CHAPTER 9 ROADWAY, BASE, STABILIZING AND PAVEMENT ITEMS REVIEW

9.1 PURPOSE

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- 5 To set forth the guidelines and instructions for a Resident Office to use and prepare the
- 6 Final Estimates Package and make offer of final payment. Also guide the District Final
 - Estimates Office (DFEO) in the final review of the construction categories specified as
- 8 subgrade, subbase, base, pavement, and friction course.

9 9.2 PROCEDURE

9.2.1 FINAL REVIEWING - ITEMS GROUPED BY COMMON PROCEDURE

(A) Square yard /Plan Quantity Concept Items: The items shown below are paid on an area basis (usually square yards). The area to be paid for shall be plan quantity subject to the applicable edition of **Section 9-3.2** of the **Specifications** which defines tolerances or deviations for plan errors and plan revisions before adjustments are to be made. Thickness and penalty adjustments are not considered tolerances. In other words, only plan revisions or plan errors qualify for tolerance. Below are examples of these square yard items:

Stabilized Subbase

Stabilization Type 'B' & 'C' - Section 160 of the Specifications
Predesigned Stabilized Subgrade - Section 161 of the Specifications
Prepared Soil Layer - Section 162 of the Specifications

Subgrade – Pay Item 165- 70

Cracking & Reseating Existing Concrete Pavement – Pay Item 175- 1

Cement Treated Subgrade

Reworking Limerock Base - Pay Item 210- 1

Shaping and Compacting Local Rock Base

Limerock Stabilized Base- Pay Item 230- 1

Optional Base - Section 285 of the Specifications

Compacting and Finishing Rock Base – **Section 285** of the **Specifications** Turnout Construction (limerock, etc.) - **Section 286** of the **Specifications**

Plain Cement Concrete Pavement – Pay Item 350- 1

Reinforced Cement Concrete Pavement – Pay Item 350- 2

1	(В)	Generally speaking, a final review entails verification of properly documented
2		computations for plan revisions or plan errors outside Specification tolerance,
3		thickness, and penalty calculations. Where it is known that plan errors exist,
4		the size of the error must be determined and documented by computations.
5		For Optional Base items, the square yard unit price shall be full
6		compensation for tack coat, prime coat, cover material for prime coat,
7		bituminous material in asphaltic base, and cement in soil/cement.
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9	Note:	If the Contractor uses a Mix In Place base, such as sand clay, no thickness
10		adjustment will apply. Normally, price adjustments for bituminous material,
11		as provided in Section 9-2.1.2 of the Specifications, shall not apply,
12		however, for contracts that have optional base items with all options being
13		asphalt, the bituminous adjustment shall apply per Special Provisions of the
14		contract. The maximum pay shall be 105 percent of surface area. Check
15		thickness calculations to determine the equivalent square yards adjustment
16		to be made (dependent upon specification tolerances).
17	(C)	Verify computations for areas left in place at no pay.
18	(D <u>B</u>)	Cubic Yard /Certified Truck Capacity Items such as:
19	(= <u>=</u>)	Commercial Stabilizing Material (in stabilized subbase)
20		Limerock, New Material (in reworking limerock base) — Section 210 of the
21		Specifications – Plan Quantity (PQ)
22		Limerock Material (in limerock stabilized base) - Section 230 of the
23		Specifications - (PQ)
24		Shell Base Material (in shell stabilized base)
25		Cover Material and Sand Cover Material
26		Asphalt Treated Permeable Base – Section 287 of the Specifications - (PQ)
27		Cement Treated Permeable Base – Section 288 of the Specifications - (PQ)
28		Borrow Excavation - Section 120 of the Specifications - Final Measure
29		(1) Each truck capacity must be certified. If sideboards are added, then
30		the Project Administrator (PA) must provide sketches for sideboard
31		dimensions and calculations verified by DFEO.
32		(2) Tabulation forms must be submitted with each entry showing time,
33		date placed, truck number, capacity, and if applicable, weights and
34		void tickets. Quantity summaries and transfers to computation books
J4		void tionoto. Quantity summanes and transfers to computation books

must be verified.

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Tonnage/Truck Weights or Automatic Batch Weight Items such as the pay (EC) 1 items below have quantities determined by weighing. These individual truck 2 weights or automatic printer tickets showing the accumulation of batched 3 components must be verified for correctness. The spread rate (Llbs/sySY) in 4 the area of placement for each item must be within five (5) percent of the 5 spread rate for that item shown in the plans, or the discrepancy shall be 6 properly explained in the overrun/underrun explanation section of the 7 appropriate computation book page by project personnel. Quantity transfers 8 9 to computation book must also be verified for each of these items: Turnout Construction (Asphalt) - Section 286 of the Specifications 10 Miscellaneous Asphalt Pavement – **Section 339** of the **Specifications** 11 Superpaye – **Section 334** of the **Specifications**. 12 Friction Course Section 337 13 Friction Course – **Section 337** of the **Specifications** 14

9.2.2 FINAL REVIEWING - INDIVIDUAL ITEM PROCEDURES

In addition to the above general instructions, the following specific points are to be checked when applicable:

19 20 21	(A) Plan Quantity- Square Yard pay items: (1) Commercial Stabilizing Stabilization: Section 160 of the Specifications Material used in Stabilized Subbase:
22 23 24	(1 <u>a</u>) Commercial & Local Material – meet the requirements of Section 914 of the Specifications. (b) Truck capacities shall be certified.
25 26	(2c) Spot Ccheck the tabulation forms, truck numbers, and calculated total volumes.
27 28	(d3) Summaries and transfers to the Computation Book shall be verified.
29 30 31	(4) No separate payment will be made for commercial material that the Contractor elects to utilize in Type 'B' or Type 'C' Stabilization (per Section 160-9.3 of the Specifications).
32 33 34	(B) Type 'B' and Type 'C' Stabilization: The quantity of these types shall be the area in square yards paid for on the basis of plan quantity.

1	(e) If the item of Borrow Excavation is included in the contract, any
2	stabilizing materials obtained from designated borrow areas shall be
3	included in the pay quantity for Borrow Excavation (per Section 160 -
4	9.4<u>6</u> of the Specifications).
5	-
6	(f) Review to ensure that the Designer has provided the required
7	supporting documentation for plan quantity and any additions
8	or deletions are supported with backup documentation.
ا ہ	(C) Stabilized Subbase: The area to be paid for shall be the area in square yards
9 10	paid for on the basis of plan quantity.
10	paid for the pasis of plan quartity.
11	Review to ensure that the Designer has provided the required supporting
12	documentation for plan quantity and any additions or deletions are
13	supported with backup documentation.
14	(D) Cement Treated Subgrade or Roadbed
15	(=) Coment restor of the grade of the same a
16	(1) Determine that any deficient areas allowed to be left in place with no
17	pay are deducted from the final pay area and that the theoretical amount of cement is deducted.
18	
19	(2) Check tabulation forms for materials utilized. Only the amount authorized to
20	be used by the PA shall be paid for under this item.
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22	(3) No separate payment will be made for bituminous material applied as a curing membrane.
23	
24	(4) No additional compensation will be allowed for labor or materials involved in reconstructing
25	defective and deficient thickness areas.
26 27	(2) Predesigned Stabilized Subgrade – Section 161 of the Specifications
21	(a) Used for construction of shoulder only, sidewalk, and bike/shared
	path . Meet the requirements of Section 120-8.1.2 of the
	Specifications, except replace "Embankment" with "Subgrade".
	Material to meet the requirements of Section 914 of the
	Specifications.
	(b) Review to ensure designer has provided the required supporting
	documentation for plan quantity and any additions or deletions are
	supported with backup documentation.
28	(3) Subgrade (Limerock Treated) – Section 165 of the Specifications
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30	(a) Review to make sure designer has provided the required supporting
31	documentation for plan quantity and any additions or deletions are

Reworking Limerock Base Courses: The quantity to be paid for shall be: (a) The

area in square yards on the basis of plan quantity: (b) The certified truck quantity of new

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Edition Date: January 1, 2000

1 2			limerock material only, check the total cubic yards using the final s and the Tabulation forms.
3 4 5			Review to ensure that the Designer has provided the required supporting documentation for plan quantity and any additions or deletions are supported with backup documentation.
6 7 8 9 10 11		(2)	Limerock Stabilized Base: The quantity to be paid for shall be the area in square yards on the basis of plan quantity and the quantity of limerock material certified loose in truck bodies at the point of placement. Where extra limerock is placed at culverts, etc., as detailed in the plans, the volume of such material shall be included in the quantity of limerock material to be paid for, but the area of base to be paid for shall not be adjusted.
13 14 15		(3)	Asphalt Treated Permeable Base and Cement Treated Permeable Base: The quantity to be paid for shall be the plan quantity in cubic yards, completed and accepted.
16 17 18			Review to ensure that the Designer has provided the required supporting documentation for plan quantity and any additions or deletions are supported with backup documentation.
19 20 21 22	(G 7)	option	nal Base Courses: This item consists of base construction of one of the lal base materials (15 base groups) shown in the plans typical cross n. The surface area to be paid for shall be plan quantity.
23 24 25		(1 <u>a</u>)	Review to ensure that the Designer has provided the required supporting documentation for plan quantity and any additions or deletions are supported with backup documentation.
26 27		(2 <u>b</u>)	Thickness in excess of 1/2 inch greater than specified shall not be considered in payment.
28 29 30		(3 <u>c</u>)	Thickness adjustments within prescribed Standard Specifications are payable and are not considered as plan errors or revisions. The pay area shall not exceed 105 percent of surface area .
31 32 33		(4 <u>d</u>)	The square yard or square meter unit price and payment shall be full compensation for tack coat, prime coat, cover material for prime coat, and bituminous material in plant mix.

1 2 3	(5 <u>e</u>)	Price adjustment for bituminous material as provided in Section 9-2.1.2 of the Specifications shall not apply, unless the plans specify a black base option only (see Chapter 6 of this manual Manual) .
4 5	(6)	Price adjustment for bituminous material (Lump Sum Projects) as provided in Section 9-2.1.2 of the Specifications shall apply.
6 7 8	mete	rock Base: The pay quantity shall be the area in square yards or square rs on the basis of plan quantity. In addition, Tathe final pay requirements erified as follows:
9 10 11	(1 <u>a</u>)	Review to ensure that the Designer has provided the required supporting documentation for plan quantity and any additions or deletions are supported with backup documentation.
12	(2 <u>b</u>)	Check limits of deficient thickness areas left in place without pay.
13 14 15 16	(<mark>3<u>c</u>)</mark>	Average thickness shall be calculated for the entire contract as a unit. Check that the thickness does not exceed the normal specified thickness plus 1/2 inch. Maximum pay is 105 percent of surface area, if bid under Optional Base item.
17 18	(Note	e: See Special Provisions for any changes).
19 20	(4 <u>d</u>)	Deficient thickness area(s) not included for pay shall appear on the final estimate with the following statement:
21 22		Square yards or square meters have been deducted due to deficient thickness.
23 24	(5 <u>e</u>)	Core measurements in areas of deficient thickness (no pay) shall not be used to determine average thickness of base material.
25 26 27	(6 <u>f</u>)	Areas and thickness for connection to back of sidewalks shall not be included in average thickness calculations of square yard or square meter pay area.
28 29 30	(7 <u>g</u>)	Authorized variable thickness base shall be calculated separately. The area shall not be included when adjusting for depths over or under normal thickness.

1 2	(8 <u>h</u>)	The mathematics of the adjustment shall be checked. The formula used is as follows:
3 4		Adjusted Pay Area = <u>Pay Average Thickness x Plan Area</u> Plan Thickness
5 6	(<u>9i</u>)	Formulas for converting variable depth base to normal thickness area Where T = Plan Thickness:
7		$\underline{English} = S.Y. = C.Y.x \frac{36}{9 xT(inches)} = or S.Y. = \frac{C.F.x 12}{9 xT(inches)}$
8		$\frac{\text{Metric} = \frac{\left[\text{C.Y. x 3 x 0.3048}\right]}{\left[\text{(T x 25.40)} \div 1000\right]} = 30.1 \text{ x C.Y.} = M_{2}$
		SY = CY (36 inches /Yard) T (inches)
		SY= Square Yard
9		CY=_Cubic_Yards
10		3 = 3 feet per CY
11		0.3048 = Metric Equivalent of 1 foot
12		1 Yard = 36 inches
13		T = Thickness in inches
14		25.4 = Millimeters in 1 inch
15		1000 = Conversion of millimeters to Meters
16	(I) Shell	Base: Payment is based on plan quantity. Calculations for average
17		ness and the method of making adjustment of the pay area due to
18		ss or deficient thickness shall be the same as those outlined for limerock
19	base .	Shell Base material is not to be paid for separately.
20	Rovie	ew to ensure that the Designer has provided the required supporting
21		mentation for plan quantity and any additions or deletions are supported
22		packup documentation.
23	(J) Shell	Stabilized Base: The pay quantities shall be plan quantity for the
24		re yards or square meters item and the volume in cubic yards or cubic
25		rs of shell material applied by truck measure.

1	(1) Review to ensure that the Designer has provided the required
2	supporting documentation for plan quantity and any additions or deletions are supported with backup documentation.
4	(2) Check all tabulation forms to verify volumes.
5 6	(3) The volume of extra shell material placed at culverts, etc., shall be included in the pay quantity of shell base material.
7 8	(K) Cemented Coquina Base: The quantity to be paid for shall be based on plar quantity for the square yards or square meters item.
9 10 11	(1) Review to ensure that the Designer has provided the required supporting documentation for plan quantity and any additions of deletions are supported with backup documentation.
12 13	(2) Check to see that deductions for deficient areas have been properly made.
14 15 16	(3) The contractor will provide written documentation to enable the engineer to perform calculations confirming the design quantity of cement was incorporated into the project.
17 18	(L <u>7-B</u>) Superpave Base: The quantity to be paid will be the area in square yards or the basis of plan quantity. <u>Black Base, plan quantity pay item</u>
19 20 21	(4a) Review to ensure that the Designer has provided the required supporting documentation for plan quantity and any additions of deletions are supported with backup documentation.
22 23 24	(2b) Check to see that each Composite Pay Factor unit price adjustment has a Lot Submittal Package representing this adjustment.
24 25 26 27	(3c) Check to see that the maximum allowable pay for thickness adjustment does not exceed 105 percent of the surface area.
28 29 30	(8) Plain Cement Concrete Pavement (PCCP) and Reinforced Cement Concrete Pavement (RCCP): The final area shall be subject to adjustment for over- thickness or under-thickness in accordance with the Section 350 of the
31	Specifications.

<u>(a)</u>	Review to ensure that the Designer has provided the required
	supporting documentation for plan quantity and any additions o
	deletions are supported with backup documentation.

Edition Date: January 1, 2000

Revision Date: September 12, 2007March 8, 2012

- (b) Check core-out report for representative interval and PA's explanation of deficient areas removed and replaced or left in place without pay.
- (c) Criteria for thickness calculations: Cores measured and greater than specified thickness shall be considered in the average thickness calculations plus 1/2".
- (d) Criteria for payment thickness: The maximum average over-thickness upon which payment will be made shall be normal thickness plus 1/4".
- (e) When the plans call for cement concrete pavement which is to be covered with asphaltic concrete surface course, the total thickness of the entire combination shall be measured and paid for as plain cement concrete pavement.
- (f) Toe bars and dowel bars shall not be included in final pay quantities as reinforcing steel.

(B) Cubic Yard Pay Items with Certified Truck Capacity

- 1. Limerock, New Material (in Reworking Limerock Base)
 - (a) Spot check Truck Tabulation Forms with certified truck quantities. This is a Final Measure Pay Item
 - (b) The quantity is determined by measuring loose volume, in truck bodies, at the point of dumping on the road, with proper deduction for all materials wasted, left in truck, or otherwise not actually used on the road. For this purpose, make sure that truck material is leveled to facilitate accurate measurements. See **Section 210** of the **Specifications**
 - 2. Limerock Material (in Limerock Stabilized Base)
 - (a) Spot check Truck Tabulation Forms with certified truck quantities. This is a Final Measure Pay Item.
 - (b) The quantity is determined by measuring loose volume, in truck bodies, at the point of dumping on the road, with proper deduction for all materials wasted, left in truck, or otherwise not actually used on the road. For this purpose, make sure that truck material is leveled to facilitate accurate measurements.

 See Section 230 of the Specifications
 - 3. Asphalt Treated Permeable Base and Cement Treated Permeable

	Topic No. 700-050-005 Review and Administra	
1 2 3		Base: Sections 287 and 288 of the Specifications . The quantities to be paid for shall be the plan quantity in cubic yards, completed and accepted.
4 5 6		Review to ensure that the Designer has provided the required supporting documentation for plan quantity and any additions or deletions are supported with backup documentation.
	4.	Borrow Excavation – Is a Final Measure Pay Item. See Section 120
		of the Specifications and Chapter 8 of this Manual for more details.
7	C Tonnage/Tru	uck Weights or Automatic Batch Weight Items.
8	<u> </u>	
9	1. Turno	out Construction (Asphalt): Pay Item No. 286- 2.
10		
11	(a)	See Chapter 9 of the Preparation & Documentation Manual, Topic
12	/h)	No. 700-050-010 for more information
13 14	<u>(b)</u>	No density is required for this pay item and therefore it does not qualify to get a composite pay factor.
15	(d)	Keep track of tickets used on this pay item.
16	<u>(u)</u>	Reep track of tickets used on this pay item.
17	2. Supe	pave Asphaltic Concrete: The quantity in tons as provided in the
18		on 334 of the Specifications. (Refer to the Final Estimates
19	Prepa	aration and Documentation Manual -Topic No. 700-050-010 Chapter
20	<u>9) for</u>	more information.
21		k to ensure each Composite Pay Factor unit price adjustment has a Lot
22	Subm	ittal Package representing this adjustment.
23	3. Aspha	altic Concrete Friction Course: Pay Items 337-7: The quantity to be
24		or will be the weight in tons, as determined in accordance with Section
25		of the Specifications .
26	(a)	Check to ensure that each Composite Pay Factor unit price
27	<u>(u)</u>	adjustment has a Lot Submittal Package representing this
28		adjustment
29	<u>(b)</u>	Check to ensure that the pay quantity was based on the spread rate

limited to 105 percent of the target spread rate based on plan

(M) Miscellaneous Asphalt (Pay Item No. 339-1)

thickness.

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2		(a) This is not a pay item which may be used for convenience in resolving
3		leveling and other asphalt roadway problems. Should the DFEO
4		encounter an improper use of this pay item on the roadway, a
5		Supplemental Agreement shall be required to pay for the improperly
6		used quantity.
7		(b) Check to ensure that the pay quantity was based on the spread rate
8		limited to a maximum of 105 percent of the plan thickness quantity.
9	(N)	Superpave Asphaltic Concrete: The quantity in tons or metric tons as
10		provided in the Section 334 of the Specifications. (Refer to Final
11		Estimates Preparation and Documentation Manual Topic No. 700-050-
12		010 Chapter 9).
13		
14	Check to en	sure each Composite Pay Factor unit price adjustment has a Lot Submittal
15		Package representing this adjustment.
16	(O)	Asphaltic Concrete Friction Course: The quantity to be paid for will be the
17		weight in tons or metric tons, as determined in accordance with Section 320-
18		2 of the Specifications.
19		(1) Check to ensure that each Composite Pay Factor unit price
20		adjustment has a Lot Submittal Package representing this adjustment
21		(2) Check to ensure that the thickness was based on the plan spread rate
22		limited to 105 percent of the project average.
23		
24	———D. (P)	-Certification of Quantities: All All asphalt produced and accepted will have a
25	<u> </u>	Certification of Quantities provided by the Contractor each month.
26		, ,
27		(1) Check to ensure that for every month asphalt was produced and
28		accepted, a Certification of Quantities has been submitted.
29		
30		(2) Check to ensure that all discrepancies have been resolved.
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32	9.2.3 Portlar	ed Cement Concrete Paving and Reinforced Cement Concrete Pavement
33	ltems	: In addition to the general instructions listed in (Section 9.2.1 of the
34		fications) the following specific points are to be checked when applicable:
35	(A)	Plain Cement Concrete Pavement (PCCP) and Reinforced Cement Concrete
36	, ,	Pavement (RCCP): The pay quantities under these items shall be the area in

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23 24 Review to ensure that the Designer has provided the required supporting

documentation for plan quantity and any additions or deletions are supported

linear meter, on the basis of plan quantity.