Section 11.4

ADJUSTMENTS

11.4.1 Purpose

This procedure provides guidance for determining the various pay adjustments associated with asphalt pay items (Pay Quantity Adjustments, Composite Pay Factor (CPF) Adjustments, and Bituminous Adjustments). Example calculations are provided in the Appendices at the end of this Chapter. Asphalt As-Built Data collection is also discussed.

11.4.2 Authority

Sections 20.23(3)(a), and 334.048(3), Florida Statutes (F.S.)

11.4.3 References

Sections 9, 234, 285, 286, 330, 334, 337 and 339 of the Standard Specifications for Road and Bridge Construction

11.4.4 Types of Adjustments

11.4.4.1 Pay Quantity Adjustments

The Department will pay for the asphalt placed up to 105% of the Adjusted Plan Quantity on Asphalt Square Yard and Tonnage Pay Items.

Exceptions: Overbuild, Temporary Asphalt, and Turnout Construction (Asphalt), and Asphalt Cubic Yard Pay Items (Asphalt Treated Permeable Base (ATPB)), do not receive pay quantity adjustments. Payment is made for the quantity that is placed.

The Asphalt Roadway – Daily Report of Quality Control (known as the QCRR) has been updated to include automation of some adjustment calculations. The Contractor shall coordinate with the Project Administrator (PA) (or designee) to verify the Plan Quantity Tonnage and any Engineer directed change(s) to be entered in the QCRR. The QCRR will calculate the Tonnage-Weighted Average $G_{mm}$ (or $G_{sb}$ for Open Graded Friction Course (FC-5)) for each pay item based on the tonnages and mix designs used on the project.


(A) **Square Yard Pay Item Adjustments**

The only Asphalt Plan Quantity Square Yard (SY) pay items are the Asphalt Base (Optional Base - Black Base) groups. Composite Base is included in this section. The pay area will be determined based upon the following formula:

\[
\text{Pay Area (SY)} = \frac{\text{Surface Area (SY) x Actual Quantity Placed (TN)}}{\text{Adjusted Plan Quantity Tonnage}}
\]

*Where the Adjusted Plan Quantity (PQ) Tonnage is determined as follows:*

Adjusted PQ (TN) = \[
\frac{\text{[Plan Surface Area (SY) x t (in) x Tonnage-Weighted Average } G_{mm} x 43.3 \text{ (Lbs/SY-in)}]}{2,000 \text{ Lbs/TN}}
\]

*And:*

- Plan Surface Area = PQ Area including any Engineer approved quantity revisions (SY)
- t = Plan Thickness (in)
- 43.3 = Conversion Factor (a constant derived by the State Material’s Office) (Lbs/SY-in)

Tonnage-Weighted Average \( G_{mm} = \frac{(\text{Tons}_{Mix \, 1})(G_{mm \, Mix \, 1})+(\text{Tons}_{Mix \, 2})(G_{mm \, Mix \, 2})+(\text{Tons}_{Mix \, n})(G_{mm \, Mix \, n})}{(\text{Tons}_{Mix \, 1})+(\text{Tons}_{Mix \, 2})+(\text{Tons}_{Mix \, n})} \)

*The Pay Adjustment (SY) is determined as follows:*

Pay Adjustment (SY) = Pay Area (SY) – Plan Quantity (SY)

The Pay Adjustment can be positive, negative, or zero. The positive adjustment is limited to 105% of the Plan Quantity (SY)

See **Appendix A** for Example (1) Negative Adjustment; Example (2) Positive Adjustment within the 105% Limit; and Example (3) Adjustments Exceeding the 105% Limit

(B) **Composite Base**
Composite Base is a mixture of granular Subbase (White Base) and Asphalt Base. Composite Base is paid under pay item number 285-709 thru 285-715 (see *Specification 285-3* and *Table 285-1*).

The Asphalt Base is a Type B-12.5 with a thickness of 4" to 7" thick (see *Specification Section 285*). The White Subbase has a thickness tolerance and will not receive a thickness adjustment (See *Specification 290-4.3*). The Asphalt Base spread rate is calculated from the equation for the Adjusted PQ Tonnage seen under Section 11.4.4.1, (A) (1). The adjustment will automatically be shown in the QCRR.

See *Appendix A*, Examples 1, 2 and 3 for the adjustment to the asphalt portion.

(C) Cubic Yard Pay Item Adjustments

The only Asphalt Cubic Yard Pay Item is Asphalt Treated Permeable Base (ATPB). This pay item *does not* allow for 105% pay adjustment. ATPB *does* receive CPF, Fuel, and Bituminous Adjustments (when applicable).

(D) Tonnage Pay Item Adjustments

(1) Superpave Structural and Friction Courses
The maximum tonnage paid will be based upon the following formula:

\[
\text{Maximum Tons Pay} = \text{Adjusted PQ} \times 1.05
\]

*Where the Adjusted PQ Tonnage is determined as follows:*

\[
\text{Adjusted PQ} (\text{TN}) = \frac{\text{PQ} (\text{TN}) \times \text{Tonnage-Weighted Average } G_{\text{mm}}}{\text{Design } G_{\text{mm}}}
\]

PQ (TN) = Original PQ, including any Engineer approved quantity revisions (TN)

\[G_{\text{mm}} = 2.540 \text{ (for Dense Graded Structural Asphalt or Friction per Section 334-1.4 of the Specifications) or } G_{\text{sb}} = 2.635 \text{ (for Open Graded Friction Course per Section 337-8.2 of the Specifications)}
\]

The Tonnage-Weighted Average \( G_{\text{mm}} \) (or \( G_{\text{sb}} \) for FC-5) is calculated within the QCRR for each pay item used. The equation for this is as follows:
Tonnage-Weighted Average $G_{mm} =$

$$\frac{(\text{Tons}_{\text{Mix } 1}) (G_{mm \text{ Mix } 1}) + (\text{Tons}_{\text{Mix } 2}) (G_{mm \text{ Mix } 2}) + (\text{Tons}_{\text{Mix } n}) (G_{mm \text{ Mix } n})}{(\text{Tons}_{\text{Mix } 1}) + (\text{Tons}_{\text{Mix } 2}) + (\text{Tons}_{\text{Mix } n})}$$

See Appendix A for Example (4) No Adjustments; Example (5) Exceeding the 105% Adjustment; and Example (6) Within the 105% Adjustment.

(2) Miscellaneous Asphalt

The Designer quantity is determined based on a spread rate of 100 Lbs/SY-inch of design thickness of asphalt placed over the area in the plans.

The maximum tonnage paid will be based upon the following formula:

Maximum Tons Pay = Adjusted PQ x 1.05

Where the Adjusted PQ is determined as follows:

$$\text{Adjusted Plan Quantity} = \frac{\text{PQ (TN)} \times \text{Tonnage-Weighted Average } G_{mm}}{\text{Design } G_{mm}}$$

And:

$\text{PQ (TN)} = \text{Original PQ, including any Engineer approved quantity revisions (TN)}$

The Tonnage-Weighted Average $G_{mm}$ is calculated within the QCRR. The equation for this is as follows:

Tonnage-Weighted Average $G_{mm} =$

$$\frac{(\text{Tons}_{\text{Mix } 1}) (G_{mm \text{ Mix } 1}) + (\text{Tons}_{\text{Mix } 2}) (G_{mm \text{ Mix } 2}) + (\text{Tons}_{\text{Mix } n}) (G_{mm \text{ Mix } n})}{(\text{Tons}_{\text{Mix } 1}) + (\text{Tons}_{\text{Mix } 2}) + (\text{Tons}_{\text{Mix } n})}$$

Design $G_{mm} = 2.540$ (per 334-1.4 of the Specifications)

See Appendix A for Example (7) Payment up to 105% on Miscellaneous Asphalt.

(3) Turnout Construction (Asphalt)

Turnout Construction Asphalt is also a tonnage pay item, however, it does not receive pay quantity adjustments. It does not receive a CPF adjustment (CPF = 1). It does receive Fuel and Bituminous adjustments, when applicable, per Specifications.
11.4.4.2 Thickness Adjustments

(A) Core-Out Adjustments (White Base)

This section is for Optional Base Courses (white base only), such as Limerock, and Cemented Coquina. This pay item group (see Section 285 of the Specifications) is Plan Quantity subject to the provisions of Section 9-3.2 of the Specifications.

The thickness is cored in accordance with Section 285-7 of the Specifications. The core-out report is used to calculate the average thickness.

The pay area is calculated as follows:

Pay Area (SY) = \( \frac{\text{Surface Area (SY)} \times \text{Calculated Avg. Thickness (in) per 287-7}}{\text{Plan Thickness (in)}} \)

The pay area shall not exceed 105% of the Surface Area.

There will be no adjustment for base courses that are constructed using mixed-in-place material.

See Appendix B for Adjustment Examples.

11.4.4.3 Quality Adjustments

(A) Composite Pay Factor (CPF) Adjustments

Once a LOT is closed and it has been determined by the Verification Technician (VT) that a CPF adjustment must be made, the adjustment shall be made during the month the LOT is closed and paid accordingly on the next progress estimate. The Engineer or designee shall calculate the unit price adjustment and enter the revised unit price adjustment and LOT tonnages on the monthly estimate.

These revised unit price adjustments can range from 75% to 105%. LOTs shall be grouped together for each unit price adjustment, when applicable.

CPF adjustments in SiteManager will be handled by adjusting the unit price by the appropriate CPF. See Appendix C, Example (2)(B). Show the calculations under the pay item on the Plan Summary Box in the Plans or reference where calculations are shown. See Appendix C; Example (3).
Note: In some instances, the QCRR will show more or less square yards than the plan quantity. The Contractor should use due care when reporting square yards to accurately report the length and width of area being placed. The PA needs to use reasonable investigation to see if plan quantity is in error and warrants an adjustment.

CPF Adjustments apply to Superpave Base, Friction, Structural, Composite Base (Asphalt portion), and Asphalt Treated Permeable Base Courses.

There will be no CPF adjustments on Miscellaneous Asphalt, Turnout Construction (Asphalt), and Temporary Asphalt. This is due to temporary asphalt being placed and removed. The Department will not pay for temporary asphalt separately; it is always included in the quantity for another pay item, such as Temporary Detour. Miscellaneous Asphalt and Turnout Construction Asphalt are not tested and are accepted on a visual basis. These pay items will have a CPF of 1 (i.e. no adjustment).

(1) Resident Office’s Responsibility
The PA and the VT are responsible for verifying the Contractor’s Quality Control (QC) Technician’s test results entered in the Material’s Acceptance and Certification (MAC) system and that the CPF reports are correct. The CPF adjustments shall be made at the closing of a LOT for the life of the Contract. See example of LOT Submittal Package (See Section 11.10 of this Manual). The reports along with the asphalt ticket packets shall be collected two working days after the closing of a LOT. The LOT Submittal Package shall be submitted with the Final Estimates Package electronically (the original asphalt tickets (white tickets) will be scanned with the LOT Submittal Package. The hard copies will be destroyed.

Note: It is the Resident Office’s responsibility to ensure any errors found on the QCRR after final acceptance are corrected by the Contractor.

See Appendix C; Examples (4), (5), and (6) for CPF calculations.

(2) Pay Factor Material Documentation - Materials Acceptance Resolution (MAR)
In some instances, the PA will require removal and replacement of tonnage within a LOT due to MAR. This asphalt may be a partial sublot, an entire sublot, or an entire LOT. The QC Technician should identify the problem before an entire LOT is placed. The asphalt identified to be removed will be milled and replaced with asphalt from another LOT. The original LOT Submittal Package will be explained with remarks as “No Pay” with reference to the new replacement LOT Submittal Package. The replacement material is to be paid in the Lot Submittal...
Package at the appropriate CPF for that lot’s production with references and remarks to the defective material LOT Submittal Package.

Note: The QCRR should accurately reflect the asphalt placed in each LOT.

(a) Composite Pay Factors < 80 and ≥ 75

   i. Remove and replace the tonnage in this LOT at no cost to the Department. Notate LOT Submittal Packages as underlined above.

   ii. Obtain an Engineering Analysis, if agreed to by the PA, to determine if material may remain in place. If material is to remain in place, apply the CPF for this LOT. If the material is to be removed and replaced, notate LOT Submittal Packages as underlined above.

   iii. The Engineer, at his/her sole option, may perform an evaluation to leave the defective material in place and apply the CPF for this LOT.

(b) Composite Pay Factor < 75

   i. Remove and replace the tonnage in this LOT at no cost to the Department. Notate LOT Submittal Packages as underlined above.

(c) Independent Verification (IV) Test Failure

   i. Remove and replace the tonnage in this LOT at no cost to the Department. Notate LOT Submittal Packages as underlined above.

Example 1:

LOT 3 had asphalt for which the PA, after concurrence from the District Construction/Bituminous Engineer, required removal and replacement. The PA identified the area in writing to the Contractor. The Contractor removed the asphalt at the Contractor’s expense and replaced with asphalt from LOT 5. The replacement asphalt will be paid based on LOT 5’s CPF with remarks identifying the area and replacement tonnage represented in LOT 3.
For example, the replacement tonnage equals 249 Tons. The LOT Submittal Package for LOT 3 will be explained with remarks as “No Pay” with reference to the replacement asphalt included in the LOT Submittal Package for LOT 5. The LOT Submittal Package for LOT 5 will clearly identify that 249 Tons was produced to replace defective asphalt produced in LOT 3, with references and remarks. The 249 Tons will be included in LOT 5 and paid at the LOT 5 CPF. See attached link on the Construction Website for another example.


(d) Individual Quality Control (QC) Test

In some instances, an individual QC test will bring the CPF down and require removal and replacement (CPF <80). The original lot is then paid based on the outcome of the CPF ((a) or (b) above). The Contractor may perform an Engineering Analysis Report (EAR), if approved by the PA, to isolate the tonnage that needs to be removed rather than the entire LOT. The affected material will be deducted from the original LOT Submittal Package. The original LOT Submittal Package will be explained with remarks for this material as “No Pay” with reference to the new replacement LOT Submittal Package. The replacement material is to be paid in the LOT Submittal Package at the appropriate CPF for that lot’s production with references and remarks to the defective material LOT Submittal Package.

Note 1: If all material in a sublot is removed and replaced, the QC test for that sublot will be thrown out and the CPF for the LOT will be based on the remaining sublot QC test results. MAC will automatically adjust the CPF accordingly.

Note 2: When isolating tonnage where removal is required, the PA must evaluate the material between the previous QC test and the QC test that caused the LOT to fall into the Low Pay Factor and evaluate the material placed after previous or current QC test.

Note 3: It is recommended to deduct asphalt left in place at no pay due to an EAR from the pay item quantity, rather than make a line item adjustment, to more easily compare final quantities in SiteManager to the final quantities on the QCRR.
See Appendix C; Example (1) E-mail from the District Material's Office to the PA with Number of Tests and Costs, Example (2)(A) Resolution Testing Costs on Website and Example (2)(B) for Reporting Cost Resolution Testing in SiteManager.

Example of Documenting Low Pay Factor Material due to Quality Control Test Failure:

The production was shut down at 700 Tons production in Sublot #4 due to a QC failure. After an EAR was performed, it was determined that 400 Tons in Sublot #3 was also affected.

All of Sublot #4 was removed; therefore, the remaining 3 QC test results are used to determine the CPF. The 3 QC test results represent the remainder of the LOT. Total production for pay will be: 2,600 Tons in LOT #3 based on the 3 QC tests. The 1,100 Tons (400 Tons Sublot #3 and 700 Tons in Sublot #4) will be removed and replaced. The deduction will be handled in the remarks column of the LOT Submittal Package for LOT #3 with reference to the LOT Submittal Package where the replacement tonnage occurred. The replacement tonnage (1,100 Tons) will be paid at the CPF for the LOT that produced the replacement tonnage with explanation in the remarks column referencing this material to LOT #3.

The Fuel and Bituminous Adjustments will follow the same process as removal and replacement of asphalt material (on MAR’s). For example: the Bituminous Adjustment for the asphalt that was rejected in the amount of 1,100 Tons will be deducted on the monthly bituminous certification submitted by the Contractor for the period reflecting Sublots 3 and 4 that were placed previously. Likewise, the monthly bituminous adjustment for the replaced 1,100 Tons of asphalt will be included on the monthly bituminous certification related to the period when the replacement will take place. Explanations and references will be made on the bituminous certification sheets and the LOT Submittal Packages in question to address the removal and replacement quantity.
See examples on how to properly document removal and replacement tonnage on the QCRR due to MAR’s and Straightedge Corrections at the following link: http://www.fdot.gov/construction/Asphalt/PDFFiles/QCRR%20MAR%20Removal,%20Segregation,%20and%20Straightedge%20Corrections.pdf.

(B) Straightedge Deficiency Adjustments

See Chapter 11.5 of this manual for Straightedge deficiency adjustments.

11.4.4.4 Bituminous Adjustments

Asphalt produced and accepted on a project will receive a bituminous adjustment if requirements are met, per Specifications 9-2.1.2 (see note below for exceptions). The requirements are original Contract time of more than 365 calendar days or more than 5,000 Tons of asphalt concrete on conventional, Lump Sum (LS), and Design Build (DB) Contracts.

There will be no Bituminous Adjustments on Optional Base Pay Items, unless the Designer specifies Black Base only on the Typical Section in the Plans.

Bituminous Adjustments will be made on Superpave Asphalt Base, Structural and Friction Courses, Turnout Construction Asphalt, Asphalt Treated Permeable Base, on Miscellaneous Asphalt Pavement, and Asphalt Rubber Membrane Interlayer Pay Items.

The Department will adjust the price for bituminous material, excluding cutback and emulsified asphalt, to reflect increases or decreases in the Asphalt Price Index (API) of bituminous material in effect during the month in which bids were received. When an estimate is generated, Bituminous Adjustments must be calculated per Specifications and a line item adjustment will be applied in SiteManager by the PA. Bituminous adjustments will not be made on asphalt exceeding 105% of the adjusted plan quantity.

The API for Bituminous and Polymer (for Unmodified Binders 67 and lower, and for Modified Binders 76 and higher) are posted on the State Construction Office Website each month: FDOT-Construction-Fuel and Bituminous Materials.

Note: When a Composite Base item(s) is specified in the Plans, a price adjustment for bituminous material will apply to the asphalt portion of the base only, according to Section 9-2.1.2 of the Specifications.
(1) **Contractor’s Responsibility**

It is the Contractor’s responsibility to provide the Department a Certification of Quantities using the Department’s forms available on the State Construction’s website at: [http://www.fdot.gov/construction/fuel&bit/FuelForms.shtm](http://www.fdot.gov/construction/fuel&bit/FuelForms.shtm). The Certification form will be turned in monthly to the PA for payment for all project types (conventional, LS, and DB).

(2) **Cutoff Period**

All *Certificates of Quantities* provided by the Contractor will need to represent the amount of material placed on the project and accepted by the Department during the estimate cutoff period. The estimate cutoff dates are provided on the State Construction Office Website at [http://www.dot.state.fl.us/Construction/CONSTADM/EstimatesCutOff.shtm](http://www.dot.state.fl.us/Construction/CONSTADM/EstimatesCutOff.shtm).

Below is an example to show how the estimate cutoff dates are to be used in processing the *Certificate of Quantities* submitted by the Contractor.

**EXAMPLE 1: Conventional Project**

The cutoff date for Progress Estimate #18 is June 11, 2017. See the snapshot of the cutoff dates that are listed on the State Construction Website below.

The Contractor’s Certification of Quantities should reflect all material placed and accepted from May 22, 2017 thru June 11, 2017 (day after cutoff date of previous month to cutoff date of present month). On Conventional Projects, the Contractor will use **Form 700-050-66** which is the *Certificate of Quantities Form* for Bituminous Material. On this Form, the June bituminous index will be used. Once the Contractor fills out the Set-Up sheet, and clicks “Go to Main Sheet” (located at bottom of the form) the *Certificate of Quantities Form* will appear filled out with quantities for pay. The Contractor will sign this form and turn it in to the PA monthly for payment. See **Appendix D**, Example (1)(A) and (1)(B) for an example of **Form 700-050-66** filled out by a Contractor for a Conventional Project.

**Example of the Cut-Off dates for 2016 on the State Construction Website**

<table>
<thead>
<tr>
<th>Year</th>
<th>Month 1</th>
<th>Month 2</th>
<th>Month 3</th>
<th>Month 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>July 16, 2017</td>
<td>August 20, 2017</td>
<td>September 17, 2017</td>
<td>September 17, 2017</td>
</tr>
<tr>
<td></td>
<td>October 15, 2017</td>
<td>November 12, 2017 (2nd Sunday)</td>
<td>December 17, 2017</td>
<td>December 17, 2017</td>
</tr>
</tbody>
</table>
(3) **Resident Office Personnel Responsibility**

It is the responsibility of the Resident Office (RO) personnel to make sure that the Contractor submits the bituminous material certification monthly on each project that meets the criteria specified in **Section 9** of the **Specifications**. Once the Contractor submits a certification, the RO personnel, in charge of the Contract, will spot check the form for quantity errors, indexes, dates, etc.

It is the responsibility of the PA to enter bituminous adjustments as a line item adjustment in SiteManager. Bituminous adjustments can be negative or positive.

### 11.4.5 As-Built Data Requirements

Asphalt As-Built Pavement Data will be collected on **Form 675-030-20A**, which is the **QCRR** Automated Version, by submitting this excel file(s) to the State Materials Office by email after Final Acceptance. **Form 700-050-12, Asphalt Roadway – As-Built Data** is not needed for projects using the automated QCRR.

For projects let before July 2015 using **Form 675-030-20, QCRR**, as-built pavement data will be submitted using **Form 700-050-12, Asphalt Roadway – As-Built Data** after paving operations are finished to provide a complete record of the composite make-up of the mainline pavement applied to each project (see note below). Once the form(s) have been completed, email the excel file(s) to the State Final Estimates Office. The objective is to provide a Pavement Design Engineer with sufficient information and necessary data that can be used to develop and apply proper engineering practices for future roadway development, design, and maintenance.

The PA will be responsible for ensuring that this data is submitted accurately. Should errors be discovered after submittal, the **QCRR** shall be corrected and resubmitted with instructions that the form has been revised.

**NOTE:** Only reflect pavement data for the mainline (through lane) on **Form 700-050-12, Asphalt Roadway – As-Built Data**. Data for ramps, shoulders, side roads, auxiliary lanes, or non-state road facilities is not needed. The Roadway VT should perform this operation and complete the form to reflect the actual pavement composition.
11.4.6 List of Attachments

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**APPENDIX A**

1. **105% Adjustments on Square Yard Pay Items (Plan Quantity)**
   - **EXAMPLE (1): Negative Adjustment**
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**APPENDIX B**

2. **Thickness Adjustments for Optional Base (White Base)**
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**APPENDIX D**

4. **Bituminous Adjustments on Conventional Projects**
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APPENDIX A

105% Adjustments on Square Yard Pay Items (Plan Quantity)

EXAMPLE (1): Negative Adjustment

Given:
A conventional project with Superpave Base Asphalt, Type B (12.5), Group 15 (Pay Item 285-715) contains the following criteria:
- PQ Area = 46,800 SY
- Unit Price = $50.35 per SY
- Design Thickness = 9"

$G_{mm}$ used for PQ determination per Specification 334-1.4 = 2.540 for Dense Graded Asphalt

The Contractor will lay the 9" in 3 courses; 3" each course

The Design Spread Rate = $G_{mm,design} \times 43.3$ (Lbs/SY-in) x thickness (in.)
= 2.540 x 43.3 (Lbs/SY-in) x 9 (in) = 989.84 = 990 Lbs/SY

The Target Spread Rate per lift =

\[
\frac{990 \text{ Lbs/SY}}{(3)} = 330 \text{ Lbs/SY} \text{ (based on the Specifications 334-1.4)}
\]

From the Asphalt Roadway – Daily Report of Quality Control, three Design Mixes were used and their recorded tonnages:
- Mix 1 with 17,451 Tons at $G_{mm}$ of 2.561
- Mix 2 with 3,780 Tons at $G_{mm}$ of 2.599, and
- Mix 3 with 1,659 Tons at $G_{mm}$ of 2.488

Total Tons Placed on the Project = 22,890 Tons
No changes to PQ area.

What is the Final Pay?
Note 1: The QCRR will calculate the following. This is just an example. Outcome of quantities may be different than QCRR outcome due to rounding.

Solution:

1. The Tonnage-Weighted Average $G_{mm}$ is calculated first.

   \[
   \text{Tonnage-Weighted Average } G_{mm} = \frac{(\text{Tons}_{Mix_1})(G_{mm Mix_1}) + (\text{Tons}_{Mix_2})(G_{mm Mix_2}) + (\text{Tons}_{Mix_n})(G_{mm Mix_n})}{(\text{Tons}_{Mix_1}) + (\text{Tons}_{Mix_2}) + (\text{Tons}_{Mix_n})}
   \]

   \[
   \text{Tonnage-Weighted Average } G_{mm} = \frac{[17,451 \text{ Tons})(2.561) + (3,780 \text{ Tons})(2.599) + (1,659 \text{ Tons})(2.488)]}{(17,451 \text{ Tons} + 3,780 \text{ Tons} + 1,659 \text{ Tons})}
   \]

   \[
   = \frac{(44,692 \text{ Tons} + 9,824.2 \text{ Tons} + 4,127.5 \text{ Tons})}{22,890 \text{ Tons}}
   \]

   \[
   = 2.562
   \]

2. The Adjusted PQ Tonnage is calculated second.

   \[
   \text{Adjusted PQ Tonnage} = \frac{[\text{PQ Area (SY)} \pm \text{Any Revisions})] \times [t \text{ (in)} \times G_{mm,avg} \times 43.3 \text{ (Lbs/SY-in)}]}{2,000 \text{ Lbs/Ton}}
   \]

   \[
   = \frac{46,800 \text{ SY} \times 9 \text{ in} \times 2.562 \times 43.3 \text{ Lbs/SY-in}}{2,000 \text{ Lbs/Ton}}
   \]

   \[
   = 23,362.8 \text{ Tons}
   \]

3. The pay adjusted area is then calculated.

   \[
   \text{Pay Adjustment} = \text{PQ Area (SY)} \times \left[ \frac{\text{Ratio of } \frac{\text{Tonnage Placed on Project}}{\text{Adjusted PQ Tons}} - 1}{2,000 \text{ Lbs/Ton}} \right]
   \]

   \[
   = 46,800 \text{ SY} \times \left[ \frac{22,890 \text{ Tons}}{23,362.8 \text{ Tons}} - 1 \right]
   \]

   \[
   = 46,800 \text{ SY} \times [-0.0202]
   \]

   \[
   = -947 \text{ SY} \ (This \ will \ be \ shown \ on \ the \ QCRR)
   \]
Note 2: This is where the PA or Project Personnel will do the line item adjustments:

1. Since there were no Plan Errors or Field Revisions in this example, the Contractor will receive payment for the full PQ Area of 46,800 SY in SiteManager for pay item 285-715 (Asphalt Base is a PQ SY pay item).

2. However, due to less asphalt being placed than planned (per Specifications, Section 330-6.1.5, the spread rate is within plus or minus 5% of the target spread rate), there will be a pay adjustment. In this case, a minus 2% (the negative ratio of 0.0202) adjustment. This is within the 5% range, and since there were no other deficiencies, the Contractor will be deducted 947 SY; (− 947 SY x $50.35/SY = − $47,681.45). This will be entered in SiteManager as a negative Line Item Adjustment.

3. The Contractor will receive a Bituminous Adjustment for all the asphalt produced and accepted, per Specifications, if the Typical Section shows Asphalt Black Base Only. If the Typical Section allows an Option for base (either white or black), a bituminous adjustment will not apply.

   If this were a black base project, no deduction to Bituminous will be made, because the Contractor did not place all the necessary asphalt for this project.

4. Fuel Adjustment: When the − 947 SY deduction is made on the SY pay item in SiteManager, a corresponding negative fuel adjustment will also be made, in SiteManager. See Chapter 5, Section 5.14 of this Manual for Fuel Adjustments.

5. Since CPFs are based on Quality and all 22,890 Tons were accepted on this project, the CPF adjustments will be made for each LOT with the appropriate CPF and corresponding tonnage (see calculations below). No other adjustment for CPF will be made at the end of the project (this means we will not deduct 947 SY from the CPF on the last LOT at the end of the project), because the quality of the 22,890 Tons was accepted.

Example 1a: For Lot 4: CPF = 1.02; LOT Tonnage = 2,000 Tons (Design Area = 4,124 SY, based on G_mm of 2.54)

\[
\text{Equivalent Area (SY)} = \frac{[\text{LOT Tonnage} \times 2,000 \text{ Lbs/Ton}]}{[\text{t (in)}] \times G_{\text{mm,avg}} \times 43.3 \text{ (Lbs/SY-in)}}
\]
Equivalent Area (SY) = \[ \frac{[2,000 \text{ Tons} \times 2,000 \text{ Lbs/Ton}]}{[9 \text{ in} \times 2.562 \times 43.3 \text{ Lbs/Ton-in}]} \]

Equivalent Area (SY) = 4,006 SY

(Use this SY instead of 4,124 SY for the CPF Adjustment, since the asphalt was placed shy of target)

CPF Adjustment for this LOT = 1.02 – 1 = 0.02
0.02 \times $50.35/SY = $1.01/SY
$1.01/SY \times 4,006 \text{ SY} = $4,046.06.

This will be a positive Line Item Adjustment.

Example 1b: For Lot 6: CPF = 0.99; LOT Tonnage = 4,000 Tons (Design Area = 8,290 SY, based on $G_{mm}$ of 2.54)

Equivalent Area (SY) = \[ \frac{[\text{LOT Tonnage} \times 2,000 \text{ Lbs/Ton}]}{[\text{t (in) \times G_{mm,avg} \times 43.3 \text{ Lbs/SY-in}]} \]

Equivalent Area (SY) = \[ \frac{[4,000 \text{ Tons} \times 2,000 \text{ Lbs/Ton}]}{[9 \text{ in} \times 2.562 \times 43.3 \text{ Lbs/Ton-in}]} \]

Equivalent Area (SY) = 8,013 SY (Instead of 8,290 SY)

CPF Adjustment for this LOT = 0.99 – 1 = - 0.01
- 0.01 \times $50.35/SY = - $0.50/SY
- $0.50/SY \times 8,013 \text{ SY} = - $4,006.50.

This will be a negative Line Item Adjustment.

Ensure payment for SY is PQ +/- any changes during placement, then pay adjustments will be made at the end.
APPENDIX A
105% Adjustments on Square Yard Pay Items (Plan Quantity)

EXAMPLE (2): Positive Adjustment within the 105% Limit

Given:
A project with Superpave Base Asphalt, Type B (12.5), Group 15 contains the following criteria:

PQ Area = 46,800 SY
Unit Price = $49.50/SY
Contractor placed 24,340 Tons
No changes to PQ area.
Design Thickness = 9"

Three Design Mixes with recorded tonnages; they are:
- Mix 1 with 18,451 Tons at G_{mm} of 2.561
- Mix 2 with 4,780 Tons at G_{mm} of 2.599
- Mix 3 with 1,109 Tons at G_{mm} of 2.488

What is the Final Pay?

Note 1: The QCRR will calculate the following. This is just an example. Outcome of quantities may be different than QCRR outcome due to rounding.

Solution:
Tonnage-Weighted Average G_{mm} =
= \frac{[(18,451 \text{ Tons})(2.561) + (4,780 \text{ Tons})(2.599) + (1,109 \text{ Tons})(2.488)]}{(18,451 \text{ Tons}) + (4,780 \text{ Tons}) + (1,109 \text{ Tons})}
= \frac{(47,253 \text{ Tons} + 12,423.2 \text{ Tons} + 2,759.2 \text{ Tons})}{24,340 \text{ Tons}}
= \frac{62,435.4 \text{ Tons}}{24,340 \text{ Tons}}
= 2.565
Adjusted PQ (TN)
\[ \frac{\text{Adjusted PQ (TN)}}{2,000 \text{ Lbs/Ton}} = \frac{\left(\text{PQ Area (SY) ± Any Revisions}\right) \times \left(\left(t \text{ (in)} \times G_{\text{mm,avg}} \times 43.3 \text{ Lbs/SY-in}\right)\right)}{2,000 \text{ Lbs/Ton}} \]
\[ = \frac{46,800 \text{ SY} \times (9 \text{ in} \times 2.565 \times 43.3 \text{ Lbs/SY-in})}{2,000 \text{ Lbs/Ton}} \]
\[ = 23,390.1 \text{ Tons} \]

Pay Adjustment = PQ Area (SY) \times \left[ \frac{(\text{Tonnage Placed on Project})}{\text{Adjusted PQ Tons}} - 1 \right]
\[ = 46,800 \text{ SY} \times \left[ \frac{24,340 \text{ Tons}}{23,390.1 \text{ Tons}} - 1 \right] \]
\[ = 46,800 \text{ SY} \times 0.0406 \]
\[ = 1,901 \text{ SY} \quad (This \ will \ be \ shown \ on \ the \ QCRR) \]

Note 2: This is where the PA or Project Personnel will do the line item adjustments:

1. Since there were no Plan Errors or Field Revisions in this example, the Contractor will receive payment for the full PQ Area of 46,800 SY in SiteManager.

2. However, the Contractor placed more asphalt than planned (the 0.0406 is 104%), and since the placement is less than the 105% limit, there will be a pay adjustment. The Contractor will receive a positive Adjustment for the 1,901 SY in SiteManager as a positive line item adjustment.

3. For Bituminous Adjustments, the Contractor will get paid for all the asphalt produced and accepted, when applicable.

4. When the +1,901 SY addition is made in SiteManager, a corresponding positive fuel adjustment will also need to be made, in SiteManager. (See Chapter 5, Section 5.14 of this Manual for Fuel Adjustments.)

5. CPFs are based on Quality. The Contractor placed 24,340 Tons which was accepted on this project. The CPF adjustments will be made for each LOT with the appropriate CPF and corresponding tonnage (See calculations in Appendix A; Example 1). No other adjustment for CPF will be made at the end of the project (this means we will not add 1,901 SY from the CPF on...
the last LOT at the end of the project), this is because the quality of the 24,340 Tons was already accepted.

Ensure payment for SY is PQ +/- any changes during placement, then pay adjustments will be made at the end.
APPENDIX A
105% Adjustments on Square Yard Pay Items (Plan Quantity)

EXAMPLE (3): Adjustments Exceeding the 105% Limit

Given:
A project with Superpave Base Asphalt, Type B (12.5), Group 15 contains the following criteria:

- PQ Area = 46,800 SY
- Unit Price: $ 49.50/SY
- Contractor placed Tons = 24,950 Tons
- No changes to PQ Area
- Design Thickness = 9"

The three Design Mixes used and their recorded tonnages are:
- Mix 1 with 18,451 Tons at $mm$ of 2.561
- Mix 2 with 4,780 Tons at $mm$ of 2.599
- Mix 3 with 1,719 Tons at $mm$ of 2.488

What is the Final Pay?

Note 1: The QCRR will calculate the following. This is just an example. Outcome of quantities may be different than QCRR outcome due to rounding.

Solution:

1. Tonnage-Weighted Average $mm$ =
   
   \[
   \frac{(\text{Tons}_{\text{Mix } 1})(G_{mm \text{ Mix } 1}) + (\text{Tons}_{\text{Mix } 2})(G_{mm \text{ Mix } 2}) + (\text{Tons}_{\text{Mix } n})(G_{mm \text{ Mix } n})}{(\text{Tons}_{\text{Mix } 1}) + (\text{Tons}_{\text{Mix } 2}) + (\text{Tons}_{\text{Mix } n})}
   \]

   \[
   = \frac{[(18,451 \text{ Tons})(2.561) + (4,780 \text{ Tons})(2.599) + (1,719 \text{ Tons})(2.488)]}{(18,451 \text{ Tons}) + (4,780 \text{ Tons}) + (1,719 \text{ Tons})}
   \]

   \[
   = \frac{(47,253 \text{ Tons} + 12,423.2 \text{ Tons} + 4,276.9 \text{ Tons})}{24,950 \text{ Tons}}
   \]

   \[
   = \frac{64,253.1 \text{ Tons}}{24,950 \text{ Tons}}
   \]

   \[
   = 2.563
   \]
2. Adjusted PQ Tons = \frac{(PQ \text{ Area SY } \pm \text{ Any Revisions}) \times [(t \text{ (in) } \times G_{\text{mm, avg}} \times 43.3 \text{ Lbs/SY-in})]}{2,000 \text{ Lbs/Ton}}

\[= \frac{(46,800 \text{ SY}) \times [(9 \text{ in } \times 2.563 \times 43.3 \text{ Lbs/SY-in})]}{2,000 \text{ Lbs/Ton}}\]

\[= 23,371.9 \text{ Tons}\]

3. Pay Adjustment = PQ \text{ Area} \times \left[ \text{Ratio of} \frac{\text{Tons Placed}}{\text{Adjusted Quantity}} - 1 \right]

\[= 46,800 \times \left[ \frac{24,950}{23,371.9} - 1 \right]\]

\[= 46,800 \times [0.0675] = 3,159 \text{ SY} \]

Since the ratio of 0.0675 or 106% is greater than 105%, the Contractor can only receive up to 105% adjustment of the Design PQ Area per Specifications.

Therefore, the adjustment limited by the Specifications will be:

\[46,800 \times 0.05 = 2,340 \text{ SY} \quad (This \ will \ be \ shown \ on \ the \ QCRR)\]

**Note 2: This is where the PA or Project Personnel will do the line item adjustments:**

1. Since there were no Plan Errors or Field Revisions in this example, the Contractor will receive payment for the full PQ Area of 46,800 SY in SiteManager.

2. The Contractor will receive a positive Line Item Adjustment for the 2,340 SY in SiteManager.

3. For Bituminous Adjustments: The extra tonnage placed will be deducted from the last bituminous certification sheet. To calculate the extra tonnage placed:

\[\text{Pay Adjustment – 105% Limit} = 3,159 \text{ SY} – 2,340 \text{ SY} = 819 \text{ SY}\]

\[\text{Tonnage to be deducted} = \frac{819 \text{ SY} \times [(9 \text{ in } \times 2.563 \times 43.3 \text{ Lbs/SY-in})]}{2,000 \text{ Lbs/Ton}}\]

\[\text{Tonnage to be deducted} = 409.0 \text{ Tons for Bituminous}\]
4. **For Fuel Adjustments:** When the 2,340 SY Line Item Adjustment is done in SiteManager, a corresponding Fuel Adjustment will be made to the SY pay item in SiteManager.

5. Because CPF Adjustments will be made as the project progresses for the actual Tonnage placed, the tonnage placed over the 105% will be deducted using the CPF from the last LOT.

Example 3a: If Last LOT CPF = 1.02:
\[1.02 - 1 = 0.02\]
\[0.02 \times \$49.50/SY = \$0.99/SY\]
\[\$0.99/SY \times 819 \text{ SY} = \$810.81 \text{ (to be deducted as a negative CPF line item adjustment)}\]

However, if in Example 3b, the Last LOT CPF = 0.98:
\[0.98 - 1 = -0.02\]
\[-0.02 \times \$49.50/SY = -\$0.99/SY\]
\[-\$0.99/SY \times 819 \text{ SY} = -\$10.81 \text{ (This will also be a negative line item adjustment)}\]
APPENDIX A
105% Adjustments on Tonnage Pay Items

EXAMPLE (4): No Adjustment

This example is for a Contract with two FPID's where the Contractor placed less Tonnage than planned. This example is rare, but could happen.

Given:

A project with Superpave Asphalt, Traffic Level B, PG 76-22, (Pay Item 334-1-52) contains the following criteria. From the Contract and per Specifications 334-1.4, Dense Graded Structural or Friction Courses will use a $G_{mm} = 2.540$ to determine design quantities.

Project “A” Plan Quantity Tons show 13,754.3 Tons
Project “B” Plan Quantity Tons show 91.1 Tons
Total PQ Tons from Contract and Plans = 13,845.3 Tons
Total PQ Area (SY) =173,622 SY
No changes to PQ Area.

Project “A”:
Total asphalt placed = 13,345.0 Tons
Three Design Mixes were used per the QCRR:
   Mix 1 with $G_{mm} = 2.599$ at 9,000.0 Tons
   Mix 2 with $G_{mm} = 2.615$ at 2,500.0 Tons
   Mix 3 with $G_{mm} = 2.578$ at 1,845.0 Tons

Project “B”:
Total Asphalt placed = 89.2 Tons
One Design Mix was used per the QCRR:
   Mix 1 with $G_{mm} = 2.599$ at 89.2 Tons

Total Tonnage placed on this Contract = 13,345 Tons + 89.2 Tons = 13,434.2 Tons

What is the Final Pay for Project A and Project B?

Note 1: The QCRR will calculate the following. This is just an example. Outcome of quantities may be different than QCRR outcome due to rounding.
Solution:

Adjusted PQ Tonnage =
\[
\frac{(\text{Plan Area TN} \pm \text{Any Revisions}) \times (\text{Tonnage-Weighted Average } G_{\text{mm}})}{\text{Design } G_{\text{mm}}}
\]

And the

Tonnage-Weighted Average \( G_{\text{mm}} \) =
\[
\frac{(\text{Tons}_1 \times (G_{\text{mm Mix 1}}) + \text{Tons}_2 \times (G_{\text{mm Mix 2}}) + \ldots \times (G_{\text{mm Mix n}}))}{(\text{Tons}_1) + (\text{Tons}_2) + \ldots + (\text{Tons}_n)}
\]

Note: On this Contract, Design Mix 1 for Projects A and B was the same, so they can be combined: Design Mix 1 Tonnage = 9,000.0 + 89.2 = 9,089.2 Tons

1. Tonnage-Weighted Average \( G_{\text{mm}} \) for the Total Contract
   \[
   = \frac{(\text{Tons}_1 \times (G_{\text{mm Mix 1}}) + \text{Tons}_2 \times (G_{\text{mm Mix 2}}) + \ldots \times (G_{\text{mm Mix n}}))}{(\text{Tons}_1) + (\text{Tons}_2) + \ldots + (\text{Tons}_n)}
   \]
   \[
   = \frac{[(9,089.2 \text{ Tons})(2.599) + (2,500.0 \text{ Tons})(2.615) + (1,845 \text{ Tons})(2.578)]}{9,089.2 \text{ Tons} + 2,500.0 \text{ Tons} + 1,845.0 \text{ Tons}}
   \]
   \[
   = \frac{23,622.8 \text{ Tons} + 6,537.5 \text{ Tons} + 4,756.4 \text{ Tons}}{13,434.2 \text{ Tons}}
   \]
   \[
   = 2.599 \quad (\text{Tonnage-Weighted } G_{\text{mm}} \text{ for the Total Contract})
   \]

2. Adjusted Plan Quantity Tons = 13,845.3 Tons \times \frac{2.599}{2.540}
   \[
   = 14,166.9 \text{ Tons}
   \]

3. Maximum Pay Tonnage = 1.05 \times \text{Adjusted Plan Quantity Tons}
   \[
   = 1.05 \times 14,166.9 \text{ Tons}
   \]
   \[
   = 14,875.2 \text{ Tons} \quad (\text{Maximum that will be paid})
   \]

However, the Contractor only placed 13,434.2 Tons total for the Contract, which is less than the Adjusted PQ, and less than the max, so the Contractor will get paid what was placed. If the Contractor placed asphalt that is excessively deficient, follow the necessary requirements under Section 330 of the Specifications.
Contractor will get paid for:
- Project A = 13,345.0 Tons
- Project B = 89.2 Tons

If the CPF is < or > than 1; Contractor will receive a negative or positive adjustment. See CPF calculations for tonnage pay items under Section 11.4.4.2 (C).

Contractor will also receive Fuel and Bituminous adjustments on the asphalt placed and accepted, when applicable per Specifications.
APPENDIX A
105% Adjustments on Tonnage Pay Items

EXAMPLE (5): Exceeding the 105% Adjustment

Given:

A project with Superpave Asphalt, Traffic Level B, PG 76-22, (Pay Item 334-1-52) contains the following criteria. From the Contract and per Specifications 334-1.4, Dense graded Structural or Friction Courses will use a $G_{mm} = 2.540$ for design quantities.

Plan Quantity Tons = 13,845.3 Tons
Total PQ Area (SY) = 173,622 SY

Three Design Mixes were used per the QCRR:
- Mix 1 with $G_{mm} = 2.599$ at 9,000.0 Tons;
- Mix 2 with $G_{mm} = 2.615$ at 2,500.0 Tons and
- Mix 3 with $G_{mm} = 2.578$ at 3,450.0 Tons

Total Tons placed and accepted = 14,950 Tons

What is the Final Pay?

Note 1: The QCRR will calculate the following. This is just an example. Outcome of quantities may be different than QCRR outcome due to rounding.

Solution:

1. Tonnage-Weighted Average $G_{mm}$

\[
G_{mm} = \frac{(Tons_{Mix 1})(G_{mm Mix 1}) + (Tons_{Mix 2})(G_{mm Mix 2}) + (Tons_{Mix n})(G_{mm Mix n})}{(Tons_{Mix 1}) + (Tons_{Mix 2}) + (Tons_{Mix n})}
\]

\[
= \frac{(9,000.0 \text{Tons})(2.599) + (2,500.0 \text{Tons})(2.615) + (3,450.0 \text{Tons})(2.578)}{(9,000.0 \text{Tons}) + (2,500.0 \text{Tons}) + (3,450.0 \text{Tons})}
\]

\[
= \frac{(23,391 \text{Tons} + 6,537.5 \text{Tons} + 8,894.1 \text{Tons})}{(14,950 \text{Tons})}
\]

\[
= 2.597
\]
2. Adjusted PQ Tons = \frac{(\text{Plan Area TN} \pm \text{Any Revisions}) \times (\text{Tonnage-Weighted Average} \ G_{\text{mm}})}{\text{Design} \ G_{\text{mm}}}

\begin{align*}
= & \frac{(13,845.3 \text{ Tons x 2.597})}{2.540} \\
= & 14,156.0 \text{ Tons}
\end{align*}

3. Max Pay Tonnage = 1.05 \times \text{Adjusted PQ Tons}
\begin{align*}
= & 1.05 \times 14,156.0 \text{ Tons} \\
= & 14,863.8 \text{ Tons}
\end{align*}

**Note 2:** This is where the PA or Project Personnel will do the line item adjustments:

1. Contractor placed more than the maximum tonnage allowed per *Specifications* (pay up to 105% of the adjusted PQ Tonnage), so there will be a negative line item adjustment of 86.2 Tons deducted for the excess tonnage placed.

   Deduction = \text{Max Pay Tonnage} – \text{Tons Placed}
   \begin{align*}
   = & 14,863.8 – 14,950.0 = -86.2 \text{ Tons}
   \end{align*}

2. Apply the appropriate CPF Adjustment using the CPF from the last lot, per *Note 5 of Appendix A, Example 3* above.

3. Deduct the corresponding Bituminous Adjustments from the Last Bituminous Certification Sheet.

4. For Fuel Adjustments: When the -86.2 Tons Line Item Adjustment is done in SiteManager, a corresponding Fuel Adjustment will be made to the pay item in SiteManager.
APPENDIX A

105% Adjustments on Tonnage Pay Items

EXAMPLE (6): Within the 105% Adjustment (Open Graded FC-5)

Given:

A project with Open Graded Friction Course contains the following criteria. Section 337-8.2 of the Specifications states that a $G_{sb} = 2.635$ shall be used. For all the equations previously shown for Tonnage pay items, the $G_{mm}$ will be substituted for $G_{sb}$. For open graded FC, only one layer of asphalt is placed.

Total PQ Tons from Plans = 13,936.5 Tons
Total PQ Area = 173,622 SY
Three Design Mixes were used per the QCRR:
   Mix 1 with $G_{sb} = 2.638$ at 9,000.0 Tons;
   Mix 2 with $G_{sb} = 2.640$ at 2,500.0 Tons and
   Mix 3 with $G_{sb} = 2.636$ at 3,150.0 Tons
Total Tons placed and accepted on project = 14,650 Tons

What is the Final Pay?

Note 1: The QCRR will calculate the following. This is just an example. Outcome of quantities may be different than QCRR outcome due to rounding.

Solution:

1. Tonnage-Weighted $G_{sb} =$

\[
= \frac{(Tons_{\text{Mix 1}})(G_{mm\ \text{Mix 1}}) + (Tons_{\text{Mix 2}})(G_{mm\ \text{Mix 2}}) + (Tons_{\text{Mix n}})(G_{mm\ \text{Mix n}})}{(Tons_{\text{Mix 1}}) + (Tons_{\text{Mix 2}}) + (Tons_{\text{Mix n}})}
\]

\[
= \frac{[(9,000.0 \ Tons) \ (2.638) + (2,500.0 \ Tons)(2.640) + (3,150.0 \ Tons)(2.636)]}{(9,000.0 \ Tons) + (2,500.0 \ Tons) + (3,150.0 \ Tons)}
\]

\[
= \frac{(23,742 \ Tons) + (6,600 \ Tons) + (8,303.4 \ Tons)}{14,650 \ Tons}
\]

\[
= 2.638
\]
2. Adjusted PQ Tons  
   \[
   \frac{\text{Adjusted PQ Tons}}{\text{Plan Area TN ± Any Revisions} \times \text{Tonnage-Weighted Average } G_{\text{mm}}}
   \]
   \[
   = \frac{(13,936.5 \text{ Tons} \times 2.638)}{2.635}
   \]
   \[
   = 13,952.4 \text{ Tons}
   \]

3. Max Pay Tonnage = 1.05 x Adjusted PQ Tons  
   \[
   = 1.05 \times 13,952.4 \text{ Tons}
   \]
   \[
   = 14,650.0 \text{ Tons (Maximum that will be paid)}
   \]

The Contractor placed the exact tonnage that we could pay up to. Therefore, Contractor will get paid the total tonnage placed which equals up to the 105% per Specifications.

The Contractor will receive Fuel and Bituminous adjustments for the total asphalt that was placed and accepted. Also the CPF, if less than or greater than 1, will be adjusted in SiteManger.
APPENDIX A
105% Adjustments on Tonnage Pay Items

EXAMPLE (7): Payment up to 105% on Miscellaneous Asphalt

Given:

A conventional project has miscellaneous asphalt around guardrail. The project area contains the following criteria. From the Contract and per Specifications 334-1.4, Dense graded Structural or Friction Courses will use a \( G_{mm} = 2.540 \) for design quantities.

Original Plan Area = 800 SY
Original PQ Tons = 80.00 Tons
Final Area = 800 SY
Final Tons = 90.5 Tons

Only one Mix was used per the QCRR with \( G_{mm} = 2.544 \)

What is the Final Pay?

Note 1: The QCRR will calculate the following. This is just an example. Outcome of quantities may be different than QCRR outcome due to rounding.

1. Tonnage-Weighted Average \( G_{mm} \)
   \[
   \frac{(\text{Tons}_{\text{Mix 1}})(G_{\text{mm Mix 1}})}{(\text{Tons}_{\text{Mix 1}})} = \frac{(90.5 \ \text{Tons} \times 2.544)}{(90.5 \ \text{Tons})} = 2.544
   \]

2. Adjusted PQ Tons =
   \[
   \frac{(\text{Plan Area TN} \pm \text{Any Revisions}) \times (\text{Tonnage-Weighted Average } G_{\text{mm}})}{\text{Design } G_{\text{mm}}} = \frac{(80.0 \ \text{Tons} \times 2.544)}{(2.540)} = 80.1 \ \text{Tons}
   \]
3. Max Pay Tonnage = 1.05 x Adjusted PQ Tons
   = 1.05 x 80.1 Tons
   = 84.1 Tons  \((Maximum \ that \ will \ be \ paid)\)

Pay Adjustment = Max Pay Tonnage - Tons Placed
   = 84.1 Tons - 90.5 Tons
   = -6.4 Tons  \((Deducted \ from \ the \ Bituminous \ and \ Fuel \ reports)\)

Note: There will be no CPF adjustment on Miscellaneous Asphalt. This pay item does receive Fuel and Bituminous adjustments per Specifications.
APPENDIX B
Thickness Adjustments for Optional Base (White Base)

EXAMPLE (1): Positive Core-Out Adjustment Calculations

Given:

What is the final pay quantity for a limerock project given the following information? Is a line item adjustment needed?

Plan Thickness = 7.00"
Plan Quantity Area = 8,000 SY
Final Area = 8,000 SY
Actual Average Core-out Report Thickness = 7.50"

Specifications allow a maximum ½" tolerance per Section 285-7

Solution:

1. Determine if the thickness exceeds 5%

   Core Out Ratio = \( \frac{\text{Core Out Thickness} - \text{Plan Thickness}}{\text{Plan Thickness}} \)

   \[ \frac{(7.50" - 7.00")}{7.00"} \]

   \[ = 0.071428571 \times 100 = 7.1428571\% \text{ > 5\%**} \)

**Make sure to use the floating decimal to calculate over or under the 105%.

Since 7.1428571% exceeds the 5% stated in the Specifications, Section 285-8, the maximum pay area will govern the payment.

2. Determine the Maximum Pay Area

   Maximum Pay Area = 1.05 x PQ Area
   = 1.05 x 8,000 SY
   = 8,400 SY

3. Line item adjustment = Maximum Pay Area – PQ Area
   = 8,400 SY – 8,000 SY
   = 400 SY
The Department will pay the Contractor the 8,000 SY area per the plans, and can only pay an additional 400 SY for the maximum thickness adjustment per Specifications.

400 SY will need to be shown as a positive line item adjustment in SiteManager.
APPENDIX B
Thickness Adjustments for Optional Base (White Base)

EXAMPLE (2): Negative Core-Out Adjustment Calculations

Given:

What is the final pay quantity for a limerock project given the following information? Is a line item adjustment needed?

Plan Thickness = 8.00"
Plan Quantity Area = 10,500 SY
Final Area = 10,000 SY
Actual Average Core-out Report Thickness = 7.79” (See Note 1)

Specifications allow a maximum ½” tolerance per Section 285-7

Solution:

1. Determine the Core Out Ratio

\[
\text{Core Out Ratio} = \frac{(\text{Core Out Thickness} - \text{Plan Thickness})}{\text{Plan Thickness}}
\]

\[
= \frac{(7.79" - 8.00")}{8.00"} = - 0.0262500 *
\]

*Since the core out ratio is negative, the 105% does not control.

2. Determine the Thickness Adjustment Area

\[
\text{Thickness Adjustment Area} = \text{Core Out Ratio} \times \text{Plan Quantity Area}
\]

\[
= - 0.026250 \times 10,500 \text{ SY}
\]

\[
= - 275.6 \text{ SY}
\]

\[
= - 276 \text{ SY (Negative Thickness Adjustment)}
\]

The Department will pay the Contractor the 10,500 SY area per plan, and has to deduct 276 SY for the negative thickness adjustment.

- 276 SY will need to be shown as a negative line item adjustment

*Make sure to use the floating decimal on your calculator to come up with either the negative or positive adjustment.
Note 1: Any Core-out average less than the plan specified thickness (in this example, anything less than 8") will be considered a negative adjustment.

Note 2: Any shy area on the Core-out report is excluded from the Core-out average calculation. Shy areas will need to be corrected by scarifying and adding additional base material. Or if authorized by the Engineer, it may be left in place without correction and at no pay (per Specifications 285-6.2). See Example (3) for a deficient area left in place with no pay calculation.
APPENDIX B

Deficiency Adjustments for Optional Base (White Base)

EXAMPLE (3): Deficient Area Calculation (Area Left in Place with No Pay)

From the last page of the core out report seen below:

![Core out report](image)

On this project, the Plan thickness is 12.5 inches. This report shows two (2) shy areas that will need to be addressed. There are two options for resolution of these areas. The Contractor can choose to correct by scarifying and adding additional base material or, in this case, the Engineer authorized that the area be left in-place at no pay per Specifications 285-6.

1\textsuperscript{st} shy core is at Station 538+38
2\textsuperscript{nd} shy core is at Station 523+71
The Length of the deficiency is calculated from the closest non-deficient cores on each side of the deficient core.

In this example;
1\textsuperscript{st} length is from Sta. 537+83 to Sta. 532+40 = 543 Ft.
2\textsuperscript{nd} length is from Sta. 522+45 to Sta. 524+80 = 235 Ft.

Any shy area left in place at No Pay will be excluded from the core out average calculation and a deduction for the shy area will be made to the plan quantity.

Note: Preferably, the Contractor, to his advantage, should revisit the shy cores to take additional cores to isolate the area. If this does not occur, the length will be taken from the core out report from the nearest acceptable core of each side of the deficient core which will increase the deducted area.

\textbf{Given:}

**What is the final pay quantity for a limerock project given the following information? Is a line item adjustment needed?**

Plan Thickness = 12.5 Inches
Actual Average Core-out Report Thickness = 12.6167”
Plan Quantity Area = 30,000 SY
Total Length of Shy Area = 778 Ft.
Total Width of Shy Area = 24 Ft.

\textbf{Solution:}

1. Calculate the Shy Area Left in Place at NO PAY:

\[
\text{Shy Area} = \frac{L (\text{Ft.}) \times W (\text{Ft.})}{9 (\text{SF SY})}
\]

\[
\text{Shy Area} = \frac{(778 \text{ Ft})(24 \text{ Ft})}{9 \text{ SF/SY}} = 2,075 \text{ SY Deduction}
\]

A negative line item adjustment will be applied in SiteManager for 2,075 SY for the deficient areas.
2. Determine if the thickness exceeds 5%

\[
\text{Core Out Ratio} = \frac{(\text{Core Out Thickness} - \text{Plan Thickness})}{\text{Plan Thickness}}
\]

\[
= \frac{(12.62" - 12.50")}{12.50"} = 0.0096 \times 100 = 0.96\% < 5\% 
\]

**Make sure to use the floating decimal to calculate over or under the 105%.

Since 0.96\% is less than the 5\% stated in the Specifications, Section 285-8, the maximum pay area will not govern the payment.

3. Calculate the Thickness Adjustment Area

\[
\text{Thickness Adjustment Area} = \text{Core Out Ratio} \times \text{Plan Quantity Area}
\]

\[
= 0.0096 \times 30,000 \text{ SY} = 288 \text{ SY}
\]

**Final Quantity:**
The entire plan quantity of 30,000 SY will be paid and include 2 line item adjustments. First, a positive line item adjustment of 288 SY will be applied in SiteManager. Second, a negative line item adjustment (from Step 1) of 2,075 SY will be applied in SiteManager for the deficient areas.
APPENDIX C
Resolution Test Results

EXAMPLE (1): E-Mail from District Material’s Office to the PA with No. of Tests and Costs

Daniel Day

From: Daniel Day
Sent: Thursday, May 21, 2015 @ 2:49 PM
To: Howard Jump (howard.jump@dot.state.fl.us)
Cc: J. Corley; Bill Blass; etc., etc.
Subject: FIN # 41109815201 LOT 6 Resolution Results

Howard,

Attached are the Resolution results for LOT 6 on the above-mentioned project. The Resolution results **DO NOT** compare with QC results. Therefore, acceptance and payment for the LOT with respect to density will be based on Resolution results. Cost for the Resolution testing should be deducted from the monthly estimate (see below).

For each sublot, the Resolution results for average Roadway Gmb should replace the QC results for average Roadway Gmb, and most likely change the density value, Individual Pay Factor, and the Composite Pay Factor. Any new values should be compared to the Master Production Range as well as the criteria of 334-5.9.5 to determine acceptance.

- Please do not approve the QC or RT samples for this LOT. The resolution lab will approve these samples.
- Resolution cost (- $31.60 per core x 9 cores = - $ 84.40)

Thanks
Daniel Day
Assistant District Bituminous Manager
Florida Department of Transportation
100 N. Day Road (MS 20)
Deland, Florida 33333
380-555-5550 (office)
APPENDIX C
Resolution Test Results

EXAMPLE (2) (A): Resolution Testing Costs on Website

The cost of resolution testing, if performed by the Department and favors the VT results, will be deducted from the Contractor's next progress estimate.

The resolution testing fees are based on the year the Contract was let. For example, if a Contract was let in January 2010 and a resolution test was done in January 2011, the January 2010 year pricing index would be used.

The cost of the testing can be found at the following URL within the 'Resolution Testing Costs for Contracts Let Between…' link.
http://www.fdot.gov/materials/navigation/documents.shtm

<table>
<thead>
<tr>
<th>Test Name</th>
<th>Quantity</th>
<th>Test Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bituminous Lab</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulk specific gravity of Compacted Bituminous Mixtures (FM 1-T188)</td>
<td>Per roadway core or gyratory pill</td>
<td>$41.89</td>
</tr>
<tr>
<td>Ignition Oven Method (FM 5-563)</td>
<td>Per asphalt content</td>
<td>$117.84</td>
</tr>
<tr>
<td>Max specific gravity (FM1-T209)</td>
<td>Per average of two trials</td>
<td>$114.50</td>
</tr>
<tr>
<td>Superpave Gyratory Compaction (AASHTO T312-04)</td>
<td>Per pair of gyratory pills</td>
<td>$163.00</td>
</tr>
<tr>
<td>Ignition Oven (FM 5-553) and Mechanical Analysis (FM1-T030)</td>
<td>Per gradation</td>
<td>$153.71</td>
</tr>
<tr>
<td>Soil Lab</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consolidation (AASHTO T 216)</td>
<td>Per sample</td>
<td>$281.08</td>
</tr>
<tr>
<td>Direct Shear (AASHTO T 236)</td>
<td>Per sample</td>
<td>$224.05</td>
</tr>
<tr>
<td>Dry Gradations (AASHTO T 237)</td>
<td>Per sample</td>
<td>$220.95</td>
</tr>
<tr>
<td>Hydrometer (AASHTO T 88)</td>
<td>Per sample</td>
<td>$120.15</td>
</tr>
<tr>
<td>LBR (FM 5-S15)</td>
<td>Per sample</td>
<td>$339.75</td>
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<tr>
<td>Liquid Limit (AASHTO T 89)</td>
<td>Per sample</td>
<td>$16.74</td>
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<tr>
<td>Modified Proctor (AASHTO T 160)</td>
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</tr>
<tr>
<td>Moisture Content (AASHTO T 235)</td>
<td>Per sample</td>
<td>$14.50</td>
</tr>
</tbody>
</table>
APPENDIX C
Resolution Test Results

EXAMPLE (2) (B): Reporting Cost of Resolution Testing in SiteManager

Within the Remarks window, specify what the test was for. In this case, it is ‘Coarse Aggregate Gradation Resolution Test for Lot 6’. The cost of the Resolution Testing will be determined by the Materials Office as shown in the email in Appendix C, Example (1).
APPENDIX C
CPF Calculations

EXAMPLE (3): Plan Summary Box for Superpave Asphaltic Concrete (Traffic B)

<table>
<thead>
<tr>
<th>PAY ITEM NO.</th>
<th>PAY ITEM DESCRIPTION</th>
<th>LOCATION</th>
<th>SIDE</th>
<th>AREA</th>
<th>LENGTH</th>
<th>WIDTH</th>
<th>UNIT</th>
<th>TOTAL</th>
<th>DESIGN NOTES</th>
<th>CONSTRUCTION REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>205-702</td>
<td>OPTIONAL BASE GROUP 07</td>
<td>Sta. 0+00 to 100+25</td>
<td></td>
<td></td>
<td>1828.0</td>
<td>24.0</td>
<td>SY</td>
<td>30000.00</td>
<td>V</td>
<td>No Plan Errors</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>30000.0</td>
<td>V</td>
<td>No Field Revisions</td>
</tr>
</tbody>
</table>

5200 @ 0.96 CPF
12000 @ 0.98 CPF
1200 @ 1.02 CPF
400 @ 1.02 CPF

* See asphalt folder for CPF Adjustments

Technical Section indicates black base only
APPENDIX C
CPF Calculations

EXAMPLE (4): CPF Calculation for Tonnage Pay items

All Plan Summary Box references will be documented as shown in Appendix C, Example 3.

EXAMPLE (4) (A): If CPF is <0.80 or ≥0.75

Given:

A project with Superpave Asphalt, Traffic Level C, PG 76-22, (Pay Item 334-1-53) contains the following criteria. Calculate the line item adjustment that should be made for the LOT CPF.

LOT 2, CPF is 0.76.
LOT Tonnage = 4,000 Tons
Unit Price = $50.05/Ton

Solution:

1. Calculate the CPF Difference
   \[0.76 - 1.00 = -0.24\]

2. Calculate the CPF Adjustment for the Entire LOT
   \[-0.24 \times $50.05/Ton = -$12.01/Ton\]
   \[-$12.01/Ton \times 4,000 \text{Tons} = -$48,040.00\]

A negative Line Item Adjustment of -$48,000 will be made in SiteManager for LOT 2.
APPENDIX C
CPF Calculations

EXAMPLE (4) (B): If CPF is > 0.80 and < 1.00

Given:

A project with Superpave Asphalt, Traffic Level C, PG 76-22, (Pay Item 334-1-53) contains the following criteria. Calculate the line item adjustment that should be made for the LOT CPF.

For LOT 3, CPF is 0.98
LOT Tonnage = 4,000 Tons
Unit Price = $50.05/Ton

Solution:

1. Calculate the CPF Difference
   \[0.98 - 1.00 = -0.02\]

2. Calculate the CPF Adjustment for the Entire LOT
   \[-0.02 \times \$50.05/\text{Ton} = - \$1.00/\text{Ton}\]
   \[4,000 \text{Tons} \times - \$1.00/\text{Ton} = - \$4,000.00\]

A negative Line Item Adjustment of -$4,000 will be made in SiteManager for LOT 3.
APPENDIX C
CPF Calculations

EXAMPLE (4) (C): If CPF = 1.00

Given:

A project with Superpave Asphalt, Traffic Level C, PG 76-22, (Pay Item 334-1-53) contains the following criteria. Calculate the line item adjustment that should be made for the LOT CPF.

For LOT 4, CPF is 1.00
LOT Tonnage = 4,000 Tons
Unit Price = $50.05/Ton

Solution:

1. Calculate the CPF Difference
   \[ 1.00 - 1.00 = 0 \]

There is no CPF adjustment at 1.00.
APPENDIX C
CPF Calculations

EXAMPLE (4) (D): If CPF is > 1.00 and up to 1.05

Given:
A project with Superpave Asphalt, Traffic Level C, PG 76-22, (Pay Item 334-1-53) contains the following criteria. Calculate the line item adjustment that should be made for the LOT CPF.

LOT 5, CPF is 1.03
4,000 Tons
Unit price $50.05/Ton

Solution:
1. Calculate the CPF Difference
   \[ 1.03 - 1.00 = 0.03 \]

2. Calculate the CPF Adjustment for the Entire LOT
   \[ 0.03 \times \$50.05/\text{Ton} = \$1.5015 = \$1.50/\text{Ton} \]
   4,000 Tons \times \$1.50/\text{Ton} = \$6,000.00

A positive Line Item Adjustment of $6,000 will be made in SiteManager for LOT 5.
APPENDIX C
CPF Calculations

EXAMPLE (5) CPF for Square Yard Pay Items

Given:

A project with Superpave Asphalt Base contains the following criteria. Calculate the line item adjustment that should be made for the LOT CPF.

CPF = 1.05
Information from the QC Roadway Report:
LOT 1 = 4,000 Tons
Actual Area Paved = 25,397 SY
Unit price = $10.55/SY

Solution:

1. Calculate the CPF Difference
   1.05 – 1.00 = 0.05

2. Calculate the CPF Adjustment for the Entire LOT
   0.05 x $10.55/SY = $0.53/SY
   25,397 SY x $0.53/SY = $13,396.92

A positive Line Item Adjustment of $13,396.92 will be made in SiteManager for LOT 1.

Note: Calculations for CPF <80 or ≥75; or < 75; > 80 and asphalt exceeding 105% will also be calculated the same way. Use Appendix A, Example 3 as a reference for deducting CPF’s on the last LOT.
APPENDIX C
CPF Calculations

EXAMPLE (6) CPF for Square Yard Pay Items (Composite Base)

Given:

A project with Composite Base, Pay Item 285-714, contains the following criteria. Calculate the line item adjustment that should be made for the LOT CPF.

Subbase is 4" Limerock and Superpave Asphalt Base SP12.5 of 6.5"
CPF = 0.89
Information from the QC Roadway Report:
    LOT 3 = 2,000 Tons
    Actual Area Paved = 5,856 SY
Unit price = $92.00/SY for pay item 285-714

Solution:

1. Calculate the CPF Difference
   
   \[ 0.89 - 1.00 = -0.11 \]

2. The unit price includes the 4" subbase plus the 6.5" of asphalt. In this case a unit price for the asphalt will need to be calculated. The Limerock Subbase does not receive an adjustment, (see Specification 290)

Total Thickness = 4" + 6.5" = 10.5"

\[
\frac{92.00 \times 6.5"}{10.5"} = 56.95 \quad \text{Unit price for the asphalt portion of the pay item}
\]

3. Calculate the CPF Adjustment for the Entire LOT

\[
-0.11 \times \frac{56.95}{SY} = -6.26/\text{SY}
\]

\[
5,856 \text{ SY} \times -6.26/\text{SY} = -36,658.56
\]

A negative Line Item Adjustment of $36,658.56 will be made in SiteManager for LOT 3.

Note: Calculations for CPF <80 or ≥75; or < 75; > 80 and asphalt exceeding 105% will also be calculated the same way. If the quantity placed exceeds the 105% limit, use Appendix A, Example 3 as a reference for deducting CPF’s on the last LOT.
APPENDIX C
CPF Calculations

EXAMPLE (7): CPF Calculations for a Cubic Yard Pay Item

Asphalt treated permeable base is measured and paid for in cubic yards. Therefore, the quantity can be obtained from the Asphalt Roadway – Daily Report of Quality Control. Calculate the adjustment given the information below.

**Given:**

LOT 3, CPF of 1.05  
Total Tonnage LOT 3 = 1,623.55 Tons;  
Total Square Yards LOT 3 = 9,494.13 SY  
Volume = 1,055 CY  
Unit Price is $240.05/CY

**Solution:**

1. Calculate the CPF Difference  
   \[ 1.05 - 1.00 = 0.05 \]

2. Calculate the CPF Adjustment for the Entire LOT  
   \[ 0.05 \times $240.05/CY = $12.00/CY \]  
   \[ 1,055 \text{ CY} \times $12.00/CY = $12,660.00 \]

A positive Line Item Adjustment will be made for $12,660 in SiteManager for LOT 3
APPENDIX D
Bituminous Adjustments on Conventional Projects

EXAMPLE (1) (A): Form 700-050-66 – Set-Up Sheet by Contractor

<table>
<thead>
<tr>
<th>Contractor's Certification of Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt Mixes with Modified and Unmodified Binders (Conventional Projects)</td>
</tr>
<tr>
<td>Certification No. 18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Financial Project ID:</th>
<th>12345678901</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor:</td>
<td>MR. EDS ASPHALT CO., INC.</td>
</tr>
<tr>
<td>Contract Number:</td>
<td>T1234</td>
</tr>
<tr>
<td>From (Mo/Day/Yr):</td>
<td>06/13/16</td>
</tr>
<tr>
<td>To (Mo/Day/Yr):</td>
<td>07/17/16</td>
</tr>
</tbody>
</table>

### Asphalt Mixes with Unmodified Binders (PG 67 & Lower)

<table>
<thead>
<tr>
<th>Pay Item Number</th>
<th>Tonnage Placed</th>
</tr>
</thead>
<tbody>
<tr>
<td>337-7</td>
<td>1000.0</td>
</tr>
<tr>
<td>334-1</td>
<td>1000.0</td>
</tr>
<tr>
<td>Adj. Gallons (ARM):</td>
<td>500.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Base Index Month:</th>
<th>Base Asphalt Price Index:</th>
<th>Current Index Month:</th>
<th>Current Asphalt Price Index:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan-15</td>
<td>2.3515</td>
<td>Jul-16</td>
<td>1.3733</td>
</tr>
</tbody>
</table>

Asphalt Index Difference: -0.8600

### Asphalt Mixes with Modified Binders (PG 76 & Higher)

<table>
<thead>
<tr>
<th>Pay Item Number</th>
<th>Tonnage Placed</th>
</tr>
</thead>
<tbody>
<tr>
<td>337-7</td>
<td>1000.0</td>
</tr>
<tr>
<td>334-1</td>
<td>1000.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Base Index Month:</th>
<th>Base Polymer Price Index:</th>
<th>Current Index Month:</th>
<th>Current Polymer Price Index:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan-15</td>
<td>2.9622</td>
<td>Jul-16</td>
<td>1.8822</td>
</tr>
</tbody>
</table>

Polymer Index Difference: -0.3319

### Asphalt Material (ASPHALT TREATED PERMEABLE BASE)

<table>
<thead>
<tr>
<th>Pay Item Number</th>
<th>Tonnage Placed</th>
</tr>
</thead>
<tbody>
<tr>
<td>334-1</td>
<td>500.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Base Index Month:</th>
<th>Base Asphalt Price Index:</th>
<th>Current Index Month:</th>
<th>Current Asphalt Price Index:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan-15</td>
<td>2.3515</td>
<td>Jul-16</td>
<td>1.3733</td>
</tr>
</tbody>
</table>

Asphalt Index Difference: -0.8600

Navigation and Printing Functions:
- Go To Main Sheet
- Go To Last Month Sheet
- Save As Month Sheet
- Remove Last Month Sheet

Effective January 2007 Letter Form: 700-050-66 (7/21/20)
APPENDIX D

Bituminous Adjustment on Conventional Projects

EXAMPLE (1) (B): Form 700-050-66 – Contractor’s Certification of Quantities

<table>
<thead>
<tr>
<th>Contract No.</th>
<th>Certification No.</th>
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<tbody>
<tr>
<td>123456/5201</td>
<td>100</td>
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</tbody>
</table>

**CONTRACTOR’S CERTIFICATION OF QUANTITIES**

**ASPHALT MIXES WITH MODIFIED AND UNMODIFIED BINDERS (CONVENTIONAL PROJECTS)**

<table>
<thead>
<tr>
<th>PAY ITEM NUMBER</th>
<th>TONNAGE</th>
<th>GALLONS</th>
<th>MONTHLY PAYMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>337-7</td>
<td>1,000.0</td>
<td>14,569</td>
<td>$1,029.34</td>
</tr>
<tr>
<td>334-1</td>
<td>1,000.0</td>
<td>14,569</td>
<td>$1,029.34</td>
</tr>
</tbody>
</table>

GALLONS OF ASPHALT CEMENT USED IN MIX: 29,120

ADDITIONAL GALLONS (AFM): 500

TOTAL GALLONS: 29,620

TOTAL MONTHLY PAYMENT: $28,410.00

**ASPHALT MIXES WITH MODIFIED BINDERS (PG 76 & HIGHER)**

<table>
<thead>
<tr>
<th>PAY ITEM NUMBER</th>
<th>TONNAGE</th>
<th>GALLONS</th>
<th>MONTHLY PAYMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>337-7</td>
<td>1,000.0</td>
<td>14,569</td>
<td>$1,029.34</td>
</tr>
<tr>
<td>334-1</td>
<td>1,000.0</td>
<td>14,569</td>
<td>$1,029.34</td>
</tr>
</tbody>
</table>

TOTAL GALLONS OF POLYMER USED IN MIX: 29,120

TOTAL MONTHLY PAYMENT: $27,153.70

**ASPHALT MATERIAL (ASPHALT TREATED PERMEABLE BASE)**

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<thead>
<tr>
<th>PAY ITEM NUMBER</th>
<th>TONNAGE</th>
<th>GALLONS</th>
<th>MONTHLY PAYMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>334-1</td>
<td>509.0</td>
<td>3,497</td>
<td>$2,007.42</td>
</tr>
</tbody>
</table>

TOTAL MONTHLY PAYMENT: $2,007.42

I certify that, based on my personal knowledge and well-founded belief following my own reasonable investigation, the tonnage gallons (metric tons and litres) represented by this Certification are true and correct.

Contractor’s Authorized Agent (Print Name & Co.)

Mr. Ed’s Asphalt Co., Inc.

Edward A. McDonald

Contractor’s Authorized Agent (Signature) __________________________ Date __________