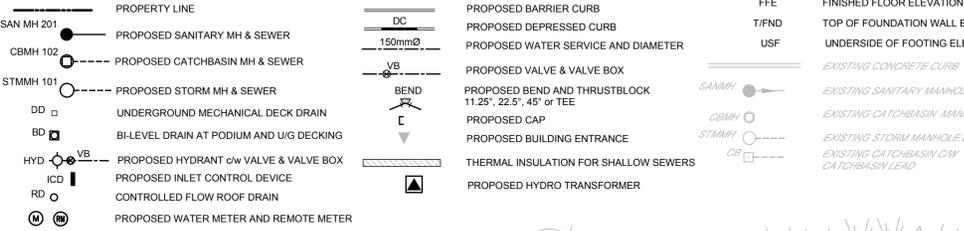
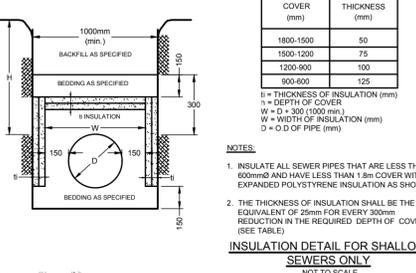


LEGEND



BENCHMARK NOTES:

- ELEVATIONS SHOWN ARE GEODETIC AND ARE REFERRED TO THE 2011 GEODETIC DATUM. ELEVATIONS ARE RELATED TO VERTICAL CONTROL MONUMENT 011948583G HAVING AN ELEVATION OF 96.03m.
- BEARINGS ARE GRID, DERIVED FROM GPS OBSERVATIONS AND ARE REFERRED TO THE GENERAL MERIDIAN OF N.T.M. ZONE 9 (76°30' WEST LONGITUDE) NAD-83 (ORIGINAL) FROM THE TOPOGRAPHIC SURVEY ON THE GRADING PLAN.
- 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 TOPOGRAPHICAL PLAN OF SURVEY, PART OF BLOCK C, REGISTERED PLAN 771, CITY OF OTTAWA, PREPARED BY ANNIS, O'SULLIVAN, VOLLEBEK LTD.
- TEMPORARY JOB BENCHMARK DESCRIPTION IS LOCATED ON NAIL IN EAST FACE OF UTILITY POLE, LOCATED APPROXIMATELY 24.7m WEST OF THE SOUTHWEST PROPERTY BOUNDARY ALONG BEAVERWOOD ROAD. SEE TOPOGRAPHICAL PLAN OF SURVEY MENTIONED ABOVE FOR DETAILS.



INSULATION DETAIL FOR SHALLOW SEWERS ONLY

NOT TO SCALE

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 CO-INSURED.
- COMPLETE ALL WORKS IN ACCORDANCE WITH THE MOST CURRENT CITY OF OTTAWA STANDARDS AND SPECIFICATIONS USING THE CURRENT GUIDELINES, BYLAWS AND STANDARDS INCLUDING MATERIALS OF CONSTRUCTION, INSPECTION AND SURVEY REFERENCES TO OPS, OPS & AWA GUIDELINES - ALL CURRENT VERSIONS AND 'AS AMENDED'.
- RESTORE ALL DISTURBED AREAS ON-SITE AND OFF-SITE, INCLUDING TRENCHES AND RELIEF VALVES ON PUBLIC ROAD ALLOWANCES TO EXISTING CONDITIONS OR BETTER TO THE SATISFACTION OF MUNICIPAL AUTHORITIES.
- 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.
- ALL ELEVATIONS ARE GEODETIC.
- REFER TO GEOTECHNICAL INVESTIGATION REPORT (PG6160-1, REVISION 3, DATED MARCH 21, 2023), 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 HARD SURFACE AREAS AND DIMENSIONS.
- REFER TO THE 'DEVELOPMENT SERVICING STUDY AND STORMWATER MANAGEMENT REPORT' (R-2022-013) PREPARED BY NOVATECH.
- SAW CUT AND KEYGRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT IN-POINTS AS PER CITY OF OTTAWA STANDARDS (R10).

SEWER NOTES:

- SUPPLY AND CONSTRUCT ALL SEWERS AND APPURTENANCES IN ACCORDANCE WITH THE MOST CURRENT CITY OF OTTAWA STANDARDS AND SPECIFICATIONS - ALL CURRENT VERSIONS AND 'AS AMENDED'.
- SPECIFICATIONS:

ITEM	SPEC. No.	REFERENCE
STORM / SANITARY MANHOLE (12000)	401.010 - TYPE 'A'	OPS
SANITARY MANHOLE FRAME AND COVER	701.012	OPS
STORM/CATCHBASIN MANHOLE (18000)	401.010 - TYPE 'B'	OPS
WATERTIGHT MANHOLE FRAME AND COVER	401.030	OPS
CATCHBASIN (80000)	705.010	OPS
CATCHBASIN FRAME & COVER	S19	CITY OF OTTAWA
SEWER TRENCH	S8	CITY OF OTTAWA
STORM SEWER	PVC DR 35 (450mm PIPE AND SMALLER)	CITY OF OTTAWA
STORM SEWER	CONCRETE 65-D (600mm PIPE AND LARGER)	CITY OF OTTAWA
SANITARY SEWER	S19	CITY OF OTTAWA
- THE SANITARY SERVICE LATERAL SHALL BE EQUIPPED WITH BACKFLOW PREVENTERS WITHIN THE BUILDING FOOTPRINT AS PER CITY OF OTTAWA STANDARD DETAILS S14.1. REFER TO MECHANICAL PLANS FOR DETAILS.
- THE STORM SERVICE LATERAL SHALL BE EQUIPPED WITH A BACKFLOW PREVENTER WITHIN THE BUILDING FOOTPRINT AS PER CITY OF OTTAWA STANDARD DETAILS S14. REFER TO MECHANICAL PLANS FOR DETAILS.
- 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.
- INSULATE ALL PIPES (SAN / STM) THAT HAVE LESS THAN 1.8m COVER WITH H=40 INSULATION PER INSULATION DETAIL FOR SHALLOW SEWERS. PROVIDE 150mm CLEARANCE BETWEEN PIPE AND INSULATION.
- CONCRETE MANHOLES ARE TO BE 1200mm STRUCTURES UNLESS OTHERWISE NOTED ON THE DRAWING. 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.
- TYPICAL STORM MANHOLES AND CATCHBASIN MANHOLES ARE TO HAVE 300mm SUMPS UNLESS OTHERWISE INDICATED.
- THE CONTRACTOR IS TO TELETYPE (CCTV) ALL PROPOSED SEWERS, 200mm OR GREATER PRIOR TO BASE COURSE ASPHALT. UPON COMPLETION OF CONTRACT, THE CONTRACTOR IS RESPONSIBLE TO FLUSH AND CLEAN ALL SEWERS AND APPURTENANCES. PROVIDE A COPY OF ALL CCTV INSPECTION REPORTS TO THE ENGINEER FOR REVIEW. AS-BUILT INFORMATION MUST INCLUDE: PIPE MATERIAL, SIZES, LENGTHS, INVERT AND TIG ELEVATIONS, STRUCTURE LOCATIONS AND ANY ALIGNMENT CHANGES, ETC.
- 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 OPS 410.07.16, 410.07.16.3 AND 420.07.24. DVE TESTING IS TO BE COMPLETED ON ALL SANITARY SEWERS 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.

WATERMAIN NOTES:

- SUPPLY AND CONSTRUCT ALL WATERMANS AND APPURTENANCES IN ACCORDANCE WITH THE CITY OF OTTAWA STANDARDS AND SPECIFICATIONS - ALL CURRENT VERSIONS AND 'AS AMENDED'.
- SPECIFICATIONS:

ITEM	SPEC. No.	REFERENCE
WATERMAIN TRENCHING	W17	CITY OF OTTAWA
HYDRANT INSTALLATION	W19	CITY OF OTTAWA
THERMAL INSULATION IN SHALLOW TRENCHES	W22	CITY OF OTTAWA
THERMAL INSULATION BY OPEN STRUCTURES	W23	CITY OF OTTAWA
VALVE BOX ASSEMBLY	W24	CITY OF OTTAWA
WATERMAIN CROSSING BELOW SEWERS	W25	CITY OF OTTAWA
CATHODIC PROTECTION FOR PVC WATERMANS	W40	CITY OF OTTAWA
WATERMAIN MATERIAL	PVC DR 18 (150mm AND LARGER)	CITY OF OTTAWA
- EXCAVATION, INSTALLATION, BACKFILL AND RESTORATION OF ALL WATERMANS BY THE CONTRACTOR. CONNECTIONS AND SHUT-OFFS AT THE MAIN AND CHLORINATION OF THE WATER SYSTEM SHALL BE PERFORMED BY CITY OFFICIALS.
- WATERMAIN SHALL BE MINIMUM 2.4m DEPTH BELOW GRADE UNLESS OTHERWISE INDICATED.
- PROVIDE MINIMUM 0.5m CLEARANCE BETWEEN OUTSIDE OF PIPES AT ALL CROSSINGS, UNLESS OTHERWISE INDICATED.
- WATER SERVICE IS TO BE CONSTRUCTED TO WITHIN 1.0m OF FOUNDATION WALL AND CAPPED, UNLESS OTHERWISE INDICATED.

INLET CONTROL DEVICE DATA TABLE: AREA A-2

DESIGN EVENT	ICD TYPE (PLUS TYPE)	OUTLET STRUCTURE	DIAMETER OF OUTLET PIPE (mm)	PEAK DESIGN FLOW (L/s)	DESIGN HEAD (m)	WATER ELEVATION (m)	VOLUME (m³)	AVAILABLE STORAGE
1:2 YR	IPX TEMPEST	1800mmØ	200mmØ	1.2	0.42	89.50	14.3	
1:5 YR	VORTEX LMF 75	1800mmØ	200mmØ	1.4	0.60	89.86	19.9	38.7 m³
1:100 YR		1800mmØ	200mmØ	2.5	1.81	90.89	88.8	

PROPOSED ROOF DRAIN TABLE: AREA R-1 (RD 1 TO RD 5)

AREA ID	ROOF DRAIN NO. (WATTS MODEL)	ROOF DRAIN OPENING	1.5 YEAR RELEASE RATE	APPROX. 5-YR PONDING DEPTH	1:100 YEAR RELEASE RATE	APPROX. 100-YR PONDING DEPTH
R-1	RD 1 (RD-100-A-ADJ)	CLOSED	0.32 L/s	11 cm	0.32 L/s	15 cm
R-1	RD 2 (RD-100-A-ADJ)	CLOSED	0.32 L/s	12 cm	0.32 L/s	15 cm
R-1	RD 3 (RD-100-A-ADJ)	CLOSED	0.32 L/s	11 cm	0.32 L/s	14 cm
R-1	RD 4 (RD-100-A-ADJ)	CLOSED	0.32 L/s	11 cm	0.32 L/s	14 cm
R-1	RD 5 (RD-100-A-ADJ)	CLOSED	0.32 L/s	11 cm	0.32 L/s	15 cm
R-1	RD 6 (RD-100-A-ADJ)	CLOSED	0.32 L/s	10 cm	0.32 L/s	14 cm

* REFER TO THE DEVELOPMENT SERVICING STUDY AND STORMWATER MANAGEMENT REPORT (R-2022-013) PREPARED BY NOVATECH FOR DRAINAGE AREA IDENTIFIERS AND STORMWATER MANAGEMENT DETAILS.

PROPOSED 150mmØ WATER SERVICE TABLE

STATION	SURFACE ELEVATION	T/WV ELEVATION	COMMENTS
0+00	91.83	89.43*	ROLL 150mmØ WM CONNECTION TO EX. 300mmØ PVC WM
0+03.8	91.82	89.40	CROSS OVER EX. 200mmØ SAN (CLEARANCE=1.5m)
0+07.0	91.90	89.33	CROSS BELOW EX. 35mmØ GAS (CLEARANCE=1.6m)
0+09.3	91.27	89.38**	CROSS BELOW DITCH (COVER=1.9m)
0+11.3	91.84	89.38	CROSS BELOW EX. U/G BELL (CLEARANCE=2.0m)
0+12.6	92.12	89.38	VALVE AND VALVE BOX AT PROPERTY LINE
0+13.6	92.33	89.38	45° VERTICAL BEND
0+15.7	93.77	91.60**	45° VERTICAL BEND
0+17.1	94.20	91.60	CAP AT 1.0m FROM FOUNDATION WALL

- * CONNECTION TO EXISTING 300mmØ PVC WATERMAIN. EXACT ELEVATION TO BE FIELD DETERMINED.
- ** PROVIDE THERMAL INSULATION AS PER CITY OF OTTAWA DETAIL W22 IN SHALLOW TRENCHES AND/OR CITY OF OTTAWA DETAIL W23 ADJACENT TO OPEN STRUCTURES.

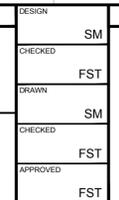
PIPE CROSSING TABLE

CROSSING	LOWER PIPE	HIGHER PIPE	CLEARANCE
○	EX. 300mmØ SAN OBV = 87.82	200mmØ STM INV = 88.97	1.05m
○	EX. 300mmØ WM OBV = 88.33	200mmØ STM INV = 88.83	0.50m

NOTE: THE POSITION OF ALL POLE LINES, CONDUITS, WATERMANS, 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.

NIVO DEVELOPMENTS
 OWNER INFORMATION
 NIVO DEVELOPMENTS INC.
 255 MICHAEL COWPLAND DRIVE,
 OTTAWA, ONTARIO, K2M 0M5
 CONTACT: ANTHONY NICOLINI
 PHONE: (613) 880-2274
 EMAIL: anthony@arkconstruction.ca

No.	REVISION	DATE	BY	No.	REVISION	DATE	BY
8	ISSUED WITH CSI#1	JUL 25/24	FST	8	ISSUED WITH CSI#1	JUL 25/24	FST
7	ISSUED FOR CONSTRUCTION	MAY 17/24	FST	7	ISSUED FOR CONSTRUCTION	MAY 17/24	FST
6	ISSUED FOR TENDER	FEB 29/24	FST	6	ISSUED FOR TENDER	FEB 29/24	FST
5	ADDED HYDRO TRANSFORMER PAD/REVISED SERVICING AND GRADING	FEB 28/24	FST	5	ADDED HYDRO TRANSFORMER PAD/REVISED SERVICING AND GRADING	FEB 28/24	FST
4	REVISED PER CITY COMMENTS	MAY 11/23	FST	4	REVISED PER CITY COMMENTS	MAY 11/23	FST
3	REVISED PER CITY COMMENTS	MAR 16/23	FST	3	REVISED PER CITY COMMENTS	MAR 16/23	FST
2	REVISED PER CITY COMMENTS	DEC 22/22	FST	2	REVISED PER CITY COMMENTS	DEC 22/22	FST
1	ISSUED FOR SITE PLAN APPROVAL	JUL 15/22	FST	1	ISSUED FOR SITE PLAN APPROVAL	JUL 15/22	FST
9	ISSUED FOR CITY APPROVAL	DEC 2/24	FST				



DESIGN SM
CHECKED FST
DRAWN SM
CHECKED FST
APPROVED FST

LICENCED PROFESSIONAL ENGINEER
 F.S. THAUVERTE
 100041299
 Dec 02, 2024
 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
 1185 BEAVERWOOD ROAD

DRAWING NAME
 GENERAL PLAN OF SERVICES

PROJECT No. 121184
REV # 9
DRAWING No. 121184-GP

M:\2024\121184\CADD\Drawings\121184-GP.dwg, GP, Date: 02-20-24, 3:38pm, Benze

D07-12-22-0114 PLAN No. : 18960