

CLASSES OF EMBEDMENT AND BACKFILL MATERIALS

ASTM D2321 ⁽¹⁾ (CSA B182.11) CLASS DESCRIPTION	ASTM D2487 NOTATION	ASTM D2487 DESCRIPTION	AASHTO M43 NOTATION	AASHTO M145 NOTATION	BNQ 2560	ASTM D2321 ⁽¹⁾ (CSA B182.11)										
						PERCENTAGE PASSING SIEVE SIZES				ATTEBERG LIMITS		COEFFICIENTS				
						1 1/2 IN. (40mm)	3/8" (9.5mm)	No. 4 (4.75mm)	NO. 200 (0.075mm)	LL	PI	Cu	Cc			
I ⁽²⁾	CRUSHED ROCK, ANGULAR ³	N/A	ANGULAR CRUSHED STONE OR ROCK, CRUSHED GRAVEL, CRUSHED SLAG; LARGE VOIDS WITH LITTLE OR NO FINES	5, 56, 57 ⁽⁴⁾ , 6, 67 ⁽⁴⁾	N/A		100%	<25%	<15%	<12%	NON PLASTIC		N/A			
II	CLEAN, COARSE-GRAINED SOILS	GW	WELL-GRADED GRAVEL, GRAVEL-SAND MIXTURES; LITTLE OR NO FINES	5, 6	A1, A3	CG-14, MG-20	100%		<50% of "COARSE FRACTION"	<5%	NON PLASTIC	>4	1 to 3			
		GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES; LITTLE OR NO FINES	56, 57, 67								4	<1 or >3			
		SW	WELL-GRADED SANDS, GRAVELLY SANDS; LITTLE OR NO FINES									>6	1 to 3			
		SP ⁵	POORLY-GRADED SANDS, GRAVELLY SAND; LITTLE OR NO FINES									<6	<1 or >3			
	COARSE-GRAINED SOILS, BORDERLINE CLEAN TO W/FINES	GW-GC, SP-SM	SANDS AND GRAVELS WHICH ARE BORDERLINE BETWEEN CLEAN AND WITH FINES	N/A		100%		VARIES	5% TO 12%	NON PLASTIC	SAME AS FOR GW, GP, SW AND SP ⁶					
III	COURSE-GRAINED SOILS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES	GRAVEL & SAND WITH <10% FINES	A-2-4, A-2-5, A-2-6, OR A-4 OR A-6 SOILS WITH MORE THAN 30% RETAINED ON #200 SIEVE	100%		<50% of "COARSE FRACTION"	12% TO 50%	N/A	<4 OR <"A" LINE	N/A				
		GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES								<7 & >"A" LINE					
		SM	SILTY SANDS, SAND-CLAY MIXTURES								>4 OR <"A" LINE					
		SC	CLAYEY SANDS, SAND-CLAY MIXTURES								>7 & >"A" LINE					
	INORGANIC FINE-GRAINED SOILS	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, SILTS WITH SLIGHT PLASTICITY						100%		>30% (RETAINED)		<50	<4 OR <"A" LINE		
		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY; GRAVELLY, SANDY, OR SILTY CLAYS; LEAN CLAYS							>30% (RETAINED)	>7 & >"A" LINE					
IV ⁽⁶⁾	INORGANICS FINE-GRAINED SOILS	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, SILTS WITH SLIGHT PLASTICITY	N/A	A-2-7 OR A-4 OR A-6 SOILS WITH 30% OR LESS RETAINED ON #200 SIEVE	100%		100%	<30% (Retained)	<50	<4 or <"A" LINE	N/A				
		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY; GRAVELLY, SANDY, OR SILTY CLAYS; LEAN CLAYS	N/A					>7 & >"A" LINE							
V ⁽⁷⁾	INORGANIC FINE-GRAINED SOILS	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS	N/A	A5, A7	100%		100%	>50%	>50	<"A" LINE	N/A				
		CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	N/A							>"A" LINE					
	ORGANIC SOILS OR HIGHLY ORGANIC SOILS	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	N/A											<50	<4 OR <"A" LINE
		OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	N/A											>50	<"A" LINE
		PT	PEAT AND OTHER HIGH ORGANIC SOILS	N/A												

- NOTES:
- REFER TO ASTM D2321 / CSA B182.11 / BNQ 2560 FOR MORE COMPLETE SOIL DESCRIPTIONS.
 - CLASS I MATERIALS ALLOW FOR A BROADER RANGE OF FINES THAN PREVIOUS VERSIONS OF D2321 / B182.11. WHEN SPECIFYING CLASS I MATERIAL FOR INFILTRATION SYSTEMS, THE ENGINEERING SHALL INCLUDE A REQUIREMENT FOR AN ACCEPTABLE LEVEL OF FINES.
 - ALL PARTICLE FACES SHALL BE FRACTURED.
 - ASSUMES LESS THAN 25% PASSES THE 3/8" SIEVE.
 - CLASS IV MATERIALS REQUIRE A GEOTECHNICAL EVALUATION PRIOR TO USE AND SHOULD ONLY BE USED AS BACKFILL UNDER THE GUIDANCE OF A QUALIFIED ENGINEER.
 - UNIFORM FINE SANDS (SP) WITH MORE THAN 50% PASSING A 100 SIEVE BEHAVE LIKE SILTS AND SHOULD BE TREATED AS CLASS III SOILS IF ALLOWED.
 - CLASS V MATERIALS SHALL NOT BE PERMITTED AS BEDDING AND BACKFILL MATERIAL.

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2	REV. DRAWING NAME OR NUMBER	TJR	01/28/16	
REV.	DESCRIPTION	BY	MM/DD/YY	CHK'D
CLASSES OF EMBEDMENT AND BACKFILL MATERIALS		4640 TRUEMAN BLVD HILLIARD, OHIO 43026 ADVANCED DRAINAGE SYSTEMS, INC.		
DRAWING NUMBER: STD-109		DRAWN BY: TJR DATE: 06/01/15 CDD BY: SCALE: NTS SHEET: 1 OF 1		