

MS-0450-0004

Driving Surface Aggregate (DSA) and Material Requirements

- I. **DESCRIPTION** — This work is the construction of Driving Surface Aggregate. When placed on subgrade, this work includes the preparation of subgrade as specified in Publication 408, Section 210.
- II. **MATERIAL** — Obtain Material from a source listed in Bulletin 14 if using liquid fuels monies, or from a stockpile that has been tested and approved by a representative of the Center for Dirt and Gravel Road Studies (CDGRS), if using Dirt & Gravel funding.
- A. **Certification.** Certification. MS-447A or Driving Surface Aggregate Certification Form supplied by SCC (State Conservation Commission)
- B. **Aggregate.** Publication 408, Section 703 and as follows:

PASSING SIEVE	MINIMUM	MAXIMUM
37.5 mm (1½ Inch)	100%	
19 mm (¾ Inch)	65%	95%
4.75 mm (#4)	30%	65%
1.18 mm (#16)	15%	30%
75 µm (#200)	10%	15%

Quality Control

Determine the resistance to degradation using the Los Angeles Abrasion test, AASHTO T-96 (ASTM C 131). The loss of mass shall be less than 40%. Existing tests made for and approved by PennDOT will be accepted. Testing will be performed by an independent lab at the owner's expense.

Aggregate will be within the range of pH 6 – pH 12.45 as measured by EPA 9045C. Testing will be performed by an independent lab at the owner's expense.

Derive 95% of the aggregate mix from the crushing of clean rock material. If 10% of the aggregate mix does not pass the #200 sieve, utilize up to 5% external source material approved by the engineer to the mix. Do not add clay or silt. Determine the amount of particles less than # 200 sieve size by using the washing procedures specified in PTM No. 100. Lime kiln Dust and cement Kiln Dust may be added to DSA to account for up to 50% of the fines passing the #200 sieve.

III. CONSTRUCTION —

- A. **Equipment: Spreaders.** Publication 408, Section 320.3(a)3, Paver preferred
Compaction Equipment. Publication 408, Section 108.05(c) 3.a, 3.b, 3.e, 4.
- B. **General.** Prepare the subgrade as specified in Publication 408, Section 210 and as follows, before placing (DSA). Do not place (DSA) material on soft, muddy, or frozen areas.
- Correct unsatisfactory subgrade conditions developing ahead of the paving operations by scarifying, reshaping, and recompacting, or by replacing the subgrade. The subgrade must be crowned to ½ to ¾ inch per foot, flat "A" cross profile. This may be precluded by the absence of sufficient material such as occurs when bedrock is exposed.
- When required, evenly place separation fabric according to manufacturer's recommendations, after scarification.
- C. **Mixing.** Use acceptable methods to mix (DSA) and water to obtain optimum moisture content for the mix as determined by PTM No. 106 before delivery to the project. Use material containing optimum moisture to prevent segregation during stockpiling, hauling, placing, and to minimize water added during compaction. Maintain (DSA) aggregate at optimum moisture from before placement to compaction. AASHTO T-99, ASTM D698, or PA Test Method No. 106.

D. Transport. Use tarps to cover 100% of the load's exposed surface from the time of loading until immediately before placement.

E. Placement. Place the (DSA) on the subgrade using a paver without causing segregation.

Place (DSA) to a minimum un-compacted depth of 6 inches and a maximum un-compacted depth of 8 inches in one lift. The crown or side slope must range from $\frac{1}{2}$ to $\frac{3}{4}$ inch per foot, for road widths up to 20 feet.

Material is to be delivered and placed at optimum moisture content +/- 1% as determined for that particular source. The optimum percentage moisture is to be determined using Proctor Test ASTM D698, procedure C, standard.

F. Compaction and Density. Compact DSA to between 95% and 100% of the maximum dry-mass (dry-weight) density, determined according to PTM No. 106, Method B. At locations directed by the owner, determine the in-place density for each 2500 m² (3,000 square yards), of each layer according to AASHTO T 191 or T 310.

Beginning on the lower or berm side of the crown, begin rolling and work to the top of the crown by overlapping the successive longitudinal passes. Utilize static mode on the initial and downgrade passes. Do not run the roller lengthwise directly over the crown. Compact to specified density requirements, using equipment specified in Publication 408, Section 108.05(c) 3.a, 3.b, 3.e, or 4.

G. Incidental. To fill driving surface areas outside the specified width, such as driveway entrances, turnouts and wider passing lanes, add additional new DSA material to fill to the same depth specified throughout the project. If berm edges do not exist to hold the fill, then place, taper and compact sufficient material to form protective edge berms.

H. Plasticity Index. Material must not exceed Plasticity Index (PI) rating of 6. The laboratory test required for these results is ASTM-D4318-Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

IV. MEASUREMENT AND PAYMENT — Ton