

## **CHAPTER 200 - GENERAL TECHNICAL REQUIREMENTS**

### **201 EROSION PREVENTION AND SEDIMENT CONTROL**

201.01 DESCRIPTION

201.02 MATERIALS

201.03 CONSTRUCTION

201.04 MEASUREMENT AND PAYMENT (NOT APPLICABLE TO PRIVATELY FINANCED PUBLIC IMPROVEMENTS)

### **202 TRAFFIC CONTROL**

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202.02 MATERIALS

202.03 CONSTRUCTION

202.04 MEASUREMENT AND PAYMENT (NOT APPLICABLE TO PRIVATELY FINANCED PUBLIC IMPROVEMENTS)

### **203 MOBILIZATION**

203.01 DESCRIPTION

203.02 MATERIALS

203.03 CONSTRUCTION

203.04 MEASUREMENT AND PAYMENT (NOT APPLICABLE TO PRIVATELY FINANCED PUBLIC IMPROVEMENTS)

### **204 CLEARING AND GRUBBING**

204.01 DESCRIPTION

204.02 MATERIALS

204.03 CONSTRUCTION

204.04 MEASUREMENT AND PAYMENT (NOT APPLICABLE TO PRIVATELY FINANCED PUBLIC IMPROVEMENTS)

## 205 MATERIALS - TYPES AND USE

### 205.01 DESCRIPTION

### 205.02 MATERIALS

205.02.01 GENERAL

205.02.02 EXPLOSIVES

205.02.03 WATER

205.02.04 AGGREGATES

205.02.04A GENERAL

205.02.04B COARSE AGGREGATES

Coarse aggregates shall be natural or crushed rock or gravel that is retained on a No. 4 sieve and is free from flat, elongated, soft, or disintegrated pieces, vegetable material, or other deleterious matter.

Use crushed rock for coarse aggregate in aggregate bases and all asphalt construction requiring coarse aggregate. Coarse aggregate in Portland Cement Concrete may also use natural gravel or other inert materials of similar characteristics or combinations thereof. Total deleterious matter shall not exceed 2% by weight.

Do not allow amount of deleterious substances to exceed the following amounts:

<b>Table 205.02.04B-1 DELETERIOUS SUBSTANCE LIMITS – COARSE AGGREGATE - PORTLAND CEMENT CONCRETE</b>	
Lightweight Pieces	0.25% (by weight)
Friable Particles	0.25% (by weight)
Material Passing No. 200 Sieve	1.00% (by weight)
Wood Particles	0.05% (by weight)

Use coarse aggregates having weighted percentages of loss that do not exceed 12% by weight when subjected to five alternations of the sodium sulfate soundness test (AASHTO T 104).

For Portland Cement Concrete: Coarse aggregate must conform to the specified maximum size, and when each maximum size is separated into designated sizes, the separated designated sizes shall be as follows:

<b>Table 205.02.04B-2 MAXIMUM SIZE – COARSE AGGREGATE - PORTLAND CEMENT CONCRETE</b>	
MAXIMUM SIZE OF AGGREGATES	SEPARATED SIZES
2"	(2" – 1"), (1" – No. 4)
1½"	(1½" – ¾"), (¾" – No. 4)
1"	(1" – No. 4)
¾"	(¾" – No. 4)

Do not allow oversized and undersized materials to exceed a combined 15% of any separated size, nor allow any pieces to have any dimension greater than twice the maximum square screen size for the specified grading.

Grading of each of the specified separated sizes of coarse aggregate shall conform to the following:

<b>Table 205.02.04B-3 GRADING REQUIREMENTS – COARSE AGGREGATE – PORTLAND CEMENT CONCRETE</b>				
<b>SEPARATED SIZES – PERCENTAGES (by weight)</b>				
<b>Sieve Size Passing</b>	<b>2" – 1"</b>	<b>1½" – ¾"</b>	<b>1" – No. 4</b>	<b>¾" – No. 4</b>
2½"	100			
2	90 – 100	100		
1½"	35 – 70	90 – 100	100	
1"	0 – 15	30 – 65	90 – 100	100
¾"		0 – 15	50 – 80	90 – 100
⅜"			15 – 40	20 – 50
No. 4			0 – 10	0 – 10

For extrusions use the gradation specified in **Subsection 607.02.02**.

When a tolerance range is set forth in the above grading requirements, it shall be understood that the midpoint of the tolerance range is the target value and the product shall conform as closely as realistically possible to this target value. The purpose of the tolerance range is only to permit occasional minor variations from the target value that are, for practical reasons, unavoidable.

When coarse aggregate is to be separated into two sizes, as set forth hereinabove, control grading of material in each separated size within the applicable range of percentages given in grading requirements for coarse aggregate hereinabove so that the quantity of each separated size measured into the batch shall be not less than 35% nor more than 65% of total quantity of coarse aggregate measured into the batch.

#### **Fracture of Gravel**

When crushed gravel is furnished, it shall have at least two mechanically fractured faces on not less than the following percentages (by weight) of the material as determined by ASTM D5821. This requirement does not apply to open-graded aggregate. For open-graded aggregate, refer to 205.02.04D.

<b>Table 205.02.04B-4 FRACTURE OF GRAVEL</b>	
<b>TYPE OF USE</b>	<b>PERCENTAGES</b>
Asphalt Concrete Pavement	75
Asphalt Surface Treatment	95
Asphalt Treated Bases	75
Aggregate Bases	70
Aggregate Trench Backfill	70

*205.02.04C FINE AGGREGATE*

*205.02.04D OPEN-GRADED AGGREGATE*

### **205.02.05 PORTLAND CEMENT**

- 205.02.06 CEMENT MORTAR
- 205.02.07 CEMENT GROUT
- 205.02.08 EPOXY CEMENT
- 205.02.09 PORTLAND CEMENT CONCRETE
- 205.02.10 ASPHALT MATERIALS
- 205.02.11 GEOTEXTILES

205.03 CONSTRUCTION

205.04 MEASUREMENT AND PAYMENT (NOT APPLICABLE TO PRIVATELY FINANCED PUBLIC IMPROVEMENTS)

**206 EXCAVATION, EMBANKMENT, BEDDING, AND BACKFILL**

206.01 DESCRIPTION

206.02 MATERIALS

- 206.02.01 EMBANKMENT MATERIALS
- 206.02.02 FOUNDATION STABILIZATION
- 206.02.03 PIPE ZONE MATERIAL

Use pipe zone material consisting of 3/4"– 0" crushed aggregate or fine sand as required by **Standard Detail 214, Trench and Backfill**.

Pipe zone material shall be as specified in **Subsection 206.02.05B** for crushed aggregate and as specified in this section for sand.

Sand is generally not an approved material in a pipe zone but when it is approved, it shall consist of fine granular material naturally produced by the disintegration of rock, produced from crushed gravel, or from river dredging. Sand must be reasonably free of organic material, mica, clay, and other deleterious substances.

The grading of sand shall conform to one of the following grading requirements as specified. Gradation and sizes shall be tested in conformance with AASHTO T 27 and T 11.

Table 206.02.03 GRADATION OF SAND			
SIEVE SIZE	PERCENTAGE PASSING BY WEIGHT		
	COARSE SAND	MEDIUM SAND	FINE SAND
1"	100	100	100
3/8"	95-65 – 100	95 – 100	---
#4	80-45 – 100/75	70 – 95	90 – 100
#30	40 – 30---	10 – 45	---
#40	10 - 30	---	---
#100	---	2 – 10	2 – 10
#200	0 – 87	0 – 7	0 – 4
Sand Equivalent	50 Minimum	50 Minimum	50 Minimum

Table ranges are inclusive of tolerances. Material must be able to stand on a minimum 60° angle from horizontal following compaction to specified density. For the purpose of this specification, specified density will be a minimum of 95% of relative density as determined by ASTM D1557 at optimum moisture.

206.02.04 NATIVE BACKFILL MATERIAL

206.02.05 SELECT BACKFILL MATERIAL

206.02.06 RIPRAP

206.02.07 IMPORTED TOPSOIL

206.02.08 NATIVE TOPSOIL

206.02.09 STORMWATER FACILITY TOPSOIL

206.02.10 WATER

### 206.03 CONSTRUCTION

206.03.01 EXCAVATION

206.03.02 ROCK EXCAVATION AND EXPLOSIVES

206.03.03 PRESERVATION OF EXISTING IMPROVEMENTS

206.03.04 EXCAVATION OF EXISTING IMPROVEMENTS AND MISCELLANEOUS

206.03.05 LIMITS OF EXCAVATION

206.03.06 SLOPE GRADING

206.03.07 FOUNDATION STABILIZATION

206.03.08 DISPOSAL OF EXCESS MATERIAL

206.03.09 TEMPORARY LOCATION OF EXCAVATED MATERIALS

206.03.10 SURFACE REMOVAL AND REPLACEMENT FOR TRENCHES

206.03.11 TRENCH EXCAVATION AND SHORING

206.03.12 DEWATERING

206.03.13 COMPACTION

206.03.14 EMBANKMENT

206.03.15 PIPE OR CONDUIT BEDDING AND PIPE ZONE

#### 206.03.16 IMPERVIOUS DAMS

Impervious dams (also known as trench dams or clay dams) may be needed when utilities are in the vicinity of known underground contaminants or in areas of high groundwater. Where indicated on the plans or as directed by the Inspector, the Contractor shall place impervious dams to prevent groundwater movement along the trench. Bentonite or CLSM shall be used. CLSM must meet the specifications outlined in Subsection 206.02.05C.

Refer to **Standard Detail 215, Impervious Dam**. To avoid waterline piping being in contact with bentonite or CLSM, the waterline shall be wrapped with two layers of 8-mil polyethylene.

206.03.~~46~~17 TRENCH BACKFILL AND COMPACTION

206.03.~~47~~18 TOPSOIL

206.04 MEASUREMENT AND PAYMENT (NOT APPLICABLE TO PRIVATELY FINANCED PUBLIC IMPROVEMENTS)

## **207 BORING AND JACKING**

207.01 DESCRIPTION

207.02 MATERIALS

207.03 CONSTRUCTION

207.04 MEASUREMENT AND PAYMENT (NOT APPLICABLE TO PRIVATELY FINANCED PUBLIC IMPROVEMENTS)

## **208 CONCRETE STRUCTURES**

208.01 DESCRIPTION

208.02 MATERIALS

208.03 CONSTRUCTION

208.04 MEASUREMENT AND PAYMENT (NOT APPLICABLE TO PRIVATELY FINANCED PUBLIC IMPROVEMENTS)

## **209 LANDSCAPING AND LANDSCAPE RESTORATION**

209.01 DESCRIPTION

209.02 MATERIALS

209.03 CONSTRUCTION

209.04 MEASUREMENT AND PAYMENT (NOT APPLICABLE TO PRIVATELY FINANCED PUBLIC IMPROVEMENTS)

## **210 RESURFACING**

210.01 DESCRIPTION

210.02 MATERIALS

210.03 CONSTRUCTION

210.04 MEASUREMENT AND PAYMENT (NOT APPLICABLE TO PRIVATELY FINANCED PUBLIC IMPROVEMENTS)

## **211 RESTORATION AND CLEANUP**

211.01 DESCRIPTION

211.02 MATERIALS

211.03 CONSTRUCTION

211.04 MEASUREMENT AND PAYMENT (NOT APPLICABLE TO PRIVATELY FINANCED PUBLIC IMPROVEMENTS)