

CDOT CLASS A FILTER MATERIAL AND TYPE II BEDDING:

CDOT CLASS A FILTER AND TYPE II BEDDING SHALL BE FREE DRAINING CRUSHED STONE MEETING THE MATERIAL AND GRADATION SPECIFICATIONS SET FORTH FOR CLASS A FILTER MATERIAL IN DIVISION 700, SECTION 703 OF THE CDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

CDOT CLASS C FILTER MATERIAL:

CDOT CLASS C FILTER MATERIAL SHALL BE FREE DRAINING SAND MEETING THE MATERIAL AND GRADATION SPECIFICATIONS SET FORTH FOR CLASS C FILTER MATERIAL IN DIVISION 700, SECTION 703 OF THE CDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

AASHTO NO. 8 AGGREGATE:

AASHTO NO. 8 AGGREGATE SHALL BE A COARSE AGGREGATE MEETING THE MATERIAL AND GRADATION SPECIFICATIONS SET FORTH FOR NO. 8 COARSE AGGREGATE PER AASHTO M43 AS DEFINED IN DIVISION 700, SECTION 703 OF THE CDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

CLASS 5 AGGREGATE BASE COURSE:

CLASS 5 AGGREGATE BASE COURSE SHALL BE AN AGGREGATE MEETING THE MATERIAL AND GRADATION SPECIFICATIONS SET FORTH FOR CLASS 5 AGGREGATE BASE COURSE AS DEFINED IN DIVISION 700, SECTION 703 OF THE CDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

AGGREGATE GRADATION TABLE:

Sieve Size	No. 357 Coarse Aggregate (AASHTO M43)	No. 4 Coarse Aggregate (AASHTO M43)	No. 8 Coarse Aggregate (AASHTO M43)	Class 5 Aggregate Base Course	Class A Filter Material	Class C Filter Material
Mass Percent of Material Passing Designated Sieve Size						
75 mm (3")					100	
63 mm (2 1/2")	100					
50.0 mm (2")	95-100	100				
37.5 mm (1 1/2")		90-100		100		
25.0 mm (1")	35-70	20-55		95-100		
19.0 mm (3/4")		0-15			20-90	100
12.5 mm (1/2")	10-30		100			
9.5 mm (3/8")		0-5	85-100			
4.75 mm (#4)	0-5		10-30	30-70	0-20	60-100
2.36 mm (#8)			0-10			
1.18 mm (#16)			0-5			
600 µm (#30)						
300 µm (#50)						10-30
150 µm (#100)						0-10
75 µm (#200)				3-15	0-3	0-3

NOTE: In addition to the gradation provided in the table above, all material must meet the specifications set forth in Division 700, Section 703 of the CDOT Standard Specifications for Road and Bridge Construction.

1-1/2" CRUSHED ROCK:

1-1/2" CRUSHED ROCK SHALL BE A CRUSHED AGGREGATE MEETING THE MATERIAL AND GRADATION SPECIFICATIONS SET FORTH FOR NO. 357 OR NO. 4 COARSE AGGREGATE PER AASHTO M43 AS DEFINED IN DIVISION 700, SECTION 703 OF THE CDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

SPRAY-ON WATERPROOF LINER:

SPRAY ON WATERPROOF LINING SHALL BE ECODUR 201 SPRAY ON LINER THAT IS VOC/SOLVENT FREE AND NSF 61 CERTIFIED (FOR USE IN POTABLE WATER), OR APPROVED EQUIVALENT APPLIED IN ACCORDANCE TO MANUFACTURER'S RECOMMENDATIONS.

BIODEGRADABLE DOUBLE-NET 100% COCONUT EROSION CONTROL BLANKET:

BIODEGRADABLE DOUBLE-NET 100% COCONUT EROSION CONTROL BLANKET SHALL MEET THE SPECIFICATIONS FOR SOIL RETENTION BLANKET (COCONUT) (BIODEGRADABLE CLASS 2) AS DEFINED IN DIVISION 200, SECTION 216 OF THE CDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. BLANKET MUST BE DOUBLE-NET AND BIODEGRADABLE.

CLASS A DRAINAGE GEOTEXTILE AND NONWOVEN GEOTEXTILE:

CLASS A DRAINAGE GEOTEXTILE AND NONWOVEN GEOTEXTILE SHALL BE NONWOVEN GEOTEXTILE MEETING AASHTO M-288 CLASS 1 STRENGTH REQUIREMENTS.

RIPRAP AND BOULDERS:

RIPRAP AND BOULDERS SHALL MEET THE MATERIAL AND GRADATION SPECIFICATIONS SET FORTH IN SECTION 31 37 00 (RIPRAP, BOULDERS AND BEDDING) OF MILE HIGH FLOOD DISTRICT'S CONSTRUCTION SPECIFICATIONS WHICH CAN BE FOUND ON THEIR WEBSITE AT WWW.MHFD.COM IN THE RESOURCE LIBRARY.

GROUT:

GROUT SHALL MEET THE MATERIAL AND INSTALLATION SPECIFICATIONS SET FORTH IN SECTION 31 37 19 (GROUTED BOULDERS, STACKED GROUTED BOULDERS AND GROUTED BOULDER RETAINING WALLS) OF MILE HIGH FLOOD DISTRICT'S CONSTRUCTION SPECIFICATIONS WHICH CAN BE FOUND ON THEIR WEBSITE AT WWW.MHFD.COM IN THE RESOURCE LIBRARY.

CONCRETE:

ALL CONCRETE USED WITHIN STORMWATER QUALITY FACILITIES SHALL BE CAST-IN-PLACE AND DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER. THE ENGINEER SHALL SPECIFY ON THE PLANS THE SPECIFIC CLASS OF CONCRETE TO BE USED AS DEFINED IN DIVISION 600, SECTION 602 OF THE CDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

REBAR:

ANY REINFORCING STEEL SPECIFIED BY THE ENGINEER FOR USE IN A STORMWATER FACILITY SHALL BE EPOXY COATED AND MEET THE SPECIFICATIONS SET FORTH IN DIVISION 600, SECTION 602 OF THE CDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

PVC PIPE:

ALL SOLID WALL PVC PIPE AND FITTINGS SHALL BE SCHEDULE 40 OR EQUIVALENT WITH SMOOTH INTERIOR AND SHALL MEET THE REQUIREMENTS OF ASTM D2729.

UNDERDRAIN:

ALL UNDERDRAINS SHALL BE 4-INCH INTERNAL DIAMETER (MINIMUM) SCHEDULE 40 PVC OR EQUIVALENT WITH SMOOTH INTERIOR AND MEET THE FOLLOWING REQUIREMENTS:

- SLOTTED PIPE WITH 0.05-INCH SLOT WIDTH
- 14 SQUARE INCHES OF OPEN AREA PER LINEAL FOOT (MINIMUM)
- CONFORMS TO ASTM D1784

GROWING MEDIA - DRAFT:

Parameter Classification	Parameter No.	Soil Parameter	Test Name	Growing Media Properties
Texture	1	Texture/Gradation	Sieve sizes based on the USDA soil classification system, silt and clay percent based on the hydrometer method	Partial Size Distribution: 60-80% Sand (0.05-2.0 mm diameter) 5-35% Silt (0.002-0.5 mm diameter) 5-15% Clay (<0.002 mm diameter) (distribution is measured after gravel > 2 mm is removed from sample)
	2			Gravel <10% (> 2.0 mm diameter) (max % based on total volume of original sample)
Salts/Sodium	3	Salinity/Salts (EC) dS/m or mmhos/cm	Saturated Paste	<3
	4	Sodium Adsorption Ratio (SAR)	USDA 60 6(20b)	<8
Organic Matter Content	5	Organic Matter (%)	ASTM D2974	>1%
Soil pH	6	pH	ASA/ASHTO	>5.5 - <8.5
Nutrients	7	Calcium Carbonate (CaCO ₃)/Lime	Calcium Carbonate Equivalent (USDA 60 6(23c))	<2%
	8	Nitrate Nitrogen (ppm)	ASA2 33-3	10 - 30
	9	Phosphorus (ppm)	Ammonium bi carbonate DTPA test	>8
	10	Potassium (ppm)		>60
	11	Copper (ppm)		>0.2
	12	Zinc (ppm)		>1.0
	13	Iron (ppm)		>5

NOTES:

1. 3 to 5% (by weight of media) shredded wood mulch (aged 6 months minimum) shall be incorporated throughout media by supplier prior to delivery.
2. Compost shall not be added to growing media/topsoil.
3. Media shall consist of the organic (top) layer of native topsoil containing characteristic living biological organisms, supplied by a source approved by SEMSWA.

THE GROWING MEDIA SUPPLIER RESEARCH AND COLLABORATION WITH OTHER AGENCIES ON MATERIAL SPECIFICATIONS IS CURRENTLY ONGOING, THEREFORE THE GROWING MEDIA SPECIFICATIONS ON THIS SHEET SHALL BE CONSIDERED DRAFT. ALL OTHER MATERIALS SPECIFIED ON THIS SHEET ARE FINAL.

PLOT: 12/21/2020 1:11:38 PM NAME: P:\2019 PROJECTS\19-013.01 CM DRWGS AND MATERIAL RECS\CAD\DRAWINGS\19-013.01 CONTROL MEASURE MATERIAL SPECS (SE METRO).DWG

REFERENCE:	SCALE:	Standard Plan Revision	
		No.	Date



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CONTROL MEASURE
MATERIAL SPECIFICATIONS

SHEET
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