

**FUNCTIONAL SERVICING REPORT  
PROPOSED RESIDENTIAL DEVELOPMENT**

**MN 5858 Dunn Street  
Niagara Falls, Ontario**

**Prepared By:**

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**Job: 16363**

**September 2023**

## **INTRODUCTION**

The following Functional Servicing Report was prepared by J.H. Cohoon Engineering Limited for RPDA Integrated Design Firm in support of future planning applications relating to the site located at MN 5858 Dunn Street, in the City of Niagara Falls, Ontario.

The development approach is to develop the site in a single-phase residential development which will consist of 72 stacked townhouse style of residential units as illustrated on the attached plan (Appendix 'A')

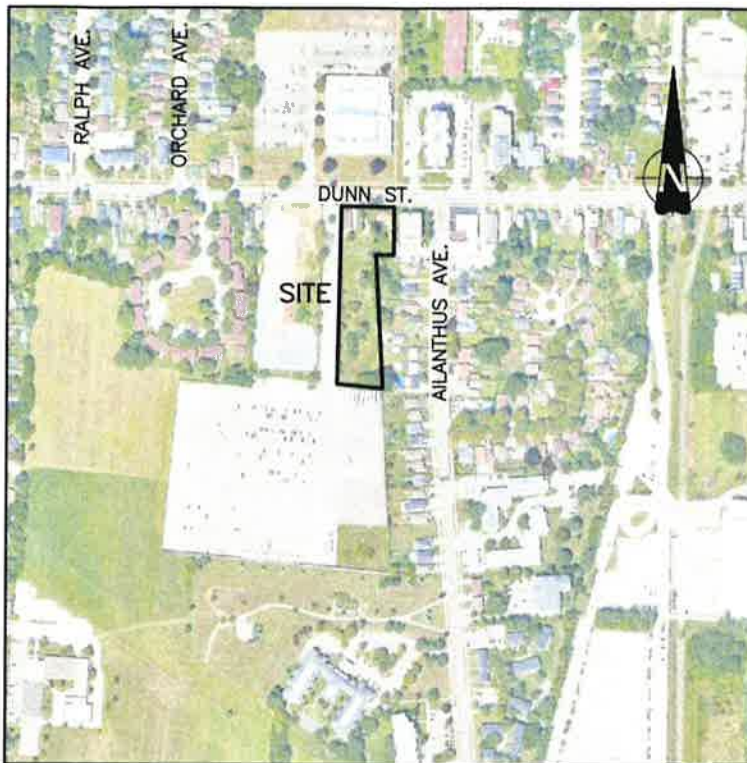
The site is located on the south side of Dunn Street just west of the intersection of Dunn Street and Ailanthus Avenue in the City of Niagara Falls. The site is approximately 0.730 hectares in size.

The objective of this report is to document the servicing strategy to be utilized for the site in a proposed initial development. Full services will be installed (i.e., sanitary, storm and water) within the development and connected to the existing municipal system in the existing municipal road allowances or abutting the subject lot. The owner will assume full responsibility for the installation and maintenance of the services on the property.

## **PROPOSED DEVELOPMENT CONCEPT**

The proposed development is to be constructed on the south side of Dunn Street consisting of 72 stacked townhouse style residential units on the property. The site proposed for the development as a residential development is 0.73 hectares in size. A key map illustrating the site location is provided in Figure 1.

The anticipated development is intended to be a series of townhouses of various block sizes with a total of approximately 72 total units. The development is illustrated on the plans prepared by J H Cohoon Engineering Limited being drawings which have been included within Appendix 'A' of this report



KEY PLAN

**Site Location – Key Plan  
Figure No. 1**

## **SANITARY SEWERS & APPURTENANCES**

### **3.1 Design Flows**

This site is proposed to be fully connected to the municipal sanitary sewer system located north of the site on Dunn Street adjacent to this site. The proposed development is proposed to drain by gravity to the existing sanitary sewer.

The proposed development is illustrated on the attached site plan being drawing that is located within Appendix 'A' of this report. In accordance with the current City of Niagara Falls requirements, the design flows are being submitted to the Engineering Department for the review of the conveyance systems within the City of Niagara Falls. The following information was provided to the City of Welland for their use and consideration.

Sanitary Design Flows

Residential Component

September 2023

72 townhouse style of Residential Units  
2.47 people per unit

On the basis of an average discharge in accordance with the Ministry of the Environment standards, the average daily flow is based upon 275 litres per person per day

$$\begin{aligned} 72 \times 2.47 \times 275 &= 48,906.0 \text{ liters per day} \\ \text{Total Average Design Flow} &= 0.566 \text{ liters per second.} \end{aligned}$$

Therefore, the total sanitary effluent from this development will be as following flows:

#### Summary of Results

$$\begin{aligned} \text{Average Flow Rate} \\ \text{Residential Component} &= 0.566 \text{ liters per sec} \end{aligned}$$

#### Infiltration Allowance

$$\begin{aligned} \text{Contributing Site Area} &= 0.730 \text{ hectares} \\ \text{Infiltration Rate} &= 0.286 \text{ liters per second per hectare} \\ \text{Infiltration Allowance} &= 0.209 \text{ liters per second} \end{aligned}$$

$$\begin{aligned} \text{Total Average Flow Rate} \\ &= 0.775 \text{ liters per sec} \end{aligned}$$

On the basis of the Harmon Peaking Factor, and a total population this development on the site being 177.84 (178) persons (residential), the peaking factor of 4.166 (Max 4) was applied resulting in a peak design flow for the development being 2.264 liters per second. The peaking factor utilized in this development taken from the Harmon Peaking Factor formula as follows:

$$M = 1.0 + 14 / (4 + \text{SQRT}(P))$$

Where P is the population in thousands

$$\begin{aligned} \text{Peak Flow Rate} \\ \text{Residential} &= 2.264 \text{ liters per sec} \\ \text{Infiltration Allowance} &= 0.209 \text{ liters per second} \\ \\ \text{Total Peak Flow Rate} \\ &= 2.473 \text{ liters per sec} \end{aligned}$$

### Sanitary Outlet

The sanitary sewer system for the subject development will be connected into the existing Sanitary Sewers that are located north of the site. The proposal is to discharge the sanitary effluent into the existing sanitary sewer in this location. The analysis relating to the overall impact of this development on the receiving sanitary sewer system will be reviewed by the City of Niagara Falls.

## WATERMAINS & APPURTENANCES

### Design Flows

The peak design flow rate from the proposed development using current City of Niagara Falls Standards. As with the wastewater, the estimated average flows have been detailed with the Sanitary Sewer Section of this report. (Section 3.1 above). However, in this case the peaking factor of 2 has been utilized and a demand of 275 liters per person per day.

The summary of the water system demands can be summarized as follows:

	Average Daily Flow Rate (Liters per second)	Peak Daily Flow Rate* (Liters per second)
Residential Component 72 Units	0.566	1.132

\* utilizing a peaking factor of 2.0 for the peak daily flow.

With the use of a peaking factor of 3.0, we have determined the following peak flows:

	Average Daily Flow Rate (Liters per second)	Peak Hourly Flow Rate** (Liters per second)
Residential Component 72 Units	0.566	1.698

\*\* utilizing a peaking factor of 3.0 for the peak daily flow.

The proposed fire protection to this development will be handled by the proposed fire hydrants to be located on the property and in the vicinity of the site.

Utilizing the requirements of the Fire Underwriters Survey 2020, the following outlines the water demand for the overall building area of the subject building.

This proposed structure is approximately 510.2 sq. m. in size (multi-storey building- 3 to 3.5 storey building). In accordance with the Fire Underwriters Survey 2020, consideration of the floor above results in the building area being increased to 2,040.8 sq. m.

Utilizing the Fire Underwriters Survey Document, our estimation of the required fire demand is as follows:

Estimate of Fire Flow Required	=	220 * C * SQRT (A)
Where C	=	Coefficient related to type of Construction
Fire Resistant Construction	=	1.5

A = Total Area of the Building (As outlined above)  
 2,040.8 sq. m.

= 220 x 1.5 \* SQRT (2,040.8)  
 = 14,907.8 litres per min  
 Rounded  
 = 15,000 litres per min

Modifications		
Occupancy	=	Low Hazard Occupancy
	=	-15%
	=	-2,250 litres per min

Net Fire Demand	=	12,750 litres per min
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Further Modifications		Automatic Sprinkler System = 0%
	=	0 litres per min

Spatial Exposure (Estimated) –		
	North 3.0m+/-	+25%
	East 2.0m+/-	+25%
	West >30.0m	+0%
	South 20.0m+/-	+15%
	Total	+65% (Max 75%)
	Increase	8,287.5 litres per min

Total Fire Demand                      21,037.5 litres per min            = 350.6 litres per sec.

The water distribution system for the subject development will be connected into the existing watermain located on Dunn Street. The analysis relating to the overall impact of this development on the existing watermain system will be reviewed by the City of Niagara Falls. Consideration of the introduction of firewalls within the structures will reduce the required fire flow

## **STORM SEWERS & APPURTENANCES**

### **Storm Sewers / Storm water Management**

The site is intended to be serviced with municipal storm sewers which are to be designed to handle the 5-year storm event. The overall stormwater management system is to be consistent with the current policies of the City of Niagara Falls which require reduction in the post development flows to below the pre-development rates for all storm events up to and including the 100-year event. A stand-alone Stormwater Management Report will address the quality and quantity controls that are required by this site during the full site plan approval process.

September 2023

## GRADING

Road grades will be established for the proposed development and are illustrated on the plans appended to the report. Minimum (0.50%) and maximum (6.0%) grades have been used in accordance with City of Niagara Falls design criteria.

## UTILITIES

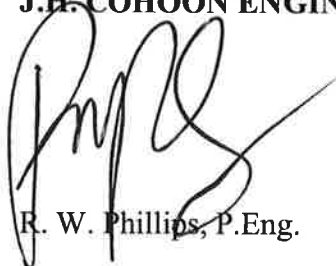
Gas, hydro, Bell, and cable utilities are available to service the proposed development. Coordination of these services will be required with Union Gas, the hydro utility, Bell, and the local cable tv provider.

## CONCLUSIONS

The preceding sections of this report outline the servicing and grading requirements for the proposed residential development on this site. Based on the work completed to date, it may be concluded that the proposed development may be developed with full municipal services.

Report Prepared By:

**J.H. COHOON ENGINEERING LIMITED**

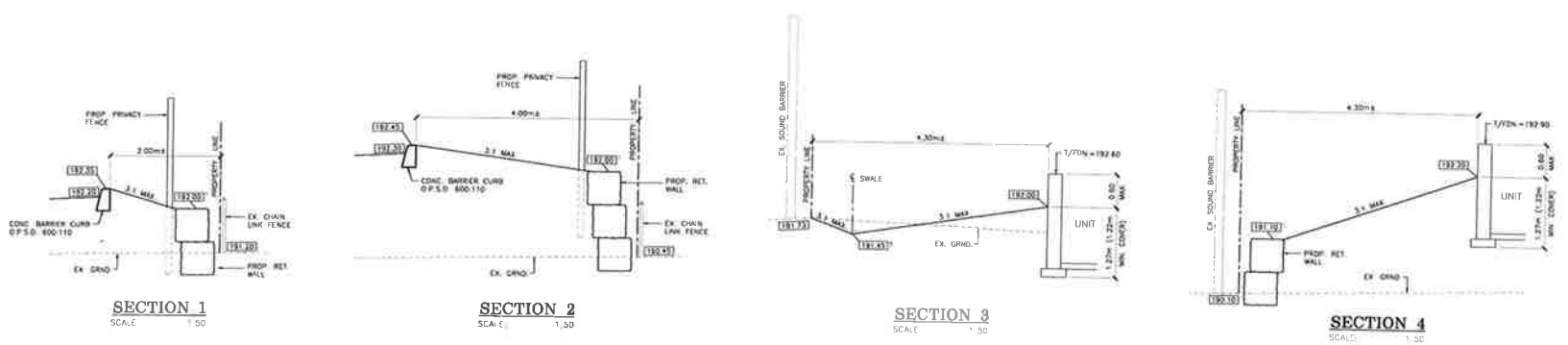


R. W. Phillips, P.Eng.





**Appendix 'A'**  
**Site Development Plan Prepared by J H Cohoon Engineering Limited**



- NOTES:**
1. ALL ELEVATIONS SHOWN ARE METRIC.
  2. BUILDER/OWNER TO VERIFY COMPLIANCE WITH ZONING BYLAWS (EX. SIDEYARDS, SETBACKS, REARWARDS ETC.).
  3. BUILDER TO VERIFY LOCATION OF ABOVE GROUND STRUCTURES (EX. TRANSFORMERS, STREET LIGHTS, HYDRANTS, FUELS TANKS ETC.) DOES NOT CONFLICT WITH (PROPOSED) ENTRANCE LOCATION.
  4. MAINTAIN THE DRAINAGE AROUND BUILDING FOOTINGS TO BE DISCHARGED TO GRADE VIA A SUMP TANK (EX. A "TOOSE-NEET" STYLE DRAIN). ALL STORM OUTLETS TO BE DIRECTIONED TOWARDS LANDSCAPES IN FRONT OF UNIT.
  5. CONTRACTOR TO VERIFY LOCATION/ELEVATION OF EXISTING SPORES PRIOR TO CONSTRUCTION.
  6. THE BUILDER/CONTRACTOR IS TO ENSURE FOOTINGS ARE FOUNDED ON SOIL CAPABLE OF SUPPORTING THE ANTICIPATED LOADS.
  7. BOUNDARY AND TOPO GRAPHIC SURVEY PROVIDED BY THE LANDSCAPE GROUP (DWG FILE #20222-00-01 DATED JULY 17, 2022).

T.B.M. No. 1 ELEV. = 193.10m (GEO)

TOP SURF OF CURB HIGHEST ON THE NORTH SIDE OF DUNN STREET AS SHOWN (DATE: 10/23) 3" HORIZONTAL CURB 1000mm

**LEGEND:**

- EXISTING ELEVATIONS
- PROPOSED ELEVATIONS
- PROPOSED SWALE ELEVATIONS
- PROPOSED TOP OF RET. WALL ELEVATIONS
- PROPOSED SWALE
- GENERAL DRAINAGE
- PROPOSED RAINWATER LEADER
- PROPOSED DEPRESSED CURB
- PROPOSED HYDRO TRANSFORMER
- PROPOSED LIGHT STANDARD
- PROPOSED OVERLAND FLOW ROUTE

**PRIMARY CONSULTANT & PROJECT MANAGER**

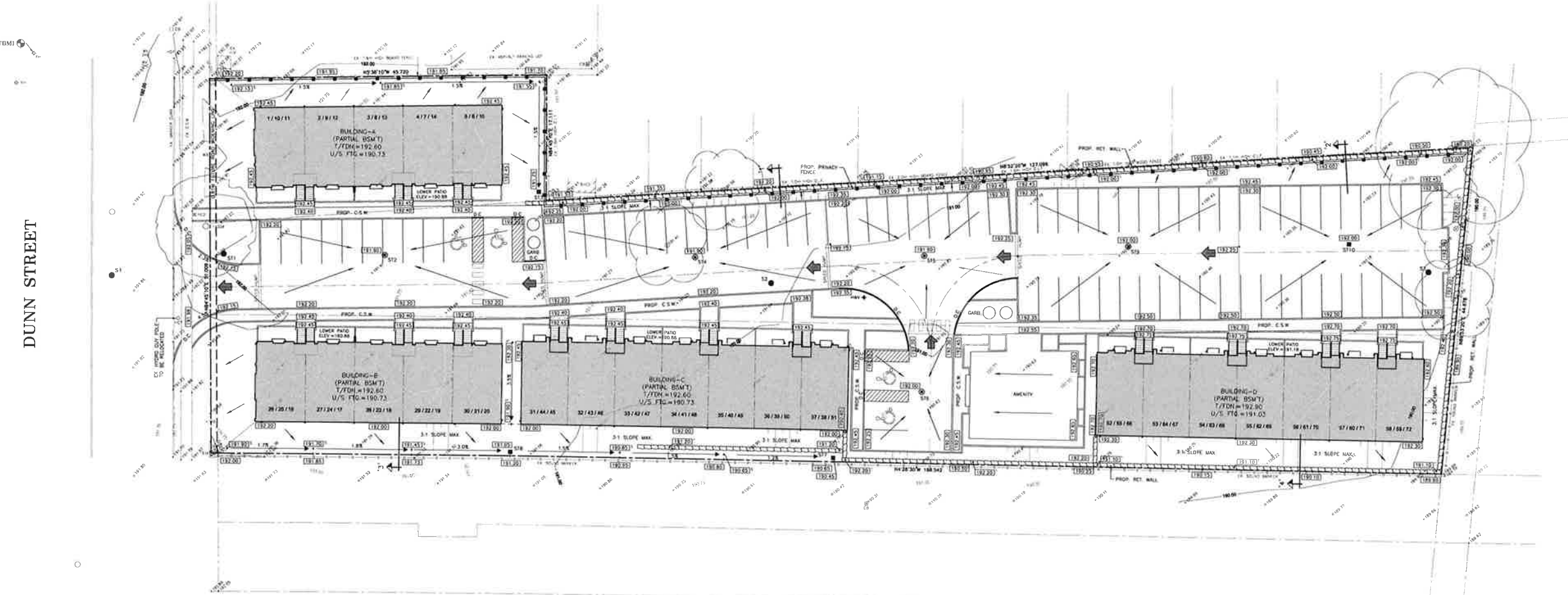
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INTEGRATED DESIGN FIRM  
SUITE 202, 1055 BRANFORD DR., MISSISSAUGA, ONTARIO L4V 1S5  
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WWW.RPDS.COM

**ELECTRICAL CONSULTANT**

**CONSULTING CIVIL ENGINEERS**

**J.H. COHOON ENGINEERING LIMITED**  
CONSULTING ENGINEERS  
410 NORTH ROAD UNIT #1 - BRANTFORD - ONTARIO - N3T 5W8  
TEL: 519-753-2888 FAX: 519-753-4923 www.cohoon.com

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This drawing is not to be used for construction until signed and stamped by the designer.



No.	Date	Version	Dwn.

PROJECT: **TOWNHOMES DEVELOPMENT**  
5858 Dunn Street  
City Of Niagara Falls  
Canada

DRAWING TITLE: **GRADING PLAN**

DRAWN BY: K.P.B. DATE: OCT, 10/23  
CHECKED BY: R.W.P. SCALE: 1:250  
PROJECT NO.: **16363** DRAWING NO.: **C-01**



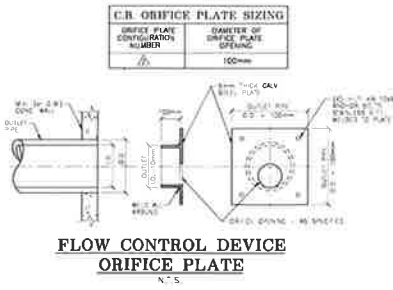
DUNN STREET

WATERMAIN CROSSINGS						
LOCATION	STM INV.	STM GRV.	SAN. INV.	SAN. GRV.	W/M INV. AT CROSSING ONLY	W/M GRV. AT CROSSING ONLY
1	189.05	189.25			190.30	190.45
2	189.14	189.34			190.30	190.45
3	188.90	189.10			190.30	190.45
4	189.35	189.55			190.55	190.70

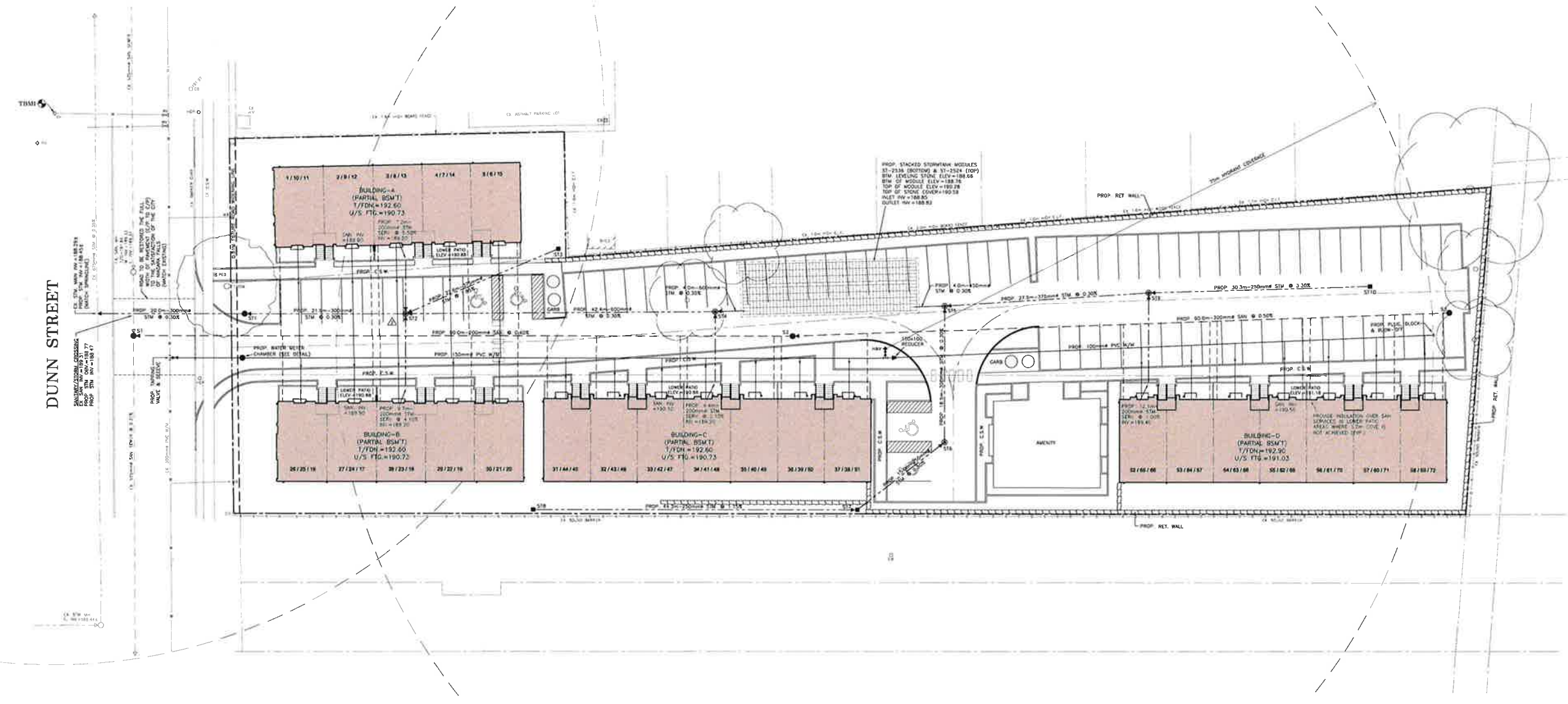
\* DENOTES LOCATION WHERE WATERMAIN IS TO BE LOWERED BELOW STORM SEWER (ONLY) OR SANITARY SEWER (ONLY) USING 45° VERT. BENDS (PROVIDE 0.50m MIN. CLEARANCE - WATERMAIN ELEVATIONS SHOWN ARE THE LOWERED ELEVATIONS AT INDICATED CROSSING LOCATIONS)

STORM SYSTEM				
M/W No.	DESCRIPTION	E/C	INVERTS	
S71	STORM/CEPTOR MODEL EFD6		192.30	N 188.51 S 188.57
S72	1.5m P/C CB/MH		191.50	N 188.64 S 188.68 SE 189.00 W 188.80 E 188.80
S73	0.6x0.6x1.95m P/C CB		181.25	N 189.43
S74	1.5m P/C CB/MH		191.50	N 188.79 S 188.81 W 188.88
S75	1.2m P/C CB/MH		191.50	N 188.88 S 188.88 W 188.88
S76	1.2m P/C CB/MH		192.00	N 188.98 S 188.98 W 188.98
S77	0.6x0.6x1.67m P/C CB		190.45	SE 189.01 N 189.03
S78	0.6x0.6x1.67m P/C CB		191.05	S 189.54
S79	1.2m P/C CB/MH		192.00	N 189.98 S 189.58 W 189.28
S710	0.6x0.6x1.67m P/C CB		192.00	N 190.50

SANITARY SYSTEM				
M/W No.	DESCRIPTION	E/C	INVERTS	
S1	1.2m P/C MH		191.80	N 189.72 S 189.33
S2	1.2m P/C MH		192.15	N 189.71 S 189.73
S3	1.2m P/C MH		192.30	N 190.18



T.B.M. No. 1 ELEV. = 193.10m (GEO)  
TOP NAT. OF FIRE HYDRANT ON THE NORTH SIDE OF DUNN STREET AS SHOWN (EASTERLY OF 2 HYDRANT CLOSE TOGETHER)



PRIMARY CONSULTANT & PROJECT MANAGER  
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No.	Date	Version	Dwn.

PROJECT:  
**TOWNHOMES DEVELOPMENT**  
5858 Dunn Street  
City Of Niagara Falls  
Canada

DRAWING TITLE:  
**SERVICING PLAN**

DRAWN BY: K.P.B. DATE: OCT 10/23

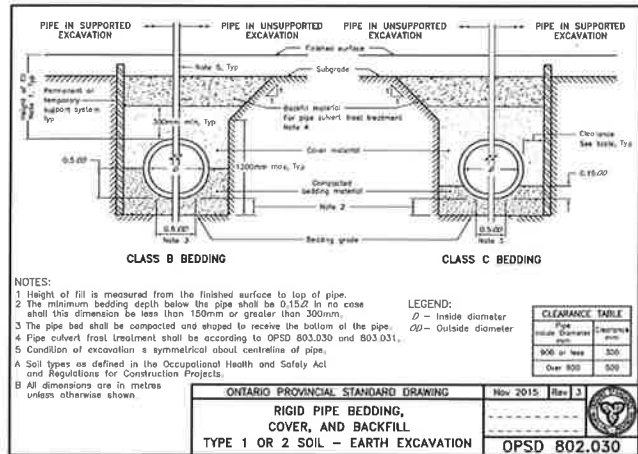
CHECKED BY: R.W.P. SCALE: 1:250

PROJECT NO.: DRAWING NO.:

**16363 C-02**





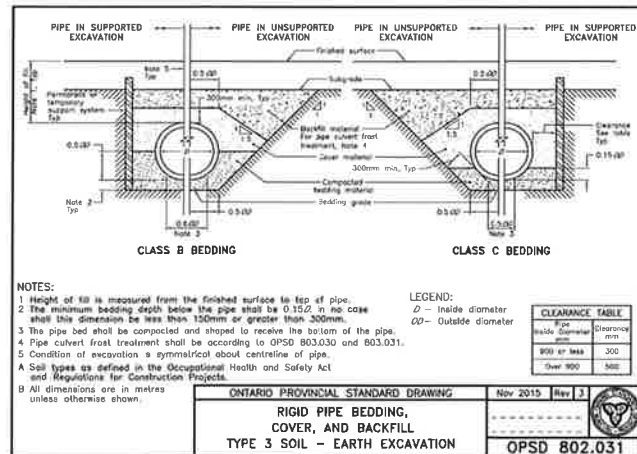


**NOTES:**  
 1 Height of fill is measured from the finished surface to top of pipe.  
 2 The minimum bedding depth below the pipe shall be 0.15D in no case shall this dimension be less than 150mm or greater than 300mm.  
 3 The pipe bed shall be compacted and shaped to receive the bottom of the pipe.  
 4 Pipe culvert frost treatment shall be according to OPSD 803.030 and 803.031.  
 5 Condition of excavation is symmetrical about centreline of pipe.  
 A Soil types as defined in the Occupational Health and Safety Act and Regulations for Construction Projects.  
 B All dimensions are in metres unless otherwise shown.

**LEGEND:**  
 D - Inside diameter  
 OD - Outside diameter

PIPE DIAMETER (mm)	MINIMUM BEDDING DEPTH (mm)	MAXIMUM BEDDING DEPTH (mm)
100 to 150	150	300
Over 150	300	300

**ONTARIO PROVINCIAL STANDARD DRAWING** Nov 2015 Rev 3  
**RIGID PIPE BEDDING, COVER, AND BACKFILL**  
 TYPE 1 OR 2 SOIL - EARTH EXCAVATION  
**OPSD 802.030**

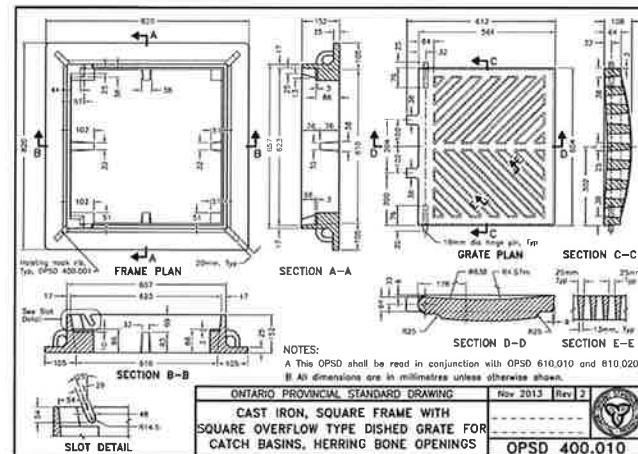


**NOTES:**  
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**LEGEND:**  
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 OD - Outside diameter

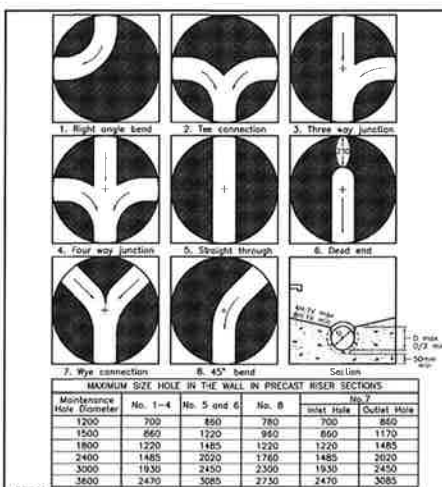
PIPE DIAMETER (mm)	MINIMUM BEDDING DEPTH (mm)	MAXIMUM BEDDING DEPTH (mm)
100 to 150	150	300
Over 150	300	300

**ONTARIO PROVINCIAL STANDARD DRAWING** Nov 2015 Rev 3  
**RIGID PIPE BEDDING, COVER, AND BACKFILL**  
 TYPE 3 SOIL - EARTH EXCAVATION  
**OPSD 802.031**



**NOTES:**  
 A This OPSD shall be read in conjunction with OPSD 610.010 and 610.020.  
 B All dimensions are in millimetres unless otherwise shown.

**ONTARIO PROVINCIAL STANDARD DRAWING** Nov 2013 Rev 2  
**CAST IRON, SQUARE FRAME WITH SQUARE OVERFLOW TYPE DISHED GRATE FOR CATCH BASINS, HERRING BONE OPENINGS**  
**OPSD 400.010**

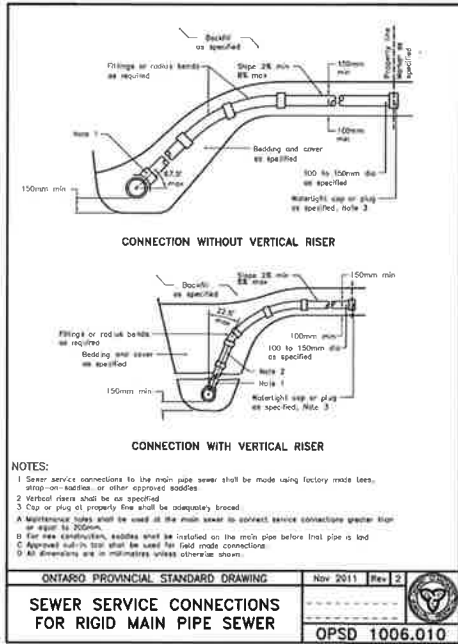


**MAXIMUM SIZE HOLE IN THE WALL IN PRECAST RISER SECTIONS**

Maintenance Hole Diameter	No. 1-4	No. 5 and 6	No. 8	No. 7
1200	700	850	780	860
1500	860	1220	950	860
1800	1220	1485	1220	1485
2400	1485	2020	1760	1485
3000	1930	2450	2300	1930
3600	2470	3085	2730	2470

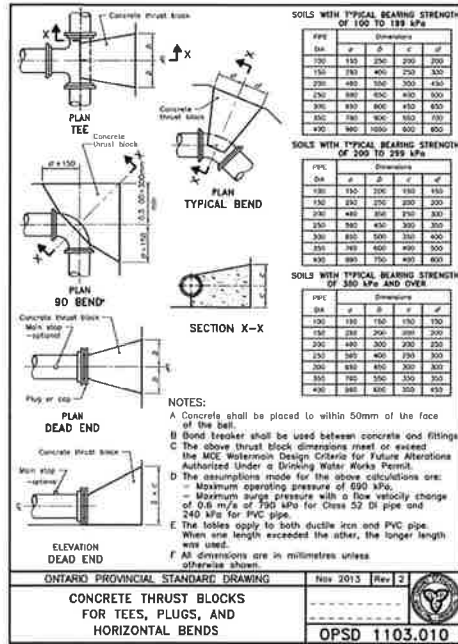
**NOTES:**  
 1 Slugs shall be notched from the outlet hole opening for top of benching.  
 A Curbs for benching shall be 300mm.  
 B When benching is hand-installed, it shall be given wood float finish, channel shall be given steel brood finish.  
 C Benchings slope and height shall be as specified.  
 D When specified maintenance holes that are 1200mm in diameter with a uniform channel for 200 or 250mm pipe may be precast at the manufacturer with standardized benching steps and channel orientation.  
 E All dimensions are nominal.  
 F All dimensions are in millimetres unless otherwise shown.

**ONTARIO PROVINCIAL STANDARD DRAWING** Nov 2014 Rev 1  
**MAINTENANCE HOLE BENCHING AND PIPE OPENING ALTERNATIVES**  
**OPSD 701.021**



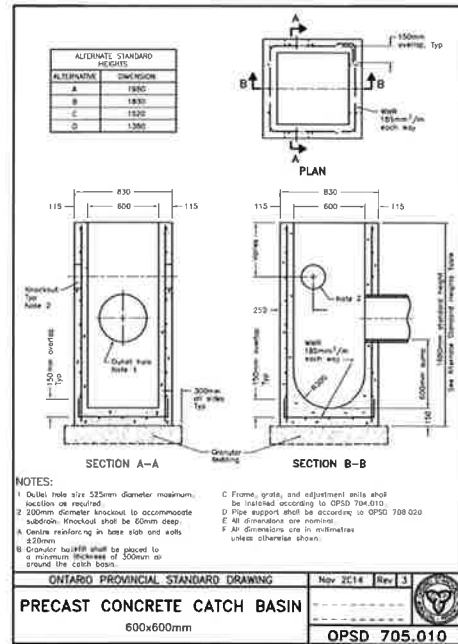
**NOTES:**  
 1 Sewer service connections to the main pipe sewer shall be made using factory made tees, elbows, crosses, or other approved fittings.  
 2 Vertical risers shall be as specified.  
 3 Cap or plug of properly fine shall be temporary broad.  
 A Maintenance holes shall be used at the main sewer to connect service connections greater than 100mm in diameter.  
 B For new construction, tees shall be installed on the main pipe before that pipe is laid.  
 C Approved methods shall be used for field made connections.  
 D All dimensions are in millimetres unless otherwise shown.

**ONTARIO PROVINCIAL STANDARD DRAWING** Nov 2011 Rev 2  
**SEWER SERVICE CONNECTIONS FOR RIGID MAIN PIPE SEWER**  
**OPSD 1006.010**



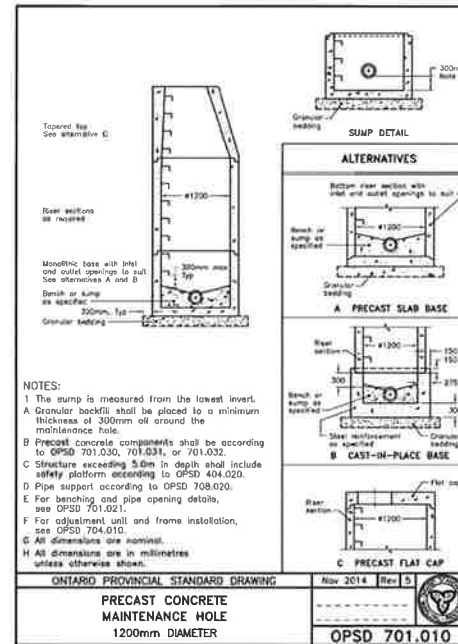
**NOTES:**  
 A Concrete shall be placed to within 50mm of the face of the bell.  
 B Bond breaker shall be used between concrete and fittings.  
 C The above thrust block dimensions meet or exceed the MCE Watermain Design Criteria for Future Alterations Authorized Under a Drinking Water Works Permit.  
 D The assumptions made for the above calculations are:  
 - Maximum operating pressure of 650 kPa.  
 - Maximum surge pressure with a flow velocity change of 0.5 m/s of 750 kPa for Class 2 D pipe and 240 kPa for PVC pipe.  
 E The tables apply to both ductile iron and PVC pipe. When one length exceeded the other, the longer length will used.  
 F All dimensions are in millimetres unless otherwise shown.

**ONTARIO PROVINCIAL STANDARD DRAWING** Nov 2012 Rev 2  
**CONCRETE THRUST BLOCKS FOR TEES, PLUGS, AND HORIZONTAL BENDS**  
**OPSD 1103.010**



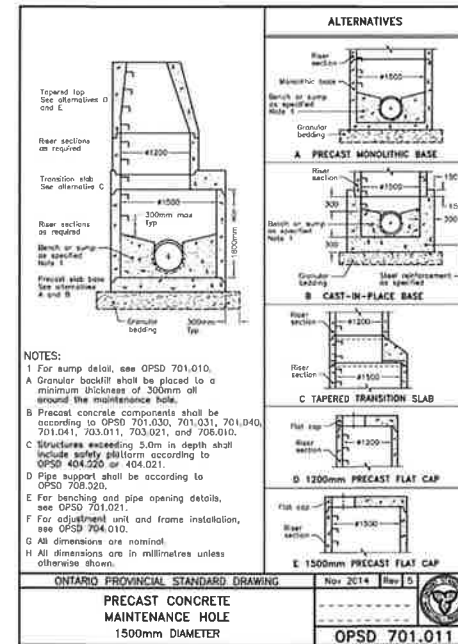
**NOTES:**  
 1 Ductile iron size 325mm diameter maximum, location as required.  
 2 300mm diameter blocks to accommodate subsoils. Knocked shall be down deep.  
 A Define retaining in base and walls.  
 B Granular bedding shall be placed to a minimum thickness of 300mm all around the catch basin.  
 C Frame, grate, and adjustment units shall be installed according to OPSD 704.010.  
 D Pipe support shall be according to OPSD 708.020.  
 E All dimensions are nominal.  
 F All dimensions are in millimetres unless otherwise shown.

**ONTARIO PROVINCIAL STANDARD DRAWING** Nov 2014 Rev 3  
**PRECAST CONCRETE CATCH BASIN**  
 600x600mm  
**OPSD 705.010**



**NOTES:**  
 1 The sump is measured from the lowest invert.  
 A Granular bedding shall be placed to a minimum thickness of 300mm all around the maintenance hole.  
 B Precast concrete components shall be according to OPSD 701.030, 701.031, 701.040, 701.041, 703.011, 703.021, and 708.010.  
 C Structures exceeding 5.0m in depth shall include safety platform according to OPSD 404.020.  
 D Pipe support according to OPSD 708.020.  
 E For benching and pipe opening details, see OPSD 701.021.  
 F For adjustment unit and frame installation, see OPSD 704.010.  
 G All dimensions are nominal.  
 H All dimensions are in millimetres unless otherwise shown.

**ONTARIO PROVINCIAL STANDARD DRAWING** Nov 2014 Rev 2  
**PRECAST CONCRETE MAINTENANCE HOLE**  
 1200mm DIAMETER  
**OPSD 701.010**



**NOTES:**  
 1 For sump detail, see OPSD 701.010.  
 A Granular bedding shall be placed to a minimum thickness of 300mm all around the maintenance hole.  
 B Precast concrete components shall be according to OPSD 701.030, 701.031, 701.040, 701.041, 703.011, 703.021, and 708.010.  
 C Structures exceeding 5.0m in depth shall include safety platform according to OPSD 404.020 or 404.021.  
 D Pipe support shall be according to OPSD 708.020.  
 E For benching and pipe opening details, see OPSD 701.021.  
 F For adjustment unit and frame installation, see OPSD 704.010.  
 G All dimensions are nominal.  
 H All dimensions are in millimetres unless otherwise shown.

**ONTARIO PROVINCIAL STANDARD DRAWING** Nov 2014 Rev 2  
**PRECAST CONCRETE MAINTENANCE HOLE**  
 1500mm DIAMETER  
**OPSD 701.011**

**PRIMARY CONSULTANT & PROJECT MANAGER**  
**RPDS**  
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No.	Date	Version	Dwn.

PROJECT:  
**TOWNHOMES DEVELOPMENT**  
 5858 Dunn Street  
 City Of Niagara Falls  
 Canada

DRAWING TITLE:  
**TYPICAL DETAILS AND NOTES**

DRAWN BY: K.P.B. DATE: OCT. 10/23

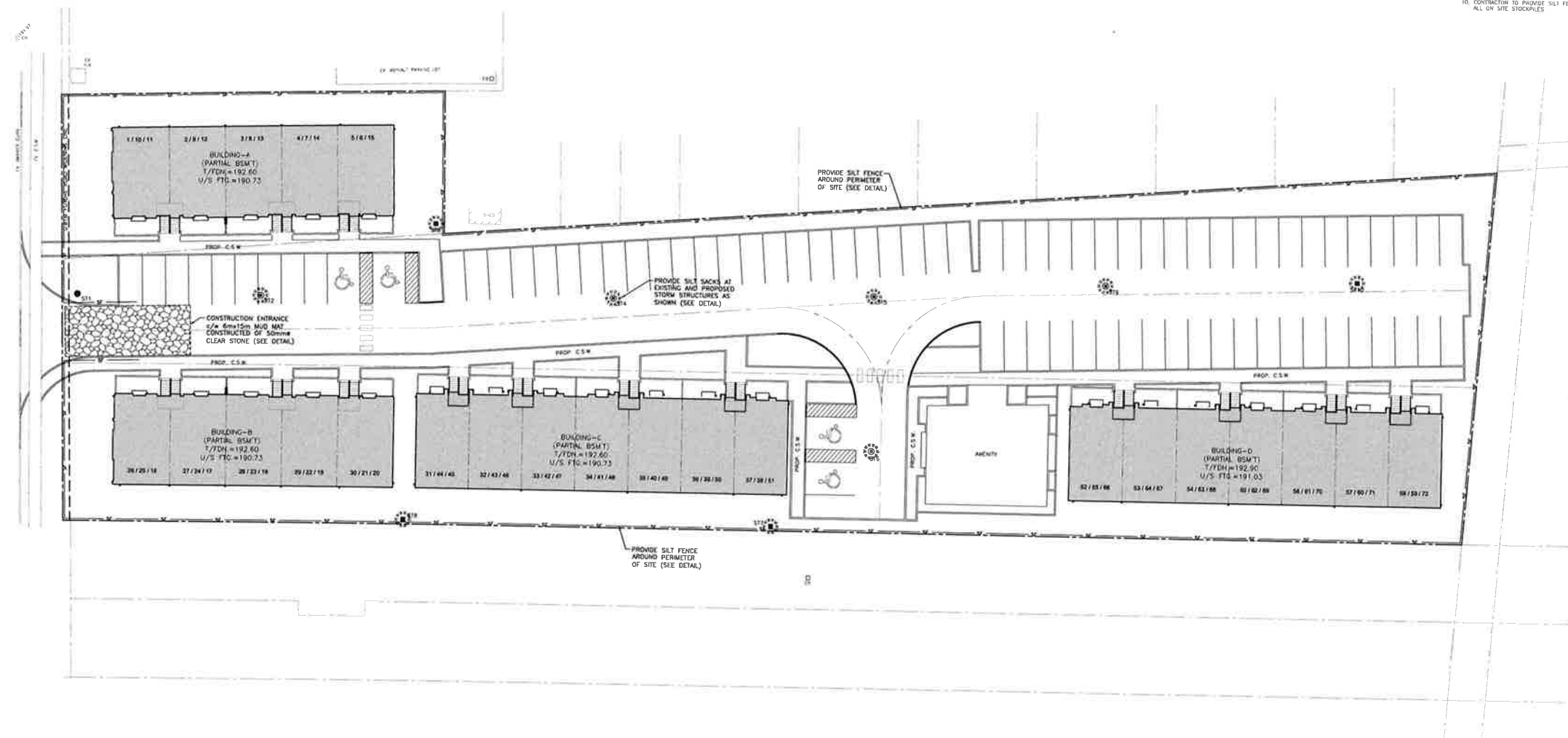
CHECKED BY: R.W.P. SCALE: AS SHOWN

PROJECT NO.: DRAWING NO.:

**16363 C-04**



DUNN STREET



**LEGEND:**  
 SILTATION FENCE  
 SILT SACK AS SHOWN

- NOTES:**
1. ALL ELEVATIONS & DIMENSIONS SHOWN ARE METRIC
  2. ELEVATIONS MAY VARY PENDING ENGINEER'S APPROVAL
  3. WHERE ONLY ONE ELEVATION IS SHOWN, EXISTING AND PROPOSED ELEVATIONS ARE THE SAME
  4. THE SILTATION & EROSION CONTROL (SEC) MEASURES ILLUSTRATED ON THIS PLAN ARE CONSIDERED TO BE THE MINIMUM REQUIREMENT. OTHER CONDITIONS MAY REQUIRE ADDITIONAL MEASURES WHICH SHALL BE QUANTIFIED BY THE ENGINEER DURING CONSTRUCTION
  5. ALL SEC MEASURES ARE TO BE IN PLACE PRIOR TO COMMENCEMENT OF CONSTRUCTION
  6. OWNER/CONTRACTOR TO MAINTAIN EROSION CONTROL MEASURES THROUGHOUT SITE UNTIL A COMPLETE GRASS/VEGETATION COVER IS ACHIEVED
  7. ONLY AT THE DISCRETION OF THE ENGINEER ARE THE SEC MEASURES TO BE REMOVED
  8. ALL RAINWATER LEADERS FROM EACH UNIT ARE TO BE DIRECTED TOWARDS LANEWAY WHERE POSSIBLE
  9. CONTRACTOR TO PROVIDE SILT BAGS ON TOP OF ALL EXISTING AND PROPOSED STORM STRUCTURES WITHIN THE INFLUENCE OF RUNOFF DURING CONSTRUCTION UNTIL ADEQUATE VEGETATIVE COVER IS ACHIEVED
  10. CONTRACTOR TO PROVIDE SILT FENCE AROUND PERIMETER OF ALL ON SITE STOCKPILES

**PRIMARY CONSULTANT & PROJECT MANAGER**  
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 INTEGRATED DESIGN FIRM  
 SUITE 200, 8955 TRANSMORE DR., MISSISSAUGA, ON L5S 6K9  
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No.	Date	Version	Dwn.

PROJECT:  
**TOWNHOMES DEVELOPMENT**  
 5858 Dunn Street  
 City Of Niagara Falls  
 Canada

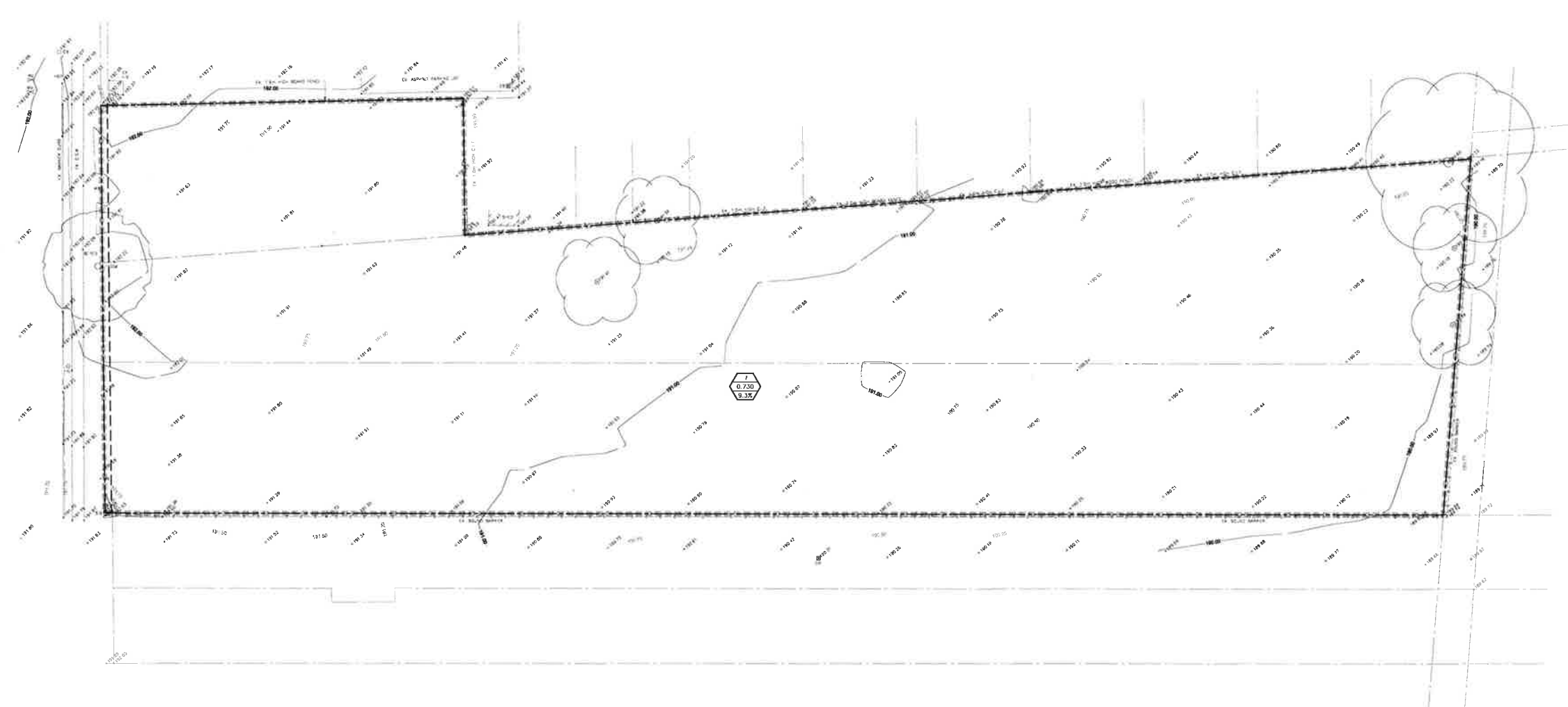
DRAWING TITLE:  
**SILTATION AND EROSION CONTROL PLAN**

DRAWN BY: K.P.B. DATE: OCT. 10/23  
 CHECKED BY: R.W.P. SCALE: 1:250

PROJECT NO.: **16363**  
 DRAWING NO.: **C-05**



DUNN STREET



**LEGEND:**  
 --- STORM DRAINAGE BOUNDARY  
 [Hexagon with 0.730] STORM DRAINAGE NUMBER  
 [Hexagon with 0.35] STORM AREA IN HECTARES  
 --- S. INFEREED

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No.	Date	Version	Dwn.

PROJECT:  
**TOWNHOMES DEVELOPMENT**  
 5858 Dunn Street  
 City Of Niagara Falls  
 Canada

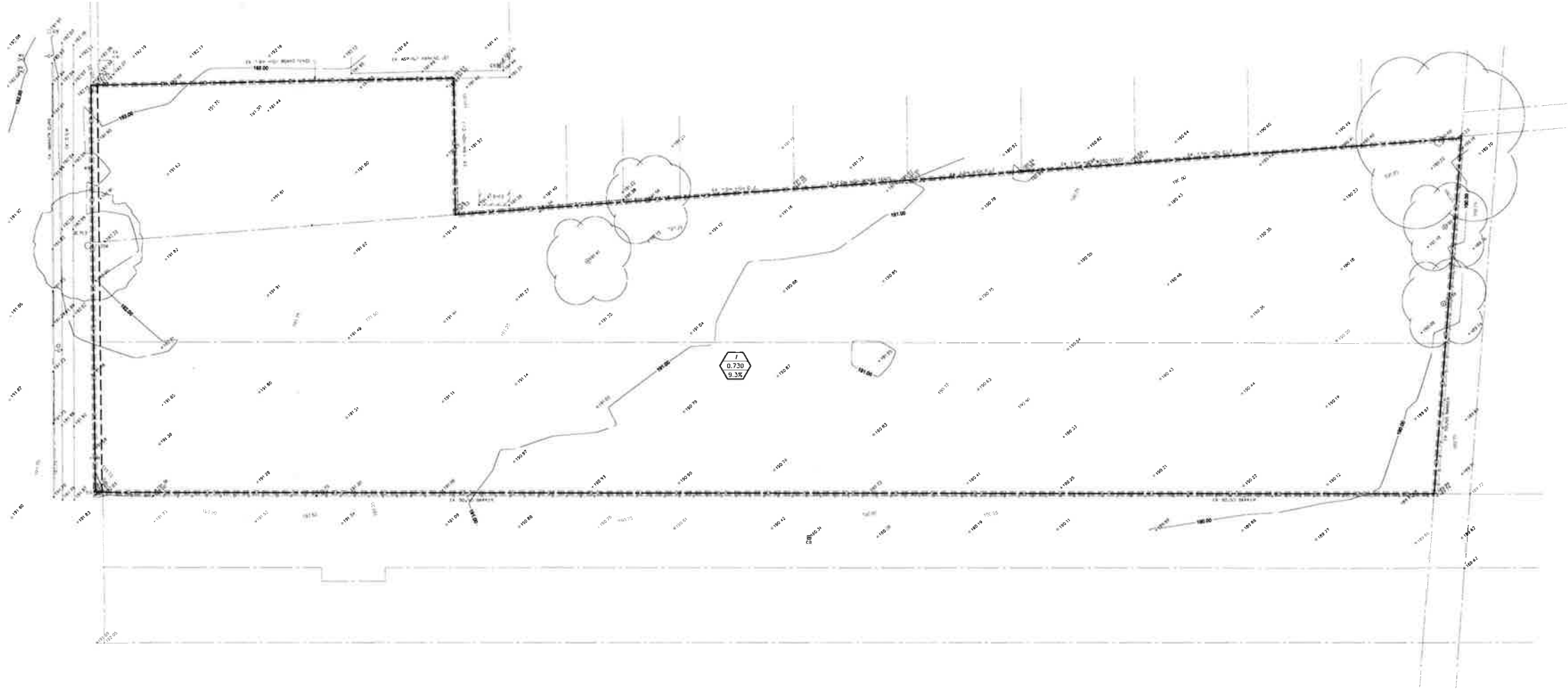
DRAWING TITLE:  
**PRE DEVELOPMENT STORM DRAINAGE AREAS**

DRAWN BY: K.P.B. DATE: OCT. 10/23

CHECKED BY: R.W.P. SCALE: 1/250

PROJECT NO.: **16363** DRAWING NO.: **C-06**

DUNN STREET



**LEGEND:**  
 - - - - - STORM DRAINAGE BOUNDARY  
 [Hexagon with 0.730/9.3%] STORM DRAINAGE NUMBER  
 [Hexagon with 0.250/15.0%] STORM AREA IN HECTARES  
 [Hexagon with 15.0%] % IMPERVIOUS

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No.	Date	Version	Dwn.

**PROJECT:**  
**TOWNHOMES DEVELOPMENT**  
 5858 Dunn Street  
 City Of Niagara Falls  
 Canada

**DRAWING TITLE:**  
**PRE DEVELOPMENT  
 STORM DRAINAGE  
 AREAS**

DRAWN BY: K.P.B. DATE: OCT 10/23

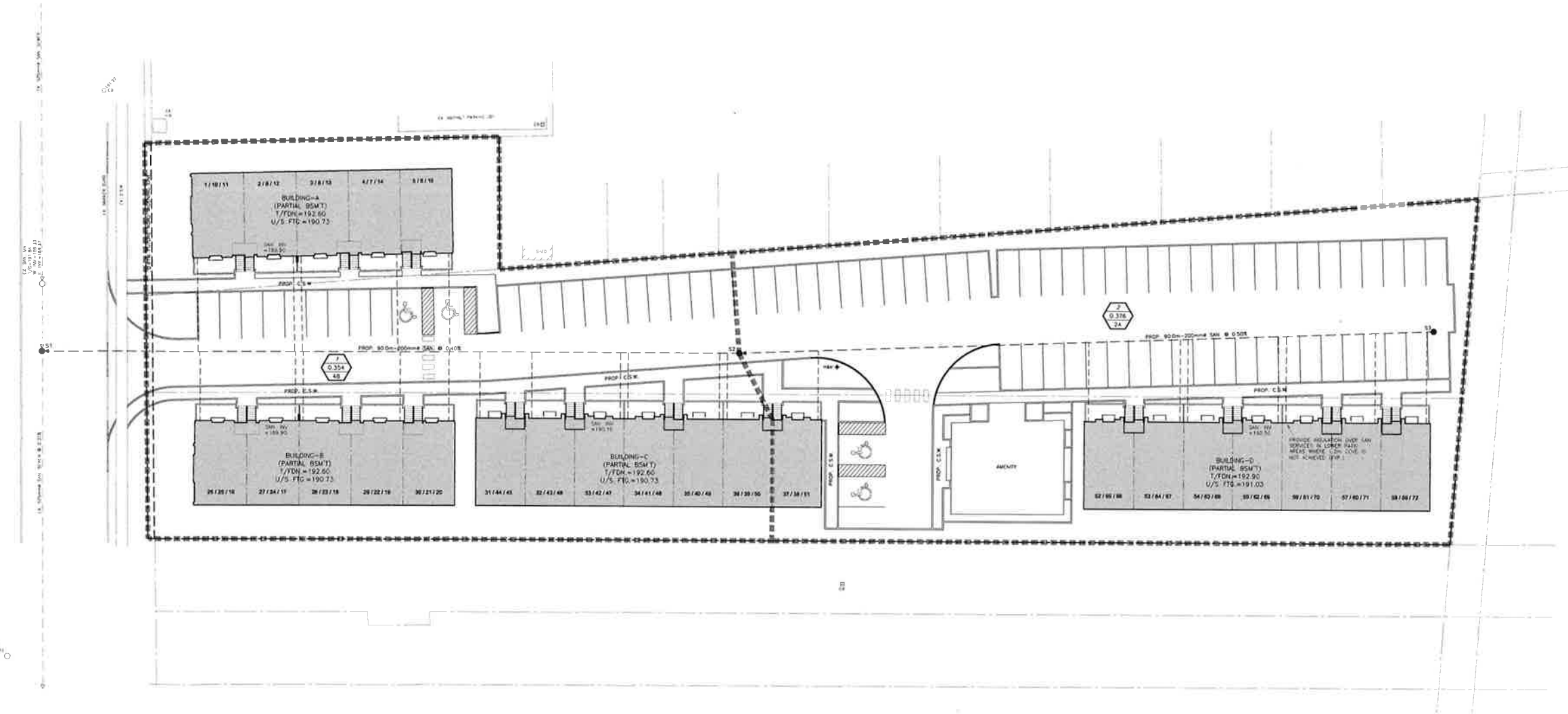
CHECKED BY: R.W.P. SCALE: 1:250

PROJECT NO.: **16363**  
 DRAWING NO.: **C-06**





DUNN STREET



LEGEND:  
 ——— SANITARY DRAINAGE BOUNDARY  
 (10) SANITARY IDENTIFICATION  
 (0.055) SANITARY AREA IN HECTARES  
 (4) NUMBER OF UNITS

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No.	Date	Version	Dwn.

PROJECT:  
**TOWNHOMES DEVELOPMENT**  
 5858 Dunn Street  
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DRAWING TITLE:  
**SANITARY DRAINAGE AREAS**

DRAWN BY: K.P.B. DATE: OCT 10/23  
 CHECKED BY: R.W.P. SCALE: 1:250

PROJECT NO.: **16363**  
 DRAWING NO.: **C-08**