



SECTION 32 15 40
CRUSHER FINES SURFACING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. The WORK to be performed includes the preparation, stockpiling, hauling, placing, and compacting of crusher fines as indicated on the DRAWINGS and specified herein.

1.02 RELATED SECTIONS

- A. The following is a list of SPECIFICATIONS, which may be related to this section:

1. Section 01 57 19, Temporary Environmental Controls
2. Section 31 23 00, Excavation and Fill.
3. Section 31 25 00, Erosion and Sedimentation Controls
4. Section 32 11 23, Aggregate Base Course

1.03 REFERENCES

- A. The following is a list of standards, which may be referenced in this section:

1. American Association of State Highway and Transportation Officials (AASHTO):
 - a. M147, Standard Specification for Materials for Aggregate and Soil Aggregate Subbase, Base, and Surface Courses.
 - b. T11, Standard Method of Test for Materials Finer Than 75 μ m (No. 200) Sieve in Mineral Aggregates by Washing.
 - c. T27, Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates.
 - d. T89, Standard Specification for Determining the Liquid Limit of Soils.
 - e. T90, Standard Specification for Determining the Plastic Limit and Plasticity Index of Soils.
 - f. T96, Standard Specification for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - g. T99, Standard Specification for the Moisture-Density Relations of Soils Using a 2.5 kg (5.5 pound) Rammer and a 305 mm (12 in) Drop.



- h. T180, Standard Specification for Moisture-Density Relations of Soils Using a 4.54 kg (10-lb) Rammer and a 457 mm (18-in) Drop.
 - i. T190, Standard Specification for Resistance R-Value and Expansion Pressure of Compacted Soils.
 - j. T265, Standard Method of Test for Laboratory Determination of Moisture Content of Soils.
 - k. T310, Standard Specification for In-Place Density and Moisture Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
2. ASTM International (ASTM):
- a. C136, Standard Test Method for Sieve Analysis of fine and Coarse Aggregates
 - b. D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft³ (600 kN-m/m³)).
 - c. D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³(2,700 kN-m/m³)).
 - d. C88, Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate.
 - e. D1883, Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.
 - f. D2419, Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
 - g. D2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)
 - h. D4791, Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate

1.04 SUBMITTALS

- A. CONTRACTOR shall cooperate with ENGINEER in obtaining and providing samples of all specified materials.
- B. CONTRACTOR shall submit certification from the supplier certifying the crusher fines, or approved equal, meets the requirements of this Specification.
- C. CONTRACTOR shall submit certified laboratory test certificates for all items required in this section.
- D. CONTRACTOR shall submit samples and or shop drawings for the following



1. Aggregate strength
2. Aggregate color.

E. CONTRACTOR shall submit the manufacturer, Material Safety Data Sheet (MSDS), Name, Trade Name, trademark, and conformance to state law of all herbicides or other chemicals.

1.05 QUALITY ASSURANCE

- A. Initial testing required to determine compliance with the requirements for the work of this section will be paid for by the OWNER. Should any tests fail, the Contractor shall pay for all further testing necessary in that area to achieve requirements.
- B. General Warranty: The special warranty specified in this article shall not deprive the OWNER of other rights the OWNER may have under other provisions of the CONTRACT DOCUMENTS
- C. Special Warranty: Submit a written warranty executed by INSTALLER agreeing to repair or replace components of crusher fines surface, or approved equal that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, the following:
 1. Premature wear and tear.
 2. Failure of system to meet performance requirements.
- D. Warranty Period: CONTRACTOR shall provide warranty for the performance of the product. CONTRACTOR shall warranty installation of product for the time of one year from completion and acceptance of the WORK by the OWNER or OWNERs representative.

PART 2 PRODUCTS

2.01 AGGREGATE BASE COURSE

- A. Aggregate Base Course shall be furnished and installed as required and specified under Section 31 23 00, Earthwork and Trenching and Section 32 11 23 Aggregate Base Course to a minimum 6" compacted depth.

2.02 HERBICIDE

- A. Herbicide shall be Casoron 4G granular weed and grass killer or approved equal.

2.03 CRUSHER FINES

- A. **Aggregates:** Crushed stone shall consist of inert materials that are hard, durable, with stone free from surface coatings and deleterious materials.
- B. R-value minimum of 70 determined by ASTM D 2488 Methodology (R-value is a measure of wear resistance).
- C. **Sand equivalent:** - an engineering measurement of the proportion of sand to silt and clay will stay at a range of 30-55, as determined by ASTM D 2419 methodology.



D. Gradations:

1. Gradation shall meet the gradation below or approved equal as approved by ENGINEER.

Standard US Sieve Size	Percentage Passing by Weight
½ inch	100
¾ inch	100
No. 4	65-80
No. 8	48-63
No. 16	40-49
No. 30	30-40
No. 50	20-27
No. 100	10-18
No. 200	10-12

Note: Materials shall consist of bank or pit run material.

PART 3 EXECUTION

3.01 GENERAL

A. Equipment:

1. Equipment shall be capable of performing the WORK as described in this SPECIFICATION. Equipment that is inadequate to obtain the results specified shall be replaced or supplemented as required to meet the requirements of this SPECIFICATION. Any equipment that is used in an improper manner may be cause for rejection of the WORK if in the opinion of ENGINEER the WORK fails to meet the requirements of this SPECIFICATION.
2. Equipment used for compaction shall be the rolling type, vibratory type, or combination of both types, and shall be of sufficient capacity to meet the compaction requirements herein.

3.02 LAYOUT OF WORK

- A. The Contractor shall stake or otherwise delineate the proposed alignment of the path according to the drawings. Obtain approval of the OWNER prior to proceeding with excavation and subgrade preparation.
- B. Cut/fill bench for the crusher fines as shown on the drawings.



- C. Cut existing grade to a minimum of seven (7) inches deep or as shown on the drawings within limits of paving. Wet and roll subgrade to obtain a firm, uniform, compacted subgrade. Keep cut sides vertical and true to line horizontally with a uniform width.

3.03 WEED CONTROL

A. Herbicide/Chemical Applications

1. Apply Casoron 4G granular weed and grass killer or approved equal to prepared subgrade per manufacturer's recommendations.
2. Apply Casoron 4G granular weed and grass killer at a rate of 250 - 300 pounds per acre. Apply approved equal at manufacturers recommended rate.
3. Herbicides or other chemicals shall be applied using well-maintained equipment by individuals working for CONTRACTOR who are properly licensed by any State and/or Federal Agency having jurisdiction over such applications. It shall be the responsibility of the CONTRACTOR to be knowledgeable of any and all current laws and regulations pertaining to herbicide and other chemical applications, and to notify OWNER or OWNERs Representative immediately if any request for herbicide or chemical applications by OWNER or OWNERs Representative is inappropriate as they pertain to these laws and regulations.
4. Herbicides or other chemicals shall not be applied during periods when wind or other physical conditions cause the herbicides or chemicals to be transported a distance of more than five (5) feet from the immediate area where they are being placed. It shall be the responsibility of the CONTRACTOR to stop WORK immediately and notify the OWNER or OWNERs Representative if any weather or other physical condition exists, which would make the application of herbicides or other chemicals inappropriate.
5. All herbicides or other chemicals used shall be applied at a rate and strength, and by the method recommended by the manufacturer of the product being used.

3.04 SUB-GRADE PREPARATION

- A. Aggregate Base Course shall be a minimum of 3" thick compacted Class 6 Base Course as Specified in Section 32 11 23, installed at 95% relative compaction on top of subgrade.
- B. Make any corrections necessary to base furnished and installed under Section 31 23 00, Earthwork and Trenching and Section 32 11 23 Aggregate Base Course to bring Class 6 Aggregate Base Course to the sections and elevations shown on the DRAWINGS.
- C. Pre-soak Class 6 Aggregate Base Course with water prior to installing crusher fines or approved equal as needed to compact Class 6 aggregate base course.



- D. Make sure proper drainage is available to ensure no standing water on the surface or adjacent to crusher fines including downspouts, when placed under roof overhang.

3.05 PLACEMENT AND COMPACTION

- A. The CONTRACTOR is responsible for controlling placement of the material; no additional compensation will be made for material placement in excess of the specified thickness or width.
- B. Do not install crusher fines material during rain or snow. Do not install crusher fines on sub-grade that has standing water.
- C. If the required compacted depth of the crusher fines exceeds 6 inches (6"), place course in two or more layers of approximately equal thickness. The minimum thickness of any one layer shall be four inches (4").
- D. Add water to $\pm 2\%$ wet of optimum moisture content. Use roller or mechanical hand tamper for compaction. Compact to 95% Standard Proctor Density (ASTM D698-70) to a uniform thickness.
 - 1. Use plate compactor on edges and hard to get areas.
 - 2. Loose material shall not be present on final surface.
- E. Top of path shall be flush with adjacent grade. Remove any excess gravel on edges. Ensure that there are no low spots, high spots, or standing water on or adjacent to path.

3.06 SURFACE FINISHING

- A. Use a smooth steel wheel roller for the final rolling of top surface of Crusher Fines. Water surface and evenly spread loose stones before final rolling. Make minimum of two complete passes over area to embed stones. Correct soft spots developed during rolling.
- B. Compacted surface shall be smooth and free from waves and other irregularities. Unsatisfactory portions of base course shall be torn up, reworked, re-laid, and rerolled at no additional expense to the Owner.

3.07 INSPECTION

- A. Finished surface shall be uniform and solid, with no evidence of chipping or cracking.
- B. Compacted paving material shall be firm to the full depth of pavement with no soft areas.
- C. Loose material shall not be present on the surface
- D. No ruts shall be visible on the surface of the pavement.
- E. Pavement sections that do not meet this specification, shall be repaired or replaced at the CONTRACTOR's expense.



3.08 REPAIRS

- A. Excavate damaged area to depth of crusher fines paving material and square off sidewalls.
- B. If area is dry, moisten damaged portion lightly and scarify.
- C. Apply crusher fines to excavated area to finished grade.
- D. Compact with an 8” to 10” hand tamp or 1000 lb. roller.
- E. Repaired surface shall be smooth and free from waves and other irregularities. Unsatisfactory portions of base course shall be torn up, reworked, re-laid, and rerolled at no additional expense to the Owner.

END OF SECTION



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