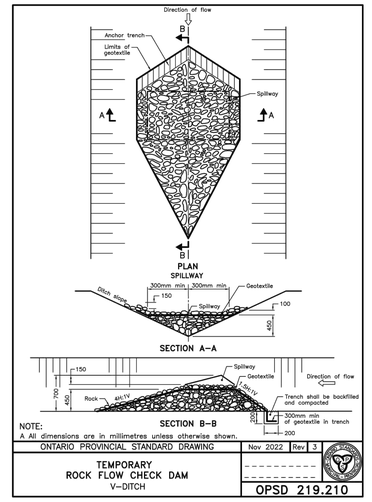
NOTES:
1 Straw bales shall be butted tightly against adjoining bales to prevent sediment flow through barrier.
2 Fill and compact gaps with loose straw.
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2021	Rev 3
LIGHT–DUTY STRAW BALE BARRIER		OPSD 219.100



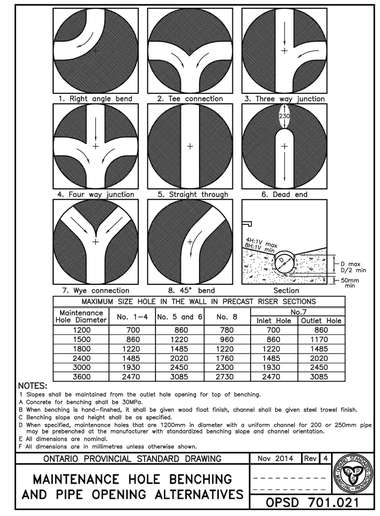
NOTE:
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2021	Rev 3
LIGHT–DUTY SILT FENCE BARRIER		OPSD 219.110



NOTE:
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2022	Rev 3
TEMPORARY ROCK FLOW CHECK DAM V–DITCH		OPSD 219.210

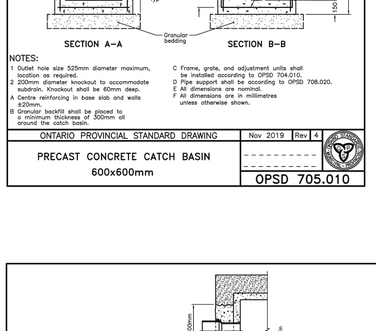


MAXIMUM SIZE HOLE IN THE WALL IN PRECAST RISER SECTIONS

Maintenance Hole Diameter	No. 1–4	No. 5 and 6	No. 8	No.7	
				Inlet Hole	Outlet Hole
1200	700	860	780	700	860
1500	860	1220	960	860	1170
1800	1220	1485	1220	1220	1485
2400	1485	2020	1760	1485	2020
3000	1930	2450	2300	1930	2450
3600	2470	3085	2730	2470	3085

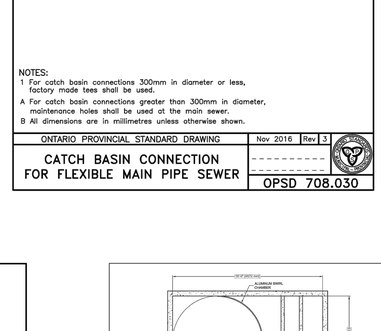
NOTES:
1 Slopes shall be maintained from the outlet hole opening for top of benching.
A Concrete for benching shall be 30MPa.
B When benching is hand–finished, it shall be given wood float finish, channel shall be given steel trowel finish.
C Benching slope and height shall be as specified.
D When specified, maintenance holes that are 1200mm in diameter with a uniform channel for 200 or 250mm pipe may be prebenched at the manufacturer with standardized benching slope and channel orientation.
E All dimensions are nominal.
F All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 4
MAINTENANCE HOLE BENCHING AND PIPE OPENING ALTERNATIVES		OPSD 701.021



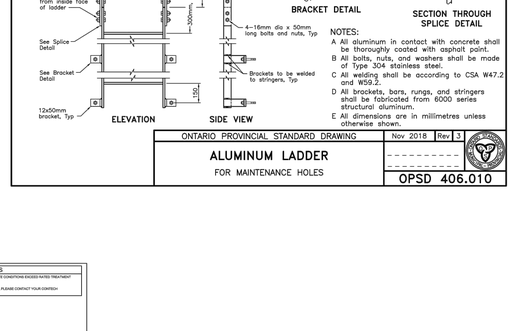
NOTES:
1 Outlet hole size 525mm diameter maximum, location as required.
2 200mm diameter knockout to accommodate subdrain. Knockout shall be 60mm deep.
A Centre reinforcing in base slab and walls ±20mm.
B Granular backfill shall be placed to a minimum thickness of 300mm all around the catch basin.
C Frame, grate, and adjustment units shall be installed according to OPSD 704.010.
D Pipe support shall be according to OPSD 708.020.
E All dimensions are nominal.
F All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2019	Rev 4
PRECAST CONCRETE CATCH BASIN 600x600mm		OPSD 705.010



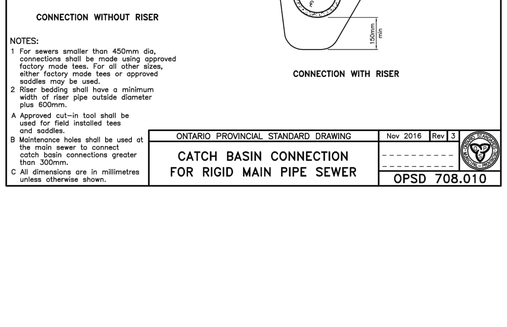
NOTES:
1 For catch basin connections 300mm in diameter or less, factory made tees shall be used.
A For catch basin connections greater than 300mm in diameter, maintenance holes shall be used at the main sewer.
B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2016	Rev 3
CATCH BASIN CONNECTION FOR FLEXIBLE MAIN PIPE SEWER		OPSD 708.030



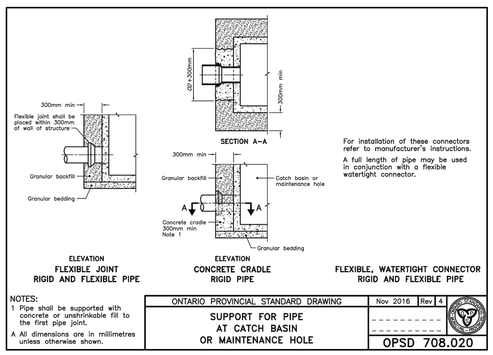
NOTES:
A All aluminum in contact with concrete shall be thoroughly coated with asphalt paint.
B All bolts, nuts, and washers shall be made of Type 304 stainless steel.
C All welding shall be according to CSA W47.2 and W59.2.
D All brackets, bars, rungs, and stringers shall be fabricated from 6000 series structural aluminum.
E All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 3
ALUMINUM LADDER FOR MAINTENANCE HOLES		OPSD 406.010



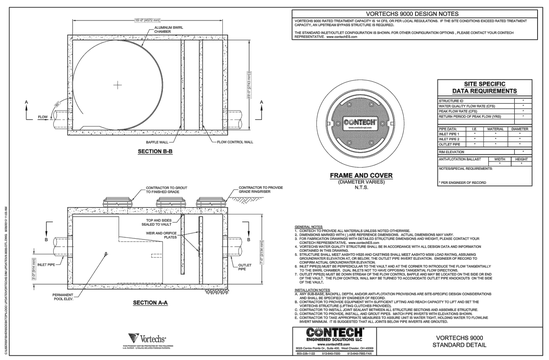
NOTES:
1 For sewers smaller than 450mm dia, connections shall be made using approved factory made tees. For all other sizes, either factory made tees or approved saddles may be used.
2 Riser bedding shall have a minimum width of riser pipe outside diameter plus 600mm.
A Approved cut–in tool shall be used for field installed tees and saddles.
B Maintenance holes shall be used at the main sewer to connect catch basin connections greater than 300mm.
C All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2016	Rev 3
CATCH BASIN CONNECTION FOR RIGID MAIN PIPE SEWER		OPSD 708.010



NOTES:
1 Pipe shall be supported with concrete or unshrinkable fill to the first pipe joint.
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2016	Rev 4
SUPPORT FOR PIPE AT CATCH BASIN OR MAINTENANCE HOLE		OPSD 708.020



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PROVENCE ORLÉANS

No.	REVISION	DATE	BY
1.	ISSUED FOR REVIEW	JUL 23/24	TJM

SCALE: N.T.S.

DESIGN | CHECKED | DRAWN | CHECKED | APPROVED

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER — T. J. MCKAY — 100195434 — July 23, 2024 — PROVINCE OF ONTARIO

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LOCATION
CITY OF OTTAWA
PROVENCE ORLEANS SUBDIVSION (2128 TRIM ROAD)

DRAWING NAME
PHASE 5A
DETAIL SHEET

PROJECT No. 117155-00
REV # 1
DRAWING No. 117155-D19

D07-16-18-0021

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#18004

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