

BIORETENTION GENERAL NOTES

1. BIORETENTION FILTER MEDIA SHOULD BE OBTAINED PREMIXED FROM APPROVED VENDOR. VENDOR TO PROVIDE TESTING RESULTS PRIOR TO INSTALLATION. DELIVERED MEDIA SHALL BE TESTED AND APPROVED BY ENGINEER PRIOR TO INSTALLATION. MEDIA INSTALLED WITHOUT FIELD ENGINEER CLEARANCE SHALL BE REMOVED AT THE CONTRACTOR'S EXPENSE. IF DEEMED NECESSARY BY THE FIELD ENGINEER, THE CONTRACTOR WILL BE SOLELY RESPONSIBLE FOR ALL REQUIRED MEDIA TESTING EXPENSES. THE CONTRACTOR IS RESPONSIBLE FOR ANY DELAYS SUFFERED AS A RESULT OF TESTING. NO COMPENSATION WILL BE PROVIDED FOR DELAYS DUE TO MEDIA ANALYSIS.
2. SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION TO PREVENT RUNOFF FROM CONTAMINATING EXCAVATED SURFACE OF THE NATIVE SOILS.
3. FINAL GRADE OF BIORETENTION FACILITIES TO BE EXCAVATED IMMEDIATELY PRIOR TO BACKFILLING WITH SPECIFIED FILTER MEDIA TO AVOID PREMATURE FACILITY CLOGGING. OPEN EXCAVATIONS BEYOND 1 DAY SHALL INSTALL TEMPORARY SACRIFICIAL FILTER FABRIC.
4. APPROVED FILTER MEDIA MIXES SHALL BE INSTALLED IMMEDIATELY PRIOR TO INSTALLATION OF THE PLANTINGS AND STABILIZATION MEASURES.
5. REFER TO THE SERVING & STORMWATER MANAGEMENT REPORT, PREPARED BY ROBINSON LAND DEVELOPMENT.

CONSTRUCTION SEQUENCING

1. EROSION AND SEDIMENTATION PROTECTION MEASURES ARE REQUIRED PRIOR TO THE COMMENCEMENT OF ANY ALL EXCAVATION ACTIVITIES.
2. FINAL GRADE OF THE FACILITIES ARE TO BE EXCAVATED IMMEDIATELY PRIOR TO BACKFILLING WITH SPECIFIED FILTER MEDIA TO AVOID PREMATURE FACILITY CLOGGING.
3. EXCAVATION, BACKFILLING AND MEDIA INSTALLATION IS ONLY TO OCCUR AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.
4. APPLY FILTER MEDIA IN 300mm LIFTS UNTIL DESIRED ELEVATION IS ACHIEVED. THOROUGHLY WET EACH LIFT BEFORE ADDING NEXT LEVEL. ALLOW WATER TO FULLY PERCOLATE THROUGH THE SOIL BEFORE ADDING EACH COURSE.
5. THE FILTER MEDIA SHALL BE FINE GRADED AFTER PLACEMENT. FINISHED GRADING SHALL CONFORM TO THE ELEVATIONS SHOWN ON THE DESIGN DRAWINGS AND SHALL BE FREE OF DEBRIS AND OTHER MATERIALS THAT WOULD BE DETRIMENTAL TO THE PERFORMANCE OF THE GROWING MEDIA.
6. THE FINISHED SURFACE SHALL BE SMOOTH AND UNIFORM, AND BE FIRM AGAINST DEEP FOOTPRINTING, WITH A FINE LOOSE SURFACE TEXTURE.
7. PROTECTION OF THE FINISHED GRADE AND CORRECTION OF ANY IRREGULARITIES CAUSED BY WORK OPERATIONS OVER THE FINISHED GRADE SHALL BE ENFORCED.
8. SETTLING OF ANY FINISHED GRADE SHALL NOT BE MORE THAN 10cm FROM SPECIFIED ELEVATIONS, AND IF SETTLING IS GREATER, THE CONTRACTOR SHALL BRING THE GRADE TO THE SPECIFIED ELEVATIONS USING APPROVED MATERIALS.
9. PLANTING NOT TO OCCUR PRIOR TO 5 DAYS AFTER MEDIA PLACEMENT TO ALLOW FOR MEDIA SETTLEMENT. ADD ADDITIONAL MEDIA IF REQUIRED.
10. PLANTING IS TO OCCUR IN ACCORDANCE WITH THE LANDSCAPE PLANS. AS NECESSARY, PROVIDE A MINIMUM OF 1 IRRIGATION PER WEEK THROUGHOUT THE MAINTENANCE PERIOD AS REQUIRED.
11. AFTER PLANTING, 75mm OF SHREDDED HARDWOOD MULCH (AGED A MINIMUM OF 12 MONTHS) IS TO BE PLACED ON TOP OF THE FILTER MEDIA AND AROUND PLANT MATERIAL. MULCH SHALL BE FREE OF ALL DELTERIOUS SUBSTANCES AND SHALL CONTAIN ONLY 100% SHREDDED MULCH. MULCH SAMPLES SHALL BE SUBMITTED TO FIELD ENGINEER FOR APPROVAL PRIOR TO INSTALLATION. MULCH INSTALLATION WITHOUT FIELD ENGINEER APPROVAL SHALL BE REMOVED AT THE CONTRACTOR'S EXPENSE.
12. GEOTECHNICAL ENGINEER TO DETERMINE IF GEOTEXTILE MATERIAL IS REQUIRED ALONG THE SIDES OF THE FACILITIES DURING CONSTRUCTION.

BIORETENTION EROSION AND SEDIMENT CONTROL

1. DURING CONSTRUCTION, PROVISION SHALL BE MADE FOR PROPER WATER MANAGEMENT AND DRAINAGE OF THE SITE. AT NO TIME SHALL SEDIMENT LADEN WATER BE ALLOWED TO ENTER THE EXCAVATED/BACKFILLED OR COMPLETED BIORETENTION AREAS PRIOR TO STABILIZATION OF THE PLANTING MATERIAL. NO SITE DRAINAGE IS TO ENTER THE PROPOSED FACILITIES. SHOULD SEDIMENT ENTER THE FACILITY PRIOR TO RECEIVING APPROVAL FROM THE FIELD ENGINEER, THE INFILTRATION RATE OF THE CONTAMINATED AREA SHOULD BE TESTED USING GUELPH PERMEAMETER TEST OR DOUBLE-RING INFILTRATION TEST, TO CONFIRM NO LOSS IN INFILTRATION POTENTIAL. SHOULD A LOSS OF INFILTRATION CAPACITY BE CONFIRMED, THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REPAIR/REMEDATION OF THE CONTAMINATED AREA TO THE SATISFACTION OF THE ENGINEER, USING APPROVED MEASURES, MATERIALS AND PRACTICES.
2. TEMPORARY SEDIMENT CONTROLS ARE TO BE INSTALLED PRIOR TO THE START OF CONSTRUCTION.
3. SILT FENCE SHALL BE INSTALLED AROUND THE PERIMETER OF THE FACILITIES PRIOR TO CONSTRUCTION TO PREVENT SEDIMENT ENTRY INTO THE FACILITIES.
4. CONTRACTOR IS RESPONSIBLE FOR ANY REMEDIATION/REPAIR OF INFILTRATION FACILITIES DAMAGED AS A RESULT OF INADEQUATE OR IMPROPER SEDIMENT CONTROL.
5. THE CONTRACTOR SHALL DELINEATE THE REQUIRED WORKING AREA ON-SITE PRIOR TO THE START OF WORK AND SHALL CONFINE OPERATIONS WITHIN THE DEFINED AREA.
6. TEMPORARY TOPSOIL AND/OR FILL MATERIAL STOCKPILE AREAS TO BE ENCLOSED WITH SEDIMENT CONTROLS.
7. WORKING AREAS, ACCESS REQUIREMENTS, AND TEMPORARY MATERIAL STORAGE AREAS TO BE MAINTAINED IN GOOD CONDITION BY THE CONTRACTOR AT ALL TIMES. AREAS AFFECTED BY THE CONTRACTOR'S ACTIVITIES TO BE REINSTITATED TO THE EXISTING CONDITIONS OR BETTER.
8. ALL ACCUMULATED SEDIMENTS TO BE REMOVED PRIOR TO THE REMOVAL OF CONTROLS AND DISPOSED OF IN AN APPROVED ON-SITE LOCATION BY THE CONTRACTOR.
9. ON-SITE EQUIPMENT REFUELING AND MAINTENANCE TO BE ONLY COMPLETED IN DESIGNATED AREAS.
10. SEDIMENT CONTROLS TO BE INSPECTED DAILY AND AFTER EACH RAINFALL EVENT. SEDIMENT CONTROLS TO BE MAINTAINED AND REPAIRED BY THE CONTRACTOR UNTIL COMPLETION OF CONSTRUCTION AND SITE RESTORATION.
11. REMOVE TEMPORARY SEDIMENT CONTROLS FOLLOWING COMPLETION OF CONSTRUCTION AND SITE RESTORATION, AND REINSTATE AFFECTED AREAS TO EXISTING CONDITIONS OR BETTER.

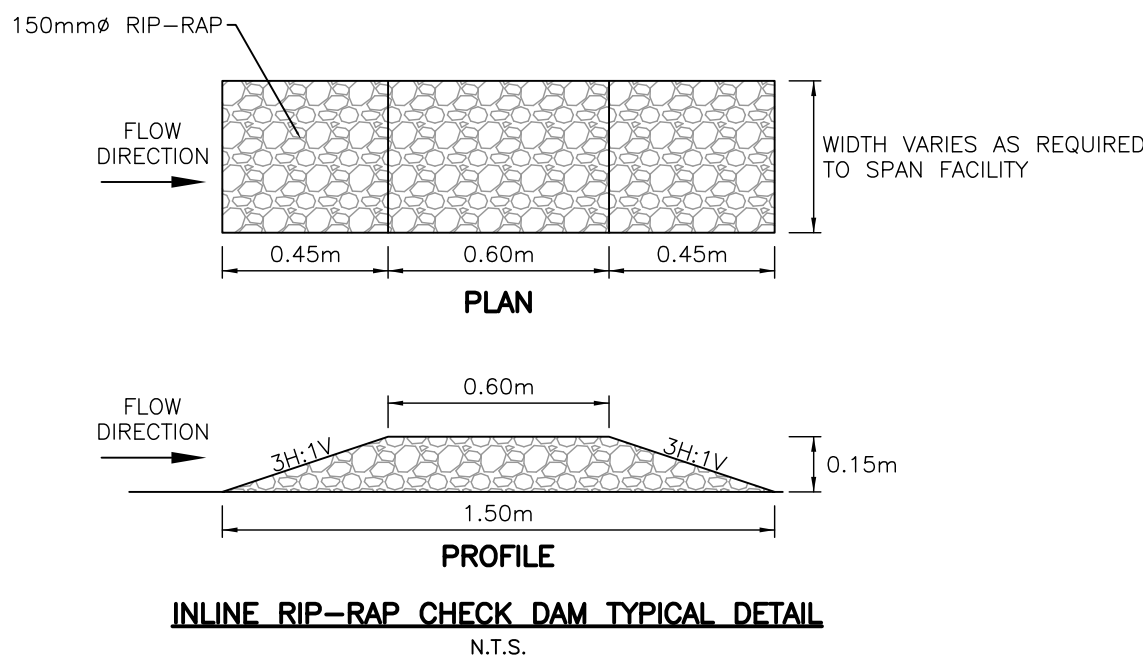
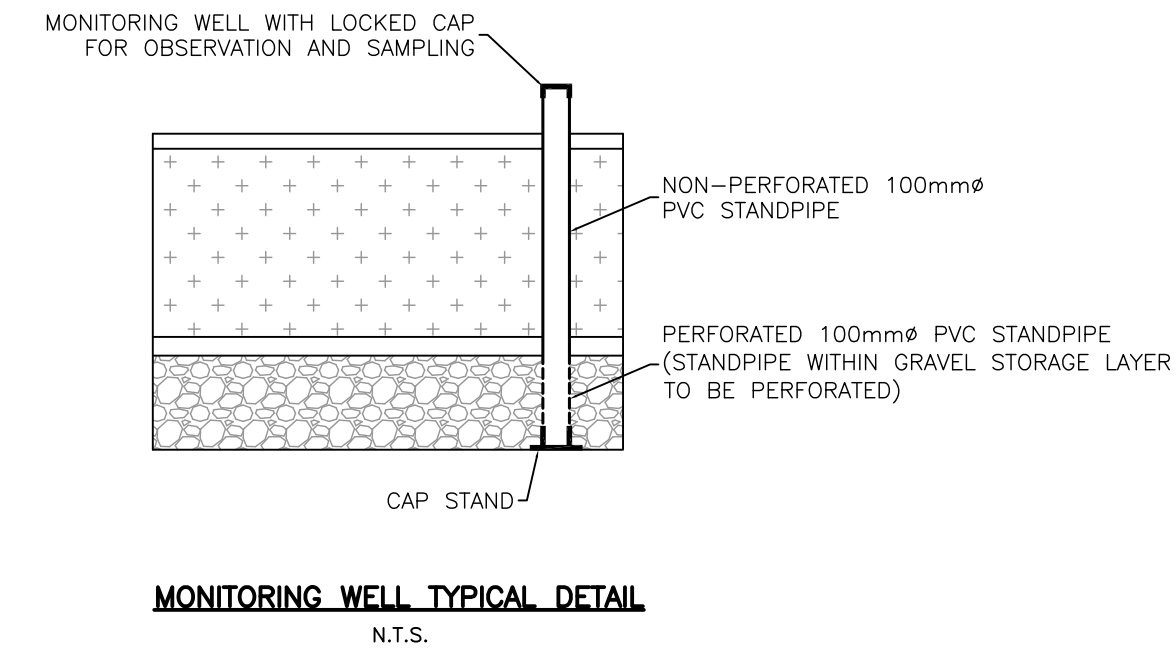
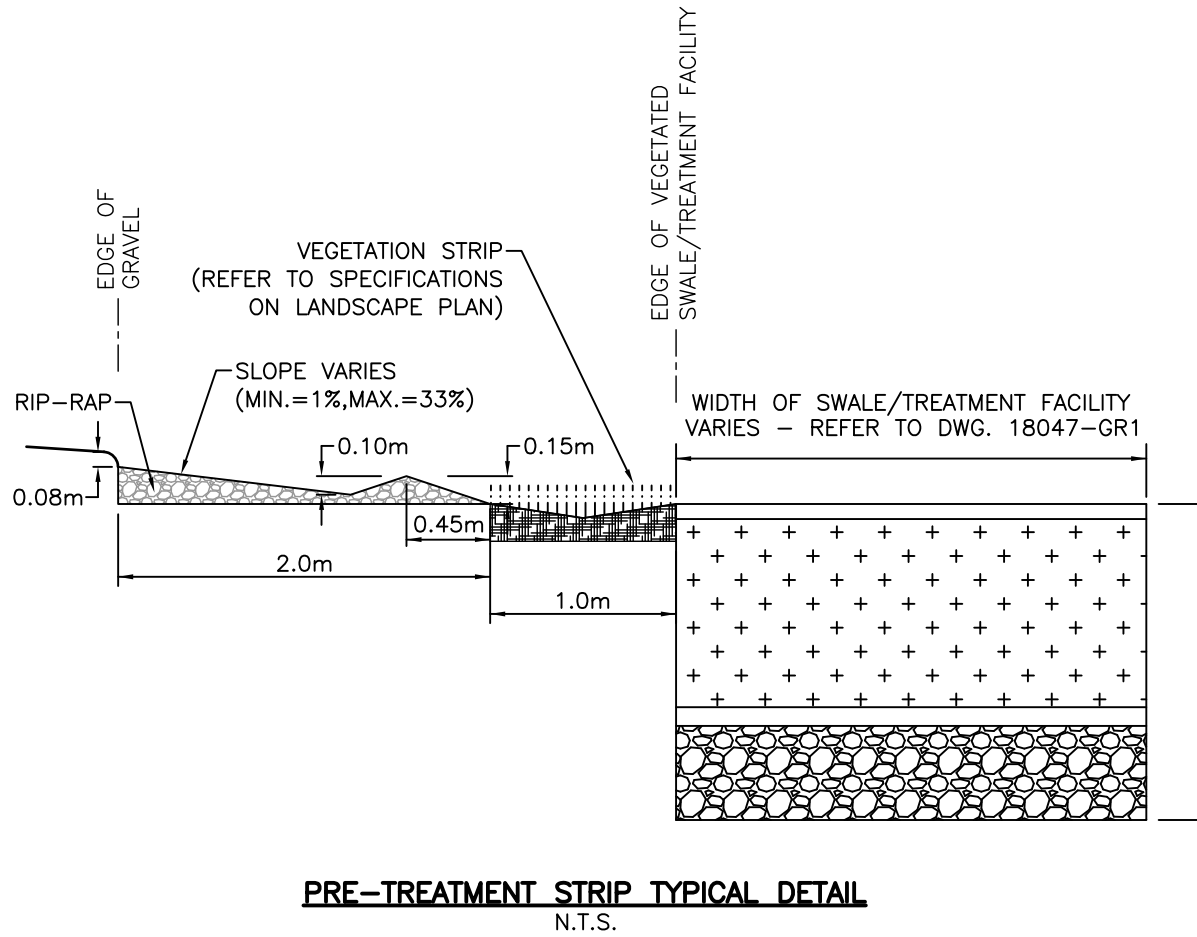
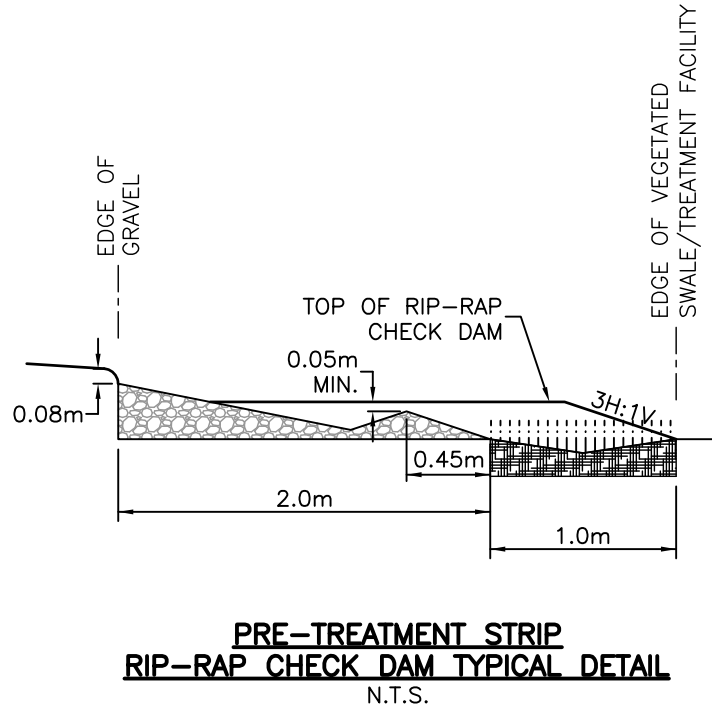
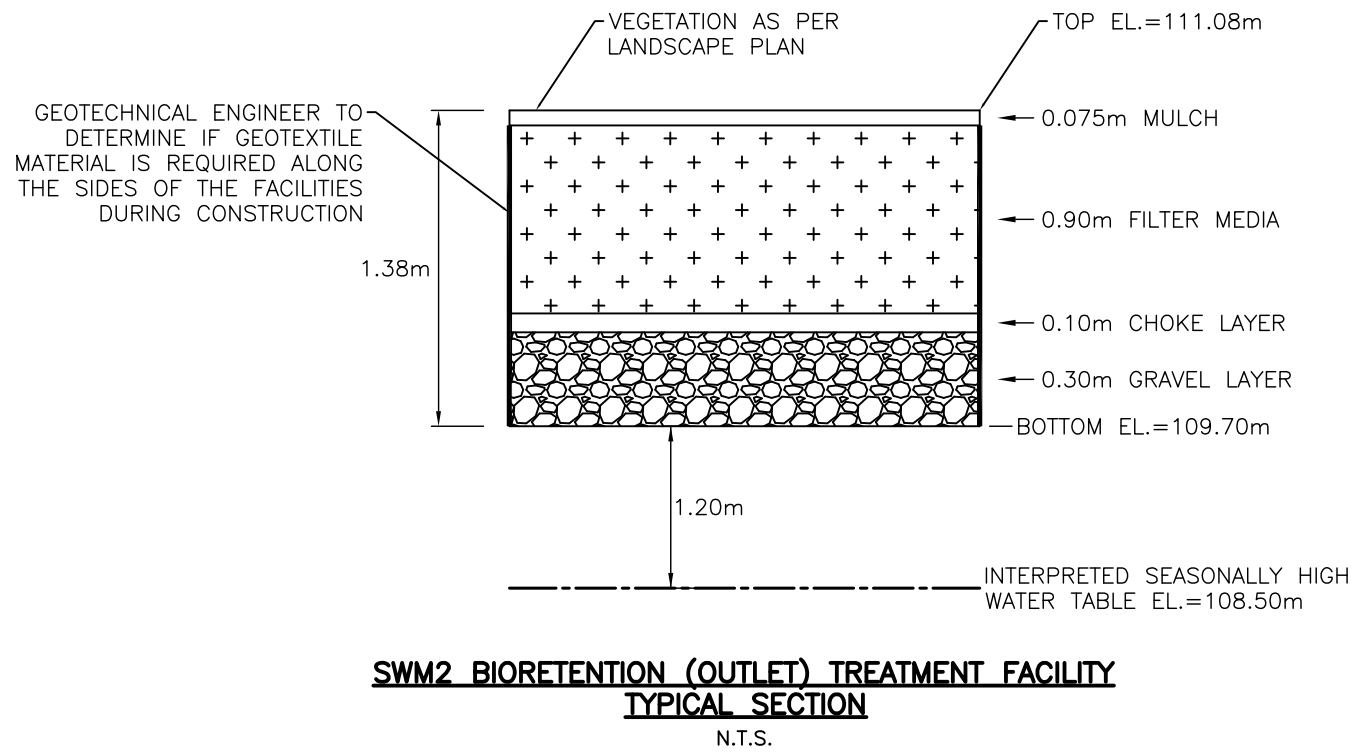
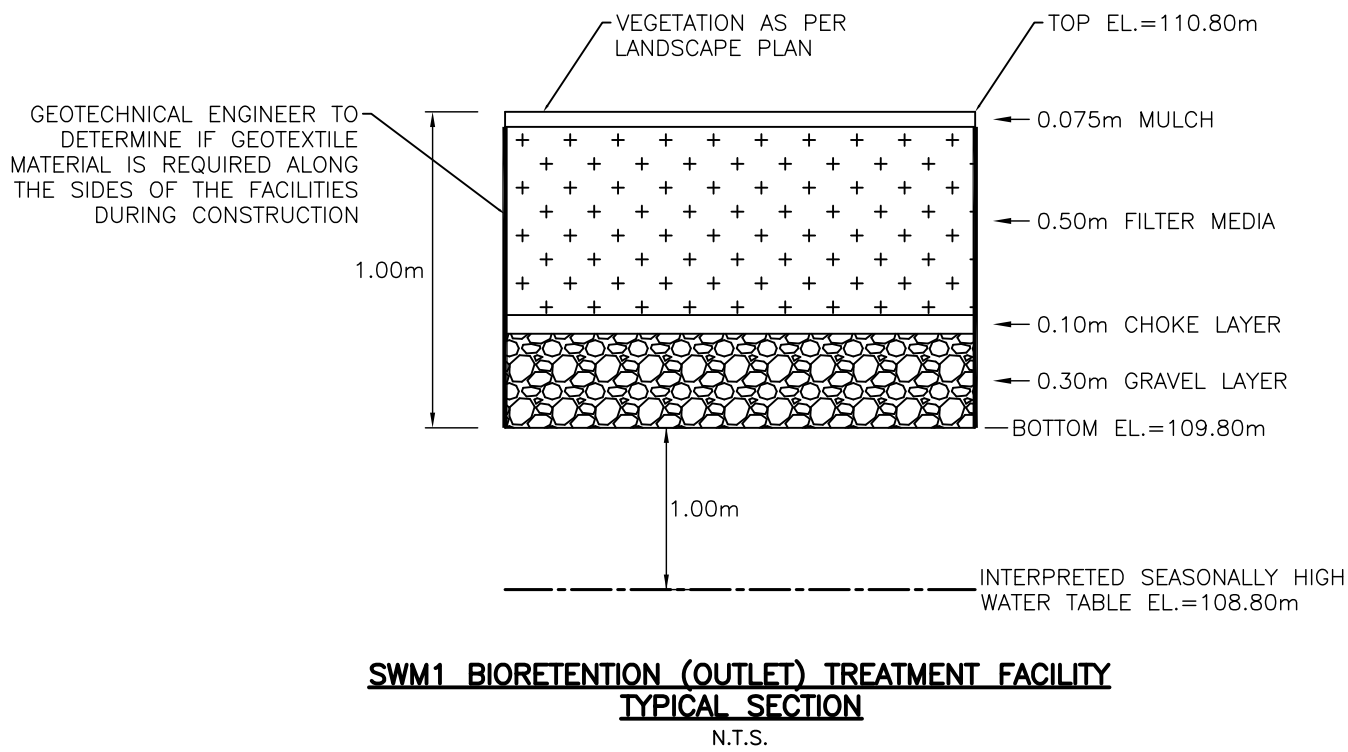
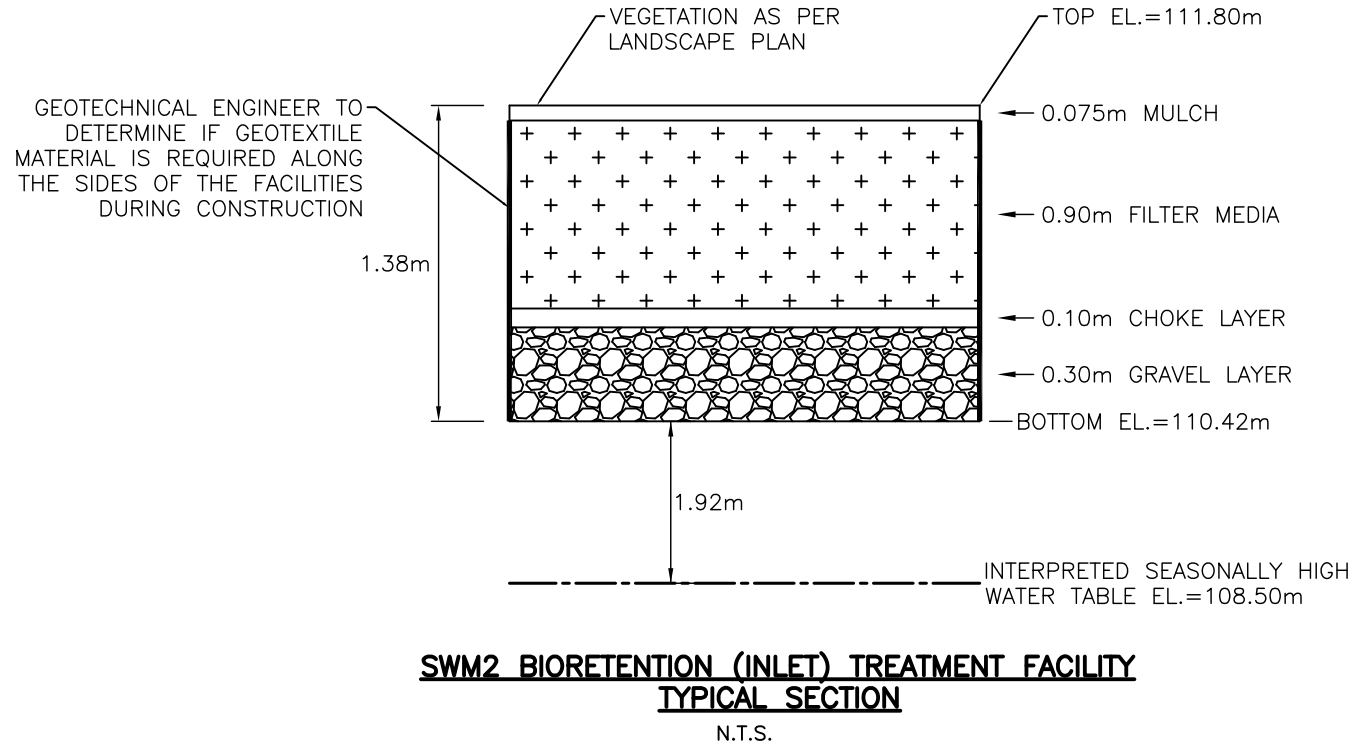
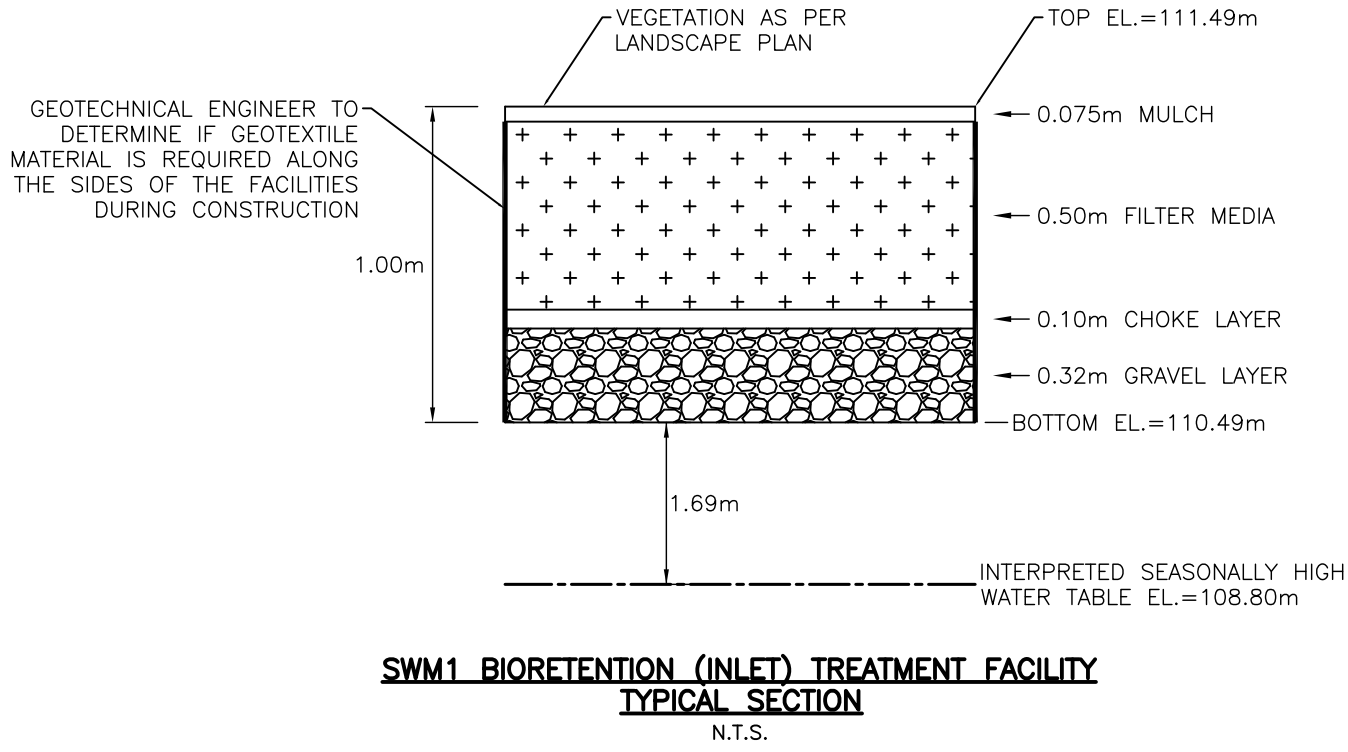
INSPECTION AND MAINTENANCE

1. TRASH, DEBRIS AND SEDIMENT SHOULD BE REMOVED FROM THE CONTRIBUTING DRAINAGE AREA BIANNUALLY TO QUARTERLY.
2. TRASH, DEBRIS, AND SEDIMENT SHOULD BE REMOVED FROM THE PRE-TREATMENT AREAS ANNUALLY TO BIANNUALLY OR WHEN SUMPS ARE HALF FULL.
3. SIDE SLOPES OF THE FACILITIES SHOULD BE INSPECTED FOR EROSION.
4. REMOVED TRASH FROM THE FILTER BED BIANNUALLY TO QUARTERLY.
5. RAKE FILTER BED REGULARLY TO REDISTRIBUTE MULCH AND PREVENT SEDIMENT CRUSTS.
6. MAINTAIN 75mm OF MULCH COVER TO PREVENT WEED GROWTH AND SOIL EROSION.
7. REPAIR SUNKEN AREAS WHEN GREATER THAN 10 cm DEEP AND BARREN/ERODED AREAS WHEN GREATER THAN 30 cm LONG.
8. REMOVE SEDIMENT FROM FILTER BED WHEN GREATER THAN 5 cm DEEP OR TIME TO DRAIN WATER PONDED ON THE SURFACE EXCEEDS 48 HOURS.
9. REMOVAL OF SEDIMENT FROM THE FILTER BED SURFACE SHOULD BE DONE WITH A RAKE AND SHOVEL OR VACUUM EQUIPMENT TO MINIMIZE PLANT DISTURBANCE. IF A SMALL EXCAVATOR IS TO BE USED, KEEP IT OFF THE FACILITY FOOTPRINT TO AVOID DAMAGE TO SIDE SLOPES AND OVER-COMPACTION OF THE FILTER MEDIA.
10. TO AVOID OVER-COMPACTION OF THE FILTER MEDIA SOIL, ANY MAINTENANCE TASKS INVOLVING VEHICLE OR FOOT TRAFFIC ON THE FILTER BED SHOULD NOT BE PERFORMED DURING WET WEATHER.
11. GRADES SHOULD BE RESTORED WITH FILTER MEDIA THAT MEETS THE APPROVED DESIGN SPECIFICATIONS.
12. REPLACE STONE, MULCH AND PLANT COVER AS REQUIRED.
13. WATER PLANTINGS FREQUENTLY, AS RECOMMENDED BY THE LANDSCAPE ARCHITECT.
14. REMOVE WEEDS AND UNDESIRABLE PLANTS BIANNUALLY TO QUARTERLY.
15. REPLACE DEAD PLANTINGS ANNUALLY TO ACHIEVE 80 PERCENT COVER BY THE THIRD GROWING SEASON.
16. NEVER APPLY CHEMICAL FERTILIZERS OR HERBICIDES.

BIORETENTION TREATMENT FACILITY SPECIFICATIONS	
MATERIAL	SPECIFICATION
MULCH LAYER	SHREDDED HARDWOOD BARK MULCH
FILTER MEDIA	SOIL MIXTURE TO CONTAIN: - 85 TO 88% SAND - 8 TO 12% SOIL FINES - 3 TO 5% ORGANIC MATTER - P-INDEX VALUE BETWEEN 10 TO 30 PPM - CATIONIC EXCHANGE CAPACITY GREATER THAN 10 meq/100 g - pH BETWEEN 5.5 TO 7.5 - INFILTRATION RATE GREATER THAN 25mm/hr
CHOKE LAYER	WASHED 3 TO 10mm DIAMETER CLEAR STONE
GRAVEL STORAGE LAYER	WASHED 50mm DIAMETER CLEAR STONE

NOTES:

1. FILTER MEDIA OBTAINED FROM VENDOR TO BE TESTED TO CONFIRM DESIGN SPECIFICATIONS PRIOR TO INSTALLATION.
2. REFER TO SURFACE VEGETATION SPECIFIED ON THE LANDSCAPE PLAN BY STANTEC.



NOTES

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. ALL ELEVATIONS SHOWN ARE GEODETIC.

NO.	REVISION	DESCRIPTION	DATE	BY
2	REVISED PER COMMENTS	12/04/19	AHJ	
1	REVISED PER COMMENTS	20/12/18	AHJ	

SCALE	
0 10m 20m 40m	HORIZONTAL 1:1000



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DESIGN	BLM
CHECKED	AHJ
DRAWN	BLM
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APPROVED	AHJ

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NOTES and DETAILS

PROJECT No.	18047
SURVEY	CAVANAGH
DATED	SEPTEMBER 2018
DWG. No:	18047-N1

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