

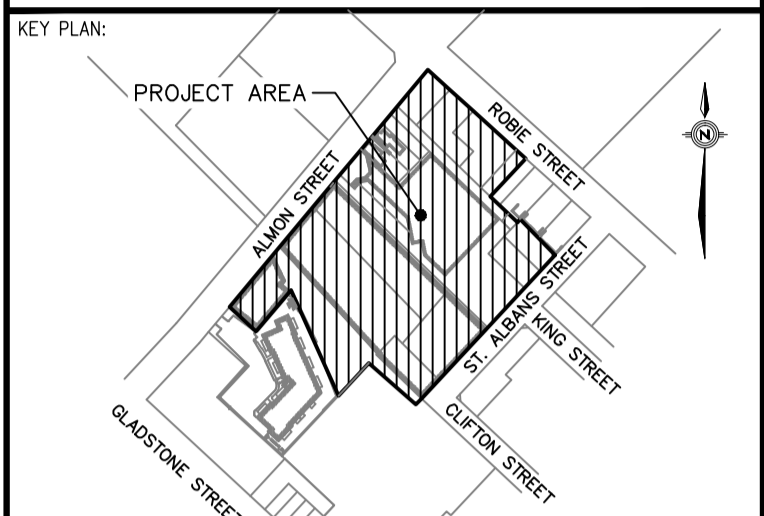
### STORM DRAINAGE ANALYSIS SCS METHOD (SITE ONLY)

SITE AREA (2.01 Ha)	Tc (min)	5 YEAR FLOW (L/s)	100 YEAR FLOW (L/s)
PRE DEVELOPED	5	409	652
FULLY DEVELOPED UNCONTROLLED FLOW	5	403	649
POST DEVELOPMENT	5	403	649

\* THE ABOVE CALCULATION ASSUMES NO STORAGE WILL BE PROVIDED. THE POST DEVELOPED SITE MAINTAINS SIMILAR RUNOFF CHARACTERISTICS AS THE PRE-DEVELOPED SITE. SYNTHETIC DESIGN STORM DISTRIBUTION ASSUMES ANNUAL HALIFAX STORM OF 24 HOUR DURATION, 5 MINUTE INCREMENT. 5 YEAR RAINFALL AMOUNT = 4.9in (123mm). 100 YEAR RAINFALL AMOUNT = 9.5in (241mm).

### SUBCATCHMENT AREAS & CURVE NUMBERS (SITE ONLY)

SITE AREA	SUBCATCHMENT AREA		SCS CURVE NUMBER	DESCRIPTION
	PRE-DEVELOPMENT	2.01± Ha		
			98	ASPHALT/ROOF
			96	ASPHALT/ROOF/GRASS



#### LEGEND:

PROPOSED	EXISTING
EDGE OF PAVEMENT	LOTLINE
WATERMAIN & GATE VALVE	WATERMAIN
SANITARY PIPE & MANHOLE	SANITARY PIPE & MANHOLE
STORM PIPE & MANHOLE	STORM PIPE & MANHOLE
UTILITY LINES & POLE	UTILITY LINES & POLE
STREET BOUNDARY	STREET BOUNDARY
PROPERTY BOUNDARY	PROPERTY BOUNDARY
EASEMENT	EASEMENT
CURB & DRIVEWAY CUT	CURB & DRIVEWAY CUT
CATCH BASIN	CATCH BASIN
FIRE HYDRANT	FIRE HYDRANT
STREET TREE	STREET TREE
ROAD SIGN	ROAD SIGN
	SANITARY LATERAL
	STORM LATERAL
	WATER LATERAL
	CATCH BASIN LEAD
	ENDCAP
	CULVERT
	LIGHT STANDARD
	PHONE PEDESTAL
	URD BOX
	HEADWALK
	SIDEWALK
	FENCE

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0	2016/09/14	ISSUED FOR DEVELOPMENT AGREEMENT
NO.	DATE: YYYY/MM/DD	DESCRIPTION
PROJECT NO:	161-00492	DATE: (YYYY/MM/DD) 2016/09/14
ORIGINAL SCALE:	HORIZONTAL: 1:500	VERTICAL: N/A
DESIGNED BY:	N. T. FOUGERE, P.ENG	
DRAWN BY:	M. AL-MIARI, CET	
CHECKED BY:	N. T. FOUGERE, P.ENG	

#### PRELIMINARY WASTEWATER CALCULATIONS (BUILDING 1)

PROPOSED MULTI-UNIT BUILDING  
342 APARTMENT UNITS - DENSITY = 2.25 PERSONS/UNIT  
2 APARTMENT UNITS - DENSITY = 3.35 PERSONS/UNIT

POPULATION (P) = 736 PEOPLE  
 $Q(PEAK) = [1.25 * (a * M)] + b$   
 $M = [1 + (14 / (4 + (P / 1000)^{0.5}))]$  = 3.88  
 $b = a * 24000 \text{ L/Ho/DAY} = 18216 \text{ L/DAY}$   
 $Q(PEAK) = [1.25 * (300 \text{ L/PERSON/DAY} * 736 \text{ PEOPLE} * 3.88)] + 18216 \text{ L/DAY}$   
 $Q(PEAK) = 12.55 \text{ L/s}$

#### PRELIMINARY COMMERCIAL WASTEWATER CALCULATIONS

AVERAGE DAILY SEWAGE FLOW = 6 L/m<sup>2</sup>/DAY  
 COMMERCIAL/RETAIL AREA = 8175m<sup>2</sup>  
 $Q(PEAK) = \text{AVERAGE DAILY SEWAGE} * \text{AREA} * \text{HOURS OF OPERATION/DAY} * \text{PEAKING FACTOR}$   
 $Q(PEAK) = 6 \text{ L/m}^2/\text{DAY} * 8175 * (24/12) * 4 = 4.54 \text{ L/s}$

TOTAL PEAK SANITARY FLOW FROM PROPOSED DEVELOPMENT = 12.55 L/s + 4.54 L/s = 17.09 L/s  
 SANITARY LATERAL PIPE - 200mm @ 1% Q(FULL) = 42.6 L/s > Q(PEAK) = 17.09 L/s; v=1.28 m/s  
 \*CALCULATIONS BASED ON INFORMATION FROM THE HALIFAX WATER DESIGN AND CONSTRUCTION SPECIFICATIONS, 2015 EDITION.

#### PRELIMINARY COMMERCIAL WASTEWATER CALCULATIONS (BUILDING 2)

AVERAGE DAILY SEWAGE FLOW = 6 L/m<sup>2</sup>/DAY  
 COMMERCIAL/RETAIL AREA = 4740m<sup>2</sup>  
 $Q(PEAK) = \text{AVERAGE DAILY SEWAGE} * \text{AREA} * \text{HOURS OF OPERATION/DAY} * \text{PEAKING FACTOR} + b$   
 $Q(PEAK) = 6 \text{ L/m}^2/\text{DAY} * 4740 * (24/12) * 4 + (.270 * 24000 \text{ L/DAY}) = 2.71 \text{ L/s}$

TOTAL PEAK SANITARY FLOW FROM PROPOSED DEVELOPMENT = 2.71 L/s  
 SANITARY LATERAL PIPE - 150mm @ 1% Q(FULL) = 19.8 L/s > Q(PEAK) = 2.71 L/s; v=0.78 m/s  
 \*CALCULATIONS BASED ON INFORMATION FROM THE HALIFAX WATER DESIGN AND CONSTRUCTION SPECIFICATIONS, 2015 EDITION.

#### PRELIMINARY WASTEWATER CALCULATIONS (BUILDING 3)

PROPOSED MULTI-UNIT BUILDING  
5 APARTMENT UNITS - DENSITY = 3.35 PERSONS/UNIT

POPULATION (P) = 17 PEOPLE  
 $Q(PEAK) = [1.25 * (a * M)] + b$   
 $M = [1 + (14 / (4 + (P / 1000)^{0.5}))]$  = 4.39  
 $b = a * 24000 \text{ L/Ho/DAY} = 19152 \text{ L/DAY}$   
 $Q(PEAK) = [1.25 * (300 \text{ L/PERSON/DAY} * 17 \text{ PEOPLE} * 4.39)] + 19152 \text{ L/DAY}$   
 $Q(PEAK) = 0.60 \text{ L/s}$

#### PRELIMINARY COMMERCIAL WASTEWATER CALCULATIONS

AVERAGE DAILY SEWAGE FLOW = 6 L/m<sup>2</sup>/DAY  
 COMMERCIAL/RETAIL AREA = 4366m<sup>2</sup>  
 $Q(PEAK) = \text{AVERAGE DAILY SEWAGE} * \text{AREA} * \text{HOURS OF OPERATION/DAY} * \text{PEAKING FACTOR}$   
 $Q(PEAK) = 6 \text{ L/m}^2/\text{DAY} * 4366 * (24/12) * 4 = 2.43 \text{ L/s}$

TOTAL PEAK SANITARY FLOW FROM PROPOSED DEVELOPMENT = 0.60 L/s + 2.43 L/s = 3.03 L/s  
 SANITARY LATERAL PIPE - 150mm @ 1% Q(FULL) = 19.8 L/s > Q(PEAK) = 3.03 L/s; v=0.81 m/s  
 \*CALCULATIONS BASED ON INFORMATION FROM THE HALIFAX WATER DESIGN AND CONSTRUCTION SPECIFICATIONS, 2015 EDITION.

CLIENT: WESTWOOD DEVELOPMENTS LIMITED

CLIENT REF. #: PROJECT: MIDTOWN NORTH HALIFAX, NS

TITLE: PRELIMINARY SERVICING PLAN

SHEET NUMBER: 1 OF 1

ISSUE: ISSUED FOR DEVELOPMENT AGREEMENT

DATE OF: 2016/09/14

REV # 0

XREFS: \\11.4.1.EXTERNAL\REFERENCES\161-00492\_BASE.DWG

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