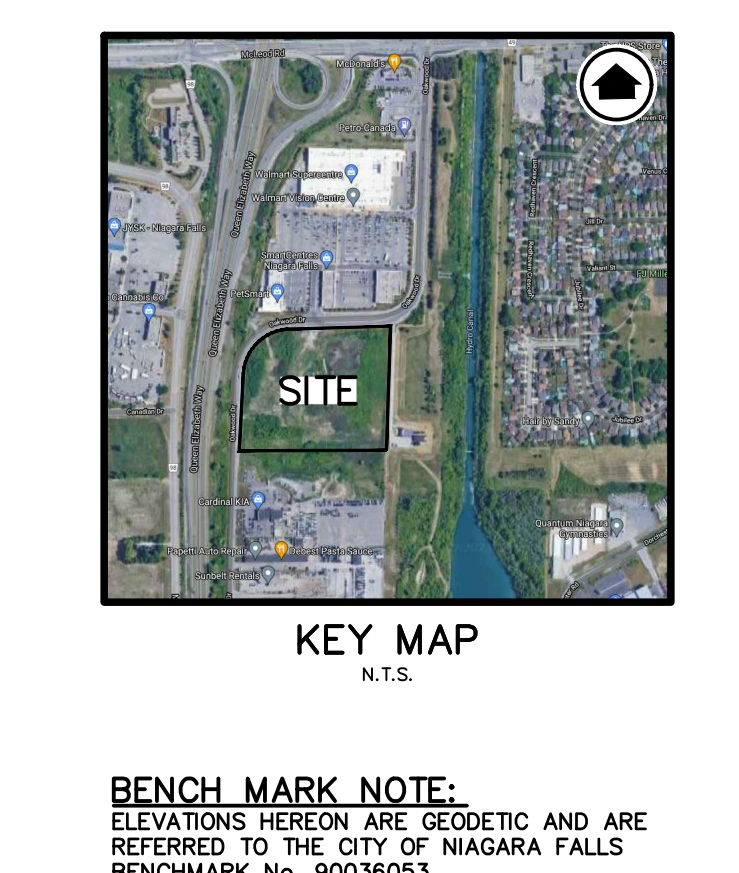
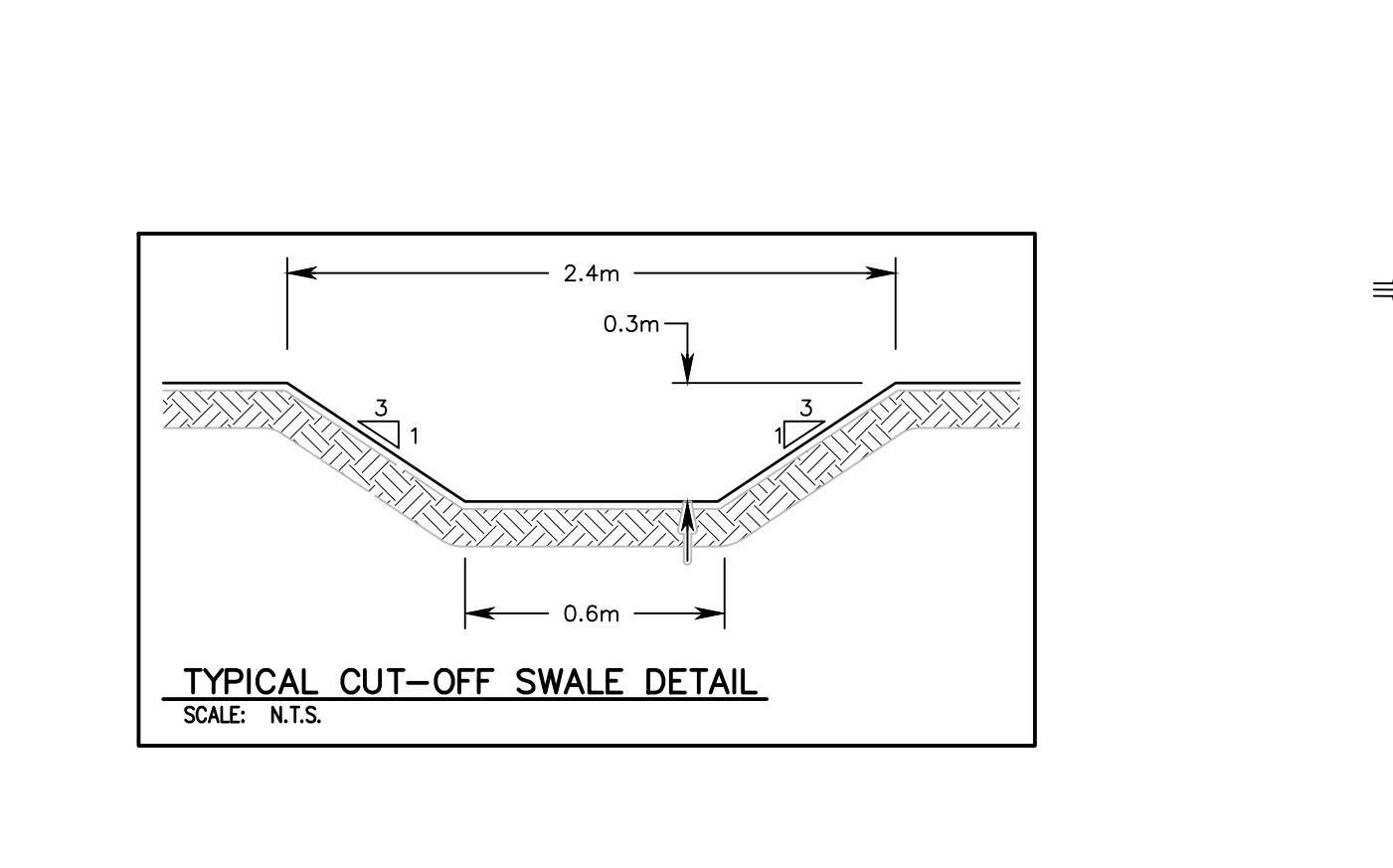
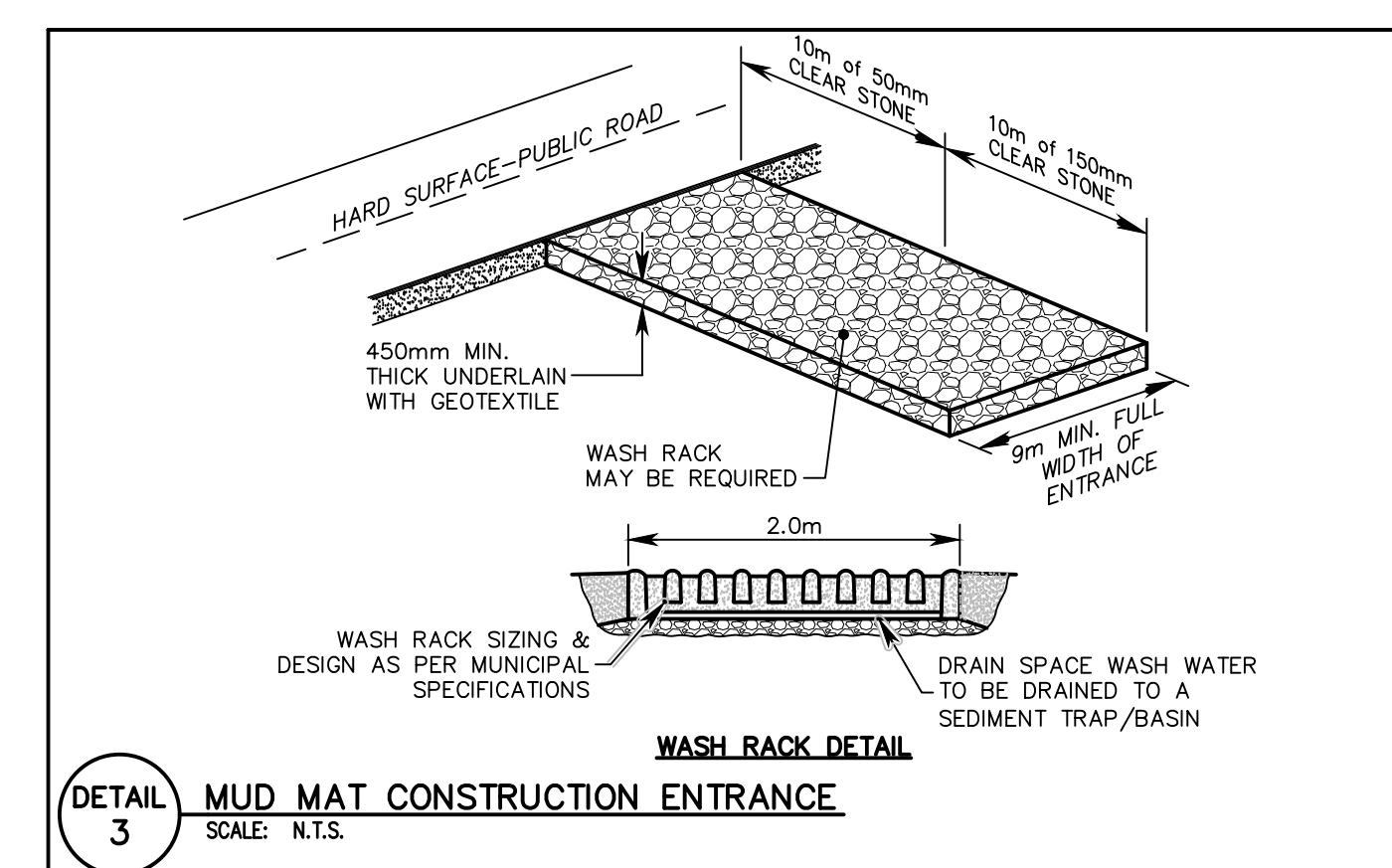
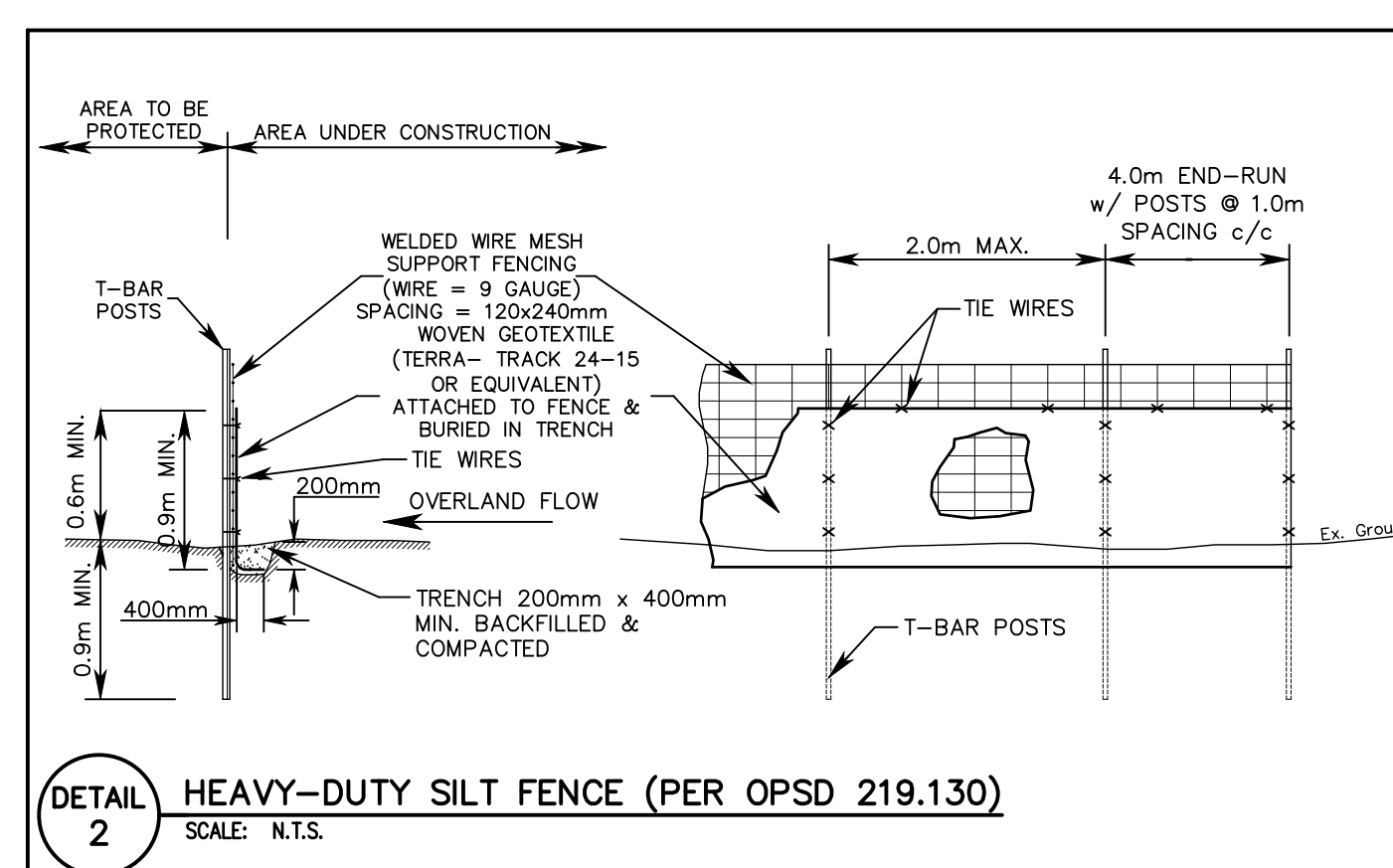
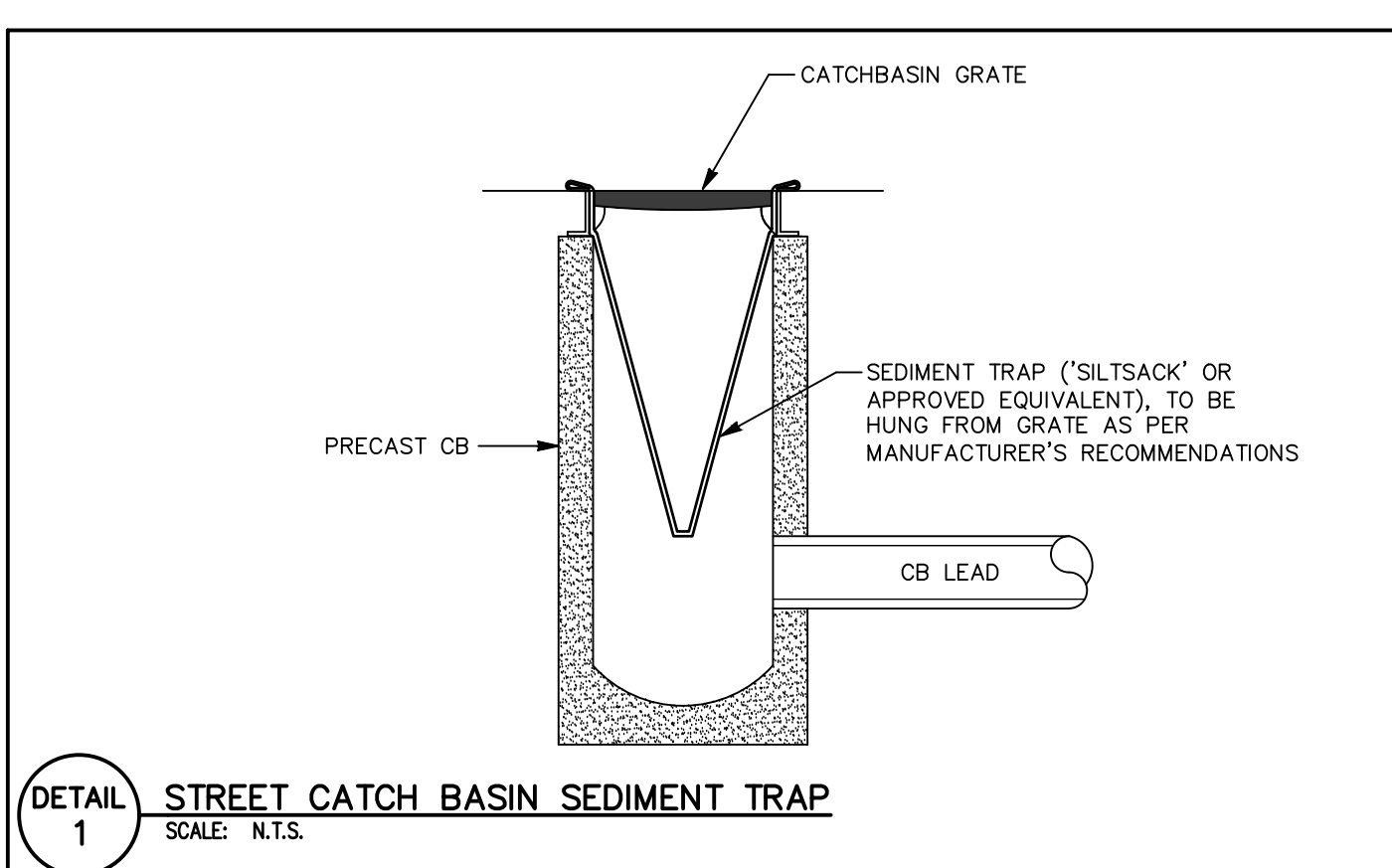
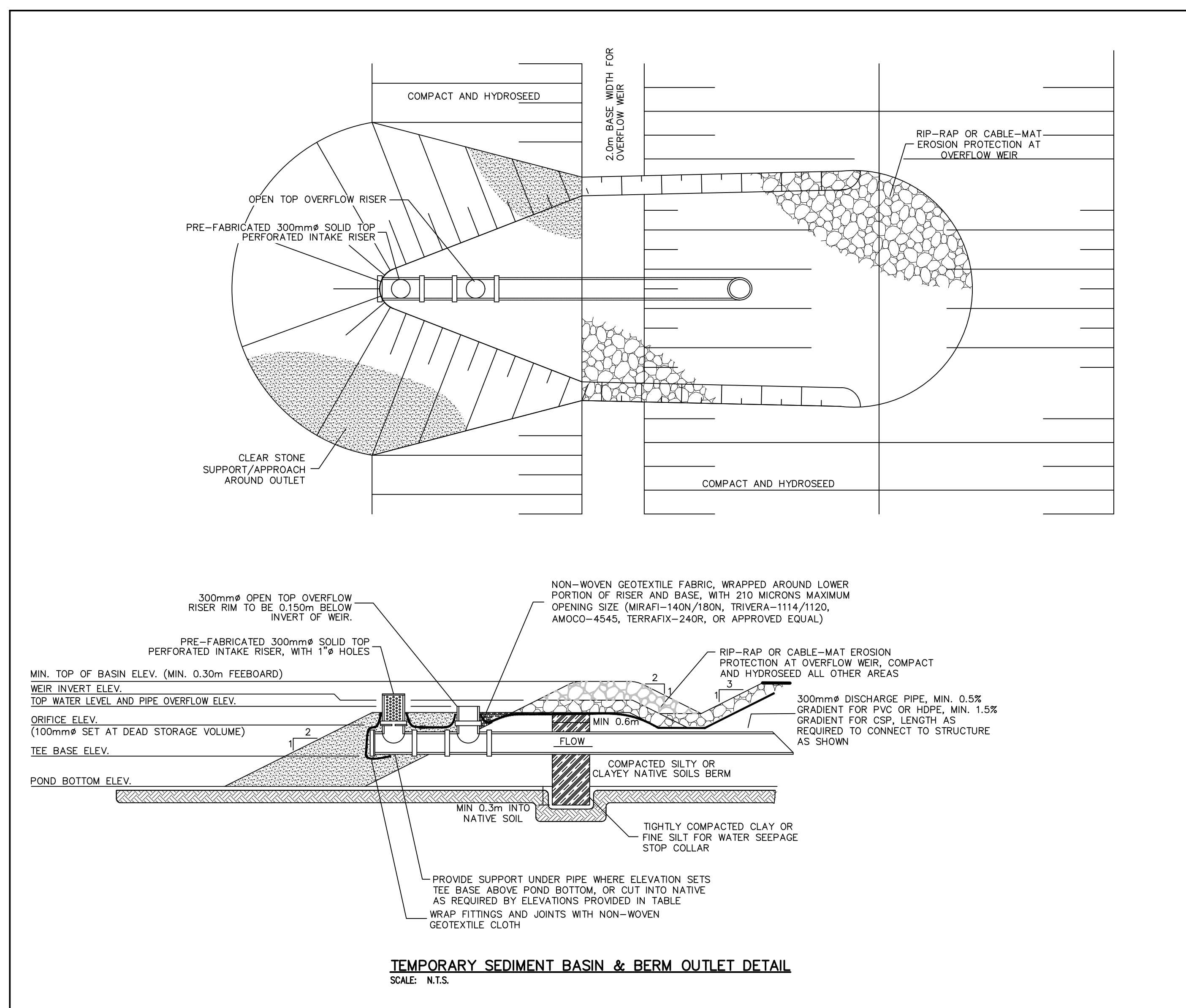


CONSTRUCTION SEQUENCING AND EROSION CONTROL SCHEDULE:

- PRIOR TO THE START OF EARTHWORKS OPERATIONS THE CONTRACTOR SHALL:
 - CLEAR AND GRUB THE SITE AS NECESSARY.
 - INSTALL ALL PERIMETER SILTATION CONTROL FENCING AS DIRECTED BY THE DEVELOPER'S CONSULTANT.
 - CONSTRUCT THE MUD MAT CONSTRUCTION ENTRANCE AS SHOWN, AND
 - INSTALL ALL SEDIMENT CONTROL SILT SACKS WITHIN EXISTING CATCHBASINS AS SHOWN.
- UPON COMMENCING EARTHWORKS OPERATIONS THE CONTRACTOR SHALL:
 - STRIPE ALL TOPSOIL ACROSS SITE AND STOCKPILE IN LOCATION AS DETAILED, AND
 - CONSTRUCT THE TEMPORARY SEDIMENT CONTROL BASINS, INCLUDING THE GRADING WORKS WITHIN THE POND, AND TEMPORARY OUTLET CONTROLS AS SHOWN.
- DURING GRADING OPERATIONS WITHIN THE REMAINDER OF THE SITE THE CONTRACTOR SHALL:
 - MAINTAIN ALL SEDIMENTATION AND EROSION CONTROL FENCING AND CONSTRUCTION ENTRANCE TO THE SATISFACTION OF THE DEVELOPER'S CONSULTANT, CITY OF NIAGARA AND NIAGARA PENINSULA CONSERVATION AUTHORITY.
 - MAINTAIN TEMPORARY SEDIMENT CONTROL BASIN #1 AND OUTLET DURING REGRADING WORKS TO THE SATISFACTION OF THE DEVELOPER'S CONSULTANT, CITY OF NIAGARA AND NIAGARA PENINSULA CONSERVATION AUTHORITY.
 - MAINTAIN TEMPORARY SEDIMENT CONTROL BASIN #1 AND OUTLET TO THE SATISFACTION OF THE DEVELOPER'S CONSULTANT, CITY OF NIAGARA AND NIAGARA PENINSULA CONSERVATION AUTHORITY.
 - INSTALL ANY ADDITIONAL SEDIMENTATION AND EROSION CONTROL MEASURES AS DIRECTED BY THE DEVELOPER'S CONSULTANT DURING GRADING OPERATIONS.
 - INSTALL SEDIMENT CONTROL FENCING AROUND THE BASE OF ALL SOIL STOCKPILES. SOIL STOCKPILES THAT ARE TO REMAIN FOR MORE THAN 30 DAYS SHALL BE STABILIZED BY MULCHING, VEGETATIVE COVER, TARP OR OTHER APPROVED MEANS.
 - COMPLETE ALL NECESSARY GRADING WORKS WITHIN THE PROPOSED DEVELOPMENT TO ADEQUATELY CONVEY STORM RUNOFF TO TEMPORARY SEDIMENT BASIN #1.
 - UPON COMPLETION OF GRADING OPERATIONS THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS WITH MULCH AND SEED AS PER OPSD-572 UNLESS FINAL CONSTRUCTION IS SCHEDULED TO COMMENCE WITHIN 30 DAYS OF THE COMPLETION OF THE GRADING OPERATIONS.
- TEMPORARY SEDIMENT BASIN #1 TO BE DECOMMISSIONED UPON COMPLETION OF SITE'S STORM SEWER SERVING.



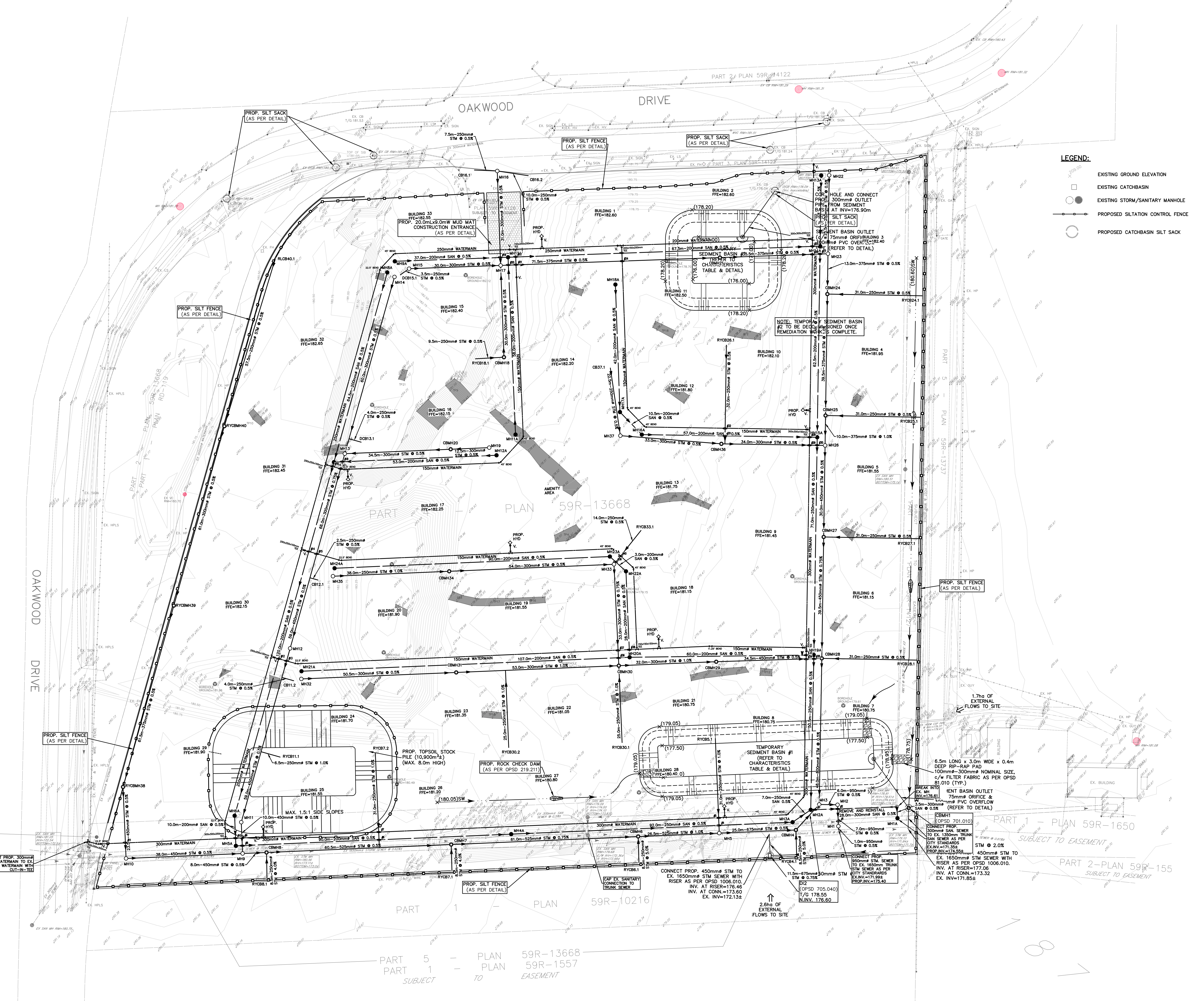
BENCH MARK NOTE:
ELEVATIONS HEREON ARE GEODETIC AND ARE REFERRED TO THE CITY OF NIAGARA FALLS BENCHMARK NO. 10036053. ELEVATION = 181.91 meters.



TEMPORARY SEDIMENT BASIN & BERM OUTLET DETAIL
SCALE: N.T.S.

| TEMPORARY SEDIMENT BASIN #1 CHARACTERISTICS | | TEMPORARY SEDIMENT BASIN #2 CHARACTERISTICS | |
|--|------------------|--|------------------|
| AREA SERVICED | 5.45 | AREA SERVICED | 3.20 |
| REQUIRED PERMANENT POOL VOLUME (BASED ON 15m ² /ha) | 68m ³ | REQUIRED PERMANENT POOL VOLUME (BASED ON 15m ² /ha) | 59m ³ |
| PROVIDED PERMANENT POOL VOLUME | 72m ³ | PROVIDED PERMANENT POOL VOLUME | 62m ³ |
| REQUIRED LIVE STORAGE VOLUME (BASED ON 15m ² /ha) | 68m ³ | REQUIRED LIVE STORAGE VOLUME (BASED ON 15m ² /ha) | 59m ³ |
| PROVIDED LIVE STORAGE VOLUME | 70m ³ | PROVIDED LIVE STORAGE VOLUME | 65m ³ |
| MINIMUM TOP OF BASIN ELEVATION | 178.20m | MINIMUM TOP OF BASIN ELEVATION | 178.20m |
| BOTTOM OF BASIN ELEVATION | 177.50m | BOTTOM OF BASIN ELEVATION | 176.00m |
| TOP OF DEAD STORAGE ELEVATION | 178.20m | TOP OF DEAD STORAGE ELEVATION | 177.20m |
| TOP OF LIVE STORAGE ELEVATION | 178.75m | TOP OF LIVE STORAGE ELEVATION | 177.50m |
| ORIFICE SIZE | 75mm ϕ | ORIFICE SIZE | 75mm ϕ |
| ORIFICE INVERT | 178.20m | ORIFICE INVERT | 177.20m |
| ESTIMATED DRAWDOWN TIME | 49.0 hrs | ESTIMATED DRAWDOWN TIME | 35.0 hrs |

THE QUEEN ELIZABETH WAY



- LEGEND:**
- EXISTING GROUND ELEVATION
 - EXISTING CATCHBASIN
 - EXISTING STORM/SANITARY MANHOLE
 - PROPOSED SILTATION CONTROL FENCE
 - PROPOSED CATCHBASIN SILT SACK

NOTES TO CONTRACTOR:

- INSPECTION:** CONTRACTOR IS RESPONSIBLE FOR CONTACTING ENGINEER 48 HRS PRIOR TO COMMENCING WORK TO ARRANGE FOR INSPECTION. ENGINEER TO DETERMINE DEGREE OF INSPECTION AND TESTING REQUIRED FOR CERTIFICATION OF UNDERGROUND SERVICE INSTALLATION AS MANDATED BY ONTARIO BUILDING CODE DIVISION C, PART 1, SECTION 1.2.2. GENERAL REVIEW FAILURE TO NOTIFY ENGINEER WILL RESULT IN EXTENSIVE POST CONSTRUCTION INSPECTION AT CONTRACTORS EXPENSE.
- CONFIRMATION OF EXISTING INVERTS:** CONTRACTOR IS TO LOCATE, EXPOSE AND VERIFY INVERTS OF EXISTING SEWERS AT CONNECTION POINTS. SHOULD THE CONTRACTOR PROCEED WITHOUT COMPLETING THESE LOCATES, EXTRA COSTS RESULTING FROM DELAYS AND STANDBY TIME WILL NOT BE CONSIDERED.

NOTES TO CONTRACTOR:

- CONTRACTOR AND SUBCONTRACTORS SHALL NOT SCALE FROM THIS DRAWING.
- ANY INCONSISTENCIES AND OMISSIONS FOUND ON THE DRAWINGS MUST BE REPORTED TO THE ENGINEER FOR CLARIFICATION BEFORE COMMENCING THE WORK.
- PRIOR TO THE START OF CONSTRUCTION THE CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND ELEVATIONS AND REPORT ALL FINDINGS TO THE ENGINEER. ONCE CONSTRUCTION HAS COMMENCED THE CONTRACTOR MUST VERIFY DIMENSIONS FOR ALL DIMENSIONS SHOWN ON THE DRAWINGS. WHEN SHOWN ON THE DRAWING, THE ACCURACY OF THE POSITION OF SOIL UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL VERIFY DIMENSIONS OF THE EXACT LOCATION OF ALL SOIL UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.
- ALL DIMENSIONS SHOWN THE PROPERTY OF THE ISSUING ENGINEER AND SHALL NOT BE REPRODUCED, COPIED, OR USED WITHOUT THE WRITTEN CONSENT OF S. LLEWELLYN & ASSOCIATES LIMITED.

| APPROVALS | | | | STAMP | |
|-----------|------------|----|-----------------------------------|--------|-----------|
| NO. | DATE | BY | REVISIONS | DESIGN | AP |
| 1 | AUG. 13/21 | AP | ISSUED FOR SITE ALTERATION PERMIT | CHK'D | SF |
| 2 | | | | DATE | |
| | | | | AP | CHK'D |
| | | | | | SF |
| | | | | | DATE |
| | | | | | Jul.05/22 |

S. LLEWELLYN & ASSOCIATES LIMITED
CONSULTING ENGINEERS
3228 South Service Road, Suite #105 East Wing, Burlington, Ontario, L7N 3H8
Tel: (905) 631-6978
WebSite: www.sla.on.ca
Email: info@sla.on.ca

BRANTHAVEN BELMONT PINEBUSH INC.
720 OVAL CT., BURLINGTON, ON

OAKWOOD DRIVE DEVELOPMENT
OAKWOOD DR. NIAGARA FALLS, ON

PROJECT No: 21077
SCALE: 1:500
DRAWING No: C101

GENERAL NOTES

- 1. THIS/ THESE PLANS IS/ ARE NOT TO BE USED FOR CONSTRUCTION UNTIL SEALED BY THE ENGINEER AND INDICATED ISSUED FOR CONSTRUCTION ON THE DRAWING.
2. THIS/ THESE PLANS IS/ ARE NOT TO BE REPRODUCED IN WHOLE OR IN PART WITHOUT THE WRITTEN PERMISSION OF S. LLEWELLYN AND ASSOCIATES LIMITED.
3. INFORMATION REGARDING ANY UTILITIES SHOWN ON THE APPROVED SET OF CONSTRUCTION DRAWINGS ARE FURNISHED AS THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL VERIFY THIS INFORMATION AS HE SEEKS FIT WITH THE UNDERSTANDING THAT THE OWNER AND HIS AGENTS DISCLAIM ALL RESPONSIBILITY FOR ITS ACCURACY AND SUFFICIENCY. THE CONTRACTOR SHALL ASSUME LIABILITY FOR ANY DAMAGE TO EXISTING WORKS.
4. EXISTING TOPOGRAPHIC AND LEGAL INFORMATION TAKEN FROM PLANS PREPARED BY THE MATHEWS, CAMERON, HEYWOOD-KERRY T. HOWE SURVEYING LIMITED.
5. SITE PLAN INFORMATION TAKEN FROM PLANS PREPARED BY ICON ARCHITECTS.
6. THIS/ THESE PLANS TO BE READ IN CONJUNCTION WITH THE STORM WATER MANAGEMENT (SWM) REPORT PREPARED BY S. LLEWELLYN AND ASSOCIATES LIMITED.
7. THIS (THESE) PLANS TO BE USED FOR SERVING AND GRADING ONLY, FOR BUILDING LOCATION REFER TO THE SITE PLAN.
8. MUNICIPAL APPROVAL OF THESE DRAWINGS IS FOR MATERIAL AND COMPLIANCE WITH CITY OF NIAGARA FALLS AND PROVINCIAL SPECIFICATIONS AND STANDARDS ONLY. APPROVAL AND INSPECTION OF THE WORKS BY THE CITY OF NIAGARA FALLS STAFF DOES NOT CERTIFY THE LINE AND GRADE OF THE WORKS NOR RELIEVE THE CONTRACTOR OF CERTIFICATION OF ALL WORKS BY THE OWNER'S ENGINEER.
9. ALTERNATE WATERMANS MAY BE ACCEPTABLE PROVIDED WRITTEN APPROVAL HAS FIRST BEEN OBTAINED FROM THE CITY OF NIAGARA FALLS AND THE ENGINEER.
10. THE APPROVAL OF THIS PLAN DOES NOT EXEMPT THE OWNER'S BONDED CONTRACTOR FROM THE REQUIREMENTS TO OBTAIN THE VARIOUS PERMITS/APPROVALS NORMALLY REQUIRED TO COMPLETE A CONSTRUCTION PROJECT, SUCH AS, BUT NOT LIMITED TO THE FOLLOWING:
- ROAD CUT PERMITS
- SEWER PERMITS
- APPROACH APPROVAL PERMITS
- RELOCATION OF SERVICES
- COMMITTEE OF ADJUSTMENT
- ENCROACHMENT AGREEMENTS
11. PRIOR TO CONSTRUCTION THE CONTRACTOR MUST:
i. CHECK AND VERIFY ALL EXISTING ELEVATIONS WHICH INCLUDE BUT ARE NOT LIMITED TO THE BENCHMARK ELEVATIONS, EXISTING SERVICE CONNECTIONS, EXISTING INVERTS AND REPORT FINDING IN WRITING TO THE ENGINEER.
ii. OBTAIN ALL UTILITY LOCATES AND REQUIRED PERMITS AND LICENSES.
iii. VERIFY ALL FINISHED FLOOR ELEVATIONS AND BASEMENT FLOOR ELEVATIONS WHICH MAY APPEAR ON THESE PLANS COMPLY WITH THE FINAL ARCHITECTURAL DRAWINGS.
iv. CONFIRM ALL DRAWINGS USED FOR CONSTRUCTION ARE OF THE MOST RECENT REVISION.
v. NOTIFY THE ENGINEER OF THE PROPOSED CONSTRUCTION SCHEDULE FOR COORDINATION OF NECESSARY PERMITS.
12. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE ENGINEER 48 HOURS PRIOR TO THE COMMENCING SITE WORKS TO ARRANGE FOR INSPECTION. THE ENGINEER SHALL DETERMINE THE EXTENT OF INSPECTION AND TESTING REQUIRED FOR CERTIFICATION OF THE UNDERGROUND SERVICE INSTALLATION AS MANDATED BY THE ONTARIO BUILDING CODE DIVISION C, PART 1, SECTION 1.2.2, GENERAL REVIEW. FAILURE TO MAKE SUITABLE ARRANGEMENTS FOR INSPECTION WILL LEAD TO POST CONSTRUCTION TESTING AND INSPECTION AS DETERMINED BY THE ENGINEER. THE COSTS OF WHICH INCLUDING ANY DELAYS IN CONSTRUCTION SHALL BE BORNE BY THE CONTRACTOR. FULL PAYMENT FOR UN-INSPECTED WORKS MAY BE WITHHELD UNTIL THE COMPLETION OF THE POST CONSTRUCTION INSPECTION AND TESTING TO THE SATISFACTION OF THE ENGINEER.
13. INSPECTION BY THE OWNER'S ENGINEER IS FOR CERTIFICATION AND GENERAL CONFORMANCE PURPOSES AND DOES NOT CERTIFY LINE AND GRADE OR IMPLY AN ASSURANCE OF QUALITY CONTROL. THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THE INSTALLATION OF THE WORKS TO PROPER LINE, GRADE AND QUALITY TO CURRENT INDUSTRY STANDARDS.
14. ANY UTILITY RELOCATIONS AND RESTORATIONS DUE TO THE DEVELOPMENT TO BE UNDERTAKEN AT THE EXPENSE OF THE OWNER/DEVELOPER AND SHALL BE COORDINATED BY THE CONTRACTOR.
15. ALL RESTORATIONS AND RECONSTRUCTIONS SHALL BE TO COMPLETED TO MATCH EXISTING CONDITIONS OR BETTER AND ARE TO BE PERFORMED TO THE SATISFACTION OF THE ENGINEER AND THE CITY OF NIAGARA FALLS.
16. SERVING CONTRACTOR TO MAINTAIN A "DEFINED TRENCH CONDITION" IN ALL SEWER AND WATERMAN INSTALLATION TRENCHES.
17. THE SITE SERVING CONTRACTOR SHALL TERMINATE ALL SERVICES 1.0m FROM THE BUILDING FACE.
18. NO BLASTING WILL BE PERMITTED.

SEWERS

- 1. SANITARY AND STORM SEWERS
A. CONSTRUCTION OF SANITARY & STORM SEWERS & PRIVATE DRAINS SHALL BE IN ACCORDANCE WITH CITY STANDARDS & SPECIFICATIONS (LATEST EDITION) AND MINISTRY OF ENVIRONMENT (MOC) GUIDELINES (LATEST EDITION).
B. COVER AND BEDDING MATERIAL FOR PRIVATE DRAINS SHALL BE GRANULAR 'A' MATERIAL AS PER OPSD 802.030 OR 802.033, CLASS 'B' BEDDING.
C. COVER AND BEDDING MATERIAL FOR PVC PIPE SHALL BE GRANULAR 'A' MATERIAL AS PER OPSD 802.030 OR 802.033.
D. ALL SEWERS TO BE VIDEO INSPECTED AS PER OPSD 409.
E. ALL SEWERS TO BE FLUSHED PRIOR TO VIDEO INSPECTION.
F. MANHOLE FRAMES AND COVERS SHALL BE AS PER OPSD 401.010 (STORM-OPEN, SANITARY-CLOSED).
G. CATCHBASIN FRAMES AND GRATES SHALL BE AS PER OPSD 400.100 IN PAVED AREA AND 400.120 IN LANDSCAPED AREA.
H. ALL NEAR LOT CATCHBASINS SHALL BE SUMPLESS.
I. SANITARY SEWERS 200mm TO 600mm IN DIAMETER SHALL BE PVC PIPE, CSA B182.2, SDR-35.
J. STORM SEWERS 250mm TO 600mm IN DIAMETER SHALL BE PVC PIPE, CSA B182.2, SDR-35.
K. STORM SEWERS GREATER THAN 600mm IN DIAMETER SHALL BE CONCRETE PIPE, CSA A257.2 (AS SPECIFIED).
L. ALL PVC STORM SEWERS ARE TO BE TESTED FOR DEFLECTION (MANDREL PASSAGE) AFTER INSTALLATION AS PER OPSD 410. SANITARY SEWERS SHALL BE TESTED FOR DEFLECTION (MANDREL PASSAGE) AND LEAKAGE (LOW AIR PRESSURE METHOD) AS PER OPSD 410 PRIOR TO ASSUMPTION BY THE CITY. PIPE DEFLECTION TESTING SHALL BE REPEATED.

PRIVATE DRAINS

- 1. PRIVATE DRAINS TO BE 150mm PVC PIPE, CSA B182.1 M-1983, SDR 28. STORM PIPE SHALL BE WHITE AND SANITARY PIPE SHALL BE BLACK.
2. COVER AND BEDDING MATERIAL FOR PRIVATE DRAINS SHALL BE GRANULAR 'A' MATERIAL AS PER OPSD 802.030 OR 802.033.
3. MINIMUM FALL FOR PRIVATE DRAINS TO BE 2.0%.
4. TOP OF SANITARY PRIVATE DRAINS AT STREET LINE TO BE 2.2M (MIN.) BELOW CENTERLINE ROAD ELEVATION AT THAT POINT OR AS DETAIL.
5. TOP OF STORM PRIVATE DRAINS AT STREET LINE TO BE 1.2M (MIN.) BELOW CENTERLINE ROAD ELEVATION AT THAT POINT OR AS DETAIL.
6. SUMP PUMPS WITH CHECK VALVES SHALL BE INSTALLED IN EACH DWELLING TO PUMP THE BUILDING KEEPING FLOOR. THE SUMP OUTLET PIPE SHALL EXTEND A MINIMUM OF 150mm ABOVE THE PROPOSED GRADE AT THE DWELLING (BASEMENT CEILING) PRIOR TO DISCHARGE.

WATERMANS AND WATER SERVICES

- 1. WATERMANS
A. CONSTRUCTION OF WATERMANS & PRIVATE SERVICES SHALL BE IN ACCORDANCE WITH CITY STANDARDS & SPECIFICATIONS (LATEST EDITION) AND MINISTRY OF ENVIRONMENT (MOC) GUIDELINES (LATEST EDITION).
B. THE DEPTH OF COVER SHALL NOT BE LESS THAN 1.80m MEASURED IN A VERTICAL PLANE ABOVE THE PIPE FROM THE TOP OF THE FINISHED GROUND ELEVATION. HOWEVER, AT NO TIME SHOULD THE MINIMUM DEPTH OF COVER TO WATERMANS BE LESS THAN THE DEPTH OF FROST PENETRATION.
C. POLYVINYL CHLORIDE (PVC) PIPE IN SIZES 100mm UP TO 600mm SHALL BE CLASS 150 DR18 CONFORMING TO AWWA C900. REINFORCED CONCRETE PRESSURE PIPE (RCCP) CAN BE USED FOR SIZES 400mm AND GREATER.
D. TRACER WIRE SHALL BE INSTALLED WITH PVC PIPE. IT SHALL BE 8 GAUGE 7 STRAND INSULATED COPPER AND SHALL BE POSITIONED CONTINUOUSLY ALONG THE CROWN OF THE PIPE FOR ITS ENTIRE LENGTH AND STRAPPED TO THE PIPE AT A MINIMUM OF 3.0m INTERVALS. TRACER WIRE SHALL BE TERMINATED ON THE INSIDE OF ALL STRUCTURES AND MANHOLES AND SHALL BE TIED OFF ON THE TOP LADDER RING AT ALL MANHOLES. VALVES AND HYDRANT SECONDARY VALVE LOCATIONS, THE TRACER WIRE SHALL BE BROUGHT UP TO THE OUTSIDE OF THE VALVE BOX WITH A 300mm LOOP OF WIRE IDENTIFIED WITH THE UNDERGROUND TRACER WIRE BY APPLYING AN ELECTRIC CURRENT OR TONING.
E. MOLDED PVC FITTINGS FOR PIPE SIZES 100mm TO 300mm SHALL CONFORM TO AWWA C900 AND CERTIFIED TO CSA B137.2.
F. FABRICATED FITTINGS 200mm AND 300mm SHALL BE MANUFACTURED FROM SOLENTS OF AWWA CLASS 150 (DR18) PVC PIPE BONDED TOGETHER AND OVER-WRAPPED WITH FIBREGLASS-REINFORCED POLYESTER TO MEET THE REQUIREMENTS OF CSA B137.2.
G. WHERE METAL FITTINGS ARE TO BE USED ON PVC MANNS SUFFICIENT CATHODIC PROTECTION AS PER FORM 400 MUST BE PROVIDED AS PER THE FOLLOWING REQUIREMENTS:
i. ONE (1) 5.5 kg ZINC ANODE WILL BE PROVIDED FOR EVERY 1000 m TRACER CONNECTIONS BY MEANS OF A SERVICE GROUND LAMP, COATED WITH T.C. MASTIC OR WRAPPED WITH SCOTCHPAK ELECTRICAL PUTTY OR APPROVED EQUAL. THE ANODE IS TO BE PLACED AT LEAST 1.0 m AWAY FROM THE WATER SERVICE AND AS DEEP AS THE SERVICE AND WITHIN 1.0 m OF THE CURB STOP.
ii. ONE (1) 11.0 kg ZINC ANODE IS TO BE INSTALLED ON EACH HYDRANT. IF PVC PIPE IS USED BETWEEN THE HYDRANT TEE OR ANCHOR TEE AND THE HYDRANT BOOT, TWO (2) 11.0 kg ZINC ANODES SHALL BE USED.
iii. ONE (1) 5.5 kg ZINC ANODE IS TO BE INSTALLED ON EVERY VALVE, AND EVERY METALLIC FITTING CONNECTED TO A PVC WATERMAN. FITTINGS INCLUDE BENDS, TEES, CROSSES, SLEEVES, REDUCERS, PLUGS, CAPS, JOINT RESTRAINERS AND COUPLINGS.
iv. ONE (1) 14.5 kg MAGNESIUM ANODE IS TO BE CONNECTED TO THE FIRST LENGTH OF AN EXISTING METALLIC WATERMAN PIPE WHEN CONNECTED TO A NEW PVC WATERMAN.
ALL SACRIFICIAL ZINC ANODES SHALL CONFORM TO ASTM B-418 TYPE I AND SHALL BE MADE OF HIGH GRADE ELECTROLYTIC ZINC, 99.99 % PURE MAGNESIUM ANODES SHALL CONFORM TO ASTM B-107-TYPE III. FOR ALL ANODES CONNECTED TO NEW PIPE, FITTINGS OR TO EXISTING METALLIC WATERMANS, A CATHODE AND CA-15 OR EQUIVALENT CATHODE SHALL BE USED. ALL THERMITE WELD CONNECTIONS TO BE COATED WITH T.C. MASTIC (AEPACOT 'A' MATERIAL), ROYBOND 747 PRIMER AND PROTECTIVE MANDY CAP OR APPROVED EQUAL.
H. BEDDING AND BACKFILL TO BE GRANULAR 'A' MATERIAL FOR MANS AND SERVICES.
I. WATERMAN DEFLECTION FOR PVC PIPE:
i. MAXIMUM ALLOWABLE DEFLECTION OF 1.5 DEGREES PER JOINT UP TO 250mm DIAMETER (160mm PER 6.1m PIPE LENGTH) AND 1.2 DEGREES FOR 300mm DIAMETER (128mm PER 6.1m PIPE LENGTH) SHALL NOT BE EXCEEDED.
ii. ALL JOINTS SHALL BE DEFLECTED AN EQUAL AMOUNT.
J. MINIMUM HORIZONTAL SEPARATION BETWEEN WATERMANS AND SEWERS SHALL BE 2.5m. VERTICAL SEPARATION BETWEEN WATERMANS AND SEWERS WHICH CROSS MUST BE 500mm BETWEEN THE OUTSIDE OF THE WATERMAN AND THE OUTSIDE OF THE SEWER, WITH THE LENGTH OF WATER PIPE BEING CENTRED AT THE POINT OF CROSSING SUCH THAT JOINTS IN THE WATERMAN WILL BE EQUIVALENT AND AS FAR AS POSSIBLE FROM THE SEWER, CROSSING PERPENDICULAR IF POSSIBLE.
K. ALL EXISTING WATER METERS BEING ABANDONED AS PART OF THE PROPOSED DEVELOPMENT MUST BE REMOVED AND SALVAGED BY THE CITY OF NIAGARA FALLS. THE SERVING CONTRACTOR SHOULD CONTACT THE WATER AND WASTEWATER SECTION, PUBLIC WORKS DEPARTMENT TO ARRANGE FOR THE WORK.

VALVES & VALVE BOXES

- 1. ALL VALVE BOXES TO BE SET TO PROPOSED GRADES.
2. 100mm TO 300mm GATE VALVE & VALVE BOXES:
A. ALL CURB STOPS SHALL BE OF A MUELLER MARK II OR-SEAL OR APPROVED EQUAL.
B. ALL CITY STANDARD SPECIFICATIONS. ALL CURB STOPS WILL USE STAINLESS STEEL STOPS TO OPERATE THE VALVE.
3. ALL MAN STOPS SHALL BE OF MUELLER II OR-SEAL OR APPROVED EQUAL UTILIZING STAINLESS STEEL SERVICE SHADES WITH DOUBLE STAINLESS STEEL BOLTS, AS PER CITY STANDARD SPECIFICATIONS.

HYDRANTS

- 1. ALL HYDRANTS SHALL BE CANADA VALVE CENTURY, MCAVITY M-67 BRIDGER OR AMERICAN AWM 2180 AND TO BE SUPPLIED WITH A "SHORTY" CONNECTION.
2. ALL FIRE HYDRANTS SHALL CONFORM TO THE CITY OF NIAGARA FALLS (MUNICIPALITY) FIRE DEPARTMENT'S REQUIREMENTS AND SHALL BE OF SAME MANUFACTURE.
3. ALL HYDRANTS INSTALLED ON WATERMANS SHALL BE A 150mm ANCHOR TEE WITH 150mm VALVE HYDRANT INSTALLATION SHALL BE AS PER OPSD 1105.010.
4. HYDRANTS SHALL BE INSTALLED ON ALL WATERMANS 150mm AND LARGER WITH THE FOLLOWING MAXIMUM ALLOWABLE SPACING, MEASURED ALONG THE FIRE VEHICLES PATH OF TRAVEL TO THE PRINCIPLE ENTRANCE OF THE UNIT:
i. 150m IN RESIDENTIAL AREAS, OR TO PROVIDE FOR A MAXIMUM HOSE LENGTH OF 75m
ii. 75m IN INDUSTRIAL AND COMMERCIAL AREAS TO PROVIDE FOR A MAXIMUM HOSE LENGTH OF 37.5m
iii. 200m IN RURAL AREAS.

GRADING NOTES

- 1. ALONG ADJOINING PROPERTIES GRADE TO MEET EXISTING OR PROPOSED ELEVATIONS WITH SLOPED SWALES OR RETAINING WALLS AS SPECIFIED.
2. ALL RETAINING WALLS 1.0m OR HIGHER SHALL BE DESIGNED BY A P.E.N.G.
3. SHOULD A RETAINING WALL BE REQUIRED, THE TOP OF WALL ELEVATIONS SHALL BE SET 150mm ABOVE THE PROPOSED SIDE YARD SWALES.
4. RETAINING WALLS 0.6m IN HEIGHT OR GREATER REQUIRE CONSTRUCTION OF A FENCE OR GUARD RAIL AT THE TOP OF THE REAR OF THE WALL. GUARDS FOR RETAINING WALLS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF EXISTING GUARDS AS CONTAINED IN THE ONTARIO BUILDING CODE.
5. TOP OF FOUNDATION WALLS FOR BUILDINGS SHALL BE 150mm (MIN) ABOVE FINISHED GRADE.
6. DRIVEWAY SLOPES SHALL NOT BE LESS THAN 1.5% AND NOT MORE THAN 8.0% REVERSED SLOPED DRIVEWAYS IN NEW DEVELOPMENTS ARE NOT PERMITTED.
7. IF GRADING IS REQUIRED ON LANDS ADJACENT TO THE DEVELOPMENT WHICH ARE NOT OWNED BY THE DEVELOPER, THEN THE DEVELOPER MUST OBTAIN WRITTEN PERMISSION FROM THE ADJACENT PROPERTY OWNER TO ALLOW THE DEVELOPER TO GRADE ON THE ADJACENT LANDS, OTHERWISE RETAINING WALLS MUST BE USED.
8. THE WRITTEN PERMISSION REQUIRED FROM THE ADJACENT LANDOWNER SHALL BE OBTAINED PRIOR TO ENTERING THE LANDS. SHOULD PERMISSION NOT BE OBTAINED OR IS WITHDRAWN PRIOR TO COMMENCING THE WORK, THEN THE DEVELOPER SHALL LIMIT HIS ACTIVITIES TO THE LIMITS OF THE DEVELOPMENT SITE.
9. DRIVEWAY AND DRIVEWAY APPROACHES SHALL BE LOCATED SUCH THAT HYDRO VALVETS AND OTHER STREET FURNITURE ARE A MIN. OF 1.2m FROM THE PROJECTIONS OF THE OUTSIDE GARAGE WALLS.
10. ANY CHANGES IN GRADES AND CATCH BASINS REQUIRE THE APPROVAL OF THE CITY'S MANAGER OF DEVELOPMENT ENGINEERING.
11. ALL DRIVEWAYS FROM PROPERTY LINES FOR THE FIRST 7.5m SHALL BE WITHIN 5% MAXIMUM GRADE, THEREAFTER, ALL DRIVEWAYS SHALL BE WITHIN 10% MAXIMUM GRADES.

COMPACTION REQUIREMENTS

- 1. UNLESS OTHERWISE NOTED OR DIRECTED BY THE GEOTECHNICAL CONSULTANT, THE FOLLOWING SHALL APPLY:
i. ALL BEDDING AND BACKFILL MATERIAL, ROAD SUB-GRADES AND GENERALLY MATERIAL USED FOR ALL GRADING AND FILL, SUCH AS, BUT NOT LIMITED TO, SHALL BE COMPACTED TO MIN. 98% SPD. ALL MATERIAL SHALL BE PLACED IN LAYERS NOT EXCEEDING 300mm LIFTS.
ii. ALL GRANULAR ROAD BASE MATERIALS SHALL BE COMPACTED TO 98% SPD.
iii. FOR ALL SEWERS AND WATERMANS IN FILL SECTIONS, THE COMPACTION SHALL BE CERTIFIED BY A GEOTECHNICAL ENGINEER PRIOR TO LAYING OF PIPE.

SILTATION AND EROSION CONTROL

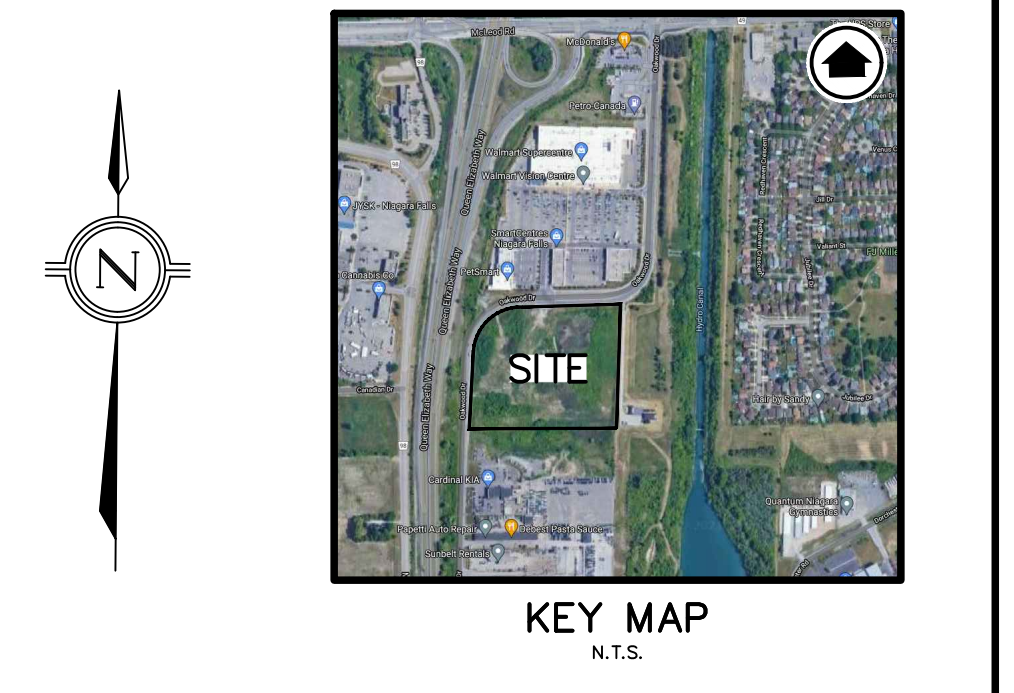
- 1. SILTATION CONTROL BARRIERS SHALL BE PLACED AS DETAIL.
2. ALL SILTATION CONTROL BARRIERS SHALL BE CLEANED AND MAINTAINED AFTER EACH RAINFALL AS DIRECTED AND TO THE SATISFACTION OF THE CITY OF NIAGARA FALLS.
3. ADDITIONAL SILT CONTROL LOCATIONS MAY BE REQUIRED AS DETERMINED BY THE ENGINEER, THE CITY OF NIAGARA FALLS.
4. ALL EROSION AND SEDIMENT CONTROL DEVICES MUST BE INSTALLED PRIOR TO DEVELOPMENT AND MAINTAINED THROUGHOUT THE CONSTRUCTION PROCESS, UNTIL ALL DISTURBED AREAS HAVE BEEN RE-ESTABLISHED.
5. ALL EROSION AND SEDIMENT CONTROL DEVICES SHOULD BE INSPECTED MINIMUM WEEKLY, AFTER EVERY RAINFALL AND MAINTAINED AND CLEANED AS REQUIRED.

SEWER/WATER ABANDONMENT

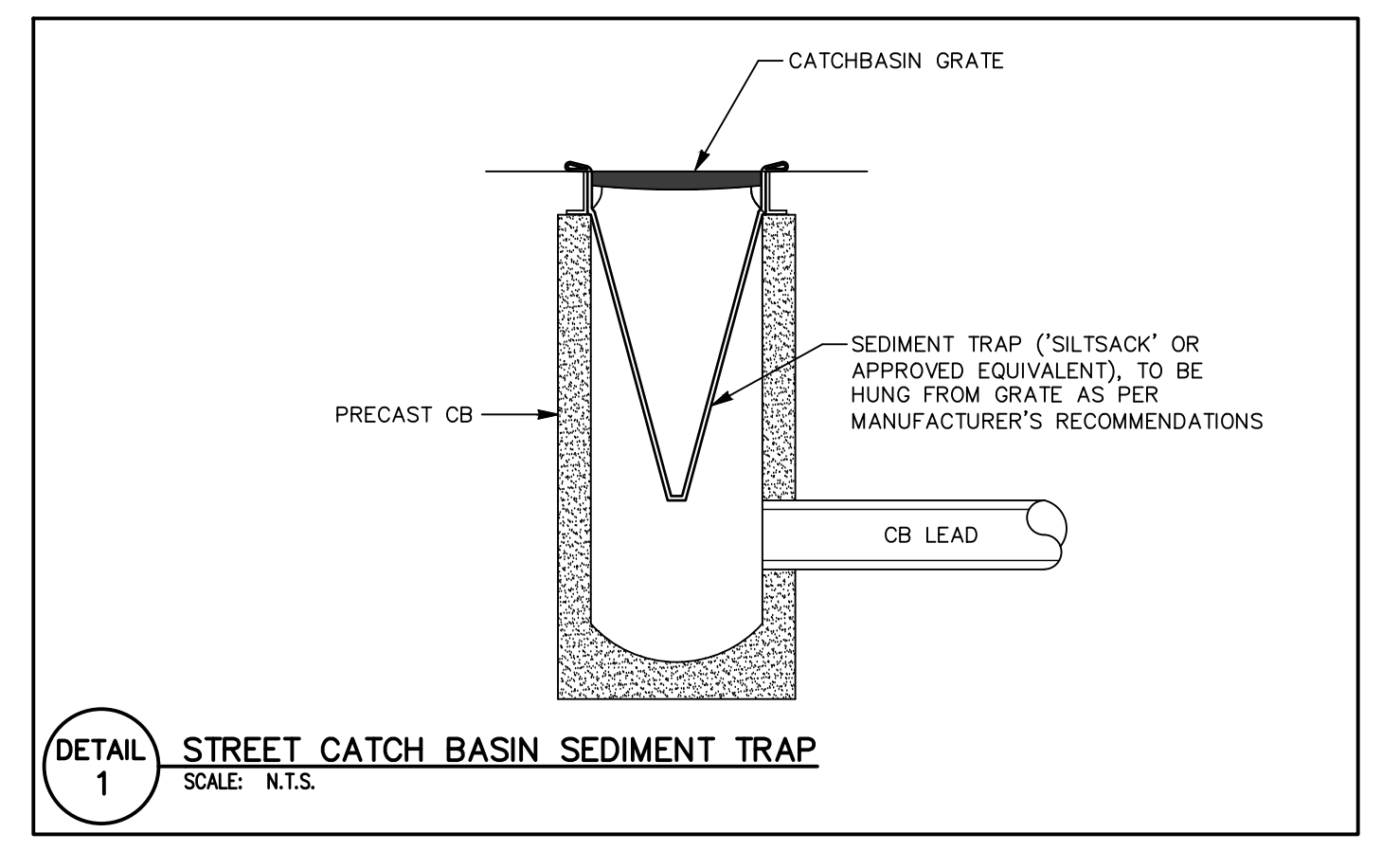
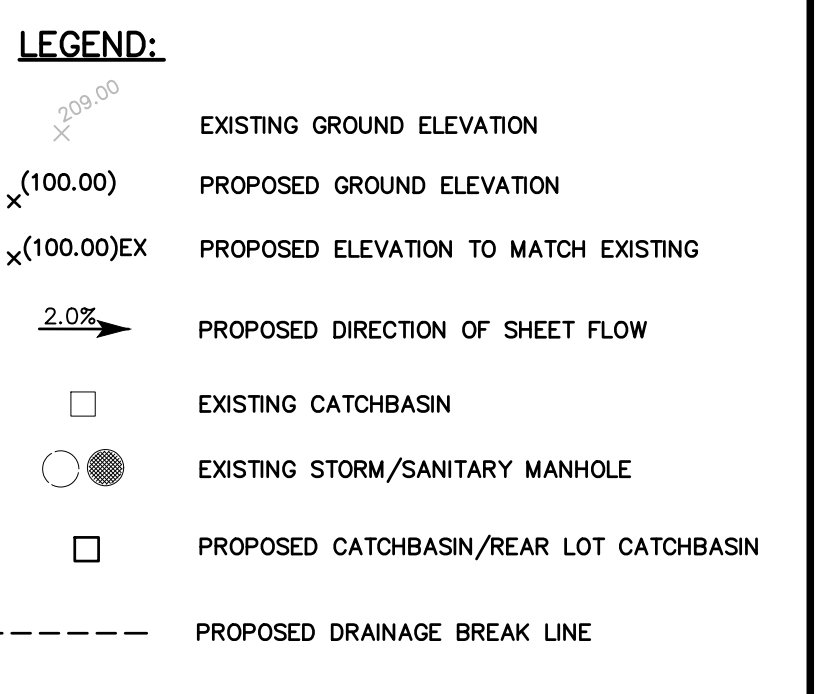
- 1. ALL EXISTING UNUSED SEWERS MUST BE PROPERLY ABANDONED BY DISCONNECTING SEWER AT THE MAIN AND GROUTING OTHER END OF THE SEWER WITH A MINIMUM 300mm OF CONCRETE.
2. UNUSED MAINTENANCE HOLES AND CATCHBASINS MUST BE COMPLETELY REMOVED.
3. OPENINGS IN MAINTENANCE HOLES AND CATCHBASINS WHERE SERVICES WERE REMOVED OR ABANDONED MUST BE BRICKED AND PARDED.
4. ALL EXISTING UNUSED WATER SERVICES MUST BE PROPERLY ABANDONED AS FOLLOWS:
5. FOR COPPER SERVICES: REMOVE CURB STOP, SHUT OFF MAIN STOP, CUT & CRIMP WATER SERVICE AT THE MAIN.
6. FOR PVC SERVICES: REMOVE GATE VALVE, REMOVE TEE AND REPLACE WITH SLEEVE. IF A TAPPING VALVE WAS USED, CONTACT THE CITY OF NIAGARA FALLS FOR FURTHER DIRECTION.

NOTES TO CONTRACTOR:

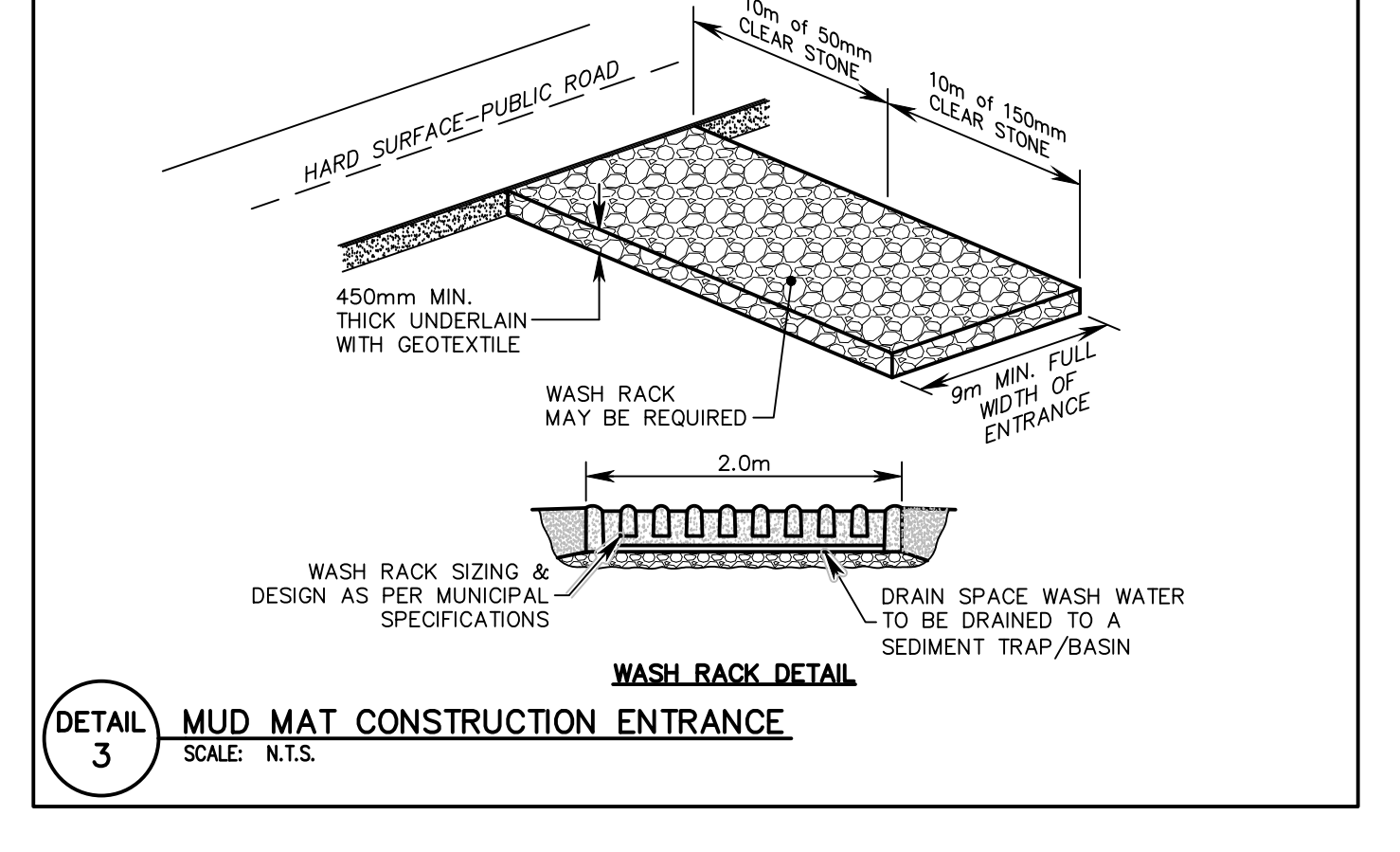
- 1. INSPECTION
CONTRACTOR IS RESPONSIBLE FOR CONTACTING ENGINEER 48 HRS PRIOR TO COMMENCING WORK TO ARRANGE FOR INSPECTION. ENGINEER TO DETERMINE DEGREE OF INSPECTION AND TESTING REQUIRED FOR CERTIFICATION OF UNDERGROUND SERVICE INSTALLATION AS MANDATED BY ONTARIO BUILDING CODE DIVISION C, PART 1, SECTION 1.2.2, GENERAL REVIEW. FAILURE TO NOTIFY ENGINEER WILL RESULT IN EXTENSIVE POST CONSTRUCTION INSPECTION AT CONTRACTORS EXPENSE.
2. CONFIRMATION OF EXISTING INVERTS
72 HOURS PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR IS TO LOCATE, EXPOSE AND VERIFY INVERTS OF EXISTING SEWERS AT CONNECTION POINTS. SHOULD THE CONTRACTOR PROCEED WITHOUT COMPLETING THESE LOCATES, EXTRA COSTS RESULTING FROM DELAYS AND STANDBY TIME WILL NOT BE CONSIDERED.



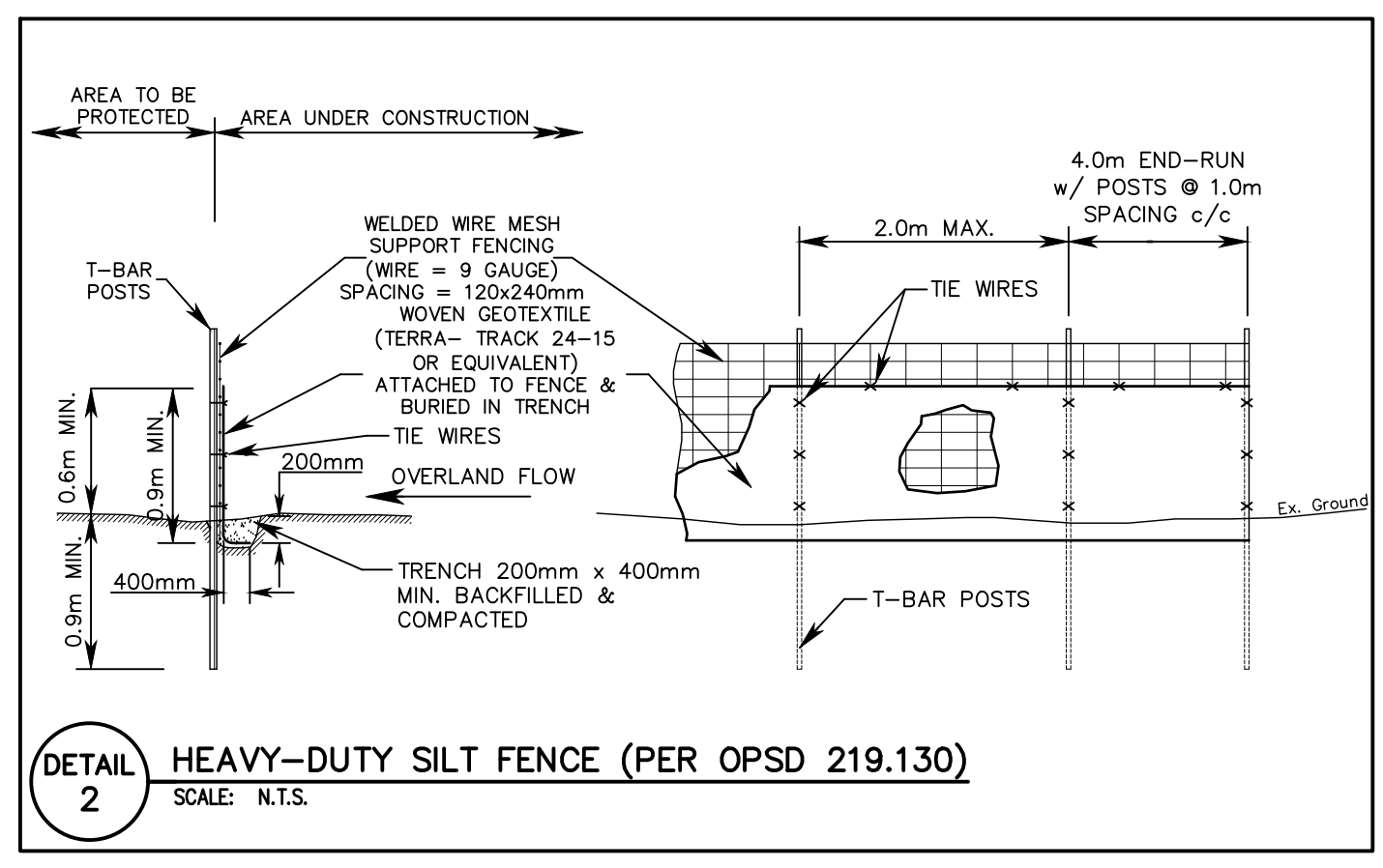
BENCHMARK NOTE:
ELEVATIONS HEREON ARE GEODETIC AND ARE REFERRED TO THE CITY OF NIAGARA FALLS BENCHMARK No. 90386023. ELEVATION = 181.91 meters



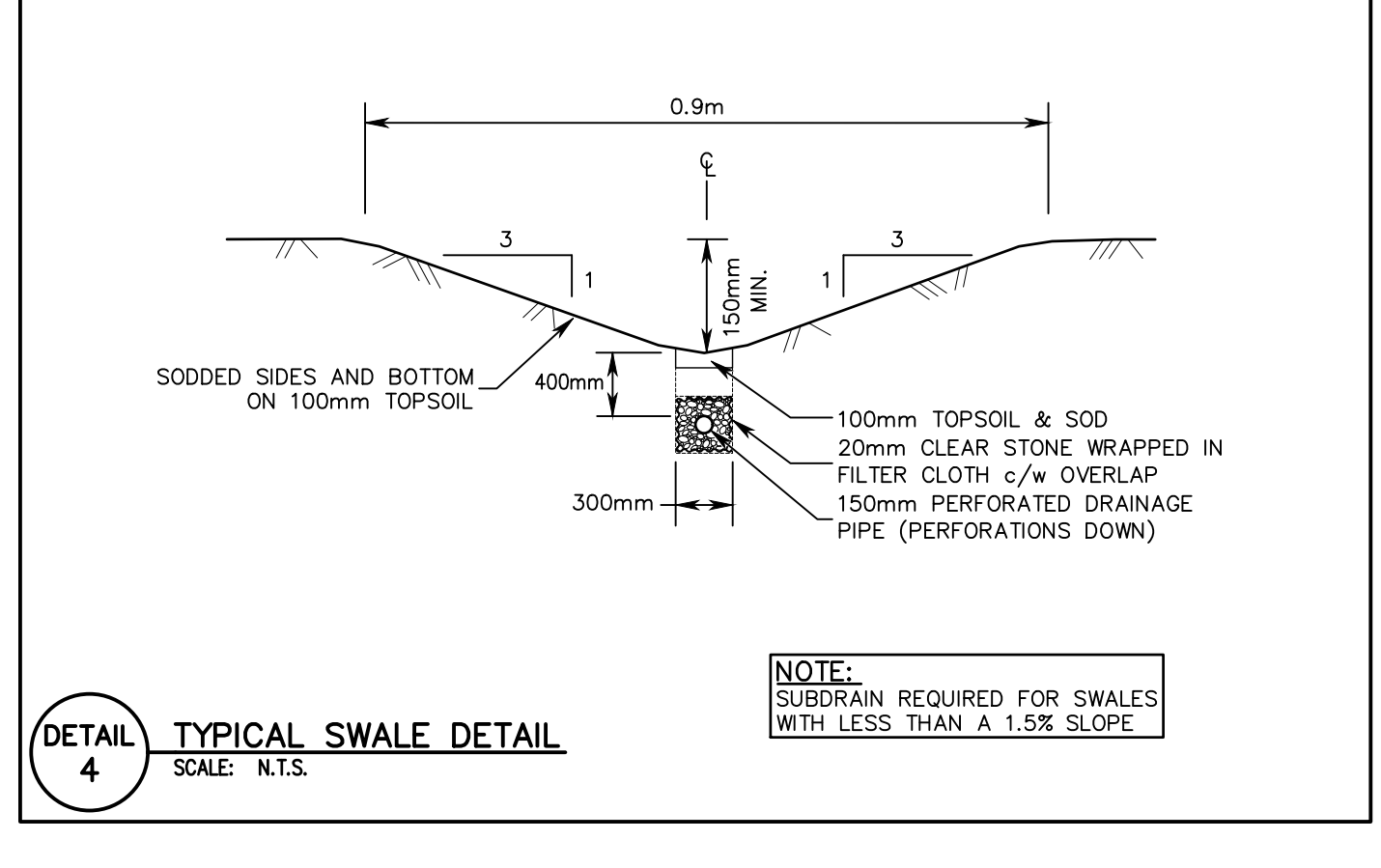
DETAIL 1 STREET CATCH BASIN SEDIMENT TRAP SCALE: N.T.S.



DETAIL 3 MUD MAT CONSTRUCTION ENTRANCE SCALE: N.T.S.



DETAIL 2 HEAVY-DUTY SILT FENCE (PER OPSD 219.130) SCALE: N.T.S.



DETAIL 4 TYPICAL SWALE DETAIL SCALE: N.T.S.

NOTES TO CONTRACTOR:

- 1. CONTRACTOR AND SUBCONTRACTORS SHALL NOT SCALE FROM THIS DRAWING.
2. ANY INCONSISTENCIES AND OMISSIONS FOUND ON THE DRAWINGS MUST BE REPORTED TO THE ENGINEER FOR CLARIFICATION BEFORE COMMENCING THE WORK.
3. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND ELEVATIONS AND REPORT ALL FINDINGS TO THE ENGINEER. (ONCE CONSTRUCTION HAS COMMENCED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DIMENSIONS AND ELEVATIONS).
4. THE POSITIONS OF PIPE LINES, CONDUITS, WATERMANS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES ARE TO BE INDICATED ON THE DRAWINGS. WHERE SHOWN ON THE DRAWING, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.
5. ALL-AS SHOWN WITHOUT THE WRITTEN CONSENT OF S. LLEWELLYN AND ASSOCIATES LIMITED.

Table with columns for DESIGN, DRAWN, CHECKED, DATE, and APPROVALS. Includes a signature block for S. LLEWELLYN & ASSOCIATES LIMITED and a table for design and drawing status.

APPROVALS section with a signature block for S. LLEWELLYN & ASSOCIATES LIMITED, including contact information and address: 3228 South Service Road, Suite #105 East Wing, Burlington, Ont., L7N 3H8.

CLIENT: BRANTHAVEN BELMONT PINEBUSH INC. 720 OVAL CT., BURLINGTON, ON. TITLE: NOTES AND DETAILS PLAN. PROJECT No.: 21077. DRAWING No.: C104. SCALE: 1:400. Includes a graphic scale bar.