

307.00 ROCK OR AGGREGATE SURFACING (SSHC Section 310)

307.01 DESCRIPTION

This work consists of placing aggregate for a wearing course on an approved roadbed or on a newly built earth grade or on detours temporarily in use during construction. The aggregate surfacing shall be spread to meet the requirements shown in the plans or as directed by the Project Manager.

307.02 MATERIAL REQUIREMENTS

- I. Setting Up the Field Testing Laboratory - Usually aggregate tests on construction projects are carried on in conjunction with other phases of the contract work and in that case the inspector may use the testing facilities provided for that work. The following equipment should be available to the aggregate inspector:

- 1 - 15 m (50 foot) tape
- 1 - Handaxe
- 1 - Grain Scale and pan or equivalent
- 1 - Set of sieves, 4.75 mm (No. 4) and 2.00 mm (No. 10) (including pan and lid)
- 1 - Shaker
- 1 - Splitter
- 2 - Aggregate drying pans
- 1 - Gasoline stove or hotplate
- 1 - Shovel or aggregate probe

- II. Sampling and Testing - Aggregates shall be sampled, tested or submitted for testing in accordance with the Materials and Tests "*Materials Sampling Guide*". The inspector should read and become familiar with *SSHC Sections 310 and 1033*, and the special provisions of the contract.

The inspector will be responsible for sampling and testing of aggregate on the project. In some cases, when aggregate is supplied by a large producer, the District Engineer will have an inspector available at the pit site to test the material before it is shipped. However, even though some testing is done at the source, testing will be required on the project in order to calculate the payment to the contractor (*SSHC Subsection 310.05*).

307.03 EQUIPMENT

The inspector should inspect the contractor's equipment before starting. Each truck should be carefully measured and the capacity computed by the inspector. These capacities, truck numbers, etc., should be recorded in a field notebook. The measurement and capacities are reported to the District Engineer on a DR Form 101. (A sample of DR Form 101 is included on *Appendix 1*). For additional information in regard to the measurement of trucks, (see Subsection 103.04 in this manual.)

The specifications provide that the contractor shall secure all permits and licenses, pay all charges and fees, and give all notices necessary and incident to the due and lawful

prosecution of the work. District Offices have current copies of the laws and load limits and questions concerning legal loads should be directed to the District Offices.

The Project Manager and inspector shall also be familiar with and see that the contractor adheres to the provisions of *SSHC Subsection 105.11*, Restrictions on Moving and Use of Heavy Equipment.

The load capacity for which the truck is licensed is indicated on a sticker pasted on the license plate and should be checked against the license certificate carried in the cab. Mass capacity will vary according to the number of single or tandem axles and will be specified for the truck's gross mass.

All trucks used on the project in connection with the performance of the work are required to be licensed in Nebraska regardless of the fact that they may be properly licensed in some other state. Trucks used only in hauling equipment or materials from outside the state to the project are covered by reciprocity and may not be required to be licensed in Nebraska.

Violations should be called to the contractor's attention. In the event that the contractor does not take steps to comply, the Project Manager shall immediately advise the District Engineer by letter with a copy to the contractor. Letters reporting violations shall include the name and address of the owner, make, type and license numbers of the vehicles and an explanation of the violation involved. This information will be referred to the proper authorities for investigation.

307.04 CONSTRUCTION METHODS

Hauling and Distributing Materials

- I. Hauling Materials. No more than two different truck box capacities will be permitted unless approved by the Project Manager. No hauling shall be permitted when weather or roads are such that hauling causes excessive rutting. When aggregate for detours is required, it is advisable to go over the detour road with the District Construction Engineer to see what road defects need correction before the aggregate is placed.
- II. Staking for the Distribution of Materials - In order that the contractor may know where on the road to place aggregate, stakes should be set along the shoulder which is to receive the aggregate at the load distance spacing. If it should occur that it is not desirable to place aggregate continuously, two stakes driven vertical should be set at the beginning and ending of each series of loads, two stakes driven to form a "X" may be used to mark each tenth load. One load should be spread between each pair of stakes, and instructions should be issued to the contractor to leave a small gap between loads so that you may be sure that all loads are placed as staked. When trucks of more than one capacity are used, stakes shall be set for each size in sections rather than intermingling the different sizes. One size usually takes the long haul and the other the short. Consult the plan for the width and depth of the aggregate to be placed.

When placing aggregate on a newly graded project, the number of loads staked in any given distance shall be checked against the project station reference stakes. When placing aggregate on an unreferenced detour, the number of loads per kilometer (mile) staked should be checked against the number of cubic meters (cubic yards) required per kilometer (mile).

- III. Inspection Costs - In order to avoid excessive inspection costs, particularly on other than high production operations, it may be necessary to control the placement and inspection operations as follows:
1. When a single aggregate, or separate aggregate materials are being deposited on both long and short haul sections, or on separate sections of the project, one inspector located at the short haul placement point may observe and inspect the loads destined for the other, or longer haul sections.
 2. The inspector staking and inspecting the delivery of the aggregates may also take necessary material samples and check the gradation of the aggregate.
 3. If the material placement rate is so low as to create uneconomical and wasteful inspection costs, the headquarters or District Office should be contacted for special instructions.

307.05 METHOD OF MEASUREMENT

Rock or aggregate for surfacing will be measured by the cubic meter (cubic yard) in trucks with "struck loads". This measurement will be made at the point of delivery. Refer to Section 105 of this manual for a more complete discussion.

307.06 BASIS OF PAYMENT (SSHC Subsection 310.05)

This material is now paid for according to SSHC Table 310.01. If there is a deduction it will be computed and deducted from the contract unit price and that lot must be shown as a contingency item on the estimate with the computed unit price.

Maintenance of temporary surfacing is paid for with equipment rental pay items.

CONVERSION FACTORS	
<u>To Convert Tons of Material to Cubic Yards</u>	<u>Divide By</u>
Crushed Sand Gravel	1.20 Tn/CY
Fine Aggregate for Concrete	1.30 Tn/CY
Coarse Aggregate (Limestone) for Concrete	1.25 Tn/CY
Sand-Gravel for Concrete; Surfacing Gravel or Crushed Rock	1.35 Tn/CY
Crushed Rock for Base Course	1.25 Tn/CY
Crushed Rock for Base Course Screenings	1.25 Tn/CY
Mineral Filler and Soil Binder	0.85 Tn/CY
<u>To Convert Megagrams of Material to Cubic Meters</u>	<u>Divide By</u>
Crushed Sand Gravel	1.30 Mg/m ³
Fine Aggregate for Concrete	1.54 Mg/m ³
Coarse Aggregate (Limestone) for Concrete	1.48 Mg/m ³
Sand-Gravel for Concrete; Surfacing Gravel or Crushed Rock	1.60 Mg/m ³
Crushed Rock for Base Course	1.48 Mg/m ³
Crushed Rock for Base Course Screenings	1.48 Mg/m ³
Mineral Filler and Soil Binder	1.06 Mg/m ³

Road Gravel Requirements

English Version

Width of Road- way	Sq. Yds.	1/2" Depth			3/4" Depth			1" Depth			1 1/2" Depth			2" Depth			2 1/2" Depth			3" Depth		
		1 cu.yd.	Per	Cu. Yds.	1 cu.yd.	Per	Cu. Yds.	1 cu.yd.	Per	Cu. Yds.	1 cu.yd.	Per	Cu. Yds.	1 cu.yd.	Per	Cu. Yds.	1 cu.yd.	Per	Cu. Yds.	1 cu.yd.	Per	Cu. Yds.
	Per Mile	Covers Lin. Ft.	Per Sta.	Per Mile	Covers Lin. Ft.	Per Sta.	Per Mile	Covers Lin. Ft.	Per Sta.	Per Mile	Covers Lin. Ft.	Per Sta.	Per Mile	Covers Lin. Ft.	Per Sta.	Per Mile	Covers Lin. Ft.	Per Sta.	Per Mile	Covers Lin. Ft.	Per Sta.	Per Mile
9'	5280.0	72.00	1.39	73.33	48.00	2.08	110.00	36.00	2.78	146.67	24.00	4.17	220.00	18.00	5.56	293.33	14.40	6.94	366.67	12.00	8.33	440.00
10'	5866.7	64.80	1.54	81.48	43.20	2.31	122.22	32.40	3.09	162.96	21.60	4.63	244.44	16.20	6.17	325.93	12.96	7.72	407.41	10.80	9.26	488.89
11'	6453.3	58.91	1.70	89.63	39.27	2.55	134.44	29.45	3.40	179.26	19.64	5.09	268.89	14.73	6.79	358.52	11.78	8.49	448.15	9.82	10.19	537.78
12'	7040.0	54.00	1.85	97.78	36.00	2.78	146.67	27.00	3.70	195.56	18.00	5.56	293.33	13.50	7.41	391.11	10.80	9.26	488.89	9.00	11.11	586.67
13'	7626.7	49.85	2.01	105.93	33.23	3.01	158.89	24.92	4.01	211.85	16.62	6.02	317.78	12.46	8.02	423.70	9.97	10.03	529.63	8.31	12.04	635.56
14'	8213.3	46.29	2.16	114.07	30.86	3.24	171.11	23.14	4.32	228.15	15.43	6.48	342.22	11.57	8.64	456.30	9.26	10.80	570.37	7.72	12.96	684.44
15'	8800.0	43.20	2.31	122.22	28.80	3.47	183.33	21.60	4.63	244.44	14.40	6.94	366.67	10.80	9.26	488.89	8.64	11.57	611.11	7.20	13.89	733.33
16'	9386.7	40.50	2.47	130.37	27.00	3.70	195.56	20.25	4.94	260.74	13.50	7.41	391.11	10.13	9.88	521.48	8.10	12.35	651.85	6.75	14.81	782.22
17'	9973.3	38.12	2.62	138.52	25.41	3.94	207.78	19.06	5.25	277.04	12.71	7.87	415.56	9.53	10.49	554.07	7.62	13.12	692.59	6.35	15.74	831.11
18'	10560.0	36.00	2.78	146.67	24.00	4.17	220.00	18.00	5.56	293.33	12.00	8.33	440.00	9.00	11.11	586.67	7.20	13.89	733.33	6.00	16.67	880.00
19'	11146.7	34.11	2.93	154.81	22.74	4.40	232.22	17.05	5.86	309.63	11.37	8.80	464.44	8.53	11.73	619.26	6.82	14.66	774.07	5.69	17.59	928.89
20'	11733.3	32.40	3.09	162.96	21.60	4.63	244.44	16.20	6.17	325.93	10.80	9.26	488.89	8.10	12.35	651.85	6.48	15.43	814.81	5.40	18.52	977.78
21'	12320.0	30.86	3.24	171.11	20.57	4.86	256.67	15.43	6.48	342.22	10.29	9.72	513.33	7.72	12.96	684.44	6.17	16.20	855.56	5.14	19.44	1026.67
22'	12906.7	29.45	3.40	179.26	19.63	5.09	268.89	14.73	6.79	358.52	9.82	10.19	537.78	7.36	13.58	717.04	5.89	16.98	896.30	4.91	20.37	1075.56
23'	13493.3	28.17	3.55	187.41	18.78	5.32	281.11	14.09	7.10	374.81	9.39	10.65	562.22	7.04	14.20	749.63	5.63	17.75	937.04	4.70	21.30	1124.44
24'	14080.0	27.00	3.70	195.56	18.00	5.56	293.33	13.50	7.41	391.11	9.00	11.11	586.67	6.75	14.81	782.22	5.40	18.52	977.78	4.50	22.22	1173.33
25'	14666.7	25.92	3.86	203.70	17.28	5.79	305.56	12.96	7.72	407.41	8.64	11.57	611.11	6.48	15.43	814.81	5.18	19.29	1018.52	4.32	23.15	1222.22
26'	15253.3	24.92	4.01	211.85	16.61	6.02	317.78	12.46	8.02	423.70	8.31	12.04	635.56	6.23	16.05	847.41	4.98	20.06	1059.26	4.15	24.07	1271.11
27'	15840.0	24.00	4.17	220.00	16.00	6.25	330.00	12.00	8.33	440.00	8.00	12.50	660.00	6.00	16.67	880.00	4.80	20.83	1100.00	4.00	25.00	1320.00
28'	16426.7	23.14	4.32	228.15	15.43	6.48	342.22	11.57	8.64	456.30	7.71	12.96	684.44	5.79	17.28	912.59	4.63	21.60	1140.74	3.86	25.93	1368.89
29'	17013.3	22.34	4.48	236.30	14.89	6.71	354.44	11.17	8.95	472.59	7.45	13.43	708.89	5.59	17.90	945.19	4.47	22.38	1181.48	3.73	26.85	1417.78
30'	17600.0	21.60	4.63	244.44	14.40	6.94	366.67	10.80	9.26	488.89	7.20	13.89	733.33	5.40	18.52	977.78	4.32	23.15	1222.22	3.60	27.78	1466.67

CHAPTER NOTES:

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