Functional Servicing

And

Stormwater Management Report

Proposed Townhouse development at 221 Doyle Street

Second Submission

DATE MARCH 20, 2024

Prepared By:
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Municipal Development & Planning Services Inc.

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1.0 Introduction

Municipal Development and Planning Services (MD&PS) Inc. was retained by Mr. Harvir Singh Khakh of 1000321467 Ontario Inc. to prepare a Functional Service and Stormwater Management Report (FSSMR) in support of a Zoning Bylaw Amendment application for a proposed 8 Unit back-to-back Townhouse building located in the 221 Doyal Street, Dundalk within Township of Southgate, Grey County. This is an infill development application which will add 8 rental townhouses under single ownership.

The purpose of this report is to identify the requirements for site servicing and stormwater management as it relates to current Town of Southgate design criteria. This report describes how the proposed development will function within the framework of existing infrastructure.

In preparing this report, the following documents were reviewed:

- Municipal Servicing Standards- Township of Southgate
- Site Plan
- Topography survey
- Record Drawings dated March 28, 2017

Figure 1: Location of Subject Property

2.0 Background

The subject area (herein referred as the "site") is approximately 1246 square metres. The subject site is bounded by residential dwellings to the East and West side and faces to Artemesia Street N on North and Doyle Street on South side. Currently, there is a two-storey brick single family building near the west side of the lot with a driveway access from Doyle Street. The site is relatively flat with slight slopes towards southwest.

The proposed development includes eight units of three storey back-to-back townhouse buildings with associated ground floor parking and landscaped areas. Four of the townhouses will front to Artemesia Street N and other four front onto Doyle Street. The townhouses will be rental units under single ownership.

3.0 Water Servicing

3.1 Existing Water Servicing

Doyle Street, Artemesia Street and surrounding areas went though road-reconstruction including installation of new services in the year 2017. There is an existing 150mm WM along south side of Artemesia Street N and existing 150mm WM on south side along Doyle Street. The existing building is currently serviced by an existing 25 mm diameter service line off the 150mm diameter PVC watermain on the Doyal street and there is a second water service available for the vacant portion of the lot on west side. There is no water service connection from Artemesia Street N.

3.2 Proposed Water Serving

The proposed development townhouses are eight single-family residential and four of which will be serviced thorough Artemesia Street and four from Doyle Street. The service connection will have single connection from both the streets and each unit service splits are proposed with the private side. A new of 50mm PVC Water service connection from Artemesia Street is proposed for the northern THs. A meter along with a Backflow Preventor will be installed as per Township standards. The existing 25mm service connection from Doyle Street is proposed to be upgraded to 50mm new connection to service the southern THs. This connection will have a separate Meter and Backflow Preventor at the face of the building. The internal watermain will run parallel to the property line and each THs will have a separate service connection and internal water meter.

Each individual THs will then be serviced by 25mm service connection through another 50mm PVC distribution main as shown in Figure SS-01. The provision of running a 50mm distribution main within private side is proposed to address the Owner's possibility to convert the THs into freehold individual THs in the future. The owner acknowledges that there may be a separate process to achieve this conversion if desired in future.

The water servicing will be designed and installed following Township Standards STD S2. Please refer to Figure SS-01. Water Demand Calculations are presented in section 3.3.

The closest Fire Hydrant at Doyal Street is located 113m and Artemesia Street is 76m away from the most eastern Townhouse. These are two existing hydrants and are located within less than 150m distance of the proposed development. Therefore, the existing hydrants are sufficient to meet the firefighting needs of the site.

3.3 Water Demand Calculation

Below design criteria are considered for domestic water demand for the development:

Population per unit for Townhouse= 2.61

Wate demand= 450 l/c/d

Peaking factor= 3

Minimum Cover = 2m

Based on the above design criteria, Table 1.0 shows the total water demand calculation

Table 1 Domestic Water Demand

TH side	Total population	Avg Day Demand (L/S)	Max Day Demand (L/S)	Peak Hour Demand L/S (Peaking Factor 3)
South Block	10.44	0.054	0.108	0.33
North Block	10.44	0.054	0.108	0.33

It is determined that proposed 50mm service connection can meet domestic water demand 0.33L/S for each side of the development.

4.0 Sanitary Servicing

4.1 Existing Sanitary Servicing

Artemesia Street N has an existing 200mm Sanitary sewer closer to centreline of the road. The site is currently serviced by a standard 100mm service connection from this sewer. There is a second connection for the vacant land on the west side and as per information provided by the Township. We have an understanding that 2 service connections are already available to the site, one of which can be upgraded for future townhouse development.

Doyle Street has a newly installed 200mm sanitary sewer at centre of the roadways. The subject site is not currently serviced from Doyle Street sanitary sewer.

4.2 Proposed Sanitary Servicing

The development will retain existing central sanitary connections from Artemesia Road N which will allow running of a local 100mm diameter distribution sanitary sewer internally to the site. Individual THs will be serviced through a 100mm sanitary off this local distribution sewer. The unused service connection will be removed and plugged at the main sewer.

The development will require a new 100mm sanitary service connection from ex 200 Sanitary sewer along Doyle Street. This will produce a local distribution network within the property to service each of the THs on the south side. Individual THs will be services through a 100mm lateral off this distribution sewer. The sewer do not meet minimum required cover and therefore will require proper insulation.

These service connections are as per the Township Standards S2 and S4. Both existing and proposed sanitary servicing have been depicted in Figure SS-01.

4.3 Sanitary sewer calculation

Design criteria below are considered for calculation of wastewater generated from the development:

Population per unit for Townhouse= 2.61

Wate demand= 350 l/c/d

Peaking factor= 1+{14/(4+(P/1000)0.50)}

Minimum Velocity = 0.6m/s

Maximum Velocity= 3m/s

Minimum Cover= 2.4m

Minimum Size= 150mm (for multiple residential)

Based on the above design criteria, Table 1.0 shows the total water demand calculation

Table 2 Sanitary Flow Calculation

TH side	Total population	Avg Day Demand (L/S)	Peak Hour Demand (L/S)	Distribution Sewer size	Each connection size
South Block	10.44	0.042	1.14	100mm	100mm
North Block	10.44	0.042	1.14	100mm	100mm

Sanitary flow generated from 4 THs is relatively small, therefore a 100mm private collector sanitary sewer at 3% is proposed to maintain the minimum velocity of 0.6m3/s. Each THs will be connected through 100mm sanitary laterals. In certain section, the laterals do not meet minimum cover required, therefore proper insulation is proposed within those sections. Please refer to Figure SS-01.

4.4 Downstream Sanitary Capacity

The proposed development is a low to medium-density infill development. Since the water, storm and sanitary services along Doyle Street and Artemesia Street N were installed recently, it is our understanding that the existing infrastructure can accommodate the water and wastewater needs of the development without imposing any detrimental effects downstream.

5.0 Stormwater Management

5.1 Existing Condition

The proposed site currently generally slopes towards the southwest where it discharges to the roadside ditches through several culverts. All the storm of pre-development conditions is captured by the municipal system which discharges to the culvert crossing Doyle Street. Doyle Street and Artemesia Street N were reconstructed in 2016/17 where new 300mm storm sewer along Doyle Street was installed. Artemesia Street N is a new road constructed to service the subdivision on the west, where a new 600mm storm sewer was installed.

Artemesia Street storm sewer crosses Doyle Street through a 450mm culvert and spills to the existing natural drainage route on the south.

Table 1 summarizes the pre-development runoff condition and the areas contributing to Doyle Street storm system.

Table 3- Pre-Development Drainage

Catchment ID	Land use	Area (Sqm)	Runoff Coefficient (C)
101	Building and Driveway	227	0.9
102	Landscaped area	1019	0.25
Composite Runoff Coefficient			0.37

Pre-development catchment areas are illustrated in Figure SWM-1.

5.2 Proposed Condition

The proposed development has 4 townhouses fronting to Artemesia Road and will be graded towards the road. The other 4 Townhouses will front to Doyle Street and will be graded towards the Doyle Street grade. In post development scenario, there will be a drainage divide such that northern half discharges to Artemisia Street N sewer and southern half discharges to Doyle Street sewer. Please refer to Figure GP-1.

Table 4- Post Development Drainage

Catchment ID	Land use	Area (Sqm)	Runoff Coefficient (C)
South Block			
201	Building and Driveway	455.7	0.9
202	Landscaped area	205	0.25
Composite Runoff Coefficient			0.74
North Block			
203	Building and Driveway	456	0.9
204	Landscaped area	129	0.25
Composite Runoff Coefficient			0.71

5.3 Proposed Stormwater Management

The proposed low to medium density has changed the site runoff coefficient from 0.37 to 0.74, considering the most conservating scenario. Given that this is an infill development, it can be considered an insignificant development for stand-alone stormwater management requirements. The proposed development is graded in such a way that total runoff is divided

in half towards each municipal roads. The runoff diversion adds some flow to Artemesia Street N, while reducing stress on Doyle Street.

6.0 Conclusion

MD&PS believes that the proposed development can be serviced using existing Storm, Sanitary and Water infrastructures located in Doyle Street and Artemesia Street N.

Water Servicing

The site will be serviced through a combination of upgrading existing and new water connections for both north and south sides. A new 50mm water connection will be required from Artemesia Street N and individual TH connections will be made through the internal network. Existing water connection from Doyle Street will be upsized to 50mm diameter pipe. An internal water network will be created which will service each THS. The internal network will be operated and maintained by the property owner.

The site is located within the 150m range of existing Fire Hydrants along Artemesia Street and Doyle Street, therefore no infrastructure upgrade is required.

Sanitary Servicing

The development will utilize existing service connection from Artemesia Street N and will need a new connection from Doyle Street. Both these 100mm diameter sewer will create an internal distribution network, which will service each THs.

The owner wants to leave the possibility of converting these units into separate freehold THs in the future.

The owner understands and acknowledges that the service connections and road restoration works will be on expense of the owner.

Stormwater Management

The proposed low to medium density has changed the site runoff coefficient from 0.37 to 0.74, considering the most conservative side. This change can be considered insignificant given that both the roads have new and upsized storm sewers installed.

The storm runoff divide towards two roads improves the existing drainage condition of Doyle Street. The development does not impose a significant impact on the existing infrastructure.

We trust the Functional Servicing Report inclusive of the Stormwater Management component will be accepted as a part of the requirement of the Zoning Bylaw Amendment application of the development. Please contact the undersigned if there are any questions or require additional information.

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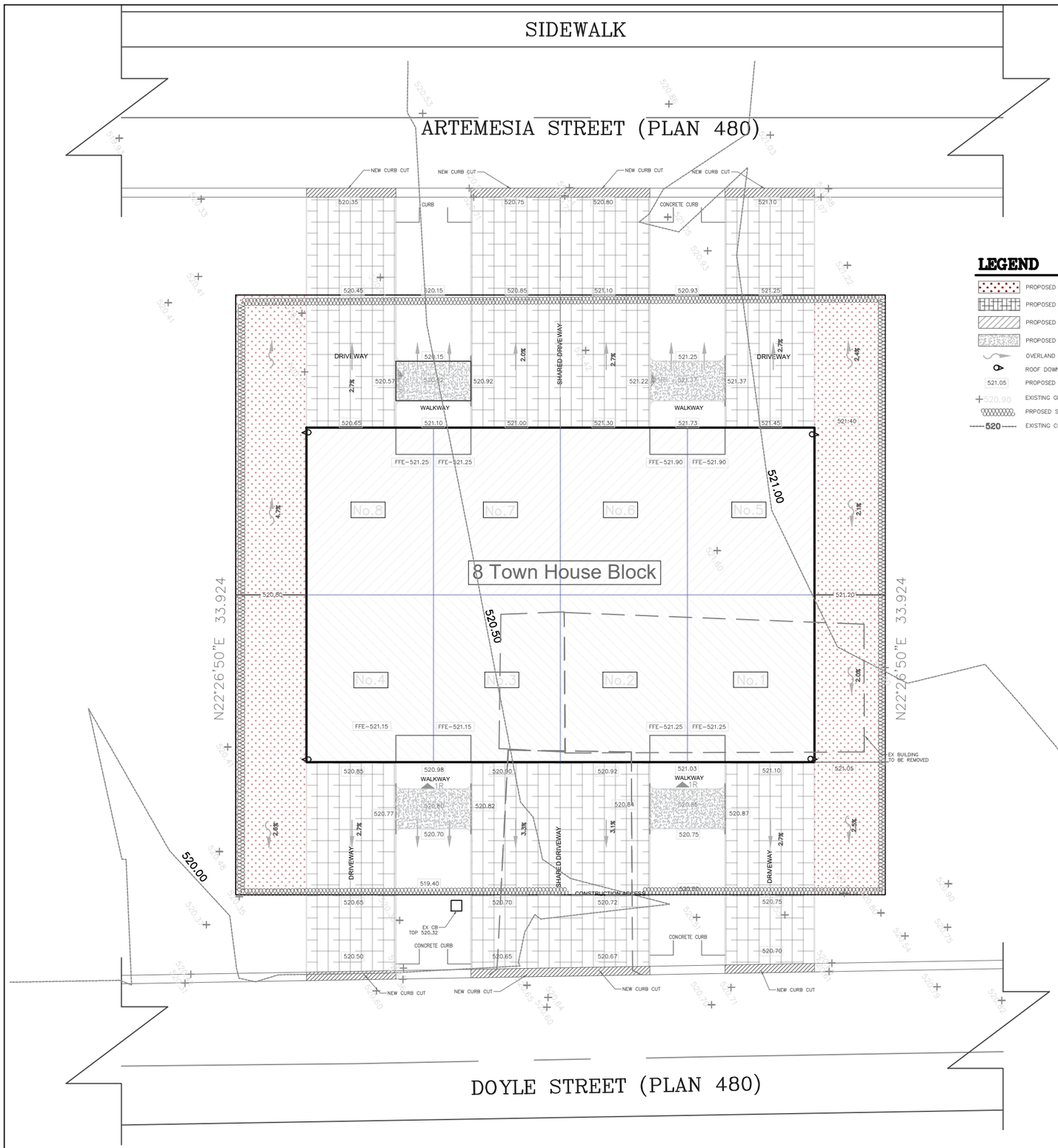
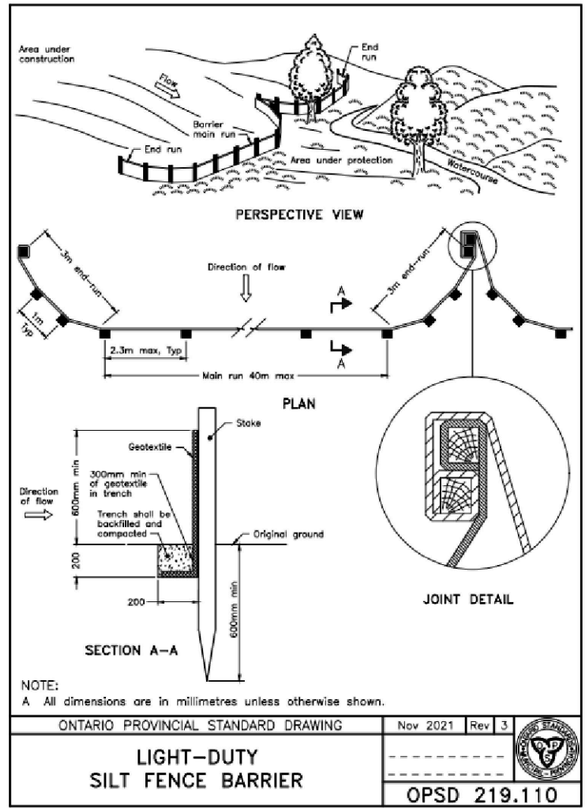


LEGEND

- PROPOSED LANDSCAPED AREA
- PROPOSED DRIVEWAY AREA
- PROPOSED BUILDING
- PROPOSED WALKWAY
- OVERLAND DRAINAGE SWALE
- ROOF DOWNSPOUT
- 521.05 PROPOSED GRADE
- +520.90 EXISTING GROUND GRADE
- PRPOSED SEDIMENT CONTROL FENCE OPSD 219.110
- -----520----- EXISTING CONTOUR



NOTE:
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2021	Rev 3
LIGHT-DUTY SILT FENCE BARRIER		OPSD 219.110

GENERAL NOTES

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4. THE CONTRACTOR MUST VERIFY AND ACCEPT RESPONSIBILITIES FOR DIMENSIONS AND JOB SITE CONDITIONS PRIOR TO CONSTRUCTION. ALSO CONFIRM APPLICABLE BY-LAW AND OBC.
5. ANY CHANGES MUST BE REPORTED TO DESIGNER AND APPROVED BY MUNICIPAL PRIOR TO CONSTRUCTION.

REV.	ISSUED FOR:	DATE
2	SUBMITTED FOR 2nd SUBMISSION	MARCH 20, 2024
1	SUBMITTED FOR APPROVAL	JANUARY 10, 2024

LICENSED PROFESSIONAL ENGINEER M. M. DHUNGANA 100039895 MAR 20, 2024 PROVINCE OF ONTARIO

CLIENT:
1000321567 Ontario Inc.

CONSULTANT:
MDPS Municipal Development & Planning Services Inc.

PROJECT:
TOWNHOUSE DEVELOPMENT
122 Doyle Street
Township of Southgate

SHEET TITLE:
PROPOSED GRADING PLAN

Scale: 1:250			DWG. No.: GP-01
SH-S:	DATE	NAME	
DESIGNED	2023.02.19	PG	
APPROVED	2023.02.19	MD	PROJ. No.: P23010 REV.

Ex. Sidewalk

70.7m–600mm STM @ –0.3%

98.9m–200mm SAN @ 0.3%

TIE TO EX
INV 516.80

ARTEMESIA STREET (PLAN 480)

MH A
T/G 519.87
W INV 516.87
E INV 516.83

150mm WATERMAIN

XW

13.0m – 100mm PVC SAN @3%

SAN MH–1
N INV 517.19
S INV 517.24
W INV 517.22

INV 517.95

LANDSCAPE

24.60m – 100mm PVC SAN@ 3%

DRIVEWAY

WALKWAY

SHARED DRIVEWAY

LANDSCAPE

DRIVEWAY

WALKWAY

17.12m – 50mm PVC water connection

M+BP

FFE–521.25

FFE–521.25

FFE–521.90

FFE–521.90

8 Town House Block

FFE–521.15

FFE–521.15

FFE–521.25

FFE–521.25

M+BP

WALKWAY

SHARED DRIVEWAY

WALKWAY

SAN MH–2
S INV 518.67
N INV 518.72
W INV 518.70

DRIVEWAY

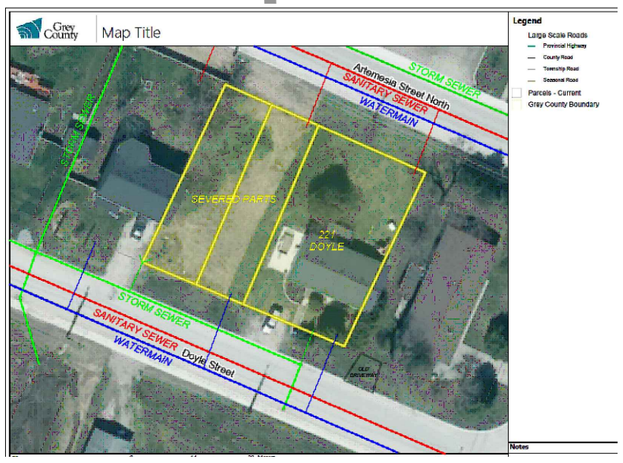
22.75m – 100mm PVC SAN@ 3%

LANDSCAPE

100mm SAN LATERAL, INSULATED

INV 518.74

EX CB
TOP 520.32



EXISTING CONNECTIONS

48.5m–300mm STM @ –0.5%

MH M
T/G 520.30
W INV 518.46
E INV 518.44

92.5m–200mm SAN @ 0.3%

10.4m – 100mm PVC SAN @3%

TIE TO EX SAN
INV 518.35

21m – 50mm PVC water connection

150mm WATERMAIN

DOYLE STREET (PLAN 480)

LEGEND

- DRAINAGE BOUNDARY
- NEW SANITARY SERVICE CONNECTION
- NEW WATER LATERAL CONNECTION
- RETAIN EX. SANITARY CONNECTION
- NEW WATER LINE
- SANITARY MAIN LINE
- WATER SUPPLY MAIN LINE
- STORM WATER MAIN LINE
- PROPOSED ROAD RESTORATION AT OWNER'S OWN COST

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5. ANY CHANGES MUST BE REPORTED TO DESIGNER AND APPROVED BY MUNICIPAL PRIOR TO CONSTRUCTION.
6. CONTRACTOR TO MAINTAIN MINIMUM 0.5m VERTICAL SEPARATION BETWEEN SANITARY SEWER AND WATERMAIN.

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2	SUBMITTED FOR 2nd SUBMISSION	MARCH 20, 2024
1	SUBMITTED FOR APPROVAL	JANUARY 10, 2024

LICENSED PROFESSIONAL ENGINEER
M. M. OHUNGAMA
100068806
MAR 20, 2024
PROVINCE OF ONTARIO

CLIENT:
1000321567 Ontario Inc.

CONSULTANT:
MDPS
Municipal Development & Planning Services Inc.

PROJECT:
TOWNHOUSE DEVELOPMENT
221 Doyle Street
Township of Southgate

SHEET TITLE:
PROPOSED SERVICING PLAN

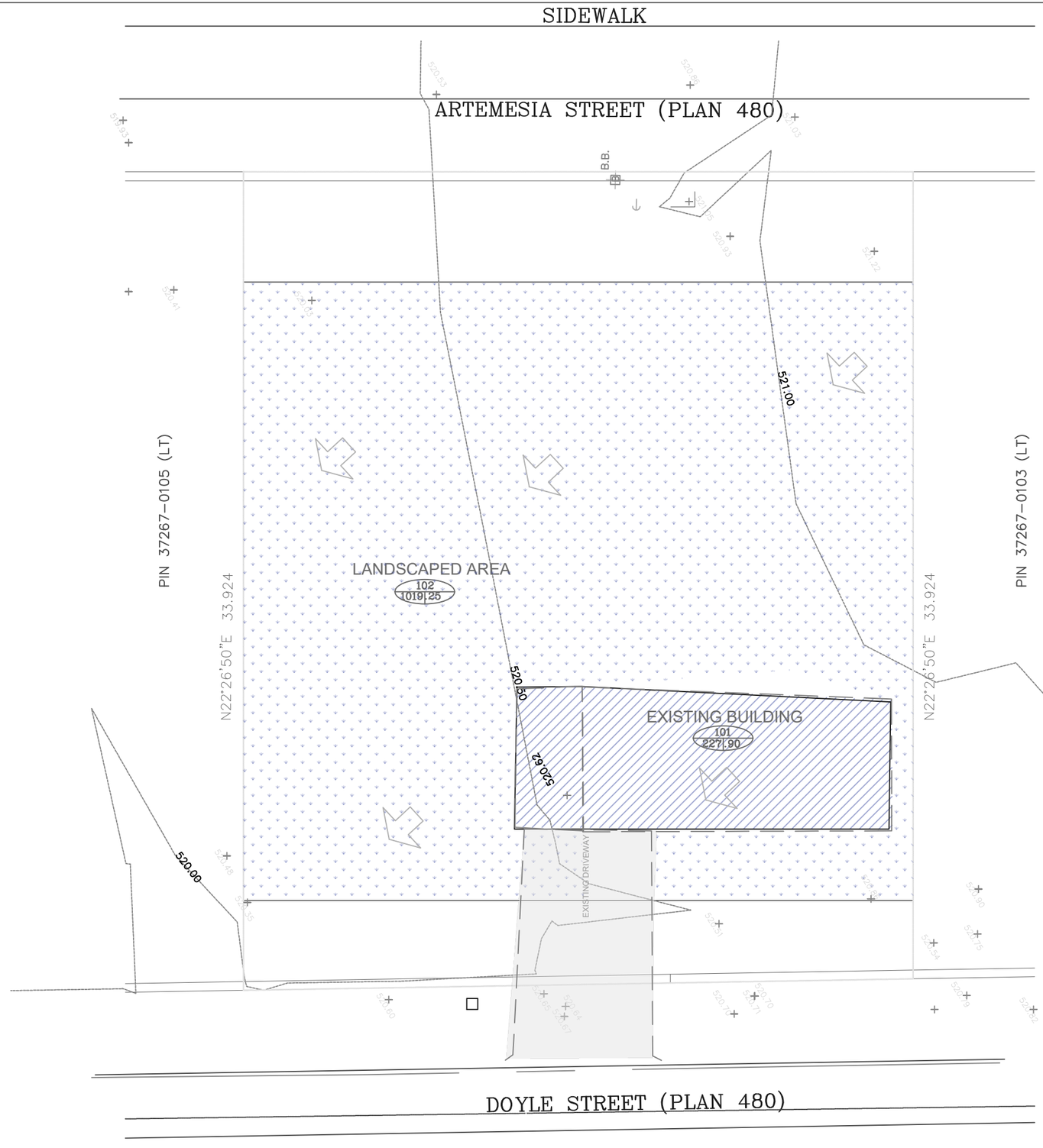
Scale: 1:250

SH-S:	DATE	NAME
DESIGNED	2023.02.19	PG
APPROVED	2023.02.19	MD

DWG. No.: SS–01

PROJ. No. : P23010

REV.



LEGEND

- SITE BOUNDARY
- 101 / 214.90 — CATCHMENTS ID / RUNOFF COEFFICIENT / TOTAL AREA (SQM)
- ~~520.00~~ — EXISTING GROUND CONTOUR
- ROOFTOP AREA (C=0.90)
- DRIVEWAY AREA (C=0.90)
- LANDSCAPED AREA (C=0.25)
- GENERAL DRAINAGE DIRECTION

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1	SUBMITTED FOR APPROVAL	JANUARY 10, 2024

LICENSED PROFESSIONAL ENGINEER
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MAR 22, 2024
PROVINCE OF ONTARIO

CLIENT:
1000321567 Ontario Inc.

CONSULTANT:
MDPS
Municipal Development & Planning Services Inc.

PROJECT:
TOWNHOUSE DEVELOPMENT
122 Doyle Street
Township of Southgate

SHEET TITLE:
EXISTING CATHCMENT PLAN

Scale: 1:250

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DESIGNED	2023.02.19	PG
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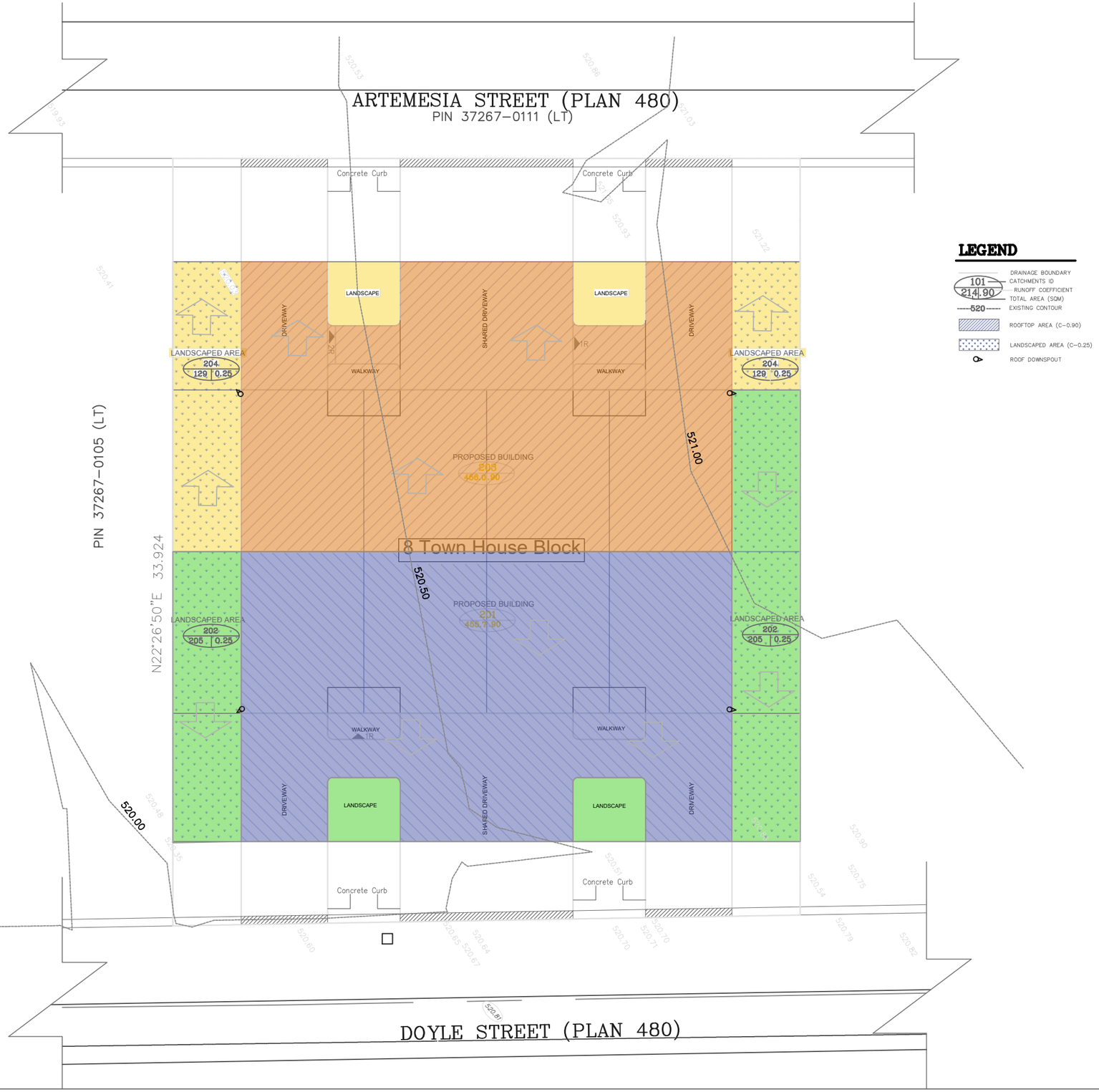
DWG. No.: SWM-01

PROJ. No. : P23010 | REV.



LEGEND

- DRAINAGE BOUNDARY
- 101 / 214.90 — CATCHMENTS ID / RUNOFF COEFFICIENT / TOTAL AREA (SQM)
- 520 — EXISTING CONTOUR
- ROOFTOP AREA (C=0.90)
- LANDSCAPED AREA (C=0.25)
- ROOF DOWNSPOUT

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LICENSED PROFESSIONAL ENGINEER
M. M. DHUNDANA
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MAR 20, 2024
PROVINCE OF ONTARIO

CLIENT:
1000321567 Ontario Inc.

CONSULTANT:
MDPS
Municipal Development & Planning Services Inc.

PROJECT:
TOWNHOUSE DEVELOPMENT
122 Doyle Street
Township of Southgate

SHEET TITLE:
PROPOSED CATHCMENT PLAN

Scale: 1:500		
SH-S:	DATE	NAME
DESIGNED	2023.02.19	PG
APPROVED	2023.02.19	MD

DWG. No.: SWM-02

PROJ. No.: P23010 | REV.