

400 FLEXIBLE PAVEMENT

ITEM 411 - STABILIZED CRUSHED AGGREGATE

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411.01 Description. This work shall consist of a compacted course or courses of crushed aggregate placed in reasonably close conformity with the width, thickness and details specified.

411.02 Materials. Material shall be limestone, crushed gravel, crushed slag, Recycled Portland Cement Concrete (RPCC), Reclaimed Asphalt Concrete Pavement (RACP), or Reclaimed Bituminous Aggregate Base (RBAB).

Open hearth and Basic-oxygen steel slag shall conform to stockpiling and aging requirements of 703.01 and come from approved sources on file at the Laboratory.

RPCC, RACP, and RBAB may be used without soundness and shale testing if the Contractor provides information proving the material meet this specification requirement at the time of original incorporation and proof the material presently meets this specification. The Laboratory may reject any suspect test data and reject any of the above materials because of excessive degradation in the reclaiming of the material.

RPCC, RACP, and RBAB shall come from an approved list on file at the Laboratory. RPCC shall be free of steel.

The gradation and physical characteristics of the material shall be such that it will compact to the satisfaction of the Engineer.

The minimum soundness shall be 15 percent.

Shale shall not exceed 5 percent. Where the major portion of the material in a coarse aggregate, from a source on record at the Laboratory, has shown the characteristics of acquiring a mudlike condition when tested for soundness, it shall be tested for soundness and the maximum loss shall be 5 percent. If gravel is used that portion retained on a No. 4 sieve shall contain no less than 40 percent fractured pieces. These materials shall meet the following grading requirements:

Sieve	Total Percent Passing
1-1/2 inch (37.5 mm)	100
1 inch (25 mm)	75-100
3/4 inch (19 mm)	60-100
3/8 inch (9.5 mm)	35-75
No. 4 (4.75 mm)	30-60
No. 30 (600 μ m)	7-30
No. 200 (75 μ m)	3-13

The fraction of these materials passing a No. 40 sieve (425 μ m) shall have a plasticity index of not more than six. Within the foregoing limits, the gradation and physical characteristics of the material shall be such that it will compact to the satisfaction of the Engineer.

411.03 Construction Methods. Subgrade for the stabilized crushed aggregate shall be thoroughly rolled and compacted to a depth of 12 inches (305 mm) to 100 percent of maximum dry density as determined by AASHTO T 99, Method C.

The crushed aggregate shall be spread upon the prepared subgrade or subbase in layers not to exceed 6 inches (152 mm) compacted thickness and shall be compacted to the density established as satisfactory by the Engineer. When the required compacted depth of stabilized crushed aggregate exceeds 6 inches (152 mm), the material shall be constructed in 2 or more layers of approximately equal thicknesses.

The initial compaction of the material shall be obtained by the use of crawler type tractors, tamping rollers, trench rollers, suitable pneumatic tire equipment or other suitable equipment approved by the Engineer. Final compaction of the surface of the stabilized crushed aggregate shall be obtained by the use of approved pneumatic tire equipment. Compaction shall follow the spreading operation closely to prevent the loss of contained moisture and displacement of material.

When the surface stability of the crushed aggregate cannot be obtained due to lack of fines, additional fines shall be added to the upper portion of the course in an amount sufficient to secure surface stability. In no case, however, shall the quantity of fines added be sufficient to increase the percent passing the No. 200 (75 μ m) sieve to more than 15 percent in the upper portion.

When so ordered by the Engineer, water shall be applied to aid in compaction and prevent segregation of the material. The water shall be added in a manner that will not soften the subgrade.

When the stability of the RACP or RBAB cannot be obtained the Contractor shall perform one of the following at no additional cost to the City:

Apply a 409 seal coat at a rate approved by the Engineer. The Engineer may require a cover aggregate also.

Thoroughly mix the RACP and RBAB with PG64-22 or asphalt emulsion at a rate and by a method approved by the Engineer.

If stability cannot be achieved the Contractor shall remove and replace the material at his own expense.

When so ordered by the Engineer, water shall be applied to aid in compaction and prevent segregation of the material. The water shall be added in a manner that will not soften the subgrade.

411.04 Method of Measurement. The quantity measured shall be the number of cubic yards (cubic meters), computed from plan lines, of approved stabilized crushed aggregate compacted in place. Water added to the material during compaction shall be included in the unit price bid per cubic yard (cubic meter) of stabilized crushed aggregate.

Where the plans provide for the use of material in a variable width or depth of course and the quantity cannot be readily calculated from plan lines, the cubic yards (cubic meters) shall be determined from by converting weight to cubic yards (cubic meters) in accordance with the following table:

Aggregate	Pounds per Cubic Yard (kg/m³)
Crushed stone	3800 (2250)
Crushed gravel	3900 (2300)
Crushed slag, less than 90 lbs. per cu. ft.*	3600 (2150)
Crushed slag, 90 to 100 lbs. per cu. ft.*	4000 (2350)
Crushed slag, more than 100 lbs. per cu. ft.*	4500 (2600)
Slacker aggregate	3400 (2000)

*Based on average dry rodded weights.

Freight bills or certified weigh bills shall be furnished as provided in 109.

411.05 Basis of Payment. Payment for accepted quantities complete in place, including compacting subgrade, hauling, placing and compacting aggregate and for furnishing and applying water, will be made at contract price for:

Item	Unit	Description
411	Cubic Yard (Cubic Meter)	Stabilized Crushed Aggregate