

## BASE COURSES

### SECTION 200 LIMEROCK BASE

#### **200-1 Description.**

Construct a base composed of limerock.

#### **200-2 Materials.**

Meet the requirements of Section 911. The Contractor may use more than one source of limerock on a single Contract provided that a single source is used throughout the entire width and depth of a section of base. Obtain approval from the Engineer before placing material from more than one source. Place material to ensure total thickness single source integrity at any station location of the base. Intermittent placement or "Blending" of sources is not permitted. Limerock may be referred to hereinafter as "rock".

Do not use any of the existing limerock base that is removed to construct the new limerock base.

#### **200-3 Equipment.**

Use mechanical rock spreaders, equipped with a device that strikes off the rock uniformly to laying thickness, capable of producing even distribution. For crossovers, intersections and ramp areas; roadway widths of 20 feet [6 m] or less; the main roadway area when forms are used and any other areas where the use of a mechanical spreader is not practicable; the Contractor may spread the rock using bulldozers or blade graders.

#### **200-4 Transporting Limerock.**

Transport the limerock to its point of use, over rock previously placed, if practicable, and dump it on the end of the preceding spread. Hauling and dumping on the subgrade will be permitted only when, in the Engineer's opinion, these operations will not be detrimental to the subgrade.

#### **200-5 Spreading Limerock.**

**200-5.1 Method of Spreading:** Spread the rock uniformly. Remove all segregated areas of fine or coarse rock and replace them with properly graded rock.

**200-5.2 Number of Courses:** When the specified compacted thickness of the base is greater than 6 inches [150 mm], construct the base in multiple courses of equal thickness. Individual courses shall not be less than 3 inches [75 mm]. The thickness of the first course may be increased to bear the weight of the construction equipment without disturbing the subgrade.

If, through field tests, the Contractor can demonstrate that the compaction equipment can achieve density for the full depth of a thicker lift, and if approved by the Engineer, the base may be constructed in successive courses of not more than 8 inches [200 mm] compacted thickness.

The Engineer's approval will be based on results of a test section constructed using the Contractor's specified compactive effort. Approval requires the compactive effort pass a minimum of five density tests with no failing tests. Construct a test section between 300 feet [90 m] and 1,000 feet [300 m] in length, full width. At each test site, the bottom 6 inches [150 mm] must be tested and pass. Remove the materials above the bottom 6 inches [150 mm], at no expense to the Department. The minimum density required on the thicker lift will be the average of the five results obtained on the thick lift in the passing test section. Maintain the exposed surface as close to "undisturbed" as possible; no further compaction will be permitted during the test preparation. If unable to achieve the required density, remove and replace or repair the test section to comply with the specifications at no additional expense to the Department.

Once approved, a change in the source of base material will require the construction of a new test section. The compactive effort will not be allowed to change once the test section is approved. The Engineer will periodically verify the density of the bottom 6 inches [150 mm] during thick lift operations.

The Department may terminate the use of thick lift construction and have the Contractor revert to the 6 inch [150 mm] maximum lift thickness if satisfactory results are not being achieved.

**200-5.3 Limerock Base for Shoulder Pavement:** Unless otherwise permitted, complete all limerock base shoulder construction at any particular location before placing the final course of pavement on the traveled roadway. When dumping material for the construction of a limerock base on the shoulders, do not allow material capable of scarring or contaminating the pavement surface on the adjacent pavement. Immediately sweep off any limerock material that is deposited on the surface course.

## **200-6 Compacting and Finishing Base.**

### **200-6.1 General:**

**200-6.1.1 Single Course Base:** After spreading, scarify the entire surface, then shape the base to produce the required grade and cross-section after compaction.

**200-6.1.2 Multiple Course Base:** Clean the first course of foreign material, then blade and bring it to a surface cross-section approximately parallel to the finished base. Before spreading any material for the upper courses, allow the Engineer to make density tests for the lower courses to determine that the required compaction has been obtained. After spreading the material for the top course, finish and shape its surface to produce the required grade and cross-section, free of scabs and laminations, after compaction.

**200-6.2 Moisture Content:** When the material does not have the proper moisture content to ensure the required density, wet or dry it as required. When adding water, uniformly mix it in by disking to the full depth of the course that is being compacted. During wetting or drying operations, manipulate, as a unit, the entire width and depth of the course that is being compacted.

**200-6.3 Density Requirements:** When proper moisture conditions are attained, compact the material to not less than 98% of maximum density determined by AASHTO T 180. Compact the limerock base for shoulder pavement to not less than 95% of the maximum density determined under AASHTO T 180.

**200-6.4 Density Tests:** The Engineer will perform at least three density determinations on each day's final compaction operations on each course, and at more frequent intervals, if deemed necessary.

During final compacting operations, blade any areas necessary to obtain the true grade and cross-section before making the Engineer the density tests on the finished base.

### **200-6.5 Correction of Defects:**

**200-6.5.1 Contamination of Base Material:** If, at any time, the subgrade material becomes mixed with the base course material, dig out and remove the mixture, and reshape and compact the subgrade. Then replace the materials removed with clean base material, and shape and compact as specified above. Perform this work at no expense to the Department.

**200-6.5.2 Cracks and Checks:** If cracks or checks appear in the base, either before or after priming, which, in the opinion of the Engineer, would impair the structural efficiency of the base, remove the cracks or checks by rescarifying, reshaping, adding base material where necessary, and recompacting.

**200-6.6 Compaction of Widening Strips:** Where base construction consists of widening strips and the trench width is not sufficient to permit use of standard base compaction equipment, compact the base using vibratory compactors, trench rollers or other special equipment which will achieve the density requirements specified herein.

When multiple course base construction is required, compact each course prior to spreading material for the overlaying course.

## **200-7 Testing Surface.**

Check the finished surface of the base course with a template cut to the required crown and with a 15 foot [4.572 m] straightedge laid parallel to the centerline of the road. Correct all irregularities greater than 1/4 inch [6 mm] to the satisfaction of the Engineer by scarifying and removing or adding rock as required, and recompact the entire area as specified hereinbefore.

## **200-8 Priming and Maintaining.**

**200-8.1 Priming:** Apply the prime coat only when the base meets the specified density requirements and when the moisture content in the top half of the base does not exceed 90% of the optimum moisture of the base material. At the time of priming, ensure that the base is firm, unyielding and in such condition that no undue distortion will occur.

**200-8.2 Maintaining:** Maintain the true crown and template, with no rutting or other distortion, while applying the surface course.

## **200-9 Thickness Requirements.**

Meet the requirements of 285-6.

## **200-10 Calculations for Average Thickness of Base.**

Calculations for determining the average thickness of base will be made in accordance with 285-7.

## **200-11 Method of Measurement.**

**200-11.1 General:** The quantity to be paid for will be the plan quantity, adjusted as specified below.

**200-11.2 Authorized Normal Thickness Base:** The surface area of authorized normal thickness base to be adjusted will be the plan quantity as specified above, omitting any areas not allowed for payment under the provisions of 200-9 and omitting areas which are to be included for payment under 200-11.3. The adjustment shall be made by adding or deducting, as appropriate, the area of base represented by the difference between the calculated average thickness, determined as provided in 200-10, and the specified normal thickness, converted to equivalent square yards [square meters] of normal thickness base.

**200-11.3 Authorized Variable Thickness Base:** Where the base is constructed to a compacted thickness other than the normal thickness as shown on the typical section in the plans, as specified on the plans or ordered by the Engineer for providing additional depths at culverts or bridges, or for providing transitions to connecting pavements, the volume of such authorized variable thickness compacted base will be calculated from authorized lines and grades, or by other methods selected by the Engineer, converted to equivalent square yards [square meters] of normal thickness base for payment.

## **200-12 Basis of Payment.**

Price and payment will be full compensation for all the work specified in this Section, including correcting all defective surface and deficient thickness, removing cracks and checks as provided in 200-6.5.2, and the additional limerock required for crack elimination.

Payment shall be made under:

Item No. 285-7-	Optional Base - per square yard.
Item No. 2285-7-	Optional Base - per square meter.