

AGGREGATES AND GRANULAR MATERIALS

Pit Run Gravel

- .1 To be well graded granular material, substantially free from clay lumps, organic matter and other extraneous material, screened to remove all stones in excess of maximum diameter specified in material description (300 mm Pit Run Gravel, 200 mm Pit Run Gravel, 100 mm Pit Run Gravel). Material to compact to specified density and conform to following gradations:

Sieve Designation	Percent Passing		
(300 mm dia)			(100)
(200 mm dia)	---		(100)
(100 mm dia)	---		(100)
→ 75 mm	---		100
50 mm	70	-	100
25 mm	50	-	100
4.75 mm	22	-	100
2.36 mm	10	-	85
→ 0.075 mm	2	-	8

- .2 Recycled concrete free from contaminated and other extraneous material, conforming to the specified gradations may be used as pit run gravel.

Pit Run Sand

- .1 To be well graded pit run sand, free from organic materials and conform to following gradations:

Sieve Designation	Percent Passing		
12.5 mm			100
4.75 mm	35	-	100
2.36 mm	20	-	70
1.18 mm	13	-	50
0.600 mm	8	-	35
0.300 mm	5	-	25
0.150 mm	2	-	15
0.075 mm	0	-	6

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2.5 River Sand

net 100%

- .1 River sand to be free of organic material and conform to the following gradations:

Sieve Designation	Percent Passing
19mm	100
4.76mm	80 - 100
0.60mm	20 - 100
0.42mm	10 - 100
0.25mm	0 - 80
0.15mm	0 - 50
0.074mm	0 - 4

2.6 Drain Rock

no practice

- .1 To consist of clean round stone or crushed rock conforming to following gradations:

Sieve Designation	Percent Passing	
	Coarse	Fine (Torpedo Gravel)
25.0mm	100	
19.0mm	0 - 100	
9.5mm	0 - 5	100
4.75mm	0	50 - 100
2.36mm		10 - 35
1.18mm		5 - 15
0.600mm		0 - 8
0.300mm		0 - 5
0.150mm		0 - 2
0.075mm		0

- .2 Drain rock to be used only where specified on Standard Detail Drawings or Contract Drawings. Use of drain rock other than as specified requires approval of Contract Administrator after examination of soils against which drain rock will be placed.

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2.7

**Granular Pipe Bedding
and Surround Material**

- .1 Crushed or graded gravels: to conform to following gradations:

method B/C *per ASTM B/C*

Sieve Designation	Percent Passing	
	Type 1*	Type 2*
25.0 mm	100	100
19.0 mm	90 - 100	90 - 100
12.5 mm	65 - 85	70 - 100
9.5 mm	50 - 75	
4.75 mm	25 - 50	40 - 70
2.36 mm	10 - 35	25 - 52
1.18 mm	6 - 26	15 - 38
0.600 mm	3 - 17	6 - 27
0.300 mm		3 - 20
0.075 mm	0 - 5	0 - 8

*Type 1: *standard gradation*

*Type 2: *to be used only in dry trench conditions and with Contract Administrator's prior approval*

Recycled concrete free from contaminated and other extraneous material, conforming to the Type 1 gradations, may be used as pipe bedding and surround material.

- .2 Other permissible materials: only where shown on Contract Drawings or directed by Contract Administrator shall drain rock, pit run sand, river sand or approved native material be used for bedding and pipe surround.

2.8

Select Granular Sub-base

method C

- .1 To be well graded granular material, substantially free from lumps and organic matter, screened if required to conform to following gradations:

Sieve Designation	Percent Passing
75 mm	100
25 mm	50 - 85
0.150 mm	0 - 15
0.075 mm	0 - 8

2.9 **Crushed Granular Sub-base** .1 To be 75 mm crushed gravel conforming to following gradations:

Sieve Designation	Percent Passing	
80mm		100
75mm		100
38mm	60 -	100
25mm	-	
19mm	35 -	80
12.5mm	-	
9.5mm	26 -	60
4.75mm	20 -	40
2.36mm	15 -	30
1.18mm	10 -	20
0.6um	5 -	15
0.3um	3 -	10
0.18um	-	
0.15um	-	
0.075um	0 -	5

2.10 **Granular Base**

.1 To be 19 mm crushed gravel conforming to following gradations:

Sieve Designation	Percent Passing	
19mm		100
12.5mm	75 -	100
9.5mm	60 -	90
4.75mm	40 -	70
2.36mm	27 -	55
1.18mm	16 -	42
0.600mm	8 -	30
0.300mm	5 -	20
0.075mm	2 -	8

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- .2 Where shown on the contract drawings or directed by the Contract Administrator, Type 2_19 mm crushed gravel conforming to following gradations is permissible:

Sieve Designation	Type 2 Percent Passing		
25 mm			100
19 mm	80	-	100
9.5 mm	50	-	85
4.75 mm	35	-	70
2.36 mm	25	-	50
1.18 mm	15	-	35
0.300 mm	5	-	20
0.075 mm	0	-	5

2.11 **Recycled Aggregate Material**

- .1 Aggregates containing recycled material may be utilized if approved by the Contract Administrator. In addition to meeting all other conditions of this specification, recycled material should not reduce the quality of construction achievable with quarried materials. Recycled material should consist only of crushed portland cement concrete; other construction and demolition materials such as asphaltic pavements, bricks, plaster, etc. are not acceptable.

2.12 **Pit Fines, Overburden and Cyclone sand**

- .1 **Pit Fines:** Fine aggregate which is a by-product of gravel washing and screening, conforming to the following:

Sieve Designation	Percent Passing		
4.76 mm			100
0.42 mm	80	-	100
0.074 mm	0	-	4

- .2 **Cyclone Sand** Inorganic fine sand produced as a by-product of gravel processing and conforming to the following:

Sieve Designation	Percent Passing		
4.76 mm			100
0.42 mm	80	-	100
0.25 mm	50	-	100
0.15 mm	0	-	70
0.074 mm	0	-	20