SOIL AND SAND FILTER INSTALLATION/INSPECTION/MATERIAL NOTES:

INSTALLATION AND COMPACTION

- 1. INSTALL MATERIALS IN 2" TO 9" LIFTS.
- 2. COMPACT MATERIALS IN ACCORDANCE WITH ASTM D698 TO THE FOLLOWING LEVELS:
- a. FILTER MEDIA AND TOPSOIL: 80% TO 82% STANDARD PROCTOR
- b. SAND FILTER: 92% TO 95% STANDARD PROCTOR
- c. SAND FILTER TRANSITION LAYER: 90% TO 92% STANDARD PROCTOR
- d. UNDERDRAIN BEDDING: 90% TO 92% STANDARD PROCTOR

CONSTRUCTION INSPECTION/OVERSIGHT

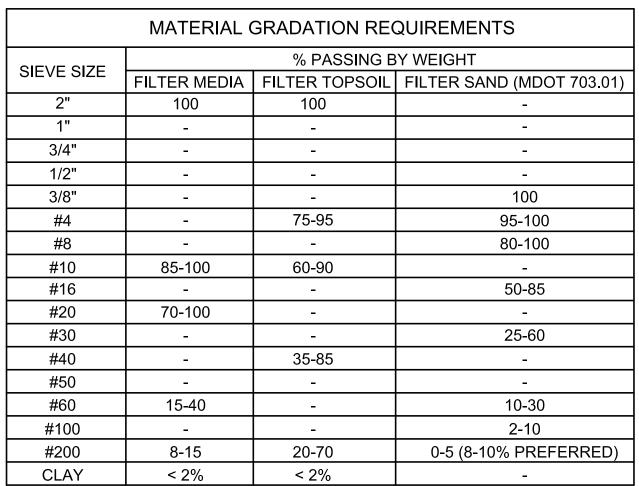
1. THE OWNER SHALL RETAIN THE SERVICES OF AN INSPECTOR (DESIGN ENGINEER) TO INSPECT/OVERSEE THE CONSTRUCTION AND STABILIZATION OF ALL STORMWATER MANAGEMENT STRUCTURES. ONCE ALL THE STORMWATER MANAGEMENT STRUCTURES ARE CONSTRUCTED AND STABILIZED, THE INSPECTOR (OR OWNER) SHALL NOTIFY THE DEP IN WRITING WITHIN 30 DAYS TO STATE THAT THE POND HAS BEEN COMPLETED. ACCOMPANYING THE NOTIFICATION SHALL BE A LOG OF THE INSPECTIONS GIVING THE DATE OF EACH INSPECTION, THE TIME OF EACH INSPECTION THE ITEMS INSPECTED ON EACH VISIT, AND THE RESULTS OF THE INSPECTION. INCLUDE IN THE NOTIFICATION TESTING DATA/SIEVE ANALYSIS DATA OF MATERIALS THAT MAKE UP THE SOIL FILTER (TYPE B UNDERDRAIN MATERIAL, FILTER MEDIA AND FILTER TOPSOIL).

- 2. INSPECTION OF THE FILTER BASIN SHALL BE PROVIDED FOR EACH PHASE OF CONSTRUCTION, WITH REQUIRED REPORTING TO THE DEP. AT A MINIMUM, INSPECTIONS WILL OCCUR:
- a. AFTER PRELIMINARY CONSTRUCTION OF THE FILTER GRADES AND ONCE THE UNDERDRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED;
- b. AFTER THE DRAINAGE LAYER IS CONSTRUCTED AND PRIOR TO THE INSTALLATION OF THE FILTER MEDIA/FILTER SAND;
- C. AFTER THE FILTER MEDIA/FILTER SAND HAS BEEN INSTALLED.
- d AFTER THE GRASSED UNDERDRAINED SOIL FILTER HAS BEEN SEEDED.
- e AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS; AND
- f. ALL MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN IS SUBJECT TO APPROVAL BY THE INSPECTOR AFTER TESTS BY A CERTIFIED LABORATORY SHOW THAT THEY ARE PASSING DEP SPECIFICATIONS
- 3. NOTIFY THE OWNER/INSPECTOR AT LEAST 72 HOURS PRIOR TO THE ANTICIPATED COMPLETION OF EACH OF THE ITEMS LISTED ABOVE TO COORDINATE TIMING OF INSPECTIONS.
- 4. UPON COMPLETION OF THE INSTALLATION OF THE SOIL FILTER SYSTEMS (INCLUDING CHAMBERS FOR SAND FILTER) AND THE ESTABLISHMENT OF 90% OF GRASS COVER IN THE GRASSED UNDERDRAINED SOIL FILTER, FLOOD THE VEGETATED BASIN TO THE DESIGN ELEVATIONS INDICATED WITH CLEAN WATER (OR OBSERVE DRAIN DOWN TIME FOLLOWING A BASIN FILLING RAIN). ADJUST THE C-509 VALVE ON THE UNDERDRAIN OUTLET TO OBTAIN A 24 TO 48 HOUR DRAIN DOWN TIME. AFTER DRAIN DOWN TIME IS WITHIN LIMITS INDICATED, PROVIDE THE CONTRACTING OFFICER/INSPECTOR WITH FINAL DRAIN DOWN TIME AND DATE(S) THE TEST WAS CONDUCTED.

TESTING AND SUBMITTALS

TESTING AND SUBMITTALS: IDENTIFY THE LOCATION OF THE SOURCE OF EACH COMPONENT OF THE SOIL FILTER SYSTEMS. SAMPLES USED FOR ANALYSIS SHALL BE A COMPOSITE OF AT LEAST THREE DIFFERENT LOCATIONS (GRABS) FROM THE STOCKPILE OR PIT FACE (SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY). SUBMIT ALL RESULTS OF THE FOLLOWING FIELD AND LABORATORY TESTING TO THE OWNER/ARCHITECT FOR REVIEW AND APPROVAL:

- a. PERFORM AND SUBMIT A SIEVE ANALYSIS CONFORMING TO ASTM C136 (STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES; 1996a) FOR ALL MATERIALS USED TO CONFIRM THE MEET THE REQUIRED GRADATIONS.
- b. PERFORM HYDROMETER TEST OF ASTM D422 AND ORGANIC CONTENT DETERMINATION FOR FILTER TOPSOIL AND FILTER MEDIA TO CONFIRM THEY MEET THE REQUIRED CLAY CONTENT AND ORGANIC CONTENT.
- c. PERFORM A PERMEABILITY TEST ON THE SOIL FILTER MEDIA, SOIL FILTER TOPSOIL, AND FILTER SAND CONFORMING TO ASTM D2434 WITH THE MIXTURE COMPACTED TO 80-82% OF MAXIMUM DRY DENSITY BASED ON ASTM D698. THE RESULTING PERMEABILITY SHALL BE BETWEEN 1 AND 2



**PERMEABILITY OF SOIL FILTER MEDIA, FILTER TOPSOIL SHALL, AND FILTER SAND BE BETWEEN 1 AND 2 INCHES PER HOUR.

MATERIAL GRADATION REQUIREMENTS (CONTINUED)		
SIEVE SIZE	% PASSING BY WEIGHT	
	MDOT 703.22, TYPE B	MDOT 703.22, TYPE C
2"	-	-
1"	95-100	100
3/4"	-	90-100
1/2"	75-100	-
3/8"	-	0-75
#4	50-100	0-25
#10	-	0-5
#20	15-80	-
#40	-	-
#50	0-15	-
#60	-	-
#200	0-5	-
CLAY	-	-

8" ORIFICE IN WEIR

INV: 58.82'-

-18" INV IN: 57.71'

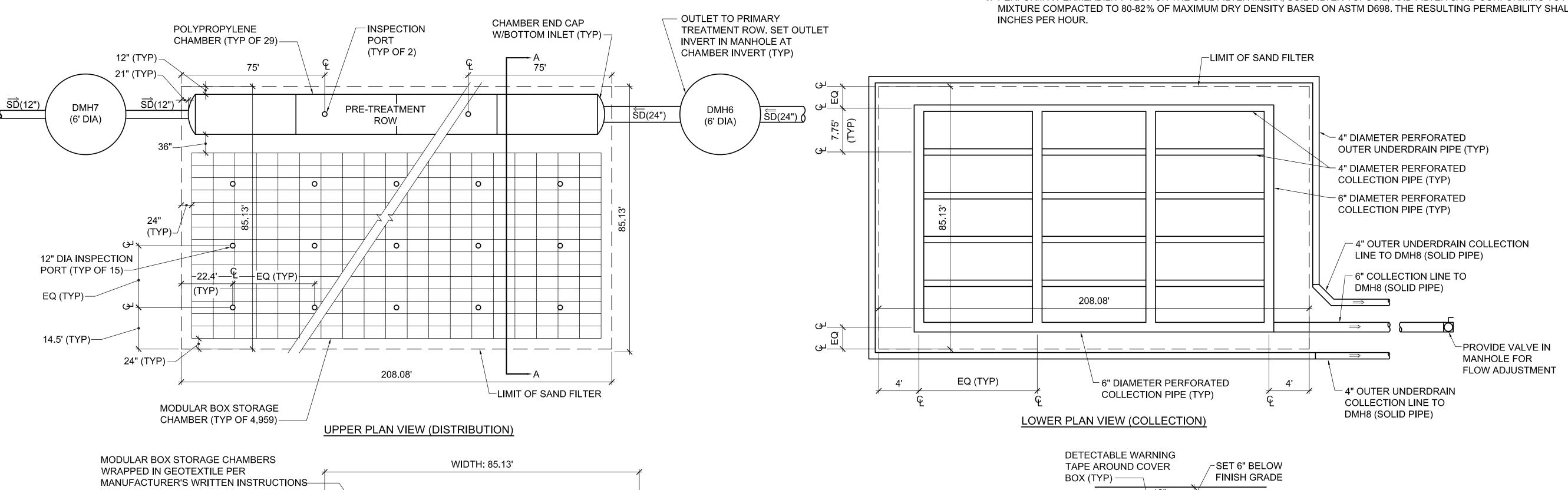
-30" INV OUT: 57.11'

MANHOLE

ELEV: 60.10'

8' DIAMETER DRAIN /

OVERFLOW WEIR



- FINISH GRADE

COMMON BORROW (TYP)

±12" WITH IMPERVIOUS LINER (TYP)

-18" COMPACTED FILTER SAND

SEPARATION GEOTEXTILE ON TOP OF CRUSHED STONE FILTER SECTION. OVERLAP GEOTEXTILE

COMPACTED CRUSHED STONE (3/4" TO 1-1/4" OR AS

6" SAND FILTER TRANSITION LAYER: WELL GRADED

CLEAN COURSE GRAVEL CONFORMING TO MAINE

DEPARTMENT OF TRANSPORTATION STANDARD

SPECIFICATION 703.22 UNDERDRAIN, TYPE B

- 12" CRUSHED STONE CONFORMING TO MAINE

SPECIFICATION 703.22, UNDERDRAIN, TYPE C

- 4" DIA PERFORATED UNDERDRAIN AND 6" MIN

FILTER FABRIC. INSTALL UNDERDRAIN AT SAME

TO MAINE DEPARTMENT OF TRANSPORTATION

ELEVATION AS UNDERDRAINS INSIDE TREATMENT

ENCASEMENT OF 3/4" CRUSHED STONE WRAPPED IN

2" WELL GRADED CLEAN COURSE SAND CONFORMING

STANDARD SPECIFICATION 703,22 UNDERDRAIN, TYPE B

DEPARTMENT OF TRANSPORTATION STANDARD

RECOMMENDED BY CHAMBER MANUFACTURER, TYP)

- EROSION CONTROL BLANKET ON TREATMENT AREA SIDE SLOPES AND AREAS WITH SLOPE EXCEEDING 33% (TYP)

WIDTH VARIES (SEE PLANS)

EXIST

SUBGRADE OR

- 8'-0" MIN, 15'-0" MAX (TYP)

-4'-0" MIN, 7'-6" MAX (TYP)

GRASSED UNDERDRAINED SOIL FILTER SCHEDULE

STRUCTURE

CB26

CB27

ELEV

65.16

61.75

COMPACTED FILL

YES

GRASSED UNDERDRAINED SOIL FILTER NOTES

BED ELEV

61.70

57.22

4" (MIN)

TREATMENT SURFACE MAXIMUM TOB SPILLWAY DRAIN

61.00

PONDED ELEV | ELEV

65.80

62.25

4" UNDERDRAIN PIPE (SLOTTED TYPE

ELEVATIONS INDICATED ON SHEETS

62.87

59.50

PROVIDE THE FOLLOWING SEED MIXTURE OR APPROVED EQUAL ON

MIXTURE AT 23 LB/ACRE OR AS RECOMMENDED BY SEED SUPPLIER):

THE BOTTOM AND SIDES OF ALL TREATMENT AREAS (APPLY SEED

SP POLYETHYLENE), INVERT

35% LITTLE BLUESTEM

20% VIRGINIA WILD RYE

5% CREEPING RED FESCUE

PRE-TREATMENT ROW: POLYPROPYLENE

NON-WOVEN GEOTEXTILE, PROVIDE 2 LAYERS

OF WOVEN GEOTEXTILE BENEATH CHAMBER-

CHAMBER. WRAP SIDES AND TOP WITH

30 MIL PVC GEOMEMBRANE LINER PANEL.

AND OVERLAP UNDER GEOTEXTILE ±12"—

4" OR 6" UNDERDRAIN (SLOTTED TYPE SP

POLYETHYLENE) COLLECTION PIPE (SEE

LOWER PLAN VIEW, TYP) -

EXTEND LINER TO TOP OF FILTER SECTION

25% INDIAN GRASS

10% BIG BLUESTEM

5% SWITCH GRASS

CG101 AND CG102 (TYP) -

CATCH BASIN FRAME AND GRATE (NEENAH

FILTER TOPSOIL) AND SEED (CONSERVATION MIX)

-12" THICK LOAMY COARSE SAND (FILTER MEDIA)

INSTALLATION AND COMPACTION NOTES, TYP)

1456 SF

2079 SF

FILTER MEDIA AND SOIL TOPSOIL SHALL CONFORM TO THE GRADATIONS

REFUSE, GLASS, STONES GREATER 2", CLODS, ROOTS AND OTHER

FILTER TOPSOIL SHALL CONTAIN 5%-8% HUMIFIED ORGANIC MATTER.

INDICATED ON THIS DRAWING AND BE FREE FROM ADMIXTURES OF SUBSOIL,

SOIL FILTERS SHALL NOT BE INSTALLED UNTIL THE WATERSHED AREAS THAT

DRAIN TO THE FILTERS HAVE BEEN PERMANENTLY STABILIZED WITH 90% VEGETATION OR OTHER FINAL SURFACES HAVE BEEN CONSTRUCTED.

WITH FILTER MEDIA)

AT BOTTOM

307'

UNDESIRABLE FOREIGN MATTER.

GRASSED UNDERDRAINED SOIL FILTER DETAIL

PROVIDE DETECTABLE

BELOW FINISH GRADE

SECTION A-A

7.75'

WARNING TAPE AROUND

PERIMETER OF FILTER, 12"

[○]±22.5"¬ 24"-

EXISTING UNDISTURBED

SUBGRADE-

R-2560-E1 BEEHIVE GRATE WITH R-1733 FRAME, OR

4" THICK SANDY LOAM TO FINE SANDY LOAM ON FILTER SURFACE (SOIL

- 12" MIN UNDERDRAIN BEDDING (CONFORMING TO MDOT 703.22, TYPE B)

 $^{-30}$ MIL PVC GEOMEMBRANE LINER PANELS ON SIDES AND BOTTOM.

BOTTOM SURFACE AREA A

SURFACE AREA | MAX PONDED ELEY

EXTEND LINER TO "MAX PONDED DEPTH" ELEVATION INDICATED (SEE

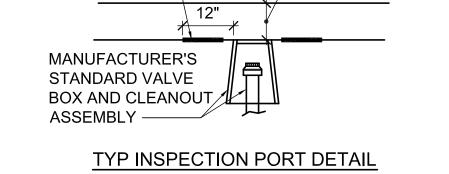
2901 SF

3148 SF

- 2" THICK TRANSITION LAYER (SOIL FILTER TOPSOIL ROTOTILLED

EMERGENCY SPILLWAY (BEYOND)

APPROVED EQUAL) AT ELEVATIONS INDICATED



UNDERDRAINED SUBSURFACE SAND FILTER NOTES:

- SEE SOIL AND SAND FILTER INSTALLATION/INSPECTION/MATERIAL NOTES, THIS SHEET.
- 2. CHAMBERS SELECTED SHALL ACCOMMODATE HS-20 LOADING.
- DIMENSIONS ARE BASED ON ONE MANUFACTURER. BASIS OF DESIGN IS AS FOLLOWS: PRE-TREATMENT CHAMBERS: CULTEC 330XLHD MODULAR BOX CHAMBERS: ACF ENVIRONMENTAL R-TANK HD (SINGLE+MINI).
- REQUIRED STORAGE VOLUME INSIDE CHAMBERS IS AS FOLLOWS: PRE-TREATMENT (EFFECTIVE STORAGE AFTER OVERLAP): 52.2 CF PER CHAMBER (38.6 CF AT 18") MODULAR BOX CHAMBERS (ASSUMES 95% VOID SPACE): 6.33 CF PER CHAMBER (4.4 CF AT 18")
- 5. INSTALL CHAMBERS AND CONNECT ALL PIPING TO CHAMBERS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.
- 6. INSTALL INSPECTION AND CLEANOUT PORTS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.
- GEOTEXTILES USED AROUND CHAMBERS SHALL CONFORM TO MANUFACTURER'S WRITTEN RECOMMENDATIONS.
- 8. SEE DRAWING CG101 FOR DRAINAGE STRUCTURE SCHEDULE.

NO. DATE DESCRIPTION

REVISIONS

30" INV IN: 57.21'

24" INV OUT: 57.11

PUBLIC SCHOOL PROJECT DeWATERS No. 12273 DRAWN BY: JSD CHECKED BY: JLG

DATE: 03/17/17

\CATCH BASIN 21 DETAIL

PORTLAND PUBLIC SCHOOLS NEW FRED P. HALL ELEMENTARY SCHOOL LOCATION 23 ORONO ROAD, PORTLAND, ME UTILITY DETAILS - 4 OAK POINT DRAWING NO.

C-510

231 Main Street, Biddeford, Maine 04005

STATE OF MAINE

UNDERDRAINED SUBSURFACE SAND FILTER DETAILS CS102,CU102,CG101 C-510 NOT TO SCALE

SURFACE GRADE OVER FILTER:
VARIES (SEE SHEET CG101)

MAX TREATMENT ELEVATION: 58.82'

TOP OF FILTER BED: 61.36'

CHAMBER INVERT: 57.32' TOP OF FILTER BED: 56.82

BOTTOM OF FILTER BED: 53.82'

FINISH GRADE - 6" PLANTING SOIL, SEED

4" DIA PERFORATED OUTER UNDERDRAIN

UNDERDRAINS INSIDE TREATMENT AREA-

STONE WRAPPED IN FILTER FABRIC.

INSTALL AT SAME ELEVATION AS

▲ SURFACE ELEVATION

BOTTOM OF FILTER BED

AND 6" MIN ENCASEMENT OF 3/4" CRUSHED

AND MULCH (TYP EACH SIDE)