

**IMPLEMENTATION OF EROSION CONTROL METHODS**

- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE WISCONSIN DNR CONSTRUCTION SITE EROSION AND SEDIMENT CONTROL TECHNICAL STANDARDS, AND THE CITY OF MANITOWOC REQUIREMENTS.
- MANUFACTURED ALTERNATIVES APPROVED AND LISTED ON THE D.O.T. EROSION CONTROL PRODUCT ACCEPTABILITY LIST MAY BE SUBSTITUTED.
- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL AT A MINIMUM BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER EVERY PRECIPITATION EVENT THAT PRODUCES 0.5 INCHES OF RAIN OR MORE DURING A 24 HOUR PERIOD. MAINTENANCE SHALL BE COMPLETED AS SOON AS POSSIBLE WITH CONSIDERATION GIVEN TO SITE CONDITIONS.
- ALL SEDIMENT CONTROL MEASURES SHALL BE ADJUSTED TO MEET FIELD CONDITIONS AT THE TIME OF CONSTRUCTION AND INSTALLED BEFORE ANY GRADING OR DISTURBANCE OF EXISTING SURFACE MATERIAL.
- ALL TEMPORARY SOIL EROSION PROTECTION SHALL REMAIN IN PLACE UNTIL THE DISTURBED AREAS ARE PERMANENTLY STABILIZED AND NO LONGER SUSCEPTIBLE TO EROSION.
- TRACKING PADS SHALL BE INSTALLED PRIOR TO ANY TRAFFIC LEAVING THE SITE. AT ALL CONSTRUCTION SITE EXITS TO PREVENT TRACKING OF SOIL OFF THE SITE. ALL OFF SITE TRACKED SOIL ON PAVED SURFACES SHALL BE REMOVED AT THE END OF EACH WORK DAY.
- OVERLAND FLOW SHALL BE PREVENTED FROM LEAVING THE WORK SITE BY INSTALLING STRAW BALES OR SILT FENCE PARALLEL TO THE CONTOURS LOCATED DOWNHILL FROM THE WORK AREA.
- IF THERE ARE DISCREPANCIES BETWEEN THESE DETAILS AND THE DNR TECHNICAL STANDARDS FOR SEDIMENT AND EROSION CONTROL, THE MORE RESTRICTIVE REQUIREMENT SHALL BE FOLLOWED.

**BEACH NOURISHMENT SAND SPECIFICATIONS**

- ALL VEGETATION AND TOPSOIL SHOULD BE REMOVED FROM THE AREA OF THE PROPOSED BEACH NOURISHMENT PRIOR TO PLACING THE SAND.
- BEACH NOURISHMENT SAND SHALL BE NATURAL MINED, MANUFACTURED, OR MIXTURE THEREOF. PARTICLE SIZE SHALL CONFORM TO TABLE 3. THE AMOUNT OF MATERIAL PASSING THE #200 SIEVE SHALL NOT EXCEED 5.0%.

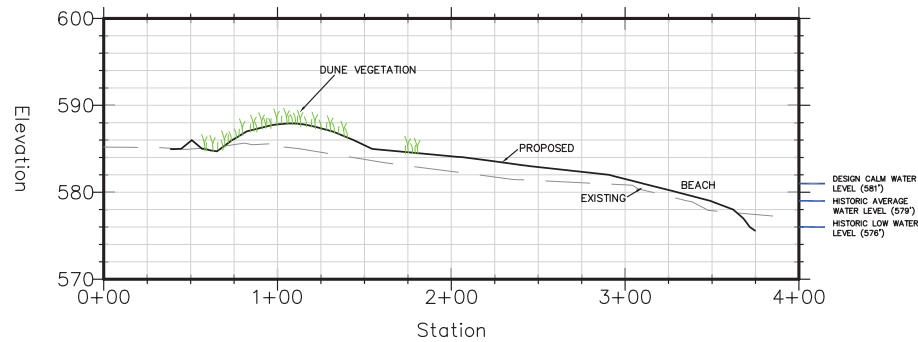
TABLE 3 - BEACH SAND PARTICLE SIZE DISTRIBUTION

SIEVE SIZE	PERCENT PASSING (BY WT.)	GRAIN SIZE DIAMETER (MILLIMETERS)
#10	100	2.0
#20	100-90	0.85
#40	100-60	0.425
#50	100-30	0.3
#70	100-0	0.25
#100	45-0	0.15
#200	5-0	0.075

**GENERAL NOTES**

- DIMENSIONS TAKE PRECEDENCE OVER SCALE. CONTRACTOR TO VERIFY ALL DIMENSIONS IN FIELD.
- PRIOR TO CONSTRUCTION OF ANY IMPROVEMENTS, THE CONTRACTOR MUST CALL DIGGERS HOTLINE SERVICE AND THE CITY OF SOUTH MILWAUKEE FOR THE LOCATION AND STAKING OF ALL EXISTING UNDERGROUND UTILITIES.
- ALL CONSTRUCTION SIGNING AND TRAFFIC CONTROL TO BE IN ACCORDANCE WITH THE CITY OF SOUTH MILWAUKEE AND WISCONSIN DEPARTMENT OF TRANSPORTATION REQUIREMENTS.
- THE PROPOSED IMPROVEMENTS SHALL BE CONSTRUCTED ACCORDING TO THE ORDINANCES AND REQUIREMENTS OF THE CITY OF SOUTH MILWAUKEE AND THE STATE OF WISCONSIN DOT, DDOCM, AND DNR REQUIREMENTS.
- THE PROPOSED IMPROVEMENTS MUST BE CONSTRUCTED IN ACCORDANCE WITH ENGINEERING PLANS APPROVED BY THE CITY OF SOUTH MILWAUKEE. PROPER CONSTRUCTION TECHNIQUES MUST BE FOLLOWED IN CONSTRUCTING THE IMPROVEMENTS INDICATED ON THE ENGINEERING PLANS.
- THE CONTRACTOR IS RESPONSIBLE FOR EXAMINING ALL SITE CONDITIONS PRIOR TO COMMENCEMENT OF CONSTRUCTION AND IS TO COMPARE THE SITE CONDITIONS TO THOSE INDICATED ON THE ENGINEERING DRAWINGS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ENGINEER AND RESOLVED PRIOR TO THE START OF CONSTRUCTION.
- THE CONTRACTOR SHALL NOTIFY THE MUNICIPALITY AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION TO ARRANGE FOR APPROPRIATE CONSTRUCTION INSPECTION.
- THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE OWNER WITH AS-BUILT INFORMATION OF THE DESIGNED IMPROVEMENTS. ANY CHANGES TO THE DESIGN OR ADDITIONAL ITEMS MUST HAVE PRIOR APPROVAL FROM THE MUNICIPALITY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS, PERMIT COSTS, BONDS, AND ALL OTHER FEES REQUIRED FOR THE PROPOSED WORK.
- THE PRIME CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL CONSTRUCTION WITH OTHER CONTRACTORS INVOLVED WITH CONSTRUCTION AND FOR REPORTING ANY ERRORS OR DISCREPANCIES BETWEEN THESE PLANS AND PLANS PREPARED BY OTHERS.
- CONTRACTOR IS RESPONSIBLE FOR SITE SAFETY DURING CONSTRUCTION OF IMPROVEMENTS.
- THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING ALL OF THE UTILITIES PRIOR TO THE INSTALLATION OF ANY UNDERGROUND IMPROVEMENTS.
- ANY UTILITIES WHICH ARE DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED TO THE OWNER'S SATISFACTION AND AT THE CONTRACTOR'S EXPENSE.
- OAK CREEK PARKWAY SHALL BE THE CONSTRUCTION ACCESS POINT TO THE SITE. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE SURFACE OF THE ROAD FOR USE BY THE PUBLIC DURING CONSTRUCTION. OAK CREEK PARKWAY SHALL REMAIN IN SERVICE DURING AND AFTER CONSTRUCTION.

**BEACH CROSS SECTION A-A'**



**BIOFILTER SPECIFICATIONS**

**PART 1 - GENERAL**

**1.01 WORK INCLUDED**

- A. BIOFILTER SOIL MIX
- B. SAND FILTER LAYER
- C. DRAINAGE AGGREGATE LAYER
- D. GEOTEXTILE

**1.02 QUALITY ASSURANCE**

THESE TESTS SHALL BE PERFORMED ON MATERIAL PRIOR TO SHIPMENT TO THE SITE WITH A MINIMUM OF ONE TEST PER MATERIAL TYPE AND FOR EVERY GARDEN.

- A. ASTM C 117 AND C 136 TESTS ON SAND USED FOR PLANTING SOIL MIX AND FOR SAND USED AS A FILTER BENEATH THE BIOFILTER SOIL MIX.
- B. ASTM D2434 OR FALLING HEAD ASTM D5084 FOR HYDRAULIC CONDUCTIVITY OF THE BIOFILTER SOIL MIX
- C. ASTM D4531 BULK DENSITY TEST FOR THE BIOFILTER SOIL MIX.

**1.03 SUBMITTALS**

RESULTS OF LABORATORY TESTS PERFORMED ON REPRESENTATIVE MATERIALS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO DELIVERY TO THE SITE.

- A. COMPOST TEST RESULTS
- B. CERTIFICATION THAT THE DRAINAGE AGGREGATE MEETS SPECIFICATION
- C. NR538 MINERAL COMPOSITION AND WATER LEACH TESTS ON SAME SOURCE AND PRODUCTION PROCESS WITHIN LAST 12 MONTHS ON ANY INDUSTRIAL BY-PRODUCT SAND USED FOR PLANTING SOIL MIX
- D. RESULTS FROM TESTS IDENTIFIED IN SECTION 1.02

**PART 2 - PRODUCTS**

**2.01 BIOFILTER SOIL MIX**

- A. THE BIOFILTER SOIL SHALL CONSIST OF A MIXTURE OF SAND AND MATURE COMPOST THAT IS SUITABLE FOR INITIAL AND LONG-TERM SUPPORT OF PLANT GROWTH, WHILE MAINTAINING MODERATE HYDRAULIC CONDUCTIVITY.
- B. MIXTURE COMPONENTS SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS PRESENT IN WNR CONSERVATION PRACTICE STANDARDS 1004 BIORETENTION FOR INFILTRATION.
- C. SAND SHALL MEET ONE OF THE FOLLOWING GRADATION REQUIREMENTS PER WNR CONSERVATION PRACTICE STANDARDS 1004:
  - USDA COARSE SAND (.02-.04 INCH)
  - ASTM C33 (FINE AGGREGATE CONCRETE SAND)
  - WISCONSIN STANDARDS AND SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION, SECTION 501.2.5.3.4. (FINE AGGREGATE CONCRETE SAND) 2005 ADDITION, OR AN EQUIVALENT AS APPROVED BY THE ADMINISTERING AUTHORITY.
- D. COMPOST SHALL MEET WNR SPECIFICATION S100 - COMPOST

**2.02 SAND FILTER LAYER**

- A. SAND SHALL MEET ONE OF THE FOLLOWING GRADATION REQUIREMENTS PER WNR CONSERVATION PRACTICE STANDARDS 1004:
  - USDA COARSE SAND (.02-.04 INCH)
  - ASTM C33 (FINE AGGREGATE CONCRETE SAND)
  - WISCONSIN STANDARDS AND SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION, SECTION 501.2.5.3.4. (FINE AGGREGATE CONCRETE SAND) 2005 ADDITION, OR AN EQUIVALENT AS APPROVED BY THE ADMINISTERING AUTHORITY.

**2.03 DRAINAGE AGGREGATE LAYER**

THE GRAVEL SHALL MEET THE COARSE AGGREGATE #2 AND OTHER SPECIFICATIONS OF WISCONSIN STANDARDS AND SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION, SECTION 501.2.5.3.4, 2003 EDITION, OR AN EQUIVALENT AS APPROVED BY THE ADMINISTERING AUTHORITY. GRAVEL SHALL BE DOUBLE-WASHED.

**2.04 GEOTEXTILE**

GEOTEXTILE USED TO PROVIDE PARTICLE SIZE SEPARATION OF THE DRAINAGE AGGREGATE FROM THE UNDERLYING NATURAL SOIL SUBGRADE AND FILTER SAND SHALL CONSIST OF NON-WOVEN POLYPROPYLENE, SUPAC 140N, OR EQUIVALENT.

**PART 3 - EXECUTION**

**3.01 INSPECTION**

- A. NOTIFY ENGINEER WHEN EXCAVATION IS COMPLETED AND READY FOR INSPECTION.
- B. VERIFY THAT EXISTING GRADES ARE AS SHOWN ON THE DRAWINGS.
- C. VERIFY THAT GROUND IS NOT FROZEN.
- D. VERIFY THAT THERE ARE NO SAND SEAMS OR UTILITY TRENCHES CONNECTED TO THE EXCAVATED AREA.
- E. TEST FOR PERMEABILITY OF THE PLANTING SOIL PRIOR TO PLACEMENT.

**3.02 TOPSOIL**

STRIP TOPSOIL AS NECESSARY. IF EXISTING TOPSOIL REMAINS STOCKPILED IN THE STORM WATER FILTERING BED AREA, MOVE IT TO ANOTHER LOCATION ON SITE AS DIRECTED BY THE OWNER.

**3.03 EXCAVATION**

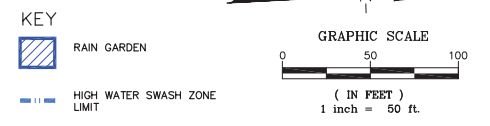
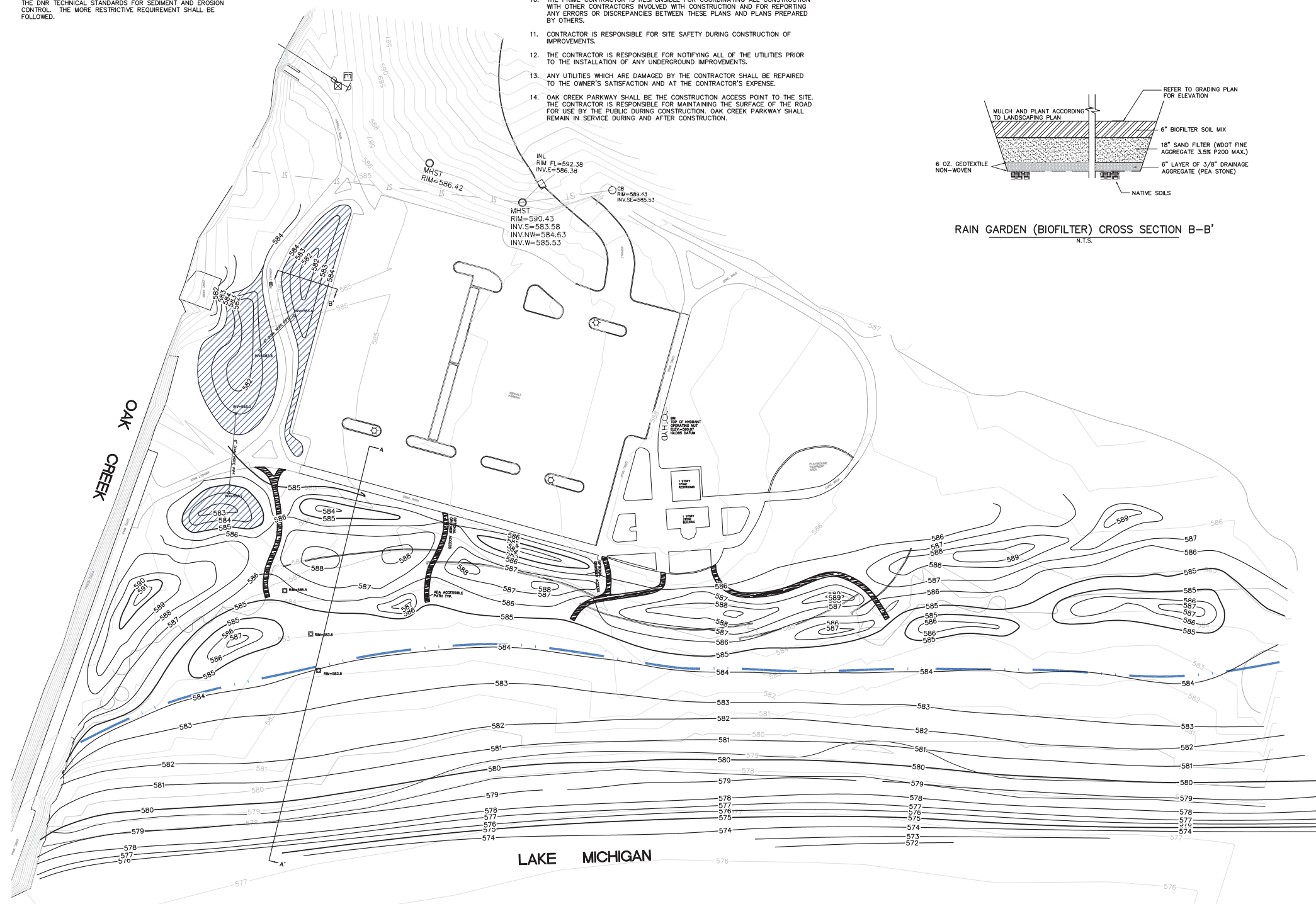
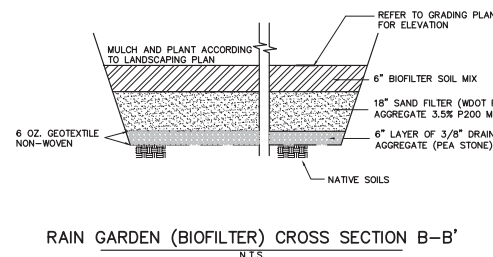
- A. PROTECT FACILITY FROM SEDIMENTATION UNTIL CONSTRUCTION SITE IS STABILIZED. SUBMIT PROTECTION PLAN TO OWNER.
- B. PROTECT THE FACILITY FROM CONSTRUCTION TRAFFIC BEFORE AND AFTER INSTALLATION.
- C. EXCAVATE TO THE LINES AND GRADES SHOWN ON THE DRAWING.
- D. DO NOT OVER EXCAVATE OR COMPACT THE BASE OF THE EXCAVATION.

**3.04 MIXING**

- A. MIX THE BIOFILTER SOIL MIX UNTIL IT IS A UNIFORM CONSISTENCY.
- B. PREFERABLY, MIX THE MATERIAL AT THE SUPPLIER'S FACILITY.
- C. IF MIXING ON SITE, MIX THE MATERIALS ON A HARD, CLEAN SURFACE. DO NOT MIX ON SOIL OR VEGETATION.

**3.05 CONSTRUCTION**

- A. PLACE GEOTEXTILE AS SHOWN ON THE DRAWINGS ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
- B. PLACE DRAINAGE AGGREGATE TO THE ELEVATION SHOWN ON THE DRAWINGS.
- C. PLACE SECOND LAYER OF GEOTEXTILE AS SHOWN ON THE DRAWING ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
- D. PLACE SAND FILTER TO THE ELEVATION SHOWN ON THE DRAWINGS. DO NOT COMPACT THE SAND FILTER.
- E. PLACE THE PLANTING SOIL MIXTURE TO THE ELEVATIONS SHOWN ON THE DRAWINGS IN 12-INCH LIFTS. DO NOT COMPACT THIS LAYER.
- F. PLACE DRAINS UNDER WALKWAYS TO THE LINE AND GRADE SHOWN ON THE DRAWINGS.
- G. PLACE MULCH AND PLANTINGS AS REQUIRED BY THE LANDSCAPE DRAWINGS AND SPECIFICATION.



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