RVDC – Fox Run
Integrated Environmental Review

June 22, 2018

KILGOUR & ASSOCIATES LTD.
2285C St. Laurent Boulevard, Unit 16
Ottawa, Ontario
K1G 4Z6
Canada
p:613.260.5555
f:613.737.2825
www.kilgourassociates.com
Project Number: CAIV 771

TABLE OF CONTENTS

List of Figures

List of Tables

List of Appendices

1.0 INTRODUCTION

This document, the Integrated Environmental Review (IER), has been prepared by Kilgour & Associates Ltd. (KAL) in support of Phase 1 of residential development at Fox Run (i.e. south of Perth St.) over two parcels (currently listed as 200 Meynell Rd. and 6350 Perth St.). Fox Run is part of a broader area of development within the Western Development Lands (WDL) located on the western edge of Richmond Village in the southwest of Ottawa. The parcels are owned and being developed by the Richmond Village Development Corporation (RVDC).

Regrading has begun over the entire development area with construction of two model homes already having commenced in the north west corner of the site. Prior to these activities however, the entire property was an active corn field and had been fully under agricultural production for many years. There were no structures present on the land prior to those associated with the current building activity. The property is being developed by as a residential community that will ultimately include 220 single homes within Phase 1 (Appendix B-1).

The IER has been written to meet the requirements of the City of Ottawa Official Plan, Section 4.7.1 – "*Integrated Environmental Review to Assess Development Applications*". This document presents information from studies completed in the planning and approvals process for the proposed development and demonstrates how information from the various environmental studies has influenced the design of the Site Plan.

Herein and as per the IER guidelines we provide:

- a brief overview of the individual technical studies and other relevant environmental background material;
- graphic illustrations, showing the spatial features and functions (e.g., natural vegetation, watercourses,) as have been identified in the individual studies;
- a summary of the potential environmental concerns raised, the scope of environmental interactions between studies, and the total package of mitigation measures, including any required development conditions and monitoring, as recommended in individual studies;
- a summary of how the proposed design complies with the environmental policies contained in Section 4 of the City of Ottawa's Official Plan;
- a statement with respect to how the recommendations of the support studies and the design with nature approach have influenced the design of the development; and
- an indication that the statement has been reviewed and concurred with by the individual sub consultants involved in the design team and technical studies.

This report has the following structure.

- Section 2.0 provides an overview of the environmental setting, as determined by the component studies.
- Section 3.0 provides a description of the proposed project.
- Section 4.0 discusses the potential environmental effects and required mitigation measures that are proposed by the proponent, or required by a regulating agency.
- Section 5.0 provides a summary of how the project and its proposed design comply with the environmental policies in Section 4 of the City of Ottawa Official Plan.
- Section 6.0 provides a statement on how the recommendations of the support studies and the Design With Nature approach have influenced the design of the development
- Section 7.0 is the statement that this IER has been reviewed and concurred with by the individual sub-consultants involved in the design and delivery of technical supporting studies.

2.0 ENVIRONMENTAL CONDITIONS

The natural heritage of the Phase 1 area of Fox Run, as well as all of the adjacent development lands to the north and south, was studied in detail through 2009 and 2010 as per the *Natural Environment & Impact Assessment Study* (KAL, Parish & Mattamy, 2010), herein the NEIA. Additional studies either specific to the Phase 1 area, or for the WDL more broadly, have been completed in the intervening years.

Phase 1 extends southeast from Perth Street for about 600 m, abutting the flood plain of the Arbuckle Drain, which covers the eastern half of the land parcels. The residential area will cover the lands to the west of the flood plain to the parcels' western boundaries (about 200 m wide). The stormwater management pond proposed for Phase 1 and for adjacent development areas is to be located within the adjacent flood plain.

This section provides an overview of the various technical studies related to Phase 1 and a summary of the environmental concerns identified.

2.1 Geotechnical

2.1.1 General Geotechnical Assessment

The most current geotechnical investigation report for the site was produced by Golder in February, 2018.

The site has a relatively flat topography, was undeveloped, and consisted of agricultural land. Jacques Whitford carried out a preliminary subsurface investigation on the site in 2007. The results of that investigation were provided in a report to Mattamy Homes Ltd. titled "Preliminary Geotechnical Investigation Report, Proposed Residential Subdivision, Perth and Ottawa Streets, Richmond Area, Ottawa, Ontario", dated June 22, 2007 (project number 1026929). That investigation included six test pits

and two boreholes in and directly adjacent to Phase 1 of this development. These previous test holes were utilized for this current investigation.

Golder conducted further field studies for the area on March 17, 2016. Two additional boreholes (numbered 16-22A and 16-22B) were required to assess the thickness and consolidation characteristics of the silty clay deposit. A monitoring well was sealed into borehole 16-22A to allow subsequent measurement of the stabilized groundwater level at the site and for hydraulic conductivity testing. Findings are reported in an updated report titled "Geotechnical Investigation - Phase 1 Residential Development, Western Development Lands, East of Perth street, Richmond Village, Ottawa, Ontario", dated February 2018 (project number 1522173-005).

In general, the subsurface conditions in Phase 1 of the development consists of up to 4 m of silty clay over about 1 to 2 m of sandy silt. The sandy silt is generally underlain by a thin layer of glacial till over limestone bedrock (Oxford Formation) at about 3.5 to more than 4 m depth. Groundwater levels (depths ranging from 0.8 to 1.2 m across the site) are expected to fluctuate seasonally. Higher groundwater levels are expected during wet periods of the year, such as spring.

2.1.2 Soil Quality

A Phase I Environmental Site Assessment was completed for all of the future Fox Run areas including the current Phase 1 project area by Golder (2011). The Phase I ESA was completed in general accordance with the November 2001 Canadian Standards Association document entitled Phase I Environmental Site Assessment, Z768 01 (R2006). The scope of work for this project was described in the Golder Associates Proposal # P1-1121-0059 and dated May 26, 2011. The results of the Phase 1 ESA are provide in Golder's report tilted "Phase 1 Environmental Site Assessment, Proposed Residential Subdivision, South End of Richmond Village (Ottawa), Ontario dated August 2011 (project number 11-1122-0155).Based on the information obtained during the Phase I ESA, there were no issues of potential environmental concern. The report did however, recommend the decommissioning of three MOE water wells. The wells are all outside of the Phase 1 area.

2.2 Terrestrial Environment

The terrestrial environment for the Phase 1 area was described as part of the NEIA (KAL, Parish & Mattamy, 2010) for WDL. The entire proposed development area for Phase 1 was found at the time to include only active agricultural lands (Appendix B-2).

No wooded areas, let alone significant woodlands, are located within >180 m of the Phase 1 area. No other significant terrestrial features (valleylands, ANSIs, rural natural features or significant wetlands) are located within >1.2 km (KAL 2012). Active agriculture has, since 1976 (based on City air photos, and presumably for much longer) extended to within 5 m of the adjacent Arbuckle Drain, the edges of which were/are not treed. Accordingly, the flood plain/riparian boundary of drain was not found to be a wildlife corridor (KAL, Parish & Mattamy, 2010) nor was indicated as such within City of Ottawa Schedule L2. No species-at-risk (SAR) have been observed within or adjacent to the Phase 1 area (see Section 2.4). As such, no EIS was triggered for this development.

Beyond the NEIA (KAL, Parish & Mattamy, 2010), a *Tree Conservation Report for Richmond West* (herein the TCR) was produced by KAL (2012) for Richmond development lands along either side of Perth Street (i.e. including Phase 1). The TCR noted trees only around the periphery of the development area with a long hedgerow (H5) along the entire west side of the site, a short hedgerow on the south end of the east side (H6), and a line of scattered trees along the south boundary of the phase. None of trees were of regionally rare species, though some, especially in H5 were notable for their size (Appendix B-3). During a visit to the site on April 18, 2018, KAL biologist Anthony Francis noted that all of the ash trees present with in H5, which formed the majority of the larger trees within the feature, had been affected by Emerald Ash Borer (EAB), and were either dead or dying.

2.3 Aquatic Environment

The Phase 1 area is bounded along sections of the eastern edge by the Arbuckle Municipal Drain. The portion of the drain here was described as Reach VG-R2 in the NEIA. The reach is slightly sinuous with several straightened areas. Bankfull widths were between 4 and 10 m with associated depths of 0.6 to 1.5 m. Wetted widths in early June varied between 3.5 and 7 m with associated depths of between 0.2 and 1 m. Wetted widths in August varied up to 4 m, with maximum depths of ~ 0.4 m. The gradient through the reach was low to moderate with a low sinuosity. Sediment in the pools was characterized by sands. Bank material consisted of clay and silt with some clay exposed at the bank toe. The watercourse was described as showing signs of degradation with significant evidence of planform adjustment and channel widening and has low stability. Extensive works undertaken by municipal drain staff in the intervening years however have addressed these issues.

Fish species present here included Northern Pike, Central Mudminnow, White Sucker, Northern Redbelly Dace, Brassy Minnow, Common Shiner, Spottail Shiner, Bluntnose Minnow, Fathead Minnow, Blacknose Dace, Creek Chub, Brook Stickleback, Rock Bass, Pumpkinseed, Johnny Darter, and Mottled Sculpin.

Setbacks for the feature as discussed within the NEIA and prescribed within the Jock River Subwatershed Study are consistent with the standard setback requirements as listed within the City's OP: the 100-year floodplain, meander belt allowance, 30 m from normal high watermark; and geotechnical hazard. The flood plain extends further from then drain than other limit and so sets the development setback for the feature (Appendix B-4).

No provincially significant wetlands occur on or adjacent to the site.

2.4 Species at Risk

No SAR have been noted within the Phase 1 area (KAL, Parish & Mattamy, 2010). The NEIA report notes Bobolink, Eastern Meadowlark and Barn Swallows (Barn Swallows not listed as SAR at the time of that report but observed never-the-less) within the southern-most portions of the WDL. These three species however, were all limited to areas 500 m or more to the south of Phase 1. Moreover, while the fields in which these birds were observed were fallow at the time, they have subsequently been under continuous and active corn production, and thus no longer provide habitat potential for Bobolink or Meadowlark (their potential utility as Barn Swallow feeding habitat is greatly reduced).

The entire Phase 1 area has been under active agriculture for many decades with no structures present suitable for supporting Barn Swallows. The entire outside of the flood plain has now been subject to regrading. As such it did not, and does not, represent SAR bird habitat.

There are no forested areas on or adjacent to the Phase 1 area and thus no habitat is present for at-risk bats species, which were not yet listed in 2010 when the NEIA was produced. The only Butternuts present within the WDL were observed near the Jock River > 1km to the south. No new Butternuts were observed on site during a visit on April 18 2018 by KAL biologist Anthony Francis to review area hedgerows.

The proposed development is not anticipated to impact any SAR or areas of SAR habitat.

3.0 PROPOSED UNDERTAKING

The RVDC is proposing to develop the Phase 1 area with 220 single detached homes. Details for water supply, wastewater management and stormwater management are as per the *Design Brief for Caivan Communities Richmond Phase 1 Richmond Village Development Corporation* (DSEL 2017).

3.1 Water Supply Servicing

The existing City of Ottawa water distribution network currently terminates in Kanata and Barrhaven, approximately 10km from the subject site. Water Supply servicing for the subject site was contemplated in the Village of Richmond Water and Sanitary Master Servicing Study prepared by Stantec Consulting Ltd., July 2011 (MSS). The preferred design concept indicated by the MSS, for development of the WDL, consists of a new public communal well system connected to the deep aquifer. The proposed Phase 1 development area will be serviced by 150 mm, 250 mm and 300 mm diameter water mains, which will be looped to the proposed 400 mm diameter water main outlet from the Communal Well being proposed for the WDL.

3.2 Wastewater Management

The WDL (including the proposed Phase 1 area) will be serviced via a new replacement sanitary trunk sewer along Martin Street from Cockburn Street, under the Arbuckle Drain, to the boundary of the Phase 1 development area. The sanitary sewers have been designed adhering to all relevant City Standards with installation scheduled to be completed in August of 2018.

3.3 Stormwater Management

The Phase 1 development will be serviced by a storm sewer system designed in accordance with the amendment to the storm sewer and stormwater management elements of the Ottawa Design Guidelines – Sewer (Technical Bulletin PIEDTB-2016-01). The storm sewers will outlet to the stormwater management Pond 1 which was previously designed and approved, and as detailed in the JFSA Pond 1 Design Brief. Although the design brief covers the ultimate pond sizing, only a preliminary Stage 1 of the pond will be constructed at this time in accordance with the Environmental Compliance Approval (ECA) for that facility. See Appendix B-5 for the ECA. The proposed first stage of the pond construction will provide the required level of service for the first couple of phases of residential development. When warranted, as development is advanced, the remainder of the pond will be submitted for an amended ECA approval for the ultimate pond configuration. The proposed storm sewer layout is depicted on Figure

5. The storm sewers in Phase 1 provide the outlet to the pond for future development areas of the WDL and have been sized accordingly.

3.4 Erosion and Sediment Control

Soil erosion occurs naturally and is a function of soil type, climate and topography (DSEL 2017). The extent of erosions losses is exaggerated during construction where the vegetation has been removed and the top layer of soil is disturbed.

- Erosion and sediment controls must be in place during construction. The following recommendations to the contractor will be included in contract documents.
- Limit extent of exposed soils at any given time.
- Re-vegetate exposed areas as soon as possible.
- Minimize the area to be cleared and grubbed.
- Protect exposed slopes with plastic or synthetic mulches.
- Install silt fence to prevent sediment from entering existing ditches.
- No refueling or cleaning of equipment near existing watercourses.
- Provide sediment traps and basins during dewatering.
- Install filter cloth between catch basins and frames.
- Installation of mud mats at construction accesses.
- Construction of temporary sedimentation ponds to treat water prior to outletting to existing wetlands and watercourses.

4.0 POTENTIAL EFFECTS AND MITIGATIONS

4.1 Geotechnical

The subsurface conditions on this site generally consist of stiff to very stiff silty clay over about 1 to 2 m of sandy silt to silt. The deposit of sandy silty to silt is underlain by a thin layer of glacial till over limestone bedrock. The depth to bedrock ranges from a minimum of about 3.5 m to more than 4 m. At the extreme north end of the site, the lower portion of the silty clay is unweathered, grey in colour, and firm in consistency.

4.1.1 Anticipated Effects

The silty clay deposit across most of the site is generally stiff to very stiff in consistency and therefore has relatively good capacity to support additional loading. However, more compressible silty clay is present beneath the north portion of the site. This more compressive silty clay may have a somewhat more limited capacity to support additional stress, such as from the weight of grade raise fill and the loads from building foundations, without experiencing some compression.

It is expected that groundwater inflow rates will be low following servicing of the site, and it should be possible to handle the groundwater inflow by pumping from well filtered sumps in the excavations. Excavation for the installation of services deeper than about 3.5 m depth will be made through the overburden and likely into the underlying bedrock.

4.1.2 Required Mitigations

As a general guideline, it is recommended that the grade raise be limited to 2 m across the entire site, to thereby avoid excessive ground and foundation settlements. Higher grade raises might be acceptable in some areas (i.e., in the areas where the more compressible grey clay is absent), however further site-specific analyses would be required to confirm the permissible grade raise on a location-by-location basis. Additional details, such as the house footing levels and servicing depths, would be required before such analyses could be carried out.

The native silty clay, sandy silt, silt, and glacial till are not considered to be generally suitable for reuse as structural/engineered fill. Within foundation areas, imported engineered fill should be used. Where excavations for basements extend into wet sandy silt to silt, consideration will need to be given to providing a working pad over the native subgrade to protect it from disturbance.

If excavations are made through the bedrock, the groundwater inflow from the bedrock could at first be relatively significant. That inflow may potentially diminish with time and continued pumping, but some form of active dewatering could be required (such as pumping from wells) and the groundwater level lowered in advance of excavation and construction. For example, pumping from several sumps which are excavated into the bedrock and to below the invert level should be considered.

The soils at this site are sensitive to disturbance from ponded water, construction traffic, and frost. If construction is carried out during periods of sustained below freezing temperatures, all subgrade areas should be protected from freezing (e.g., by using insulated tarps and/or heating).

4.2 Trees

4.2.1 Anticipated Effects

The hedgerows on the edges of the site (H5 and H6) straddle the property line and would be mostly maintained. The north-most 90 m (15%) of H5 will be removed to provide road access into the community. The scattered trees along the south side of Phase 1 will also be removed. New trees planted throughout the community however, given that there are currently no trees within way from site edges, will greatly recue overall canopy cover through the area.

For new trees on site, the silty clay deposit that is present at the site is highly sensitive to water depletion by trees of high water demand during periods of dry weather (Golder 2018). When trees draw water from clay soils, the clay undergoes shrinkage which can result in settlement of adjacent structures. The zone of influence of a tree is considered to be approximately equal to the height of the tree.

4.2.2 Required Mitigations

To minimize impact to the remaining trees on the property, the following protection measures are indicated as necessary during construction:

- Tree removal on site should be limited to that which is necessary to accommodate site construction.

  - To minimize impact to remaining trees during future site development: Erect a fence beyond the critical root zone (CRZ, i.e. 10 x the trunk diameter) of trees. The fence should be highly visible (e.g. orange construction fence) and paired with erosion control fencing. Pruning of branches is recommended in areas of potential conflict with construction equipment;
  - Do not place any material or equipment within the CRZ of the tree;
  - Do not attach any signs, notices or posters to any tree;
  - Do not raise or lower the existing grade within the CRZ without approval;
  - Tunnel or bore when digging within the CRZ of a tree;
  - Do not damage the root system, trunk or branches of any tree; and
  - Ensure that exhaust fumes from all equipment are NOT directed towards any tree's canopy.

- The *Migratory Bird Convention Act* (Canada, 1994) protects the nests and young of migratory breeding birds in Canada. The City of Ottawa guidelines stipulate no clearing of trees or vegetation between April 1 and August 15, unless a qualified biologist has determined that no nesting is occurring within 5 days prior to the clearing (Ottawa, 2017c).

Trees that have a high water demand should not be planted closer to structures than the ultimate height of the trees. In accordance with current City guidelines, and based on the characteristics of the silty clay at the site, the setback distance for trees planted in Phase 1 of the development may be reduced to 4.5 m from the foundations for small and medium sized trees. Specific trees to be planted on site are identified in the landscape plan for the development (Appendix B-6).

4.3 Fish and Fish Habitat

4.3.1 Anticipated Effects

All Phase 1 development, except for the stormwater management pond, will be built outside of the required setbacks to the Arbuckle Drain. The main channel of the Drain will remain unaltered, but two pond outlets (a small overflow outlet and the main pond outlet) will connect the pond to the channel. The construction of the pond has already been permitted (Appendix B-7a), as have the two outlets (Appendix B-7b). The approval for the outlets by the RVCA indicates their acceptance that there are no anticipated negative impacts to the receiver (i.e. the Arbuckle Drain) by the pond. No other aquatic features are present on site. There are no negative impacts to surface water features anticipated from site development.

4.3.2 Required Mitigations

Erosion and sediment control measures will be installed as per the ESC plan to prevent overland sediment flow off site during construction.

4.4 Species at Risk

4.4.1 Potential Effects

No other SAR or SAR habitat are present on or adjacent to the Phase 1 area. No negative impacts to SAR are thus anticipated for this development project.

4.4.2 Required Mitigations

With no SAR or SAR habitat present, no SAR-specific mitigative measures are required.

5.0 COMPLIANCE WITH POLICY 4.7 – ENVIRONMENTAL PROTECTION

The following table indicates where studies and/or assessments have been required by the City of Ottawa in the completion of an Integrated Environmental Review, depending on characteristics of the site, to assess a development application. The study requirements and status for the development application are indicated in the Table to demonstrate compliance to the requirements of the Official Plan.

Table 1. Demonstrated compliance with Policy 4.7 Environmental Protection

OP Section	Studies/Assessment Required	Where Required	Relevant Study and Status	Summary of Issue
4.7.1	Integrated environmental review to assess development applications	Summary of all environmental studies/assessments submitted with development application	This document	
4.7.2	Tree retention and planting	All plans of subdivision and site plans	KAL (2012). Landscaping Plan – Appendix B-6 **A City tree removal permit will be required.**	No high quality specimen trees occur on site. Trees within adjacent hedgerows will be protected from development.
4.7.2	Demonstrate no impact on the natural features or on the ecological function for which the area is identified	On lands adjacent to significant portions of the habitat of endangered and threatened species	KAL, Parish & Mattamy (2010)	No valued woodlands, urban or rural natural areas, rare communities, wetlands, steep slopes or valleys, or ANSIs were observed on the site.
4.7.3	Demonstrate no negative impact on fish habitat; If there is impact – review by Department of Fisheries and Oceans	On or adjacent to fish habitat	KAL, Parish & Mattamy (2010) ECA – Appendix B-7a RVCA Permit to Alter a Waterway – Appendix B-7b	The Arbuckle drain will remain unaltered. All residential development respects the required setbacks. The SWM pond, which will be within the 100 yr floodplain has already been approved.
4.7.3	Erosion and sediment control plan	All development proposals	DSEL (2017)	ESC Plan requirements are detailed within the Design Brief.
4.7.3	Determine appropriate setback from rivers, lakes and streams	Development proposals adjacent to rivers, lakes and streams	KAL, Parish & Mattamy (2010)	Setback for the Arbuckle Drain is equal to the 100 yr floodplain.
4.7.5	Hydrogeology/terrain analysis	Subdivisions based on private services	Study not required.	Subdivision based on shared / public services.

OP Section	Studies/Assessment Required	Where Required	Relevant Study and Status	Summary of Issue
4.7.5	Groundwater impact assessment	Groundwater resources areas	Golder (2012)	The "Groundwater Vulnerability Study, Richmond Village Well System" prepared by Golder Associates (March 2012) concluded minimal risk to groundwater.
4.7.5	Wellhead protection study	Wellhead Protection Area designated on Schedule K	Ongoing…	Phase 1 is within a potential wellhead protection area though the final designation has not been approved. The community well has been designed accordingly regardless.
4.7.6	Stormwater site management plans	Site plan and subdivision and zoning amendment applications	DSEL 2017	Subdivision will connect to the proposed/approved SWM pond with outlet to the Arbuckle Drain.
4.7.7	Assessment of landscape feature	Geomorphic, Geological and Landform feature (designated on Schedule K); Features (e.g. ANSI) identified in other studies	Study not required.	No Features as identified on Schedule K of the City of Ottawa Official Plan.

6.0 INCORPORATION OF DESIGN WITH NATURE PRINCIPLES

Section 4.7 – Environmental Protection of the City of Ottawa Official Plan identifies planning objectives to support natural features and functions in the development of lands within the City. The stated objectives are:

- Increasing forest cover across the city;
- Maintaining and improving water quality;
- Maintaining base flows and reducing peak flows in surface water;
- Protecting and improving the habitat for fish and wildlife in stream corridors;
- Protecting springs, recharge areas, headwater wetlands and other hydrological areas; and
- Managing resources by using low-maintenance, natural solutions.

The City of Ottawa desires that land developments achieve these objectives through design with nature. The purpose of this section is to demonstrate the compliance of the proposed development with the design with nature principles.

In support of the development application by RVDC, various studies (described above) have been completed to identify significant natural resources that may be present on the site.

There were no significant environmental features identified on the property that would implore the design with nature approach on the site. That being said, the development application does support environmental initiatives identified by the City of Ottawa, as demonstrated above in Section 6. Additional measures are:

- The development area currently has limited tree coverage. While the residential development cannot produce new forest areas, canopy cover will be enhanced through tree planting;
- Surface water drainage will be routed through City approved stormwater management systems so that objectives for stormwater quality will be met during and post construction; and
- The proposed project is being carried out in an area that does not and has not contained significant wetland habitat, or significant habitat for species considered rare, threatened or endangered species.

6.1 Integration of Energy Efficiency and Sustainable Design

Section 4.7 – Environmental Protection of the City of Ottawa Official Plan requires the incorporation of energy efficient and sustainable design principles into new developments following a Sustainable Design Checklist (now known as the Green Checklist).

Table 2. City of Ottawa Site Plan Control Approval Green Checklist

ID	Question	Response
1a	Does the project proponent intent to seek LEED certification for this project?	No
1b	If yes, which level of LEED certification is the project intended or designed to meet?	None
1c	Will this project be seeking certification under another third-party green building rating system?	No
2	Will this project include renewable energy facilities and pursue a FIT or MicroFIT contract under the Ontario Power Authority's Feed-in Tarrif program?	No
3	Which features is the project designed to incorporate?	None

7.0 CLOSURE

The following persons have read this Integrated Environmental Review and agree that this document provides a reasonable summary of the highlights of their individual component studies.

Natural Environment, Aquatic Habitat, Tree Conservation Kilgour & Associates Ltd. Anthony Francis, PhD	**Geotechnical Investigation and Site Environmental Assent** Golder: Kim Lesage, P.Eng.
Stormwater Management DSEL: Kevin Murphy, P.Eng.	

8.0 LITERATURE CITED

David Schaefer Engineering Ltd. (DSEL). 2017. Design Brief for Caivan Communites Richmond Phase 1 Richmond Development Corporation. Project No.: 15-783 November 28, 2017. 4th Submission.

David Schaefer Engineering Ltd. (DSEL). 2013. Master Drainage Plan Western Development Lands Village of Richmond for Richmond Village (South) Limited. November 2013 – Rev. 3.

Golder Associates (Golder). 2011. Phase I Environmental Site Assessment, Proposed Residential Subdivision, South End of Richmond Village (Ottawa), Ontario. Report Number: 11-1122-0155.

Golder Associates (Golder). 2012. Groundwater Vulnerability Study, Richmond Village Well System. Report Number: 11-1127-0134. Dated: March 2012.

Golder Associates (Golder). 2018. Geotechnical Investigation, Phase 1 Residential Development, Western Development Lands, East of Perth Street Richmond Village, Ottawa, Ontario. Report Number: 1522173-005.

J.F. Sabourin & Associates (JFSA). 2017. Stormwater Management Report for Caivan Communities - Richmond Phase 1. Updated November 2017.

J.F. Sabourin & Associates (JFSA). 2018. Design Brief for Interim Stormwater Management Pond 1, Western Development Lands - Richmond. Revised March 2018.

Kilgour & Associates Ltd., Parish Geomorphic & Mattamy Homes Ld. (KAL, Parish & Mattamy), 2010. Natural Environment & Impact Assessment Study. February 2010.

Kilgour & Associates Ltd. (KAL), 2012 Paterson Group, 2013. Stage 1 Archaeological Assessment Proposed Cardinal Creek Development, Lands South of Old Montreal Rd. Part Lot 25, 26, and 27, and 28 Concession 1 and Part Lot C, D, and E Concession 8 in the Geographic Township of Cumberland, Historic County of Russell, Ottawa, Ontario. PIF: P369-003-2012. Prepared for Taggart Investments.

Appendix A
Detailed Analysis of Compliance of the RVDC Development Plan with Section 4.7 of the City of Ottawa Official Plan

Detailed Analysis of Compliance with Section 4.7 of the City of Ottawa Official Plan

This appendix provides a detailed examination of the requirements of Policy 4.7 of the City of Ottawa Official Plan as it pertains to subject development plan by RVDC. Each of the policy requirements is provided verbatim, with a short discussion of the approach taken by RVDC to comply with the specific policy, where relevant. The City Policy statements are *italicized*, while the RVDC approach to compliance is in regular font.

Policy 4.7.1 – Integrated Environmental Review to Assess Development Applications

A comprehensive understanding of the relationship between the natural environment and the built environment is the foundation of site design and subdivision planning, as well as planning for the larger areas subject to community design plans. The integrated environmental review considers as a whole the significant findings from individual support studies (i.e., tree preservation and protection plans, environmental impact statements, stormwater site management plans, Phase I Environmental Site Assessments). It also ensures that development proceeds in keeping with the analysis and recommendations of any watershed and subwatershed studies and federal or provincial environmental assessments documents, where applicable. The integrated environmental review ensures that development design complies with the environmental policies contained in Section 4, and that the principles of design with nature have been applied. [Amendment 13, September 8, 2004]

4.7.1(1)Subdivisions, and major site plans and major rezoning applications, will be accompanied by an integrated environmental review statement demonstrating how all the studies in support of the application influence the design of the development with respect to effects on the environment and compliance with the appropriate policies of Section 4. The appropriate policies and studies will be identified through pre-consultation at the beginning of the design and review process. [Amendment #76, OMB File # PL100206, Ministerial Modification # 48, April 26, 2012.]

4.7.1(2) The integrated environmental review statement will provide:

a. *A brief overview of the results of individual technical studies and other relevant environmental background material;*
b. *A graphic illustration, such as an air photo, summarizing the spatial features and functions (e.g. natural vegetation, watercourses, significant slopes or landform features, recharge/infiltration areas) as identified in the individual studies;*
c. *A summary of the potential environmental concerns raised, the scope of environmental interactions between studies, and the total package of mitigation measures, including any required development conditions and monitoring, as recommended in individual studies;*
d. *A statement with respect to how the recommendations of the support studies and the design with nature approach have influenced the design of the development;*
e. *An indication that the statement has been reviewed and concurred with by the individual sub consultants involved in the design team and technical studies.*
f. *A description of how the principles of Design Objective 7 (Section 2.5.1) to maximize the energy-efficiency of development and to promote sustainable design that reduces consumption, energy use and carbon footprint of the built environment have been*

considered. A sustainable design checklist will be prepared to assist in this description. [Amendment #76, OMB File # PL100206, Ministerial Modification # 49, April 26, 2012.

RVDC Approach to Compliance

This document, i.e., the Integrated Environmental Review, satisfies this requirement. Note that the sustainable design checklist referred to in 4.7.1(2f) is now referred to as the green checklist.

4.7.2 – Protection of Vegetation Cover

Preserving vegetation on sites subject to development not only contributes to the urban and rural forest and the overall environmental health of the area, but also helps improve the visual appeal of newly developed areas. However, development proposals may necessitate removal of existing vegetative cover in some instances. Development proposals will be required to preserve vegetative cover or propose compensation measures, through the following policies. [OMB decision #1754, May 10, 2006]

***Policy 4.7.2 (1)** In order to support the Official Plan objective for 30% tree cover, applications for subdivision or site plan approval will be supported by a tree preservation and protection plan and a landscape planting plan. [Amendment #76, OMB File # PL100206, April 26, 2012.]*

RVDC Approach to Compliance 4.7.2 (1)

A Tree Conservation Report was prepared by KAL (2012) following City of Ottawa Guidelines. A detailed landscape plan is provided in Appendix B and has been submitted to the City.

***Policy 4.7.2 (2)** The Tree Conservation Report constitutes part of a complete application and may be submitted early in the design and development review process. It should be submitted before any tree removal occurs on development lands. The report will be completed in keeping with the Tree Conservation Report guidelines and in summary will: [Amendment #76, August 04, 2010]*

a. *Retain as much natural vegetation as feasible, especially along surface water features, on steep slopes, in valued woodlots and in areas linking green spaces, with a particular emphasis on high quality or rare vegetative communities; [OMB decision #1754, May 10, 2006] [Amendment #76, OMB File # PL100206, April 26, 2012.]*
b. *Identify the presence of endangered or threatened species or their habitat as identified in the Endangered Species Act, 2007 and provide recommendations for protection measures to be used. [Amendment #76, OMB File # PL100206, April 26, 2012.]*
c. *Demonstrate how components of the proposed development, such as grading plans and the location of buildings, roads, and infrastructure, support tree conservation. [Amendment #76, OMB File # PL100206, April 26, 2012.]*
d. *Determine which stands of trees or individual trees warrant retention based on a preliminary assessment;*
e. *For those trees or stands of trees being retained, outline measures for their protection during construction and over the long term;*

RVDC Approach to Compliance 4.7.2 (2a,b,c,d,e)

The Tree Conservation Report (KAL, 2012) and NEIA (KAL, Parish & Mattamy 2010) confirmed that there were no significant specimen trees rare vegetation, Areas of Natural and Scientific Interest, significant wetlands, natural areas, and no woodlands greater than 50 years within the development areas. No endangered or threatened species or their habitats were present on property.

Policy 4.7.2 (2,f)

f. Describe the area and nature of tree loss and compensation measures proposed;

RVDC Approach to Compliance on Policy 4.7.2 (2f)

KAL (2012) surveyed the development area and surrounding site. Removal of trees was indicated for the development area along the southern boundary and from the northern most 90 m of the Hedgerow H5, with retention of all trees on the remainder of the property. Detailed landscape plans for each phase of development include more trees to be planted than will be lost from the site.

Policy 4.7.2 (2g)

g. Where there is substantial alteration of the natural vegetation cover on the site, the impact on fauna or rare species during and after construction will be considered and mitigation measures proposed.

RVDC Approach to Compliance on Policy 4.7.2 (2g)

There are relatively few trees generally, and no significant specimen trees within the development area based on the assessment by KAL (2012). The site does not provide significant habitat for species listed as at risk under the Ontario ESA (KAL 2018). The site is a former agricultural area. There is no net negative impact on fauna or rare species during or after construction, and no requirement for mitigation measures.

Policy 4.7.2 (2h)

h. Provide strategic recommendations to guide the landscape plan. [Amendment #76, June 24, 2009] [Amendment #76, August 04, 2010]

RVDC Approach to Compliance on Policy 4.7.2 (2h)

The site Landscape Plan is provided in Appendix B and is compliant with the recommendations of the TCR (KAL, 2012) and the geotech report (Golder, 2018)

Policy 4.7.2 (3) *The landscape plan will:*

f. Indicate tree planting or vegetation cover required to provide protection for surface water features or steep slopes;
g. Investigate the appropriateness of the use of native species in tree planting strategies;
h. Provide a reference document for future residents on the importance and care of trees on their property.

RVDC Approach to Policy 4.7.2 (3)

The site Landscape Plan is provided in Appendix B and is compliant with the recommendations of the TCR (KAL, 2012) and the geotech report (Golder, 2018). RVDC acknowledges the landscape plan will specify the appropriate use of native species in tree planting strategies. RVDC also acknowledges the requirement for a reference document for future residents on the importance and care of trees. Homeowners will be provided with information regarding how often to water trees and sod planted along the streets on their property.

Policy 4.7.3 – Erosion Prevention and Protection of Surface Water

Protecting stream corridors and the surface water environment serves the dual purpose of preserving and enhancing the environmental quality of stream and river corridors and their aquatic habitat, as well as reducing risks from natural hazards associated with watercourses. Ensuring that development is set back an appropriate distance from watercourses helps serve these purposes by ensuring a healthy, natural riparian zone and providing a margin of safety from hazards associated with flooding and unstable slopes.

Council has adopted Slope Stability Guidelines for Development Applications in the City of Ottawa, 2004, to guide slope stability assessments and requirements for setbacks. Slope stability assessments identify the geotechnical limit of the hazard lands, which includes the stable slope allowance plus, where appropriate, an allowance for future erosion and in some cases, an additional allowance to permit access in the event of future slope failure. Sites where slope stability issues are a concern were identified in the report, Slope Stability Study of the Regional Municipality of Ottawa-Carleton, 1976 (Ontario Misc. Paper MP 68) and are shown on Schedule K. Schedule K provides for early identification of slope stability concerns but is not sufficiently detailed to assess constraints on specific sites. [OMB decision #1754, May 10, 2006] [Amendment #76, OMB File # PL100206, July 21, 2011.]

RVDC Approach to Policy 4.7.3

All residential development will occur outside of all required setbacks to the Arbuckle Drain as per NEIA (KAL, Parish & Mattamy, 2010), except for the SWM pond. The SWM pond, which has already been approved, will occur within the 100 yr floodplain, but not within the meander belt, which is set as the limit of hazard (KAL, Parish & Mattamy, 2010).

Policy 4.7.3 (1)

1. *Except as otherwise provided for in this section, Council will establish minimum setbacks from rivers, lakes, streams and other surface water features in watershed, subwatershed and environmental management plans and in these plans identify any additional studies needed to refine the setback through the development review process as well as any site-specific measures needed to protect the setback. [OMB decision #1754, May 10, 2006] [Amendment #76, OMB File # PL100206, July 21, 2011.]*

RVDC Approach to Policy 4.7.3 (1)

All residential development will occur outside of all required setbacks to the Arbuckle Drain as per NEIA (KAL, Parish & Mattamy, 2010), except for the SWM pond. The SWM pond will occur within the 100 yr floodplain but has already been approved for construction there.

Policy 4.7.3 (2)

2. *Where a Council-approved watershed, subwatershed, or environmental management plan does not exist, the minimum setback will be the greater of the following:*

    a. *Development limits as established by the regulatory flood line (see Section 4.8.1);*

    b. *Development limits as established by the geotechnical limit of the hazard lands;*

    c. *30 metres from the normal high water mark of rivers, lakes and streams, as determined in consultation with the Conservation Authority; or*
    d. *15 metres from the existing top of bank, where there is a defined bank. [OMB decision #1754, May 10, 2006]*

RVDC Approach to Policy 4.7.3 (2)

All residential development will occur outside of all required setbacks to the Arbuckle Drain as per NEIA (KAL, Parish & Mattamy, 2010), except for the SWM pond. The SWM pond will occur within the 100 yr floodplain but has already been approved for construction there.

Policy 4.7.3 (3)

2. *The setback provided for in policies 1 and 2 will be implemented through the zoning by-law and any change in the setback will require a zoning by-law amendment or variance that is consistent with the policies in this section of the Plan. [Amendment #76, OMB File # PL100206, April 26, 2012.]*

RVDC Approach to Policy 4.7.3 (3)

All residential development will occur outside of all required setbacks to the Arbuckle Drain as per NEIA (KAL, Parish & Mattamy, 2010), except for the SWM pond. The SWM pond will occur within the 100 yr floodplain but has already been approved for construction there.

Policy 4.7.3 (4)

3. *No site alteration or development is permitted within the minimum setback, except as otherwise provided for in this section. Site alteration is defined as activities, such as fill, grading and excavation that would change the landform and natural vegetative characteristics of a site. Development is defined as the creation of a new lot or the construction of buildings and structures requiring approval under the Planning Act or the issuance of a Building Permit under the Building Code Act. Exceptions to this policy are:*

a. *Activities that create or maintain infrastructure within the requirements of the environmental assessment process or works subject to the Drainage Act;*
b. *Alterations necessary for recreation, environmental restoration, or slope stability works that are approved by the City and the Conservation Authority. [OMB decision #1754, May 10, 2006]*

RVDC Approach to 4.7.3 (4)

All residential development will occur outside of all required setbacks to the Arbuckle Drain as per NEIA (KAL, Parish & Mattamy, 2010), except for the SWM pond. The SWM pond will occur within the 100 yr floodplain but has already been approved for construction there.

Policy 4.7.3 (5)

4. *The geotechnical limit of hazard will be determined in keeping with the Slope Stability Guidelines for Development Applications in the City of Ottawa 2004. Sites where slope stability issues are a concern were identified in the report, Slope Stability Study of the Regional Municipality of Ottawa-Carleton, 1976 (Ontario Misc. Paper MP 68) and are shown on Schedule K. Schedule K provides for early identification of slope stability concerns but is not sufficiently detailed to assess constraints on specific sites. [Amendment #76, OMB File # PL100206, July 21, 2011.]*

RVDC Approach to 4.7.3 (5)

All residential development on site will occur beyond the geotechnical limit of hazard.

Policy 4.7.3 (6)

5. *Exceptions to the setbacks in policy 2 will be considered by the City in consultation with the Conservation Authority in situations where development is proposed:*

    a. *On existing lots where, due to the historical development in the area, it is unreasonable to demand or impossible to achieve minimum setback distances because of the size or location of the lot, approved or existing use on the lot, or other physical constraint;*

    b. *Adjacent to a minor tributary that serves primarily a surface water function and that may have only an intermittent flow. This provision includes situations where a watershed, subwatershed or environmental management plan exists but does not provide guidance on a minor tributary;*
    c. *Adjacent to an existing top of bank where the regulatory flood line and the geotechnical limit of the hazard lands are within 15 metres from the existing top of bank [OMB decision #1754, May 10, 2006]*

RVDC Approach to Policy 4.7.3 (6)

All residential development will occur outside of all required setbacks to the Arbuckle Drain as per NEIA (KAL, Parish & Mattamy, 2010), except for the SWM pond. The SWM pond will occur within the 100 yr floodplain but has already been approved for construction there.

Policy 4.7.3 (7)

6. *Where an exception to the setback is requested, an alternate setback will be considered by the City in consultation with the Conservation Authority on the basis of a study that addresses the following criteria:*

    a. *Slope of the bank and geotechnical considerations related to unstable slopes, as addressed in Council's Slope Stability Guidelines for Development Applications in the City of Ottawa, 2004;*

    b. *Natural vegetation and the ecological function of the setback area;*

    c. *The nature of the abutting water body, including the presence of a flood plain;*
    d. *The need to demonstrate that there will be no negative impacts on adjacent fish habitat. [OMB decision #1754, May 10, 2006]*

RVDC Approach to Policy 4.7.3 (7)

All residential development will occur outside of all required setbacks to the Arbuckle Drain as per NEIA (KAL, Parish & Mattamy, 2010), except for the SWM pond. The SWM pond will occur within the 100 yr floodplain but has already been approved for construction there.

Policy 4.7.3 (8)

7. *Notwithstanding policy 3, lot creation by subdivision may be considered which includes land within the required setback in Villages adjacent to a minor tributary that serves primarily a surface water function and that may have only an intermittent flow, subject to the following criteria:*

    a. *Where slope stability is an issue, the lot area outside the geotechnical limit of hazard is sufficient to meet the required minimum lot size and Council's Slope Stability Guidelines for Development Applications in the City of Ottawa, 2004 are satisfied; and*
    b. *The lot area outside the setback is sufficient to accommodate all structures and water and wastewater services. [OMB decision #1754, May 10, 2006]*

RVDC Approach to Policy 4.7.3 (8)

All residential development will occur outside of all required setbacks to the Arbuckle Drain as per NEIA (KAL, Parish & Mattamy, 2010), except for the SWM pond. The SWM pond will occur within the 100 yr floodplain but has already been approved for construction there.

Policy 4.7.3 (9)

8. *Notwithstanding policy 3, lot creation by subdivision may be considered which includes land within the required setback in the rural area outside Villages, subject to the following criteria:*

a. *Where slope stability is an issue, the lot area outside the geotechnical limit of hazard is sufficient to meet the required minimum lot size and Council's Slope Stability Guidelines for Development Applications in the City of Ottawa, 2004 are satisfied; and*
b. *The lot area outside the setback is sufficient to accommodate all structures and water and wastewater services. [OMB decision #1754, May 10, 2006]*

RVDC Approach to Policy 4.7.3 (9)

All residential development will occur outside of all required setbacks to the Arbuckle Drain as per NEIA (KAL, Parish & Mattamy, 2010), except for the SWM pond. The SWM pond will occur within the 100 yr floodplain but has already been approved for construction there.

Policy 4.7.3 (10)

9. *Notwithstanding policy 3, a lot created by severance in the rural area may include land within the required setback provided the criteria in policy 7 are satisfied. The new lot created by severance in the rural area should be located outside the setback to the extent possible. [OMB decision #1754, May 10, 2006]*

RVDC Approach to Policy 4.7.3 (10)

All residential development on site will occur beyond the geotechnical limit of hazard.

Policy 4.7.3 (11)

10. *Under the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation, pursuant to the Conservation Authorities Act of Ontario, the approval of the Conservation Authority is required for works such as site grading, the placement of fill, the alteration of existing channels of watercourses, and certain construction projects. The Conservation Authority should be consulted for any project near a lake, river, stream or wetland regarding the need for a permit. The Rideau Canal is a federal waterway and as such all shoreline and in-water works along the canal system will also require approval of Parks Canada. [Amendment #76, OMB File # PL100206, July 21, 2011.]*

RVDC Approach to Policy 4.7.3 (11)

There are no natural wetland areas on or adjacent to the development area.

Policy 4.7.3 (12)

11. *Where development is proposed on private services, no septic tank or distribution piping may be located closer than 30 m from the normal high water mark of a river, lake or stream or other watercourse unless an alternative setback has been permitted by the City in consultation with the Conservation Authority, for example, as may be required for existing lots in the rural area. [OMB decision #1754, May 10, 2006]*

RVDC Approach to Policy 4.7.3 (12)

No part of the development will include servicing on private services.

Policy 4.7.3 (13)

12. *An erosion and sediment control plan will be provided that shows how erosion on the site will be minimized during construction through application of established standards and procedures. Measures to maintain vegetative cover along the slope during and after construction will be addressed.*

RVDC Approach to Policy 4.7.3 (10)

The Design Brief for the project (DSEL, 2017) provides a site Erosion and Sediment Control (ESC) Plan.

Policy 4.7.3 (14)

13. *Natural watercourses should be maintained in their natural condition. Where an alteration is assessed as being environmentally appropriate and consistent with an approved subwatershed plan, environmental management plan or a storm water site management plan or, in the case of public projects, through a Class Environmental Assessment, watercourse alterations must follow natural channel design. Watercourse alterations must also meet any other applicable provincial and federal regulations, as amended from time to time, such as the Lakes and Rivers Improvement Act, Public Lands Act and Fisheries Act and may require written approval from the appropriate Conservation Authority under the Fill, Construction and Alteration to Waterways regulations.*

RVDC Approach to Policy 4.7.3 (14)

The Arbuckle Drain adjacent to the development area will remain untouched aside from approved connections.

Policy 4.7.3 (15)

14. *Development and site alteration will not be permitted in fish habitat except in accordance with federal and provincial requirements. Development applications near or adjacent to water bodies that provide fish habitat will be required to demonstrate that the proposed development will not have a negative impact on fish habitat. Fish habitat is defined as those areas on which fish depend directly or indirectly to carry out their life processes. Fish habitat includes spawning grounds, nursery and rearing areas, areas that supply food, and features that allow migration. In the event that a negative impact is unavoidable, the proposal must be reviewed and authorized by the federal Department of Fisheries and Oceans, or its designate, which may or may not, under the federal Fisheries Act, authorize the work depending on development circumstances and type of habitat. [Ministerial Modification 45, November 10, 2003] [Amendment #76, OMB File # PL100206, July 21, 2011.]*

RVDC Approach to Policy 4.7.3 (15)

The Arbuckle Drain adjacent to the development area will remain untouched aside from approved connections.

Policy 4.7.3 (16)

15. *In addition to the provisions for setbacks described in this section, development proposals adjacent to municipal drains and other works under the Drainage Act must also maintain clear access to the legal working space adjacent to the drain. This working space is defined in the Engineer's Report adopted through a By-law approved by Council under the Drainage Act for the construction and future maintenance of drainage works. Many drains also provide fish habitat. [Amendment #76, OMB File # PL100206, July 21, 2011.]*

RVDC Approach to Policy 4.7.3 (16)

The Arbuckle Drain adjacent to the development area will remain untouched aside from approved connections with access to be fully preserved.

Policy 4.7.3 (17)

16. *In support of the policies of this Plan, the City will:*

    a. *Support initiatives of the Ministry of Agriculture and Food, other provincial ministries, farming organizations, Conservation Authorities and others, which encourage sound agricultural land management and soil conservation practices and other measures that minimize or eliminate the amount of pesticides, nutrients, silt and other contaminants that can enter the ground and surface water systems of Ottawa; [Ministerial Modification 46, November 10, 2003]*

    b. *Investigate means to control land alteration in significant wetlands and natural areas, and the removal of top soil and peat extraction, by applying the provisions of the Conservation Authority Act, or the Municipal Act as amended from time to time, in partnership with the Conservation Authorities;*

    c. *When reviewing its own practices, serve as a model and ensure that the development of its properties and the provision of its infrastructure take advantage of opportunities to design with nature;*

    d. *Initiate an annual recognition program to recognize innovative projects that design with nature.*

RVDC Approach to Policy 4.7.3 (17)

No response required.

4.7.4 – Protection of Endangered Species

Endangered and threatened species are those species either listed under the regulations of the Ontario Endangered Species Act *or are considered by the provincial government to be at risk of becoming endangered through all or a portion of its Ontario range. The habitat of these species is identified and protected by the Ministry of Natural Resources. Wildlife habitat generally is protected through environmental designations in this Plan.*

Butternut (Juglans cinerea) is an endangered tree whose main threat is a fungal disease that kills the infected trees. Butternut trees have special policies under the Ontario Regulation 242/08 of the Endangered Species Act 2007, administered by the Ministry of Natural Resources. The identification of butternut (and other trees) on a site will be required under the policies in Section 4.7.2 of this Plan. Where butternut is identified, the health of the tree(s) will be assessed by a certified Butternut Health Assessor and a permit from the Ministry of Natural Resources is required to remove a healthy tree.

Policy 4.7.4 (1)

1. *Endangered and threatened species are those listed under Ontario Regulation 230/08 of the Endangered Species Act, 2007.*
2. *Significant habitat of endangered and threatened species is defined as the habitat, as approved by the Ontario Ministry of Natural Resources, that is necessary for the maintenance, survival, and/or recovery of naturally occurring or reintroduced populations of endangered species or threatened species, and where those areas of occurrence are occupied or habitually occupied by the species during all or any part of its life cycle. Significant habitat of endangered and threatened species will be identified by:*
    a. *Regulations made under the Endangered Species Act, 2007;*
    b. *An Environmental Impact Statement in areas where there is potential for significant habitat to exist; or,*
    c. *Other studies as approved by the City and Ministry of Natural Resources (e.g., subwatershed studies or environmental management plans).*
3. *The Ministry of Natural Resources has mapped areas with potential for significant habitat, based on known occurrences of endangered and threatened species. These maps will be consulted during pre-consultation to determine the need for an EIS and its scope as described in Section 4.7.8. The requirements of the Environmental Impact Statement will vary depending on such matters as the scale of proposed development, the nature of the site, the availability of comprehensive studies for the area and other matters identified in Section 4.7.8.*
4. *Environmental Impact Statements that address the potential for significant habitat of endangered or threatened species will be reviewed by the Ministry of Natural Resources. The Ministry of Natural Resources will approve the extent of significant habitat for endangered and threatened species.*
5. *No development or site alteration, as defined in Section 4.7.8, will be permitted in significant habitat of endangered and threatened species. [Ministerial modification #50, December 24, 2009]*
6. *Development and site alteration will not be permitted within 120m of the boundary of identified significant habitat of endangered and threatened species unless the ecological function of the adjacent lands has been evaluated and the Environmental Impact Statement demonstrates that there will be no negative impact (as defined in Section 4.7.8) on the significant habitat of endangered and threatened species or on its ecological functions. [Ministerial modification #50, December 24, 2009]*

RVDC Approach to Policy 4.7.4

The NEIA by KAL, Parish & Mattamy (2010) provided an assessment of present flora and fauna for the entire WDL. Species scheduled under the *ESA* subsequent to the that report are considered in Section 2.4 of this report. The Phase 1 area does not support any Species-At-Risk and so can proceed without contravention of the *ESA*.

4.7.5 – Protection of Groundwater Resources

In order to safeguard the integrity of groundwater resources, the City will ensure that new development can be accommodated within the system without affecting supplies available to other users. Some uses however, are not appropriate in areas where residents rely on groundwater and are more appropriately located in a fully serviced industrial park probably within the urban area. [Amendment #76, August 04, 2010]

Policy 4.7.5 (1)

1. *When reviewing development applications, the City will consider the potential for impact on groundwater resources.*
    a. *A groundwater impact assessment may be required where the City has identified that the lands play a role in the management of the groundwater resource or the need is indicated in other available information such as subwatershed plans or local knowledge, and*
    b. *A groundwater impact assessment may be required where the proposed use has the potential to negatively impact the groundwater resource. [Amendment #76, August 04, 2010*

In either case, the proposed use will not be permitted without a favourable impact assessment.

RVDC Approach to Policy 4.7.5 (1)

Water Supply servicing for the subject site was contemplated in the Village of Richmond Water and Sanitary Master Servicing Study prepared by Stantec Consulting Ltd., July 2011 (MSS). The preferred design concept indicated by the MSS, for development of the WDL, consists of a new public communal well system connected to the deep aquifer. Design of the Communal Well system has been underway concurrently with the subdivision design, and other supporting infrastructure (sanitary trunk and stormwater pond) to service the WDL. The "Groundwater Vulnerability Study, Richmond Village Well System" prepared by Golder Associates (March 2012) concluded minimal risk to groundwater.

Policy 4.7.5 (2)

2. *When evaluating a non-residential land-use in a rural land-use designation reliant on private, individual services, Council will consider whether or not it would be better located in a fully serviced part of the City because of its potential impact on groundwater quality and quantity. [Amendment #76, August 04, 2010]*

RVDC Approach to Policy 4.7.5 (2)

No part of the development will include servicing on private services.

Policy 4.7.5 (3)

3. *Regardless of the provisions in policies 1 and 2 above, an application to amend the zoning by-law to permit a high risk industrial use will not be permitted in the rural area. In this regard, high risk means an industrial use;*
    a. *Which requires the use of water in an processing operation and;*
    b. *Which has as a by-product water-borne wastes requiring municipal waste treatment.*

[Amendment #76, August 04, 2010]

RVDC Approach to Policy 4.7.5 (3)

The proposed development is not high risk industrial land use.

Policy 4.7.5 (4)

4. *Where wellhead protection areas have been identified, the policies in Section 4.8.2 will apply.*

RVDC Approach to Policy 4.7.5 (4)

Phase 1 is within a potential wellhead protection area though the final designation has not been approved. The community well has been designed accordingly regardless.

4.7.6 – Stormwater Management

The City's commitment to plan on a watershed and subwatershed basis is outlined in Section 2.4.3. The City will implement the recommendations of the watershed, subwatershed and environmental management plans through the implementation mechanisms of this Plan or other appropriate mechanisms. In reviewing applications, the City will require that stormwater site management plans be submitted in accordance with the guidance set out in the environmental management, subwatershed and watershed plans.

Policies

Policy 4.7.6 (1)

1. *A stormwater site management plan will be required to support subdivision and site-plan applications.*

RVDC Approach to Policy 4.7.6 (1)

The *Master Drainage Plan Western Development Lands Village of Richmond for Richmond Village (South) Limited* (DSEL, 2013) provides a stormwater management plan for the project.

Policy 4.7.6 (2)

2. *Stormwater site management plans will be prepared in accordance with the guidance set out in a subwatershed or watershed plans (see Section 2.4.3). Generally, stormwater site management plans will include details on subdivision management, specific best management practices for stormwater, erosion and sediment control, and details for enhancement and rehabilitation of natural features. Where no subwatershed plan or environmental management plan exists, the City will review stormwater site management plans to ensure that:*

    a. *Watercourse flows are not altered in a way that would increase the risk of downstream flooding or channel erosion;*

    b. *Base flow in the watercourse is not reduced;*

    c. *The quality of water that supports aquatic life and fish habitat is not adversely affected;*

    d. *The quality of water that supports water-based recreational uses is not affected;*

    e. *Natural habitat linkages that are located in or traverse the site are maintained or enhanced;*

    f. *Groundwater is not negatively impacted;*

    g. *Any other impacts on the existing infrastructure or natural environment are addressed in a manner consistent with established standards and procedures;*

    h. *Objectives related to the optimization of wet weather infrastructure management are realized.*

RVDC Approach to Policy 4.7.6 (2)

The *Master Drainage Plan Western Development Lands Village of Richmond for Richmond Village (South) Limited* (DSEL, 2013) provides a stormwater management plan for the project.

4.7.7 – Landform Features

Landform features are geomorphic, geological and other landform features that are distinctive to Ottawa. Many of these features were described in a 1975 study Geological Sites and Features in the Regional Municipality of Ottawa-Carleton, undertaken in partnership with the Ministry of Natural Resources. The MNR has identified some of these features, such as Hog's Back Falls as provincially significant Earth Science Areas of Natural and Scientific Interest that are part of the City's natural heritage system. Geomorphic, Geological and Landform Features are shown on Schedule K. [Amendment #76, August 04, 2010]

Policy 4.7.7 (1)

1. *When reviewing development proposals or when designing or reviewing public works, the City will ensure that the educational, scientific and landscape value of the Geomorphic, Geological and Landform Features, as shown on Scheduled K, will not be impaired. Only permitted*

development that is sympathetic to the unique characteristic of the resource, its setting and its interpretation value will be considered. Earth Science ANSIs are subject to the policies of Section 2.4.2 [Amendment #76, August 04, 2010]

RVDC Approach to Policy 4.7.7 (1)

On the basis of the various studies commissioned by RVDC, there are no significant natural features within or adjacent to the proposed development area.

Policy 4.7.7 (2)

2. *Development and site alteration within provincially significant Earth Science Areas of Natural and Scientific Interest or on land within 50m of these features will not be permitted unless it is demonstrated through an Environmental Impact Statement that there will be no negative impact on the feature or its ecological functions. These features are shown on Schedule K. Definitions of these terms and the policies regarding Environmental Impact Statements are provided in Section 4.7.8. [Amendment #76, OMB File # PL100206, Ministerial Modification # 51, July 21, 2011.]*

RVDC Approach to Policy 4.7.7 (2)

On the basis of the various studies commissioned by RVDC, there are no significant natural features within or adjacent to the proposed development area.

Policy 4.7.7 (3)

3. *The City will encourage the protection of other significant landform features, such as rock outcrops, escarpments, knolls, valley or other features identified in such studies as provincial ANSI studies, or municipal subwatershed studies and community design plans.*

RVDC Approach to Policy 4.7.7 (3)

On the basis of the various studies commissioned by RVDC, there are no significant natural features within or adjacent to the proposed development area.

Policy 4.7.7 (4)

4. *When considering subdivision or site plan applications, the City will ensure the protection of landform features by encouraging owners or developers to implement such measures as:*

    a. *Selective grading to minimize topographic change;*

    b. *Orienting buildings and roads parallel to topographic contours;*

    c. *Setting back development from the bottom and top of steep slopes;*

d. Flexible setbacks;

e. Providing flexibility for road layouts and right-of-way requirements.

RVDC Approach to Policy 4.7.7 (4)

On the basis of the various studies commissioned by RVDC, there are no significant natural features within or adjacent to the proposed development area.

4.7.8 – Environmental Impact Statement

Development within or adjacent to woodlands, wetlands, and other natural features has potential to impact the feature and its functions by removing vegetation, increasing the amount of paved or other impermeable surfaces, changing the grading of the site, or making other changes. The Environmental Impact Statement serves to identify the natural features of a site early in the development process and consider ways to avoid or mitigate these impacts, and enhance natural functions. [Amendment #76, OMB File # PL100206, April 26, 2012.]

Almost all of the city's natural heritage system, defined in Section 2, is contained within areas designated as Rural Natural Features, Urban Natural Features, Significant Wetland, and Natural Environment Areas. The requirements for an Environmental Impact Statement for development proposed within Rural Natural Features or on lands adjacent to these designated areas are described in Section 3. An Environmental Impact Statement is also required for development proposed within or adjacent to significant woodlands, significant valleylands, significant wildlife habitat and other components of the natural heritage system, regardless of their designation in the Plan. [Amendment #76, OMB File # PL100206, Ministerial Modification #52, April 26, 2012.]

Policy 4.7.8 (1 & 2)

0. *An Environmental Impact Statement is required for development and site alteration proposed within and adjacent to natural heritage features designated as Rural Natural Features and adjacent to land designated as Urban Natural Feature, Significant Wetland, and Natural Environment Area. It is also required for development and site alteration within or adjacent to other elements of the natural heritage system, as required in Section 2, that are not designated on Schedule A or B. [Amendment #76, OMB File # PL100206, April 26, 2012]*
1. *No development or site alteration will be permitted within the natural features described in policy 1 above, where permitted by the policies of this Plan, or on adjacent lands unless an Environmental Impact Statement indicates it will have no negative impact, defined as degradation that threatens the health and integrity of the natural features or ecological functions for which an area is identified due to single, multiple or successive development or site alteration activities. [Amendment #76, OMB File # PL100206, April 26, 2012]*

RVDC Approach to Policy 4.7.8 (1 & 2)

No Rural Natural Features or Urban Natural Features as designated or identified in the City's Urban Natural Areas Environmental Evaluation framework are present on or adjacent to the proposed development area.

Policy 4.7.8 (3, 4, 5, 6)

2. *Development is defined as creation of a new lot, a change in land use, or the construction of buildings and structures, requiring approval under the Planning Act, but does not include activities that create or maintain infrastructure authorized under an environmental assessment process; or works subject to the Drainage Act. [Amendment #76, OMB File # PL100206, April 26, 2012]*
3. *Site alteration is defined as activities, such as grading, excavation and the placement of fill that would change the landform and natural vegetative characteristics of a site. [Amendment #76, OMB File # PL100206, April 26, 2012]*
4. *Ecological function are defined as: the natural processes, products or services that living and nonliving environments provide or perform within or between species, ecosystems and landscapes, including biological physical and socio-economic interactions. [Amendment #76, OMB File # PL100206, Ministerial Modification #53, April 26, 2012]*
5. *The requirements for an EIS adjacent to natural heritage features designated on Schedule A and B in this Plan are described in Section 3. The requirements for an EIS adjacent to the significant habitat of endangered and threatened species and Earth Science Areas of Natural and Scientific Interest are described in Section 4. [Amendment #76, OMB File # PL100206, April 26, 2012]*

RVDC Approach to Policy 4.7.8 (7)

No response required.

Policy 4.7.8 (3, 4, 5, 6)

6. *Where significant woodlands, significant wildlife habitat, significant valleylands or other natural heritage features are not designated, development and site alteration will not be permitted for:*
    a. *any development permitted under the policies of this Plan within the feature;*
    b. *any development permitted under the policies of this Plan within 120 metres of the feature in the rural area;*
    c. *any development permitted under the policies of this Plan within 30 metres of the feature in the urban area;*

RVDC Approach to Policy 4.7.8 (7)

No significant woodlands, significant wildlife habitat, significant valleylands or other natural heritage features occur within the proposed development area.

Policy 4.7.8 (8 & 9)

7. *The need for an Environmental Impact Statement and its scope will be confirmed through preconsultation with the City early in the development review process, based on a preliminary screening for natural environment features within and adjacent to the study area. Aerial photographs, watershed and sub-watershed studies, field investigations and other information sources such as the Natural Heritage Information Centre may be consulted. The screening should consider the potential for endangered or threatened species habitat, significant woodlands, valley lands, wetlands and wildlife habitat that are not designated in the plan, in accordance*

with the Provincial Policy Statement definition of significant and the relevant identification and evaluation factors specified in the Natural Heritage Reference Manual for the Provincial Policy Statement. [Amendment #76, OMB File # PL100206, Ministerial Modification #53, April 26, 2012]

8. *There are different types of Environmental Impact Statements:*
    a. *Full site-impact statements to assess the effects of large-scale development proposals, such as a subdivision proposal. They are prepared by a qualified professional with expertise in assessing impacts on the natural environment, but reviewed and approved by the municipality;*
    b. *Impact statements for lands adjacent to Urban Natural Features where the emphasis will be on managing the interface or transition zone between urban developments and natural features in an urban context. This would include such concerns as surface drainage adjacent to the feature; natural infiltration and soft edges adjacent to features such as wetlands, wet meadows and moist forests; protection of woodland edges (drip-line setbacks, soil compaction, removal and stock-piling); and management of access and other potential issues related to uses along the edge of the feature;*
    c. *Scoped site-impact statements to assess the potential impacts of smaller development proposals, such as single-lot severances, where impacts would be minor. A scoped impact study can be as simple as a checklist of matters to be addressed as part of the application process, and can be completed by the applicant. Scoped site-impact studies may also be appropriate to address the potential impacts of larger proposals if more detailed studies, such as a comprehensive impact study, are available.*

RVDC Approach to Policy 4.7.8 (8 & 9)

No response required.

Policy 4.7.8 (10)

9. *No development or site alteration will be permitted within the natural features described in policy 1 above, where permitted by the policies of this Plan, or on adjacent lands unless an Environmental Impact Statement indicates it will have no negative impact, defined as degradation that threatens the health and integrity of the natural features or ecological functions for which an area is identified due to single, multiple or successive development or site alteration activities. [Amendment #76, OMB File # PL100206, July 21, 2011.]*

RVDC Approach to Policy 4.7.8 (10)

No EIS was triggered for this project.

Policy 4.7.8 (11)

10. *Environmental Impact Statements will include:*
    a. *A map drawn to scale identifying the location and extent of the feature, a description of the environmental values within the environmental feature or designation which could potentially be adversely affected by the proposed development, a description of the terrain/topography, vegetative cover and types, soil type and depth, and surface water movement patterns;*

b. Where the potential for significant habitat of endangered and threatened species has been identified, a description of the habitat present on the site and its suitability for the specific endangered and threatened species that potentially may use the area, as required in Section 4.7.4. [Amendment #76, August 04, 2010]

c. A description of the proposed development;

d. A description of the impacts on the environmental feature that might reasonably be expected to result from the proposed development;

e. A description of the actions that may be reasonably required to prevent, change, minimize or mitigate impacts on the environmental feature as a result of the proposed development, including the identification of opportunities for ecological restoration, enhancement and long-term conservation of the feature;

f. A description of the flora and fauna present on the site and how the development may impact on the flora and fauna within the site or natural feature and proposed mitigation measures to be taken during and after construction;

g. An evaluation of the cumulative effects of the proposed development and other existing or proposed activities or development within or adjacent to the study area. For the purpose of this policy 'proposed activities or development' refers to applications that have been lodged with and which are waiting or have received City approval. The evaluation will assess residual effects following mitigation on the natural features and ecological functions identified in the area; [Amendment #76, OMB File # PL100206, April 26, 2012]

h. A professional opinion on whether negative effects on the natural features and ecological functions will occur, and the significance of these impacts in the context of the evaluation of the natural area (i.e., the natural features and functions for which the area was originally identified as significant and the residual impact of the proposed development on the general significance rating of the larger natural area);

i. Identification of monitoring needs and recognition of parties to be responsible for assessing and reporting on these needs over a prescribed period of time.

RVDC Approach to Policy 4.7.8 (11)

No response required.

Appendix B
Figures and Supporting Documents

Appendix B-1 – General Site Plan

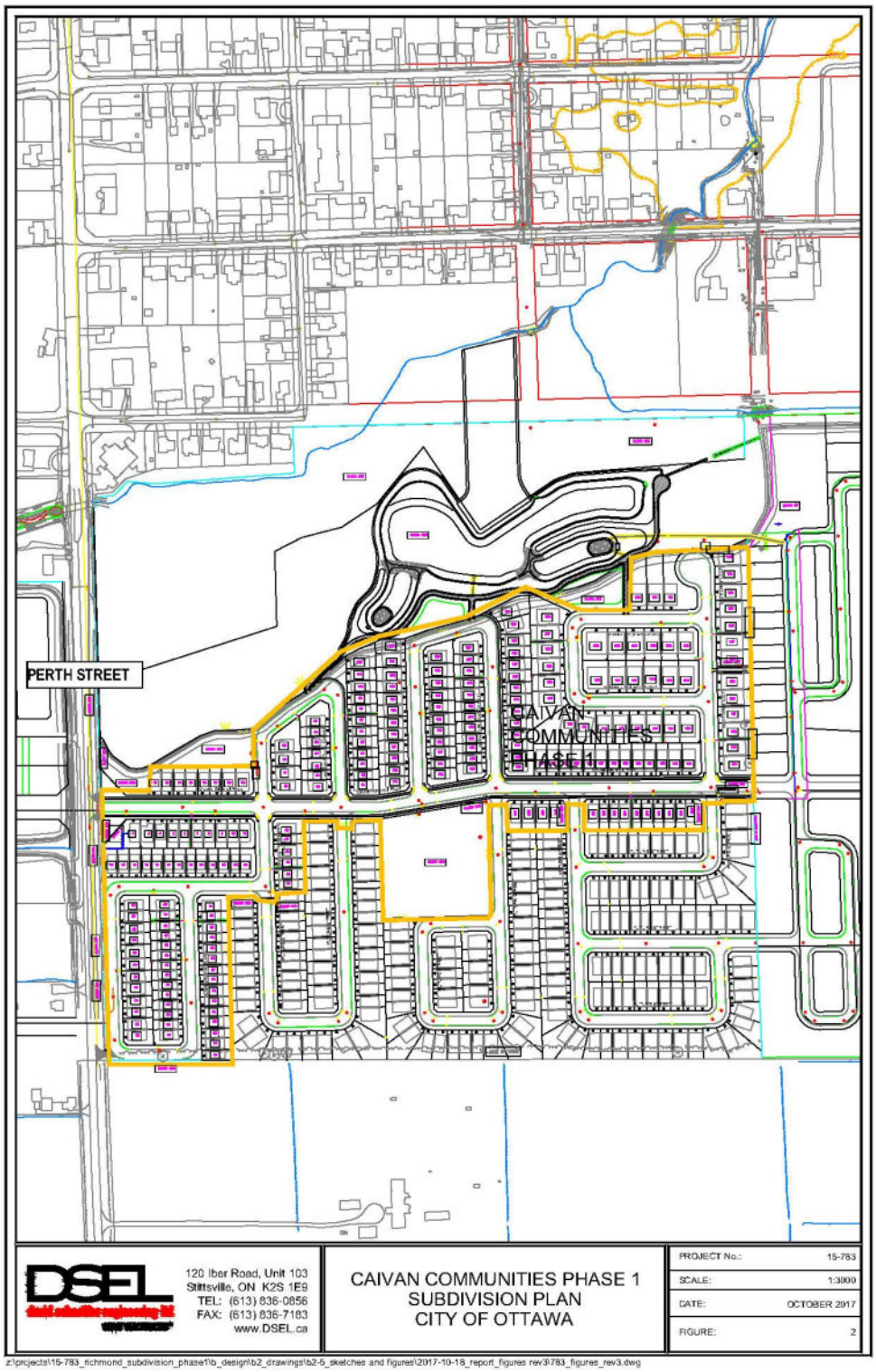


Figure 1. General Site Plan

Appendix B-2 - Site natural heritage

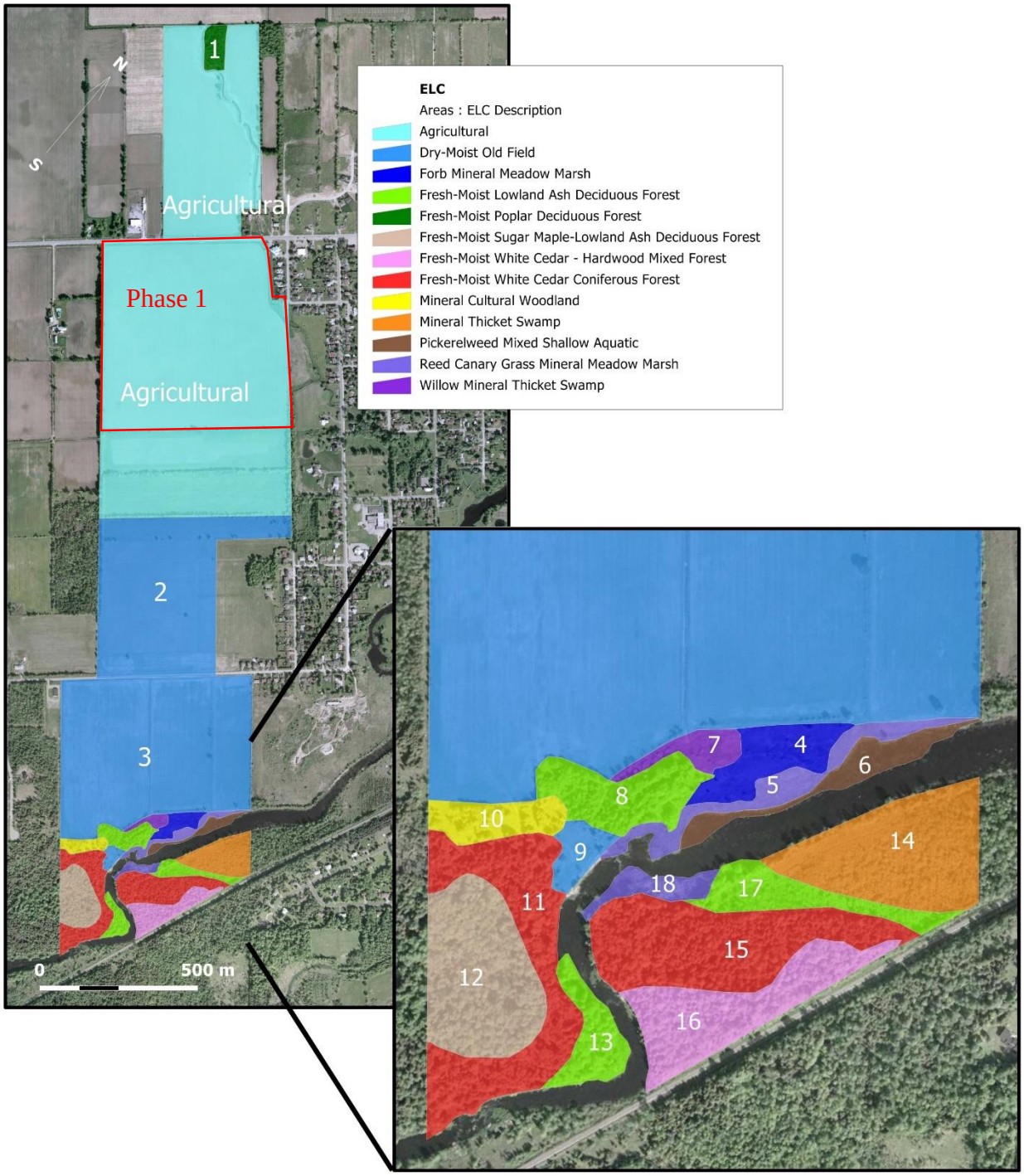


Figure 2. Site natural heritage

Appendix B-3 - Trees

Tree Number	Tree Description	Size (DBH in cm)	Tree Number	Tree Description	Size (DBH in cm)
1	Green Ash	91	**21**	Black Ash	s
2	White Ash	50	**22**	Hawthorn	s
3*	Burr Oak	83	**23**	Green Ash	s
4*	Crack Willow	162	**24**	Burr Oak	s
5	White Ash	58	**25**	Green Ash	m
6*	Crack Willow	76	**26***	White Elm	52
7*	Burr Oak	62	**27**	Black Ash	s
8	3 Green Ash	s	**28***	White Elm	107
9	Green Ash	91	**29**	Snag	m
10	Green Ash	112	**30**	Common Apple	s
11	Green Ash	82	**31**	Black Ash	s
12	4 Green Ash	55, 52, m, m	**32**	Manitoba Maple	s
13	4 Green Ash	56, 51, m, m	**33**	Burr Oak	s
14	Green Ash	54	**34**	4 Green Ash	s
15	Green Ash	xl	**35**	Black Ash	s
16*	Burr Oak	105	**36**	Common Apple	s
17*	Burr Oak	105	**37**	Green Ash	s
18	Trembling Aspen	s	**38**	Green Ash	s
19	Hawthorn	s	**39**	2 Manitoba Maple	s
20	Burr Oak	m			

Tree sizes: s=10-34cm DBH, m=35-49cm DDBH, xl > 75 cm DBH but with multiple stems splitting near breast height and fencing complicating direct measure. * indicates a specimen tree (>50 cdm DBH, reasonably healthy, non-invasive).

Figure 3. TCR

Appendix B-4 – Drainage Fabric and Aquatic Setbacks

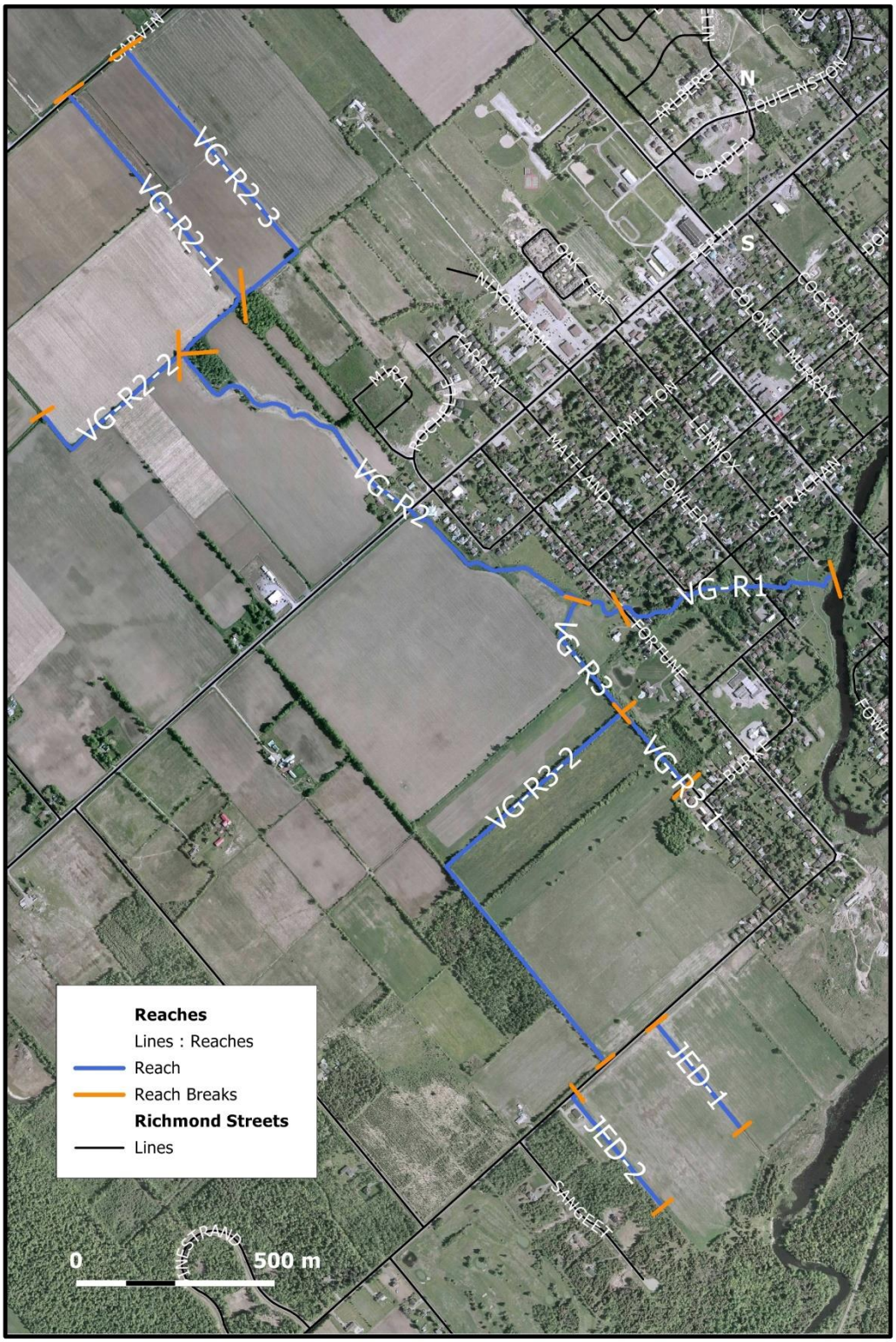


Figure 4. Area reaches

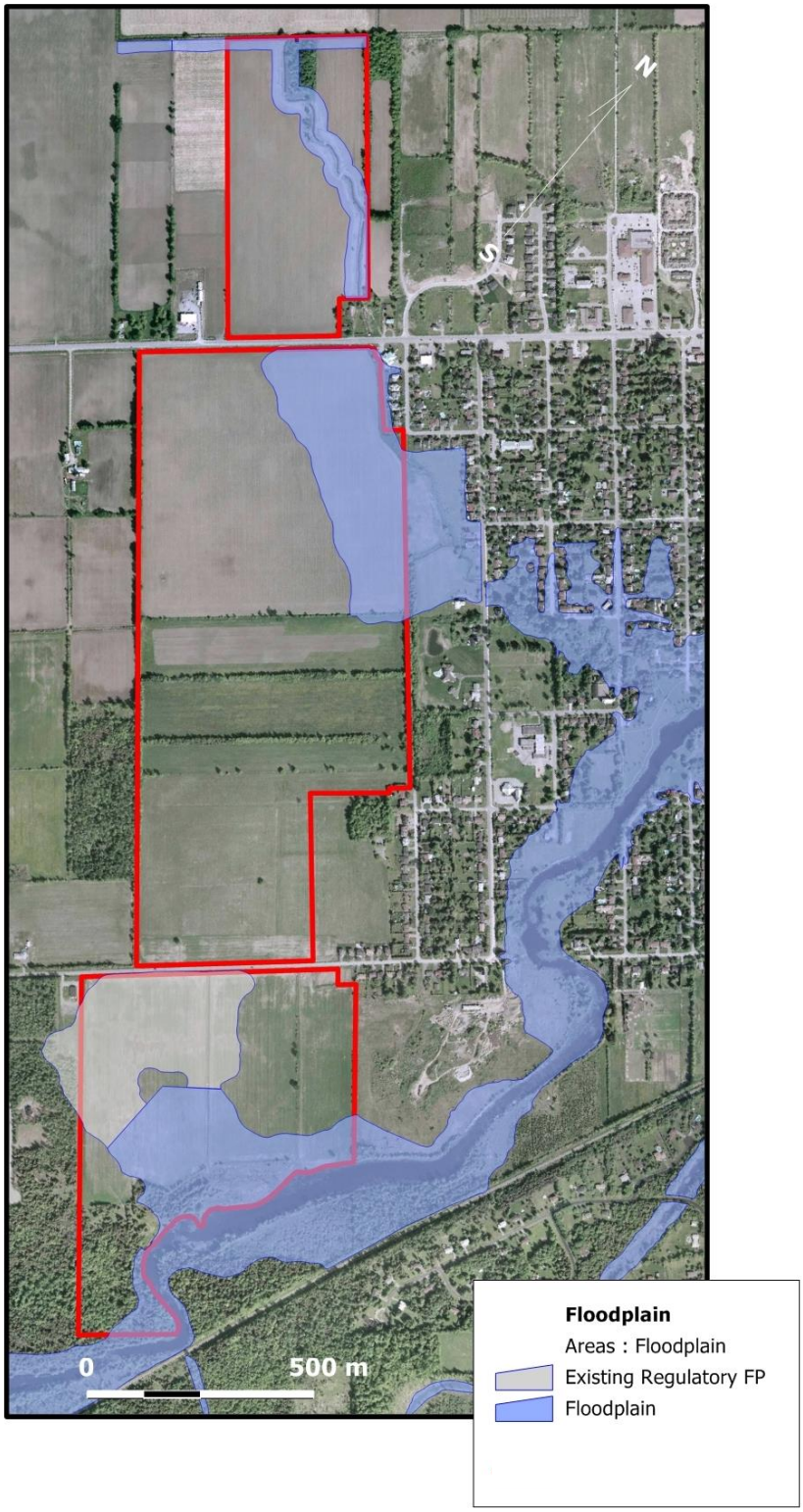


Figure 5. Floodplain

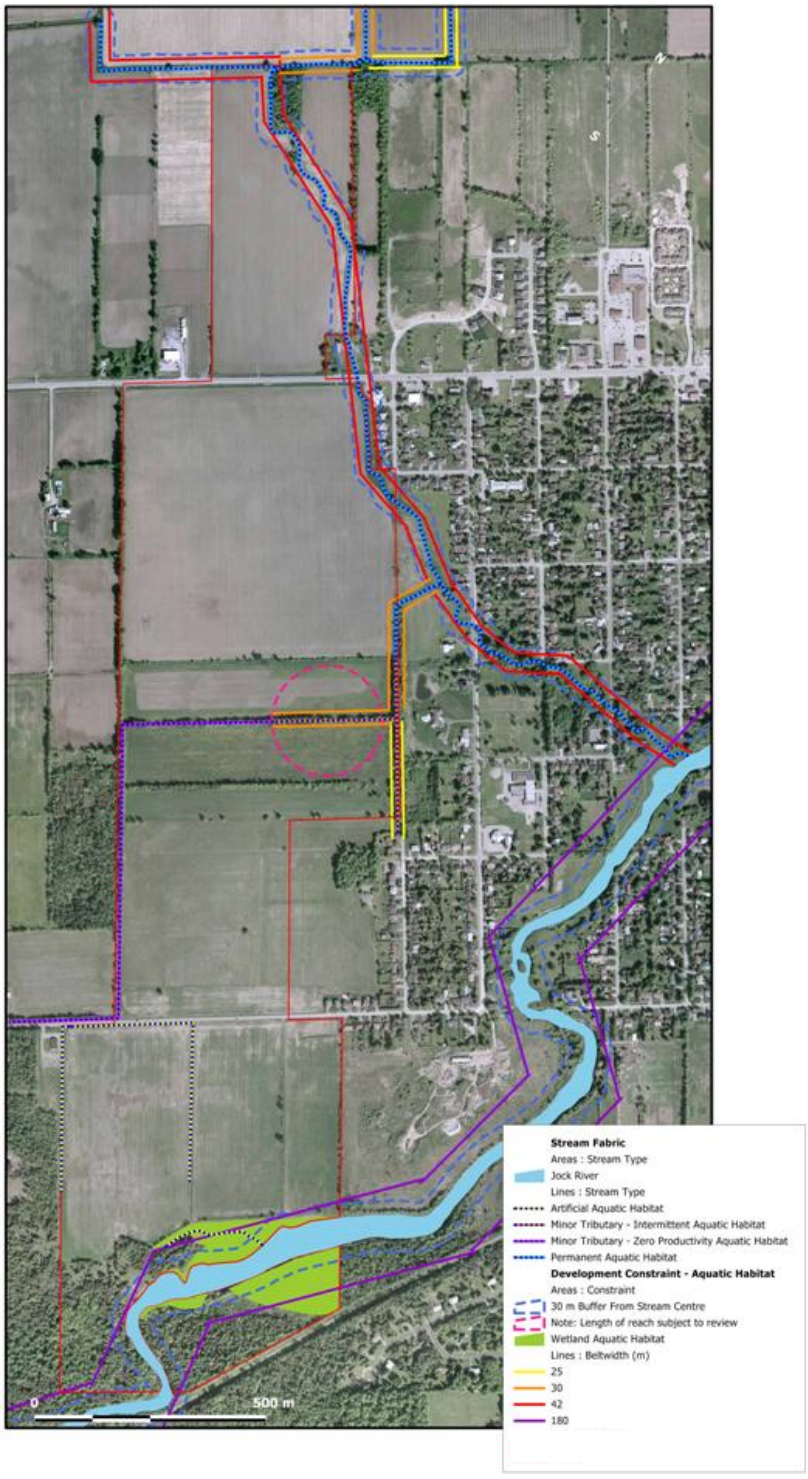


Figure 6. 30 m from NHWM

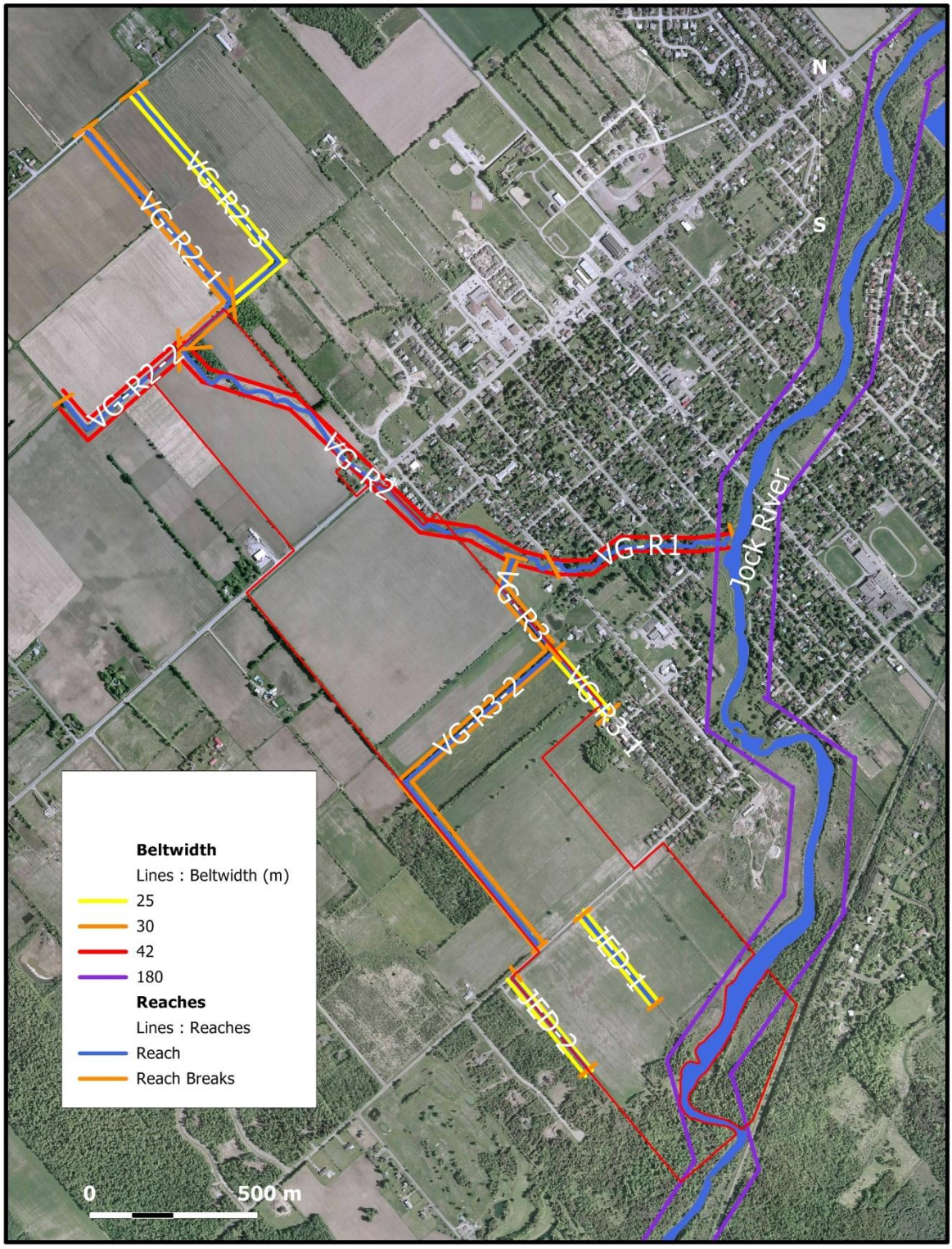
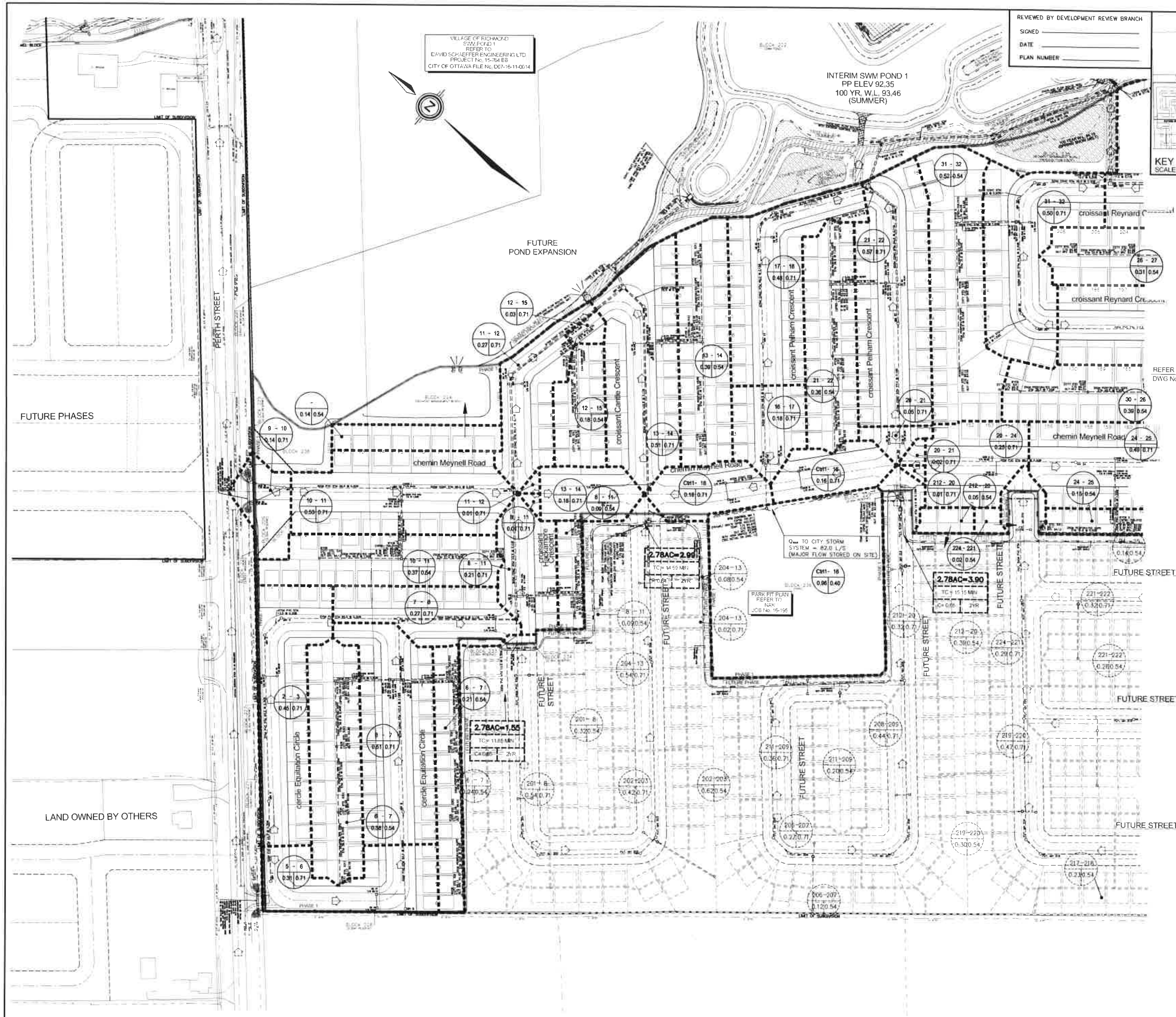
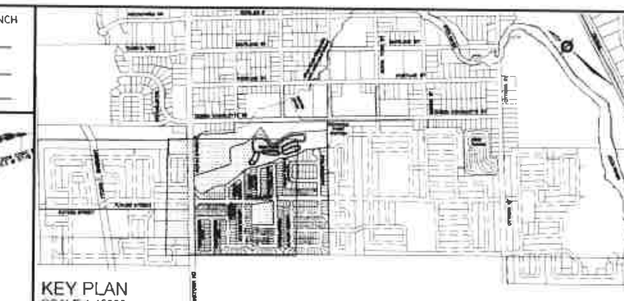


Figure 7. Meander belts

The meander belt width defines the potential hazard area (KAL, Parish & Mattamy, 2010).

Appendix B-5 – SWM Plan





LEGEND

STORM DRAINAGE BOUNDARY	
STORM DRAINAGE BOUNDARY IN FUTURE PHASES	
UPSTREAM MH TO DOWNSTREAM MH	42 - 43
AREA IN HECTARES	0.37
RUNOFF COEFFICIENT	0.74
EXTERNAL 2.78AC =	2.78AC=17.48
EXTERNAL TIME OF CONCENTRATION	TC=14.48 MIN
EXTERNAL BLENDED RUNOFF COEFFICIENT	C=0.67
UPSTREAM MH TO DOWNSTREAM MH	21-23
AREA IN FUTURE PHASES IN HECTARES	0.28
RUNOFF COEFFICIENT	0.78
STREET CATCHBASIN & LEAD	
MAINTENANCE HOLE	
CURB INLET CATCHBASIN & LEAD	
CATCHBASIN/ MAINTENANCE HOLE	
INTERCONNECTED CATCH BASIN & LEADS	
CAP	
OVERLAND FLOW DIRECTION	
EXTERNAL OVERLAND FLOW DIRECTION	
INTERIM SWM POND 1 WATERSHED BOUNDARY	

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 10-10-314-00, DRAWING DATED SEPTEMBER 26, 2012. CITY OF OTTAWA 1K MAPPING, RECEIVED ON MARCH 27, 2013. GIS MAP, RECEIVED ON JANUARY 20, 2009.

LEGAL INFORMATION

M-PLAN PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 10-10-314-00, SURVEY DATED MAY 12, 2017

4th SUBMISSION 17-11-17

NOT FOR CONSTRUCTION

BENCH MARK No. 0011968U124 ELEVATION = 95.186 m

ELEVATIONS SHOWN ARE GEODETIC AND ARE REFERRED TO BENCHMARK No. 0011968U124 HAVING A PUBLISHED ELEVATION OF 95.186m. LOCATION: BRIDGE OVER JOCK RIVER IN RICHMOND, 0.8 KM SOUTH OF RICHMOND ROAD, BARSS CAP IN TOP OF EAST WALL 2.7M FROM NORTH END.

No.	DATE	BY	DESCRIPTION
4.	17-11-17	W.L.	4th SUBMISSION
3.	17-10-13	W.L.	3rd SUBMISSION
2.	17-05-19	W.L./Z.L.	2nd SUBMISSION
1.	16-12-23	W.L./Z.L.	1st SUBMISSION

CITY OF OTTAWA

PROJECT No. 15-783

LICENSED PROFESSIONAL ENGINEER W. LIU 100167932 PROVINCE OF ONTARIO

STORM DRAINAGE PLAN

© DSEL

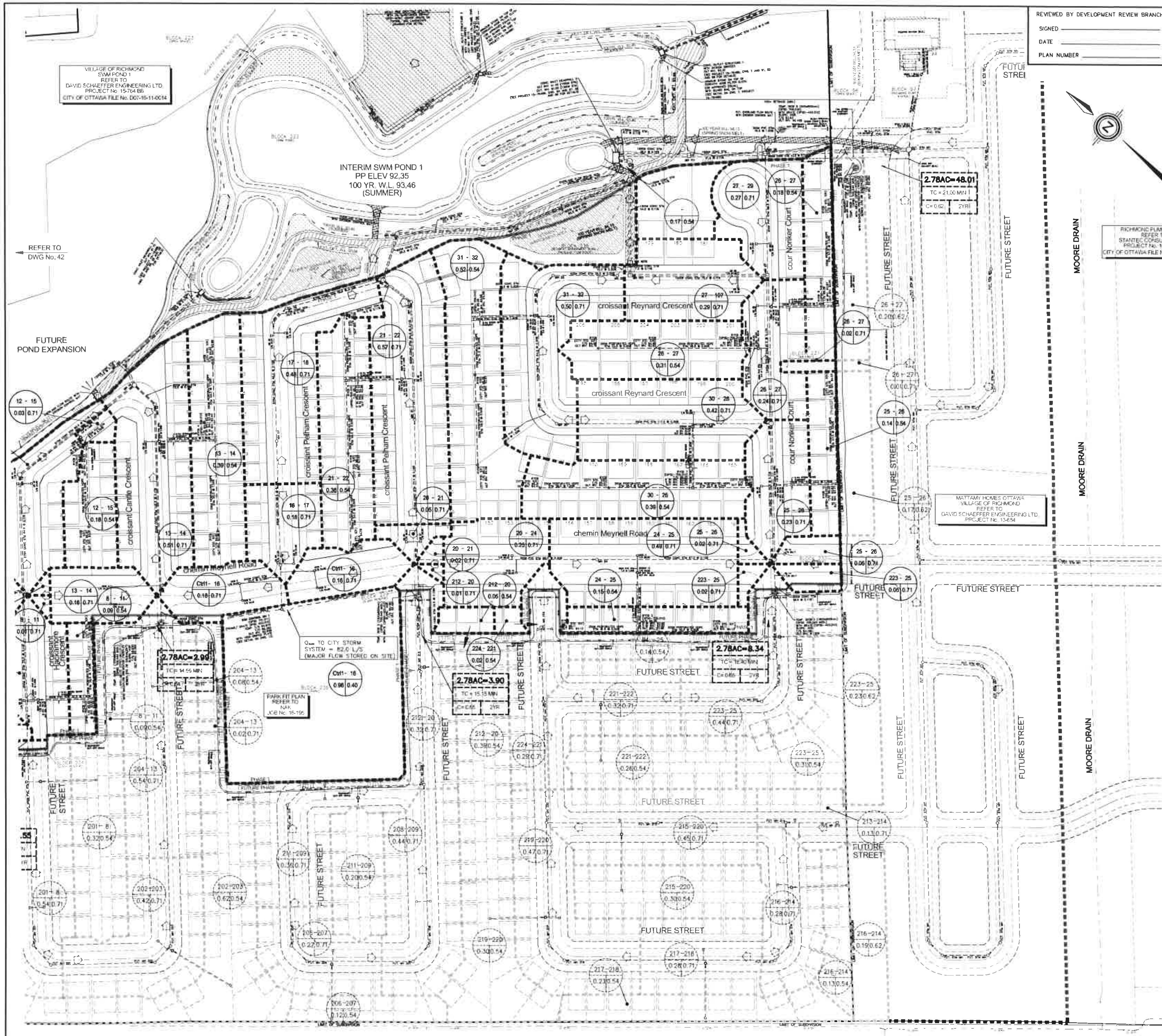
RICHMOND VILLAGE DEVELOPMENT CORPORATION

CAIVAN COMMUNITIES
RICHMOND PHASE 1

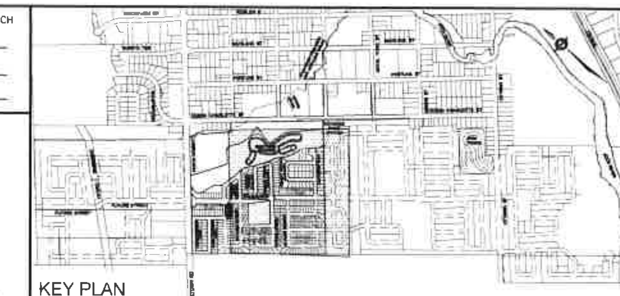
DSEL david schaeffer engineering ltd
120 Iber Road, Unit 203
Stittsville, ON K2S 1E9
Tel: (613) 836-0856
Fax: (613) 836-7183
www.DSEL.ca

DRAWN BY: A.B.	CHECKED BY: W.L./C.M.	DRAWING NO.	SHEET NO.
DESIGNED BY: P.P.	CHECKED BY: K.M.		
SCALE: 1:1000	DATE: DECEMBER 2016		42

CITY FILE No. D07-16-11-0014 CITY PLAN No. ______



REVIEWED BY DEVELOPMENT REVIEW BRANCH	
SIGNED	
DATE	
PLAN NUMBER	



KEY PLAN
SCALE 1:15000

LEGEND

- STORM DRAINAGE BOUNDARY
- STORM DRAINAGE BOUNDARY IN FUTURE PHASES
- UPSTREAM MH TO DOWNSTREAM MH — 42 - 43
- AREA IN HECTARES — 0.37
- RUNOFF COEFFICIENT — 0.74
- EXTERNAL 2.78AC = — 2.78AC=17.48
- EXTERNAL TIME OF CONCENTRATION — TC=14.45 MIN
- EXTERNAL BLENDED RUNOFF COEFFICIENT — C=0.67
- UPSTREAM MH TO DOWNSTREAM MH — 21-23
- AREA IN FUTURE PHASES IN HECTARES — 0.28
- RUNOFF COEFFICIENT — 0.78
- STREET CATCHBASIN & LEAD
- MAINTENANCE HOLE
- CURB INLET CATCHBASIN & LEAD
- CATCHBASIN/ MAINTENANCE HOLE
- INTERCONNECTED CATCH BASIN & LEADS
- CAP
- OVERLAND FLOW DIRECTION
- EXTERNAL OVERLAND FLOW DIRECTION
- INTERIM SWM POND 1 WATERSHED BOUNDARY

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 10-10-314-00, DRAWING DATED SEPTEMBER 26, 2012. CITY OF OTTAWA 1K MAPPING, RECEIVED ON MARCH 27, 2013. GIS MAP, RECEIVED ON JANUARY 20, 2009.

LEGAL INFORMATION

M-PLAN PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 10-10-314-00, SURVEY DATED MAY 12, 2017

4th SUBMISSION 17-11-17

NOT FOR CONSTRUCTION

BENCH MARK No. 0011968U124 ELEVATION = 95.186 m

ELEVATIONS SHOWN ARE GEODETIC AND ARE REFERRED TO BENCHMARK No. 0011968U124 HAVING A PUBLISHED ELEVATION OF 95.186m. LOCATION: BRIDGE OVER JOCK RIVER IN RICHMOND, 0.6 KM SOUTH OF RICHMOND ROAD, BARSS CAP IN TOP OF EAST WALL, 2.7M FROM NORTH END.

No.	DATE	BY	DESCRIPTION
4.	17-11-17	W.L.	4th SUBMISSION
3.	17-10-13	W.L.	3rd SUBMISSION
2.	17-05-19	W.L./Z.L.	2nd SUBMISSION
1.	16-12-23	W.L./Z.L.	1st SUBMISSION

Ottawa CITY OF OTTAWA

PROJECT No. 15-783

LICENSED PROFESSIONAL ENGINEER W. LIU 100167932 PROVINCE OF ONTARIO

STORM DRAINAGE PLAN

RICHMOND VILLAGE DEVELOPMENT CORPORATION

CAIVAN COMMUNITIES
RICHMOND PHASE 1

DSEL
david schaeffer engineering ltd
120 Iber Road, Unit 203
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

DRAWN BY: A.B.	CHECKED BY: W.L./C.M.	DRAWING NO.	SHEET NO.
DESIGNED BY: P.P.	CHECKED BY: K.M.		43
SCALE: 1:1000	DATE: DECEMBER 2016		

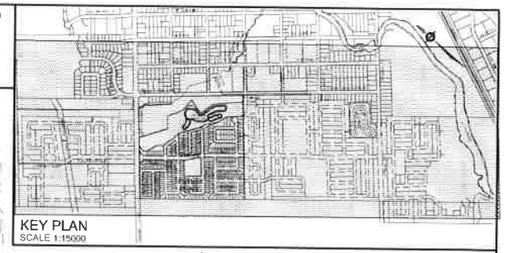
CITY FILE No. D07-16-11-0014 CITY PLAN No. ____

REVIEWED BY DEVELOPMENT REVIEW BRANCH

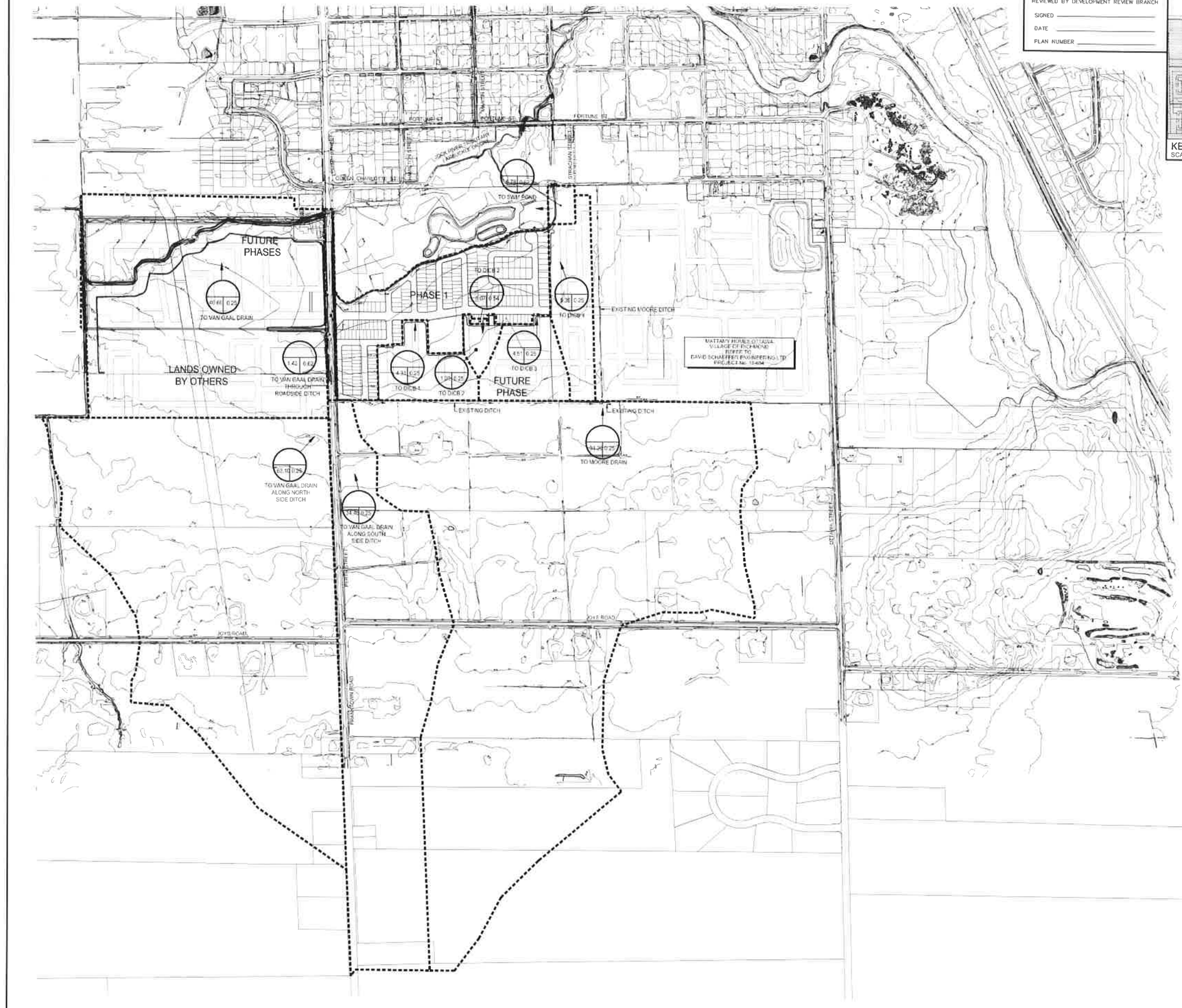
SIGNED _____

DATE _____

PLAN NUMBER _____



KEY PLAN
SCALE 1:15000



LEGEND

1 - 2 — UPSTREAM MH TO DOWNSTREAM MH
0.60 0.25 — RUNOFF COEFFICIENT
AREA IN HECTARES
STORM SEWER TRIBUTARY BOUNDARY

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 10-10-314-00, DRAWING DATED SEPTEMBER 26, 2012. CITY OF OTTAWA 1K MAPPING, RECEIVED ON MARCH 27, 2013. GIS MAP, RECEIVED ON JANUARY 20, 2009.

LEGAL INFORMATION

M-PLAN PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 10-10-314-00, SURVEY DATED MAY 12, 2017

4th SUBMISSION 17-11-17

NOT FOR CONSTRUCTION

BENCH MARK No. 0011968U124 ELEVATION = 95.186 m

ELEVATIONS SHOWN ARE GEODETIC AND ARE REFERRED TO BENCHMARK No. 0011968U124 HAVING A PUBLISHED ELEVATION OF 95.186m, LOCATION: BRIDGE OVER JOCK RIVER IN RICHMOND, 0.6 KM SOUTH OF RICHMOND ROAD, BARSS CAP IN TOP OF EAST WALL, 2.7M FROM NORTH END.

No.	DATE	BY	DESCRIPTION
4.	17-11-17	W.L.	4th SUBMISSION
3.	17-10-13	W.L.	3rd SUBMISSION
2.	17-05-19	W.L./Z.L.	2nd SUBMISSION
1.	16-12-23	W.L./Z.L.	1st SUBMISSION

Ottawa CITY OF OTTAWA

PROJECT No. 15-783

LICENSED PROFESSIONAL ENGINEER — W. LIU — 100167932 — PROVINCE OF ONTARIO

STORM DRAINAGE PLAN (PRE-DEVELOPMENT CONDITION) © DSEL

RICHMOND VILLAGE DEVELOPMENT CORPORATION

CAIVAN COMMUNITIES RICHMOND PHASE 1

DSEL david schaeffer engineering ltd
120 Iber Road, Unit 203
Stittsville, ON K2S 1E9
Tel (613) 836-0856
Fax (613) 836-7183
www.DSEL.ca

DRAWN BY: A.B.	CHECKED BY: W.L./C.M	DRAWING NO.	SHEET NO.
DESIGNED BY: P.P.	CHECKED BY: K.M.		44
SCALE: 1:5000	DATE: DECEMBER 2016		

CITY FILE No. D07-16-11-0014 CITY PLAN No. ____

PONDING AREA TABLE

AREA NUMBER	MAXIMUM STATIC PONDING DEPTH (m)	MAXIMUM STATIC PONDING ELEVATION (m)	MAXIMUM STATIC PONDING VOLUME (m³)	MAXIMUM STATIC PONDING AREA (m²)	MAX 100 YEAR PONDING DEPTH (MEASURED ABOVE CB T/G)
PA-1	0.35	95.63	134.7	1242.52	
PA-2	0.35	95.63	147.1	1444.06	
PA-3	0.35	95.26	140.1	1395.50	
PA-4	0.35	95.26	189.1	1534.44	
PA-5	0.35	95.36	137.8	1353.05	
PA-6_1	0.35	95.36	62.9	658.35	
PA-6_2	0.35	95.36	88.4	854.50	
PA-6_3	0.35	95.38	82.1	800.76	
PA-7	0.35	95.31	94.1	863.34	
PA-8_1	0.35	95.36	124.4	1141.25	
PA-8_2	0.35	95.36	100.3	962.64	
PA-8_3	0.35	95.36	100.4	934.41	
PA-8_4	0.35	95.35	109.7	1090.24	
PA-9_1	0.19	95.36	20.0	133.08	
PA-9_3	0.35	95.36	83.9	757.34	
PA-9_4	0.27	95.36	31.0	363.51	
PA-9_5	0.24	95.36	27.7	365.37	
PA-10	0.09	95.42	1.8	63.40	
PA-11_1	0.18	95.40	15.4	271.84	
PA-11_2	0.35	95.40	139.0	1254.76	
PA-12_1	0.34	95.28	82.7	778.33	
PA-12_2	0.11	95.28	3.5	107.32	
PA-12_4	0.12	95.29	4.1	110.15	
PA-13	0.35	95.36	127.0	1292.35	
PA-14	0.35	95.47	107.8	1007.13	
PA-15	0.04	95.32	0.1	13.29	
PA-16	0.08	95.36	0.7	28.90	

**NOTE: PONDING VOLUMES FOR THE REAR YARDS ARE NOT TAKEN INTO ACCOUNT FOR STORAGE CAPACITY

PONDING AREA TABLE

AREA NUMBER	MAXIMUM STATIC PONDING DEPTH (m)	MAXIMUM STATIC PONDING ELEVATION (m)	MAXIMUM STATIC PONDING VOLUME (m³)	MAXIMUM STATIC PONDING AREA (m²)	MAX 100 YEAR PONDING DEPTH (MEASURED ABOVE CB T/G)
PA-25	0.26	95.23	-	-	-
PA-26	0.15	95.17	-	-	-
PA-27	0.30	95.20	-	-	-
PA-28	0.30	95.15	-	-	-
PA-29	0.21	95.15	-	-	-
PA-30	0.30	95.45	-	-	-
PA-31	0.30	95.45	-	-	-
PA-32	0.30	95.41	-	-	-
PA-33	0.30	95.41	-	-	-
PA-34	0.30	95.44	-	-	-
PA-35	0.10	95.39	-	-	-
PA-36	0.30	95.36	-	-	-
PA-37	0.30	95.61	-	-	-
PA-38	0.30	95.57	-	-	-
PA-39	0.30	95.52	-	-	-
PA-40	0.29	95.29	-	-	-
PA-41	0.25	95.24	-	-	-
PA-42	0.24	95.22	-	-	-
PA-43	0.21	95.19	-	-	-
PA-44	0.30	95.40	-	-	-

**NOTE: PONDING VOLUMES FOR THE REAR YARDS ARE NOT TAKEN INTO ACCOUNT FOR STORAGE CAPACITY

PONDING AREA TABLE

AREA NUMBER	MAXIMUM STATIC PONDING DEPTH (m)	MAXIMUM STATIC PONDING ELEVATION (m)	MAXIMUM STATIC PONDING VOLUME (m³)	MAXIMUM STATIC PONDING AREA (m²)	MAX 100 YEAR PONDING DEPTH (MEASURED ABOVE CB T/G)
PA-45	0.30	95.36	-	-	-
PA-46	0.30	95.56	-	-	-
PA-47	0.30	95.52	-	-	-
PA-48	0.30	95.42	-	-	-
PA-49	0.30	95.39	-	-	-
PA-50	0.15	95.17	-	-	-
PA-51	0.27	95.17	-	-	-
PA-52	0.30	95.30	-	-	-
PA-53	0.25	95.42	-	-	-
PA-54	0.30	95.38	-	-	-
PA-55	0.30	95.34	-	-	-
PA-56	0.30	95.30	-	-	-
PA-57	0.30	95.43	-	-	-
PA-58	0.30	95.35	-	-	-
PA-59	0.30	95.35	-	-	-
PA-60	0.30	95.31	-	-	-
PA-61	0.29	95.40	-	-	-
PA-62	0.30	95.42	-	-	-
PA-63	0.30	95.41	-	-	-

**NOTE: PONDING VOLUMES FOR THE REAR YARDS ARE NOT TAKEN INTO ACCOUNT FOR STORAGE CAPACITY

INLET CONTROL DEVICE (ICD) DATA (Plas-Tech Storm Tech Orifice Plate) - STREET CATCHBASIN

STREET NAME	CATCHBASIN ID	OUTLET PIPE DIA. (mm)	OUTLET PIPE TYPE	OUTLET PIPE LENGTH (m)	OUTLET PIPE INV. DEPTH (m)	TOP OF GRATE	INVERT INLET	INVERT OUTLET	ICD DIA (mm)	MAX RELEASE RATE (L/S)
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

INLET CONTROL DEVICE (ICD) DATA (Plas-Tech Storm Tech Orifice Plate) - REAR YARD CATCHBASIN

STREET NAME	CATCHBASIN ID	OUTLET PIPE DIA. (mm)	OUTLET PIPE INV. DEPTH	TOP OF GRATE	INVERT INLET	INVERT OUTLET	ICD DIA (mm)	MAX RELEASE RATE (L/S)
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

REVIEWED BY DEVELOPMENT REVIEW BRANCH

SIGNED ______

DATE ______

PLAN NUMBER ______

KEY PLAN
SCALE 1:15000

REFER TO DWG No. 46

PERMISSION REQUIRED FOR WORK ON ADJACENT LANDS

ANY DISTURBED AREA DURING CONSTRUCTION TO BE RESTORED TO THE ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE AUTHORITIES HAVING JURISDICTION

CONTRACTOR TO VERIFY THE PRECISE LOCATIONS AND INVERT ELEVATIONS OF Ex. UNDERGROUND SERVICES AND Ex. UTILITIES PRIOR TO STARTING CONSTRUCTION

NOTE:
ALL SWALES SHALL BE 0.15m DEEP WITH 3:1 SIDE SLOPES UNLESS OTHERWISE INDICATED

NOTE RE: PERFORATED PIPE
PERFORATED PIPE IS REQUIRED FOR SWALE SLOPE LESS THAN 1.5%. REFER TO CITY STD. S29, S30 FOR REAR YARD TRENCH AND PIPE DETAIL ONLY

NOTE:
A GEOTECHNICAL ENGINEER LICENSED IN THE PROVINCE OF ONTARIO IS TO INSPECT ALL SUBGRADE SURFACES FOR FOOTING AND PAVEMENT STRUCTURES PRIOR TO CONSTRUCTION

NOTE: RE: EX. TREES
ALL EXISTING TREES AND SHRUBS WITHIN LOTS, BLOCKS AND PROPOSED ROW TO BE REMOVED, WHERE APPLICABLE. TREE REMOVAL TO BE APPROVED AND COORDINATED BY THE CITY OF OTTAWA

LEGEND

- TOP OF FOUNDATION ELEVATION
- FINISHED FLOOR ELEVATION
- UNDERSIDE OF FOOTING ELEVATION
- NUMBER OF RISERS
- UNITS REQUIRING PRESSURE REDUCING VALVES — PRV
- WALKOUT UNITS — WO
- SLAB ON GRADE — SOG
- PONDING AREA
- PONDING AREA ID — PA-1
- PHASING LIMITS
- PROPOSED ELEVATION
- EXISTING ELEVATION — x92.52
- TOP OF GRATE ELEVATION — T/G 93.50
- MAJOR OVERLAND FLOW DIRECTION
- STORM DRAINAGE BOUNDARY

ALL DWELLINGS ARE TO BE PROVIDED WITH SUMP PUMPS UNLESS OTHERWISE NOTED. SEE DETAIL ON DWG. 3.

TOPOGRAPHIC INFORMATION
TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 10-10-314-00, DRAWING DATED SEPTEMBER 28, 2012. CITY OF OTTAWA 1K MAPPING, RECEIVED ON MARCH 27, 2013. GIS MAP, RECEIVED ON JANUARY 20, 2009.

LEGAL INFORMATION
M-PLAN PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 10-10-314-00, SURVEY DATED MAY 12, 2017

4th SUBMISSION 17-11-17

NOT FOR CONSTRUCTION

BENCH MARK No. 0011968U124 ELEVATION = 95.186 m
ELEVATIONS SHOWN ARE GEODETIC AND ARE REFERRED TO BENCHMARK No. 0011968U124 HAVING A PUBLISHED ELEVATION OF 95.186m. LOCATION: BRIDGE OVER JOCK RIVER IN RICHMOND, 0.8 KM SOUTH OF RICHMOND ROAD, BRASS CAP IN TOP OF EAST WALL, 2.7M FROM NORTH END.

No.	DATE	BY	DESCRIPTION
4.	17-11-17	W.L.	4th SUBMISSION
3.	17-10-13	W.L.	3rd SUBMISSION
2.	17-05-19	W.L./Z.L.	2nd SUBMISSION
1.	16-12-23	W.L./Z.L.	1st SUBMISSION

Ottawa CITY OF OTTAWA

PROFESSIONAL ENGINEER W. LIU 100167932 PROVINCE OF ONTARIO

PROJECT No. 15-783

100 YEAR / STATIC PONDING AREA AND ICD PLAN

© DSEL

RICHMOND VILLAGE DEVELOPMENT CORPORATION

CAIVAN COMMUNITIES RICHMOND PHASE 1

DSEL david schaeffer engineering ltd

120 Iber Road, Unit 203
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

DRAWN BY: A.B.	CHECKED BY: W.L./C.M.	DRAWING NO.	SHEET NO.
DESIGNED BY: P.P.	CHECKED BY: K.M.		45
SCALE: 1:750	DATE: DECEMBER 2016		

CITY FILE No. D07-16-11-0014 CITY PLAN No. ______

ANY DISTURBED AREA DURING CONSTRUCTION TO BE RESTORED TO THE ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE AUTHORITIES HAVING JURISDICTION

CONTRACTOR TO VERIFY THE PRECISE LOCATIONS AND INVERT ELEVATIONS OF Ex. UNDERGROUND SERVICES AND Ex. UTILITIES PRIOR TO STARTING CONSTRUCTION

PERMISSION REQUIRED FOR WORK ON ADJACENT LANDS

VILLAGE OF RICHMOND
SWM POND 1
REFER TO
DAVID SCHAEFFER ENGINEERING LTD
PROJECT No. 15-764 BB
CITY OF OTTAWA FILE No. D07 16 11-0014

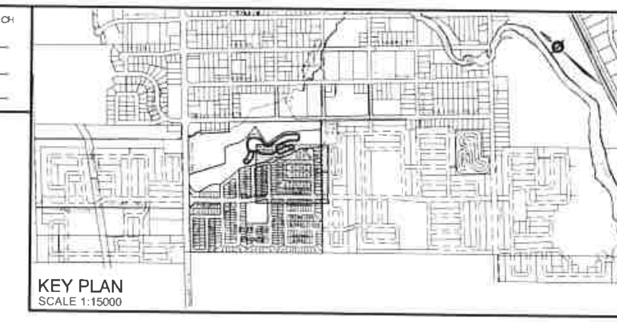
NOTE:
A GEOTECHNICAL ENGINEER LICENSED IN THE PROVINCE OF ONTARIO IS TO INSPECT ALL SUBGRADE SURFACES FOR FOOTING AND PAVEMENT STRUCTURES PRIOR TO CONSTRUCTION

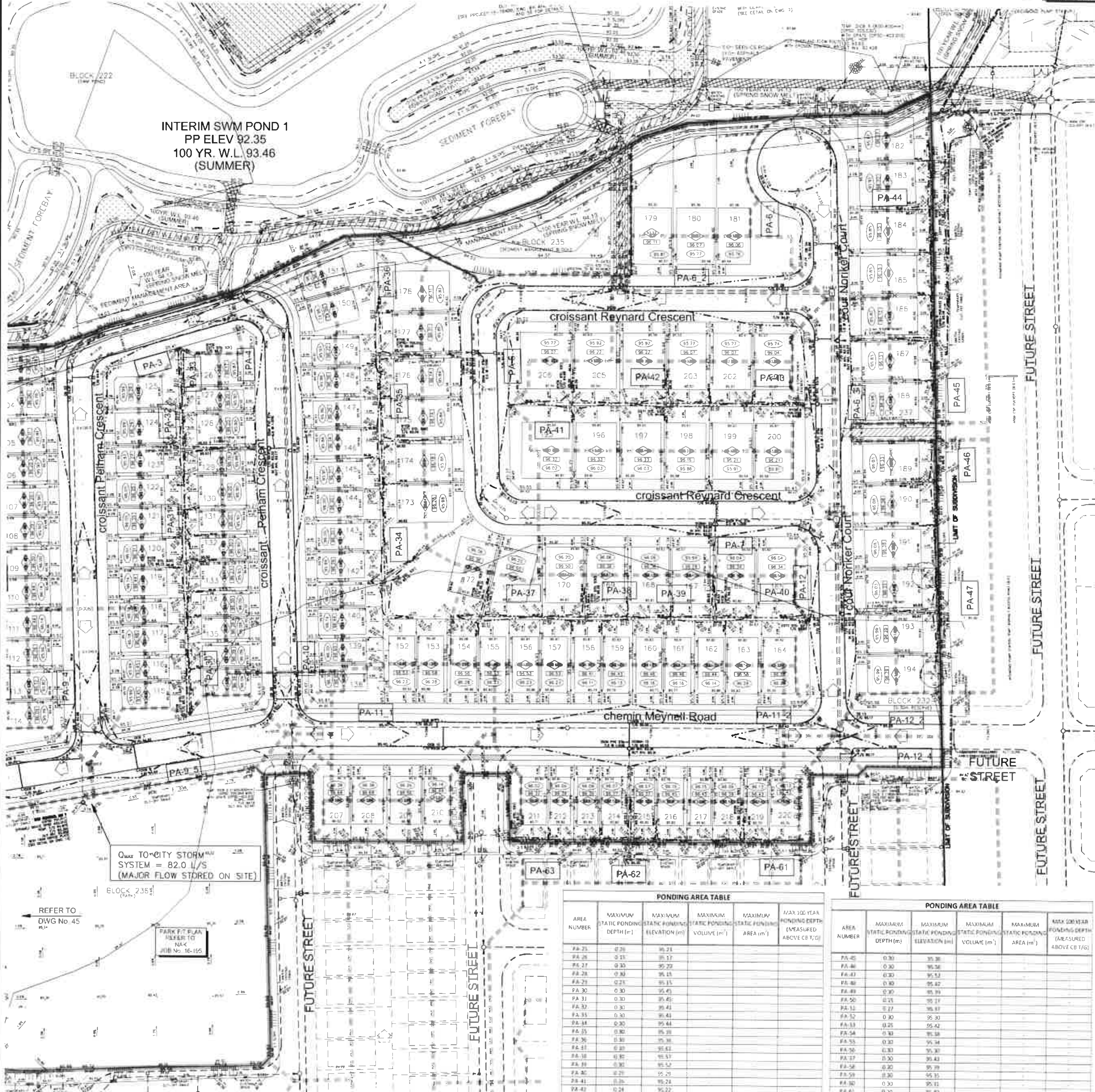
NOTE:
ALL SWALES SHALL BE 0.15m DEEP WITH 3:1 SIDE SLOPES UNLESS OTHERWISE INDICATED

NOTE RE: PERFORATED PIPE
PERFORATED PIPE IS REQUIRED FOR SWALE SLOPE LESS THAN 1.5%. REFER TO CITY STD. S29, S30 FOR REAR YARD TRENCH AND PIPE DETAIL ONLY

NOTE: RE: EX. TREES
ALL EXISTING TREES AND SHRUBS WITHIN LOTS, BLOCKS AND PROPOSED ROW TO BE REMOVED, WHERE APPLICABLE. TREE REMOVAL TO BE APPROVED AND COORDINATED BY THE CITY OF OTTAWA.

REVIEWED BY DEVELOPMENT REVIEW BRANCH
SIGNED ____________
DATE ____________
PLAN NUMBER ____________





PONDING AREA TABLE					
AREA NUMBER	MAXIMUM STATIC PONDING DEPTH (m)	MAXIMUM STATIC PONDING ELEVATION (m)	MAXIMUM STATIC PONDING VOLUME (m³)	MAXIMUM STATIC PONDING AREA (m²)	MAX 100 YEAR PONDING DEPTH (MEASURED ABOVE CB T/G)
PA-1	0.35	95.01	134.7	1242.52	-
PA-2	0.35	95.03	147.1	1444.06	-
PA-3	0.35	95.26	140.1	1395.50	-
PA-4	0.35	95.26	149.1	1534.44	-
PA-5	0.35	95.26	137.8	1353.05	-
PA-6_1	0.31	95.18	62.9	658.35	-
PA-6_2	0.35	95.18	88.4	854.50	-
PA-6_3	0.35	95.16	82.1	800.76	-
PA-7	0.35	95.31	94.1	867.34	-
PA-8_1	0.35	95.16	124.4	1141.25	-
PA-8_2	0.35	95.18	106.9	962.54	-
PA-8_3	0.35	95.18	100.4	934.41	-
PA-8_4	0.35	95.18	105.7	1099.24	-
PA-9_1	0.19	95.16	20.0	313.68	-
PA-9_3	0.35	95.18	83.9	757.34	-
PA-9_4	0.27	95.18	31.0	363.51	-
PA-9_5	0.24	95.16	27.7	365.72	-
PA-10	0.09	95.42	1.8	63.40	-
PA-11_1	0.18	95.40	15.4	271.84	-
PA-11_2	0.33	95.40	139.0	1254.76	-
PA-12_1	0.34	95.28	82.7	779.21	-
PA-12_2	0.11	95.28	8.5	107.92	-
PA-12_4	0.12	95.29	4.1	110.15	-
PA-13	0.35	95.36	127.0	1292.95	-
PA-14	0.35	95.47	107.8	1007.13	-
PA-15	0.04	95.32	0.1	13.29	-
PA-16	0.08	95.36	0.7	28.90	-

**NOTE: PONDING VOLUMES FOR THE REAR YARDS ARE NOT TAKEN INTO ACCOUNT FOR STORAGE CAPACITY

INLET CONTROL DEVICE (ICD) DATA (Plas-Tech Storm Tech Orifice Plate) - STREET CATCHBASIN

STREET NAME	CATCHBASIN ID	OUTLET PIPE DIA (mm)	OUTLET PIPE TYPE	OUTLET PIPE LENGTH (m)	OUTLET PIPE INV. DEPTH (m)	TOP OF GRATE	INVERT INLET	INVERT OUTLET	ICD DIA (mm)	MAX RELEASE RATE (L/S) @ 100Y PONDING
chemin Meynell Road	CB 1	200	PVC	[illegible]	1.38	94.81		93.41	178	[illegible]
	CBMH 2	[illegible]	PVC	[illegible]	1.74	94.81		[illegible]	127	[illegible]
									152	[illegible]
	CB 3	200	PVC	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	102	[illegible]
	[illegible]	200	PVC	[illegible]	1.38	[illegible]		[illegible]		
	[illegible]	250	PVC	[illegible]	1.34	[illegible]	[illegible]	[illegible]	108	[illegible]
	[illegible]	200	PVC	[illegible]	1.38	[illegible]		[illegible]		
	[illegible]	250	PVC	[illegible]	1.34	[illegible]	[illegible]	[illegible]	108	[illegible]
	[illegible]	200	PVC	[illegible]	1.38	[illegible]		[illegible]		
	[illegible]	200	PVC	[illegible]	1.38	[illegible]		[illegible]	[illegible]	[illegible]
	[illegible]	200	PVC	[illegible]	1.38	[illegible]		[illegible]	108	[illegible]
	[illegible]	200	PVC	[illegible]	1.38	[illegible]		[illegible]	178	[illegible]
	[illegible]	250	PVC	[illegible]	1.74	[illegible]		[illegible]	178	[illegible]
	[illegible]	200	PVC	[illegible]	[illegible]	[illegible]		[illegible]	83	[illegible]
	[illegible]	250	PVC	[illegible]	[illegible]	[illegible]		[illegible]	83	[illegible]
	[illegible]	200	PVC	[illegible]	[illegible]	[illegible]		[illegible]	83	[illegible]
	[illegible]	200	PVC	[illegible]	[illegible]	[illegible]		[illegible]	94	[illegible]
croissant [illegible] Crescent	[illegible]	200	PVC	[illegible]	[illegible]	[illegible]		[illegible]	83	[illegible]
	[illegible]	250	PVC	[illegible]	[illegible]	[illegible]		[illegible]	108	[illegible]
	[illegible]	250	PVC	4.0	1.74	[illegible]		[illegible]	83	[illegible]
	[illegible]	200	PVC	[illegible]	[illegible]	[illegible]		[illegible]	127	[illegible]
	[illegible]	250	PVC	[illegible]	[illegible]	[illegible]		[illegible]	178	[illegible]
croissant Pelham Crescent	[illegible]	200	PVC	[illegible]	1.38	[illegible]		[illegible]	83	[illegible]
	[illegible]	200	PVC	[illegible]	[illegible]	[illegible]		[illegible]	83	[illegible]
	[illegible]	200	PVC	[illegible]	[illegible]	[illegible]		[illegible]	127	[illegible]
	[illegible]	200	PVC	[illegible]	[illegible]	[illegible]		[illegible]	127	[illegible]
	[illegible]	250	PVC	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
	[illegible]	200	PVC	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
	CB 26	200	PVC	6.0	1.38	95.33		[illegible]	[illegible]	[illegible]
	CB 27	200	PVC	1.5	1.38	95.37		[illegible]	[illegible]	[illegible]
croissant Reynard Crescent	[illegible]	200	PVC	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
	[illegible]	200	PVC	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	PVC	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
									[illegible]	[illegible]
	[illegible]	200	PVC	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
	[illegible]	200	PVC	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
	[illegible]	250	PVC	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
									[illegible]	[illegible]
cour Noriker Court	[illegible]	200	PVC	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
	[illegible]	200	PVC	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
	[illegible]	200	PVC	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
	[illegible]	250	PVC	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
	[illegible]	250	PVC	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
	[illegible]	200	PVC	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
	[illegible]	250	PVC	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
croissant [illegible] Crescent	[illegible]	200	PVC	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
	[illegible]	250	PVC	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	200	PVC	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
	[illegible]	200	PVC	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
	[illegible]	200	PVC	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
	[illegible]	200	PVC	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
	[illegible]	250	PVC	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	200	PVC	[illegible]	[illegible]	[illegible]		[illegible]		
	[illegible]	250	PVC	[illegible]	1.74	[illegible]		[illegible]	127	[illegible]
									[illegible]	[illegible]
	[illegible]	250	PVC	[illegible]	1.74	94.82		[illegible]	[illegible]	[illegible]
									[illegible]	[illegible]

INLET CONTROL DEVICE (ICD) DATA (Plas-Tech Storm Tech Orifice Plate) - REAR YARD CATCHBASIN

STREET NAME	CATCHBASIN ID	OUTLET PIPE DIA (mm)	OUTLET PIPE INV. DEPTH	TOP OF GRATE	INVERT INLET	INVERT OUTLET	ICD DIA (mm)	MAX RELEASE RATE (L/S)
chemin Meynell Road	RYCB 1	250	1.48	[illegible]	[illegible]	[illegible]		
	RYCB 2	250	[illegible]	[illegible]	[illegible]	[illegible]		
croissant [illegible] Crescent	RYCB 3	250	[illegible]	[illegible]	[illegible]	[illegible]		
	RYCB 4	250	[illegible]	[illegible]	[illegible]	[illegible]		
croissant Pelham Crescent	RYCB 5	250	[illegible]	[illegible]	[illegible]	[illegible]		
croissant Reynard Crescent	RYCB 6	250	[illegible]	[illegible]	[illegible]	[illegible]		
	RYCB 7	250	[illegible]	[illegible]	[illegible]	[illegible]		
cour Noriker Court	RYCB 8	250	[illegible]	[illegible]	[illegible]	[illegible]		
	RYCB 9	250	[illegible]	[illegible]	[illegible]	[illegible]		
	RYCB 10	250	[illegible]	[illegible]	[illegible]	[illegible]		
croissant [illegible] Crescent	RYCB 11	250	[illegible]	[illegible]	[illegible]	[illegible]		
[illegible]	[illegible]	250	[illegible]	[illegible]	[illegible]	[illegible]		
	[illegible]	250	[illegible]	[illegible]	[illegible]	[illegible]		

PONDING AREA TABLE					
AREA NUMBER	MAXIMUM STATIC PONDING DEPTH (m)	MAXIMUM STATIC PONDING ELEVATION (m)	MAXIMUM STATIC PONDING VOLUME (m³)	MAXIMUM STATIC PONDING AREA (m²)	MAX 100 YEAR PONDING DEPTH (MEASURED ABOVE CB T/G)
PA-25	0.20	95.21			
PA-26	0.15	95.17			
PA-27	0.30	95.22			
PA-28	0.30	95.15			
PA-29	0.25	95.15			
PA-30	0.30	95.45			
PA-31	0.30	95.45			
PA-32	0.30	95.41			
PA-33	0.30	95.41			
PA-34	0.30	95.44			
PA-35	0.30	95.39			
PA-36	0.30	95.38			
PA-37	0.30	95.43			
PA-38	0.30	95.57			
PA-39	0.30	95.52			
PA-40	0.29	95.29			
PA-41	0.26	95.24			
PA-42	0.24	95.22			
PA-43	0.21	95.19			
PA-44	0.30	95.40			

**NOTE: PONDING VOLUMES FOR THE REAR YARDS ARE NOT TAKEN INTO ACCOUNT FOR STORAGE CAPACITY

PONDING AREA TABLE					
AREA NUMBER	MAXIMUM STATIC PONDING DEPTH (m)	MAXIMUM STATIC PONDING ELEVATION (m)	MAXIMUM STATIC PONDING VOLUME (m³)	MAXIMUM STATIC PONDING AREA (m²)	MAX 100 YEAR PONDING DEPTH (MEASURED ABOVE CB T/G)
PA-45	0.30	95.36			
PA-46	0.30	95.36			
PA-47	0.30	95.53			
PA-48	0.30	95.47			
PA-49	0.30	95.39			
PA-50	0.15	95.17			
PA-51	0.27	95.37			
PA-52	0.30	95.30			
PA-53	0.25	95.42			
PA-54	0.30	95.38			
PA-55	0.30	95.34			
PA-56	0.30	95.30			
PA-57	0.30	95.43			
PA-58	0.30	95.39			
PA-59	0.30	95.35			
PA-60	0.30	95.31			
PA-61	0.29	95.40			
PA-62	0.30	95.42			
PA-63	0.30	95.41			

**NOTE: PONDING VOLUMES FOR THE REAR YARDS ARE NOT TAKEN INTO ACCOUNT FOR STORAGE CAPACITY

LEGEND

- TOP OF FOUNDATION ELEVATION
- FINISHED FLOOR ELEVATION
- UNDERSIDE OF FOOTING ELEVATION
- NUMBER OF RISERS
- UNITS REQUIRING PRESSURE REDUCING VALVES — PRV
- WALKOUT UNITS
- SLAB ON GRADE
- PONDING AREA
- PONDING AREA ID — PA-1
- PHASING LIMITS
- PROPOSED ELEVATION
- EXISTING ELEVATION — ×92.52
- TOP OF GRATE ELEVATION — T/G 92.55
- MAJOR OVERLAND FLOW DIRECTION
- STORM DRAINAGE BOUNDARY

ALL DWELLINGS ARE TO BE PROVIDED WITH SUMP PUMPS UNLESS OTHERWISE NOTED. SEE DETAIL ON DWG. 3.

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 10-10-314-00, DRAWING DATED SEPTEMBER 26, 2012. CITY OF OTTAWA 1K MAPPING, RECEIVED ON MARCH 27, 2013. GIS MAP, RECEIVED ON JANUARY 20, 2009.

LEGAL INFORMATION

M-PLAN PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 10-10-314-00, SURVEY DATED MAY 12, 2017

4th SUBMISSION 17-11-17

NOT FOR CONSTRUCTION

BENCH MARK No. 0011968U124 ELEVATION = 95.186 m

ELEVATIONS SHOWN ARE GEODETIC AND ARE REFERRED TO BENCHMARK No. 0011968U124 HAVING A PUBLISHED ELEVATION OF 95.186m. LOCATION: BRIDGE OVER JOCK RIVER IN RICHMOND, 0.8 KM SOUTH OF RICHMOND ROAD, BRASS CAP IN TOP OF EAST WALL, 2.7M FROM NORTH END.

No.	DATE	BY	DESCRIPTION
4.	17-11-17	W.L.	4th SUBMISSION
3.	17-10-13	W.L.	3rd SUBMISSION
2.	17-05-19	W.L./Z.L.	2nd SUBMISSION
1.	16-12-23	W.L./Z.L.	1st SUBMISSION

Ottawa CITY OF OTTAWA

PROJECT No. 15-783

LICENSED PROFESSIONAL ENGINEER W. LIU 100167932 PROVINCE OF ONTARIO

100 YEAR / STATIC PONDING AREA AND ICD PLAN

© DSEL

RICHMOND VILLAGE DEVELOPMENT CORPORATION

CAIVAN COMMUNITIES
RICHMOND PHASE 1

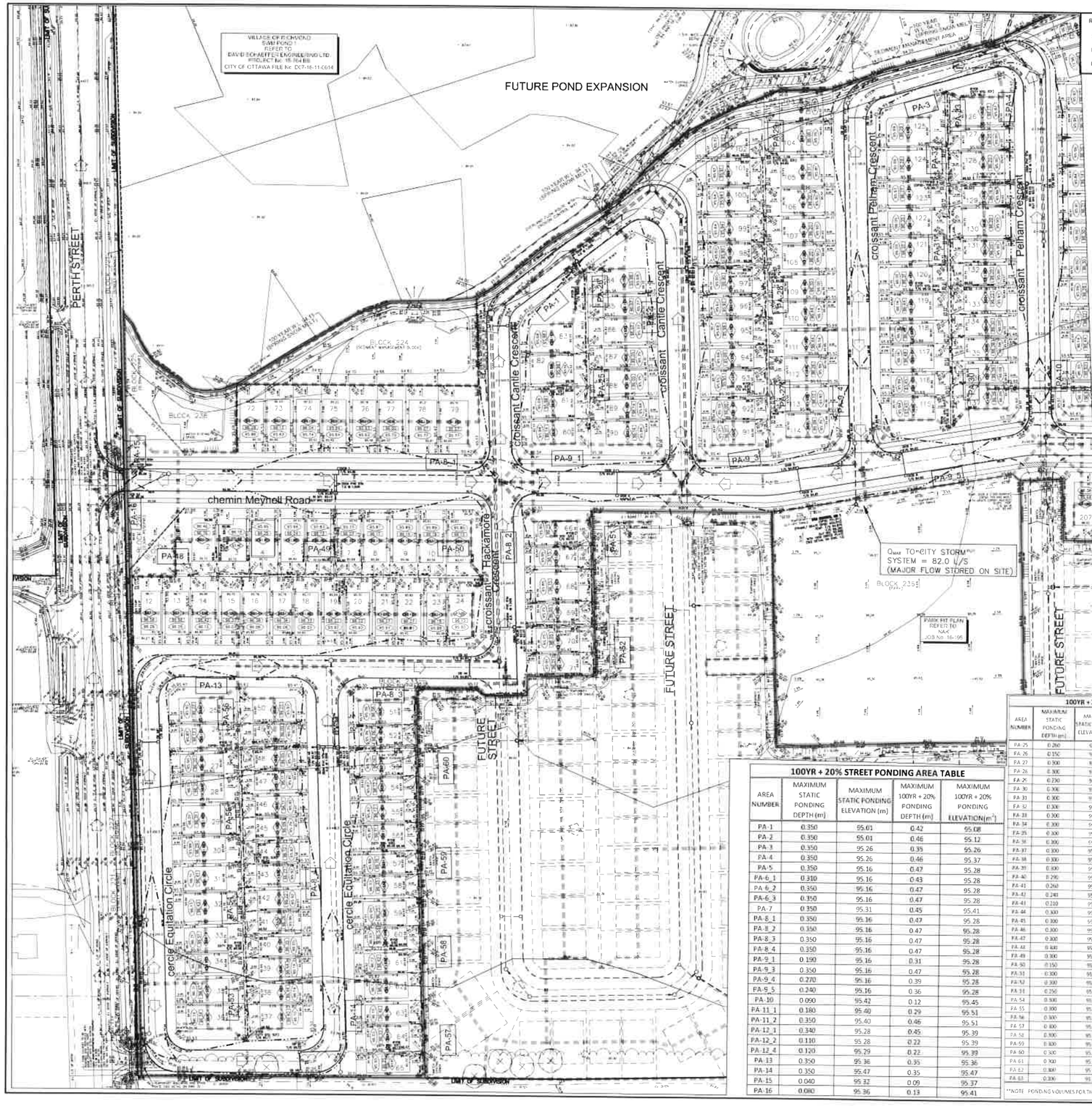
DSEL
david schaeffer engineering ltd

120 Iber Road, Unit 203
Stittsville, ON K2S 1E9
Tel (613) 836-0856
Fax (613) 836-7183
www.DSEL.ca

DRAWN BY: A.B.	CHECKED BY: W.L./C.M.	DRAWING NO.	SHEET NO.
DESIGNED BY: P.P.	CHECKED BY: K.M.		46
SCALE: 1:750	DATE: DECEMBER 2016		

CITY PLAN No. ____

CITY FILE No. D07-16-11-0014

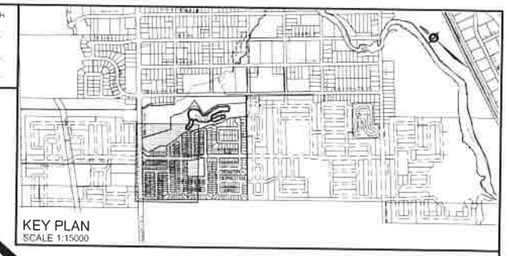


REVIEWED BY DEVELOPMENT REVIEW BRANCH

SIGNED _____

DATE _____

PLAN NUMBER _____



REFER TO DWG No. 46

PERMISSION REQUIRED FOR WORK ON ADJACENT LANDS

ANY DISTURBED AREA DURING CONSTRUCTION TO BE RESTORED TO THE ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE AUTHORITIES HAVING JURISDICTION.

CONTRACTOR TO VERIFY THE PRECISE LOCATIONS AND INVERT ELEVATIONS OF Ex. UNDERGROUND SERVICES AND Ex. UTILITIES PRIOR TO STARTING CONSTRUCTION.

NOTE:
ALL SWALES SHALL BE 0.15m DEEP WITH 3:1 SIDE SLOPES UNLESS OTHERWISE INDICATED

NOTE RE: PERFORATED PIPE
PERFORATED PIPE IS REQUIRED FOR SWALE SLOPE LESS THAN 1.5%. REFER TO CITY STD. S29, S30 FOR REAR YARD TRENCH AND PIPE DETAIL ONLY

NOTE:
A GEOTECHNICAL ENGINEER LICENSED IN THE PROVINCE OF ONTARIO IS TO INSPECT ALL SUBGRADE SURFACES FOR FOOTING AND PAVEMENT STRUCTURES PRIOR TO CONSTRUCTION

NOTE: RE: EX. TREES
ALL EXISTING TREES AND SHRUBS WITHIN LOTS, BLOCKS AND PROPOSED ROW TO BE REMOVED, WHERE APPLICABLE. TREE REMOVAL TO BE APPROVED AND COORDINATED BY THE CITY OF OTTAWA.

LEGEND

- TOP OF FOUNDATION ELEVATION
- FINISHED FLOOR ELEVATION
- UNDERSIDE OF FOOTING ELEVATION
- NUMBER OF RISERS
- UNITS REQUIRING PRESSURE REDUCING VALVES — PRV
- WALKOUT UNITS — WO
- SLAB ON GRADE — SOG
- PONDING AREA
- PONDING AREA ID — PA-1
- PHASING LIMITS
- PROPOSED ELEVATION
- EXISTING ELEVATION
- TOP OF GRATE ELEVATION — TG 92.55
- MAJOR OVERLAND FLOW DIRECTION
- STORM DRAINAGE BOUNDARY

ALL DWELLINGS ARE TO BE PROVIDED WITH SUMP PUMPS UNLESS OTHERWISE NOTED. SEE DETAIL ON DWG. 3.

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 10-10-314-00, DRAWING DATED SEPTEMBER 26, 2012. CITY OF OTTAWA 1K MAPPING, RECEIVED ON MARCH 27, 2013. GIS MAP, RECEIVED ON JANUARY 20, 2009.

LEGAL INFORMATION

M-PLAN PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 10-10-314-00, SURVEY DATED MAY 12, 2017

4th SUBMISSION 17-11-17

NOT FOR CONSTRUCTION

BENCH MARK No. 0011968U124 ELEVATION = 95.186 m

ELEVATIONS SHOWN ARE GEODETIC AND ARE REFERRED TO BENCHMARK No. 0011968U124 HAVING A PUBLISHED ELEVATION OF 95.186m. LOCATION: BRIDGE OVER JOCK RIVER IN RICHMOND, 0.8 KM SOUTH OF RICHMOND ROAD, BARSS CAP IN TOP OF EAST WALL, 2.7M FROM NORTH END.

100YR + 20% STREET PONDING AREA TABLE

AREA NUMBER	MAXIMUM STATIC PONDING DEPTH (m)	MAXIMUM STATIC PONDING ELEVATION (m)	MAXIMUM 100YR + 20% PONDING DEPTH (m)	MAXIMUM 100YR + 20% PONDING ELEVATION (m^3)
PA-1	0.350	95.01	0.42	95.08
PA-2	0.350	95.01	0.46	95.12
PA-3	0.350	95.26	0.35	95.26
PA-4	0.350	95.26	0.46	95.37
PA-5	0.350	95.16	0.47	95.28
PA-6_1	0.310	95.16	0.43	95.28
PA-6_2	0.350	95.16	0.47	95.28
PA-6_3	0.350	95.16	0.47	95.28
PA-7	0.350	95.31	0.45	95.41
PA-8_1	0.350	95.16	0.47	95.28
PA-8_2	0.350	95.16	0.47	95.28
PA-8_3	0.350	95.16	0.47	95.28
PA-8_4	0.350	95.16	0.47	95.28
PA-9_1	0.190	95.16	0.31	95.28
PA-9_3	0.350	95.16	0.47	95.28
PA-9_4	0.270	95.16	0.39	95.28
PA-9_5	0.240	95.16	0.36	95.28
PA-10	0.090	95.42	0.12	95.45
PA-11_1	0.180	95.40	0.29	95.51
PA-11_2	0.350	95.40	0.46	95.51
PA-12_1	0.340	95.28	0.45	95.39
PA-12_2	0.110	95.28	0.22	95.39
PA-12_4	0.120	95.29	0.22	95.39
PA-13	0.350	95.36	0.35	95.36
PA-14	0.350	95.47	0.35	95.47
PA-15	0.040	95.32	0.09	95.37
PA-16	0.080	95.36	0.13	95.41

100YR + 20% REARYARD PONDING AREA TABLE

AREA NUMBER	MAXIMUM STATIC PONDING DEPTH (m)	MAXIMUM STATIC PONDING ELEVATION (m)	MAXIMUM 100YR + 20% PONDING DEPTH (m)	MAXIMUM 100YR + 20% PONDING ELEVATION (m^3)	LOT/BLOCK NUMBER	LOWEST CORNER ELEVATION
PA-25	0.260	95.21	0.30	95.28	83	95.36
PA-26	0.150	95.17	0.22	95.23	84	95.33
PA-27	0.300	95.30	0.34	95.24	92	95.11
PA-28	0.300	95.31	0.34	95.22	97	95.26
PA-29	0.230	95.15	0.26	95.19	101	95.23
PA-30	0.300	95.45	0.32	95.48	117	95.67
PA-31	0.300	95.45	0.39	95.53	118	95.52
PA-32	0.300	95.43	0.36	95.47	125	95.53
PA-33	0.300	95.43	0.32	95.43	126	95.57
PA-34	0.300	95.44	0.34	95.48	132	95.62
PA-35	0.300	95.39	0.36	95.45	133	95.50
PA-36	0.300	95.36	0.36	95.43	137	95.47
PA-37	0.300	95.61	0.33	95.64	171	95.70
PA-38	0.300	95.57	0.35	95.63	269	95.64
PA-39	0.300	95.52	0.38	95.59	167	95.63
PA-40	0.290	95.29	0.31	95.31	165	95.49
PA-41	0.260	95.24	0.30	95.28	205	95.29
PA-42	0.240	95.32	0.29	95.28	203	95.29
PA-43	0.210	95.19	0.27	95.25	201	95.31
PA-44	0.300	95.60	0.35	95.48	183	95.47
PA-45	0.300	95.36	0.36	95.43	182	95.47
PA-46	0.300	95.56	0.35	95.61	188	95.63
PA-47	0.300	95.52	0.36	95.58	359	95.63
PA-48	0.400	95.63	0.34	95.47	3	95.50
PA-49	0.300	95.39	0.36	95.46	2	95.50
PA-50	0.150	95.17	0.28	95.30	11	95.35
PA-51	0.300	95.40	0.32	95.42	87	95.42
PA-52	0.300	95.30	0.35	95.36	89	95.41
PA-53	0.250	95.42	0.28	95.44	93	95.62
PA-54	0.300	95.38	0.35	95.43	43	95.53
PA-55	0.300	95.34	0.35	95.40	85	95.45
PA-56	0.300	95.30	0.36	95.37	40	95.41
PA-57	0.300	95.43	0.33	95.46	65	95.47
PA-58	0.300	95.38	0.35	95.45	63	95.56
PA-59	0.300	95.35	0.36	95.41	57	95.46
PA-60	0.300	95.31	0.36	95.38	58	95.47
PA-61	0.300	95.41	0.34	95.45	235	95.58
PA-62	0.300	95.62	0.36	95.68	215	95.73
PA-63	0.300	95.43	0.32	95.44	211	95.58

**NOTE: PONDING VOLUMES FOR THE REAR YARDS ARE NOT TAKEN INTO ACCOUNT FOR STORAGE CAPACITY

No.	DATE	BY	DESCRIPTION
4.	17-11-17	W.L.	4th SUBMISSION
3.	17-10-13	W.L.	3rd SUBMISSION
2.	17-05-19	W.L./Z.L.	2nd SUBMISSION
1.	16-12-23	W.L./Z.L.	1st SUBMISSION

Ottawa CITY OF OTTAWA

PROJECT No. 15-783

W. LIU 100167932 LICENSED PROFESSIONAL ENGINEER PROVINCE OF ONTARIO

100 YEAR + 20% PONDING AREA PLAN

⊙ DSEL

RICHMOND VILLAGE DEVELOPMENT CORPORATION

CAIVAN COMMUNITIES
RICHMOND PHASE 1

david schaeffer engineering ltd
120 Iber Road, Unit 203
Stittsville, ON K2S 1E9
Tel: (613) 836-0856
Fax: (613) 836-7183
www.DSEL.ca

DRAWN BY:	A.B.	CHECKED BY: W.L./C.M.	DRAWING NO.
DESIGNED BY:	P.P.	CHECKED BY: K.M.	SHEET NO: 47
SCALE:	1:750	DATE: DECEMBER 2016	

CITY FILE No. D07-16-11-0014 CITY PLAN No.

ANY DISTURBED AREA DURING CONSTRUCTION TO BE RESTORED TO THE ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE AUTHORITIES HAVING JURISDICTION

CONTRACTOR TO VERIFY THE EXISTING LOCATIONS AND INVERT ELEVATIONS OF EX. UNDERGROUND SERVICES AND EX. UTILITIES PRIOR TO STARTING CONSTRUCTION

PERMISSION REQUIRED FOR WORK ON ADJACENT LANDS

VILLAGE OF RICHMOND
SWM POND 1
REFER TO
DAVID SCHAEFFER ENGINEERING LTD
PROJECT No. 15-783 EB
CITY OF OTTAWA FILE No. D07-16-11-0014

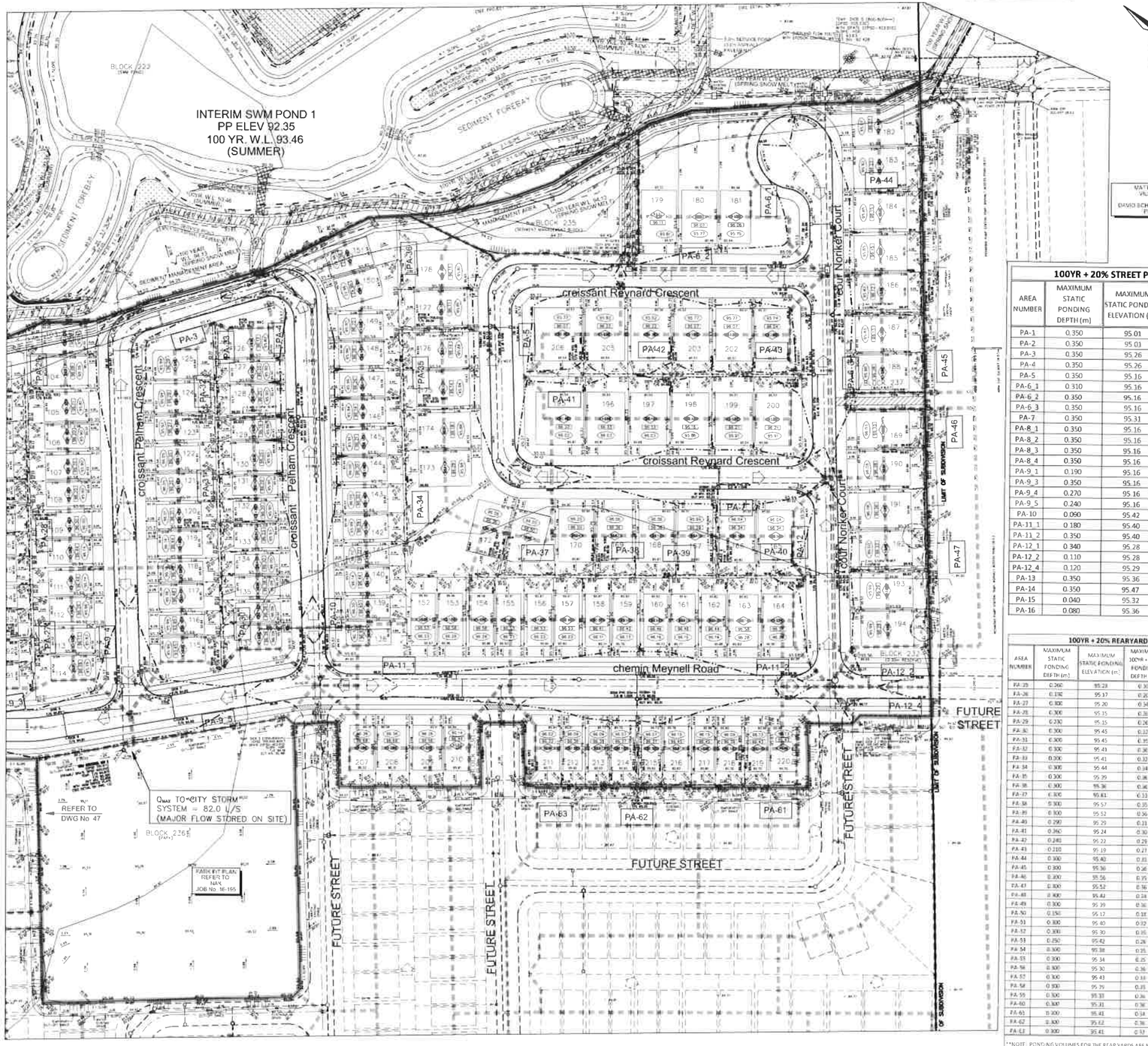
NOTE:
A GEOTECHNICAL ENGINEER LICENSED IN THE PROVINCE OF ONTARIO IS TO INSPECT ALL SUBGRADE SURFACES FOR FOOTING AND PAVEMENT STRUCTURES PRIOR TO CONSTRUCTION

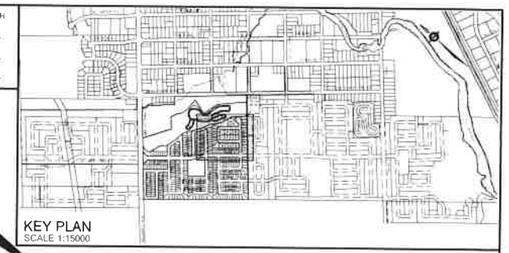
NOTE:
ALL SWALES SHALL BE 0.15m DEEP WITH 3:1 SIDE SLOPES UNLESS OTHERWISE INDICATED

NOTE RE: PERFORATED PIPE
PERFORATED PIPE IS REQUIRED FOR SWALE SLOPE LESS THAN 1.5% REFER TO CITY STD. S29, S30 FOR REAR YARD TRENCH AND PIPE DETAIL ONLY

NOTE:RE: EX. TREES
ALL EXISTING TREES AND SHRUBS WITHIN LOTS, BLOCKS AND PROPOSED ROW TO BE REMOVED, WHERE APPLICABLE. TREE REMOVAL TO BE APPROVED AND COORDINATED BY THE CITY OF OTTAWA.

REVIEWED BY DEVELOPMENT REVIEW BRANCH
SIGNED _____
DATE _____
PLAN NUMBER _____





MATTAMY HOMES OTTAWA
VILLAGE OF RICHMOND
REFER TO
DAVID SCHAEFFER ENGINEERING LTD
PROJECT No. 13-654

LEGEND

TOP OF FOUNDATION ELEVATION
FINISHED FLOOR ELEVATION
UNDERSIDE OF FOOTING ELEVATION
NUMBER OF RISERS
UNITS REQUIRING PRESSURE REDUCING VALVES — PRV
WALKOUT UNITS — WO
SLAB ON GRADE — SOG
PONDING AREA
PONDING AREA ID — PA-1
PHASING LIMITS
PROPOSED ELEVATION
EXISTING ELEVATION
TOP OF GRATE ELEVATION — T/G 92.55
MAJOR OVERLAND FLOW DIRECTION
STORM DRAINAGE BOUNDARY

100YR + 20% STREET PONDING AREA TABLE

AREA NUMBER	MAXIMUM STATIC PONDING DEPTH (m)	MAXIMUM STATIC PONDING ELEVATION (m)	MAXIMUM 100YR + 20% PONDING DEPTH (m)	MAXIMUM 100YR + 20% PONDING ELEVATION (m)
PA-1	0.350	95.01	0.42	95.08
PA-2	0.350	95.01	0.46	95.12
PA-3	0.350	95.26	0.35	95.26
PA-4	0.350	95.26	0.46	95.37
PA-5	0.350	95.16	0.47	95.28
PA-6_1	0.310	95.16	0.43	95.28
PA-6_2	0.350	95.16	0.47	95.28
PA-6_3	0.350	95.16	0.47	95.28
PA-7	0.350	95.31	0.45	95.41
PA-8_1	0.350	95.16	0.47	95.28
PA-8_2	0.350	95.16	0.47	95.28
PA-8_3	0.350	95.16	0.47	95.28
PA-8_4	0.350	95.16	0.47	95.28
PA-9_1	0.190	95.16	0.31	95.28
PA-9_3	0.350	95.16	0.47	95.28
PA-9_4	0.270	95.16	0.39	95.28
PA-9_5	0.240	95.16	0.36	95.28
PA-10	0.090	95.42	0.12	95.45
PA-11_1	0.180	95.40	0.29	95.51
PA-11_2	0.350	95.40	0.46	95.51
PA-12_1	0.340	95.28	0.45	95.39
PA-12_2	0.110	95.28	0.22	95.39
PA-12_4	0.120	95.29	0.22	95.39
PA-13	0.350	95.36	0.35	95.36
PA-14	0.350	95.47	0.35	95.47
PA-15	0.040	95.32	0.09	95.37
PA-16	0.080	95.36	0.13	95.41

100YR + 20% REARYARD PONDING AREA TABLE

AREA NUMBER	MAXIMUM STATIC PONDING DEPTH (m)	MAXIMUM STATIC PONDING ELEVATION (m)	MAXIMUM 100YR + 20% PONDING DEPTH (m)	MAXIMUM 100YR + 20% PONDING ELEVATION (m)	LOT/BLOCK NUMBER	LOWEST EGRESS ELEVATION
PA-25	0.260	95.23	0.30	95.29	81	95.38
PA-26	0.190	95.17	0.26	95.23	84	95.33
PA-27	0.300	95.20	0.34	95.24	92	95.33
PA-28	0.300	95.15	0.36	95.22	97	95.26
PA-29	0.230	95.15	0.26	95.19	103	95.28
PA-30	0.300	95.45	0.32	95.48	137	95.67
PA-31	0.300	95.45	0.35	95.51	133	95.53
PA-32	0.300	95.41	0.38	95.47	129	95.53
PA-33	0.300	95.41	0.32	95.43	125	95.57
PA-34	0.300	95.44	0.34	95.48	172	95.62
PA-35	0.300	95.39	0.36	95.45	175	95.56
PA-36	0.300	95.36	0.36	95.43	177	95.47
PA-37	0.300	95.81	0.33	95.64	171	95.70
PA-38	0.300	95.57	0.35	95.63	169	95.64
PA-39	0.300	95.52	0.36	95.53	167	95.63
PA-40	0.290	95.29	0.31	95.31	165	95.49
PA-41	0.260	95.24	0.30	95.28	205	95.29
PA-42	0.240	95.22	0.29	95.28	203	95.29
PA-43	0.210	95.19	0.23	95.25	201	95.31
PA-44	0.300	95.40	0.33	95.46	183	95.47
PA-45	0.300	95.36	0.36	95.43	187	95.47
PA-46	0.300	95.56	0.35	95.63	189	95.63
PA-47	0.300	95.52	0.36	95.58	193	95.63
PA-48	0.300	95.42	0.34	95.47	3	95.50
PA-49	0.300	95.39	0.36	95.46	5	95.50
PA-50	0.150	95.17	0.18	95.20	11	95.35
PA-51	0.300	95.40	0.32	95.42	67	95.47
PA-52	0.300	95.30	0.35	95.36	69	95.41
PA-53	0.250	95.42	0.28	95.44	37	95.62
PA-54	0.300	95.38	0.25	95.43	41	95.53
PA-55	0.300	95.34	0.25	95.40	45	95.45
PA-56	0.300	95.30	0.36	95.37	49	95.41
PA-57	0.300	95.43	0.33	95.46	63	95.47
PA-58	0.300	95.39	0.35	95.45	61	95.56
PA-59	0.300	95.33	0.36	95.43	57	95.46
PA-60	0.300	95.31	0.38	95.38	53	95.42
PA-61	0.300	95.42	0.34	95.48	215	95.59
PA-62	0.300	95.42	0.36	95.48	213	95.73
PA-63	0.300	95.41	0.33	95.44	211	95.59

**NOTE: PONDING VOLUMES FOR THE REARYARDS ARE NOT TAKEN INTO ACCOUNT FOR STORAGE CAPACITY

ALL DWELLINGS ARE TO BE PROVIDED WITH SUMP PUMPS UNLESS OTHERWISE NOTED. SEE DETAIL ON DWG. 3.

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 10-10-314-00, DRAWING DATED SEPTEMBER 26, 2012, CITY OF OTTAWA 1K MAPPING, RECEIVED ON MARCH 27, 2013, GS MAP, RECEIVED ON JANUARY 20, 2009.

LEGAL INFORMATION

M-PLAN PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 10-10-314-00, SURVEY DATED MAY 12, 2017

4th SUBMISSION 17-11-17

NOT FOR CONSTRUCTION

BENCH MARK No. 001196BU124 ELEVATION = 95.186 m

ELEVATIONS SHOWN ARE GEODETIC AND ARE REFERRED TO BENCHMARK No. 001196BU124 HAVING A PUBLISHED ELEVATION OF 95.186m. LOCATION: BRIDGE OVER JOCK RIVER IN RICHMOND, 0.8 KM SOUTH OF RICHMOND ROAD, BARSS CAP IN TOP OF EAST WALL, 2.3M FROM NORTH END.

No.	DATE	BY	DESCRIPTION
4.	17-11-17	W.L.	4th SUBMISSION
3.	17-10-13	W.L.	3rd SUBMISSION
2.	17-05-18	W.L./Z.L.	2nd SUBMISSION
1.	16-12-23	W.L./Z.L.	1st SUBMISSION

Ottawa CITY OF OTTAWA

PROJECT No. 15-783

LICENSED PROFESSIONAL ENGINEER W. LIU 100167932 PROVINCE OF ONTARIO

100 YEAR + 20% PONDING AREA PLAN

© DSEL

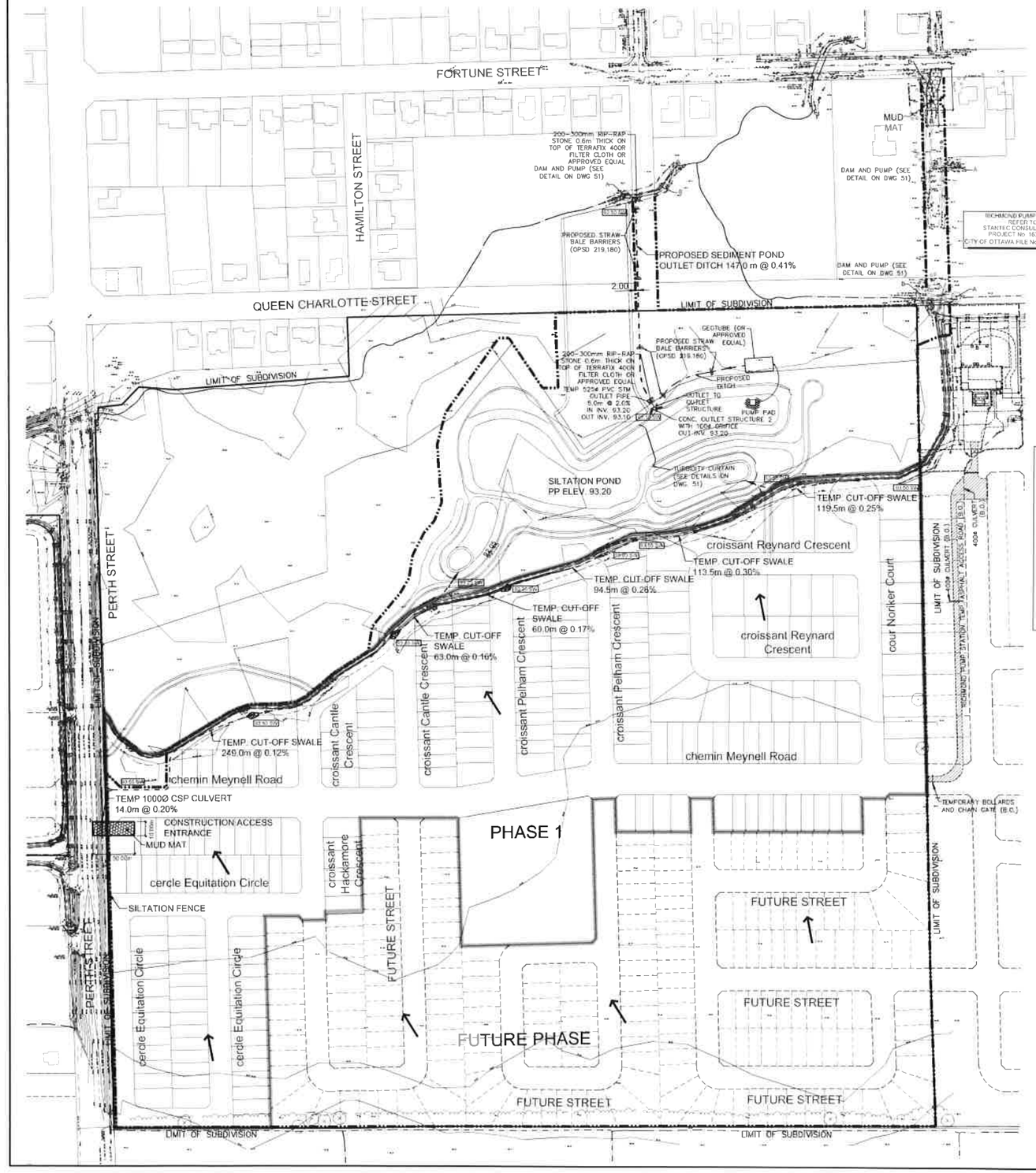
RICHMOND VILLAGE DEVELOPMENT CORPORATION

CAIVAN COMMUNITIES
RICHMOND PHASE 1

david schaeffer engineering ltd
120 Iber Road, Unit 203
Stittsville, ON K2S 1E9
Tel: (613) 836-0856
Fax: (613) 836-7183
www.DSEL.ca

DRAWN BY: A.B.	CHECKED BY: W.L./C.M.	DRAWING NO.	SHEET NO.
DESIGNED BY: P.P.	CHECKED BY: K.M.		48
SCALE: 1:750	DATE: DECEMBER 2016		

CITY FILE No. D07-16-11-0014 CITY PLAN No. _____

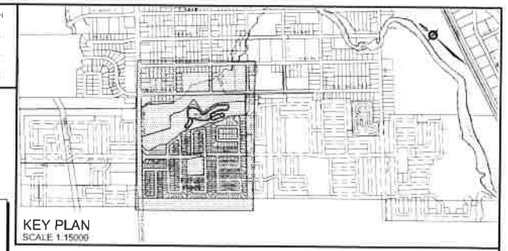


REVIEWED BY DEVELOPMENT REVIEW BRANCH

SIGNED _____

DATE _____

PLAN NUMBER _____



KEY PLAN
SCALE 1:15000

SPILLS CONTROL NOTES

ALL CONSTRUCTION EQUIPMENT SHALL BE REFUELED, MAINTAINED AND STORED NO LESS THAN 30 METERS FROM THE WATERCOURSES, STREAMS, CREEKS, WOODLOTS AND ANY ENVIRONMENTALLY SENSITIVE AREAS, OR AS OTHERWISE SPECIFIED.

THE CONTRACTOR MUST IMPLEMENT ALL NECESSARY MEASURES IN ORDER TO PREVENT LEAKS, DISCHARGES OR SPILLS OF POLLUTANTS, DELETERIOUS MATERIALS, OR OTHER SUCH MATERIALS OR SUBSTANCES WHICH WOULD OR COULD CAUSE AN ADVERSE IMPACT TO THE NATURAL ENVIRONMENT.

IN THE EVENT OF A LEAK, DISCHARGE OR SPILL OF A POLLUTANT, DELETERIOUS MATERIAL OR OTHER SUCH MATERIAL OR SUBSTANCE WHICH WOULD OR COULD CAUSE AN ADVERSE IMPACT TO THE NATURAL ENVIRONMENT, THE CONTRACTOR SHALL:

1 IMMEDIATELY NOTIFY THE APPROPRIATE FEDERAL, PROVINCIAL AND LOCAL GOVERNMENT MINISTRIES, DEPARTMENTS, AGENCIES AND AUTHORITIES OF THE INCIDENT IN ACCORDANCE WITH ALL CURRENT LAWS, LEGISLATION, ACTS, BY-LAWS, PERMITS, APPROVALS, ETC.
2. TAKE IMMEDIATE MEASURES TO CONTAIN THE MATERIAL OR SUBSTANCE, AND TO TAKE SUCH MEASURES AS THEY DEEM APPROPRIATE TO MITIGATE AGAINST THE ANY ADVERSE IMPACTS TO THE NATURAL ENVIRONMENT
3 THE CONTRACT SHALL RESTORE THE AFFECTED AREA TO ORIGINAL CONDITION OR BETTER, ALL TO THE SATISFACTION OF THE AUTHORITIES HAVING JURISDICTION.

EROSION AND SEDIMENT CONTROL NOTES:

1. PRIOR TO TOPSOIL STRIPPING, EARTHWORKS, OR UNDERGROUND CONSTRUCTION, EROSION AND SEDIMENT CONTROLS SHALL BE IMPLEMENTED TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION.
2. SEDIMENT CONTROL FENCE SHALL BE CLEANED AND MAINTAINED IN GOOD REPAIR BY CONTRACTOR.
3. SEDIMENT CONTROL FENCE TO REMAIN IN PLACE UNTIL THE WORKING AREA HAS BEEN STABILIZED AND REVEGETATED.
4. ACCUMULATED SEDIMENT TO BE REMOVED OFF SITE PRIOR TO THE REMOVAL OF SEDIMENT CONTROL FENCE.
5. EROSION AND SEDIMENT CONTROL MEASURES MAY BE MODIFIED IN THE FIELD AT THE DISCRETION OF THE CITY OF OTTAWA SITE INSPECTOR OR CONSERVATION AUTHORITY PERSONNEL.
6. CONTRACTOR MUST USE BEST MANAGEMENT PRACTICES (BMPS) FOR EROSION AND SEDIMENT CONTROL.

MONITORING OF SEDIMENT AND EROSION CONTROLS

DURING CONSTRUCTION, MONITORING OF CONTROL MEASURES WILL BE COMPLETED:
1) PRIOR TO PREDICTED RAIN EVENTS
2) SUBSEQUENT TO RAIN EVENTS
3) ON A DAILY BASIS
4) AFTER SIGNIFICANT SNOWMELT EVENTS (WINTER-SPRING CONDITIONS)
DURING INACTIVE CONSTRUCTION PERIODS, WHERE THE SITE IS LEFT ALONE FOR 30 DAYS OR LONGER, A MONTHLY INSPECTION SHOULD BE CONDUCTED.
5) DAILY DURING EXTENDED RAIN OR SNOWMELT PERIODS

MAINTENANCE PROGRAM

ALL DAMAGED ESC MEASURES SHOULD BE REPAIRED AND/OR REPLACEMENT WITHIN 48 HOURS OF THE INSPECTION.
THE ENVIRONMENTAL MONITOR IS REQUIRED TO SUBMIT UPDATES TO THE CITY/ CONSERVATION AUTHORITY BY EMAIL IN A TIMELY MANNER
SEDIMENT SHOULD BE REMOVED FROM THE SEDIMENT CONTROL FENCING ONCE SEDIMENT HAS ACCUMULATED TO A LEVEL OF ONE-THIRD THE HEIGHT OF FENCING OR TO A HEIGHT OF 30 cm. ANY AMOUNT OF ACCUMULATED SEDIMENT SHOULD BE REMOVED PRIOR TO THE REMOVAL OF THE CONTROL MEASURES

THE SILTATION CONTROL PLAN IS INTENDED TO ASSIST THE CONTRACTOR IN THE LAYOUT AND CONSTRUCTION OF THE SILTATION CONTROL FEATURES ONLY. THIS DRAWING SHALL NOT BE USED FOR CONSTRUCTION OF SITE SERVICES.

SEQUENCE OF ACTIVITIES

THE EROSION AND SEDIMENT CONTROL MEASURES MUST BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE:

- INSTALLATION OF THE SEDIMENT CONTROL FENCING WHERE INDICATED
- REMOVAL OF SITE VEGETATION IN ACCORDANCE WITH ALL APPLICABLE BY-LAWS.
- CONSTRUCTION OF THE EROSION AND SEDIMENT CONTROL POND IN ACCORDANCE WITH THE DESIGN DRAWINGS
- REGULAR MONITORING OF THE SEDIMENT CONTROL FENCES BY THE CONTRACTOR TO VERIFY THAT THE FENCES ARE FUNCTIONING AS INTENDED.
- REGULAR MONITORING OF THE SEDIMENT BASIN TO VERIFY THAT THE BASIN IS FUNCTIONING AS INTENDED
- REMOVAL OF THE EROSION AND SEDIMENT CONTROL DEVICES ONCE THE SITE HAS BEEN STABILIZED

LEGEND

PROPOSED SILT FENCE
PROPOSED ROCK FLOW CHECK DAM (OPSD 219.210)
SWALE
MAJOR OVERLAND FLOW DIRECTION
EXISTING CONTOUR ELEVATION
PROPOSED SWALE CENTERLINE GRADE (e.g. 124.100SW)
PHASE LINE

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 10-10-314-00, DRAWING DATED SEPTEMBER 26, 2012. CITY OF OTTAWA 1K MAPPING, RECEIVED ON MARCH 27, 2013. GIS MAP, RECEIVED ON JANUARY 20, 2009.

LEGAL INFORMATION

M-PLAN PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 10-10-314-00, SURVEY DATED MAY 12, 2017

4th SUBMISSION 17-11-17

NOT FOR CONSTRUCTION

BENCH MARK No. 001196BU124 ELEVATION = 95.186 m

ELEVATIONS SHOWN ARE GEODETIC AND ARE REFERRED TO BENCHMARK No. 001196BU124 HAVING A PUBLISHED ELEVATION OF 95.186m, LOCATION: BRIDGE OVER JOCK RIVER IN RICHMOND, 0.8 KM SOUTH OF RICHMOND ROAD, BARSS CAP IN TOP OF EAST WALL, 2.3M FROM NORTH END.

No.	DATE	BY	DESCRIPTION
4.	17-11-17	W.L.	4th SUBMISSION
3.	17-10-13	W.L.	3rd SUBMISSION
2.	17-05-19	W.L./Z.L.	2nd SUBMISSION
1.	16-12-23	W.L./Z.L.	1st SUBMISSION

Ottawa CITY OF OTTAWA

PROJECT No. 15-783

LICENSED PROFESSIONAL ENGINEER W. LIU 100167932 PROVINCE OF ONTARIO

EROSION & SEDIMENT CONTROL PLAN - STAGE 1

⊙ DSEL

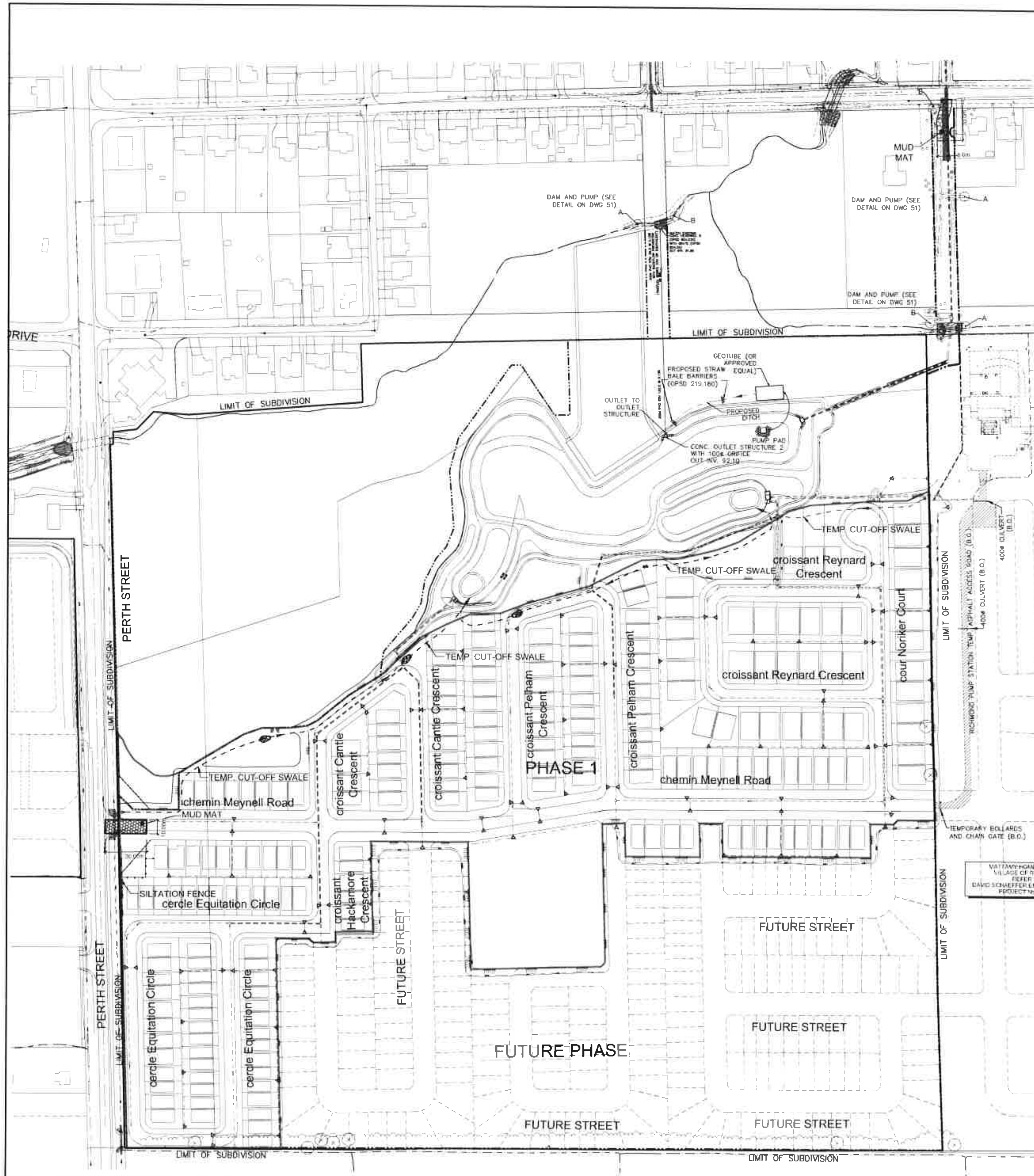
RICHMOND VILLAGE DEVELOPMENT CORPORATION

CAIVAN COMMUNITIES RICHMOND PHASE 1

DSEL david schaeffer engineering ltd
120 Iber Road, Unit 203
Stittsville, ON K2S 1E9
Tel (613) 836-0856
Fax (613) 836-7183
www.DSEL.ca

DRAWN BY: A.B.	CHECKED BY: W.L./C.M.	DRAWING NO.	SHEET NO.
DESIGNED BY: A.B.	CHECKED BY: K.M.		49
SCALE: 1:1500	DATE: DECEMBER 2016		

CITY FILE No. D07-16-11-0014 CITY PLAN No.



SPILLS CONTROL NOTES

ALL CONSTRUCTION EQUIPMENT SHALL BE REFUELED MAINTAINED AND STORED NO LESS THAN 30 METERS FROM THE WATERCOURSES, STREAMS, CREEKS, WOODLOTS AND ANY ENVIRONMENTALLY SENSITIVE AREAS, OR AS OTHERWISE SPECIFIED

THE CONTRACTOR MUST IMPLEMENT ALL NECESSARY MEASURES IN ORDER TO PREVENT LEAKS, DISCHARGES OR SPILLS OF POLLUTANTS, DELETERIOUS MATERIALS, OR OTHER SUCH MATERIALS OR SUBSTANCES WHICH WOULD OR COULD CAUSE AN ADVERSE IMPACT TO THE NATURAL ENVIRONMENT.

IN THE EVENT OF A LEAK, DISCHARGE OR SPILL OF A POLLUTANT, DELETERIOUS MATERIAL OR OTHER SUCH MATERIAL OR SUBSTANCE WHICH WOULD OR COULD CAUSE AN ADVERSE IMPACT TO THE NATURAL ENVIRONMENT, THE CONTRACTOR SHALL:

1. IMMEDIATELY NOTIFY THE APPROPRIATE FEDERAL, PROVINCIAL AND LOCAL GOVERNMENT MINISTRIES, DEPARTMENTS, AGENCIES AND AUTHORITIES OF THE INCIDENT IN ACCORDANCE WITH ALL CURRENT LAWS, LEGISLATION, ACTS, BY-LAWS, PERMITS, APPROVALS, ETC
2. TAKE IMMEDIATE MEASURES TO CONTAIN THE MATERIAL OR SUBSTANCE, AND TO TAKE SUCH MEASURES AS THEY DEEM APPROPRIATE TO MITIGATE AGAINST THE ANY ADVERSE IMPACTS TO THE NATURAL ENVIRONMENT
3. THE CONTRACT SHALL RESTORE THE AFFECTED AREA TO ORIGINAL CONDITION OR BETTER, ALL TO THE SATISFACTION OF THE AUTHORITIES HAVING JURISDICTION.

THE SILTATION CONTROL PLAN IS INTENDED TO ASSIST THE CONTRACTOR IN THE LAYOUT AND CONSTRUCTION OF THE SILTATION CONTROL FEATURES ONLY. THIS DRAWING SHALL NOT BE USED FOR CONSTRUCTION OF SITE SERVICES.

MONITORING OF SEDIMENT AND EROSION CONTROLS

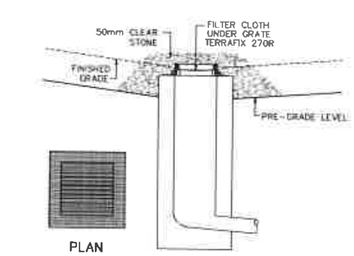
DURING CONSTRUCTION, MONITORING OF CONTROL MEASURES WILL BE COMPLETED:
1) PRIOR TO PREDICTED RAIN EVENTS
2) SUBSEQUENT TO RAIN EVENTS
3) ON A DAILY BASIS
4) AFTER SIGNIFICANT SNOWMELT EVENTS (WINTER-SPRING CONDITIONS)
DURING INACTIVE CONSTRUCTION PERIODS, WHERE THE SITE IS LEFT ALONE FOR 30 DAYS OR LONGER, A MONTHLY INSPECTION SHOULD BE CONDUCTED.
5) DAILY DURING EXTENDED RAIN OR SNOWMELT PERIODS

MAINTENANCE PROGRAM

ALL DAMAGED ESC MEASURES SHOULD BE REPAIRED AND/OR REPLACEMENT WITHIN 48 HOURS OF THE INSPECTION.

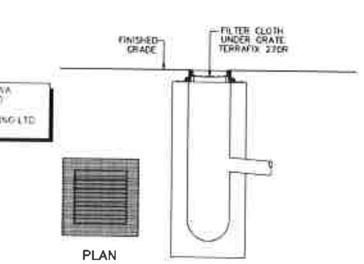
THE ENVIRONMENTAL MONITOR IS REQUIRED TO SUBMIT UPDATES TO THE CITY/CONSERVATION AUTHORITY BY EMAIL IN A TIMELY MANNER

SEDIMENT SHOULD BE REMOVED FROM THE SEDIMENT CONTROL FENCING ONCE SEDIMENT HAS ACCUMULATED TO A LEVEL OF ONE-THIRD THE HEIGHT OF FENCING OR TO A HEIGHT OF 30 cm. ANY AMOUNT OF ACCUMULATED SEDIMENT SHOULD BE REMOVED PRIOR TO THE REMOVAL OF THE CONTROL MEASURES.



DETAIL FOR RLCB/DICB SILT PROTECTION

SCALE: NTS

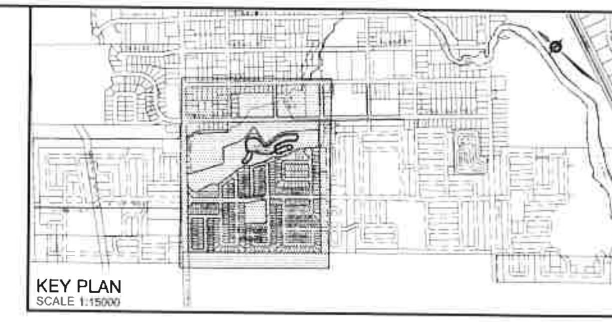


DETAIL FOR STREET CB SILT PROTECTION

SCALE: NTS

LEGEND

- PROPOSED SILT FENCE
- PROPOSED ROCK FLOW CHECK DAM (OPSD 219.210)
- SWALE
- MAJOR OVERLAND FLOW DIRECTION
- EXISTING CONTOUR ELEVATION
- PROPOSED SWALE CENTERLINE GRADE
- PHASE LINE
- FILTER CLOTH FOR EXISTING STRUCTURE



REVIEWED BY DEVELOPMENT REVIEW BRANCH
SIGNED ______
DATE ______
PLAN NUMBER ______

EROSION AND SEDIMENT CONTROL NOTES:

1. PRIOR TO TOPSOIL STRIPPING, EARTHWORKS, OR UNDERGROUND CONSTRUCTION, EROSION AND SEDIMENT CONTROLS SHALL BE IMPLEMENTED TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION.
2. SEDIMENT CONTROL FENCE SHALL BE CLEANED AND MAINTAINED IN GOOD REPAIR BY CONTRACTOR.
3. SEDIMENT CONTROL FENCE TO REMAIN IN PLACE UNTIL THE WORKING AREA HAS BEEN STABILIZED AND REVEGETATED.
4. ACCUMULATED SEDIMENT TO BE REMOVED OFF SITE PRIOR TO THE REMOVAL OF SEDIMENT CONTROL FENCE.
5. EROSION AND SEDIMENT CONTROL MEASURES MAY BE MODIFIED IN THE FIELD AT THE DISCRETION OF THE CITY OF OTTAWA SITE INSPECTOR OR CONSERVATION AUTHORITY PERSONNEL.
6. CONTRACTOR MUST USE BEST MANAGEMENT PRACTICES (BMPS) FOR EROSION AND SEDIMENT CONTROL.

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 10-10-314-00, DRAWING DATED SEPTEMBER 26, 2012. CITY OF OTTAWA 1K MAPPING, RECEIVED ON MARCH 27, 2013. GIS MAP, RECEIVED ON JANUARY 20, 2009

LEGAL INFORMATION

M-PLAN PROVIDED BY J.D. BARNES LIMITED, PROJECT No 10-10-314-00, SURVEY DATED MAY 12, 2017

4th SUBMISSION 17-11-17

NOT FOR CONSTRUCTION

BENCH MARK No. 0011968U124 ELEVATION = 95.186 m

ELEVATIONS SHOWN ARE GEODETIC AND ARE REFERRED TO BENCHMARK No. 0011968U124 HAVING A PUBLISHED ELEVATION OF 95.186m. LOCATION: BRIDGE OVER JOCK RIVER IN RICHMOND, 0.8 KM SOUTH OF RICHMOND ROAD, BARSS CAP IN TOP OF EAST WALL, 3.7M FROM NORTH END.

No.	DATE	BY	DESCRIPTION
4.	17-11-17	W.L.	4th SUBMISSION
3.	17-10-13	W.L.	3rd SUBMISSION
2.	17-05-19	W.L./Z.L.	2nd SUBMISSION
1.	16-12-23	W.L./Z.L.	1st SUBMISSION

Ottawa CITY OF OTTAWA

PROJECT No. 15-783

LICENSED PROFESSIONAL ENGINEER W. LIU 100167932 PROVINCE OF ONTARIO

EROSION & SEDIMENT CONTROL PLAN - STAGE 2

© DSEL

RICHMOND VILLAGE DEVELOPMENT CORPORATION

CAIVAN COMMUNITIES RICHMOND PHASE 1

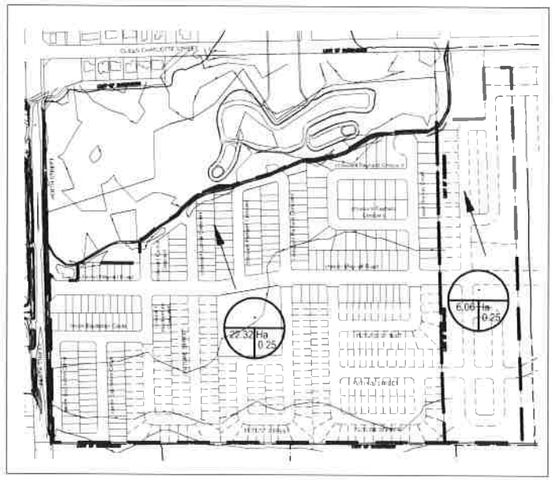
DSEL david schaeffer engineering ltd

120 Iber Road, Unit 203
Stittsville, ON K2S 1E9
Tel: (613) 836-0856
Fax: (613) 836-7183
www.DSEL.ca

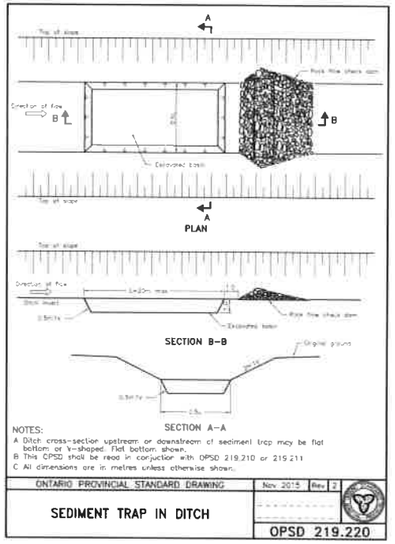
DRAWN BY:	A.B.	CHECKED BY:	W.L./C.M.	DRAWING NO.	SHEET NO.
DESIGNED BY:	A.B.	CHECKED BY:	K.M.		50
SCALE:	1:1500	DATE:	DECEMBER 2016		

CITY PLAN No. ______

CITY FILE No. D07-16-11-0014

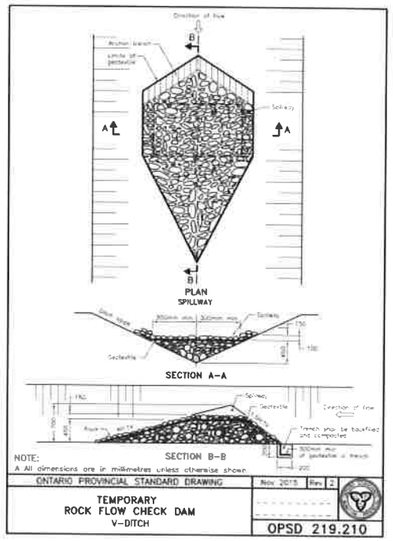


SILT CONTROL TRIBUTARY AREA
SCALE: 1:4000



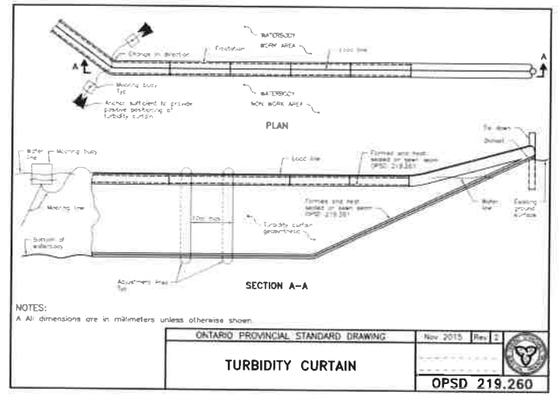
NOTES:
A Ditch cross-section upstream or downstream of sediment trap may be flat bottom or V-shaped. Flat bottom shown.
B This OPSD shall be read in conjuction with OPSD 219.210 or 219.211
C All dimensions are in metres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev. 2
SEDIMENT TRAP IN DITCH		OPSD 219.220



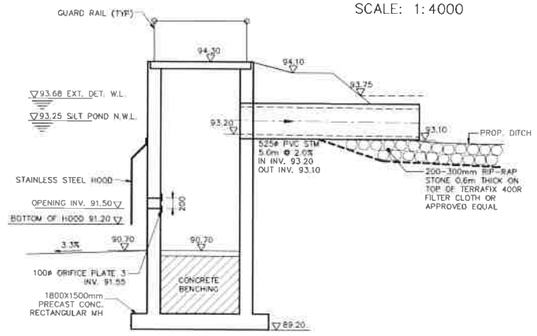
NOTE:
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev. 2
TEMPORARY ROCK FLOW CHECK DAM V-DITCH		OPSD 219.210

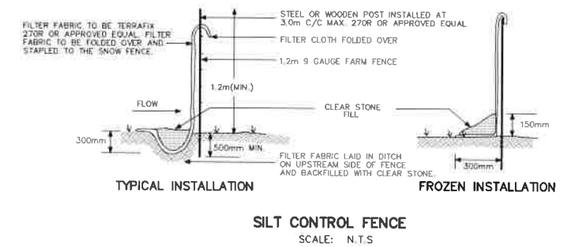


NOTES:
A All dimensions are in millimeters unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev. 2
TURBIDITY CURTAIN		OPSD 219.260

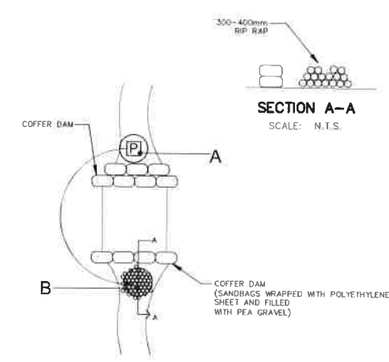


SEDIMENT BASIN OUTLET DETAIL
SCALE: N.T.S



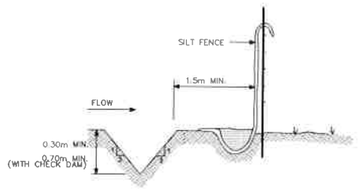
TYPICAL INSTALLATION FROZEN INSTALLATION

SILT CONTROL FENCE
SCALE: N.T.S

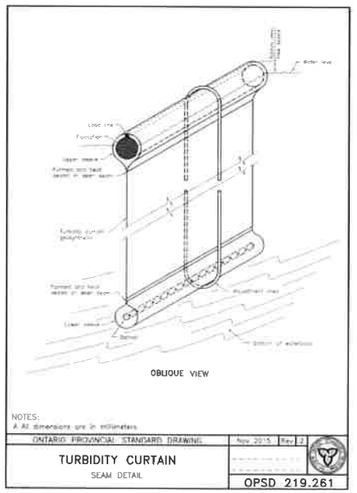


DAM AND PUMP
SCALE: N.T.S.

SECTION A-A
SCALE: N.T.S.

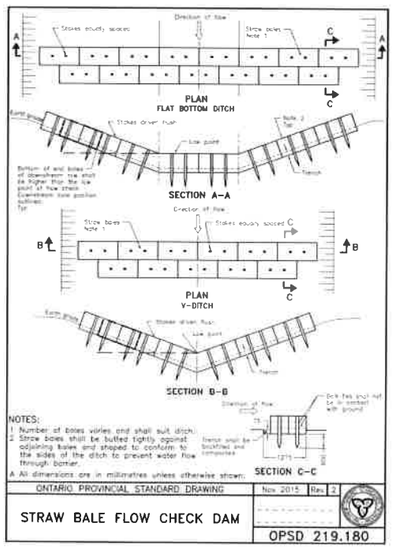


SWALE DETAIL
SCALE N.T.S.



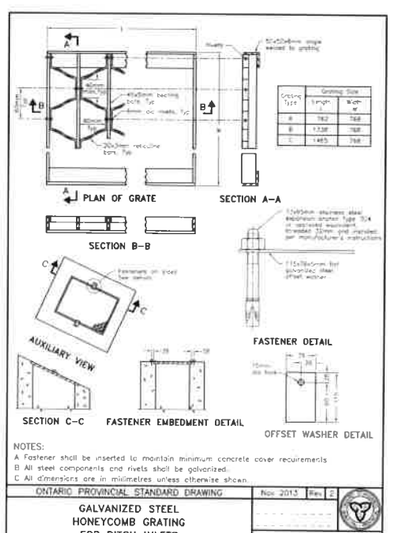
NOTES:
A All dimensions are in millimeters.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev. 2
TURBIDITY CURTAIN SEAM DETAIL		OPSD 219.261



NOTES:
1 Number of bales varies and shall suit ditch.
2 Straw bales shall be butted tightly against adjoining bales and shaped to conform to the sides of the ditch to prevent water flow through barrier.
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev. 2
STRAW BALE FLOW CHECK DAM		OPSD 219.180



NOTES:
A Fastener shall be inserted to maintain minimum concrete cover requirements
B All steel components and rivets shall be galvanized.
C All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev. 2
GALVANIZED STEEL HONEYCOMB GRATING FOR DITCH INLETS		OPSD 403.010

REVIEWED BY DEVELOPMENT REVIEW BRANCH
SIGNED _____
DATE _____
PLAN NUMBER _____

TOPOGRAPHIC INFORMATION
TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 10-10-314-00. DRAWING DATED SEPTEMBER 26, 2012 CITY OF OTTAWA 1K MAPPING, RECEIVED ON MARCH 27, 2013. G/S MAP, RECEIVED ON JANUARY 20, 2009.

LEGAL INFORMATION
M-PLAN PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 10-10-314-00, SURVEY DATED MAY 12, 2017

4th SUBMISSION 17-11-17
NOT FOR CONSTRUCTION

BENCH MARK No. 0011968U124 ELEVATION = 95.186 m
ELEVATIONS SHOWN ARE GEODETIC AND ARE REFERRED TO BENCHMARK No. 0011968U124 HAVING A PUBLISHED ELEVATION OF 93.186m. LOCATION: BRIDGE OVER JOCK RIVER IN RICHMOND, 0.8 KM SOUTH OF RICHMOND ROAD, BARES CAP IN TOP OF EAST WALL, 2.7M FROM NORTH END.

No.	DATE	BY	DESCRIPTION
4.	17-11-17	W.L.	4th SUBMISSION
3.	17-10-13	W.L.	3rd SUBMISSION
2.	17-05-19	W.L./Z.L.	2nd SUBMISSION
1.	16-12-23	W.L./Z.L.	1st SUBMISSION

Ottawa CITY OF OTTAWA

PROJECT No. 15-783

LICENSED PROFESSIONAL ENGINEER W. LIU 100167932 PROVINCE OF ONTARIO

EROSION AND SEDIMENT CONTROL PLAN - DETAILS

© DSEL

RICHMOND VILLAGE DEVELOPMENT CORPORATION

CAIVAN COMMUNITIES
RICHMOND PHASE 1

DSEL
david schaeffer engineering ltd
920 Merivale Road, Unit 203
Ottawa, ON K2B 1E8
Tel (613) 836-0856
Fax (613) 836-7183
www.DSEL.ca

DRAWN BY: A.B.	CHECKED BY: W.L./C.M.	DRAWING NO.	SHEET NO.
DESIGNED BY: P.P.	CHECKED BY: K.M.		51
SCALE: AS SHOWN	DATE: DECEMBER 2016		

CITY FILE No. D07-16-11-0014 CITY PLAN No.

Appendix B-6 – Landscape Plan

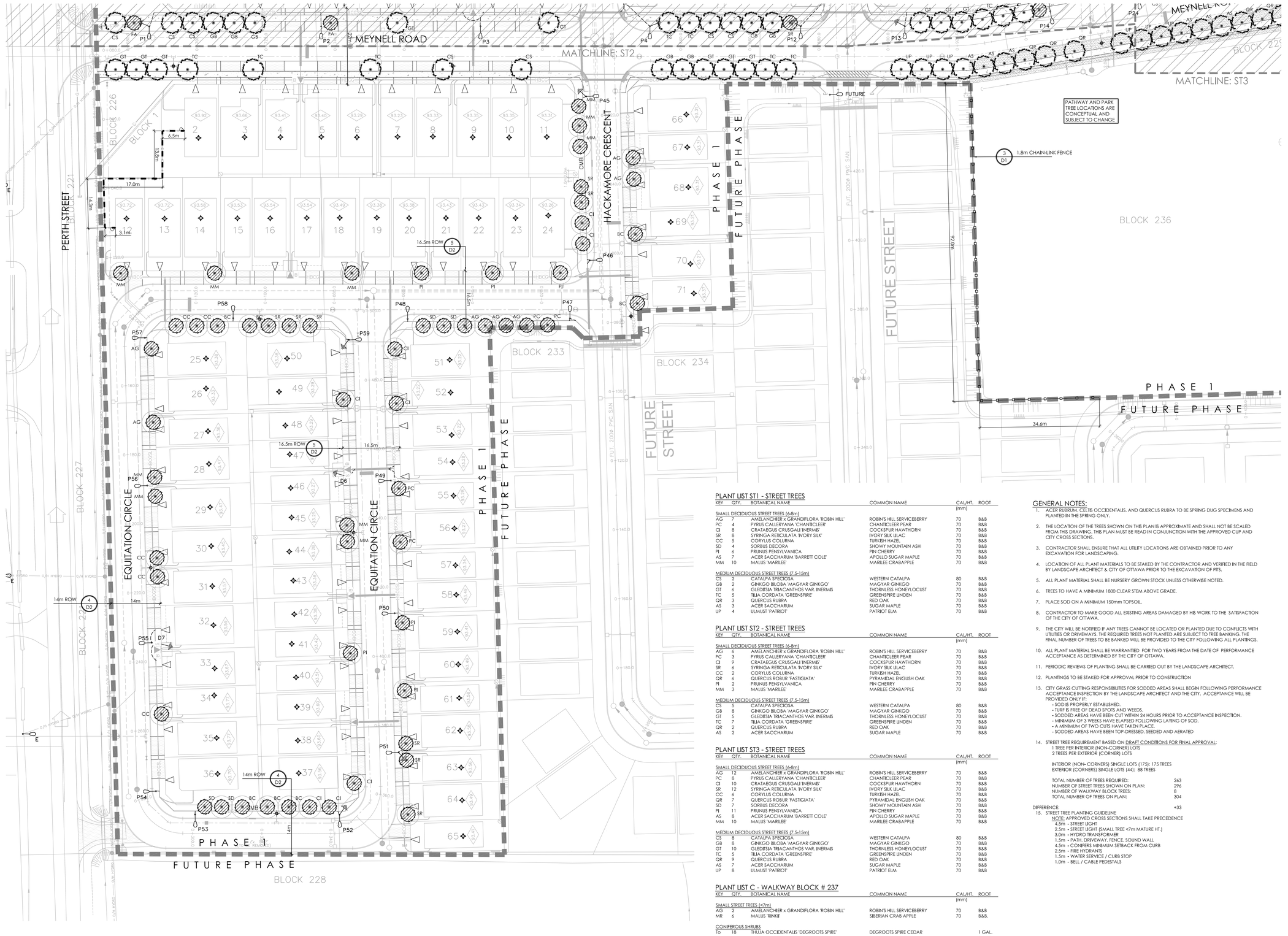
KEYMAP
NTS

RICHMOND VILLAGE
DEVELOPMENT CORPORATION

CAIVAN COMMUNITIES
FOX RUN PHASE 1

LIST OF DRAWINGS:

#1-12128 - CAIVAN COMMUNITIES RICHMOND PHASE 1 - RICHMOND DEVELOPMENT CORPORATION - ISSUED FOR FIRST SUBMISSION - MAR. 2018



PLANT LIST ST1 - STREET TREES

KEY	QTY.	BOTANICAL NAME	COMMON NAME	CAL/HT. (mm)	ROOT
SMALL DECIDUOUS STREET TREES (6-8m)					
AG	7	AMELANCHIER x GRANDIFLORA 'ROBIN HILL'	ROBIN'S HILL SERVICEBERRY	70	B&B
PC	4	PYRUS CALLERYANA 'CHANTICLEER'	CHANTICLEER PEAR	70	B&B
CI	8	CRATAEGUS CRUSGALI 'INERMIS'	COCKSPUR HAWTHORN	70	B&B
SR	8	SYRINGA RETICULATA 'IVORY SILK'	IVORY SILK LILAC	70	B&B
CC	5	CORYLUS COLURNA	TURKISH HAZEL	70	B&B
SD	4	SORBUS DECORA	SHOWY MOUNTAIN ASH	70	B&B
PI	6	PRUNUS PENSYLVANICA	PIN CHERRY	70	B&B
AS	7	ACER SACCHARUM 'BARRETT COLE'	APOLLO SUGAR MAPLE	70	B&B
MM	10	MALUS 'MARILEE'	MARILEE CRABAPPLE	70	B&B
MEDIUM DECIDUOUS STREET TREES (7.5-15m)					
CS	2	CATALPA SPECIOSA	WESTERN CATALPA	80	B&B
GB	2	GINKGO BILOBA 'MAGYAR GINKGO'	MAGYAR GINKGO	70	B&B
GT	6	GLEDITSIA TRIACANTHOS VAR. INERMIS	THORNLESS HONEYLOCUST	70	B&B
TC	5	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN	70	B&B
QR	3	QUERCUS RUBRA	RED OAK	70	B&B
AS	3	ACER SACCHARUM	SUGAR MAPLE	70	B&B
UP	4	ULMUST 'PATRIOT'	PATRIOT ELM	70	B&B

PLANT LIST ST2 - STREET TREES

KEY	QTY.	BOTANICAL NAME	COMMON NAME	CAL/HT. (mm)	ROOT
SMALL DECIDUOUS STREET TREES (6-8m)					
AG	6	AMELANCHIER x GRANDIFLORA 'ROBIN HILL'	ROBIN'S HILL SERVICEBERRY	70	B&B
PC	3	PYRUS CALLERYANA 'CHANTICLEER'	CHANTICLEER PEAR	70	B&B
CI	9	CRATAEGUS CRUSGALI 'INERMIS'	COCKSPUR HAWTHORN	70	B&B
SR	6	SYRINGA RETICULATA 'IVORY SILK'	IVORY SILK LILAC	70	B&B
CC	2	CORYLUS COLURNA	TURKISH HAZEL	70	B&B
QR	6	QUERCUS ROBUR 'FASTIGIATA'	PYRAMIDAL ENGLISH OAK	70	B&B
PI	2	PRUNUS PENSYLVANICA	PIN CHERRY	70	B&B
MM	3	MALUS 'MARILEE'	MARILEE CRABAPPLE	70	B&B
MEDIUM DECIDUOUS STREET TREES (7.5-15m)					
CS	5	CATALPA SPECIOSA	WESTERN CATALPA	80	B&B
GB	8	GINKGO BILOBA 'MAGYAR GINKGO'	MAGYAR GINKGO	70	B&B
GT	5	GLEDITSIA TRIACANTHOS VAR. INERMIS	THORNLESS HONEYLOCUST	70	B&B
TC	7	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN	70	B&B
QR	2	QUERCUS RUBRA	RED OAK	70	B&B
AS	2	ACER SACCHARUM	SUGAR MAPLE	70	B&B

PLANT LIST ST3 - STREET TREES

KEY	QTY.	BOTANICAL NAME	COMMON NAME	CAL/HT. (mm)	ROOT
SMALL DECIDUOUS STREET TREES (6-8m)					
AG	12	AMELANCHIER x GRANDIFLORA 'ROBIN HILL'	ROBIN'S HILL SERVICEBERRY	70	B&B
PC	8	PYRUS CALLERYANA 'CHANTICLEER'	CHANTICLEER PEAR	70	B&B
CI	10	CRATAEGUS CRUSGALI 'INERMIS'	COCKSPUR HAWTHORN	70	B&B
SR	12	SYRINGA RETICULATA 'IVORY SILK'	IVORY SILK LILAC	70	B&B
CC	6	CORYLUS COLURNA	TURKISH HAZEL	70	B&B
QR	7	QUERCUS ROBUR 'FASTIGIATA'	PYRAMIDAL ENGLISH OAK	70	B&B
SD	7	SORBUS DECORA	SHOWY MOUNTAIN ASH	70	B&B
PI	11	PRUNUS PENSYLVANICA	PIN CHERRY	70	B&B
AS	8	ACER SACCHARUM 'BARRETT COLE'	APOLLO SUGAR MAPLE	70	B&B
MM	10	MALUS 'MARILEE'	MARILEE CRABAPPLE	70	B&B
MEDIUM DECIDUOUS STREET TREES (7.5-15m)					
CS	8	CATALPA SPECIOSA	WESTERN CATALPA	80	B&B
GB	8	GINKGO BILOBA 'MAGYAR GINKGO'	MAGYAR GINKGO	70	B&B
GT	10	GLEDITSIA TRIACANTHOS VAR. INERMIS	THORNLESS HONEYLOCUST	70	B&B
TC	5	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN	70	B&B
QR	9	QUERCUS RUBRA	RED OAK	70	B&B
AS	7	ACER SACCHARUM	SUGAR MAPLE	70	B&B
UP	8	ULMUST 'PATRIOT'	PATRIOT ELM	70	B&B

PLANT LIST C - WALKWAY BLOCK # 237

KEY	QTY.	BOTANICAL NAME	COMMON NAME	CAL/HT. (mm)	ROOT
SMALL STREET TREES (<7m)					
AG	2	AMELANCHIER x GRANDIFLORA 'ROBIN HILL'	ROBIN'S HILL SERVICEBERRY	70	B&B
MR	6	MALUS 'RINKII'	SIBERIAN CRAB APPLE	70	B&B.
CONIFEROUS SHRUBS					
To	18	THUJA OCCIDENTALIS 'DEGROOTS SPIRE'	DEGROOTS SPIRE CEDAR		1 GAL.
GRASSES/PERENNIALS					
ca	98	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER REED GRASS		1 GAL.
es	80	ERAGROSTIS SPECABILIS	PURPLE LOVE GRASS		1 GAL.

GENERAL NOTES:

1. ACER RUBRUM, CELTIS OCCIDENTALIS, AND QUERCUS RUBRA TO BE SPRING DUG SPECIMENS AND PLANTED IN THE SPRING ONLY.
2. THE LOCATION OF THE TREES SHOWN ON THIS PLAN IS APPROXIMATE AND SHALL NOT BE SCALED FROM THIS DRAWING. THIS PLAN MUST BE READ IN CONJUNCTION WITH THE APPROVED CUP AND CITY CROSS SECTIONS.
3. CONTRACTOR SHALL ENSURE THAT ALL UTILITY LOCATIONS ARE OBTAINED PRIOR TO ANY EXCAVATION FOR LANDSCAPING.
4. LOCATION OF ALL PLANT MATERIALS TO BE STAKED BY THE CONTRACTOR AND VERIFIED IN THE FIELD BY LANDSCAPE ARCHITECT & CITY OF OTTAWA PRIOR TO THE EXCAVATION OF PITS.
5. ALL PLANT MATERIAL SHALL BE NURSERY GROWN STOCK UNLESS OTHERWISE NOTED.
6. TREES TO HAVE A MINIMUM 1800 CLEAR STEM ABOVE GRADE.
7. PLACE SOD ON A MINIMUM 150mm TOPSOIL.
8. CONTRACTOR TO MAKE GOOD ALL EXISTING AREAS DAMAGED BY HIS WORK TO THE SATISFACTION OF THE CITY OF OTTAWA.
9. THE CITY WILL BE NOTIFIED IF ANY TREES CANNOT BE LOCATED OR PLANTED DUE TO CONFLICTS WITH UTILITIES OR DRIVEWAYS. THE REQUIRED TREES NOT PLANTED ARE SUBJECT TO TREE BANKING. THE FINAL NUMBER OF TREES TO BE BANKED WILL BE PROVIDED TO THE CITY FOLLOWING ALL PLANTINGS.
10. ALL PLANT MATERIAL SHALL BE WARRANTIED FOR TWO YEARS FROM THE DATE OF PERFORMANCE ACCEPTANCE AS DETERMINED BY THE CITY OF OTTAWA.
11. PERIODIC REVIEWS OF PLANTING SHALL BE CARRIED OUT BY THE LANDSCAPE ARCHITECT.
12. PLANTINGS TO BE STAKED FOR APPROVAL PRIOR TO CONSTRUCTION
13. CITY GRASS CUTTING RESPONSIBILITIES FOR SODDED AREAS SHALL BEGIN FOLLOWING PERFORMANCE ACCEPTANCE INSPECTION BY THE LANDSCAPE ARCHITECT AND THE CITY. ACCEPTANCE WILL BE PROVIDED ONLY IF:
    - SOD IS PROPERLY ESTABLISHED.
    - TURF IS FREE OF DEAD SPOTS AND WEEDS.
    - SODDED AREAS HAVE BEEN CUT WITHIN 24 HOURS PRIOR TO ACCEPTANCE INSPECTION.
    - MINIMUM OF 3 WEEKS HAVE ELAPSED FOLLOWING LAYING OF SOD.
    - A MINIMUM OF TWO CUTS HAVE TAKEN PLACE.
    - SODDED AREAS HAVE BEEN TOP-DRESSED, SEEDED AND AERATED
14. STREET TREE REQUIREMENT BASED ON DRAFT CONDITIONS FOR FINAL APPROVAL:
    1 TREE PER INTERIOR (NON-CORNER) LOTS
    2 TREES PER EXTERIOR (CORNER) LOTS

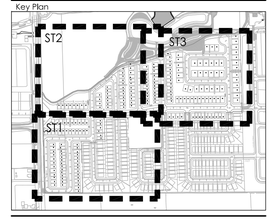
    INTERIOR (NON- CORNERS) SINGLE LOTS (175): 175 TREES
    EXTERIOR (CORNERS) SINGLE LOTS (44): 88 TREES

TOTAL NUMBER OF TREES REQUIRED:	263
NUMBER OF STREET TREES SHOWN ON PLAN:	296
NUMBER OF WALKWAY BLOCK TREES:	8
TOTAL NUMBER OF TREES ON PLAN:	304
DIFFERENCE:	+33

15. STREET TREE PLANTING GUIDELINE
    NOTE: APPROVED CROSS SECTIONS SHALL TAKE PRECEDENCE
    4.5m - STREET LIGHT
    2.5m - STREET LIGHT (SMALL TREE <7m MATURE HT.)
    3.0m - HYDRO TRANSFORMER
    1.5m - PATH, DRIVEWAY, FENCE, SOUND WALL
    4.5m - CONIFERS MINIMUM SETBACK FROM CURB
    2.5m - FIRE HYDRANTS
    1.5m - WATER SERVICE / CURB STOP
    1.0m - BELL / CABLE PEDESTALS

Contractor shall check all dimensions on the work and report any discrepancy to the Landscape Architect before proceeding. All drawings and specifications are the property of the Landscape Architect and must be returned at the completion of the work. This drawing is not to be used for construction until signed by the Landscape Architect.

Key Plan



LEGEND

PHASE LINE

FENCING
- ACOUSTIC FENCE WITH GATE — LOCATED 0.3M ON PRIVATE PROPERTY LOCATED 0.5M FROM PERTH ST P.L.
- PRIVACY FENCE WITH GATE — LOCATED 0.15M ON PRIVATE PROPERTY
- CHAIN LINK FENCE — LOCATED 0.15M ON PRIVATE PROPERTY
- DECORATIVE RAIL FENCE

PLANTING
- DECIDUOUS STREET TREE
- SMALL STREET TREE (<7m)
- CONIFEROUS SHRUB
- GRASSES/PERENNIALS
- SEEDING

UTILITIES
- PROPOSED HYDRO TRANSFORMER
- PROPOSED CABLE PEDESTAL
- PROPOSED BELL PEDESTAL
- CURB STOP
- PROPOSED BELL CABINET
- COMMUNITY MAIL BOX LOCATION
- PROPOSED STREET LIGHT
- FIRE HYDRANT
- EXISTING HYDRO POLE

PLANTING KEY
- TREE SPECIES / QUANTITY
- SHRUB SPECIES / QUANTITY

DETAIL KEY
- DETAIL NO. / SHEET NO.

No.	Description	Date
-		
-		
-		
-		
-		
-		
1	Issued for First Submission	Mar.1/18

Revision

City Approval Stamp

ASSOCIATION OF LANDSCAPE DESIGNERS ONTARIO — SILVANO TARDELLA — OALA — MEMBER

Project

CAIVAN COMMUNITIES
FOX RUN PHASE 1

Title

STREETSCAPE PLAN

Date	Oct 19 2017
Scale	1:500
Drawn	lw
Checked	lm
Job No.	1-12128

Sheet: ST1

PLANT LIST ST1 - STREET TREES

KEY	QTY.	BOTANICAL NAME	COMMON NAME	CAL/HT. (mm)	ROOT
SMALL DECIDUOUS STREET TREES (6-8m)					
AG	7	AMELANCHIER x GRANDIFLORA 'ROBIN HILL'	ROBIN'S HILL SERVICEBERRY	70	B&B
PC	4	PYRUS CALLERYANA 'CHANTICLEER'	CHANTICLEER PEAR	70	B&B
CI	8	CRATAEGUS CRUSGALI 'INERMIS'	COCKSPUR HAWTHORN	70	B&B
SR	8	SYRINGA RETICULATA 'IVORY SILK'	IVORY SILK LILAC	70	B&B
CC	5	CORYLUS COLURNA	TURKISH HAZEL	70	B&B
SD	4	SORBUS DECORA	SHOWY MOUNTAIN ASH	70	B&B
PI	6	PRUNUS PENSYLVANICA	PIN CHERRY	70	B&B
AS	7	ACER SACCHARUM 'BARRETT COLE'	APOLLO SUGAR MAPLE	70	B&B
MM	10	MALUS 'MARILEE'	MARILEE CRABAPPLE	70	B&B
MEDIUM DECIDUOUS STREET TREES (7.5-15m)					
CS	2	CATALPA SPECIOSA	WESTERN CATALPA	80	B&B
GB	2	GINKGO BILOBA 'MAGYAR GINKGO'	MAGYAR GINKGO	70	B&B
GT	6	GLEDITSIA TRIACANTHOS VAR. INERMIS	THORNLESS HONEYLOCUST	70	B&B
TC	5	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN	70	B&B
QR	3	QUERCUS RUBRA	RED OAK	70	B&B
AS	3	ACER SACCHARUM	SUGAR MAPLE	70	B&B
UP	4	ULMUST 'PATRIOT'	PATRIOT ELM	70	B&B

PLANT LIST ST2 - STREET TREES

KEY	QTY.	BOTANICAL NAME	COMMON NAME	CAL/HT. (mm)	ROOT
SMALL DECIDUOUS STREET TREES (6-8m)					
AG	6	AMELANCHIER x GRANDIFLORA 'ROBIN HILL'	ROBIN'S HILL SERVICEBERRY	70	B&B
PC	3	PYRUS CALLERYANA 'CHANTICLEER'	CHANTICLEER PEAR	70	B&B
CI	9	CRATAEGUS CRUSGALI 'INERMIS'	COCKSPUR HAWTHORN	70	B&B
SR	6	SYRINGA RETICULATA 'IVORY SILK'	IVORY SILK LILAC	70	B&B
CC	2	CORYLUS COLURNA	TURKISH HAZEL	70	B&B
QR	6	QUERCUS ROBUR 'FASTIGIATA'	PYRAMIDAL ENGLISH OAK	70	B&B
PI	2	PRUNUS PENSYLVANICA	PIN CHERRY	70	B&B
MM	3	MALUS 'MARILEE'	MARILEE CRABAPPLE	70	B&B
MEDIUM DECIDUOUS STREET TREES (7.5-15m)					
CS	5	CATALPA SPECIOSA	WESTERN CATALPA	80	B&B
GB	8	GINKGO BILOBA 'MAGYAR GINKGO'	MAGYAR GINKGO	70	B&B
GT	5	GLEDITSIA TRIACANTHOS VAR. INERMIS	THORNLESS HONEYLOCUST	70	B&B
TC	7	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN	70	B&B
QR	2	QUERCUS RUBRA	RED OAK	70	B&B
AS	2	ACER SACCHARUM	SUGAR MAPLE	70	B&B

PLANT LIST ST3 - STREET TREES

KEY	QTY.	BOTANICAL NAME	COMMON NAME	CAL/HT. (mm)	ROOT
SMALL DECIDUOUS STREET TREES (6-8m)					
AG	12	AMELANCHIER x GRANDIFLORA 'ROBIN HILL'	ROBIN'S HILL SERVICEBERRY	70	B&B
PC	8	PYRUS CALLERYANA 'CHANTICLEER'	CHANTICLEER PEAR	70	B&B
CI	10	CRATAEGUS CRUSGALI 'INERMIS'	COCKSPUR HAWTHORN	70	B&B
SR	12	SYRINGA RETICULATA 'IVORY SILK'	IVORY SILK LILAC	70	B&B
CC	6	CORYLUS COLURNA	TURKISH HAZEL	70	B&B
QR	7	QUERCUS ROBUR 'FASTIGIATA'	PYRAMIDAL ENGLISH OAK	70	B&B
SD	7	SORBUS DECORA	SHOWY MOUNTAIN ASH	70	B&B
PI	11	PRUNUS PENSYLVANICA	PIN CHERRY	70	B&B
AS	8	ACER SACCHARUM 'BARRETT COLE'	APOLLO SUGAR MAPLE	70	B&B
MM	10	MALUS 'MARILEE'	MARILEE CRABAPPLE	70	B&B
MEDIUM DECIDUOUS STREET TREES (7.5-15m)					
CS	8	CATALPA SPECIOSA	WESTERN CATALPA	80	B&B
GB	8	GINKGO BILOBA 'MAGYAR GINKGO'	MAGYAR GINKGO	70	B&B
GT	10	GLEDITSIA TRIACANTHOS VAR. INERMIS	THORNLESS HONEYLOCUST	70	B&B
TC	5	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN	70	B&B
QR	9	QUERCUS RUBRA	RED OAK	70	B&B
AS	7	ACER SACCHARUM	SUGAR MAPLE	70	B&B
UP	8	ULMUST 'PATRIOT'	PATRIOT ELM	70	B&B

PLANT LIST C - WALKWAY BLOCK # 237

KEY	QTY.	BOTANICAL NAME	COMMON NAME	CAL/HT. (mm)	ROOT
SMALL STREET TREES (<7m)					
AG	2	AMELANCHIER x GRANDIFLORA 'ROBIN HILL'	ROBIN'S HILL SERVICEBERRY	70	B&B
MR	6	MALUS 'RINKII'	SIBERIAN CRAB APPLE	70	B&B.
CONIFEROUS SHRUBS					
To	18	THUJA OCCIDENTALIS 'DEGROOTS SPIRE'	DEGROOTS SPIRE CEDAR		1 GAL.
GRASSES/PERENNIALS					
ca	98	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER REED GRASS		1 GAL.
es	80	ERAGROSTIS SPECABILIS	PURPLE LOVE GRASS		1 GAL.

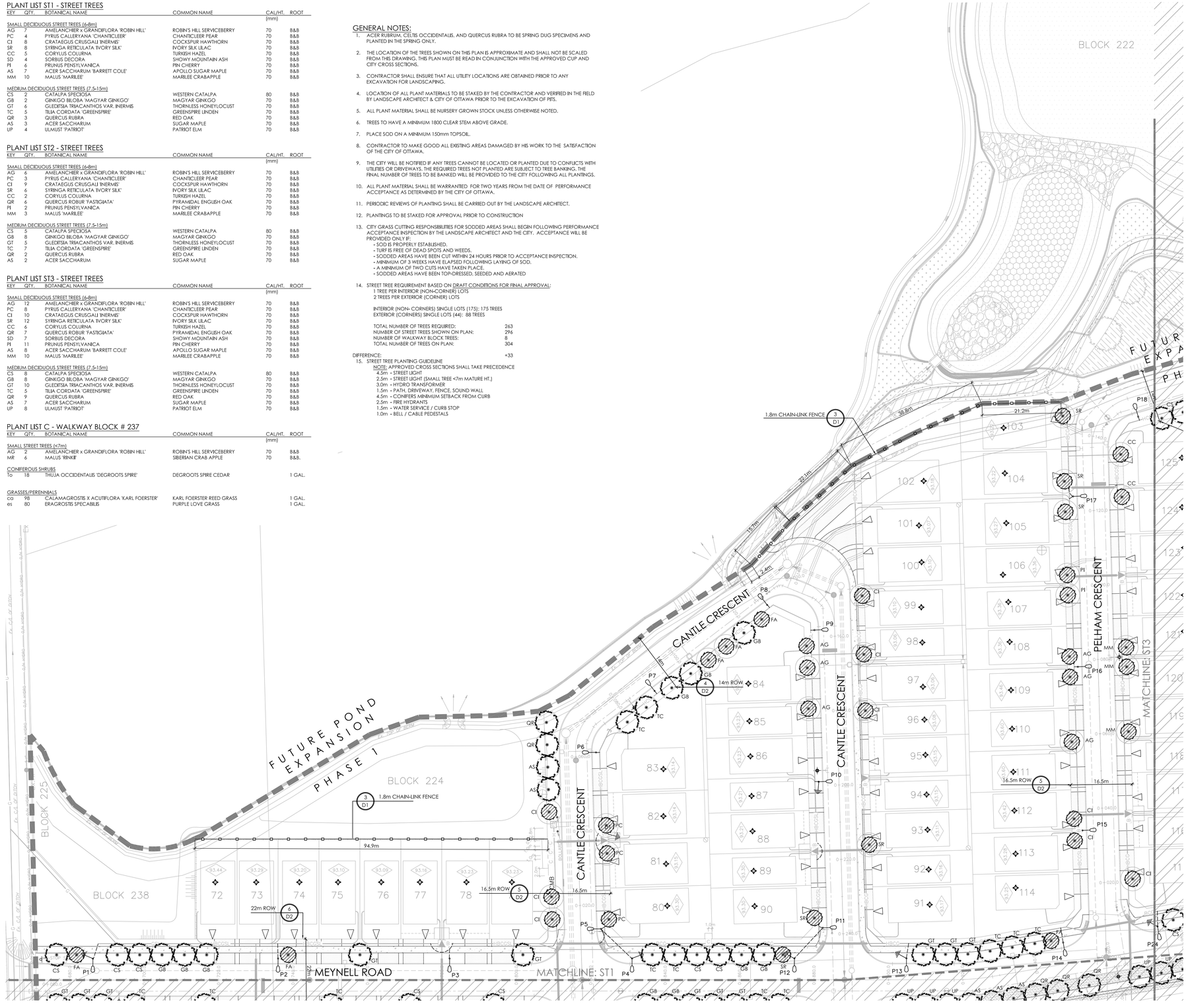
GENERAL NOTES:

1. ACER RUBRUM, CELTIS OCCIDENTALIS, AND QUERCUS RUBRA TO BE SPRING DUG SPECIMENS AND PLANTED IN THE SPRING ONLY.
2. THE LOCATION OF THE TREES SHOWN ON THIS PLAN IS APPROXIMATE AND SHALL NOT BE SCALED FROM THIS DRAWING. THIS PLAN MUST BE READ IN CONJUNCTION WITH THE APPROVED CUP AND CITY CROSS SECTIONS.
3. CONTRACTOR SHALL ENSURE THAT ALL UTILITY LOCATIONS ARE OBTAINED PRIOR TO ANY EXCAVATION FOR LANDSCAPING.
4. LOCATION OF ALL PLANT MATERIALS TO BE STAKED BY THE CONTRACTOR AND VERIFIED IN THE FIELD BY LANDSCAPE ARCHITECT & CITY OF OTTAWA PRIOR TO THE EXCAVATION OF PITS.
5. ALL PLANT MATERIAL SHALL BE NURSERY GROWN STOCK UNLESS OTHERWISE NOTED.
6. TREES TO HAVE A MINIMUM 1800 CLEAR STEM ABOVE GRADE.
7. PLACE SOD ON A MINIMUM 150mm TOPSOIL.
8. CONTRACTOR TO MAKE GOOD ALL EXISTING AREAS DAMAGED BY HIS WORK TO THE SATISFACTION OF THE CITY OF OTTAWA.
9. THE CITY WILL BE NOTIFIED IF ANY TREES CANNOT BE LOCATED OR PLANTED DUE TO CONFLICTS WITH UTILITIES OR DRIVEWAYS. THE REQUIRED TREES NOT PLANTED ARE SUBJECT TO TREE BANKING. THE FINAL NUMBER OF TREES TO BE BANKED WILL BE PROVIDED TO THE CITY FOLLOWING ALL PLANTINGS.
10. ALL PLANT MATERIAL SHALL BE WARRANTIED FOR TWO YEARS FROM THE DATE OF PERFORMANCE ACCEPTANCE AS DETERMINED BY THE CITY OF OTTAWA.
11. PERIODIC REVIEWS OF PLANTING SHALL BE CARRIED OUT BY THE LANDSCAPE ARCHITECT.
12. PLANTINGS TO BE STAKED FOR APPROVAL PRIOR TO CONSTRUCTION
13. CITY GRASS CUTTING RESPONSIBILITIES FOR SODDED AREAS SHALL BEGIN FOLLOWING PERFORMANCE ACCEPTANCE INSPECTION BY THE LANDSCAPE ARCHITECT AND THE CITY. ACCEPTANCE WILL BE PROVIDED ONLY IF:
    - SOD IS PROPERLY ESTABLISHED.
    - TURF IS FREE OF DEAD SPOTS AND WEEDS.
    - SODDED AREAS HAVE BEEN CUT WITHIN 24 HOURS PRIOR TO ACCEPTANCE INSPECTION.
    - MINIMUM OF 3 WEEKS HAVE ELAPSED FOLLOWING LAYING OF SOD.
    - A MINIMUM OF TWO CUTS HAVE TAKEN PLACE.
    - SODDED AREAS HAVE BEEN TOP-DRESSED, SEEDED AND AERATED
14. STREET TREE REQUIREMENT BASED ON DRAFT CONDITIONS FOR FINAL APPROVAL:
    1 TREE PER INTERIOR (NON-CORNER) LOTS
    2 TREES PER EXTERIOR (CORNER) LOTS

    INTERIOR (NON- CORNERS) SINGLE LOTS (175): 175 TREES
    EXTERIOR (CORNERS) SINGLE LOTS (44): 88 TREES

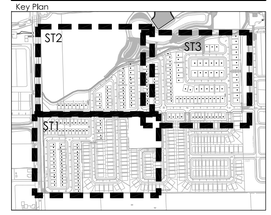
TOTAL NUMBER OF TREES REQUIRED:	263
NUMBER OF STREET TREES SHOWN ON PLAN:	296
NUMBER OF WALKWAY BLOCK TREES:	8
TOTAL NUMBER OF TREES ON PLAN:	304

    DIFFERENCE: +33
15. STREET TREE PLANTING GUIDELINE
    NOTE: APPROVED CROSS SECTIONS SHALL TAKE PRECEDENCE
    4.5m - STREET LIGHT
    2.5m - STREET LIGHT (SMALL TREE <7m MATURE HT.)
    3.0m - HYDRO TRANSFORMER
    1.5m - PATH, DRIVEWAY, FENCE, SOUND WALL
    4.5m - CONIFERS MINIMUM SETBACK FROM CURB
    2.5m - FIRE HYDRANTS
    1.5m - WATER SERVICE / CURB STOP
    1.0m - BELL / CABLE PEDESTALS



Contractor shall check all dimensions on the work and report any discrepancy to the Landscape Architect before proceeding. All drawings and specifications are the property of the Landscape Architect and must be returned at the completion of the work. This drawing is not to be used for construction until signed by the Landscape Architect.

Key Plan



LEGEND

PHASE LINE

FENCING
- ACOUSTIC FENCE WITH GATE — LOCATED 0.3M ON PRIVATE PROPERTY
- PRIVACY FENCE WITH GATE — LOCATED 0.3M FROM PERTH ST P.L.
- CHAIN LINK FENCE — LOCATED 0.15M ON PRIVATE PROPERTY
- DECORATIVE RAIL FENCE

PLANTING
- DECIDUOUS STREET TREE
- SMALL STREET TREE (<7m)
- CONIFEROUS SHRUB
- GRASSES/PERENNIALS
- SEEDING

UTILITIES
- PROPOSED HYDRO TRANSFORMER
- PROPOSED CABLE PEDESTAL
- PROPOSED BELL PEDESTAL
- CURB STOP
- PROPOSED BELL CABINET
- COMMUNITY MAIL BOX LOCATION
- PROPOSED STREET LIGHT
- FIRE HYDRANT
- EXISTING HYDRO POLE

PLANTING KEY
- XX — TREE SPECIES
- XX — QUANTITY
- XX — SHRUB SPCIES
- XX — QUANTITY

DETAIL KEY
- DETAIL NO.
- SHEET NO.

No.	Description	Date
-		
-		
-		
-		
-		
-		
-		
1	Issued for First Submission	Mar.1/18

Revision

City Approval Stamp

ASSOCIATION OF LANDSCAPE ARCHITECTS ONTARIO — OALA — MEMBER — ALLNARO TARDELLA

N

Project

CAIVAN COMMUNITIES
FOX RUN PHASE 1

Title

STREETSCAPE PLAN

Date	Oct 19 2017
Scale	1:500
Drawn	lw
Checked	lm
Job No.	1-12128

Sheet

ST2

GENERAL NOTES:

1. ACER RUBRUM, CELTIS OCCIDENTALIS, AND QUERCUS RUBRA TO BE SPRING DUG SPECIMENS AND PLANTED IN THE SPRING ONLY.
2. THE LOCATION OF THE TREES SHOWN ON THIS PLAN IS APPROXIMATE AND SHALL NOT BE SCALED FROM THIS DRAWING. THIS PLAN MUST BE READ IN CONJUNCTION WITH THE APPROVED CUP AND CITY CROSS SECTIONS.
3. CONTRACTOR SHALL ENSURE THAT ALL UTILITY LOCATIONS ARE OBTAINED PRIOR TO ANY EXCAVATION FOR LANDSCAPING.
4. LOCATION OF ALL PLANT MATERIALS TO BE STAKED BY THE CONTRACTOR AND VERIFIED IN THE FIELD BY LANDSCAPE ARCHITECT & CITY OF OTTAWA PRIOR TO THE EXCAVATION OF PITS.
5. ALL PLANT MATERIAL SHALL BE NURSERY GROWN STOCK UNLESS OTHERWISE NOTED.
6. TREES TO HAVE A MINIMUM 1800 CLEAR STEM ABOVE GRADE.
7. PLACE SOD ON A MINIMUM 150mm TOPSOIL.
8. CONTRACTOR TO MAKE GOOD ALL EXISTING AREAS DAMAGED BY HIS WORK TO THE SATISFACTION OF THE CITY OF OTTAWA.
9. THE CITY WILL BE NOTIFIED IF ANY TREES CANNOT BE LOCATED OR PLANTED DUE TO CONFLICTS WITH UTILITIES OR DRIVEWAYS. THE REQUIRED TREES NOT PLANTED ARE SUBJECT TO TREE BANKING. THE FINAL NUMBER OF TREES TO BE BANKED WILL BE PROVIDED TO THE CITY FOLLOWING ALL PLANTINGS.
10. ALL PLANT MATERIAL SHALL BE WARRANTED FOR TWO YEARS FROM THE DATE OF PERFORMANCE ACCEPTANCE AS DETERMINED BY THE CITY OF OTTAWA.
11. PERIODIC REVIEWS OF PLANTING SHALL BE CARRIED OUT BY THE LANDSCAPE ARCHITECT.
12. PLANTINGS TO BE STAKED FOR APPROVAL PRIOR TO CONSTRUCTION
13. CITY GRASS CUTTING RESPONSIBILITIES FOR SODDED AREAS SHALL BEGIN FOLLOWING PERFORMANCE ACCEPTANCE INSPECTION BY THE LANDSCAPE ARCHITECT AND THE CITY. ACCEPTANCE WILL BE PROVIDED ONLY IF:
    - SOD IS PROPERLY ESTABLISHED,
    - TURF IS FREE OF DEAD SPOTS AND WEEDS,
    - SODDED AREAS HAVE BEEN CUT WITHIN 24 HOURS PRIOR TO ACCEPTANCE INSPECTION.
    - MINIMUM OF 3 WEEKS HAVE ELAPSED FOLLOWING LAYING OF SOD.
    - A MINIMUM OF TWO CUTS HAVE TAKEN PLACE.
    - SODDED AREAS HAVE BEEN TOP-DRESSED, SEEDED AND AERATED
14. STREET TREE REQUIREMENT BASED ON DRAFT CONDITIONS FOR FINAL APPROVAL:
    1 TREE PER INTERIOR (NON-CORNER) LOTS
    2 TREES PER EXTERIOR (CORNER) LOTS

    INTERIOR (NON- CORNERS) SINGLE LOTS (175): 175 TREES
    EXTERIOR (CORNERS) SINGLE LOTS (44): 88 TREES

TOTAL NUMBER OF TREES REQUIRED:	263
NUMBER OF STREET TREES SHOWN ON PLAN:	296
NUMBER OF WALKWAY BLOCK TREES:	8
TOTAL NUMBER OF TREES ON PLAN:	304

DIFFERENCE: +33

15. STREET TREE PLANTING GUIDELINE
    NOTE: APPROVED CROSS SECTIONS SHALL TAKE PRECEDENCE
    4.5m - STREET LIGHT
    2.5m - STREET LIGHT (SMALL TREE <7m MATURE HT.)
    3.0m - HYDRO TRANSFORMER
    1.5m - PATH, DRIVEWAY, FENCE, SOUND WALL
    4.5m - CONIFERS MINIMUM SETBACK FROM CURB
    2.5m - FIRE HYDRANTS
    1.5m - WATER SERVICE / CURB STOP
    1.0m - BELL / CABLE PEDESTALS

PLANT LIST ST1 - STREET TREES

KEY	QTY.	BOTANICAL NAME	COMMON NAME	CAL/HT. (mm)	ROOT
SMALL DECIDUOUS STREET TREES (6-8m)					
AG	7	AMELANCHIER x GRANDIFLORA 'ROBIN HILL'	ROBIN'S HILL SERVICEBERRY	70	B&B
PC	4	PYRUS CALLERYANA 'CHANTICLEER'	CHANTICLEER PEAR	70	B&B
CI	8	CRATAEGUS CRUSGALLI INERMIS'	COCKSPUR HAWTHORN	70	B&B
SR	8	SYRINGA RETICULATA 'IVORY SILK'	IVORY SILK LILAC	70	B&B
CC	5	CORYLUS COLURNA	TURKISH HAZEL	70	B&B
SD	4	SORBUS DECORA	SHOWY MOUNTAIN ASH	70	B&B
PI	6	PRUNUS PENSYLVANICA	PIN CHERRY	70	B&B
AS	7	ACER SACCHARUM 'BARRETT COLE'	APOLLO SUGAR MAPLE	70	B&B
MM	10	MALUS 'MARLEE'	MARLEE CRABAPPLE	70	B&B
MEDIUM DECIDUOUS STREET TREES (7.5-15m)					
CS	2	CATALPA SPECIOSA	WESTERN CATALPA	80	B&B
GB	2	GINKGO BILOBA 'MAGYAR GINKGO'	MAGYAR GINKGO	70	B&B
GT	6	GLEDITSIA TRIACANTHOS VAR. INERMIS	THORNLESS HONEYLOCUST	70	B&B
TC	5	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN	70	B&B
QR	3	QUERCUS RUBRA	RED OAK	70	B&B
AS	3	ACER SACCHARUM	SUGAR MAPLE	70	B&B
UP	4	ULMUST 'PATRIOT'	PATRIOT ELM	70	B&B

PLANT LIST ST2 - STREET TREES

KEY	QTY.	BOTANICAL NAME	COMMON NAME	CAL/HT. (mm)	ROOT
SMALL DECIDUOUS STREET TREES (6-8m)					
AG	6	AMELANCHIER x GRANDIFLORA 'ROBIN HILL'	ROBIN'S HILL SERVICEBERRY	70	B&B
PC	3	PYRUS CALLERYANA 'CHANTICLEER'	CHANTICLEER PEAR	70	B&B
CI	9	CRATAEGUS CRUSGALLI INERMIS'	COCKSPUR HAWTHORN	70	B&B
SR	6	SYRINGA RETICULATA 'IVORY SILK'	IVORY SILK LILAC	70	B&B
CC	2	CORYLUS COLURNA	TURKISH HAZEL	70	B&B
QR	6	QUERCUS ROBUR 'FASTIGIATA'	PYRAMIDAL ENGLISH OAK	70	B&B
PI	2	PRUNUS PENSYLVANICA	PIN CHERRY	70	B&B
MM	3	MALUS 'MARLEE'	MARLEE CRABAPPLE	70	B&B
MEDIUM DECIDUOUS STREET TREES (7.5-15m)					
CS	5	CATALPA SPECIOSA	WESTERN CATALPA	80	B&B
GB	8	GINKGO BILOBA 'MAGYAR GINKGO'	MAGYAR GINKGO	70	B&B
GT	5	GLEDITSIA TRIACANTHOS VAR. INERMIS	THORNLESS HONEYLOCUST	70	B&B
TC	7	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN	70	B&B
QR	2	QUERCUS RUBRA	RED OAK	70	B&B
AS	2	ACER SACCHARUM	SUGAR MAPLE	70	B&B

PLANT LIST ST3 - STREET TREES

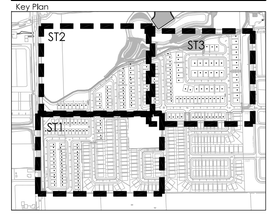
KEY	QTY.	BOTANICAL NAME	COMMON NAME	CAL/HT. (mm)	ROOT
SMALL DECIDUOUS STREET TREES (6-8m)					
AG	12	AMELANCHIER x GRANDIFLORA 'ROBIN HILL'	ROBIN'S HILL SERVICEBERRY	70	B&B
PC	8	PYRUS CALLERYANA 'CHANTICLEER'	CHANTICLEER PEAR	70	B&B
CI	10	CRATAEGUS CRUSGALLI INERMIS'	COCKSPUR HAWTHORN	70	B&B
SR	12	SYRINGA RETICULATA 'IVORY SILK'	IVORY SILK LILAC	70	B&B
CC	6	CORYLUS COLURNA	TURKISH HAZEL	70	B&B
QR	7	QUERCUS ROBUR 'FASTIGIATA'	PYRAMIDAL ENGLISH OAK	70	B&B
SD	7	SORBUS DECORA	SHOWY MOUNTAIN ASH	70	B&B
PI	11	PRUNUS PENSYLVANICA	PIN CHERRY	70	B&B
AS	8	ACER SACCHARUM 'BARRETT COLE'	APOLLO SUGAR MAPLE	70	B&B
MM	10	MALUS 'MARLEE'	MARLEE CRABAPPLE	70	B&B
MEDIUM DECIDUOUS STREET TREES (7.5-15m)					
CS	8	CATALPA SPECIOSA	WESTERN CATALPA	80	B&B
GB	8	GINKGO BILOBA 'MAGYAR GINKGO'	MAGYAR GINKGO	70	B&B
GT	10	GLEDITSIA TRIACANTHOS VAR. INERMIS	THORNLESS HONEYLOCUST	70	B&B
TC	5	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN	70	B&B
QR	9	QUERCUS RUBRA	RED OAK	70	B&B
AS	7	ACER SACCHARUM	SUGAR MAPLE	70	B&B
UP	8	ULMUST 'PATRIOT'	PATRIOT ELM	70	B&B

PLANT LIST C - WALKWAY BLOCK # 237

KEY	QTY.	BOTANICAL NAME	COMMON NAME	CAL/HT. (mm)	ROOT
SMALL STREET TREES (<7m)					
AG	2	AMELANCHIER x GRANDIFLORA 'ROBIN HILL'	ROBIN'S HILL SERVICEBERRY	70	B&B
MR	6	MALUS 'RINKIT'	SIBERIAN CRAB APPLE	70	B&B.
CONIFEROUS SHRUBS					
To	18	THUJA OCCIDENTALIS 'DEGROOTS SPIRE'	DEGROOTS SPIRE CEDAR		1 GAL.
GRASSES/PERENNIALS					
ca	98	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER REED GRASS		1 GAL.
es	80	ERAGROSTIS SPECIABILIS	PURPLE LOVE GRASS		1 GAL.

Contractor shall check all dimensions on the work and report any discrepancy to the Landscape Architect before proceeding. All drawings and specifications are the property of the Landscape Architect and must be returned at the completion of the work. This drawing is not to be used for construction until signed by the Landscape Architect.

Key Plan



LEGEND

PHASE LINE

FENCING
- ACOUSTIC FENCE WITH GATE LOCATED 0.3M ON PRIVATE PROPERTY
- PRIVACY FENCE WITH GATE LOCATED 0.3M ON PRIVATE PROPERTY
- CHAIN LINK FENCE LOCATED 0.15M ON PRIVATE PROPERTY
- DECORATIVE RAIL FENCE

PLANTING
- DECIDUOUS STREET TREE
- SMALL STREET TREE (<7m)
- CONIFEROUS SHRUB
- GRASSES/PERENNIALS
- SEEDING

UTILITIES
- PROPOSED HYDRO TRANSFORMER
- PROPOSED CABLE PEDESTAL
- PROPOSED BELL PEDESTAL
- CURB STOP
- PROPOSED BELL CABINET
- COMMUNITY MAIL BOX LOCATION
- PROPOSED STREET LIGHT
- FIRE HYDRANT
- EXISTING HYDRO POLE

PLANTING KEY
- XX QUANTITY — TREE SPECIES
- XX QUANTITY — SHRUB SPECIES

DETAIL KEY
- DETAIL NO. / SHEET NO.

No.	Description	Date
-		
-		
-		
-		
-		
-		
1	Issued for First Submission	Mar.1/18

Revision

City Approval Stamp

ONTARIO ASSOCIATION OF LANDSCAPE ARCHITECTS — OALA — MEMBER

N

Project

CAIVAN COMMUNITIES
FOX RUN PHASE 1

Title

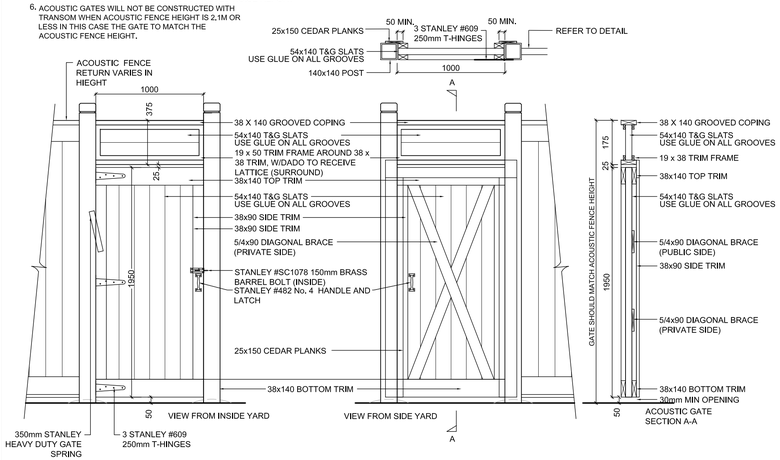
STREETSCAPE PLAN

Date	Oct 19 2017
Scale	1:500
Drawn	lw
Checked	lm
Job No.	1-12128

Sheet: ST3

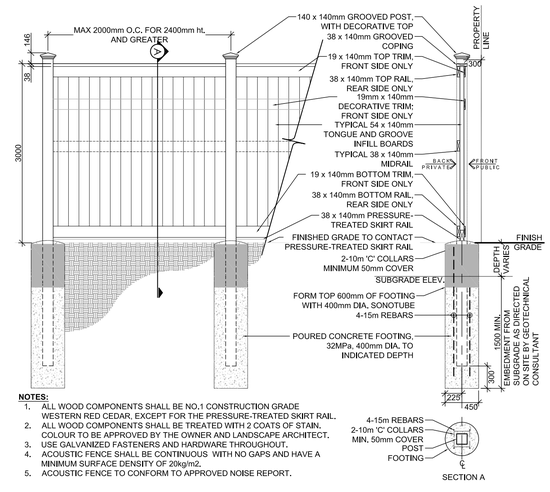
NOTES

1. ALL WOOD COMPONENTS SHALL BE NO. 1 CONSTRUCTION GRADE WESTERN RED CEDAR.
2. ALL WOOD COMPONENTS SHALL BE TREATED WITH 2 COATS OF STAIN. COLOR TO BE DETERMINED BY LANDSCAPE ARCHITECT
3. USE GALVANIZED FASTENERS AND HARDWARE THROUGHOUT.
4. ACOUSTIC FENCE SHALL BE CONTINUOUS WITH NO GAPS AND HAVE A MINIMUM SURFACE DENSITY OF 20 kg/m2
5. ACOUSTIC FENCE TO CONFORM TO APPROVED NOISE REPORT
6. ACOUSTIC GATES WILL NOT BE CONSTRUCTED WITH TRANSOM WHEN ACOUSTIC FENCE HEIGHT IS 2.1M OR LESS IN THIS CASE THE GATE TO MATCH THE ACOUSTIC FENCE HEIGHT.



1 3m ACOUSTIC GATE

N.T.S.



NOTES:

1. ALL WOOD COMPONENTS SHALL BE NO.1 CONSTRUCTION GRADE WESTERN RED CEDAR, EXCEPT FOR THE PRESSURE-TREATED SKIRT RAIL.
2. ALL WOOD COMPONENTS SHALL BE TREATED WITH 2 COATS OF STAIN. COLOUR TO BE APPROVED BY THE OWNER AND LANDSCAPE ARCHITECT.
3. USE GALVANIZED FASTENERS AND HARDWARE THROUGHOUT.
4. ACOUSTIC FENCE SHALL BE CONTINUOUS WITH NO GAPS AND HAVE A MINIMUM SURFACE DENSITY OF 20kg/m2.
5. ACOUSTIC FENCE TO CONFORM TO APPROVED NOISE REPORT.

2 3m ACOUSTIC FENCE

N.T.S.

NOTES:

1. CHAIN LINK FENCE TO BE BLACK VINYL COATED, 50 WOVEN MESH, 6 GAUGE O.D. 1800mm HIGH AS SPECIFIED OF 11 GAUGE GALVANIZED STEEL CORE FASTENED TO TOP RAIL, BRACE RAIL, LINE POST, STRETCHER BAR AND 6 GAUGE BOTTOM TENSION WIRE WITH 35mm (9 GAUGE) KNUCKLED FASTENERS 475mm O.C.
2. FINISH TO BE BLACK GLOSS ENAMEL BY POWDER COAT APPLICATION PRIOR TO COATING, ALL SURFACES TO BE CHEMICALLY CLEANED AND TREATED WITH PARKER BONDERITE AND CHLOROTHENE SOLVENT OR APPROVED EQUALS. POWDER COATING MUST BE A POLYESTER 2000 SERIES APPLIED IN A THICKNESS OF 4-5mm BY ELECTROSTATIC COAT AND OVEN CURED TO A SMOOTH AND EVEN SURFACE.
3. ALL FENCE POSTS AND RAILS TO BE GALVANIZED SCHEDULE "40" PIPE.
4. NO PLASTIC FITTINGS OR COMPONENTS ARE TO BE USED.
5. END, CORNER, LINE AND STRAINING POSTS SHALL BE 2000mm IN LENGTH FOR 1220mm HIGH FENCE (ALL POSTS AND PIPE RAILS TO BE GALVANIZED).
6. WIRE MESH TO FACE THE PUBLIC SIDE OF THE FENCE WITH THE PIPE RAILS FACING THE PRIVATE SIDE.
7. FASTENERS SHALL BE 6 GA. ALUMINUM OR HEAVIER.
8. CONCRETE FOOTING SHALL BE CSA 30MPa CLASS F-1
9. CENTER LINE OF FENCE TO BE LOCATED 150mm FROM LOTLINE ON PRIVATE PROPERTY UNLESS OTHERWISE DIRECTED BY CONTRACT ADMINISTRATOR.

3 1.8m CHAIN LINK FENCE

N.T.S.

Contractor shall check all dimensions on the work and report any discrepancy to the Landscape Architect before proceeding. All drawings and specifications are the property of the Landscape Architect and must be returned at the completion of the work. This drawing is not to be used for construction until signed by the Landscape Architect.

Key Plan

No.	Description	Date
-		
-		
-		
-		
-		
-		
1	Issued for First Submission	Mar.1/18

Revision

City Approval Stamp

ASSOCIATION OF LANDSCAPE ARCHITECTS ONTARIO SILVANO TARDELLA MEMBER OALA

Project

CAIVAN COMMUNITIES
FOX RUN PHASE 1

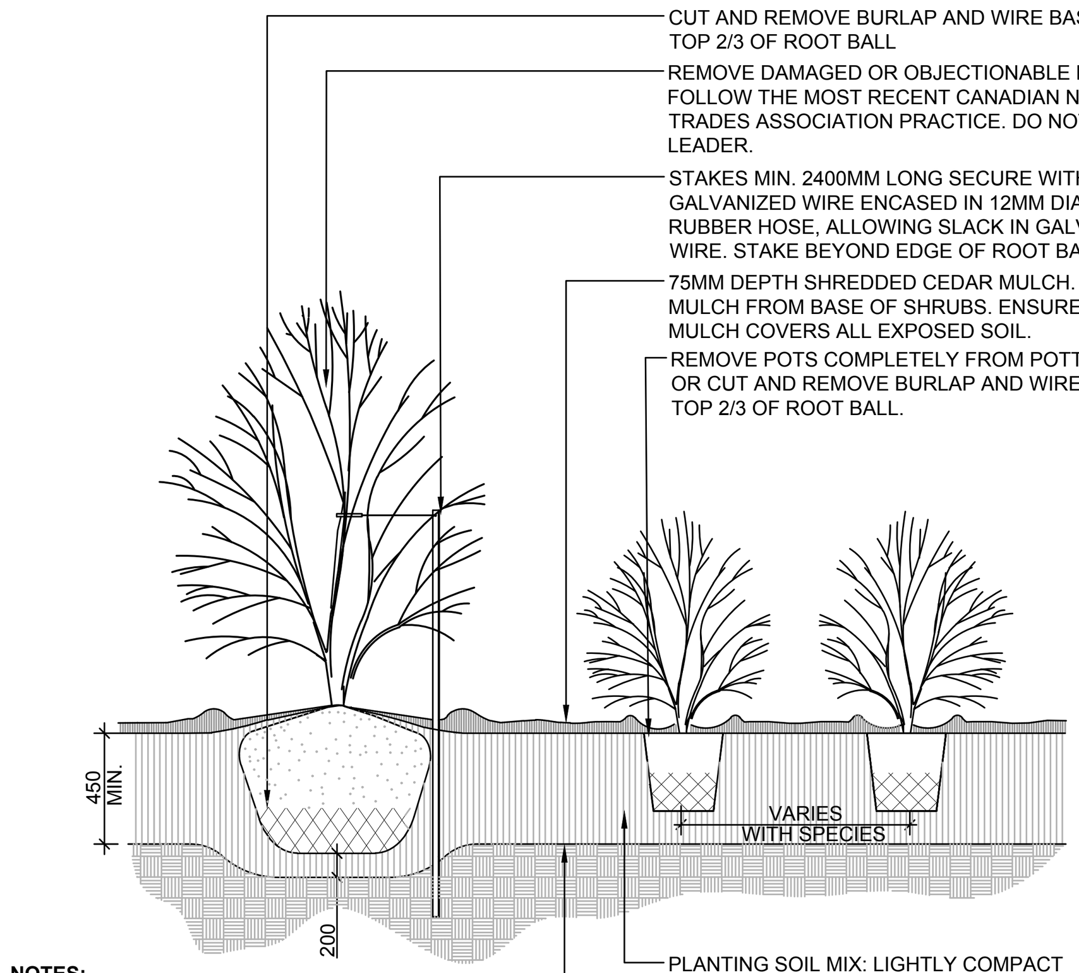
Title

DETAILS

Date Oct 19 2017
Scale 1:500
Drawn lw
Checkedlm
Job No. 1-12128

Sheet

D1

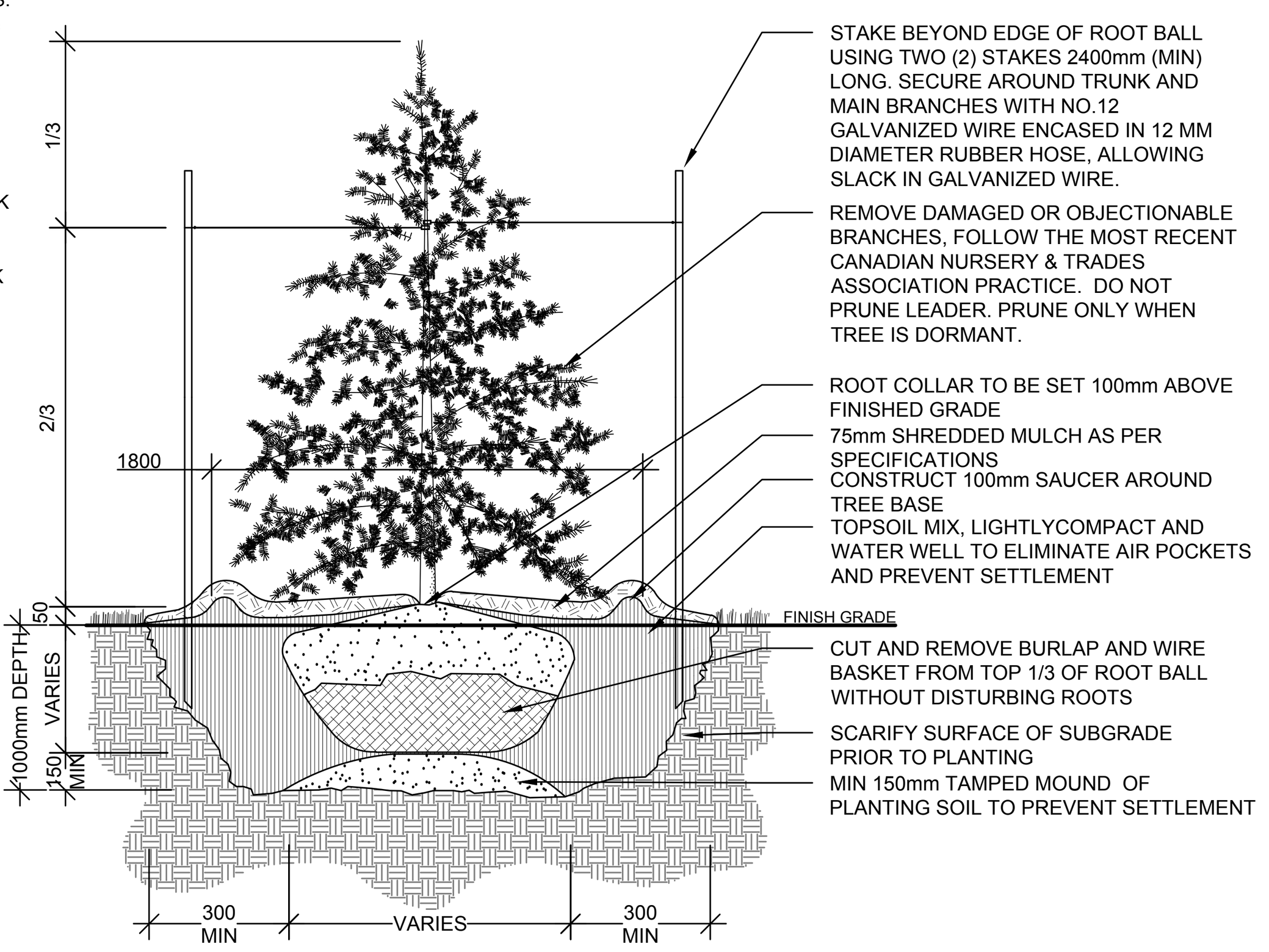


CUT AND REMOVE BURLAP AND WIRE BASKET FROM TOP 2/3 OF ROOT BALL
REMOVE DAMAGED OR OBJECTIONABLE BRANCHES. FOLLOW THE MOST RECENT CANADIAN NURSERY & TRADES ASSOCIATION PRACTICE. DO NOT PRUNE LEADER.
STAKES MIN. 2400MM LONG SECURE WITH NO.12 GALVANIZED WIRE ENCASED IN 12MM DIAMETER RUBBER HOSE, ALLOWING SLACK IN GALVANIZED WIRE. STAKE BEYOND EDGE OF ROOT BALL.
75MM DEPTH SHREDDED CEDAR MULCH. PULL BACK MULCH FROM BASE OF SHRUBS. ENSURE THAT MULCH COVERS ALL EXPOSED SOIL.
REMOVE POTS COMPLETELY FROM POTTED STOCK OR CUT AND REMOVE BURLAP AND WIRE FROM TOP 2/3 OF ROOT BALL.
450 MIN.
VARIES WITH SPECIES
200
PLANTING SOIL MIX: LIGHTLY COMPACT ADD WATER TO WELL TO ELIMINATE AIR POCKETS AND PREVENT SETTLEMENT.
SCARIFY SUBGRADE OF PLANTING BED

NOTES:

1. PLANTING SOIL MIXTURE AS PER SPECIFICATION.
2. SHRUBS SPECIFIED BARE ROOTS (B.R.) TO BE PLANTED SO THAT ROOTS ARE FULLY EXTENDED IN PLANTING HOLE WITH SOIL MIX BACKFILLED CAREFULLY TO PREVENT ROOT DAMAGE.
3. PROVIDE 100 HIGH EARTH SAUCER AROUND SHRUB BED.
4. STAKES TO BE REMOVED AT COMPLETION OF TWO YEAR WARRANTY PERIOD.

1 SHRUB BED IN WELL DRAINED SOIL
N.T.S.

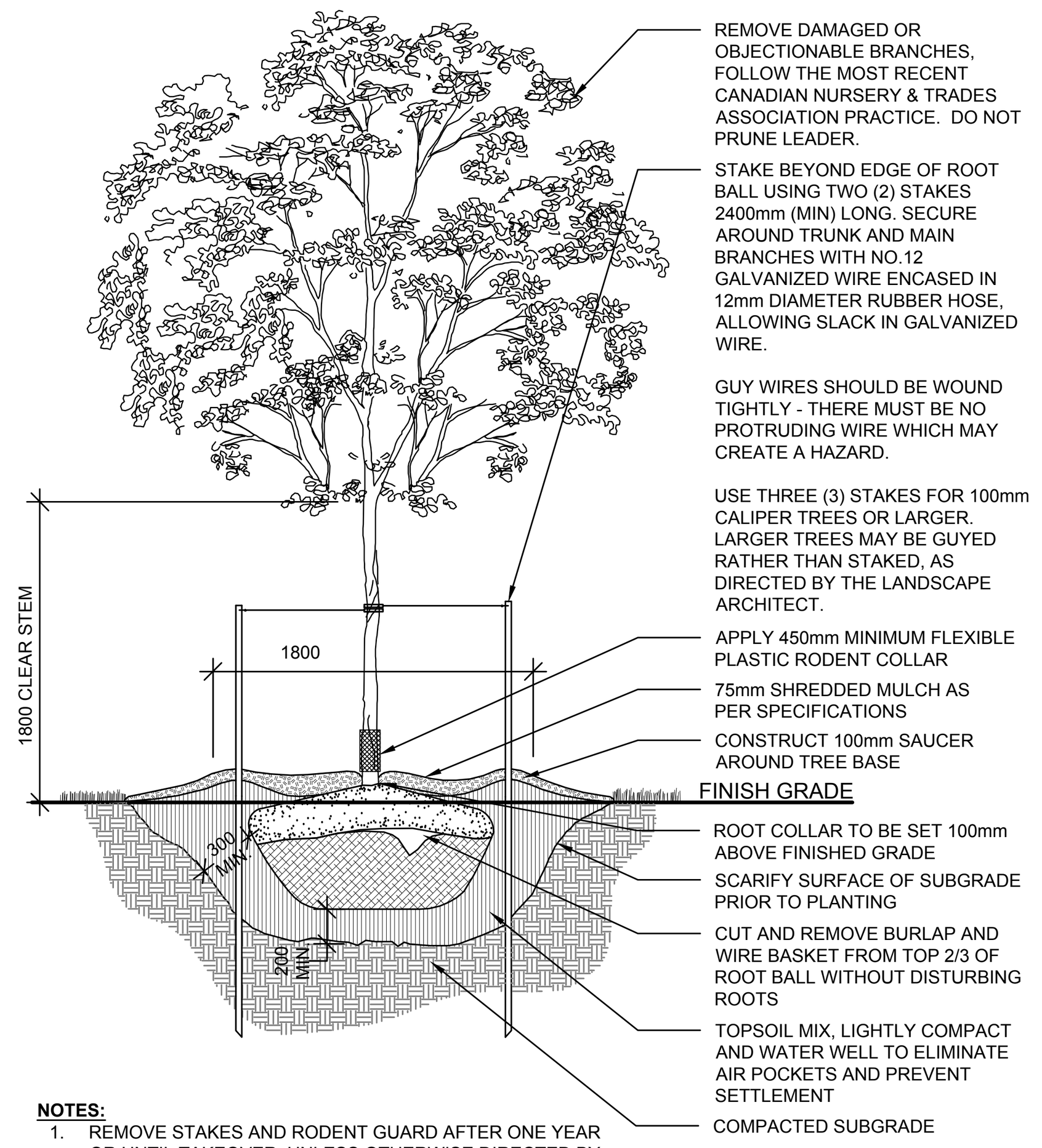


STAKE BEYOND EDGE OF ROOT BALL USING TWO (2) STAKES 2400mm (MIN) LONG. SECURE AROUND TRUNK AND MAIN BRANCHES WITH NO.12 GALVANIZED WIRE ENCASED IN 12 MM DIAMETER RUBBER HOSE, ALLOWING SLACK IN GALVANIZED WIRE.
REMOVE DAMAGED OR OBJECTIONABLE BRANCHES, FOLLOW THE MOST RECENT CANADIAN NURSERY & TRADES ASSOCIATION PRACTICE. DO NOT PRUNE LEADER. PRUNE ONLY WHEN TREE IS DORMANT.
ROOT COLLAR TO BE SET 100mm ABOVE FINISHED GRADE
75mm SHREDDED MULCH AS PER SPECIFICATIONS
CONSTRUCT 100mm SAUCER AROUND TREE BASE
TOPSOIL MIX, LIGHTLYCOMPACT AND WATER WELL TO ELIMINATE AIR POCKETS AND PREVENT SETTLEMENT
FINISH GRADE
CUT AND REMOVE BURLAP AND WIRE BASKET FROM TOP 1/3 OF ROOT BALL WITHOUT DISTURBING ROOTS
SCARIFY SURFACE OF SUBGRADE PRIOR TO PLANTING
MIN 150mm TAMPED MOUND OF PLANTING SOIL TO PREVENT SETTLEMENT
1/3
2/3
1800
1000mm DEPTH VARIES
300 MIN
VARIES
300 MIN

NOTE:

1. REMOVE STAKES AFTER ONE YEAR OR UNTIL TAKEOVER UNLESS OTHERWISE DIRECTED BY THE LANDSCAPE ARCHITECT.
2. TOPSOIL MIXTURE AND SHREDDED MULCH AS PER SPECIFICATION

2 CONIFEROUS TREE
N.T.S.

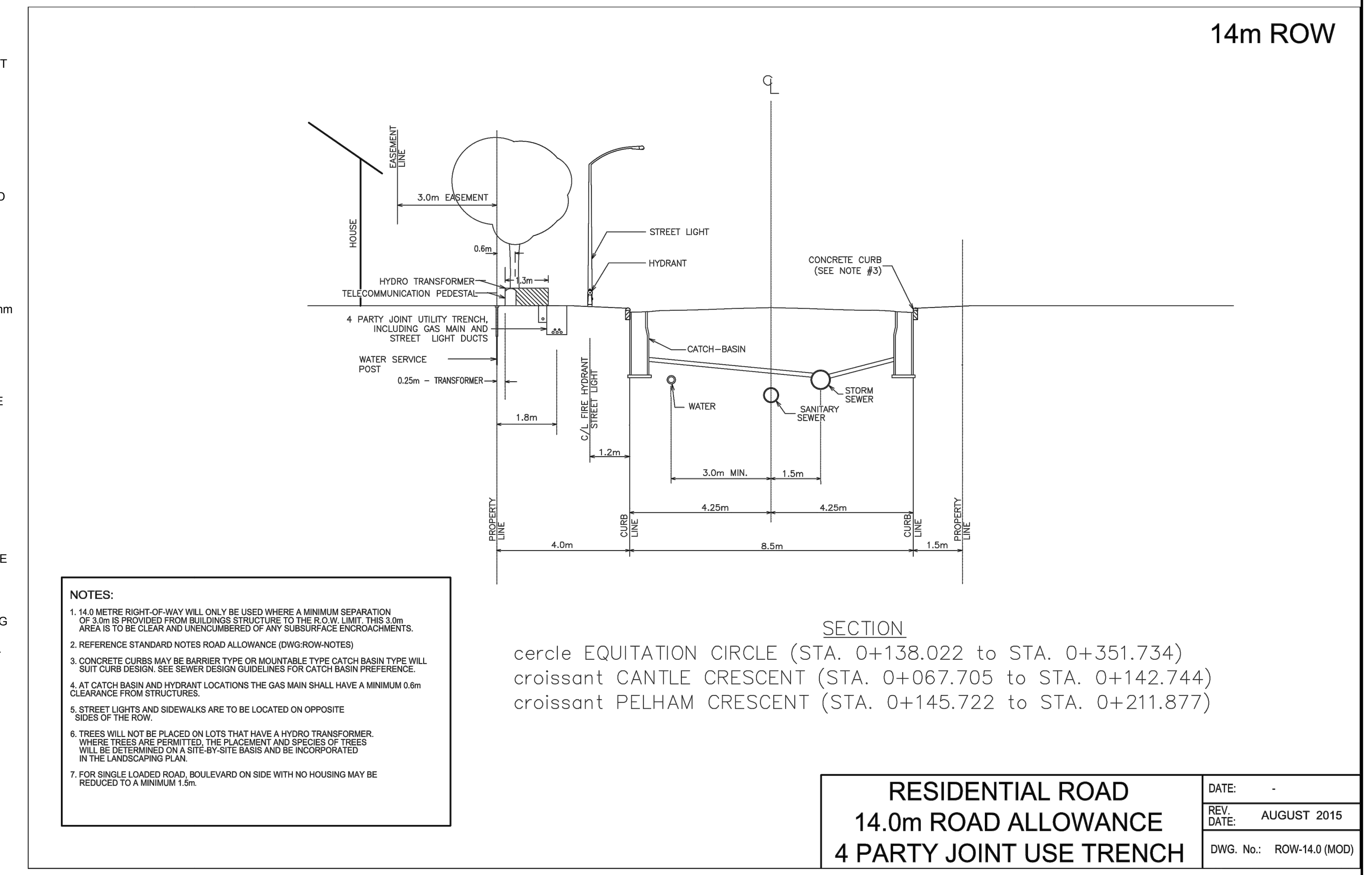


REMOVE DAMAGED OR OBJECTIONABLE BRANCHES. FOLLOW THE MOST RECENT CANADIAN NURSERY & TRADES ASSOCIATION PRACTICE. DO NOT PRUNE LEADER.
STAKE BEYOND EDGE OF ROOT BALL USING TWO (2) STAKES 2400mm (MIN) LONG. SECURE AROUND TRUNK AND MAIN BRANCHES WITH NO.12 GALVANIZED WIRE ENCASED IN 12mm DIAMETER RUBBER HOSE, ALLOWING SLACK IN GALVANIZED WIRE.
GUY WIRES SHOULD BE WOUND TIGHTLY - THERE MUST BE NO PROTRUDING WIRE WHICH MAY CREATE A HAZARD.
USE THREE (3) STAKES FOR 100mm CALIPER TREES OR LARGER. LARGER TREES MAY BE GUYED RATHER THAN STAKED, AS DIRECTED BY THE LANDSCAPE ARCHITECT.
APPLY 450mm MINIMUM FLEXIBLE PLASTIC RODENT COLLAR
75mm SHREDDED MULCH AS PER SPECIFICATIONS
CONSTRUCT 100mm SAUCER AROUND TREE BASE
FINISH GRADE
ROOT COLLAR TO BE SET 100mm ABOVE FINISHED GRADE
SCARIFY SURFACE OF SUBGRADE PRIOR TO PLANTING
CUT AND REMOVE BURLAP AND WIRE BASKET FROM TOP 2/3 OF ROOT BALL WITHOUT DISTURBING ROOTS
TOPSOIL MIX, LIGHTLY COMPACT AND WATER WELL TO ELIMINATE AIR POCKETS AND PREVENT SETTLEMENT
COMPACTED SUBGRADE
1800 CLEAR STEM
1800

NOTES:

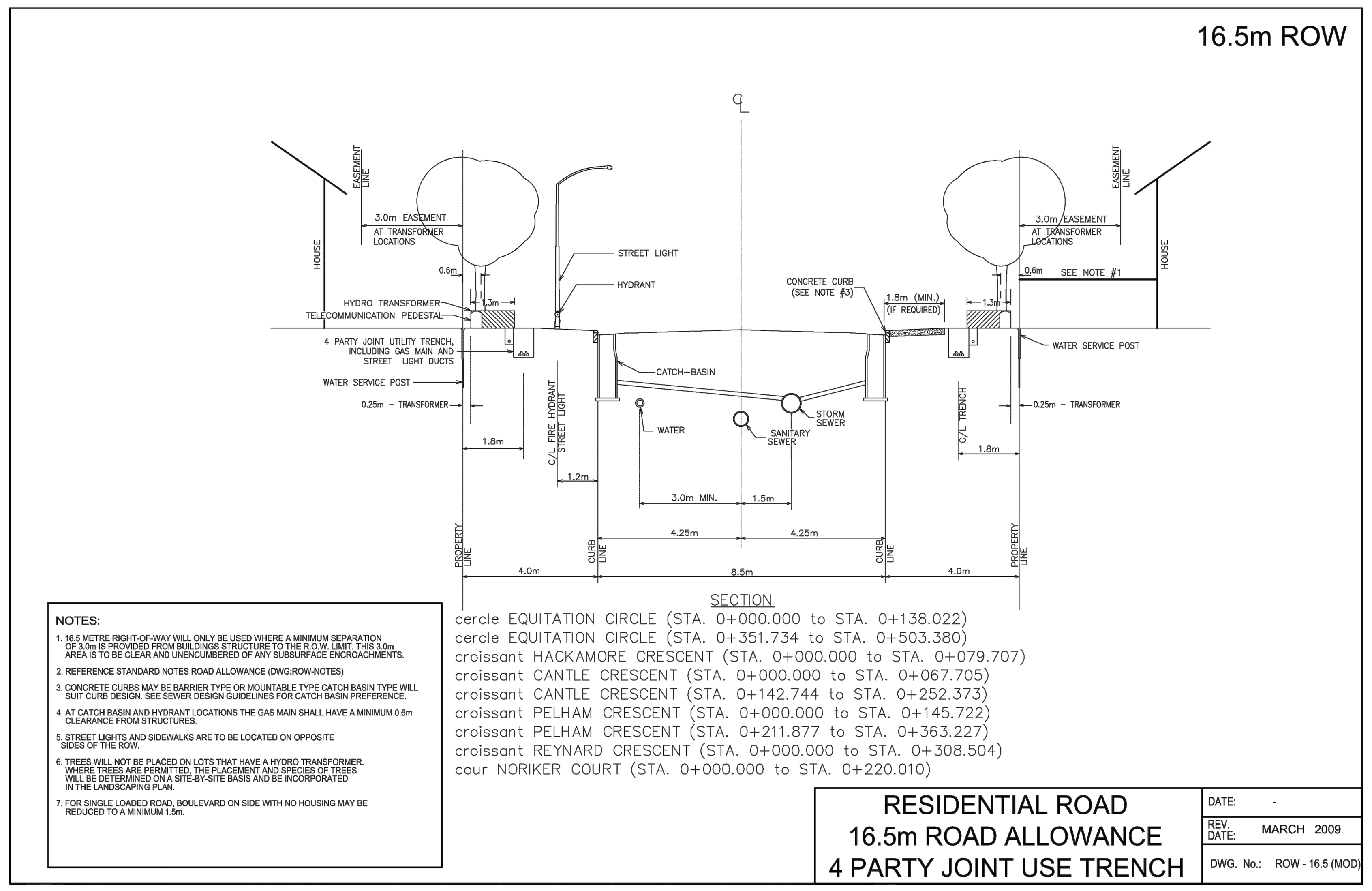
1. REMOVE STAKES AND RODENT GUARD AFTER ONE YEAR OR UNTIL TAKEOVER, UNLESS OTHERWISE DIRECTED BY THE LANDSCAPE ARCHITECT.
2. TOPSOIL MIXTURE AND SHREDDED MULCH AS PER SPECIFICATION
3. REMOVE TREE WRAP AFTER PLANTING
4. CALIPER TO BE MEASURED AT THE BASE OF TREE AT ROOT BALL.

3 DECIDUOUS TREE
N.T.S.



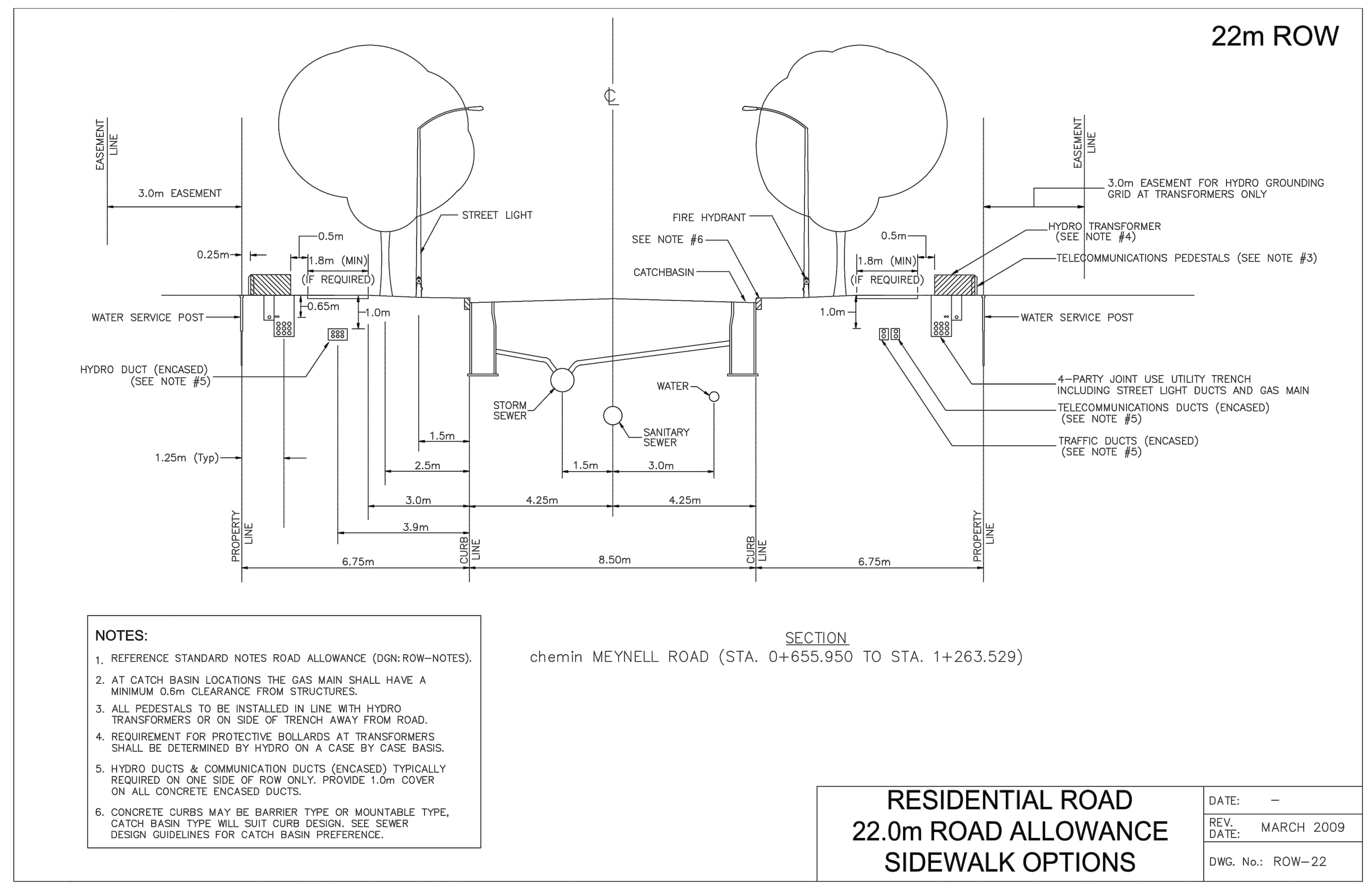
14m ROW
3.0m EASEMENT
STREET LIGHT
HYDRANT
HYDRO TRANSFORMER
TELECOMMUNICATION PEDESTAL
CONCRETE CURB (SEE NOTE #3)
CATCH-BASIN
WATER SERVICE POST
WATER
SANITARY SEWER
STORM SEWER
3.0m MIN.
1.5m
4.25m
4.25m
4.0m
8.5m
1.5m
NOTES:
SECTION
cercle EQUATION CIRCLE (STA. 0+138.022 to STA. 0+351.734)
croissant CANTLE CRESCENT (STA. 0+067.705 to STA. 0+142.744)
croissant PELHAM CRESCENT (STA. 0+145.722 to STA. 0+211.877)
RESIDENTIAL ROAD
14.0m ROAD ALLOWANCE
4 PARTY JOINT USE TRENCH
DATE: -
REV. DATE: AUGUST 2015
DWG. No.: ROW-14.0 (MOD)

4 14.0m ROAD ALLOWANCE
N.T.S.



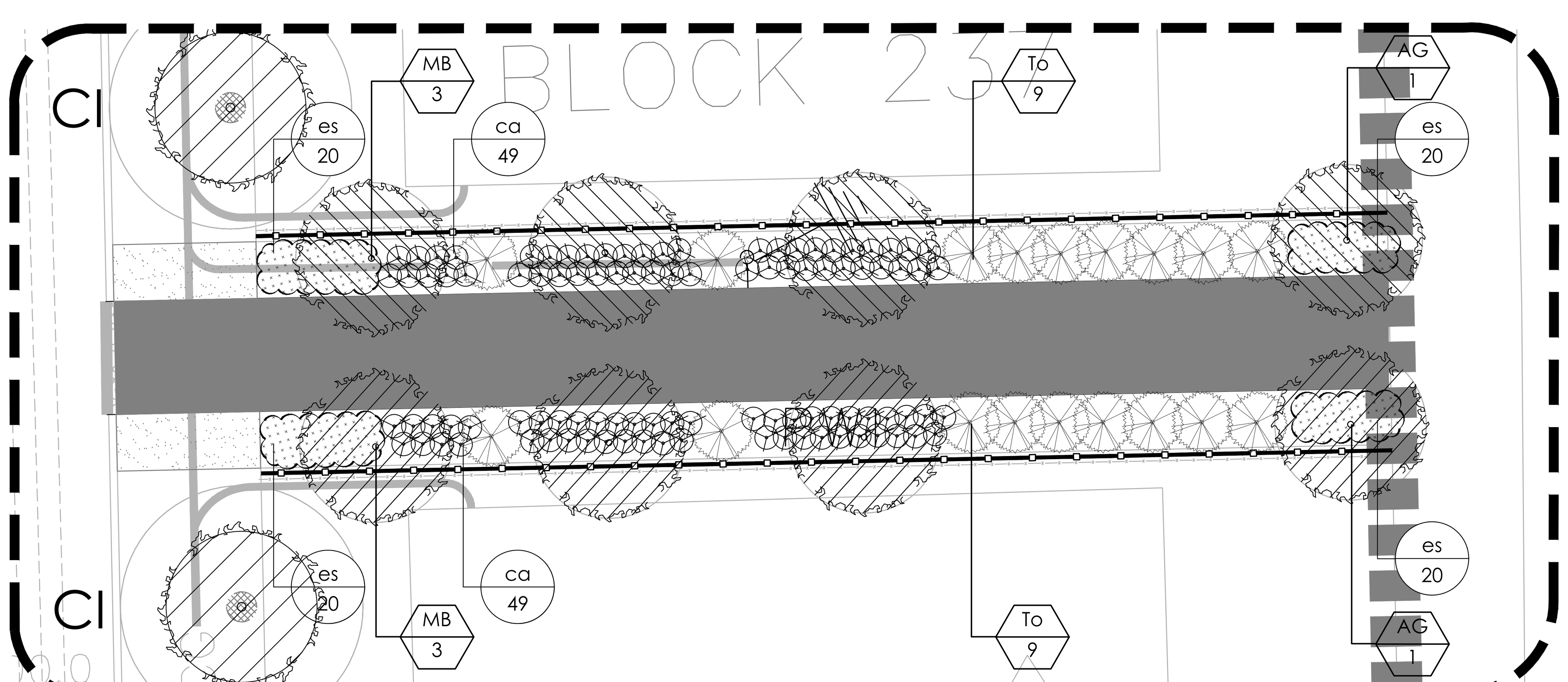
16.5m ROW
3.0m EASEMENT AT TRANSFORMER LOCATIONS
STREET LIGHT
HYDRANT
HYDRO TRANSFORMER
TELECOMMUNICATION PEDESTAL
CONCRETE CURB (SEE NOTE #3)
WATER SERVICE POST
CATCH-BASIN
WATER
SANITARY SEWER
STORM SEWER
3.0m MIN.
1.5m
4.25m
4.25m
4.0m
8.5m
4.0m
NOTES:
SECTION
cercle EQUATION CIRCLE (STA. 0+000.000 to STA. 0+138.022)
cercle EQUATION CIRCLE (STA. 0+351.734 to STA. 0+503.380)
croissant HACKAMORE CRESCENT (STA. 0+000.000 to STA. 0+079.707)
croissant CANTLE CRESCENT (STA. 0+000.000 to STA. 0+067.705)
croissant CANTLE CRESCENT (STA. 0+142.744 to STA. 0+252.373)
croissant PELHAM CRESCENT (STA. 0+000.000 to STA. 0+145.722)
croissant PELHAM CRESCENT (STA. 0+211.877 to STA. 0+363.227)
croissant REYNARD CRESCENT (STA. 0+000.000 to STA. 0+308.504)
cour NORIKER COURT (STA. 0+000.000 to STA. 0+220.010)
RESIDENTIAL ROAD
16.5m ROAD ALLOWANCE
4 PARTY JOINT USE TRENCH
DATE: -
REV. DATE: MARCH 2009
DWG. No.: ROW - 16.5 (MOD)

5 16.5m ROAD ALLOWANCE
N.T.S.



22m ROW
3.0m EASEMENT
STREET LIGHT
FIRE HYDRANT
CATCHBASIN
3.0m EASEMENT FOR HYDRO GROUNDING GRID AT TRANSFORMERS ONLY
HYDRO TRANSFORMER (SEE NOTE #4)
TELECOMMUNICATIONS PEDESTALS (SEE NOTE #3)
WATER SERVICE POST
HYDRO DUCT (ENCASED) (SEE NOTE #5)
STORM SEWER
SANITARY SEWER
WATER
4-PARTY JOINT USE UTILITY TRENCH INCLUDING STREET LIGHT DUCTS AND GAS MAIN
TELECOMMUNICATIONS DUCTS (ENCASED) (SEE NOTE #5)
TRAFFIC DUCTS (ENCASED) (SEE NOTE #5)
6.75m
8.50m
6.75m
NOTES:
1. REFERENCE STANDARD NOTES ROAD ALLOWANCE (DGN: ROW-NOTES).
2. AT CATCH BASIN LOCATIONS THE GAS MAIN SHALL HAVE A MINIMUM 0.5m CLEARANCE FROM STRUCTURES.
3. ALL PEDESTALS TO BE INSTALLED IN LINE WITH HYDRO TRANSFORMERS OR ON SIDE OF TRENCH AWAY FROM ROAD.
4. REQUIREMENT FOR PROTECTIVE BOLLARDS AT TRANSFORMERS SHALL BE DETERMINED BY HYDRO ON A CASE BY CASE BASIS.
5. HYDRO DUCTS & COMMUNICATION DUCTS (ENCASED) TYPICALLY REQUIRED ON ONE SIDE OF ROW ONLY. PROVIDE 1.0m COVER ON ALL CONCRETE ENCASED DUCTS.
6. CONCRETE CURBS MAY BE BARRIER TYPE OR MOUNTABLE TYPE, CATCH BASIN TYPE WILL SUIT CURB DESIGN. SEE SEWER DESIGN GUIDELINES FOR CATCH BASIN PREFERENCE.
SECTION
chemin MEYNELL ROAD (STA. 0+655.950 TO STA. 1+263.529)
RESIDENTIAL ROAD
22.0m ROAD ALLOWANCE
SIDEWALK OPTIONS
DATE: -
REV. DATE: MARCH 2009
DWG. No.: ROW-22

6 22.0m ROAD ALLOWANCE
N.T.S.

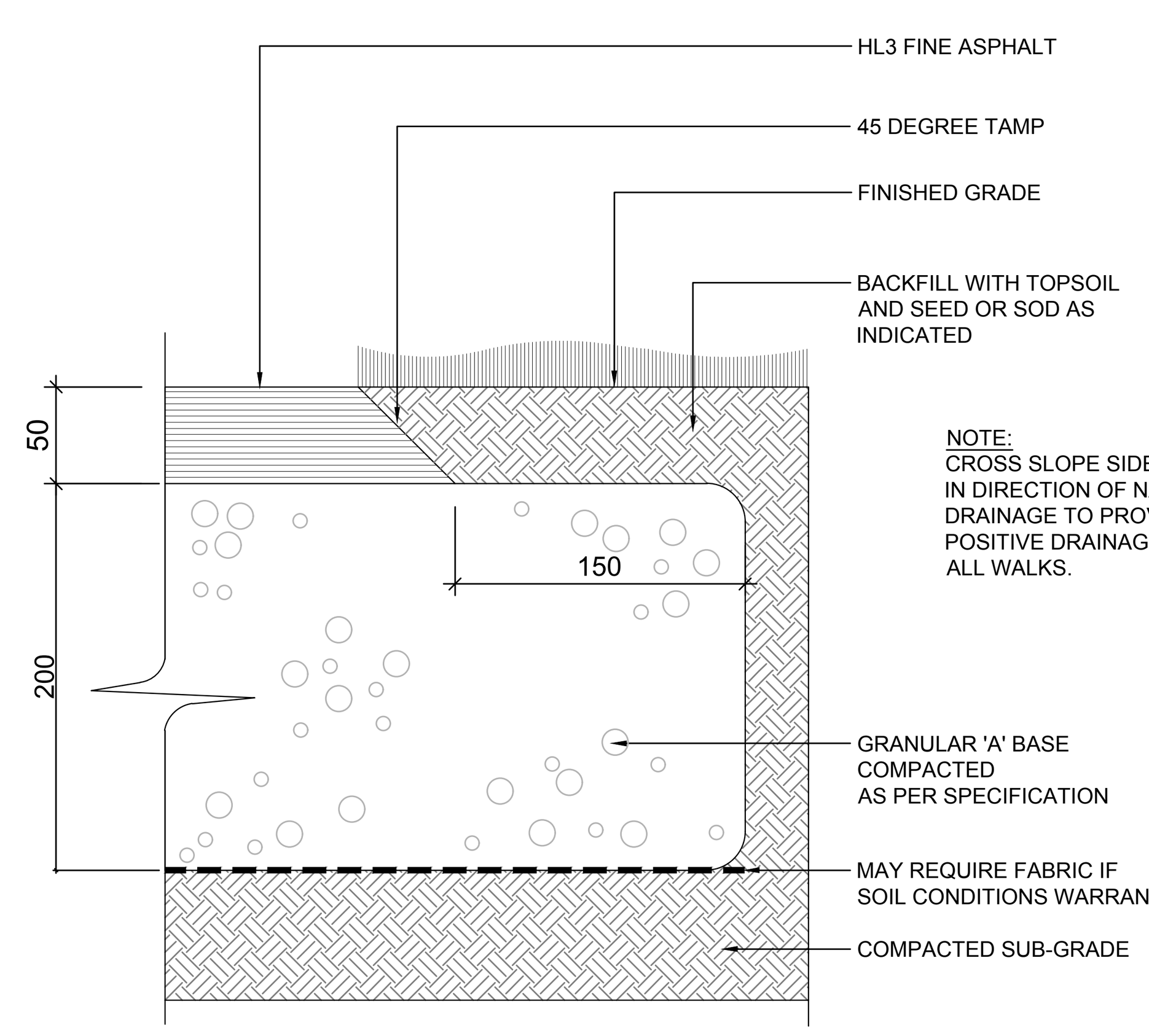


7 WALKWAY BLOCK 236
N.T.S.

KEY	QTY.	BOTANICAL NAME	COMMON NAME	CAL/HT. (mm)	ROOT
UP	8	ULMUST 'PATRIOT'	PATRIOT ELM	70	B&B

PLANT LIST C - WALKWAY BLOCK # 237

KEY	QTY.	BOTANICAL NAME	COMMON NAME	CAL/HT. (mm)	ROOT
SMALL STREET TREES (<7m)					
AG	2	AMELANCHIER x GRANDIFLORA 'ROBIN HILL'	ROBIN'S HILL SERVICEBERRY	70	B&B
MR	6	MALUS 'RINKII'	SIBERIAN CRAB APPLE	70	B&B.
CONIFEROUS SHRUBS					
To	18	THUJA OCCIDENTALIS 'DEGROOTS SPIRE'	DEGROOTS SPIRE CEDAR		1 GAL.
GRASSES/PERENNIALS					
ca	98	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER REED GRASS		1 GAL.



HL3 FINE ASPHALT
45 DEGREE TAMP
FINISHED GRADE
BACKFILL WITH TOPSOIL AND SEED OR SOD AS INDICATED
NOTE: CROSS SLOPE SIDEWALK IN DIRECTION OF NATURAL DRAINAGE TO PROVIDE POSITIVE DRAINAGE OFF ALL WALKS.
50
200
150
GRANULAR 'A' BASE COMPACTED AS PER SPECIFICATION
MAY REQUIRE FABRIC IF SOIL CONDITIONS WARRANT
COMPACTED SUB-GRADE

8 ASPHALT WALKWAY
N.T.S.

Key Plan

No.	Description	Date
1	Issued for First Submission	Mar.1/18

Revision

City Approval Stamp

ONTARIO ASSOCIATION OF LANDSCAPE ARCHITECTS
SILVANO TARDELLA
OALA
MEMBER

Project

CAIVAN COMMUNITIES
FOX RUN PHASE 1

Title

DETAILS

Date Oct 19 2017
Scale 1:500
Drawn lw
Checked m
Job No. 1-12128

Sheet D2

Appendix B-7 – Pond Permits (a: ECS, b: Permits to Alter a Waterway)

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 1060-AY8JK4
Issue Date: May 30, 2018

Richmond Village Development Corporation
2934 Baseline Road, Suite 302
Ottawa, Ontario
K2H 1B2

Site Location: Western Development Lands
6350 Perth Street
Lot 22, Concessions 2, 3, 4
City of Ottawa, Ontario

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

an amendment to existing stormwater management works for the collection, treatment and disposal of stormwater run-off servicing 33 hectare of an approximately 92 hectare residential subdivision development, located at 6350 Perth Street, west of Queen Charlotte Street, east of Joy's Road, north of CN Rail and the Jock River and south of Garvin Road, in the City of Ottawa, providing Enhanced Level water quality control and erosion protection and attenuating post-development peak flows to pre-development levels for all storm events up to and including the 100-year storm event, consisting of the following:

Proposed Works:

- outlet relocation to the Arbuckle Municipal Drain (originally located at the intersection of Arbuckle Drain and the Strachan Street road allowance) to a point downstream of the Fortune Street Culvert;

- headwall and storm sewer size adjustment to inlets of the proposed stormwater management pond described below.

Previous Works:

- storm sewers on Meynell Road, Equitation Circle, Hackamore Crescent, Cantle Crescent, Pelhem Crescent, Reynard Crescent, and Noriker Court collecting stormwater from the site,

discharging into the wet pond mentioned below;

- stormwater management facility (catchment area 33 hectares): - one (1) wet pond with a sediment forebay, located just west of an unopened road allowance for Queen Charlotte Street, having a permanent pool volume of 23,546 cubic metres, an extended detention volume of 23,817 cubic metres, and a total storage volume of approximately 34,182 cubic metres, including the permanent pool volume, at a total depth of approximately 1.78 metres, receiving inflow from the storm sewers on-site, discharging to the Arbuckle Municipal Drain and ultimately to the Jock River;

- storm box culvert with a width of 3 metres and a height of 2.4 metres, beside the existing box culvert located under Fortune Street;

including erosion/sedimentation control measures during construction and all other controls and appurtenances essential for the proper operation of the aforementioned Works;

all in accordance with the submitted application and supporting documents listed in Schedule "A" forming part of this Approval.

For the purpose of this environmental compliance approval, the following definitions apply:

1. "Approval" means this entire document and any schedules attached to it, and the application;

2. "Director" means a person appointed by the Minister pursuant to section 5 of the EPA for the purposes of Part II.1 of the EPA;

3. "District Manager" means the District Manager of the appropriate local District Office of the Ministry, where the Works are geographically located;

4. "EPA" means the *Environmental Protection Act,* R.S.O. 1990, c.E.19, as amended;

5. "Ministry" means the ministry of the government of Ontario responsible for the EPA and OWRA and includes all officials, employees or other persons acting on its behalf;

6. "Owner" means Richmond Village Development Corporation, and includes its successors and assignees;

7. "OWRA" means the Ontario Water Resources Act, R.S.O. 1990, c. O.40, as amended;

8. "Works" means the sewage works described in the Owner's application, and this Approval.

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL CONDITIONS

1.1 The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

1.2 Except as otherwise provided by these Conditions, the Owner shall design, build, install, operate and maintain the Works in accordance with the description given in this Approval, the application for approval of the works and the submitted supporting documents and plans and specifications as listed in this Approval.

1.3 Where there is a conflict between a provision of any submitted document referred to in this Approval and the Conditions of this Approval, the Conditions in this Approval shall take precedence, and where there is a conflict between the listed submitted documents, the document bearing the most recent date shall prevail.

1.4 Where there is a conflict between the listed submitted documents, and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.

1.5 The conditions of this Approval are severable. If any condition of this Approval, or the application of any condition of this Approval to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this Approval shall not be affected thereby.

1.6 The issuance of, and compliance with the conditions of, this Approval does not:

(a) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including, but not limited to, the obligation to obtain approval from the local conservation authority/MNRF necessary to construct or operate the sewage works; or

(b) limit in any way the authority of the Ministry to require certain steps be taken to require the Owner to furnish any further information related to compliance with this Approval.

1.7 This Approval is for the treatment and disposal of stormwater run-off from approximately 33 hectares draining to the stormwater management facility, based on an average imperviousness of 51%. Any changes within the drainage area that might increase the required storage volumes or increase the flows to or from the stormwater management facility or any structural/physical changes to the stormwater management facility including the inlets or outlets will require an amendment to this Approval.

2. EXPIRY OF APPROVAL

2.1 The approval issued by this Approval will cease to apply to those parts of the Works which have not been constructed within five (5) years of the date of this Approval.

2.2 In the event that completion and commissioning of any portion of the Works is anticipated to be delayed beyond the specified expiry period, the Owner shall submit an application of extension to the expiry period, at least twelve (12) months prior to the end of the period. The application for extension shall include the reason(s) for the delay, whether there is any design change(s) and a review of whether the standards applicable at the time of Approval of the Works are still applicable at the time of request for extension, to ensure the ongoing protection of the environment.

3. CHANGE OF OWNER

3.1 The Owner shall notify the District Manager and the Director, in writing, of any of the following changes within thirty (30) days of the change occurring:

(a) change of Owner;

(b) change of address of the Owner;

(c) change of partners where the Owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the Business Names Act, R.S.O. 1990, c.B17 shall be included in the notification to the District Manager; and

(d) change of name of the corporation where the Owner is or at any time becomes a corporation, and a copy of the most current information filed under the Corporations Information Act, R.S.O. 1990, c. C39 shall be included in the notification to the District Manager.

3.2 In the event of any change in ownership of the Works, other than a change to a successor municipality, the Owner shall notify in writing the succeeding owner of the existence of this Approval, and a copy of such notice shall be forwarded to the Water Supervisor and the Director.

3.3 The Owner shall ensure that all communications made pursuant to this condition refer to the number at the top of this Approval.

3.4 Notwithstanding any other requirements in this Approval, upon transfer of the ownership or assumption of the Works to a municipality if applicable, any reference to the District Manager shall be replaced with the Water Supervisor.

4. TEMPORARY EROSION AND SEDIMENT CONTROL

4.1 The Owner shall install and maintain temporary sediment and erosion control measures during construction and conduct inspections once every two (2) weeks and after each significant storm event (a significant storm event is defined as a minimum of 25 mm of rain in any 24 hours period). The inspections and maintenance of the temporary sediment and erosion control measures shall continue until they are no longer required and at which time they shall be

removed and all disturbed areas reinstated properly.

4.2 The Owner shall maintain records of inspections and maintenance which shall be made available for inspection by the Ministry, upon request. The record shall include the name of the inspector, date of inspection, and the remedial measures, if any, undertaken to maintain the temporary sediment and erosion control measures.

5. MONITORING AND RECORDING

5.1 The Owner shall, upon commencement of operation of the Works, carry out the following monitoring program:

(a) All samples and measurements taken for the purposes of this Approval are to be taken at a time and in a location characteristic of the quality and quantity of the effluent stream over the time period being monitored.

(b) Samples shall be collected at the following sampling points, at the frequency specified, by means of the specified sample type and analyzed for each parameter listed and all results recorded, as outlined in Schedule "B".

(c) The methods and protocols for sampling, analysis and recording shall conform, in order of precedence, to the methods and protocols specified in the following:

i. the Ministry's Procedure F-10-1, “Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works (Liquid Waste Streams Only)”, as amended from time to time by more recently published editions;

ii. the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater” (January 1999), ISBN 0-7778-1880-9, as amended from time to time by more recently published editions; and

iii. the publication “Standard Methods for the Examination of Water and Wastewater” (21st edition), as amended from time to time by more recently published editions.

6. OPERATION AND MAINTENANCE

6.1 If applicable, any proposed storm sewers or other stormwater conveyance in this Approval can be constructed but not operated until the proposed stormwater management facilities in this Approval or any other Approval that are designed to service the storm sewers or other stormwater conveyance are in operation.

6.2 The Owner shall make all necessary investigations, take all necessary steps and obtain all necessary approvals so as to ensure that the physical structure, siting and operations of the

stormwater works do not constitute a safety or health hazard to the general public.

6.3 The Owner shall inspect and ensure that the design minimum liquid retention volume is maintained in the Works at all times, except when maintenance is required.

6.4 The Owner shall undertake an inspection of the condition of the stormwater management system, at least once a year, and undertake any necessary cleaning and maintenance to ensure that sediment, debris and excessive decaying vegetation are removed from the above noted stormwater management Works to prevent the excessive build-up of sediment, debris and/or decaying vegetation to avoid reduction of capacity of the stormwater management Works. The Owner shall also regularly inspect and clean out the inlet to and outlet from the works to ensure that these are not obstructed.

6.5 The Owner shall construct, operate and maintain the Works with the objective that the effluent from the Works is essentially free of floating and settleable solids and does not contain oil or any other substance in amounts sufficient to create a visible film, sheen, foam or discoloration on the receiving waters.

6.6 The Owner shall maintain a logbook to record the results of these inspections and any cleaning and maintenance operations undertaken, and shall make the logbook available for inspection by the Ministry upon request. The logbook shall include, but not necessarily be limited to, the following information:

(a) the name of the Works; and

(b) the date and results of each inspection, maintenance and cleaning, including an estimate of the quantity of any materials removed.

6.7 The Owner shall prepare an operations manual prior to the commencement of operation of the Works that includes, but is not necessarily limited to, the following information:

(a) operating and maintenance procedures for routine operation of the Works;

(b) inspection programs, including frequency of inspection, for the Works and the methods or tests employed to detect when maintenance is necessary;

(c) repair and maintenance programs, including the frequency of repair and maintenance for the Works;

(d) contingency plans and procedures for dealing with potential spills and any other abnormal situations and for notifying the Water Supervisor; and

(e) procedures for receiving, responding and recording public complaints, including recording any follow-up actions taken.

6.8 The Owner shall maintain the operations manual current and retain a copy at the Owner's

administrative office for the operational life of the Works. Upon request, the Owner shall make the manual available to Ministry staff.

7. REPORTING

7.1 One (1) week prior to the start-up of the operation of the Works, the Owner shall notify the Water Supervisor (in writing) of the pending start-up date.

7.2 The Owner shall, upon request, make all reports, manuals, plans, records, data, procedures and supporting documentation available to Ministry staff.

7.3 The Owner shall prepare a performance report within ninety (90) days following the end of the period being reported upon, and submit the report(s) to the Water Supervisor when requested. The first such report shall cover the first annual period following the commencement of operation of the Works and subsequent reports shall be prepared to cover successive annual periods following thereafter. The reports shall contain, but shall not be limited to, the following information:

8. RECORD KEEPING

8.1 The Owner shall retain for a minimum of five (5) years from the date of their creation, all records and information related to or resulting from the operation and maintenance activities required by this Approval.

Schedule "A"

1. Application for Environmental Compliance Approval for Municipal and Private Sewage Works, dated March 11, 2016 and received on March 31, 2016, submitted by Richmond Village Development Corporation.
2. Stormwater Management Pond 1 Western Development Lands- Richmond, Richmond Village (South) Limited, dated August, 2015 prepared by David Schaeffer Engineering Ltd.
3. Interim Stormwater Management Pond 1 Western Development Lands- Richmond, Richmond Village (South) Limited, dated August, 2015 prepared by David Schaeffer Engineering Ltd.
4. Pipe Data Form and sewer design sheets prepared by David Schaeffer Engineering Ltd.
5. Engineering Drawings: Richmond Village Development Corporation, dated January 29, 2016 prepared by David Schaeffer Engineering Ltd.
6. Emails from Kevin Murphy, David Schaeffer Engineering Ltd. dated September 13, 2016;
7. Emails from Kevin Murphy, David Schaeffer Engineering Ltd. dated September 28, 2016;
8. Email from Kevin Murphy, David Schaeffer Engineering Ltd. dated September 29, 2016;
9. Application for Environmental Compliance Approval, dated March 12, 2018, received on April 3, 2018, submitted by Richmond Village Development Corporation;
10. Transfer of Review Letter of Recommendation, dated March 29, 2018 and signed by Damien Whittaker, P.Eng., Senior Engineer - Infrastructure Applications, Development Review, Rural Branch, Planning, Infrastructure & Economic Development Department, City of Ottawa;
11. Email from Kevin Murphy, David Schaeffer Engineering Ltd. dated April 20, 2018;
12. Email from Harry Alvey, City of Ottawa dated April 23, 2018;
13. Email from Damien Whittaker, City of Ottawa dated April 24, 2018;
14. Email from Damien Whittaker, City of Ottawa dated April 25, 2018;
15. Email from Harry Alvey, City of Ottawa dated April 27, 2018;
16. Email from Harry Alvey, City of Ottawa dated April 30, 2018;
17. Email from Kevin Murphy, David Schaeffer Engineering Ltd. dated May 2, 2018;
18. Email from Harry Alvey, City of Ottawa dated May 17, 2018; and
19. Email from Harry Alvey, City of Ottawa dated May 25, 2018.

Schedule "B"

Table 1: Effluent Monitoring
(Samples to be collected from the influent and effluent streams of the stormwater management facility)

Sample Type	Grab
Frequency	Three (3) rainfall *Wet Events* per year, with two (2) of the events occurring between May and September
Parameters	Total Suspended Solids, Phosphorus and Temperature

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is imposed to ensure that the Works are built and operated in the manner in which they were described for review and upon which approval was granted. This condition is also included to emphasize the precedence of Conditions in the Approval and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review. The condition also advises the Owners their responsibility to notify any person they authorized to carry out work pursuant to this Approval the existence of this Approval. Condition 1.6 is included to emphasize that the issuance of the Approval does not diminish any other statutory and regulatory obligations to which the owner is subject in the construction, maintenance and operation of the works. The condition specifically highlights the need to obtain any necessary conservation authority approvals. The condition also emphasizes the fact that this Approval doesn't limit the authority of the Ministry to require further information.

2. Condition 2 is included to ensure that, when the Works are constructed, the Works will meet the standards that apply at the time of construction to ensure the ongoing protection of the environment.

3. Condition 3 is included to ensure that the Ministry records are kept accurate and current with respect to approved works and to ensure that subsequent owners of the Works are made aware of the Approval and continue to operate the Works in compliance with it.

4. Condition 4 is included as installation, regular inspection and maintenance of the temporary sediment and erosion control measures is required to mitigate the impact on the downstream receiving watercourse during construction, until they are no longer required.

5. Condition 5 is included to enable the Owner to evaluate and demonstrate the performance of the Works, on a continual basis, so that the Works are properly operated and maintained at a level which is consistent with the design objectives specified in the Approval and that the Works do not cause any impairment to the receiving watercourse or the environment.

6. Condition 6 is included as regular inspection and necessary removal of sediment and excessive decaying vegetation from the approved stormwater management Works is required to mitigate the impact of sediment, debris and/or decaying vegetation on the treatment capacity of the Works. It is also required to ensure that adequate storage is maintained in the stormwater management facilities at all times as required by the design, and to prevent stormwater impounded in the works from becoming stagnant. Furthermore, Condition 5 is included to ensure that the stormwater management Works are operated and maintained to function as designed.

7. Condition 7 is included to provide a performance record for future references, to ensure that the Ministry is made aware of problems as they arise, and to provide a compliance record for all the terms and conditions outlined in this Approval, so that the Ministry can work with the Owner in resolving any problems in a timely manner.

8. Condition 8 is included to require that all records are retained for a sufficient time period to adequately evaluate the long-term operation and maintenance of the Works.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 8358-AEEQ9G issued on October 14, 2016.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*****
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of the Environmental Protection Act
Ministry of the Environment and Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 30th day of May, 2018

C. Labarge

Christina Labarge, P.Eng.
Director

appointed for the purposes of Part II.1 of the *Environmental Protection Act*

AL/

c: District Manager, MOECC Ottawa
Water Supervisor, MOECC Ottawa
Damien Whittaker, City of Ottawa (File No. D07-16-11-0014)
Clerk, City of Ottawa
Kevin Murphy, David Schaeffer Engineering Limited

RIDEAU VALLEY
CONSERVATION AUTHORITY

3889 Rideau Valley Drive, P.O. Box 599, Manotick, ON K4M 1A5
tel 613-692-3571 | 1-800-267-3504 | fax 613-692-0831 | www.rvca.ca

LETTER OF PERMISSION – ONT. REG. 174/06, SECTION 28 CONSERVATION AUTHORITIES ACT 1990, AS AMENDED.

Date: July 7, 2016.
File: RV5-20/16
Contact: Hal Stimson
(613) 692-3571 ext. 1127
hal.stimson@rvca.ca

Mr. Frank Cairo
Richmond Village Development Corporation
5504 Wicklow Drive
Manotick, Ontario
K4M 1C4

Permit to alter a waterway under Section 28 of the Conservation Authorities Act for Service Crossings and Storm Outlets at Lot 22/23, Concession 3, Goulbourn Township now in the City of Ottawa

Dear Mr. Cairo

The Rideau Valley Conservation Authority has reviewed your application on behalf of Richmond Village Development Corporation and understands the proposal to be for: the installation by open cut trench of new Sanitary and Storm Sewer crossings of the Arbuckle and Moore Municipal Drains and the installation of a new storm water management facility spillway and a storm outlet with concrete headwall and rip rap outlet protection into the Arbuckle Municipal Drain.

This proposal was reviewed under Ontario Regulation 174/06, the "*Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*" regulation.

PERMISSION AND CONDITIONS

By this letter the Rideau Valley Conservation Authority hereby grants you approval to undertake this project as outlined in your permit application but subject to the following conditions:

1. Approval is subject to the understanding of the project as described above and outlined in the application and submitted plans including:
   - Drawing Sheet No. 2 titled General Plan of Services Village of Richmond Sanitary Trunk, Revision No. 3 dated 15-10-20 stamped by Z. Li, P. Eng.as prepared by DSEL.
   - Drawing Sheet No. 5 titled Plan and Profile of Strachan Street (STA. 0+120.000 to STA. 0+320.000 Village of Richmond Sanitary Trunk, Revision No. 3 dated 15-10-20 stamped by Z. Li, P. Eng.as prepared by DSEL.
   - Drawing Sheet No. 6 titled Plan and Profile of Queen Charlotte Street (STA. 0+000.000 to STA. 0+209.437 Village of Richmond Sanitary Trunk, Revision No. 3 dated 15-10-20 stamped by Z. Li, P. Eng.as prepared by DSEL.
   - Drawing Sheet No. 7 titled Plan and profile of Martin Street (STA. 0-040.000 to STA. 0+200.000 Village of Richmond Sanitary Trunk, Revision No. 4 dated 15-10-20 stamped by Z. Li, P. Eng.as prepared by DSEL.
   - Drawing Sheet No. 13 titled Siltation Control Plan Village of Richmond Sanitary Trunk, Revision No. 3 dated 15-10-20 stamped by Z. Li, P. Eng.as prepared by DSEL.

   No conditions are subject to change/revision by the on-site contractor(s).

2. **A De-watering Plan and Sediment and Erosion Control Plan must be submitted by the contractor to this office for review prior to construction activities commencing.**

3. All grades are to be restored to the current elevations and as is conditions.

4. Any excess excavated material, as a result of the work, must be disposed of in a suitable location outside any regulatory floodplain and fill regulated area. No changes to area grades are to occur as a result of the work.

5. Rip rap erosion protection to be used at the storm outlet or on the utility crossings must be placed to ensure the top elevation of the rip rap is at the same elevation as the channel bed.

6. It is recommended that you retain the services of an engineer to conduct on-site inspections to ensure adequacy of the work, verify stability and re-instatement of the final grades and confirm all imported fill is of a suitable type and has been adequately placed and compacted.

7. Only clean non-contaminated fill material will be used and all work is to occur on your property, or if on other property only with full authorization of the owner(s).

8. **There will be no in-water works between March 15 and July 15, of any given year to protect local aquatic species populations during their spawning and nursery time periods.**

9. All in-stream work should be completed in the dry by de-watering the work area and diverting and/or pumping any flows around cofferdams placed at the limits of the work area. Silt or debris that has accumulated around the temporary cofferdams should be cautiously removed prior to their withdrawal. No channel modifications or dredging is permitted or implied by this letter.

10. Work in-water shall not be conducted at times when flows are elevated due to local rain events, storms or seasonal floods. Existing stream flows must be maintained downstream of the de-watered work area without interruption, during all stages of the work. There must be no increase in water levels upstream of the de-watered work area.

11. It is recommended that you ensure your contractor(s) are provided with a copy of this letter so as to ensure compliance with the conditions listed herein.

12. Any aquatic species (fish, turtles) trapped within an enclosed work area are to be safely relocated outside of the enclosed area to the main watercourse downstream of the work zone.

13. Sediment barriers should be used on site in an appropriate method according to the Ontario Provincial Standard Specifications (OPSS) for silt barriers as a minimum. If the sediment and erosion control methods include silt fence it should be placed along the shoreline to prevent overland flow on disturbed areas from entering the watercourse. Soil type, slope of land, drainage area, weather, predicted sediment load and deposition should be considered when selecting the type of sediment/erosion control.

14. Sediment and erosion control measures shall be in place before any excavation or construction works commence. All sediment/erosion control measures are to be monitored regularly by experienced personnel and maintained as necessary to ensure good working order. In the event that the erosion and sedimentation control measures are deemed not to be performing adequately, the contractor shall undertake immediate additional measures as appropriate to the situation to the satisfaction of the Conservation Authority.

15. The waters of the creek are NOT to be considered as machine staging areas. Activities such as equipment refuelling and maintenance must be conducted away from the water to prevent entry of petroleum products, debris, or other deleterious substances into the water. Operate machinery from outside the water, or on the water in a manner that minimizes disturbance to the banks or bed of the watercourse. Equipment shall not be cleaned in the watercourse or where wash-water can enter any watercourse. Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks

16. All disturbed soil areas must be appropriately stabilized to prevent erosion.

17. Develop a response plan that is to be implemented immediately in the event of flooding, a sediment release or spill of a deleterious substance. This plan is to include measures to: a) stop work, contain sediment-laden water and other deleterious substances and prevent their further migration into the

watercourse and downstream receiving watercourses; b) notify the RVCA and all applicable authorities in the area c) promptly clean-up and appropriately dispose of the sediment-laden water and deleterious substances; and d) ensure clean-up measures are suitably applied so as not to result in further alteration of the bed and/or banks of the watercourse; and e) ensure construction equipment and/or materials are located outside the 100-year floodplain in the vent of flooding.

18. Nothing in this letter of permission relieves the applicant from requirements of any other federal, provincial or municipal permits or permission including, for example, Ontario Ministry of Environment Certificate of Approvals, or stormwater or site plan approvals.

19. Any stockpiled materials shall be stored and stabilized away from the water.

20. The owner is ultimately responsible for failure to comply with any and/or all of these conditions and must take all precautions to ensure no sediment runoff from the work site into any watercourse during and after the construction period. Failure to comply with the approval and/or conditions of this letter will result in the permit being revoked and may also result in legal action being initiated to resolve the matter to the Conservation Authority's satisfaction.

21. The applicant agrees that Authority staff may visit the subject property, before, during and after project completion, to ensure compliance with the conditions as set out in this letter of permission.

22. A new application must be submitted should any work as specified in this letter be ongoing or planned for or after July 7, 2018.

23. That the Authority be given twenty-four hours notice prior to the start of construction and within twenty-four hours of project completion.

24. All other approvals as might be required from the Municipality, and/or other Provincial or Federal Agencies must be obtained prior to initiation of work. This includes but is not limited to the Endangered Species Act., the Ontario Water Resources Act., Environmental Protection Act., Public Lands Act, and the Fisheries Act.

By this letter the Rideau Valley Conservation Authority assumes no responsibility or liability for any flood, erosion, or slope failure damage which may occur either to your property or the structures on it or if any activity undertaken by you adversely affects the property or interests of adjacent landowners. This letter does not relieve you of the necessity or responsibility for obtaining any other federal, provincial or municipal permits. This permit is not transferable to subsequent property owners.

Should you have any questions regarding this letter, please contact Hal Stimson at our Manotick office.

Terry K. Davidson

Terry K. Davidson, P. Eng.
Conservation Authority S. 28 Signing delegate
O. Reg. 174/06

Cc: K. Murphy, P. Eng. DSEL
M. Gagné, City Ottawa Drainage Coordinator

- Pursuant to the provisions of S. 28(12) of the Conservation Authorities Act (R.S.O.1990, as amended.) any or all of the conditions set out above may be appealed to the Executive Committee of the Conservation Authority in the event that they are not satisfactory or cannot be complied with.
- Failure to comply with the conditions of approval or the scope of the project may result in the cancelling of the permission and/or initiation of legal action under S. 28(16) of the Act.
- This letter of permission does not come into full force and effect until the attached copy of this letter is returned to the Authority offices in Manotick signed and dated which return shall be taken as indicating acceptance of the conditions of the Authority's approval and acknowledgement that the details of the proposal as described in this letter are a fair and accurate representation of the proposed undertaking.

Name: _____ (print)

Signed: _____ Date: _____

RIDEAU VALLEY
CONSERVATION AUTHORITY

3889 Rideau Valley Drive, P.O. Box 599, Manotick, ON K4M 1A5
tel 613-692-3571 | 1-800-267-3504 | fax 613-692-0831 | www.rvca.ca

LETTER OF PERMISSION – ONT. REG. 174/06, SECTION 28 CONSERVATION AUTHORITIES ACT 1990, AS AMENDED.

Date: October 18, 2016.
File: RV5-22/16T
Contact: Hal Stimson
(613) 692-3571 Ext 1127
hal.stimson@rvca.ca

Mr. Frank Cairo
Richmond Village Development Corporation
5504 Wicklow Drive
Manotick, Ontario
K4M 1C4

Permit for Development under Section 28 of the Conservation Authorities Act for a Stormwater Management Facility at Lot 22, Concession 3, Goulbourn Township now in the City of Ottawa

Dear Mr. Cairo

The Rideau Valley Conservation Authority has reviewed your application on behalf of the Richmond Village Development Corporation and understands the proposal to be for: the construction of a new stormwater management facility within the flood plain of the Jock River and the Arbuckle Municipal Drain. Appropriate cut/fill analysis has been undertaken that meet RVCA fill policies. This infrastructure is to service the Richmond Village Residential subdivision to be located to the west of Queen Charlotte Street in Richmond in accordance with the approved Stormwater Management Report and Design Briefs. An enhanced level of treatment is expected as a result of the design and continued drainage outlet is to be provided for off-site lands in order to ensure the development does not cause flooding of other properties.

This proposal was reviewed under Ontario Regulation 174/06, the "*Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*" regulation.

PERMISSION AND CONDITIONS

By this letter the Rideau Valley Conservation Authority hereby grants you approval to undertake this project as outlined in your permit application but subject to the following conditions:

1. Approval is subject to the understanding of the project as described above and outlined in the application and submitted plans and reports including:
   - Drawing Fig-1 titled Existing Ground –vs- 2010 Floodplain dated 2015-11-17 as prepared by DSEL.
   - Drawing Fig-2 titled Proposed Pond (100yr-WL) –vs- 2010 Floodplain dated 2015-11-17 as prepared by DSEL.
   - Drawing Fig-3 titled Proposed Pond (100yr-WL) dated 2015-11-17 as prepared by DSEL.
   - Drawing Fig-4 titled Existing Ground –vs- Proposed Pond (100yr-WL) dated 2015-11-17 as prepared by DSEL.
   - Drawing SEC-1 titled Section 1 dated 2015-11-17 as prepared by DSEL.
   - Drawing SEC-2 titled Section 2 dated 2015-11-17 as prepared by DSEL.
   - Drawing SEC-3 titled Section 3 dated 2015-11-17 as prepared by DSEL.
   - Drawing SEC-4 titled Section 4 dated 2015-11-17 as prepared by DSEL.
   - Drawings dated 16-01-29 with Interim and Final SWM Pond and Outlets.
   - Report dated Feb 2016 for interim Pond Design.
   - Report dated Nov 2015 for Final Pond Design.
   - Baseflow Information provided by JFSA dated April 13, 2016.

   No conditions are subject to change/revision by the on-site contractor(s).

2. **<u>There will be no in-water works between March 15 and July 1, of any given year</u> to protect local aquatic species populations during their spawning and nursery time periods.**

3. It is recommended that you retain the services of an engineer to conduct on-site inspections to ensure adequacy of the work, verify stability of the final grades and confirm all imported fill is of a suitable type and has been adequately placed and compacted.

4. A final as built grading plan shall be submitted immediately upon completion of the approved works prepared by an Ontario Land Surveyor or Professional Engineer licensed to practice in Ontario indicating that grades achieved on the site conform to those indicated on the approved plan and detailing the new alignment of the 1:100 year flood line.

5. It is recommended that you ensure your contractor(s) are provided with a copy of this letter so as to ensure compliance with the conditions listed herein.

6. Any excess excavated material, as a result of the work, must be disposed of in a suitable location outside any regulatory floodplain and fill regulated area.

7. Only clean material free from particulate matter may be placed in the water. Any stockpiled materials shall be stored and stabilized away from the water.

8. All materials and equipment used for the purpose of site preparation and project completion must be operated (washed, refuelled, and serviced) and all fuel stored in a manner that prevents any deleterious substance (e.g. petroleum products, silt, debris etc.) from entering any watercourse.

9. Sediment barriers should be used on site in an appropriate method according to the Ontario Provincial Standard Specifications (OPSS) for silt barriers as a minimum. If the sediment and erosion control methods include silt fence it should be placed along the shoreline to prevent overland flow on disturbed areas from entering the watercourse. Soil type, slope of land, drainage area, weather, predicted sediment load and deposition should be considered when selecting the type of sediment/erosion control.

10. Sediment and erosion control measures shall be in place before any excavation or construction works commence. All sediment/erosion control measures are to be monitored regularly by experienced personnel and maintained as necessary to ensure good working order. In the event that the erosion and sedimentation control measures are deemed not to be performing adequately, the contractor shall undertake immediate additional measures as appropriate to the situation to the satisfaction of the Conservation Authority.

11. Work in water shall not be conducted at times when flows are elevated due to local rain events, storms or seasonal floods.

12. Develop a response plan that is to be implemented immediately in the event of flooding, a sediment release or spill of a deleterious substance. This plan is to include measures to: a) stop work, contain sediment-laden water and other deleterious substances and prevent their further migration into the watercourse and downstream receiving watercourses; b) notify the RVCA and all applicable authorities in the area c) promptly clean-up and appropriately dispose of the sediment-laden water and deleterious substances; and d) ensure clean-up measures are suitably applied so as not to result in further alteration of the bed and/or banks of the watercourse.

13. The owner is ultimately responsible for failure to comply with any and/or all of these conditions and must take all precautions to ensure no sediment runoff from the work site into any watercourse during and after the construction period. Failure to comply with the approval and/or conditions of this letter will result in the permit being revoked and may also result in legal action being initiated to resolve the matter to the Conservation Authority's satisfaction.

14. The applicant agrees that Authority staff may visit the subject property, before, during and after project completion, to ensure compliance with the conditions as set out in this letter of permission.

15. A new application must be submitted should any work as specified in this letter be ongoing or planned for or after October 18, 2018.

16. That the Authority be given twenty-four hours notice prior to the start of construction and within twenty-four hours of project completion.

17. All other approvals as might be required from the Municipality, and/or other Provincial or Federal Agencies must be obtained prior to initiation of work. This includes but is not limited to the Endangered Species Act., the Ontario Water Resources Act., Environmental Protection Act., Public Lands Act, and the Fisheries Act.

By this letter the Rideau Valley Conservation Authority assumes no responsibility or liability for any flood, erosion, or slope failure damage which may occur either to your property or the structures on it or if any activity undertaken by you adversely affects the property or interests of adjacent landowners. This letter does not relieve you of the necessity or responsibility for obtaining any other federal, provincial or municipal permits. This permit is not transferable to subsequent property owners.

Should you have any questions regarding this letter, please contact Hal Stimson at our Manotick office.

Terry K. Davidson

Terry K. Davidson, P. Eng.
Conservation Authority S. 28 Signing delegate
O. Reg. 174/06

Cc: K. Murphy, P. Eng. DSEL
D.Ryan, P. Geo., City Ottawa Drainage Manager

- Pursuant to the provisions of S. 28(12) of the Conservation Authorities Act (R.S.O.1990, as amended.) any or all of the conditions set out above may be appealed to the Executive Committee of the Conservation Authority in the event that they are not satisfactory or cannot be complied with.
- Failure to comply with the conditions of approval or the scope of the project may result in the cancelling of the permission and/or initiation of legal action under S. 28(16) of the Act.
- This letter of permission does not come into full force and effect until the attached copy of this letter is returned to the Authority offices in Manotick signed and dated which return shall be taken as indicating acceptance of the conditions of the Authority's approval and acknowledgement that the details of the proposal as described in this letter are a fair and accurate representation of the proposed undertaking.

Name: _____ (print)

Signed: _____ Date: _____

RIDEAU VALLEY
CONSERVATION AUTHORITY

3889 Rideau Valley Drive, P.O. Box 599, Manotick, ON K4M 1A5
tel 613-692-3571 | 1-800-267-3504 | fax 613-692-0831 | www.rvca.ca

LETTER OF PERMISSION - ONTARIO REGULATION 174/06, SECTION 28 CONSERVATION AUTHORITIES ACT 1990, AS AMENDED.

Date April 23, 2018
File: RV5-04/18
Contact: Hal Stimson
(613) 692-3571 ext. 1127
hal.stimson@rvca.ca

Mr. Damien Whittaker
City of Ottawa
110 Laurier Avenue West
Ottawa, Ontario
K1P 1J1

Permit to alter a waterway under Section 28 of the Conservation Authorities Act for stormwater outlet at Lot 23 Concession 3, Goulbourn Township, now in the City of Ottawa known municipally as 48 Fortune Street

Dear Mr. Damien Whittaker

The Rideau Valley Conservation Authority has reviewed your application on behalf of the City of Ottawa and understands the proposal to be for the construction of a storm water outlet and outlet channel for a proposed storm water management facility (Caivan Communities SWM Pond # 1) which will connect to the Arbuckle Municipal Drain, on the downstream side of the crossing of Fortune Street. The Arbuckle Municipal Drain is a tributary watercourse of the Jock River. The work will include a short section of new rip rap channel and a concrete headwall. The location is noted to be within the 1:100 year RVCA regulated flood plain and the 1:100 year flood elevation is 94.09 m.a.s.l.

This proposal was reviewed under Ontario Regulation 174/06, the "*Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*" regulation.

PERMISSION AND CONDITIONS

By this letter the Rideau Valley Authority hereby grants you approval to undertake this project as outlined in your permit application but subject to the following conditions:

1. Approval is subject to the understanding of the project as described above and outlined in the application and submitted drawings including:
    - Drawing Sheet Nos. 10, 11 and13 for Project No. 15-764BB titled Village of Richmond SWM Pond 1, all revision No. 10, dated 18-02-26 as prepared by DSEL Engineering Ltd. and stamped by W. Liu, P. Eng.
    - Drawing No. GEO-1, for Project No. 15078 titled SWM Pond 1 Outlet 1 Stilling Basin, Revision No. 4, dated 2016-03-07 as prepared by GEOMorphix and stamped by Paul V. Villard, P. Geo.
    - Memo dated March 08, 2018 Subject Western Development Lands – Caivan Communities SWM Pond # 1 – Revised Pond Outlet Location to Harry Alvey, P. Eng. from Kevin L. Murphy, P. Eng of David Schaeffer Engineering
    - Memo dated March 1, 2018 Subject Western Development Lands – Richmond/Revision to Outfall Location of Outlet Pipe from SWM Facility 1 to Kevin Murphy, P. Eng. DSEL from Laura Pipkins, P. Eng of J.F. Sabourin & Associates.
    - Report titled Design Brief for Interim Stormwater Management Pond 1 Western Development Lands – Richmond by DSEL Project No. 15-764 dated Revised December, 2017.

      No conditions are subject to change/revision by the on-site contractor(s).

2. **A De-watering Plan and Sediment and Erosion Control Plan must be submitted to this office by the contractor for review prior to construction activities.**

3. All excess excavated material, as a result of the work, must be disposed of in a suitable location outside any regulatory floodplain and fill regulated area. This will include the material that will be required to be excavated for the new rip rap lined outlet channel in the flood plain.

4. It is recommended that you retain the services of a professional engineer to conduct on-site inspections to ensure adequacy of the work, verify stability of the final grade and slopes and confirm all imported fill is of suitable type and has been adequately placed and compacted.

5. **There will be no in-water works between March 15 and June 30, of any given year to protect local aquatic species populations during their spawning and nursery time periods.**

6. It is recommended that you ensure your contractor(s) are provided with a copy of this letter so as to ensure compliance with the conditions listed herein.

7. Work in-water shall not be conducted at times when flows are elevated due to local rain events, storms or seasonal floods. Existing stream flows must be maintained downstream of the de-watered work area without interruption, during all stages of the work. There must be no increase in water levels upstream of the de-watered work area.

8. Any aquatic species (fish, turtles) trapped within an enclosed work area are to be safely relocated outside of the enclosed area to the main watercourse downstream of the work zone.

9. All in-stream work should be completed in the dry by de-watering the work area and diverting and/or pumping any flows around cofferdams placed at the limits of the work area. Silt or debris that has

accumulated around the temporary cofferdams should be cautiously removed prior to their withdrawal. No channel modifications or dredging is permitted or implied by this letter.

10. Sediment barriers should be used on site in an appropriate method according to the Ontario Provincial Standard Specifications (OPSS) for silt barriers as a minimum. Soil type, slope of land, drainage area, weather, predicted sediment load and deposition should be considered when selecting the type of sediment/erosion control.

11. Sediment and erosion control measures shall be in place before any excavation or construction works commence. All sediment/erosion control measures are to be monitored regularly by experienced personnel and maintained as necessary. In the event that the erosion and sedimentation control measures are deemed not to be performing adequately, the contractor shall undertake immediate additional measures as appropriate to the situation to the satisfaction of the Conservation Authority.

12. The waters of the creek/drain are NOT to be considered as machine staging areas. Activities such as equipment refuelling and maintenance must be conducted away from the water to prevent entry of petroleum products, debris, or other deleterious substances into the water. Operate machinery from outside the water, or on the water in a manner that minimizes disturbance to the banks or bed of the watercourse. Equipment shall not be cleaned in the watercourse or where wash-water can enter any watercourse. Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.

13. Demolition or construction debris is not to be deposited in the waters of any creek; inert concrete/asphalt debris will be considered a deleterious substance. An emergency spill kit should be kept on site in case of fluid leaks or spills from machinery.

14. All disturbed soil areas must be appropriately stabilized to prevent erosion.

15. Only clean material free from particulate matter may be placed in the water.

16. Develop a response plan that is to be implemented immediately in the event of a sediment release or spill of a deleterious substance. This plan is to include measures to: a) stop work, contain sediment-laden water and other deleterious substances and prevent their further migration into the watercourse and downstream receiving watercourses; b) notify the RVCA and all applicable authorities in the area c) promptly clean-up and appropriately dispose of the sediment-laden water and deleterious substances; and d) ensure clean-up measures are suitably applied so as not to result in further alteration of the bed and/or banks of the watercourse.

17. The RVCA is to receive 48 hours notice of the proposed commencement of the works to ensure compliance with all conditions. The applicant agrees that Authority staff may visit the subject property, before, during and after project completion, to ensure compliance with the conditions as set out in this letter of permission.

18. A new application must be submitted should any work as specified in this letter be ongoing or planned for or after April 23, 2020.

19. All other approvals as might be required from the Municipality, and/or other Provincial or Federal Agencies must be obtained prior to initiation of work. This includes but is not limited to the Drainage Act, the Endangered Species Act, the Ontario Water Resources Act, Environmental Protection Act, Public Lands Act, or the Fisheries Act.

By this letter the Rideau Valley Conservation Authority assumes no responsibility or liability for any flood, erosion, or slope failure damage which may occur either to your property or the structures on it or if any activity undertaken by you adversely affects the property or interests of adjacent landowners. This letter does not relieve you of the necessity or responsibility for obtaining any other federal, provincial or municipal permits. This permit is not transferable to subsequent property owners.

Should you have any questions regarding this letter, please contact Hal Stimson at our Manotick office.

Terry K. Davidson

Terry K. Davidson P.Eng
Conservation Authority S. 28 Signing delegate
O. Reg. 174/06

c.c. K. Murphy, P. Eng. DSEL

- Pursuant to the provisions of S. 28(12) of the Conservation Authorities Act (R.S.O.1990, as amended.) any or all of the conditions set out above may be appealed to the Executive Committee of the Conservation Authority in the event that they are not satisfactory or cannot be complied with.
- Failure to comply with the conditions of approval or the scope of the project may result in the cancelling of the permission and/or initiation of legal action under S. 28(16) of the Act.
- This letter of permission does not come into full force and effect until the attached copy of this letter is returned to the Authority offices in Manotick signed and dated which return shall be taken as indicating acceptance of the conditions of the Authority's approval and acknowledgement that the details of the proposal as described in this letter are a fair and accurate representation of the proposed undertaking.

Name: _____ (print)

Signed: _____ Date: _____