SECTION 02271

RIPRAP

PART 1 GENERAL

1.01 WORK INCLUDED

A. Preparation of Foundation

B. Placing of rubble stone, concrete block or sacked sand-cement rip-rap.

1.02 RELATED WORK

A. Section 02110: Clearing and Grubbing

B. Section 02210: Grading and Excavation

C. Section 0300: Concrete Work

PART 2 PRODUCTS

2.01 GROUT

A. Mix 1 part Portland Cement, 4 parts sand and sufficient water to make grout flow into and fill voids.

B. Fine Aggregate Sand:

1. AASHTO M-45; hard, strong, durable uncoated mineral or rock particles free of injurious amounts of organics or other deleterious substances.

2. Sand for grout: uniformly graded from coarse to fine within the following limits:

Sieve Size	Total Percent Passing by Weight
8	100
50	15-40
100	0-10
200	0-5

3. Test aggregate, when required, by methods of AASHTO:

Sampling	T-2
Clay lumps	T-112
Coal and lignite	T-113
Material passing 200 sieve	T-11
Organic impurities	T-21
Mortar-making properties	T-71

Sieve analysis	T-27
Soundness (sulfates)	T-104
Soundness (freezing and thawing)	T-103
Light weight particles	T-149

C. Portland Cement:

1. AASHTO M-85 or ASTM C-150
2. Sample and test Portland Cement, when required, by the methods of AASHTO:

Soundness	T-107
Sampling	T-127
Fineness:	
Turbidimeter	T-98
Air permeability	T-153
Time of Setting:	
Gillmore needles	T-154
Vicat needles	T-131
Air Content of Mortar	T-137
Normal Consistency	T-129
Tensile Strength	T-132
Compressive Strength	T-106
False Set	T-186
Light weight particles	T-149

2.02 RUBBLE STONE RIPRAP

A. Masonry stone that is sound, dense, and free from structural defects

B. Approximately rectangular in shape ranging in sizes of 6 to 8 inches in width, 10 to 12 inches in length, and 10 to 12 inches in depth on TDOT classification as shown in plans and approved by Town Engineer.

2.03 SACKED SAND-CEMENT

A. One bag (94 pounds) of Portland cement and five cubic feet of sand

B. Sacks shall be made of either cotton or jute, standard grade, and of approximately one cubic foot capacity.

2.04 CONCRETE BLOCKS

A. Concrete will be as specified in Section 03300.

B. The concrete blocks shall be approximately 8” wide, 12” long, and 12” deep, or may be standard grade 16” concrete building blocks.

PART 3 EXECUTION

3.01 PREPARATION

A. Immediately prior to the construction of rip-rap, trim the slopes or ground surfaces within reasonably close conformity to the lines and grades indicated on the Plans or as directed by the Engineer, and thoroughly compact by the use of hand or mechanical tamps in accordance with Section 02210.

B. On slopes, place the bottom of the riprap at least 2 feet below the natural ground surface, unless otherwise directed.

3.02 RUBBLE-STONE RIPRAP

A. Hand place rubble-stone riprap (plain) upon the prepared foundation so that the stones shall be as close together as is practicable to reduce voids.

B. For grouted riprap, place the stone in such a manner as to stagger all joints as far as it is possible, and then fill voids with grout.

3.03 CONCRETE BLOCK RIPRAP

A. Place each block against the adjoining blocks with sides and ends in contact.

B. Place the blocks in a manner that the joints will be staggered.

3.04 SACKED SAND-CEMENT RIPRAP

A. Fill sacks, approximately ¾ full with a mixture of sand and cement.

B. Place sacks as close together as possible to reduce voids.

END OF SECTION