Functional Servicing Report

Bessada Kia

1675 & 1695 Bayly Street, Pickering

December 23, 2025

Project No. 23-1368

KIRBY
STRUCTURES

Table of Contents

1 Introduction

Kirby Structures Ltd. has prepared this functional servicing report in support of a zoning by-law amendment application for 1675 and 1695 Bayly Street in Pickering, Ontario. 1675 Bayly Street is the existing Bessada Kia dealership and 1695 is currently vacant land that is being used for overflow parking from the dealership. The proposal seeks an amalgamation of the two properties with an associated zoning by-law amendment.

This functional servicing report has been undertaken to demonstrate the following regarding the proposed development:

- Functional grading
- Functional servicing for water, sanitary, and utilities
- Functional stormwater quantity, quality, and erosion control adhering to the City of Pickering Stormwater Management Design Guidelines
- Functional erosion and sediment control
- Functional construction management

2 Site Description & Proposed Development

The subject site is the combination of 1675 and 1695 Bayly Street, measuring approximately 1.11 hectares and is located at the southwest corner of the intersection of Bayly Street and Brock Road in Pickering. The 1675 Bayly Street portion of the site is the existing Bessada Kia dealership and will remain largely the same with the exception of the proposed addition to the east side of the existing building. The site is mostly comprised of asphalt and building areas with some perimeter landscaping. The site has an established stormwater management control system consisting of on-site storm sewers, parking lot storage, and a Stormceptor treatment unit. The 1695 Bayly Street portion is currently vacant land and consists mostly of gravel areas that are used for overflow parking from the dealership. This portion of the site also contains some small asphalt and landscaped areas remaining from the Petro Canada service station that was formerly on the property. The proposal for this area is to use the north and east portions of the corner lot for enhanced vehicle displays with the interior of the lot being used for parking and traffic flow. The proposed addition to the dealership will cross the existing property line separating the two properties and therefore the proposal considers the merging of the two properties.

3 Functional Grading

A conceptual grading plan has been completed for the proposal and can be found in Appendix A. The proposed plan illustrates the merger of the two properties with the addition to match the existing building's finish floor elevation. The existing asphalt areas and stormwater control systems for the Bessada Kia dealership will remain in place with slight modifications to facilitate the construction of the proposed addition. Newly graded areas will be directed to the new parking area on the corner portion of the lot, where it can be collected by proposed catch basins and be subjected to stormwater management controls. The existing east entrance onto Brock Road is currently graded such that runoff from the site is directed to the catch basin on Brock Road in front of the entrance. The proposed grading will create a high point at the property line to ensure runoff from the proposed development is fully contained within the site.

4 Functional Servicing

All servicing requirements for the proposed addition will be facilitated through the expansion of the servicing from the existing building as required. Some modifications will be required to the existing services in order to accommodate the addition, however, no new services to the property will be required. The existing water, sanitary, and fire services will continue to service the existing building and addition. The existing private hydrant and associated service line will be relocated. A conceptual layout of the proposed servicing for the development is also shown on the conceptual grading plan in Appendix A. All other utilities including hydro, gas, and telecommunications will be provided from the existing building.

5 Functional Stormwater Management

5.1 Existing Drainage Conditions

The existing drainage conditions for the current Bessada Kia dealership consists of runoff which is self contained within the asphalt areas with stormwater ponding at the various catch basins. The on-site storm sewer network conveys flows to the south where it is controlled by a reducer pipe prior to being subjected to a Stormceptor treatment unit and ultimately discharging through the southern retaining wall. The outlet drainage is directed south through the industrial area via an established channel.

The existing drainage conditions for the 1695 Bayly portion of the site is generally sheet flow from west to east, draining directly towards the curb and gutter along Brock Road. An existing catch basin manhole is located near the southeast corner of the property and remains from the former Petro Canada service station. A portion of the southern end of the site drains towards this catch basin, which is connected to the storm sewer network along Brock Road.

The existing conditions drainage area being considered is that which matches the proposed drainage area based on preliminary grading. Any area which falls within the existing Bessada Kia dealership property is being treated as landscaped areas despite being developed. The reason for this is because this area will no longer be subjected to the existing stormwater controls on the Bessada Kia property and will instead be controlled on the newly developed portion of the lot. This ensures that a proper pre-development scenario is being considered. The Existing Conditions figure can be found Appendix A.

5.2 Proposed Drainage Conditions

The proposed drainage conditions will feature new catch basins to capture runoff generated from the proposed asphalt parking areas on the corner lot. The proposed storm sewer system will direct flows to the proposed on-site stormwater management controls prior to discharging from the site via the existing catch basin manhole at the southeast corner and ultimately into the Brock Road storm network. Portions of the existing Bessada Kia lot will be regraded to accommodate the addition and direct runoff towards the various catch basins. The proposed drainage area has been delineated based on the conceptual grading design. This area includes some areas from the existing Bessada Kia lot that must be directed to the corner lot. These areas will be accounted for by the newly proposed stormwater controls, allowing the existing stormwater controls for the existing dealership to be alleviated and remain in place for the portions of the existing site that will not contribute to the corner lot. The existing building's rooftop drainage will continue to be directed to the existing stormwater controls while the rooftop drainage from the proposed addition will be directed to the new stormwater controls on the corner lot.

5.3 Quality Control

On-site stormwater quality control for the proposed development will be provided will be provided using an oil and grit separator similar to the existing treatment unit for the existing Bessada Kia site. That existing unit will remain and will have its total contributing drainage area reduced. The unit will continue to provide an equivalent or improved removal efficiency as a result. A new treatment unit will be provided for the proposed catchment area, which will include sizing based on the portions of the existing Bessada Kia lot that will be directed to the new catch basins. The specified treatment unit and sizing details will be provided during the detailed design stage.

The proposed underground storage system will feature isolation rows at all inlet locations. This provides additional sediment removal and creates a treatment-train approach when combined with the oil and grit separator. A minimum 80% total suspended solids removal will be targeted to provide an enhanced level of protection.

5.4 Quantity Control

On-site stormwater quantity control for the proposed development will be provided using underground storage modules to attenuate peak flows from the increased impervious areas. The storage is also sized to provide control for the areas from the existing Bessada Kia dealership that must be diverted to accommodate the addition. The Rational Method was used to analyze the peak flows under existing and proposed conditions. The Modified Rational Method was used to calculate a preliminary storage sizing requirement of 106.5 m^3 for the 100-Year storm. A preliminary sizing of 130 m^3 has been shown on the grading plan. All calculations are provided in Appendix B. Full routing calculations for all storm events will be completed using the Storage Indicator Method during the detailed design to ensure that all peak flows from the site under proposed conditions are less than or equal to the pre-development levels.

5.5 Erosion Control

The City of Pickering requires 5 mm retention/infiltration on-site using low impact development (LID) techniques. Subject to favourable soils and groundwater conditions (to be determined during detailed design), the erosion control volume will be provided using infiltration. The exact sizing and location will be determined at that time, with the intent to infiltrate all runoff from the roof as it is considered to be generally clean and suitable for infiltration.

The underground storage modules will also feature open bottoms, subject to favourable conditions. This will allow runoff at the bottom of the storage to infiltrate into the native soils rather than being discharged from the site, further adding to the total erosion control volume that can be provided.

6 Functional Erosion & Sediment Control

A fully developed erosion and sediment control plan will be provided during the detailed design submission for Site Plan Approval. That plan will include typical erosion and sediment control measures including, but not limited to, perimeter silt fencing, stockpile locations and stabilization, check dams, mud mats, silt sacks for catch basins, and dust control.

7 Functional Construction Management

A fully developed construction management plan will be provided during the detailed design submission for Site Plan Approval. That plan will include items such as a spill response plan, restriction of working hours, identify site trailer and construction staff / visitor parking locations, and general construction sequencing.

8 Conclusion

This functional servicing report has been provided to conceptually demonstrate how the proposed development can be serviced and provide stormwater management controls in order to support the rezoning application of the subject site.

The proposed addition will be serviced using existing services to the Bessada Kia property. No new service connections are required. Existing servicing infrastructure will be modified or relocated as necessary to facilitate the construction of the addition.

The stormwater management strategies outlined will ensure that stormwater quality and quantity control can be provided to address the impact of the proposed development prior to discharging to the downstream storm sewer on Brock Road. The existing stormwater management systems on the Bessada Kia property will continue to serve a lesser area than originally designed for with the additional area being diverted to the new systems.

A fully detailed erosion and sediment control plan and construction management plan will be provided during the detailed design submission.

If you have any questions or comments regarding this report, please contact the undersigned.

Respectfully yours,

KIRBY STRUCTURES LTD.

David Leung, P.Eng.
Project Engineer
davidl@kirbystructures.com

APPENDIX A

FIGURES

METRIC

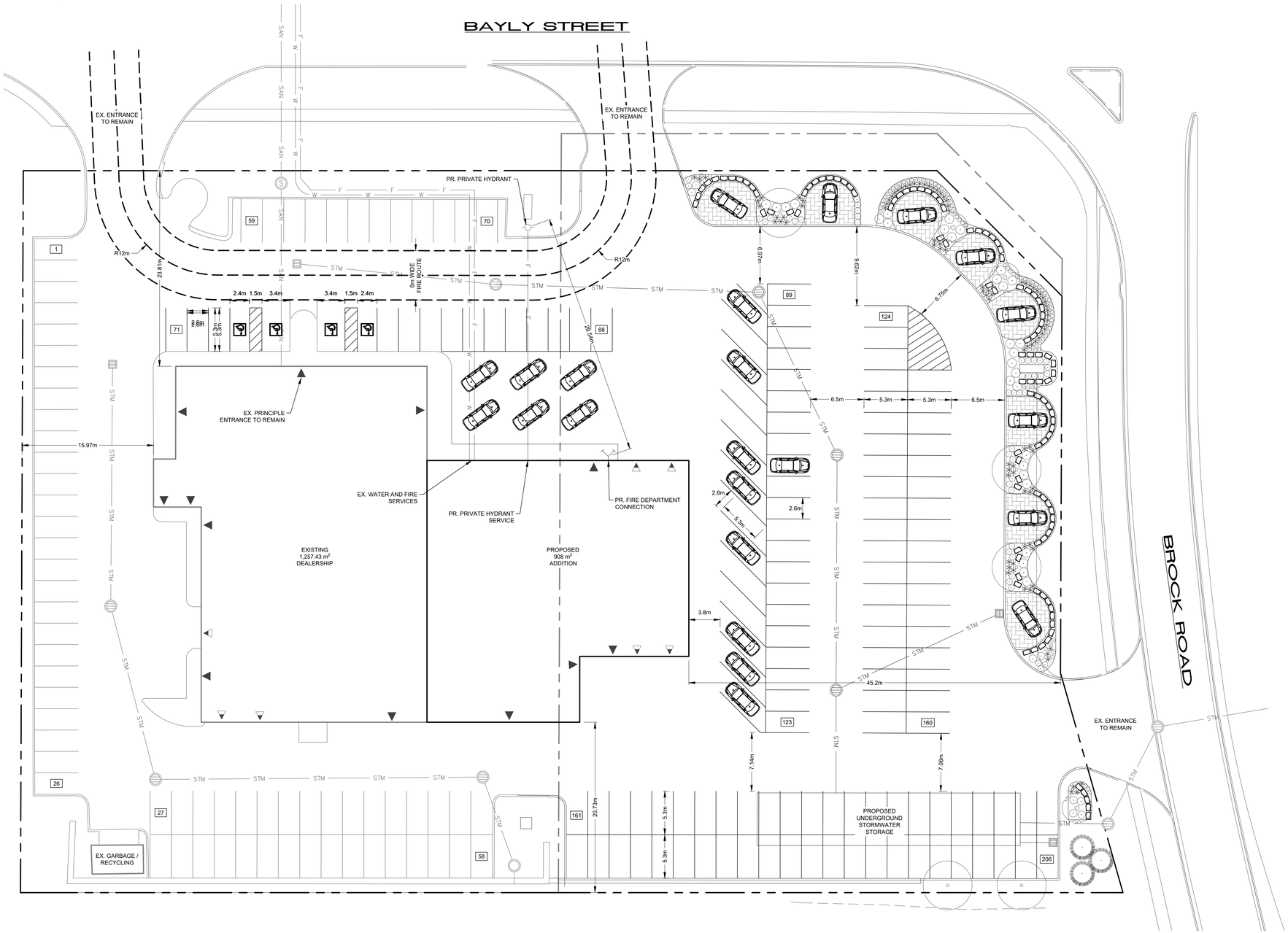
ALL UNITS ARE METRIC UNLESS NOTED OTHERWISE

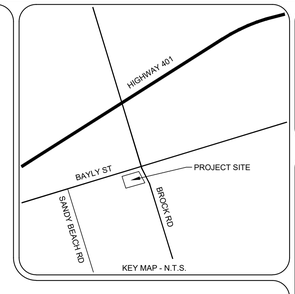
NOTES:

1. TOPOGRAPHIC SURVEY PROVIDED BY J.D. BARNES LTD. (OCT 28, 2020). ELEVATIONS ARE GEODETIC AND REFERRED TO CITY OF PICKERING BENCHMARK No. R-042 HAVING A PUBLISHED ELEVATION OF 84.884m (CGVD-1928:1978).
2. THE LOCATIONS OF ALL UTILITIES ARE ILLUSTRATIVE ONLY, THE ACCURACY OF LOCATION, DEPTH OR ORIENTATION IS NOT IMPLIED. ALL SUB-CONTRACTORS ARE TO CONFIRM INDEPENDENTLY THE EXACT LOCATIONS OF ALL UTILITIES AND SHALL ASSUME LIABILITY FOR ANY AND ALL DAMAGES INCURRED BY THEM.
3. CONSTRUCTION DETAILS NOT SHOWN ON PLANS ARE TO BE REFERENCED TO ONTARIO PROVINCIAL STANDARD DRAWINGS AND MUNICIPAL SPECIFICATIONS & STANDARDS, AS APPLICABLE.

EXISTING ZONING
1675 BAYLY STREET (EXCEPTION ZONE 85) / 1695 BAYLY STREET (EXCEPTION ZONE 65)

SITE STATISTICS			SITE AREAS			PARKING SPACES		
REGULATIONS	REQUIRED	PROVIDED	TYPE	AREA	COVERAGE	TYPE	REQUIRED	PROVIDED
MIN. LOT AREA		11,086.5 m^2	TOTAL LOT*	11,086.5 m^2	100%	VEHICLE SALES 3 SPACES PER 100m^2 GFA (2,844.9 m^2 / 100 m^2 x 3)	85	206
MIN. FRONT YARD		23.81 m	BUILDINGS	2,187.4 m^2	20%			
MIN. REAR YARD		20.73 m	ASPHALT / CONCRETE	7,433.5 m^2	67%			
MIN. EXTERIOR SIDE YARD		45.20 m	LANDSCAPE	1,465.6 m^2	13%			
MIN. INTERIOR SIDE YARD		15.97 m						
			*LOT AREA CONSIDERED IS THE COMBINATION OF BOTH LOTS			ACCESSIBLE PARKING	4	4





PLAN NORTH

TRUE NORTH

REV No.	DATE ISSUED DD-MM-YY	REVISION DESCRIPTION
1	23-12-25	FOR REZONING

PROJECT NAME

BESSADA KIA
PROPOSED ADDITION

1675 BAYLY STREET
PICKERING, ON

PROJECT No.
23-1368

KIRBY STRUCTURES
1260 TERWILLEGAR AVENUE, UNIT No. 2
OSHAWA, ONTARIO L1J 7A5
(905) 723-2223 KIRBYSTRUCTURES.COM

SCALE	DRAWN	CHECKED	APPROVED
1:250	DL	DT	DL

DRAWING TITLE: SITE PLAN

DRAWING No.: C1

Plotted by: David Leung Date: Dec 23, 2025 - 9:54 am File: C:\Users\David Leung\kirbystructures.com\All\Company - Documents\Current\Jobs\2023\23-1368 Bessada Kia Addition\Drawings\Cnf\Sheets\23-1368 - C1 - SITE PLAN.dwg Layout: 24x36

METRIC

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1. TOPOGRAPHIC SURVEY PROVIDED BY J.D. BARNES LTD. (OCT 28, 2020). ELEVATIONS ARE GEODETIC AND REFERRED TO CITY OF PICKERING BENCHMARK No. R-042 HAVING A PUBLISHED ELEVATION OF 84.884m (CGVD-1928:1978).
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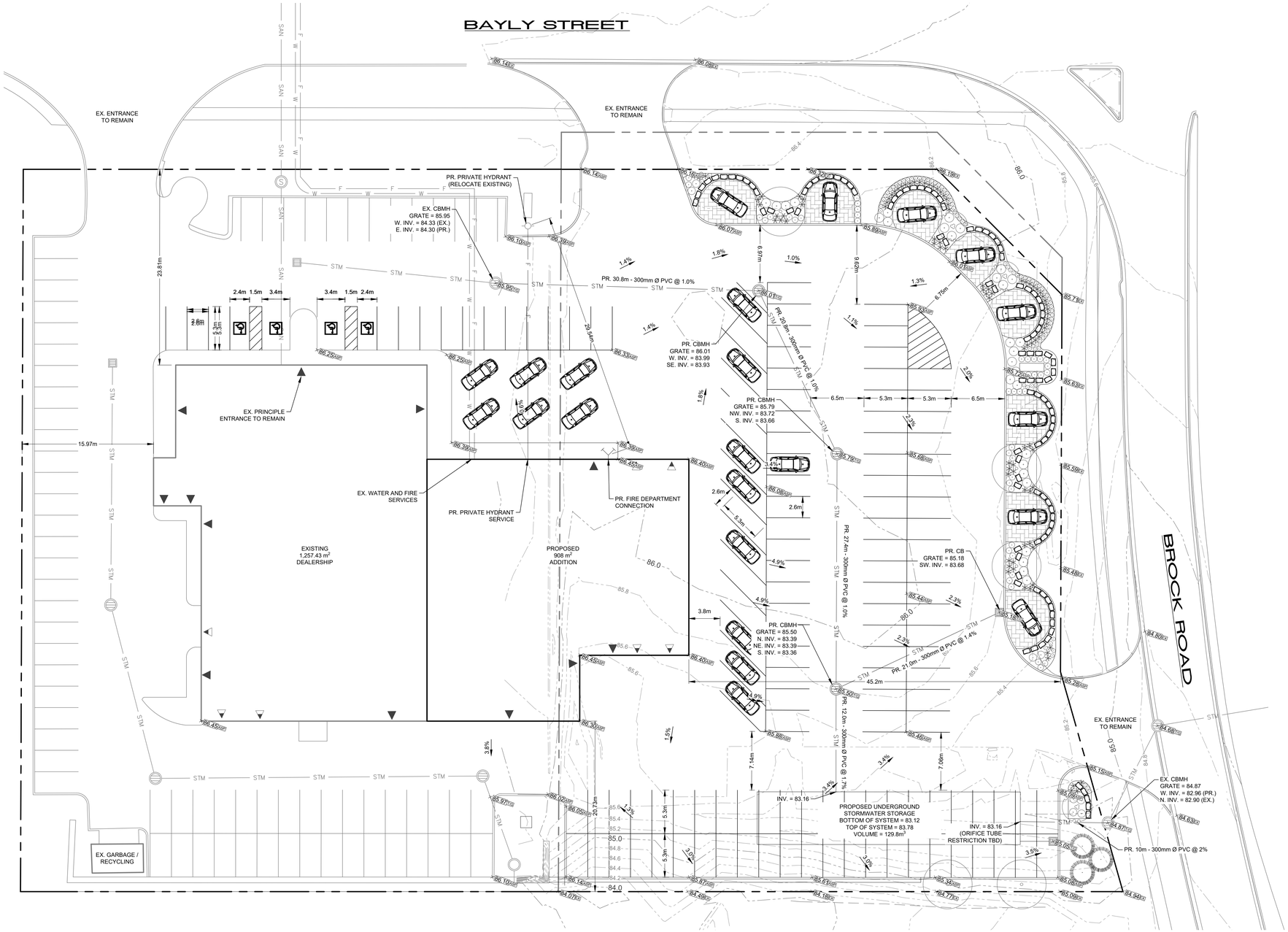

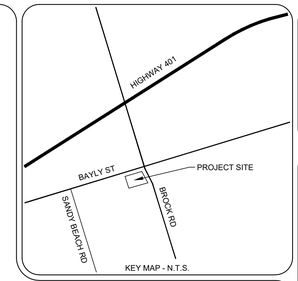

PLAN NORTH

TRUE NORTH

REV No.	DATE ISSUED DD-MM-YY	REVISION DESCRIPTION
1	23-12-25	FOR REZONING

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SCALE	DRAWN	CHECKED	APPROVED
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METRIC
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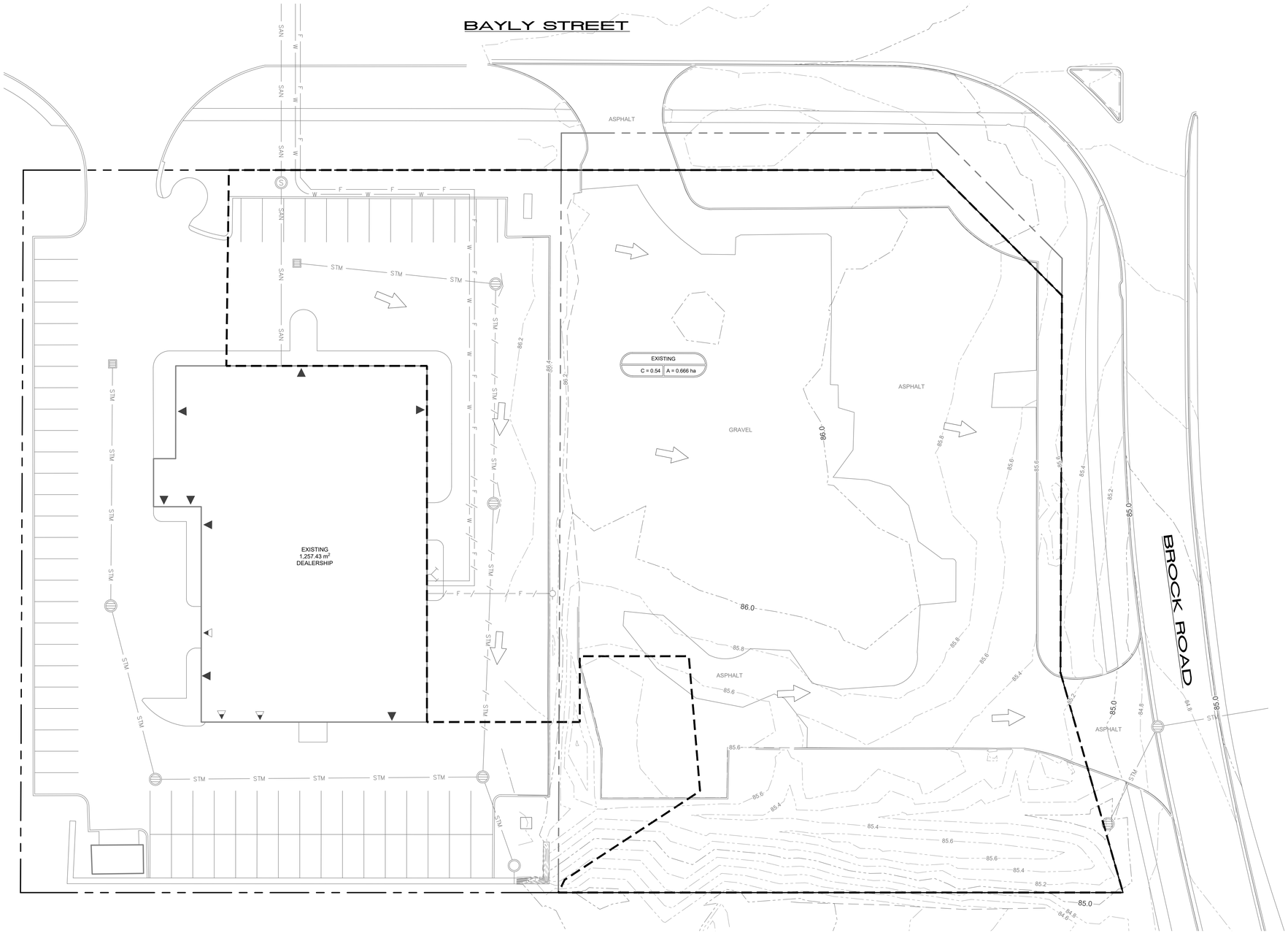

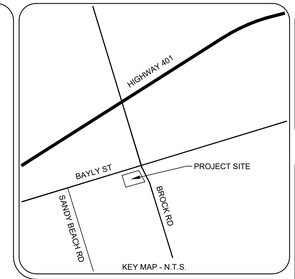

KEY MAP - N.T.S.

PLAN NORTH

TRUE NORTH

MAJOR OVERLAND FLOW

REV No.	DATE ISSUED DD-MM-YY	REVISION DESCRIPTION

PROJECT NAME

BESSADA KIA
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SCALE	DRAWN	CHECKED	APPROVED
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DRAWING TITLE
EXISTING DRAINAGE CONDITIONS

DRAWING No.

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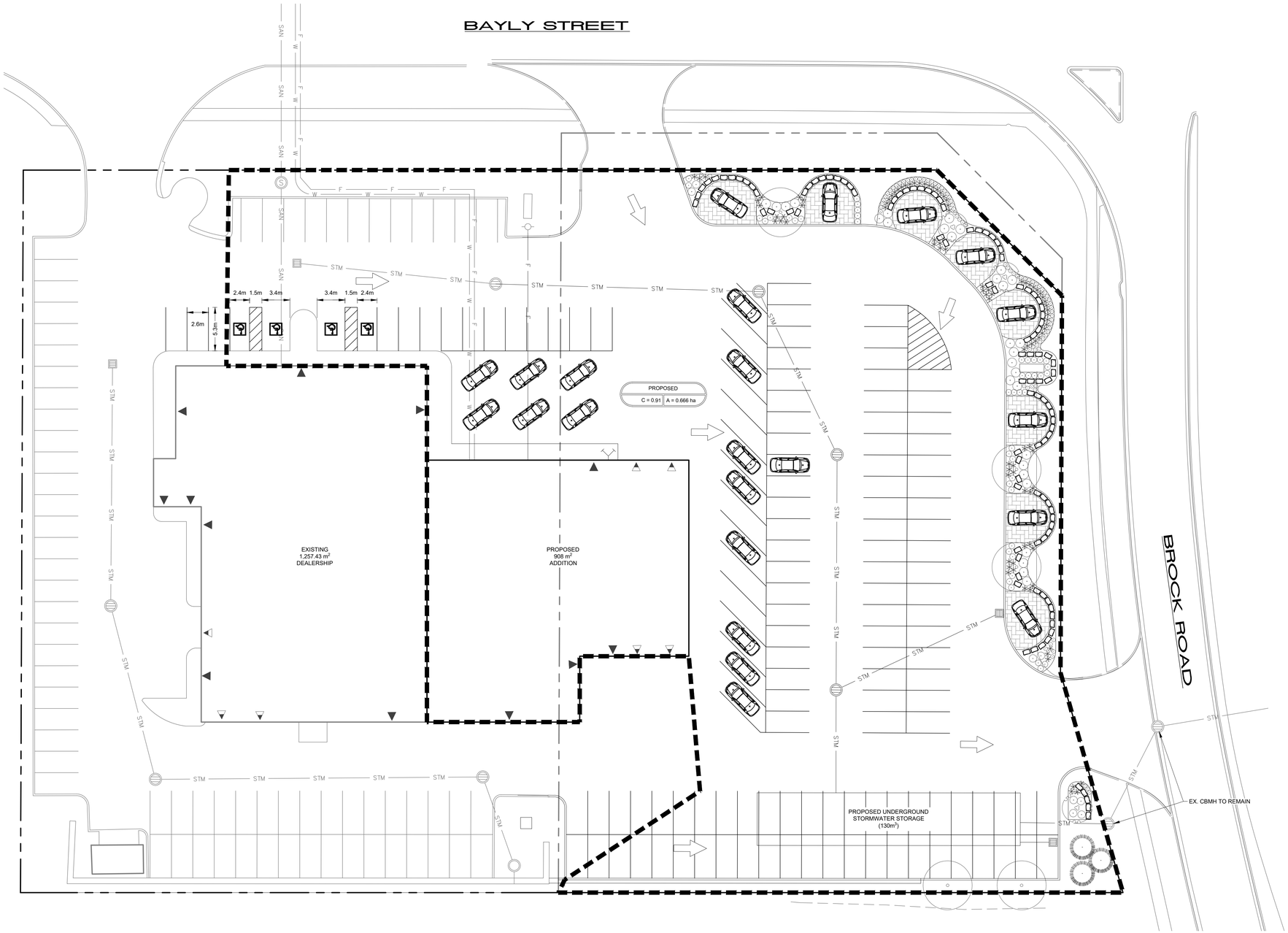
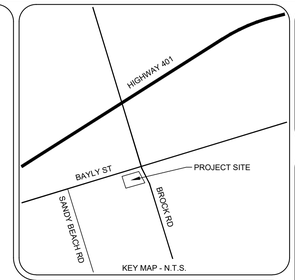
METRIC
ALL UNITS ARE METRIC UNLESS NOTED OTHERWISE





PLAN NORTH

TRUE NORTH

MAJOR OVERLAND FLOW

REV No.	DATE ISSUED DD-MM-YY	REVISION DESCRIPTION

PROJECT NAME

BESSADA KIA
PROPOSED ADDITION

1675 BAYLY STREET
PICKERING, ON

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SCALE	DRAWN	CHECKED	APPROVED
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DRAWING TITLE
PROPOSED DRAINAGE CONDITIONS

DRAWING No.

Plotted by: David Leung Date: Dec 23, 2025 - 8:55 am File: C:\Users\David Leung\Kirbystructures.com\All Company - Documents\Current\Jobs\2023\23-1368 Bessada Kia Addition\Drawings\Civil\Sheets\23-1368 - SWM FIGURES.dwg Layout: POST

APPENDIX B

CALCULATIONS

KIRBY STRUCTURES

Project: 23-1368 - Bessada Kia
Designer: David Leung, P.Eng.
Date: December 23, 2025

RATIONAL METHOD CALCULATIONS

Peak Flow

$Q = 0.0028 \times C \times I \times A$

where:

Q= Peak flow, m^3/s
C= Composite runoff coeffient
I= Rainfall intensity, mm/hr
A= Catchment area, ha

Rainfall Intensity

$I = a / (T_C + b)^c$

where:

I= Rainfall intensity, mm/hr
T_C= Time of concentration, min
a, b, c= IDF parameters

For 25mm storm,
$I = 43 \times C + 5.9$

Return Period	IDF Parameters		
	a	b	c
2-Year	715.076	5.262	0.815
5-Year	1082.901	6.007	0.837
10-Year	1313.979	6.026	0.845
25-Year	1581.718	6.007	0.848
50-Year	1828.009	6.193	0.856
100-Year	2096.425	6.485	0.863

Time of Concentration

For C < 0.4, $T_C = (3.26 \times (1.1 - C) \times L^{0.5}) / S^{0.33}$ [Airport Formula]
For C > 0.4, $T_C = (0.057 \times L) / (S^{0.2} \times A^{0.1})$ [Bransby-Williams Formula]

where:

T_C= Time of concentration, min
L= Length of catchment, m
S= Slope of catchment, %

minimum 10 min (MTO Drainage Manual, 1997)

C Factor

For urban catchment areas:
C values for 25, 50, and 100-Year are increased by 10, 20, and 25%, respectively (MTO Drainage Manual, 1997)

PRE-DEVELOPMENT CONDITIONS

DRAINAGE CATCHMENT PARAMETERS									PEAK FLOW CALCULATIONS															
										25mm		2-Year		5-Year		10-Year		25-Year		50-Year		100-Year	
Name	Area (A)	Impervious Areas	Gravel Areas	Landscaped Areas	Undeveloped Areas	Composite C	Length	Slope	Time of Concentration (T_C)	Intensity (I)	Peak Flow (Q)	Intensity (I)	Peak Flow (Q)	Intensity (I)	Peak Flow (Q)	Intensity (I)	Peak Flow (Q)	Intensity (I)	Peak Flow (Q)	Intensity (I)	Peak Flow (Q)	Intensity (I)	Peak Flow (Q)
	(ha)	(ha) 0.95	(ha) 0.65	(ha) 0.25	(ha) 0.25		(m)	(%)	(min)	(mm/hr)	(m^3/s)	(mm/hr)	(m^3/s)	(mm/hr)	(m^3/s)	(mm/hr)	(m^3/s)	(mm/hr) C Factor=	(m^3/s) 1.1	(mm/hr) C Factor=	(m^3/s) 1.2	(mm/hr) C Factor=	(m^3/s) 1.25
EXISTING	0.666	0.161	0.203	0.302		0.54	125	1.2	10.00	29.17	0.029	77.57	0.078	106.31	0.107	126.04	0.127	150.62	0.167	168.58	0.204	186.69	0.235

POST-DEVELOPMENT CONDITIONS

DRAINAGE CATCHMENT PARAMETERS									PEAK FLOW CALCULATIONS															
										25mm		2-Year		5-Year		10-Year		25-Year		50-Year		100-Year	
Name	Area (A)	Impervious Areas	Gravel Areas	Landscaped Areas	Undeveloped Areas	Composite C	Length	Slope	Time of Concentration (T_C)	Intensity (I)	Peak Flow (Q)	Intensity (I)	Peak Flow (Q)	Intensity (I)	Peak Flow (Q)	Intensity (I)	Peak Flow (Q)	Intensity (I)	Peak Flow (Q)	Intensity (I)	Peak Flow (Q)	Intensity (I)	Peak Flow (Q)
	(ha)	(ha) 0.99	(ha) 0.95	(ha) 0.25	(ha) 0.25		(m)	(%)	(min)	(mm/hr)	(m^3/s)	(mm/hr)	(m^3/s)	(mm/hr)	(m^3/s)	(mm/hr)	(m^3/s)	(mm/hr) C Factor=	(m^3/s) 1.1	(mm/hr) C Factor=	(m^3/s) 1.2	(mm/hr) C Factor=	(m^3/s) 1.25
PROPOSED	0.666	0.592		0.074		0.91	115	2	10.00	44.95	0.076	77.57	0.131	106.31	0.180	126.04	0.213	150.62	0.280	168.58	0.342	186.69	0.395

KIRBY STRUCTURES

Project: 23-1368 - Bessada Kia
Designer: David Leung, P.Eng.
Date: December 23, 2025

MODIFIED RATIONAL METHOD - 100-YEAR

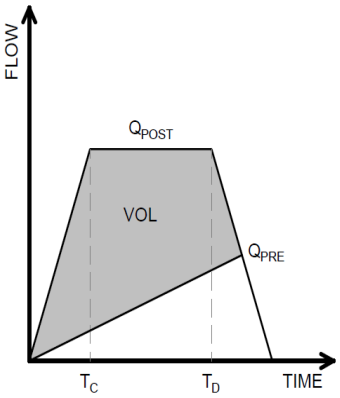
Drainage Area ID = PROPOSED
Area = 0.666 ha
Composite C = 1.14
T_C = 10.0 min
Release Rate = 0.235 m^3/s

Rainfall Intensity (I),

$I = a / (T_D + b)^c$

Rainfall Parameters
a = 2096.43
b = 6.485
c = 0.863

DRAINAGE AREA PROPOSED							
Storm Duration (min)	I (mm/hr)	Q_{POST} (m^3/s)	RV_{POST} (m^3)	Q_{PRE} (m^3/s)	RV_{PRE} (m^3)	Storage Required (m^3)	
5	255.0	0.540	161.9	0.235	105.9	56.0	
6	237.3	0.502	180.8	0.235	113.0	67.8	
7	222.0	0.470	197.3	0.235	120.1	77.3	
8	208.7	0.442	212.0	0.235	127.1	84.9	
9	197.1	0.417	225.2	0.235	134.2	91.0	
10	186.7	0.395	237.0	0.235	141.3	95.8	
11	177.4	0.375	247.8	0.235	148.3	99.5	
12	169.1	0.358	257.7	0.235	155.4	102.3	
13	161.6	0.342	266.7	0.235	162.4	104.3	
14	154.8	0.328	275.1	0.235	169.5	105.6	
15	148.5	0.314	282.9	0.235	176.6	106.3	
16	**142.8**	**0.302**	**290.1**	**0.235**	**183.6**	**106.5**	**(max)**
17	137.6	0.291	296.9	0.235	190.7	106.2	
18	132.7	0.281	303.2	0.235	197.8	105.5	
19	128.2	0.271	309.2	0.235	204.8	104.4	
20	124.0	0.262	314.9	0.235	211.9	103.0	
21	120.1	0.254	320.2	0.235	218.9	101.3	
22	116.5	0.246	325.3	0.235	226.0	99.3	
23	113.0	0.239	330.1	0.235	233.1	97.0	



$VOL = Q_{POST} \times T_D - Q_{PRE} \times (T_D + T_C) / 2$