NOVATECH

Engineers, Planners & Landscape Architects

Engineering

- Land/Site Development
- Municipal Infrastructure
- Environmental/ Water Resources
- Traffic/ Transportation
- Recreational

Planning

- Land/Site Development
- Planning Application Management
- Municipal Planning
- Urban Design
- Expert Witness (LPAT)
- Wireless Industry

Landscape Architecture

- Streetscapes & Public Amenities
- Open Space, Parks & Recreation
- Community & Residential
- Commercial & Institutional
- Environmental Restoration

39 Years

Brookstreet Apartments
525 Legget Drive
359 Terry Fox Drive

Servicing and Stormwater Management Brief

BROOKSTREET APARTMENTS
525 LEGGET DRIVE
359 TERRY FOX DRIVE

SITE SERVICING AND SWM BRIEF

Prepared for:

KRP Properties

Prepared by:

NOVATECH
Suite 200, 240 Michael Cowpland Drive
Kanata, Ontario
K2M 1P6

Issued: October 1 , 2021

Ref: R-2021-131
Novatech File No. 120202

NOVATECH
Engineers, Planners & Landscape Architects

October 1, 2021

City of Ottawa
110 Laurier Ave. West, 4th Floor
Ottawa, Ontario
K1P 1J1

Attention: Mr. Damien Whittaker

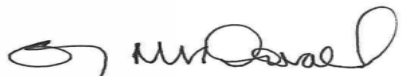
Re: Brookstreet Apartments
525 Legget Drive and 359 Terry Fox Drive
Site Servicing and Stormwater Management Brief

Please find enclosed the Site Servicing and Stormwater Management Brief for the proposed development at 525 Legget Drive and 359 Terry Fox Drive. This report is submitted in support of a zoning amendment and site plan control application on behalf of KRP Properties.

If you have any questions, please contact the undersigned.

Sincerely,

NOVATECH



Greg MacDonald, P.Eng.
Director | Land Development & Public Sector Infrastructure

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 Fax: 613.254.5867 www.novatech-eng.com

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

1.0 INTRODUCTION

This Site Servicing and Stormwater Management Brief has been prepared in support of a zoning amendment and site plan control application for the construction of a 28 – story apartment building attached to the existing hotel expansion constructed in 2016. The building will contain 224 apartment units, ground floor amenities, an extension of the existing ball room and a roof top restaurant. Two levels of underground parking will provide 110 parking spaces. The existing parking structure will provide another 288 spaces on the two lower levels. Refer to **Figure 1 – Brookstreet Apartments** for an overview.

Figure 1 Brookstreet Apartments

The stormwater management for the site will continue in the current pattern with little impact from the additional building. The storm flows will be conveyed in the existing storm sewer to the existing stormwater management pond. The existing stormwater pond has surplus capacity for this development.

The sanitary service for the expansion will be provided by connecting to an existing 250mm sanitary service in the vicinity of the hotel building. The existing sanitary service only services the underground parking facility and the recently constructed expansion and has excess capacity to service the proposed apartment building.

The apartment building will connect to the existing municipal water service on Terry Fox Drive. Dual water services will be provided.

Servicing and Grading Plans for the development are included in **Appendix A.**

2.0 GEOTECHNICAL INVESTIGATION

A subsurface investigation was carried out at the site by Paterson Group. The results of that investigation are provided in the report entitled "Geotechnical Investigation, Proposed Brookstreet Development, Report No. PG5673-1, June 10, 2021". The principal findings of the geotechnical investigations are as follows:

- A surficial layer of pavement structure and/or topsoil and surficial fill of thickness from 0.3m to 0.6m.
- A silty sand and silty clay layer of thickness up to 2 metres was encountered below the pavement structure/topsoil in all boreholes.
- A glacial till layer at depths of 1.5m to 2.5m below existing ground surface
- The boreholes were terminated in bedrock at depths of about 1.5m to 2.5m below ground surface.

3.0 STORMWATER MANAGEMENT

The stormwater management strategy for the Kanata Research Park is described in the Kanata Research Park Stormwater Management Report (April, 2000) for the 188 ha site. In brief, there are four SWM ponds (Pond 1, Pond 2, Pond 3, and the Duck Pond) which were used to control post-development peak flows to pre-development levels up to the 100-year storm as well as to provide water quality control. The Brookstreet Apartment lands are part of Area 1 in that SWM plan and drain to Pond 1. Area 1 is 19.85 ha in size with an imperviousness of 80%. Pond 1 has a 100-year required storage volume of 5210 m^3 and a maximum allowable 100-year release rate of 1.514m^3/s.

The proposed building footprint is approximately 1300 m^2 most of which is situated over existing impervious areas. The additional impervious areas because of hard landscaping are approximately 1500 m^2. In the 100-year rainfall event, this additional impervious area is projected to create 144 m^3 of additional runoff resulting in an increase in pond depth of 9.6 mm. Refer to **Appendix B** for calculations.

The increase in volume represents a 2.7 % increase in the required volume of the pond and less than a 10mm increase in the total water level in the pond. These increases are negligble and will not affect the function of Pond 1 and are within the modelling error tolerance for the SWM facility. Moreover, while Pond 1 only requires 5210 m^3 of storage, according to the MOE Certificate of Approval the total available storage capacity of the constructed pond is 28,920 m^3. The pond has been oversized and has substantial additional storage capacity to accommodate development in the area.

The expansion is proposed to drain via roof drains and an internal drainage system to the storm sewer which runs along the west side of the existing parking structure. This storm sewer is a 900mm pipe set at a slope of 0.32% and drains directly to the Pond 1 forebay. Due to the extent of the proposed parking structure this storm sewer will be relocated around the parking structure to the SWMF as shown on drawing 120202-GP2. A storm sewer design sheet and storm drainage area plans are included in **Appendix B.**

4.0 SANITARY SEWER SYSTEM

The proposed Apartment Building will be serviced by connecting to an existing 250mm sanitary service that currently services the existing parking garage and the recent expansion to the hotel. The existing 250mm sanitary sewer outlets to the main 250mm sanitary sewer to the west of the hotel which in turn outlets to the 750mm dia. March Trunk Sewer on the Marshes Golf Course lands. The March Trunk Sewer was designed to accommodate flow from the tributary drainage areas shown on the Sanitary Drainage Area Plan (98066-SAN) in **Appendix C.**

As part of previous investigations, the capacity of the existing sanitary sewer system on Kanata Research Park Lands has been documented within the report Sanitary and Storm Trunk Sewer Design Brief Kanata Research Park Lands by Novatech dated November 12, 2014. Contained in the report are the tributary sanitary flows from the Brookstreet Hotel as well as the underground parking structure. A Sanitary Sewer Design Sheet and Drainage Area Plan from this report are contained in **Appendix C,** as well as flows from the recent expansion .

The City of Ottawa design criteria were used to calculate the theoretical sanitary flows for the proposed Apartment Building.

Apartment Building

- Per capita flow 280 L/cap/day
- Peak Factor = $1 + 14/(4 + P^{1/2}) \times 0.80 = 3.10$; Commercial Peak Factor 1.5
- 0.33 L/sec/ha extraneous flows
- Restaurant 30L/seat/day; Typical Floor Space/Seat: 1.25m^2/seat
- Design Population: 361 m^2 / 1.25m^2/seat = 288 seats

Table 3.1 identifies the theoretical sanitary flows from the Apartment Building.

Table 3.1 Theoretical Sanitary Flows based on the Design Population

Component	Floor Area (m^2)	Floor Area per Seat	Design Population	Flow per Seat (L/seat/day)	Average Flow (L/s)	Peaking Factor	Peak Flow (L/s)
Commercial	361	1.25m^2/seat	288 seats	30	**0.10**	**1.5**	**0.15**
Component	**Units**	**Pop/Unit**	**Population**	**Per Capita Flow**	**Average Flow**	**Peak Factor**	**Peak Flow**
1 Bdr	162	1.4	227	280 L/day	0.74		
2 Bdr	93	2.1	195	280 L/day	0.56		
3 Bdr	1	3.1	3	280 L/day	0.11		
	224		**425**		**1.41**	**3.40**	**4.79**
Extraneous Flow = 0.53 ha x 0.33 L/sec/ha = 0.17 L/sec							**0.17**
Total Flow = 5.11 L/sec							

In the Sanitary and Storm Trunk Sewer Design Brief Kanata Research Park Lands by Novatech dated November 12, 2014, the existing underground parking area tributary to the sanitary sewer system had no peak population flow and a peak design flow of 0.36 L/s that included extraneous flows. The recent expansion added a population flow of 0.45 L/s. The new apartment building will add a peak design flow of 5.11L/sec. From the 2014 report, the total peak design flow in the sanitary sewer downstream of the proposed hotel expansion connection was 13.91 L/s, and amended to include the recent expansion to 14.36 L/sec. With the increase in population flow from the proposed apartment building, the peak design flow is now 19.47 L/s (14.36 + 5.11). The capacity in the 250 mm diameter sewer to convey these flows to the City's trunk sewer is 44.74 L/sec. See Sanitary Sewer Design Sheet in **Appendix C**.

5.0 WATER SUPPLY

The proposed Apartment Building will be connected to the existing municipal water service within Terry Fox Drive. The existing 150 mm diameter watermain that services the Monmouth Building will be extended to the parking garage of the proposed apartment building. A second 150 mm diameter water service will be constructed from Terry Fox Drive to the parking structure. A valve will be placed on the Terry Fox main between the two watermain services.

The theoretical water demands for the proposed apartment building were calculated using City of Ottawa Design Criteria as follows:

Residential
- Average Day Demand = Design Population x 350 L/cap/day
- Maximum Day Demand = 2.5 x Average Day Demand
- Peak Hour Demand = 2.2 x Maximum Day Demand

Commercial (Restaurant)
- Average Day Demand = 5 L/m^2/day
- Maximum Day Demand = 1.5 x Average Day Demand
- Peak Hour Demand = 1.8 x Maximum Day Demand

Table 4.1 Theoretical Average Water Demand Brookstreet Apartments

Site Component	**Floor Area (m^2)**		**Population (m2)**		**Average Flow (L/s)**
Commercial	361		5 L/m2/day		0.02
Site Component	**Units**	**Pop/Unit**	**Population**	**Per Capita Flow**	**Average Flow (L/s)**
Residential	224	1.9	425	350 L/day	1.73
Based on the above, water demands are summarized as follows: **Average Day** = **1.75 L/sec** **Maximum Day** = (0.02 x 1.5) + (1.73 x 2.5) = **4.35 L/sec** **Peak Hour** = (0.02 x 1.5 x 1.8) + (1.73 x 2.5 x 2.2) = **9.57 L/sec**					

Fire Underwriters Survey (FUS) was used to provide water demands to the City to obtain the boundary conditions in the existing water mains on Terry Fox Drive. A fire demand of 6,000 L/min was calculated which is included in **Appendix D.**

6.0 EROSION AND SEDIMENT CONTROL

Temporary erosion and sediment control measures will be implemented during construction in accordance with the "Guidelines on Erosion and Sediment Control for Urban Construction Sites" (Government of Ontario, May 1987). These measures include:

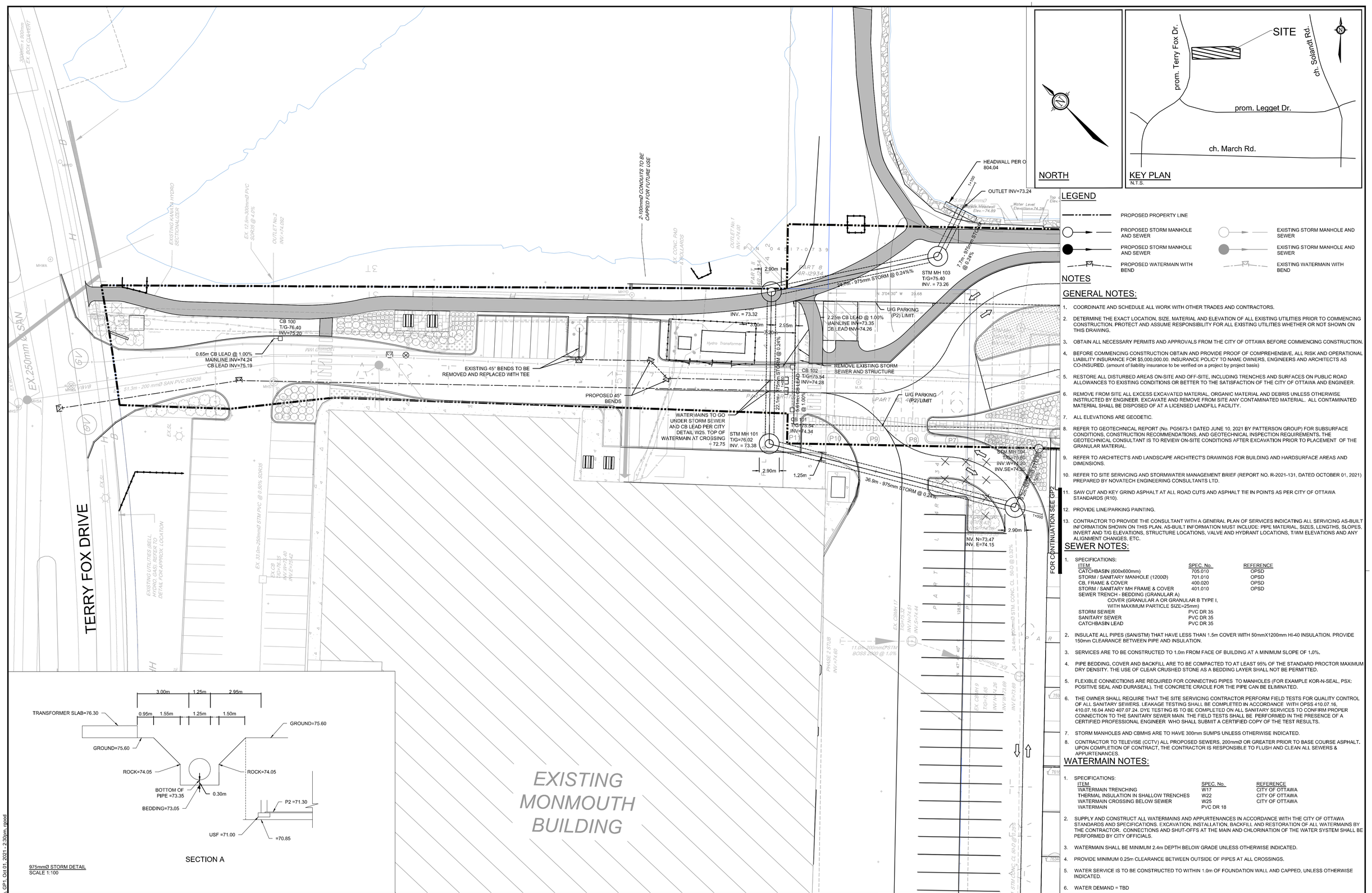
- Placement of filter socks or bags under all catch basins and maintenance holes;
- Silt fences around the area under construction placed as per OPSS 577 and OPSD 219.110;
- Light duty straw bale check dam per OPSD 219.180;
- Application of topsoil and sod to disturbed areas

The proposed erosion and sediment control measures will be implemented prior to construction and will remain in place during construction until vegetation is established. There will be regular inspection and maintenance of the sediment control measures.

NOVATECH

Greg MacDonald, P.Eng.
Director
Land Development and Public Sector Infrastructure

APPENDIX A
Servicing and Grading Drawings



NOTES

GENERAL NOTES:

1. COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
2. DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THIS DRAWING.
3. OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF OTTAWA BEFORE COMMENCING CONSTRUCTION.
4. BEFORE COMMENCING CONSTRUCTION OBTAIN AND PROVIDE PROOF OF COMPREHENSIVE, ALL RISK AND OPERATIONAL LIABILITY INSURANCE FOR $5,000,000.00. INSURANCE POLICY TO NAME OWNERS, ENGINEERS AND ARCHITECTS AS CO-INSURED. (amount of liability insurance to be verified on a project by project basis)
5. RESTORE ALL DISTURBED AREAS ON-SITE AND OFF-SITE, INCLUDING TRENCHES AND SURFACES ON PUBLIC ROAD ALLOWANCES TO EXISTING CONDITIONS OR BETTER TO THE SATISFACTION OF THE CITY OF OTTAWA AND ENGINEER.
6. REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL, ORGANIC MATERIAL AND DEBRIS UNLESS OTHERWISE INSTRUCTED BY ENGINEER. EXCAVATE AND REMOVE FROM SITE ANY CONTAMINATED MATERIAL. ALL CONTAMINATED MATERIAL SHALL BE DISPOSED OF AT A LICENSED LANDFILL FACILITY.
7. ALL ELEVATIONS ARE GEODETIC.
8. REFER TO GEOTECHNICAL REPORT (No. PG5673-1 DATED JUNE 10, 2021 BY PATTERSON GROUP) FOR SUBSURFACE CONDITIONS, CONSTRUCTION RECOMMENDATIONS, AND GEOTECHNICAL INSPECTION REQUIREMENTS. THE GEOTECHNICAL CONSULTANT IS TO REVIEW ON-SITE CONDITIONS AFTER EXCAVATION PRIOR TO PLACEMENT OF THE GRANULAR MATERIAL.
9. REFER TO ARCHITECT'S AND LANDSCAPE ARCHITECT'S DRAWINGS FOR BUILDING AND HARDSURFACE AREAS AND DIMENSIONS.
10. REFER TO SITE SERVICING AND STORMWATER MANAGEMENT BRIEF (REPORT NO. R-2021-131, DATED OCTOBER 01, 2021) PREPARED BY NOVATECH ENGINEERING CONSULTANTS LTD.
11. SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).
12. PROVIDE LINE/PARKING PAINTING.
13. CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GENERAL PLAN OF SERVICES INDICATING ALL SERVICING AS-BUILT INFORMATION SHOWN ON THIS PLAN. AS-BUILT INFORMATION MUST INCLUDE: PIPE MATERIAL, SIZES, LENGTHS, SLOPES, INVERT AND T/G ELEVATIONS, STRUCTURE LOCATIONS, VALVE AND HYDRANT LOCATIONS, T/WM ELEVATIONS AND ANY ALIGNMENT CHANGES, ETC.

SEWER NOTES:

1. SPECIFICATIONS:

ITEM	SPEC. No.	REFERENCE
CATCHBASIN (600x600mm)	705.010	OPSD
STORM / SANITARY MANHOLE (1200Ø)	701.010	OPSD
CB, FRAME & COVER	400.020	OPSD
STORM / SANITARY MH FRAME & COVER	401.010	OPSD
SEWER TRENCH - BEDDING (GRANULAR A) COVER (GRANULAR A OR GRANULAR B TYPE I, WITH MAXIMUM PARTICLE SIZE=25mm)		
STORM SEWER	PVC DR 35	
SANITARY SEWER	PVC DR 35	
CATCHBASIN LEAD	PVC DR 35	

2. INSULATE ALL PIPES (SAN/STM) THAT HAVE LESS THAN 1.5m COVER WITH 50mmX1200mm HI-40 INSULATION. PROVIDE 150mm CLEARANCE BETWEEN PIPE AND INSULATION.
3. SERVICES ARE TO BE CONSTRUCTED TO 1.0m FROM FACE OF BUILDING AT A MINIMUM SLOPE OF 1.0%.
4. PIPE BEDDING, COVER AND BACKFILL ARE TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY. THE USE OF CLEAR CRUSHED STONE AS A BEDDING LAYER SHALL NOT BE PERMITTED.
5. FLEXIBLE CONNECTIONS ARE REQUIRED FOR CONNECTING PIPES TO MANHOLES (FOR EXAMPLE KOR-N-SEAL, PSX: POSITIVE SEAL AND DURASEAL). THE CONCRETE CRADLE FOR THE PIPE CAN BE ELIMINATED.
6. THE OWNER SHALL REQUIRE THAT THE SITE SERVICING CONTRACTOR PERFORM FIELD TESTS FOR QUALITY CONTROL OF ALL SANITARY SEWERS. LEAKAGE TESTING SHALL BE COMPLETED IN ACCORDANCE WITH OPSS 410.07.16, 410.07.16.04 AND 407.07.24. DYE TESTING IS TO BE COMPLETED ON ALL SANITARY SERVICES TO CONFIRM PROPER CONNECTION TO THE SANITARY SEWER MAIN. THE FIELD TESTS SHALL BE PERFORMED IN THE PRESENCE OF A CERTIFIED PROFESSIONAL ENGINEER WHO SHALL SUBMIT A CERTIFIED COPY OF THE TEST RESULTS.
7. STORM MANHOLES AND CBMHS ARE TO HAVE 300mm SUMPS UNLESS OTHERWISE INDICATED.
8. CONTRACTOR TO TELEVISE (CCTV) ALL PROPOSED SEWERS, 200mmØ OR GREATER PRIOR TO BASE COURSE ASPHALT. UPON COMPLETION OF CONTRACT, THE CONTRACTOR IS RESPONSIBLE TO FLUSH AND CLEAN ALL SEWERS & APPURTENANCES.

WATERMAIN NOTES:

1. SPECIFICATIONS:

ITEM	SPEC. No.	REFERENCE
WATERMAIN TRENCHING	W17	CITY OF OTTAWA
THERMAL INSULATION IN SHALLOW TRENCHES	W22	CITY OF OTTAWA
WATERMAIN CROSSING BELOW SEWER	W25	CITY OF OTTAWA
WATERMAIN	PVC DR 18	

2. SUPPLY AND CONSTRUCT ALL WATERMAINS AND APPURTENANCES IN ACCORDANCE WITH THE CITY OF OTTAWA STANDARDS AND SPECIFICATIONS. EXCAVATION, INSTALLATION, BACKFILL AND RESTORATION OF ALL WATERMAINS BY THE CONTRACTOR. CONNECTIONS AND SHUT-OFFS AT THE MAIN AND CHLORINATION OF THE WATER SYSTEM SHALL BE PERFORMED BY CITY OFFICIALS.
3. WATERMAIN SHALL BE MINIMUM 2.4m DEPTH BELOW GRADE UNLESS OTHERWISE INDICATED.
4. PROVIDE MINIMUM 0.25m CLEARANCE BETWEEN OUTSIDE OF PIPES AT ALL CROSSINGS.
5. WATER SERVICE IS TO BE CONSTRUCTED TO WITHIN 1.0m OF FOUNDATION WALL AND CAPPED, UNLESS OTHERWISE INDICATED.
6. WATER DEMAND = TBD

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

Owner:
Wesley Clover International
c/o Richard Goldstein
KRP Propoerties
300-555 Legget Drive, Tower B,
Kanata, ON K2K 2X3

No.	REVISION	DATE	BY
1.	ISSUED WITH ZONING AND SITE PLAN APPLICATION	OCT 01/21	GJM

SCALE 1:250 (1:250 0 2 4 6 8 10)

DESIGN GJM
CHECKED GJM
DRAWN RJG
CHECKED GJM
APPROVED GJM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER G.J. MacDONALD Oct. 1, 2021 PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

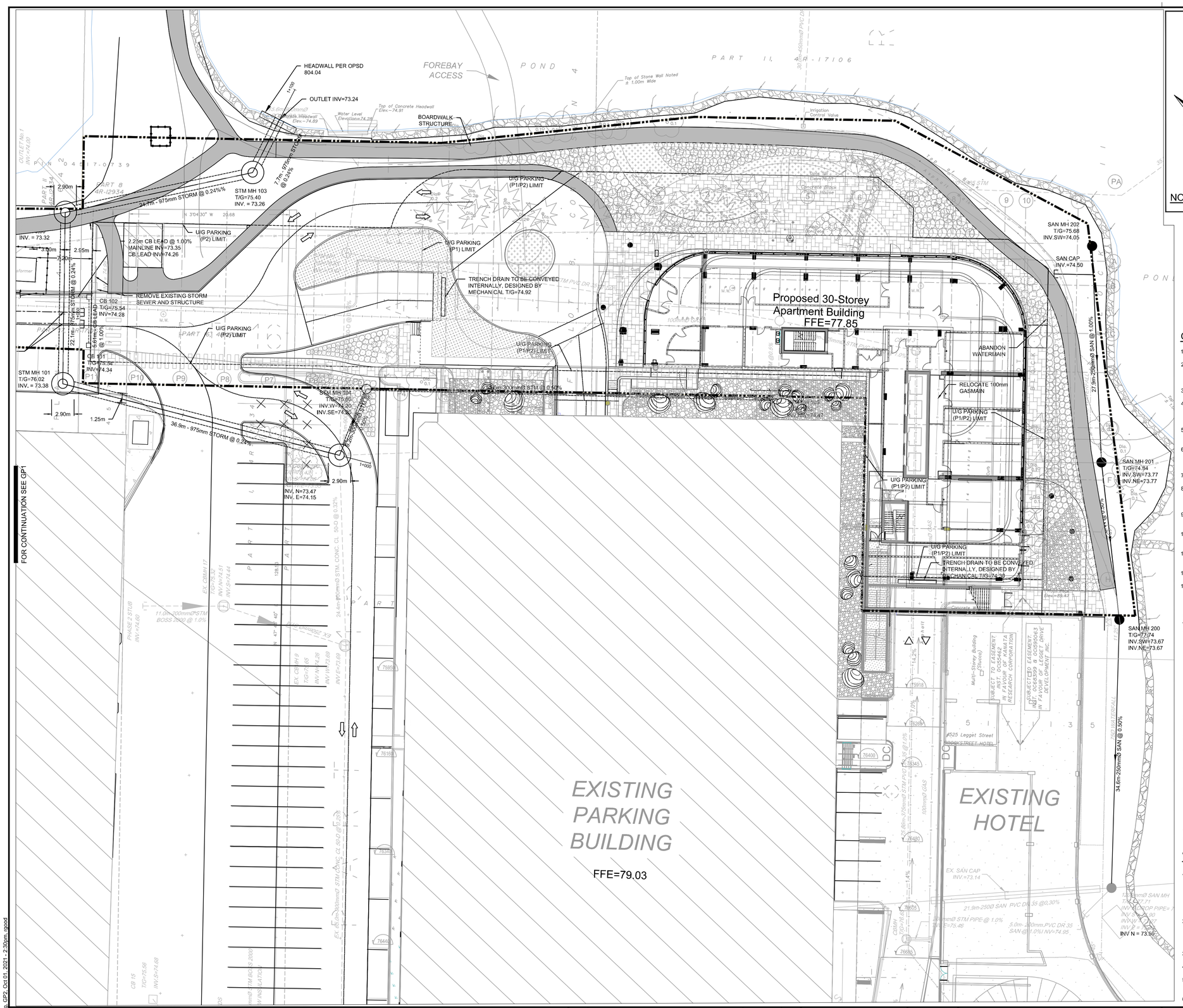
LOCATION
CITY of OTTAWA
BROOKSTREET APARTMENTS

DRAWING NAME
GENERAL PLAN OF SERVICES

PROJECT No. 120202-00
REV 1
DRAWING No. 120202-GP1

M:\2020\120202\CAD\Design\120202-GP.dwg, GP1, Oct 01, 2021 - 2:39pm, cpood

FILNAME\2nd - JM1mm\Mm



LEGEND

- PROPOSED PROPERTY LINE
- PROPOSED STORM MANHOLE AND SEWER
- PROPOSED STORM MANHOLE AND SEWER
- PROPOSED WATERMAIN WITH BEND
- PROPOSED RETAINING WALL
- EXISTING STORM MANHOLE AND SEWER
- EXISTING STORM MANHOLE AND SEWER
- EXISTING WATERMAIN WITH BEND

GENERAL NOTES:

1. COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
2. DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THIS DRAWING.
3. OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF OTTAWA BEFORE COMMENCING CONSTRUCTION.
4. BEFORE COMMENCING CONSTRUCTION OBTAIN AND PROVIDE PROOF OF COMPREHENSIVE, ALL RISK AND OPERATIONAL LIABILITY INSURANCE FOR $5,000,000.00. INSURANCE POLICY TO NAME OWNERS, ENGINEERS AND ARCHITECTS AS CO-INSURED (amount of liability insurance to be verified on a project by project basis)
5. RESTORE ALL DISTURBED AREAS ON-SITE AND OFF-SITE, INCLUDING TRENCHES AND SURFACES ON PUBLIC ROAD ALLOWANCES TO EXISTING CONDITIONS OR BETTER TO THE SATISFACTION OF THE CITY OF OTTAWA AND ENGINEER.
6. REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL, ORGANIC MATERIAL AND DEBRIS UNLESS OTHERWISE INSTRUCTED BY ENGINEER. EXCAVATE AND REMOVE FROM SITE ANY CONTAMINATED MATERIAL. ALL CONTAMINATED MATERIAL SHALL BE DISPOSED OF AT A LICENSED LANDFILL FACILITY.
7. ALL ELEVATIONS ARE GEODETIC.
8. REFER TO GEOTECHNICAL REPORT (No. PG5673-1 DATED JUNE 10, 2021 BY PATTERSON GROUP) FOR SUBSURFACE CONDITIONS, CONSTRUCTION RECOMMENDATIONS, AND GEOTECHNICAL INSPECTION REQUIREMENTS. THE GEOTECHNICAL CONSULTANT IS TO REVIEW ON-SITE CONDITIONS AFTER EXCAVATION PRIOR TO PLACEMENT OF THE GRANULAR MATERIAL.
9. REFER TO ARCHITECT'S AND LANDSCAPE ARCHITECT'S DRAWINGS FOR BUILDING AND HARDSURFACE AREAS AND DIMENSIONS.
10. REFER TO SITE SERVICING AND STORMEATER MANAGEMENT BRIEF (REPORT NO. R-2021-131, DATED OCTOBER 01, 2021) PREPARED BY NOVATECH ENGINEERING CONSULTANTS LTD.
11. SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).
12. PROVIDE LINE/PARKING PAINTING.
13. CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GENERAL PLAN OF SERVICES INDICATING ALL SERVICING AS-BUILT INFORMATION SHOWN ON THIS PLAN. AS-BUILT INFORMATION MUST INCLUDE: PIPE MATERIAL, SIZES, LENGTHS, SLOPES, INVERT AND T/G ELEVATIONS, STRUCTURE LOCATIONS, VALVE AND HYDRANT LOCATIONS, T/WM ELEVATIONS AND ANY ALIGNMENT CHANGES, ETC.

SEWER NOTES:

1. SPECIFICATIONS:

ITEM	SPEC. No.	REFERENCE
CATCHBASIN (600x600mm)	705.010	OPSD
STORM / SANITARY MANHOLE (1200Ø)	701.010	OPSD
CB, FRAME & COVER	400.020	OPSD
STORM / SANITARY MH FRAME & COVER	401.010	OPSD
SEWER TRENCH - BEDDING (GRANULAR A) COVER (GRANULAR A OR GRANULAR B TYPE I, WITH MAXIMUM PARTICLE SIZE=25mm)		
STORM SEWER	PVC DR 35	
SANITARY SEWER	PVC DR 35	
CATCHBASIN LEAD	PVC DR 35	

2. INSULATE ALL PIPES (SAN/STM) THAT HAVE LESS THAN 1.5m COVER WITH 50mmX1200mm HI-40 INSULATION. PROVIDE 150mm CLEARANCE BETWEEN PIPE AND INSULATION.
3. SERVICES ARE TO BE CONSTRUCTED TO 1.0m FROM FACE OF BUILDING AT A MINIMUM SLOPE OF 1.0%.
4. PIPE BEDDING, COVER AND BACKFILL ARE TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY. THE USE OF CLEAR CRUSHED STONE AS A BEDDING LAYER SHALL NOT BE PERMITTED.
5. FLEXIBLE CONNECTIONS ARE REQUIRED FOR CONNECTING PIPES TO MANHOLES (FOR EXAMPLE KOR-N-SEAL, PSX: POSITIVE SEAL AND DURASEAL). THE CONCRETE CRADLE FOR THE PIPE CAN BE ELIMINATED.
6. THE OWNER SHALL REQUIRE THAT THE SITE SERVICING CONTRACTOR PERFORM FIELD TESTS FOR QUALITY CONTROL OF ALL SANITARY SEWERS. LEAKAGE TESTING SHALL BE COMPLETED IN ACCORDANCE WITH OPSS 410.07.16, 410.07.16.04 AND 407.07.24. DYE TESTING IS TO BE COMPLETED ON ALL SANITARY SERVICES TO CONFIRM PROPER CONNECTION TO THE SANITARY SEWER MAIN. THE FIELD TESTS SHALL BE PERFORMED IN THE PRESENCE OF A CERTIFIED PROFESSIONAL ENGINEER WHO SHALL SUBMIT A CERTIFIED COPY OF THE TEST RESULTS.
7. STORM MANHOLES AND CBMHS ARE TO HAVE 300mm SUMPS UNLESS OTHERWISE INDICATED.
8. CONTRACTOR TO TELEVISE (CCTV) ALL PROPOSED SEWERS, 200mmØ OR GREATER PRIOR TO BASE COURSE ASPHALT. UPON COMPLETION OF CONTRACT, THE CONTRACTOR IS RESPONSIBLE TO FLUSH AND CLEAN ALL SEWERS & APPURTENANCES.

WATERMAIN NOTES:

1. SPECIFICATIONS:

ITEM	SPEC. No.	REFERENCE
WATERMAIN TRENCHING	W17	CITY OF OTTAWA
THERMAL INSULATION IN SHALLOW TRENCHES	W22	CITY OF OTTAWA
WATERMAIN CROSSING BELOW SEWER	W25	CITY OF OTTAWA
WATERMAIN	PVC DR 18	

2. SUPPLY AND CONSTRUCT ALL WATERMAINS AND APPURTENANCES IN ACCORDANCE WITH THE CITY OF OTTAWA STANDARDS AND SPECIFICATIONS. EXCAVATION, INSTALLATION, BACKFILL AND RESTORATION OF ALL WATERMAINS BY THE CONTRACTOR. CONNECTIONS AND SHUT-OFFS AT THE MAIN AND CHLORINATION OF THE WATER SYSTEM SHALL BE PERFORMED BY CITY OFFICIALS.
3. WATERMAIN SHALL BE MINIMUM 2.4m DEPTH BELOW GRADE UNLESS OTHERWISE INDICATED.
4. PROVIDE MINIMUM 0.25m CLEARANCE BETWEEN OUTSIDE OF PIPES AT ALL CROSSINGS.
5. WATER SERVICE IS TO BE CONSTRUCTED TO WITHIN 1.0m OF FOUNDATION WALL AND CAPPED, UNLESS OTHERWISE INDICATED.
6. WATER DEMAND = TBD

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

Owner:
Wesley Clover International
c/o Richard Goldstein
KRP Propoerties
300-555 Legget Drive, Tower B,
Kanata, ON K2K 2X3

No.	REVISION	DATE	BY
1.	ISSUED WITH ZONING AND SITE PLAN APPLICATION	OCT 01/21	GJM

SCALE 1:250
1:250
0 2 4 6 8 10

DESIGN GJM
CHECKED GJM
DRAWN RJG
CHECKED GJM
APPROVED GJM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER G.J. MacDONALD Oct. 1, 2021 PROVINCE OF ONTARIO

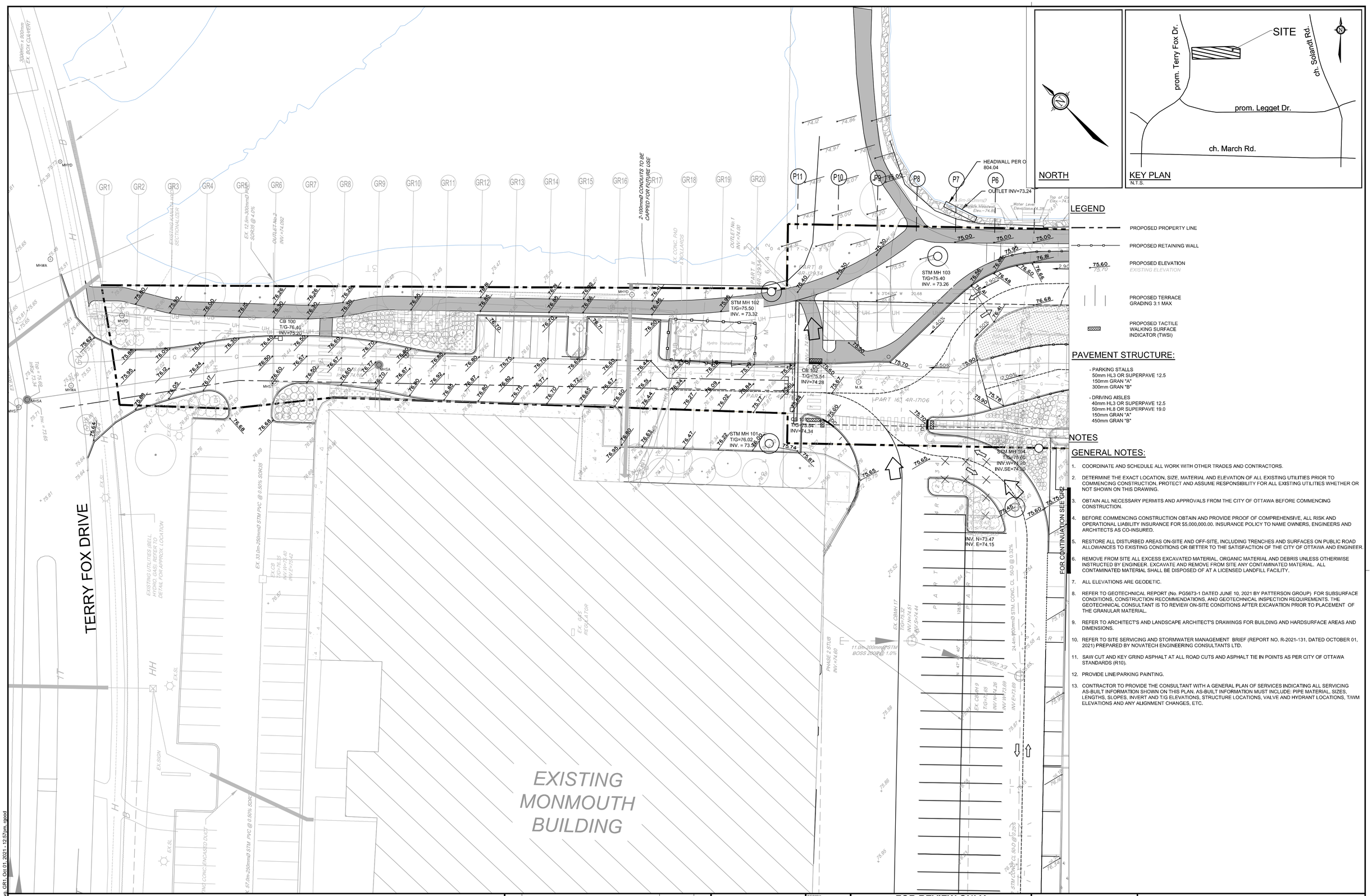
NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY of OTTAWA
BROOKSTREET APARTMENTS

DRAWING NAME
GENERAL PLAN OF SEVRICES

PROJECT No. 120202-00
REV REV 1
DRAWING No. 120202-GP2

M:\2020\120202\CAD\Design\120202-GP.dwg, GP2, Oct 01, 2021 - 2:30pm, cpood
PLAN1.DWG - 841mmx594mm



NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

Owner:
Wesley Clover International
c/o Richard Goldstein
KRP Propoerties
300-555 Legget Drive, Tower B,
Kanata, ON K2K 2X3
Phone: (613)591-0594

No.	REVISION	DATE	BY
1.	ISSUED WITH ZONING AND SITE PLAN APPLICATION	OCT 01/21	GJM

SCALE
1:250
1:250
0 2 4 6 8 10

DESIGN GJM
CHECKED GJM
DRAWN RJG
CHECKED GJM
APPROVED GJM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
G.J. MacDONALD
Oct. 1, 2021
PROVINCE OF ONTARIO

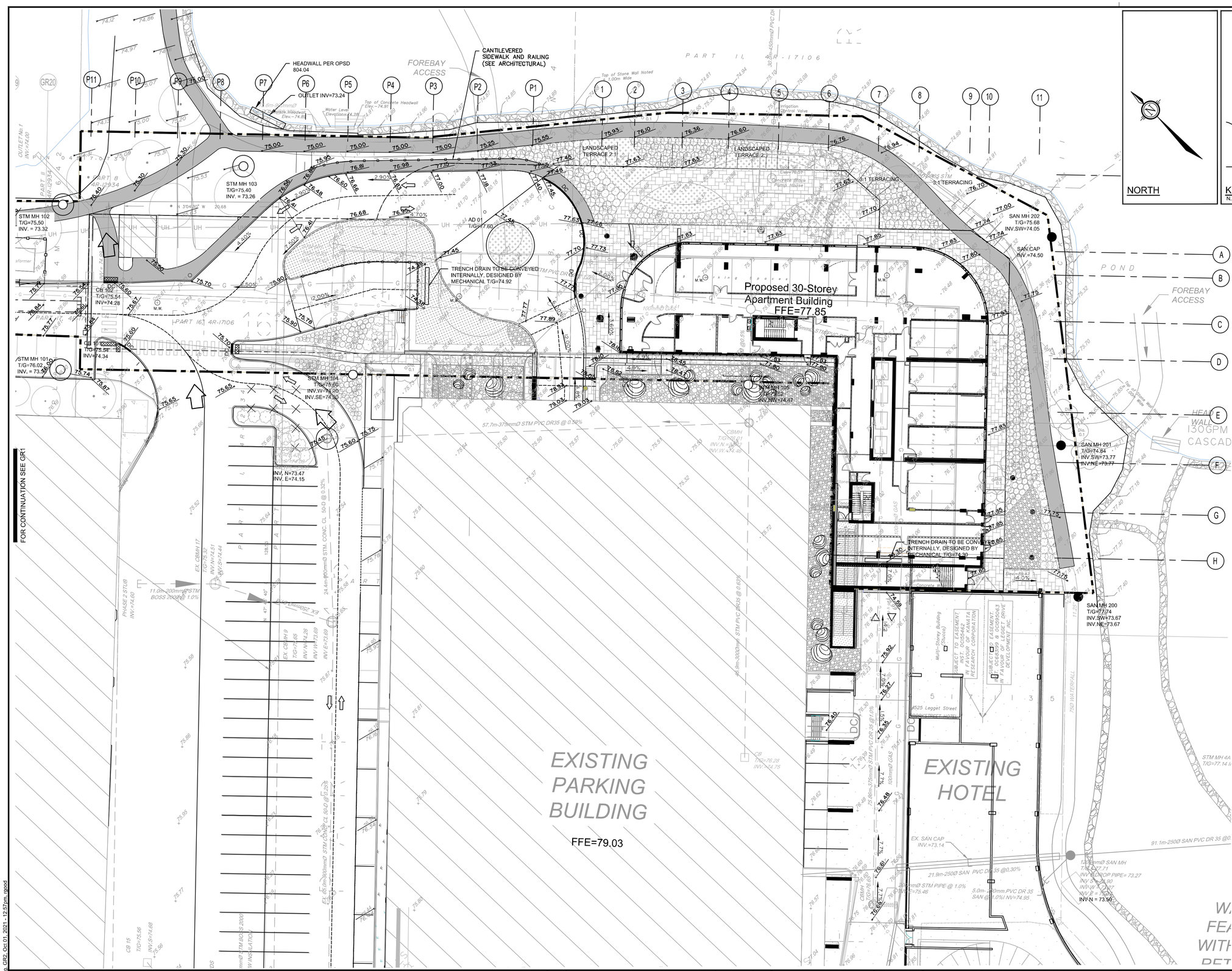
NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY of OTTAWA
BROOKSTREET APARTMENTS

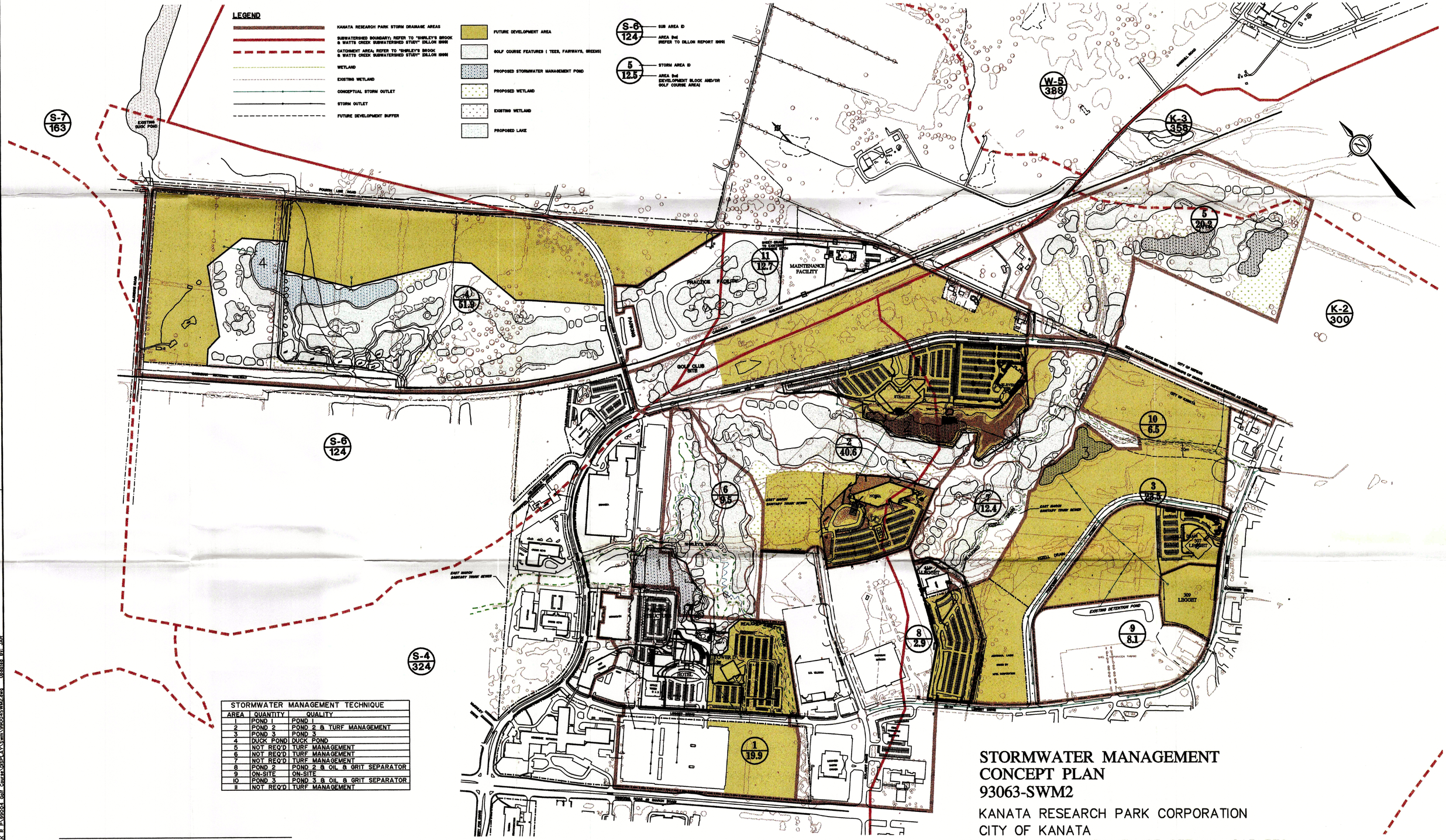
DRAWING NAME
GRADING PLAN

PROJECT No. 120202-00
REV REV 1
DRAWING No. 120202-GR1

M:\2020\120202\CAD\Design\120202-GR.dwg, GR1, Oct 01, 2021 - 12:57pm, gpood
PLAN1.DWG - 841mmx594mm


Proposed 30-Storey Apartment Building
FFE=77.85
EXISTING PARKING BUILDING
FFE=79.03
EXISTING HOTEL
HEADWALL PER OPSD 804.04
OUTLET INV=73.24
CANTILEVERED SIDEWALK AND RAILING (SEE ARCHITECTURAL)
FOREBAY ACCESS
LANDSCAPED TERRACE 2:1
LANDSCAPED TERRACE 2:1
3:1 TERRACING
3:1 TERRACING
STM MH 103
T/G=75.40
INV. = 73.26
STM MH 102
T/G=75.50
INV. = 73.32
AD 01
T/G=77.80
TRENCH DRAIN TO BE CONVEYED INTERNALLY, DESIGNED BY MECHANICAL T/G=74.92
CB 102
T/G=75.54
INV=74.28
CB 101
T/G=75.55
INV=74.34
STM MH 101
T/G=76.02
INV. = 73.56
STM MH 104
T/G=75.60
INV.W=73.30
INV.SE=74.30
INV, N=73.47
INV, E=74.15
SAN MH 105
T/G=77.52
INV.NW=74.47
SAN MH 202
T/G=75.68
INV.SW=74.05
SAN CAP
INV.=74.50
SAN MH 201
T/G=74.84
INV.SW=73.77
INV.NE=73.77
SAN MH 200
T/G=77.74
INV.SW=73.67
INV.NE=73.67
TRENCH DRAIN TO BE CONVEYED INTERNALLY, DESIGNED BY MECHANICAL T/G=74.30
HEADWALL 130GPM CASCAD
FOR CONTINUATION SEE GR1
PHASE 2 STUB INV=74.60
11.0m-200mmØ STM @SS 2.00% @ 1.0%
24.4m-Ø200mmØ STM, CONC. CL. 50-D @ 0.32%
EX. CB#H 9 T/G=75.65 INV.N=74.26 INV.W=73.69 INV.E=73.69
EX. CB#H 17 T/G=75.32 INV.N=74.51 INV.E=74.44
EX. 85.0m-375mmØ STM CONC. CL. 50-D @ 0.23%
CB 15 T/G=75.56 INV.S=74.68
57.7m-375mmØ STM PVC DR35 @ 0.58%
85.8m-300mmØ STM PVC DR35 @ 0.63%
75.85m-375mmØ STM PVC DR 35 @1.0%
100mmØ GAS
21.9m-250Ø SAN PVC DR 35 @0.30%
91.1m-250Ø SAN PVC DR 35 @0.
5.0m-200mm PVC DR 35 SAN @1.0% INV=74.95
4.5m-250mmØ STM PIPE @ 1.0%
INV=75.46
12.0mmØ SAN MH T/G=77.71
INV. DROP PIPE= 73.27
INV. S = 73.90
INV.W = 73.27
INV.E = 73.27
INV.N = 73.50
525 Legget Street
750 WATERFALL
MULTI-Storey Building
SUBJECT TO EASEMENT IN FAVOUR OF KANATA RESEARCH CORPORATION
SUBJECT TO EASEMENT IN FAVOUR OF 1 OCTOBER DEVELOPMENT INC.
Concrete Block Pump House
Diesel Tank
Irrigation Control Valve
Top of Stone Wall Noted 1.00m Wide
Top of Concrete Headwall Elev.= 74.91
Water Level Elevation=74.25
Top of Headwall Elev.= 74.89
Bottom of Headwall Elev.= 74.89
PART II, 4R-17106
PART I, 4R-29934
PART I, 4R-17106
PART 16, 4R-17106
PART 1, 4R-29934
PART 2, 4R-29934
PART 3, 4R-29934
PART 4, 4R-29934
PART 5, 4R-29934
PART 6, 4R-29934
PART 7, 4R-29934
PART 8, 4R-29934
PART 9, 4R-29934
PART 10, 4R-29934
PART 11, 4R-29934
PART 12, 4R-29934
PART 13, 4R-29934
PART

APPENDIX B
Storm Sewer Design Sheet and Drawing



STORMWATER MANAGEMENT TECHNIQUE		
AREA	QUANTITY	QUALITY
1	POND 1	POND 1
2	POND 2	POND 2 & TURF MANAGEMENT
3	POND 3	POND 3
4	DUCK POND	DUCK POND
5	NOT REQ'D	TURF MANAGEMENT
6	NOT REQ'D	TURF MANAGEMENT
7	NOT REQ'D	TURF MANAGEMENT
8	POND 2	POND 2 & OIL & GRIT SEPARATOR
9	ON-SITE	ON-SITE
10	POND 3	POND 3 & OIL & GRIT SEPARATOR
11	NOT REQ'D	TURF MANAGEMENT

KANATA RESEARCH PARK

Kanata Research Park Corporation
555 Legget Drive, Suite 266, Kanata, Ontario, Canada, K2K 2X3
(613)591-0594

STORMWATER MANAGEMENT CONCEPT PLAN 93063-SWM2

KANATA RESEARCH PARK CORPORATION
CITY OF KANATA
REGIONAL MUNICIPALITY OF OTTAWA–CARLETON
APRIL 2000

SCALE 1 : 4000

NOVATECH
ENGINEERING CONSULTANTS LTD.
OTTAWA, ONTARIO

PLANALDWG - 914mmX610mm

Oct 16, 2000 - 16:15 DWG Name: J:\Nova\K R P\93004 Golf Course\DEPLAY\Smm\93004SWM2.dwg Updated By: JAR

Calculation Summary

Project: 120202

Brookstreet Apartment Building

Additional Volume:

1600m^2 additional impervious area $V = CAd$

$$V = (0.9) \times (1330m^2) \times (100mm\ rainfall)$$

$$V = 144\ m^3$$

Pond Impacts:

$$Volume\ Increase\ = \frac{Added\ Volume}{Existing\ Volume}$$

$$= \frac{144m^3}{5210m^3}$$

= 0.027

Depth Increase, $d = \frac{Added\ Volume}{Surface\ Area}$

$$d = \frac{144m^3}{15{,}000m^2}$$

d = 9.6 mm

Project: Brookstreet Apartments
Location: Ottawa, Ontario
Client: KRP

DATE: Sept. 23, 2021
Rev: 1

NOVATECH
Engineers, Planners & Landscape Architects

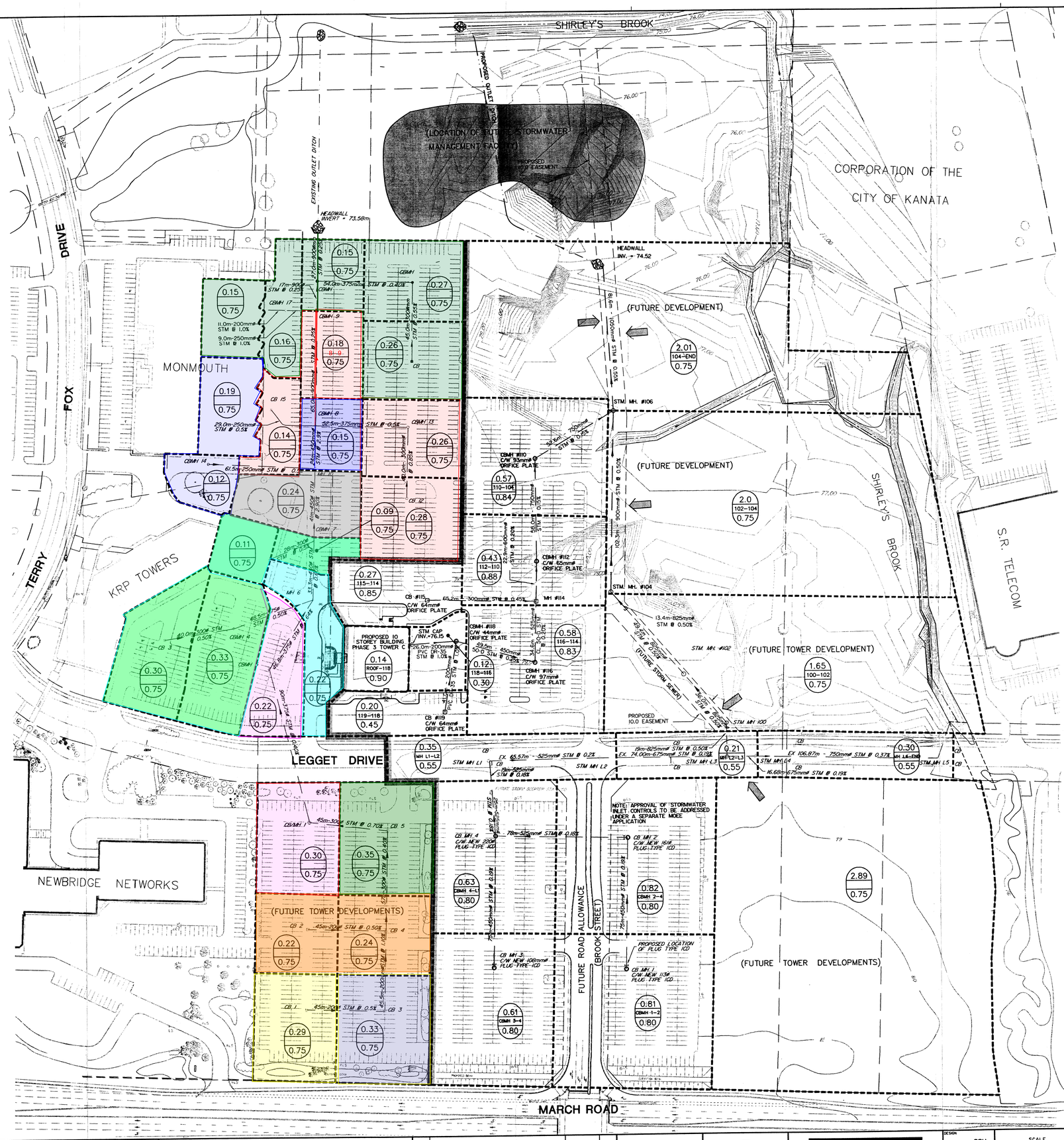
Storm Sewer Design Sheet

LOCATION								FLOW					PROPOSED SEWER								
STREET	FROM	TO	AREA ID	R= 0.25	R= 0.55	R= 0.75	R= 0.90	INDIV 2.78 AR	ACCUM 2.78 AR	TIME OF CONC.	RAINFALL INTENSITY I	PEAK FLOW Q (l/s)	NOMINAL SIZE (mm)	PIPE SIZE (mm)	PIPE SLOPE (%)	LENGTH (m)	CAPACITY (l/s)	FULL FLOW VELOCITY (m/s)	TIME OF FLOW (min.)	EXCESS CAPACITY (l/s)	Q/Qfull
	CB1	CB2	Refer to 98066-STM			0.290		0.60	0.60	10.00	104.19	63.00	200	203	0.50	45.0	24.22	0.75	1.01	-38.78	2.60
	CB3	CB4				0.330		0.69	0.69	11.01	99.17	68.23	200	203	1.10	45.5	35.92	1.11	0.69	-32.31	1.90
	CB4	CB5				0.460		0.96	1.65	11.69	96.04	158.19	300	305	0.40	57.0	63.87	0.87	1.09	-94.32	2.48
	CB5	CBMH1				0.350		0.73	2.38	12.78	91.50	217.49	300	305	0.70	45.0	84.49	1.16	0.65	-133.00	2.57
	CBMH1	CBMH5				0.520		1.08	3.46	13.43	89.02	308.09	375	381	0.40	90.0	115.80	1.01	1.48	-192.29	2.66
	CBMH5	MH6				0.220		0.46	3.92	14.90	83.87	328.75	375	381	0.64	46.8	146.48	1.28	0.61	-182.28	2.24
	MH6	CBMH7				0.830		1.73	5.65	15.51	81.94	462.99	450	457	0.60	33.3	230.62	1.40	0.40	-232.37	2.01
	CBMH7	MH10				0.240		0.50	6.15	15.91	80.74	496.60	450	457	2.90	41.0	507.02	3.09	0.22	10.43	0.98
	MH10	CBMH8				0.460		0.96	7.11	16.13	80.08	569.36	450	457	2.90	24.0	507.02	3.09	0.13	-62.34	1.12
	CBMH8	CBMH9				0.860		1.79	8.90	16.26	79.70	709.58	900	914	0.25	65.0	945.25	1.44	0.75	235.67	0.75
	CBMH9	CBMH100	Refer to 120202-STM			0.990		2.06	10.97	17.01	77.58	850.78	900	914	0.32	24.4	1069.42	1.63	0.25	218.64	0.80
	CBMH100	STM MH 101				0.150		0.31	11.28	17.26	76.90	867.40	975	991	0.24	36.9	1146.51	1.49	0.41	279.11	0.76
	STM MH 101	STM MH102				0.000	0.110	0.28	11.56	17.68	75.80	875.93	975	991	0.24	22.1	1146.51	1.49	0.25	270.58	0.76
	STM MH 102	STM MH103				0.000		0.00	11.56	17.92	75.17	868.55	975	991	0.24	24.7	1146.51	1.49	0.28	277.96	0.76
	STM MH103	OUTLET				0.000		0.00	11.56	18.20	74.47	860.47	975	991	0.24	7.7	1146.51	1.49	0.09	286.04	0.75

Definitions
Q = 2.78 AIR
Q = Peak Flow, in Litres per second (L/s)
A = Area in hectares (ha)
I = Rainfall Intensity (mm/h)

Notes:
1) Ottawa Rainfall-Intensity Curve
2) Min Velocity = 0.80 m/sec.

Reference Plans
Drawing No. 98066-STM Rev. 2
Drawing No. 120202-STM Rev. 1



NOTE:

1. RUNOFF COEFFICIENTS FOR TOWER 'C' PHASE 3 DEVELOPMENT ARE AS OUTLINED IN *"KANATA RESEARCH PARK - TOWER 'C' STORMWATER MANAGEMENT REPORT"* (NECL, Dec 1998)
2. APPROVAL OF STORMWATER INLET CONTROLS FOR THE EXISTING NEWBRIDGE PARKING LOT (PLUG TYPE ICD'S) TO BE ADDRESSED UNDER A SEPARATE MOEE APPLICATION.

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

KANATA RESEARCH PARK
Kanata Research Park Corporation
555 Legget Drive, Suite 204, Kanata, Ontario, Canada, K2K 2X3
(613)591-8594

No.	REVISION	DATE	BY
2	REVISED STORM SEWER PER R.M.O.C. COMMENTS	APR. 15/99	GSH
1	ISSUED FOR COMMENTS	DEC. 11/98	GSH

LICENSED PROFESSIONAL ENGINEER — UDO BOEHME — PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER — G. S. HOLOWACH — PROVINCE OF ONTARIO

NOVATECH
CONSULTING ENGINEERS & PLANNERS
Suite 17, 77 Auriga Drive
Nepean, Ontario
K2E 7Z7
Telephone (613)727-1658
Facsimile (613)727-6972

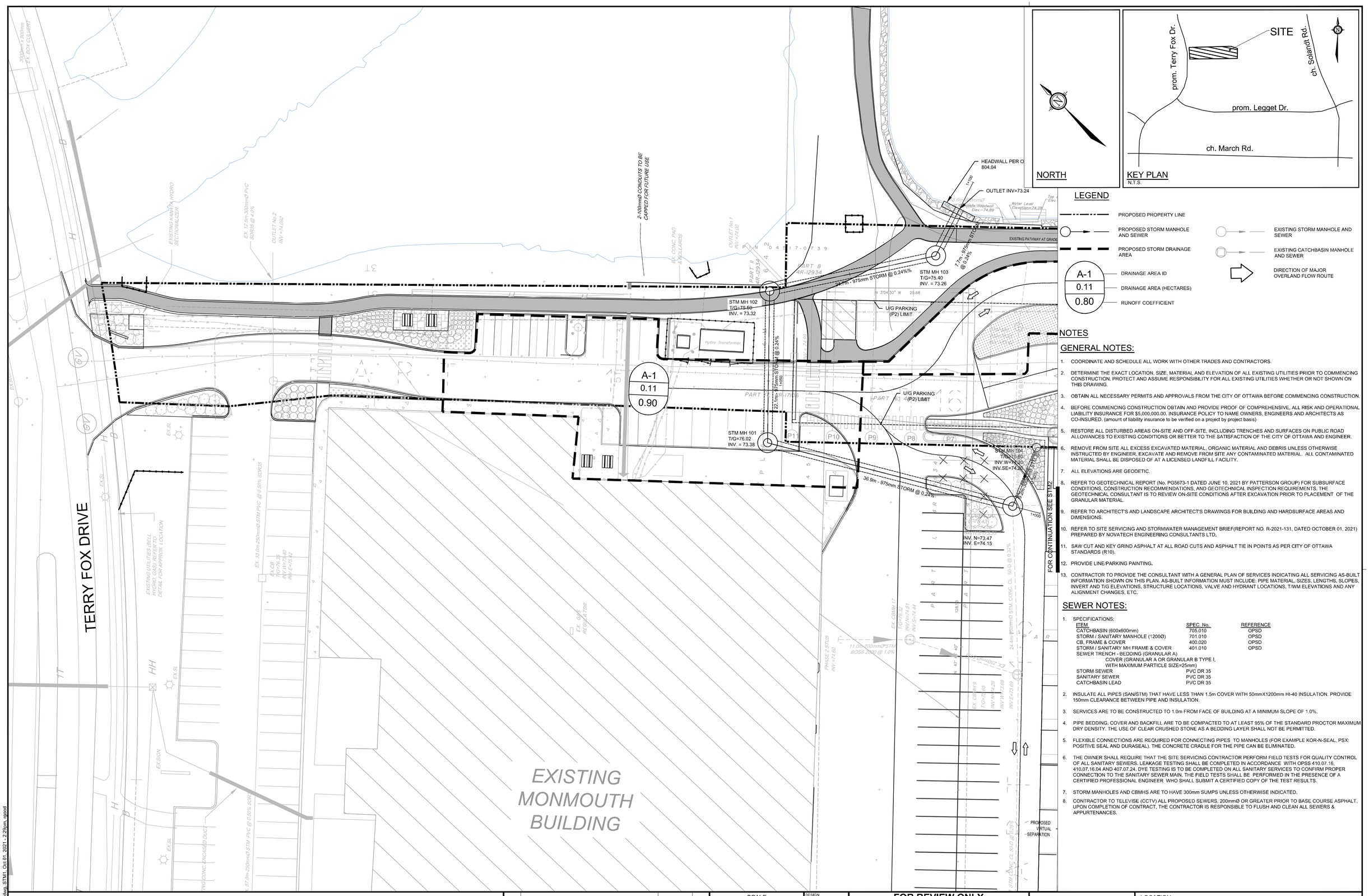
DESIGN	GSH
CHECKED	UB
DRAWN	DU
CHECKED	GSH
APPROVED	UB

SCALE: 1:1000

CITY OF KANATA
KANATA RESEARCH PARK
TOWER 'C' PROJECT

STORM DRAINAGE AREA PLAN

PROJECT No. 98066
DATE SEPTEMBER 1998
DRAWING No. 98066-STM



LEGEND

- PROPOSED PROPERTY LINE
- PROPOSED STORM MANHOLE AND SEWER
- PROPOSED STORM DRAINAGE AREA
- A-1 / 0.11 / 0.80 — DRAINAGE AREA ID / DRAINAGE AREA (HECTARES) / RUNOFF COEFFICIENT
- EXISTING STORM MANHOLE AND SEWER
- EXISTING CATCHBASIN MANHOLE AND SEWER
- DIRECTION OF MAJOR OVERLAND FLOW ROUTE

NOTES

GENERAL NOTES:

1. COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
2. DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THIS DRAWING.
3. OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF OTTAWA BEFORE COMMENCING CONSTRUCTION.
4. BEFORE COMMENCING CONSTRUCTION OBTAIN AND PROVIDE PROOF OF COMPREHENSIVE, ALL RISK AND OPERATIONAL LIABILITY INSURANCE FOR $5,000,000.00. INSURANCE POLICY TO NAME OWNERS, ENGINEERS AND ARCHITECTS AS CO-INSURED. (amount of liability insurance to be verified on a project by project basis)
5. RESTORE ALL DISTURBED AREAS ON-SITE AND OFF-SITE, INCLUDING TRENCHES AND SURFACES ON PUBLIC ROAD ALLOWANCES TO EXISTING CONDITIONS OR BETTER TO THE SATISFACTION OF THE CITY OF OTTAWA AND ENGINEER.
6. REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL, ORGANIC MATERIAL AND DEBRIS UNLESS OTHERWISE INSTRUCTED BY ENGINEER. EXCAVATE AND REMOVE FROM SITE ANY CONTAMINATED MATERIAL. ALL CONTAMINATED MATERIAL SHALL BE DISPOSED OF AT A LICENSED LANDFILL FACILITY.
7. ALL ELEVATIONS ARE GEODETIC.
8. REFER TO GEOTECHNICAL REPORT (No. PG5673-1 DATED JUNE 10, 2021 BY PATTERSON GROUP) FOR SUBSURFACE CONDITIONS, CONSTRUCTION RECOMMENDATIONS, AND GEOTECHNICAL INSPECTION REQUIREMENTS. THE GEOTECHNICAL CONSULTANT IS TO REVIEW ON-SITE CONDITIONS AFTER EXCAVATION PRIOR TO PLACEMENT OF THE GRANULAR MATERIAL.
9. REFER TO ARCHITECT'S AND LANDSCAPE ARCHITECT'S DRAWINGS FOR BUILDING AND HARDSURFACE AREAS AND DIMENSIONS.
10. REFER TO SITE SERVICING AND STORMWATER MANAGEMENT BRIEF(REPORT NO. R-2021-131, DATED OCTOBER 01, 2021) PREPARED BY NOVATECH ENGINEERING CONSULTANTS LTD.
11. SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).
12. PROVIDE LINE/PARKING PAINTING.
13. CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GENERAL PLAN OF SERVICES INDICATING ALL SERVICING AS-BUILT INFORMATION SHOWN ON THIS PLAN. AS-BUILT INFORMATION MUST INCLUDE: PIPE MATERIAL, SIZES, LENGTHS, SLOPES, INVERT AND T/G ELEVATIONS, STRUCTURE LOCATIONS, VALVE AND HYDRANT LOCATIONS, T/WM ELEVATIONS AND ANY ALIGNMENT CHANGES, ETC.

SEWER NOTES:

1. SPECIFICATIONS:

ITEM	SPEC. No.	REFERENCE
CATCHBASIN (600x600mm)	705.010	OPSD
STORM / SANITARY MANHOLE (1200Ø)	701.010	OPSD
CB, FRAME & COVER	400.020	OPSD
STORM / SANITARY MH FRAME & COVER	401.010	OPSD
SEWER TRENCH - BEDDING (GRANULAR A) COVER (GRANULAR A OR GRANULAR B TYPE I, WITH MAXIMUM PARTICLE SIZE=25mm)		
STORM SEWER	PVC DR 35	
SANITARY SEWER	PVC DR 35	
CATCHBASIN LEAD	PVC DR 35	

2. INSULATE ALL PIPES (SAN/STM) THAT HAVE LESS THAN 1.5m COVER WITH 50mmX1200mm HI-40 INSULATION. PROVIDE 150mm CLEARANCE BETWEEN PIPE AND INSULATION.
3. SERVICES ARE TO BE CONSTRUCTED TO 1.0m FROM FACE OF BUILDING AT A MINIMUM SLOPE OF 1.0%.
4. PIPE BEDDING, COVER AND BACKFILL ARE TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY. THE USE OF CLEAR CRUSHED STONE AS A BEDDING LAYER SHALL NOT BE PERMITTED.
5. FLEXIBLE CONNECTIONS ARE REQUIRED FOR CONNECTING PIPES TO MANHOLES (FOR EXAMPLE KOR-N-SEAL, PSX: POSITIVE SEAL AND DURASEAL). THE CONCRETE CRADLE FOR THE PIPE CAN BE ELIMINATED.
6. THE OWNER SHALL REQUIRE THAT THE SITE SERVICING CONTRACTOR PERFORM FIELD TESTS FOR QUALITY CONTROL OF ALL SANITARY SEWERS. LEAKAGE TESTING SHALL BE COMPLETED IN ACCORDANCE WITH OPSS 410.07.16, 410.07,16.04 AND 407.07.24. DYE TESTING IS TO BE COMPLETED ON ALL SANITARY SERVICES TO CONFIRM PROPER CONNECTION TO THE SANITARY SEWER MAIN. THE FIELD TESTS SHALL BE PERFORMED IN THE PRESENCE OF A CERTIFIED PROFESSIONAL ENGINEER WHO SHALL SUBMIT A CERTIFIED COPY OF THE TEST RESULTS.
7. STORM MANHOLES AND CBMHS ARE TO HAVE 300mm SUMPS UNLESS OTHERWISE INDICATED.
8. CONTRACTOR TO TELEVISE (CCTV) ALL PROPOSED SEWERS, 200mmØ OR GREATER PRIOR TO BASE COURSE ASPHALT. UPON COMPLETION OF CONTRACT, THE CONTRACTOR IS RESPONSIBLE TO FLUSH AND CLEAN ALL SEWERS & APPURTENANCES.

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

Owner:
Wesley Clover International
c/o Richard Goldstein
KRP Propoerties
300-555 Legget Drive, Tower B,
Kanata, ON K2K 2X3

No.	REVISION	DATE	BY
1.	ISSUED WITH ZONING AND SITE PLAN APPLICATION	OCT 01/21	GJM

SCALE 1:250 (1:250, 0 2 4 6 8 10)

DESIGN GJM
CHECKED GJM
DRAWN RJG
CHECKED GJM
APPROVED GJM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER — G.J. MacDONALD — Oct. 1, 2021 — PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

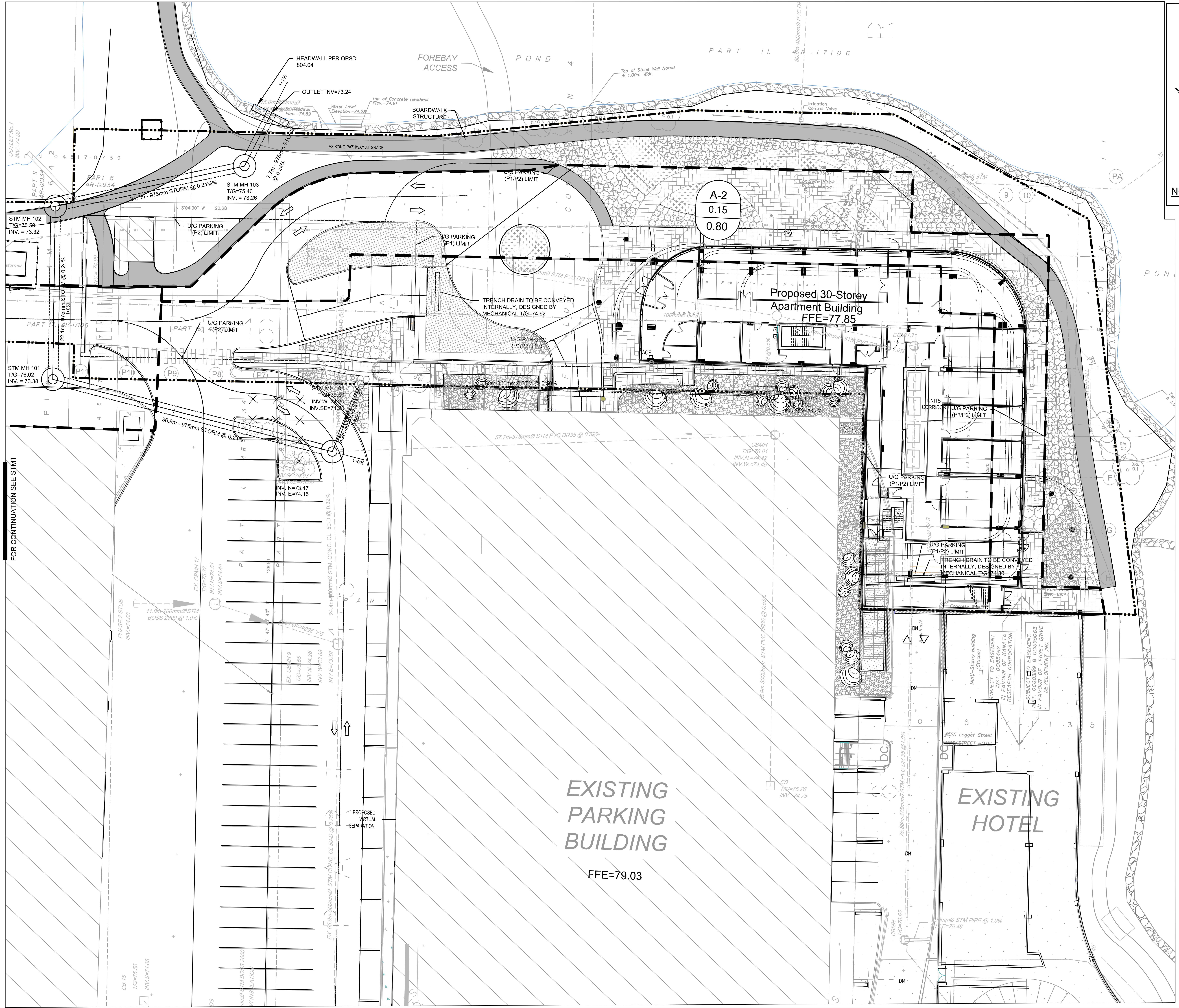
LOCATION
CITY of OTTAWA
BROOKSTREET APARTMENTS

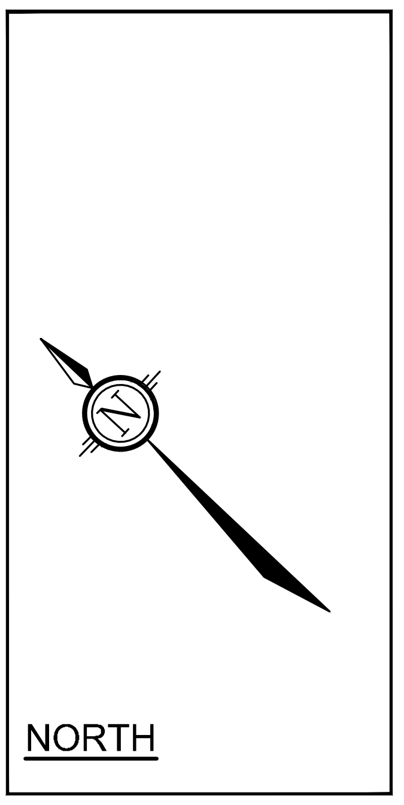
DRAWING NAME
STORM DRAINAGE AREA PLAN

PROJECT No. 120202-00
REV REV 1
DRAWING No. 120202-STM1

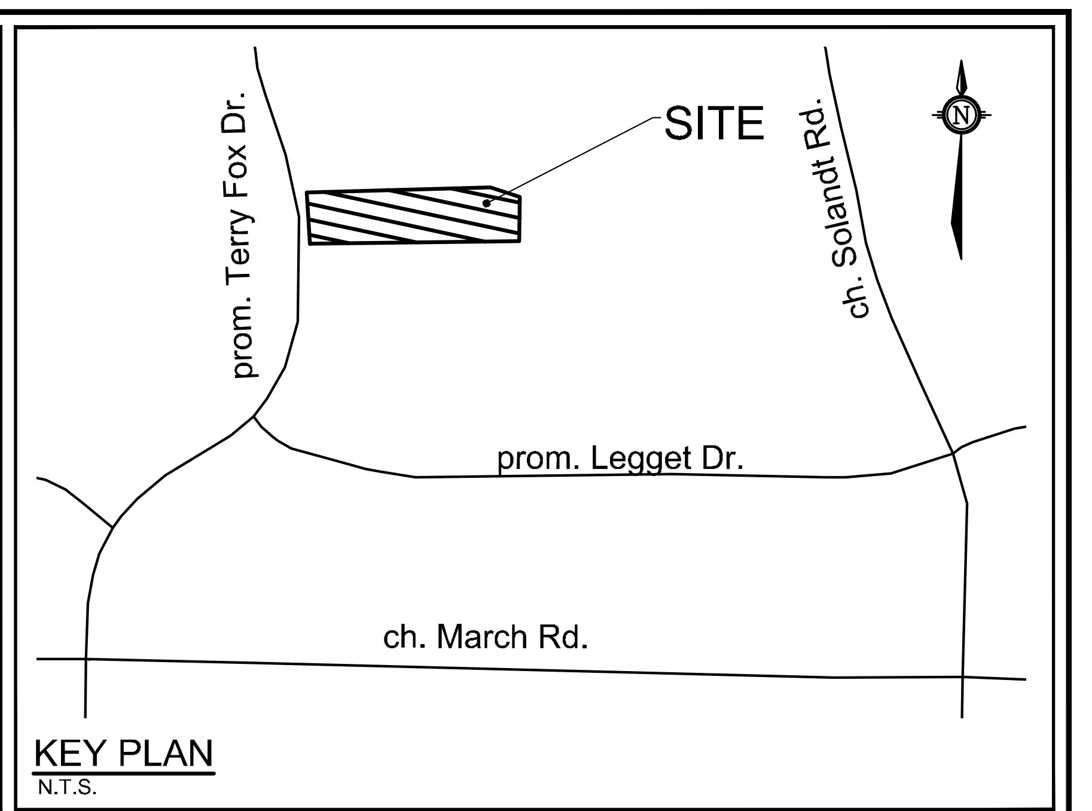
M:\2020\120202\CAD\Design\120202-STM.dwg, STM1, Oct 01, 2021 - 2:29pm, qood

PLAN1.DWG - INTmm/06mm





NORTH



KEY PLAN
N.T.S.

LEGEND

—··—··—	PROPOSED PROPERTY LINE
○→ —	PROPOSED STORM MANHOLE AND SEWER
▬ ▬ ▬	PROPOSED STORM DRAINAGE AREA
A-1	DRAINAGE AREA ID
0.11	DRAINAGE AREA (HECTARES)
0.80	RUNOFF COEFFICIENT
○→ —	EXISTING STORM MANHOLE AND SEWER
▢→ —	EXISTING CATCHBASIN MANHOLE AND SEWER
⇨	DIRECTION OF MAJOR OVERLAND FLOW ROUTE

NOTES

GENERAL NOTES:

1. COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
2. DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THIS DRAWING.
3. OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF OTTAWA BEFORE COMMENCING CONSTRUCTION.
4. BEFORE COMMENCING CONSTRUCTION OBTAIN AND PROVIDE PROOF OF COMPREHENSIVE, ALL RISK AND OPERATIONAL LIABILITY INSURANCE FOR $5,000,000.00. INSURANCE POLICY TO NAME OWNERS, ENGINEERS AND ARCHITECTS AS CO-INSURED. (amount of liability insurance to be verified on a project by project basis)
5. RESTORE ALL DISTURBED AREAS ON-SITE AND OFF-SITE, INCLUDING TRENCHES AND SURFACES ON PUBLIC ROAD ALLOWANCES TO EXISTING CONDITIONS OR BETTER TO THE SATISFACTION OF THE CITY OF OTTAWA AND ENGINEER.
6. REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL, ORGANIC MATERIAL AND DEBRIS UNLESS OTHERWISE INSTRUCTED BY ENGINEER. EXCAVATE AND REMOVE FROM SITE ANY CONTAMINATED MATERIAL. ALL CONTAMINATED MATERIAL SHALL BE DISPOSED OF AT A LICENSED LANDFILL FACILITY.
7. ALL ELEVATIONS ARE GEODETIC.
8. REFER TO GEOTECHNICAL REPORT (No. PG5673-1 DATED JUNE 10, 2021 BY PATTERSON GROUP) FOR SUBSURFACE CONDITIONS, CONSTRUCTION RECOMMENDATIONS, AND GEOTECHNICAL INSPECTION REQUIREMENTS. THE GEOTECHNICAL CONSULTANT IS TO REVIEW ON-SITE CONDITIONS AFTER EXCAVATION PRIOR TO PLACEMENT OF THE GRANULAR MATERIAL.
9. REFER TO ARCHITECT'S AND LANDSCAPE ARCHITECT'S DRAWINGS FOR BUILDING AND HARDSURFACE AREAS AND DIMENSIONS.
10. REFER TO SITE SERVICING AND STORMWATER MANAGEMENT BRIEF (REPORT NO. R-2021-131, DATED OCTOBER 01, 2021) PREPARED BY NOVATECH ENGINEERING CONSULTANTS LTD.
11. SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).
12. PROVIDE LINE/PARKING PAINTING.
13. CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GENERAL PLAN OF SERVICES INDICATING ALL SERVICING AS-BUILT INFORMATION SHOWN ON THIS PLAN. AS-BUILT INFORMATION MUST INCLUDE: PIPE MATERIAL, SIZES, LENGTHS, SLOPES, INVERT AND T/G ELEVATIONS, STRUCTURE LOCATIONS, VALVE AND HYDRANT LOCATIONS, T/WM ELEVATIONS AND ANY ALIGNMENT CHANGES, ETC.

SEWER NOTES:

1. SPECIFICATIONS:

ITEM	SPEC. No.	REFERENCE
CATCHBASIN (600x600mm)	705.010	OPSD
STORM / SANITARY MANHOLE (1200Ø)	701.010	OPSD
CB, FRAME & COVER	400.020	OPSD
STORM / SANITARY MH FRAME & COVER	401.010	OPSD
SEWER TRENCH - BEDDING (GRANULAR A) COVER (GRANULAR A OR GRANULAR B TYPE I, WITH MAXIMUM PARTICLE SIZE=25mm)		
STORM SEWER	PVC DR 35	
SANITARY SEWER	PVC DR 35	
CATCHBASIN LEAD	PVC DR 35	

2. INSULATE ALL PIPES (SAN/STM) THAT HAVE LESS THAN 1.5m COVER WITH 50mmX1200mm HI-40 INSULATION. PROVIDE 150mm CLEARANCE BETWEEN PIPE AND INSULATION.
3. SERVICES ARE TO BE CONSTRUCTED TO 1.0m FROM FACE OF BUILDING AT A MINIMUM SLOPE OF 1.0%.
4. PIPE BEDDING, COVER AND BACKFILL ARE TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY. THE USE OF CLEAR CRUSHED STONE AS A BEDDING LAYER SHALL NOT BE PERMITTED.
5. FLEXIBLE CONNECTIONS ARE REQUIRED FOR CONNECTING PIPES TO MANHOLES (FOR EXAMPLE KOR-N-SEAL, PSX: POSITIVE SEAL AND DURASEAL). THE CONCRETE CRADLE FOR THE PIPE CAN BE ELIMINATED.
6. THE OWNER SHALL REQUIRE THAT THE SITE SERVICING CONTRACTOR PERFORM FIELD TESTS FOR QUALITY CONTROL OF ALL SANITARY SEWERS. LEAKAGE TESTING SHALL BE COMPLETED IN ACCORDANCE WITH OPSS 410.07.16, 410.07.16.04 AND 407.07.24. DYE TESTING IS TO BE COMPLETED ON ALL SANITARY SERVICES TO CONFIRM PROPER CONNECTION TO THE SANITARY SEWER MAIN. THE FIELD TESTS SHALL BE PERFORMED IN THE PRESENCE OF A CERTIFIED PROFESSIONAL ENGINEER WHO SHALL SUBMIT A CERTIFIED COPY OF THE TEST RESULTS.
7. STORM MANHOLES AND CBMHS ARE TO HAVE 300mm SUMPS UNLESS OTHERWISE INDICATED.
8. CONTRACTOR TO TELEVISE (CCTV) ALL PROPOSED SEWERS, 200mmØ OR GREATER PRIOR TO BASE COURSE ASPHALT. UPON COMPLETION OF CONTRACT, THE CONTRACTOR IS RESPONSIBLE TO FLUSH AND CLEAN ALL SEWERS & APPURTENANCES.

M:\2020\120202\CAD\Design\120202-STM.dwg, STM2, Oct 01, 2021 - 2:29pm, rpood

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

Owner:
Wesley Clover International
c/o Richard Goldstein
KRP Propoerties
300-555 Legget Drive, Tower B,
Kanata, ON K2K 2X3

No.	REVISION	DATE	BY
1.	ISSUED WITH ZONING AND SITE PLAN APPLICATION	OCT 01/21	GJM

SCALE
1:250

1:250
0 2 4 6 8 10

DESIGN	GJM
CHECKED	GJM
DRAWN	RJG
CHECKED	GJM
APPROVED	GJM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
G.J. MacDONALD
Oct. 1, 2021
PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY of OTTAWA
BROOKSTREET APARTMENTS

DRAWING NAME
STORM AREA DRAINAGE PLAN

PROJECT No. 120202-00
REV REV 1
DRAWING No. 120202-STM2

PLANA1.DWG - 841mmx594mm

APPENDIX C
Sanitary Sewer Design Sheet

SANITARY TRUNK SEWER
Sanitary Sewer Design Sheet
Brookstreet Apartments

PROJECT : 120202

DESIGNED BY: GMAC

DATE: Sept. 23, 2021

NOVATECH
Engineers, Planners & Landscape Architects

	LOCATION			INDIVIDUAL		CUMULATIVE		PEAK FLOWS				PROPOSED SEWER					
	AREA	FROM MH	TO MH	FLOW RATE (L/s)	Infiltration Area (ha)	FLOW RATE (L/s)	Infiltration Area (ha)	PEAK FACTOR M	PEAK FLOW Q (p) (L/s)	PEAK EXTRAN.FLOW Q(i) (L/s)	***PEAK DESIGN FLOW Q (d) (L/s)***	LENGTH (m)	PIPE SIZE (mm)	TYPE OF PIPE	GRADE %	CAPACITY (L/s)	FULL FLOW VELOCITY (m/s)
	528 March Road Site	SAN MH 4	EX. SAN MH A	0.35	2.20	0.35	2.20	5.7	2.00	0.62	*2.61*	25.4	250	PVC	0.50	43.87	0.87
	Legget Drive	EX. SAN MH A	EX. SAN MH B	0.00	0.00	0.35	2.20	5.7	2.00	0.62	*2.61*	55.1	250	PVC	0.33	35.64	0.70
	Legget Drive (Newbridge)	EX. SAN MH	EX. SAN MH C	1.69	4.05	1.69	4.05	1.5	2.54	1.13	*3.67*	60.3	250	PVC	0.31	34.54	0.68
	Legget Drive	EX. SAN MH C	EX. SAN MH B	0.00	0.00	1.69	4.05	1.5	2.54	1.13	*3.67*	68.0	250	PVC	0.29	33.41	0.66
**	Legget Drive	EX. SAN MH B	SAN MH 3	0.00	0.00	2.04	6.25	1.5	3.06	1.75	*4.81*	26.7	250	PVC	0.25	31.02	0.61
*	KRP Site	SAN MH 3	SAN MH 2	0.00	0.00	2.04	6.25	1.5	3.06	1.75	*4.81*	50.4	250	PVC	0.50	43.87	0.87
*	KRP Site	SAN MH 2	SAN MH 1	0.00	0.00	2.04	6.25	1.5	3.06	1.75	*4.81*	44.0	250	PVC	0.50	43.87	0.87
*	KRP Site	SAN MH 1	EX. SAN MH D	0.00	0.00	2.04	6.25	1.5	3.06	1.75	*4.81*	9.1	250	PVC	1.00	62.04	1.22
	KRP Site (Tower C)	TOWER C	EX. SAN MH D	0.96	1.23	0.96	1.23	1.5	1.44	0.34	*1.79*	114.3	250	PVC	0.40	39.24	0.77
*	KRP Site	EX. SAN MH D	EX. SAN MH E	0.00	0.00	3.00	7.48	1.5	4.50	2.09	*6.60*	9.5	250	PVC	1.00	62.04	1.22
*	KRP Site	EX. SAN MH E	EX. SAN MH F	0.00	0.00	3.00	7.48	1.5	4.50	2.09	*6.60*	48.1	250	PVC	0.67	50.78	1.00
	KRP Site (Tower D)	TOWER D	EX. SAN MH F	0.96	3.37	0.96	3.37	1.5	1.44	0.94	*2.39*	34.0	200	PVC	1.30	39.01	1.20
*	KRP Site	EX. SAN MH F	EX. SAN MH G	0.00	0.00	3.96	10.85	1.5	5.95	3.04	*8.98*	61.9	250	PVC	0.35	36.70	0.72
†	KRP Site (Brookstreet Hotel)	HOTEL	EX. SAN MH G	2.21	4.49	2.21	4.49	1.5 - 4.0	7.07	1.26	*8.33*	22.0	200	PVC	0.90	32.46	1.00
*	KRP Site	EX. SAN MH G	EX. SAN MH H	0.00	0.00	6.17	15.34	1.5	9.26	4.30	*13.56*	21.0	250	PVC	0.38	38.24	0.75
	KRP Site (Parking Structure)	PRKG STRUCT	EX. SAN MH H	0.30	1.28	0.30	1.28	1.5	0.45	0.36	*0.81*	91.1	250	PVC	0.40	39.24	0.77
*	KRP Site	EX. SAN MH H	EX. SAN MH I	0.00	0.00	6.47	16.62	1.5	9.71	4.65	*14.36*	88.9	250	PVC	0.38	38.24	0.75
*	KRP Site	EX. SAN MH I	EX. 750 TRUNK	0.00	0.00	6.47	16.62	1.5	9.71	4.65	*14.36*	100.1	250	PVC	0.52	44.74	0.88
	Brookstreet Apartments	EX SAN MH1	EX 750 TRUNK						**4.94**	**0.17**	***19.47***	**100.1**	**250**	**PVC**	**0.52**	**44.74**	**0.88**

Notes:

1. Q(d) = Q(p) + Q(i) , where
   Q(d) = Design Flow (L/sec)
   Q(p) = Population Flow (L/sec)
   Q(i) = Extraneous Flow (L/sec)
2. Q(i) = 0.28 L/sec/ha
3. Daily Sewage Flow from Office Towers = 75 L/person/day (Appendix 4-A, Ottawa Sewer Design Guidelines)
4. Commercial Peaking Factor = 1.5 (Figure 4.3 Ottawa Sewer Design Guidelines)
5. Refer to Sanitary Drainage Area Plan (114060-SAN, C200) for details of drainage areas
6. Refer to the 'Sanitary and Storm Sewer Design Brief' for a breakdown of Daily Sewage Flow components and applicable peaking factors from the Brookstreet Hotel

* Denotes sewers applicable to this MOE ECA appplication. All other sewers shown on this design sheet are private sewers tributary to the sanitary trunk sewer under application for MOE approval and/or have MOE approval under an existing C of A.
** An existing C of A covers the sanitary stub from SAN MH B north approx. 16.1m to the existing cap. The 10.7m of proposed sewer from the cap to SAN MH 3 is applicable to the new MOE ECA application.
† Total peak sanitary flow from hotel site = 8.33 L/s, including Extraneous Flows (Also refer to Note 6 above for further details)

SANITARY TRUNK SEWER
Sanitary Sewer Design Sheet

PROJECT : 114060
DESIGNED BY: SM/FST
CHECKED BY: FST
DATE: 25-Sep-14

NOVATECH
Engineers, Planners & Landscape Architects

	LOCATION			INDIVIDUAL		CUMULATIVE		PEAK FLOWS				PROPOSED SEWER					
	AREA	FROM MH	TO MH	FLOW RATE (L/s)	Infiltration Area (ha)	FLOW RATE (L/s)	Infiltration Area (ha)	PEAK FACTOR M	PEAK FLOW Q (p) (L/s)	PEAK EXTRAN.FLOW Q(i) (L/s)	***PEAK DESIGN FLOW Q (d) (L/s)***	LENGTH (m)	PIPE SIZE (mm)	TYPE OF PIPE	GRADE %	CAPACITY (L/s)	FULL FLOW VELOCITY (m/s)
	528 March Road Site	SAN MH 4	EX. SAN MH A	0.35	2.20	0.35	2.20	5.7	2.00	0.62	***2.61***	25.4	250	PVC	0.50	43.87	0.87
	Legget Drive	EX. SAN MH A	EX. SAN MH B	0.00	0.00	0.35	2.20	5.7	2.00	0.62	***2.61***	55.1	250	PVC	0.33	35.64	0.70
	Legget Drive (Newbridge)	EX. SAN MH	EX. SAN MH C	1.69	4.05	1.69	4.05	1.5	2.54	1.13	***3.67***	60.3	250	PVC	0.31	34.54	0.68
	Legget Drive	EX. SAN MH C	EX. SAN MH B	0.00	0.00	1.69	4.05	1.5	2.54	1.13	***3.67***	68.0	250	PVC	0.29	33.41	0.66
**	Legget Drive	EX. SAN MH B	SAN MH 3	0.00	0.00	2.04	6.25	1.5	3.06	1.75	***4.81***	26.7	250	PVC	0.25	31.02	0.61
*	KRP Site	SAN MH 3	SAN MH 2	0.00	0.00	2.04	6.25	1.5	3.06	1.75	***4.81***	50.4	250	PVC	0.50	43.87	0.87
*	KRP Site	SAN MH 2	SAN MH 1	0.00	0.00	2.04	6.25	1.5	3.06	1.75	***4.81***	44.0	250	PVC	0.50	43.87	0.87
*	KRP Site	SAN MH 1	EX. SAN MH D	0.00	0.00	2.04	6.25	1.5	3.06	1.75	***4.81***	9.1	250	PVC	1.00	62.04	1.22
	KRP Site (Tower C)	TOWER C	EX. SAN MH D	0.96	1.23	0.96	1.23	1.5	1.44	0.34	***1.79***	114.3	250	PVC	0.40	39.24	0.77
*	KRP Site	EX. SAN MH D	EX. SAN MH E	0.00	0.00	3.00	7.48	1.5	4.50	2.09	***6.60***	9.5	250	PVC	1.00	62.04	1.22
*	KRP Site	EX. SAN MH E	EX. SAN MH F	0.00	0.00	3.00	7.48	1.5	4.50	2.09	***6.60***	48.1	250	PVC	0.67	50.78	1.00
	KRP Site (Tower D)	TOWER D	EX. SAN MH F	0.96	3.37	0.96	3.37	1.5	1.44	0.94	***2.39***	34.0	200	PVC	1.30	39.01	1.20
*	KRP Site	EX. SAN MH F	EX. SAN MH G	0.00	0.00	3.96	10.85	1.5	5.95	3.04	***8.98***	61.9	250	PVC	0.35	36.70	0.72
†	KRP Site (Brookstreet Hotel)	HOTEL	EX. SAN MH G	2.21	4.49	2.21	4.49	1.5 - 4.0	7.07	1.26	***8.33***	22.0	200	PVC	0.90	32.46	1.00
*	KRP Site	EX. SAN MH G	EX. SAN MH H	0.00	0.00	6.17	15.34	1.5	9.26	4.30	***13.56***	21.0	250	PVC	0.38	38.24	0.75
	KRP Site (Parking Structure)	PRKG STRUCT	EX. SAN MH H	0.00	1.28	0.00	1.28	1.5	0.00	0.36	***0.36***	91.1	250	PVC	0.40	39.24	0.77
*	KRP Site	EX. SAN MH H	EX. SAN MH I	0.00	0.00	6.17	16.62	1.5	9.26	4.65	***13.91***	88.9	250	PVC	0.38	38.24	0.75
*	KRP Site	EX. SAN MH I	EX. 750 TRUNK	0.00	0.00	6.17	16.62	1.5	9.26	4.65	***13.91***	100.1	250	PVC	0.52	44.74	0.88

Notes:
1. Q(d) = Q(p) + Q(i) , where
   Q(d) = Design Flow (L/sec)
   Q(p) = Population Flow (L/sec)
   Q(i) = Extraneous Flow (L/sec)
2. Q(i) = 0.28 L/sec/ha
3. Daily Sewage Flow from Office Towers = 75 L/person/day (Appendix 4-A, Ottawa Sewer Design Guidelines)
4. Commercial Peaking Factor = 1.5 (Figure 4.3 Ottawa Sewer Design Guidelines)
5. Refer to Sanitary Drainage Area Plan (114060-SAN, C200) for details of drainage areas
6. Refer to the 'Sanitary and Storm Sewer Design Brief' for a breakdown of Daily Sewage Flow components and applicable peaking factors from the Brookstreet Hotel

* Denotes sewers applicable to this MOE ECA appplication. All other sewers shown on this design sheet are private sewers tributary to the sanitary trunk sewer under application for MOE approval and/or have MOE approval under an existing C of A.
** An existing C of A covers the sanitary stub from SAN MH B north approx. 16.1m to the existing cap. The 10.7m of proposed sewer from the cap to SAN MH 3 is applicable to the new MOE ECA application.
† Total peak sanitary flow from hotel site = 8.33 L/s, including Extraneous Flows (Also refer to Note 6 above for further details)

LEGEND

- 2.02 / 101-103 / 1.5 | 2.6 — AREA IN HECTARES; AREA IDENTIFIER; PEAK FLOW RATE (L/s), incl. Extraneous Flows; PEAKING FACTOR
  *Refer to Sanitary and Storm Sewer Design Brief for detailed calculations of flow rates for each development
- SANITARY DRAINAGE AREA BOUNDARY
- DIRECTION OF FLOW
- SANITARY TRUNK SEWER AND MH
- TRIBUTARY SANITARY SEWER AND MH

MONMOUTH

MARCH ROAD

BROOKSTREET

LEGGET DRIVE

THE MARSHES GOLF COURSE

SELECTRON

1.23 TOWER 'C' 1.5 | 1.79

1.28 PARKING 1.5 | 0.36

4.49 HOTEL 1.5 | 0.40 | 8.33

4.05 NEWBRIDGE 1.5 | 3.67

3.37 TOWER 'D' 1.5 | 2.39

2.20 4-EX 'A' 5.7 | 2.62

PROPOSED 2-STOREY BUILDING FFE=80.00

EX. SAN MH INV=76.34

EX. SAN MH INV=75.94

EX. SAN INV=73.20

EX. SAN MH INV=70.29

EX. SAN MH INV=76.75

EX. SAN MH 'C' INV=76.68

EX. SAN INV=73.26

EX. SAN MH 'D' INV=75.13

EX. SAN MH 'F' INV=73.74

EX. SAN MH 'G' INV=72.86

EX. SAN MH 'H' INV=72.74

EX. SAN MH 'I' INV=71.53

EX. SAN MH INV=70.11

EX. SAN MH 'E' INV=74.09

SAN MH 1 INV=75.27

SAN MH 2 INV=76.04

SAN MH 3 INV=76.35

EX. SAN INV=75.05

EX. SAN MH 'B' INV=76.44

SAN MH 4 INV=76.80

SAN INV=77.00

EX. SAN MH 'A' INV=76.64

EX. SAN MH INV=69.93

EX. SAN MH INV=69.70

250mm-SANITARY SEWER

200mm-SAN SEWER

200mm SAN SERVICE

250 Ø SAN

750mm-SANITARY SEWER

CONC. PAD & BOLLARDS

FIRE ROUTE

PARKING

No	DATE	EMISSION POUR / OBJECT
1	2014.05.28	ISSUED WITH DSS & SWM REPORT
2	2014.08.08	ISSUED WITH REVISED DSS & SWM REPORT
3	2014.09.25	ISSUED WITH REVISED DSS & SWM REPORT
4	2014.11.12	ISSUED FOR CITY / MOE APPROVAL

CLE / KEY :

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

MECHANICAL, ELECTRICAL ENGINEER :

CIVIL ENGINEER :

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

MECHANICAL, ELECTRICAL ENGINEER :

STRUCTURAL ENGINEER :

CLIENT :

ARCHITECT :

Architects
190 Somerset St. W
Suite 206
Ottawa , Ontario
K2P 0J4
T.613.695.6122
F.514.861.5383
www.rubinrotman.com
Rubin & Rotman architects

SEAL :

LICENSED PROFESSIONAL ENGINEER
F.S. THAUVETTE
100041999
Nov. 12, 2014
PROVINCE OF ONTARIO

NOTE :

L'entrepreneur doit vérifier toutes les informations et dimension sur le site et aviser immédiatement l'architecte de toutes erreurs ou omissions.

Contractor shall verify all information and dimensions on site and immediately report any errors or omissions to the architect.

PROJECT NAME :

Sanmina
500 March Rd.
Kanata, Ontario

TITLE :

SANITARY DRAINAGE AREA PLAN

ISSUE DATE : 2014.11.12	DRAWN BY : SM
SCALE : 1 : 750	VERIFIED BY : FST
NECL FILE : 114060-SAN	DRAWING NO : C200
	REVISION : 4

M:\2014\114060\CAD\DESIGN\114060-SAN.DWG
Date de tracage : 2014/11/12
Par SMS

APPENDIX D
Fire Demand per FUS

FUS - Fire Flow Calculations

As per 1999 Fire Underwriter's Survey Guidelines

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 120202
Project Name: Brookstreet Appartments
Date: 9/15/2021
Input By: Jazmine Gauthier
Reviewed By: Greg MacDonald

Legend: Input by User; No Information or Input Required

Building Description: 31 story building (incl. 4 story podium)
Fire Resistive Construction

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction C	Wood frame		1.5	0.6	
		Ordinary construction		1		
		Non-combustible construction		0.8		
		Modified Fire resistive construction (2 hrs)	Yes	0.6		
		Fire resistive construction (> 3 hrs)		0.6		
2	**Floor Area**					
	A	Podium Level Footprint (m^2)	1536			
		Total Floors/Storeys (Podium)	4			
		Tower Footprint (m^2)	887			
		Total Floors/Storeys (Tower)	27			
		Protected Openings (1 hr)	Yes			
		Area of structure considered (m^2)			**2,304**	
	F	**Base fire flow without reductions**				**6,000**
		$F = 220\ C\ (A)^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**			**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**5,100**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**			**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	Yes	-30%	-30%	**-2,550**
		Standard Water Supply	Yes	-10%	-10%	
		Fully Supervised System	Yes	-10%	-10%	
				Cumulative Total	**-50%**	
5	**Exposure Surcharge (cumulative %)**				**Surcharge**	
	(3)	North Side	0 - 3 m		25%	**3,060**
		East Side	> 45.1m		0%	
		South Side	20.1 - 30 m		10%	
		West Side	0 - 3 m		25%	
				Cumulative Total	**60%**	
Results						
6	(1) + (2) + (3)	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**6,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**100**
				or	USGPM	1,585
7	**Storage Volume**	Required Duration of Fire Flow (hours)			Hours	2
		Required Volume of Fire Flow (m^3)			m^3	720

FUS - Fire Flow Calculations - User Guide - Fire Resistive

Novatech Project #: 120202
Project Name: Brookstreet Appartments
Date: 9/15/2021
Input By: Jazmine Gauthier
Reviewed By: Greg MacDonald

- Please use the notes below as a guide when completing the FUS Fire Flow Calculations
- When in doubt, confirm construction material, firewalls, etc. with architect/owner
- When in doubt, err on conservative side

Note: This form only applies for Fire Resistive

Enter a description of the building or unit being considered, i.e. use/most stringent condition/address

Summary		
Construction Type	Fire Resistive Construction	
Floor Area Considered	2,304	m^2
Occupancy Reduction	-15%	
Sprinkler Reduction	-50%	
Exposure Surcharge	60%	
Total Fire Flow	6,000	L/min

Project Manager Review
Date: _____
Name: _____
Signature: _____

Base Fire Flow

Construction Material

1
Does not apply for this form
Does not apply for this form
Does not apply for this form
Only Use if can be confirmed with client/architect (ISO Cl 5)
Only Use if can be confirmed with client/architect (ISO Cl 6)

Floor Area

2
If considered gross floor area, then enter 1 floor/storey. If Fire wall, then reduce footprint accordingly.
Un-Protected **8** = number of floors above first 2, up to max of 10 floors total

Protected **2** = number of additional immediately adjoining floors to be considered, up to 2

Do vertical openings have minimum 1 hour rating between floors? Confirm this with the architect.

For unprotected openings scenario only, can be mix of podium and tower

Reductions or Surcharges

Occupancy hazard reduction or surcharge

3
Residential - with no garage
Residential - with garage
General Commercial - Generally, no reduction
Check usage with FUS
Check usage with FUS

Sprinkler Reduction

4
Only Use if can be confirmed with client/architect
Only Use if can be confirmed with client/architect
Only Use if can be confirmed with client/architect

Exposure Surcharge (cumulative %)

5
For Fire walls: FUS considers a Fire wall to have a minimum 2 hour rating per NBC.

Results

6
NOTE: Refer to City Technical Bulletin ISDTB-2014-02 for additional considerations to cap this value at 10,000L/min

If IGPM is needed, divide USGPM by 1.20095

7
For Rural areas, or where required