

SERVICING AND STORMWATER MANAGEMENT REPORT



Project No.: OCP-17-0613

495 Jinkinson Road – J.R. Brisson Equipment Ltd. Case Equipment Dealership

Prepared for:

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McINTOSH PERRY

Executive Summary

Developing a site within the City of Ottawa requires meeting a predefined set of requirements outlined in the City of Ottawa Sewer Design Guidelines (SDG) - 2012 along with meeting the local conservation authority requirements (Mississippi Valley Conservation Authority - MVCA) and provincial requirements (Ministry of Environmental, Conservation and Parks - MECP). Site specific requirements are discussed and outlined in the pre-consultation meeting with the City of Ottawa before the detailed design process is initiated.

This report describes an innovative and cost-efficient design solution for the site servicing (water, sanitary, and storm) and stormwater management (SWM) requirements in order to develop this site. The Mississippi Valley Conservation Authority (MVCA) requires the removal of 70% of total suspended solids (TSS) before runoff discharge. Two enhanced grass swales are proposed following the MECP guidelines to provide the required amount of quality control requested by the MVCA.

Evaluation of the proposed site plan in addition to a review of the site grading and soil characteristics was completed. Our review identified that trapezoidal enhanced grassed swales with restricted flows provided the optimal design solution to meet the stormwater management requirements. During storm events the stormwater will be retained within the enhanced grassed swales until the storm event subsides and flows reduce. The runoff from the site will drain to the back of the property and outlet to the same site behind the development area. These design elements will ensure that water quality and quantity concerns are addressed at all stages of development.

The evaluation of the proposed development, existing site characteristics and surrounding municipal infrastructure suggests that the SWM design elements consisting of enhanced grass swales will not only be a possible design solution to the site constraints but will also contribute to the health of the local watercourse. The proposed septic and well will service the development. Therefore, it is our professional opinion that this site located at 495 Jinkinson Road is able to be developed and fully serviced to accommodate the proposed J.R. Brisson heavy equipment sales, service and rental location.

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1.0 PROJECT DESCRIPTION

1.1 Purpose

McIntosh Perry (MP) has been retained by J.R. Brisson Equipment Ltd. to prepare this Servicing and Stormwater Management Report in support of the Site Plan Control process for the proposed J.R. Brisson heavy equipment sales, service and rental location at 495 Jinkinson Road within the City of Ottawa.

The main purpose of this report is to present a servicing design for the development in accordance with the recommendations and guidelines provided by the City of Ottawa (City), the Mississippi Valley Conservation Authority (MVCA), the Ministry of the Environment, Conservation and Parks (MECP) and the Ministry of Transportation (MTO). This report will address the water, sanitary and storm sewer servicing for the development, ensuring that existing and available services will adequately service the proposed development.

This report should be read in conjunction with the following drawing:

- CP-17-0613, C101 – Lot Grading, Drainage, Sediment and Erosion Control Plan.

1.2 Site Description

The property is located at 495 Jinkinson Road. It is described as Part of Lot 17, Concession A (Rideau Front), City of Ottawa, Ontario. The land in question covers approximately 22.00 ha, though only 2.50 ha is to be developed, and is located west of the Hazeldean Road on-ramp to Highway 7. The property is subject to an easement per INST NS171766 and INST OC968652. The existing site is currently undeveloped consisting of tree cover and grass.

The proposed development consists of a 1,015 m², one-storey Case Dealership. In addition, the development includes a graveled storage yard, parking, drive aisle and landscaping along the frontage to Jinkinson Road. The existing private approach will be removed and replaced with another further to the east.

Figure 1: Key Map: 495 Jinkinson Road, Ottawa



2.0 BACKGROUND STUDIES

Background studies that have been completed for the site include review of a topographical survey of the site, a geotechnical report, a Phase I Environmental Site Assessment (ESA) and Hydrogeological Study.

A topographic survey of the site was completed by MPSI and can be found under separate cover.

The following reports have previously been completed and are available under separate cover:

- Geotechnical Investigation completed by McIntosh Perry dated June, 2018.
- Phase I ESA completed by McIntosh Perry dated May 1, 2018.
- Hydrogeological Study - 495 Jinkinson Road by McIntosh Perry dated January 2019

3.0 PRE-CONSULTATION SUMMARY

City of Ottawa Staff have been pre-consulted regarding this proposed development in person on February 23rd, 2018. Specific design parameters to be incorporated within this design include the following:

- Pre-development and post-development flows shall be calculated using a time of concentration (Tc) of 20 minutes and 10 minutes, respectively.
- Control 5 through 100-year post-development flows to the 5 and 100-year pre-development flows with a combined C value to a maximum of 0.50.

Correspondence with the City can be found in Appendix 'A'.

4.0 EXISTING SERVICES

The property has not been developed and is within Area D (Rural) of the City of Ottawa Zoning Schedule. There are no underground services available within the Jinkinson Road right-of-way though overhead wires are present along the frontage of the site.

5.0 SERVICING PLAN

5.1 Proposed Servicing Overview

The property will be serviced with a new well and a septic system to provide water and sanitary services to the building. The stormwater will be conveyed by means of sheet flow and enhanced grassed swales to a storage area along the southeastern limit of the development area prior to its discharge to the rear portion of the property.

5.2 Proposed Water Design

A new well will be drilled within the landscaped area in the parking lot north of the building to provide the proposed development with domestic water supply. As per the findings of the *Hydrogeological Study - 495 Jinkinson Road* by McIntosh Perry, dated January 2019, the drilled well can provide sufficient quantity and quality of water for proposed site needs. The report also finds the proposed development will not adversely affect groundwater. The building will be connected by a 50 mm diameter copper lateral that will provide sufficient pressure and flow for the intended use of the development.

The proposed well, will not provide any fire protection for the site. No fire protection will be provided on site as per correspondence with Ottawa Fire Services. Refer to Appendix 'B' for more details.

The water demands for the new buildings have been calculated as per the Ottawa Design Guidelines – Water Distribution and are as follows: the average and maximum daily demands are 1.00 L/s and 1.49 L/s respectively. The maximum hourly demand was calculated as 2.69 L/s (Refer to Appendix 'B' for more details).

5.3 Proposed Sanitary Design

A new septic bed located within the west side yard will be installed and sized to accommodate the development. McIntosh Perry will coordinate with the Ottawa Septic System Office (OSSO) for the required permits and approvals.

Currently the sanitary design flow is calculated at 5,000 L/day, which takes into consideration the building plumbing as well as the floor drains from the maintenance, service and wash bay locations within the building. Note that at this time, the flow from the maintenance, service and wash bay location is expected to be directed to an oil and grit separator discharging directly into the existing roadside ditch. From correspondence with M&E Engineering, the maximum flows to be discharged from the oil and grit separator to the unevaluated wetland consists of 30 gpm (1.89 L/s).

5.4 Proposed Storm Design (Conveyance and Management)

The transition from an undeveloped site covered in vegetation to a fully developed site will increase the amount of stormwater runoff due to an increase in impervious area. Since the site is split into two drainage areas flowing to different wetlands, the pre and post flows have been restricted to the respective wetland. To manage the increase in stormwater runoff, enhanced grassed swales and outlets equipped with earth weirs

have been designed to convey, restrict and treat the stormwater for suspended solid removal. The stormwater will generally sheet flow from the front of the property to the back. The storage during the 5 through 100-year storm events shall be provided by the enhanced grassed swales and a portion of the gravel storage yard through restricting the flow of water out of the swales. The combined restricted flow from the swale will not exceed the pre-development flows for the respective storm events. Each outlet has been designed with a trapezoidal earth weir as well as a pipe sized for the restricted 5-year flows and equipped with an orifice plate are provided for the outlet to control the flows until the 100-year storm event subsides while also allowing for an emergency overland flow location. The stormwater management design will be further detailed in Section 6.0.

5.5 Site Utilities

All relevant utility companies (telephone - Bell, gas – Enbridge and hydro – Hydro Ottawa and cable - Rogers) will be contacted prior to construction in order to confirm adequate utility servicing for the site. It is anticipated that the existing overhead wires within the Jinkinson Road right-of-way will be used for the servicing of the site.

5.6 Service Locations/Cover

The proposed sanitary and water service laterals will be placed under the parking lot and grassed areas. Hydro, telephone, gas will be primarily placed in a common utility trench connecting to existing infrastructure along Jinkinson Road. It is anticipated that the hydro and gas meters will be located at the centre of the building. The minimum cover for sanitary and water services will conform to requirements per the City of Ottawa Standard. Separation distances between the storm, water and sanitary will be maintained as per the Ministry of the Environment, Conservation and Parks requirements.

6.0 PROPOSED STORMWATER MANAGEMENT

6.1 Design Criteria and Methodology

Stormwater management for this site will be maintained through positive drainage away from the proposed building and be conveyed by way of overland sheet flow to the back of the site where enhanced grassed swales equipped with an earthen weir are proposed to treat the quality of the water as well as restrict the runoff and provide storage for the 5 and 100-year storm events. The emergency overland flow will be directed towards the rear of the property. Two trapezoidal earth weirs located in the southern portion of the site will provide the emergency overland flow location for both control areas of the site as well as control the 100-year storm event flows. The quantitative and qualitative properties of the storm runoff for both the pre- and post-development flows are further detailed below.

Stormwater Best Management Practices (SWM BMP's) will be implemented at the "Lot level", "Conveyance" and "End of Pipe" locations. These concepts will be explained further in Section 6.3. To summarize, roof water will be directed to grass surfaces, where possible, that in turn will be collected into proposed stormwater management swale. The SWM facilities will consist of a swale treating both quality and quantity, with a normal level of quality control mandated by the Mississippi Valley Conservation Authority (MVCA).

6.2 Runoff Calculations

Runoff calculations presented in this report are derived using the Rational Method, given as:

$$Q = 2.78CIA \text{ (L/s)}$$

Where	C	= Runoff coefficient
	I	= Rainfall intensity in mm/hr (City of Ottawa IDF curves)
	A	= Drainage area in hectares

It is recognized that the rational method tends to overestimate runoff rates. As a by-product of using extremely conservative prediction method, any facilities that are sized using these results are expected to function as intended in real world conditions.

The following coefficients were used to develop an average C for each area:

Table 1: Average Runoff Coefficients (C)

Roofs/Concrete/Asphalt	0.90
Gravel	0.60
Undeveloped and Grass	0.20

As per the City of Ottawa Sewer Design Guidelines, the 5-year balanced 'C' value must be increased by 25% for a 100-year storm event to a maximum of 1.0.

As per the pre-consultation meeting with the City of Ottawa the time of concentration (T_c) used for pre-development and post-development flows shall be calculated using a time of concentration (T_c) of 20 and 10 minutes, respectively.

6.2.1 Pre-Development Drainage

The existing site has been demonstrated as drainage areas A1 and A2, which coincide with the municipal drain boundary provided by the City of Ottawa. Drainage area A1 represents the site area that drains to the Goulbourn Wetland Complex which in the Flowing Creek sub-catchment of the Jock River, while drainage area A2 discharges into the Hazeldean Road Municipal Drain. Drawing CP-17-0613 PRE (Appendix 'D') indicates the limits of the drainage areas. Existing conditions have the overland stormwater runoff flowing from a high point located relatively central to the site and draining inconsistently in all directions with pockets of no drainage. Table 2 demonstrates the existing flow rates in pre-development conditions.

Table 2: Pre-Development Runoff Summary

Area ID	Drainage Area (ha)	Runoff Coefficient (5-year)	Runoff Coefficient (100-year)	T_c (min)	Unrestricted 5-year Peak Flow (L/s)	Unrestricted 100-year Peak Flow (L/s)
A1	1.47	0.20	0.25	20	57.28	122.26
A2	0.99	0.20	0.25	20	38.81	82.83
Total	2.46				96.09	205.09

(See Appendix 'F' for Calculations)

6.2.2 Post-Development Drainage

The post-development drainage plan was designed to retain runoff generated by a 5 and 100-year storm event onsite. Stormwater exceeding this amount is directed to the southern portion of the property. Since the site discharges to two separate watersheds in pre-development conditions, the post-development flows have been restricted to match the pre-development flows to the coinciding receiving watersheds. The proposed drainage and overland flow directions are indicated on drawing CP-17-0613 POST (Appendix 'E'). Table 3 on the following page displays the post-development runoff generated by the proposed site.

Table 3: Post-Development Runoff Summary

Area ID	Drainage Area (ha)	Runoff Coefficient (5-year)	Runoff Coefficient (100-year)	T _c (min)	Unrestricted 5-year Peak Flow (L/s)	Unrestricted 100-year Peak Flow (L/s)
B1	0.11	0.20	0.25	10	6.54	14.02
B2	0.04	0.20	0.25	10	2.03	4.35
B3	1.35	0.50	0.62	10	195.92	419.58
B4	0.96	0.64	0.76	10	178.78	361.81
Total	2.46				383.27	799.76

(See Appendix 'F' for Calculations)

Runoff from areas B3 and B4 will be restricted before outletting to the rear of the property. The total flow leaving the site from area B3 will be controlled by a 236 mm orifice within a 375 mm storm pipe that will restrict the 5-year storm event flows to 50.67 L/s. A trapezoidal earth weir in combination with the pipe and orifice will restrict the 100-year storm event flows to 108.25 L/s. The restriction devices will account for the unrestricted flow leaving the site within the side of the site that drains to the Goulbourn Wetland Complex. Area B4 will be similarly restricted with a 196mm orifice within a 300 mm storm pipe that will restrict the 5-year storm event flows to 36.75 L/s. A trapezoidal earth weir in combination with the pipe and orifice will restrict the 100-year storm event flows to 78.48 L/s. The restrictions applied to area B4 accounts for the unrestricted flow leaving the site from the side draining to the Hazeldean Road Municipal Drain. See Appendix 'F' for calculations. This restriction and quality runoff control will be further detailed in Sections 6.3 and 6.4.

6.3 Quantity Control

After discussing the stormwater management criteria for the site with City staff, the post-development runoff for this site has been restricted to match the 5 and 100-year pre-development flow rates with a calculated C value of 0.20 and 0.25, respectively (See Appendix 'A' for pre-consultation notes). Also, from further correspondence the post- development flows have been restricted to the pre- development flow routes to the coinciding receiving watersheds. These values create the following allowable release rates and storage volumes for the development site shown on the following page.

Table 4: Allowable Release Rate

Tertiary Watershed	Area ID	Drainage Area (ha)	Runoff Coefficient (5-year)	Runoff Coefficient (100-year)	5-year Flow Rate (L/s)	100-year Flow Rate (L/s)
Goulbourn Wetland Complex	A1	1.47	0.20	0.25	57.28	122.26
Hazeldean Road Municipal Drain	A2	0.99	0.20	0.25	38.81	82.83

(See Appendix 'F' for Calculations)

Reducing site flows will be achieved using flow restriction and will create the need for onsite storage. Runoff from areas B3 and B4 will be restricted as detailed in Table 5 below.

Table 5: Post-Development Restricted Runoff Calculations

Area ID	Post-Development Unrestricted (L/s)		Post-Development (Restricted) (L/s)		
	5-yr	100-yr	5-yr	100-yr	
B1	6.54	14.02	6.54	14.02	UNRESTRICTED
B3	195.92	419.58	50.67	108.25	RESTRICTED
Goulbourn Wetland Complex		Subtotal:	57.21	122.26	Pre-Dev (L/s): 57.28 (5-yr) 122.26 (100-yr)
B2	2.03	4.35	2.03	4.35	UNRESTRICTED
B4	178.78	361.81	36.75	78.48	RESTRICTED
Hazeldean Road Municipal Drain		Subtotal:	38.78	82.83	Pre-Dev(L/s): 38.81 (5-yr) 82.83 (100-yr)
Total	383.27	799.76	95.99	205.09	

(See Appendix 'F' for Calculations)

Runoff from Area B3 will be restricted at the outlet by a 236 mm diameter orifice plug within the 375 mm diameter outlet pipe as well as a trapezoidal earth weir with a bottom dimension of 2.78 m and 3:1 side slopes. This orifice plug will restrict area B3 to 50.67 L/s for the 5-year storm event creating a water surface elevation (WSEL) of 135.64. The 100-year storm event flows will be restricted by both the orifice plug and trapezoidal earth weir restricting the flows to 108.25 L/s creating a WSEL of 135.73. The storage for this area will be provided within the enhanced grassed swale as well as atop a portion of the gravel storage yard.

Similarly, runoff from area B4 will be restricted at the outlet by a 196 mm diameter orifice plug within the 300 mm diameter outlet pipe as well as a trapezoidal earth weir with a bottom dimension of 1.63 m and 3:1 side slopes. This orifice plug will restrict area B4 to 36.75 L/s for the 5-year storm event creating a water surface elevation (WSEL) of 135.70. The 100-year storm event flows will be restricted by both the orifice plug and trapezoidal earth weir restricting the flows to 78.48 L/s creating a WSEL of 135.80. The storage for this area will be provided within the enhanced grassed swale as well as atop a portion of the gravel storage yard. Table 6 below details the amount of required and provided storage before outletting to the rear of the property.

Table 6: Site Storage Summary

Area	Depth of Ponding (m) for 5-yr storm	5-year required storage (m ³)	5-year available storage (m ³)	Depth of Ponding (m) for 100-yr storm	100-year required storage (m ³)	100-year available storage (m ³)
B3	0.19	97.71	100.71	0.28	208.5	223.02
B4	0.21	101.61	104.64	0.31	198.45	200.38

(See Appendix 'F' for Calculations)

6.4 Quality Control

The development of this lot will employ Best Management Practices (BMP's) wherever possible. The intent of implementing stormwater BMP's is to ensure that water quality and quantity concerns are addressed at all stages of development. Lot level BMP's typically include temporary retention of the parking lot runoff, minimizing ground slopes and maximizing landscaped areas. Some of these BMP's cannot be provided for this site due to site constraints and development requirements.

The enhanced grassed swales have a variant cross-slope and a drainage conveyance slope of 0.3% to slow down the stormwater which creates an opportunity for infiltration and removal of total suspended solids. It is suggested that the grassed swale be evaluated yearly to determine if the amount of suspended solid accumulation requires removal. The minimum travel path of water through both swales is approximately 61 m providing sufficient total suspended solid removal to satisfy the conservation authority's requirement of 70%. Table 7 provides the criteria and proposed conditions the enhanced grassed swale will be subjected to.

Table 7: Enhanced Grassed Swale Requirements

No.	Design Element	Criteria	Proposed Works
1	Drainage Areas	Less than 2 hectares	Each swale receives flows from less than 2 hectares or area.
2	Soils Type	Soil percolation rate should be greater than 15mm/hr	Area is predominantly over highly fractured limestone bedrock. Based on historical performance, runoff has been known to infiltrate.
3	Water Table Depth	The seasonally high-water depth should be greater than 1m below the bottom of the enhanced swales	The groundwater elevation has been observed to be 0.36m below existing grade. Since the required TSS removal is 70% it is anticipated that this will be achieved.
4	Bedrock Depth	The depth to bedrock should be greater than 1m below the bottom of the enhanced swales	Depth to bedrock is less than 1m below the existing ground. However as stated within the Geotechnical Report within Section 5.2.2, the bedrock is highly fractured and highly weathered. Based on previous experience in the area it is anticipated that it still allows for infiltration through the fractures.
5	Cross-Section	Bottom width: >0.75m Side slopes: 2.5:1 (Typical) Maximum Depth of Flow: <0.5m (Typical) Channel Slope: <4%	Bottom width: 2-18m Side slopes: 20:1 to 3:1 Max Depth of Flow: 0.41m Channel Slope: 0.25% - 0.50%
6	Flow Velocity	Convey the peak flow from a 4 hour 25mm Chicago storm with a velocity <0.5m/s	The velocity within the ditch will be less the 0.5 m/s.
7	Swale Length	>5m	The swale is greater than 5m in length.
8	Permanent Check Dams	To promote infiltration of stormwater and the settling of pollutants, permanent check dams can be constructed at intervals along the swale systems	The outlet functions as a check dam. The length of the swales does not warrant intermediary check dams.
9	Major System Events	Grassed swales must be evaluated under major system and minor system events to ensure that swales can convey these storms effectively	The major storm events are anticipated to crest the banks however given the adjacent land use (vegetated and no sediment or erosion concerns), runoff will still ultimately be directed to the intended outlet through a combination of overland sheet flow (where runoff has crested the banks) and concentrated flow (runoff within the banks).

7.0 SEDIMENT EROSION CONTROL

Before construction begins, temporary silt fence, straw bale or rock flow check dams will be installed at all natural runoff outlets from the property. Straw bales will be placed within the roadside ditch along Jinkinson Road. It is crucial that these controls be maintained throughout construction. The site-grading contractor is responsible for ensuring sediment control structures are installed in accordance with the Site Grading and Drainage Plan as indicated. Silt fences shall be installed on site before construction or earth-moving operations begin, as shown on the Site Grading and Drainage Plan.

The Contractor, at their discretion or at the instruction of the City, the Conservation Authority or the Contract Administrator shall increase the quantity of erosion and sediment controls on-site to ensure that the site is operating as intended and no additional sediment finds its way into the ditches on site. The straw bales & silt fences shall be inspected weekly and after rainfall events. Care shall be taken to properly remove sediment from the fences and check dams as required.

Work through winter months shall be closely monitored for erosion along sloped areas. Should erosion be noted, the Contractor shall be alerted and shall take all necessary steps to rectify the situation. Should the Contractor's efforts fail at remediating the eroded areas, the Contractor shall contact the Conservation Authority to review the site conditions and determine the appropriate course of action. As the ground begins to thaw, the Contractor shall place silt fencing at all required locations as soon as ground conditions both warrant and permit.

8.0 SUMMARY


- A new 1,015 m² Case Dealership will be constructed within the front portion of the site located at 495 Jinkinson Road.
- A new septic system will be installed to service the site including a 100 mm private service lateral to be coordinated by others as part of the septic application.
- A new well will be drilled on the site including a 50 mm diameter copper service lateral to the building.
- Stormwater runoff will be directed by overland sheet flow to the rear of the property where the outlet will control the quantity and quality of the runoff.
- As discussed with the City of Ottawa staff, the stormwater management design will ensure that the post-development flow rates are restricted to the 5-year and 100-year pre-development flow rate respectively, with a calculated maximum C value of 0.5.
- Storage for the 5- through 100-year storm events will be provided within the parking lot areas and within the enhanced grassed swales.
- The stormwater management design accounts for 70% total suspended solid removal per the Mississippi Valley Conservation Authorities requirements.

9.0 RECOMMENDATIONS

Based on the information presented in this report, we recommend that City of Ottawa approve this Servicing and Stormwater Management Report in support of the proposed J.R. Brisson Equipment Ltd development on Jinkinson Road.

The sediment and erosion control plan outlined in Section 7.0 and detailed in the Grading and Drainage Plan notes are to be implemented by the contractor.

This report is respectfully being submitted for approval.



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10.0 STATEMENT OF LIMITATIONS

This report was produced for the exclusive use of J.R. Brisson Equipment Ltd. The purpose of the report is to assess the existing stormwater management system and provide recommendations and designs for the post-construction scenario that comply with the guidelines and standards from the Ministry of the Environment, Conservation and Parks, City of Ottawa and local approval agencies. McIntosh Perry reviewed the site information and background documents listed in Section 2.0 of this report. While the previous data was reviewed by McIntosh Perry and site visits were performed, no field verification/measures of any information were conducted.

Any use of this review by a third party, or any reliance on decisions made based on it, without a reliance report is the responsibility of such third parties. McIntosh Perry accepts no responsibility for damages, if any, suffered by any third party as a result of decisions or actions made based on this review.

The findings, conclusions and/or recommendations of this report are only valid as of the date of this report. No assurance is made regarding any changes in conditions subsequent to this date. If additional information is discovered or becomes available at a future date, McIntosh Perry should be requested to re-evaluate the conclusions presented in this report, and provide amendments, if required.

APPENDIX A:
CITY OF OTTAWA PRE-CONSULTATION NOTES

Site Plan Control Application Pre-Consultation- 495 Jinkinson

Meeting Date: February 23, 2018

Proposal:

The proponent wishes to develop approximately 6 acres of land located at 495 Jinkinson Road to accommodate the Heavy Equipment and Vehicle Sales, Rental and Servicing business. The proposal falls within the RG [355r] Boundary on the property. The remainder of land will mostly remain its original state.

Staff Comments

The application will be considered as: "*Application for New Development*", "*Manager Approval, Public Consultation*", "*Value of Infrastructure and Landscaping - < \$50,000*", "*Conservation Authority Fee - Remainder of City*" – see link http://app06.ottawa.ca/online_services/forms/ds/site_plan_control_en.pdf

Submission requirements:

Plan of Survey (2 copies)

Site Plan (10 copies)

- Site plans should indicate fire and emergency route and the location of Fire Protection Storage Tank.
- Site plan should also show Zoning boundary to ensure all proposed development components relating to the Heavy Equipment and Vehicle Sales, Rental and Servicing business are within the zoning limit.
- Site plan should also indicate the existing and proposed access. Please note curvet is required for the new access. It is understood the existing access will be removed.
- Access should be designed according to City's Private Approach By-law. If additional width is needed to accommodate vehicle movement, please provide additional rationale to justify the design choice.
- Site plan should show wetland and the 30 metres required setback from the wetland.
- Site plan should also identify locations of service bays and entrance of the building.
- Site plan should identify required screening around the storage area. Opaque screen that is at least 1.8 metres in height from finish grade is required as per Zoning Bylaw.
- Site plan should show accessibility design of the parking lot.
- Please separate grading from site plan. Keep the plan clear.

Landscape Plan (10 copies)

- Indicate proposed paving for parking lot and around the building
- Landscaping along Jinkinson to protect the Scenic Entry Route (Highway 7)

Building Elevations (5 copies)

- Show façade treatments
- Show any signage location and dimensions.

Planning Rationale (5 copies)

- Planning Rationale Include Design Brief and Integrated Environmental Review Statement.
- Schedule J of the Official Plan and the City's Cycling Network Plan identifies Highway 7 as Scenic Entry Route. Planning Rationale should provide discussion around use of landscape and architectural treatments along with other design elements along Jinkinosn to protect the Scenic Entry Route.

Grading and Drainage Plan (10 copies)

Erosion and Sediment Control Plan (10 Copies)

Stormwater Management Brief (5 copies)

- Post-development runoff should be controlled to the pre-development rate.
- MOECC approval may be necessary for proposed industrial development.
- Consultation with MTO is recommended for additional stormwater management requirement.

Geotechnical Study (5 copies)

Hydrogeological and Terrain Analysis (5 copies)

Environmental Impact Statement (EIS) (5 copies)

- A revised EIS should be provided and Include Tree Conservation Report (TCR) as part of the EIS.
- Additional consultation with locale MNRF office is necessary and the revised EIS should discuss significant habitat for threatened and endangered species. Additional Site visit may be triggered.

Please provide electronic copy (PDF) of all plans and studies required.

All plans and drawings must be produced on A1-sized paper and folded to 21.6 cm x 27.9 cm (8½"x 11").

A scale of 1:200 is recommended for the Site Plan and Landscape Plan.

Note that many of the plans and studies collected with this application must be signed, sealed and dated by a qualified engineer, architect, surveyor, planner or designated specialist.

Other Development Considerations

- Ministry of Environment, Environmental Compliance Approval may be required. Please contact the local MOE office for clarification. Please note that if an ECA is required that process time is 6 months +, and is required prior to issuance of a commence work permit.
- Accessibility Design Standards – particularly for parking, as the standards are stricter than the Traffic and Parking By-law in regards to accessible parking spaces. A copy of the accessibility design standards can be found on City's Website.
- Construction activities should follow Protocol for Wildlife Protection during Construction.
- Parkland Cash-in-lieu will be required at 2% of the proposed development area (approximately 6 acres). The value of land will be determined as of the day before planning approval is given for Site Plan Control.
- Outside storage is not permitted within any required front yard.

From: Tyler Ferguson
Sent: May 4, 2018 10:10 AM
To: Sean Leflar
Cc: Ryan Kennedy
Subject: FW: 495 Jinkinson Road - MVCA Requirements

FYI, this is great news for Jinkinson. We can now look at the two outlet option.

Tyler Ferguson, EIT

Engineering Intern

T. 613.836.2184 (ext 2242) | F. 613.836.3742

From: Nader Nakhaei [<mailto:NNakhaei@mvc.on.ca>]
Sent: May-04-18 10:00 AM
To: Tyler Ferguson <t.ferguson@mcintoshperry.com>
Cc: Curtis Melanson <c.melanson@mcintoshperry.com>; Niall Oddie <NOddie@mvc.on.ca>
Subject: RE: 495 Jinkinson Road - MVCA Requirements

Hi Tyler,

Yes, the quality control requirement would be "Normal" (70% TSS removal). Any type of SWM design that is based on MOE manual standards (including grass swale and check dams) along with possible and best management practices can be acceptable by us.

Please do not hesitate to contact me if you have any further question/concern.

Cheers,

Nader Nakhaei, Ph.D. | Postdoctoral Fellow / Water Resources Engineer (EIT) | Mississippi Valley Conservation Authority
www.mvc.on.ca | t. 613 253 0006 ext. 259 | f. 613 253 0122 | NNakhaei@mvc.on.ca



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Please consider the environment before printing this e-mail and/or its attachments

From: Tyler Ferguson [<mailto:t.ferguson@mcintoshperry.com>]
Sent: Thursday, May 3, 2018 2:18 PM
To: Nader Nakhaei <NNakhaei@mvc.on.ca>
Cc: Curtis Melanson <c.melanson@mcintoshperry.com>; Niall Oddie <NOddie@mvc.on.ca>
Subject: 495 Jinkinson Road - MVCA Requirements

Hi Nadar,

We are currently working on the stormwater management design for the site located at 495 Jinkinson Road. There was a pre-consultation meeting on February 23rd but I wanted to confirm the stormwater management criteria and briefly go over our approach for the SWM design.

The quality control requirement for the site was given as:

- 1 Normal level of quality treatment (70% TSS removal)

Can you confirm this requirement? Since the site requires a 70% TSS removal, we are proposing to use a treatment train approach to meet the quality control requirements. A proposed enhanced grass swale as per MOE standards would be the prominent feature providing quality control. Along with rock check dams where possible and best management practices (lot level, conveyance & end-of-pipe). Would this type of treatment train approach be acceptable to the MVCA in order to meet the 70% TSS removal?

I have also attached a plan for reference and if you have any questions or concerns don't hesitate to contact me.

Thanks,

Tyler Ferguson, EIT

Engineering Intern

115 Walgreen Road, R.R. 3, Carp, ON K0A 1L0

T. 613.836.2184 (ext 2242) | F. 613.836.3742

t.ferguson@mcintoshperry.com | www.mcintoshperry.com

McINTOSH PERRY

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APPENDIX B:
EXISTING WATERMAIN FLOW AND FIRE PROTECTION CALCULATIONS

From: Evans, Allan <Allan.Evans@ottawa.ca>
Sent: June 11, 2018 11:10 AM
To: Tyler Ferguson
Cc: Curtis Melanson; Sean Leflar
Subject: RE: 495 Jinkinson Road: Requirement for Fire Tanks on-site

Apologies all, very busy.

Based upon the classification and building size (with 4 hour fire rated wall), provided the OBC does not require standpipes or sprinklers, no on-site water will be required.

Regards,

Allan Evans

Fire Protection Engineer
Ottawa Fire Service
1445 Carling Avenue
Ottawa, ON, K1Z 7L9

Follow me on Twitter: @FFSnack
((613) 913-2747

Did you know? That as of October 15th, 2015, all residential occupancies that contain at least one fuel-burning appliance (e.g., gas water heater or gas furnace), fireplace or an attached garage require the installation of a CO alarm outside all sleeping areas.

Learn More at: http://www.mcscs.jus.gov.on.ca/english/FireMarshal/CarbonMonoxideAlarms/QuestionsandAnswers/OFM_COAlarms_QandA.html



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From: Tyler Ferguson <t.ferguson@mcintoshperry.com>
Sent: Wednesday, June 06, 2018 8:22 AM
To: Evans, Allan <Allan.Evans@ottawa.ca>
Cc: Curtis Melanson <c.melanson@mcintoshperry.com>; Sean Leflar <s.leflar@mcintoshperry.com>
Subject: RE: 495 Jinkinson Road: Requirement for Fire Tanks on-site

Hi Allan,

Please let us know when we should expect to receive a response for the below.

Thanks,

Tyler Ferguson, EIT

Engineering Intern
115 Walgreen Road, R.R. 3, Carp, ON K0A 1L0
T. 613.836.2184 (ext 2242) | F. 613.836.3742
t.ferguson@mcintoshperry.com | www.mcintoshperry.com

From: Tyler Ferguson
Sent: May-25-18 8:25 AM
To: Evans, Allan <Allan.Evans@ottawa.ca>
Cc: Curtis Melanson <c.melanson@mcintoshperry.com>; Sean Leflar <s.leflar@mcintoshperry.com>
Subject: RE: 495 Jinkinson Road: Requirement for Fire Tanks on-site

Hi Allan,

Just following up on the email below, do you know if we will require onsite fire protection?

Thanks,

Tyler Ferguson, EIT

Engineering Intern
T. 613.836.2184 (ext 2242) | F. 613.836.3742

From: Tyler Ferguson
Sent: May-16-18 4:10 PM
To: Evans, Allan <Allan.Evans@ottawa.ca>
Cc: Curtis Melanson <c.melanson@mcintoshperry.com>; Sean Leflar <s.leflar@mcintoshperry.com>
Subject: RE: 495 Jinkinson Road: Requirement for Fire Tanks on-site

Hi Allan,

Have you had a chance to review the below?

Thanks,

Tyler Ferguson, EIT

Engineering Intern

T. 613.836.2184 (ext 2242) | F. 613.836.3742

From: Tyler Ferguson

Sent: May-11-18 1:29 PM

To: Evans, Allan <Allan.Evans@ottawa.ca>

Cc: Curtis Melanson <c.melanson@mcintoshperry.com>; Sean Leflar <s.leflar@mcintoshperry.com>

Subject: RE: 495 Jinkinson Road: Requirement for Fire Tanks on-site

Hi Allan,

As requested, see below for description of the building provided by the architect:

"The front "building" is a combination of office, retail and low hazard industrial (warehouse space), with a building area of 427 sq.m. The back "building" is medium hazard industrial (repair garage), with a building area of 573 sq.m. The front and back are going to be separated with a 4-hour firewall. For what it's worth, the whole thing will be built using non-combustible construction."

Let us know if we will require any onsite fire protection.

If you need any more information don't hesitate to contact me.

Thanks,

Tyler Ferguson, EIT

Engineering Intern

T. 613.836.2184 (ext 2242) | F. 613.836.3742

From: Tyler Ferguson

Sent: May-04-18 2:05 PM

To: Evans, Allan <Allan.Evans@ottawa.ca>

Cc: Curtis Melanson <c.melanson@mcintoshperry.com>; Sean Leflar <s.leflar@mcintoshperry.com>

Subject: RE: 495 Jinkinson Road: Requirement for Fire Tanks on-site

Hi Allan,

We will confirm the occupancy for the building and get back to you.

Thanks,

Tyler Ferguson, EIT

Engineering Intern

T. 613.836.2184 (ext 2242) | F. 613.836.3742

From: Evans, Allan [<mailto:Allan.Evans@ottawa.ca>]

Sent: May-04-18 12:57 PM

To: Tyler Ferguson <t.ferguson@mcintoshperry.com>; Sean Leflar <s.leflar@mcintoshperry.com>

Cc: Curtis Melanson <c.melanson@mcintoshperry.com>

Subject: RE: 495 Jinkinson Road: Requirement for Fire Tanks on-site

What would it fall under for classification under the OBC? What hazard level specifically.

Usually if you subdivide a building into smaller portions than 600 m2 with a 2 hour fire wall, it does not fall under Part 3 of the OBC and on-site water would likely not be required. If it was classified medium or high hazard industrial, I would likely still review as well as determine where our nearest water source was as we sometimes will request when above 200 m2, but it is a lot less likely.

Regards,

Allan Evans

Fire Protection Engineer

Ottawa Fire Service

1445 Carling Avenue

Ottawa, ON, K1Z 7L9

Follow me on Twitter: @FFSnack

(613) 913-2747

Did you know? That as of October 15th, 2015, all residential occupancies that contain at least one fuel-burning appliance (e.g., gas water heater or gas furnace), fireplace or an attached garage require the installation of a CO alarm outside all sleeping areas.

Learn More at: http://www.mcscs.jus.gov.on.ca/english/FireMarshal/CarbonMonoxideAlarms/QuestionsandAnswers/OFM_COAlarms_QandA.html



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From: Tyler Ferguson <t.ferguson@mcintoshperry.com>
Sent: Friday, May 04, 2018 10:41 AM
To: Evans, Allan <Allan.Evans@ottawa.ca>; Sean Leflar <s.leflar@mcintoshperry.com>
Cc: Curtis Melanson <c.melanson@mcintoshperry.com>
Subject: RE: 495 Jinkinson Road: Requirement for Fire Tanks on-site

Hi Allan,

Can you please confirm the below?

Thanks,

Tyler Ferguson, EIT

Engineering Intern

115 Walgreen Road, R.R. 3, Carp, ON K0A 1L0

T. 613.836.2184 (ext 2242) | F. 613.836.3742

t.ferguson@mcintoshperry.com | www.mcintoshperry.com

From: Tyler Ferguson
Sent: May-02-18 2:47 PM
To: Evans, Allan <Allan.Evans@ottawa.ca>; Sean Leflar <s.leflar@mcintoshperry.com>
Cc: Curtis Melanson <c.melanson@mcintoshperry.com>
Subject: RE: 495 Jinkinson Road: Requirement for Fire Tanks on-site

Hi Allan,

Thanks for the response. If the building has an internal fire wall between a 600 m2 portion of the building and remaining building footprint would that satisfy the criteria of not requiring on site fire protection?

Thanks,

Tyler Ferguson, EIT

Engineering Intern

T. 613.836.2184 (ext 2242) | F. 613.836.3742

From: Evans, Allan [<mailto:Allan.Evans@ottawa.ca>]
Sent: May-02-18 1:57 PM
To: Sean Leflar <s.leflar@mcintoshperry.com>
Cc: Tyler Ferguson <t.ferguson@mcintoshperry.com>; Curtis Melanson <c.melanson@mcintoshperry.com>
Subject: RE: 495 Jinkinson Road: Requirement for Fire Tanks on-site

Apologies – emails got pushed down too far in my mailbox.

Yes, the site will require on-site water storage as the building is > 600 m2. As for size, please provide the FUS and OBC calculations for flow and water storage breakdown. Once we get that value, we can sit down and discuss a more realistic amount that we would require (we won't need the full 2 hour supply for instance).

Regards,

Allan Evans

Fire Protection Engineer

Ottawa Fire Service

1445 Carling Avenue

Ottawa, ON, K1Z 7L9

Follow me on Twitter: @FFSnack

(613) 913-2747

Did you know? That as of October 15th, 2015, all residential occupancies that contain at least one fuel-burning appliance (e.g., gas water heater or gas furnace), fireplace or an attached garage require the installation of a CO alarm outside all sleeping areas.

Learn More at: http://www.mcscs.jus.gov.on.ca/english/FireMarshal/CarbonMonoxideAlarms/QuestionsandAnswers/OFM_COAlarms_QandA.html



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From: Sean Leflar <s.leflar@mcintoshperry.com>

Sent: Friday, April 20, 2018 1:37 PM
To: Evans, Allan <Allan.Evans@ottawa.ca>
Cc: Tyler Ferguson <t.ferguson@mcintoshperry.com>; Curtis Melanson <c.melanson@mcintoshperry.com>
Subject: RE: 495 Jinkinson Road: Requirement for Fire Tanks on-site

Good Afternoon,

I just realized I forgot to attach a conceptual site plan showing the location and size of the building. Please see attached.

Sorry for the inconvenience,

Sean Leflar

Civil Engineering Technologist
115 Walgreen Road, R.R. 3, Carp, ON K0A 1L0
T. 613.836.2184 (ext 2252) | F. 613.836.3742
s.leflar@mcintoshperry.com | www.mcintoshperry.com

From: Sean Leflar
Sent: April 20, 2018 11:47 AM
To: Evans, Allan <Allan.Evans@ottawa.ca>
Cc: Tyler Ferguson <t.ferguson@mcintoshperry.com>; Curtis Melanson <c.melanson@mcintoshperry.com>
Subject: 495 Jinkinson Road: Requirement for Fire Tanks on-site

Good Morning,

We are gearing up to start the civil work for a site located at 495 Jinkinson Road within the City of Ottawa which is currently undeveloped. The site is planned to be developed with a heavy equipment and vehicle sales, rental and servicing establishment including a gravel storage yard and an asphalt parking lot. There is only one building proposed that will hold the offices, sales, rental and service centres. Fire Station 81 – Stittsville is approximately 4.7km north east of the site as the crow flies. Would this site require fire tanks on-site, if so, could you please inform me what the requirements would be?

If you have any questions or concerns, please feel free to get in contact.

Thank you for your time,

Sean Leflar

Civil Engineering Technologist
115 Walgreen Road, R.R. 3, Carp, ON K0A 1L0
T. 613.836.2184 (ext 2252) | F. 613.836.3742
s.leflar@mcintoshperry.com | www.mcintoshperry.com

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,

McINTOSH PERRY

CP-17-0613 - 495 JINKINSON ROAD - Water Demands

Project:	495 JINKINSON ROAD
Project No.:	CP-17-0613
Designed By:	S.V.L.
Checked By:	R.P.K.
Date:	05/09/2018
Site Area:	2.46 gross ha

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	350	L/c/d
Industrial - Light	35,000	L/gross ha/d
Industrial - Heavy	55,000	L/gross ha/d
Shopping Centres	2,500	L/(1000m ² /d)
Hospital	900	L/(bed/day)
Schools	70	L/(Student/d)
Trailer Parks no Hook-Ups	340	L/(space/d)
Trailer Park with Hook-Ups	800	L/(space/d)
Campgrounds	225	L/(campsite/d)
Mobile Home Parks	1,000	L/(Space/d)
Motels	150	L/(bed-space/d)
Hotels	225	L/(bed-space/d)
Tourist Commercial	28,000	L/gross ha/d
Other Commercial	28,000	L/gross ha/d
AVERAGE DAILY DEMAND	1.00	L/s

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	2.5 x avg. day	L/c/d
Industrial	1.5 x avg. day	L/gross ha/d
Commercial	1.5 x avg. day	L/gross ha/d
Institutional	1.5 x avg. day	L/gross ha/d
MAXIMUM DAILY DEMAND	1.49	L/s

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	2.2 x max. day	L/c/d
Industrial	1.8 x max. day	L/gross ha/d
Commercial	1.8 x max. day	L/gross ha/d
Institutional	1.8 x max. day	L/gross ha/d
MAXIMUM HOUR DEMAND	2.69	L/s

WATER DEMAND DESIGN FLOWS PER UNIT COUNT
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

APPENDIX C: SANITARY SEWER CALCULATIONS



****Commercial****

SEPTIC APPLICATION

Scan - Email - Phone
Folder - CanadaPost - PickUp Box

System Office - Septiques & Eaux

3889 Rideau Valley Drive Box 599 Manotick, ON K4M 1A5

Phone: 613-692-3571 1-800-267-3504

Fax: 613-692-1503

18-673
REQUIRED FOR ALL
INQUIRIES

Septic@rvca.ca

Address of property: 495 Tinkinson

Township: OSG HUN-GLO-FIT-CUM-NEP-GOU-RID-KAN

Contact for pickup: Patrick Leblanc

Phone#/Email: p.leblanc@mcintoshpermy.com

INFORMATION FOR OWNER/APPLICANT

Attached is your Sewage System Permit. A minimum of two inspections are required before your proposed sewage system can be approved for use (additional inspections may be required for clay soils/bedrock and/or re-inspections). Inspections must be requested in writing. Please see attached:

- Inspection fax request form (all inspections MUST be requested in writing)
- As-built components and drawing form
- Copy of the approved application and schedule pages
- Approved Part 8 permit (applicant copy - YELLOW)(city copy#2 - PINK ** Agent Deliver Direct To City**)

PLEASE NOTE

- A permit is valid for 12 months from the original date of issuance noted in "permit date". If lapsed, it may be renewed only once for a period of 12 months from the date of expiry.

- No person shall make a material change or cause a material change to be made to a plan, specification, document or other information on the basis of which a permit was issued without notifying, filing details with and obtaining the authorization of the Chief Building Official. (Building Code Act 1992, c.23, s.8(12))

Sewage System Permit Construction Requirements

1. Clay Soils/Bedrock only (if required per issued Approval)

In clay soils/bedrock, a site preparation inspection is required. The total contact area must be properly prepared. Scarification must be done under dry conditions prior to importing leaching bed fill.

2. Installation Inspection - 2nd inspection

When the sewage system is substantially completed (i.e., before the final fill is placed over the septic tank and leaching bed system) an installation inspection is required. Prior to any inspection request, the following must be submitted:

- "as-built components" and "as-built drawings" — see attached form
- "engineer letter" — if the system is engineered
- grain size analysis and weight bills for all Filter Media types of septic systems
- Weight bills for washed septic stone, where applicable.
- Maintenance/service contract for treatment unit installed

3. Final Grading Inspection - 3rd inspection

When construction of the sewage system is complete, a final grading inspection is required. Before a Certificate of Completion can be issued, the following must be complete:

- The leaching bed and septic tank must be covered with sand fill and topsoil and graded accordingly
- All conditions of the Sewage System Permit & comments on the installation inspection report must be met
- The depth of cover & material type must be identified by inspection pipes or holes placed over trenches at 4 corners of bed
- The 4 corners of the bed must be staked



Ottawa Septic System Office Bureau des systèmes septiques d'Ottawa

Main Phone: 613-692-3571 x 1129
SEPTIC APPLICATION

Inspection Request Form

Complete and fax to: 613-692-1507 or e-mail: septic@rvca.ca

18-673
REQUIRED FOR ALL INQUIRIES

Section A. Property and General Information

Date Submitted	Septic File Number:	
Civic Address		
Former Township	<input type="checkbox"/> Osgoode <input type="checkbox"/> Cumberland <input type="checkbox"/> Goulbourn <input type="checkbox"/> Torbolton <input type="checkbox"/> Nepean <input type="checkbox"/> Huntley <input type="checkbox"/> Rideau <input type="checkbox"/> Gloucester <input type="checkbox"/> Fitzroy <input type="checkbox"/> Kanata <input type="checkbox"/> Ottawa	
Property Owner		

Section B. Requestor Information

Name of Requestor	Phone Number:
E-mail	Fax Number:
I am the (check one)	<input type="checkbox"/> Installer <input type="checkbox"/> Engineer <input type="checkbox"/> Property Owner

Section C. I am Requesting the following:

<input type="checkbox"/> 1st - Subgrade (If required - check one): <input type="checkbox"/> Scarification <input type="checkbox"/> Clay Seal <input type="checkbox"/> Subgrade	<input type="checkbox"/> 2nd - Installation Inspection (Check all that apply) Refer to attached: <input type="checkbox"/> As-Built Components Page <input type="checkbox"/> As-Built Drawing <input type="checkbox"/> Engineers Letter <input type="checkbox"/> Filter Media Bills <input type="checkbox"/> Grain Size Analysis <input type="checkbox"/> Maintenance Agreement <input type="checkbox"/> ESA Permit Number: _____	<input type="checkbox"/> 3rd - Final Grade Inspection Note: Topsoil must be applied unless winter conditions exist at Director's discretion All deficiencies must be addressed from installation report
Notes/Comments		

Section D. Re-inspection

<input type="checkbox"/> Re-inspection - 1st call	<input type="checkbox"/> Re-inspection Request - 2nd call
Note: Re-inspection fee applies on requests for same deficiency - Please provide payment information below	
Card Type:	<input type="checkbox"/> Mastercard <input type="checkbox"/> Visa
Card Number:	Expiry:
Cardholder Name:	
Notes/Comments	

Please Note:

- 3-5 business day turn around for inspections
- OSSO file will be given to inspector upon receipt of this request form
- PRIORITY will be given to requests that have septic file/permit numbers

Submit

Reset

Print

AS-BUILT COMPONENTS

(required prior to installation inspection)

18-673

REQUIRED FOR ALL INQUIRIES

Elevations of installed system must be supplied with this report (in reference to the TBM).

Exact size and location of all structures, well(s) and system(s) and its components must be shown (including neighbouring lots).

Septic/Holding Tank: _____ L

Manufacturer: _____

☐ concrete ☐ plastic ☐ other

Filter: ☐ no ☐ yes _____ make

Treatment: Make _____

Unit: Model _____

Diameter of pipes _____ mm/inches

Make of pipes: _____

Ends: ☐ capped ☐ interconnected

Number of runs: _____ m

Length of runs: _____ m

Stone area _____ m²

Filter media:

Amount Purchased: _____ kg

Date Purchased: _____

Supplier: _____

Grain/size analysis by: _____

Analysis dated: _____

Stone:

Amount Purchased: _____ kg

Date Purchased: _____

Supplier: _____

Name of owner: _____

Installer: _____

Installer Signature: _____

License Number: _____

Date of Installation: _____

Pump Systems:

ESA Permit #: _____

Volume discharge rates: _____ /15min

Alarm location: _____

Dimension of Pump Chamber: _____

Height of Float Switch: _____

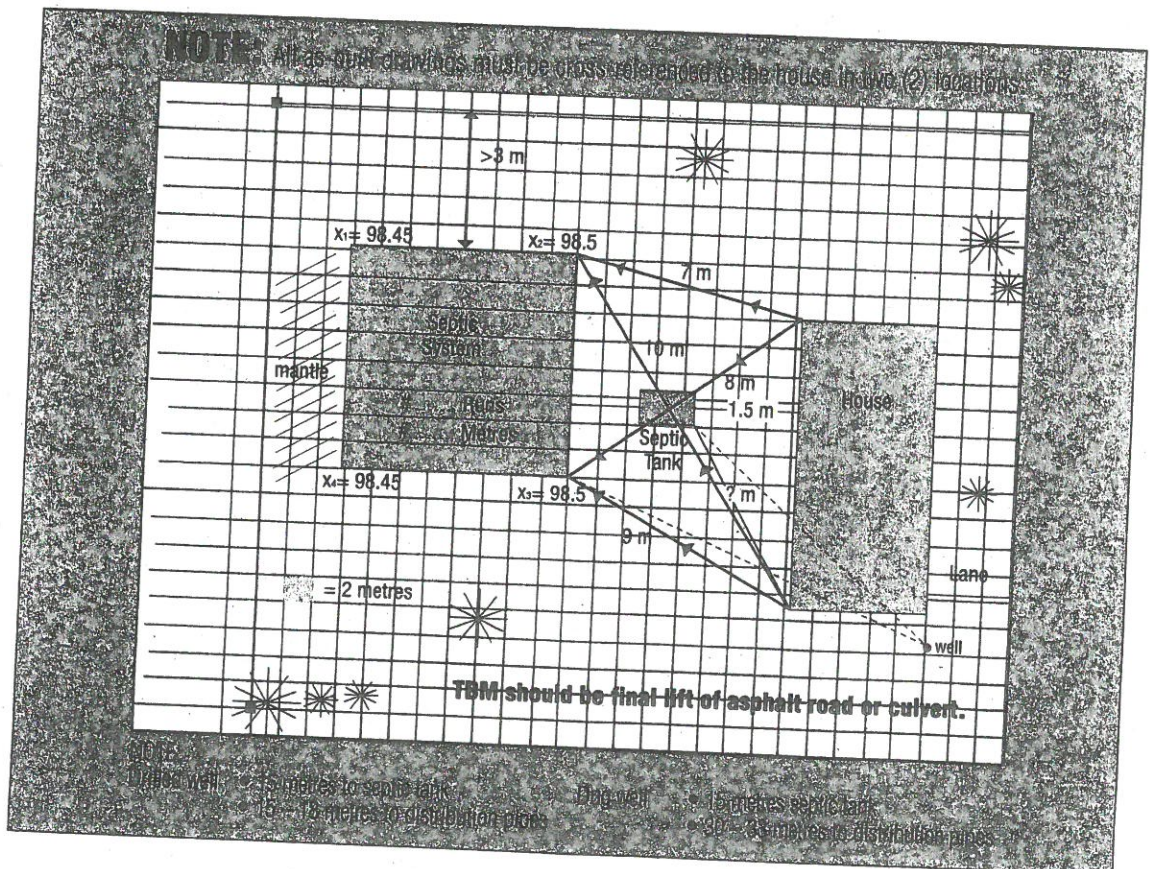
Grease Interceptor:

☐ no ☐ yes Size: _____

Location: _____

*** Grain Size Analysis and weight bills must be supplied with this report.**

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AS-BUILT DRAWING

SEPTIC APPLICATION

18-673
REQUIRED FOR ALL
INQUIRIES

N

Scale: 1 = 1 metre

SEPTIC PERMIT NO.

Batch # 12346
Entry #: 3

RECEIPT CONFIRMATION

Page: 1

Rideau Valley C. A.

P.O. Box 599
Manotick, Ontario K4M 1A5
Canada
Phone: (613) 692-3571
Fax: (613) 692-0831

DOCUMENT NO.: PY000032722

DATE: 12/13/2018

AMOUNT RECEIVED

936.00 CAD

FROM J.R. Brisson Equipment Ltd



SIGNATURE

PAID BY: CHECK

CHECK/RECEIPT NO.: 000012346-00003

DATE RECEIVED: 12/13/2018


DESCRIPTION		AMOUNT
4300-20-20600	New 495 Jinkinson Rd (GOU) Septic 18-673: J.R. BRISSON EQUIP	936.00
SUB-TOTAL:		936.00
TOTAL:		936.00

43

Application for a Permit to Construct or Demolish

This form is authorized under subsection 8(1.1) of the Building Code Act, 1992


For use by Principal Authority			
Application number:	RVCA RECEIVED		Permit number (if different):
Date received:	DEC 13 2018		Roll number:
Refer to: _____		Initials: _____ Digital: _____	
OTTAWA SEPTIC SYSTEM OFFICE			
Application submitted to: _____ (Name of municipality, upper-tier municipality, board of health or conservation authority)			
A. Project information			
Building number, street name 495 Jinkinson Road		Unit number	Lot/con. Part Lot 17, Con 11
Municipality Ottawa, Geographic Township of Goulbourn	Postal code K2S 1B9	Plan number/other description	
Project value est. \$		Area of work (m ²) ~400 sq.m	
B. Purpose of application			
<input checked="" type="radio"/> New construction		<input type="radio"/> Addition to an existing building	
<input type="radio"/> Alteration/repair		<input type="radio"/> Other	
Proposed use of building Heavy Construction Equipment Dealership		Current use of building N/A	
Description of proposed work Proposed development of a Class 4 sewage system with a fully-raised two cell Filter Bed. Note: Sewage System Design does not service floor drains in service maintenance area as flow from floor drains will be directed to oil/grit separator that discharges to existing roadside ditch.			
C. Applicant			
Applicant is:		Owner or <input checked="" type="radio"/> Authorized agent of owner	
Last name Leblanc	First name Patrick	Corporation or partnership McIntosh Perry Consulting Engineers Ltd.	
Street address 115 Walgreen Road, R.R. #3		Unit number	Lot/con.
Municipality Carp	Postal code K0A 1L0	Province Ontario	E-mail p.leblanc@mcintoshperry.com
Telephone number (613) 714-4586	Fax (613) 836-3742	Cell number (613) 229-5863	
D. Owner (if different from applicant)			
Last name Lalonde		First name Steve	Corporation or partnership J.R.Brisson Equipment Ltd.
Street address 121 St-Pierre Road		Unit number	Lot/con.
Municipality Vars	Postal code K0A 3H0	Province Ontario	E-mail slalonde@jrbrisson.com
Telephone number (613) 443-3300 ext 4518	Fax ()	Cell number (343) 540-9055	

E. Builder (optional)			
Last name	First name	Corporation or partnership (if applicable)	
Street address		Unit number	Lot/con.
Municipality	Postal code	Province	E-mail
Telephone number ()	Fax ()	Cell number ()	
F. Tarion Warranty Corporation (Ontario New Home Warranty Program):			
i. Is proposed construction for a new home as defined in the <i>Ontario New Home Warranties Plan Act</i> ? If no, go to section G.		Yes	No <input checked="" type="checkbox"/>
ii. Is registration required under the <i>Ontario New Home Warranties Plan Act</i> ?		Yes	No <input checked="" type="checkbox"/>
iii. If yes to (ii) provide registration number(s): _____			
G. Required Schedules			
i) Attach Schedule 1 for each individual who reviews and takes responsibility for design activities.			
ii) Attach Schedule 2 where application is to construct on-site, install or repair a sewage system.			
H. Completeness and compliance with applicable law			
i) This application meets all the requirements of clauses 1.3.1.3 (5) (a) to (d) of Division C of the <i>Building Code</i> (the application is made in the correct form and by the owner or authorized agent, all applicable fields have been completed on the application and required schedules, and all required schedules are submitted).		Yes <input checked="" type="checkbox"/>	No
Payment has been made of all fees that are required, under the applicable by-law, resolution or regulation made under clause 7(1)(c) of the <i>Building Code Act, 1992</i> , to be paid when the application is made.		Yes <input checked="" type="checkbox"/>	No
ii) This application is accompanied by the plans and specifications prescribed by the applicable by-law, resolution or regulation made under clause 7(1)(b) of the <i>Building Code Act, 1992</i> .		Yes <input checked="" type="checkbox"/>	No
iii) This application is accompanied by the information and documents prescribed by the applicable by-law, resolution or regulation made under clause 7(1)(b) of the <i>Building Code Act, 1992</i> which enable the chief building official to determine whether the proposed building, construction or demolition will contravene any applicable law.		Yes <input checked="" type="checkbox"/>	No
iv) The proposed building, construction or demolition will not contravene any applicable law.		Yes <input checked="" type="checkbox"/>	No
I. Declaration of applicant			
<p>I <u>Patrick Leblanc</u> declare that:</p> <p>(print name)</p> <p>1. The information contained in this application, attached schedules, attached plans and specifications, and other attached documentation is true to the best of my knowledge.</p> <p>2. If the owner is a corporation or partnership, I have the authority to bind the corporation or partnership.</p> <p>Date December 12, 2018 Signature of applicant </p>			

Personal information contained in this form and schedules is collected under the authority of subsection 8(1.1) of the *Building Code Act, 1992*, and will be used in the administration and enforcement of the *Building Code Act, 1992*. Questions about the collection of personal information may be addressed to: a) the Chief Building Official of the municipality or upper-tier municipality to which this application is being made, or, b) the inspector having the powers and duties of a chief building official in relation to sewage systems or plumbing for an upper-tier municipality, board of health or conservation authority to whom this application is made, or, c) Director, Building and Development Branch, Ministry of Municipal Affairs and Housing 777 Bay St., 2nd Floor. Toronto, M5G 2E5 (416) 585-6666.

Schedule 1: Designer Information


Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information			
Building number, street name 495 Jinkinson Road		Unit no.	Lot/con. Part Lot 17, Con 11
Municipality City of Ottawa, Geographic Township of Goulbourn	Postal code K2S 1B9	Plan number/ other description 2018	
B. Individual who reviews and takes responsibility for design activities			
Name Patrick Leblanc		Firm McIntosh Perry Consulting Engineers Ltd.	
Street address 115 Walgreen Road, R.R. #3		Unit no.	Lot/con.
Municipality Carp	Postal code K0A 1L0	Province Ontario	E-mail p.leblanc@mcintoshperry.com
Telephone number (613) 714-4586		Fax number (613) 836-3742	Cell number (613) 229-5863
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1. of Division C]			
House	HVAC – House	Building Structural	
Small Buildings	Building Services	Plumbing – House	
Large Buildings	Detection, Lighting and Power	Plumbing – All Buildings	
Complex Buildings	Fire Protection	<u>On-site Sewage Systems</u>	
Description of designer's work Proposed development of a Class 4 sewage system with a fully-raised two cell Filter Bed.			
D. Declaration of Designer			
I, <u>Patrick Leblanc</u> declare that (choose one as appropriate): (print name)			
<p>I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.</p> <p>Individual BCIN: _____</p> <p>Firm BCIN: _____</p>			
<p>I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code.</p> <p>Individual BCIN: _____</p> <p>Basis for exemption from registration: _____</p>			
<p>The design work is exempt from the registration and qualification requirements of the Building Code.</p> <p>Basis for exemption from registration and qualification: <u>P.Eng. (Licence #100141438)</u></p>			
I certify that:			
<p>1. The information contained in this schedule is true to the best of my knowledge.</p> <p>2. I have submitted this application with the knowledge and consent of the firm.</p>			
Date December 12, 2018		Signature of Designer 	

NOTE:

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) (c) of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
- Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of practice, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

Schedule 2: Sewage System Installer Information

A. Project Information			
Building number, street name 495 Jinkinson Road		Unit number	Lot/con. Part Lot 17, Con 11
Municipality Ottawa, Geographic Town- ship of Goulbourn	Postal code K2S 1B9	Plan number/other description	
B. Sewage system installer			
Is the installer of the sewage system engaged in the business of constructing on-site, installing, repairing, servicing, cleaning or emptying sewage systems, in accordance with Building Code Article 3.3.1.1, Division C?			
Yes (Continue to Section C)		No (Continue to Section E)	X Installer unknown at time of application (Continue to Section E)
C. Registered installer information (where answer to B is "Yes")			
Name		BCIN	
Street address		Unit number	Lot/con.
Municipality	Postal code	Province	E-mail
Telephone number ()	Fax ()	Cell number ()	
D. Qualified supervisor information (where answer to section B is "Yes")			
Name of qualified supervisor(s)		Building Code Identification Number (BCIN)	
E. Declaration of Applicant:			
<p>Patrick Leblanc</p> <p>I _____ declare that:</p> <p style="padding-left: 40px;">(print name)</p> <p>I am the applicant for the permit to construct the sewage system. If the installer is unknown at time of application, I shall submit a new Schedule 2 prior to construction when the installer is known;</p> <p><u>OR</u></p> <p>I am the holder of the permit to construct the sewage system, and am submitting a new Schedule 2, now that the installer is known.</p> <p>I certify that:</p> <ol style="list-style-type: none"> 1. The information contained in this schedule is true to the best of my knowledge. 2. If the owner is a corporation or partnership, I have the authority to bind the corporation or partnership. <p style="margin-top: 20px;">Date December 12, 2018 Signature of applicant </p>			



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DEC 13 2018

Schedule 4

Proposed Services

Complete Sections 1 thru 7

Do Not Complete
Permit No _____
Revision No _____
Date 18-6-73

REQUIRED FOR ALL INQUIRIES

1. Engineered

- ☐ Yes
☒ No

2. Water supply

- ☒ Proposed
☐ Existing

3. Type of work proposed

- ☒ New Installation
☐ Replacement
☐ Alteration

4. Type of Well

- ☐ Dug/bored/Sandpoint well
☒ Drilled well
☐ Municipal
☐ Other

5. Residential Sewage Design Flow Info.

Bedrooms

House (floor area) _____ m²

People

Total Fixture Units _____ (Schedule 8)

Residential Flow _____ L/day

6. Sewage Design Flow Other Occupancies

Design Flow 4,000 L/day

Detailed sewage flow calculations:

Total Office Space = ~375 sq.m / 9.3 sq.m = 40 employees
Parts Warehouse + Maintenance Service Shop = Max 13 employees
Min. Q = (75 L/employee) x (40+13 employees) = 3,975 L/day
Daily Design Flow (Q) = 4,000 L/day

☐ Class 4 – BMEC Area Bed (Schedule 11)

7. Type of System

- ☐ Treatment Unit _____
☐ Class 2 – Leaching Pit
☐ Class 3 – Cesspool
☐ Class 4 – Shallow Buried Trench

☐ Class 4 – Trench (Schedule 9)

- ☐ Fully raised
☐ Partially raised
☐ In-ground

☒ Class 4 – Filter Media (Schedule 10)

- ☒ Fully raised
☐ Partially raised
☐ In-ground

☐ Fully raised

☐ Partially raised

☐ In-ground

☐ Class 4 – “Type A” Dispersal (Schedule 13)

☐ Fully raised

☐ Partially raised

☐ In-ground

☐ Class 4 – “Type B” Dispersal (Schedule 14)

☐ Fully raised

☐ Partially raised

☐ In-ground

☐ Class 5 – Holding Tank (9000L min)

☐ Tank/Treatment Unit/Pump Chamber ONLY

☐ Effluent Filter/Risers ONLY



**Schedule 5
Sewage System Details**

Do Not Complete

Permit No. _____

Revision No. _____

Date _____

Type of System Class 4 Fully Raised Filter Bed System (Schedule 4)

Septic/Holding Tank Size: 12,000 (min) Litres

Make: MacGregor Concrete Products

Septic Tank Effluent Filter Make: Tuf-Tite EF-6

Model: MAC-135000-1P

Treatment Unit – Make & Model _____

Number of Units: 1

Other: _____

Refer to Typical Drawing # B

Pump(s) required yes

Mantle Information:

Pump Rate min. 494 L/dose

Native or imported = 15m in S-W direction(s)

Note: Alarm required for all
pumping systems

Slope subgrade 1 % slope

S-W direction(s)

Site to be Scarified (If clay) YES / (NO)

Clay Seal Required (If bedrock) YES / (NO)

☐ **Trench**

Distribution Pipe Length _____ m

Loading Area _____ m²

Type of Chamber _____

Length of Chamber _____ m

☐ **Shallow Buried Trench**

Pipe Length _____ m

☐ **BMEC Area Bed**

☐ **Type A**

☐ **Type B**

Stone _____ m²

Sand _____ m²

Pipe _____ m

Linear Loading _____ L/m²

☒ **Filter Media Bed**

Stone 2 x 40 sq.m = 80 sq.m m²

Extended Base 80 sq.m m²

Pipe 42 m per cell = total 84 m m

Weight of Filter Media 120,000 Kg

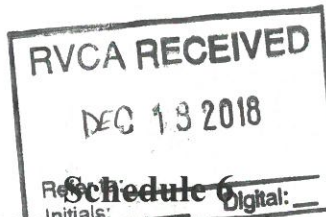
Loading Area min 400 sq.m m²

☐ **Tank/Treatment Unit/Pump Chamber Replacement ONLY**

☐ **Effluent Filter & Riser ONLY**

Construction Notes:

All tanks and connections shall be sealed to prevent groundwater infiltration. Additionally, floatation protection shall be designed and provided by installer as part of installation for all tanks.



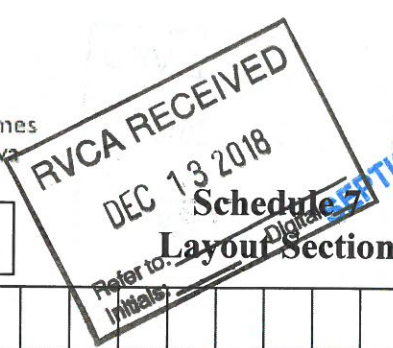
Do Not Complete
 Permit No _____
 Revision No _____
 Date 18-6-73

Soil and Water Table Information
 (Minimum depth of test pit: 2 metres)

REQUIRED FOR ALL INQUIRIES

Name of Applicant/Agent: <u>Patrick Leblanc</u> Date: <u>Oct. 18, 2018</u> Time: <u>11:00 AM</u> Applicant/Agent Signature: <u>[Signature]</u>				Inspector: _____ Date: _____ Time: _____ Inspector Signature: _____																																																									
TP1 <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">EG (136.10)</th> <th style="width: 15%;">Soil Description</th> <th style="width: 5%;">T</th> </tr> </thead> <tbody> <tr> <td style="border-bottom: 1px solid black;">0.10m</td> <td style="border-bottom: 1px solid black;">Topsoil</td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td style="border-bottom: 1px solid black;">.5m</td> <td style="border-bottom: 1px solid black;">Med. Brown Sand</td> <td style="border-bottom: 1px solid black;">8</td> </tr> <tr> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;">EOH (inferred BR)</td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td style="border-bottom: 1px solid black;">1.0 m</td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td style="border-bottom: 1px solid black;">1.5m</td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td style="border-bottom: 1px solid black;">2.0 m</td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> </tbody> </table> <p style="margin-top: 10px;">Note: No GWT encountered on Oct. 18, 2018.</p> <p style="margin-top: 10px;">HGWT = ~135.70 based on observations during preliminary site visit by MP on April 30, 2018</p>				EG (136.10)	Soil Description	T	0.10m	Topsoil		.5m	Med. Brown Sand	8		EOH (inferred BR)		1.0 m						1.5m						2.0 m			<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">EG (.....)</th> <th style="width: 15%;">Soil Description</th> <th style="width: 5%;">T</th> </tr> </thead> <tbody> <tr> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> </tbody> </table> <div style="border: 1px solid black; padding: 5px; margin: 10px; transform: rotate(-2deg);"> Test pits not available for inspection. Engineer assumes all liability for soil and HGWT info/elev's. </div>				EG (.....)	Soil Description	T																								
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LEGEND
 BR = Bedrock HGWT = High ground water table EG = Existing grade
 GWT = Ground water table M = metres T = percolation rate



18-673
SEPTIC APPLICATION
REQUIRED FOR ALL
INQUIRIES

Do Not Complete
 Permit No _____
 Revision No _____
 Date _____

Scale: 1Block = _____

N

See Attached Drawing

○Dug Well ●Drilled Well ▲Neighbouring Homes ◇Benchmark ---Tile Drainage —Property Line

Elevations (metric only)
 B.M. _____ m
 B.M Description _____

 Exact Location _____

Min. of 5 elevations in proposed system area
 (in X pattern)
 X₁ _____ X₂ _____
 X₃ _____ X₄ _____
 X₅ _____ X₆ (toe) _____
 X₇ _____ X₈ _____



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DEC 13 2018

Refer to:
Initials: Schedule 8 Original:

Do Not Complete

Permit No.

Revision No.

Date

18-673

SEPTIC APPLICATION

Fixture unit count

REQUIRED FOR ALL
INQUIRIES

Fixtures	# Existing	+ # Proposed	X	unit count	=	Fixture Count
Bathroom						
Bathroom group (toilet, sink and tub or shower) with flush tank		+	X	6	=	
Bathtub with/without overhead shower		+	X	1.5	=	
Shower stall		+	X	1.5	=	
Wash basin (1½ inch trap)		+	X	1.5	=	
Watercloset (toilet)	N/A (See Schedule 4)					
Bidet						
Kitchen						
Dishwasher						
Sink with/without garbage grinder(s), domestic and other small type single, double or 2 single with a common trap		+	X	1.5	=	
Other						
Domestic washing machine		+	X	1.5	=	
Combination sink and laundry tray single or double (Installed on 1½ trap)		+	X	1.5	=	

***Total:**

***Insert the TOTAL in section 5 of Schedule 4 (O.Reg 151/13 Table 7.4.9.3)**

1. Sump pumps and floor drains are not to be connected to the sewage system. Connection of such fixtures to a sewage system may lead to a hydraulic failure of the said system. The above mentioned fixtures should be discharged separately to an approved Class 2 (leaching pit) sewage system.
2. Where laundry waste is not more than 20% of the total daily design sanitary sewage flow, it may discharge to a sewage system (Part 8, OBC, 8.1.3.1(2)).

Agent/Owner signature

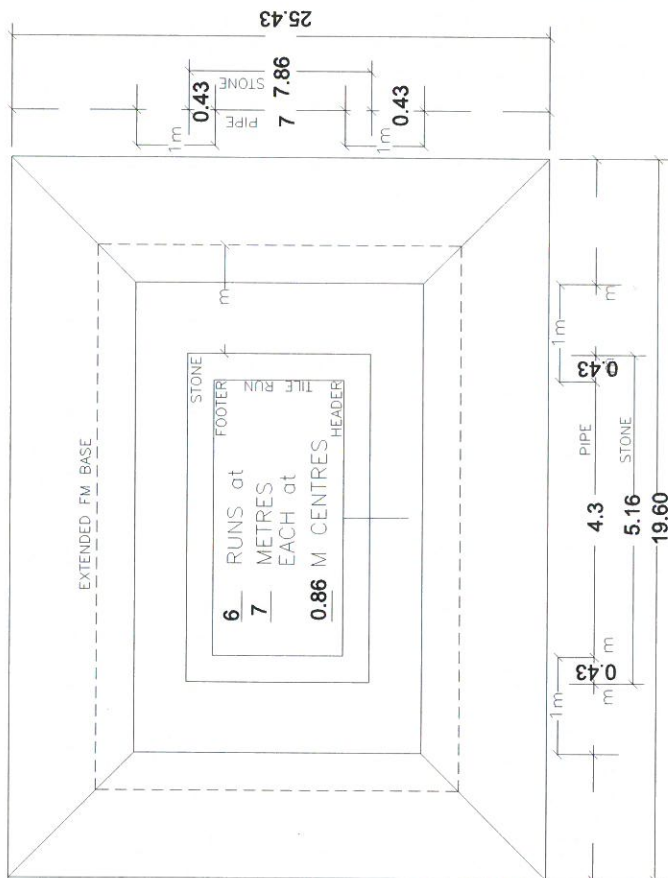
Dec. 12, 2018

Date

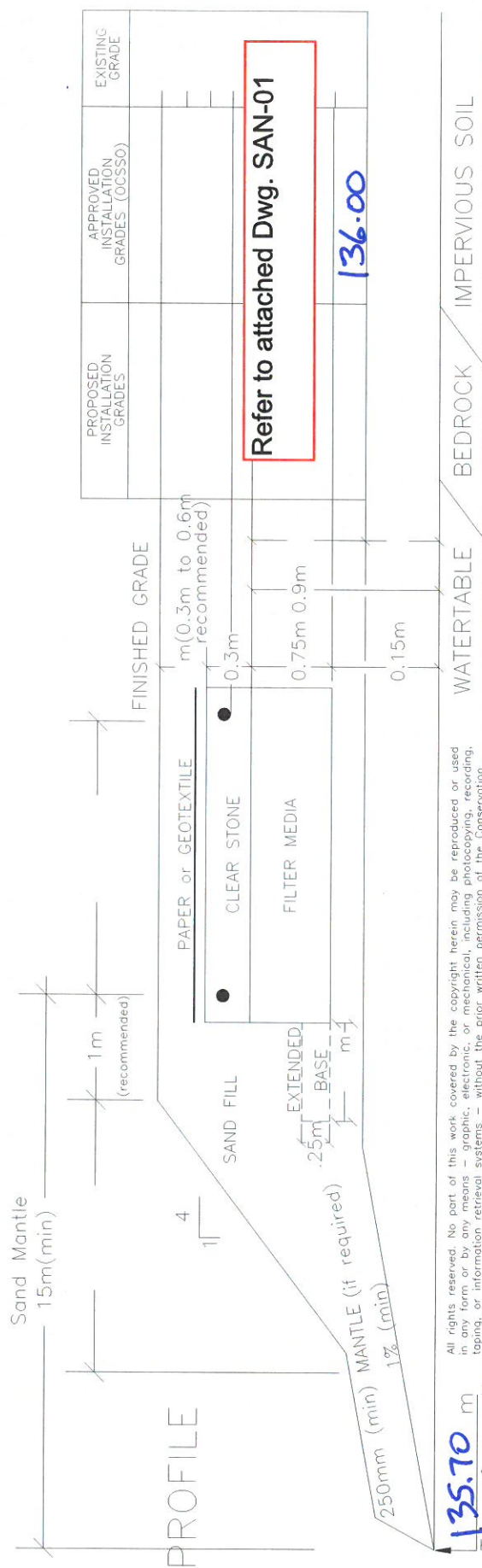


mantle required:	Yes	<input checked="" type="checkbox"/>
	No	<input type="checkbox"/>
carification required:	Yes	<input type="checkbox"/>
	No	<input checked="" type="checkbox"/>
clay seal required:	Yes	<input type="checkbox"/>
	No	<input checked="" type="checkbox"/>

SAND LAYER = $\frac{400}{\text{min}}$ m²



NOT TO SCALE



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Toe of mantle

Page 11

OSSO version June 2014



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Ottawa Software Bureau des systèmes
Systeme Officielles d'Ottawa
Digital:

SCHEDULE 10 – TYPICAL DRAWING E
BURIED OR RAISED TILE BED – FILTER MEDIA METHOD

SEPTIC APPLICATION

MANAGER, O.S.S. REC-18-DATE

DATE 18-6-73

FOR ALL
INQUIRIES

Note that stone area shown represents 1 of 2 identical filter beds.

PROFILE

SEPTIC APPLICATION

18 073
REQUIRED FOR ALL INQUIRIES

RVCA RECEIVED
DEC 13 2018

Refer to: _____
Initials: _____ Digital: _____

DESIGN NOTES

DESIGN CRITERIA
Q = 4,000L/DAY
TANK SIZE = 3Q = 12,000L MIN.
NATIVE T-TIME = 8min/cm
IMPORTED T-TIME = 8min/cm
MIN. LOADING AREA = 400m²
IMPORTED 15m SAND MANTLE
MAX 4:1 SLOPES TO EXISTING

LEACHING BED NOTES
TOP OF BED
TOP OF STONE
HEADER INV.
BOTTOM OF STONE
SUBGRADE AT HEADER
SUBGRADE AT END OF MANTLE

= 137.50m
= 137.20m
= 137.05m
= 136.90m
= 136.00m
= 135.70m

No.	Revision/Issue	Date
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McINTOSH PERRY

115 Walgreen Road, RR3, Carp, ON K0A 1L0
Tel: 613-836-2184 Fax: 613-836-3742
www.mcintoshperry.com

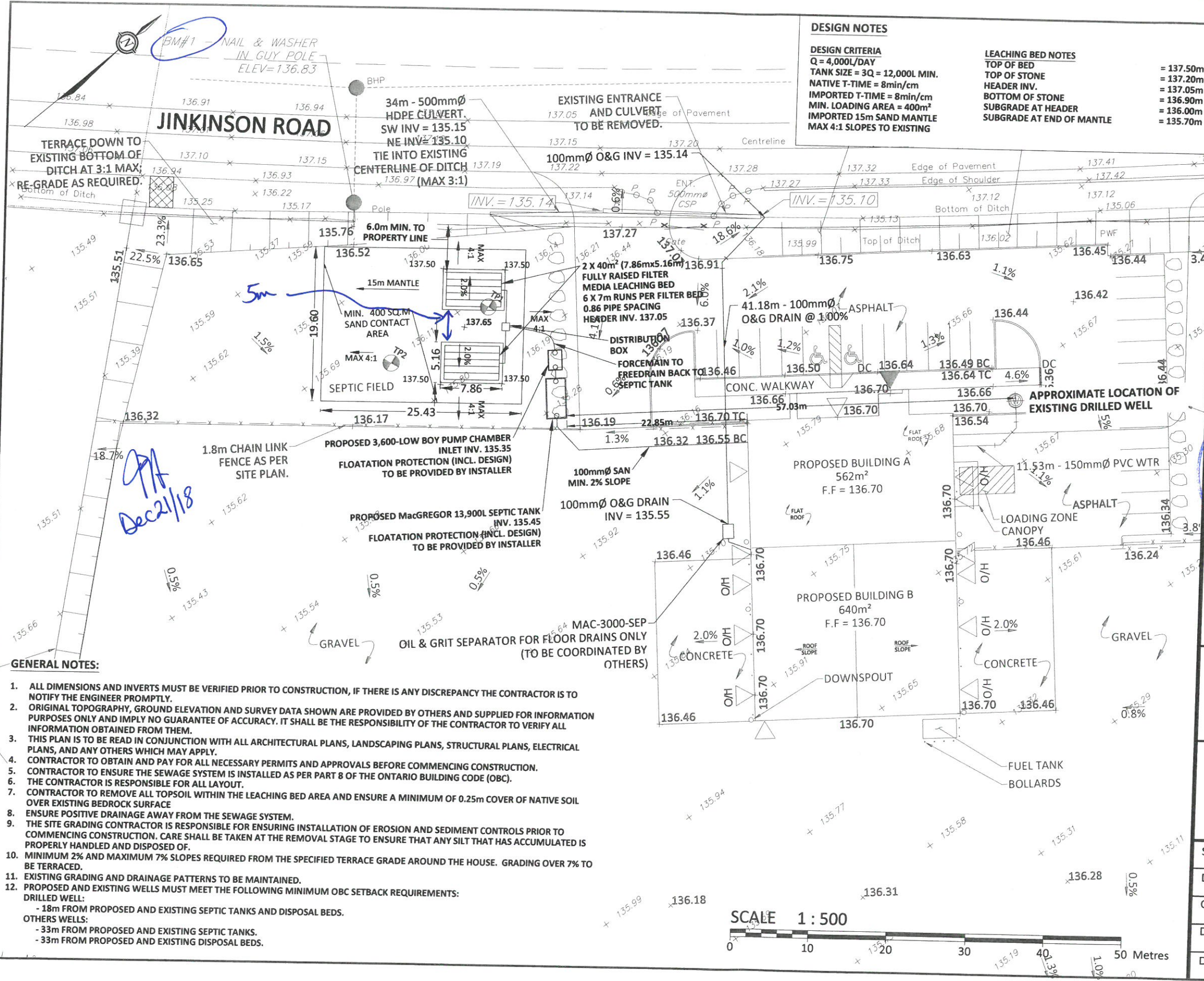


Client:
J.R. BRISSON EQUIPMENT LTD.
121 ST. PIERRE, VARS, ON K0A 3H0

Project:
CASE EQUIPMENT DEALERSHIP
495 JINKINSON ROAD, OTTAWA, ON

Drawing Title:
SEWAGE SYSTEM DESIGN

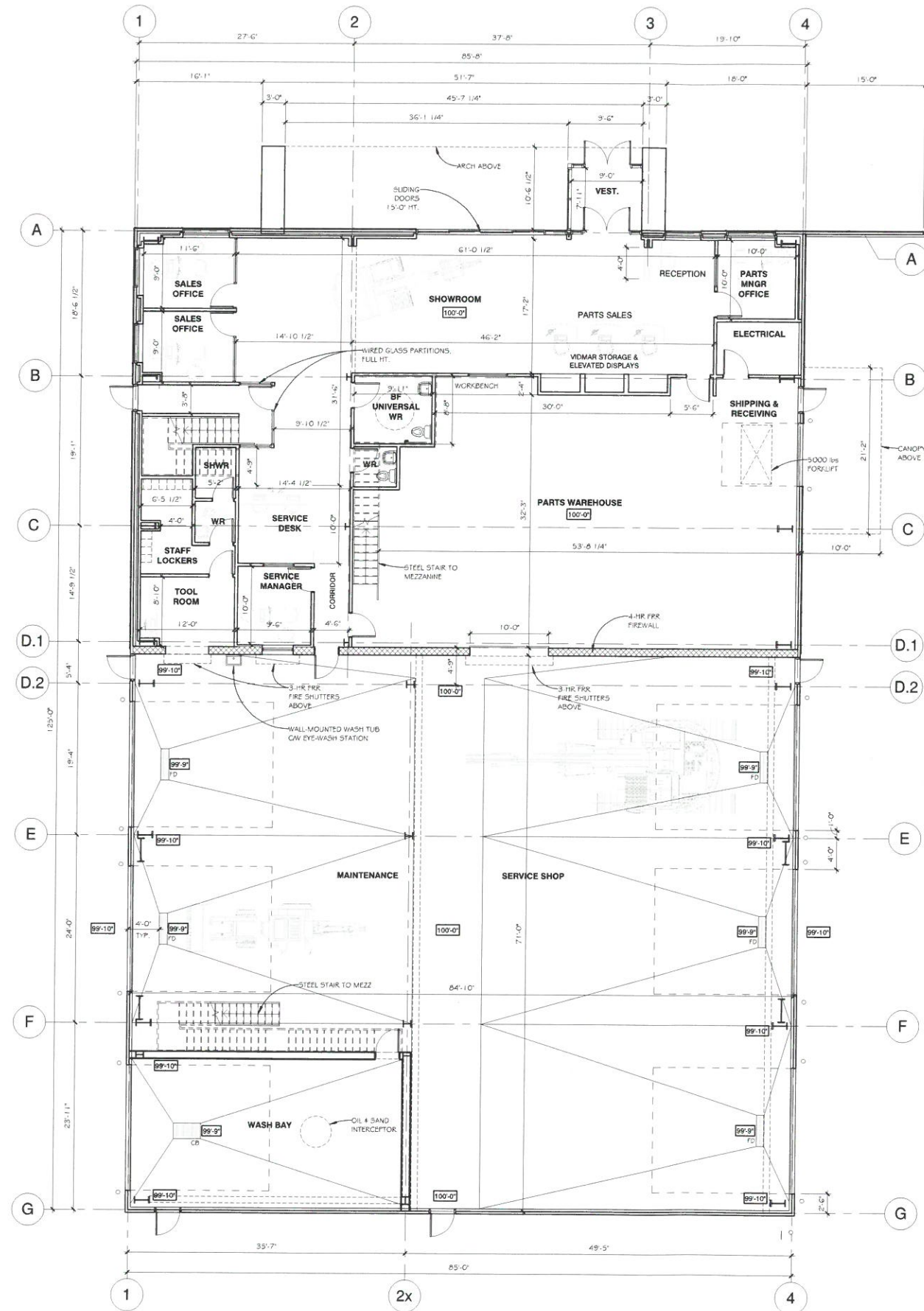
Scale: 1:500	Project Number: CP-17-0613
Drawn by: B.A.	Drawing Number: SAN-01
Checked By: P.L.	
Designed By: P.L.	
Date: DEC/11/2018	



GENERAL NOTES:

- ALL DIMENSIONS AND INVERTS MUST BE VERIFIED PRIOR TO CONSTRUCTION, IF THERE IS ANY DISCREPANCY THE CONTRACTOR IS TO NOTIFY THE ENGINEER PROMPTLY.
- ORIGINAL TOPOGRAPHY, GROUND ELEVATION AND SURVEY DATA SHOWN ARE PROVIDED BY OTHERS AND SUPPLIED FOR INFORMATION PURPOSES ONLY AND IMPLY NO GUARANTEE OF ACCURACY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL INFORMATION OBTAINED FROM THEM.
- THIS PLAN IS TO BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL PLANS, LANDSCAPING PLANS, STRUCTURAL PLANS, ELECTRICAL PLANS, AND ANY OTHERS WHICH MAY APPLY.
- CONTRACTOR TO OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS BEFORE COMMENCING CONSTRUCTION.
- CONTRACTOR TO ENSURE THE SEWAGE SYSTEM IS INSTALLED AS PER PART 8 OF THE ONTARIO BUILDING CODE (OBC).
- THE CONTRACTOR IS RESPONSIBLE FOR ALL LAYOUT.
- CONTRACTOR TO REMOVE ALL TOPSOIL WITHIN THE LEACHING BED AREA AND ENSURE A MINIMUM OF 0.25m COVER OF NATIVE SOIL OVER EXISTING BEDROCK SURFACE.
- ENSURE POSITIVE DRAINAGE AWAY FROM THE SEWAGE SYSTEM.
- THE SITE GRADING CONTRACTOR IS RESPONSIBLE FOR ENSURING INSTALLATION OF EROSION AND SEDIMENT CONTROLS PRIOR TO COMMENCING CONSTRUCTION. CARE SHALL BE TAKEN AT THE REMOVAL STAGE TO ENSURE THAT ANY SILT THAT HAS ACCUMULATED IS PROPERLY HANDLED AND DISPOSED OF.
- MINIMUM 2% AND MAXIMUM 7% SLOPES REQUIRED FROM THE SPECIFIED TERRACE GRADE AROUND THE HOUSE. GRADING OVER 7% TO BE TERRACED.
- EXISTING GRADING AND DRAINAGE PATTERNS TO BE MAINTAINED.
- PROPOSED AND EXISTING WELLS MUST MEET THE FOLLOWING MINIMUM OBC SETBACK REQUIREMENTS:
DRILLED WELL:
- 18m FROM PROPOSED AND EXISTING SEPTIC TANKS AND DISPOSAL BEDS.
OTHERS WELLS:
- 33m FROM PROPOSED AND EXISTING SEPTIC TANKS.
- 33m FROM PROPOSED AND EXISTING DISPOSAL BEDS.

REVISION: 1.18 Project: Proposed 1007 Jinkinson Road, Ottawa, ON. 1.18, 1.19, 1.20, 1.21, 1.22, 1.23, 1.24, 1.25, 1.26, 1.27, 1.28, 1.29, 1.30, 1.31, 1.32, 1.33, 1.34, 1.35, 1.36, 1.37, 1.38, 1.39, 1.40, 1.41, 1.42, 1.43, 1.44, 1.45, 1.46, 1.47, 1.48, 1.49, 1.50, 1.51, 1.52, 1.53, 1.54, 1.55, 1.56, 1.57, 1.58, 1.59, 1.60, 1.61, 1.62, 1.63, 1.64, 1.65, 1.66, 1.67, 1.68, 1.69, 1.70, 1.71, 1.72, 1.73, 1.74, 1.75, 1.76, 1.77, 1.78, 1.79, 1.80, 1.81, 1.82, 1.83, 1.84, 1.85, 1.86, 1.87, 1.88, 1.89, 1.90, 1.91, 1.92, 1.93, 1.94, 1.95, 1.96, 1.97, 1.98, 1.99, 2.00, 2.01, 2.02, 2.03, 2.04, 2.05, 2.06, 2.07, 2.08, 2.09, 2.10, 2.11, 2.12, 2.13, 2.14, 2.15, 2.16, 2.17, 2.18, 2.19, 2.20, 2.21, 2.22, 2.23, 2.24, 2.25, 2.26, 2.27, 2.28, 2.29, 2.30, 2.31, 2.32, 2.33, 2.34, 2.35, 2.36, 2.37, 2.38, 2.39, 2.40, 2.41, 2.42, 2.43, 2.44, 2.45, 2.46, 2.47, 2.48, 2.49, 2.50, 2.51, 2.52, 2.53, 2.54, 2.55, 2.56, 2.57, 2.58, 2.59, 2.60, 2.61, 2.62, 2.63, 2.64, 2.65, 2.66, 2.67, 2.68, 2.69, 2.70, 2.71, 2.72, 2.73, 2.74, 2.75, 2.76, 2.77, 2.78, 2.79, 2.80, 2.81, 2.82, 2.83, 2.84, 2.85, 2.86, 2.87, 2.88, 2.89, 2.90, 2.91, 2.92, 2.93, 2.94, 2.95, 2.96, 2.97, 2.98, 2.99, 3.00, 3.01, 3.02, 3.03, 3.04, 3.05, 3.06, 3.07, 3.08, 3.09, 3.10, 3.11, 3.12, 3.13, 3.14, 3.15, 3.16, 3.17, 3.18, 3.19, 3.20, 3.21, 3.22, 3.23, 3.24, 3.25, 3.26, 3.27, 3.28, 3.29, 3.30, 3.31, 3.32, 3.33, 3.34, 3.35, 3.36, 3.37, 3.38, 3.39, 3.40, 3.41, 3.42, 3.43, 3.44, 3.45, 3.46, 3.47, 3.48, 3.49, 3.50, 3.51, 3.52, 3.53, 3.54, 3.55, 3.56, 3.57, 3.58, 3.59, 3.60, 3.61, 3.62, 3.63, 3.64, 3.65, 3.66, 3.67, 3.68, 3.69, 3.70, 3.71, 3.72, 3.73, 3.74, 3.75, 3.76, 3.77, 3.78, 3.79, 3.80, 3.81, 3.82, 3.83, 3.84, 3.85, 3.86, 3.87, 3.88, 3.89, 3.90, 3.91, 3.92, 3.93, 3.94, 3.95, 3.96, 3.97, 3.98, 3.99, 4.00, 4.01, 4.02, 4.03, 4.04, 4.05, 4.06, 4.07, 4.08, 4.09, 4.10, 4.11, 4.12, 4.13, 4.14, 4.15, 4.16, 4.17, 4.18, 4.19, 4.20, 4.21, 4.22, 4.23, 4.24, 4.25, 4.26, 4.27, 4.28, 4.29, 4.30, 4.31, 4.32, 4.33, 4.34, 4.35, 4.36, 4.37, 4.38, 4.39, 4.40, 4.41, 4.42, 4.43, 4.44, 4.45, 4.46, 4.47, 4.48, 4.49, 4.50, 4.51, 4.52, 4.53, 4.54, 4.55, 4.56, 4.57, 4.58, 4.59, 4.60, 4.61, 4.62, 4.63, 4.64, 4.65, 4.66, 4.67, 4.68, 4.69, 4.70, 4.71, 4.72, 4.73, 4.74, 4.75, 4.76, 4.77, 4.78, 4.79, 4.80, 4.81, 4.82, 4.83, 4.84, 4.85, 4.86, 4.87, 4.88, 4.89, 4.90, 4.91, 4.92, 4.93, 4.94, 4.95, 4.96, 4.97, 4.98, 4.99, 5.00, 5.01, 5.02, 5.03, 5.04, 5.05, 5.06, 5.07, 5.08, 5.09, 5.10, 5.11, 5.12, 5.13, 5.14, 5.15, 5.16, 5.17, 5.18, 5.19, 5.20, 5.21, 5.22, 5.23, 5.24, 5.25, 5.26, 5.27, 5.28, 5.29, 5.30, 5.31, 5.32, 5.33, 5.34, 5.35, 5.36, 5.37, 5.38, 5.39, 5.40, 5.41, 5.42, 5.43, 5.44, 5.45, 5.46, 5.47, 5.48, 5.49, 5.50, 5.51, 5.52, 5.53, 5.54, 5.55, 5.56, 5.57, 5.58, 5.59, 5.60, 5.61, 5.62, 5.63, 5.64, 5.65, 5.66, 5.67, 5.68, 5.69, 5.70, 5.71, 5.72, 5.73, 5.74, 5.75, 5.76, 5.77, 5.78, 5.79, 5.80, 5.81, 5.82, 5.83, 5.84, 5.85, 5.86, 5.87, 5.88, 5.89, 5.90, 5.91, 5.92, 5.93, 5.94, 5.95, 5.96, 5.97, 5.98, 5.99, 6.00, 6.01, 6.02, 6.03, 6.04, 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16.61, 16.62, 16.63, 16.64, 16.65, 16.66, 16.67, 16.68, 16.69, 16.70, 16.71, 16.72, 16.73, 16.74, 16.75, 16.76, 16.77, 16.78, 16.79, 16.80, 16.81, 16.82, 16.83, 16.84, 16.85, 16.86, 16.87, 16.88, 16.89, 16.90, 16.91, 16.92, 16.93, 16.94, 16.95, 16.96, 16.97, 16.98, 16.99, 17.00, 17.01, 17.02, 17.03, 17.04, 17.05, 17.06, 17.07, 17.08, 17.09, 17.10, 17.11, 17.12, 17.13, 17.14, 17.15, 17.16, 17.17, 17.18,



1 GROUND FLOOR PLAN
A101 SCALE 1/8" = 1'-0"

NOTES:
Contractor shall check and verify all dimensions on site and report any discrepancies to the Architect before proceeding.

RVCA RECEIVED
DEC 13 2018
Refer to: _____
Initials: _____ Digital: _____

SEPTIC APPLICATION
18-673
REQUIRED FOR ALL
INQUIRIES

ISSUED FOR CO-ORDINATION	21 AUG 2018
no. revision	date



383 Parkdale Avenue, Suite 201
Ottawa Ontario Canada K1Y 4R4
KWC ARCHITECTS INC.
PHONE (613) 238-2117
FAX (613) 238-6595
E MAIL kwc@kwc-arch.com

1
A1

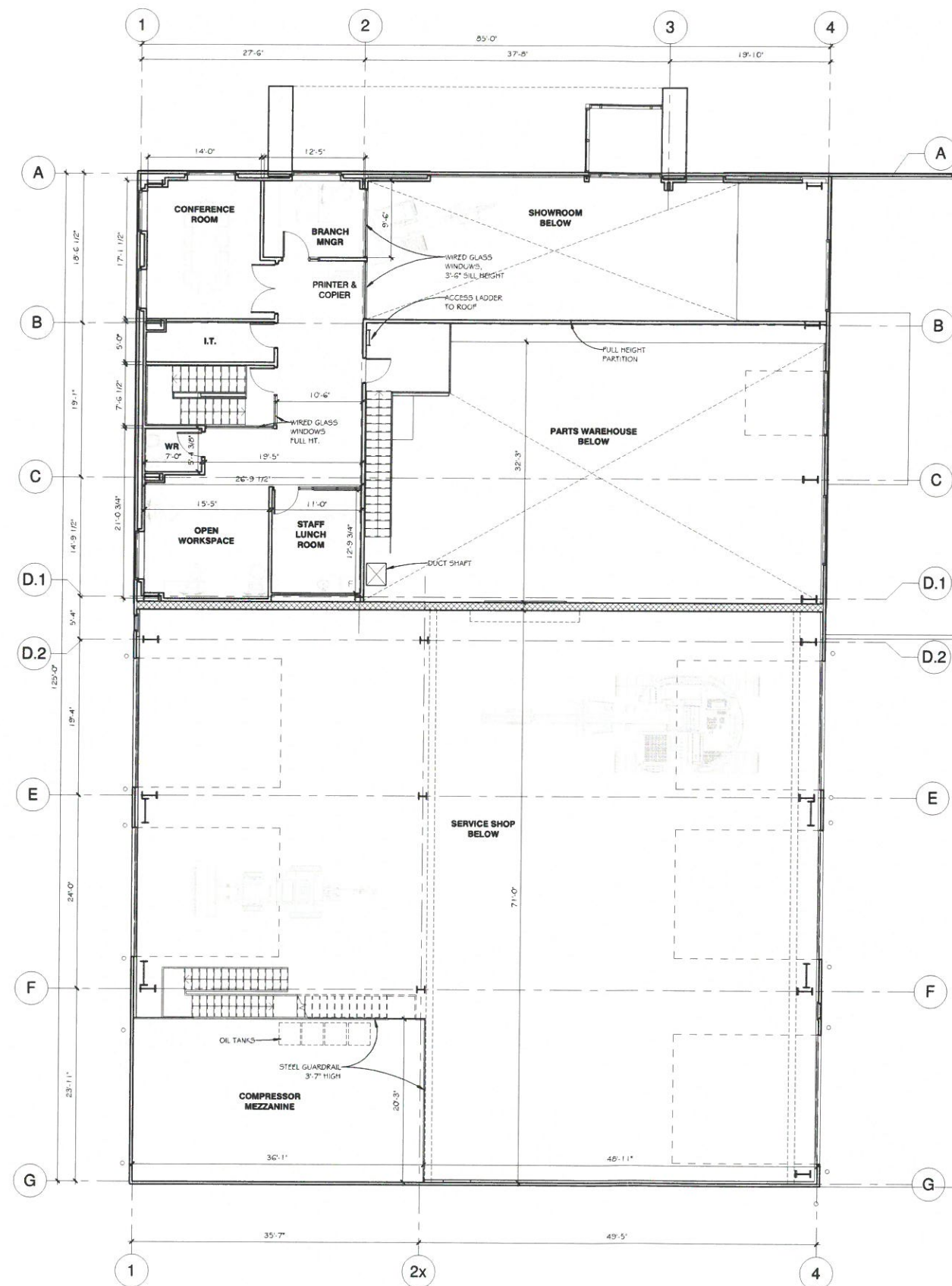
J.R. Brisson Equipment Ltd.
CASE EQUIPMENT
DEALERSHIP

495 JINKINSON RD.
STITTVILLE, ON

DESIGNED BY	KWC	APPROVED BY	
CHECKED BY	IC	REVIEWED BY	1829
DATE	21 AUGUST 2018	DATE	CS notes

GROUND FLOOR PLAN

plot scale 1:1



1 SECOND FLOOR PLAN
A102 SCALE 1/8" = 1'-0"

NOTES:

Contractor shall check and verify all dimensions on site and report any discrepancies to the Architect before proceeding.



SEPTIC APPLICATION

18-673

REQUIRED FOR ALL
INQUIRIES

no.	revision	date
1	ISSUED FOR CO-ORDINATION	21 AUG 2018



architect

383 Parkdale Avenue, Suite 201
Ottawa Ontario Canada K1Y 4R4
KWC ARCHITECTS INC.
PHONE (613) 238-2117
FAX (613) 238-6595
E MAIL kwc@kwc-arch.com

sheet no. 1
sheet no. A1

client
J.R. Brisson Equipment Ltd.
CASE EQUIPMENT
DEALERSHIP

495 JINKINSON RD.
STITTVILLE, ON

designed by	KWC	approved by	
checked by	IC	approved by	
date	21 AUGUST 2018	date	21 AUGUST 2018
drawing / details		code	CS notes

MEZZANINE PLAN

A102

****Commercial****



Ottawa Septic System Office Bureau des systèmes septiques d'Ottawa

SEPTIC APPLICATION

18-673

REQUIRED FOR INQUIRIES

Permit
Part 8 – Sewage System
Ontario Building Code

Do Not Complete
Permit No _____
Revision No _____
Date _____
Related Application _____

A copy of this permit must be posted on the property at all time during construction. OBC, Division C — Part 1, Section 1.3.2.1
This permit verifies that the on-site sewage system was reviewed and approved for construction under the Ontario Building Code and O.Reg. 323/12 as amended by O.Reg. 151/13.

Inspected & Recommended by: J. Hutton Owner: J.R. Brisson Equipment Ltd.

Inspection Date & Time: _____ Weather: _____

Civic Address: 495 Tinkinson Rd. Legal: _____

number of bedrooms: _____ fixture units: _____

finished floor area: _____ Q: 4000 L/day

septic/holding tank/pretreatment tank 12000 L (min) weigh bills for filter media ☒ yes ☐ no

effluent filter yes grain size analysis required ☒ yes ☐ no

pump rate as per Engineer L/15 min site to be scarified ☐ yes ☒ no

treatment unit _____ clay seal inspection ☐ yes ☒ no

number of units _____ mantle required ☒ yes ☐ no

sub-grade inspection ☐ yes ☒ no

ELEVATION ☐ In Ground ☐ Partially Raised ☒ Fully Raised

TYPE OF SYSTEM

- ☐ Trench
☐ Pipe and Stone or ☐ Chambers

type of chamber _____

loading area _____ m²

total trench length _____ m

trench configuration _____

☐ **Dispersal Bed**

- ☐ BMEC ☐ Type A ☐ Type B

stone _____ m²

sand _____ m²

pipe _____

linear loading _____ L/m²

☐ **Shallow Buried Trench**

pipe length _____ m

orifice spacing _____ m

☒ **Filter Media Bed**

stone 81 m²

extended base _____ m²

pipe 2x (6 runs of 7m; 0.86m g/c)

weight of filter media 120000 kg

loading area minimum 400 m²

☐ **Class 5 Holding Tank**

☐ **Septic Tank Only**

Manager, Septic System Approvals: [Signature] Permit Date: DECEMBER 21, 2018

Comments: _____

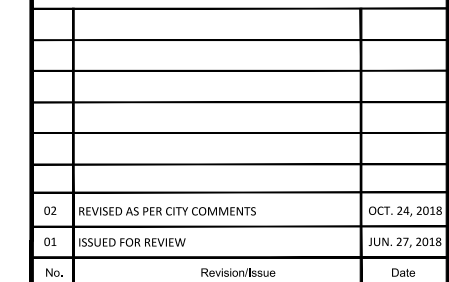
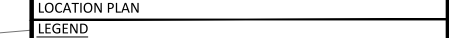
- ☐ maintenance/pumping required ☐ ESA permit # required ☐ engineer to verify
☐ Class 5 Holding Tank approval only valid for three years from date of issue ☐ subgrade ☐ squirt height _____

Manager, Septic System Approvals: _____ Revision Date: _____

Comments: _____

NOTE: For further details, refer to corresponding application.

APPENDIX D:
PRE-DEVELOPMENT DRAINAGE PLAN



Check and verify all dimensions before proceeding with the work	Do not scale drawings
---	-----------------------

115 Walgreen Road, RR3, Carp, ON K0A 1L0
Tel: 613-836-2184 Fax: 613-836-3742
www.mcintoshperry.com

Client:
J.R. BRISSON EQUIPMENT LTD.
121 ST. PIERRE, VARS, ON K0A 3H0

OTTAWA ONTARIO

Scale:	N.T.S.	Project Number:
--------	--------	-----------------

CP-17-0613

Stamm nr.	S.V.L.	Cl. 17 0015

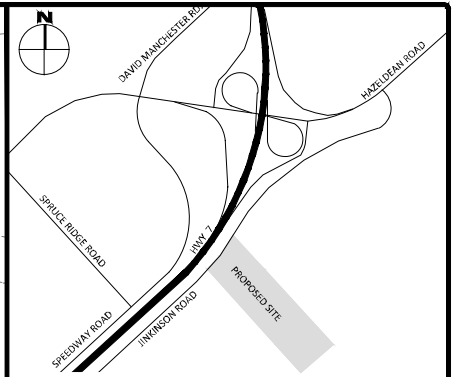
Checked By:	R.P.K.	Drawing Number:
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FOR REVIEW ONLY
NOT FOR CONSTRUCTION

PRE

APPENDIX E:
POST-DEVELOPMENT DRAINAGE PLAN

FILE NAME: J:\02 Project - Drainage\2017 Jobs\CP1600-17-0613 - J.R. Brisson - Site Plan Control - 495 Jinkinson Road\CP1600-17-0613 - Presentation.dwg
LAST SAVED: Monday, February 04, 2019 1:51:56 PM
LAST PLOTTED: Monday, February 04, 2019 1:51:56 PM

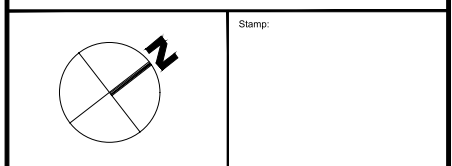


LEGEND		
AREA	B1	2.10 ha
AREA SIZE (HECTARES)		
5-YR RUNOFF COEFFICIENT	0.20	
100-YR RUNOFF COEFFICIENT	0.25	

No.	Revision/Issue	Date
03	REVISED AS PER CITY COMMENTS	FEB. 04, 2019
02	REVISED AS PER CITY COMMENTS	OCT. 24, 2018
01	ISSUED FOR REVIEW	JUN. 27, 2018

Check and verify all dimensions before proceeding with the work. Do not scale drawings.

McINTOSH PERRY
115 Walgreen Road, RR3, Carp, ON K0A 1L0
Tel: 613-836-2184 Fax: 613-836-3742
www.mcintoshperry.com



Client:
J.R. BRISSON EQUIPMENT LTD.
121 ST. PIERRE, VARS, ON K0A 3H0

Project:
**495 JINKINSON ROAD
CASE EQUIPMENT DEALERSHIP**

OTTAWA ONTARIO

Drawing Title:
POST-DEVELOPMENT DRAINAGE PLAN

Scale:	N.T.S.	Project Number:	CP-17-0613
Drawn by:	S.V.L.		
Checked by:	R.P.K.	Drawing Number:	
Designed by:	S.V.L.	SHEET 2 of 2	POST

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

APPENDIX F:
STORMWATER MANAGEMENT CALCULATIONS

McINTOSH PERRY

CP-17-0613 - 495 JINKINSON ROAD - RUNOFF CALCULATIONS

1 of 5

Pre-Development Runoff Coefficient

Drainage Area	Area (ha)	Impervious Area (m ²)	C	Gravel Area (m ²)	C	Pervious Area (m ²)	C	Average C (5-Year)	Average C (100-Year)
A1	1.47	0.00	0.90	0.00	0.60	14665.60	0.20	0.20	0.25
A2	0.99	0.00	0.90	0.00	0.60	9935.83	0.20	0.20	0.25

Pre-Development Runoff Calculations

Drainage Area	Area (ha)	C (5-Year)	C (100-Year)	Tc (min)	I (mm/hr)		Q (L/s)	
					5-Year	100-Year	5-Year	100-Year
A1	1.47	0.20	0.25	20	70.3	120.0	57.28	122.26
A2	0.99	0.20	0.25	20	70.3	120.0	38.81	82.83
Total	2.46						96.09	205.09

Post-Development Runoff Coefficient

Drainage Area	Area (ha)	Impervious Area (m ²)	C	Gravel Area (m ²)	C	Pervious Area (m ²)	C	Average C (5-Year)	Average C (100-Year)
B1	0.11	0.00	0.90	0.00	0.60	1129.52	0.20	0.20	0.25
B2	0.04	0.00	0.90	0.00	0.60	350.45	0.20	0.20	0.25
B3	1.35	17.47	0.90	10111.00	0.60	3407.61	0.20	0.50	0.62
B4	0.96	3410.31	0.90	4669.42	0.60	1505.66	0.20	0.64	0.76

Post-Development Runoff Calculations

Drainage Area	Area (ha)	C (5-Year)	C (100-Year)	Tc (min)	I (mm/hr)		Q (L/s)	
					5-Year	100-Year	5-Year	100-Year
B1	0.11	0.20	0.25	10	104.2	178.6	6.54	14.02
B2	0.04	0.20	0.25	10	104.2	178.6	2.03	4.35
B3	1.35	0.50	0.62	10	104.2	178.6	195.92	419.58
B4	0.96	0.64	0.76	10	104.2	178.6	178.78	361.81
Total	2.46						383.27	799.76

Post-Development Restricted Runoff Calculations

Drainage Area	Unrestricted Flow (L/s)		Restricted Flow (L/s)		Storage Required (m ³)		Storage Provided (m ³)		
	5-Year	100-Year	5-Year	100-Year	5-Year	100-Year	5-Year	100-Year	
B1	6.54	14.02	6.54	14.02	-	-	-	-	UNRESTRICTED
B2	2.03	4.35	2.03	4.35	-	-	-	-	UNRESTRICTED
B3	195.92	419.58	50.67	108.25	97.71	208.50	100.71	223.02	RESTRICTED
B4	178.78	361.81	36.75	78.48	101.61	198.45	104.64	200.38	RESTRICTED
Total	383.27	799.76	95.99	205.09	199.32	406.95	205.35	423.40	

McINTOSH PERRY

CP-17-0613 - 495 JINKINSON ROAD - STORAGE REQUIREMENTS

2 of 5

Storage Requirements for Area B3

5-Year Storm Event

Tc (min)	I (mm/hr)	B2 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m³)
15	83.6	157.12	50.67	106.44	95.80
16	80.5	151.29	50.67	100.62	96.59
17	77.6	145.93	50.67	95.25	97.16
18	75.0	140.97	50.67	90.30	97.52
19	72.5	136.37	50.67	85.70	97.70
20	70.3	132.10	50.67	81.42	97.71
21	68.1	128.11	50.67	77.43	97.57

Maximum Storage Required 5-Year (m³) = 97.71

100-Year Storm Event

Tc (min)	I (mm/hr)	B2 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m³)
15	142.9	335.79	108.25	227.54	204.79
16	137.5	323.10	108.25	214.85	206.26
17	132.6	311.59	108.25	203.34	207.41
18	128.1	301.01	108.25	192.77	208.19
19	123.9	291.14	108.25	182.90	208.50
20	120.0	281.98	108.25	173.73	208.48
21	116.3	273.29	108.25	165.04	207.95

Maximum Storage Required 100-Year (m³) = 208.50

5-Year Storm Event Storage Summary

Water Elev. (m) =		135.64	
INV. (out)	Area (m ²)	Depth (m)	Volume (m ³)
135.45	1085.1	0.19	100.7

Storage Available (m³) =	100.7
Storage Required (m³) =	97.7

100-Year Storm Event Storage Summary

Water Elev. (m) =		135.73	
INV. (out)	Area (m ²)	Depth (m)	Volume (m ³)
135.45	1732.8	0.28	223.0

Storage Available (m³) =	223.0
Storage Required (m³) =	208.5

Discharge through Outlet Structure

For Orifice Flow, C =	0.600
For Weir Flow, C =	0.035

	Orifice	Rip-Rap Lined
Invert Elevation	135.45	135.64
Orifice Width/Weir Length	236 mm	2.78 m
Orifice Area (m ²)	0.044	

Elevation (m)	Orifice		Rip-Rap Lined Earth Weir		Total
	H [m]	Q [l/s]	H [m]	Q [l/s]	Q [l/s]
135.45	x	x	x	x	0.00
135.57	0.12	40.27	x	x	40.27
135.64	0.19	50.67	x	x	50.67
135.73	0.28	61.52	0.09	46.73	108.25
135.83	0.38	71.66	0.19	169.15	240.81
135.84	0.39	72.60	0.20	185.05	257.65

5-yr
100-yr

Notes:

1. Orifice Equation: $Q = cA(2gh)^{1/2}$ (m³/s *1000 = l/s)
2. Weir flow calculated in Bentley's FlowMaster - Trapezoidal Channel at 0.1%, 3:1 side slopes, roughness coeff. of 0.035.
3. These Computations Do Not Account for Submergence Effects

Reference: Urban Hydrology, Hydraulics and Stormwater Quality: engineering application and computer modeling / A. Akan, Robert J. Houghtalen, 2003.

McINTOSH PERRY

CP-17-0613 - 495 JINKINSON ROAD - STORAGE REQUIREMENTS

4 of 5

Storage Requirements for Area B4

5-Year Storm Event

Tc (min)	I (mm/hr)	B2 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m³)
20	70.3	120.54	36.75	83.79	100.55
21	68.1	116.90	36.75	80.15	100.99
22	66.1	113.50	36.75	76.75	101.31
23	64.3	110.31	36.75	73.56	101.51
24	62.5	107.31	36.75	70.56	101.61
25	60.9	104.49	36.75	67.74	101.61
26	59.3	101.83	36.75	65.08	101.52

Maximum Storage Required 5-Year (m³) = 101.61

100-Year Storm Event

Tc (min)	I (mm/hr)	B2 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m³)
20	120.0	243.15	78.48	164.67	197.61
21	116.3	235.66	78.48	157.18	198.04
22	112.9	228.77	78.48	150.29	198.38
23	109.7	222.28	78.48	143.80	198.45
24	106.7	216.20	78.48	137.72	198.32
25	103.8	210.33	78.48	131.85	197.77
26	101.2	205.06	78.48	126.58	197.46

Maximum Storage Required 100-Year (m³) = 198.45

5-Year Storm Event Storage Summary

Water Elev. (m) =		135.70	
INV. (out)	Area (m ²)	Depth (m)	Volume (m ³)
135.49	823.9	0.21	104.6

Storage Available (m³) =	104.6
Storage Required (m³) =	101.6

100-Year Storm Event Storage Summary

Water Elev. (m) =		135.80	
INV. (out)	Area (m ²)	Depth (m)	Volume (m ³)
135.49	1149.0	0.31	200.4

Storage Available (m³) =	200.4
Storage Required (m³) =	198.4

Discharge through Outlet Structure

For Orifice Flow, C =	0.600
For Weir Flow, C =	0.035

	Orifice	Rip-Rap Lined
Invert Elevation	135.49	135.70
Orifice Width/Weir Length	196 mm	1.63 m
Orifice Area (m ²)	0.030	

Elevation (m)	Orifice		Rip-Rap Lined Earth Weir		Total
	H [m]	Q [l/s]	H [m]	Q [l/s]	Q [l/s]
135.49	x	x	x	x	0.00
135.60	0.11	26.59	x	x	26.59
135.70	0.21	36.75	x	x	36.75
135.80	0.31	44.65	0.10	33.84	78.48
135.90	0.41	51.34	0.20	115.94	167.28
135.91	0.42	51.97	0.21	126.76	178.73

5-yr
100-yr

- Notes:
- 1. Orifice Equation: $Q = cA(2gh)^{1/2}$ (m³/s *1000 = l/s)
 - 2. Weir flow calculated in Bentley's FlowMaster - Trapezoidal Channel at 0.1%, 3:1 side slopes, roughness coeff. of 0.035.
 - 3. These Computations Do Not Account for Submergence Effects

Reference: Urban Hydrology, Hydraulics and Stormwater Quality: engineering application and computer modeling / A. Akan, Robert J. Houghtalen, 2003.