

DIVISION 300 BASES AND GRANULAR SURFACES

SECTION 301
LIME TREATED SUBGRADE

301.01 GENERAL (a) Control of Materials. As with all materials incorporated into a project, the Resident Engineer is responsible for obtaining applicable certifications and Contractor test results for this item. Samples of soil and lime must be submitted to the Materials Division 30 days (minimum) prior to beginning the work so they may determine and specify the exact percentage of lime to be used. Additional information on frequency and testing of materials is found in the *Manual of Field Sampling and Testing Procedures*.

A sample of the water should be submitted to the Materials Division for testing if the water is not from a public water supply.

If a certification stating that the lime to be used conforms to AASHTO M 216 does not accompany its shipment or if the producer is not shown on the QPL, the lime must be tested and approved prior to use.

(b) Quality Control and Acceptance. The Contractor is responsible for determining the maximum laboratory density, the optimum moisture content, the in-place density and in-place moisture content. Information on frequencies and testing procedures are contained in the *Manual of Field Sampling and Testing Procedures* and in Subsection 301.07 of the Standard Specifications.

The Department will perform verification testing at the minimum frequency shown in the *Manual of Field Sampling and Testing Procedures*. Refer to *Sections 106 and 210.01(a)* of this Manual for additional information on acceptance and verification testing.

(c) Soundings. The Resident Engineer will take soundings of the compacted material as part of the inspection process. As a minimum, soundings shall be taken at the rate specified in the *Manual of Field Sampling and Testing Procedures*. The soundings are to be recorded and retained in the Resident Engineer's project files.

(d) Verification of Line and Grade. The responsibility for computation of planned grades and setting sufficient stakes to provide control of the work is the same as described in *Subsection 210.01(b)* of this Manual. In addition, it is the responsibility of the Resident Engineer to check the finished subgrade to verify compliance with the lines and grades staked. This is normally accomplished by "stringlining" the completed subgrade.

(e) Seasonal and Temperature Limitations. The minimum temperature for application of lime is 50°F (10°C). Application of lime must cease by a date in October that will give reasonable assurance that the entire operation will be complete by October 31. Operations shall not commence prior to April 1.

301.02 METHOD OF MEASUREMENT. This work includes the pay items: "Processing Lime Treated Subgrade" and one of the following pay items: "Quicklime

(slurry) in Treated Subgrade”, “Quicklime (dry) in Treated Subgrade”, or “Hydrated Lime in Treated Subgrade”. Form 19-162 (19-162 m), "Daily Soil Cement/Lime Base Report" shall be used to document the measurements. (See *Appendix III*.) The computerized ETicket System (Refer to *Subsection 109.01(c)* of this Manual.) may be used to document the weight of lime in lieu of using the top portion of Form 19-162 or 19-162m (the blanks for truck number, gross, tare, and net weights). Forms 19-162 and 19-162m (metric) are available on the Construction drive of the LAN (CSD4:\forms\f19_162.dot and f19_162m.dot).

(a) Processing Lime Treated Subgrade. This item is measured by the Square Yard (Square Meter). The measurements (and computation of area) shall be entered on or attached to Form 19-162 (for metric projects, Form 19-162m).

(b) Lime. Lime is paid for by the ton (metric ton), weighed in trucks. The weights are to be recorded either on Form 19-162 (19-162m) or on the computerized Daily Report System.

301.03 DOCUMENTATION - CURRENT AND FINAL ESTIMATES. The completed Form(s) 19-162 (19-162m), "Daily Soil Cement/Lime Base Report" [and the computerized ETicket System report, if used,] shall be used as Original Source Document(s) for pay items applicable to this Specification. (Refer to *Appendix III* and *Section 109* of this Manual.) No further documentation is necessary for payment on Current and Final Estimates.

NOTE: Weight Tickets should be retained in the RE Office as source Documents, also.

Scale calibration certificates and weight tickets shall be handled in accordance with *Section 109* of this Manual.

SECTION 302 SELECTED MATERIAL

302.01 GENERAL (a) Control of Materials. The Resident Engineer is responsible for obtaining and reviewing Contractor test results for this item. Materials which do not comply with the Specifications are to be removed or corrected to meet Specifications at the Contractor's expense unless accepted by Change Order at a reduced price. Additional information on frequency and testing of materials is found in the *Manual of Field Sampling and Testing Procedures*.

(b) Quality Control and Acceptance. The Resident Engineer will sample and test the Selected Material to determine the maximum laboratory density, and optimum moisture content. This information will then be provided to the Contractor for use in their acceptance testing. The Contractor will perform quality control and acceptance sampling in accordance with Section 306 of the Standard Specifications. Additional information on the frequency and testing procedures is found in Section 306 of the Standard Specifications and in the *Manual of Field Sampling and Testing Procedures*.

Verification testing will be conducted by the Department at the minimum frequencies shown in the *Manual of Field Sampling and Testing Procedures*. See *Subsection 106.04* of this Manual for additional information on verification testing.

(c) **Verification of Line and Grade.** The responsibility for computation of planned grades and setting sufficient stakes to provide control of the work is the same as described in *Subsection 210.01(b)* of this Manual. In addition, it is the responsibility of the Resident Engineer to check the finished subgrade to verify compliance with the lines and grades staked. This is normally accomplished by "stringlining" and/or "blue-topping" the completed work.

302.02 METHOD OF MEASUREMENT. Selected material is measured and paid for either by the cubic yard (cubic meter) in trucks or by the ton (metric ton). *Section 109* of this Manual describes the procedures to be followed for both types of measurement. Scale calibration certificates and weight tickets (and documentation of conversion between Cubic Yard. and Tons [cubic meter and metric ton], if used) shall be handled in accordance with *Section 109* of this Manual.

302.03 DOCUMENTATION - CURRENT AND FINAL ESTIMATES. (a) **For Selected Material measured by the Cubic Yard (cubic meter),** Form 19-165 (19-165m), "Daily Report of Volumetric Hauling" shall be used as the Original Source Document(s) for "Selected Material (Class SM ____)". The volume of each vehicle used is to be computed and reported on Form 19-507 (19-507m), "Truck Measurement Form" and submitted with the first applicable Daily Report. (Refer to *Appendix III* and *Subsections 109.10 and 109.11* of this Manual.) No further documentation is necessary for payment on Current and Final Estimates.

(b) For Selected Material measured by the Ton (metric ton). When paid by the Ton (Metric Ton) Source Documents for Selected Material are the Weight Tickets provided by the Contractor on the job site. These are entered into the computerized ETicket System and retained in the RE office. The ETicket daily reports shall be submitted as Original Source Document(s) for "Selected Material (Class SM-____)" for checking purposes. Refer to *Subsection 109.01(c)* of this Manual. No further documentation is necessary for payment on Current and Final Estimates.

On projects with a very small amount of Selected Material, Form 19-213 (19-213m) "Daily Report of ____ Operations, Roadway Inspector's Record," may be utilized if the Resident Engineer feels the total quantity for the project does not justify setting up the computer file and generating the computerized version.

SECTION 303 AGGREGATE BASE COURSE

303.01 GENERAL (a) Control of Materials. The Resident Engineer is responsible for obtaining and reviewing Contractor test results for this item. Materials which do not comply with the Specifications are to be removed or corrected to meet Specifications at the Contractor's expense. Blending on the roadway is prohibited by the Specifications. Blending at the source requires the use of mechanical feeders.

Additional information on frequency and testing of materials is found in the *Manual of Field Sampling and Testing Procedures*.

NOTE: Steel slag is allowed for Classes 1 & 2 Aggregate Base Course.

(b) Quality Control and Acceptance. Quality control and acceptance sampling and testing are performed by the Contractor in accordance with Section 306 of the Standard Specifications. Additional information on the frequency and testing procedures is found in *Section 306* of this Manual and in the *Manual of Field Sampling and Testing Procedures*.

As a minimum, verification testing will be conducted by the Department at the frequencies shown in the *Manual of Field Sampling and Testing Procedures*. See *Subsection 106.04* of this Manual for additional information on verification testing.

NOTE: If the specified compacted base course exceeds 6" (150 mm), the Contractor is required to construct the base in two or more layers of approximately equal thickness, unless vibrating or other types of special compacting equipment are used. In these situations the Resident Engineer may increase the layer thickness up to 8" (200 mm) if acceptable compaction and consolidation is achieved.

(c) Verification of Line and Grade. The responsibility for computation of planned grades and setting sufficient stakes to provide control of the work is the same as described in *Subsection 210.01(b)* of this Manual. In addition, it is the responsibility of the Resident Engineer to check the finished subgrade to verify compliance with the lines and grades staked. This is normally accomplished by "stringlining" and/or "blue-topping" the completed work.

303.02 METHOD OF MEASUREMENT. Aggregate Base Course is measured and paid for either by the Cubic Yard (cubic meter) in trucks or by the Ton (metric ton). *Section 109* of this Manual describes the procedures to be followed for both types of measurement. Scale calibration certificates and weight tickets (and documentation of conversion between C.Y. and Tons [cubic meter and metric tons], if used) shall be handled in accordance with *Section 109* of this Manual.

NOTE: If the Specific Gravity of the Aggregate Base is greater than 2.8, the amount of pay is reduced by the ratio of 2.8 and that Specific Gravity.

303.03 DOCUMENTATION - CURRENT AND FINAL ESTIMATES. (a) Measurement by the Cubic Yard (cubic meter). Completed Form(s) 19-165 (19-165m), "Daily Report of Volumetric Hauling" shall be used as Original Source Document(s) for "Aggregate Base Course (Class ___)". The volume of each vehicle used is to be computed and reported on Form 19-507 (19-507m), "Truck Measurement Form" and submitted with the first applicable Daily Report. (Refer to *Appendix III* and *Subsections 109.10 and 109.11* of this Manual.) No further documentation is necessary for payment on Current and Final Estimates.

(b) Measurement by the Ton (metric ton). When paid by the Ton (Metric Ton) Source Documents for Aggregate Base are the Weight Tickets provided by the

Contractor on the job site. These are entered into the computerized ETicket System and retained in the RE office. The ETicket daily reports shall be used as Original Source Document(s) for "Aggregate Base Course (Class ___)" for checking purposes. Refer to *Subsection 109.01(c)* of this Manual. No further documentation is necessary for payment on Current and Final Estimates.

NOTE: On projects with a very small amount of "Aggregate Base Course (Class ___), Form 19-213 (19-213 m) "Daily Report of ___ Operations, Roadway Inspector's Record" may be utilized if the Resident Engineer feels the total quantity for the project does not justify setting up the computer file and generating the computerized version.

SECTION 304 - VACANT

SECTION 305 RECONSTRUCTED BASE COURSE

305.01 (a) GENERAL. This item consists of reshaping and compacting an existing base material to a planned typical section. If existing material is not sufficient to obtain the planned typical section, additional material should be authorized by the Resident Engineer and paid for as Aggregate Base Course (Class ___).

(b) Quality Control and Acceptance. The Contractor will perform quality control and acceptance sampling in accordance with Section 306 of the Standard Specifications. Resident Engineer personnel should verify that the lines and grades proposed and/or constructed are acceptable and perform verification testing at the frequency specified by the *Manual of Field Sampling and Testing Procedures*.

NOTE: Soundings are not required on Reconstructed Base Course.

305.02 METHOD OF MEASUREMENT AND DOCUMENTATION - CURRENT AND FINAL ESTIMATES. Reconstructed Base Course is measured by the metric station (Station) measured along the centerline of the roadway. Roadways in each direction of a divided highway are measured separately. Additional areas outside the normal roadway will be converted to normal measurements based on the equivalent area. For documentation procedures, see *Section 213* of this Manual. Information contained in *Section 213* also applies to Reconstructed Base Course.

Additional aggregate base course required to construct the plan grade and typical section will be measured and paid for in accordance with *Subsections 303.02 and 303.03* of this Manual.

SECTION 306
QUALITY CONTROL AND ACCEPTANCE

306.01 QUALITY CONTROL. The Department is responsible for providing the maximum laboratory density and optimum moisture content for the aggregate base being used, with the exception of lime treated subgrade. The Contractor is responsible for density, gradation, and plasticity index testing, however there is no required frequency for this testing for quality control purposes. The only tests required to be performed and submitted are those identified as acceptance tests in Subsection 306.03 and the individual sections of the Standard Specifications.

306.02 ACCEPTANCE (a) Testing and Verification. Acceptance tests are to be performed by the Contractor using the procedures and rates specified in Section 306 of the Standard Specifications and the *Manual of Field Sampling and Testing Procedures*. As is the case with Earthwork, only Contractor tests are used for acceptance of items in Division 300 (with the exception of Cement Stabilized Crushed Stone Base Course and Portland Cement Concrete Base). Therefore, the Department must make maximum use of verification tests in order to ensure that the test results reported by the Contractor are accurate. See *Subsection 106.04* of this Manual for additional information on verification testing and the *Manual of Field Sampling and Testing Procedures* for specific test procedures and frequencies for verification testing.

Material used in mixes (such as Cement Stabilized Crushed Stone Base Course and Portland Cement Concrete Base) must be sampled from the stockpile, tested, and accepted before being incorporated into the work.

(b) Soundings. If specified on the plans, the Contractor must take thickness measurement (soundings) of the compacted base material as part of the acceptance process. Soundings should be taken at the same rate as the other acceptance tests for the item, with a minimum of one per layer. Soundings should be recorded and submitted with the other acceptance test results for each lot. The Resident Engineer should perform verification testing of the Contractor's sounding results by taking an independent sounding at a rate of one sounding for every 4 contractor soundings.

NOTE: Soundings are not required on Reconstructed Base Course.

**SECTION 307
CEMENT TREATED BASE COURSE**

307.01 GENERAL. (a) Control of Materials. The Resident Engineer is responsible for obtaining applicable certifications and Contractor test results for this item. Samples of soil aggregate and cement must be submitted to the Materials Division 30 days (minimum) prior to beginning the work for determination of the percentage of cement to be used and the maximum laboratory density.

A sample of the water should be submitted to the Materials Division for testing if the water is not from a public water supply

Certifications for cement from sources listed on the QPL must accompany shipments. If they do not, the cement must be tested and approved by Materials Division prior to use.

NOTE: Flyash or ground granulated blast furnace slag may be used as a replacement for up to 25% cement by weight. Refer to the Specifications.

(b) Quality Control and Acceptance. Quality control and acceptance sampling and testing are performed by the Contractor in accordance with Section 306 of the Standard Specifications, with the exception that acceptance testing is based on a lot size of 10,000 square meters (12,000 square yards). Additional information on the frequency and testing procedures is found in the *Manual of Field Sampling and Testing Procedures*.

As a minimum, verification testing will be conducted by the Department at the frequencies shown in the *Manual of Field Sampling and Testing Procedures*. See *Subsection 106.04* of this Manual for additional information on verification testing.

(c) Verification of Line and Grade. The responsibility for computation of planned grades and setting sufficient stakes to provide control of the work is the same as described in *Subsection 210.01(b)* of this Manual. In addition, it is the responsibility of the Resident Engineer to verify compliance with the lines and grades staked. This is normally accomplished by "stringlining" the completed work or using the rolling straightedge. Refer to *Subsection 307.04(f)* of the Specifications.

(d) Seasonal and Temperature Limitations. The minimum surface temperature for application of Cement Treated Base Course is 40°F (5°C). Operations shall not commence prior to April 1. Application of cement must cease by a date sufficiently early that will give reasonable assurance that the entire operation and application of subsequent asphalt courses will be complete by:

Asphalt Surface Treatment – Roadway	September 30
Asphalt Surface Treatment – Shoulders	October 31
ACHM Binder Course	October 31
ACHM Surface Course	October 31

307.02 METHOD OF MEASUREMENT. Cement Treated Base Course includes three separate pay items: Cement in Treated Base Course, Soil Aggregate in Cement Treated Base Course (___ Compacted Depth), and Processing Cement Treated Base Course (___ Uniform Thickness). Form 19-162 (19-162m), "Daily Soil Cement/Lime Base Report" shall be used to document the measurements. (See *Appendix*

III.) The computerized ETicket System (Refer to *Subsection 109.01(c)* of this Manual.) may be used to document the weight of cement in lieu of using the top portion of Form 19-162 or 19-162m (the blanks for truck number, gross, tare, and net weights).

(a) **Cement in Treated Base Course.** Cement is paid for by the Ton (Metric Ton), weighed in trucks. The specific details for this measurement are described in *Section 109* of this Manual.

(b) **Soil Aggregate in Cement Treated Base Course (___ Compacted Depth).** Soil Aggregate is measured by either the Station (Metric Station), Square Yard (Square Meter), Cubic Yard (Cubic Meter), or Ton (Metric Ton). See *Section 109* of this Manual for details of each of these methods.

(c) **Processing Cement Treated Base Course (___ Uniform Thickness).** This item is measured either by the Station (Metric Station) or by the Square Yard (Square Meter). The measurements (and computation of area) shall be entered on the Form 19-162 (19-162m).

307.03 DOCUMENTATION - CURRENT AND FINAL ESTIMATES. (a) Completed Form(s) 19-162 (19-162m), "Daily Soil Cement/Lime Base Report" shall be used as Original Source Document(s) for "Processing Cement Treated Base Course (___ mm [___] Uniform Thickness)" and "Cement in Treated Base Course". No further documentation is necessary for payment on Current and Final Estimates on these items.

(b) If "Soil Aggregate in Cement Treated Base Course (___[___ mm] Compacted Depth)" is measured by the square yard (square meter) or station (metric station), completed Form(s) 19-162 (19-162m), "Daily Soil Cement/Lime Base Report" shall be used as Original Source Document(s).

If this item is measured by the cubic yard (cubic meter) or ton (metric ton), documentation shall be in the same manner as "Selected Material (Class SM___)" in *Subsection 302.02* of this Manual.

(c) In addition, Form(s) 19-208 (19-208 m), "Daily Report for (Prime, Tack)" is to be completed to document the protective coating of asphalt applied. (Refer to *Appendix III* of this Manual.)

Scale calibration certificates and load tickets shall be handled in accordance with *Section 109* of this Manual.

NOTE: The protective coating of asphalt used on "Cement Treated Base Course" is subsidiary to "Processing Cement Treated Base Course (___ mm [___] Uniform Thickness)" and must be applied at the rate of 0.1 to 0.3 gallons/s.y (0.4 to 1.1 L/sq m) and comply with applicable Specifications for the type asphalt used. The Resident Engineer should have sufficient certifications for this material on file to document its compliance with Specifications.

SECTION 308
CEMENT STABILIZED CRUSHED STONE BASE COURSE

308.01 GENERAL. (a) Design. Samples of aggregate and cement must be submitted to the Materials Division 30 days (minimum) prior to beginning work in order to determine the mix cement percentage, the optimum moisture content, and the maximum laboratory density.

NOTE: Any change in aggregate source and/or cement content **MUST** be documented in writing by an approved laboratory mix design form Materials Division **BEFORE** being used by the Contractor.

(b) Quality Control and Acceptance. Quality control and acceptance sampling and testing are carried out by the Contractor in accordance with Subsection 308.05 of the Standard Specifications. The Contractor will sample and test each 1000 cu yd (750 cu m) subplot for thickness, gradation, and compressive strength. Compressive strength is determined from cores cut from each subplot. This same core is also used for thickness determination.

The Department will take one sample from each lot (4000 cu yds. / 3000 cu m) for acceptance and verification testing. Acceptance of a standard lot for gradation and thickness will be based on passing test reports for all Contractor and Department tests within the lot.

Acceptance for compressive strength is based on the average of the four Contractor subplot tests (cores) and the Department's lot test. See Subsection 308.05(d) of the Standard Specifications for additional information on acceptance and adjustments in payment.

(c) Weather Limitations, Protection and Curing. See Subsection 308.04 of the Standard Specifications regarding placement procedures, weather limitations, and protection and curing of the Cement Stabilized Crushed Stone Base Course.

308.02 METHOD OF MEASUREMENT. The quantities shown on the plans for Processing Cement Stabilized Crushed Stone Base (square yards or square meters) will be considered as final quantities, and no further measurement is required, unless the Resident Engineer and/or the Contractor note exception(s) and/or a change order is approved altering the quantity. The Materials Division laboratory design of this mixture will establish the mix proportions of aggregate and cement in pounds per square yard (kilograms per square meter). This information will be used in conjunction with the planned (or measured) square yards (square meters) to compute pay quantities. The computations are considered part of the Original Source Documents.

308.03 DOCUMENTATION - CURRENT ESTIMATES. Current Estimate documentation may be based on a percent of plan quantity for Processing Cement Stabilized Crushed Stone Base Course (square yards or square meters) and the Materials Division laboratory mix design; a percent of plan quantity for Processing Cement Stabilized Crushed Stone Base Course (square yards or square meters) within specified Station limits and the laboratory mix design; approximate field measurement; etc. Current Estimate documentation for "Processing Cement Stabilized Crushed Stone Base Course", "Aggregate in Cement Stabilized Crushed Stone Base Course" and "Cement in Cement Stabilized Crushed Stone Base Course" must be recorded on separate "Reports of Work Performed" (RWPs) and marked "Current Estimate". Exceptions to the plan

quantity for Processing Cement Stabilized Crushed Stone Base Course may be reported by reference to the appropriate "Final Document" or approved change order that contains the measurement and computations for the variance.

Examples of properly completed RWP's for Current Estimate documentation on the above items are found in *Figure 308-1*. Additional information on the completion of RWP's is found in *Subsection 109.02* of this Manual.

308.04 DOCUMENTATION - FINAL ESTIMATES. Final Estimate Documentation for "Processing Cement Stabilized Crushed Stone Base Course" will be based on the plan quantity with noted exceptions in square yards (square meters). Final Estimate documentation for "Aggregate in Cement Stabilized Crushed Stone Base Course" and "Cement in Cement Stabilized Crushed Stone Base Course" is to be based on:

- (a) Plan quantity and noted exceptions for Processing Cement Stabilized Crushed Stone Base Course.
- (b) The mix proportions in kilograms per square meter (pounds per square yard) of aggregate and cement as established by the laboratory design from the Materials Division.

The Original Source Document (OSD) that must accompany the Final Estimate is the RWP marked "Final Document" for each item. Final Documents for cement or aggregate should contain (a) and (b) above and computation(s) of the applicable pay item:

Metric

$$\frac{(\text{kg/sq m cement or aggregate}) \times (\text{sq m})}{(1000 \text{ kg/metric ton})} = \text{metric tons cement or aggregate}$$

US Standard

$$\frac{(\text{\#/s.y. cement or aggregate}) \times (\text{s.y.})}{(2000 \text{ \#/ton})} = \text{tons cement or aggregate}$$

Examples of properly completed RWP's for Final Estimate documentation on the above items are found in *Figure 308-2*. Additional information on the completion of RWP's is found in *Subsection 109.02* of this Manual.

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
 CONSTRUCTION DIVISION - REPORT OF WORK PERFORMED
 ITEM CEMENT IN CEMENT STABILIZED CRUSHED STONE BASE COURSE QUICK CODE 308112.M
 JOB NO. R12345 FAP NO. ABC-123-45 JOB NAME HWY 81 - RMT 99 (BASE COURSE)
 CURRENT ESTIMATE DATE 6-23-98 REPORT NO. 1
 FINAL DOCUMENT

Pay Quantity	Unit	Description	Location	Sub Item #
97.87	MTons	SEE BELOW		
TOTAL TODAY				
PREVIOUS TOTAL				
TOTAL TO DATE				

BASIS OF ESTIMATE: % PLAN QUANTITY & JOB LAB. MIX DESIGN

STA.	STA. L&C.	PLAN QUANT. (SQ. M)	% COMB.	CONCRETE TARGETED * RATE (MTons/SQ. M)	CEMENT (MTons)
1+00	6+23	LML 2092	100	2092 * 0.0193	= 40.38
6+75	10+12	LML 1348	75	1011 * 0.0193	= 19.51
10+32	30+00	LML 7872	25	1968 * 0.0193	= 37.98

PLAN LAB. MIX DESIGN, MIX UNIT WEIGHT = 2211 kg/cu.m, 5% CEMENT
 $\frac{2211 \text{ kg}}{\text{cu.m}} \times 0.175 \text{ m (thickness)} \times 1000 \text{ kg} = 0.3869 \text{ m tons/Sq. m}$
 $0.3869 \times 0.5 = 0.0193 \text{ MTons/SQ. M CEMENT}$
 $0.3869 \times 0.95 = 0.3676 \text{ m tons/SQ. M AGGREGATE}$

REPORTED BY: Bob Smith CHECKED BY: Andrew Johnson
 Rev. 6-8-94

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
 CONSTRUCTION DIVISION - REPORT OF WORK PERFORMED
 ITEM PROCESSING CEMENT STABILIZED CRUSHED STONE BASE COURSE QUICK CODE 308112.M
 JOB NO. R12345 FAP NO. ABC-123-45 JOB NAME HWY 81 - RMT 99 (BASE COURSE)
 CURRENT ESTIMATE DATE 6-23-98 REPORT NO. 1
 FINAL DOCUMENT

BASIS OF ESTIMATE: % PLAN QUANTITY UNIT OF MEAS. SQ. M

LOCATION	PLAN QUANTITY	PERCENT COMPLETE	TOTAL TO DATE	PREVIOUS ALLOWED	DUE THIS REPORT	REMARKS
1+00 - 6+23 LML	2092	100%	2092	-	2092	
6+75 - 10+12 LML	1348	75%	1011	-	1011	
10+32 - 30+00 LML	7872	25%	1968	-	1968	
Total Due This Report						
Previous Total						
Total To Date						

REPORTED BY: M. Lewis CHECKED BY: William Clark

Figure 308-1a Figure 308-1b
 Examples of Current Estimate RWP for
 Cement Stabilized Crushed Stone Base Course

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
 CONSTRUCTION DIVISION - REPORT OF WORK PERFORMED
 ITEM AGGREGATE IN CEMENT STABILIZED CRUSHED STONE BASE QUICK CODE: 308113M
 JOB NO. R12345 FAP NO. ABC-123-45 JOB NAME HWY 81 - HWY 99 (BASE COURSE)
 CURRENT ESTIMATE
 FINAL DOCUMENT DATE 6-23-98 REPORT NO. 1

Pay Quantity	Unit	Description, Location	Sub Item #
1864.09	MTON	SEE BELOW	
TOTAL TODAY			
PREVIOUS TOTAL			
1864.09	MTON	TOTAL TO DATE	

BASIS OF ESTIMATE: % PLAN QUANTITY & JOB LAB. MIX DESIGN
 (SEE RATE CALCULATIONS ON CHANGEST RWP NO. 1, ITEM CODE 308113M)
 STA. STA. LAC. QTY (SQ. M) % AGG. VERIFIED Y RATE (M TON/M) = (M TON) AGGREGATE
 1+00 6+23 LML 2092 100 2092 x 0.3476 = 769.02
 6+75 10+12 LML 1348 75 1011 x 0.3476 = 371.64
 10+32 30+00 LML 7872 25 1968 x 0.3476 = 723.43
 1864.09

REPORTED BY: Bill Smith CHECKED BY: Andrew Thomas Rev. 4-84

Figure 308-1c

Examples of Current Estimate RWPs for
 Cement Stabilized Crushed Stone Base Course

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
 CONSTRUCTION DIVISION - REPORT OF WORK PERFORMED
 ITEM PROCESSING CEMENT STABILIZED CRUSHED STONE BASE COURSE QUICK CODE: 308112M
 JOB NO. R12345 FAP NO. ABC-123-45 JOB NAME HWY 81 - HWY 99 (BASE COURSE)
 CURRENT ESTIMATE
 FINAL DOCUMENT DATE 7-27-98 REPORT NO. 1

Pay Quantity	Unit	Description, Location	Sub Item #
2092	SQ. M	STA. 1+00 - 6+23 LML	
1348	SQ. M	STA. 6+75 - 10+12 LML	
7872	SQ. M	STA. 10+32 - 30+00 LML	
2092	SQ. M	STA. 1+00 - 6+23 RML	
1360	SQ. M	STA. 6+75 - 10+12 RML	
7872	SQ. M	STA. 10+32 - 30+00 RML	
TOTAL TODAY			
22636	SQ. M		
PREVIOUS TOTAL			
22636	SQ. M	TOTAL TO DATE	

BASIS OF ESTIMATE: VERIFIED PLAN QUANTITY

REPORTED BY: M. Lewis CHECKED BY: Andrew Thomas Rev. 4-84

Figure 308-2a

Examples of Final RWPs for
 Cement Stabilized Crushed Stone Base Course

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
 CONSTRUCTION DIVISION - REPORT OF WORK PERFORMED
 ITEM CEMENT IN CEMENT STABILIZED CRUSHED STONE BASE ITEM CODE: 308113M
COURSE QUICK CODE
 JOB NO. R12345 FAP NO. ABC-123-45 JOB NAME HWY 81 - HWY 99 (BASE
4 SURF)
 CURRENT ESTIMATE REPORT NO. 1
 FINAL DOCUMENT DATE 7-27-98

Pay Quantity	Unit	Description, Location	Sub Item #
436.89	M.TON	SEE BELOW	
436.89	M.TON	TOTAL TODAY	
		PREVIOUS TOTAL	
436.89	M.TON	TOTAL TO DATE	

BASIS OF ESTIMATE: VERIFIED PLAN QUANTITY & JOB LABORATORY MIX

STP.	STA.	Loc.	PLAN SQ. FT.	ACER. #	CEMENT # #
1+00	6+73	LAL	2092	769.02	40.38
6+75	10+12	LAL	1345	493.52	24.02
10+32	30+00	LAL	7872	2893.75	151.93
1+00	6+73	RAL	2092	769.02	40.38
6+78	10+18	RAL	1360	499.94	24.25
10+32	30+00	RAL	7872	2893.75	151.93
		TOTALS	22620	8321.00	436.89

FROM LAB IN DESIGN MIX UNIT = 2211 kg/cu m, 5% CEMENT
 2211 kg/cu m = 0.175 m (THICKNESS) x 1 m²/1000 kg = 0.3869 m³/sq. m
 * 0.3869 x 0.95 = 0.3676 m³/sq. m ASSEMBLY
 * 0.3869 x 0.05 = 0.0193 m³/sq. m CEMENT

REPORTED BY: W. Clark CHECKED BY: Andrew Plonka
 Rev. 6/94

Figure 308-2b

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
 CONSTRUCTION DIVISION - REPORT OF WORK PERFORMED
 ITEM AGGREGATE IN CEMENT STABILIZED CRUSHED STONE ITEM CODE: 308114M
BASE COURSE QUICK CODE
 JOB NO. R12345 FAP NO. ABC-123-45 JOB NAME HWY 81 - HWY 99 (BASE
4 SURF)
 CURRENT ESTIMATE REPORT NO. 1
 FINAL DOCUMENT DATE 7-27-98

Pay Quantity	Unit	Description, Location	Sub Item #
8321.00	M.TON	SEE FINAL DOCUMENT NO. 1, CEMENT IN CEMENT	
		STABILIZED CRUSHED STONE BASE COURSE, ITEM CODE #	
		308113M FOR LOCATIONS & CALCULATIONS	
8321.00	M.TON	TOTAL TODAY	
		PREVIOUS TOTAL	
8321.00	M.TON	TOTAL TO DATE	

BASIS OF ESTIMATE: VERIFIED PLAN QUANTITY & JOB LABORATORY MIX

REPORTED BY: W. Clark CHECKED BY: Andrew Plonka
 Rev. 6/94

Figure 308-2c

Examples of Final RWP for
 Cement Stabilized Crushed Stone Base Course

**SECTION 309
PORTLAND CEMENT CONCRETE BASE**

309.01 GENERAL (a). Design. This item consists of the placement of Portland cement concrete on a prepared surface as a base course. Concrete meeting the requirements of one of the following three classes may be used for this item:

1. Paving concrete meeting the requirements of Section 501 of the Standard Specifications,
2. Class A concrete meeting the requirements of Section 802 of the Standard Specifications,
3. Class S concrete meeting the requirements of Section 802 of the Standard Specifications.

Mix designs are prepared by the Contractor in accordance with Subsection 501.03 or 802.05 of the Standard Specifications, as applicable to the class of mix used.

(b) Quality Control and Acceptance. The Contractor will perform quality control and acceptance sampling and testing in accordance with Subsection 501.04 of the Standard Specifications. The Resident Engineer will perform acceptance/verification sampling and testing in accordance with Subsection 501.04 of the Standard Specifications and the *Manual of Field Sampling and Testing Procedures*.

NOTE: Specifications require compressive strength compliance to be based upon cylinders. Thickness compliance is to be based upon soundings of the fresh concrete. Refer to 2003 Specifications.

309.02 METHOD OF MEASUREMENT. Portland Cement Concrete Base (___ “ [___mm] Uniform Thickness) will be measured by the square yard (square meter) with adjustments in accordance with Subsections 501.04 (air content and compressive strength), 501.10 (thickness), and 501.14 of the Standard Specifications. The micro computer AREA program may be used to perform the calculations.

Reinforcing Steel, when specified, will be measured and paid for in accordance with Section 502 of the Standard Specifications.

309.03 DOCUMENTATION - CURRENT ESTIMATES. Current Estimate documentation may be based on a percent of plan quantity, a percent of plan quantity within specified Station limits, approximate field measurement, reference to the appropriate "Final Document" (OSD), etc. Current Estimate documentation for this item will be recorded on the "Report of Work Performed" and marked "Current Estimate."

309.04 DOCUMENTATION - FINAL ESTIMATES. Final Estimate documentation for "Portland Cement Concrete Base (___ mm [___"] Uniform Thickness)":shall consist of an RWP marked marked "Final Document" showing all applicable measurements and calculations on the RWP or on attached sheets. The RWP shall also contain any calculations necessary to compute applicable reductions in quantity due to deficient pavement thickness, based on soundings of fresh concrete, and as described in Section 501 of the Specifications. The "Basis of Payment" on the RWP should be "Actual Field Measurement." See *Figure 309-1*.

SECTION 310

OPEN GRADED PORTLAND CEMENT CONCRETE BASE COURSE

310.01 GENERAL. (a) This item consists of constructing a permeable Portland cement base course on an accepted base course. No mix design is required, as the cement content and gradations are established in the Standard Specifications. Special attention should be placed on preventing deterioration of the permeability of the constructed Open Graded Portland Cement Concrete Base Course. During subsequent paving operations, no traffic or Contractor's equipment should be permitted on the open graded base other than the paver. *No haul trucks of any type are permitted on the open graded Portland cement concrete base course.*

(b) Quality Control and Acceptance. The Contractor will perform quality control and acceptance sampling in accordance with Subsection 310.05 of the Specifications. The Department will perform verification testing in accordance with the *Manual of Field Sampling and Testing Procedures* and Section 310 of the Standard Specifications.

(c) Base Thickness. Thickness of the placed open graded Portland cement concrete base course should be measured by the RE immediately behind the screed. Any variations in thickness greater than $\pm 1/4"$ (± 6 mm) must be corrected before the mix has taken initial set. The paving operation should be stopped until the thickness problem is corrected and all deficient areas behind the paver are corrected.

310.02 METHOD OF MEASUREMENT. "Open Graded Portland Cement Concrete Base Course" will be measured by the Square Yard (Square Meter) in place. The micro computer AREA program may be used to perform the calculations. If used, the printout from the program must be attached to the appropriate RWP marked "Final Document".

310.03 DOCUMENTATION - CURRENT ESTIMATES. Current Estimate documentation may be based on a percent of plan quantity, a percent of plan quantity within specified Station limits, approximate field measurement, reference to the appropriate "Final Document" (OSD), etc. Current Estimate documentation for this item will be recorded on the "Report of Work Performed" and marked "Current Estimate."

310.04 DOCUMENTATION - FINAL ESTIMATES. Final Estimate Documentation for this item shall be properly completed RWP's marked "Final Document." The "Basis of Estimate" on the "Final Document" RWP for this item should be "Actual Field Measurement." The measurement shall be shown on the RWP or on attached sheets.

**ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION DIVISION - REPORT OF WORK PERFORMED**

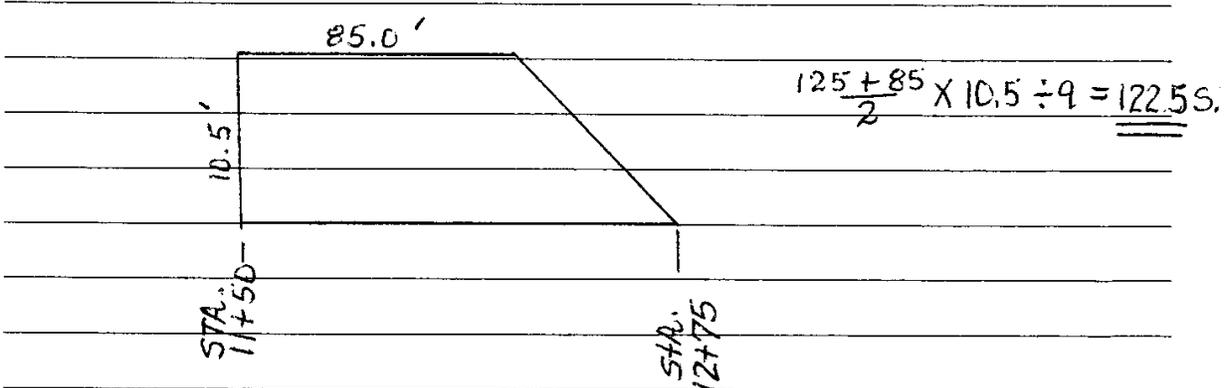
ITEM Portland Cement Concrete Base ITEM CODE: 309010
 QUICK CODE _____

JOB NO. R00001 FAP NO. RHA-365-12(7) JOB NAME HWY. 37-HWY224
(TUCKERMAN)

CURRENT ESTIMATE
 FINAL DOCUMENT DATE 7/10/98 REPORT NO. 1

Pay Quantity	Unit	Description, Location	Sub Item #
122.5	S.Y.	Sta. 11+50 - 12+75 Lt.	
122.5	S.Y.	TOTAL TODAY	
—		PREVIOUS TOTAL	
122.5	S.Y.	TOTAL TO DATE	

BASIS OF ESTIMATE: Actual Field Measurement



REPORTED BY: Andrew Nichols CHECKED BY: BRIAN ANTHONY
Rev. 6-8-94

Figure 309-1

**Example of Final Document for
Portland Cement Concrete Base**

