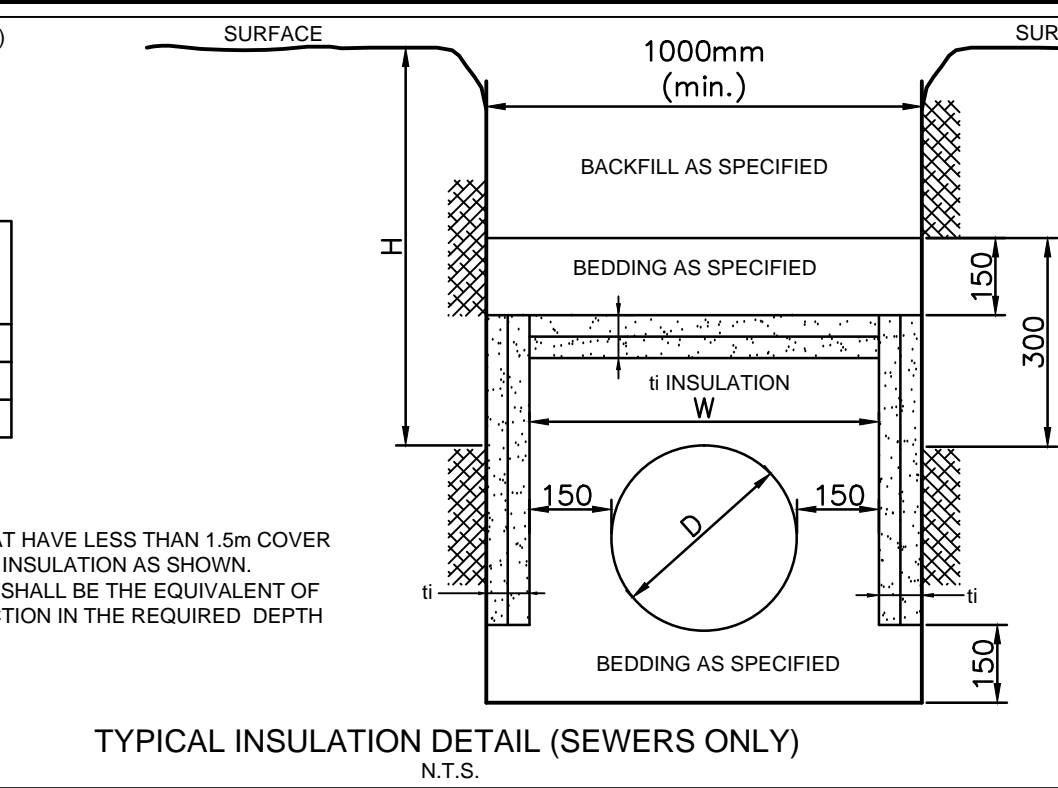


W = THICKNESS OF INSULATION (mm)	1000mm (min.)
h = DEPTH OF COVER	300
W = WIDTH OF INSULATION (mm)	1500
D = O.D. OF PIPE (mm)	150



- INSULATE ALL SEWER PIPES THAT HAVE LESS THAN 1.5m COVER WITH EXPANDED POLYSTYRENE INSULATION AS SHOWN.
- THE THICKNESS OF INSULATION SHALL BE THE EQUIVALENT OF 25mm FOR EVERY 300mm REDUCTION IN THE REQUIRED DEPTH OF COVER (SEE TABLE).

TYPICAL INSULATION DETAIL (SEWERS ONLY)
N.T.S.

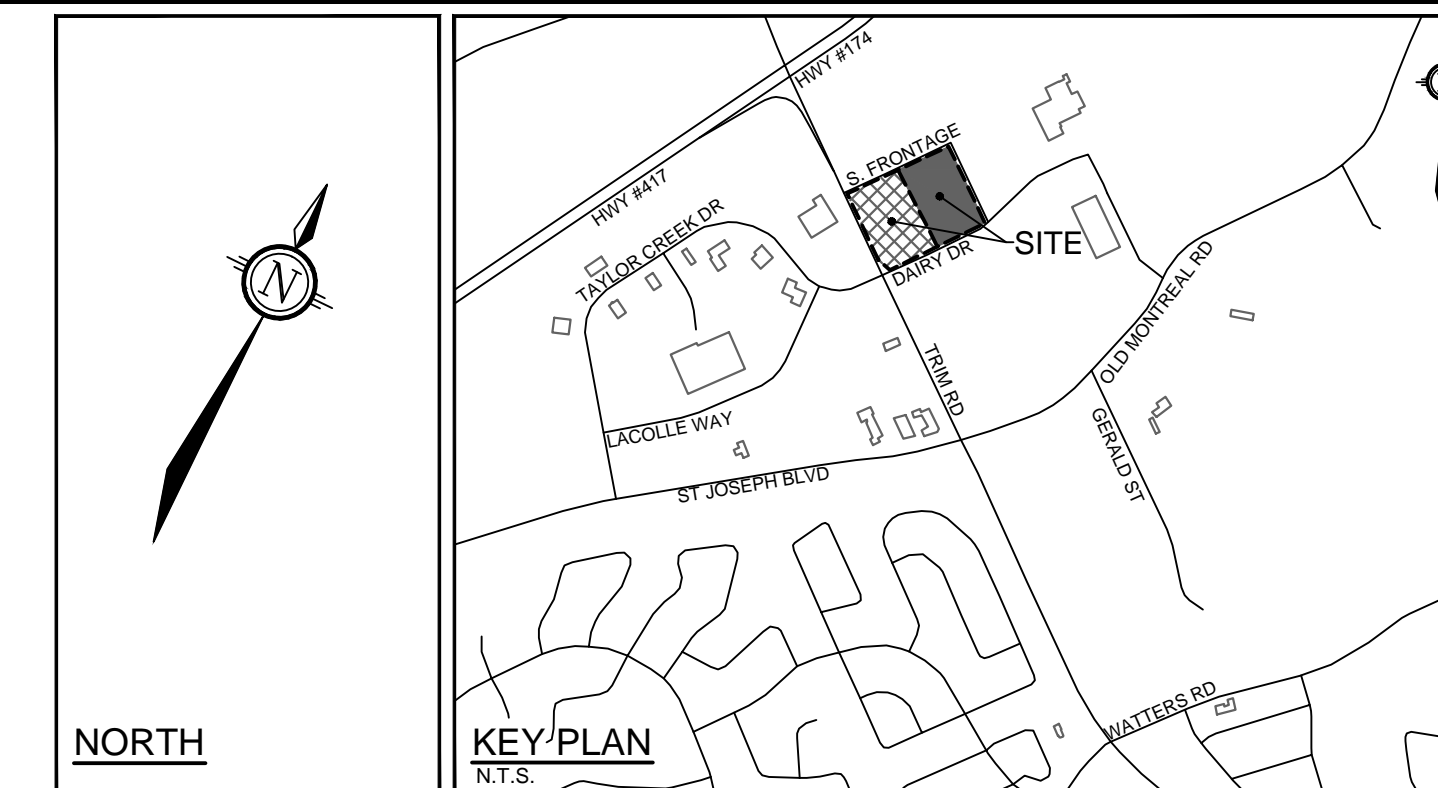
STATION	SURFACE ELEVATION	TOP OF WM ELEVATION	DESCRIPTION
1+000.0	56.61	54.25	CONNECT TO EXISTING 400mmØ WATERMAIN
1+001.5	56.63	54.25	22.5° VERTICAL BEND
1+003.0	56.69	53.38	CROSS ABOVE EXISTING 375mmØ SAN SEWER (EX SAN INV = 49.87)
1+004.6	56.64	52.98	22.5° VERTICAL BEND
1+005.9	56.61	52.98	CROSS BELOW EXISTING 600mmØ STM SEWER (EX STM INV = 53.48)
1+009.0	56.60	52.98	CROSS BELOW FUTURE 1200mmØ STM SEWER (STM INV = 54.21)
1+010.6	56.60	52.98	22.5° VERTICAL BEND
1+012.5	56.20	53.80	22.5° VERTICAL BEND
1+019.0	56.61	54.21	VAVB AT PROPERTY LINE
1+020.0	56.95	54.55	150mmØ SERVICE
1+030.0	56.50	54.10	---
1+040.0	56.74	54.34	---
1+047.9	56.86	54.46	150mmØ SERVICE
1+050.0	56.90	54.50	---
1+060.0	57.02	54.62	---
1+070.0	57.02	54.62	---
1+080.0	56.92	54.52	---
1+090.0	56.83	54.43	---
1+100.0	56.70	54.30	---
1+101.3	56.70	54.30	150mm TEE
1+101.9	56.70	54.30	50mmØ WATERMAIN
1+102.5	56.70	54.30	CAP

STATION	SURFACE ELEVATION	TOP OF WM ELEVATION	DESCRIPTION
2+000.0	56.60	54.20	CONNECTION TO 200mmØ WATERMAIN
2+001.8	56.69	54.20	22.5° VERTICAL BEND
2+003.7	56.66	54.04	22.5° VERTICAL BEND
2+004.6	56.66	54.98	CROSSING ABOVE 375mmØ STORM SEWER (STM INV = 54.30)
2+005.5	56.66	54.98	22.5° VERTICAL BEND
2+007.8	56.60	54.20	22.5° VERTICAL BEND
2+010.0	56.60	54.00	---
2+020.0	56.20	53.99	---
2+030.0	56.49	54.09	---
2+040.0	56.48	54.08	---
2+050.0	56.50	54.10	---
2+060.0	56.45	54.05	---
2+070.0	56.40	54.00	---
2+080.0	56.52	54.12	---
2+087.5	56.45	54.15	VAVB
2+087.5	56.55	54.15	HYDRANT

WATERMAIN NOTES:

- SPECIFICATIONS:
 - ITEM: WATERMAIN TRENCHING
 - ITEM: THERMAL INSULATION IN SHALLOW TRENCHES
 - ITEM: BACKFILL AND RESTORATION OF WATERMAIN AT OPEN STRUCTURES
 - ITEM: WATERMAIN CROSSING BELOW SEWER
 - ITEM: HYDRANT INSTALLATION
 - ITEM: WATERMAIN
- SUPPLY AND CONSTRUCT ALL WATERMANS AND APPURTENANCES IN ACCORDANCE WITH THE CITY OF OTTAWA STANDARDS AND SPECIFICATIONS. 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.
- WATER SERVICE IS TO BE CONSTRUCTED TO WITHIN 1.0m OF FOUNDATION WALL AND CAPED, UNLESS OTHERWISE INDICATED.

SPEC. No.	REFERENCE
W17	CITY OF OTTAWA
W22	CITY OF OTTAWA
W23	CITY OF OTTAWA
W25	CITY OF OTTAWA
W19	CITY OF OTTAWA
PVC DR18, PEX SDR9	CITY OF OTTAWA



LEGEND

- PROPOSED CURB
- PROPOSED DEPRESSED CURB
- PROPOSED WATERMAIN AND DIAMETER
- PROPOSED VALVE LOCATION
- PROPOSED STANDPOST
- PROPOSED SIAMENSE CONNECTION
- PROPOSED CAP
- PROPOSED WATER METER
- PROPOSED REMOTE METER
- PROPOSED STORM MANHOLE & SEWER
- PROPOSED STORM MANHOLE & SEWER
- PROPOSED TOP OF GRATE ELEVATION (WATER TIGHT LID REQUIRED)
- DIRECTION OF FLOW
- PROPOSED CATCHBASIN C/W CATCHBASIN LEAD
- PROPOSED CATCHBASIN MH
- PROPOSED ROOF DRAIN
- PROPOSED BUILDING ENTRANCE
- PROPOSED STORMCEPTOR
- PROPOSED TRANSFORMER
- PROPOSED LANDSCAPE DRAIN
- PROPOSED SEEPAGE BARRIER
- EXISTING UTILITY POLE C/W GUY WIRES
- EXISTING WATERMAIN C/W VALVE & VALVE BOX
- EXISTING HYDRANT C/W VALVE & LEAD
- EXISTING SANITARY MANHOLE & SEWER
- EXISTING STORM MANHOLE & SEWER
- EXISTING CATCHBASIN C/W CATCHBASIN LEAD
- EXISTING LIGHT STANDARD
- EXISTING REMOTE WATER METER
- EXISTING TRANSFORMER

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 \$2,000,000.00. INSURANCE POLICY TO NAME OWNERS, ENGINEERS AND ARCHITECTS AS CO-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, 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 REPORT (NO. 13-083, DATED AUGUST, 2013), PREPARED BY HOULE CHEVRIER ENGINEERING FOR SUBSURFACE CONDITIONS, CONSTRUCTION RECOMMENDATIONS, AND GEOTECHNICAL INSPECTION REPORT. MEETS THE GEOTECHNICAL CONSULTANT IS TO REVIEW ON-SITE CONDITIONS AFTER EXCAVATION PRIOR TO PLACEMENT OF THE GRANULAR MATERIAL.
- REFER TO ARCHITECTS AND LANDSCAPE ARCHITECTS DRAWINGS FOR BUILDING AND HARD SURFACE AREAS AND DIMENSIONS.
- REFER TO DEVELOPMENT SERVICES STUDY AND STORMWATER MANAGEMENT REPORT (R-2013-106) PREPARED BY NOVATECH ENGINEERING CONSULTANTS LTD.
- SAFETY CUT AND KEY GRIND ASPHALT AT ALL ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).
- PROVIDE LINE PARKING PAINTING.
- CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GENERAL PLAN OF SERVICES INDICATING ALL SERVICES AS-BUILT INFORMATION SHOWN ON THIS PLAN. AS-BUILT INFORMATION MUST INCLUDE: PIPE MATERIAL, SIZES, LENGTHS, SLOPES, INVERT AND TIG ELEVATIONS, STRUCTURE LOCATIONS, VALVE AND HYDRANT LOCATIONS, TWM ELEVATIONS AND ANY ALIGNMENT CHANGES, ETC.

SEWER NOTES:

- SPECIFICATIONS:
 - ITEM: STORM / SANITARY MANHOLE (1200mm, 1500mm, 1800mm, 2400mm)
 - SPEC. No.: 701.01, 701.01, 701.02, 701.03
 - REFERENCE: OPSD
- CATCHBASIN (600x600mm)
- CB FRAME & COVER
- STORM SANITARY MH FRAME & COVER
- CATCHBASIN MH FRAME & COVER
- SEWER TRENCH (PVC DR 35, CONC CLASS 650)
- STORM SEWER (PVC DR 35, CONC CLASS 650)
- SANITARY SEWER (SUPER PIPE)
- SERVICES ARE TO BE CONSTRUCTED TO 1.0m FROM FACE OF BUILDING AT A MINIMUM SLOPE OF 1.0%.
- 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.
- 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 41.07.15, 41.07.16 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.
- STORM MANHOLES AND CBMHs ARE TO HAVE 300mm SUMP UNLESS OTHERWISE INDICATED.
- ALL CATCHBASINS AND CATCHBASIN MANHOLES TO BE PROVIDED WITH MINIMUM 3 METER LONG PERFORATED SUBDRAINS WHICH EXTEND IN AT LEAST TWO DIRECTIONS FROM EACH CATCHBASIN AT PAVEMENT SUBGRADE LEVEL.
- CONTRACTOR TO TELETYPE (CCTV) ALL PROPOSED SEWERS, 200mmØ OR GREATER PRIOR TO BASE COURSE SUBDRAIN UPON COMPLETION OF CONTRACT. THE CONTRACTOR IS RESPONSIBLE TO FLUSH AND CLEAN ALL SEWERS & APPURTENANCES.

STATION	SURFACE ELEVATION	TOP OF WM ELEVATION	DESCRIPTION
0+000.0	56.64	54.00	CONNECT TO EXISTING 400mmØ WATERMAIN
0+001.6	56.64	54.00	22.5° VERTICAL BEND
0+003.4	56.61	53.09	CROSSING ABOVE EXISTING 375mmØ SAN SEWER (EX SAN INV = 60.40)
0+004.5	56.61	52.78	22.5° VERTICAL BEND
0+005.9	56.64	52.78	CROSSING BELOW EXISTING 675mmØ STM SEWER (EX STM INV = 53.28)
0+005.1	56.72	52.78	CROSSING BELOW FUTURE 1200mmØ STM SEWER (STM INV = 54.07)
0+010.7	56.72	52.78	22.5° VERTICAL BEND
0+014.3	56.72	54.32	22.5° VERTICAL BEND
0+020.1	56.66	54.26	VAVB AT PROPERTY LINE
0+023.2	57.05	54.26	22.5° VERTICAL BEND
0+024.2	57.05	53.87	22.5° VERTICAL BEND
0+025.4	57.04	53.87	CROSSING BELOW PROPOSED 300mmØ STORM SEWER (STM INV = 54.37)
0+026.6	57.02	53.87	22.5° VERTICAL BEND
0+028.5	57.02	54.62	22.5° VERTICAL BEND
0+030.0	56.99	54.59	---
0+041.1	56.86	54.46	CROSSING BELOW PROPOSED BUILDING 'D' SAN AND STM SERVICES
0+041.9	56.86	54.46	---
0+050.0	56.85	54.45	50mmØ SERVICE
0+060.0	56.88	54.58	---
0+068.5	57.09	54.69	50mmØ SERVICE
0+070.0	57.07	54.67	---
0+075.1	57.00	54.60	CROSSING BELOW PROPOSED 300mmØ STORM SEWER (STM INV = 54.94)
0+080.0	56.97	54.57	---
0+089.4	56.89	54.49	HYDRANT LEAD
0+089.7	56.89	54.49	200mm x 100mm REDUCER
0+100.0	56.95	54.55	---
0+107.9	57.07	54.67	50mmØ SERVICE
0+109.1	57.07	54.67	50mmØ SERVICE
0+109.7	57.07	54.67	CAP

EXACT DEPTH OF EXISTING WATERMAIN TO BE DETERMINED AT TIME OF EXCAVATION. CONTRACTOR TO CONFIRM TOP OF WATERMAIN. PROVIDE THERMAL INSULATION AS PER CITY OF OTTAWA DETAIL W22 WHERE COVER IS LESS THAN 2.4m

DESIGN EVENT	IPEX TEMPEST ICD	DIAMETER OF OUTLET PIPE (mm)	DESIGN FLOW (L/s)	UPSTREAM HEAD (m)	SURFACE PONDING (m)	VOLUME (m³)
1.5 YR LOW, MEDIUM FLOW (LMF)	300	2.8	0.28	1.15	0.05	9.7
1.100 YR LOW, MEDIUM FLOW (LMF)	300	4.0	0.53	0.26	1.16	28.2

DESIGN EVENT	IPEX TEMPEST ICD	DIAMETER OF OUTLET PIPE (mm)	DESIGN FLOW (L/s)	UPSTREAM HEAD (m)	SURFACE PONDING (m)	VOLUME (m³)
1.5 YR LOW, MEDIUM FLOW (LMF)	300	5.8	2.75	0.05	116.1	1.16
1.100 YR LOW, MEDIUM FLOW (LMF)	300	6.0	2.82	0.12	280.2	280.2

DESIGN EVENT	IPEX TEMPEST ICD	DIAMETER OF OUTLET PIPE (mm)	DESIGN FLOW (L/s)	UPSTREAM HEAD (m)	SURFACE PONDING (m)	VOLUME (m³)
1.5 YR LOW, MEDIUM FLOW (LMF)	200	7.6	1.80	0.10	5.7	5.7
1.100 YR LOW, MEDIUM FLOW (LMF)	200	7.7	1.90	0.20	26.7	26.7

DESIGN EVENT	IPEX TEMPEST ICD	DIAMETER OF OUTLET PIPE (mm)	DESIGN FLOW (L/s)	UPSTREAM HEAD (m)	SURFACE PONDING (m)	VOLUME (m³)
1.5 YR LOW, MEDIUM FLOW (LMF)	300	4.0	1.03	0.05	40.0	40.0
1.100 YR LOW, MEDIUM FLOW (LMF)	300	6.0	2.65	0.17	81.9	81.9

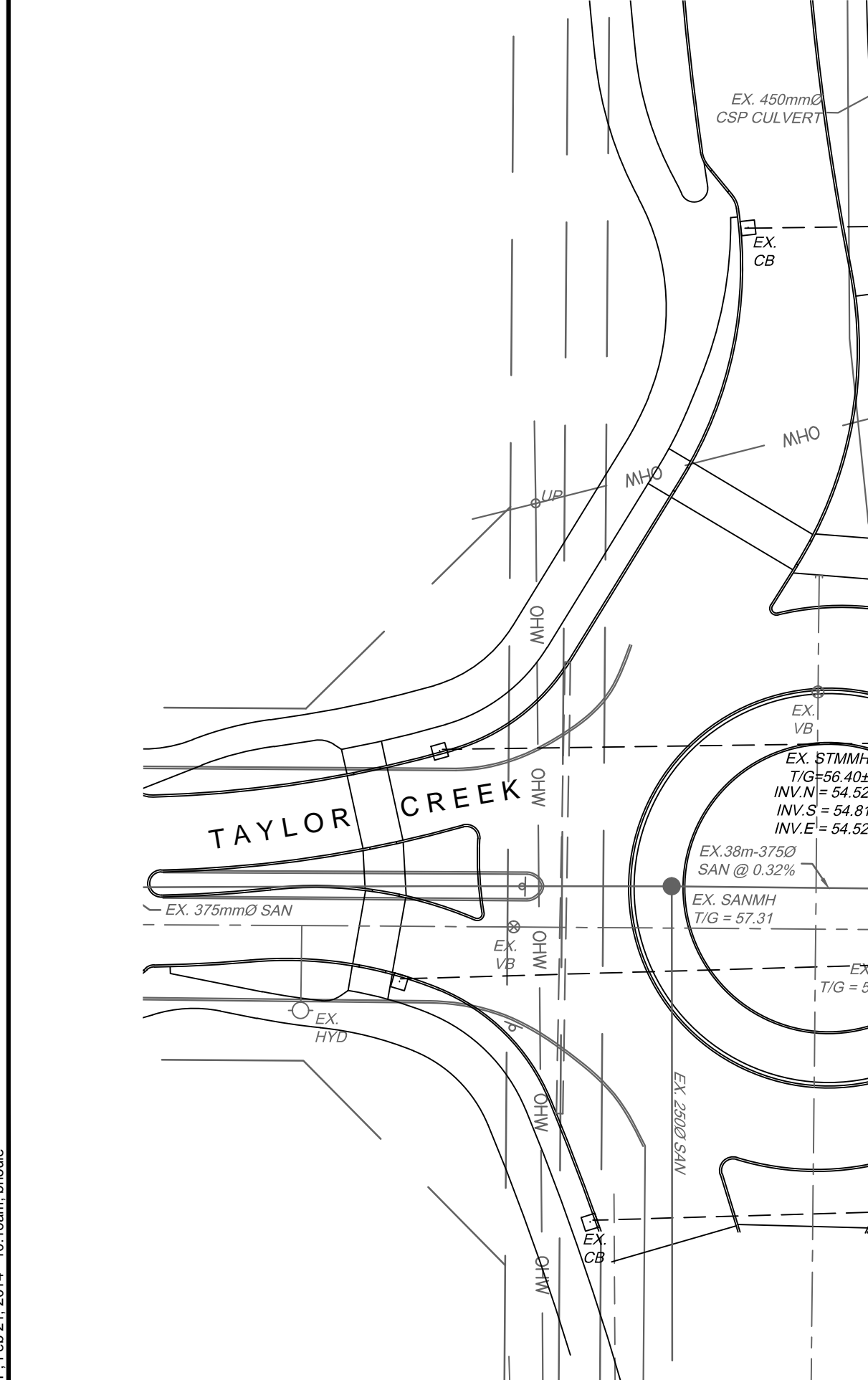
DESIGN EVENT	IPEX TEMPEST ICD	DIAMETER OF OUTLET PIPE (mm)	DESIGN FLOW (L/s)	UPSTREAM HEAD (m)	SURFACE PONDING (m)	VOLUME (m³)
1.5 YR LOW, MEDIUM FLOW (LMF)	300	5.2	1.15	0.05	233.1	233.1
1.100 YR LOW, MEDIUM FLOW (LMF)	300	6.9	2.27	0.20	483.0	483.0

ROOF DRAIN NO.	ROOF DRAIN OPENING	1.5 YEAR RELEASE RATE	APPROX. 5 YR PONDING DEPTH	1-100 YEAR RELEASE RATE	APPROX. 100 YR PONDING DEPTH
RD 1	1/4 EXPOSED	0.95 L/s	0.11 m	1.14 L/s	0.15 m
RD 2	1/4 EXPOSED	0.95 L/s	0.11 m	1.14 L/s	0.15 m
RD 3	1/4 EXPOSED	0.95 L/s	0.11 m	1.14 L/s	0.15 m
RD 4	1/4 EXPOSED	0.95 L/s	0.11 m	1.14 L/s	0.15 m
RD 5	1/4 EXPOSED	0.95 L/s	0.11 m	1.14 L/s	0.15 m
RD 6	1/4 EXPOSED	0.95 L/s	0.11 m	1.14 L/s	0.15 m
RD 7	1/4 EXPOSED	0.95 L/s	0.11 m	1.14 L/s	0.15 m
RD 8	1/4 EXPOSED	0.95 L/s	0.11 m	1.14 L/s	0.15 m
RD 9	CLOSED	0.76 L/s	0.10 m	0.76 L/s	0.15 m
RD 10	CLOSED	0.76 L/s	0.10 m	0.76 L/s	0.15 m

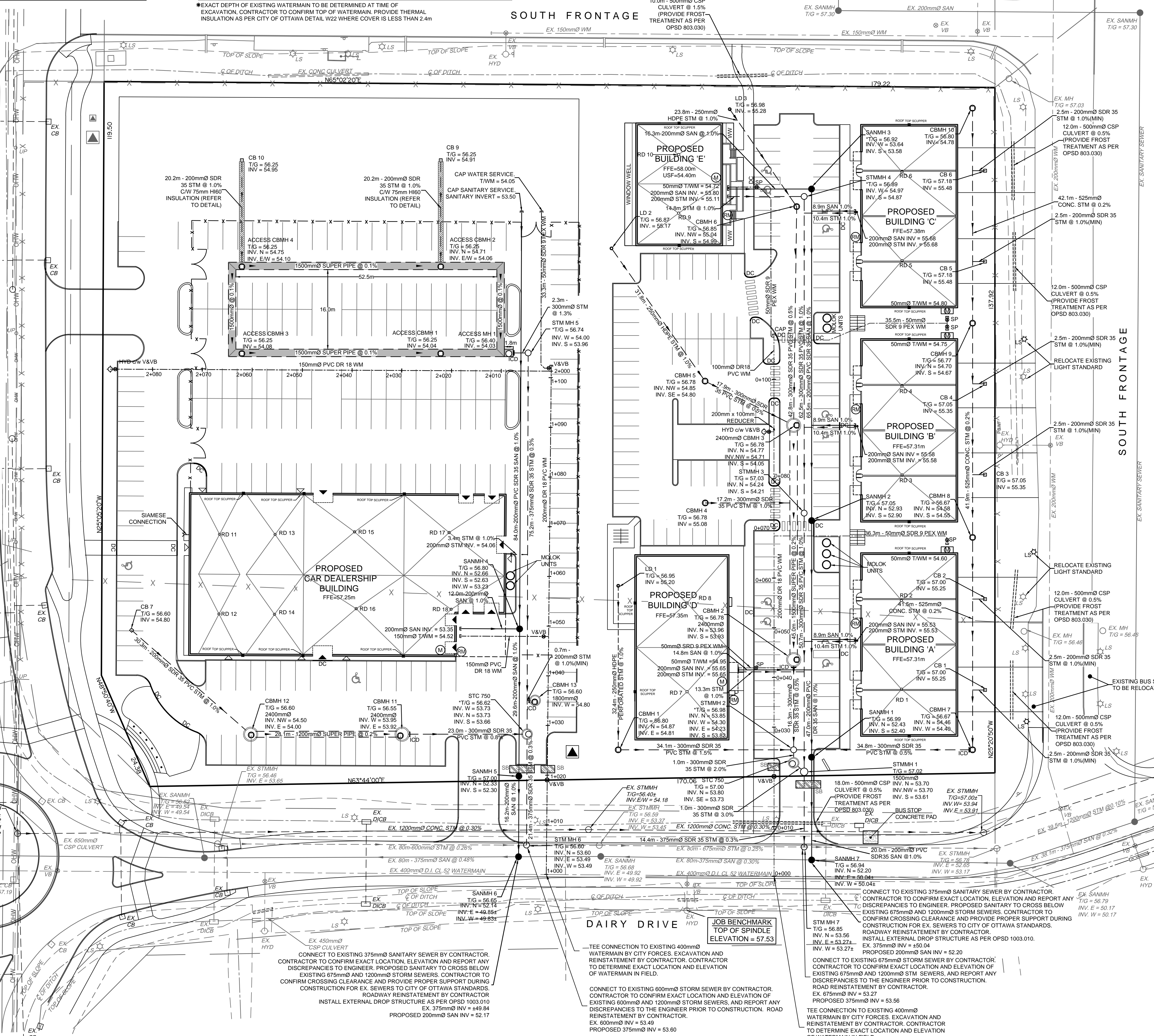
ROOF DRAIN NO.	ROOF DRAIN OPENING	1.5 YEAR RELEASE RATE	APPROX. 5 YR PONDING DEPTH	1-100 YEAR RELEASE RATE	APPROX. 100 YR PONDING DEPTH
RD 11	1/4 EXPOSED	0.95 L/s	0.11 m	1.14 L/s	0.15 m
RD 12	1/4 EXPOSED	0.95 L/s	0.11 m	1.14 L/s	0.15 m
RD 13	CLOSED	0.76 L/s	0.11 m	0.76 L/s	0.14 m
RD 14	CLOSED	0.76 L/s	0.11 m	0.76 L/s	0.14 m
RD 15	1/4 EXPOSED	0.95 L/s	0.11 m	1.14 L/s	0.14 m
RD 16	1/4 EXPOSED	0.95 L/s	0.11 m	1.14 L/s	0.14 m
RD 17	1/4 EXPOSED	0.95 L/s	0.11 m	1.14 L/s	0.15 m
RD 18	CLOSED	0.76 L/s	0.11 m	0.76 L/s	0.15 m

ALL PROPOSED ROOF DRAINS TO BE WATERS TIGHT, ADJUSTABLE FLOW CONTROL ROOF DRAINS. REFER TO APPENDIX 'F' IN THE STORMWATER MANAGEMENT REPORT (R-2013-106) FOR ROOF DRAIN DETAIL SHEET.

*MAXIMUM PONDING DEPTH ON BUILDING ROOF WILL NOT EXCEED 0.15m PRIOR TO SPILL OFF TROUGH ROOF TOP SCUPPERS



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.



No.	REVISION	DATE	BY
2	REVISED PER CITY OF OTTAWA COMMENTS	FEB 7/14	MS
1	ISSUED FOR SITE PLAN APPLICATION	NOV 5/13	MS

SCALE: 1:400

FOR REVIEW ONLY

CHECKED: CJO
DRAWN: MS
MTM
CJO
MS

NOVATECH ENGINEERING CONSULTANTS LTD.
113071-00
REV # 02
113071-GP