STRIK BALDINELLI MONIZ
PLANNING · CIVIL · STRUCTURAL · MECHANICAL · ELECTRICAL

LONDON LOCATION
1599 Adelaide St. N., Unit 301
London, ON N5X 4E8
P: 519-471-6667

KITCHENER LOCATION
132 Queen St. S. Unit 4
Kitchener, ON N2G 1V9
P: 519-725-8093

www.sbmltd.ca

sbm@sbmltd.ca

October 10, 2024

SBM-17-0068

2102603 Ontario Inc.
82 Caroline Street
Stratford, Ontario, N5A 7L9

Attn: Tom Melanson

Re: Site Servicing Feasibility Study
Proposed Residential Developments
24605 Saxton Road, Strathroy, Ontario

1. INTRODUCTION

This Site Servicing Feasibility Study (Study) has been prepared by Strik, Baldinelli, and Moniz Ltd. (SBM) to address the servicing feasibility of the proposed residential buildings at 24605 Saxton Road, Strathroy, Ontario as per the Conceptual Site Plan by SBM provided in Appendix A.

The proposed developments consist of a site area of 3.14 ha. The existing site is currently open, green field sites consisting of grass and small-growth trees. The major and minor flows are generally conveyed from the northwest into the private site. These flows typically occur overland and naturally infiltrate on site. The undeveloped site does not have any known stormwater management features.

The most recent proposed development will include two (2) 8-storey buildings containing a total of 184 residential units, and six (6) 2-storey back-to-back townhouses with a total of 36 residential units. For the proposed post-development conditions, please refer to the Site Plan outlined in Appendix A and prepared by SBM dated September 3, 2024.

Design requirements have been based on the Strathroy-Caradoc Servicing Standards (SCSS) dated October 2021, and the Ministry of Environment Conservation and Parks (MECP) Design Guidelines for Drinking-Water Systems (DGDWS), the MECP Stormwater Management Planning and Design Manual (SWMPDM), and the current edition of the Ontario Building Code (OBC).

2. SANITARY SERVICING

As per Strathroy-Caradoc record drawing 04-3860-1000 sheet (7) dated November 11, 2005, and provided in Appendix A, there is an existing 250mm diameter sanitary sewer in the Carroll Street Right-of-Way (ROW) available to service the proposed development. Strathroy-Caradoc Record drawing 04-3860-1000 sheet 2 shows two (2) private 250mm sanitary sewers that ultimately connect to the sanitary sewer within Carroll Street ROW. The proposed flows are shown in the sanitary sewer design sheet by SBM outlined in Appendix B.

The sanitary peak flow for the residential development was calculated by considering 8-storey apartment buildings as high-density residential developments and 2-storey townhouses as medium-density residential development with population densities of 1.6 and 2.4 people per unit respectively. The apartment buildings have occupancy load of 294 people (184 units at 2.4 people per unit), townhouses have occupancy load of 86 people (36 units at 1.6 people per unit), total occupancy load of 380 people. Using a flow of 300 L/capita/day as per the SCSS dated October 2021, the

anticipated peak sanitary flow for each apartment building is 2.36 L/s, while the six townhouses have a total sanitary flow of 1.41 L/s. The infiltration of the entire site was determined to be 0.25 L/s which results in a total peak sanitary flow of 6.38 L/s for all developments.

Apartment buildings and townhouses will be serviced via individual PDC's. A connection to the existing 250mm private sanitary sewer will be designed as part of the SPA process.

According to the Municipality of Strathroy-Caradoc's as-constructed Sanitary Sewer Design sheet, dated May 11, 2005, and included in Appendix B, the sanitary sewers running from manhole A to manhole 14 (located at the Saxton Road/Carroll Street intersection) have a full flow capacity of 32.6 L/s. As per "*Strathroy-Caradoc Servicing Capacity and Constraints Study 2022, prepared by WSP*" the current total peak inflow to the Albert St. Sewage Pumping Station is 225.95 L/s however, the total capacity of the pump station is 258 L/s. The existing sanitary sewer with the highest design flow runs from the existing stub on Carroll Street to Manhole 14, with a current design flow of 12.47 L/s. After accounting for an additional 6.38 L/s from the proposed development, the new design flow for this pipe section will be approximately 18.85 L/s, which is approximately 58% of its maximum capacity of 32.6 L/s. Therefore, the existing sewer system has sufficient capacity to accommodate the new development.

3. WATER SERVICING

According to Strathroy-Caradoc Record Drawing 04-3860-1000 sheet 2 prepared by Dillon Consulting and provided in Appendix A, there is an existing 250mm private watermain north of the proposed development that ultimately connects to the existing watermain within the Saxton Road ROW. Individual services to the existing 250mm private watermain will be designed as part of the SPA process.

Domestic Water Supply

Based on the attached Site Plan prepared by SBM shown in Appendix A, the proposed development will consist of two (2) 8-storey apartment buildings containing a total of 184 residential units, and six (6) 2-storey back-to-back townhouses with a total of 36 residential units. The residential population was assumed to be high-density and medium density with water usage calculated as per the SCSS dated October 2021.

The residential population for the apartment buildings was determined by multiplying the high-density occupancy load of 1.6 people per unit by the total number of proposed units (184), resulting in a total population of 294. For the townhouses, the residential population was determined by multiplying the medium-density occupancy load of 2.4 people per unit by the total number of proposed units (36), resulting in a total population of 86 people. Average daily demand was calculated by multiplying the total population by the average day domestic demand for design provided by the SCSS of 250 L/day providing an average daily demand of 1.10 L/s. Max hour demand and Max day demand were calculated by multiplying average daily demand by the max hour peak factor of 7.8 and max day peak factor 3.5 as outlined by Section 4.3.2(b) of the SCSS, for total demand of 8.59 L/s and 3.86 L/s respectively. Please refer to the Domestic Demand Calculations, provided in Appendix C.

2.1 Water Supply for Fire Protection

Section 4.3.2 i) of the SCSS dated October 2021 requires the minimal residual pressure during the maximum day plus fire scenario to be not less than 140 kPa (20 psi) at any location in the water distribution system. A hydrant flow test was conducted on the municipal hydrant at 70 Carroll Street Unit A1 (LCBO) on August 12, 2019, by Forest City Fire Protection with results provided in Appendix C. The pressures obtained from this hydrant flow test were used to calculate the available water pressure during the maximum day plus a fire-flow scenario.

Since a sprinkler system is required for the proposed building, the fire-fighting demand is determined as per NFPA-13. The proposed building is conservatively determined to have the 'Light Hazard' as outlined in Annex A - Section A.5.3.1 of NFPA-13. The required fire-fighting plus maximum day demand is 1362 L/min as shown in fire flow calculations provided in Appendix C. As per section 4.3.2 a) ii) of the SCSS maximum velocity shall not exceed 3.0 m/s under all flow conditions. Under fire-flow + maximum day demand with a 250mm diameter private watermain, the anticipated velocity was calculated to be 0.46 m/s.

As per NFPA-13 and OBC Part 3 requirements, the fire hydrant shall be located within 45 meters of the 'Fire Department Connection' (Siamese Connection) on the proposed building. The proposed townhouses are designed in accordance with Part 9 of the OBC; therefore, fire fighting calculations are not required. If it is found that the fire hydrant at 70 Carrol Street is more than 90 meters away from any of the townhouses, the proposed private hydrant will serve the townhouses, and its location will be determined during detailed design.

2.2 Capacity Review

As shown in the Fire Flow calculations attached to this Study, the water pressure at the hydrant located at 70 Carroll Street East, at the flow rate of 1362 L/min (fire flow + maximum day demand), will be approximately 388.2 kPa (56.30 psi). A Hazen-Williams calculation has been performed and included in Appendix C to estimate the pressure loss in the private watermain, determining whether sufficient pressure is available to support fire suppression through the sprinkler systems. A site plan sketch, also attached in Appendix C, provides a conservative approximation of the proposed 250mm private watermain that will service the sprinklered buildings. Using an assumed pipe length of 85.00m, and assuming two 45-degree elbows and two water valves, the final pressure at the proposed sprinklered building is estimated to be around 56.12 psi. These preliminary calculations suggest that the 250mm private watermain connection will provide adequate water pressure to meet fire suppression requirements. If it is found in any case that the proposed water service has insufficient capacity, which is to be determined at a later stage, mechanical scope will be triggered for internal plumbing as Civil scope begins 1.2m outside of the building shell (per Ontario Building Code (OBC) definition). Coordination between the two disciplines will be required to confirm that the fire flow scenarios for the current and proposed development may be fulfilled.

The water pressure during fire fighting conditions at the nearest available hydrant is approximately 56.30 psi, which is larger than the minimum required pressure of 20 psi and less than the maximum allowable pressure of 100 psi, therefore residual pressure at the nearest available hydrant meets the requirements of Section 4.3.2 a) ii) of the SCSS dated October 2021. Fire flow calculations also demonstrate that the proposed water distribution system can provide the minimum required water supply flow rate under the fire flow plus maximum day demand scenario, therefore there appears to be adequate water supply available for the proposed development. These calculations are to be confirmed at the time of detailed design.

4. STORMWATER MANAGEMENT AND STORM SERVICING

The SWM run-off coefficient (C-value) calculations provided in Appendix D show that the post-development C-value of 0.75 for the entire site is greater than the pre-development C-value of 0.20. Therefore, stormwater management quantity controls will be required for this development. Infiltration trenches, underground storage, inlet control devices and appropriately sized orifice may be proposed as required to infiltrate/store and control post development flows for the 2-year through 100-year storm events to the pre-development levels. The 250-year storm event will be safely conveyed overland generally matching the existing conditions of the site. The property identification number for the subject site, as shown in the Strathroy-Crossing municipal drain presentation published online and included in Appendix D, appears to be "014-060-092-05." According to the "Strathroy Crossing Drain 2023" report by Spriet Associates, dated December 21, 2023, the site with this property identification number has an allowable stormwater release rate of 35 L/s. The same presentation slide in Appendix D indicates the presence of two storm manholes located near the private road north of the property.

The proposed design may incorporate infiltration trenches or underground storage as part of the stormwater management strategy. However, an overflow storm connection can be made to the manholes connected to the Strathroy Crossing drain. This will ensure that only excess water is directed to the storm system, maintaining the discharge within the allowable release rate of 35 L/s. If additional controls are required during the detailed design stage, an orifice plate can be installed in the storm structures to restrict flow to the Strathroy Crossing drain while retaining excess stormwater on-site.

5. SUMMARY

Based on the above, the Municipality of Strathroy-Caradoc's existing water and sanitary systems have sufficient capacity to accommodate the proposed residential development of the subject site.

6. LIMITATIONS

This Study was prepared by SBM for the Municipality of Strathroy-Caradoc and 2102603 Ontario Inc. Use of this study by any third party, or any reliance upon its findings is solely the responsibility of that party. SBM accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made or actions undertaken as a result of this study. Third party use of this study, without the express written consent of the Consultant, denies any claims, whether in contract, tort, and/or any other cause of action in law, against the Consultant.

All findings and conclusions presented in this Study are based on site conditions as they appeared in the information presented to SBM and related to in this document. This Study is not intended to be exhaustive in scope, or to imply a risk-free development. It should be recognized that the passage of time may alter the opinions, conclusions, and recommendations provided herein, as well as any changes in the layout of the development. The design was limited to the documents referenced herein and SBM accepts no responsibility for the accuracy of the information provided by others. All designs and recommendations presented in this Study are based on the information available at the time of the review.

This document is deemed to be the intellectual property of SBM in accordance with Canadian copyright law.

7. CLOSURE

We trust this Study meets your satisfaction. Should you have any questions or require further information, please do not hesitate to contact us.

Respectfully submitted,

Strik, Baldinelli, Moniz Ltd.

Planning • Civil • Structural • Mechanical • Electrical

Hasan Ahmad, M.Eng., P.Eng
Civil Eng III, Project Lead

Mohamad El Neser
Civil intern

APPENDIX A

Conceptual Site Plan by SBM dated September 3, 2024

Topographical Survey by SBM September 06, 2017

Municipality of Strathroy-Caradoc as constructed drawing No. 04-3860-1000, Dated November 11, 2005

REFERENCE DOCUMENTS:

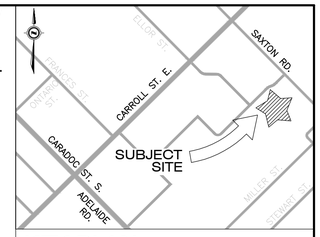
1. EXISTING LEGAL INFORMATION OBTAINED FROM SKETCH PROVIDED BY GIBSON SURVEYING INC., FILE No. 17-1136C, DATED FEBRUARY 14, 2017.

PARCELS, BUILDINGS AND EXISTING INFORMATION ARE APPROXIMATE AND FOR REFERENCE ONLY.

THE PLAN IS COMPILED AND SHOULD NOT BE CONSIDERED A PLAN OF SURVEY.

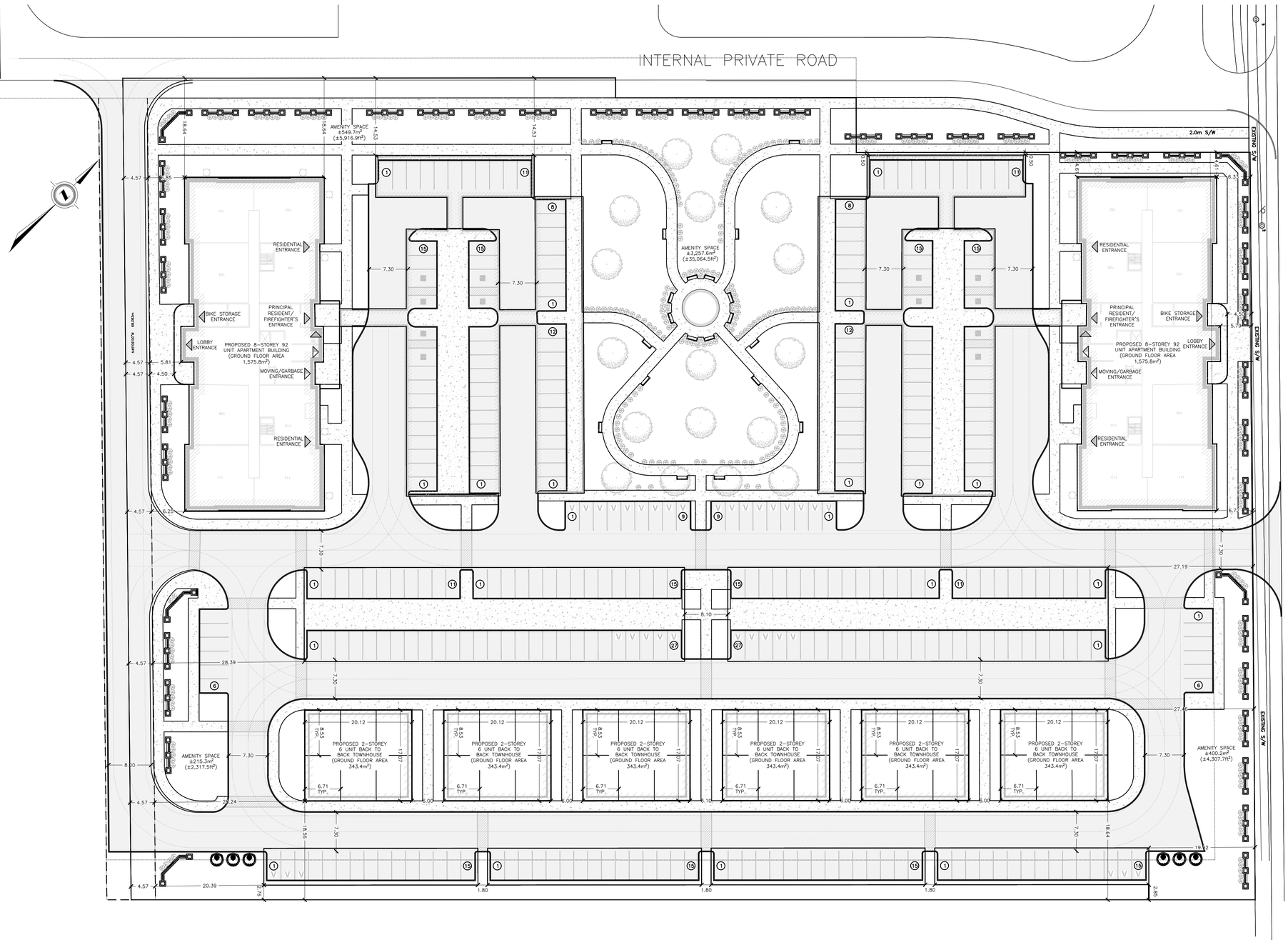
LEGAL INFORMATION

PART OF
LOT 23
REGISTRAR'S COMPILED PLAN No. 370
IN THE
MUNICIPALITY OF
STRATHROY-CARADOC
COUNTY OF MIDDLESEX



KEY PLAN

N.T.S.



ZONING DATA CHART

GROSS SITE AREA: 31,408.2 m²
BUILDING AREA: 5,212.0 m²
PARKING STRUCTURE AREA: 7,033.1 m²
PROPOSED UNIT COUNT 220
ASPHALT AREA (ON SITE): 12,489.1 m²
LANDSCAPED AREA: 6,674.0 m²

ITEM		REQUIRED	PROVIDED
	HIGH DENSITY RESIDENTIAL (R3-##)		
1	LOT AREA (m^2 PER UNIT MIN)	APARTMENT: 130 TOWNHOUSE: 210	APARTMENT XX.X** TOWNHOUSE XX.X** TOTAL: 142.8
2	LOT FRONTAGE (m MIN)	APARTMENT: 30 TOWNHOUSE: 6/UNIT	140.0 6.7 (EACH UNIT)
3	FRONT YARD DEPTH (m MIN)	APARTMENT: 4.5 TOWNHOUSE: 4.5	4.5 27.4
4	EXTERIOR SIDE YARD WIDTH (m MIN)	4.5	N/A
5	SIDE YARD WIDTH (m MIN)	APARTMENT: 3.0 TOWNHOUSE: 2.0	APARTMENT 4.6 (NORTH) TOWNHOUSE 18.5 ACCESSORY NORTH 0.5* ACCESSORY SOUTH 2.7
6	REAR YARD DEPTH (m MIN)	APARTMENT: 15.0 TOWNHOUSE: 9	APARTMENT 9.0* TOWNHOUSE 28.2 ACCESSORY 20.3
7	LOT COVERAGE (% MAX)	APARTMENT: N/A TOWNHOUSE: 45	N/A TOWNHOUSE: 6.6
8	ACCESSORY STRUCTURE COVERAGE MAXIMUM	$10m^2$ PER UNIT (10*220 = 2,200m^2)	32.0m^2 (7,033.1m^2)*
9	LANDSCAPED OPEN SPACE (% MIN)	APARTMENT: 20 TOWNHOUSE: 30	APARTMENT XX.X** TOWNHOUSE XX.X** TOTAL: 21.2
10	OUTDOOR COMMON AMENITY AREA MINIMUM	$20m^2$ PER UNIT (20*220 = 4,400.0m^2)	20.1m^2 (4,422.8m^2)
11	PARKING COVERAGE (% MAX)	25	39.8*
12	YARDS WHERE PARKING IS PERMITTED	ALL YARDS EXCEPT FRONT OR EXTERIOR	REAR & INTERIOR
13	MAXIMUM HEIGHT (m MAX)	APARTMENT: 15 TOWNHOUSE: 15 ACCESSORY 4.5	APARTMENT: TBD* TOWNHOUSE: <15 ACCESSORY 4.3

*ZONING DEFICIENCY
** TO BE CONFIRMED

PARKING REQUIREMENTS

MINIMUM PARKING SPACE DIMENSIONS 2.6mX5.4m, TYPE A 3.4mX5.5m, TYPE B 2.4mX5.5m

REQUIRED PARKING:

DWELLING APARTMENT	1.25 PER UNIT	1.25*184	= 230 SPACES
VISITOR SPACES	0.15 PER UNIT	0.15*184	= 28 SPACES
DWELLING TOWNHOUSE	1.50 PER UNIT	1.50*36	= 54 SPACES
VISITOR SPACES	0.15 PER UNIT	0.15*36	= 6 SPACES
TOTAL REQUIRED PARKING			= 318 SPACES
TOTAL PROVIDED PARKING			= 318 SPACES
B/F PARKING REQUIRED:			= 5 TYPE 'A' 5 TYPE 'B'
B/F PARKING PROVIDED:			= 6 TYPE 'A', 6 TYPE 'B'

AS CONSTRUCTED SERVICES	COMPLETION		No.	REVISIONS	D/M/Y	BY
		DESIGN JR	01	INITIAL ALL RESIDENTIAL DESIGN	03/09/24	JR
		DRAWN JR				
		CHECKED ND				
		APPROVED ND				
		DATE 30/08/2024				
		CAD 17-0068				

CONSULTANT
STRIK BALDINELLI MONIZ
PLANNING - CIVIL - STRUCTURAL - MECHANICAL - ELECTRICAL
1599 Adelaide St. N, Unit 301, London, Ontario, N5X 4E8
Tel: (519) 471-6667 Fax: (519) 471-0034
Email: sbm@sbmltd.ca

ENGINEER'S STAMP
PRELIMINARY NOT FOR CONSTRUCTION

ENGINEER'S STAMP

CLIENT
2102603 ONTARIO INC.
82 CAROLINE ST.
STRATFORD, ON
N5A 7L9

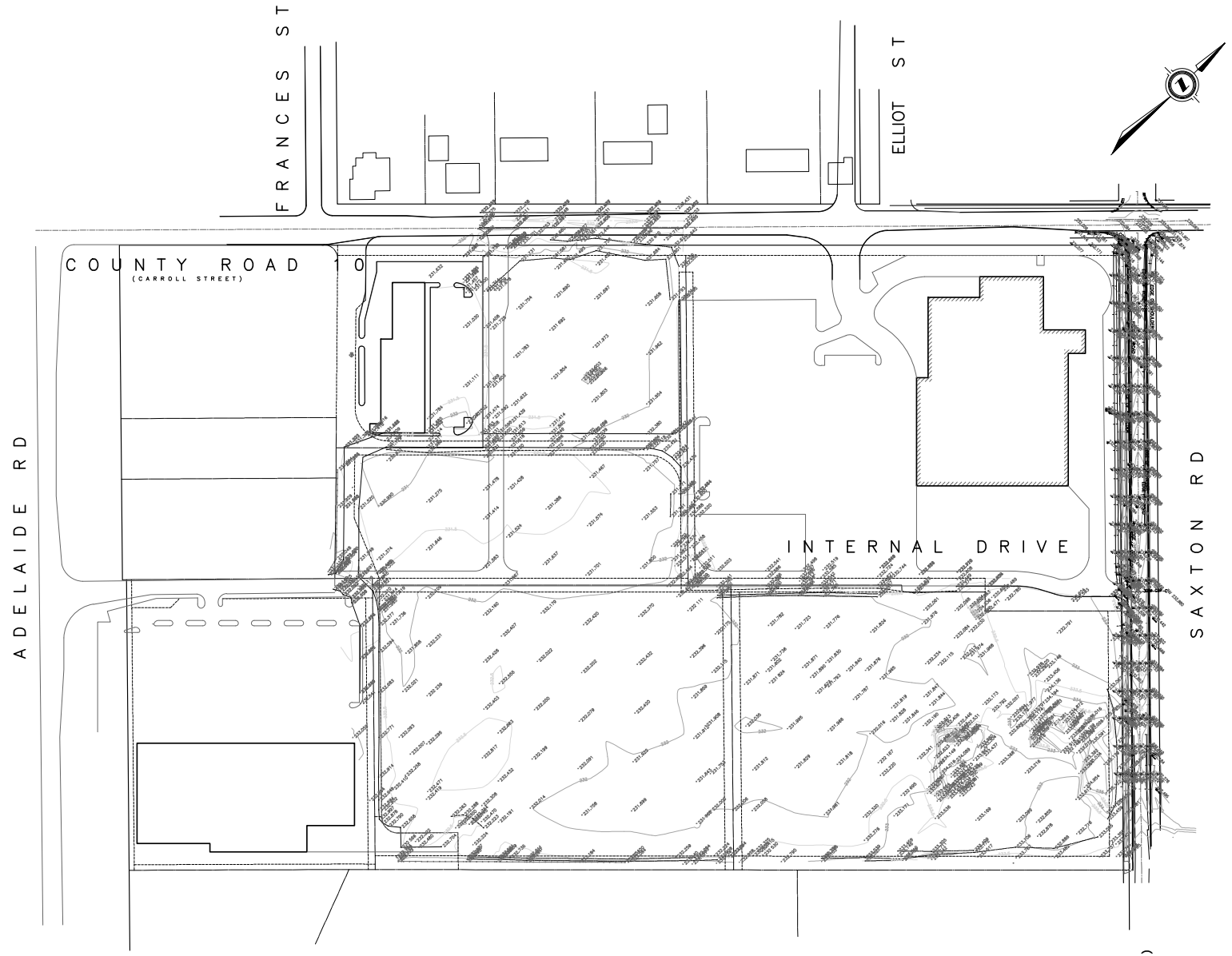
SCALE
SCALE - 1:400
4.0 0 8.0m

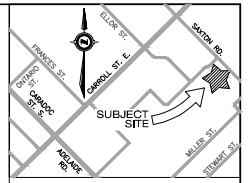
TITLE
CONCEPTUAL SITE PLAN
STRATHROY CROSSING DEVELOPMENTS
CARROLL
STRAHTROY, ON.

PROJECT No.
SBM-17-0068

SHEET No.
SP1

PLAN FILE No.
—





KEY PLAN
N.T.S.

LEGAL INFORMATION
PART OF
LOT 23
REGISTRAR'S COMPILED PLAN No.
370
IN THE
MUNICIPALITY OF
STRATHROY-CARADOC
COUNTY OF MIDDLESEX

SITE BENCHMARK:
LOCATION: NAIL IN HYDRO POLE ON THE SOUTH SIDE OF SAXTON ROAD, ADJACENT TO THE SUBJECT SIDE. AS SHOWN ON THE DRAWINGS.

*ELEVATION: 233.690m

*ELEVATIONS SHOWN ARE SITE SPECIFIC AND REFERENCED TO THE ABOVE NOTED BENCHMARK. ELEVATIONS SHOWN MAY NOT NECESSARILY BE GEODETIC.

REFER TO NOTES, LEGEND, AND DETAILS ON SHEET C1

AS CONSTRUCTED SERVICES	COMPLETION

DESIGN	KEK
DRAWN	KEK
CHECKED	AMJ
APPROVED	KAM
DATE	13/07/2017
DWG	17-0068

No.	REVISIONS	D/M/Y	BY
1	FOR CLIENT REVIEW/APPROVAL	09/06/17	KEK

CONSULTANT
STRIK BALDINELLI MONIZ
CIVIL ENGINEERING
14361 Medway Rd., PO Box #29, Arva, Ontario
Tel: (519) 471-6667 Fax: (519) 471-0034
Email: sbm@sbmltd.ca

ENGINEER'S STAMP
PRELIMINARY NOT FOR CONSTRUCTION

ENGINEER'S STAMP

CLIENT
2102603 ONTARIO INC
82 CAROLINE ST.
STRATFORD, ON.
N5A 7L9
P: 226.663.6323
E: JOEL@SECUREXX.COM

SCALE
SCALE - 1:300
3.0 0 6.0m

TITLE
EXISTING TOPOGRAPHY
STRATHROY MIXED USE DEVELOPMENT
96 CARROLL STREET EAST
STRATHROY, ON.

PROJECT No.
SBM-17-0068
SHEET No.
EX. GRADES
PLAN FILE No.
-

CARROLL STREET EAST

COUNTY ROAD 81 (ADELAIDE ROAD)

SAXTON ROAD

LOT 1

LOT 2

LOT 3

LOT

GRAVEL PARKING LOT

APPROXIMATE LOCATION OF BURIED BELL CABLE

BIRCH TREES

MAPLE TREE

BUILDING A
95,000 SF

FINISHED FLOOR
ELEV. 232.85

FUTURE
EXPANSION
40,000 SF

FIN. FL. ELEV. 232.90

FIN. FL. ELEV. 232.90

FIN. FL. ELEV. 232.90

CONTRACTOR TO PROVIDE MANUFACTURED TEE FOR FUTURE SANITARY CONNECTION

MH F

MH E

MH J

MH K

MH G

MH H

MH I

MH 18
LID231.290

MH 1A
LID231.606

MH B
231.744ROAD

MH 1C
LID232.023

MH 1D
LID230.995

MH A

MH
LID232.35

MW 1
231.441ROAD

94.1m – 300 DIA PERF. ST

90.0m – 300 DIA PERF. ST

200 DIA

250 W

250mm WV

10"-8" TEE AND VALVE

8" TEE AND VALVE

CONTRACTOR TO OBTAIN PERMIT FROM COUNTY OF MIDDLESEX FOR CONNECTION TO EXISTING WATERMAIN. COORDINATION WITH THE COUNTY WILL BE REQUIRED.

EXISTING 200mm WATERMAIN STUB

CONTRACTOR TO PROVIDE KNOCKOUT FOR FUTURE CONNECTION INV TO BE CONFIRMED WITH ENGINEER

CONTRACTOR TO PROVIDE KNOCKOUT FOR FUTURE CONNECTION AT INV.230.92

CONTRACTOR TO COORDINATE WITH THE TOWNSHIP FOR THE TAPPING OF THE WATERMAIN INTO EXISTING

SANITARY CONNECTION INTO MH A

EXPAN.

20,000 S.F. EXPAN.

FINISHED FLOOR
ELEV. 232.95

PROPOSED
GROCERY
50,000 S.F.

FINISHED FLOOR
ELEV. 232.95

PROPOSED
RETAIL
40,000 S.F.

FINISHED FLOOR
ELEV. 232.85

AUTOMOTIVE/SPORTS STORE
75,240 S.F.
FINISHED FLOOR
ELEV. 233.00

FF 233.00
PROPOSED
MARK'S WORK WAREHOUSE
(8,000 SF)

FF 232.95
SERVICE CENTRE
DRIVE-THRU
8 BAYS

GARDEN CENTRE COMPOUND
(12,828 SF)

FROST SHADES
(4,500 SF)

FIRE AND TRUCK ROUTE
HEAVY DUTY ASPHALT

TOPSOIL
STOCKPILE

21.0m – 300 DIA
A257.2 @5.0 STORM
SEWER @ 0.50% SLOPE
MATCH EX INV IN MH
STUB INV. 230.357

This record document has been prepared based in part upon information furnished by others. Dillon Consulting Limited cannot assure the accuracy of others' information and thus is not responsible for the accuracy of this record document or for any error or omission that may have been incorporated into it as a result. Those relying on this record document are advised to obtain independent verification of its accuracy before applying it for any purpose.

RECORD DRAWING

RECORD DRAWING
PROFESSIONAL ENGINEER
IAN M. JAZA
PROVINCE OF ONTARIO

DILLON CONSULTING LIMITED

November 11, 2005
DATE

APPROVED AS TO FORM, IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF DILLON CONSULTING LIMITED AS TO DESIGN AND SPECIFICATION.

TOWN ENGINEER
THE TOWNSHIP OF STRATHROY-CARADOC

MADY DEVELOPMENT CORPORATION

DILLON CONSULTING
3200 Deziel Drive, Suite 608, Windsor, ON N8W 5K8
Phone: (519) 948-5000 Fax (519) 948-5054

No.	ISSUED FOR	DATE	BY
7	RECORD DRAWING	OCT 27/05	OM/EMA
6	CONSTRUCTION	APR 08/05	KEK/EMA
5	ADDENDUM #1	APR 06/05	KEK/EMA
4	MOE APPROVAL	MAR 29/05	KEK/EMA
3	TENDER	MAR 21/05	KEK/EMA
2	MUNICIPAL APPROVAL	MAR 21/05	KEK/EMA
1	MUNICIPAL REVIEW	MAR 08/05	KEK/EMA

SURVEY	BY OTHERS
DESIGN	KEK
DRAFTING	EMA
PRE-TENDER	GBW

0 10 20m
1:750

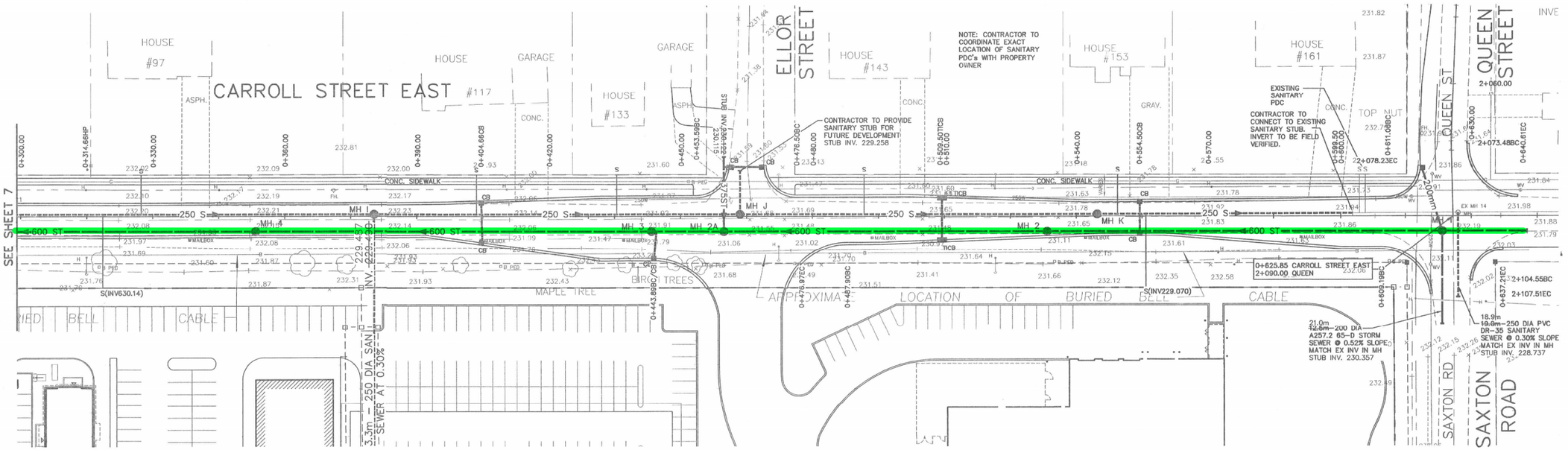
STRATHROY - CARADOC COMMERCIAL DEVELOPMENT

SITE SERVICES

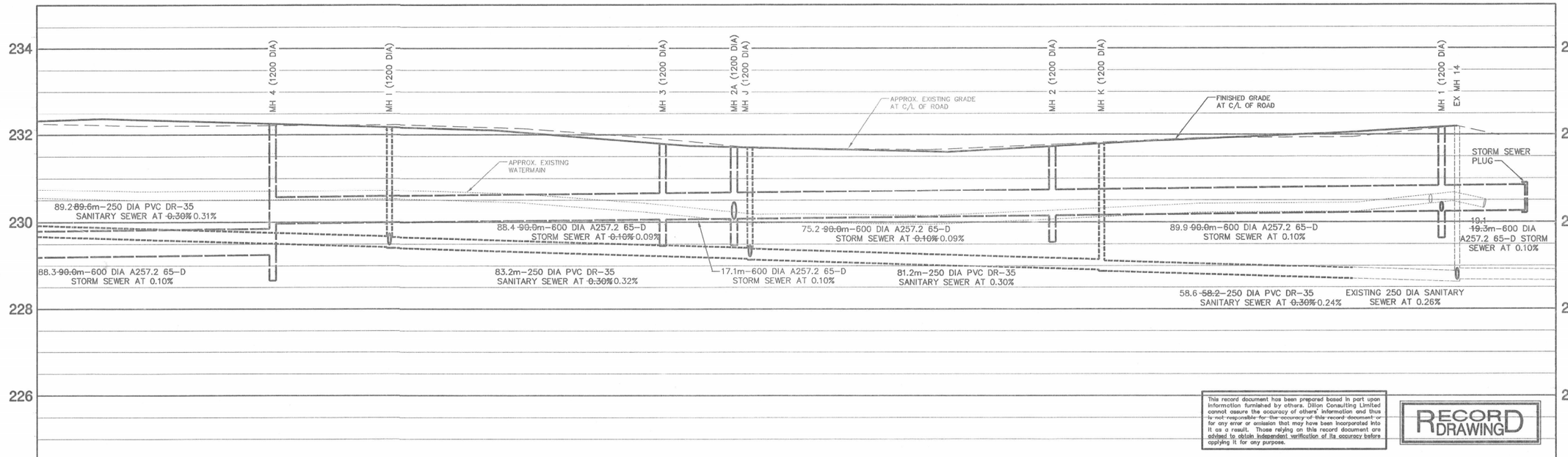
PROJECT NO. 04-3860-1000

SHEET NO. 2

Nov 11, 2005 - 10:43am G:\CAD\043860\RECORD\043860100 Record.dwg



REFER TO INDIVIDUAL PDC SHEETS
FOR INVERTS AND LOCATIONS OF SERVICES



This record document has been prepared based in part upon information furnished by others. Dillon Consulting Limited cannot assure the accuracy of others' information and thus is not responsible for the accuracy of this record document or for any error or omission that may have been incorporated into it as a result. Those relying on this record document are advised to obtain independent verification of its accuracy before applying it for any purpose.

RECORD DRAWING

	STORM SEWER INVERT	SANITARY SEWER INVERT
MH 4 (1200 DIA)	W229.254 S229.963 E229.959	
MH 1 (1200 DIA)		W229.437 W229.436 S229.447 E229.410 E229.487
MH 3 (1200 DIA)	W230.042 S230.059 E230.059	
MH 2A (1200 DIA) MH J (1200 DIA)	W230.077 N230.076 S230.076 E230.076	N229.217 N229.216 W229.216 E229.141 E229.129
MH 2 (1200 DIA)	W230.144 S230.148 E230.149 E230.148	
MH K (1200 DIA)		W228.854 W228.857 E228.857 E228.859
MH 1 (1200 DIA)		W228.719 W228.693 E228.693 STUB
EX MH 14	W230.235 S230.239 E230.239	W226.635 S226.672
STUB INV.	230.258 STUB INV.	

RECORD DRAWING
PROFESSIONAL ENGINEERS M. CAZA PROVINCE OF ONTARIO
Dillon Consulting Limited
November 11, 2005
DATE

APPROVED AS TO FORM, IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF DILLON CONSULTING LIMITED AS TO DESIGN AND SPECIFICATION.

TOWN ENGINEER
THE TOWNSHIP OF STRATHROY-CARADOC

MADY DEVELOPMENT CORPORATION

DILLON CONSULTING
3200 Deziel Drive, Suite 608, Windsor, ON N8W 5K8
Phone: (519) 948-5000 Fax (519) 948-5054

No.	ISSUED FOR	DATE	BY
7	RECORD DRAWING	OCT 27/05	OM/EMA
6	CONSTRUCTION	APR 06/05	KEK/EMA
5	ADDENDUM #1	APR 06/05	KEK/EMA
4	MOE APPROVAL	MAR 29/05	KEK/EMA
3	TENDER	MAR 21/05	KEK/EMA
2	MUNICIPAL APPROVAL	MAR 21/05	KEK/EMA
1	MUNICIPAL REVIEW	MAR 08/05	KEK/EMA

	BY OTHERS
SURVEY	
DESIGN	KEK
DRAFTING	EMA
PRE-TENDER	GBW

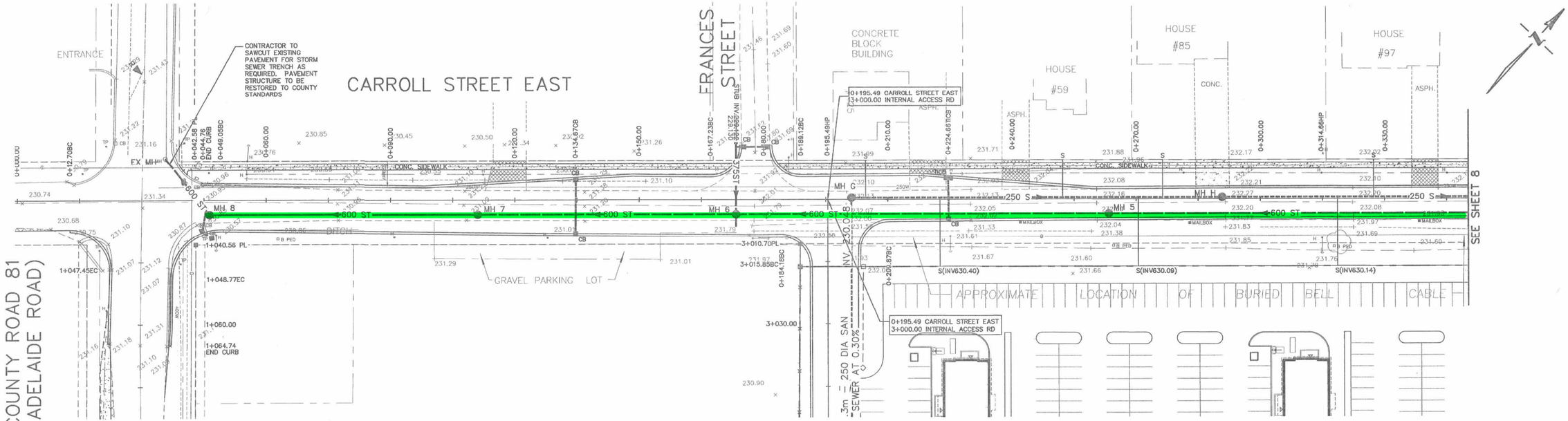
HORIZONTAL 1:500 (0, 10m) VERTICAL 1:50 (0, 1m)

STRATHROY - CARADOC COMMERCIAL DEVELOPMENT

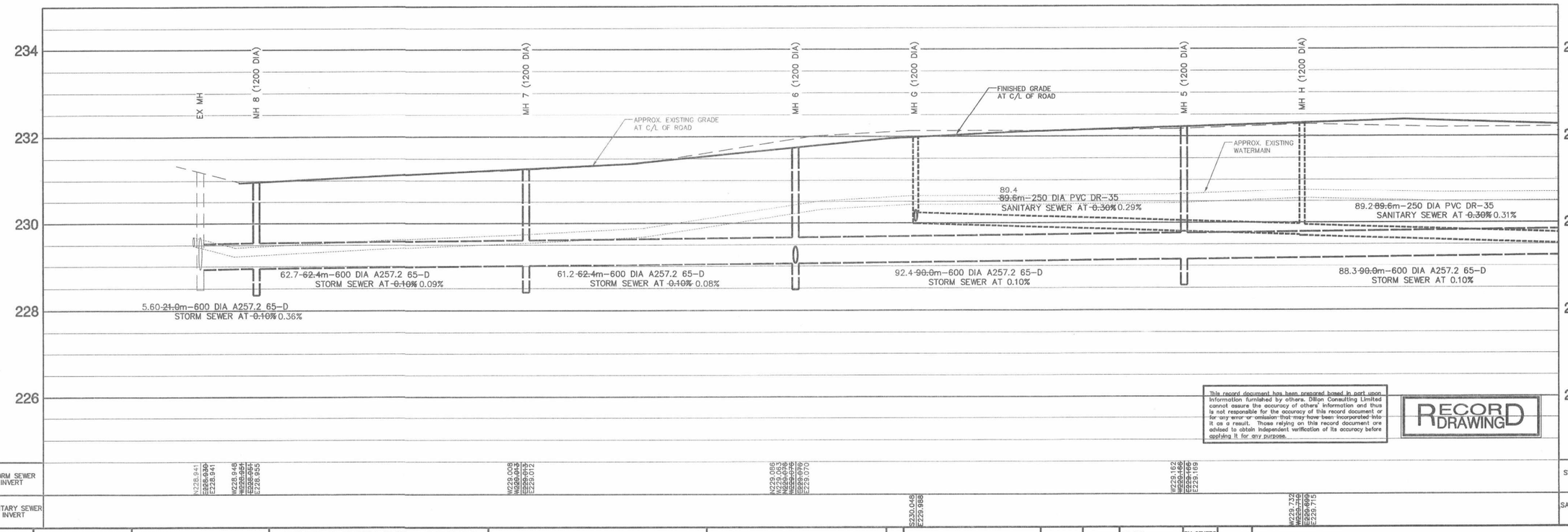
PLAN & PROFILE
CARROLL STREET EAST
STA. 0+300 TO STA. 0+630

PROJECT NO. 04-3860-1000
SHEET NO. 8

VIEW: SHT
Nov 11, 2005 - 11:23am G:\CAD\04386D\RECORD\04386D1000 Record.dwg



REFER TO INDIVIDUAL PDC SHEETS
FOR INVERTS AND LOCATIONS OF SERVICES



RECORD DRAWING

RECORD DRAWING

DILLON CONSULTING LIMITED

November 11, 2005
DATE

APPROVED AS TO FORM, IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF DILLON CONSULTING LIMITED AS TO DESIGN AND SPECIFICATION.

TOWN ENGINEER
THE TOWNSHIP OF STRATHROY–CARADOC

MADY DEVELOPMENT CORPORATION

DILLON CONSULTING
3200 Deziel Drive, Suite 608, Windsor, ON N8W 5K8
Phone: (519) 948–5000 Fax (519) 948–5054

No.	ISSUED FOR	DATE	BY
7	RECORD DRAWING	OCT 27/05	OM/EMA
6	CONSTRUCTION	APR 08/05	KEK/EMA
5	ADDENDUM #1	APR 06/05	KEK/EMA
4	MOE APPROVAL	MAR 29/05	KEK/EMA
3	TENDER	MAR 21/05	KEK/EMA
2	MUNICIPAL APPROVAL	MAR 21/05	KEK/EMA
1	MUNICIPAL REVIEW	MAR 08/05	KEK/EMA

	BY OTHERS
SURVEY	
DESIGN	KEK
DRAFTING	EMA
PRE–TENDER	GBW

HORIZONTAL 1:500 (0, 10m) VERTICAL 1:50 (0, 1m)

STRATHROY - CARADOC COMMERCIAL DEVELOPMENT

PLAN & PROFILE
CARROLL STREET EAST
STA. 0+030 TO STA. 0+330

PROJECT NO. 04-3860-1000

SHEET NO. 7

VER: SHT Nov 11, 2005 – 11:22am G:\CAD\043860\RECORD\043860100 Record.dwg

APPENDIX B

SBM Sanitary Sewer Design Sheet
Municipality of Strathroy-Caradoc as constructed Sanitary Sewer Design Sheet

STRIK BALDINELLI MONIZ
PLANNING · CIVIL · STRUCTURAL · MECHANICAL · ELECTRICAL

LONDON LOCATION
1599 Adelaide St. N., Unit 301
London, ON N5X 4E8
P: 519-471-6667

KITCHENER LOCATION
132 Queen St. S. Unit 4
Kitchener, ON N2G 1V9
P: 519-725-8093

www.sbmltd.ca

sbm@sbmltd.ca

Sanitary Service Design Sheet

Residential Occupancy:

*Medium Density (Zone Category R2) = 75 Units/hectare @ 2.4 people/unit
*High Density (Zone Category R3) = 150-300 Units/hectare @ 1.6 people/unit

***Design Parameters:**

Daily Flow =	300	L/cap/day
Sewage Infiltration =	6740	L/ha/day
=	0.08	L/ha/sec
Harmon Formula (Peaking Factor) =	(1 + 14/(4+P^0.5))	
Uncertainty Factor =	1.1	

Date: September 30, 2024
Job Number: SBM-17-0068
Client: 2102603 Ontario Inc.
Project: Strathroy Crossing Development
Location: 24605 Saxton Road, Strathroy

Location			Area		Population						Sewage Flows			
Area No.	From MH	To MH	Delta Hectare	Total Hectare	No. of Units	People Per Unit	People Per Hectare	Commericial Floor Area	Delta Pop.	Total Pop.	Harmon Peaking Factor	Infilt (L/S)	Sewage (L/S)	Total (L/S)
8 - Storey Apartment Building (West)				0.00	92	1.6			147	147	4.19	0.00	2.36	**2.36**
8 - Storey Apartment Building (East)				0.00	92	1.6			147	147	4.19	0.00	2.36	**2.36**
2 - Storey Back to Back Townhouses				0.00	36	2.4			86	86	4.26	0.00	1.41	**1.41**
Sewage Infiltration			3.14	3.14								0.25		**0.25**
Total Sewage Flow														**6.38**

* As per the Municipality of Strathroy-Caradoc Servicing Standards October 2021

SANITARY SEWER DESIGN SHEET
STRATHROY-CARADOC COMMERCIAL DEVELOPMENT

Project Name: Strathroy-Caradoc Commercial Development
Project Number: 04-3860-1000/2000
Design By: KEK
Checked By: NMC
Filename: N:\PROJECTS\DRAFT\043860\Task1000\SanitaryPreliminary6-final.qpw
Date: 11-May-2005
Sheet: 1 of 1

LOCATION				AREA AND POPULATION				SEWER DESIGN									PROFILE							Cover Check	
Area #	Street	From MH	To MH	Area (ha)	Accum Site Area (ha)	Floor Area (ha)	Accum Floor Area (ha)	Average Flow m^3/ha-d	Peak Factor 'M'	Average Daily Flow (l/s)	Peak Flow (l/s)	Extra Flow (l/s)	Design Flow (l/s)	Pipe Size (mm)	Slope (%)	Manning Coeff. "n"	Full Flow Capacity (l/s)	Full Flow Velocity (m/s)	Length (m)	Flow Time (min)	Drop in MH (m)	Fall (m)	U/S (m)	D/S (m)	Ground Elevation Up MH (m)	Depth at U/S (m)
	Internal	A	B	2.49	2.49	0.72	0.72	50.0	4.00	0.41	1.66	0.19	1.85	250	0.30	0.013	32.6	0.66	85.3	2.14	0.020	0.26	230.855	230.600	231.560	0.705
	Internal	B	C	0.00	2.49	0.00	0.72	50.0	4.00	0.41	1.66	0.19	1.85	250	0.30	0.013	32.6	0.66	85.3	2.14	0.020	0.26	230.580	230.324	231.360	0.780
	Internal	C	G	0.00	2.49	0.00	0.72	50.0	4.00	0.41	1.66	0.19	1.85	250	0.30	0.013	32.6	0.66	85.3	2.14	0.060	0.26	230.304	230.048	231.240	0.936
	Internal	D	E	5.55	5.55	1.78	1.78	50.0	4.00	1.03	4.12	0.43	4.55	250	0.30	0.013	32.6	0.66	73.2	1.84	0.020	0.22	230.190	229.970	232.400	2.210
	Internal	E	F	0.00	5.55	0.00	1.78	50.0	4.00	1.03	4.12	0.43	4.55	250	0.30	0.013	32.6	0.66	73.3	1.84	0.020	0.22	229.950	229.730	232.000	2.050
	Internal	F	I	0.00	5.55	0.00	1.78	50.0	4.00	1.03	4.12	0.43	4.55	250	0.30	0.013	32.6	0.66	73.3	1.84	0.060	0.22	229.710	229.490	231.800	2.090
	Carroll Street East	G	H	0.97	3.46	0.01	0.73	50.0	4.00	0.42	1.69	0.27	2.26	250	0.30	0.013	32.6	0.66	89.6	2.25	0.020	0.27	229.988	229.719	232.130	2.142
	Carroll Street East	H	I	1.04	4.51	0.01	0.75	50.0	4.00	0.43	1.73	0.35	2.49	250	0.30	0.013	32.6	0.66	89.6	2.25	0.020	0.27	229.699	229.430	232.270	2.571
	Carroll Street East	I	J	0.00	10.06	0.00	2.53	50.0	4.00	1.46	5.85	0.78	7.25	250	0.30	0.013	32.6	0.66	83.2	2.09	0.020	0.25	229.410	229.161	232.230	2.820
	Carroll Street East	J	K	4.28	14.34	1.21	3.74	50.0	4.00	2.16	8.65	1.12	12.36	250	0.30	0.013	32.6	0.66	81.2	2.04	0.030	0.24	229.141	228.897	231.700	2.559
	Carroll Street East	K	*Exist. Stub*	0.00	14.34	0.00	3.74	50.0	4.00	2.16	8.65	1.12	12.36	250	0.30	0.013	32.6	0.66	58.2	1.46	0.030	0.17	228.867	228.693	231.780	2.913
	Carroll Street East	*Exist. Stub*	*MH No. 14*	*0.00*	*14.34*	*0.00*	*3.74*	*50.0*	*4.00*	*2.16*	*8.65*	*1.12*	*12.47*	*250*	*0.30*	*0.013*	*32.6*	*0.66*	*24.2*	*0.61*		*0.07*	**228.693**	**228.620**	*231.940*	*3.247*
			Total	14.34		3.74																				

LOCATION				AREA AND POPULATION					DESIGN FLOW				SEWER CAPACITY					SEWER DATA			COVER CHECK			
				Individual		Cumulative			Peaking	Population	Extraneous	Total													
Area #	Street	From MH	To MH	Area (ha)	Number of Lots in Area	Population	Area (ha)	Total Population	Factor	Flow Q(p) (L/s)	Flow Q(i) (L/s)	Flow Q(p)+Q(i) (L/s)	Pipe Dia. (mm)	Length (m)	Slope (%)	Fall (m)	Capac. (l/s)	Vel. (m/s)	Upper Invert Elev.	Lower Invert Elev.	Drop in MH	Ground Elev. Up MH	Pipe Thickness (mm)	Cover (m)
	Carroll Street East	G	H	0.72	3.00	10.50	0.72	10.50	4.41	0.24	0.06	0.3	250	91.0	0.30	0.27	32.6	0.66	229.988	229.719	0.06	232.13	10	2.142
	Carroll Street East	H	I	0.40	1.00	3.50	0.40	3.50	4.45	0.08	0.03	0.1	250	91.0	0.30	0.27	32.6	0.66	229.699	229.430	0.06	232.23	10	2.531
	Carroll Street East	I	J	0.52	2.00	7.00	0.52	7.00	4.43	0.16	0.04	0.2	250	85.6	0.30	0.26	32.6	0.66	229.410	229.161	0.06	231.70	10	2.290
	Carroll Street East	J	K	0.57	2.00	7.00	0.57	7.00	4.43	0.16	0.04	0.2	250	90.0	0.30	0.27	32.6	0.66	229.141	228.897	0.06	231.94	10	2.799
	Carroll Street East	Exist. Stub	Exist. MH	0.27	1.00	3.50	0.27	3.50	4.45	0.08	0.02	0.1	250	10.0	0.30	0.03	32.6	0.66	228.693	228.620	0.06	232.00	10	3.307
	Ellor Street	Future	J	2.70	20.00	70.00	2.70	70.00	4.28	1.56	0.21	1.8	250	190.0	0.30	0.57	32.6	0.66	229.791	229.221	0.06	231.00	10	1.209
			Total	5.182																				

DESIGN FORMULAE

Q(p) = PqM/86.4 (l/s) where p population in 1000's
Q(i) = iA (l/s) where A=area in ha = peak extraneous flow (l/s)
Q(d) = Q(p) + Q(i) (l/s) = peak design flow (l/s)

NOTES

Peaking factor for Commercial Development = 4.0 based on MOE standards and Town of Strathroy-Carradoc Servicing requirements

The average flow is based on 5000 L/1000m2-day (based on MOE standards)

Q(d) = (PqM)/86.4+IA

Where Q(d) = Peak domestic sewage flow in L/s (including extraneous flows)
P = Design population, in thousands
q = Average daily per capita domestic flow in L/cap.d
M= Peaking factor 1+14/(4+P^.5)
I= Unit of peak extraneous flow in L/ha.s
A = Gross tributary area in ha
n = Roughness Coefficient 0.013

Average daily domestic flow	450.00	l/cap.d
Avg. daily commercial flow	28.00	m^3/ha.d
Avg. daily light industrial flow	35.00	m^3/ha.d
Avg. daily heavy industrial flow	55.00	m^3/ha.d
Infiltration	6740	L/ha.day 0.078 L/ha.s
Minimum pipe size =	200	mm
Minimum pipe velocity=	0.60	m/s 2.00 fps
Maximum Pipe Velocity =	3.00	m/s 12.0 fps

(according to Strathroy-Carradoc Servicing Standards)

APPENDIX C

Domestic Water Demand and Velocity Calculations
Hydrant Flow Test
NFPA#13 Flow Requirements and Hazard Classes
NFPA#13 Fire Fighting Calculations
Pressure Loss in Pipes (Hazen-Williams) Calculations
Site Plan Sketch for Water Service

STRIK BALDINELLI MONIZ
PLANNING · CIVIL · STRUCTURAL · MECHANICAL · ELECTRICAL

LONDON LOCATION
1599 Adelaide St. N., Unit 301
London, ON N5X 4E8
P: 519-471-6667

KITCHENER LOCATION
132 Queen St. S. Unit 4
Kitchener, ON N2G 1V9
P: 519-725-8093

www.sbmltd.ca

sbm@sbmltd.ca

DOMESTIC WATER DEMAND AND VELOCITY CALCULATIONS

DATE:	2024-09-29
JOB No.:	SBM-17-0068
Client:	**2102603 Ontario Inc.**
Project:	**Strathroy Crossing Development**
Location:	**24605 Saxton Road Strathroy, Ontario**

DEMAND CALCULATION

Avg. Day Demand =	250	L/day/cap
Avg. Day Demand =	0.002893519	L/s/cap
Max. Day Peaking Factor =	3.5	
Max. Hour Peaking Factor =	7.8	
Medium Density Residential =	2.4	p/unit
High Density Residential =	1.6	p/unit
*Commercial Area Allowance Average Flow= 28m3/(ha d) =	28000.0	L/day/ha

	Units/Area (ha)	Population	Avg. Day (L/s)	Max. Hour (L/s)	Max. Day (L/s)
Medium Density Residential Building (West)	92	147	0.43	3.32	1.49
Medium Density Residential Building (East)	92	147	0.43	3.32	1.49
Medium Density Stacked Townhouses	36	86	0.25	1.95	0.88
Total			**1.10**	**8.59**	**3.86**

*Refer to MOECC "The Design Guidelines for Drinking-Water Systems" (2008)
**Refer to "Municipality of Strathroy-Caradoc Servicing Standards" October (2021)

VELOCITY CALCULATION

Diameter (mm)	Demand (L/s)	Velocity (m/s)
250	8.59	0.175

Maximum allowable velocity of 3.0 m/s under maximum hour domestic flow conditions as per Sec 4.3.2 Strathroy-Caradoc Servicing Standards.

FCFP
BE PROTECTED
Sprinkler • Fire Alarm • Security

FLOW TEST RESULTS

Form SD-008 RevDate: April 28, 2015

Date of Test: August 12, 2019 **Time:** 7:45 am

Location: Walmart & LCBO private hydrants
Strathroy, Ontario
Static/Residual on Walmart hydrant
Flow on LCBO hydrant

Main Size: 10" **Static:** 58 **PSI**

Number of Openings	Size of Openings	Pitot PSI	Flow GPM	Residual PSI
1	2-1/2"	46	1140	55
2	2-1/2"	28 + 30	1810	53
3				
4				

Witnessed By: Andy Coghlin- FCFP
Jon Noszenko - FCFP

NFPA # 13 FLOW DEMAND REQUIREMENTS

HAZARD	SPRINKLER FLOW	HYDRANT ALLOWANCE	TOTAL FLOW
Light	175 GPM	100 GPM	275 GPM
Ordinary 1	250 GPM	250 GPM	500 GPM
Ordinary 2	350 GPM	250 GPM	600 GPM
Extra 1	750 GPM	500 GPM	1250 GPM
Extra 2	1000 GPM	500 GPM	1500 GPM
Warehousing	Varies too much to come up with a generic water demand		

The pressures range on each of these flows and would be generally be 35 PSI - 80 PSI Requirments, but this information can't truly be given until final layouts and calculations are complete

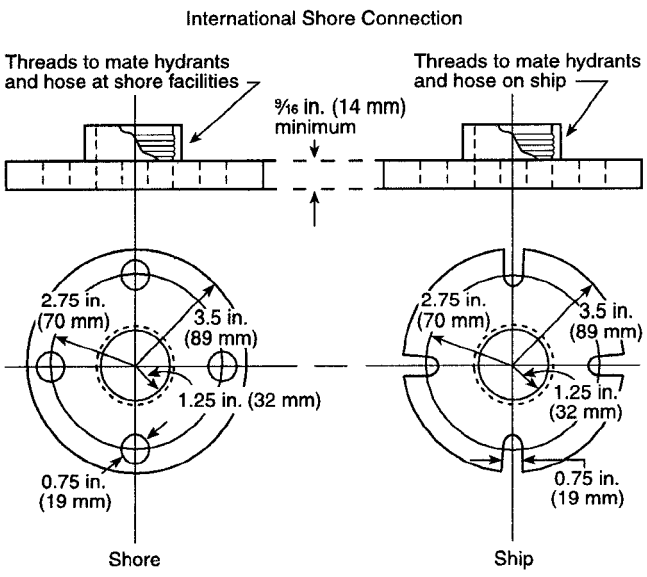


FIGURE A.3.10.7 International Shore Fire Connection.

A.5.1 Occupancy examples in the listings as shown in the various hazard classifications are intended to represent the norm for those occupancy types. Unusual or abnormal fuel loadings or combustible characteristics and susceptibility for changes in these characteristics, for a particular occupancy, are considerations that should be weighed in the selection and classification.

The light hazard classification is intended to encompass residential occupancies; however, this is not intended to preclude the use of listed residential sprinklers in residential occupancies or residential portions of other occupancies.

A.5.2 Light hazard occupancies include occupancies having uses and conditions similar to the following:

Animal shelters
Churches
Clubs
Eaves and overhangs, if of combustible construction with no combustibles beneath
Educational
Hospitals, including animal hospitals and veterinary facilities
Institutional
Kennels
Libraries, except large stack rooms
Museums
Nursing or convalescent homes
Offices, including data processing
Residential
Restaurant seating areas
Theaters and auditoriums, excluding stages and prosceniums
Unused attics

Note that it is not the committee's intent to automatically equate library bookshelves with ordinary hazard occupancies or with library stacks. Typical library bookshelves of approximately 8 ft (2.4 m) in height, containing books stored vertically on end, held in place in close association with each other, with aisles wider than 30 in. (762 mm) can be considered to be light hazard occupancies. Similarly, library stack areas, which are more akin to shelf storage or record storage, as defined in NFPA 232, *Standard for the Protection of Records*, should be considered to be ordinary hazard occupancies.

A.5.3 For purposes of these definitions, Class I, Class II, Class III, and Class IV commodities would be considered to have moderate rates of heat release, while Group A plastics would be considered to have high rates of heat release. Stockpiles are considered to include display merchandise (mercantile) and arrangements of combustibles ancillary to operations within the occupancy as opposed to dedicated storage areas where the fire loading is generally more severe.

A.5.3.1 Ordinary hazard occupancies (Group 1) include occupancies having uses and conditions similar to the following:

Automobile parking and showrooms
Bakeries
Beverage manufacturing
Canneries
Dairy products manufacturing and processing
Electronic plants
Glass and glass products manufacturing
Laundries
Restaurant service areas

A.5.3.2 Ordinary hazard occupancies (Group 2) include occupancies having uses and conditions similar to the following:

Agricultural facilities
Barns and stables
Cereal mills
Chemical plants — ordinary
Confectionery products
Distilleries
Dry cleaners
Exterior loading docks

Note that exterior loading docks only used for loading and unloading of ordinary combustibles should be classified as OH2. For the handling of flammable and combustible liquids, hazardous materials, or where utilized for storage, exterior loading docks and all interior loading docks should be protected based upon the actual occupancy and the materials handled on the dock, as if the materials were actually stored in that configuration.

Feed mills
Horse stables
Leather goods manufacturing
Libraries — large stack room areas
Machine shops
Metal working
Mercantile
Paper and pulp mills
Paper process plants
Piers and wharves

Plastics fabrication, including blow molding, extruding, and machining; excluding operations using combustible hydraulic fluids

Post offices

Printing and publishing

Racetrack stable/kennel areas, including those stable/kennel areas, barns, and associated buildings at state, county, and local fairgrounds

Repair garages

Resin application area

Stages

Textile manufacturing

Tire manufacturing

Tobacco products manufacturing

Wood machining

Wood product assembly

A.5.4.1 Extra hazard occupancies (Group 1) include occupancies having uses and conditions similar to the following:

Aircraft hangars (except as governed by NFPA 409, *Standard on Aircraft Hangars*)

Combustible hydraulic fluid use areas

Die casting

Metal extruding

Plywood and particleboard manufacturing

Printing [using inks having flash points below 100°F (38°C)]

Rubber reclaiming, compounding, drying, milling, vulcanizing

Saw mills

Textile picking, opening, blending, garnetting, or carding, combining of cotton, synthetics, wool shoddy, or burlap

Upholstering with plastic foams

A.5.4.2 Extra hazard occupancies (Group 2) include occupancies having uses and conditions similar to the following:

Asphalt saturating

Flammable liquids spraying

Flow coating

Manufactured home or modular building assemblies (where finished enclosure is present and has combustible interiors)

Open oil quenching

Plastics manufacturing

Solvent cleaning

Varnish and paint dipping

A.5.5 Other NFPA standards contain design criteria for fire control or fire suppression *(see Section 5.5 and Chapter 2)*. While these can form the basis of design criteria, this standard describes the methods of design, installation, fabrication, calculation, and evaluation of water supplies that should be used for the specific design of the system.

Other NFPA standards contain sprinkler system design criteria for fire control or suppression of specific hazards. This information has been either referenced or copied into Chapter 21 using NFPA's extract policy.

A.5.6 Specification of the type, amount, and arrangement of combustibles for any commodity classification is essentially an attempt to define the potential fire severity, based on its burning characteristics, so the fire can be successfully controlled by the prescribed sprinkler protection for the commodity class. In actual storage situations, however, many storage arrays do not fit precisely into one of the fundamental classifications; therefore, the user needs to make judgments after comparing each classification to the existing storage conditions. Storage arrays consist of thousands of products, which make it impossible to specify all the acceptable variations for any class. As an alternative, a variety of common products are classified in this annex based on judgment, loss experience, and fire test results.

Table A.5.6 provides examples of commodities not addressed by the classifications in Section 5.6.

Table A.5.6.3 is an alphabetized list of commodities with corresponding classifications.

Table A.5.6.3.1 through Table A.5.6.3.4 and Table A.5.6.4.1 provide examples of commodities within a specific class.

Table A.5.6 Examples of Commodities Not Addressed by the Classifications in Section 5.6

Boat Storage
- Stored on racks
Boxes, Crates
- Empty, wood slatted*
Lighters (butane)
- Loose in large containers (Level 3 aerosol)
Storage Container
- Large container storage of household goods

*Should be treated as idle pallets.

A.5.6.1.1 Commodity classification is governed by the types and amounts of materials (e.g., metal, paper, wood, plastics) that are a part of a product and its primary packaging. However, in a storage or warehousing situation, classification is also affected by such factors as the primary storage or shipping container material, the amount of air space, and the location of the more hazardous materials within the container. For example, a Group A plastic product enclosed in a five- or six-sided metal container can be considered Class II, while a ceramic product heavily wrapped in tissue paper and placed in a corrugated carton could be Class III.

A.5.6.2.2 For example, Class III will become Class IV, and Class IV will become a cartoned unexpanded Group A plastic commodity.

A.5.6.2.3 For example, Class II will become Class IV, and Class III and Class IV will become a cartoned unexpanded Group A plastic commodity.

A.5.6.3 See Table A.5.6.3.

Table A.5.6.3 Alphabetized Listing of Commodity Classes

Commodity	Commodity Class
Aerosols	
Cartoned or uncartoned — Level 1	Class III
Alcoholic Beverages	
Cartoned or uncartoned	
- Up to 20 percent alcohol in metal, glass, or ceramic containers	Class I
- Up to 20 percent alcohol in wood containers	Class II

STRIK BALDINELLI MONIZ
PLANNING · CIVIL · STRUCTURAL · MECHANICAL · ELECTRICAL

LONDON LOCATION
1599 Adelaide St. N., Unit 301
London, ON N5X 4E8
P: 519-471-6667

KITCHENER LOCATION
132 Queen St. S. Unit 4
Kitchener, ON N2G 1V9
P: 519-725-8093

www.sbmltd.ca

sbm@sbmltd.ca

Fire-Fighting Flow NFPA#13

Date: September 26, 2024
Job No: SBM-17-0068

Client: **2102603 Ontario Inc.**
Project: **Proposed Residential Building development**
Location: **24605 Saxton Road, Strathroy, Ontario**

Table 1. NFPA#13 Flow Demand Requirements

Hazard	Sprinkler Flow (USGPM)	Hydrant Allowance (USGPM)	Total Flow (USGPM)
Light	175	100	275
Ordinary 1	250	250	500
Ordinary 2	350	250	600
Extra 1	750	500	1250
Extra 2	1000	500	1500

Required Supply Flow Rate, USGPM (Table 1) = 275
Required Supply Flow Rate, L/min = 1041

Maximum Day Demand, L/min = 5.35 L/s (Refer to attached Domestic Water Demand calculation)
321 L/min

Required Supply Fire Flow + Maximum Day Demand, L/min = 1362

Incorporate Hazen-Williams and Bernoulli's Principles: $P_{residual} = P_{static} - (Q_{required}/Q_{test})^{1.85} \times (P_{static} - P_{test})$

	58.00	*psi (399.9 kPa) =	**0.00**	L/min (0 USGPM)
Provided Supply Flow Rate @	**55.00**	*psi (379.21 kPa) =	**4315.00**	L/min (1140 USGPM)
	53.00	*psi (365.42 kPa) =	**6852.00**	L/min (1810 USGPM)
Residual pressure at hydrant =	**56.30**	psi (388.2 kPa) =	**1362.00**	L/min (360 USGPM)

* Refer to Hydrant Flow Test by Forest City Fire Protection-70 Caroll Street Hydrant

Table 1. Water Velocity Calculation

Diameter (mm)	Demand (L/min)	Velocity (m/s)
250	1362	0.462

Maximum allowable velocity of 3.0 m/s as per Section 4.3.2 a) ii) of the Strathroy Caradoc Servicing Standards

STRIK BALDINELLI MONIZ
PLANNING · CIVIL · STRUCTURAL · MECHANICAL · ELECTRICAL

LONDON LOCATION
1599 Adelaide St. N., Unit 301
London, ON N5X 4E8
P: 519-471-6667

KITCHENER LOCATION
132 Queen St. S. Unit 4
Kitchener, ON N2G 1V9
P: 519-725-8093

www.sbmltd.ca

sbm@sbmltd.ca

Pressure Loss in Pipes (Hazen-Williams) Calculations

DATE: October 10, 2024
JOB N0.: SBM-17-0068

Client: **2102603 Ontario Inc.**
Project: **Strathroy Crossing development**
Location: **24605 Saxton Road, Strathroy, Ontario**

For data entry
Calculated, not for data entry

Pressure in Main

Starting Pressure Head at Building Connection without pressure loss	388.2	kPa		*Refer to attached fire hydrant flow test and Fire Flow Calculation

Pressure Loss in 250mm Service

Friction Losses Through Pipe Fitting in Terms of Equivalent Length of Pipe:

**Valve (2x4.56 ft)	2.78	m		**Refer to NFPA 1142, Table I.1 (c)
**45-degree elbow (2x10.49 ft)	7.36	m		
Length of pipe (m)	85	m		
l = total length of pipe, including additional length due to loss in fittings	95.14	m		
***c = Hazen-Williams roughness constant	110			***Refer to Strathroy-Caradoc Servicing Standards (SCSS), section 4.3.2
q = volume flow (L/s) [refer to fire-fighting demand calculations]	22.7			**** Refer to Fire-Fighting Flow NFPA#13 Calculation
d = inside or hydraulic diameter (mm)	250			

Calculated Pressure Loss

f = friction head loss in mm of water per 100 m of pipe (mm H_20 per 100 m pipe)	-139.28			
f = friction head loss in kPa per 100 m of pipe (kPa per 100 m pipe)	-1.37			
Head loss (mm H20)	-132.51			
Head loss (kPa)	-1.30		or	-0.19 psi

Calculated Flow Velocity

v = flow velocity (m/s)	0.46		*****Less than 3.0 m/s as per SCSS, therefore Okay

Final Pressure at the proposed building for sprinklers accounting for pressure loss (kPa)	**386.90**		or	56.12 **psi**

REFERENCE DOCUMENTS:

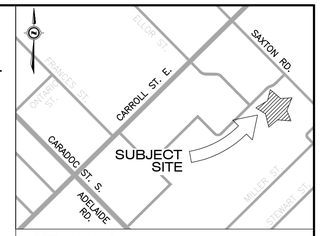
1. EXISTING LEGAL INFORMATION OBTAINED FROM SKETCH PROVIDED BY GIBSON SURVEYING INC., FILE No. 17-1136C, DATED FEBRUARY 14, 2017.

PARCELS, BUILDINGS AND EXISTING INFORMATION ARE APPROXIMATE AND FOR REFERENCE ONLY.

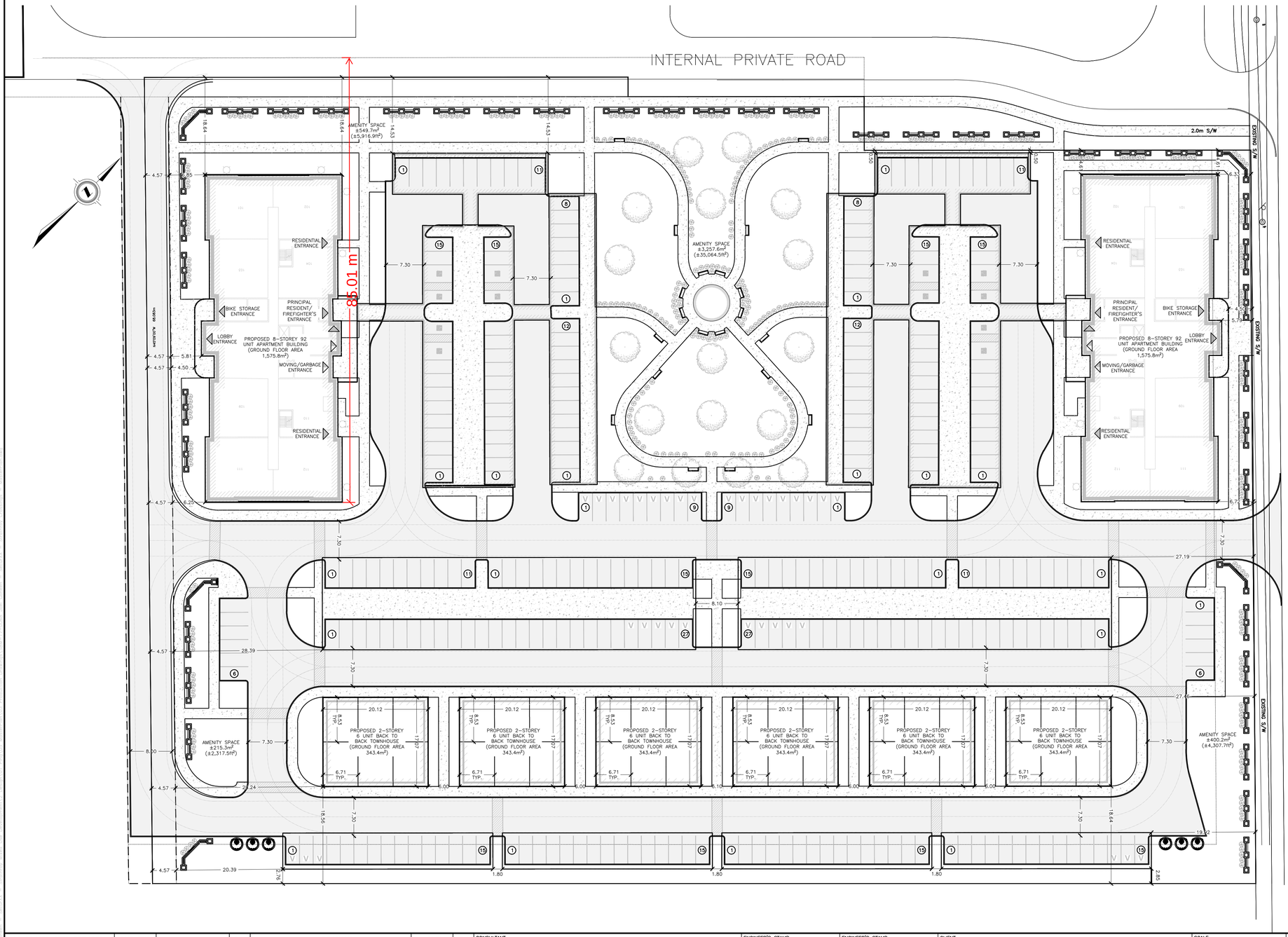
THE PLAN IS COMPILED AND SHOULD NOT BE CONSIDERED A PLAN OF SURVEY.

LEGAL INFORMATION

PART OF
LOT 23
REGISTRAR'S COMPILED PLAN No. 370
IN THE
MUNICIPALITY OF
STRATHROY-CARADOC
COUNTY OF MIDDLESEX



KEY PLAN
N.T.S.



ZONING DATA CHART

GROSS SITE AREA: 31,408.2 m²
BUILDING AREA: 5,212.0 m²
PARKING STRUCTURE AREA: 7,033.1 m²
PROPOSED UNIT COUNT 220
ASPHALT AREA (ON SITE): 12,489.1 m²
LANDSCAPED AREA: 6,674.0 m²

ITEM		REQUIRED	PROVIDED
	HIGH DENSITY RESIDENTIAL (R3-##)		
1	LOT AREA (m^2 PER UNIT MIN)	APARTMENT: 130 TOWNHOUSE: 210	APARTMENT XX.X** TOWNHOUSE XX.X** TOTAL: 142.8
2	LOT FRONTAGE (m MIN)	APARTMENT: 30 TOWNHOUSE: 6/UNIT	140.0 6.7 (EACH UNIT)
3	FRONT YARD DEPTH (m MIN)	APARTMENT: 4.5 TOWNHOUSE: 4.5	4.5 27.4
4	EXTERIOR SIDE YARD WIDTH (m MIN)	4.5	N/A
5	SIDE YARD WIDTH (m MIN)	APARTMENT: 3.0 TOWNHOUSE: 2.0	APARTMENT 4.6 (NORTH) TOWNHOUSE 18.5 ACCESSORY NORTH 0.5* ACCESSORY SOUTH 2.7
6	REAR YARD DEPTH (m MIN)	APARTMENT: 15.0 TOWNHOUSE: 9	APARTMENT 9.0* TOWNHOUSE 28.2 ACCESSORY 20.3
7	LOT COVERAGE (% MAX)	APARTMENT: N/A TOWNHOUSE: 45	N/A TOWNHOUSE: 6.6
8	ACCESSORY STRUCTURE COVERAGE MAXIMUM	$10m^2$ PER UNIT (10*220 = 2,200m^2)	32.0m^2 (7,033.1m^2)*
9	LANDSCAPED OPEN SPACE (% MIN)	APARTMENT: 20 TOWNHOUSE: 30	APARTMENT XX.X** TOWNHOUSE XX.X** TOTAL: 21.2
10	OUTDOOR COMMON AMENITY AREA MINIMUM	$20m^2$ PER UNIT (20*220 = 4,400.0m^2)	20.1m^2 (4,422.8m^2)
11	PARKING COVERAGE (% MAX)	25	39.8*
12	YARDS WHERE PARKING IS PERMITTED	ALL YARDS EXCEPT FRONT OR EXTERIOR	REAR & INTERIOR
13	MAXIMUM HEIGHT (m MAX)	APARTMENT: 15 TOWNHOUSE: 15 ACCESSORY 4.5	APARTMENT: TBD* TOWNHOUSE: <15 ACCESSORY 4.3

*ZONING DEFICIENCY
** TO BE CONFIRMED

PARKING REQUIREMENTS

MINIMUM PARKING SPACE DIMENSIONS 2.6mX5.4m, TYPE A 3.4mX5.5m, TYPE B 2.4mX5.5m

REQUIRED PARKING:			
DWELLING APARTMENT	1.25 PER UNIT	1.25*184	= 230 SPACES
VISITOR SPACES	0.15 PER UNIT	0.15*184	= 28 SPACES
DWELLING TOWNHOUSE	1.50 PER UNIT	1.50*36	= 54 SPACES
VISITOR SPACES	0.15 PER UNIT	0.15*36	= 6 SPACES
TOTAL REQUIRED PARKING			= 318 SPACES
TOTAL PROVIDED PARKING			= 318 SPACES
B/F PARKING REQUIRED:			= 5 TYPE 'A' 5 TYPE 'B'
B/F PARKING PROVIDED:			= 6 TYPE 'A', 6 TYPE 'B'

AS CONSTRUCTED SERVICES	COMPLETION

		No.	REVISIONS	D/M/Y	BY
DESIGN	JR	01	INITIAL ALL RESIDENTIAL DESIGN	03/09/24	JR
DRAWN	JR				
CHECKED	ND				
APPROVED	ND				
DATE	30/08/2024				
CAD	17-0068				

CONSULTANT
STRIK BALDINELLI MONIZ
sbm
PLANNING - CIVIL - STRUCTURAL - MECHANICAL - ELECTRICAL
1599 Adelaide St. N, Unit 301, London, Ontario, N5X 4E8
Tel: (519) 471-6667 Fax: (519) 471-0034
Email: sbm@sbmltd.ca

ENGINEER'S STAMP
PRELIMINARY NOT FOR CONSTRUCTION

ENGINEER'S STAMP

CLIENT
2102603 ONTARIO INC.
82 CAROLINE ST.
STRATFORD, ON
N5A 7L9

SCALE
SCALE - 1:400
4.0 0 8.0m

TITLE
CONCEPTUAL SITE PLAN
STRATHROY CROSSING DEVELOPMENTS
CARROLL
STRAHTROY, ON.

PROJECT No.
SBM-17-0068

SHEET No.
SP1

PLAN FILE No.
-

APPENDIX D

Storm Water Management Run-Off Coefficient Calculations
Strathroy Crossing Drain online presentation
Strathroy Crossing Drain 2023, by Spriet Associates

STRIK BALDINELLI MONIZ
PLANNING · CIVIL · STRUCTURAL · MECHANICAL · ELECTRICAL

LONDON LOCATION
1599 Adelaide St. N., Unit 301
London, ON N5X 4E8
P: 519-471-6667

KITCHENER LOCATION
132 Queen St. S. Unit 4
Kitchener, ON N2G 1V9
P: 519-725-8093

www.sbmltd.ca

sbm@sbmltd.ca

C' Coefficient Calculations

DATE:	September 30, 2024
JOB No.:	SBM-17-0068
Client:	**2102603 Ontario Inc.**
Project:	**Strathroy Development Crossing**
Location:	**24605 Saxton Road, Strathroy, Ontario**

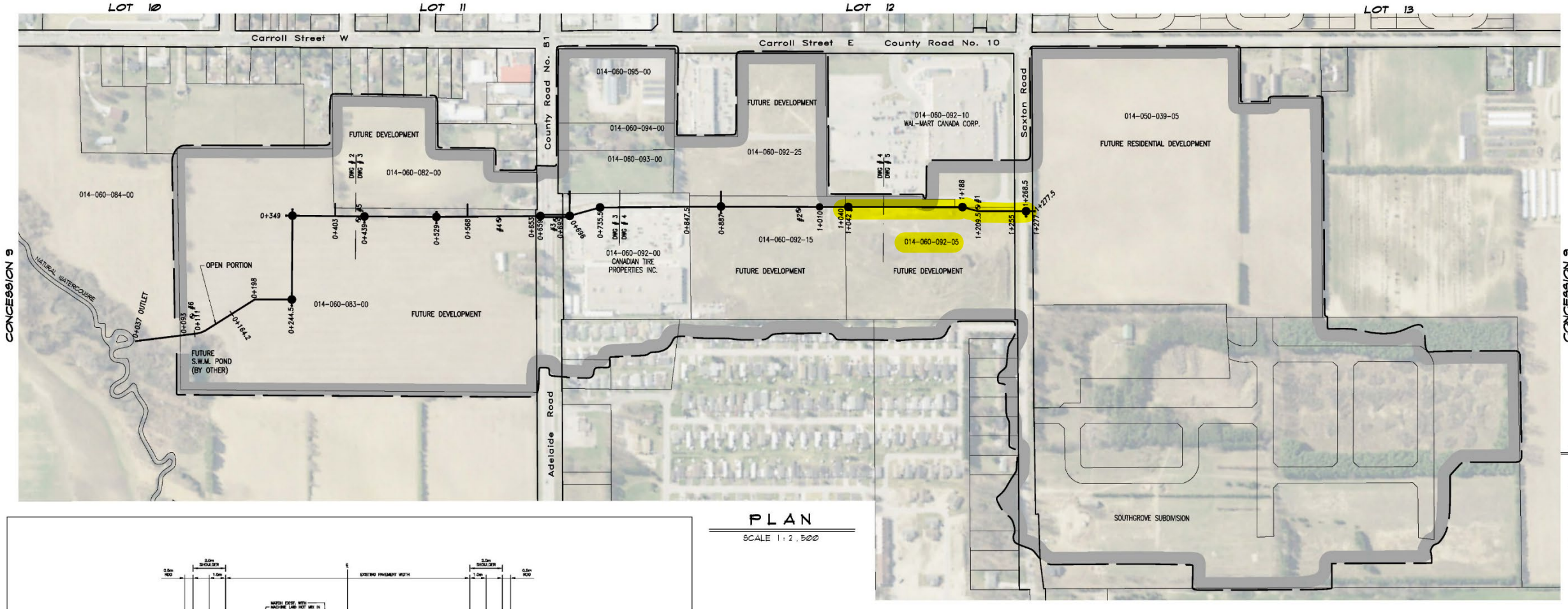
PRE-DEVELOPMENT AREA (A101, entire site)

	Area (m^2)	C	A*C
Total Area:	31408.20		
Building Area:	0.00	0.9	0
Concrete/Asphalt:	0.00	0.9	0
Gravel:	0.00	0.7	0
Landscaped/Open:	31408.20	0.2	6281.64
Totals:	31408.20		6281.64
$C_{eq} = \sum(A*C)/\sum(A) =$	**0.20**		

POST-DEVELOPMENT CONTROLLED AREA (A201, entire site)

	Area (m^2)	C	A*C
Total Area:	31408.20		
Building Area:	5212.00	0.9	4690.8
Concrete/Asphalt:	19522.20	0.9	17569.98
Gravel:	0.00	0.7	0
Landscaped/Open:	6674.00	0.2	1334.8
Totals:	31408.20		23595.58
$C_{eq} = \sum(A*C)/\sum(A) =$	**0.75**		

Strathroy-Crossings Municipal Drain



PUBLIC CONSULTATIONS

Preliminary design, cost estimates, and assessments were prepared and an informal public meeting was held to review the findings and preliminary proposals. Four initial alternatives were developed, costed, and reviewed with several stakeholders. Further input and requests were provided by the affected owners and the first proposal was chosen as the preferred solution. Detailed drawings and layouts were completed and reviewed further with the affected owners. The owner downstream of Adelaide Road has provided their draft subdivision layout and the drain has been redesigned to follow their road layout while providing a storm sewer capacity to serve their development.

DESIGN CRITERIA AND CONSIDERATIONS

Through consultation with the St. Clair Region Conservation Authority, proposed release flows must take into consideration the concern of the small release flows under existing conditions for the tributary area. This is due to the topography and soils described above which results in significant infiltration. Accordingly, small storms will continue to be completely infiltrated with this system providing flood relief during and after larger storm events. This system is designed to provide an outlet for individual properties after stormwater management measures for both quantity and quality and are provided on a site-by-site basis for each property. However, the capacity of the system through the downstream development property (Roll No. 014-060-083-00) has been designed to accommodate additional unrestricted flows which will outlet into a new stormwater management facility designed for this specific development with flows being restricted before being released into the downstream channel.

The allowable release rates, based on discussions with St. Clair Region conservation Authority, were determined to be 13.7 Litres per second per hectare (L/s/Ha) for future residential lands, 11.0 L/s/Ha for future commercial lands and 75 L/s/Ha for existing roads. A minimum release rate of 16 litres per second was attributed to each property to account for physical constraints such as minimum orifice sizes and available pipe sizes.

Resulting allowable release rates for each parcel are summarized in the table below:

Roll Number/ Property Identification	***Allowable Release Rate (L/S)***
014-050-039-05	153
Southgrove Development	236
Saxton Road and existing residential	88
014-060-092-10	16
014-060-092-05	35
014-060-092-25	29
014-060-092-15	33
014-060-093-00	16
014-060-094-00	16
014-060-095-00	16
014-060-082-00	36
Adelaide Road	55
TOTAL:	729