

Gulf States Materials, Inc.

Specifications for Item GS-100

Flexible Base Material

1. DESCRIPTION

- 1.1 This construction shall consist of a base course composed of crushed calcium sulfate in accordance with these specifications and shall conform to the dimensions, lines and grades as shown on the plans or as directed by the Engineer.

2. MATERIALS

2.1 Aggregate

The aggregate shall be crushed calcium sulfate. The binder shall be material obtained from the crushing operation and from the fines intermixed with the material.

The crushed material shall consist of hard, durable particles or fragments of calcium sulfate free from objectionable matter and shall not contain an objectionable amount of flat or elongated pieces.

2.2 Physical Requirements

The processed material, when properly sampled and tested by standard laboratory procedures, shall meet the following requirements:

- 2.2.1 The crushed calcium sulfate material shall be within the following gradation:

Screened		Unscreened	
Sieve Size	Percent Retained	Sieve Size	Percent Retained
1 3/4"	-0-	1 3/4"	0-10
7/8"	5-35	No. 4	15-65
3/8"	25-50	No. 40	30-70
No. 4	35-65		
No. 40	55-85		

- 2.2.2 The binder or the portion of the base material passing the No. 40 mesh sieve, shall have a Liquid Limit of not more than 40 ($LL \leq 40$) and a Plasticity Index of not more than 10 ($PI \leq 10$).

- 2.2.3 The crushed aggregate shall have no more than a 20% increase passing the No. 40 mesh sieve when subjected to Wet Ball Mill (Tex-116-E).

- 2.2.4 The processed material, when compacted to 95 percent of the Modified Proctor density (ASTM D 1557), shall have a California Bearing Ratio of not less than 100 ($CBR \geq 100$) after a period of 30 days when tested in general accordance with ASTM D 1883.
- 2.2.5 The Specific Gravity of the processes material shall be a minimum of 1.9 as determined by ASTM C 127.

3. CONSTRUCTION METHODS

3.1 **Preparation of the Subgrade or Existing Base**

The subgrade or existing base course shall be Proof Rolled. Any soft spots, ruts or inadequately compacted areas shall be corrected in accordance with applicable specifications or as directed by the Engineer. Proper compaction and grade shall be accepted by the Engineer prior to placement of the GS-100 base course. Attention should be given to stabilizing the subgrade when excessively plastic or organic soils are encountered. Proper drainage of the subgrade or existing base is required.

When new GS-100 is required to be mixed with existing base, deliver, place, and spread the GS-100 in the required amount per station. Manipulate and thoroughly mix the new GS-100 with existing base to provide a uniform mixture to the specified depth before shaping. Because of the unknown impurities associated with recycled crushed concrete, GSM **does not** recommend the mixing of GS-100 with recycled crushed concrete.

3.2 **Base Course Placement**

The GS-100 shall be delivered to the jobsite in dump trucks with the dump beds thoroughly cleaned of any objectionable matter. Deposit and spread the GS-100 in a uniform layer without segregation. The base shall be spread to a loose depth not greater than 10 inches. Maintain the shape of the course. Control dust by sprinkling as directed. Correct or replace segregated areas as directed.

Place successive base courses and finish courses using the same construction methods required for the first course.

3.3 **Base Course Compacting**

Compact base using any type of roller, or combination of rollers, that meets the production rates and quality requirements of the contract unless otherwise shown or as directed by the Engineer. GSM does not recommend using a vibratory steel wheel roller for more than one complete pass for compaction.

Compact using density control unless otherwise shown on the plans. Multiple lifts are permitted when shown on the plans or approved. Bring each layer to the moisture content directed. When necessary, sprinkle the material to maintain optimum moisture.

Begin rolling longitudinally at the sides and proceed toward the center, overlapping on successive trips by at least one-half the width of the roller unit. On super-elevated curves, begin rolling at the low side and progress toward the high side. Offset alternate trips of the roller.

Operate rollers at a speed between 2 and 6 mph as directed. Compaction shall be complete within 6 hours from the time compaction was started.

Rework, re-compact, and refinish material that fails to meet or that loses required moisture, density, stability, or finish before the next course is placed or the project is accepted. Continue until specification requirements are met.

- a. **Ordinary compaction.** Roll with approved compaction equipment as directed. Correct irregularities, depressions, and weak spots immediately by scarifying the areas affected, adding or removing approved material as required, reshaping, and re-compacting.
- b. **Density Control.** Compact to at least 95% of the maximum dry density determined by the Modified Proctor (ASTM D 1557) or 100% of the maximum dry density determined by Tex-113-E, unless otherwise show on the plans. Maintain moisture during compaction at not less than 1 percentage point below optimum moisture content determined by the applicable density test. Determine the initial moisture content of the material by drying the final product in an oven at a temperature not to exceed 45° C (113° F). The moisture content during field compaction shall be determined by ASTM D 4944-11 ("Speedy Moisture") and report the results to the Engineer, unless otherwise shown on the plans or directed.

3.4 **Finishing**

After compaction has been completed, use a maintainer or subgrade trimmer to clip, skin, or tight-blade the surface to a depth of approximately ¼-inch. Remove loosened material and dispose of it at an approved location. Sealed the clipped surface immediately by rolling with compaction equipment until a smooth surface is attained. Add small increments of water as needed during rolling. Shape and maintain the course and surface in conformity with the typical sections, lines and grades as shown on the plans or a directed.

In areas where surfacing is to be placed, correct grade deviations greater than ¼-inch in sixteen feet measured longitudinally or greater than ¼-inch over the entire width of the cross-section. Correct by loosening, adding, or removing material. Reshape and recompact in accordance with 3.3 above.

3.5 Curing

Cure the finished section until the moisture content is at least 2 percentage points below optimum or as directed before applying the next successive course or prime coat.

4. MEASUREMENT

The GS-100 shall be measured by the ton on certified scales.

5. PAYMENT

The amount of accepted base material measured as specified will be paid for at the unit contract price per ton of "Flexible Base Material, ITEM GS-100". This price shall be full compensation for all labor, materials, equipment, and incidentals necessary to complete the work.