TRIBUTE (BROOKDALE) LIMITED

FUNCTIONAL SERVICING REPORT

1101A, 1105, and 1163 Kingston Road

January 24, 2025

1101A, 1105 AND 1163 KINGSTON ROAD

FUNCTIONAL SERVICING REPORT

TRIBUTE (BROOKDALE) LIMITED

FUNCTIONAL SERVICING REPORT

PROJECT NO.: 221-12931
DATE: JANUARY 2025

WSP CANADA INC.
150 COMMERCE VALLEY DRIVE WEST
THORNHILL, ON, CANADA L3T 7Z3

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Date

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TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

1 INTRODUCTION

WSP has been retained by Tribute (Brookdale) Limited to prepare a Functional Servicing Report in support of the proposed redevelopment of the site located at 1101A, 1105 and 1163 Kingston Road in the City of Pickering, Ontario. The proposed plan, which will be constructed in five phases, involves the re-development of the existing commercial site into a five building multi-use development. This report provides the conceptual framework for water distribution, sanitary sewage and storm drainage for the site prior to the commencement of detailed design. A Stormwater Management Report outlining the proposed conceptual Stormwater Management controls on this site has been prepared by WSP under a separate cover.

In preparing this report, WSP staff secured and reviewed the Site Plan prepared by Turner Fleischer Architects Inc., topographic surveys prepared by J.D. Barnes Ltd. (see **Appendix E**), and record drawings provided by the Region of Durham (see **Appendix E**). This report is intended to provide the functional design framework for the proposed development. All required approvals from the City of Pickering, Region of Durham, and all other governing bodies shall be obtained as part of the registration of the development.

1.1 SITE DESCRIPTION

The subject site is approximately 7.75 ha (19.15 acres), and it is located at 1101A, 1105 and 1163 Kingston Road in the City of Pickering, Ontario. The site is bounded by Kingston Road to the north-west, a segment of Walnut Lane and a segment of Public Road to the north-east, Highway 401 to the south and existing commercial lands to the west. Under the existing conditions, the site contains five commercial buildings. The location and existing site conditions are illustrated in **Figure 1-A – "Location Map",** and **Figure 1-B – "Pre-development Plan"** respectively.

Based on the site plan provided by Turner Fleischer, the proposed development will be mixed use, and it will include five buildings that will be constructed across five phases. The intention of the phasing is to keep the existing commercial developments located outside of the phase limits operational in the interim. The existing public driveway that runs along the north-east boundary of the site will also be replaced by a complete 20.0 m R.O.W. as part of the Walnut Lane extension project.

The first phase, which will be located at the north end of the development, will introduce one new building (Building A). With the introduction of this building, two of the existing commercial developments located within the site will be removed. The second phase, which will be located at the south-east corner of the site, will introduce one new Building (Building 'B') and one existing commercial development will be removed. The third phase, located at the north-west corner of the site, will introduce one new building (Building 'C') and an existing commercial development will be removed. The fourth phase, which will be in the middle of the site, will introduce one new building (Building 'D') and a Park. No existing commercial developments will be removed in Phase 4. The fifth

phase will introduce one new Building (Building 'E') and one existing commercial development will be removed.

The development statistics that summarize each of the proposed phases are outlined in Table 1. The ultimate conditions are illustrated in **Figure 1-C – "Post Development Plan"**.

Table 1 – Development Statistics Summary

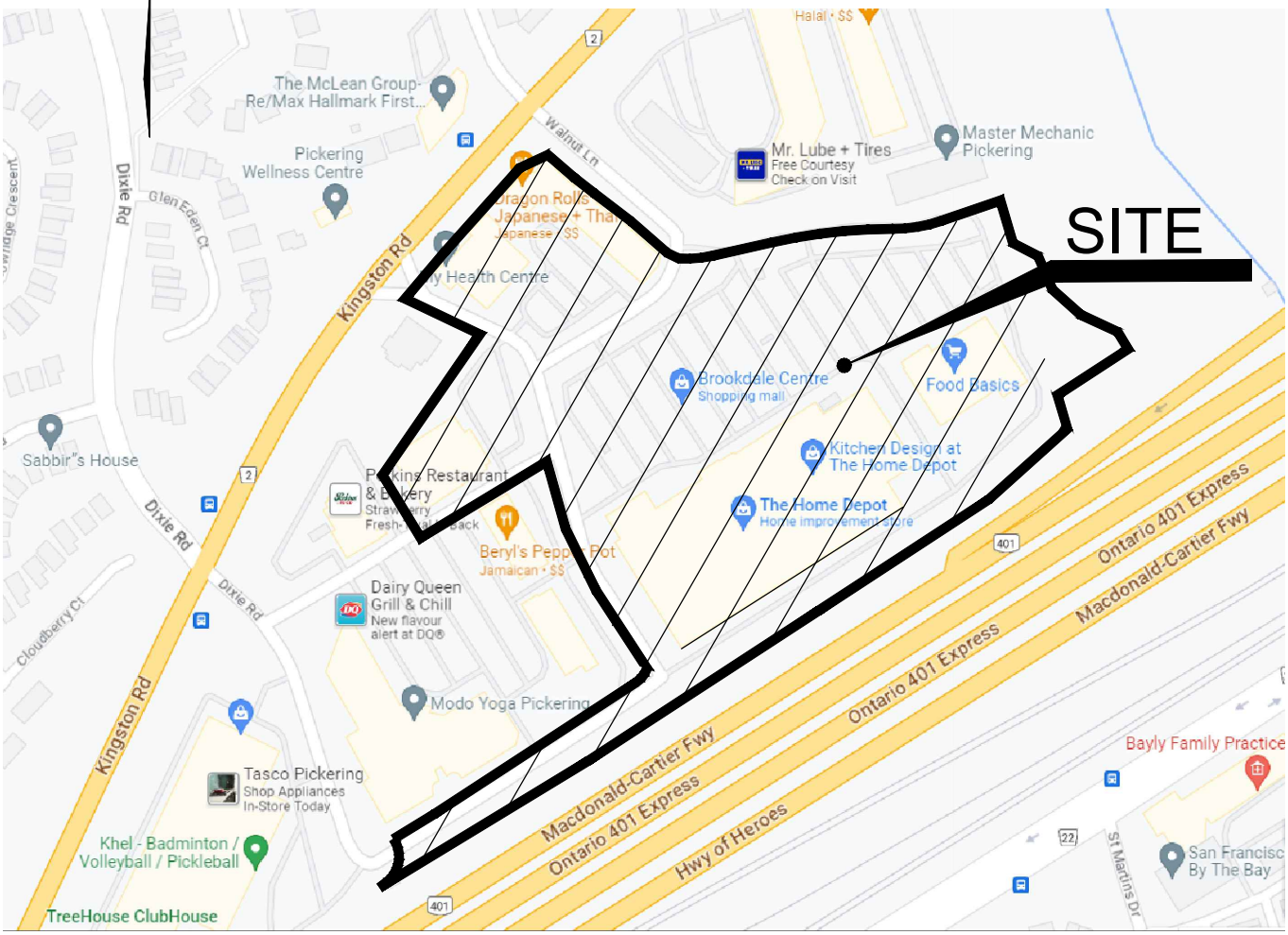
Phase	Area (ha)	Building	Land Use	Units	Residential Population	Commercial GFA (sq.m.)	Number of Floors
1	1.13	Building 'A'	Mixed-Use Residential	582	1,157	4,771	19+MPH
2	1.39	Building 'B'	Residential	1,259	2507	N/A	35+MPH
3	0.60	Building 'C'	Residential	598	1,191	N/A	23+MPH
4	2.16	Building 'D'	Residential	852	1,696	1,249	35+MPH
5	2.47	Building 'E'	Mixed-Use Residential	1,973	3,927	565	35+MPH
TOTAL	**7.75**			**5,264**	**10,478**	**6,585**	

(1) *Occupancy rates, per capita flows and peaking factor are as per the Region of Durham Design Specifications*

(2) *Unit Counts and Floor Areas from drawings prepared by Turner Fleisher*

1.2 PUBLIC RIGHT - OF - WAY

Public roads that run through the site and connect to Walnut Lane are proposed as part of the site plan. A 17.0 m right - of - way will wrap around the south side of the Phase 1 lands and the west side of the Phase 4 lands. The 17.0 m right - of – way will have an 8.5 m pavement width with boulevard areas on both sides. A 20.0 m right - of - way will wrap around the north-west side of the Phase 1 lands and the south side of the Phase 4 lands. The 20.0 m right - of – way will have 9.75 m pavement width with boulevard areas on both sides. The 20.0 m right - of – way will terminate at the west property boundary, with the option to extend this road to Dixie Road in the future. The proposed road layout is outlined in **Figure 1-C – "Post Development Plan".**



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TITLE

1101A, 1105, and 1163 KINGSTON ROAD

SITE LOCATION PLAN

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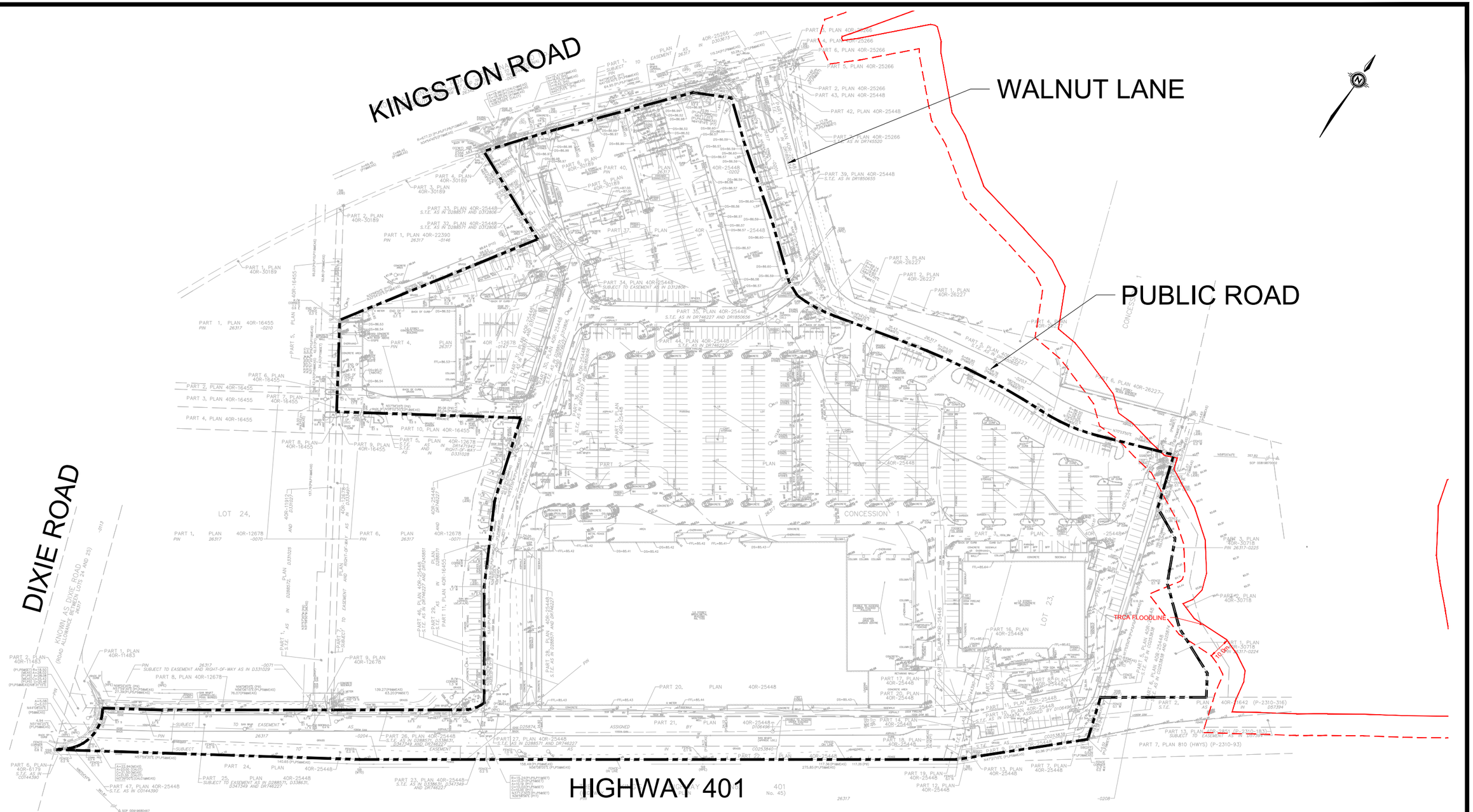

LEGEND

PROPERTY LINE

CLIENT
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PRE-DEVELOPMENT PLAN

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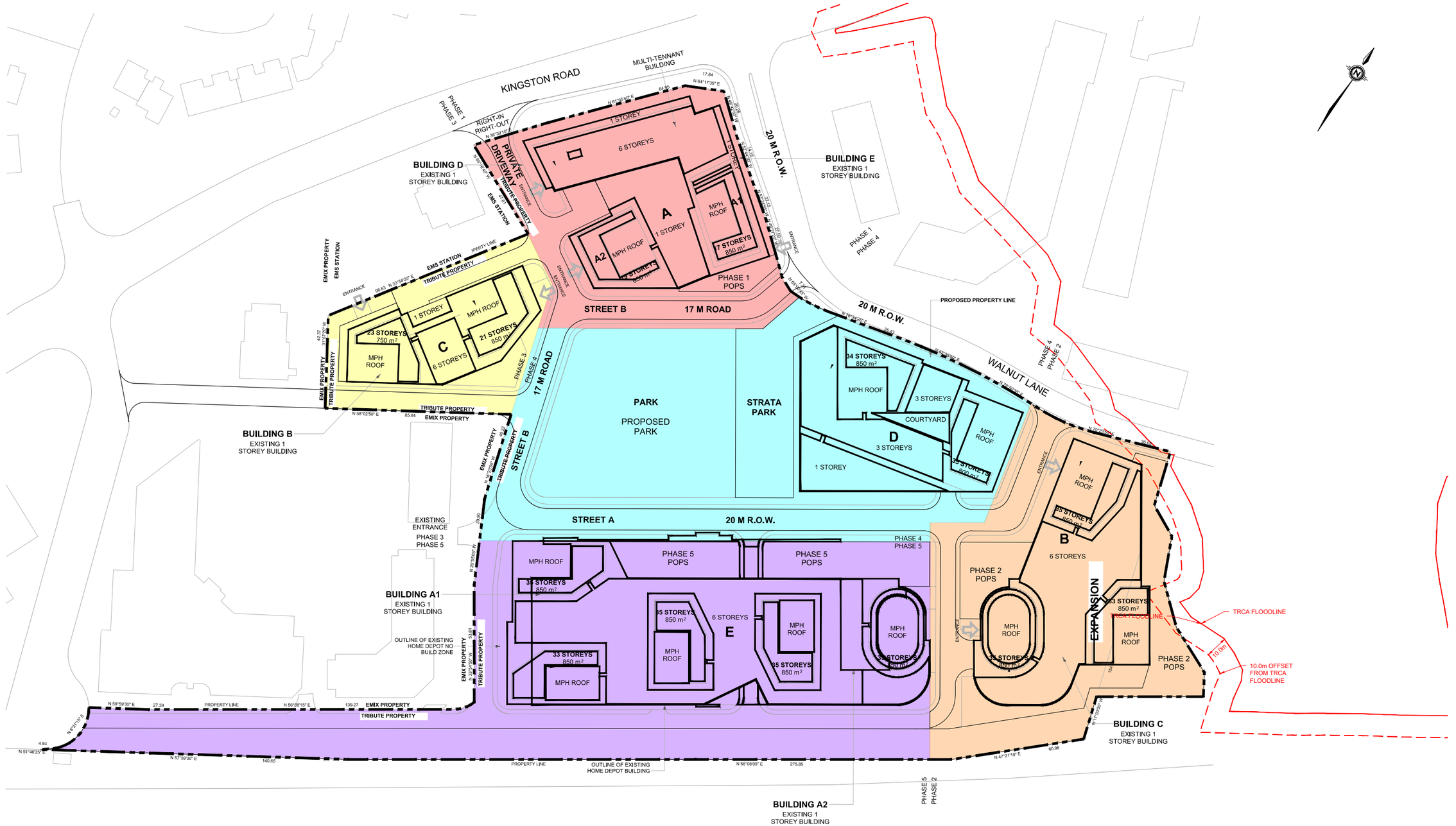

LEGEND

- PROPERTY LINE
- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4
- PHASE 5

CLIENT
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TITLE
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POST-DEVELOPMENT PLAN

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2 WATER SUPPLY AND APPURTENANCES

2.1 EXISTING CONDITIONS

Based on the record drawings from the Region of Durham, and the topographic surveys prepared by J.D. Barnes Ltd the existing infrastructure in the vicinity of the site is as follows:

- a 300 mm diameter watermain on Kingston Road north of the site;
- a 250 mm diameter watermain on Walnut Lane;
- a 100 mm diameter watermain on Walnut Lane;
- a series of 100 – 250 mm diameter watermains located within the existing commercial site that service the existing commercial developments; and
- an external chamber and backflow preventor room located east of Walnut Lane that services all buildings within the existing development.

The location of the existing water services is illustrated in **Figure 2A - "Existing Watermains".**

2.2 MUNICIPAL WATERMAIN IMPROVEMENTS

A new 300 mm diameter watermain will be constructed north of the site as part of the future Walnut Lane extension. The proposed watermain will connect to the existing watermains on Liverpool Road and Kingston Road. The future watermain will be active at the time of the proposed redevelopment of this site, so the intention is to use it as the connection point for the proposed development. At this time, it is WSP's understanding that the 300 mm diameter watermain will have the capacity to service the proposed development.

2.3 PROPOSED WATER SERVICES

An illustration of the proposed water servicing strategy for each phase is outlined in **Figures 2B – 2F**. The following subsections describe the proposed water servicing in detail.

2.3.1 PHASE 1

In Phase 1, a 300 mm diameter watermain will be constructed along the proposed 17.0 m public right-of-way south of Building 'A'. This watermain will connect to the 300 mm diameter watermain within Walnut Lane and will be capped at the limit of the 17.0m right-of-way until the right-of-way is continued in Phase 4.

A set of domestic and fire water service connections will be made directly to the proposed 300 mm diameter watermain within the 17.0m right-of-way to service Building 'A'. The connections will be made in accordance with Region of Durham Standards. If the height of these towers exceeds 84 m, a secondary fire connection will be provided as per Ontario's building code requirements. Sizing of the water service connections will be coordinated with the Region of Durham and the mechanical engineering consultant at the detailed design stage.

To limit the disturbance to the existing commercial development during the construction of Phase 1, all existing non-essential watermains intersecting the Phase 1 limits will be capped at the phase limit. Based on the topographic survey, it is believed that the existing building within the Phase 3 lands relies on the existing 200 mm diameter fire main and the 100 mm diameter domestic watermain that falls within the proposed Phase 1 lands. Temporary water services will be constructed off of the proposed 300 mm watermain within the 17.0m right-of-way to ensure that water service to the existing building within Phase 3 is preserved. Refer to **Figure 2B - "Phase 1 Water Servicing"** for an illustration of the proposed water servicing strategy for Phase 1.

2.3.2 PHASE 2

In Phase 2, a 300 mm diameter watermain will be constructed along the proposed 17.0 m public right-of-way west of Building 'B'. This watermain will tie into the 300 mm diameter watermain on Walnut Lane. The domestic and fire connections for Building 'B' will connect directly into this proposed watermain and the connections will be in accordance with Region of Durham Standards. If the height of these towers exceeds 84 m, a secondary fire connection will be provided as per Ontario's building code requirements. Sizing of the water service connections will be coordinated with the Region of Durham and the mechanical engineering consultant at the detailed design stage.

According to the topographic surveys prepared by J.D. Barnes Ltd, the existing commercial development in the south of the site has water connections that fall within the west limits of Phase 2. These connections will have to be removed to accommodate the underground structure of Building 'B', so temporary domestic and water service connections will have to be installed to re-route these existing services outside of the proposed underground structure. The temporary connections will tie into the proposed 300 mm diameter watermain within Phase 2 to prevent additional disruption to the existing development. Since the existing building relies on an external chamber and backflow preventor room located within the Phase 4 lands, a temporary chamber and backflow preventor room are proposed to be installed to service the existing building in the interim condition.

Refer to **Figure 2C - "Phase 2 Water Servicing"** for an illustration of the proposed water servicing strategy for Phase 2.

2.3.3 PHASE 3

To service Building 'C', a set of domestic and fire water service connections is proposed to connect into the proposed 300 mm diameter watermain within the Phase 1 17.0 m right-of-way. The connections will be made in accordance with Region of Durham Standards, and if the height of the buildings exceeds 84 m, a secondary fire connection will be provided as per Ontario's building code requirements. Sizing of the water service connections will be coordinated with the Region of Durham and the mechanical engineering consultant at the detailed design stage.

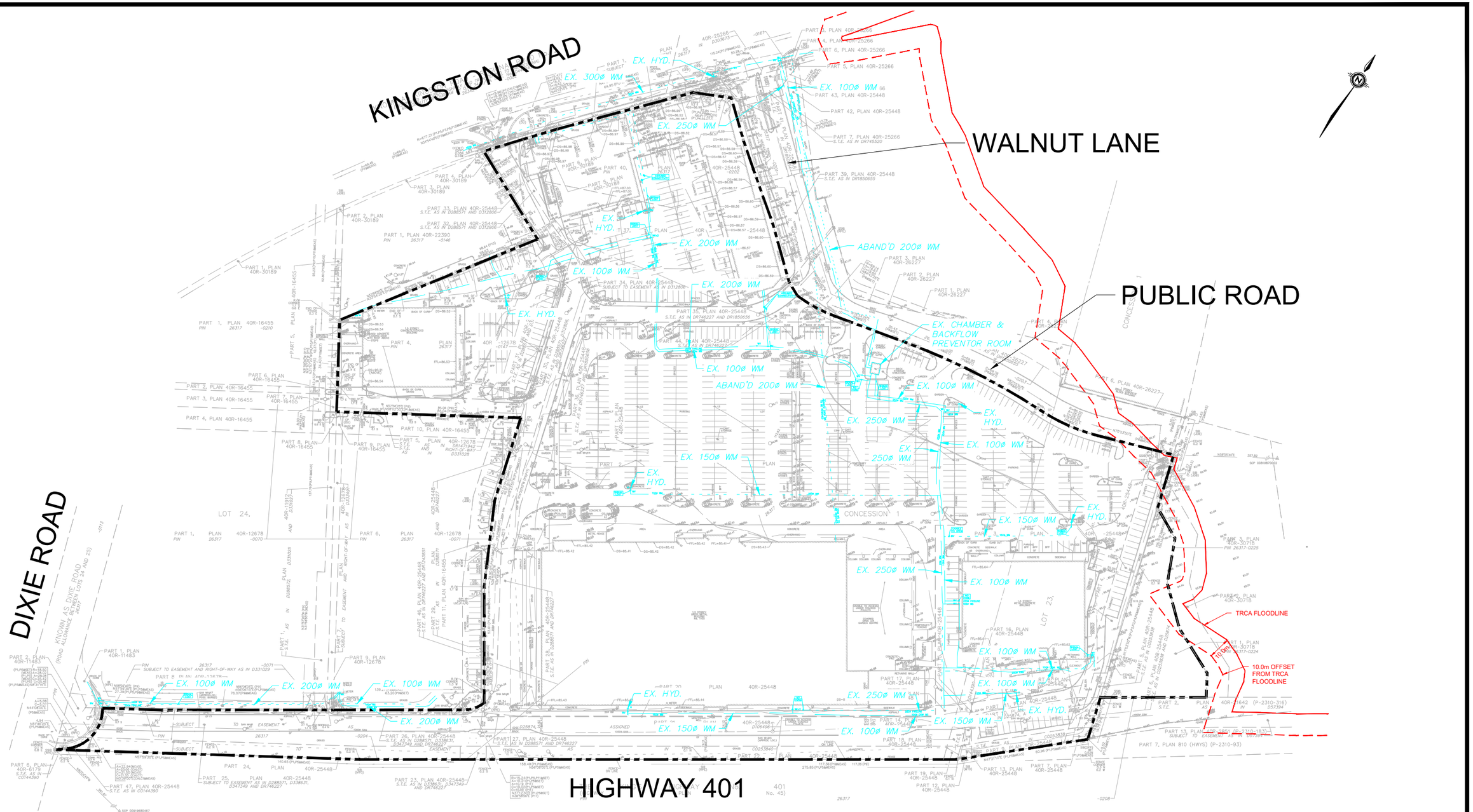
Refer to **Figure 2D - "Phase 3 Water Servicing"** for an illustration of the proposed water servicing strategy for Phase 3.

2.3.4 PHASE 4

In Phase 4, a 300 mm diameter watermain will be installed within the proposed 20.0 m and 17.0 m right-of-ways that fall within Phase 4. The watermain will complete a loop to the future watermain in Walnut Lane. The water services for Building 'D' will connect to the proposed 300 mm diameter watermain within the 20.0 m right-of-way. The connections will be in accordance with Region of Durham Standards, and if the height of these towers exceeds 84 m, a secondary fire connection will be provided as per Ontario's building code requirements. Sizing of the water service connections will be coordinated with the Region of Durham and the mechanical engineering consultant at the detailed design stage. Refer to **Figure 2E - "Phase 4 Water Servicing"** for an illustration of the proposed water servicing strategy for Phase 4.

2.3.5 PHASE 5

In Phase 5, Building 'E' will have domestic and fire water service connections to the proposed 300 mm diameter watermain within the 20.0 m right-of-way north of the building. The water connections for Building 'E' will be made in accordance with Region of Durham Standards, and if the height of these towers exceeds 84 m, a secondary fire connection will be provided as per Ontario's building code requirements. Sizing of the water service connections will be coordinated with the Region of Durham and the mechanical engineering consultant at the detailed design stage. Refer to **Figure 2F - "Phase 5 Water Servicing"** for an illustration of the proposed water servicing strategy for Phase 5.



LEGEND

PROPERTY LINE

EXISTING WATER SERVICE

CLIENT

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TITLE

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EXISTING WATERMAINS

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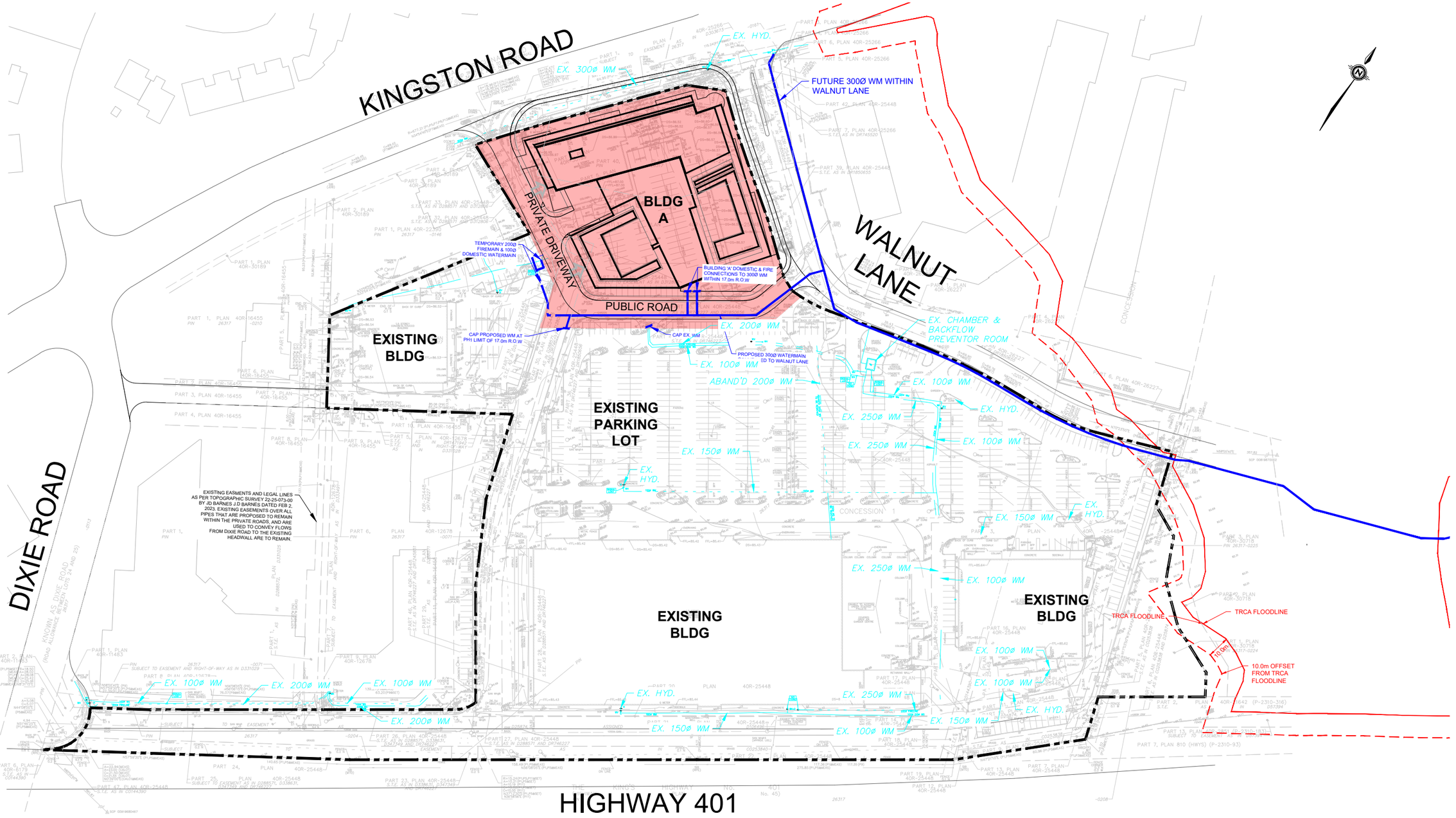
Scale 1:1750	Figure No. 2A



LEGEND

- PROPERTY LINE
- EXISTING WATER SERVICE
- PROPOSED WATER SERVICE
- PHASE 1

CLIENT
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TITLE
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PHASE 1 - WATER SERVICING

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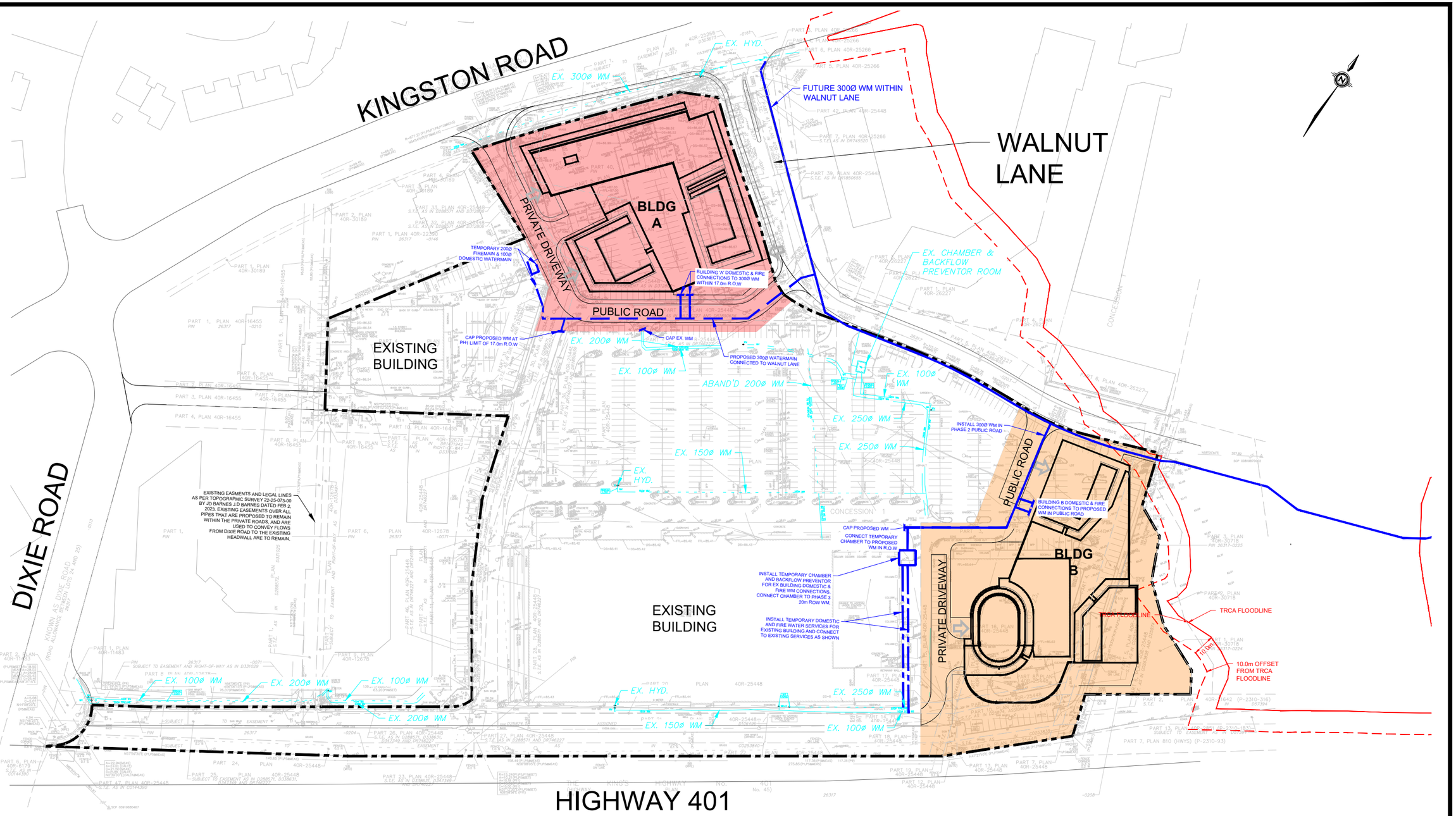

LEGEND

- PROPERTY LINE
- EXISTING WATER SERVICE
- PROPOSED WATER SERVICE
- PROPOSED WATER SERVICE INSTALLED IN PRIOR PHASE
- PHASE 1
- PHASE 2

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PHASE 2 - WATER SERVICING

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KINGSTON ROAD

EX. HYD.

EX. 300Ø WM

FUTURE 300Ø WM WITHIN WALNUT LANE

BLDG A

PRIVATE DRIVEWAY

WALNUT LANE

TEMPORARY 200Ø FIREMAIN & 100Ø DOMESTIC WATERMAIN

BUILDING 'A' DOMESTIC & FIRE CONNECTIONS TO 300Ø WM WITHIN 17.0m R.O.W

PUBLIC ROAD

BUILDING C DOMESTIC & FIRE CONNECTIONS TO PROPOSED WM IN PUBLIC ROAD

CAP PROPOSED WM AT PH1 LIMIT OF 17.0m R.O.W

CAP EX. WM

PROPOSED 300Ø WATERMAIN CONNECTED TO WALNUT LANE

BLDG C

INSTALL 300Ø WM IN PHASE 2 PUBLIC ROAD

PUBLIC ROAD

BUILDING B DOMESTIC & FIRE CONNECTIONS TO PROPOSED WM IN PUBLIC ROAD

DIXIE ROAD

EXISTING EASMENTS AND LEGAL LINES AS PER TOPOGRAPHIC SURVEY 22-25-073-00 BY JD BARNES J.D BARNES DATED FEB 2, 2023. EXISTING EASEMENTS OVER ALL PIPES THAT ARE PROPOSED TO REMAIN WITHIN THE PRIVATE ROADS, AND ARE USED TO CONVEY FLOWS FROM DIXIE ROAD TO THE EXISTING HEADWALL ARE TO REMAIN.

CAP PROPOSED WM

CONNECT TEMPORARY CHAMBER TO PROPOSED WM IN R.O.W

INSTALL TEMPORARY CHAMBER AND BACKFLOW PREVENTOR FOR EX BUILDING DOMESTIC & FIRE WM CONNECTIONS. CONNECT CHAMBER TO PHASE 3 20m ROW WM.

INSTALL TEMPORARY DOMESTIC AND FIRE WATER SERVICES FOR EXISTING BUILDING AND CONNECT TO EXISTING SERVICES AS SHOWN

EXISTING BUILDING

BLDG B

PRIVATE DRIVEWAY

TRCA FLOODLINE

TRCA FLOODLINE

10.0m

10.0m OFFSET FROM TRCA FLOODLINE

EX. 100Ø WM

EX. 200Ø WM

EX. 100Ø WM

EX. 200Ø WM

EX. HYD.

EX. 150Ø WM

EX. 250Ø WM

EX. 100Ø WM

HIGHWAY 401

LEGEND

- PROPERTY LINE
- EXISTING WATER SERVICE
- PROPOSED WATER SERVICE
- PROPOSED WATER SERVICE INSTALLED IN PRIOR PHASE

- PHASE 1
- PHASE 2
- PHASE 3

CLIENT

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TITLE

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PHASE 3 - WATER SERVICING

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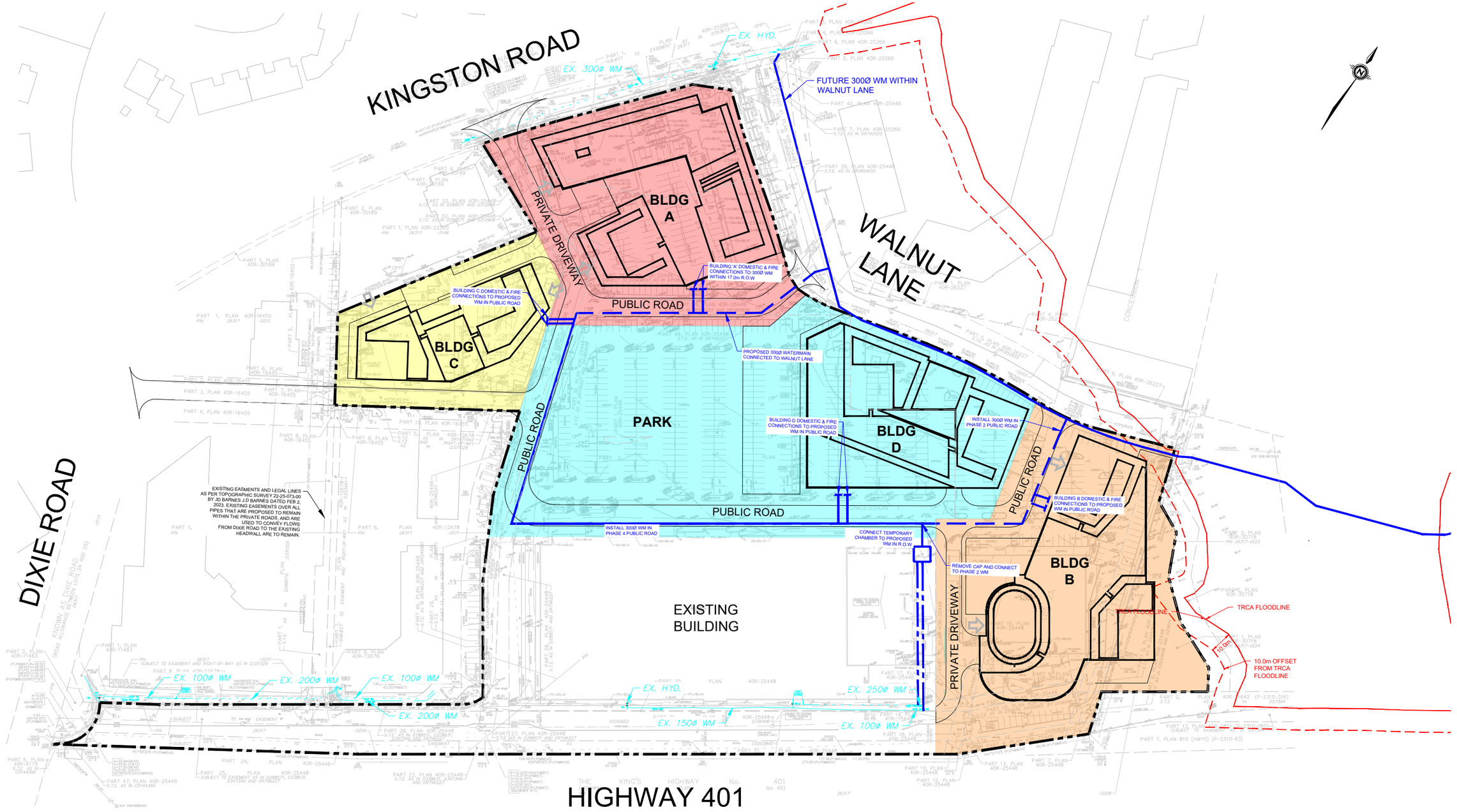

LEGEND

- PROPERTY LINE
- EXISTING WATER SERVICE
- PROPOSED WATER SERVICE
- PROPOSED WATER SERVICE INSTALLED IN PRIOR PHASE

- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4

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PHASE 4 - WATER SERVICING

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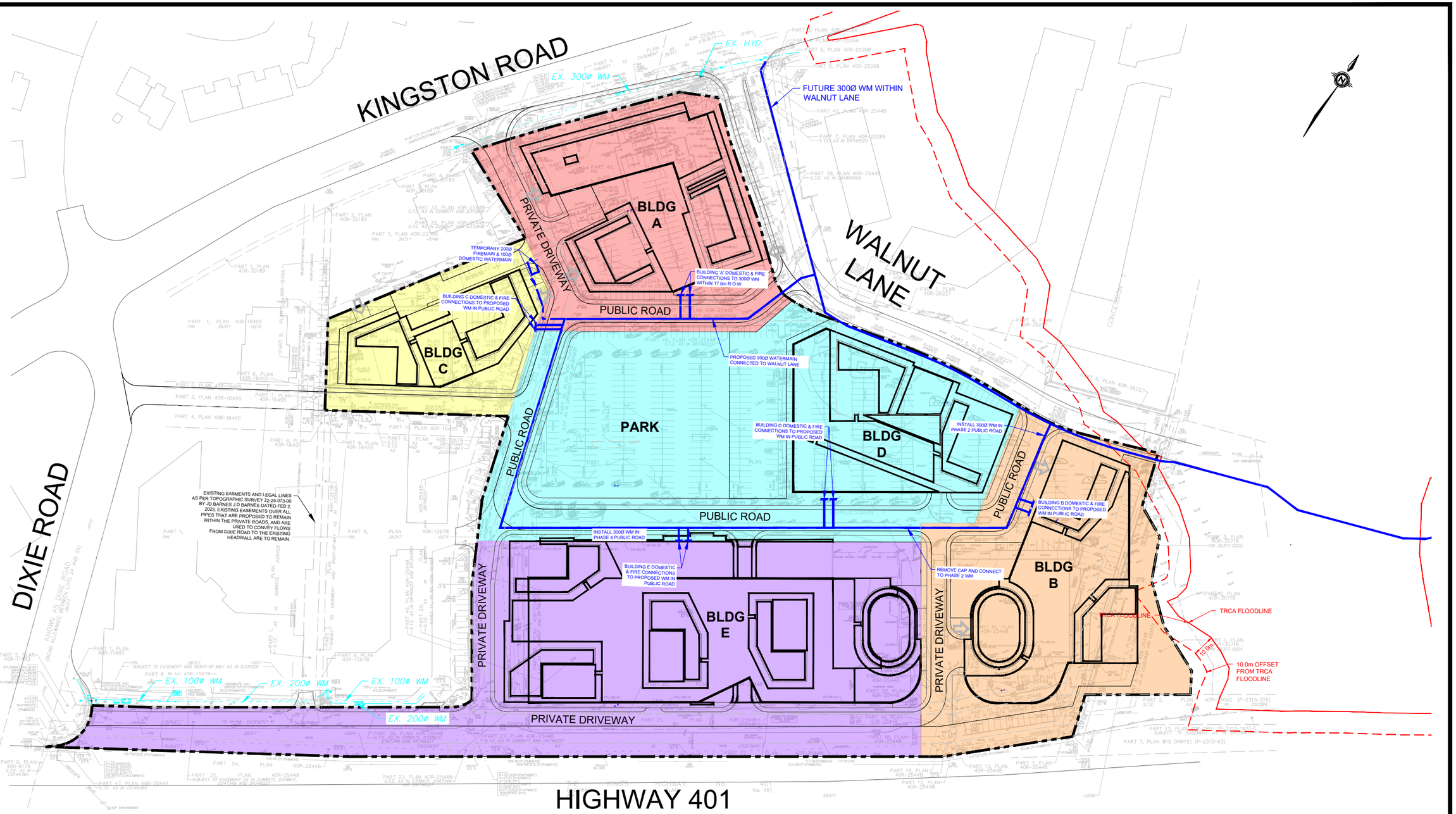
Scale 1:1750	Figure No. 2E



LEGEND

- PROPERTY LINE
- EXISTING WATER SERVICE
- PROPOSED WATER SERVICE
- PROPOSED WATER SERVICE INSTALLED IN PRIOR PHASE

- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4
- PHASE 5

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TITLE

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PHASE 5 - WATER SERVICING

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Scale 1:1750	Figure No. 2F

3 SANITARY SEWAGE SYSTEM

3.1 EXISTING CONDITIONS

Based on the record drawings from the Region of Durham, and the topographic surveys prepared by J.D. Barnes Ltd the existing infrastructure in the vicinity of the site is as follows:

- 1050 mm diameter trunk sanitary sewer on the south side of the site;
- 200 mm diameter sanitary sewers located in an easement on the west side of the site;
- 200 mm diameter sanitary sewer on Walnut Lane; and
- 200 mm diameter sanitary sewer north of the site on Kingston Road.

In the existing condition, all sanitary waste generated within the site is ultimately discharged to the 1050 mm diameter trunk sewer. The methods of connection to the trunk are summarized below:

- The two buildings on the south side of the site have direct connections to the trunk;
- The building on the west side of the site is conveyed to the trunk via the 200 mm diameter sanitary sewer located in the easement on the west side of the site; and
- The two buildings on the north side of the site have connections to the Kingston Road sanitary sewer before connecting to the 1050 mm diameter trunk sewer.

Figure 3A - "Existing Sanitary Sewers" illustrates the existing on - site sanitary servicing strategy.

3.2 DESIGN PARAMETERS

To calculate the peak sanitary flows, the following Region of Durham design criteria has been utilized:

- 180,000 L / ha / day average day flow generation rate for commercial use;
- 364 L / cap / day average day flow generation rate for residential use;
- Population equivalent based on unit type for residential use:
  - 1.5 people per one Bedroom residential apartment unit;
  - 2.5 people per two Bedroom residential apartment unit;
  - 3.5 people per three Bedroom residential apartment unit; and
  - 4.5 people per four Bedroom residential apartment unit.
- Peaking Factor for residential use: Harmon Formula $KH = 1 + \frac{14}{4+P^{0.5}}$; and
- Infiltration: 0.26 L / ha / s.

3.3 POST - DEVELOPMENT SEWAGE FLOW

The anticipated post - development sanitary flows to the downstream sanitary sewer system have been calculated based on the Region of Durham Design Criteria and site statistics provided by Turner Fleischer Architects. Detailed flow generation design sheets are included in **Appendix A**. The flow summary for each phase is included in **Table 2**.

Table 2 – Sanitary Flow Generation Summary

Phase	Buildings	Average Daily Flow	Peak Flow
1	Building 'A'	6.16 L/s	19.61 L/s
2	Building 'B'	10.92 L/s	37.41L/s
3	Building 'C'	5.17 L/s	18.97 L/s
4	Building 'D'	7.97 L/s	26.83 L/s
5	Building 'E'	17.30 L/s	56.03 L/s

3.4 PROPOSED SANITARY SERVICING

As part of the Walnut Lane extension project, there will be a sanitary sewer installed within the Walnut Lane R.O.W that will be sized to convey flows from the proposed development. The future Walnut Lane sewer will discharge to the 1050 mm diameter trunk sanitary sewer south of the site.

As the subject site is developed, connections from the proposed development to the future sanitary sewer in Walnut Lane will be made via sanitary sewers installed within the site. The following subsections outline the proposed sanitary servicing strategy in detail. Sanitary design sheets and drainage plans corresponding to the proposed sanitary servicing strategy are given in **Appendix A**.

3.4.1 PHASE 1

In Phase 1, one sanitary sewer connection that services Building 'A' will be made to the future sanitary sewer on Walnut Lane. Preliminary sizing of the sanitary connection suggests that the connection should be 250 mm diameter. However, the final size will be coordinated with the Mechanical Engineer at the detailed design stage.

The topographic survey indicates that the existing commercial developments within the Phase 1 lands utilize a sanitary service connection to Kingston Road. It is proposed that during Phase 1 construction this existing sanitary connection is abandoned.

Refer to **Figure 3B - "Phase 1 Sanitary Servicing"** for an illustration of the proposed sanitary servicing strategy for Phase 1.

3.4.2 PHASE 2

In Phase 2, a public sanitary sewer that connects to the future sanitary sewer on Walnut Lane will be constructed within the proposed 20.0 m right-of-way west of Building 'B'. This leg of public sanitary sewer will be sized to convey all sanitary flows from Phase 2, Phase 4, and Phase 5. Preliminary sizing suggests that this sewer in the R.O.W should be 300 mm diameter. However, the size will be confirmed during detailed design.

To provide sanitary service to Building 'B', a connection will be provided to the proposed sanitary sewer within the proposed 20.0 m right-of-way . Preliminary sizing suggests that this connection should be 200mm diameter, but the final size will be coordinated with the Mechanical Engineer at the detailed design stage. Refer to **Figure 3C - "Phase 2 Sanitary Servicing"** for an illustration of the proposed sanitary servicing strategy for Phase 2.

According to the topographic surveys prepared by J.D. Barnes Ltd, the existing commercial development has a sanitary connection to the existing trunk sanitary sewer that runs along the south side of the site. It is proposed that this existing sanitary service connection to the trunk is removed during Phase 2 construction. However, the trunk sanitary sewer must be protected and maintained during all phases of construction.

3.4.3 PHASE 3

In Phase 3, a 200 mm diameter sanitary sewer is proposed to connect to the existing sanitary sewer network that runs in an easement along the west side of the site. This existing system ultimately flows south and ties into the existing 1050 mm diameter trunk sanitary sewer on the south side of the site.

To service Building 'C', a connection to the proposed 200 mm diameter sanitary sewer within the 17.0 m right-of-way before will be made. Preliminary sizing suggests that this connection should be 200mm diameter, but the final size will be coordinated with the Mechanical Engineer at the detailed design stage.

As per the topographic survey, connecting Building 'C' to the existing sanitary sewer network that runs in an easement along the west side of the site matches the existing sanitary drainage strategy for the development currently within the Phase 3 lands. As per the Phase 3 sanitary design sheet included in **Appendix A**, WSP does not have concerns with the capacity of the existing local sanitary network to convey sanitary flows to the trunk.

The existing sanitary connection for the commercial development within the Phase 3 lands will be removed during Phase 3 construction. Refer to **Figure 3D - "Phase 3 Sanitary Servicing"** for an illustration of the proposed sanitary servicing strategy for Phase 3.

3.4.4 PHASE 4

In Phase 4, a public sanitary sewer that connects to the future sanitary sewer on Walnut Lane will be constructed within the proposed public R.O.W south of Building 'D'. This leg of public sanitary sewer will be sized to convey all sanitary flows from Phase 4 and 5. Preliminary sizing suggests that this sewer in the R.O.W should be 300 mm diameter. However, the size will be confirmed during detailed design.

Building 'D' will have one sanitary service connection to the sanitary sewer within the proposed public R.O.W. Preliminary sizing of the sanitary connection suggests that the size should be 200 mm diameter. However, the final size will be coordinated with the Mechanical Engineer at the detailed design stage.

The proposed sanitary sewer in the public R.O.W south of Building 'D' will not be extended along the full length of the R.O.W to the property line on the west side of the development. WSP believes that even with minimal pipe sloping, there is too much length and not enough cover to have a sanitary sewer drain by gravity from the lands to the west and connect to the future sanitary sewer in Walnut Lane. Thus, any future redevelopment within the lands to the west shall direct sanitary flows west to Dixie Road before draining south to the 1050 mm diameter trunk sewer.

Although no existing buildings will be removed during Phase 4, the topographic surveys prepared by J.D. Barnes Ltd shows that there is an existing 200 mm diameter sanitary connection to the municipal sanitary sewer on the west side of the site that falls within the proposed Phase 4 Lands. This connection is shown to be capped and WSP believes it is not currently being used to service a development. Thus, it is proposed that this connection be removed as part of the Phase 4 redevelopment.

Refer to **Figure 3E - "Phase 4 Sanitary Servicing"** for an illustration of the proposed sanitary servicing strategy for Phase 3.

3.4.5 PHASE 5

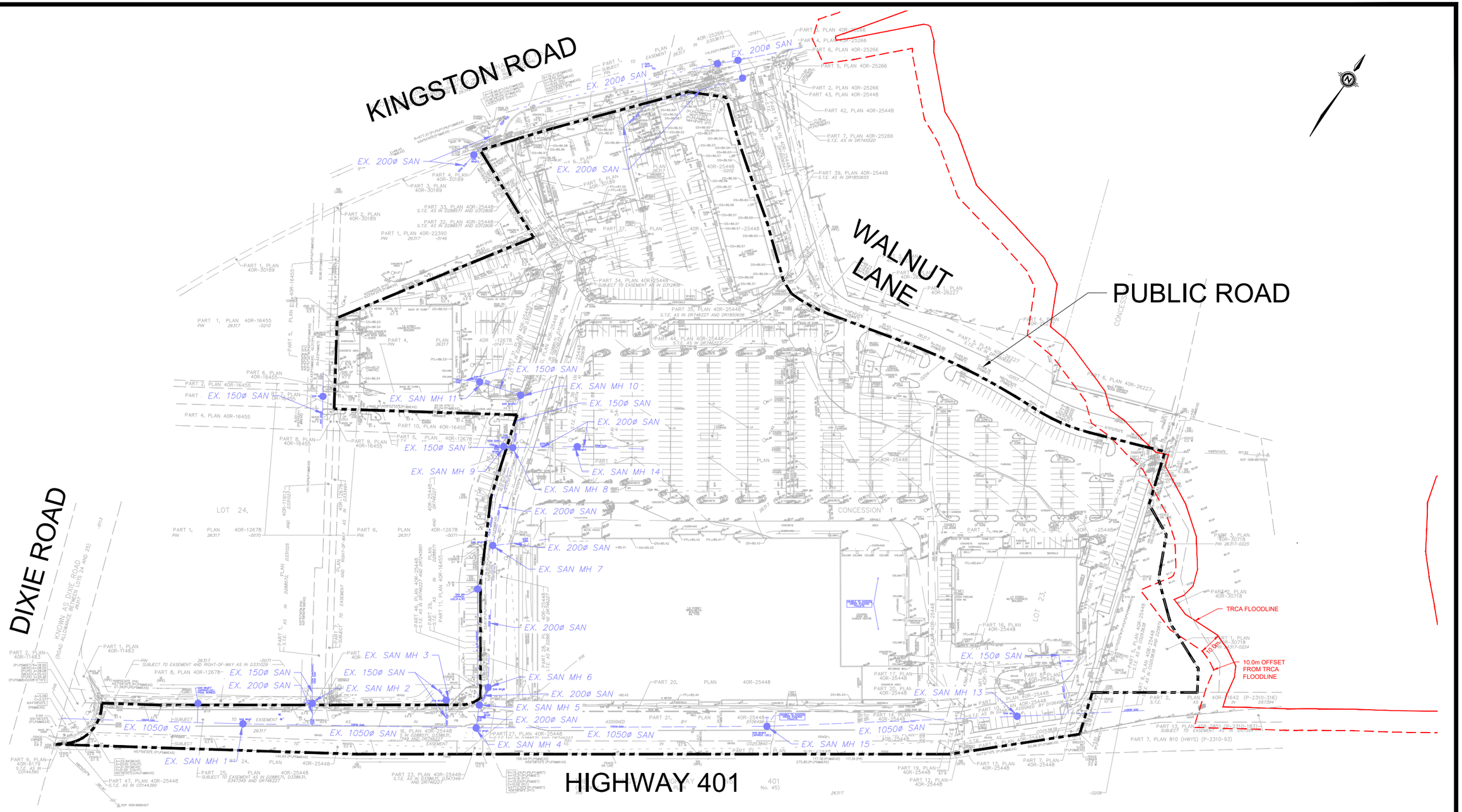
In Phase 5, Building 'E' is proposed to have one sanitary service connection to the sanitary sewer within the proposed R.O.W north of the building. Preliminary sizing of the sanitary connection suggests that the connection should be 250 mm diameter. However, the final size will be coordinated with the mechanical engineer at the detailed design stage.

According to the topographic surveys prepared by J.D. Barnes Ltd, the existing commercial development on the south side of the site has a sanitary connection to the 200 mm diameter municipal sanitary sewer that runs along the west boundary of the site. It is proposed that this existing service connection is removed during the Phase 5 redevelopment, while the other existing municipal sanitary sewers within the Phase 5 lands are proposed to remain.

Refer to **Figure 3F - "Phase 5 Sanitary Servicing"** for an illustration of the proposed sanitary servicing strategy for Phase 5.

3.5 SANITARY CAPACITY ANALYSIS

WSP contacted the Region of Durham regarding the 1050 mm diameter trunk sanitary sewer capacity for a nearby site in October of 2021. At that time, it was indicated that capacity was to be allocated on a first come first serve basis at the time of signing a development agreement. There are currently other ongoing developments within the service area and as such the Region of Durham is in the process of confirming capacity limitations through the use of ongoing flow monitoring. This will form the basis of determining any potential upgrades that will be required as development continues to proceed within the existing sanitary drainage boundary of Pickering City Centre area and beyond.



LEGEND

PROPERTY LINE

EXISTING SANITARY SERVICE

CLIENT

TRIBUTE (BROOKDALE) LIMITED

TITLE

1101A, 1105, and 1163 KINGSTON ROAD

EXISTING SANITARY SEWERS

wsp

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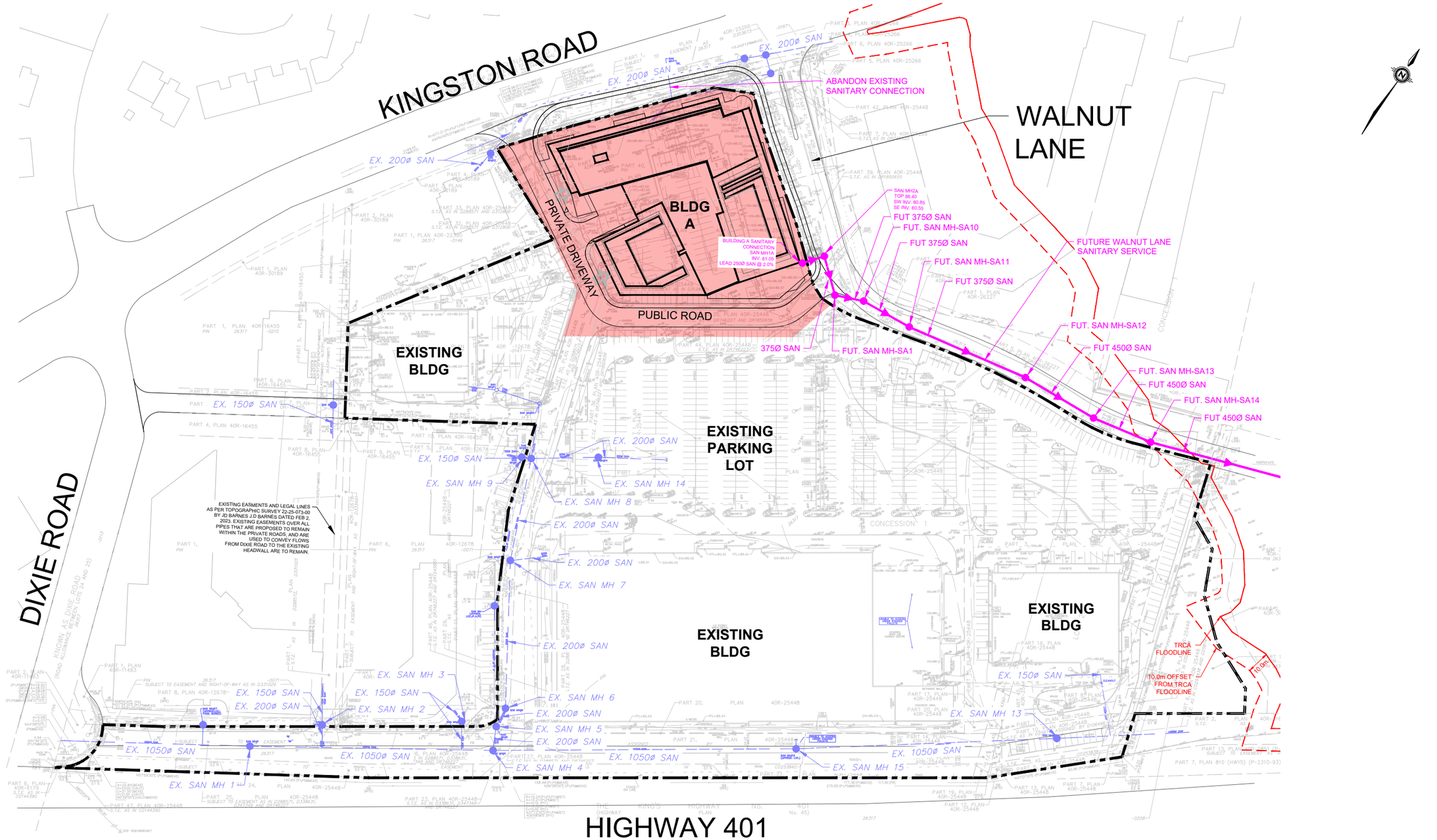
Date JAN 2025	Proj. No. 221-12931
Scale 1:1750	Figure No. 3A



LEGEND

- PROPERTY LINE
- EXISTING SANITARY SERVICE
- PROPOSED WATER SERVICE
- PHASE 1

CLIENT
TRIBUTE (BROOKDALE) LIMITED

TITLE
1101A, 1105, and 1163 KINGSTON ROAD
PHASE 1 - SANITARY SERVICING

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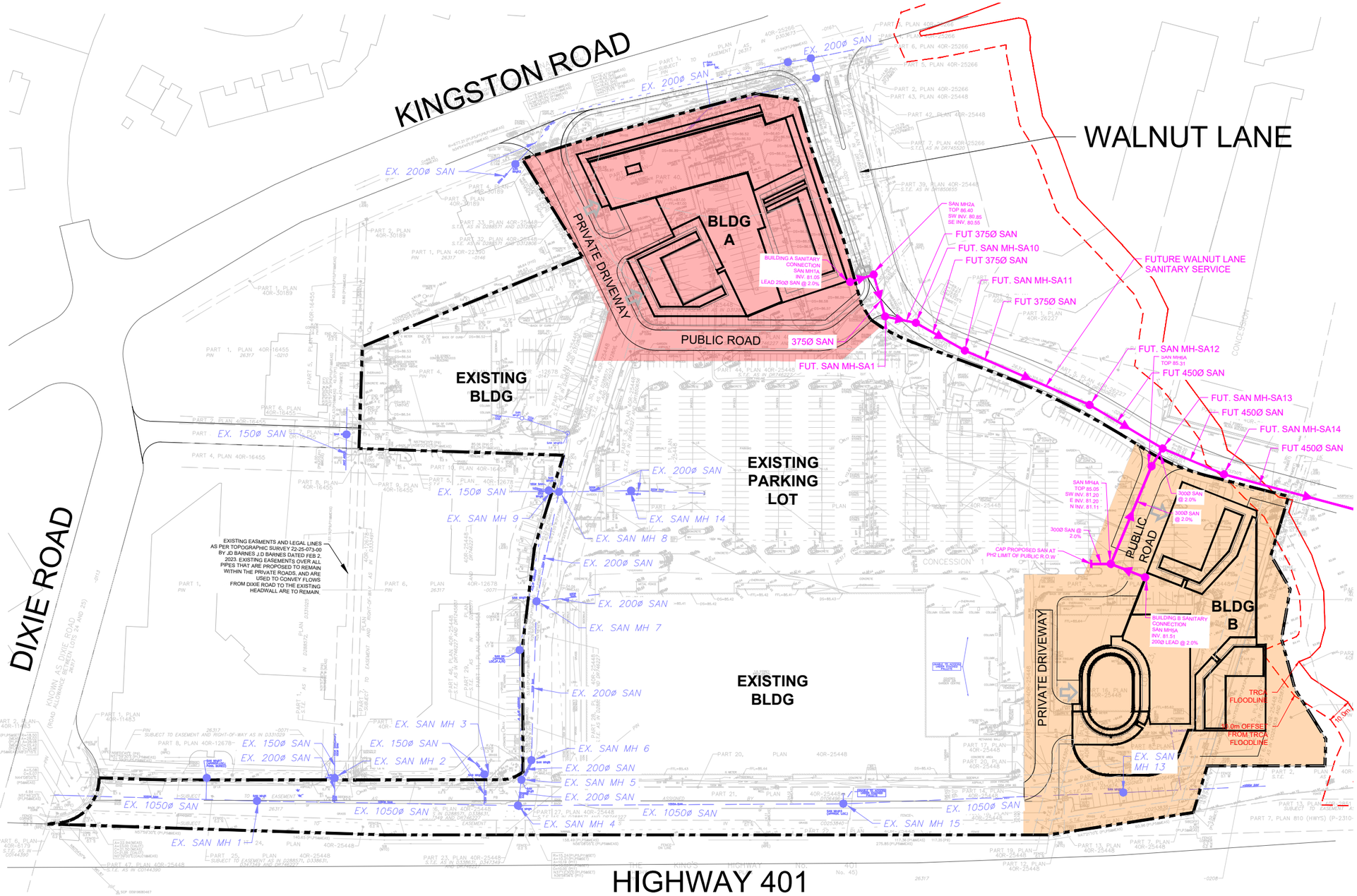
Scale 1:1750	Figure No. 3B



LEGEND

- PROPERTY LINE
- EXISTING SANITARY SERVICE
- PROPOSED SANITARY SERVICE
- PROPOSED SANITARY SERVICE INSTALLED IN PRIOR PHASE
- PHASE 1
- PHASE 2

CLIENT

TRIBUTE (BROOKDALE) LIMITED

TITLE

1101A, 1105, and 1163 KINGSTON ROAD

PHASE 2 - SANITARY SERVICING

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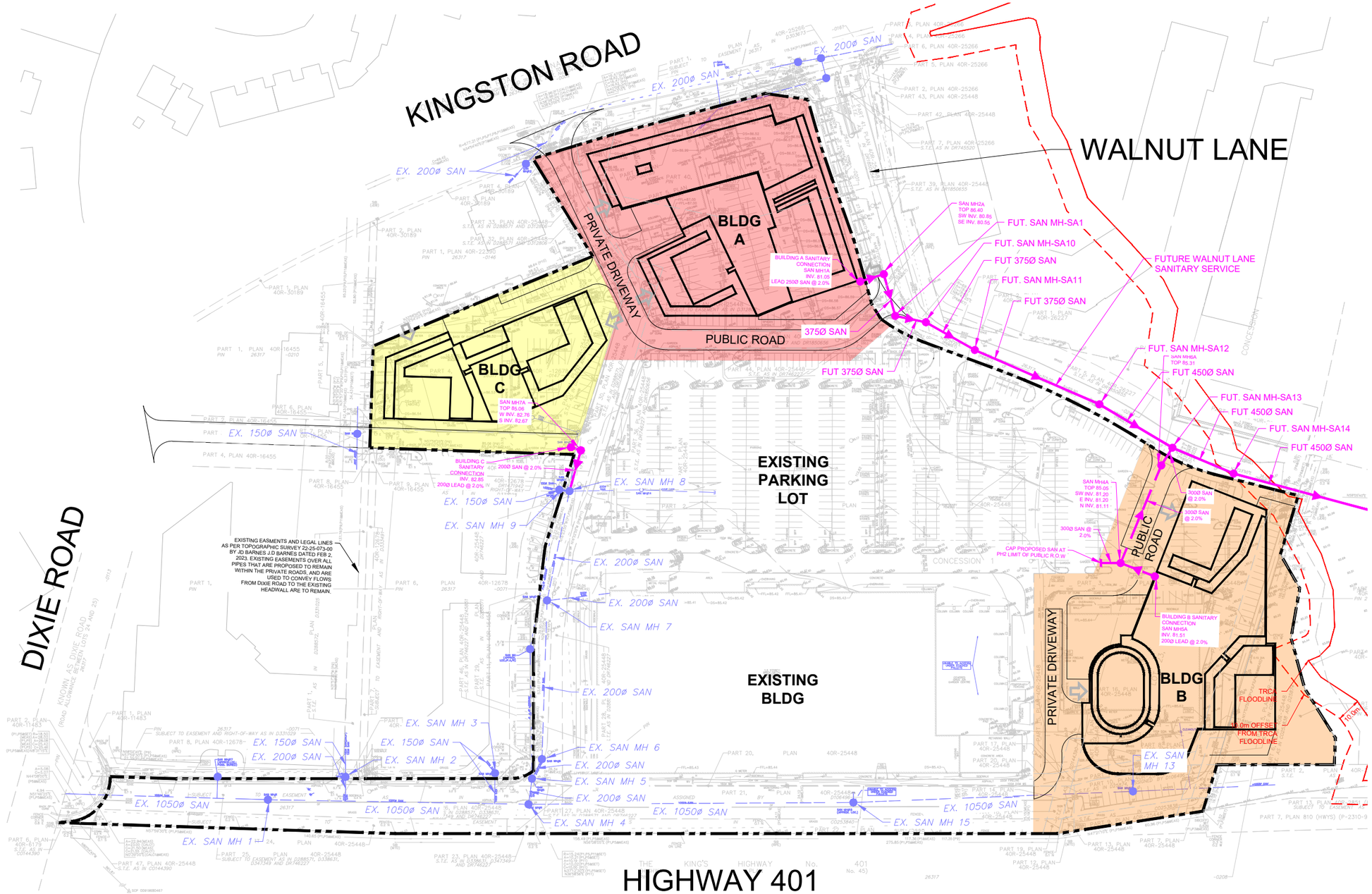
Scale 1:1750	Figure No. 3C



LEGEND

- PROPERTY LINE
- EXISTING SANITARY SERVICE
- PROPOSED SANITARY SERVICE
- PROPOSED SANITARY SERVICE INSTALLED IN PRIOR PHASE

- PHASE1
- PHASE 2
- PHASE 3

CLIENT
TRIBUTE (BROOKDALE) LIMITED

TITLE
1101A, 1105, and 1163 KINGSTON ROAD
PHASE 3 - SANITARY SERVICING

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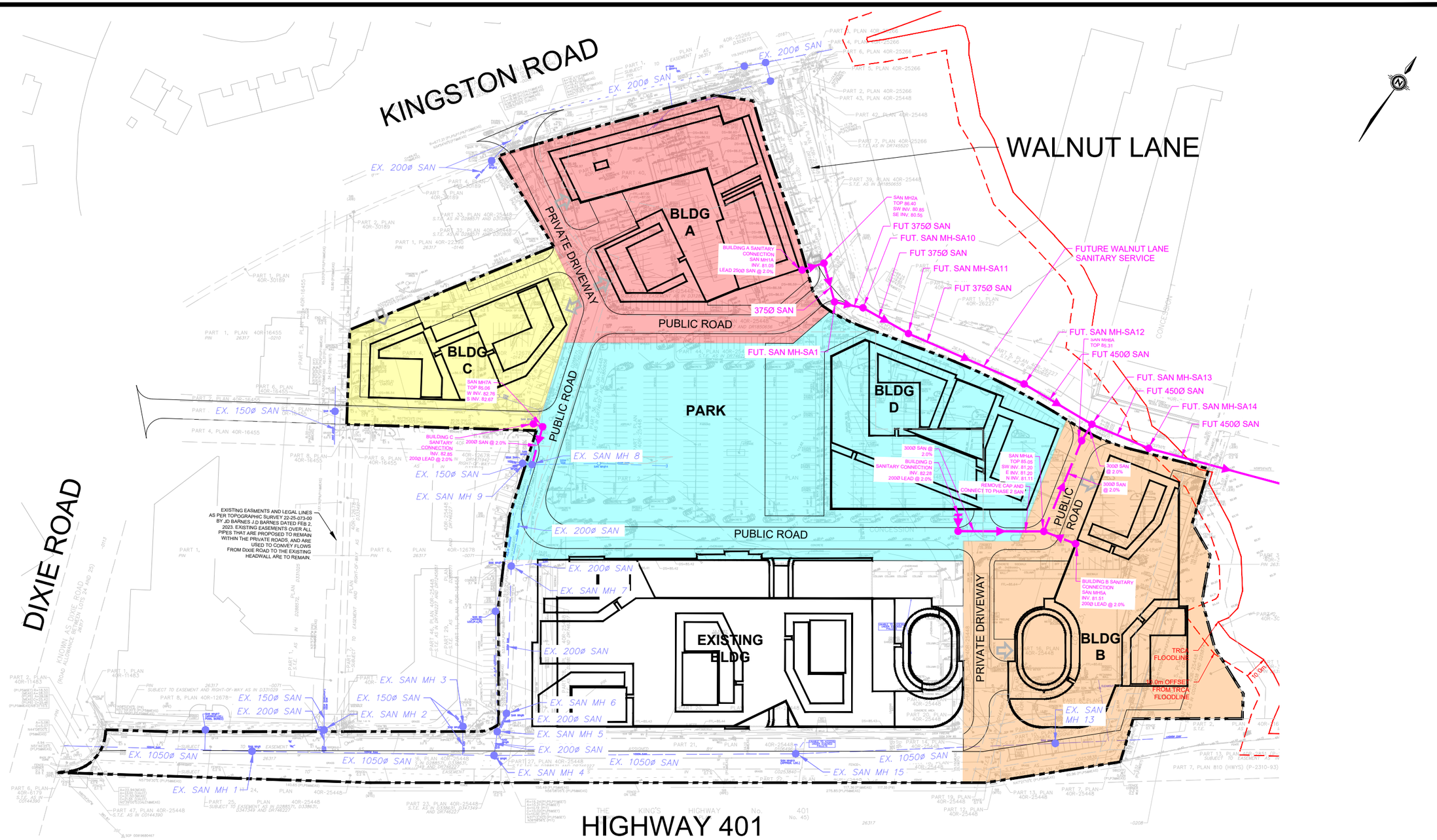
Scale 1:1750	Figure No. 3D



LEGEND

- PROPERTY LINE
- EXISTING SANITARY SERVICE
- PROPOSED SANITARY SERVICE
- PROPOSED SANITARY SERVICE INSTALLED IN PRIOR PHASE

- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4

CLIENT
TRIBUTE (BROOKDALE) LIMITED

TITLE
1101A, 1105, and 1163 KINGSTON ROAD
PHASE 4 - SANITARY SERVICING

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Scale 1:1750	Figure No. 3E

KINGSTON ROAD

WALNUT LANE

HIGHWAY 401

DIXIE ROAD

PRIVATE DRIVEWAY

PUBLIC ROAD

PARK

PRIVATE DRIVEWAY

PUBLIC ROAD

BLDG A

BLDG C

BLDG D

BLDG E

BLDG B

EX. 200ø SAN

EX. 150ø SAN

EX. 1050ø SAN

EX. SAN MH 1

EX. SAN MH 2

EX. SAN MH 3

EX. SAN MH 4

EX. SAN MH 5

EX. SAN MH 6

EX. SAN MH 7

EX. SAN MH 8

EX. SAN MH 9

EX. SAN MH 13

EX. SAN MH 15

375ø SAN

FUT 375ø SAN

FUT. SAN MH-SA1

FUT. SAN MH-SA10

FUT. SAN MH-SA11

FUT. SAN MH-SA12

FUT. SAN MH-SA13

FUT. SAN MH-SA14

FUT 450ø SAN

FUTURE WALNUT LANE SANITARY SERVICE

SAN MH2A
TOP 86.40
SW INV. 80.85
SE INV. 80.55

BUILDING A SANITARY CONNECTION
SAN MH1A
INV. 81.05
LEAD 250ø SAN @ 2.0%

SAN MH8A
TOP 85.31

SAN MH7A
TOP 85.06
W INV. 82.76
S INV. 82.67

BUILDING C SANITARY CONNECTION
INV. 82.85
200ø LEAD @ 2.0%
200ø SAN @ 2.0%

300ø SAN @ 2.0%

BUILDING D SANITARY CONNECTION
INV. 82.25
200ø LEAD @ 2.0%

SAN MH4A
TOP 85.05
SW INV. 81.20
E INV. 81.20
N INV. 81.11

SAN MH3A
TOP 85.50
NW INV. 82.06
SE INV. 82.06
NE INV. 81.97

REMOVE CAP AND CONNECT TO PHASE 2 SAN

CAP PROPOSED SAN AT PH2 LIMIT OR PUBLIC R.O.W.

BUILDING E SANITARY CONNECTION
SAN MH5A
INV. 82.38
250ø LEAD @ 2.0%

BUILDING B SANITARY CONNECTION
SAN MH6A
INV. 81.51
200ø LEAD @ 2.0%

TRCA FLOODLINE

10.0m OFFSET FROM TRCA FLOODLINE

10.0m

EXISTING EASMENTS AND LEGAL LINES AS PER TOPOGRAPHIC SURVEY 22-25-073-00 BY JD BARNES J.D BARNES DATED FEB 2, 2023. EXISTING EASEMENTS OVER ALL PIPES THAT ARE PROPOSED TO REMAIN WITHIN THE PRIVATE ROADS, AND ARE USED TO CONVEY FLOWS FROM DIXIE ROAD TO THE EXISTING HEADWALL ARE TO REMAIN.

LEGEND

- PROPERTY LINE
- EXISTING SANITARY SERVICE
- PROPOSED SANITARY SERVICE
- PROPOSED SANITARY SERVICE INSTALLED IN PRIOR PHASE

- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4
- PHASE 5

CLIENT
TRIBUTE (BROOKDALE) LIMITED

TITLE
1101A, 1105, and 1163 KINGSTON ROAD
PHASE 5 - SANITARY SERVICING

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Scale 1:1750	Figure No. 3F

4 STORM DRAINAGE SYSTEM

A Stormwater Management Report for this development also prepared by WSP has been prepared under a separate cover. It identifies the stormwater controls under which this site will operate to comply all relevant Wet Weather Flow Management Guidelines (WWFMG).

4.1 EXISTING CONDITIONS

Based on the record drawings from the Region of Durham, and the topographic surveys prepared by J.D. Barnes Ltd the existing infrastructure in the vicinity of the site is as follows:

- 200 mm – 900 mm diameter storm sewers across the site;
- Two quantity control chambers (one within the proposed Phase 1 lands, and one within the proposed Phase 2 lands);
- On - site surface storage;
- On - site roof storage;
- One headwall at the south side of the site. This headwall contains two (2) inlets; and
- 1.83 m x 1.83 m box culvert located at the south end of the site.

In the existing condition, all of the on - site storm sewers ultimately discharge to the 1.83 m x 1.83 m box culvert located at the south end of the site. It is WSP's understanding that the box culvert runs beneath Highway 401 and discharges to a 900 mm culvert under the Go Transit and CNR tracks. It is understood that all flows from the site are ultimately discharged to Frenchman's Bay. Based on the topographic surveys prepared by J.D. Barnes Ltd, it is believed that the existing on - site storm sewers are very shallow due to the outlet elevation and size of the site. The methods of connection are as follows:

- The section of the site that falls within the future Phase 1, Phase 3, and Phase 4 lands drain via the storm network that runs along the west side of the site (herein referred to Existing Storm Network A). Sewers in the main network range from 450 mm diameter to 675 mm diameter in size, and this network has a direct connection to the headwall before discharging to the box culvert. The network also has an existing 150 mm diameter orifice at EX. STM MH 10 that provides quantity control and allows the network to backflow into an on - site quantity control chamber located in the future Phase 3 Lands;
- The section of the site that falls within the future Phase 2, and Phase 5 lands drains through a network that runs along the east and south sides of the site (herein referred to Existing Storm Network B). Sewers in the main network range from 450 mm diameter to 525 mm diameter in size. Based on the topographic surveys prepared by J.D. Barnes Ltd, it is believed that this network discharges directly to the box culvert and avoids the headwall. The network also has an existing 150 mm diameter orifice at EX. STM MH 18 that provides quantity control and allows the

network to backflow into an on - site underground storage chamber located in the future Phase 2 Lands; and

- The segment of driveway within the Phase 4 lands that is located west of the headwall drains via a storm network that runs beneath the driveway (herein referred to Existing Storm Network C). The sewers of the main network that fall within the proposed development range from 525 mm diameter to 900 mm diameter and the system has a direct connection to the headwall. Based on the topographic surveys prepared by J.D. Barnes Ltd, it is believed that this storm network west of the headwall collects drainage from Dixie Road and the existing commercial developments to the west.

The existing on - site storm features are illustrated in figure **Figure 4A - "Existing Storm Sewers".**

4.2 PROPOSED MINOR STORM DRAINAGE SYSTEM

As part of the Walnut Lane extension project, there will be a storm network installed within the Walnut Lane R.O.W that will be sized to capture and convey the proposed storm flows within Walnut Lane. The future Walnut Lane sewer will discharge flows to a proposed headwall east of the site. The proposed development will not use the future Walnut Lane storm sewer network to convey its storm flows. Instead, the proposed development will use on - site sewer networks to convey flows to the box culvert located south of the site. The proposed on-site minor storm drainage system will capture all flows up to the 100-year event and release them to the box culvert at the allowable release rate.

The following sections outline the proposed phased storm servicing strategy in detail. Additional details regarding the allowable release rate and overall storm servicing strategy for the site is outlined in the Stormwater Management Report prepared by WSP under a separate cover.

4.2.1 PHASE 1

All storm flows from Phase 1 that are outside of the proposed 17.0m right-of-way will be collected by an internal storm drainage system and directed to a storage tank within Building 'A'. Details regarding the internal drainage system will be determined at the detailed design stage, but the system is to be fit with a jellyfish treatment unit to provide the required quality control for the impervious at grade areas within Phase 1. The storage tank will discharge the flows to a maximum release rate of 16.93 L/s during the 100-year storm event, and it will be designed to hold a volume of 520 m^3. Preliminary sizing of the storm service connection from the storage tank indicates that the size should be 300 mm diameter. However, the final size will be confirmed at the detailed design stage.

Storm flows from the Phase 1 right-of-way will be conveyed into a proposed superpipe that will be located within the 17.0m right-of-way. As demonstrated in **Figure 4B - "Phase 1 – Storm Servicing"**, both the Phase 1 storm tank and the 17.0m right-of-way will be routed through this superpipe and into Existing Storm Network A. Preliminary sizing suggests that this superpipe should be 975 mm diameter in size. However, the final size will be confirmed at the detailed design stage.

A manhole fitted with a flow control device will limit the release rate from the entire Phase 1 area into Existing Storm Network A to 54.98L/s during the 100-year storm event. At this time, it is planned to have the existing OGS STC 6000 within Existing Storm Network A provide the required quality control for the right of-way drainage. The ability for this existing unit to meet the treatment objectives will be assessed at the detailed design stage.

Since the proposed release rate from the Phase 1 area is less than the allowable release rate, there will be no adverse effects to Existing Storm Network A. The Phase 1 storm sewer drainage plans and design sheets that support this are included in **Appendix B**. Additional details relating to the proposed Phase 1 storm servicing strategy and modelling are included in the Stormwater Management Report prepared by WSP under a separate cover.

4.2.2 PHASE 2

Storm flows from Phase 2 (excluding the R.O.W) will be collected by an internal storm drainage system and directed to a storage tank within Building 'B'. Specifications regarding the internal drainage system will be determined at the detailed design stage, but the system is to be fit with a jellyfish treatment unit to provide the required quality control for the impervious at grade areas within Phase 2. The storage tank will discharge the flows to a maximum release rate of 63.82 L/s during the 100-year event. The proposed tank will have a storage volume of 440 m^3.

A storm connection is proposed to connect Building 'B' to Existing Storm Network B. Preliminary sizing suggests that the connection should be 300mm diameter. However, the final size will be confirmed at the detailed design stage.

To avoid backflow into proposed Building 'B', the 10m-250 mm diameter orifice on the northeast side of STM MH 18 will be removed. Remodelling the system without the orifice and backflow suggests that the existing 525 mm diameter sewers will need to be upgraded to sizes ranging from 600 to 750 mm diameter. In the analysis, it was assumed that the existing pipe slopes measured from the topographic surveys prepared by J.D. Barnes Ltd wiill be maintained.

Storm flows from the Phase 2 right-of-way will be conveyed into a proposed 1200 mm diameter superpipe that will span across the site and tie into Existing Storm Network A via Existing MH 9. In the interim condition, the superpipe will only take flows from the Phase 2 right-of-way and discharge will be limited to a maximum 8.7 L/s in the 100-year storm event by a manhole fitted with a flow control device. In the ultimate conditions this superpipe will take additional flows from the Phase 4 Park, building and 20.0m right-of way areas. As mentioned in Section 4.2.1, it is planned to have the existing OGS STC 6000 within Existing Storm Network A provide the required quality control for the right of-way drainage. The ability for this existing unit to meet the treatment objectives will be assessed at the detailed design stage. This strategy is discussed further in **Section 4.2.4** and the Stormwater Management Report prepared by WSP under a separate cover.

In Phase 2 it is proposed to drain a 0.12ha area east of Building 'B' uncontrolled to Pine Creek. This area will also contain infiltration pits and the overall release rate flowing towards Pine Creek will be reduced in the proposed conditions. This strategy is discussed further in the Stormwater Management Report prepared by WSP under a separate cover.

The proposed Phase 2 storm servicing layout is shown on **Figure 4C - "Phase 2 – Storm Servicing"**. Following the recommended upgrades to Existing Storm Network B, there are no capacity concerns with the Existing Storm Network A and B's ability to convey the proposed flows. The Phase 2 storm sewer drainage plans and design sheets are included in **Appendix B**.

Additional details relating to the proposed Phase 2 storm servicing strategy and modelling are included in the Stormwater Management Report prepared by WSP under a separate cover.

4.2.3 PHASE 3

Storm flows from Phase 3 will be collected by an internal storm drainage system and directed to a storage tank within Building 'C'. Specifications regarding the internal drainage system will be determined at the detailed design stage, but the system is to be fit with a jellyfish treatment unit to provide the required quality control for the impervious at grade areas within Phase 3. The storage tank will discharge the flows to a maximum allowable release rate of 29.08 L/ s during the 100-year storm event and it will have a volume of 280m^3. A storm connection is proposed from Building 'C' to into the 975 mm diameter superpipe installed in Phase 1. Preliminary sizing of the storm service connection suggests that it should be 300 mm diameter. However, the final size will be confirmed at the detailed design stage.

Since drainage from Phase 3 will be processed through the superpipe, it will ultimately be discharged to Existing Storm Network A. Following Phase 3 construction, the total release rate from the Phase 1 & 3 areas to Existing Storm Network A will be 84.06 L/s during the 100-year storm event. This controlled flow will be provided by a manhole fitted with a flow control device.

The proposed Phase 3 storm servicing layout is shown on **Figure 4D - "Phase 3 – Storm Servicing"**. There are no capacity concerns with Existing Storm Network A's ability to convey the proposed flows. This is supported by the Phase 3 storm sewer drainage plans and design sheets included in **Appendix B.**

Additional details relating to the proposed Phase 3 storm servicing strategy and modelling are included in the Stormwater Management Report prepared by WSP under a separate cover.

4.2.4 PHASE 4

Storm flows from Phase 4 (excluding the R.O.W and Park) will be collected by an internal storm drainage system and directed to a storage tank within Building 'D'. Specifications regarding the internal drainage system will be determined at the detailed design stage, but the system is to be fit with a jellyfish unit to provide the required quality control for the impervious at grade areas within Phase 4. The storage tank will discharge the flows to a maximum allowable release rate of 16.67 L / s during the 100-year storm event. The proposed tank will have a volume of 340.0 m^3. A storm is proposed from Building 'D' to the proposed 1200 mm diameter superpipe within the proposed

20.0m right-of-way. Preliminary sizing of the storm service connection suggests that it should be 250 mm diameter. However, the final size will be confirmed at the detailed design stage.

Storm flows from the Phase 4 park will be captured and controlled by a subsurface storage system with a volume of 280 m^3. The system will be designed to release flows to a maximum of 37.09 L / s during the 100-year storm event. The subsurface storage system will discharge into the proposed 1200 mm superpipe within the 20.0m right-of-way. Preliminary sizing suggests that the connection will be 250mm in diameter. However, final sizing will be confirmed at the detailed design stage.

Storm flows from the 20.0m right-of-way within Phase 4 will be routed through the 1200 mm superpipe within the 20.0m right-of-way. All storm flows captured from the 20.0m right-of-way areas (Phase 2 and 4), the Phase 4 building area, and the phase 4 park areas will all be conveyed into Existing Storm Network A via this superpipe. A manhole fitted with a flow control device will limit the release rate from these areas to 98.53L/s during the 100-year storm event.

Storm flows from the 17.0m right-of-way within Phase 4 will be routed through the proposed 975 mm superpipe within the 17.0m right-of-way. This 975 mm superpipe will process all of the storm drainage from Phase 1, Phase 3, and the Phase 4 17.0m right-of-way areas A manhole fitted with a flow control device will limit the release rate from these areas to 99.42L/s during the 100-year event.

As mentioned in Section 4.2.1, it is planned to have the existing OGS STC 6000 within Existing Storm Network A provide the required quality control for the right of-way drainage. The ability for this existing unit to meet the treatment objectives will be assessed at the detailed design stage.

The proposed Phase 4 storm servicing layout is shown on **Figure 4E - "Phase 4 – Storm Servicing"**. There are no capacity concerns with Existing Storm Network A's ability to convey the proposed flows. This is supported by the Phase 4 storm sewer drainage plans and design sheets included in **Appendix B.**

Additional details relating to the proposed Phase 4 storm servicing strategy and modelling are included in the Stormwater Management Report prepared by WSP under a separate cover.

4.2.5 PHASE 5

Storm flows within the Phase 5 building area and driveway areas immediately to the south and west of the building will be collected by an internal storm drainage system and directed to a storage tank within Building 'D'. Specifications regarding the internal drainage system will be determined at the detailed design stage but the system is to be fit with a jellyfish treatment unit to provide the required quality control for these impervious at grade areas within Phase 5. The storage tank will discharge the flows to a maximum release rate of 88.72 L / s during the 100-year storm event and will have a storage volume of 680 m^3. A storm connection is proposed from the Building 'E' storm tank to Existing Storm Network B. Preliminary sizing of the storm connections suggest that it should be 300 mm diameter. However, the final size will be confirmed at the detailed design stage.

Storm flows within Phase 5 landscape area located east of the headwall, and south of the proposed driveway are proposed to flow uncontrolled to Frenchman's Bay. For the section of Phase 5 private

road that is located west of the headwall, the intention is to match the existing condition and have this area drain to the headwall via Existing Storm Network C.

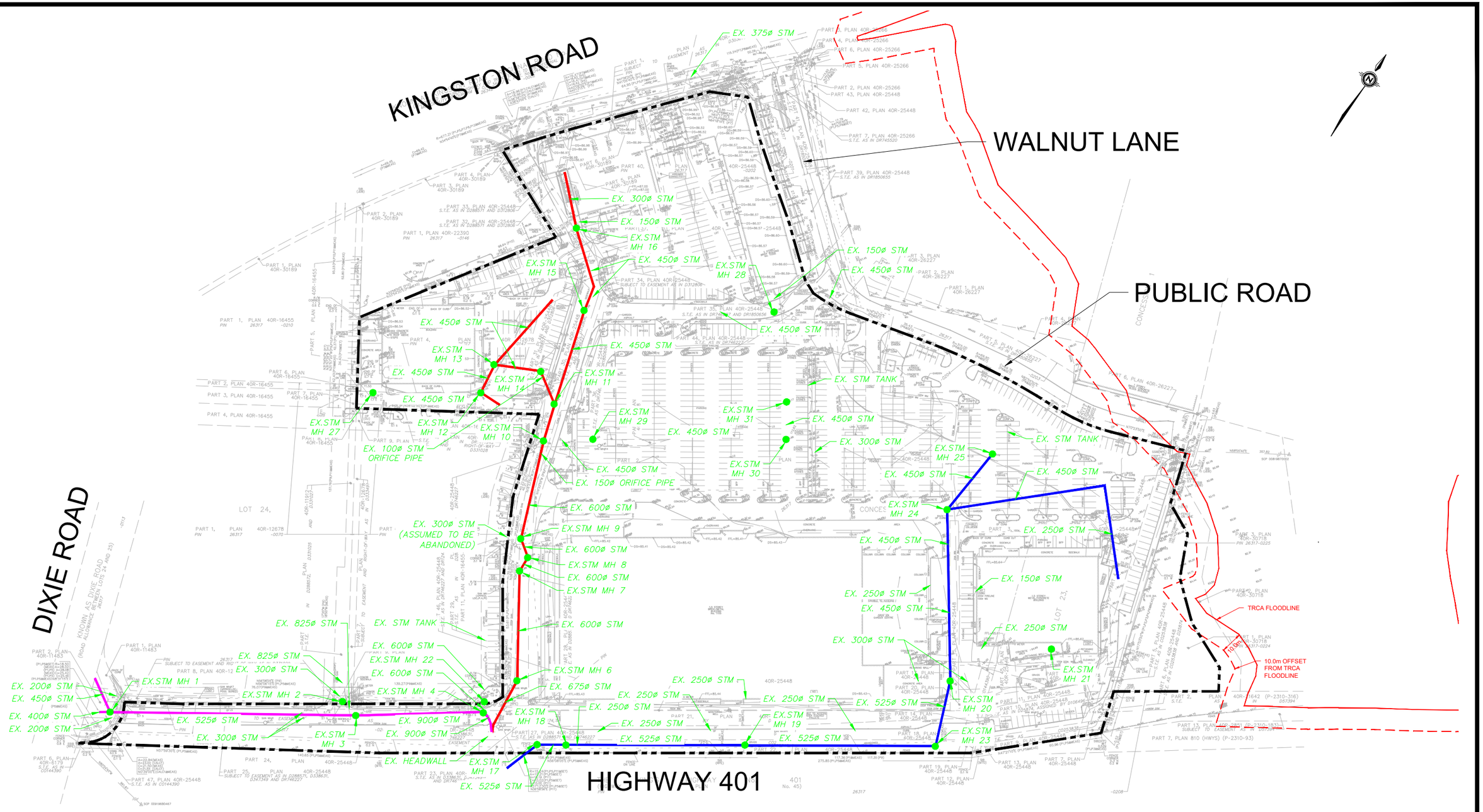
The proposed Phase 5 storm servicing layout is shown on **Figure 4F - "Phase 5 – Storm Servicing".** There are no capacity concerns with Existing Storm Network A's ability to convey the proposed flows. This is supported by the Phase 5 storm sewer drainage plans and design sheets included in **Appendix B.** Since the intention is to match the existing condition west of the headwall and preserve all of Existing Storm Network C, this segment of the network was excluded from the analysis.

Following the implementation of the proposed stormwater management measures, the total release rate from the site will be reduced in the post-development condition. Additional details relating to the proposed storm servicing strategy and modelling are included in the Stormwater Management Report prepared by WSP under a separate cover.

4.3 MAJOR STORM DRAINAGE SYSTEM

The major storm system is a conveyance system for flows in excess of the minor system flows. Stormwater run-off from events up to and including the 100 - year storm event will be contained on - site and released at a controlled rate within the allowable post-development limits to the minor storm system. For major storm events exceeding the 100 - year storm, overland flow routes will be designed to direct excess flows to the existing culvert at the south end of the site via the on - site roadways.

For the development of the site, the grading design will be prepared such that the surface (i.e., roads, walkways and landscaped areas) grades will direct surface drainage away from the building to approved outlets. The proposed grading of the subject site will ensure that existing grade elevations at the time of construction will be met along the property limits. The plumbing system for each building will be coordinated with the mechanical consultant to ensure that they are designed to convey a 100-year run-off from the development. For major storm events exceeding the 100 - year storm and the capacity of the proposed storage tanks, an overflow will be designed to direct excess flows to grade and ultimately to the existing box culvert at the south end of the site via the on - site roadways. Refer to **Appendix C** for the preliminary site grading plan.



LEGEND

- PROPERTY LINE
- EXISTING STORM SERVICE
- EXISTING STORM SEWER NETWORK A
- EXISTING STORM SEWER NETWORK B
- EXISTING STORM SEWER NETWORK C

CLIENT
TRIBUTE (BROOKDALE) LIMITED

TITLE
1101A, 1105, and 1163 KINGSTON ROAD
EXISTING STORM SEWERS

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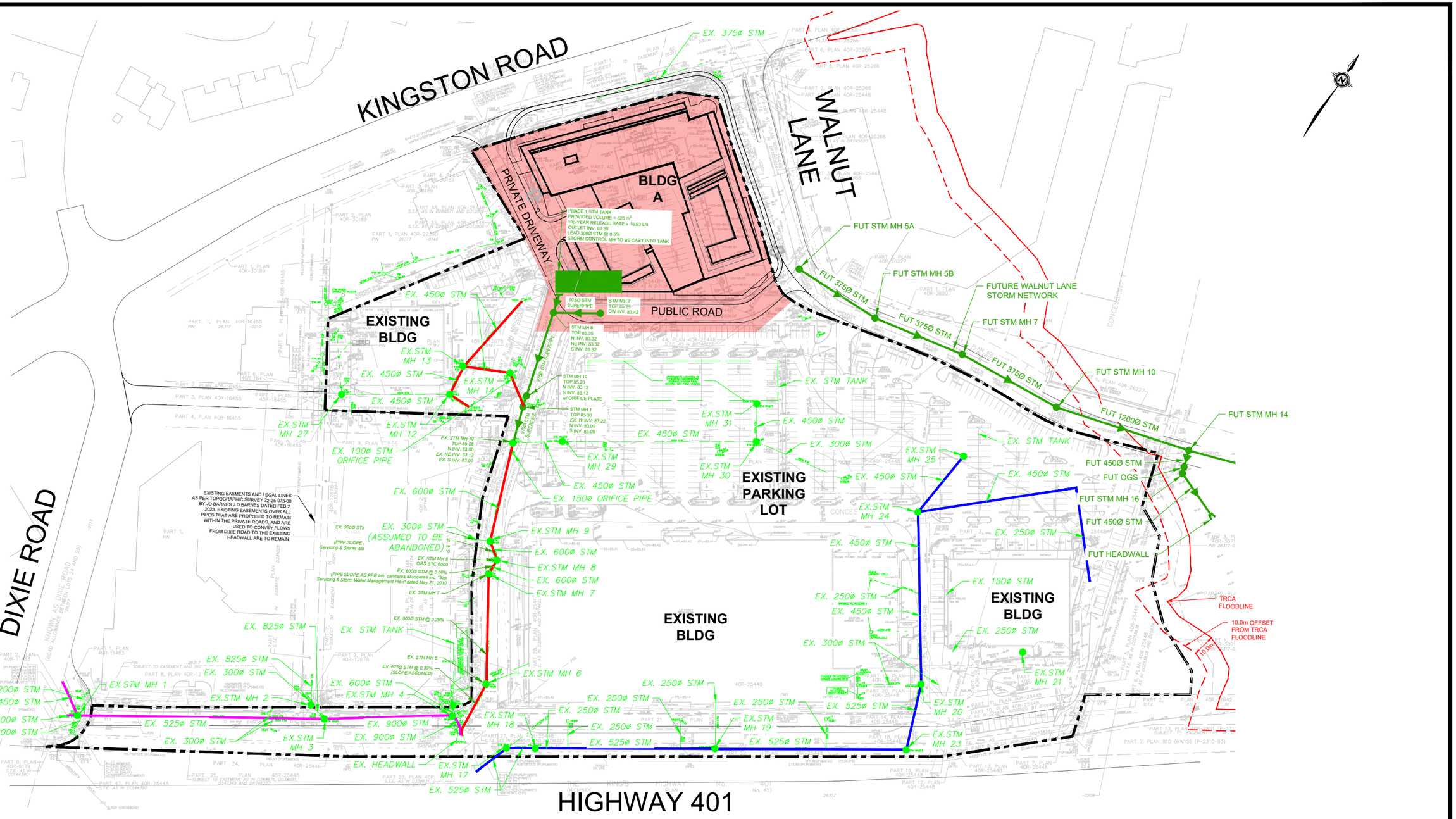

LEGEND

- PROPERTY LINE
- EXISTING STORM SERVICE
- EXISTING STORM SEWER NETWORK A
- EXISTING STORM SEWER NETWORK B
- EXISTING STORM SEWER NETWORK C
- PROPOSED STORM SERVICE
- PROPOSED STORM SERVICE INSTALLED IN PRIOR PHASE
- PHASE 1

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TITLE

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PHASE 1 - STORM SERVICING

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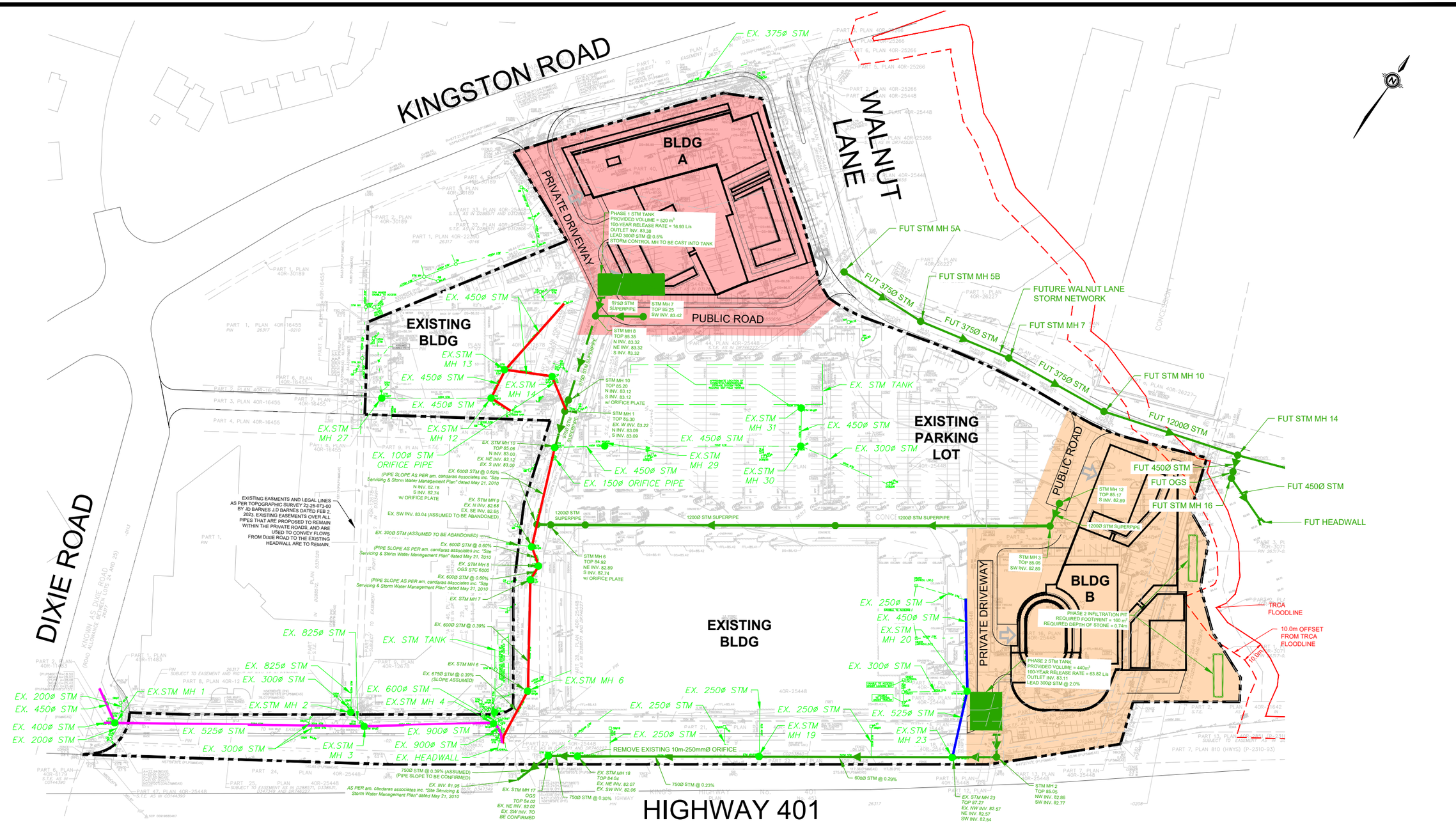


LEGEND

- PROPERTY LINE
- EXISTING STORM SERVICE
- EXISTING STORM SEWER NETWORK A
- EXISTING STORM SEWER NETWORK B
- EXISTING STORM SEWER NETWORK C
- PROPOSED STORM SERVICE
- PROPOSED STORM SERVICE INSTALLED IN PRIOR PHASE
- PHASE 1
- PHASE 2

CLIENT: TRIBUTE (BROOKDALE) LIMITED

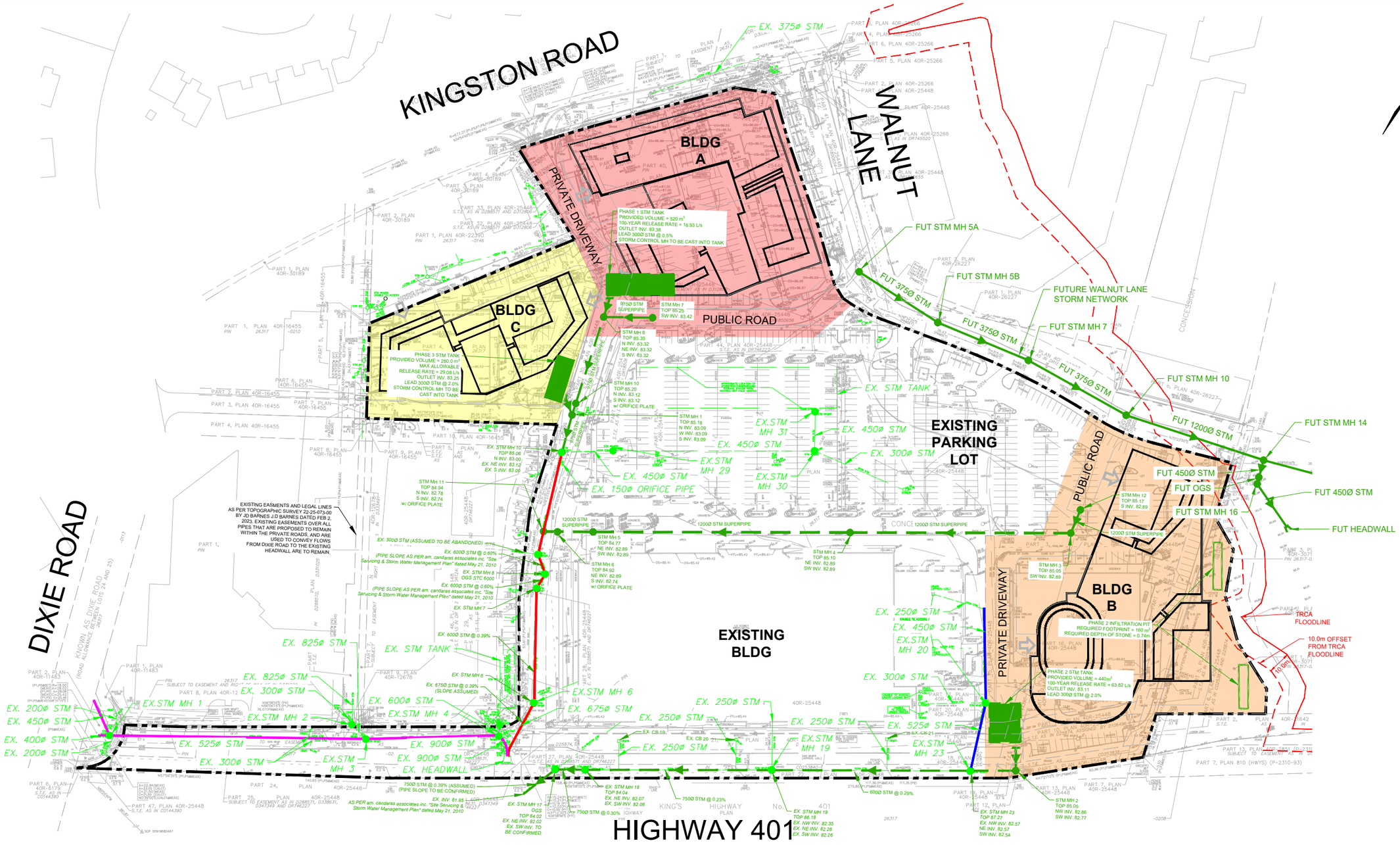
TITLE

1101A, 1105, and 1163 KINGSTON ROAD

PHASE 2 - STORM SERVICING

wsp
150 Commerce Valley Dr. West, Thornhill, ON Canada L3T 7M8
www.wsp.com

Checked K.K.	Drawn Z.B.
Date JAN 2025	Proj. No. 221-12931
Scale 1:1750	Figure No. 4C



LEGEND

- PROPERTY LINE
- EXISTING STORM SERVICE
- EXISTING STORM SEWER NETWORK A
- EXISTING STORM SEWER NETWORK B
- EXISTING STORM SEWER NETWORK C
- PROPOSED STORM SERVICE
- PROPOSED STORM SERVICE INSTALLED IN PRIOR PHASE
- PHASE 1
- PHASE 2
- PHASE 3

CLIENT: TRIBUTE (BROOKDALE) LIMITED

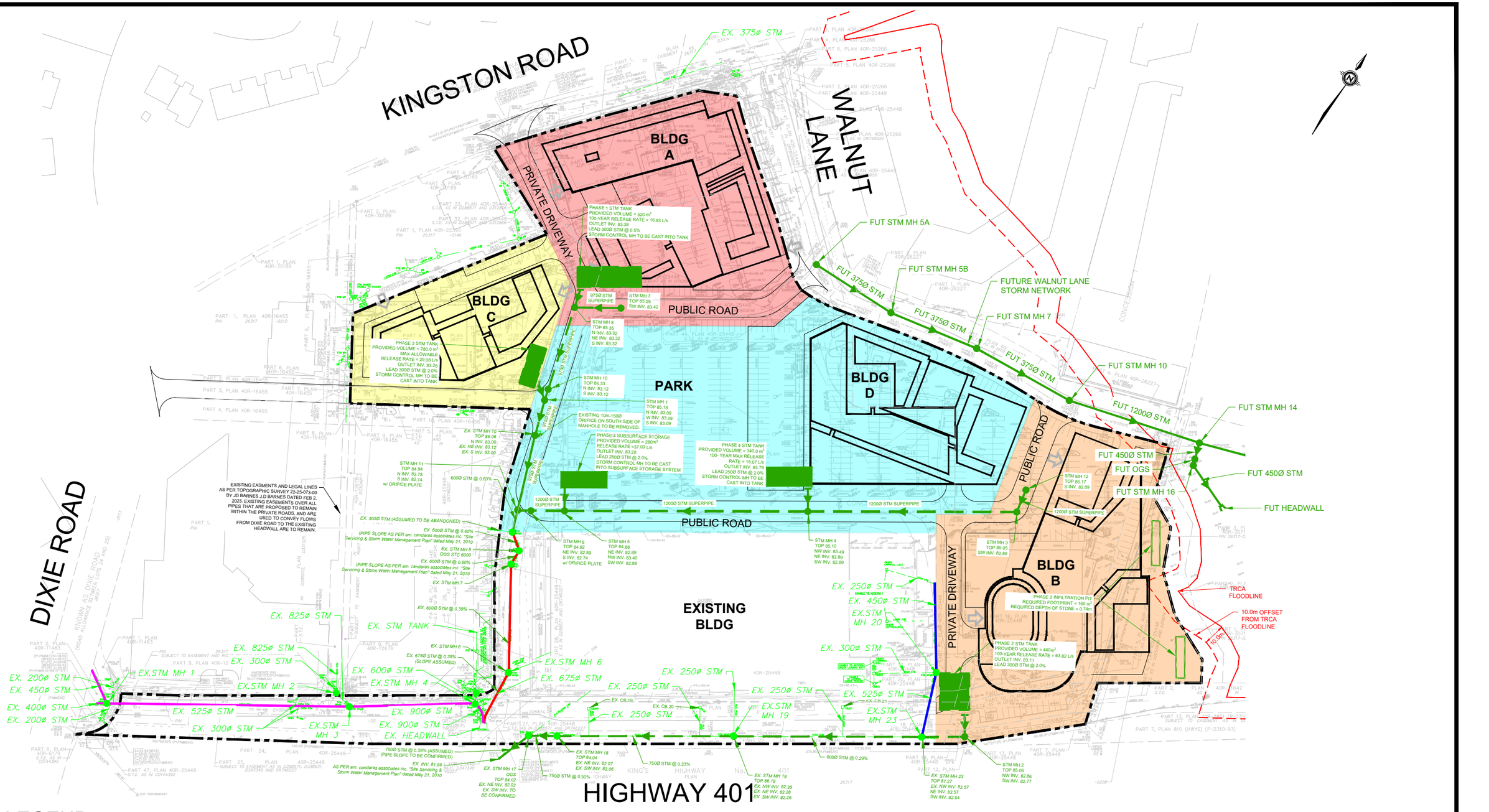
TITLE

1101A, 1105, and 1163 KINGSTON ROAD

PHASE 3 - STORM SERVICING

wsp
150 Commerce Valley Dr. West, Thornhill, ON Canada L3T 7M8
www.wsp.com

Checked: K.K.	Drawn: Z.B.
Date: JAN 2025	Proj. No.: 221-12931
Scale: 1:1750	Figure No.: 4D



LEGEND

- PROPERTY LINE
- EXISTING STORM SERVICE
- EXISTING STORM SEWER NETWORK A
- EXISTING STORM SEWER NETWORK B
- EXISTING STORM SEWER NETWORK C
- PROPOSED STORM SERVICE
- PROPOSED STORM SERVICE INSTALLED IN PRIOR PHASE
- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4

CLIENT
TRIBUTE (BROOKDALE) LIMITED

TITLE
1101A, 1105, and 1163 KINGSTON ROAD
PHASE 4 - STORM SERVICING

wsp
150 Commerce Valley Dr. West, Thornhill, ON Canada L3T 7M8
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Date JAN 2025	Proj. No. 221-12931
Scale 1:1750	Figure No. 4E

KINGSTON ROAD

DIXIE ROAD

HIGHWAY 401

WALNUT LANE

PRIVATE DRIVEWAY

PUBLIC ROAD

PARK

BLDG A

BLDG B

BLDG C

BLDG D

BLDG E

EX. 375ø STM

PHASE 1 STM TANK
PROVIDED VOLUME = 520 m³
100-YEAR RELEASE RATE = 16.93 L/s
OUTLET INV. 83.38
LEAD 300Ø STM @ 0.5%
STORM CONTROL MH TO BE CAST INTO TANK

PHASE 3 STM TANK
PROVIDED VOLUME = 280.0 m³
MAX ALLOWABLE RELEASE RATE = 29.08 L/s
OUTLET INV. 83.25
LEAD 300Ø STM @ 2.0%
STORM CONTROL MH TO BE CAST INTO TANK

PHASE 5 STM TANK
PROVIDED VOLUME = 680m³
MAX ALLOWABLE RELEASE RATE = 88.72 L/s
OUTLET INV. 82.58
LEAD 300Ø STM @ 2.0%

PHASE 2 STM TANK
PROVIDED VOLUME = 440m³
100-YEAR RELEASE RATE = 63.82 L/s
OUTLET INV. 83.11
LEAD 300Ø STM @ 2.0%

PHASE 2 INFILTRATION PIT
REQUIRED FOOTPRINT = 160 m²
REQUIRED DEPTH OF STONE = 0.74m

EXISTING EASMENTS AND LEGAL LINES AS PER TOPOGRAPHIC SURVEY 22-25-073-00 BY JD BARNES LTD BARNES DATED FEB 2, 2023. EXISTING EASEMENTS OVER ALL PIPES THAT ARE PROPOSED TO REMAIN WITHIN THE PRIVATE ROADS, AND ARE USED TO CONVEY FLOWS FROM DIXIE ROAD TO THE EXISTING HEADWALL ARE TO REMAIN.

FUT STM MH 5A
FUT STM MH 5B
FUT 375Ø STM
FUTURE WALNUT LANE STORM NETWORK
FUT STM MH 7
FUT STM MH 10
FUT 1200Ø STM
FUT STM MH 14
FUT 450Ø STM
FUT OGS
FUT STM MH 16
FUT 450Ø STM
FUT HEADWALL

EX. 825ø STM
EX. 825ø STM
EX. 300ø STM
EX. 200ø STM
EX. 450ø STM
EX. 400ø STM
EX. 200ø STM
EX. 525ø STM
EX. 300ø STM
EX. 600ø STM
EX. 900ø STM
EX. 900ø STM
EX. HEADWALL
EX. STM TANK
EX.STM MH 1
EX.STM MH 2
EX.STM MH 3
EX.STM MH 4
EX.STM MH 6

TRCA FLOODLINE
10.0m OFFSET FROM TRCA FLOODLINE

LEGEND

- PROPERTY LINE
- EXISTING STORM SERVICE
- EXISTING STORM SEWER NETWORK A
- EXISTING STORM SEWER NETWORK B
- EXISTING STORM SEWER NETWORK C
- PROPOSED STORM SERVICE
- PROPOSED STORM SERVICE INSTALLED IN PRIOR PHASE
- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4
- PHASE 5

CLIENT
TRIBUTE (BROOKDALE) LIMITED

TITLE
1101A, 1105, and 1163 KINGSTON ROAD
PHASE 5 - STORM SERVICING

wsp
150 Commerce Valley Dr. West, Thornhill, ON Canada L3T 7M8
www.wsp.com

Checked K.K.	Drawn Z.B.
Date JAN 2025	Proj. No. 221-12931
Scale 1:1750	Figure No. 4F

5 SITE GRADING

5.1 EXISTING CONDITIONS

In the existing condition the site falls from north to south. Runoff is conveyed away from the existing buildings to a series of on – site drains. In the emergency situation where runoff cannot be captured, it is conveyed to the existing box culvert located at the south end of the site via the on - site driveways.

5.2 PROPOSED CONDITIONS

The proposed grading design for the new development will direct storm drainage to the on - site collection points. Since the site grading will be phased, the objective is to capture as much runoff within each phase as possible and prevent overland flow to the existing property. However, since the existing site falls from north to south, the emergency overland flow route for the major storm events must go through the existing site towards the box culvert located at the south end of the site. This flow will be via the on - site driveways and R.O.W's and it will ensure that drainage is diverted away from all of the buildings.

The proposed grading plans for each phase are included in **Appendix C**. In summary the plans consider the following:

- Proposed grades along all boundaries (phase and site) are to match to existing so that there is no impact to the adjacent properties;
- Minimize disruption to all existing municipal rights-of-way containing existing utilities and services;
- Promote drainage into the minor sewer systems;
- Grade the lands to direct overland flow away from the proposed structures;
- Create high points within the development area to direct flows towards drainage inlets with a maximum proposed ponding depth of 0.30 m; and
- Ensure that minimum and maximum grades conform to AODA and City of Pickering standards.

6 EROSION AND SEDIMENT CONTROL

Temporary Erosion and Sediment Control must be provided onsite during construction to prevent sediment runoff to the neighbouring developments and municipal roads. Fencing and hoarding will be erected surrounding the perimeter of each phase, and mud mats will be required at site access points. In addition, catchbasins that are to remain in close proximity to the construction zones will be protected with geotextile fabric. All Erosion and Sediment Control Best Management Practices shall be designed, constructed and maintained for the duration of construction. The preliminary Erosion and Sediment Control Plans for each phase are outlined in **Appendix D**.

7 CONCLUSIONS

7.1 WATER

The proposed development will rely on the future 300mm diameter watermain in Walnut Lane for water servicing. At this time. it is WSP's understanding that this watermain will have the capacity to service the proposed development. Buildings within the proposed development will either have service connections directly to the watermain in Walnut Lane, or to the proposed extension of the watermain within the future right-of-ways within the site. Each building's water service connection will at minimum consist of one domestic connection and one fire connection. If the height of any building exceeds 84 m, a secondary fire connection will be provided as per Ontario's building code requirements. The service connection sizing will be coordinated with the Region of Durham and the mechanical engineering consultant at the detailed design stage. The connections will be made in accordance with Region of Durham standards.

7.2 SANITARY

Sanitary flows from the proposed development will be conveyed to the future sanitary sewer that will be installed in Walnut Lane or the existing system on the west side of the site. These local sewer systems ultimately discharge to the existing 1050 mm diameter trunk sanitary sewer that runs along the south side of the site. WSP does not have capacity concerns with the local sewers leading to the trunk.

For a nearby development, WSP was informed by the Region of Durham that the capacity for the trunk sewer was to be allocated on a first come first serve basis at the time of signing a development agreement. It is WSP's understanding that there are currently other ongoing developments within the service area and as such the Region of Durham is in the process of confirming capacity limitations through use of ongoing flow monitoring. This will form the basis of determining any potential upgrades that will be required as development continues to proceed within the existing sanitary drainage boundary of Pickering City Centre area and beyond. Thus, it is assumed that at the time of the proposed redevelopment of the subject lands, there will be capacity in the trunk sewer to accept the proposed sanitary flows.

7.3 STORM

All storm flows from the site up to the 100-year event will ultimately be released at the allowable release rate to the 1.83 m x 1.83 m box culvert located at the south end of the site. On site quantity control chambers and superpipes will be used to provide the necessary quantity controls throughout the site.

Storm flows from Phases 1, 3, and 4 the proposed right-of-ways will be conveyed into Existing Storm Network A on the west side of the site. Preliminary sizing suggests that Existing Storm Network A has enough capacity to convey the flows to the box culvert in each of the proposed conditions.

Storm flows from Phase 2 (excluding the right-of-way), and flows within Phase 5 building and driveway areas that are east of the headwall will be conveyed into Existing Storm Network B that runs along the south side of the site. Preliminary sizing suggests that minor pipe upgrades to Existing Storm Network B will be required to accommodate the proposed flows.

Storm flows within Phase 5 that are tributary to west of the headwall will flow to the box culvert via Existing Storm Network C (southwest side of the site) matching the existing condition.

There are two proposed uncontrolled drainage areas on-site. In Phase 2 it is proposed to drain a 0.12ha area east of Building 'B' uncontrolled to Pine Creek. This area will contain infiltration pits and the overall release rate flowing towards Pine Creek from this area will be reduced in the proposed conditions. In Phase 5 it is proposed to drain the area south of the proposed driveway on the south side of the Building 'E' uncontrolled to Frenchman's Bay.

Following the implementation of the proposed stormwater management measures, the total release rate from the site will be reduced in the post-development condition. Additional details relating to the proposed storm servicing strategy and modelling are included in the Stormwater Management Report prepared by WSP under a separate cover.

APPENDIX

A SANITARY FLOW CALCULATIONS AND DESIGN SHEETS

SANITARY FLOW GENERATION

PHASE 1

Project: **1101A, 1105, and 1163 KINGSTON ROAD**
Job No.: **221-12931**

Building	Unit Count/ GFA (ha)	Site Area (ha)	Occupancy Rate	Equivalent Population	Per Capita Flow	Average Daily Flow (L/s)	Peaking Factor	Peak Flow (L/s)
Building A								
Residential	582			1157	364 L/cap/day	4.87	3.76	18.32
BACH+1B	*344*		*1.5 ppu*	*516*				
2B	*192*		*2.5 ppu*	*480*				
3B	*46*		*3.5 ppu*	*161*				
Retail	0.48				180000 L/ha/day	0.99	1.00	0.99
Infiltration		1.13				0.29		0.29
Subtotal				1157		6.16		19.61
Phase 1 Residential Subtotal				**1157**	**364 L/cap/day**	**4.87**	**3.76**	**18.32**
Phase 1 Retail/Daycare Subtotal	**0.48**				**180000 L/ha/day**	**0.99**	**1.00**	**0.99**
Phase 1 Infiltration		**1.13**				**0.29**		**0.29**
PHASE 1 TOTAL						**6.16**		**19.61**

Notes:
1. Occupancy rates, per capita flows and peaking factor are as per the Region of Durham Design Specifications For Sanitary Sewers
2. Unit Counts and Floor Areas from drawings prepared by Turner Fleisher
3. Infiltration considered for entire Phase area to account for any future changes in plan

SANITARY FLOW GENERATION

PHASE 2

Project: **1101A, 1105, and 1163 KINGSTON ROAD**
Job No.: **221-12931**

Building	Unit Count/ GFA (ha)	Site Area (ha)	Occupancy Rate	Equivalent Population	Per Capita Flow	Average Daily Flow (L/s)	Peaking Factor	Peak Flow (L/s)
Building B								
Residential	1259			2507	364 L/cap/day	10.56	3.51	37.05
BACH+1B	*742*		*1.5 ppu*	*1113*				
2B	*416*		*2.5 ppu*	*1040*				
3B	*101*		*3.5 ppu*	*354*				
Retail	0.00				180000 L/ha/day	0.00	1.00	0.00
Infiltration		1.39				0.36		0.36
Subtotal				2507		10.92		37.41
Phase 2 Residential Subtotal				**2507**	**364 L/cap/day**	**10.56**	**3.51**	**37.05**
Phase 2 Retail Subtotal	**0.00**				**180000 L/ha/day**	**0.00**	**1.00**	**0.00**
Phase 2 Infiltration		**1.39**				**0.36**		**0.36**
PHASE 2 TOTAL						**10.92**		**37.41**

Notes:
1. Occupancy rates, per capita flows and peaking factor are as per the Region of Durham Design Specifications For Sanitary Sewers
2. Unit Counts and Floor Areas from drawings prepared by Turner Fleisher
3. Infiltration considered for entire Phase area to account for any future changes in plan

SANITARY FLOW GENERATION

PHASE 3

Project: **1101A, 1105, and 1163 KINGSTON ROAD**
Job No.: **221-12931**

Building	Unit Count/ GFA (ha)	Site Area (ha)	Occupancy Rate	Equivalent Population	Per Capita Flow	Average Daily Flow (L/s)	Peaking Factor	Peak Flow (L/s)
Building C								
Residential	598			1191	364 L/cap/day	5.02	3.75	18.82
BACH+1B	*353*		*1.5 ppu*	*530*				
2B	*197*		*2.5 ppu*	*493*				
3B	*48*		*3.5 ppu*	*168*				
Retail	0.00				180000 L/ha/day	0.00	1.00	0.00
Infiltration		0.60				0.16		0.16
Subtotal				1191		5.17		18.97
Phase 3 Residential Subtotal				**1191**	**364 L/cap/day**	**5.02**	**3.75**	**18.82**
Phase 3 Retail Subtotal	**0.00**				**180000 L/ha/day**	**0.00**	**1.00**	**0.00**
Phase 3 Infiltration		**0.60**				**0.16**		**0.16**
PHASE 3 TOTAL						**5.17**		**18.97**

Notes:
1. Occupancy rates, per capita flows and peaking factor are as per the Region of Durham Design Specifications For Sanitary Sewers
2. Unit Counts and Floor Areas from drawings prepared by Turner Fleisher
3. Infiltration considered for entire Phase area to account for any future changes in plan

SANITARY FLOW GENERATION

PHASE 4

Project: **1101A, 1105, and 1163 KINGSTON ROAD**
Job No.: **221-12931**

Building	Unit Count/ GFA (ha)	Site Area (ha)	Occupancy Rate	Equivalent Population	Per Capita Flow	Average Daily Flow (L/s)	Peaking Factor	Peak Flow (L/s)
Building D								
Residential	852			1696	364 L/cap/day	7.15	3.64	26.01
BACH+1B	*503*		*1.5 ppu*	*755*				
2B	*281*		*2.5 ppu*	*703*				
3B	*68*		*3.5 ppu*	*238*				
Retail	0.12				180000 L/ha/day	0.26	1.00	0.26
Infiltration		2.16				0.56		0.56
Subtotal				1696		7.97		26.83
Phase 4 Residential Subtotal				**1696**	**364 L/cap/day**	**7.15**	**3.64**	**26.01**
Phase 4 Retail Subtotal	**0.12**				**180000 L/ha/day**	**0.26**	**1.00**	**0.26**
Phase 4 Infiltration		**2.16**				**0.56**		**0.56**
PHASE 4 TOTAL						**7.97**		**26.83**

Notes:
1. Occupancy rates, per capita flows and peaking factor are as per the Region of Durham Design Specifications For Sanitary Sewers
2. Unit Counts and Floor Areas from drawings prepared by Turner Fleisher
3. Infiltration considered for entire Phase area to account for any future changes in plan

SANITARY FLOW GENERATION

PHASE 5

Project: **1101A, 1105, and 1163 KINGSTON ROAD**
Job No.: **221-12931**

Building	Unit Count/ GFA (ha)	Site Area (ha)	Occupancy Rate	Equivalent Population	Per Capita Flow	Average Daily Flow (L/s)	Peaking Factor	Peak Flow (L/s)
Building E								
Residential	1973			3927	364 L/cap/day	16.54	3.34	55.27
BACH+1B	*1164*		*1.5 ppu*	*1746*				
2B	*651*		*2.5 ppu*	*1628*				
3B	*158*		*3.5 ppu*	*553*				
Retail	0.06				180000 L/ha/day	0.12	1.00	0.12
Infiltration		2.47				0.64		0.64
Subtotal				3927		17.30		56.03
Phase 4 Residential Subtotal				**3927**	**364 L/cap/day**	**16.54**	**3.34**	**55.27**
Phase 4 Retail Subtotal	**0.06**				**180000 L/ha/day**	**0.12**	**1.00**	**0.12**
Phase 4 Infiltration		**2.47**				**0.64**		**0.64**
PHASE 4 TOTAL						**17.30**		**56.03**

Notes:
1. Occupancy rates, per capita flows and peaking factor are as per the Region of Durham Design Specifications For Sanitary Sewers
2. Unit Counts and Floor Areas from drawings prepared by Turner Fleisher
3. Infiltration considered for entire Phase area to account for any future changes in plan

KINGSTON ROAD

WALNUT LANE

DIXIE ROAD

HIGHWAY 401

BLDG. A

1.13
0.48 | 1157

BUILDING A SANITARY CONNECTION
SAN MH1A
INV. 81.05
LEAD 250Ø SAN @ 2.0%

SAN MH2A
TOP 86.40
SW INV. 80.85
SE INV. 80.55

FUT. SAN MH-SA1 (B.O.)
TOP 86.53
NW INV. 80.46
NE INV. 80.40

FUT. SAN MH-SA10 (B.O.)

FUT. SAN MH-SA11 (B.O.)

FUTURE WALNUT LANE
SANITARY SERVICE (BY OTHERS)

FUT. SAN MH-SA12 (B.O.)

SAN MH6A
TOP 85.31
S INV. 80.23
N INV. 80.17

FUT. SAN MH-SA13 (B.O.)
TOP 86.25
S INV. 80.00
W INV. 79.88
E INV. 79.81

FUT. SAN MH-SA14 (B.O.)
W INV. 79.67
E INV. 79.64

3750Ø SAN
@ 0.5%

FUT. 375Ø
SAN @ 0.5%

0.60
0 | 1191

BLDG. C

SAN MH7A
TOP 85.06
W INV. 82.76
S INV. 82.67

PROPOSED
PARK

2.31
0.12 | 1696

BLDG. D

BUILDING C
SANITARY
CONNECTION
INV. 82.85
200Ø LEAD @ 2.0%

200Ø SAN @ 2.0%

300Ø SAN @
2.0%

BUILDING D
SANITARY CONNECTION
INV. 82.28
200Ø LEAD @ 2.0%

SAN MH3A
TOP 85.50
NW INV. 82.06
SE INV. 82.06
NE INV. 81.97

SAN MH4A
TOP 85.05
SW INV. 81.20
E INV. 81.20
N INV. 81.11

REMOVE CAP AND
CONNECT TO PHASE 2 SAN

300Ø SAN @
2.0%

300Ø SAN
@ 2.0%

300Ø SAN
@ 2.0%

CAP PROPOSED SAN AT
PH2 LIMIT OF PUBLIC R.O.W.

EXISTING EASMENTS AND LEGAL LINES
AS PER TOPOGRAPHIC SURVEY 22-25-073-00
BY JD BARNES J.D BARNES DATED FEB 2,
2023. EXISTING EASEMENTS OVER ALL
PIPES THAT ARE PROPOSED TO REMAIN
WITHIN THE PRIVATE ROADS, AND ARE
USED TO CONVEY FLOWS
FROM DIXIE ROAD TO THE EXISTING
HEADWALL ARE TO REMAIN.

BUILDING E SANITARY
CONNECTION
INV. 82.38
250Ø LEAD @ 2.0%

BLDG. E

2.47
0.06 | 3927

BUILDING B SANITARY
CONNECTION
SAN MH5A
INV. 81.51
200Ø LEAD @ 2.0%

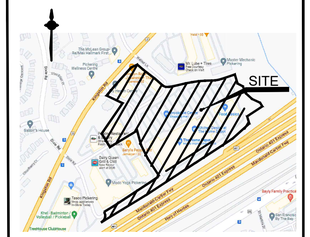
BLDG. B

1.24
0 | 2507

TRCA FLOODLINE

10.0m

10.0m OFFSET
FROM TRCA
FLOODLINE



KEY PLAN N.T.S.

LEGEND

- PROPERTY LINE
- PROPOSED SANITARY
- EX. SANITARY TO REMAIN
- SANITARY DRAINAGE BOUNDARY
- 0.45 / 0 | 416 — AREA (ha) / RESIDENTIAL POPULATION (ppl) / COMMERCIAL FLOOR AREA (ha)
- PHASE1
- PHASE 2
- PHASE 3
- PHASE 4
- PHASE 5

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
2.	ISSUED FOR ZBA & OPA	KK	25-01-24	
1.	ISSUED FOR ZBA & OPA	KK	23-10-27	

ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED

CLIENT
TRIBUTE (BROOKDALE) LIMITED

MUNICIPALITY
CITY OF PICKERING

PROJECT TITLE
1101A, 1105, and 1163 KINGSTON ROAD

SHEET TITLE
SANITARY DRAINAGE PLAN

CONSULTANT
wsp

STAMP

APPROVAL

DESIGNED	DRAWN	CHECKED
Z.B.	CAD 20	K.K.

SCALE	DATE
1:750	OCTOBER 2023

JOB NUMBER	SHEET NUMBER
221-12931	SAN-1

WSP CANADA INC.

THE REGIONAL MUNICIPALITY OF DURHAM

SANITARY SEWER DESIGN SHEET

PROJECT : 1101A, 1105, and 1163 KINGSTON ROAD **Phase 1**
JOB No. : 221-12931-00
FROM :

DESIGNED BY: ZB
CHECKED BY : KK
DATE : 2025-01-15

MH. No.	Residential				Commercial			Industrial	Institutional	Flow in L/s						Proposed Sewer				
	Gross area (ha)	Population density	Population	Peak flow factor	Lot area (ha)	Floor space Index	Floor area (ha)	Lot area	Lot (ha)	Res. flow Infil* L/S 0.26	Res. flow Sewage L/S 0.0042	Comm. L/S 2.08	Indus. L/S 1.04	Inst. L/S 1.30	Total flow L/s	Actual Pipe size mm	Slope %	Capacity in L/s	Velocity in m/s	Load %
SAN MH1A	1.13		1157				0.48													
SAN MH2A	1.13		1157	3.76			0.48			0.29	18.32	0.99	0.00	0.00	19.61	250	*2.00*	84.10	1.71	23%
SAN MH2A	0.00		0				0.00													
FUT. SAN MH-SA1	1.13		1157	3.76			0.48			0.29	18.32	0.99	0.00	0.00	19.61	375	*0.50*	123.98	1.12	16%

Notes:
1. Occupancy rates, per capita flows and peaking factor are as per the Region of Durham Design Specifications For Sanitary Sewers
2. Unit Counts and Floor Areas from drawings prepared by Turner Fleisher
3. Infiltration considered for entire Site Area to account for any future changes in plan

WSP CANADA INC.

THE REGIONAL MUNICIPALITY OF DURHAM

SANITARY SEWER DESIGN SHEET

PROJECT : 1101A, 1105, and 1163 KINGSTON ROAD **Phase 2**
JOB No. : 221-12931-00
FROM :

DESIGNED BY: ZB
CHECKED BY : KK
DATE : 2025-01-15

MH. No.	Residential				Commercial			Industrial	Institutional	Flow in L/s						Proposed Sewer				
	Gross area (ha)	Population density	Population	Peak flow factor	Lot area (ha)	Floor space Index	Floor area (ha)	Lot area	Lot (ha)	Res. flow Infil* L/S 0.26	Res. flow Sewage L/S 0.0042	Comm. L/S 2.08	Indus. L/S 1.04	Inst. L/S 1.30	Total flow L/s	Actual Pipe size mm	Slope %	Capacity in L/s	Velocity in m/s	Load %
SAN MH5A	1.39		2507				0.00													
SAN MH4A	1.39		2507	3.51			0.00			0.36	37.05	0.00	0.00	0.00	37.41	200	*2.00*	46.38	1.48	81%
SAN MH4A	0.00		0				0.00													
SAN MH6A	1.39		2507	3.51			0.00			0.36	37.05	0.00	0.00	0.00	37.41	300	*2.00*	136.76	1.93	27%
SAN MH6A	0.00		0				0.00													
FUT. SAN MH-SA13	1.39		2507	3.51			0.00			0.36	37.05	0.00	0.00	0.00	37.41	300	*2.00*	136.76	1.93	27%

Notes:

1. Occupancy rates, per capita flows and peaking factor are as per the Region of Durham Design Specifications For Sanitary Sewers
2. Unit Counts and Floor Areas from drawings prepared by Turner Fleisher,

q

WSP CANADA INC.

THE REGIONAL MUNICIPALITY OF DURHAM

SANITARY SEWER DESIGN SHEET

PROJECT : 1101A, 1105, and 1163 KINGSTON ROAD **Phase 3**
JOB No. : 221-12931-00
FROM :

DESIGNED BY: ZB
CHECKED BY : KK
DATE : 2025-01-15

MH. No.	Residential				Commercial			Industrial	Institutional	Flow in L/s						Proposed Sewer				
	Gross area (ha)	Population density	Population	Peak flow factor	Lot area (ha)	Floor space Index	Floor area (ha)	Lot area	Lot (ha)	Res. flow Infil* L/S 0.26	Res. flow Sewage L/S 0.0042	Comm. L/S 2.08	Indus. L/S 1.04	Inst. L/S 1.30	Total flow L/s	Actual Pipe size mm	Slope %	Capacity in L/s	Velocity in m/s	Load %
BLDG C	0.60		1191				0.00													
SAN MH7A	0.60		1191	3.75			0.00			0.16	18.82	0.00	0.00	0.00	18.97	200	*2.00*	46.38	1.48	41%
SAN MH7A	0		0				0.00													
EX. SAN MH#8	0.60		1191	3.75			0.00			0.16	18.82	0.00	0.00	0.00	18.97	200	*2.00*	46.38	1.48	41%
EX. SAN MH#8	0		0				0.09 (4)													
EX. SAN MH#7	0.60		1191	3.75			0.09			0.16	18.82	0.19	0.00	0.00	19.16	200	*1.40*	38.81	1.24	49%
EX. SAN MH#7	0		0				1.09 (4)													
EX. SAN MH#6	0.60		1191	3.75			1.18			0.16	18.82	2.46	0.00	0.00	21.43	200	*1.40*	38.81	1.24	55%
EX. SAN MH#6	0		0				0.00													
EX. SAN MH#5	0.60		1191	3.75			1.18			0.16	18.82	2.46	0.00	0.00	21.43	200	*1.12*	34.71	1.10	62%
EX. SAN MH#5	0		0				0.00													
EX. SAN MH#4 **(TRUNK)**	0.60		1191	3.75			1.18			0.16	18.82	2.46	0.00	0.00	21.43	200	*3.10*	57.75	1.84	37%

Notes:

1. Occupancy rates, per capita flows and peaking factor are as per the Region of Durham Design Specifications For Sanitary Sewers
2. Unit Counts and Floor Areas from drawings prepared by Turner Fleisher
3. Infiltration considered for entire Site Area to account for any future changes in plan
4. Existing Commercial area as measured using Google Earth.

WSP CANADA INC.

THE REGIONAL MUNICIPALITY OF DURHAM

SANITARY SEWER DESIGN SHEET

PROJECT : 1101A, 1105, and 1163 KINGSTON ROAD **Phase 4-5**
JOB No. : 221-12931-00
FROM :

DESIGNED BY: ZB
CHECKED BY : KK
DATE : 2025-01-15

MH. No.	Residential				Commercial			Industrial	Institutional	Flow in L/s						Proposed Sewer				
	Gross area (ha)	Population density	Population	Peak flow factor	Lot area (ha)	Floor space Index	Floor area (ha)	Lot area	Lot (ha)	Res. flow Infil* L/S 0.26	Res. flow Sewage L/S 0.0042	Comm. L/S 2.08	Indus. L/S 1.04	Inst. L/S 1.30	Total flow L/s	Actual Pipe size mm	Slope %	Capacity in L/s	Velocity in m/s	Load %
BLDG D	2.16		1696				0.12													
SAN MH3A	2.16		1696	3.64			0.12			0.56	26.01	0.26	0.00	0.00	26.83	200	*2.00*	46.38	1.48	58%
BLDG E	2.47		3927				0.06													
SAN MH3A	2.47		3927	3.34			0.06			0.64	55.27	0.12	0.00	0.00	56.03	250	*2.00*	84.10	1.71	67%
SAN MH3A	0.00		0				0.00													
SAN MH4A	4.63		5623	3.20			0.18			1.20	75.74	0.38	0.00	0.00	77.32	300	*2.00*	136.76	1.93	57%
SAN MH5A	1.39		2507				0.00													
SAN MH4A	1.39		2507	3.51			0.00			0.36	37.05	0.00	0.00	0.00	37.41	200	*2.00*	46.38	1.48	81%
SAN MH4A	0.00		0				0.00													
SAN MH6A	6.02		8130	3.04			0.18			1.56	104.24	0.38	0.00	0.00	106.18	300	*2.00*	136.76	1.93	78%
SAN MH6A	0.00		0				0.00													
FUT. SAN MH-SA13	6.02		8130	3.04			0.18			1.56	104.24	0.38	0.00	0.00	106.18	300	*2.00*	136.76	1.93	78%

Notes:
1. Occupancy rates, per capita flows and peaking factor are as per the Region of Durham Design Specifications For Sanitary Sewers
2. Unit Counts and Floor Areas from drawings prepared by Turner Fleisher
3. Infiltration considered for entire Site Area to account for any future changes in plan

APPENDIX

B STORM FLOW CALCULATIONS AND DESIGN SHEETS

EXISTING CATCHMENTS DELINEATED USING TOPO BY J.D BARNES LIMITED DATED FEBRUARY 2, 2023 AND STORMWATER MANAGEMENT REPORT BY a.m candaras associates inc. DATED JANUARY 2015

KINGSTON ROAD

WALNUT LANE

DIXIE ROAD

HIGHWAY 401

PH 1
16.93

PHASE 1 STM TANK
PROVIDED VOLUME = 520 m³
100-YEAR RELEASE RATE = 16.93 L/s
OUTLET INV. 83.38
LEAD 300Ø STM @ 0.5%
STORM CONTROL MH TO BE CAST INTO TANK

BLDG. A

ROW 1
54.98

*RELEASE RATE INCLUDES PH1 CATCHMENT. REFER TO SWM REPORT FOR DYNAMIC MODELING DETAILS.

*RELEASE RATE CALCULATED USING MAXIMUM CAPACITY OF 10m-150Ø ORIFICE. REFER TO COMMENTS IN PHASE 1 STORM SEWER DESIGN SHEET FOR DETAILS.

975Ø STM SUPERPIPE

STM MH 7
TOP 85.25
SW INV. 83.42

STM MH 8
TOP 85.20
N INV. 83.32
NE INV. 83.32
S INV. 83.32

975Ø STM SUPERPIPE

STM MH 10
TOP 85.20
N INV. 83.12
S INV. 83.12
w/ ORIFICE PLATE

STM MH 1
TOP 85.30
EX. W INV. 83.22
N INV. 83.09
S INV. 83.09

EXISTING BUILDING

EX. 6
34.5

*EXISTING RELEASE RATE ASSUMED TO BE EQUAL TO THE ALLOWABLE RELEASE RATE FOR PHASE 3. AS PER TOPOGRAPHIC SURVEY, THIS AREA IS ORIFICE CONTROLLED BY A 100mm ORIFICE AT THE SOUTHEAST CORNER OF EX. STM MH14. REFER TO COMMENTS ON PH1 STM DESIGN SHEET AND THE STORMWATER MANAGEMENT REPORT BY WSP FOR DISCUSSION REGARDING THE ALLOWABLE RELEASE RATE FOR THIS PARCEL.

*APPROXIMATE EXISTING CONTROLLED CATCHMENT AREA FOLLOWING PHASE 1 & WALNUT LANE CONSTRUCTION. CATCHMENT DELINEATED AS PER TOPO AND STORMWATER MANAGEMENT REPORT FOR EXISTING DEVELOPMENT BY a.m candaras associates inc. DATED JANUARY 2015

EX. STM MH 10
TOP 85.06
N INV. 83.00
EX. NE INV. 83.12
EX. S INV. 83.09

EX. 600Ø STM @ 0.60%
(PIPE SLOPE AS PER am. candaras associates inc. "Site Servicing & Storm Water Management Plan" dated May 21, 2010

EX. STM MH 9
EX. N INV. 82.75
EX. SE INV. 82.65
EX. SW INV. 83.04 (ASSUMED TO BE ABANDONED)

EX. 300Ø STM (ASSUMED TO BE ABANDONED)

EX. 600Ø STM @ 0.60%
(PIPE SLOPE AS PER am. candaras associates inc. "Site Servicing & Storm Water Management Plan" dated May 21, 2010

EX. STM MH 8
OGS STC 6000

EX. 600Ø STM @ 0.60%
(PIPE SLOPE AS PER am. candaras associates inc. "Site Servicing & Storm Water Management Plan" dated May 21, 2010

EX. STM MH 7

EX. 600Ø STM @ 0.39%

EX. STM MH 6

EX. 675Ø STM @ 0.39%
(SLOPE ASSUMED)

EXISTING PARKING LOT

EX. 1
90.89

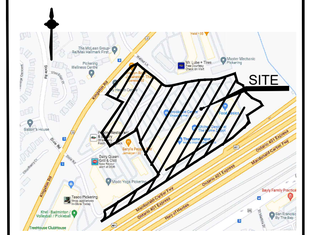
EXISTING BUILDING

EXISTING BUILDING

TRCA FLOODLINE

10.0m

10.0m OFFSET FROM TRCA FLOODLINE



KEY PLAN N.T.S.

LEGEND

- PROPERTY LINE
- PROPOSED STORM
- EXISTING STORM SEWER TO REMAIN
- STORM DRAINAGE BOUNDARY
- EXISTING STORM DRAINAGE BOUNDARY
- ROW 1 / 0.16 / 0.90 — PROPOSED CATCHMENT ID, RUNOFF COEFFICIENT, DRAINAGE AREA (ha)
- 1.69 / 0.084 — PROPOSED CATCHMENT ID, CONTROLLED RELEASE RATE (L/s)
- EX. 2 / 0.28 / 0.95 — EXISTING CATCHMENT ID, RUNOFF COEFFICIENT, DRAINAGE AREA (ha)
- EX. 1 / 0.014 — EXISTING CATCHMENT ID, CONTROLLED RELEASE RATE (L/s)
- PHASE1

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
2.	ISSUED FOR ZBA & OPA	KK	25-01-24	
1.	ISSUED FOR ZBA & OPA	KK	23-10-27	

ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED

CLIENT: TRIBUTE (BROOKDALE) LIMITED

MUNICIPALITY: CITY OF PICKERING

PROJECT TITLE: 1101A, 1105, and 1163 KINGSTON ROAD

SHEET TITLE: STORM DRAINAGE PLAN PHASE 1

CONSULTANT: wsp

STAMP

APPROVAL

DESIGNED	DRAWN	CHECKED
Z.B.	CAD 20	K.K.

SCALE	DATE
1:750	OCTOBER 2023

JOB NUMBER	SHEET NUMBER
221-12931	STM-1

EXISTING CATCHMENTS DELINEATED USING TOPO BY J.D BARNES LIMITED DATED FEBRUARY 2, 2023 AND STORMWATER MANAGEMENT REPORT BY a.m candaras associates inc. DATED JANUARY 2015

WHERE APPLICABLE, EXISTING ROOFTOP RELEASE RATES ARE AS INDICATED IN "SITE SERVICING & STORMWATER MANAGEMENT PLAN" BY a.m candaras associates inc. DATED MAY 21,2010

KINGSTON ROAD

WALNUT LANE

DIXIE ROAD

HIGHWAY 401

PH 1
16.93

BLDG. A

PHASE 1 STM TANK
PROVIDED VOLUME = 520 m³
100-YEAR RELEASE RATE = 16.93 L/s
OUTLET INV. 83.38
LEAD 300Ø STM @ 0.5%
STORM CONTROL MH TO BE CAST INTO TANK

ROW 1
54.98

975Ø STM SUPERPIPE

STM MH 7
TOP 85.25
SW INV. 83.42

STM MH 8
N INV. 83.32
NE INV. 83.32
S INV. 83.32

EXISTING BUILDING
EX. 6
34.5

EXISTING PARKING LOT
EX. 1
90.89

975Ø STM SUPERPIPE

STM MH 10
TOP 85.20
N INV. 83.12
S INV. 83.12
w/ ORIFICE PLATE

STM MH 1
TOP 85.30
EX. W INV. 83.22
N INV. 83.09
S INV. 83.09

EX. STM MH 10
TOP 85.06
N INV. 83.00
EX. NE INV. 83.12
EX. S INV. 83.09

EX. 600Ø STM @ 0.60%
(PIPE SLOPE AS PER am. candaras associates inc. "Site Servicing & Storm Water Management Plan" dated May 21, 2010
N INV. 82.78
S INV. 82.74
w/ ORIFICE PLATE

EX. STM MH 9
EX. N INV. 82.68
EX. SE INV. 82.65
EX. SW INV. 83.04 (ASSUMED TO BE ABANDONED)

EXISTING EASMENTS AND LEGAL LINES AS PER TOPOGRAPHIC SURVEY 22-25-073-00 BY JD BARNES J.D BARNES DATED FEB 2, 2023. EXISTING EASEMENTS OVER ALL PIPES THAT ARE PROPOSED TO REMAIN WITHIN THE PRIVATE ROADS, AND ARE USED TO CONVEY FLOWS FROM DIXIE ROAD TO THE EXISTING HEADWALL ARE TO REMAIN.

EX. 300Ø STM (ASSUMED TO BE ABANDONED)

EX. 600Ø STM @ 0.60%
(PIPE SLOPE AS PER am. candaras associates inc. "Site Servicing & Storm Water Management Plan" dated May 21, 2010

EX. STM MH 8
OGS STC 6000

EX. 600Ø STM @ 0.60%
(PIPE SLOPE AS PER am. candaras associates inc. "Site Servicing & Storm Water Management Plan" dated May 21, 2010

EX. STM MH 7

EX. 600Ø STM @ 0.39%

EX. STM MH 6

EX. 675Ø STM @ 0.39%
(SLOPE ASSUMED)

1200Ø STM SUPERPIPE

STM MH 5
TOP 84.77
NE INV. 82.89
SW INV. 82.89

STM MH 6
TOP 84.92
NE INV. 82.89
S INV. 82.74
w/ ORIFICE PLATE

1200Ø STM SUPERPIPE

1200Ø STM SUPERPIPE

STM MH 4
TOP 85.10
NE INV. 82.89
SW INV. 82.89

EXISTING BUILDING
EX. 4
43.4

EX. 2
0.29 | 0.95

EX. CB 19

EX. CB 20

EX. 5
0.31 | 0.72

EX. 3
0.10 | 0.64

750Ø STM @ 0.39% (ASSUMED)
(PIPE SLOPE TO BE CONFIRMED)

EX. INV. 81.95
AS PER am. candaras associates inc. "Site Servicing & Storm Water Management Plan" dated May 21, 2010

EX. STM MH 17
OGS
TOP 84.02
EX. NE INV. 82.02
EX. SW INV. TO BE CONFIRMED

750Ø STM @ 0.30%

EX. STM MH 18
TOP 84.04
EX. NE INV. 82.07
EX. SW INV. 82.06

750Ø STM @ 0.23%

EX. STM MH 19
TOP 86.18
EX. NW INV. 82.35
EX. NE INV. 82.28
EX. SW INV. 82.26

600Ø STM @ 0.29%

EX. STM MH 23
TOP 87.27
EX. NW INV. 82.57
NE INV. 82.57
SW INV. 82.54

STM MH 2
TOP 85.05
NW INV. 82.86
SW INV. 82.77

*TO DRAIN UNCONTROLLED TO PINE CREEK. UNCONTROLLED RELEASE RATE = 67.61L/s. REFER TO SWM REPORT FOR DETAILS.

ROW 2
8.70

STM MH 12
TOP 85.17
S INV. 82.89

1200Ø STM SUPERPIPE

PH2 D1
0.12 | 0.57

PH 2
63.82

STM MH 3
TOP 85.05
SW INV. 82.89

BLDG. B

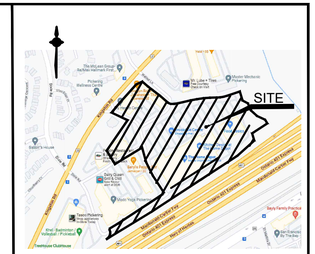
PHASE 2 INFILTRATION PIT
REQUIRED FOOTPRINT = 160 m²
REQUIRED DEPTH OF STONE = 0.74m

PHASE 2 STM TANK
PROVIDED VOLUME = 440m³
100-YEAR RELEASE RATE = 63.82 L/s
OUTLET INV. 83.11
LEAD 300Ø STM @ 2.0%

TRCA FLOODLINE

10.0m

10.0m OFFSET FROM TRCA FLOODLINE



KEY PLAN N.T.S.

LEGEND

- PROPERTY LINE
- PROPOSED STORM
- EXISTING STORM SEWER TO REMAIN
- STORM DRAINAGE BOUNDARY
- EXISTING STORM DRAINAGE BOUNDARY
- ROW 1 / 0.16 | 0.90 — PROPOSED CATCHMENT ID / RUNOFF COEFFICIENT
- DRAINAGE AREA (ha)
- 1.69 / 0.084 — PROPOSED CATCHMENT ID / CONTROLLED RELEASE RATE (L/s)
- EX. 2 / 0.28 | 0.95 — EXISTING CATCHMENT ID / RUNOFF COEFFICIENT
- DRAINAGE AREA (ha)
- EX. 1 / 0.014 — EXISTING CATCHMENT ID / CONTROLLED RELEASE RATE (L/s)
- PHASE1
- PHASE 2

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
2.	ISSUED FOR ZBA & OPA	KK	25-01-24	
1.	ISSUED FOR ZBA & OPA	KK	23-10-27	

ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED

CLIENT
TRIBUTE (BROOKDALE) LIMITED

MUNICIPALITY
CITY OF PICKERING

PROJECT TITLE
1101A, 1105, and 1163 KINGSTON ROAD

SHEET TITLE
STORM DRAINAGE PLAN PHASE 2

CONSULTANT
wsp

STAMP

APPROVAL

DESIGNED	DRAWN	CHECKED
Z.B.	CAD 20	K.K.

SCALE	DATE
1:750	OCTOBER 2023

JOB NUMBER	SHEET NUMBER
221-12931	STM-2

EXISTING CATCHMENTS DELINEATED USING TOPO BY J.D BARNES LIMITED DATED FEBRUARY 2, 2023 AND STORMWATER MANAGEMENT REPORT BY a.m candaras associates inc. DATED JANUARY 2015

KINGSTON ROAD

WALNUT LANE

DIXIE ROAD

HIGHWAY 401

PH 1
16.93

BLDG. A

PHASE 1 STM TANK
PROVIDED VOLUME = 520 m³
100-YEAR RELEASE RATE = 16.93 L/s
OUTLET INV. 83.38
LEAD 300Ø STM @ 0.5%
STORM CONTROL MH TO BE CAST INTO TANK

ROW 1
54.98

975Ø STM SUPERPIPE

STM MH 7
TOP 85.25
SW INV. 83.42

STM MH 8
TOP 85.30
N INV. 83.32
NE INV. 83.32
S INV. 83.32

BLDG. C

PHASE 3 STM TANK
PROVIDED VOLUME = 280.0 m³
MAX ALLOWABLE
RELEASE RATE = 29.08 L/s
OUTLET INV. 83.25
LEAD 300Ø STM @ 2.0%
STORM CONTROL MH TO BE CAST INTO TANK

PH 3
29.08

975Ø STM SUPERPIPE

STM MH 10
TOP 85.20
N INV. 83.12
S INV. 83.12
w/ ORIFICE PLATE

STM MH 1
TOP 85.18
N INV. 83.09
W INV. 83.09
S INV. 83.09

EXISTING PARKING LOT

EX. STM MH 10
TOP 85.06
N INV. 83.00
EX. NE INV. 83.12
EX. S INV. 83.00

STM MH 11
TOP 84.94
N INV. 82.78
S INV. 82.74
w/ ORIFICE PLATE

EX. STM MH 9
TOP 84.98
EX. N INV. 82.68
NE INV. 82.71
EX. SE INV. 82.65

EX. SW INV. 83.04 (ASSUMED TO BE ABANDONED)

EX. 300Ø STM (ASSUMED TO BE ABANDONED)

EX. 600Ø STM @ 0.60%
(PIPE SLOPE AS PER am. candaras associates inc. "Site Servicing & Storm Water Management Plan" dated May 21, 2010

EX. STM MH 8
OGS STC 6000

EX. 600Ø STM @ 0.60%
(PIPE SLOPE AS PER am. candaras associates inc. "Site Servicing & Storm Water Management Plan" dated May 21, 2010

EX. STM MH 7

EX. 600Ø STM @ 0.39%

EX. STM MH 6

EX. 675Ø STM @ 0.39%
(SLOPE ASSUMED)

EXISTING EASMENTS AND LEGAL LINES AS PER TOPOGRAPHIC SURVEY 22-25-073-00 BY JD BARNES J.D BARNES DATED FEB 2, 2023. EXISTING EASEMENTS OVER ALL PIPES THAT ARE PROPOSED TO REMAIN WITHIN THE PRIVATE ROADS, AND ARE USED TO CONVEY FLOWS FROM DIXIE ROAD TO THE EXISTING HEADWALL ARE TO REMAIN.

1200Ø STM SUPERPIPE

STM MH 5
TOP 84.77
NE INV. 82.89
SW INV. 82.89

STM MH 6
TOP 84.92
NE INV. 82.89
S INV. 82.74
w/ ORIFICE PLATE

1200Ø STM SUPERPIPE

STM MH 4
TOP 85.10
NE INV. 82.89
SW INV. 82.89

1200Ø STM SUPERPIPE

EXISTING BUILDING

EX. 4
43.4

EX. 2
0.29 | 0.95

EX. 5
0.31 | 0.72

EX. 3
0.10 | 0.64

EX. CB 19

EX. CB 20

750Ø STM @ 0.39% (ASSUMED)
(PIPE SLOPE TO BE CONFIRMED)

EX. INV. 81.95
AS PER am. candaras associates inc. "Site Servicing & Storm Water Management Plan" dated May 21, 2010

EX. STM MH 17
OGS
TOP 84.02
EX. NE INV. 82.02
EX. SW INV. TO BE CONFIRMED

EX. STM MH 18
TOP 84.04
EX. NE INV. 82.07
EX. SW INV. 82.06

750Ø STM @ 0.30%

750Ø STM @ 0.23%

600Ø STM @ 0.29%

EX. STM MH 19
TOP 86.18
EX. NW INV. 82.35
EX. NE INV. 82.28
EX. SW INV. 82.26

EX. STM MH 23
TOP 87.27
EX. NW INV. 82.57
NE INV. 82.57
SW INV. 82.54

STM MH 2
TOP 85.05
NW INV. 82.86
SW INV. 82.77

ROW 2
8.70

STM MH 12
TOP 85.17
S INV. 82.89

1200Ø STM SUPERPIPE

STM MH 3
TOP 85.05
SW INV. 82.89

PH 2
63.82

BLDG. B

PHASE 2 INFILTRATION PIT
REQUIRED FOOTPRINT = 160 m²
REQUIRED DEPTH OF STONE = 0.74m

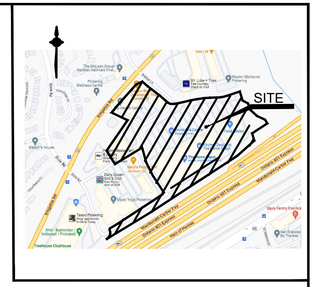
PHASE 2 STM TANK
PROVIDED VOLUME = 440m³
100-YEAR RELEASE RATE = 63.82 L/s
OUTLET INV. 83.11
LEAD 300Ø STM @ 2.0%

PH2 D1
0.12 | 0.57

TRCA FLOODLINE

10.0m

10.0m OFFSET FROM TRCA FLOODLINE



KEY PLAN N.T.S.

LEGEND

- PROPERTY LINE
- PROPOSED STORM
- EXISTING STORM SEWER TO REMAIN
- STORM DRAINAGE BOUNDARY
- EXISTING STORM DRAINAGE BOUNDARY
- ROW 1 / 0.16 | 0.90 — PROPOSED CATCHMENT ID / RUNOFF COEFFICIENT / DRAINAGE AREA (ha)
- 1.69 / 0.084 — PROPOSED CATCHMENT ID / CONTROLLED RELEASE RATE (L/s)
- EX. 2 / 0.28 | 0.95 — EXISTING CATCHMENT ID / RUNOFF COEFFICIENT / DRAINAGE AREA (ha)
- EX. 1 / 0.014 — EXISTING CATCHMENT ID / CONTROLLED RELEASE RATE (L/s)
- PHASE1
- PHASE 2
- PHASE 3

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
2.	ISSUED FOR ZBA & OPA	KK	25-01-24	
1.	ISSUED FOR ZBA & OPA	KK	23-10-27	

ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED

CLIENT
TRIBUTE (BROOKDALE) LIMITED

MUNICIPALITY
CITY OF PICKERING

PROJECT TITLE
1101A, 1105, and 1163 KINGSTON ROAD

SHEET TITLE
STORM DRAINAGE PLAN PHASE 3

CONSULTANT
wsp

STAMP

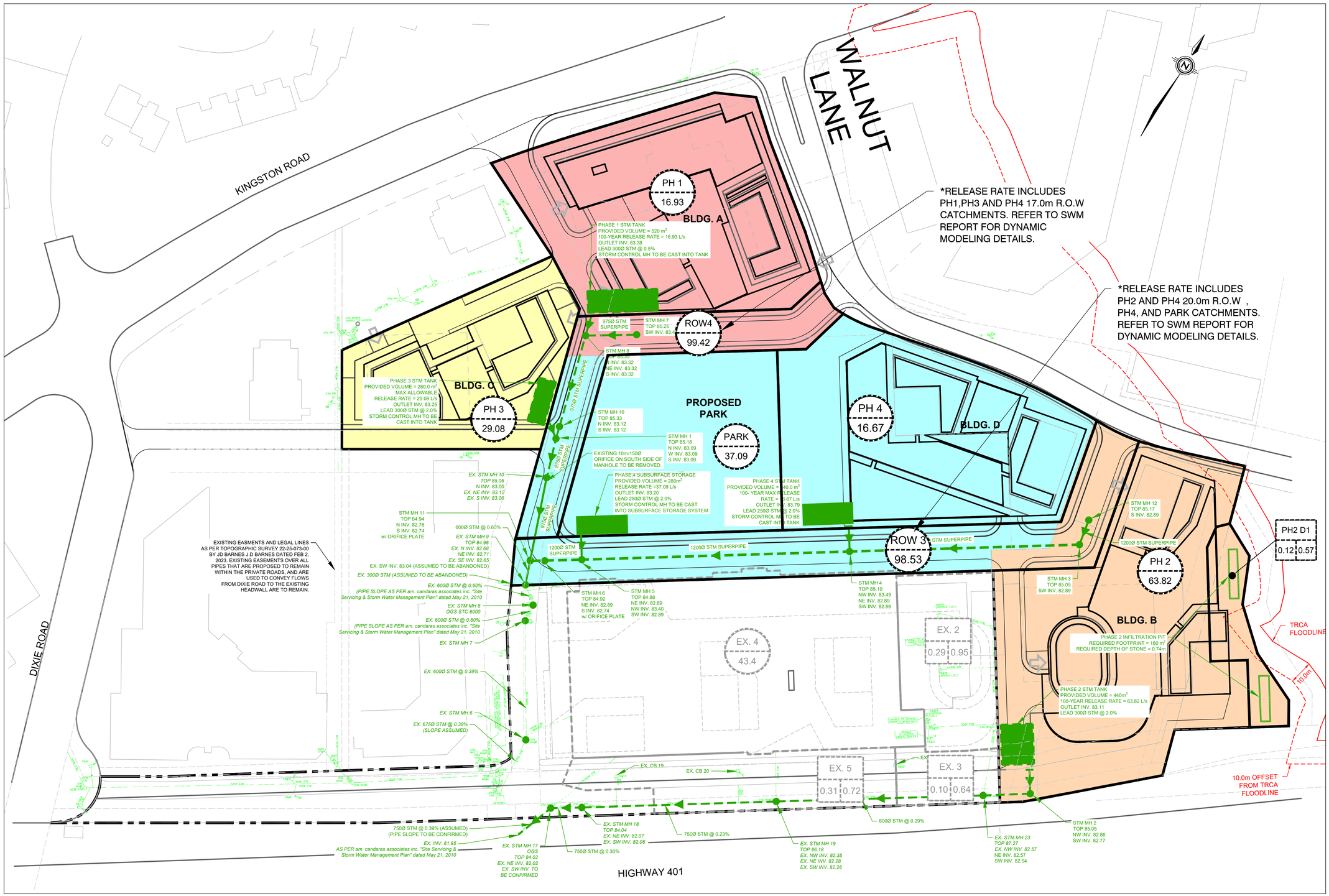
APPROVAL

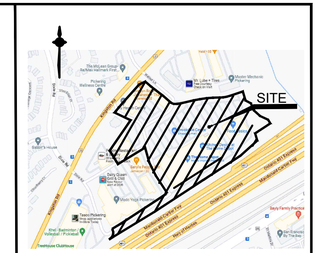
DESIGNED	DRAWN	CHECKED
Z.B.	CAD 20	K.K.

SCALE	DATE
1:750	OCTOBER 2023

JOB NUMBER	SHEET NUMBER
221-12931	STM-3

EXISTING CATCHMENTS DELINEATED USING TOPO BY J.D BARNES LIMITED DATED FEBRUARY 2, 2023 AND STORMWATER MANAGEMENT REPORT BY a.m candaras associates inc. DATED JANUARY 2015





KEY PLAN N.T.S.

LEGEND

- PROPERTY LINE
- PROPOSED STORM
- EXISTING STORM SEWER TO REMAIN
- STORM DRAINAGE BOUNDARY
- EXISTING STORM DRAINAGE BOUNDARY
- ROW 1 / 0.16 / 0.90 — PROPOSED CATCHMENT ID, RUNOFF COEFFICIENT, DRAINAGE AREA (ha)
- 1.69 / 0.084 — PROPOSED CATCHMENT ID, CONTROLLED RELEASE RATE (L/s)
- EX. 2 / 0.28 / 0.95 — EXISTING CATCHMENT ID, RUNOFF COEFFICIENT, DRAINAGE AREA (ha)
- EX. 1 / 0.014 — EXISTING CATCHMENT ID, CONTROLLED RELEASE RATE (L/s)
- PHASE1
- PHASE 2
- PHASE 3
- PHASE 4

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
2.	ISSUED FOR ZBA & OPA	KK	25-01-24	
1.	ISSUED FOR ZBA & OPA	KK	23-10-27	

ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED

CLIENT
TRIBUTE (BROOKDALE) LIMITED

MUNICIPALITY
CITY OF PICKERING

PROJECT TITLE
1101A, 1105, and 1163 KINGSTON ROAD

SHEET TITLE
STORM DRAINAGE PLAN PHASE 4

CONSULTANT
wsp

STAMP

APPROVAL

DESIGNED	DRAWN	CHECKED
Z.B.	CAD 20	K.K.

SCALE	DATE
1:750	OCTOBER 2023

JOB NUMBER	SHEET NUMBER
221-12931	STM-4

EXISTING CATCHMENTS DELINEATED USING TOPO BY J.D BARNES LIMITED DATED FEBRUARY 2, 2023 AND STORMWATER MANAGEMENT REPORT BY a.m candaras associates inc. DATED JANUARY 2015

KINGSTON ROAD

WALNUT LANE

DIXIE ROAD

HIGHWAY 401

PH 1
16.93

BLDG. A

PHASE 1 STM TANK
PROVIDED VOLUME = 520 m³
100-YEAR RELEASE RATE = 16.93 L/s
OUTLET INV. 83.38
LEAD 300Ø STM @ 0.5%
STORM CONTROL MH TO BE CAST INTO TANK

ROW4
99.42

975Ø STM SUPERPIPE

STM MH 7
TOP #5.25
SW INV. 83.4

STM MH 8
N INV. 83.32
NE INV. 83.32
S INV. 83.32

PH 3
29.08

BLDG. C

PHASE 3 STM TANK
PROVIDED VOLUME = 280.0 m³
MAX ALLOWABLE
RELEASE RATE = 29.08 L/s
OUTLET INV. 83.25
LEAD 300Ø STM @ 2.0%
STORM CONTROL MH TO BE
CAST INTO TANK

PROPOSED PARK

PARK
37.09

STM MH 10
STM MH 10
TOP 85.33
N INV. 83.12
S INV. 83.12

STM MH 1
TOP 85.18
N INV. 83.09
W INV. 83.09
S INV. 83.09

EXISTING 10m-150Ø ORIFICE ON SOUTH SIDE OF MANHOLE TO BE REMOVED.

PHASE 4 SUBSURFACE STORAGE
PROVIDED VOLUME = 280m³
RELEASE RATE =37.09 L/s
OUTLET INV. 83.20
LEAD 250Ø STM @ 2.0%
STORM CONTROL MH TO BE CAST
INTO SUBSURFACE STORAGE SYSTEM

PHASE 4 STM TANK
PROVIDED VOLUME = 440.0 m³
100- YEAR MAX RELEASE
RATE = 15.67 L/s
OUTLET INV. 83.79
LEAD 250Ø STM @ 2.0%
STORM CONTROL MH TO BE
CAST INTO TANK

PH 4
16.67

BLDG. D

EX. STM MH 10
TOP 85.06
N INV. 83.00
EX. NE INV. 83.12
EX. S INV. 83.00

STM MH 11
TOP 84.94
N INV. 82.78
S INV. 82.74
w/ ORIFICE PLATE

600Ø STM @ 0.60%

EX. STM MH 9
TOP 84.98
EX. N INV. 82.68
NE INV. 82.71
EX. SE INV. 82.65

EX. SW INV. 83.04 (ASSUMED TO BE ABANDONED)

EX. 300Ø STM (ASSUMED TO BE ABANDONED)

EX. 600Ø STM @ 0.60%
(PIPE SLOPE AS PER am. candaras associates inc. "Site Servicing & Storm Water Management Plan" dated May 21, 2010

EX. STM MH 8
OGS STC 6000

EX. 600Ø STM @ 0.60%
(PIPE SLOPE AS PER am. candaras associates inc. "Site Servicing & Storm Water Management Plan" dated May 21, 2010

EX. STM MH 7

EXISTING EASMENTS AND LEGAL LINES AS PER TOPOGRAPHIC SURVEY 22-25-073-00 BY JD BARNES J.D BARNES DATED FEB 2, 2023. EXISTING EASEMENTS OVER ALL PIPES THAT ARE PROPOSED TO REMAIN WITHIN THE PRIVATE ROADS, AND ARE USED TO CONVEY FLOWS FROM DIXIE ROAD TO THE EXISTING HEADWALL ARE TO REMAIN.

*PH4 D3 IS TRIBUTARY TO THE EXISTING STORM NETWORK THAT IS WEST OF THE PROPOSED HEADWALL. THE INTENTION IS TO MATCH THE EXISTING CONDITION THROUGH THIS AREA. AT THIS TIME, THE EXTERNAL FLOWS INTO THE SITE THAT ARE TRIBUTARY TO THIS NETWORK ARE UNKNOWN. THUS, THE SYSTEM OF STORM SEWERS WITHIN PH4 D3 CANNOT BE MODELED.

EX. 600Ø STM @ 0.39%

EX. STM MH 6

EX. 675Ø STM @ 0.39%
(SLOPE ASSUMED)

PH4 D3
0.49 | 0.52

*TO DRAIN UNCONTROLLED TO FRENCHMANS BAY. UNCONTROLLED RELEASE RATE = 191.58 L/s. REFER TO SWM REPORT FOR DETAILS.

750Ø STM @ 0.39% (ASSUMED)
(PIPE SLOPE TO BE CONFIRMED)

EX. INV. 81.95
AS PER am. candaras associates inc. "Site Servicing & Storm Water Management Plan" dated May 21, 2010

EX. STM MH 17
OGS
TOP 84.02
EX. NE INV. 82.02
EX. SW INV. TO BE CONFIRMED

EX. STM MH 18
TOP 84.04
EX. NE INV. 82.07
EX. SW INV. 82.06

750Ø STM @ 0.30%

750Ø STM @ 0.23%

EX. STM MH 19
NW INV. 82.63
EX. NE INV. 82.28
EX. SW INV. 82.26

PH4 D1
0.23 | 0.45

600Ø STM @ 0.29%

EX. STM MH 23
TOP 87.27
EX. NW INV. 82.57
NE INV. 82.57
SW INV. 82.54

STM MH 2
TOP 85.05
NW INV. 82.86
SW INV. 82.72

*TO DRAIN UNCONTROLLED TO FRENCHMANS BAY. UNCONTROLLED RELEASE RATE = 67.61L/s. REFER TO SWM REPORT FOR DETAILS.

1200Ø STM SUPERPIPE

ROW 3
98.53

1200Ø STM SUPERPIPE

STM MH 12
TOP 85.17
S INV. 82.89

1200Ø STM SUPERPIPE

PH 2
63.82

PH2 D1
0.12 | 0.57

STM MH 3
TOP 85.05
SW INV. 82.89

BLDG. B

PHASE 2 INFILTRATION PIT
REQUIRED FOOTPRINT = 160 m²
REQUIRED DEPTH OF STONE = 0.74m

PHASE 2 STM TANK
PROVIDED VOLUME = 440m³
100-YEAR RELEASE RATE = 63.82 L/s
OUTLET INV. 83.11
LEAD 300Ø STM @ 2.0%

TRCA FLOODLINE

10.0m

10.0m OFFSET FROM TRCA FLOODLINE

1200Ø STM SUPERPIPE

STM MH 5
TOP 84.77
NE INV. 82.89
SW INV. 82.89

STM MH 6
TOP 84.92
NE INV. 82.89
S INV. 82.74
w/ ORIFICE PLATE

STM MH 5
TOP 84.88
NE INV. 82.89
NW INV. 83.40
SW INV. 82.89

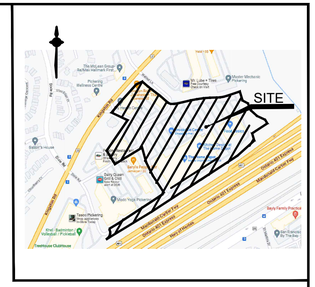
BLDG. E

PH 5
88.72

PHASE 5 STM TANK
PROVIDED VOLUME = 680m³
MAX ALLOWABLE RELEASE RATE = 88.72 L/s
OUTLET INV. 82.58
LEAD 300Ø STM @ 2.0%

STM MH 4
TOP 85.10
NE INV. 82.89
SW INV. 82.89

STM MH 4
TOP 85.10
NW INV. 83.49
NE INV. 82.89
SW INV. 82.89



KEY PLAN N.T.S.

LEGEND

- PROPERTY LINE
- PROPOSED STORM
- EXISTING STORM SEWER TO REMAIN
- STORM DRAINAGE BOUNDARY
- EXISTING STORM DRAINAGE BOUNDARY
- ROW 1 / 0.16 / 0.90 — PROPOSED CATCHMENT ID, RUNOFF COEFFICIENT, DRAINAGE AREA (ha)
- 1.69 / 0.084 — PROPOSED CATCHMENT ID, CONTROLLED RELEASE RATE (L/s)
- EX. 2 / 0.28 / 0.95 — EXISTING CATCHMENT ID, RUNOFF COEFFICIENT, DRAINAGE AREA (ha)
- EX. 1 / 0.014 — EXISTING CATCHMENT ID, CONTROLLED RELEASE RATE (L/s)
- PHASE1
- PHASE 2
- PHASE 3
- PHASE 4
- PHASE 5

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
2.	ISSUED FOR ZBA & OPA	KK	25-01-24	
1.	ISSUED FOR ZBA & OPA	KK	23-10-27	

ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED

CLIENT
TRIBUTE (BROOKDALE) LIMITED

MUNICIPALITY
CITY OF PICKERING

PROJECT TITLE
1101A, 1105, and 1163 KINGSTON ROAD

SHEET TITLE
STORM DRAINAGE PLAN PHASE 5

CONSULTANT
wsp

STAMP

APPROVAL

DESIGNED	DRAWN	CHECKED
Z.B.	CAD 20	K.K.

SCALE	DATE
1:750	OCTOBER 2023

JOB NUMBER	SHEET NUMBER
221-12931	STM-5

WSP CANADA INC.

STORM SEWER DESIGN SHEET
1101A, 1105, and 1163 KINGSTON ROAD - PHASE 1

City of Pickering

PREPARED BY: Z.B.
CHECKED BY: K.K.
DATE: 15-Jan-25
LAST PRINTED: 15-Jan-25
FILE No 221-12931

STREET	FROM M.H.	TO M.H.	CATCHMENT ID.	ha AREA Mixed/Use	R RUNOFF COEFFICIENT	2.78 A.R.	ACCUM 2.78 A.R.	T_c (MIN)	i RAINFALL INTENSITY (mm / hr)	Q_{100} PEAK UNCONTROLLED FLOW (L / S)	Q_{CON} CONTROLLED FLOW (L / S)	Q_{TOTAL} Q_{100} + Q_{CON} (L / S)	PIPE DIA. (mm)	SLOPE (%)	LENGTH (m)	CAPACITY (L / s)	VELOCITY (m / s)	TIME IN SECTION (min.)	TOTAL TIME (min.)	LOAD %	COMMENTS
EAST SITE																					
Phase 1	PHASE 1 SWM TANK	STM MH 8	PH1	0.93	0.77	-	-	10.00	186.69	-	16.93	**16.93**	300	0.50	9.0	68.38	0.97	0.16	10.16	25%	- PH1 CONTROLLED RELEASE RATE THROUGH SWM TANK
Phase 1	STM MH 7	STM MH 8	ROW 1	0.20	0.88	-	-	10.00	186.69	-	54.98	**54.98**	975	-	21.5	-	-	-	-	-	- PH1 CONTROLLED RELEASE RATE THROUGH SUPERPIPE + PH1 ROW RELEASE RATE. REFER TO SWM REPORT FOR DYNAMUC MODELLING DETAILS
Phase 1	STM MH 8	STM MH 10	-	-	-	-	-	10.00	186.69	-	-	**54.98**	975	-	38.5	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
Phase 1	STM MH 10	STM MH 1	-	-	-	-	-	10.00	186.69	-	-	**54.98**	975	-	5.4	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
Phase 3	STM MH 1	EX STM MH 10	EX. 6	0.60	1.00	-	-	10.00	186.69	-	34.50 (1)	**89.48**	975	-	17.2	-	-	-	-	-	- EXISTING RELEASE RATE ASSUMED TO BE EQUAL TO THE ALLOWABLE RELEASE RATE FOR PHASE 3. NOTE AS PER TOPOGRAPHIC SURVEY, THIS AREA IS CONTROLLED BY AN ORIFICE ON THE SOUTH EAST CORNER OF STM MH 14. AT THIS TIME THE ORIGINAL DESIGN DETAILS FOR THE EXISTING STORMWATER MANAGEMENT SYSTEM WITHIN THE PHASE 3 LANDS ARE UNKNOWN. HOWEVER, SINCE THE SIZEING OF THE DOWNSTREAM SYSTEM IS NOT BEING REDUCED, THERE ARE NO CAPACITY CONCERNS WITH THE
Existing Development	EX STM MH 29	EX STM MH 10	EX. 1	1.69	1.00			10.00	186.69	-	90.89	**90.89**	150	-	10.0	-	-	-	-	-	Q=CA (2gh)^0.5 WHERE: C = 0.8 (orifice tube), A = 0.0177m^2 (150 mm DIA. ORIFICE) , g = 9.81 m/s^2, h= 85.10 (HIGH WATER LEVEL PER a.m candaras associates inc STORMWATER MANAGEMENT REPORT DATED JANUARY, 2015) - 83.00 = 2.10m Q=0.8*0.0177m^2*(2*9.81m/s^2*2.10m) Q=0.09089m^3/s Q= 90.89 L/s
Existing Development	EX STM MH 10	EX STM MH 9	-	-	-	-	-	10.00	186.69	-	-	**180.37**	600	0.68	46.8	506.33	1.79	0.44	10.44	36%	- CONSERVATIVELY ASSUMED THAT PEAK FLOW FROM ALL UPSTREAM TRIBUTARIES OCCURS TOGETHER. PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023
Existing Development	EX STM MH 9	EX STM MH 8 (OGS)	-	-	-	-	-	10.44	182.54	-	-	**180.37**	600	0.60	9.4	475.61	1.68	0.09	10.53	38%	- PIPE SLOPE AS PER a.m candaras associates inc. "SITE SERVICING & STORM WATER MANAGEMENT PLAN" DATED May 21, 2010. DESIGN INFO USED BECAUSE SURVEY CONTAINS CONFLICTING INFORMATION THROUGH THIS SEGMENT. SLOPE TO BE VERIFIED DURING DETAILED DESIGN.
Existing Development	EX STM MH 8 (OGS)	EX STM MH 7	-	-	-	-	-	10.53	181.68	-	-	**180.37**	600	0.60	7.4	475.61	1.68	0.07	10.60	38%	- PIPE SLOPE AS PER a.m candaras associates inc. "SITE SERVICING & STORM WATER MANAGEMENT PLAN" DATED May 21, 2010. DESIGN INFO USED BECAUSE SURVEY CONTAINS CONFLICTING INFORMATION THROUGH THIS SEGMENT. SLOPE TO BE VERIFIED DURING DETAILED DESIGN.
Existing Development	EX STM MH7	EX STM MH 6	-	-	-	-	-	10.60	181.00	-	-	**180.37**	600	0.39	51.1	383.45	1.36	0.63	11.23	47%	- PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023 - UPSIZE EX. 600mm DIA. SEWER TO 675mm DIA. TO ACCOMMODATE FUTURE PHASES
Existing Development	EX STM MH 6	Headwall	-	-	-	-	-	11.23	175.45	-	-	**180.37**	675	0.39	35.6	524.95	1.47	0.40	11.63	34%	- PIPE SLOPE UNKNOWN, ASSUMED SAME SLOPE AS UPSTREAM PIPE. SLOPE TO BE VERIFIED DURING DETAILED DESIGN.

*i_{100}=2096.425/(T_c+6.485)^0.863

RUNOFF COEFFICIENTS

0.25	SOFT LANDSCAPING/PARK	0.95	IMPERVIOUS AT GRADE	0.90	
0.50	GREEN ROOF	0.95	IMPERVIOUS ROOF	0.90	

No. OF SHEETS
1

NOTES
1) EXISTING RELEASE RATE ASSUMED TO BE EQUAL TO THE ALLOWABLE RELEASE RATE FOR PHASE 3. REFER TO COMMENTS IN THE LAST COLUMN OF THE DESIGN SHEET.

WSP CANADA INC.

STORM SEWER DESIGN SHEET
1101A, 1105, and 1163 KINGSTON ROAD - PHASE 2

City of Pickering

PREPARED BY: Z.B.
CHECKED BY: K.K.
DATE: 15-Jan-25
LAST PRINTED: 15-Jan-25
FILE No 221-12931

STREET	FROM M.H.	TO M.H.	CATCHMENT ID.	ha AREA Mixed/Use	R RUNOFF COEFFICIENT	2.78 A.R.	ACCUM 2.78 A.R.	T_c (MIN)	i RAINFALL INTENSITY (mm / hr)	Q_{100} PEAK UNCONTROLLED FLOW (L / S)	Q_{CON} CONTROLLED FLOW (L / S)	Q_{TOTAL} Q_{100} + Q_{CON} (L / S)	PIPE DIA. (mm)	SLOPE (%)	LENGTH (m)	CAPACITY (L / s)	VELOCITY (m / s)	TIME IN SECTION (min.)	TOTAL TIME (min.)	LOAD %	COMMENTS
EAST SITE																					
Phase 1	PHASE 1 SWM TANK	STM MH 8	PH1	0.93	0.77	-	-	10.00	186.69	-	16.93	**16.93**	300	0.50	9.0	68.38	0.97	0.16	10.16	25%	- PH1 CONTROLLED RELEASE RATE THROUGH SWM TANK
Phase 1	STM MH 7	STM MH 8	ROW 1	0.20	0.88	-	-	10.00	186.69	-	54.98	**54.98**	975	-	21.5	-	-	-	-	-	- PH1 CONTROLLED RELEASE RATE THROUGH SUPERPIPE + PH1 ROW RELEASE RATE. REFER TO SWM REPORT FOR DYNAMUC MODELLING DETAILS.
Phase 1	STM MH 8	STM MH 10	-	-	-	-	-	10.00	186.69	-	-	**54.98**	975	-	38.5	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
Phase 1	STM MH 10	STM MH 1	-	-	-	-	-	10.00	186.69	-	-	**54.98**	975	-	5.4	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
Phase 3	STM MH 1	EX STM MH 10	EX. 6	0.60	1.00	-	-	10.00	186.69	-	34.50 (1)	**89.48**	975	-	17.2	-	-	-	-	-	- EXISTING RELEASE RATE ASSUMED TO BE EQUAL TO THE ALLOWABLE RELEASE RATE FOR PHASE 3. NOTE AS PER TOPOGRAPHIC SURVEY, THIS AREA IS CONTROLLED BY AN ORIFICE ON THE SOUTH EAST CORNER OF STM MH 14. AT THIS TIME THE ORIGINAL DESIGN DETAILS FOR THE EXISTING STORMWATER MANAGEMENT SYSTEM WITHIN THE PHASE 3 LANDS ARE UNKNOWN. HOWEVER, SINCE THE SIZEING OF THE DOWNSTREAM SYSTEM IS NOT BEING REDUCED, THERE ARE NO CAPACITY CONCERNS WITH THE EXISTING SYSTEM.
Existing Development	EX STM MH 29	EX STM MH 10	EX. 1	1.69	1.00	-	-	10.00	186.69	-	90.89	**90.89**	150	-	10.0	-	-	-	-	-	Q=CA (2gh)^0.5 WHERE: C = 0.8 (orifice tube), A = 0.0177m^2 (150 mm DIA. ORIFICE) , g = 9.81 m/s^2, h= 85.10 (HIGH WATER LEVEL PER a.m candaras associates inc STORMWATER MANAGEMENT REPORT DATED JANUARY, 2015) - 83.00 = 2.10m Q=0.8*0.0177m^2*(2*9.81m/s^2*2.10m) Q=0.09089m^3/s Q= 90.89 L/s
Existing Development	EX STM MH 10	EX STM MH 9	-	-	-	-	-	10.00	186.69	-	-	**180.37**	600	0.68	46.8	506.33	1.79	0.44	10.44	36%	- CONSERVATIVELY ASSUMED THAT PEAK FLOW FROM ALL UPSTREAM TRIBUTARIES OCCURS TOGETHER. PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023
PH2 ROW	STM MH 12	STM MH 3	ROW 2	0.15	0.85	-	-	10.00	186.69	-	8.70	**8.70**	1200	-	11.3	-	-	-	-	-	- PH2 ROW CONTROLLED RELEASE RATE THROUGH SUPERPIPE
PH4 ROW	STM MH 3	STM MH 4	-	-	-	-	-	10.00	186.69	-	-	**8.70**	1200	-	98.5	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
PH4 ROW	STM MH 4	STM MH 5	-	-	-	-	-	10.00	186.69	-	-	**8.70**	1200	-	114.0	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
PH4 ROW	STM MH 5	STM MH 6	-	-	-	-	-	10.00	186.69	-	-	**8.70**	1200	-	16.2	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
PH4 ROW	STM MH 6	STM MH 11	-	-	-	-	-	10.00	186.69	-	-	**8.70**	1200	-	6.3	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
PH4 ROW	STM MH 11	STM MH 9	-	-	-	-	-	10.00	186.69	-	-	**189.07**	600	0.60	10.4	475.61	1.68	0.10	10.10	40%	- EXISTING 600 DIA STM TO REMAIN - PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023
Existing Development	EX STM MH 9	EX STM MH 8 (OGS)	-	-	-	-	-	10.44	182.54	-	-	**189.07**	600	0.60	9.4	475.61	1.68	0.09	10.53	40%	- PIPE SLOPE AS PER a.m candaras associates inc. "SITE SERVICING & STORM WATER MANAGEMENT PLAN" DATED May 21, 2010. DESIGN INFO USED BECAUSE SURVEY CONTAINS CONFLICTING INFORMATION THROUGH THIS SEGMENT. SLOPE TO BE VERIFIED DURING DETAILED DESIGN.
Existing Development	EX STM MH 8 (OGS)	EX STM MH 7	-	-	-	-	-	10.53	181.68	-	-	**189.07**	600	0.60	7.4	475.61	1.68	0.07	10.60	40%	- PIPE SLOPE AS PER a.m candaras associates inc. "SITE SERVICING & STORM WATER MANAGEMENT PLAN" DATED May 21, 2010. DESIGN INFO USED BECAUSE SURVEY CONTAINS CONFLICTING INFORMATION THROUGH THIS SEGMENT. SLOPE TO BE VERIFIED DURING DETAILED DESIGN.
Existing Development	EX STM MH7	EX STM MH 6	-	-	-	-	-	10.60	181.00	-	-	**189.07**	600	0.39	51.1	383.45	1.36	0.63	11.23	49%	- PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023 - UPSIZE EX. 600mm DIA. SEWER TO 675mm DIA. TO ACCOMMODATE FUTURE PHASES
Existing Development	EX STM MH 6	Headwall	-	-	-	-	-	11.23	175.45	-	-	**189.07**	675	0.39	35.6	524.95	1.47	0.40	11.63	36%	- PIPE SLOPE UNKNOWN, ASSUMED SAME SLOPE AS UPSTREAM PIPE. SLOPE TO BE VERIFIED DURING DETAILED DESIGN.
SOUTH SITE																					
Phase 2	PHASE 2 SWM TANK	STM MH 2	PH 2	1.12	0.71	-	-	10.00	186.69	-	63.82	**63.82**	300	2.00	10.2	136.76	1.93	0.09	10.09	47%	- PH2 ALLOWABLE REALEASE RATE REFER TO SWM REPORT FOR DETAILS
Phase 2	STM MH 2	EX STM MH 23	-	-	-	-	-	10.00	186.69	-	-	**63.82**	300	1.00	20.2	96.70	1.37	0.25	10.25	66%	
	EX STM MH 20	EX STM MH 23	EX. 2	0.29	0.95	0.77	0.77	10.00	186.69	142.99	-	**142.99**	525	0.35	31.2	254.43	1.18	0.44	10.44	56%	- REFER TO EX. 2 IN PHASE 2 STORM DRAINAGE PLAN. - PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023
Existing Development	EX STM MH 23	EX STM MH 19	EX. 3	0.10	0.64	0.18	0.94	10.44	182.47	172.22	-	**236.04**	600	0.29	88.8	330.66	1.17	1.26	11.71	71%	- CONSERVATIVELY ASSUMED THAT PEAK FLOW FROM PHASE 2 SWM TANK OCCURS ALONGSIDE UNCONTROLLED PEAK FLOW REFER TO EX. 3 IN PHASE 2 STORM DRAINAGE PLAN. - UPGRADE EX. 525mm DIA. SEWER TO 600mm DIA. - PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023
Existing Development	EX BUILDING	EX STM MH 19	EX. 4			-	-	10.00	186.69	-	43.40	**43.40**	250	2.00	21.0	84.10	1.71	0.20	10.20	52%	- REFER TO EX. 4 IN PHASE 2 STORM DRAINAGE PLAN. - CONTROLLED RELEASE RATE AS PER a.m candaras associates inc. "SITE SERVICING & STORM WATER MANAGEMENT PLAN" DATED May 21, 2010.
Existing Development	EX STM MH 19	EX STM MH 18	EX. 5	0.31	0.72	0.62	1.56	11.71	171.47	268.23	-	**375.45**	750	0.23	83.3	533.91	1.21	1.15	12.86	70%	- CONSERVATIVELY ASSUMED THAT PEAK FLOW FROM PHASE 2 SWM TANK and EX BUILDING OCCURS ALONGSIDE UNCONTROLLED PEAK FLOW - REFER TO EX. 5 IN PHASE 2 STORM DRAINAGE PLAN. - UPGRADE EX. 525mm DIA. SEWER TO 750mm DIA. - PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023
Existing Development	EX STM MH 18	EX STM MH 17	-	-	-	-	1.56	12.86	162.65	254.43	-	**361.65**	750	0.30	13.3	609.77	1.38	0.16	13.02	59%	- CONSERVATIVELY ASSUMED THAT PEAK FLOW FROM PHASE 2 SWM TANK OCCURS ALONGSIDE UNCONTROLLED PEAK FLOW - UPGRADE EX. 525mm DIA. SEWER TO 750mm DIA. - PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023
Existing Development	EX STM MH 17	BOX CULVERT	-	-	-	-	1.56	13.02	161.49	252.62	-	**361.65**	750	0.39	-	695.24	1.57	-	-	52%	- CONSERVATIVELY ASSUMED THAT PEAK FLOW FROM PHASE 2 SWM TANK OCCURS ALONGSIDE UNCONTROLLED PEAK FLOW - UPGRADE EX. 525mm DIA. SEWER TO 750mm DIA. - PIPE SLOPE ASSUMED BASED ON MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023, AND PROPOSED INVERT ELEVATION IN a.m candaras associates inc. "SITE SERVICING & STORM WATER MANAGEMENT PLAN" DATED May 21, 2010

*i_{100}=2096.425/(T_c+6.485)^0.863

RUNOFF COEFFICIENTS

0.25	SOFT LANDSCAPING/PARK	0.95	IMPERVIOUS AT GRADE	0.90	
0.50	GREEN ROOF	0.95	IMPERVIOUS ROOF	0.90	

No. OF SHEETS
1

NOTES
1) EXISTING RELEASE RATE ASSUMED TO BE EQUAL TO THE ALLOWABLE RELEASE RATE FOR PHASE 3. REFER TO COMMENTS IN THE LAST COLUMN OF THE DESIGN SHEET.

WSP CANADA INC.

STORM SEWER DESIGN SHEET
1101A, 1105, and 1163 KINGSTON ROAD - PHASE 3

City of Pickering

PREPARED BY: Z.B.
CHECKED BY: K.K.
DATE: 15-Jan-25
LAST PRINTED: 15-Jan-25
FILE No 221-12931

STREET	FROM M.H.	TO M.H.	CATCHMENT ID.	ha AREA Mixed/Use	R RUNOFF COEFFICIEN	2.78 A.R.	ACCUM 2.78 A.R.	T_c (MIN)	I RAINFALL INTENSITY (mm / hr)	Q_{100} PEAK UNCONTROLLED FLOW (L / S)	Q_{CON} CONTROLLED FLOW (L / S)	Q_{TOTAL} Q_{100} + Q_{CON} (L / S)	PIPE DIA. (mm)	SLOPE (%)	LENGTH (m)	CAPACITY (L / s)	VELOCITY (m / s)	TIME IN SECTION (min.)	TOTAL TIME (min.)	LOAD %	COMMENTS
EAST SITE																					
Phase 1	PHASE 1 SWM TANK	STM MH 8	PH1	0.93	0.80	-	-	10.00	186.69	-	16.93	**16.93**	300	0.50	9.0	68.38	0.97	0.16	10.16	25%	- PH1 CONTROLLED RELEASE RATE THROUGH SWM TANK
Phase 1	STM MH 7	STM MH 8	ROW 1	0.20	0.95	-	-	10.00	186.69	-	54.98	**54.98**	975	-	21.5	-	-	-	-	-	- PH1 CONTROLLED RELEASE RATE THROUGH SUPERPIPE + PH1 ROW RELEASE RATE. REFER TO SWM REPORT FOR DYNAMUC MODELLING DETAILS.
Phase 1	STM MH 8	STM MH 10	-	-	-	-	-	10.00	186.69	-	-	**54.98**	975	-	38.5	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
Phase 1	STM MH 10	STM MH 1	-	-	-	-	-	10.00	186.69	-	-	**54.98**	975	-	5.4	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
Phase 3	PHASE 3 SWM TANK	EX STM MH 1	PH3	0.60	0.79	-	-	10.00	186.69	-	29.08	**29.08**	300	2.00	8.0	136.76	1.93	0.07	10.07	21%	- PH3 CONTROLLED RELEASE RATE THROUGH SWM TANK
Phase 3	STM MH 1	EX STM MH 10	-	-	-	-	-	10.00	186.69	-	-	**29.08**	975	0.50	17.2	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
Existing Development	EX STM MH 29	EX STM MH 10	EX. 1	1.69	1.00	4.70	4.70	10.00	186.69	-	90.89	**90.89**	150	-	10.0	-	-	-	-	-	Q=CA (2gh)^0.5 WHERE: C = 0.6 (orifice tube), A = 0.0177m^2 (150 mm DIA. ORIFICE) , g = 9.81 m/s^2, h= 85.10 (HIGH WATER LEVEL PER a.m candaras associates inc STORMWATER MANAGEMENT REPORT DATED JANUARY, 2015) - 83.00 = 2.10m Q=0.8*0.0177m^2*(2*9.81m/s^2*2.10m) Q=0.09089m^3/s Q= 90.89 L/s
Existing Development	EX STM MH 10	EX STM MH 9	-	-	-	-	-	0.00	417.64	-	-	**119.97**	600	0.68	46.8	506.33	1.79	0.44	0.44	24%	- CONSERVATIVELY ASSUMED THAT PEAK FLOW FROM ALL UPSTREAM TRIBUTARIES OCCURS TOGETHER. PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023
PH2 ROW	STM MH 12	STM MH 3	ROW 2	0.15	0.95	-	-	10.00	186.69	-	8.70	**8.70**	1200	-	11.3	-	-	-	-	-	- PH2 ROW CONTROLLED RELEASE RATE THROUGH SUPERPIPE
PH4 ROW	STM MH 3	STM MH 4	-	-	-	-	-	10.00	186.69	-	-	**8.70**	1200	-	98.5	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
PH4 ROW	STM MH 4	STM MH 5	-	-	-	-	-	10.00	186.69	-	-	**8.70**	1200	-	114.0	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
PH4 ROW	STM MH 5	STM MH 6	-	-	-	-	-	10.00	186.69	-	-	**8.70**	1200	-	16.2	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
PH4 ROW	STM MH 6	STM MH 11	-	-	-	-	-	10.00	186.69	-	-	**8.70**	1200	-	6.3	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
Existing Development	EX STM MH 9	EX STM MH 8 (OGS)	-	-	-	-	-	0.44	394.85	-	-	**128.67**	600	0.60	9.4	475.61	1.68	0.09	0.53	27%	- CONSERVATIVELY ASSUMED THAT PEAK FLOW FROM ALL UPSTREAM TRIBUTARIES OCCURS TOGETHER.PIPE SLOPE AS PER a.m candaras associates inc. "SITE SERVICING & STORM WATER MANAGEMENT PLAN" DATED May 21, 2010. DESIGN INFO USED BECAUSE SURVEY CONTAINS CONFLICTING INFORMATION THROUGH THIS SEGMENT. SLOPE TO BE VERIFIED DURING DETAILED DESIGN.
Existing Development	EX STM MH 8 (OGS)	EX STM MH 7	-	-	-	-	-	0.53	390.34	-	-	**128.67**	600	0.60	7.4	475.61	1.68	0.07	0.60	27%	- PIPE SLOPE AS PER a.m candaras associates inc. "SITE SERVICING & STORM WATER MANAGEMENT PLAN" DATED May 21, 2010. DESIGN INFO USED BECAUSE SURVEY CONTAINS CONFLICTING INFORMATION THROUGH THIS SEGMENT. SLOPE TO BE VERIFIED DURING DETAILED DESIGN.
Existing Development	EX STM MH7	EX STM MH 6	-	-	-	-	-	0.60	386.84	-	-	**128.67**	600	0.39	51.1	383.45	1.36	0.63	1.23	34%	- PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023 - UPSIZE EX. 600mm DIA. SEWER TO 675mm DIA. TO ACCOMMODATE FUTURE PHASES
Existing Development	EX STM MH 6	Headwall	-	-	-	-	-	1.23	359.49	-	-	**128.67**	675	0.39	35.6	524.95	1.47	0.40	1.63	25%	- PIPE SLOPE UNKNOWN, ASSUMED SAME SLOPE AS UPSTREAM PIPE. SLOPE TO BE VERIFIED DURING DETAILED DESIGN.
SOUTH SITE																					
Phase 2	PHASE 2 SWM TANK	STM MH 2	PH 2	1.12	0.71	-	-	10.00	186.69	-	63.82	**63.82**	300	2.00	10.2	136.76	1.93	0.09	10.09	47%	- PH2 ALLOWABLE REALEASE RATE
Phase 2	STM MH 2	EX STM MH 23	-	-	-	-	-	10.09	185.84	-	-	**63.82**	300	1.00	20.2	96.70	1.37	0.25	10.33	66%	
	EX STM MH 20	EX STM MH 23	EX. 2	0.29	0.95	0.77	0.77	10.00	186.69	142.99	-	**142.99**	525	0.35	31.2	254.43	1.18	0.44	10.44	56%	- REFER TO EX. 2 IN PHASE 2 STORM DRAINAGE PLAN - PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023
Existing Development	EX STM MH 23	EX STM MH 19	EX. 3	0.10	0.64	0.18	0.94	10.44	182.47	172.22	-	**236.04**	600	0.29	88.8	330.66	1.17	1.26	11.71	71%	- CONSERVATIVELY ASSUMED THAT PEAK FLOW FROM PHASE 2 SWM TANK OCCURS ALONGSIDE UNCONTROLLED PEAK FLOW REFER TO EX. 3 IN PHASE 2 STORM DRAINAGE PLAN. - UPGRADE EX. 525mm DIA. SEWER TO 600mm DIA. - PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023
Existing Development	EX BUILDING	EX STM MH 19	EX. 4			-	-	10.00	186.69	-	43.40	**43.40**	250	2.00	21.0	84.10	1.71	0.20	10.20	52%	- REFER TO EX. 4 IN PHASE 2 STORM DRAINAGE PLAN. - CONTROLLED RELEASE RATE AS PER a.m candaras associates inc. "SITE SERVICING & STORM WATER MANAGEMENT PLAN" DATED May 21, 2010.
Existing Development	EX STM MH 19	EX STM MH 18	EX. 5	0.31	0.72	0.62	1.56	11.71	171.47	268.23	-	**375.45**	750	0.23	83.3	533.91	1.21	1.15	12.86	70%	- CONSERVATIVELY ASSUMED THAT PEAK FLOW FROM PHASE 2 SWM TANK and EX BUILDING OCCURS ALONGSIDE UNCONTROLLED PEAK FLOW - REFER TO EX. 5 IN PHASE 2 STORM DRAINAGE PLAN. - UPGRADE EX. 525mm DIA. SEWER TO 750mm DIA. - PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023
Existing Development	EX STM MH 18	EX STM MH 17	-	-	-	-	1.56	12.86	162.65	254.43	-	**361.65**	750	0.30	13.3	609.77	1.38	0.16	13.02	59%	- CONSERVATIVELY ASSUMED THAT PEAK FLOW FROM PHASE 2 SWM TANK OCCURS ALONGSIDE UNCONTROLLED PEAK FLOW - UPGRADE EX. 525mm DIA. SEWER TO 750mm DIA. - PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023
Existing Development	EX STM MH 17	BOX CULVERT	-	-	-	-	1.56	13.02	161.49	252.62	-	**361.65**	750	0.39	-	695.24	1.57	-	-	52%	- CONSERVATIVELY ASSUMED THAT PEAK FLOW FROM PHASE 2 SWM TANK OCCURS ALONGSIDE UNCONTROLLED PEAK FLOW - UPGRADE EX. 525mm DIA. SEWER TO 750mm DIA. - PIPE SLOPE ASSUMED BASED ON MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023, AND PROPOSED INVERT ELEVATION IN a.m candaras associates inc. "SITE SERVICING & STORM WATER MANAGEMENT PLAN" DATED May 21, 2010

*I_{100}=2096.425/(T_c+6.485)^0.863

RUNOFF COEFFICIENTS

0.25	SOFT LANDSCAPING/PARK	0.95	IMPERVIOUS AT GRADE	0.90	
0.50	GREEN ROOF	0.95	IMPERVIOUS ROOF	0.90	

No. OF SHEETS
1

NOTES

WSP CANADA INC.

STORM SEWER DESIGN SHEET
1101A, 1105, and 1163 KINGSTON ROAD - PHASE 4

City of Pickering

PREPARED BY: Z.B.
CHECKED BY: K.K.
DATE: 15-Jan-25
LAST PRINTED: 15-Jan-25
FILE No 221-12931

STREET	FROM M.H.	TO M.H.	CATCHMENT ID.	ha AREA Mixed/Use	R RUNOFF COEFFICIENT	2.78 A.R.	ACCUM 2.78 A.R.	T_c (MIN)	I RAINFALL INTENSITY (mm / hr)	Q_{100} PEAK UNCONTROLLED FLOW (L / S)	Q_{CON} CONTROLLED FLOW (L / S)	Q_{TOTAL} Q_{100} + Q_{CON} (L / S)	PIPE DIA. (mm)	SLOPE (%)	LENGTH (m)	CAPACITY (L / s)	VELOCITY (m / s)	TIME IN SECTION (min.)	TOTAL TIME (min.)	LOAD %	COMMENTS
EAST SITE																					
Phase 1	PHASE 1 SWM TANK	STM MH 8	PH1	0.93	0.80	-	-	10.00	186.69	-	16.93	**16.93**	300	0.50	9.0	68.38	0.97	0.16	10.16	25%	- PH1 CONTROLLED RELEASE RATE THROUGH SWM TANK
Phase 1	STM MH 7	STM MH 8	ROW 4	0.20	0.95	-	-	10.00	186.69	-	99.42	**99.42**	975	-	21.5	-	-	-	-	-	- PH1 CONTROLLED RELEASE RATE THROUGH SUPERPIPE + PH1 ROW RELEASE RATE. REFER TO SWM REPORT FOR DYNAMUC MODELLING DETAILS.
Phase 1	STM MH 8	STM MH 10	-	-	-	-	-	10.00	186.69	-	-	**99.42**	975	-	38.5	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
Phase 1	STM MH 10	STM MH 1	-	-	-	-	-	10.00	186.69	-	-	**99.42**	975	-	5.4	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
Phase 3	PHASE 3 SWM TANK	EX STM MH 1	PH3	0.60	0.79	-	-	10.00	186.69	-	29.08	**29.08**	300	2.00	8.0	136.76	1.93	0.07	10.07	21%	- PH3 CONTROLLED RELEASE RATE THROUGH SWM TANK
Phase 3	STM MH 1	EX STM MH 10	-	-	-	-	-	10.00	186.69	-	-	**99.42**	975	-	17.2	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
Phase 4	EX STM MH 10	STM MH 11	-	-	-	-	-	10.00	186.69	-	-	**99.42**	975	-	46.8	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
PH2 ROW	STM MH 12	STM MH 3	ROW 3	0.59	0.95	-	-	10.00	186.69	-	98.53	**98.53**	1200	-	11.3	-	-	-	-	-	RELEASE RATE INCLUDES PH1,PH3 AND PH4 17.0m R.O.W CATCHMENTS. REFER TO SWM REPORT FOR DYNAMIC MODELING DETAILS.
PH4 ROW	STM MH 3	STM MH 4	-	-	-	-	-	10.00	186.69	-	-	**98.53**	1200	-	98.5	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
PH4	PHASE 4 SWM TANK	STM MH 4	PH4	0.70	0.71	-	-	10.00	186.69	-	16.67	**16.67**	250	2.00	10.8	84.10	1.71	0.11	-	20%	- PH4 CONTROLLED RELEASE RATE THROUGH SWM TANK
PH4 ROW	STM MH 4	STM MH 5	-	-	-	-	-	10.00	186.69	-	-	**98.53**	1200	-	114.0	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
PH4 PARK	PHASE 4 SUBSURFACE STORAGE	STM MH 5	PARK	0.88	0.55	-	-	10.00	186.69	-	**37.09**	**37.09**	250	2.00	11.2	84.10	1.71	-	-	44%	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
PH4 ROW	STM MH 5	STM MH 6	-	-	-	-	-	10.00	186.69	-	-	**98.53**	1200	-	16.2	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
PH4 ROW	STM MH 6	STM MH 11	-	-	-	-	-	10.00	186.69	-	-	**98.53**	1200	-	6.3	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
PH4 ROW	STM MH 11	STM MH 9	-	-	-	-	-	10.00	186.69	-	-	**196.28**	600	0.60	10.4	475.61	1.68	0.10	10.10	41%	- REFER TO SWM REPORT FOR DYNAMIC MODELLING INFORMATION LEADING TO TOTAL RELWESE RATE INDICATED. - EXISTING 600 DIA STM TO REMAIN - PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023
Existing Development	EX STM MH 9	EX STM MH 8 (OGS)	-	-	-	-	-	0.00	417.64	-	-	**196.28**	600	0.60	9.4	475.61	1.68	0.09	0.09	41%	-PIPE SLOPE AS PER a.m candaras associates inc. "SITE SERVICING & STORM WATER MANAGEMENT PLAN" DATED May 21, 2010. DESIGN INFO USED BECAUSE SURVEY CONTAINS CONFLICTING INFORMATION THROUGH THIS SEGMENT. SLOPE TO BE VERIFIED DURING DETAILED DESIGN.
Existing Development	EX STM MH 8 (OGS)	EX STM MH 7	-	-	-	-	-	0.09	412.55	-	-	**196.28**	600	0.60	7.4	475.61	1.68	0.07	0.17	41%	- PIPE SLOPE AS PER a.m candaras associates inc. "SITE SERVICING & STORM WATER MANAGEMENT PLAN" DATED May 21, 2010. DESIGN INFO USED BECAUSE SURVEY CONTAINS CONFLICTING INFORMATION THROUGH THIS SEGMENT. SLOPE TO BE VERIFIED DURING DETAILED DESIGN.
Existing Development	EX STM MH7	EX STM MH 6	-	-	-	-	-	0.17	408.61	-	-	**196.28**	600	0.39	51.1	383.45	1.36	0.63	0.79	51%	- PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023 - UPSIZE EX. 600mm DIA. SEWER TO 675mm DIA. TO ACCOMMODATE FUTURE PHASES
Existing Development	EX STM MH 6	Headwall	-	-	-	-	-	0.79	377.98	-	-	**196.28**	675	0.39	35.6	524.95	1.47	0.40	1.20	37%	- PIPE SLOPE UNKNOWN, ASSUMED SAME SLOPE AS UPSTREAM PIPE. SLOPE TO BE VERIFIED DURING DETAILED DESIGN.
SOUTH SITE																					
Phase 2	PHASE 2 SWM TANK	STM MH 2	PH 2	1.12	0.71	-	-	10.00	186.69	-	63.82	**63.82**	300	2.00	10.2	136.76	1.93	0.09	10.09	47%	- PH2 ALLOWABLE REALEASE RATE
Phase 2	STM MH 2	EX STM MH 23	-	-	-	-	-	10.09	185.84	-	-	**63.82**	300	1.00	20.2	96.70	1.37	0.25	10.33	66%	
	EX STM MH 20	EX STM MH 23	EX. 2	0.29	0.95	0.77	0.77	10.00	186.69	142.99	-	**142.99**	525	0.35	31.2	254.43	1.18	0.44	10.44	56%	- REFER TO EX. 2 IN PHASE 2 STORM DRAINAGE PLAN - PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023
Existing Development	EX STM MH 23	EX STM MH 19	EX. 3	0.10	0.64	0.18	0.94	10.44	182.47	172.22	-	**236.04**	600	0.29	88.8	330.66	1.17	1.26	11.71	71%	- CONSERVATIVELY ASSUMED THAT PEAK FLOW FROM PHASE 2 SWM TANK OCCURS ALONGSIDE UNCONTROLLED PEAK FLOW REFER TO EX. 3 IN PHASE 2 STORM DRAINAGE PLAN. - UPGRADE EX. 525mm DIA. SEWER TO 600mm DIA. - PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023
Existing Development	EX BUILDING	EX STM MH 19	EX. 4			-	-	10.00	186.69	-	43.40	**43.40**	250	2.00	21.0	84.10	1.71	0.20	10.20	52%	- REFER TO EX. 4 IN PHASE 2 STORM DRAINAGE PLAN. - CONTROLLED RELEASE RATE AS PER a.m candaras associates inc. "SITE SERVICING & STORM WATER MANAGEMENT PLAN" DATED May 21, 2010.
Existing Development	EX STM MH 19	EX STM MH 18	EX. 5	0.31	0.72	0.62	1.56	11.71	171.47	268.23	-	**375.45**	750	0.23	83.3	533.91	1.21	1.15	12.86	70%	- CONSERVATIVELY ASSUMED THAT PEAK FLOW FROM PHASE 2 SWM TANK and EX BUILDING OCCURS ALONGSIDE UNCONTROLLED PEAK FLOW - REFER TO EX. 5 IN PHASE 2 STORM DRAINAGE PLAN. - UPGRADE EX. 525mm DIA. SEWER TO 750mm DIA. - PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023
Existing Development	EX STM MH 18	EX STM MH 17	-	-	-	-	1.56	12.86	162.65	254.43	-	**361.65**	750	0.30	13.3	609.77	1.38	0.16	13.02	59%	- CONSERVATIVELY ASSUMED THAT PEAK FLOW FROM PHASE 2 SWM TANK OCCURS ALONGSIDE UNCONTROLLED PEAK FLOW - UPGRADE EX. 525mm DIA. SEWER TO 750mm DIA. - PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023
Existing Development	EX STM MH 17	BOX CULVERT	-	-	-	-	1.56	13.02	161.49	252.62	-	**361.65**	750	0.39	-	695.24	1.57	-	-	52%	- CONSERVATIVELY ASSUMED THAT PEAK FLOW FROM PHASE 2 SWM TANK OCCURS ALONGSIDE UNCONTROLLED PEAK FLOW - UPGRADE EX. 525mm DIA. SEWER TO 750mm DIA. - PIPE SLOPE ASSUMED BASED ON MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023, AND PROPOSED INVERT ELEVATION IN a.m candaras associates inc. "SITE SERVICING & STORM WATER MANAGEMENT PLAN" DATED May 21, 2010

*I_{100}=2096.425/(T_c+6.485)^0.863

RUNOFF COEFFICIENTS

0.25	SOFT LANDSCAPING/PARK	0.95	IMPERVIOUS AT GRADE	0.90	
0.50	GREEN ROOF	0.95	IMPERVIOUS ROOF	0.90	

No. OF SHEETS
1

NOTES

WSP CANADA INC.

STORM SEWER DESIGN SHEET
1101A, 1105, and 1163 KINGSTON ROAD - PHASE 5

City of Pickering

PREPARED BY: Z.B.
CHECKED BY: K.K.
DATE: 15-Jan-25
LAST PRINTED: 15-Jan-25
FILE No 221-12931

STREET	FROM M.H.	TO M.H.	CATCHMENT ID.	ha AREA Mixed/Use	R RUNOFF COEFFICIENT	2.78 A.R.	ACCUM 2.78 A.R.	T_c (MIN)	i RAINFALL INTENSITY (mm / hr)	Q_{100} PEAK UNCONTROLLED FLOW (L / S)	Q_{CON} CONTROLLED FLOW (L / S)	Q_{TOTAL} Q_{100} + Q_{CON} (L / S)	PIPE DIA. (mm)	SLOPE (%)	LENGTH (m)	CAPACITY (L / s)	VELOCITY (m / s)	TIME IN SECTION (min.)	TOTAL TIME (min.)	LOAD %	COMMENTS
EAST SITE																					
Phase 1	PHASE 1 SWM TANK	STM MH 8	PH1	0.93	0.80	-	-	10.00	186.69	-	16.93	**16.93**	300	0.50	9.0	68.38	0.97	0.16	10.16	25%	- PH1 CONTROLLED RELEASE RATE THROUGH SWM TANK
Phase 1	STM MH 7	STM MH 8	ROW 4	0.20	0.95	-	-	10.00	186.69	-	99.42	**99.42**	975	-	21.5	-	-	-	-	-	- PH1 CONTROLLED RELEASE RATE THROUGH SUPERPIPE + PH1 ROW RELEASE RATE. REFER TO SWM REPORT FOR DYNAMUC MODELLING DETAILS.
Phase 1	STM MH 8	STM MH 10	-	-	-	-	-	10.00	186.69	-	-	**99.42**	975	-	38.5	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
Phase 1	STM MH 10	STM MH 1	-	-	-	-	-	10.00	186.69	-	-	**99.42**	975	-	5.4	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
Phase 3	PHASE 3 SWM TANK	EX STM MH 1	PH3	0.60	0.79	-	-	10.00	186.69	-	29.08	**29.08**	300	2.00	8.0	136.76	1.93	0.07	10.07	21%	- PH3 CONTROLLED RELEASE RATE THROUGH SWM TANK
Phase 3	STM MH 1	EX STM MH 10	-	-	-	-	-	10.00	186.69	-	-	**99.42**	975	-	17.2	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
Phase 4	EX STM MH 10	STM MH 11	-	-	-	-	-	10.00	186.69	-	-	**99.42**	975	-	46.8	-	-	-	-	-	- PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023
Phase 4	STM MH 11	STM MH 9	-	-	-	-	-	10.00	186.69	-	-	**99.42**	975	-	46.8	-	-	-	-	-	- PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023
PH2 ROW	STM MH 12	STM MH 3	ROW 3	0.59	0.85	-	-	10.00	186.69	-	98.53	**98.53**	1200	-	11.3	-	-	-	-	-	RELEASE RATE INCLUDES PH1,PH3 AND PH4 17.0m R.O.W CATCHMENTS. REFER TO SWM REPORT FOR DYNAMIC MODELING DETAILS.
PH4 ROW	STM MH 3	STM MH 4	-	-	-	-	-	10.00	186.69	-	-	**98.53**	1200	-	98.5	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
PH4	PHASE 4 SWM TANK	STM MH 4	PH4	0.70	0.71	-	-	10.00	186.69	-	16.67	**16.67**	250	2.00	10.8	84.10	1.71	0.11	-	20%	- PH4 CONTROLLED RELEASE RATE THROUGH SWM TANK
PH4 ROW	STM MH 4	STM MH 5	-	-	-	-	-	10.00	186.69	-	-	**98.53**	1200	-	114.0	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
PH4 PARK	PHASE 4 SUBSURFACE STORAGE	STM MH 5	PARK	0.88	0.55	-	-	10.00	186.69	-	**37.09**	**37.09**	250	2.00	11.2	84.10	1.71	-	-	44%	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
PH4 ROW	STM MH 5	STM MH 6	-	-	-	-	-	10.00	186.69	-	-	**98.53**	1200	-	16.2	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
PH4 ROW	STM MH 6	STM MH 9	-	-	-	-	-	10.00	186.69	-	-	**98.53**	1200	-	6.3	-	-	-	-	-	- REFER TO SWM REPORT FOR SUPERPIPE MODELLING DETAILS
PH4 ROW	STM MH 11	STM MH 9	-	-	-	-	-	10.00	186.69	-	-	**196.28**	600	0.60	10.4	475.61	1.68	0.10	10.10	41%	- REFER TO SWM REPORT FOR DYNAMIC MODELLING INFORMATION LEADING TO TOTAL RELWESE RATE INDICATED. - EXISTING 600 DIA STM TO REMAIN - PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023
PH5	EX STM MH 9	EX STM MH 8 (OGS)	-	-	-	-	-	0.00	417.64	-	-	**196.28**	600	0.60	9.4	475.61	1.68	0.09	0.09	41%	-PIPE SLOPE AS PER a.m candaras associates inc. "SITE SERVICING & STORM WATER MANAGEMENT PLAN" DATED May 21, 2010. DESIGN INFO USED BECAUSE SURVEY CONTAINS CONFLICTING INFORMATION THROUGH THIS SEGMENT. SLOPE TO BE VERIFIED DURING DETAILED DESIGN.
PH5	EX STM MH 8 (OGS)	EX STM MH 7	-	-	-	-	-	0.09	412.55	-	-	**196.28**	600	0.60	7.4	475.61	1.68	0.07	0.17	41%	- PIPE SLOPE AS PER a.m candaras associates inc. "SITE SERVICING & STORM WATER MANAGEMENT PLAN" DATED May 21, 2010. DESIGN INFO USED BECAUSE SURVEY CONTAINS CONFLICTING INFORMATION THROUGH THIS SEGMENT. SLOPE TO BE VERIFIED DURING DETAILED DESIGN.
PH5	EX STM MH7	EX STM MH 6	-	-	-	-	-	0.17	408.61	-	-	**196.28**	600	0.39	51.1	383.45	1.36	0.63	0.79	51%	- PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023 - UPSIZE EX. 600mm DIA. SEWER TO 675mm DIA. TO ACCOMMODATE FUTURE PHASES
PH5	EX STM MH 6	Headwall	-	-	-	-	-	0.79	377.98	-	-	**196.28**	675	0.39	35.6	524.95	1.47	0.40	1.20	37%	- PIPE SLOPE UNKNOWN, ASSUMED SAME SLOPE AS UPSTREAM PIPE. SLOPE TO BE VERIFIED DURING DETAILED DESIGN.
SOUTH SITE																					
Phase 2	PHASE 2 SWM TANK	STM MH 2	PH 2	1.12	0.71	-	-	10.00	186.69	-	63.80	**63.80**	300	2.00	10.2	136.76	1.93	0.09	10.09	47%	- PH2 ALLOWABLE REALEASE RATE
Phase 2	STM MH 2	EX STM MH 23	-	-	-	-	-	10.09	185.84	-	-	**63.80**	300	1.00	20.2	96.70	1.37	0.25	10.33	66%	
PH5	EX STM MH 23	EX STM MH 19				-	-	10.33	183.49	-	-	**63.80**	600	0.29	88.8	330.66	1.17	1.26	11.60	19%	- UPGRADE EX. 525mm DIA. SEWER TO 600mm DIA. - PIPE SLOPE MEASURED FROM INVERT INFORMATION PROVIDED IN SITE SURVEY PREPARED BY J.D BARNES DATED FEB 2, 2023
PH5	PHASE 5 SWM TANK	EX STM MH 19	PH 5	1.76	0.74	-	-	10.00	186.69	-	88.72	**88.72**	300	2.00	21.0	136.76	1.93	0.18	10.18	65%	- PH5 ALLOWABLE RELEASE RATE
PH5	EX STM MH 19	EX STM MH 18				-	-	11.60	172.36	-	-	**152.52**	750	0.23	83.3	533.91	1.21	1.15	12.75	29%	- CONSERVATIVELY ASSUMED THAT PEAK FLOW FROM ALL UPSTREAM TRIBUTARIES OCCURS TOGETHER.
PH5	EX STM MH 18	EX STM MH 17	-	-	-	-	-	12.75	163.44	-	-	**152.52**	750	0.30	13.3	609.77	1.38	0.16	12.91	25%	- CONSERVATIVELY ASSUMED THAT PEAK FLOW FROM ALL UPSTREAM TRIBUTARIES OCCURS TOGETHER.
PH5	EX STM MH 17	BOX CULVERT	-	-	-	-	-	12.91	162.27	-	-	**152.52**	750	0.39	-	695.24	1.57	-	-	22%	- CONSERVATIVELY ASSUMED THAT PEAK FLOW FROM ALL UPSTREAM TRIBUTARIES OCCURS TOGETHER.

*i_{100}=2096.425/(T_c+6.485)^0.863

RUNOFF COEFFICIENTS

0.25	SOFT LANDSCAPING/PARK	0.95	IMPERVIOUS AT GRADE	0.90	
0.50	GREEN ROOF	0.95	IMPERVIOUS ROOF	0.90	

No. OF SHEETS
1

NOTES

APPENDIX

C SITE SERVICING AND GRADING PLANS

TOPOGRAPHIC INFORMATION SHOWN AS PER J.D BARNES SURVEY 22-25-073-00 DATED 2/2/2023. ELEVATIONS HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF PICKERING BENCHMARK No. 1-059, HAVING A PUBLISHED ELEVATION OF 84.111m (CGVD-1928: 1978)

SERVICING INFRASTRUCTURE PLACEMENT TO BE FINALIZED AT DETAILED DESIGN STAGE. LOCATIONS SHOWN ARE FOR PROOF OF CONCEPT ONLY.

KINGSTON ROAD

DIXIE ROAD

HIGHWAY 401

WALNUT LANE

FUTURE WALNUT LANE 300Ø WM

BLDG. A

PHASE 1 STM TANK
PROVIDED VOLUME = 520 m³
100-YEAR RELEASE RATE = 16.93 L/s
OUTLET INV. 83.38
LEAD 300Ø STM @ 0.5%
STORM CONTROL MH TO BE CAST INTO TANK

BUILDING A SANITARY CONNECTION
SAN MH1A
INV. 81.05
LEAD 250Ø SAN @ 2.0%

BUILDING 'A' DOMESTIC & FIRE CONNECTIONS TO 300Ø WM WITHIN 17.0m R.O.W

TEMPORARY 200Ø FIREMAIN & 100Ø DOMESTIC WATERMAIN

975Ø STM SUPERPIPE

STM MH 7
TOP 85.25
SW INV. 83.42

375Ø SAN @ 0.5%

SAN MH2A
TOP 86.40
SW INV. 80.85
SE INV. 80.55

FUT. STM MH 5A (B.O.)

FUT. SAN MH-SA1 (B.O.)
TOP 86.53
NW INV. 80.46
NE INV. 80.40

FUT. SAN MH-SA10 (B.O.)

FUT. SAN MH-SA11 (B.O.)

FUT. STM MH 5B (B.O.)

FUTURE WALNUT LANE STORM SERVICE (BY OTHERS)

FUTURE WALNUT LANE SANITARY SERVICE (BY OTHERS)

FUT. STM MH 7 (B.O.)

FUT. SAN MH-SA12 (B.O.)

FUT. SAN MH-SA13 (B.O.)
TOP 86.25
S INV. 80.00
W INV. 79.88
E INV. 79.81

FUT. SAN MH-SA14 (B.O.)
W INV. 79.67
E INV. 79.64

FUT. STM MH 10 (B.O.)

FUT. STM MH 14

FUT. 450Ø STM @ 0.5%

FUT. OGS (B.O.)

FUT. STM MH 16 (B.O.)

FUT. HEADWALL

FUT. 375Ø SAN @ 0.5%

EXISTING BUILDING

CAP PROPOSED WM AT PH1 LIMIT OF 17.0m R.O.W

CAP EX. WM

PROPOSED 300Ø WATERMAIN CONNECTED TO WALNUT LANE

STM MH 8
TOP 85.35
N INV. 83.32
NE INV. 83.32
S INV. 83.32

975Ø STM SUPERPIPE

STM MH 10
TOP 85.20
N INV. 83.12
S INV. 83.12
w/ ORIFICE PLATE

STM MH 1
TOP 85.30
EX. W INV. 83.22
N INV. 83.09
S INV. 83.09

975Ø STM SUPERPIPE

EXISTING PARKING LOT

EX. STM MH 10
TOP 85.06
N INV. 83.00
EX. NE INV. 83.12
EX. S INV. 83.00

EX. 600Ø STM @ 0.60%
(PIPE SLOPE AS PER am. candaras associates inc. "Site Servicing & Storm Water Management Plan" dated May 21, 2010

EX. STM MH 9
EX. N INV. 82.68
EX. SE INV. 82.65
EX. SW INV. 83.04 (ASSUMED TO BE ABANDONED)

EX. 300Ø STM (ASSUMED TO BE ABANDONED)

EX. 600Ø STM @ 0.60%
(PIPE SLOPE AS PER am. candaras associates inc. "Site Servicing & Storm Water Management Plan" dated May 21, 2010

EX. STM MH 8
OGS STC 6000

EX. 600Ø STM @ 0.60%
(PIPE SLOPE AS PER am. candaras associates inc. "Site Servicing & Storm Water Management Plan" dated May 21, 2010

EX. STM MH 7

EX. 600Ø STM @ 0.39%

EX. STM MH 6

EX. 675Ø STM @ 0.39%
(SLOPE ASSUMED)

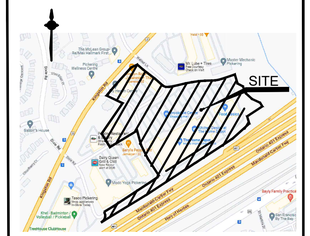
EXISTING EASMENTS AND LEGAL LINES AS PER TOPOGRAPHIC SURVEY 22-25-073-00 BY JD BARNES J.D BARNES DATED FEB 2, 2023. EXISTING EASEMENTS OVER ALL PIPES THAT ARE PROPOSED TO REMAIN WITHIN THE PRIVATE ROADS, AND ARE USED TO CONVEY FLOWS FROM DIXIE ROAD TO THE EXISTING HEADWALL ARE TO REMAIN.

EXISTING BUILDING

TRCA FLOODLINE

10.0m

10.0m OFFSET FROM TRCA FLOODLINE



KEY PLAN N.T.S.

LEGEND

- PROPERTY LINE
- PROPOSED UNDERGROUND LIMITS
- PROPOSED WATERMAIN
- PROPOSED STORM
- PROPOSED SANITARY
- PROPOSED TEMPORARY WATERMAIN
- PROPOSED WATERMAIN INSTALLED IN PREVIOUS PHASES
- PROPOSED STORM INSTALLED IN PREVIOUS PHASES
- PROPOSED SANITARY INSTALLED IN PREVIOUS PHASES
- EXISTING STORM SEWER TO REMAIN
- EXISTING SANITARY SEWER TO REMAIN
- EXISTING WATERMAIN TO REMAIN
- PHASE 1

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
2.	ISSUED FOR ZBA & OPA	KK	25-01-24	
1.	ISSUED FOR ZBA & OPA	KK	23-10-27	

ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED

CLIENT
TRIBUTE (BROOKDALE) LIMITED

MUNICIPALITY
CITY OF PICKERING

PROJECT TITLE
1101A, 1105, and 1163 KINGSTON ROAD

SHEET TITLE
SITE SERVICING PLAN PHASE 1

CONSULTANT
wsp

STAMP
LICENSED PROFESSIONAL ENGINEER
K.KYRIOPOULOS
10016/2022
Jan. 24, 2025
PROVINCE OF ONTARIO

APPROVAL

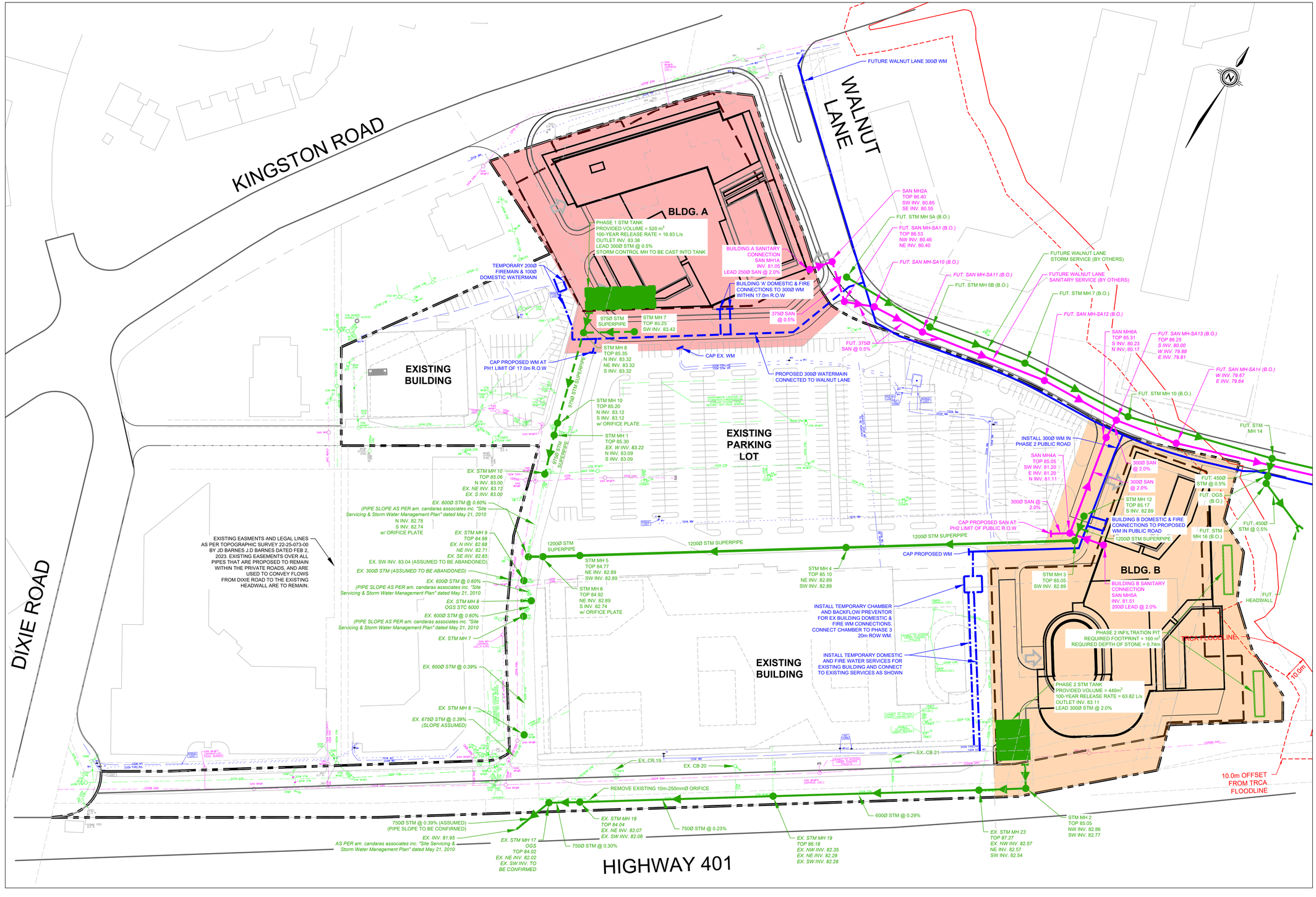
DESIGNED	DRAWN	CHECKED
Z.B.	CAD 20	K.K.

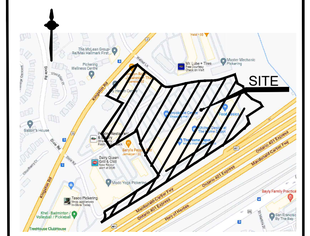
SCALE	DATE
1:750	OCTOBER 2023

JOB NUMBER	SHEET NUMBER
221-12931	SS1

TOPOGRAPHIC INFORMATION SHOWN AS PER J.D BARNES SURVEY 22-25-073-00 DATED 2/2/2023. ELEVATIONS HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF PICKERING BENCHMARK No. 1-059, HAVING A PUBLISHED ELEVATION OF 84.111m (CGVD-1928: 1978)

SERVICING INFRASTRUCTURE PLACEMENT TO BE FINALIZED AT DETAILED DESIGN STAGE. LOCATIONS SHOWN ARE FOR PROOF OF CONCEPT ONLY.





KEY PLAN N.T.S.

LEGEND

- PROPERTY LINE
- PROPOSED UNDERGROUND LIMITS
- PROPOSED WATERMAIN
- PROPOSED STORM
- PROPOSED SANITARY
- PROPOSED TEMPORARY WATERMAIN
- PROPOSED WATERMAIN INSTALLED IN PREVIOUS PHASES
- PROPOSED STORM INSTALLED IN PREVIOUS PHASES
- PROPOSED SANITARY INSTALLED IN PREVIOUS PHASES
- EXISTING STORM SEWER TO REMAIN
- EXISTING SANITARY SEWER TO REMAIN
- EXISTING WATERMAIN TO REMAIN
- PHASE 1
- PHASE 2

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
2.	ISSUED FOR ZBA & OPA	KK	25-01-24	
1.	ISSUED FOR ZBA & OPA	KK	23-10-27	

ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED

CLIENT
TRIBUTE (BROOKDALE) LIMITED

MUNICIPALITY
CITY OF PICKERING

PROJECT TITLE
1101A, 1105, and 1163 KINGSTON ROAD

SHEET TITLE
SITE SERVICING PLAN PHASE 2

CONSULTANT
wsp

STAMP
LICENSED PROFESSIONAL ENGINEER
K. KYRIOPOULOS
100193502
Jan. 24, 2025
PROVINCE OF ONTARIO

APPROVAL

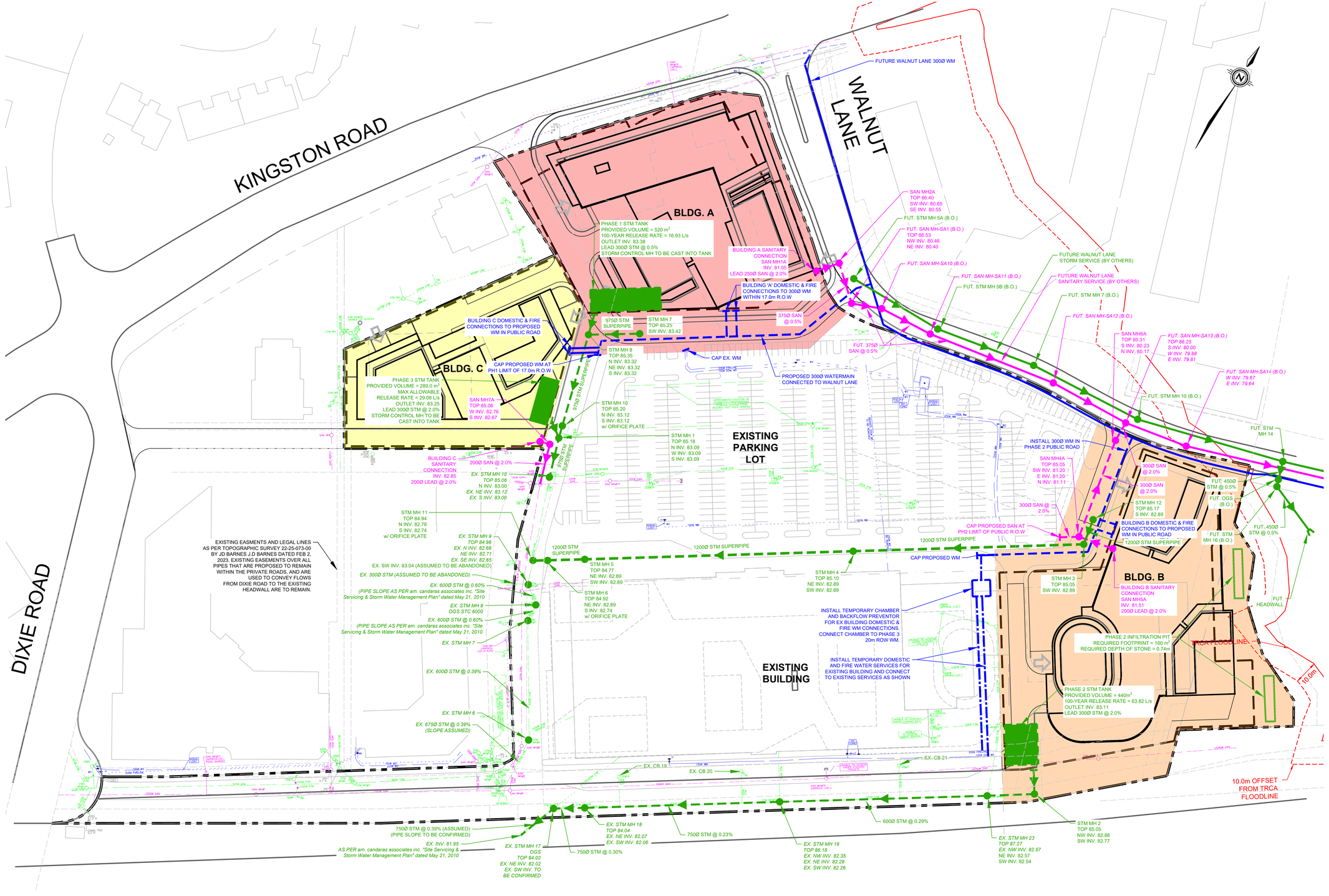
DESIGNED	DRAWN	CHECKED
Z.B.	CAD 20	K.K.

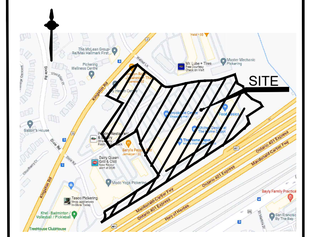
SCALE	DATE
1:750	OCTOBER 2023

JOB NUMBER	SHEET NUMBER
221-12931	SS2

TOPOGRAPHIC INFORMATION SHOWN AS PER J.D BARNES SURVEY 22-25-073-00 DATED 2/2/2023. ELEVATIONS HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF PICKERING BENCHMARK No. 1-059, HAVING A PUBLISHED ELEVATION OF 84.111m (CGVD-1928: 1978)

SERVICING INFRASTRUCTURE PLACEMENT TO BE FINALIZED AT DETAILED DESIGN STAGE. LOCATIONS SHOWN ARE FOR PROOF OF CONCEPT ONLY.





KEY PLAN N.T.S.

LEGEND

- PROPERTY LINE
- PROPOSED UNDERGROUND LIMITS
- PROPOSED WATERMAIN
- PROPOSED STORM
- PROPOSED SANITARY
- PROPOSED TEMPORARY WATERMAIN
- PROPOSED WATERMAIN INSTALLED IN PREVIOUS PHASES
- PROPOSED STORM INSTALLED IN PREVIOUS PHASES
- PROPOSED SANITARY INSTALLED IN PREVIOUS PHASES
- EXISTING STORM SEWER TO REMAIN
- EXISTING SANITARY SEWER TO REMAIN
- EXISTING WATERMAIN TO REMAIN
- PHASE 1
- PHASE 2
- PHASE 3

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
2.	ISSUED FOR ZBA & OPA	KK	25-01-24	
1.	ISSUED FOR ZBA & OPA	KK	23-10-27	

ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED

CLIENT
TRIBUTE (BROOKDALE) LIMITED

MUNICIPALITY
CITY OF PICKERING

PROJECT TITLE
1101A, 1105, and 1163 KINGSTON ROAD

SHEET TITLE
SITE SERVICING PLAN PHASE 3

CONSULTANT
wsp

STAMP
LICENSED PROFESSIONAL ENGINEER K. KYRIOPOULOS 100148582 Jan. 24, 2025 PROVINCE OF ONTARIO

APPROVAL

DESIGNED	DRAWN	CHECKED
Z.B.	CAD 20	K.K.

SCALE	DATE
1:750	OCTOBER 2023

JOB NUMBER	SHEET NUMBER
221-12931	SS3

TOPOGRAPHIC INFORMATION SHOWN AS PER J.D BARNES SURVEY 22-25-073-00 DATED 2/2/2023. ELEVATIONS HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF PICKERING BENCHMARK No. 1-059, HAVING A PUBLISHED ELEVATION OF 84.111m (CGVD-1928: 1978)

SERVICING INFRASTRUCTURE PLACEMENT TO BE FINALIZED AT DETAILED DESIGN STAGE. LOCATIONS SHOWN ARE FOR PROOF OF CONCEPT ONLY.

KINGSTON ROAD

DIXIE ROAD

HIGHWAY 401

WALNUT LANE

FUTURE WALNUT LANE 300Ø WM

BLDG. A

PHASE 1 STM TANK
PROVIDED VOLUME = 520 m³
100-YEAR RELEASE RATE = 16.93 L/s
OUTLET INV. 83.38
LEAD 300Ø STM @ 0.5%
STORM CONTROL MH TO BE CAST INTO TANK

BUILDING A SANITARY CONNECTION
SAN MH1A
INV. 81.05
LEAD 250Ø SAN @ 2.0%

BUILDING 'A' DOMESTIC & FIRE CONNECTIONS TO 300Ø WM WITHIN 17.0m R.O.W

BUILDING C DOMESTIC & FIRE CONNECTIONS TO PROPOSED WM IN PUBLIC ROAD

BLDG. C

PHASE 3 STM TANK
PROVIDED VOLUME = 280.0 m³
MAX ALLOWABLE
RELEASE RATE = 29.08 L/s
OUTLET INV. 83.25
LEAD 300Ø STM @ 2.0%
STORM CONTROL MH TO BE CAST INTO TANK

975Ø STM SUPERPIPE

STM MH 7
TOP 85.25
SW INV. 83.42

STM MH 8
TOP 85.35
N INV. 83.32
NE INV. 83.32
S INV. 83.32

SAN MH7A
TOP 85.06
W INV. 82.76
S INV. 82.67

STM MH 10
TOP 85.33
N INV. 83.12
S INV. 83.12

STM MH 1
TOP 85.18
N INV. 83.09
W INV. 83.09
S INV. 83.09

EXISTING 10m-150Ø ORIFICE ON SOUTH SIDE OF MANHOLE TO BE REMOVED.

PROPOSED PARK

PHASE 4 SUBSURFACE STORAGE
PROVIDED VOLUME = 280m³
RELEASE RATE =37.09 L/s
OUTLET INV. 83.20
LEAD 250Ø STM @ 2.0%
STORM CONTROL MH TO BE CAST INTO SUBSURFACE STORAGE SYSTEM

PHASE 4 STM TANK
PROVIDED VOLUME = 340.0 m³
100- YEAR MAX RELEASE
RATE = 16.67 L/s
OUTLET INV. 83.79
LEAD 250Ø STM @ 2.0%
STORM CONTROL MH TO BE CAST INTO TANK

BUILDING C SANITARY CONNECTION
INV. 82.85
200Ø LEAD @ 2.0%

200Ø SAN @ 2.0%

EX. STM MH 10
TOP 85.06
N INV. 83.00
EX. NE INV. 83.12
EX. S INV. 83.09

STM MH 11
TOP 84.94
N INV. 82.78
S INV. 82.74
w/ ORIFICE PLATE

600Ø STM @ 0.60%

EX. STM MH 9
TOP 84.98
EX. N INV. 82.68
NE INV. 82.71
EX. SE INV. 82.65

EX. SW INV. 83.04 (ASSUMED TO BE ABANDONED)

EX. 300Ø STM (ASSUMED TO BE ABANDONED)

EX. 600Ø STM @ 0.60%
(PIPE SLOPE AS PER am. candaras associates inc. "Site Servicing & Storm Water Management Plan" dated May 21, 2010

EX. STM MH 8
OGS STC 6000

EX. 600Ø STM @ 0.60%
(PIPE SLOPE AS PER am. candaras associates inc. "Site Servicing & Storm Water Management Plan" dated May 21, 2010

EX. STM MH 7

EX. 600Ø STM @ 0.39%

EX. STM MH 6

EX. 675Ø STM @ 0.39%
(SLOPE ASSUMED)

EXISTING EASMENTS AND LEGAL LINES AS PER TOPOGRAPHIC SURVEY 22-25-073-00 BY JD BARNES J.D BARNES DATED FEB 2, 2023. EXISTING EASEMENTS OVER ALL PIPES THAT ARE PROPOSED TO REMAIN WITHIN THE PRIVATE ROADS, AND ARE USED TO CONVEY FLOWS FROM DIXIE ROAD TO THE EXISTING HEADWALL ARE TO REMAIN.

STM MH 6
TOP 84.92
NE INV. 82.89
S INV. 82.74
w/ ORIFICE PLATE

STM MH 5
TOP 84.88
NE INV. 82.89
NW INV. 83.40
SW INV. 82.89

INSTALL 300Ø WM IN PHASE 4 PUBLIC ROAD

12000Ø STM SUPERPIPE

EXISTING BUILDING

EX. CB 19

EX. CB 20

EX. CB 21

750Ø STM @ 0.39% (ASSUMED)
(PIPE SLOPE TO BE CONFIRMED)

EX. INV. 81.95
AS PER am. candaras associates inc. "Site Servicing & Storm Water Management Plan" dated May 21, 2010

EX. STM MH 17
OGS
TOP 84.02
EX. NE INV. 82.02
EX. SW INV. TO BE CONFIRMED

EX. STM MH 18
TOP 84.04
EX. NE INV. 82.07
EX. SW INV. 82.06

750Ø STM @ 0.30%

750Ø STM @ 0.23%

EX. STM MH 19
TOP 86.18
EX. NW INV. 82.35
EX. NE INV. 82.28
EX. SW INV. 82.26

600Ø STM @ 0.29%

EX. STM MH 23
TOP 87.27
EX. NW INV. 82.57
NE INV. 82.57
SW INV. 82.54

STM MH 2
TOP 85.05
NW INV. 82.86
SW INV. 82.77

PROPOSED 300Ø WATERMAIN CONNECTED TO WALNUT LANE

375Ø SAN @ 0.5%

FUT. 375Ø SAN @ 0.5%

BLDG. D

BUILDING D DOMESTIC & FIRE CONNECTIONS TO PROPOSED WM IN PUBLIC ROAD

BUILDING D SANITARY CONNECTION
INV. 82.28
200Ø LEAD @ 2.0%

300Ø SAN @ 2.0%

SAN MH3A
TOP 84.99
NW INV. 82.06
NE INV. 81.97

REMOVE CAP AND CONNECT TO PHASE 2 SAN

INSTALL 300Ø WM IN PHASE 2 PUBLIC ROAD

SAN MH4A
TOP 85.05
SW INV. 81.20
E INV. 81.20
N INV. 81.11

300Ø SAN @ 2.0%

300Ø SAN @ 2.0%

STM MH 12
TOP 85.17
S INV. 82.89

FUT. 450Ø STM @ 0.5%

FUT. OGS (B.O.)

FUT. STM MH 14

FUT. 450Ø STM @ 0.5%

FUT. STM MH 16 (B.O.)

FUT. HEADWALL

BUILDING B DOMESTIC & FIRE CONNECTIONS TO PROPOSED WM IN PUBLIC ROAD

12000Ø STM SUPERPIPE

BUILDING B SANITARY CONNECTION
SAN MH5A
INV. 81.51
200Ø LEAD @ 2.0%

STM MH 3
TOP 85.05
SW INV. 82.89

STM MH 4
TOP 85.10
NW INV. 83.49
NE INV. 82.89
SW INV. 82.89

CONNECT TEMPORARY CHAMBER TO PROPOSED WM IN R.O.W

REMOVE CAP AND CONNECT TO PHASE 2 WM

BLDG. B

PHASE 2 INFILTRATION PIT
REQUIRED FOOTPRINT = 160 m²
REQUIRED DEPTH OF STONE = 0.74m

PHASE 2 STM TANK
PROVIDED VOLUME = 440m³
100-YEAR RELEASE RATE = 63.82 L/s
OUTLET INV. 83.11
LEAD 300Ø STM @ 2.0%

TRCA FLOODLINE

10.0m

10.0m OFFSET FROM TRCA FLOODLINE

SAN MH2A
TOP 86.40
SW INV. 80.85
SE INV. 80.55

FUT. STM MH 5A (B.O.)

FUT. SAN MH-SA1 (B.O.)
TOP 86.53
NW INV. 80.46
NE INV. 80.40

FUT. SAN MH-SA10 (B.O.)

FUT. SAN MH-SA11 (B.O.)

FUT. STM MH 5B (B.O.)

FUTURE WALNUT LANE STORM SERVICE (BY OTHERS)

FUTURE WALNUT LANE SANITARY SERVICE (BY OTHERS)

FUT. STM MH 7 (B.O.)

FUT. SAN MH-SA12 (B.O.)

SAN MH6A
TOP 85.31
S INV. 80.23
N INV. 80.17

FUT. SAN MH-SA13 (B.O.)
TOP 86.25
S INV. 80.00
W INV. 79.88
E INV. 79.81

FUT. SAN MH-SA14 (B.O.)
W INV. 79.67
E INV. 79.64

FUT. STM MH 10 (B.O.)

KEY PLAN N.T.S.

SITE

LEGEND

- PROPERTY LINE
- PROPOSED UNDERGROUND LIMITS
- PROPOSED WATERMAIN
- PROPOSED STORM
- PROPOSED SANITARY
- PROPOSED TEMPORARY WATERMAIN
- PROPOSED WATERMAIN INSTALLED IN PREVIOUS PHASES
- PROPOSED STORM INSTALLED IN PREVIOUS PHASES
- PROPOSED SANITARY INSTALLED IN PREVIOUS PHASES
- EXISTING STORM SEWER TO REMAIN
- EXISTING SANITARY SEWER TO REMAIN
- EXISTING WATERMAIN TO REMAIN
- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
2.	ISSUED FOR ZBA & OPA	KK	25-01-24	
1.	ISSUED FOR ZBA & OPA	KK	23-10-27	

ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED

CLIENT
TRIBUTE (BROOKDALE) LIMITED

MUNICIPALITY
CITY OF PICKERING

PROJECT TITLE
1101A, 1105, and 1163 KINGSTON ROAD

SHEET TITLE
SITE SERVICING PLAN PHASE 4

CONSULTANT
wsp

STAMP
LICENSED PROFESSIONAL ENGINEER
K. KYRIOPOULOS
100169502
Jan. 24, 2025
PROVINCE OF ONTARIO

APPROVAL

DESIGNED	DRAWN	CHECKED
Z.B.	CAD 20	K.K.

SCALE	DATE
1:750	OCTOBER 2023

JOB NUMBER	SHEET NUMBER
221-12931	SS4

TOPOGRAPHIC INFORMATION SHOWN AS PER J.D BARNES SURVEY 22-25-073-00 DATED 2/2/2023. ELEVATIONS HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF PICKERING BENCHMARK No. 1-059, HAVING A PUBLISHED ELEVATION OF 84.111m (CGVD-1928: 1978)

SERVICING INFRASTRUCTURE PLACEMENT TO BE FINALIZED AT DETAILED DESIGN STAGE. LOCATIONS SHOWN ARE FOR PROOF OF CONCEPT ONLY.

KINGSTON ROAD

DIXIE ROAD

HIGHWAY 401

WALNUT LANE

FUTURE WALNUT LANE 300Ø WM

BLDG. A

BLDG. B

BLDG. C

BLDG. D

BLDG. E

PROPOSED PARK

PHASE 1 STM TANK
PROVIDED VOLUME = 520 m³
100-YEAR RELEASE RATE = 16.93 L/s
OUTLET INV. 83.38
LEAD 300Ø STM @ 0.5%
STORM CONTROL MH TO BE CAST INTO TANK

BUILDING A SANITARY CONNECTION
SAN MH1A
INV. 81.05
LEAD 250Ø SAN @ 2.0%

BUILDING 'A' DOMESTIC & FIRE CONNECTIONS TO 300Ø WM WITHIN 17.0m R.O.W

375Ø SAN @ 0.5%

975Ø STM SUPERPIPE

STM MH 7
TOP 85.25
SW INV. 83.42

BUILDING C DOMESTIC & FIRE CONNECTIONS TO PROPOSED WM IN PUBLIC ROAD

STM MH 8
TOP 85.35
N INV. 83.32
NE INV. 83.32
S INV. 83.32

PHASE 3 STM TANK
PROVIDED VOLUME = 280.0 m³
MAX ALLOWABLE
RELEASE RATE = 29.08 L/s
OUTLET INV. 83.25
LEAD 300Ø STM @ 2.0%
STORM CONTROL MH TO BE CAST INTO TANK

SAN MH7A
TOP 85.06
W INV. 82.76
S INV. 82.67

875Ø STM SUPERPIPE

STM MH 10
TOP 85.33
N INV. 83.12
S INV. 83.12

STM MH 1
TOP 85.18
N INV. 83.09
W INV. 83.09
S INV. 83.09

EXISTING 10m-150Ø ORIFICE ON SOUTH SIDE OF MANHOLE TO BE REMOVED.

PROPOSED 300Ø WATERMAIN CONNECTED TO WALNUT LANE

FUT. 375Ø SAN @ 0.5%

PHASE 4 SUBSURFACE STORAGE
PROVIDED VOLUME = 280m³
RELEASE RATE =37.09 L/s
OUTLET INV. 83.20
LEAD 250Ø STM @ 2.0%
STORM CONTROL MH TO BE CAST INTO SUBSURFACE STORAGE SYSTEM

PHASE 4 STM TANK
PROVIDED VOLUME = 340.0 m³
100- YEAR MAX RELEASE
RATE = 16.67 L/s
OUTLET INV. 83.79
LEAD 250Ø STM @ 2.0%
STORM CONTROL MH TO BE CAST INTO TANK

BUILDING D DOMESTIC & FIRE CONNECTIONS TO PROPOSED WM IN PUBLIC ROAD

BUILDING C SANITARY CONNECTION
INV. 82.85
200Ø LEAD @ 2.0%

EX. STM MH 10
TOP 85.06
N INV. 83.00
EX. NE INV. 83.12
EX. S INV. 83.00

200Ø SAN @ 2.0%

STM MH 11
TOP 84.94
N INV. 82.78
S INV. 82.74
w/ ORIFICE PLATE

600Ø STM @ 0.60%

EX. STM MH 9
TOP 84.98
EX. N INV. 82.68
NE INV. 82.71
EX. SE INV. 82.65

EX. SW INV. 83.04 (ASSUMED TO BE ABANDONED)

EX. 300Ø STM (ASSUMED TO BE ABANDONED)

EX. 600Ø STM @ 0.60%
(PIPE SLOPE AS PER am. candaras associates inc. "Site Servicing & Storm Water Management Plan" dated May 21, 2010

EX. STM MH 8
OGS STC 6000

EX. 600Ø STM @ 0.60%
(PIPE SLOPE AS PER am. candaras associates inc. "Site Servicing & Storm Water Management Plan" dated May 21, 2010

EX. STM MH 7

EX. 600Ø STM @ 0.39%

EX. STM MH 6

EX. 675Ø STM @ 0.39%
(SLOPE ASSUMED)

EXISTING EASMENTS AND LEGAL LINES AS PER TOPOGRAPHIC SURVEY 22-25-073-00 BY JD BARNES J.D BARNES DATED FEB 2, 2023. EXISTING EASEMENTS OVER ALL PIPES THAT ARE PROPOSED TO REMAIN WITHIN THE PRIVATE ROADS, AND ARE USED TO CONVEY FLOWS FROM DIXIE ROAD TO THE EXISTING HEADWALL ARE TO REMAIN.

750Ø STM @ 0.39% (ASSUMED)
(PIPE SLOPE TO BE CONFIRMED)

EX. 81.95
AS PER am. candaras associates inc. "Site Servicing & Storm Water Management Plan" dated May 21, 2010

EX. STM MH 17
OGS
TOP 84.02
EX. NE INV. 82.02
EX. SW INV. TO BE CONFIRMED

EX. STM MH 18
TOP 84.04
EX. NE INV. 82.07
EX. SW INV. 82.06

750Ø STM @ 0.30%

750Ø STM @ 0.23%

EX. STM MH 19
NW INV. 82.63
EX. NE INV. 82.28
EX. SW INV. 82.26

600Ø STM @ 0.29%

EX. STM MH 23
TOP 87.27
EX. NW INV. 82.57
NE INV. 82.57
SW INV. 82.54

STM MH 2
TOP 85.05
NW INV. 82.86
SW INV. 82.77

120Ø STM SUPERPIPE

INSTALL 300Ø WM IN PHASE 4 PUBLIC ROAD

STM MH 6
TOP 84.92
NE INV. 82.89
S INV. 82.74
w/ ORIFICE PLATE

STM MH 5
TOP 84.88
NE INV. 82.89
NW INV. 83.40
SW INV. 82.85

BUILDING E DOMESTIC & FIRE CONNECTIONS TO PROPOSED WM IN PUBLIC ROAD

BUILDING E SANITARY CONNECTION
INV. 82.38
250Ø LEAD @ 2.0%

REMOVE CAP AND CONNECT TO PHASE 2 WM

PHASE 5 STM TANK
PROVIDED VOLUME = 680m³
MAX ALLOWABLE RELEASE RATE = 88.72 L/s
OUTLET INV. 82.58
LEAD 300Ø STM @ 2.0%

SAN MH2A
TOP 86.40
SW INV. 80.85
SE INV. 80.55

FUT. STM MH 5A (B.O.)

FUT. SAN MH-SA1 (B.O.)
TOP 86.53
NW INV. 80.46
NE INV. 80.40

FUT. SAN MH-SA10 (B.O.)

FUT. SAN MH-SA11 (B.O.)

FUT. STM MH 5B (B.O.)

FUTURE WALNUT LANE STORM SERVICE (BY OTHERS)

FUTURE WALNUT LANE SANITARY SERVICE (BY OTHERS)

FUT. STM MH 7 (B.O.)

FUT. SAN MH-SA12 (B.O.)

SAN MH6A
TOP 85.31
S INV. 80.23
N INV. 80.17

FUT. SAN MH-SA13 (B.O.)
TOP 86.25
S INV. 80.00
W INV. 79.88
E INV. 79.81

FUT. SAN MH-SA14 (B.O.)
W INV. 79.67
E INV. 79.64

FUT. STM MH 10 (B.O.)

FUT. STM MH 14

INSTALL 300Ø WM IN PHASE 2 PUBLIC ROAD

SAN MH4A
TOP 85.05
SW INV. 81.20
E INV. 81.20
N INV. 81.11

REMOVE CAP AND CONNECT TO PHASE 2 SAN

300Ø SAN @ 2.0%

BUILDING D SANITARY CONNECTION
INV. 82.28
200Ø LEAD @ 2.0%

SAN MH3A
TOP 85.50
NW INV. 82.06
SE INV. 82.06
NE INV. 81.97

300Ø SAN @ 2.0%

300Ø SAN @ 2.0%

STM MH 12
TOP 85.17
S INV. 82.89

FUT. 450Ø STM @ 0.5%

FUT. OGS (B.O.)

BUILDING B DOMESTIC & FIRE CONNECTIONS TO PROPOSED WM IN PUBLIC ROAD

120Ø STM SUPERPIPE

FUT. STM MH 16 (B.O.)

FUT. 450Ø STM @ 0.5%

STM MH 3
TOP 85.05
SW INV. 82.89

BUILDING B SANITARY CONNECTION
SAN MH5A
INV. 81.51
200Ø LEAD @ 2.0%

FUT. HEADWALL

PHASE 2 INFILTRATION PIT
REQUIRED FOOTPRINT = 160 m²
REQUIRED DEPTH OF STONE = 0.74m

TRCA FLOODLINE

10.0m

PHASE 2 STM TANK
PROVIDED VOLUME = 440m³
100-YEAR RELEASE RATE = 63.82 L/s
OUTLET INV. 83.11
LEAD 300Ø STM @ 2.0%

10.0m OFFSET FROM TRCA FLOODLINE

SITE

KEY PLAN N.T.S.

LEGEND

- PROPERTY LINE
- PROPOSED UNDERGROUND LIMITS
- PROPOSED WATERMAIN
- PROPOSED STORM
- PROPOSED SANITARY
- PROPOSED TEMPORARY WATERMAIN
- PROPOSED WATERMAIN INSTALLED IN PREVIOUS PHASES
- PROPOSED STORM INSTALLED IN PREVIOUS PHASES
- PROPOSED SANITARY INSTALLED IN PREVIOUS PHASES
- EXISTING STORM SEWER TO REMAIN
- EXISTING SANITARY SEWER TO REMAIN
- EXISTING WATERMAIN TO REMAIN
- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4
- PHASE 5

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
2.	ISSUED FOR ZBA & OPA	KK	25-01-24	
1.	ISSUED FOR ZBA & OPA	KK	23-10-27	

ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED

CLIENT
TRIBUTE (BROOKDALE) LIMITED

MUNICIPALITY
CITY OF PICKERING

PROJECT TITLE
1101A, 1105, and 1163 KINGSTON ROAD

SHEET TITLE
SITE SERVICING PLAN PHASE 5

CONSULTANT
wsp

STAMP
LICENSED PROFESSIONAL ENGINEER K. KYRIOPOULOS 100145902 Jan. 24, 2025 PROVINCE OF ONTARIO

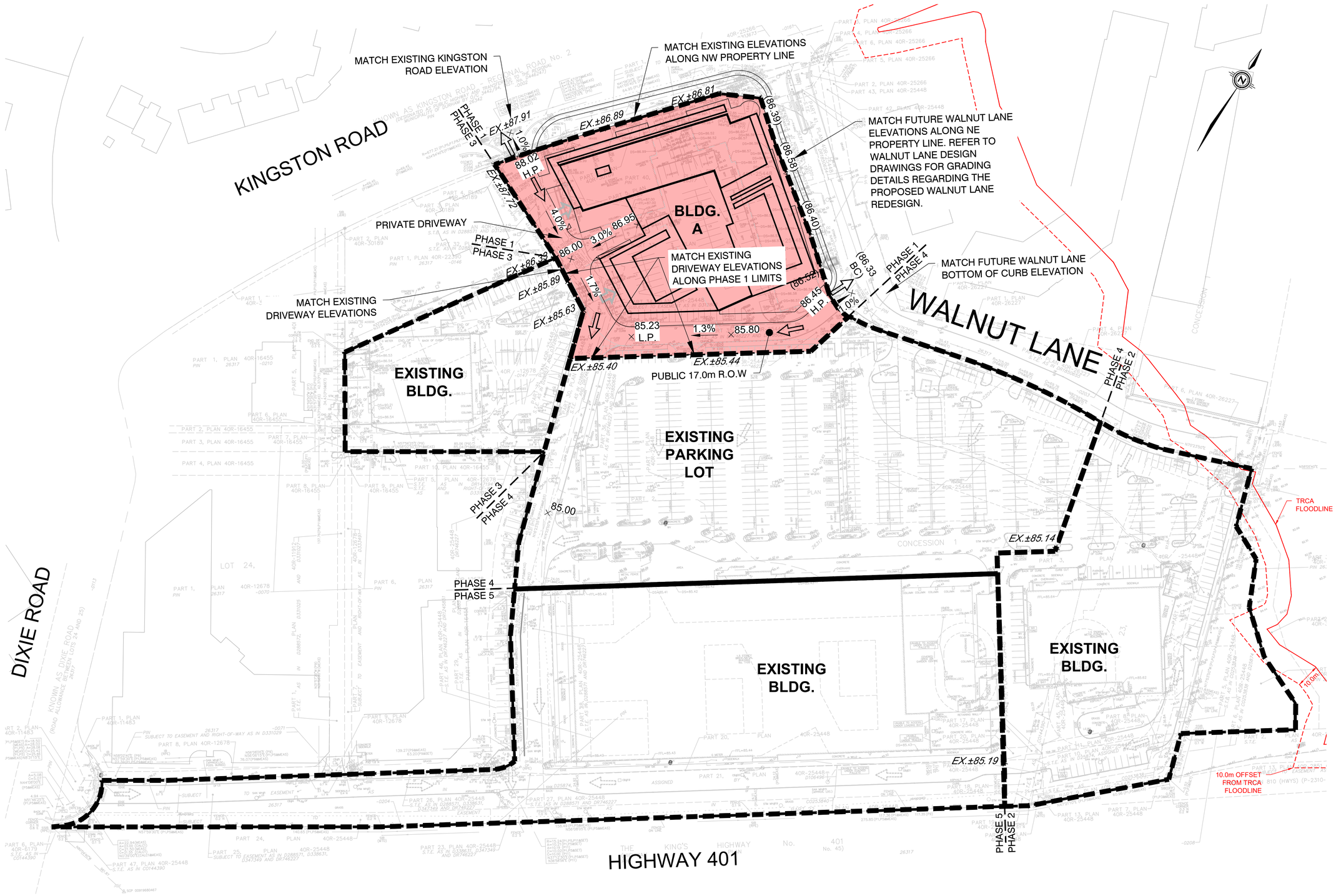
APPROVAL

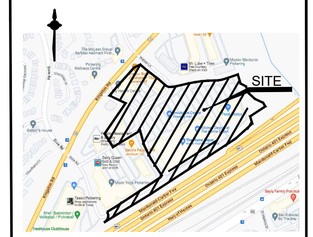
DESIGNED	DRAWN	CHECKED
Z.B.	CAD 20	K.K.

SCALE	DATE
1:750	OCTOBER 2023

JOB NUMBER	SHEET NUMBER
221-12931	SS5

TOPOGRAPHIC INFORMATION SHOWN AS PER J.D BARNES SURVEY 22-25-073-00 DATED 2/2/2023. ELEVATIONS HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF PICKERING BENCHMARK No. 1-059, HAVING A PUBLISHED ELEVATION OF 84.111m (CGVD-1928: 1978)





KEY PLAN N.T.S.

LEGEND

- PROPERTY LINE
- PHASE LIMITS
- ×EX.±86.48 EXISTING ELEVATION TO MATCH
- ×(86.52) FUTURE WALNUT LANE ELEVATION TO MATCH
- × 86.52 PROPOSED ELEVATION
- 2.0% PROPOSED GRADE
- OVERLAND FLOW
- EXISTING OVERLAND FLOW
- PHASE 1

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
2.	ISSUED FOR ZBA & OPA	KK	25-01-24	
1.	ISSUED FOR ZBA & OPA	KK	23-10-27	

ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED

CLIENT: TRIBUTE (BROOKDALE) LIMITED

MUNICIPALITY: CITY OF PICKERING

PROJECT TITLE: 1101A, 1105, and 1163 KINGSTON ROAD

SHEET TITLE: GRADING PLAN PHASE 1

CONSULTANT: wsp

STAMP: LICENSED PROFESSIONAL ENGINEER K. KYRIOPOULOS 100163502 Jan. 24, 2025 PROVINCE OF ONTARIO

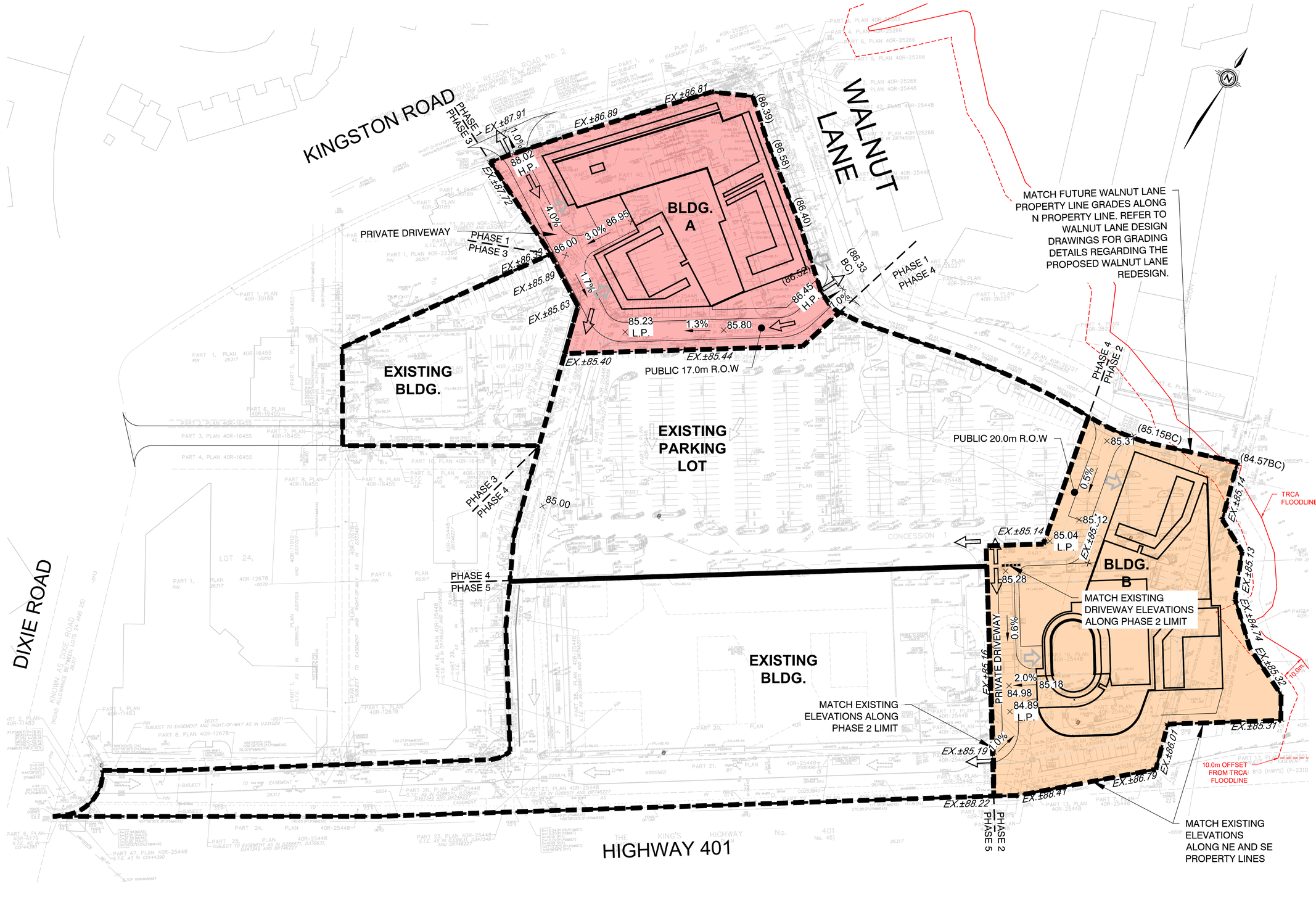
APPROVAL

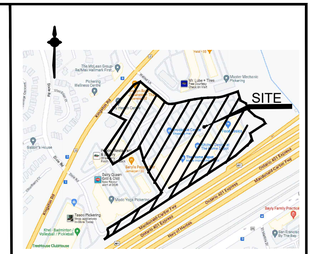
DESIGNED	DRAWN	CHECKED
Z.B.	CAD 20	K.K.

SCALE	DATE
1:750	OCTOBER 2023

JOB NUMBER	SHEET NUMBER
221-12931	GR1

TOPOGRAPHIC INFORMATION SHOWN AS PER J.D BARNES SURVEY 22-25-073-00 DATED 2/2/2023. ELEVATIONS HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF PICKERING BENCHMARK No. 1-059, HAVING A PUBLISHED ELEVATION OF 84.111m (CGVD-1928: 1978)





KEY PLAN N.T.S.

LEGEND

- PROPERTY LINE
- PHASE LIMITS
- ×EX.±86.48 EXISTING ELEVATION TO MATCH
- ×(86.52) FUTURE WALNUT LANE ELEVATION TO MATCH
- × 86.52 PROPOSED ELEVATION
- 2.0% PROPOSED GRADE
- OVERLAND FLOW
- EXISTING OVERLAND FLOW
- PHASE 1
- PHASE 2

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
2.	ISSUED FOR ZBA & OPA	KK	25-01-24	
1.	ISSUED FOR ZBA & OPA	KK	23-10-27	

ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED

CLIENT
TRIBUTE (BROOKDALE) LIMITED

MUNICIPALITY
CITY OF PICKERING

PROJECT TITLE
1101A, 1105, and 1163 KINGSTON ROAD

SHEET TITLE
GRADING PLAN PHASE 2

CONSULTANT
wsp

STAMP
LICENCED PROFESSIONAL ENGINEER
K. KYRIOPOULOS
100149502
Jan. 24, 2025
PROVINCE OF ONTARIO

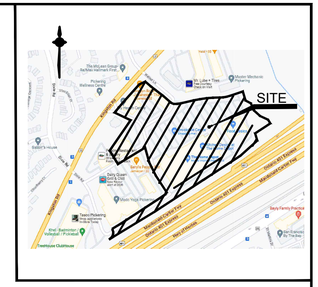
APPROVAL

DESIGNED	DRAWN	CHECKED
Z.B.	CAD 20	K.K.

SCALE	DATE
1:750	OCTOBER 2023

JOB NUMBER	SHEET NUMBER
221-12931	GR2

TOPOGRAPHIC INFORMATION SHOWN AS PER J.D BARNES SURVEY 22-25-073-00 DATED 2/2/2023. ELEVATIONS HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF PICKERING BENCHMARK No. 1-059, HAVING A PUBLISHED ELEVATION OF 84.111m (CGVD-1928: 1978)



KEY PLAN N.T.S.

LEGEND

- PROPERTY LINE
- PHASE LIMITS
- ×EX.±86.48 EXISTING ELEVATION TO MATCH
- ×(86.52) FUTURE WALNUT LANE ELEVATION TO MATCH
- × 86.52 PROPOSED ELEVATION
- 2.0% PROPOSED GRADE
- OVERLAND FLOW
- EXISTING OVERLAND FLOW
- PHASE 1
- PHASE 2
- PHASE 3

KINGSTON ROAD

DIXIE ROAD

WALNUT LANE

BLDG. A

BLDG. B

BLDG. C

EXISTING PARKING LOT

EXISTING BLDG.

HIGHWAY 401

PUBLIC 17.0m R.O.W

PUBLIC 20.0m R.O.W

PRIVATE DRIVEWAY

MATCH PH1 PROPOSED ROAD GRADE

MATCH EXISTING ELEVATIONS ALONG PHASE 2 LIMIT

TRCA FLOODLINE

10.0m OFFSET FROM TRCA FLOODLINE

PHASE 1
PHASE 3

PHASE 1
PHASE 4

PHASE 4
PHASE 2

PHASE 3
PHASE 4

PHASE 4
PHASE 5

PHASE 2
PHASE 5

EX.±87.91 1.0% 88.02 H.P.

EX.±87.72 4.0% 3.0% 86.95 86.00

EX.±86.89 EX.±86.81 (86.39) (86.58) (86.40)

EX.±86.12 EX.±86.61 1.5% 0.8% 86.03 L.P. 86.18

EX.±87.19 86.62 86.70

EX.±86.50 EX.±86.09

EX.±85.40 EX.±85.37 EX.±85.17

85.23 L.P. 1.3% 85.80

(86.52) 86.45 H.P. 1.0% (86.33 BC)

85.00

(85.15BC) (84.72TC)(84.57BC) 85.31

0.5% 85.12 85.04 L.P.

EX.±85.14 85.28

0.6% 2.0% 85.18 84.98 84.89 L.P.

EX.±85.19 0%

EX.±88.22 EX.±88.41 EX.±86.79 EX.±86.01

EX.±85.14 EX.±85.13 EX.±84.74 EX.±85.32 EX.±85.31 10.0m

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
2.	ISSUED FOR ZBA & OPA	KK	25-01-24	
1.	ISSUED FOR ZBA & OPA	KK	23-10-27	

ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED

CLIENT
TRIBUTE (BROOKDALE) LIMITED

MUNICIPALITY
CITY OF PICKERING

PROJECT TITLE
1101A, 1105, and 1163 KINGSTON ROAD

SHEET TITLE
GRADING PLAN PHASE 3

CONSULTANT
wsp

STAMP
LICENSED PROFESSIONAL ENGINEER K. KYRIOPOULOS 100135022 Jan. 24, 2025 PROVINCE OF ONTARIO

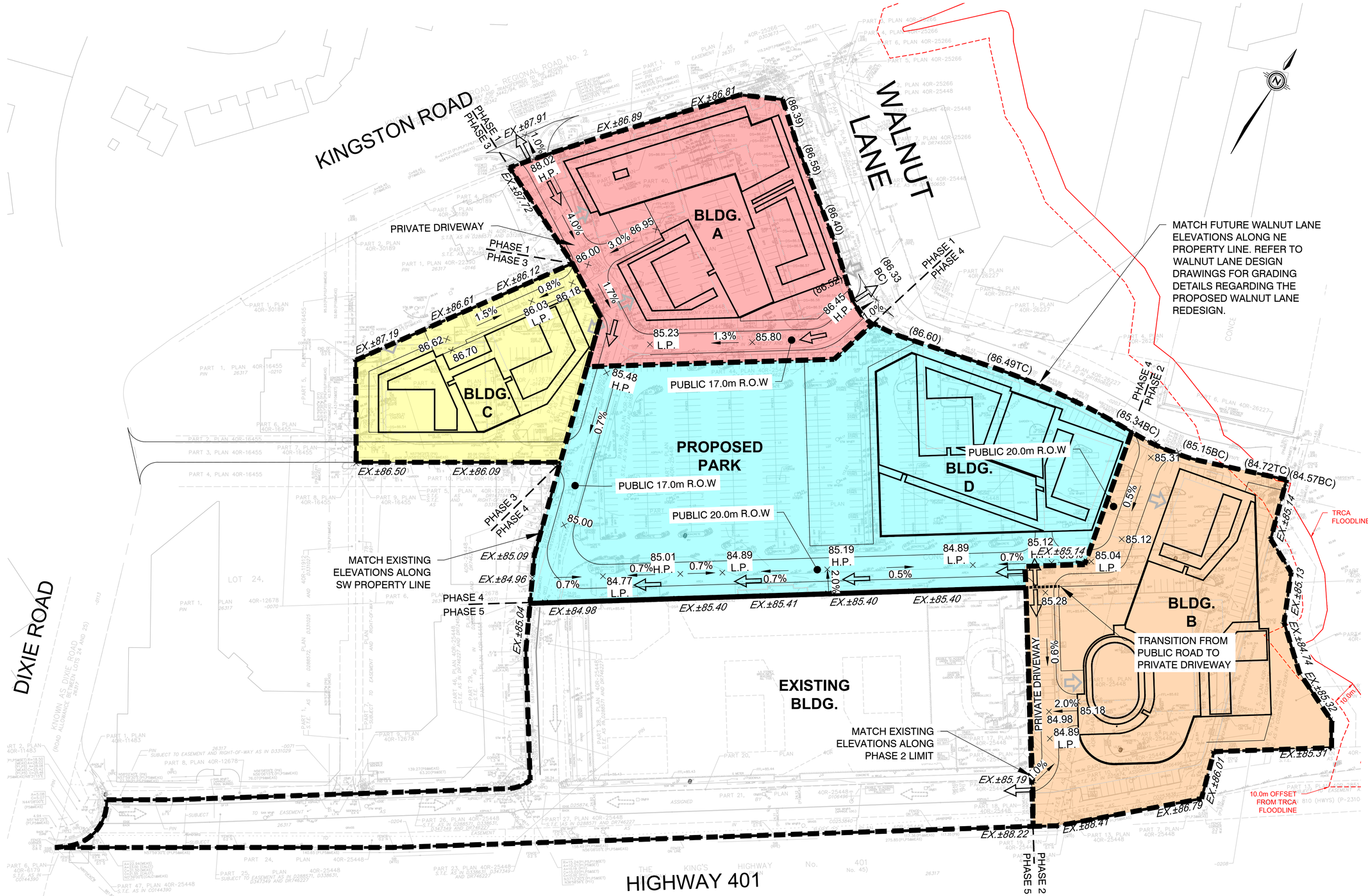
APPROVAL

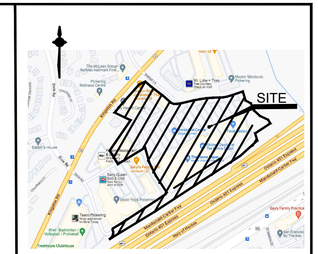
DESIGNED	DRAWN	CHECKED
Z.B.	CAD 20	K.K.

SCALE	DATE
1:750	OCTOBER 2023

JOB NUMBER	SHEET NUMBER
221-12931	GR3

TOPOGRAPHIC INFORMATION SHOWN AS PER J.D BARNES SURVEY 22-25-073-00 DATED 2/2/2023. ELEVATIONS HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF PICKERING BENCHMARK No. 1-059, HAVING A PUBLISHED ELEVATION OF 84.111m (CGVD-1928: 1978)





KEY PLAN N.T.S.

LEGEND

- PROPERTY LINE
- PHASE LIMITS
- ×EX.±86.48 EXISTING ELEVATION TO MATCH
- ×(86.52) FUTURE WALNUT LANE ELEVATION TO MATCH
- × 86.52 PROPOSED ELEVATION
- 2.0% PROPOSED GRADE
- OVERLAND FLOW
- EXISTING OVERLAND FLOW
- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
2.	ISSUED FOR ZBA & OPA	KK	25-01-24	
1.	ISSUED FOR ZBA & OPA	KK	23-10-27	

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CLIENT: TRIBUTE (BROOKDALE) LIMITED

MUNICIPALITY: CITY OF PICKERING

PROJECT TITLE: 1101A, 1105, and 1163 KINGSTON ROAD

SHEET TITLE: GRADING PLAN PHASE 4

CONSULTANT: wsp

STAMP: LICENSED PROFESSIONAL ENGINEER K. KYRIOPOULOS 100149302 Jan. 24, 2025 PROVINCE OF ONTARIO

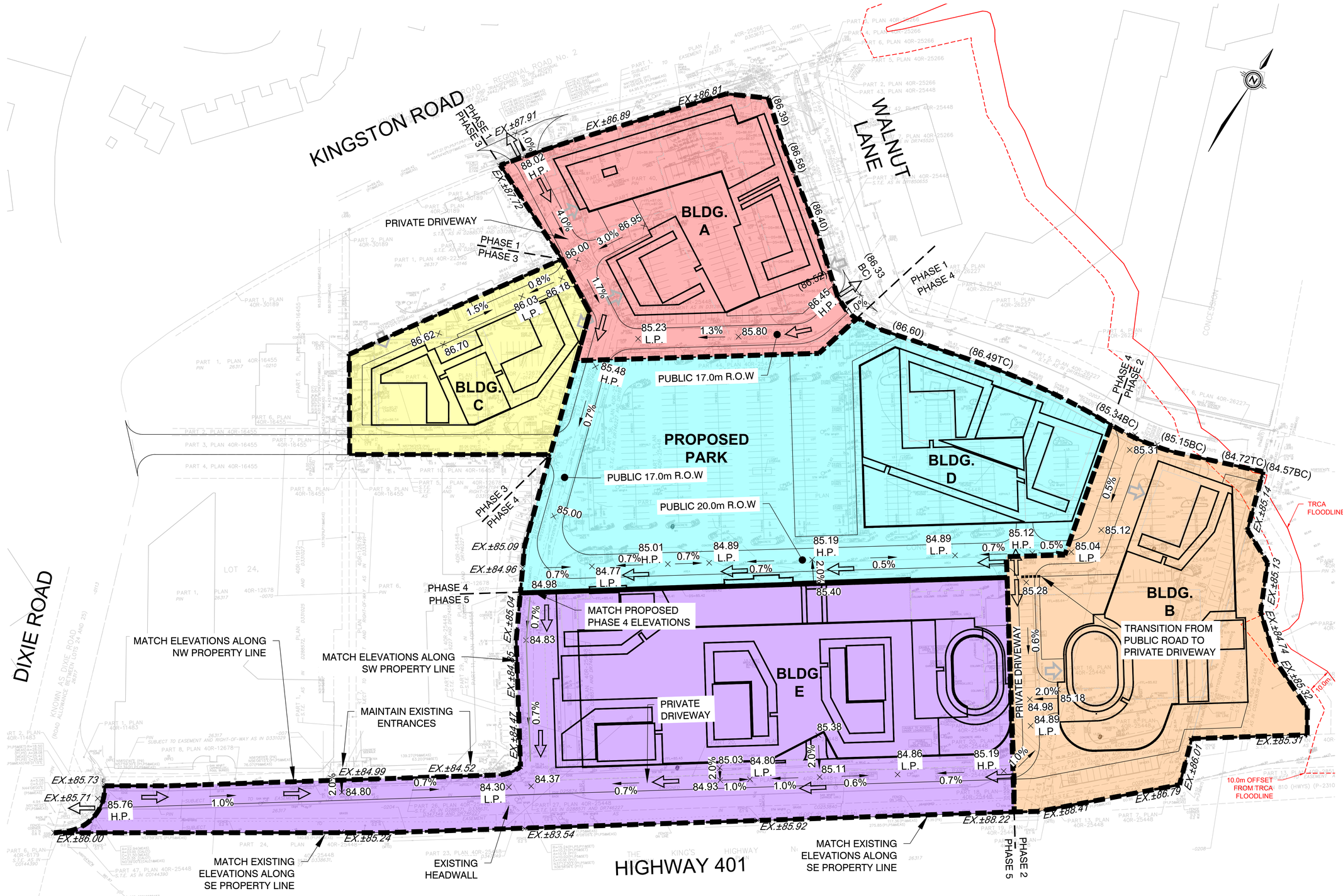
APPROVAL

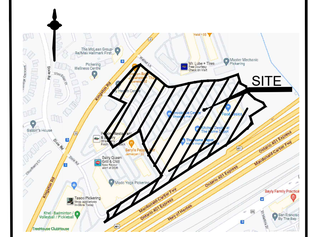
DESIGNED	DRAWN	CHECKED
Z.B.	CAD 20	K.K.

SCALE	DATE
1:750	OCTOBER 2023

JOB NUMBER	SHEET NUMBER
221-12931	GR4

TOPOGRAPHIC INFORMATION SHOWN AS PER J.D BARNES SURVEY 22-25-073-00 DATED 2/2/2023. ELEVATIONS HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF PICKERING BENCHMARK No. 1-059, HAVING A PUBLISHED ELEVATION OF 84.111m (CGVD-1928: 1978)





KEY PLAN N.T.S.

LEGEND

- PROPERTY LINE
- PHASE LIMITS
- ×EX.±86.48 EXISTING ELEVATION TO MATCH
- ×(86.52) FUTURE WALNUT LANE ELEVATION TO MATCH
- × 86.52 PROPOSED ELEVATION
- 2.0% PROPOSED GRADE
- OVERLAND FLOW
- EXISTING OVERLAND FLOW
- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4
- PHASE 5

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
2.	ISSUED FOR ZBA & OPA	KK	25-01-24	
1.	ISSUED FOR ZBA & OPA	KK	23-10-27	

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CLIENT: TRIBUTE (BROOKDALE) LIMITED

MUNICIPALITY: CITY OF PICKERING

PROJECT TITLE: 1101A, 1105, and 1163 KINGSTON ROAD

SHEET TITLE: GRADING PLAN PHASE 5

CONSULTANT: wsp

STAMP: LICENSED PROFESSIONAL ENGINEER K. KYRIOPOULOS 100163502 Jan. 24, 2025 PROVINCE OF ONTARIO

APPROVAL

DESIGNED	DRAWN	CHECKED
Z.B.	CAD 20	K.K.

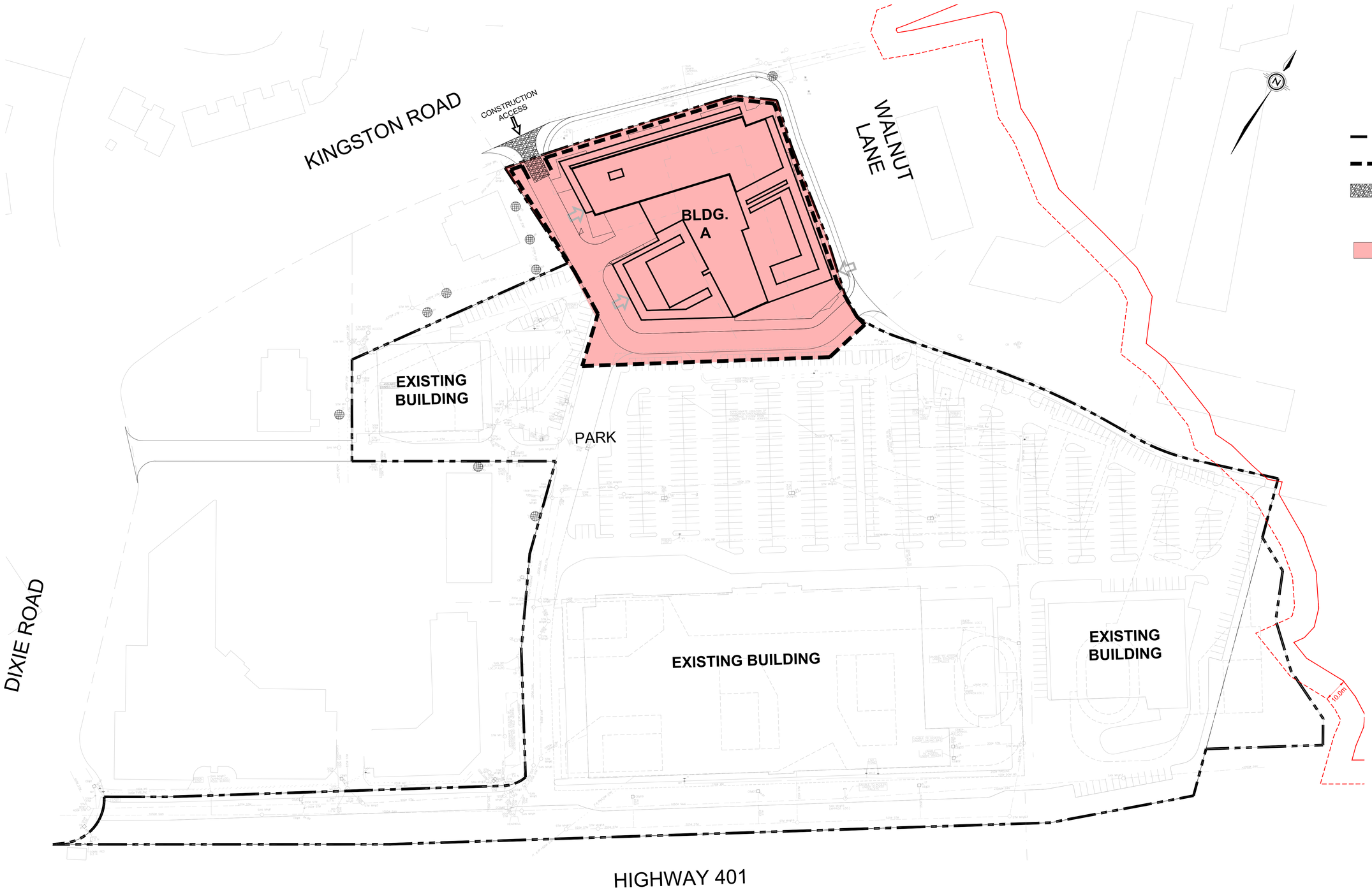
SCALE	DATE
1:750	OCTOBER 2023

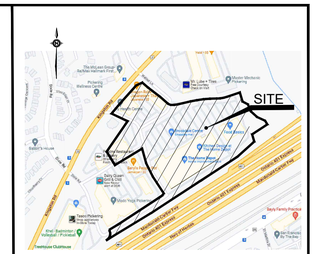
JOB NUMBER	SHEET NUMBER
221-12931	GR5

APPENDIX

D EROSION AND SEDIMENT CONTROL PLANS

REFER TO ESC 6 FOR STANDARD NOTES AND DETAILS





KEY PLAN N.T.S.

LEGEND

- PROPERTY LINE
- PHASE 1 SILT FENCE
- MUD MAT
- CATCHBASIN SILT SACK
- PHASE 1

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
2.	ISSUED FOR ZBA & OPA	KK	25-01-24	
1.	ISSUED FOR ZBA & OPA	KK	23-10-27	

ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED

CLIENT
TRIBUTE (BROOKDALE) LIMITED

MUNICIPALITY
CITY OF PICKERING

PROJECT TITLE
1101A, 1105, and 1163 KINGSTON ROAD

SHEET TITLE
EROSION AND SEDIMENT CONTROL PLAN PHASE 1

CONSULTANT
wsp

STAMP
LICENSED PROFESSIONAL ENGINEER
K. KYRIOPOULOS
100149502
Jan. 24, 2025
PROVINCE OF ONTARIO

APPROVAL

DESIGNED	DRAWN	CHECKED
Z.B.	CAD 20	K.K.

SCALE	DATE
1:750	OCTOBER 2023

JOB NUMBER	SHEET NUMBER
221-12931	ESC1

REFER TO ESC 6 FOR STANDARD NOTES AND DETAILS

KINGSTON ROAD

WALNUT LANE

BLDG. A

EXISTING BUILDING

CONSTRUCTION ACCESS

DIXIE ROAD

EXISTING BUILDING

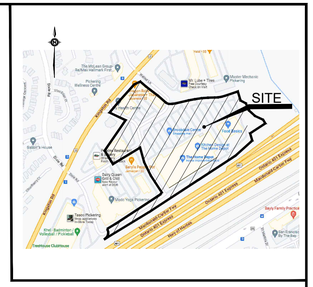
BLDG. B

TRCA FLOODLINE

10.0m

10.0m OFFSET FROM TRCA FLOODLINE

HIGHWAY 401



KEY PLAN N.T.S.

LEGEND

- PROPERTY LINE
- PHASE 2 SILT FENCE
- MUD MAT
- CATCHBASIN SILT SACK
- PHASE 1
- PHASE 2

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
2.	ISSUED FOR ZBA & OPA	KK	25-01-24	
1.	ISSUED FOR ZBA & OPA	KK	23-10-27	

ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED

CLIENT
TRIBUTE (BROOKDALE) LIMITED

MUNICIPALITY
CITY OF PICKERING

PROJECT TITLE
1101A, 1105, and 1163 KINGSTON ROAD

SHEET TITLE
EROSION AND SEDIMENT CONTROL PLAN PHASE 2

CONSULTANT
wsp

STAMP
LICENSED PROFESSIONAL ENGINEER
K. KYRIOPOULOS
100163502
Jan. 24, 2025
PROVINCE OF ONTARIO

APPROVAL

DESIGNED	DRAWN	CHECKED
Z.B.	CAD 20	K.K.

SCALE	DATE
1:750	OCTOBER 2023

JOB NUMBER	SHEET NUMBER
221-12931	ESC2

REFER TO ESC 6 FOR STANDARD NOTES AND DETAILS

KINGSTON ROAD

WALNUT LANE

DIXIE ROAD

HIGHWAY 401

BLDG. A

BLDG. C

BLDG. B

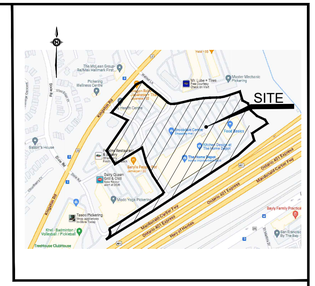
CONSTRUCTION ACCESS

EXISTING BUILDING

TRCA FLOODLINE

10.0m

10.0m OFFSET FROM TRCA FLOODLINE



KEY PLAN N.T.S.

LEGEND

- PROPERTY LINE
- PHASE 3 SILT FENCE
- MUD MAT
- CATCHBASIN SILT SACK
- PHASE 1
- PHASE 2
- PHASE 3

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
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1.	ISSUED FOR ZBA & OPA	KK	23-10-27	

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CLIENT
TRIBUTE (BROOKDALE) LIMITED

MUNICIPALITY
CITY OF PICKERING

PROJECT TITLE
1101A, 1105, and 1163 KINGSTON ROAD

SHEET TITLE
EROSION AND SEDIMENT CONTROL PLAN PHASE 3

CONSULTANT
wsp

STAMP
LICENSED PROFESSIONAL ENGINEER
K. KYRIOPOULOS
100142982
Jan. 24, 2025
PROVINCE OF ONTARIO

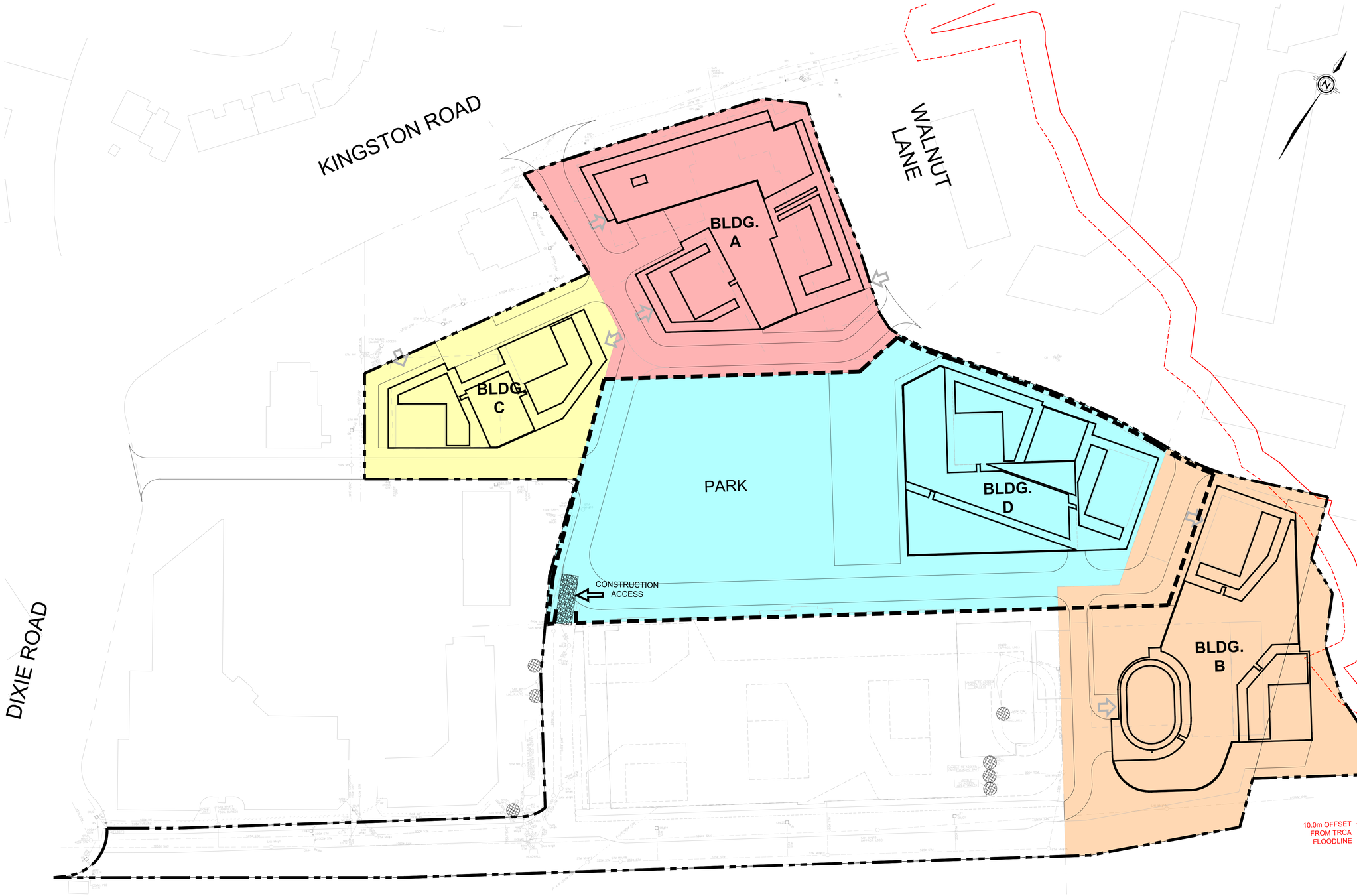
APPROVAL

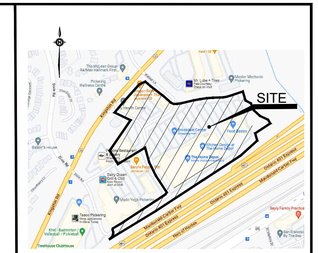
DESIGNED	DRAWN	CHECKED
Z.B.	CAD 20	K.K.

SCALE	DATE
1:750	OCTOBER 2023

JOB NUMBER	SHEET NUMBER
221-12931	ESC3

REFER TO ESC 6 FOR STANDARD NOTES AND DETAILS





KEY PLAN N.T.S.

LEGEND

- PROPERTY LINE
- PHASE 4 SILT FENCE
- MUD MAT
- CATCHBASIN SILT SACK
- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
2.	ISSUED FOR ZBA & OPA	KK	25-01-24	
1.	ISSUED FOR ZBA & OPA	KK	23-10-27	

ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED

CLIENT
TRIBUTE (BROOKDALE) LIMITED

MUNICIPALITY
CITY OF PICKERING

PROJECT TITLE
1101A, 1105, and 1163 KINGSTON ROAD

SHEET TITLE
EROSION AND SEDIMENT CONTROL PLAN PHASE 4

CONSULTANT
wsp

STAMP
LICENCED PROFESSIONAL ENGINEER
K. KYRIOPOULOS
100142982
Jan. 24, 2025
PROVINCE OF ONTARIO

APPROVAL

DESIGNED	DRAWN	CHECKED
Z.B.	CAD 20	K.K.

SCALE	DATE
1:750	OCTOBER 2023

JOB NUMBER	SHEET NUMBER
221-12931	ESC4

REFER TO ESC 6 FOR STANDARD NOTES AND DETAILS

KINGSTON ROAD

WALNUT LANE

DIXIE ROAD

HIGHWAY 401

BLDG. A

BLDG. B

BLDG. C

BLDG. D

BLDG. E

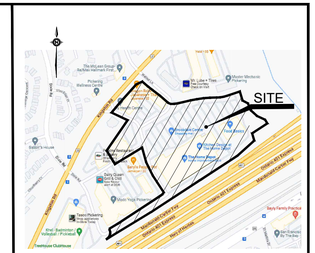
PARK

TRCA FLOODLINE

10.0m

10.0m OFFSET FROM TRCA FLOODLINE

CONSTRUCTION ACCESS



KEY PLAN N.T.S.

LEGEND

- PROPERTY LINE
- PHASE 5 SILT FENCE
- MUD MAT
- CATCHBASIN SILT SACK
- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4
- PHASE 5

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
2.	ISSUED FOR ZBA & OPA	KK	25-01-24	
1.	ISSUED FOR ZBA & OPA	KK	23-10-27	

ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED

CLIENT
TRIBUTE (BROOKDALE) LIMITED

MUNICIPALITY
CITY OF PICKERING

PROJECT TITLE
1101A, 1105, and 1163 KINGSTON ROAD

SHEET TITLE
EROSION AND SEDIMENT CONTROL PLAN PHASE 5

CONSULTANT
wsp

STAMP
LICENSED PROFESSIONAL ENGINEER
K. KYRIOPOULOS
100143932
Jan. 24, 2025
PROVINCE OF ONTARIO

APPROVAL

DESIGNED	DRAWN	CHECKED
Z.B.	CAD 20	K.K.

SCALE	DATE
1:750	OCTOBER 2023

JOB NUMBER	SHEET NUMBER
221-12931	ESC5

TRCA EROSION AND SEDIMENT CONTROL NOTES:

1. EROSION AND SEDIMENT CONTROL (ESC) MEASURES WILL BE IMPLEMENTED PRIOR TO, AND MAINTAINED DURING THE CONSTRUCTION PHASES, TO PREVENT ENTRY OF SEDIMENT INTO THE WATER. ALL DAMAGED EROSION AND SEDIMENT CONTROL MEASURES SHOULD BE REPAIRED AND/OR REPLACED WITHIN 48 HOURS OF THE INSPECTION.
2. DISTURBED AREAS WILL BE MINIMIZED TO THE EXTENT POSSIBLE, AND TEMPORARILY OR PERMANENTLY STABILIZED OR RESTORED AS THE WORK PROGRESSES.
3. ALL IN-WATER AND NEAR-WATER WORKS WILL BE CONDUCTED IN THE DRY AND APPROPRIATE EROSION AND SEDIMENT CONTROLS
4. THE EROSION AND SEDIMENT CONTROL STRATEGIES OUTLINED ON THE PLANS ARE NOT STATIC AND MAY NEED TO BE UPGRADED/AMENDED AS SITE CONDITIONS CHANGE TO MINIMIZE SEDIMENT LADEN RUNOFF FROM LEAVING THE WORK AREAS. IF THE PRESCRIBED MEASURES ON THE PLANS ARE NOT EFFECTIVE IN PREVENTING THE RELEASE OF A DELETERIOUS SUBSTANCE, INCLUDING SEDIMENT, THEN ALTERNATIVE MEASURES MUST BE IMPLEMENTED IMMEDIATELY TO MINIMIZE POTENTIAL ECOLOGICAL IMPACTS. TRCA ENFORCEMENT OFFICER SHOULD BE IMMEDIATELY CONTACTED. ADDITIONAL ESC MEASURES TO BE KEPT ON SITE AND USED, AS NECESSARY.
5. AN ENVIRONMENTAL MONITOR WILL ATTEND THE SITE TO INSPECT ALL NEW CONTROLS IMMEDIATELY AFTER INSTALLATION. INSPECTION OF ESC MEASURES TO BE WILL OCCUR, AT MINIMUM:
   - 5.1. ON A WEEKLY BASIS;
   - 5.2. PRIOR TO SIGNIFICANT RAINFALL EVENTS (MINIMUM PREDICTED 25MM OVER 24 HOURS);
   - 5.3. AFTER EVERY RAINFALL/SNOWMELT EVENT; AND
   - 5.4. DAILY DURING EXTENDED RAINFALL PERIODS.

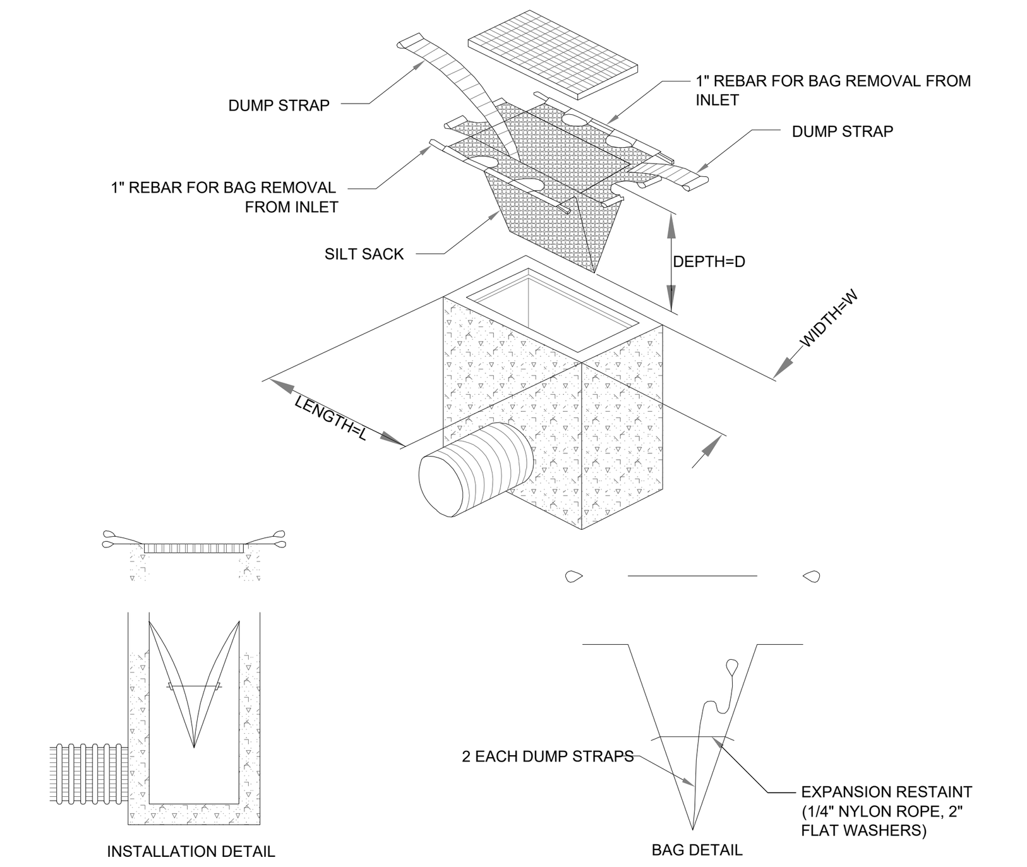
   INSPECTIONS WILL FOCUS ON MEASURES RELATED TO EROSION AND SEDIMENT CONTROLS, DEWATERING OR UNWATERING, RESTORATION AND IN- OR NEAR- WATER WORKS. SHOULD CONCERNS ARISE ON SITE THE ENVIRONMENTAL MONITOR WILL CONTACT THE TRCA ENFORCEMENT OFFICER AS WELL AS THE PROPONENT.
6. ALL ACTIVITIES, INCLUDING MAINTENANCE PROCEDURES, WILL BE CONTROLLED TO PREVENT THE ENTRY OF PETROLEUM PRODUCTS, DEBRIS, RUBBLE, CONCRETE OR OTHER DELETERIOUS SUBSTANCES INTO THE WATER. VEHICULAR REFUELING AND MAINTENANCE WILL BE CONDUCTED A MINIMUM OF 30 METRES FROM THE WATER
7. ALL GRADES WITHIN THE REGULATORY FLOOD PLAIN WILL BE MAINTAINED OR MATCHED.
8. THE PROPONENT/CONTRACTOR SHALL MONITOR THE WEATHER SEVERAL DAYS IN ADVANCE OF THE ONSET OF THE PROJECT TO ENSURE THAT THE WORKS WILL BE CONDUCTED DURING FAVOURABLE WEATHER CONDITIONS. SHOULD AN UNEXPECTED STORM ARISE, THE CONTRACTOR WILL REMOVE ALL UNFIXED ITEMS FROM THE REGIONAL STORM FLOOD PLAIN THAT WOULD HAVE THE POTENTIAL TO CAUSE A SPILL OR AN OBSTRUCTION TO FLOW, E.G., FUEL TANKS, PORTA-POTTIES, MACHINERY, EQUIPMENT, CONSTRUCTION MATERIALS, ETC.
9. ALL DEWATERING/UNWATERING SHALL BE TREATED AND RELEASED TO THE ENVIRONMENT AT LEAST 30 METRES FROM A WATERCOURSE OR WETLAND AND ALLOWED TO DRAIN THROUGH A WELL VEGETATED AREA. NO DEWATERING EFFLUENT SHALL BE SENT DIRECTLY TO ANY WATERCOURSE, WETLAND OR FOREST, OR ALLOWED TO DRAIN ONTO DISTURBED SOILS WITHIN THE WORK AREA. THESE CONTROL MEASURES SHALL BE MONITORED FOR EFFECTIVENESS AND MAINTAINED OR REVISED TO MEET THE OBJECTIVE OF PREVENTING THE RELEASE OF SEDIMENT LADEN WATER.
10. ALL ACCESS TO THE WORK SITE SHALL BE FROM EITHER SIDE OF THE WATERCOURSE. NO EQUIPMENT OR VEHICLES ARE PERMITTED TO CROSS THROUGH THE WATERCOURSE UNLESS APPROVED BY TRCA.

City of PICKERING

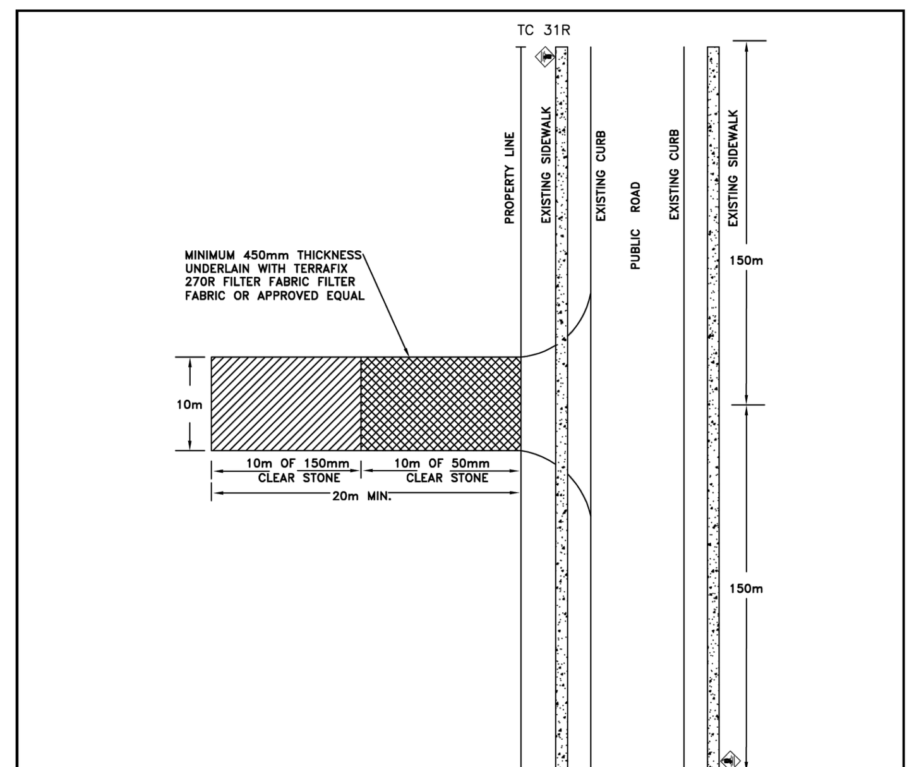
Erosion and Sediment Control General Notes

1. Prior to commencement of any on-site work/topsoil stripping, erosion and sediment control (ESC) measures, as per approved Erosion & Sediment Control Plan, must be installed to prevent surface runoff from leaving the site "untreated". All ESC measures are to be maintained until the site has been stabilized.
2. The contractor shall be responsible for the proper installation, maintenance and removal of all temporary erosion and sediment control measures during construction, as directed by the Engineer or the City of Pickering.
3. Sediment control fence to use geotextile with weave density of 270R terrafix or equivalent.
4. All exposed soils shall be immediately stabilized as directed by the Engineer or City of Pickering.
5. Check dams are to be used in any temporary drainage swales required during the construction period.
6. Additional erosion and sediment control measures may be required and shall be determined by the Engineer or the City of Pickering.
7. All swales are to be stabilized prior to use.
8. Inspection of the proposed erosion and sediment control measures will occur on a weekly basis, after rainfall events exceeding 10mm or after rapid snow melt events and daily during extended rain or snow melt periods. The silt control fence must be inspected for rips or tears, broken stakes, blow outs and accumulation of sediment. The silt control fence must be fixed and/or replaced immediately when damaged. Accumulated sediment must be removed from the silt control fence when accumulation reaches 50% of the height of the fence.
9. Rock check dams are to be cleaned of all accumulated sediment as soon as sediment has accumulated to a depth greater than 50% of all the upstream check dams.
10. Cleaning and repair of mud mats and any other temporary sediment control measures shall be done as necessary through regular inspection or as directed by the Engineer or City of Pickering. All damaged ESC measures shall be repaired and/or replaced within 48 hours of the inspection.
11. Materials to repair damaged ESC measures must be kept on-site at all times.
12. The ESC strategies on these plans are not static and may need to be upgraded/amended as site conditions change to prevent sediment releases. Failed ESC measures must be repaired immediately.
13. No construction activity or machinery shall intrude beyond the silt control fence or limit of development. All construction vehicles shall leave the site at designated locations as shown on the plans. All materials and equipment shall be stored on site in a designated area. No materials or equipment shall be stored on the Municipal right of way. No construction vehicles will park on Municipal roads.
14. Servicing of construction equipment on site is prohibited.
15. The contractor must clean adjacent roads on a regular basis. The road shall be, at a minimum scraped daily and flushed (if necessary) on Friday evenings or Saturday mornings.
16. Dust control to be reviewed daily. Water truck or calcium chloride is to be provided on-site and haul roads/working areas are to be treated as required to ensure that dust is controlled on-site.
17. At the end of construction period, accumulated sediment is to be removed off site prior to the removal of the silt fence.
18. All litter and debris shall be monitored and disposed of daily or as necessary through regular inspection.
19. All topsoil stockpiles shall be surrounded with sediment control fence and stabilized with seed mix as per this drawing.
20. Disturbed areas are to be minimized to the extent possible and stabilized as the work progresses. Any area exposed for more than 30 days will be stabilized.

Erosion and Sediment Control General Notes — Page 2 of 2



TEMPORARY CATCHBASIN SILT SACK
N.T.S.



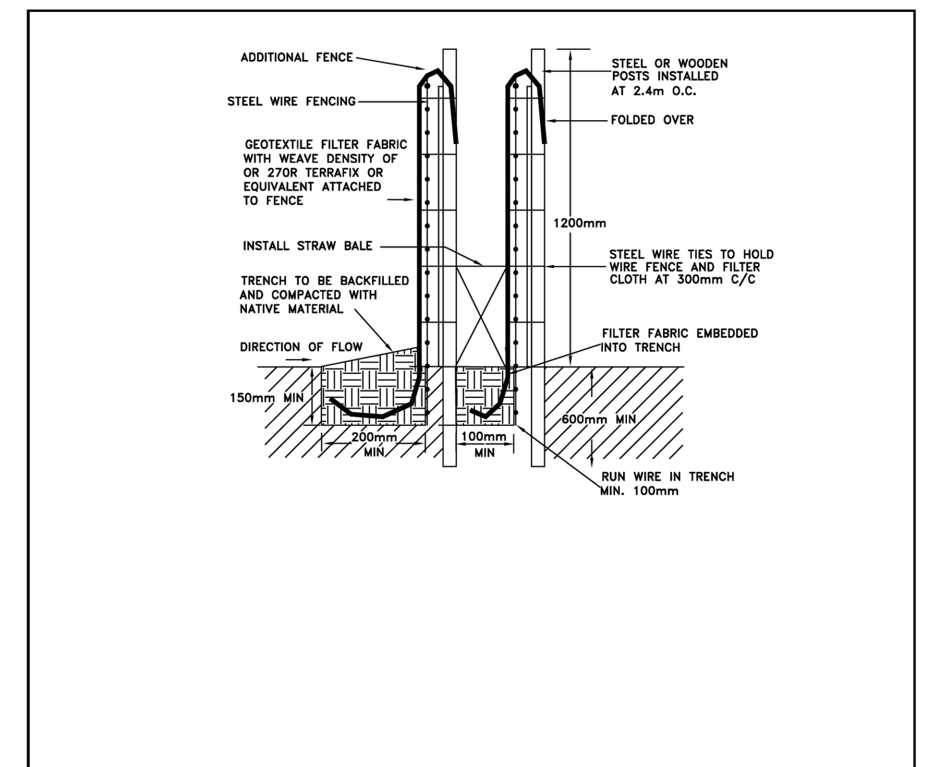
NOTES :

1. TEMPORARY "TRUCK ENTRANCE" SIGNS SHALL BE INSTALLED ON THE SHOULDER, 150 m IN ADVANCE OF THE ACCESS.(NOTE: SEE DETAILS ON THE USE OF THESE SIGNS IN THE ONTARIO TRAFFIC MANUAL BOOK 7). THE APPLICANT WILL BE RESPONSIBLE FOR THE COST OF OBTAINING, ERECTING AND MAINTAINING THESE SIGNS.
2. TEMPORARY CONSTRUCTION ACCESS SHALL BE REMOVED FROM THE ROAD ALLOWANCE AND ALL DISTURBED AREAS SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION.

TC 31L TC 31R

All dimensions are in millimetres unless otherwise noted.

City of Pickering	Engineering Services Department	
DRAWN J. McMULLEN	MUD MAT FOR TEMPORARY CONSTRUCTION ACCESS (URBAN CROSS-SECTION)	REVISION NO. 1
APPROVED R. STARR		DATE NOVEMBER 2019
DATE OCTOBER 2007		P-824.2

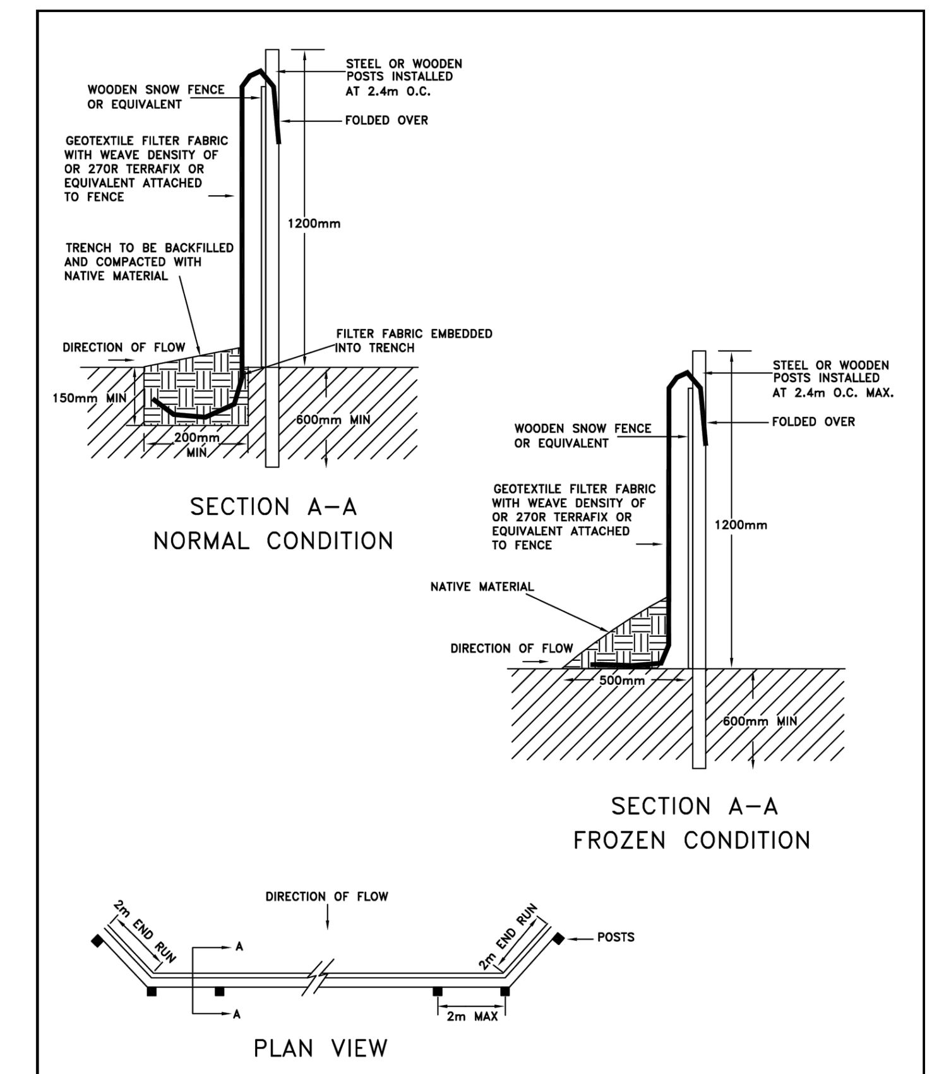


NOTES :

1. INSTALL SILT FENCE IN HIGHLY SENSITIVE AREAS SUCH AS WATERCOURSES AND WETLAND AREAS. AN ADDITIONAL SILT FENCE MAY BE REQUIRED AS DIRECTED BY THE CITY OF PICKERING.
2. EXACT LOCATION TO BE DETERMINED IN THE FIELD AND TO BE APPROVED BY THE ENGINEER OR THE CITY OF PICKERING.
3. SILT FENCE AND SEDIMENT TRAP TO BE CLEANED AND STRAW BALES REPLACED PERIODICALLY AS REQUIRED BY THE ENGINEER OR THE CITY OF PICKERING.
4. ALL SILT FENCE & SEDIMENT TRAPS ARE TO BE REMOVED WHEN CONSTRUCTION IS COMPLETED. THE REMAINING SEDIMENT IS TO BE GRADED, PREPARED AND SEEDED OR SODDED.
5. SILT FENCE INSTALLATION WORK MUST AVOID THE DESTRUCTION OF EXISTING WOODY VEGETATION(ie. SHRUBS AND TREES) OTHER THAN THOSE SPECIES WHICH HAVE BEEN APPROVED FOR REMOVAL BY THE CITY OF PICKERING.

All dimensions are in millimetres unless otherwise noted.

City of Pickering	Engineering Services Department	
DRAWN J. McMULLEN	HEAVY DUTY SILT FENCE & STRAW BALE BARRIER	REVISION NO. 1
APPROVED R. STARR		DATE NOVEMBER 2019
DATE OCTOBER 2007		P-823.2



All dimensions are in millimetres unless otherwise noted.

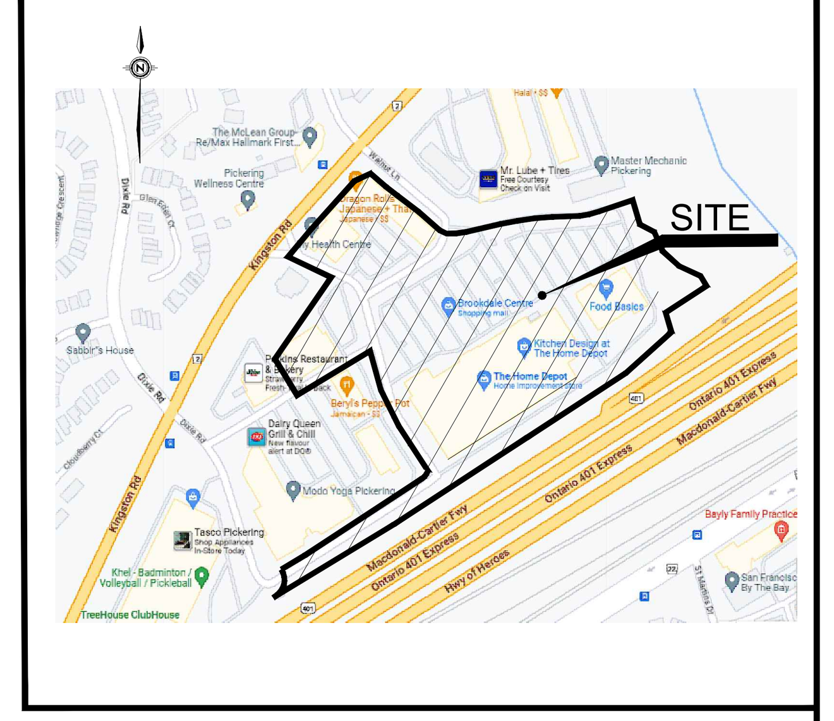
City of Pickering	Engineering Services Department	
DRAWN J. McMULLEN	SILT FENCE	REVISION NO. 2
APPROVED R. STARR		DATE NOVEMBER 2019
DATE FEBRUARY 2003		P-823.1

TC-21
N.T.S.

TC-1
N.T.S.

TC-31L
N.T.S.

TC-31R
N.T.S.



KEY PLAN N.T.S.

LEGEND

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
2.	ISSUED FOR ZBA & OPA	KK	25-01-24	
1.	ISSUED FOR ZBA & OPA	KK	23-10-27	

ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED

CLIENT
TRIBUTE (BROOKDALE) LIMITED

MUNICIPALITY
CITY OF PICKERING

PROJECT TITLE
1101A, 1105, and 1163 KINGSTON ROAD

SHEET TITLE
EROSION AND SEDIMENT CONTROL STANDARD NOTES & DETAILS

CONSULTANT
wsp

STAMP
LICENSED PROFESSIONAL ENGINEER
K. KYRIOPOULOS
100149902
Jan. 24, 2025
PROVINCE OF ONTARIO

APPROVAL

DESIGNED	DRAWN	CHECKED
Z.B.	CAD 20	K.K.

SCALE

DATE OCTOBER 2023

JOB NUMBER 221-12931

SHEET NUMBER ESC6

E SUPPORTING DOCUMENTS

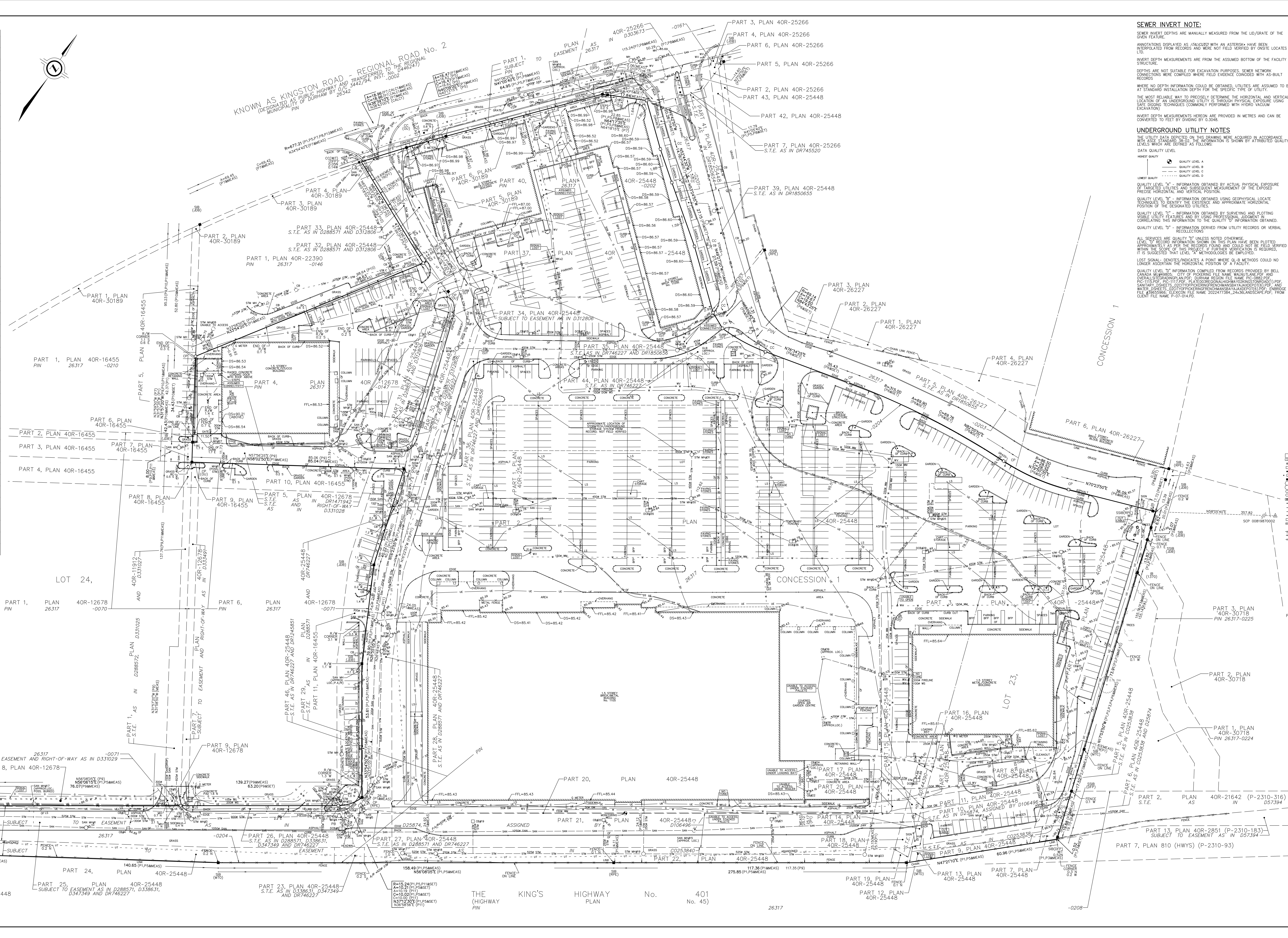
SEWER INVERT DATA TABLE

MH/CB	DIRECTION	DIAMETER	INVERT	TOP OF LID/ GRATE ELEV.	INVERT ELEVATION	NOTES
CB#1	N	200	1.31	85.54	84.23	
CB#2	SE	200	1.23	85.54	84.31	
CB#3	SE	300	1.23	84.91	83.68	
CB#4	N	300	1.37	84.89	83.52	
CB#5	NE	300	1.09	84.95	83.86	
DCB#6	NE	300	1.26	84.32	83.06	
DCB#7	SE	300	1.17	84.28	83.11	
CB#8	W	300	1.40	85.29	83.89	
CB#9	W	250	1.30	84.91	83.61	
CB#10	W	300	1.43	85.38	83.95	
CB#11	S	450	1.52	85.24	83.72	
CB#12	SE	300	1.30	85.41	84.11	
CB#13	NW S	450 450	1.59 1.86	85.62	84.03 83.76	
CB#14	NW	250	1.07	85.26	84.19	
CB#15	NE	250	0.96	85.44	84.48	
CB#16	SE	300	0.78	85.71	84.93	
DCB#17	SE SW	300 250	1.29 1.27	85.65	84.36 84.38	
CB#18	NW	250	1.24	85.58	84.34	
CB#19	SSE	250	1.44	84.69	83.25	
CB#20	SE	250	1.49	84.81	83.32	
CB#21	SE	250	1.58	84.77	83.19	
CB#22	*NW*	*250*	N/A	84.19	N/A	PARKED TRUCK
CB#23	NW NE SE	250 300 250	1.30 1.31 1.30	84.19	82.89 82.88 82.89	
CB#24	SE	250	N/A	N/A	N/A	1.10 TO DEBRIS
DCB#25	SW	300	1.35	84.88	83.53	
CB#26	NW NE SE W	450 150 450 250	2.14 1.71 2.15 1.88	85.03	82.89 83.32 82.88 83.15	
CB#27	N/A	N/A	N/A	84.77	N/A	NO PIPE
CB#28	SW	250	1.20	84.44	83.24	
DCB#29	SE	250	1.24	84.83	83.59	
CB#30	SE SW	250 450	1.27 1.32	84.74	83.47 83.42	
CB#31	NW	250	1.14	84.95	83.81	
CB#32	W	300	1.57	85.53	83.96	
CB#33	NE	300	1.00	85.24	84.24	
DCB#34	NW	250	1.0	84.77	83.77	
DCB#35	NW	250	0.70	84.84	84.14	
DCB#36	W	300	0.72	84.78	84.06	
CB#37	NE	250	1.81	85.87	84.06	
CB#38	*E*	*250*	*1.50*	*85.25*	*83.75*	
CB#39	*NE*	*250*	*1.50*	*85.25*	*83.75*	
STM MH#1	NW NE SW	450 525 400	1.87 1.97 1.90	85.77	83.90 83.80 83.87	
STM MH#2	NW E W	825 825 300	2.27 2.44 1.90	85.04	82.77 82.60 83.14	
STM MH#3	NE SW W	825 *900 *525	2.38 *2.37 *2.33	84.82	82.44 82.45 82.49	
STM MH#4	NW E SW	600 900 900	±1.98 2.34 2.14	84.41	±82.43 82.07 82.27	
STM MH#5	NW SE	600 100	2.26 2.29	84.76	82.50 82.47	SE - REDUCED PIPE
STM MH#6	NW S	600 675	2.23 2.26	84.59	82.36 82.33	

**INFORMATION OBTAINED FROM RECORDS FROM CLIENT, REGION OF DURHAM AND CITY OF PICKERING; NOT FIELD VERIFIED BY ONSITE LOCATES INC.*

MH/CB	DIRECTION	DIAMETER	INVERT	TOP OF LID/ GRATE ELEV.	INVERT ELEVATION	NOTES
STM MH#7	N SE	600 600	2.30 2.33	84.89	82.59 82.56	
STM MH#8	NW S	*600 *600	±2.50 ±2.50	84.99	±82.49 ±82.49	OIL GRIT SEPARATOR
STM MH#9	N SE SW	600 600 300	2.30 2.33 1.94	84.98	82.68 82.65 83.04	
STM MH#10	NW N NE S	300 450 450 *150	1.92 N/A 1.94 *2.06	85.06	83.14 N/A 83.12 *83.00	1.95TO DEBRIS REDUCED PIPE
STM MH#11	E W	300 300	1.90 1.84	85.06	83.16 83.22	
STM MH#12	N E SW	450 300 450	2.34 ±2.07 ±2.02	85.86	83.52 ±83.79 ±83.84	
STM MH#13	N NE S SW	450 450 450 150	2.65 2.70 2.62 1.80	86.13	83.48 83.43 83.51 84.33	
STM MH#14	SE SW	100 450	2.19 2.17	85.51	83.32 83.34	
STM MH#15	N NE S	450 *450 450	1.83 1.74 1.85	85.56	83.73 83.82 83.71	NE-RECESSED
STM MH#16	NW N SE	300 150 450	1.40 1.31 2.15	86.32	84.92 85.01 84.17	
STM MH#17	*N NE *S	*525 *525 *525	N/A 2.00 N/A	84.02	N/A 82.02 N/A	OIL GRIT SEPARATOR
STM MH#18	NE SW	250 525	1.97 1.98	84.04	82.07 82.06	NE-W/ ORIFICE PIPE
STM MH#19	NW NE SW	250 525 525	3.75 3.90 3.92	86.18	82.43 82.28 82.26	
STM MH#20	NW NE SE SW	450 300 525 250	2.19 1.84 2.20 2.17	84.88	82.69 83.04 82.68 82.71	
STM MH#21	NE SE SW	250 250 250	1.36 1.15 1.40	84.48	83.12 83.33 83.08	
STM MH#22	NW SE	100 600	2.08 2.10	84.54	82.46 82.44	NW-REDUCED PIPE
STM MH#23	NW SW	525 525	4.70 4.73	87.27	82.57 82.54	
STM MH#24	N NE SE	450 450 450	2.20 2.18 2.22	85.15	82.95 82.97 82.93	
STM MH#25	NW NW NE S	450 100 450 450	1.57 1.76 1.62 1.87	85.16	83.59 83.40 83.54 83.29	
STM MH#26	*S	*250	N/A	N/A	N/A	UNABLE TO ACCESS
STM MH#27	NW NE	300 450	2.31 ±2.32	86.26	83.95 ±83.94	
STM MH#28	NW NE SW	150 450 450	1.74 1.87 1.88	85.99	84.25 84.12 84.11	
STM MH#29	NE SW	450 450	1.60 1.62	84.94	83.34 83.32	
STM MH#30	NW E SW	450 300 450	1.03 1.06 1.10	84.98	83.95 83.92 83.88	
STM MH#31	NW SE	450 450	1.14 1.20	85.17	84.03 83.97	
STM MH#32	*N *SW	*250 *250	N/A N/A	86.72	N/A N/A	BOLTED SHUT
SAN MH#1	NE SW	1050 1050	5.80 5.77	85.10	79.30 79.33	
SAN MH#2	NW NW' SE	150 150 200	1.37 2.62 2.63	85.06	83.69 82.44 82.43	NW'-DROP
SAN MH#3	SE W	150 150	2.81 2.77	84.50	81.69 81.73	
SAN MH#4	NW NE SW	200 1050 1050	4.38 5.13 5.10	84.29	79.91 79.16 79.19	
SAN MH#5	N SE	200 200	4.23 4.25	84.45	80.22 80.20	
SAN MH#6	NW S	200 200	4.07 4.22	84.53	80.46 80.31	
SAN MH#7	N NE SE	200 200 200	3.56 3.40 3.60	84.94	81.38 81.54 81.34	
SAN MH#8	NW NE S SW	150 200 200 150	2.74 3.02 3.04 2.97	85.06	82.32 82.04 82.02 82.09	
SAN MH#9	NE SW	150 150	3.09 3.08	85.23	82.14 82.09	
SAN MH#10	SE W	150 150	2.00 1.98	85.29	83.29 83.31	
SAN MH#11	E SW	150 150	2.17 2.10	85.94	83.77 83.84	
SAN MH#12	N S	200 200	2.07 1.96	87.91	85.84 85.95	
SAN MH#13	NE SW	*1050 *1050	6.50 6.40	85.27	78.77 78.87	W/ PLATFORM
SAN MH#14	NE SW	200 200	1.81 2.30	84.91	83.10 82.61	
SAN MH#15	*NW *NW' *NE *SW	*150 *150 *1050 *1050	*3.95 *6.54 *7.41 *7.41	*±86.56	*±82.61 *±79.02 *±79.15 *±79.15	UNDER STACKED PALLETS; *NW'-DROP
SAN MH#16	*NE *S	*200 *200	*2.90 *2.30	*86.80	*83.90 *84.50	UNABLE TO FOUND
SAN MH#17	*SE	*200	N/A	N/A	N/A	UNABLE TO FOUND
MH#1	NW SE	±1000 ±1000	2.50 2.50	86.34	83.84 83.84	POSSIBLY STORM MANHOLE
MH#2	NW SE	±1000 ±1000	2.90 2.92	85.62	82.72 82.70	POSSIBLY STORM MANHOLE

**INFORMATION OBTAINED FROM RECORDS FROM CLIENT, REGION OF DURHAM AND CITY OF PICKERING; NOT FIELD VERIFIED BY ONSITE LOCATES INC.*



SEWER INVERT NOTE:

SEWER INVERT DEPTHS ARE MANUALLY MEASURED FROM THE LID/GRATE OF THE GIVEN FEATURE.

ANNOTATIONS DISPLAYED AS *ITALICIZED* WITH AN ASTERISK* HAVE BEEN INTERPOLATED FROM RECORDS AND WERE NOT FIELD VERIFIED BY ONSITE LOCATES LTD.

INVERT DEPTH MEASUREMENTS ARE FROM THE ASSUMED BOTTOM OF THE FACILITY STRUCTURE.

DEPTHS ARE NOT SUITABLE FOR EXCAVATION PURPOSES. SEWER NETWORK CONNECTIONS WERE COMPILED WHERE FIELD EVIDENCE COINCIDED WITH AS-BUILT RECORDS

WHERE NO DEPTH INFORMATION COULD BE OBTAINED, UTILITIES ARE ASSUMED TO BE AT STANDARD INSTALLATION DEPTH FOR THE SPECIFIC TYPE OF UTILITY.

THE MOST RELIABLE WAY TO PRECISELY DETERMINE THE HORIZONTAL AND VERTICAL LOCATION OF AN UNDERGROUND UTILITY IS THROUGH PHYSICAL EXPOSURE USING SAFE DIGGING TECHNIQUES (COMMONLY PERFORMED WITH HYDRO VACUUM EXCAVATION)

INVERT DEPTH MEASUREMENTS HEREON ARE PROVIDED IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

UNDERGROUND UTILITY NOTES

THE UTILITY DATA DEPICTED ON THIS DRAWING WERE ACQUIRED IN ACCORDANCE WITH ASCE STANDARD 38-02. THE INFORMATION IS SHOWN BY ATTRIBUTED QUALITY LEVELS WHICH ARE DEFINED AS FOLLOWS:

DATA QUALITY LEVEL

HIGHEST QUALITY
- QUALITY LEVEL A
- QUALITY LEVEL B
- QUALITY LEVEL C
- QUALITY LEVEL D

LOWEST QUALITY

QUALITY LEVEL "A" - INFORMATION OBTAINED BY ACTUAL PHYSICAL EXPOSURE OF TARGETED UTILITIES AND SUBSEQUENT MEASUREMENT OF THE EXPOSED PRECISE HORIZONTAL AND VERTICAL POSITION.

QUALITY LEVEL "B" - INFORMATION OBTAINED USING GEOPHYSICAL LOCATE TECHNIQUES TO IDENTIFY THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF THE DESIGNATED UTILITIES.

QUALITY LEVEL "C" - INFORMATION OBTAINED BY SURVEYING AND PLOTTING VISIBLE UTILITY FEATURES AND BY USING PROFESSIONAL JUDGMENT IN CORRELATING THIS INFORMATION TO THE QUALITY "D" INFORMATION OBTAINED.

QUALITY LEVEL "D" - INFORMATION DERIVED FROM UTILITY RECORDS OR VERBAL RECOLLECTIONS

ALL SERVICES ARE QUALITY "D" UNLESS NOTED OTHERWISE.
LEVEL "D" RECORD INFORMATION SHOWN ON THIS PLAN HAVE BEEN PLOTTED APPROXIMATELY AS PER THE RECORDS FOUND AND COULD NOT BE FIELD VERIFIED WITHIN THE SCOPE OF THIS PROJECT. IF FURTHER VERIFICATION IS REQUIRED, IT IS SUGGESTED THAT LEVEL "A" METHODOLOGIES BE EMPLOYED.

LOST SIGNAL- DENOTES/INDICATES A POINT WHERE QL-B METHODS COULD NO LONGER ASCERTAIN THE HORIZONTAL POSITION OF A FACILITY.

QUALITY LEVEL "D" INFORMATION COMPILED FROM RECORDS PROVIDED BY BELL CANADA MU#49805; CITY OF PICKERING FILE NAME WALNUTLANE.PDF AND OVERALLSITEGRADINGPLAN.PDF; DURHAM REGION FILE NAME PIC-0882.PDF, PIC-1115.PDF, PIC-1117.PDF, PLATE003REGIONALHIGHWAY02KINGSTONROAD(1).PDF, SANITARY_DSHEETS_02CITYOFPICKERINGFRENCHMANSBAYAJAXDEPOT(6).PDF, AND WATER_DSHEETS_02CITYOFPICKERINGFRENCHMANSBAYAJAXDEPOT(6).PDF; ENBRIDGE FILE #39655966; ELEXICON FILE NAME 2022477384_24x36LANDSCAPE.PDF; FROM CLIENT FILE NAME P-07-014.PD.

PLAN OF SURVEY OF

PART OF LOTS 23 AND 24 CONCESSION 1

(GEOGRAPHIC TOWNSHIP OF PICKERING)
NOW IN THE

CITY OF PICKERING

REGIONAL MUNICIPALITY OF DURHAM

SCALE 1 : 500

10 0 10 20 30 metres

METRIC DISTANCES AND/OR COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

BENCHMARK

ELEVATIONS HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF PICKERING BENCHMARK No. 1-059, HAVING A PUBLISHED ELEVATION OF 84.111m (CGVD-1928:1978).

NOTES

BEARINGS ARE UTM GRID, DERIVED FROM SPECIFIED CONTROL POINTS (SCPs), 00919680467 AND 00819870002, UTM ZONE 17, NAD83 (ORIGINAL).

DISTANCES ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.999876.

THE LOCATION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND ANY OTHER UNDERGROUND AND ABOVEGROUND UTILITIES AND STRUCTURES ARE NOT NECESSARILY SHOWN ON THIS PLAN AND WHERE SHOWN THE ACCURACY OF THE LOCATION OF SUCH UTILITIES AND STRUCTURES ARE NOT GUARANTEED. THE CONTRACTOR SHALL CONFIRM THE EXACT LOCATION AND INVERT MEASUREMENTS OF ALL SUCH UTILITIES AND STRUCTURES PRIOR TO CONSTRUCTION AND SHALL ASSUME LIABILITY FOR ANY DAMAGE TO THEM.

INTEGRATION DATA

SPECIFIED CONTROL POINTS (SCPs): UTM ZONE 17, NAD83 (ORIGINAL).

COORDINATES TO URBAN ACCURACY PER SECTION 14 (2) OF O.REG 216/10.

POINT ID	EASTING	NORTHING
SCP 00919680467	653 923.28	4 854 259.48
SCP 00819870002	653 632.50	4 855 014.92

COORDINATES CANNOT, IN THEMSELVES, BE USED TO RE-ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THIS PLAN.

THE RESULTANT TIE BETWEEN SCP 00919680467 AND SCP 00819870002 IS 809.58m, N21°03'10"W.

FOR BEARING COMPARISONS, THE FOLLOWING ROTATIONS WERE APPLIED TO CONVERT TO GRID BEARINGS:

PLAN	COUNTER-CLOCKWISE ROTATION
P1,P5,P6,P8,P9,P10,P11	1°18'55"
P3,P4	1°02'00"

LEGEND

■	DENOTES	SURVEY MONUMENT FOUND
□	DENOTES	SURVEY MONUMENT SET
SIB	DENOTES	STANDARD IRON BAR
SSIB	DENOTES	SHORT STANDARD IRON BAR
IB	DENOTES	IRON BAR
PB	DENOTES	PLASTIC BAR
CC	DENOTES	CUT CROSS
CP	DENOTES	CONCRETE PIN
WIT	DENOTES	WITNESS
MEAS	DENOTES	MEASURED
JDB	DENOTES	J.D. BARNES LIMITED
DFP	DENOTES	DONEVAN FLEISCHMANN PETRICH LTD., O.L.S.
MTC	DENOTES	MINISTRY OF TRANSPORTATION AND COMMUNICATIONS
MTO	DENOTES	MINISTRY OF TRANSPORTATION OF ONTARIO
RPE	DENOTES	RADY-PENTEK & EDWARD SURVEYING LTD., O.L.S.
1370	DENOTES	KRCMAR SURVEYORS LTD., O.L.S.
OU	DENOTES	ORIGIN UNKNOWN
S.T.E.	DENOTES	SUBJECT TO EASEMENT
P1	DENOTES	SURVEYOR'S REAL PROPERTY REPORT BY RADY-PENTEK & EDWARD SURVEYING LTD., O.L.S., DATED NOVEMBER 14, 2012 (JOB No. 04-228)
P2	DENOTES	PLAN OF SURVEY BY J.D. BARNES LIMITED, DATED DECEMBER 17, 2020 (JDB REF No. 20-25-858-01)
P3	DENOTES	PLAN 40R-30718
P4	DENOTES	PLAN 40R-21642
P5	DENOTES	PLAN 40R-25448
P6	DENOTES	PLAN 40R-26227
P7	DENOTES	PLAN 40R-30189
P8	DENOTES	PLAN 40R-25266
P9	DENOTES	PLAN 40R-12678
P10	DENOTES	PLAN 40R-22390
P11	DENOTES	PLAN 40R-16455
P12	DENOTES	PLAN 40R-31388
CALC1	DENOTES	CALCULATED FROM P5
CB	DENOTES	CATCHBASIN
DCB	DENOTES	DOUBLE CATCHBASIN
HC	DENOTES	HYDRO CHAMBER
HJB	DENOTES	HYDRO JUNCTION BOX
GK	DENOTES	GAS KEY
* G METER	DENOTES	GAS METER
HW	DENOTES	HANDWELL
HMH	DENOTES	HYDRO MANHOLE
MH	DENOTES	MANHOLE
SAN MH	DENOTES	SANITARY MANHOLE
STM MH	DENOTES	STORM MANHOLE
TMH	DENOTES	TELEPHONE MANHOLE
HP	DENOTES	HYDRO POLE
LS	DENOTES	LIGHT STANDARD
BL	DENOTES	BOLLARD LIGHT
TL	DENOTES	TRAFFIC SIGNAL
TJB	DENOTES	TELEPHONE JUNCTION BOX
PED	DENOTES	TELEPHONE PEDESTAL
OPI	DENOTES	OPTICAL PLANT INTERFACE
H	DENOTES	FIRE HYDRANT
WK	DENOTES	WATER KEY
WV	DENOTES	WATER VALVE
HT	DENOTES	HYDRO TRANSFORMER
R/W	DENOTES	RETAINING WALL
BC	DENOTES	BACK OF CURB
DS	DENOTES	DOOR SILL ELEVATION
GS	DENOTES	GARAGE SILL ELEVATION
FFL	DENOTES	FINISHED FLOOR ELEVATION
BFP	DENOTES	BARRIER-FREE PARKING SPACE
—OC—	DENOTES	OVERHEAD CABLE
—SAN—	DENOTES	UNDERGROUND SANITARY SEWER
—STM—	DENOTES	UNDERGROUND STORM SEWER
—G—	DENOTES	UNDERGROUND GAS LINE
—W—	DENOTES	UNDERGROUND WATER LINE
—UE—	DENOTES	UNDERGROUND HYDRO LINE
—UC—	DENOTES	UNDERGROUND CABLE LINE
—UT—	DENOTES	UNDERGROUND TELEPHONE LINE
—FO—	DENOTES	UNDERGROUND FIBRE OPTIC LINE
—UNK—	DENOTES	UNDERGROUND UNKNOWN LINE
]	DENOTES	ENDCAP/PLUG
P.A/R	DENOTES	POSSIBLY ABANDONED/REMOVED

CAUTION: CALL BEFORE YOU DIG

THIS PLAN IS INTENDED FOR DESIGN PURPOSES ONLY. OTHER BURIED UTILITIES MAY EXIST WHICH ARE NOT SHOWN DUE TO INSUFFICIENT INFORMATION OR IMPROPER INSTALLATION. CONTACT ALL POTENTIAL OWNERS OF UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION OR BREAKING GROUND.
IT IS THE RESPONSIBILITY OF THE CONTRACTOR/BUILDER TO ENSURE THE APPROPRIATE LEGAL REQUIREMENTS ARE MET.

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE REGULATIONS MADE UNDER THEM.

2. THE SURVEY WAS COMPLETED ON OCTOBER 17, 2022.

DATE ________________

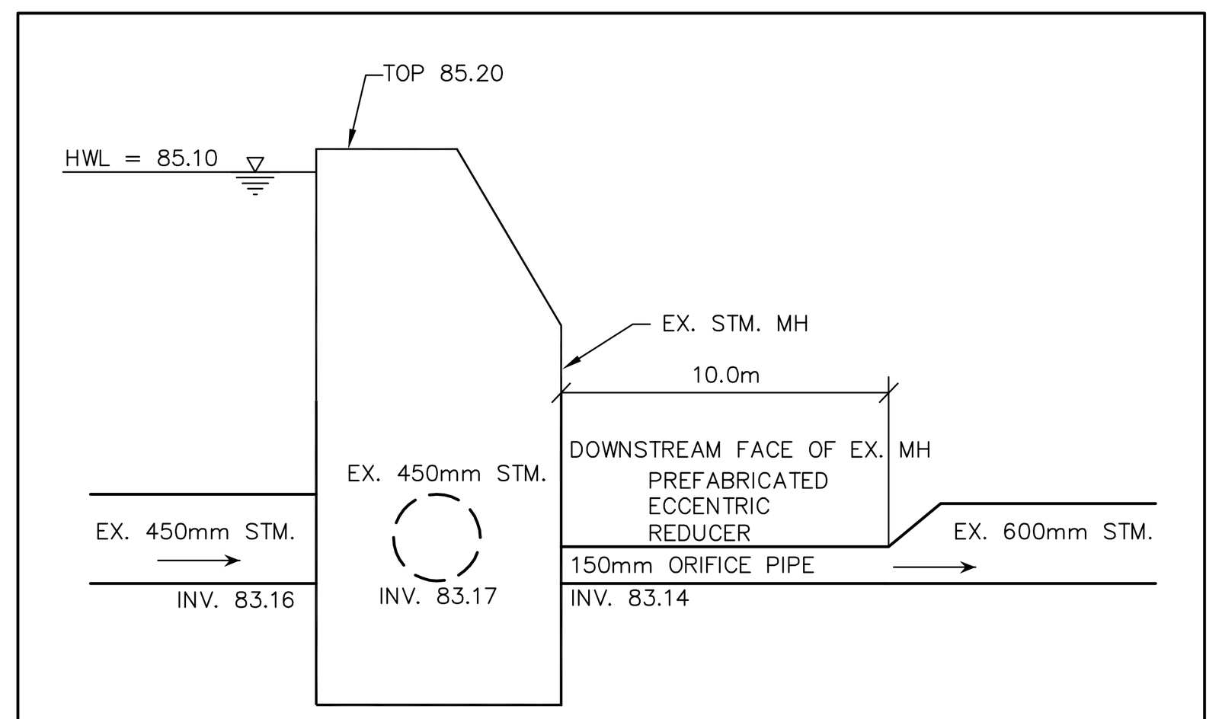
G.C. LAFRAMBOISE
ONTARIO LAND SURVEYOR

PLAN UPDATED FEBRUARY 2, 2023 TO INCLUDE SUBSURFACE UTILITY FIELD WORK AS COMPLETED ON JANUARY 20, 2023.

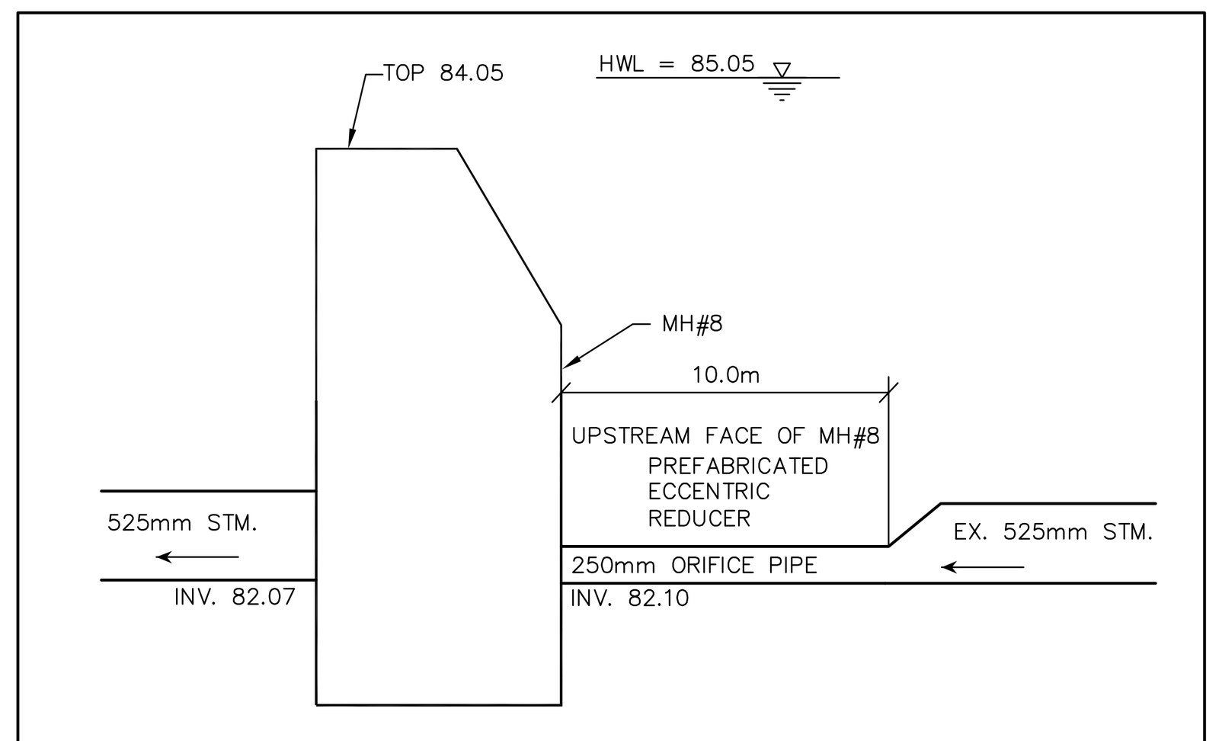
J.D. BARNES LIMITED
LAND INFORMATION SPECIALISTS
SURVEYING MAPPING GIS
110 SCOTIA COURT, UNIT 38, WHITBY, ON L1N 8Y7
T: (905) 723-1212 F: (905) 723-4234 www.jdbarnes.com

DRAWN BY: M.R.	CHECKED BY: G.C.L.	REFERENCE NO.: 22-25-073-00
FILE: G:\22-25-073\00\22-25-073-00.dgn		DATED: 2/2/2023

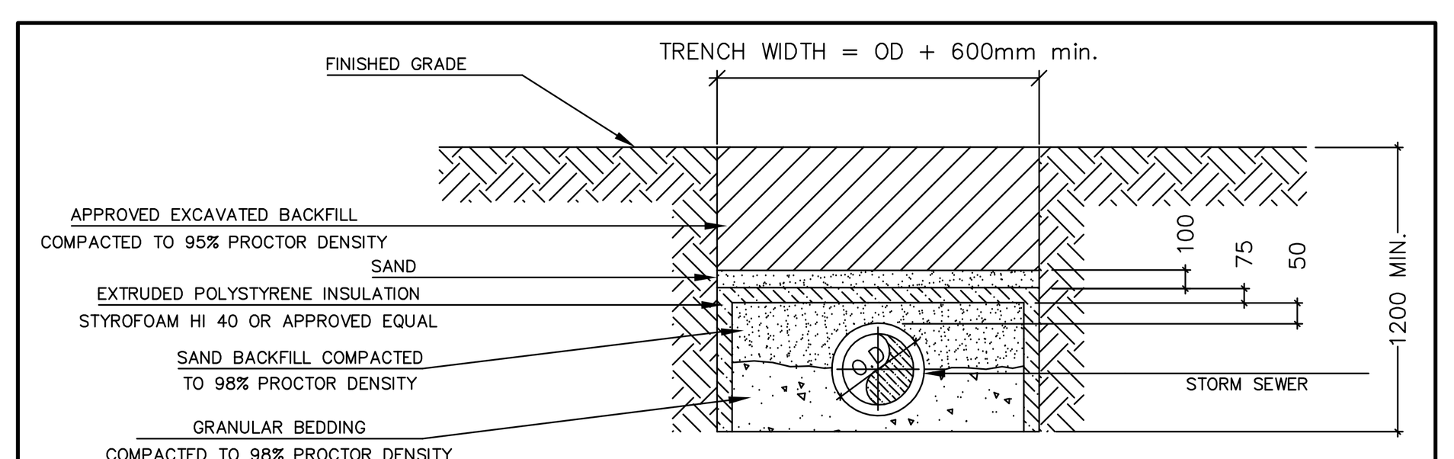
PLOTTED: 2/2/2023



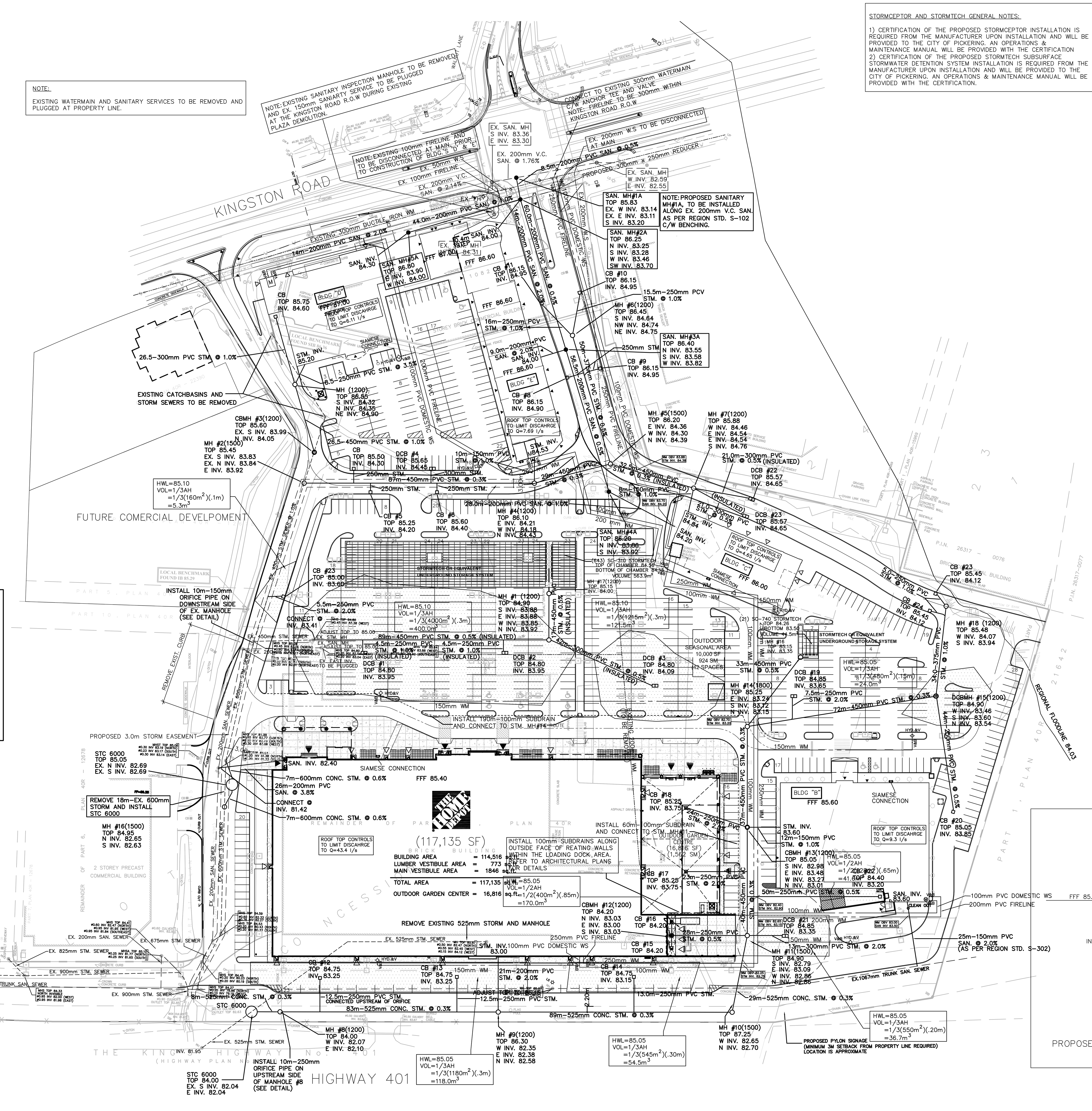
150mm ORIFICE PIPE DETAIL
N.T.S



250mm ORIFICE PIPE DETAIL
N.T.S



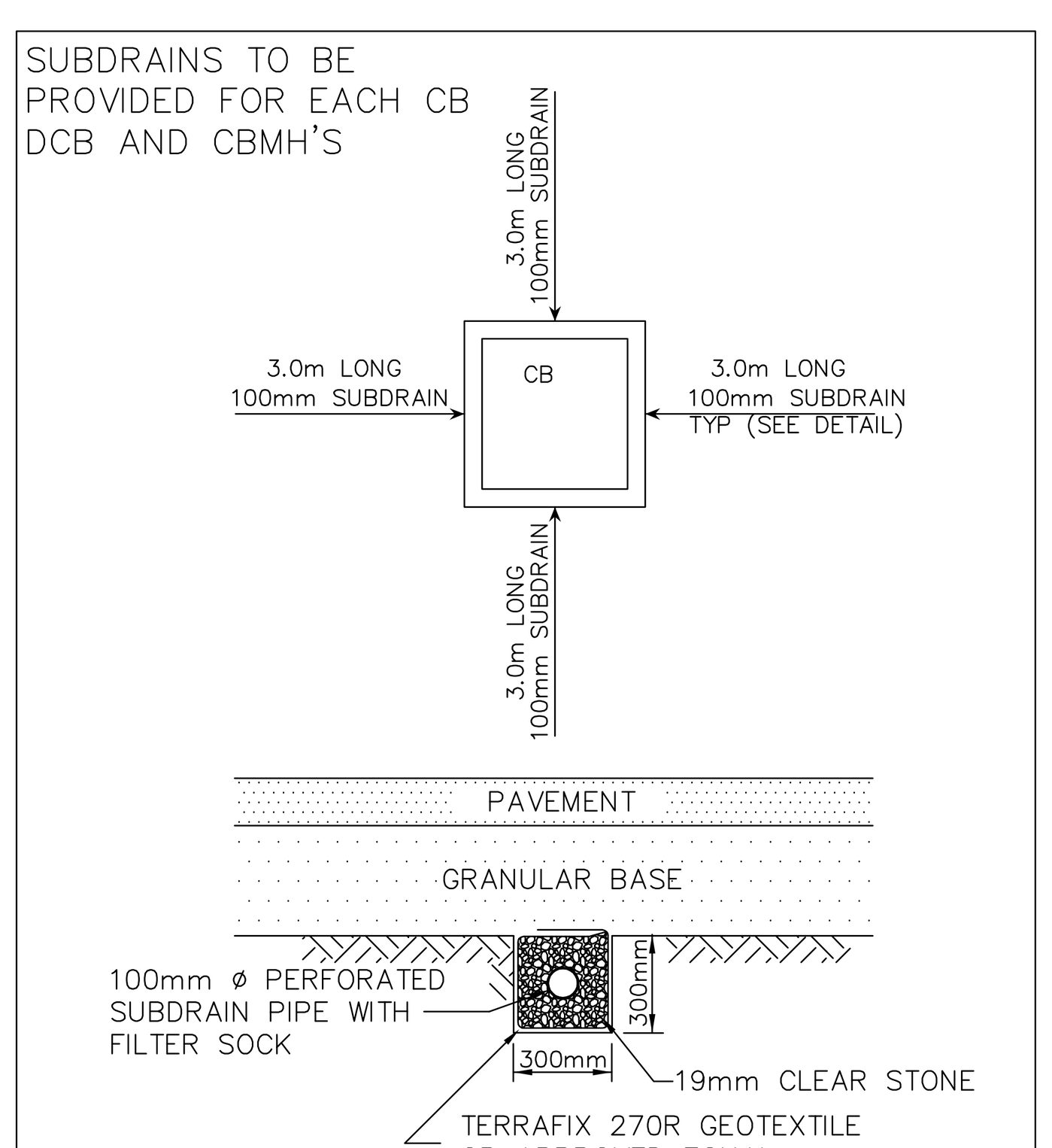
STORM SEWER INSULATION DETAIL
WHERE DEPTH TO OBVERT IS LESS THAN 1.2m
N.T.S.



NOTE:

EXISTING WATERMAIN AND SANITARY SERVICES TO BE REMOVED AND PLUGGED AT PROPERTY LINE.

NOTE: ALL STORM, SANITARY AND WATER SERVICES TO BE INSTALLED TO 1.5m FROM THE PROPOSED BUILDINGS BY THE SITE SERVICING CONTRACTOR



SUBDRAIN
CROSS SECTION
N.T.S.

STORMCEPTOR AND STORMTECH GENERAL NOTES:

1) CERTIFICATION OF THE PROPOSED STORMCEPTOR INSTALLATION IS REQUIRED FROM THE MANUFACTURER UPON INSTALLATION AND WILL BE PROVIDED TO THE CITY OF PICKERING. AN OPERATIONS & MAINTENANCE MANUAL WILL BE PROVIDED WITH THE CERTIFICATION
2) CERTIFICATION OF THE PROPOSED STORMTECH SUBSURFACE STORMWATER DETENTION SYSTEM INSTALLATION IS REQUIRED FROM THE MANUFACTURER UPON INSTALLATION AND WILL BE PROVIDED TO THE CITY OF PICKERING. AN OPERATIONS & MAINTENANCE MANUAL WILL BE PROVIDED WITH THE CERTIFICATION.

BENCHMARK

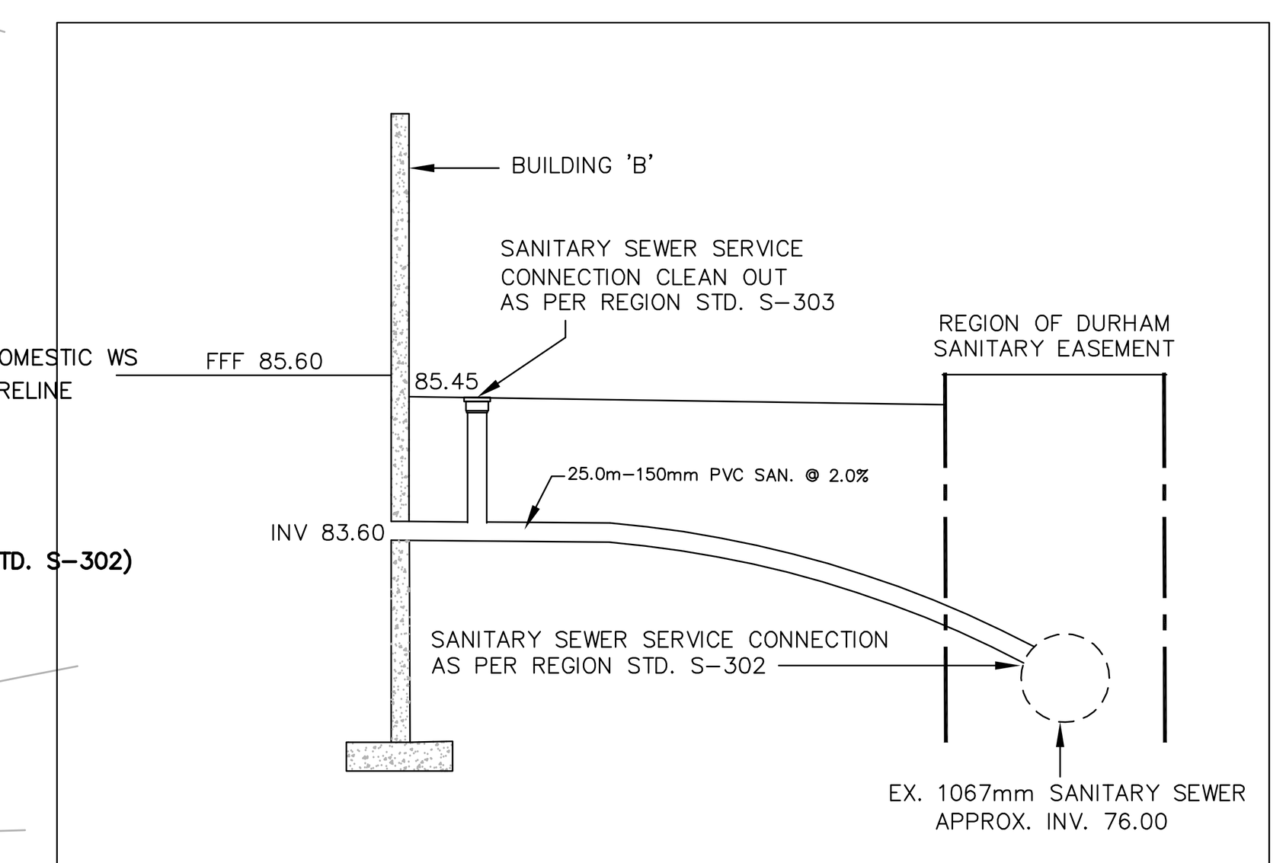
ELEVATIONS ARE GEODETIC AND ARE REFERRED TO THE TOWN OF PICKERING BENCHMARK No. 1-064 HAVING AN ELEVATION OF 91.914 METRES. BRASS CAP SET VERTICALLY IN CHANCE ANCHOR. LOCATED AT ±33m WEST OF CENTRELINE OF THE DIXIE ROAD AND 27.7m SOUTH OF THE EASTERLY PRODUCTION OF CLOUDBERRY COURT. CAP IS LOCATED 0.20 BELOW GRADE.

SERVICING NOTES:

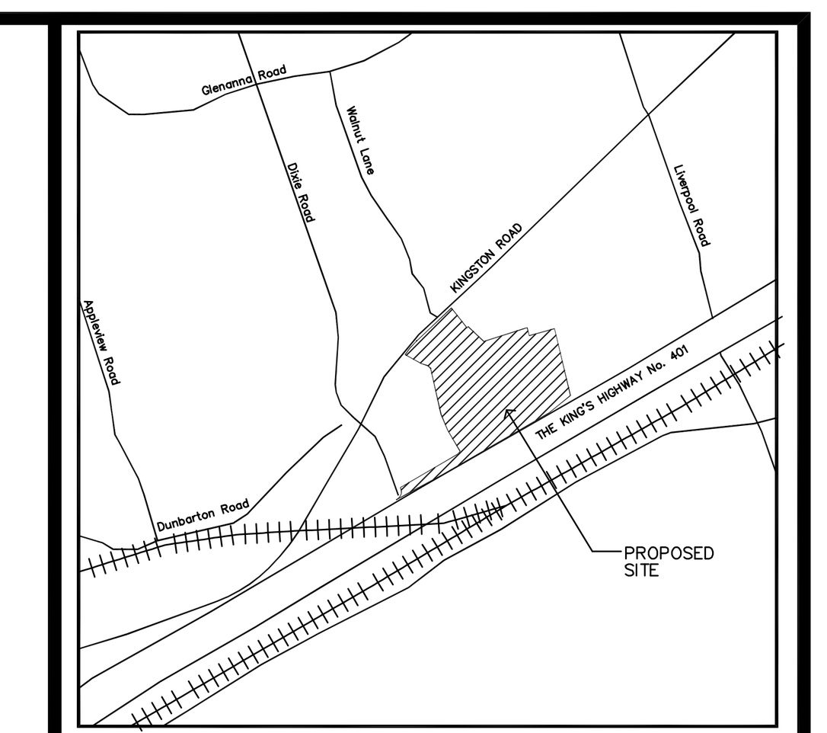
1) ALL SANITARY SEWERS, WATERMAINS AND APPURTENANCES TO COMPLY WITH REGION OF DURHAM STANDARDS AND THE ONTARIO BUILDING CODE
2) SANITARY SEWER CONNECTION TO BE MINIMUM OF 150mm DR28 PVC PIPE, CLASS P BEDDING
3) SANITARY MANHOLES AS PER OPSD 701.010, C/W GRATE AS PER OPSD 401.010
4) ALL STORM SEWERS AND APPURTENANCES TO COMPLY WITH THE ONTARIO PROVINCIAL STANDARDS AND BUILDING CODE
5) STORM SEWER PIPE 450mm AND SMALLER SHALL BE DR35 PVC PIPE, CLASS P BEDDING
6) ALL MANHOLES AND CATCHBASIN MANHOLES AS PER ONTARIO PROVINCIAL STANDARDS
7) ALL CATCHBASINS AS PER THE ONTARIO PROVINCIAL STANDARDS OPSD 705.010, 705.020, C/W GRATE AS PER OPSD 400.020
8) THE FIRST PIPE LENGTH IN AND OUT OF MANHOLES SHALL BE CONCRETE CRADLED TO THE FIRST JOINT
9) BACKFILL ALL MANHOLES WITH COMPACTED GRANULAR MATERIAL WITHIN 1.0m OF THE STRUCTURE
10) ALL TRENCHES TO BE BACKFILLED IN ACCORDANCE WITH THE MUNICIPAL AND REGIONAL STANDARDS
11) GENERALLY A MINIMUM OF 0.25m SHALL BE PROVIDED BETWEEN THE OUTSIDE OF THE PIPE BARRELS AT THE POINT OF CROSSING FOR STORM AND SANITARY SEWERS. A MINIMUM OF 0.5m SHALL BE PROVIDED BETWEEN THE OUTSIDE OF THE PIPE BARRELS AT THE POINT OF CROSSING FOR ALL SEWERS AND WATERMAINS
12) WATERMAINS SHALL BE PVC AS PER A.W.W.A. C-900 (DR18) CLASS P BEDDING. PROVIDE 1.80m MINIMUM COVER ON ALL WATERMAINS AND SERVICE CONNECTIONS

LEGEND

- CATCHBASIN
- DOUBLE CATCHBASIN
- PROPOSED STORM MANHOLE
- PROPOSED CATCHBASIN MANHOLE
- PROPOSED SANITARY MANHOLE
- VALVE AND BOX
- VALVE AND CHAMBER
- HYDRANT AND VALVE
- 85.20 PROPOSED ELEVATION
- EXISTING ELEVATION
- STORMWATER PONDING AREAS



PROPOSED SANITARY SERVICE CONNECTION FOR BUILDING 'B'
SCALE: N.T.S



KEY PLAN
NTS

NO.	DATE	REVISIONS	BY
20	MAY 21/10	RE-ISSUED FOR SPA AND BUILDING 'C' PERMIT	D.C.
19	NOV.23/09	REV. WATERMAIN LAYOUT TO BUILDING 'E'	D.P.
18	SEPT.3/09	RE-ISSUED FOR SPA AND BUILDING 'E' PERMIT	D.C.
17	APR.9/09	REV. GRADING FOR BLDG. 'D'&'E' AS PER CITY COMMENTS	D.C.
16	MAR.18/09	ISSUED FOR BLDG. 'D' PERMIT	D.C.
15	MAR. 3/09	REV. WATER SERVICE FOR BLDG. D & GRADING AT EAST SIDE BLDG. E	D.C.
14	JAN.26/09	ISSUED FOR SPA	D.C.
13	AUG.19/08	REVISED SITE PLAN APPROVAL	D.C.
12	APR.8/08	REVISED METER ROOM LOCATION	D.C.
11	NOV.29/07	ISSUED FOR FINAL APPROVAL	D.C.
10	NOV.16/07	ISSUED FOR FINAL APPROVAL	D.C.
9	OCT.31/07	REVISED AS PER CITY COMMENTS	D.C.
8	OCT.4/07	ISSUED FOR SPA & PERMIT	D.C.
7	SEPT.18/07	REVISED AS PER CITY COMMENTS AND NEW SITE PLAN	D.C.
6	JULY 18/07	ISSUED FOR SPA	D.C.
5	JULY 16/07	REVISED AS PER NEW SITE PLAN	D.C.
4	JUNE 22/07	REVISED AS PER NEW SITE PLAN	D.C.
3	MAY 29/07	REVISED AS PER NEW SITE PLAN	D.C.
2	APR. 7/06	REVISED AS PER NEW SITE PLAN	D.C.
1	JAN.24/06	ISSUED FOR SPA	D.C.

DRAWING ISSUE

DATE	PARTICULARS	BY
	Issued for Design Approval	
	Issued for Site Plan Approval	
	Issued for Pricing and Budgeting	
	Issued for Building Permit	
	Issued for Tendering	
	Issued for Construction	
	Issued for Record Set of Dwgs.	

CONTRACTOR TO BE RESPONSIBLE FOR VERIFYING THE LOCATIONS OF ALL EXISTING UNDERGROUND AND ABOVE UTILITIES AND SERVICES. THE CONTRACTOR SHALL ADVISE THE ENGINEER OF ANY DISCREPANCIES PROIR TO PROCEEDING WITH CONSTRUCTION. VARIOUS UTILITIES CONCERNED TO BE GIVEN REQUIRED ADVANCED NOTICE PRIOR TO ANY DIGGING, FOR STAKE OUT. A.M. CANDARAS ASSOCIATES INC. ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE LOCATION OF EXISTING UTILITIES AS INDICATED ON THIS DRAWING.

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consulting engineers
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Woodbridge ont. L4L 9R4
905-850-8020 Fax 905-850-8099
Email: civil@amcai.com

PROJECT

PROPOSED COMMERCIAL DEVELOPMENT FOR BROOKDALE CENTRES INC.

1105 KINGSTON ROAD
PICKERING, ONTARIO

DRAWING NAME

SITE SERVICING & STORM WATER MANAGEMENT PLAN

SCALE	DATE OF DWG.	PROJECT NO.
1:750	JAN.24/06	0589
DRAWN BY: DMC	SHEET NO.: G2	
CHKD BY: AMC		