

**LEGEND**

PROPERTY LINE	PROPOSED WATER METER AND REMOTE METER
SANMH 101	PROPOSED FINISHED FLOOR ELEVATION
CBMH 102	PROPOSED UNDERSIDE OF FOOTING ELEVATION
STMMH 108	PROPOSED BASEMENT FLOOR ELEVATION
CB 01	PROPOSED TOP OF FOUNDATION ELEVATION
HYD	EXISTING CONCRETE CURB
VB	EXISTING SANITARY MH & SEWER
DC	EXISTING STORMWATER & SEWER
200mmØ	EXISTING HYDRANT
BEND	EXISTING UTILITY POLE
11.25', 22.5', 45' or TEE	EXISTING WATERMAIN
ICD	EXISTING LIGHT STANDARD
PROPOSED TWSI	EXISTING HYDRANT
PROPOSED INLET CONTROL DEVICE	EXISTING UTILITY POLE
PROPOSED TRENCH	EXISTING WATERMAIN
PROPOSED RETAINING WALL	EXISTING LIGHT STANDARD
	EXISTING OVERHEAD UTILITY WIRES

**PROPOSED 150mmØ BLDG A WATER SERVICE TABLE**

STATION	SURFACE ELEVATION	TWM ELEVATION	COMMENTS
1+000.0	86.82	84.22	250mmØ CROSS
1+001.3	86.85	84.25	250mmØ 150mm REDUCER(S)
1+003.8	86.85	84.25	150mmØ VALVE AND VALVE BOX
1+006.6	87.00	84.30	CAP 1.0m FROM BUILDING

**PROPOSED 250mmØ WATERMAIN TABLE**

STATION	SURFACE ELEVATION	TWM ELEVATION	COMMENTS
0+000.0	86.50	83.84	CONNECTION TO EX. 300mmØ WM STUB IN ESSELMONT ST
0+000.8	86.50	83.84	300mmØ 250mm REDUCER
0+001.3	86.58	83.90	45° HORIZONTAL BEND
0+001.7	86.57	83.92	VALVE AND VALVE BOX AT PROPERTY LINE
0+010.6	86.53	83.95	22.5° HORIZONTAL BEND
0+031.7	86.62	84.22	HYDRANT TEE
0+036.2	86.62	84.22	250mmØ CROSS
0+050.4	86.60	84.20	CROSS BELOW 375mmØ STM (±0.61m CLEARANCE)
0+091.2	86.72	84.20	45° HORIZONTAL BEND
0+101.0	86.69	84.20	45° HORIZONTAL BEND
0+107.0	86.60	84.10	CROSS BELOW 375mmØ STM (±0.54m CLEARANCE)
0+137.8	86.85	83.90	CROSS BELOW 375mmØ STM (±0.53m CLEARANCE)
0+141.5	86.69	83.99	VALVE AND VALVE BOX AT PROPERTY LINE
0+154.6	86.88	84.35	CONNECTION TO EX. 300mmØ WM IN NAVAN RD

**PROPOSED 200mmØ-150mmØ BLDG C WATER SERVICE TABLE**

STATION	SURFACE ELEVATION	TWM ELEVATION	COMMENTS
3+000.0	86.62	84.22	250mmØ CROSS
3+007.1	86.73	84.22	TEE (BUILDING B SERVICE)
3+008.1	86.72	84.25	250mmØ 200mm REDUCER
3+012.8	86.67	84.27	CROSS BELOW 375mmØ STM (±0.67m CLEARANCE)
3+014.3	86.65	84.25	45° HORIZONTAL BEND
3+020.8	86.85	84.45	HYDRANT TEE
3+021.8	87.03	84.45	200mmØ 150mm REDUCER
3+026.3	87.05	84.50	150mmØ VALVE AND VALVE BOX
3+031.6	87.19	84.50	CAP 1.0m FROM BUILDING

**PROPOSED 200mmØ-150mmØ BLDG B WATER SERVICE TABLE**

STATION	SURFACE ELEVATION	TWM ELEVATION	COMMENTS
2+000.0	86.73	84.22	TEE
2+005.3	86.95	84.30	45° HORIZONTAL BEND
2+014.6	86.70	84.30	45° HORIZONTAL BEND
2+016.4	86.67	84.27	CROSS BELOW 375mmØ STM (±0.70m CLEARANCE)
2+023.0	86.81	84.40	HYDRANT TEE
2+024.0	86.82	84.40	200mmØ 150mm REDUCER
2+032.8	87.10	84.60	150mmØ VALVE AND VALVE BOX
2+035.2	87.19	84.60	CAP 1.0m FROM BUILDING

**AREA A-2: ICD TABLE - CBMH 104**

DESIGN EVENT	TYPE OF ICD	DIAMETER OF OUTLET PIPE (mm)	DESIGN FLOW (L/S)	DESIGN HEAD (m)	WATER DEPTH (m)	VOLUME (m³)
1.2 YR	18mm DIA. ORIFICE	375	13.3	0.18	84.80	81.4
1.5 YR	PLUG TYPE ICD		16.2	0.29	84.91	112.7
1.00 YR			23.9	0.63	85.25	234.2

**SITE FLOWS & STORMWATER MANAGEMENT TABLE**

DESIGN EVENT	PRE-DEVELOPMENT CONDITIONS					POST-DEVELOPMENT CONDITIONS					REDUCTION IN FLOW (L/s) or %
	UNCONTROLLED FLOW (L/s)	ALLOWABLE RELEASE RATE (L/s)**	A-1 DIRECT RUNOFF (L/s)	A-2 FLOW (L/s)	A-3 FLOW (L/s)	R-1 FLOW (L/s)	R-2 FLOW (L/s)	R-3 FLOW (L/s)	TOTAL FLOW (L/s)		
1.2 YR	63.3	63.3	31.5	13.3	3.7	2.9	2.9	3.5	57.7	5.6 or 9%	
1.5 YR	85.9	85.9	42.7	16.2	5.0	3.3	4.0	74.3	11.6 or 14%		
1.00 YR	154.0	154.0	84.5	23.9	9.4	3.6	4.5	129.7	24.3 or 30%		

\*\* REDUCED FLOW COMPARED TO PRE-DEVELOPMENT UNCONTROLLED CONDITIONS  
\*\* LESSER OF UNCONTROLLED PRE-DEVELOPMENT FLOWS OR 85 L/s/m²

**CRITICAL SEWER PIPE CROSSING TABLE**

CROSSING	LOWER PIPE	HIGHER PIPE	CLEARANCE SURFACE ELEVATION
1	250mmØ TWM-83.95	300mmØ STM INV-84.84 ± 1.01m	86.55 m
2	250mmØ TWM-84.20	375mmØ STM INV-84.81 ± 0.61m	86.60 m
3	250mmØ TWM-84.10	375mmØ STM INV-84.64 ± 0.54m	86.60 m
4	250mmØ TWM-83.90	375mmØ STM INV-84.43 ± 0.53m	86.85 m
5	200mmØ TWM-84.27	375mmØ STM INV-84.97 ± 0.70m	86.67 m
6	200mmØ TWM-84.27	375mmØ STM INV-84.94 ± 0.67m	86.67 m
7	200mmØ SAN 05V-82.42	375mmØ STM INV-85.03 ± 2.61m	86.77 m

**ROOF DRAIN TABLE**

AREA ID	ROOF DRAIN No. (WATTS MODEL)	ROOF DRAIN OPENING SETTING	2 YEAR RELEASE RATE	APPROX. 2-YR PONDING DEPTH	5-YEAR RELEASE RATE	APPROX. 5-YEAR PONDING DEPTH	100-YEAR RELEASE RATE	APPROX. 100-YR PONDING DEPTH
R-1	RD 1A (RD-100-A-ADJ)	1/4 EXPOSED	0.72 L/s	10 cm	0.82 L/s	11 cm	0.91 L/s	14 cm
	RD 2A (RD-100-A-ADJ)	1/4 EXPOSED	0.72 L/s	10 cm	0.82 L/s	11 cm	0.91 L/s	14 cm
	RD 3A (RD-100-A-ADJ)	1/4 EXPOSED	0.72 L/s	10 cm	0.82 L/s	11 cm	0.91 L/s	14 cm
	RD 4A (RD-100-A-ADJ)	1/4 EXPOSED	0.72 L/s	10 cm	0.82 L/s	11 cm	0.91 L/s	14 cm
	RD 1B (RD-100-A-ADJ)	1/4 EXPOSED	0.72 L/s	10 cm	0.82 L/s	11 cm	0.91 L/s	14 cm
R-2	RD 2B (RD-100-A-ADJ)	1/4 EXPOSED	0.72 L/s	10 cm	0.82 L/s	11 cm	0.91 L/s	14 cm
	RD 3B (RD-100-A-ADJ)	1/4 EXPOSED	0.72 L/s	10 cm	0.82 L/s	11 cm	0.91 L/s	14 cm
	RD 4B (RD-100-A-ADJ)	1/4 EXPOSED	0.72 L/s	10 cm	0.82 L/s	11 cm	0.91 L/s	14 cm
	RD 1C (RD-100-A-ADJ)	1/4 EXPOSED	0.72 L/s	10 cm	0.82 L/s	11 cm	0.91 L/s	14 cm
	RD 2C (RD-100-A-ADJ)	1/4 EXPOSED	0.72 L/s	10 cm	0.82 L/s	11 cm	0.91 L/s	14 cm
R-3	RD 3C (RD-100-A-ADJ)	1/4 EXPOSED	0.72 L/s	10 cm	0.82 L/s	11 cm	0.91 L/s	14 cm
	RD 4C (RD-100-A-ADJ)	1/4 EXPOSED	0.72 L/s	10 cm	0.82 L/s	11 cm	0.91 L/s	14 cm

**GENERAL NOTES:**

- COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
- 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.
- OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF OTTAWA BEFORE COMMENCING CONSTRUCTION.
- 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 INSURED.
- 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.
- REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL, OBTAIN 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.
- ALL ELEVATIONS ARE GEODETIC.
- REFER TO THE GEOTECHNICAL REPORT (No. PG682-1, Revision 1, DATED APRIL 12, 2023), PREPARED BY PATERSON GROUP INC. 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.
- REFER TO ARCHITECT'S AND LANDSCAPE ARCHITECT'S DRAWINGS FOR BUILDING AND HARDWARE SURFACE AREAS AND DIMENSIONS.
- REFER TO DEVELOPMENT SERVICES STUDY & STORMWATER MANAGEMENT REPORT (R-2023-024) PREPARED BY NOVATECH ENGINEERING CONSULTANTS LTD.
- SAW CUT AND KEY GRAB ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).
- PROVIDE LINE/PARKING PAINTING.
- CONTRACTOR TO PROVIDE CONSULTATION WITH A GENERAL PLAN OF SERVICES INDICATING ALL SERVICES AS-BUILT INFORMATION SHOWN ON THIS PLAN. AS-BUILT INFORMATION MUST INCLUDE PIPE MATERIALS, SIZES, SLOPES, INVERTS AND TIE ELEVATIONS, STRUCTURE LOCATIONS, VALVE AND HYDRANT LOCATIONS, TWM ELEVATIONS AND ANY ALIGNMENT CHANGES, ETC.

**SEWER NOTES:**

- SURPLY AND CONSTRUCT ALL SEWERS AND APPURTENANCES IN ACCORDANCE WITH THE MOST CURRENT CITY OF OTTAWA STANDARDS AND SPECIFICATIONS.
- SPECIFICATIONS:
 

ITEM	SPEC. No.	REFERENCE
CATCHBASIN (600x600mm)	705.010	OPSD
STORM / SANITARY MANHOLE (1200mmØ)	701.010	OPSD
CB, FRAME & COVER	400.050	OPSD
STORM / SANITARY MH FRAME & COVER	401.030	OPSD
WATER TIGHT MH FRAME AND COVER	401.030	CITY OF OTTAWA
SEWER TRENCH	56	
STORM SEWER	PVC DR 35	
SANITARY SEWER	PVC DR 35	
CATCHBASIN LEAD	PVC DR 35	
- ALL STORM AND SANITARY SEWER LATERALS SHALL BE EQUIPPED WITH BACKFLOW PREVENTION DEVICES AS PER THE CITY OF OTTAWA STANDARD DETAILS S14 AND S14.1 OR S14.2.
- INSULATE ALL PIPES (SAN/STM) THAT HAVE LESS THAN 150mm COVER WITH H-80 INSULATION PER INSULATION DETAIL FOR SHALLOW SEWERS. PROVIDE 150mm CLEARANCE BETWEEN WATERMAIN AND INSULATION.
- SERVICES ARE TO BE CONSTRUCTED TO 1.0m FROM FACE OF BUILDING AT A MINIMUM SLOPE OF 1.0%.
- 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.
- FLEXIBLE CONNECTIONS ARE REQUIRED FOR CONNECTING PIPES TO MANHOLES (FOR EXAMPLE KORN-SEAL, FOX, POSITIVE SEAL AND DURASEAL). THE CONCRETE CRADLE FOR THE PIPE CAN BE ELIMINATED.
- THE OWNER SHALL REQUIRE THAT THE SITE SERVING CONTRACTOR PERFORM FIELD TESTS FOR QUALITY CONTROL OF ALL SANITARY SEWERS. LEAKAGE TESTING SHALL BE COMPLETED IN ACCORDANCE WITH OPSD 410.07.15, 410.07.16 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.
- ALL STORM MANHOLES AND CATCHBASIN MANHOLES ARE TO HAVE 300mm SLUMPS UNLESS OTHERWISE INDICATED. ALL CATCHBASINS ARE TO HAVE 600mm SLUMPS UNLESS OTHERWISE INDICATED.
- ALL CATCHBASINS, MANHOLES AND/OR CATCHBASIN MANHOLES THAT ARE TO HAVE ICD'S INSTALLED WITHIN THEM ARE TO HAVE 600mm SLUMPS.
- ALL WEEPING TILE CONNECTIONS TO BE MADE TO THE PROPOSED STORM SEWER SYSTEM DOWNSTREAM OF ANY INLET CONTROL DEVICES.
- CONTRACTOR TO TELEVISION (CCTV) ALL PROPOSED SEWERS, 200mmØ OR GREATER PRIOR TO BASE COURSE ASPHALT. UPON COMPLETION OF CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE TO FLUSH AND CLEAN ALL SEWERS & APPURTENANCES.

**WATERMAIN NOTES:**

- SURPLY 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, SHUT-OFFS AT THE MAIN AND CHLORINATION OF THE WATER SYSTEM SHALL BE PERFORMED BY CITY OF OTTAWA FORCES.
- SPECIFICATIONS:
 

ITEM	SPEC. No.	REFERENCE
WATERMAIN TRENCHING	W19	CITY OF OTTAWA
FIRE HYDRANT INSTALLATION	W22	CITY OF OTTAWA
THERMAL INSULATION IN SHALLOW TRENCHES	W23	CITY OF OTTAWA
INSULATION ADJACENT TO OPEN STRUCTURES	W24	CITY OF OTTAWA
VALVE BOX ASSEMBLY	W25	CITY OF OTTAWA
WATERMAIN WATERMAIN CROSSING BELOW SEWER	PVC DR 18	CITY OF OTTAWA
WATERMAIN CROSSING ABOVE SEWER	W25.2	CITY OF OTTAWA
- WATERMAIN SHALL BE MINIMUM 2.4m DEPTH BELOW GRADE UNLESS OTHERWISE INDICATED.
- PROVIDE MINIMUM 0.5m CLEARANCE BETWEEN OUTSIDE OF PIPES AT ALL CROSSINGS, IF SEWER IS ABOVE WATERMAIN.
- PROPOSED WATER SERVICES ARE TO BE CONSTRUCTED TO WITHIN 1.0m OF FOUNDATION WALL AND CAPPED, UNLESS OTHERWISE INDICATED.

**BENCHMARK NOTES:**

- ELEVATIONS SHOWN ARE GEODETIC AND ARE REFERRED TO THE COWDA GEODETIC DATUM, DERIVED FROM CONTROL MONUMENT NO. 001196530227 HAVING AN ELEVATION OF 86.707 METRES.
- IT IS THE RESPONSIBILITY OF THE USER OF THIS INFORMATION TO VERIFY THAT THE JOB BENCHMARK HAS NOT BEEN ALTERED OR DISTURBED AND THAT ITS RELATIVE ELEVATION AND DESCRIPTION AGREES WITH THE INFORMATION SHOWN ON THIS DRAWING.
- BENCHMARK WAS PROVIDED ON TOPOGRAPHIC PLAN OF SURVEY OF PART OF LOT 4, CONVESSION 4 (OTTAWA FRONT) GEODAPHIC TOWNSHIP OF GLOUCESTER, CITY OF OTTAWA, SURVEYED BY ANNIS, O'SULLIVAN AND VOLEBEK LTD.

**INSULATION DETAIL FOR SHALLOW SEWERS**

NOT TO SCALE

COVER (mm)	INSULATION THICKNESS (mm)
1000-1200	50
1500-2000	75
1200-1500	100
900-1200	125

h = THICKNESS OF INSULATION (mm)  
D = DIAMETER OF PIPE (mm)  
W = WIDTH OF INSULATION (mm)  
D > D.O.F. OF PIPE (mm)

**OWNER INFORMATION**

262576 ONTARIO INC.  
231 BRITANNY DRIVE, SUITE D  
OTTAWA, ONTARIO, K1K 0R8  
LALIT AGGARWAL  
PHONE: (613)-746-1647  
lsa@manorparkcap.com

**SCALE**

1:300

0 3 6 9 12

**FOR REVIEW ONLY**

DESIGN	ZA
CHECKED	FST
DRAWN	ZA
CHECKED	FST
APPROVED	FST

**LOCATION**

CITY OF OTTAWA  
3317 NAVAN ROAD

**DRAWING NAME**

GENERAL PLAN OF SERVICES

**PROJECT No.**

118076

**REV #**

REV # 2

**DRAWING No.**

118076-GP

**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

**PROPOSED ELEVATION**

86.20, 86.07, 84.50, 84.49, 84.47, 85.48, 86.07

**EXISTING ELEVATION**

87.17, 86.87, 86.63, 86.67, 86.62

**POND CROSS-SECTION A-A**

SCALE: 1:300 (H)  
1:30 (V)

**CHAINAGE**

0+000, 0+010, 0+020, 0+030, 0+042.19

**INSULATION NOTES:**

- THE THICKNESS OF SEWER INSULATION SHALL BE THE EQUIVALENT OF 25mm FOR EVERY 100mm REDUCTION IN THE REQUIRED DEPTH OF COVER (LESS THAN 1500mm (SEE TABLE)).

**ASSUMED FUTURE FLOW WIDENING**

SANMH 105 TIG-88.23 INV-SW-81.59 INV-E-81.12 c/w SAFETY PLATFORM PER OPSD 404.020

**CONNECT TO EXISTING SANITARY SEWER STUB WITH NEW SANMH 105. EXACT LOCATION TO BE DETERMINED IN THE FIELD BASED ON LOCATION OF EX. WATERMAIN, CULVERT AND UTILITIES. SAN TO CROSS UNDER EX. 200mmØ WM WITH APPROXIMATELY 2.2m CLEARANCE. WM INV-83.55c. SAN 05V-81.32c.**

EXACT LOCATION AND ELEVATION OF SANITARY STUB TO BE CONFIRMED IN THE FIELD PRIOR TO INSTALLING SANMH 105. REPORT DISCREPANCIES TO ENGINEER. MAINTAIN AND PROTECT EXISTING UTILITIES, CULVERT ETC. IN VICINITY OF PROPOSED WORKS.

**HEADWALL PER OPSD 804.030**

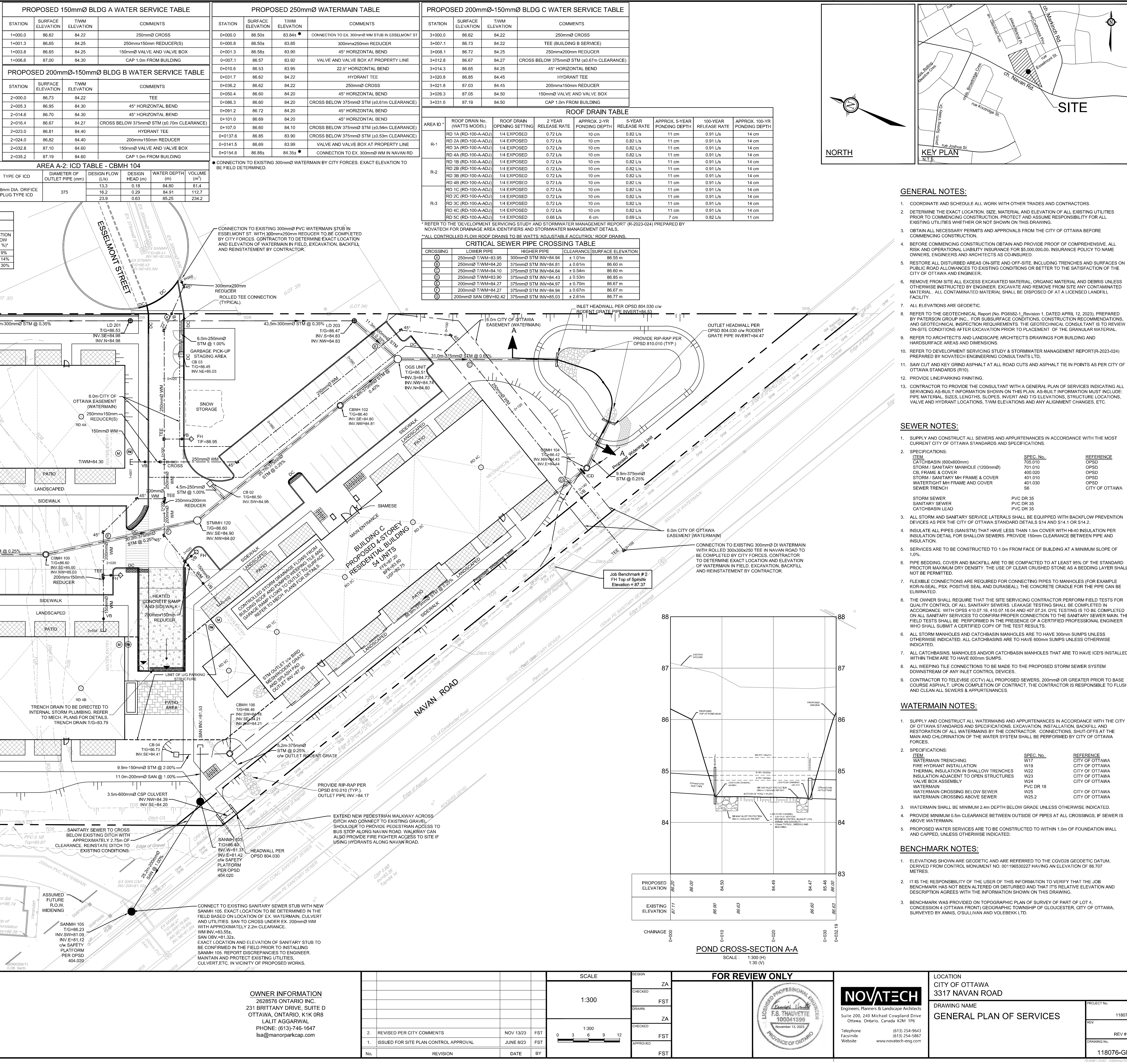
INV-W-81.37 INV-E-81.42 c/w SAFETY PLATFORM PER OPSD 404.020

**EXTEND NEW PEDESTRIAN WALKWAY ACROSS DITCH AND CONNECT TO EXISTING GRAVEL SHOULDER TO PROVIDE PEDESTRIAN ACCESS TO BUS STOP ALONG NAVAN ROAD. WALKWAY CAN ALSO PROVIDE FIRE FIGHTER ACCESS TO SITE IF USING HYDRANTS ALONG NAVAN ROAD.**

**CONNECTION TO EXISTING 300mmØ DI WATERMAIN WITH ROLLED 300x300x250 TEE IN NAVAN ROAD TO BE COMPLETED BY CITY FORCES. CONTRACTOR TO DETERMINE EXACT LOCATION AND ELEVATION OF WATERMAIN IN FIELD. EXCAVATION, BACKFILL AND REINSTATEMENT BY CONTRACTOR.**

**CONNECTION TO EXISTING 300mmØ PVC WATERMAIN STUB IN ESSELMONT ST WITH 300mmØ 250mm REDUCER TO BE COMPLETED BY CITY FORCES. CONTRACTOR TO DETERMINE EXACT LOCATION AND ELEVATION OF WATERMAIN IN FIELD. EXCAVATION, BACKFILL AND REINSTATEMENT BY CONTRACTOR.**

**CONNECTION TO EXISTING 300mmØ WATERMAIN BY CITY FORCES. EXACT ELEVATION TO BE FIELD DETERMINED.**



NOVATECH ENGINEERING CONSULTANTS LTD. 118076-GP-REV. 15, 2023, 12-24, 2023

D07-12-23-0085