

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	BNO 2560	ASTM D2321 ⁽¹⁾ (CSA B182.11)										
						PERCENTAGE PASSING SIEVE SIZES				ATTERBERG 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 ⁶	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					
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						100%	> 30% (RETAINED)	<50		>7 & >"A" LINE			
IV ⁽⁵⁾	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								100%	100%	>50%	<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						>50	<"A" LINE					

NOTES:

1. REFER TO ASTM D2321 / CSA B182.11 / BNO 2560 FOR MORE COMPLETE SOIL DESCRIPTIONS.
2. 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.
3. ALL PARTICLE FACES SHALL BE FRACTURED.
4. ASSUMES LESS THAN 25% PASSES THE 3/8" SIEVE.
5. CLASS IV MATERIALS REQUIRE A GEOTECHNICAL EVALUATION PRIOR TO USE AND SHOULD ONLY BE USED AS BACKFILL UNDER THE GUIDANCE OF A QUALIFIED ENGINEER.
6. 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.
7. 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

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CLASSES OF EMBEDMENT AND AND BACKFILL MATERIALS

DRAWING NUMBER: STD-109



4640 TRUEMAN BLVD
HILLIARD, OHIO 43026

DRAWN BY:	TJR
DATE:	06/01/15
CHK'D BY:	
SCALE:	NTS
SHEET:	1 OF 1