

## Section 1043

1 All stone shall meet the approval of the Engineer. While no specific gradation is required,  
2 there shall be equal distribution of the various sizes of the stone within the required size  
3 range. The size of an individual stone particle will be determined by measuring its long  
4 dimension.

5 Stone or broken concrete for rip rap shall meet Table 1042-1 for the class and size  
6 distribution.

Class	Required Stone Sizes, inches		
	Minimum	Midrange	Maximum
A	2	4	6
B	5	8	12
1	5	10	17
2	9	14	23

7 No more than 5.0% of the material furnished can be less than the minimum size specified nor  
8 no more than 10.0% of the material can exceed the maximum size specified.

## SECTION 1043 AGGREGATE FROM CRUSHED CONCRETE

### 1043-1 GENERAL

12 Aggregate from crushed concrete is a recycled product made by crushing concrete obtained  
13 from concrete truck clean out, demolition of existing concrete structures or pavement, or  
14 similar sources and transported from a crushing facility. It does not include concrete  
15 pavements that are rubblelized, broken or otherwise crushed in place on the roadway.

16 The crushed material must meet all sources approval requirements described in Sections 1005  
17 and 1006 with the exception of the sodium sulfate test requirement. Deleterious materials  
18 shall not be more than 3%.

19 Sampling and acceptance for the determination of gradation, LL and PI will be performed as  
20 described in the *Aggregate QC/QA Program Manual* and the *Aggregate Sampling Manual*.

### 1043-2 AGGREGATE BASE COURSE

22 The material shall meet the ABC gradation. The LL of the material shall be raised 5 points to  
23 no more than 35.

### 1043-3 AGGREGATE SHOULDER BORROW

25 The material shall meet Section 1019.

### 1043-4 CLEAN COARSE AGGREGATE FOR ASPHALT

27 The material shall meet the gradation of a standard size in Table 1005-1. Use of the material  
28 shall be approved by the Engineer, and the mix shall meet all requirements.

### 1043-5 CLEAN COARSE AGGREGATE FOR CONCRETE

30 The material shall meet the gradation of a standard size in Table 1005-1. Use of the material  
31 is restricted to Class B concrete mixes only. Use of the material shall be approved by the  
32 Engineer, and the concrete shall meet all requirements.

## SECTION 1044 SUBSURFACE DRAINAGE MATERIALS

### 1044-1 SUBDRAIN FINE AGGREGATE

36 Subdrain fine aggregate shall meet No. 2S or 2MS in Table 1005-2.

**1 1044-2 SUBDRAIN COARSE AGGREGATE**

2 Subdrain coarse aggregate shall meet No. 78M in Table 1005-1.

**3 1044-3 PIPE AND FITTINGS**

4 Pipe and fittings may be, at the option of the Contractor, either concrete, corrugated steel,  
5 bituminized fiber or corrugated plastic.

**6 1044-4 CONCRETE PIPE AND FITTINGS**

7 Non-perforated concrete pipe and pipe fittings shall meet AASHTO M 86 for standard  
8 strength nonreinforced concrete pipe.

9 Perforated concrete pipe shall meet AASHTO M 175 for standard strength perforated  
10 nonreinforced concrete underdrainage pipe.

11 Joint materials shall meet Section 1028.

**12 1044-5 CORRUGATED STEEL PIPE AND FITTINGS**

13 Non-perforated corrugated steel pipe and pipe fittings shall meet Subarticle 1032-3(A).

14 Perforated corrugated steel pipe shall meet AASHTO M 36.

15 Fabricate the corrugated steel pipe from steel sheets having a minimum thickness of 0.052".

**16 1044-6 PVC PIPE**

17 PVC pipe shall meet ASTM D1785.

**18 1044-7 CORRUGATED PLASTIC PIPE AND FITTINGS**

19 Corrugated plastic pipe and fittings shall meet AASHTO M 252 for heavy duty tubing, except  
20 that the maximum stretch resistance shall be 10%.

**21 1044-8 OUTLET PIPE**

22 Outlets constructed of PVC Schedule 40 pipe shall meet ASTM D2665. HDPE pipe shall  
23 meet AASHTO M 294, Type S.

24 **SECTION 1046**  
25 **GUARDRAIL MATERIALS**

**26 1046-1 GENERAL**

27 Use guardrail materials from sources meeting requirements of the Department's Brand  
28 Registration Program for guardrail. A list of these sources is available from the Materials and  
29 Test Unit's Central Laboratory. The Department will remove a manufacturer of guardrail  
30 materials from this program if the monitoring efforts indicated that non-specification material  
31 is being provided or test procedures are not being followed.

32 The following types of guardrail materials and all associated accessories may be accepted  
33 under this program: rail elements, posts and offset blocks, terminal sections, anchor units,  
34 transition sections and hardware.

**35 1046-2 RAIL ELEMENTS**

36 The rail element and terminal sections shall meet AASHTO M 180 for Class A, Type 2.

**37 1046-3 POSTS AND OFFSET BLOCKS****38 (A) General**

39 (1) The Contractor may furnish any one of the following types of steel guardrail posts.  
40 Only one type of post will be permitted at any one continuous installation.