FLEXIBLE-PAVEMENT MATERIALS
(INCLUDING MATERIALS FOR STABILIZING)

SECTION 911
BASE AND STABILIZED BASE MATERIALS

911-1 Description.

This Section governs materials to be used in the construction of base and subgrade stabilization including limerock, shell, shell-rock, cemented coquina shell, and recycled concrete aggregate (RCA).

911-2 Materials.

911-2.1 General:

911-2.1.1 Approval of Material: Approval of mineral aggregate sources shall be in accordance with 6-2.3.

911-2.1.2 Deleterious Substances: Materials shall not contain deleterious substances that would result in: prevention of the bituminous prime coat from adhering to the base course; a detriment to the finishing, strength, or performance of the base; or a surface which is susceptible to distortion under construction traffic. Such substances include, but are not limited to: cherty or other extremely hard pieces, lumps, balls or pockets of sand or clay size material, organic matter, loose sand, loose, free shells, corals or skeletal remain of other marine invertebrates retained on the No. 4 sieve, or water sensitive clay minerals.

911-2.3 Limerock Composition: Limerock material shall consist of unconsolidated or partly consolidated limestone of marine origin.

911-2.4 Shell Material: Composition: Shell materials shall consist of naturally occurring deposits formed essentially of broken mollusk shell, corals and the skeletal remains of other marine invertebrates. Live or steamed shell, or man-made deposits as a by-product of the shellfish industry will not be permitted.

911-2.4.1 Bank Run Shell: Shell materials meeting the requirements of this Section which are presently found as “dry land” deposits.

911-2.4.2 Dredged Shell: Shell materials meeting the requirements of this Section which are dredged from ocean, bay or lake deposits.

911-2.5 Shell-Rock Material Composition: Shell-rock materials shall consist of naturally occurring heterogeneous deposits of limestone with interbedded layers or lenses of loose and cemented shell, to include cemented sands (calcitic sandstone). This material shall be mined and processed in a manner that will result in a reasonably homogenous finished product.

911-2.6 Cemented Coquina Shell Material Composition: Cemented coquina shell materials to be used as cemented coquina base or stabilized base, shall be defined as naturally occurring deposits formed essentially of broken mollusk shell, corals and the skeletal remains of other marine invertebrates, which are presently found as “dry land” deposits and which have been cemented together by carbonates or other natural cementing agents.

911-2.7 Recycled Concrete Aggregate (RCA) Composition: RCA shall consist of concrete material derived from the crushing of hard portland cement concrete. In addition to the deleterious materials noted in 911-2.2, RCA shall be asbestos free. The following limits shall not be exceeded:

Bituminous Concrete ..... 1% by weight
Bricks ..... 1% by weight
Glass and Ceramics ..... 1% by weight
Wood and other organic substances ..... 0.1% by weight
Reinforcing steel and welded wire fabric ..... 0.1% by weight
Plaster and gypsum board ..... 0.1% by weight

911-3 Material Requirements.

911-3.1 Limerock Bearing Ratio (LBR): Materials shall meet the requirements in Table 911-1 in accordance with FM 5-515:

Table 911-1
Limerock Bearing Ratio (LBR)

Material	Requirement
Limerock	Average Results per LOT - 100, minimum Individual Results - 90, minimum
Shell	
Shell-Rock	
Cemented Coquina Shell	
RCA	Individual Results - 150, minimum

911-3.2 Liquid Limit and Plasticity: Materials shall meet the requirements in Table 911-2 in accordance with AASHTO T89 and AASHTO T90:

Table 911-2
Liquid Limit and Plastic Properties

Material		Liquid Limit	Plastic Properties
Limerock	Base	Not to exceed 35	Non-Plastic (NP)
	Stabilized Base		Plasticity not to exceed 10
Shell		-	NP
Shell-Rock			
Cemented Coquina Shell		-	NP
RCA		-	NP

911-3.3 Carbonates: Materials shall meet the carbonate requirements in Table 911-3 in accordance with FM 5-514:

Table 911-3
Percentage of Carbonates (Calcium and Magnesium)

Material	Requirement
Limerock	minimum - 70%
Shell	minimum - 50%
Shell-Rock	minimum - 50%
Cemented Coquina Shell	minimum - 50%
RCA	Not Applicable

911-3.4 Gradation and Size Requirements: Materials shall meet the gradation and size requirements in Table 911-4 in accordance with FM 1-T27 and FM 1-T11:

Table 911-4[1]
Gradation Requirements

Material		Requirement	
Limerock	Base	At least 97% shall pass a 3-1/2 inch sieve[2]	
	Stabilized Base	At least 97% shall pass a 1-1/2 inch sieve[2]	
Shell	Dredged shell	Passing 3-1/2 inch sieve - 97% Passing No. 4 sieve - 50%, maximum Passing No. 200 sieve - maximum 7.5% (washed)	
	Bank-run shell	Passing 3-1/2 inch sieve - 97% Passing No. 4 sieve - 80%, maximum Passing No. 200 sieve - 20%, maximum (washed)	
Shell-Rock		Passing 3-1/2 inch sieve - 97%, minimum Passing No. 4 sieve - 70%, maximum Passing No. 200 sieve - 20%, maximum (washed)	
Cemented Coquina Shell			
RCA		Sieve Size	Percent by Weight Passing
		2 inch	100
		3/4 inch	65 to 95
		3/8 inch	40 to 85
		No. 4	25 to 65
		No. 10	20 to 50
		No. 50	5 to 30
		No. 200	0 to 10

(1) The maximum dimension shall not exceed six inches.
(2) The material shall be well graded down to dust. The fine material shall consist entirely of dust of fracture.

911-4 Exceptions, Additions, and Restrictions.

Approved materials shall not be mixed with other approved or non-approved materials.