

109 MEASUREMENT AND PAYMENT

109.01 Measurement of Quantities

Method of Measurement

Highway construction work is divided into separate pay items. Each pay item represents a unique construction element of the project, e.g. guardrail, culvert pipe, roadway excavation, etc.

Each pay item has a method of measurement. A method of measurement is a procedure used to determine the quantity of work eligible for payment under each pay item. Usually the method of measurement measures the quantity of a key material for each pay item, e.g. cubic yards of structural concrete, or measures the completed work as a unit, i.e. each catch basin vs a lump sum structure.

Each pay item has a method of measurement clause or subsection, which can be found in either the Standard Specifications or the Special Provisions. The clause will describe exactly how the item is to be measured for payment. Subsection 109.01 more fully describes the method of measurement for pay items that have an undefined or incomplete description of how to measure the work for payment.

A method of measurement may or may not represent the actual quantities of materials used. For example, structure backfill is measured based on Standard Drawing B-19.40, which shows vertical fill limits adjacent to the structure. In reality, excavations are sloped next to structures so that the volume of structure backfill placed will always exceed the amount measured for payment.

Carefully review “Method of Measurement” and “Basis of Payment” sections in the Standard Specifications / Special Provisions to know exactly what is included in a pay item.

Measuring and Documenting Pay Quantities

The accurate measurement of pay quantities is a very important task for the Inspector. Field measurements for pay items are converted directly into dollars for the contractor. Because there is a direct relationship between what the Inspector measures and what the Department pays out, inaccuracies in measurements lead to underpayments or overpayments to the contractor.

ADOT has a training course to help Inspectors in this area. The course is titled *Pay Item/Daily Diary Documentation (TCH3001)*. This is an excellent guide for all Inspectors on how to accurately measure and document pay quantities on ADOT projects.

Scales

Scale Operator

For many pay items involving bulk materials, e.g., aggregate base, asphalt, and mineral admixture, payment to the contractor is based on the weight of the material. Unlike other methods of measurement, measuring by weight can be a concern for the Department.

When paying for material by weight, ADOT has very little direct control or involvement in the weighing process. The material is weighed for payment on scales either owned or leased by the contractor or Material Supplier. The material is entirely handled by the contractor or Material Supplier before it is placed at the project site. Only when the material arrives at the project site does the Department exercise some control over it. As a result, the

Department must rely on the accuracy of the contractor's scales and the honesty of the contractor's scale operators and trucking staff when this method of measurement is used.

To help ensure the integrity of this process, the Department requires a scale operator to monitor the weighing of materials for payment. When manually operated platform scales are used, a scale operator shall be assigned full-time to monitor weighing. When automatic scales are used (weights are automatically displayed and printed), the monitoring can be done part-time.

Regardless of whether scale monitoring is done on a part- or full-time basis, the scale operator has several important duties related to the weighing of materials.

- Ensuring the scales are properly certified.
- Ensuring the scales are being operated correctly and within their prescribed limits.
- Verifying the vehicle tare weights are correct if there is doubt about their accuracy (this could include weighing empty trucks on another scale).
- Verifying that the weight being measured is the same as the weight being recorded (more of an issue on manually operated scales).
- Tracking the accumulated amount of material used on a daily basis.
- Ensuring the contractor's weigh tickets are completed correctly.

The Resident Engineer or Project Supervisor may assign other duties to the scale operator to keep the person busy full-time. However, it is important that the scale operator has sufficient time to fully carry out the duties listed above so they can competently oversee the weighing process.

Scale Accuracy and Calibration

Like a tape measure, a scale needs to measure accurately and consistently according to accepted standards. A scale's accuracy directly reflects how accurately ADOT pays the contractor for work measured by weight.

To measure weight accurately, two things must occur.

- The scale must be calibrated correctly.
- The tare weight of the container holding the material must be accurately known.

Even when the scale weighs accurately and the correct tare weights are used, weights still need to be accurately recorded so payment can be made.

Policy on Scales

- Truck scales must be licensed by the Weights & Measures Services Division (WMSD) within a period of 12 months preceding the date of weighing.
- The original setup of scales and all moves of scales should be licensed and certified by WMSD or a Registered Service Agency (RSA) before the scales are to be used.
- In the event ADOT personnel cannot satisfy themselves as to the proper accuracy of the scales, at any time prior to or during the weighing operations, weighing operations should cease and the WMSD or RSA should be called by the contractor to inspect the scales.
- ADOT personnel should not repair scales. An adjustment of the balance bar to maintain zero balance of the beam is the only adjustment that should be made by ADOT personnel. All other adjustments or repairs must be performed by an RSA.

- Scale certifications are good for 12 months. No grace period for recertification should be allowed. Commercial scales are required to be recertified by WMSD or an RSA within 45 days prior to expiration of the 12-month period.
- Responsibility for scale set-up, operation, maintenance, adjustment, and repair lies with the contractor.
- The WMSD maintains a list of current Registered Service Agencies. It is also important to ensure the RSA certification is current. An RSA certification search is available on the WMSD section of the AZ Dept. of Agriculture website.

Weighing Requirements

- An acceptable load invoice or ticket should include truck number, time, source, date, type of material, and net pounds or tons. Each invoice should be signed by the ADOT scale operator and collected by the Inspector calculating the spread, who in turn should make a notation of station limits of the spread on the front of the invoice and initial. At the completion of the shift, the spread person should deliver the invoices to the project office for checking and totaling.
- In the event loads or portions of loads are rejected, notes explaining the reason should be made on the respective invoice, initialed, and dated by state and contractor representatives.
- Each day's totals and accumulated totals should be recorded on ADOT Pen Form - Truck Weight Record. Documentation, such as moisture deductions, should be shown on this form. Each weigh record will be signed daily by the scale operator or their deputy.
- The daily weigh record should be attached to the daily invoices and tapes. The invoices, checked tapes, and weigh sheet should be retained at the project office and kept with the project files.
- Spot checks of weighing operations and tare weights should be made. The frequency of these checks is dependent on the quantity of material being weighed daily, so the frequency of checking should be at the Resident Engineer's discretion.

109.02 Scope of Payment

Even though the Department pays for completed work on a monthly basis as the job progresses, this does not mean the work has been accepted. The Department has the right, until final acceptance (see Subsection 105.20), to require defective work to be corrected by the contractor, even after the Department has paid for that work.

109.03 Compensation for Altered Quantities

The quantities shown in the bidding schedule are just estimates of the amount of work required to complete the contract. In reality, the actual quantities are going to be different than the estimated ones. Contractors often ask for unit price adjustments when quantities run under the estimated amounts, items are deleted, or when work is added. Regardless of the reason, Resident Engineers should stay within the guidelines of 104.02 when making unit price adjustments.

As a Department, consistency is needed when allowing unit price adjustments. This ensures fairness to all our contractors, subcontractors and materials suppliers. Consult with the District Engineer when you feel a unit price adjustment is warranted outside the scope of 109.03, 104.02, or related subsections (see Subsection 104.02 of this manual).

109.04 Adjustments in the Contract Price

General

Supplemental agreements are used to make changes to ADOT construction contracts. They change work in the contract and adjust the contract cost accordingly. They CREATE new pay items or INCREASE, or DECREASE existing pay items or quantities. Supplemental agreements, specifically Change Orders, may also be used to change or

waive specifications or add days to contract time, even when there is no effect on contract costs. Bid Items are never deleted; quantities must be adjusted to zero.

When signed by the contractor and the Resident Engineer, supplemental agreements are binding legal documents that supplement the original contract.

Three different types of supplemental agreements may be used to amend ADOT construction contracts:

1. Letter of Agreements are used if the cost of the extra work is less than \$10,000. This is the simplest Supplemental Agreement. It describes the change and creates a lump sum Item No. 9240101, Miscellaneous Work (Resident Engineer Use Only), for payment. The Letter of Agreement is signed/authorized by the Resident Engineer and signed by the contractor. A Letter of Agreement is not to be used to change, add or delete plans or a specification or to add contract time extensions.
2. Change Orders uses existing items and unit prices in the bidding schedule or establishes new items and unit prices to pay for extra work. A Supplemental Agreement form is sent to the contractor describing the change and listing the pay items and unit prices affected by the change. Much supporting documentation such as a detailed cost analysis, revised design details, and plan sheets are contained in a Change Order package. A Change Order is also used to extend contract time, adding additional days to complete a project.
3. Force Accounts compensate the contractor for extra work based on the actual hours worked, equipment and materials used (time and materials). It is the most cumbersome and administratively complex Supplemental Agreement. It contains all the supporting documents found in a Change Order, plus additional record keeping requirements once the Force Account work begins.

The type of Supplemental Agreement used depends on the cost and complexity of the contract change. Simpler changes can be done by Letter of Agreement, while the more complex changes, for which costs are difficult to quantify, may need to be done by Force Account. The order of increasing complexity is:

1. Letter of Agreement, 109.04(A)
2. Quantity adjustments by Change Order using existing pay items, 109.04(B)
3. Detailed estimate (cost analysis) by Change Order, 109.04(C)
4. Force Account, 109.04(D)

The Letter of Agreement (LOA)

The Letter of Agreement is best suited when the changes are simple, can be easily identified and estimated, and cost \$10,000 or less. A Letter of Agreement is the easiest for the Department to administer and does not require an extensive approval process. The Letter of Agreement can also be used to credit the Department for cost savings that result when the RE relaxes minor specification requirements. The intent shouldn't be to nickel-and-dime the contractor, but to recover legitimate cost savings when the contractor is clearly realizing a quantifiable economic benefit as the result of a change. A LOA can also be used to recover costs such as Partnering Workshop expenses.

The Change Order (CO)

A more formal documentation and approval process is needed for this type of Supplemental Agreement. If the change cannot be handled by adjusting the quantities of existing contract items—109.04(B), then a detailed cost analysis of the extra work must be performed—109.04(C). The Change Order is best suited when the work can be quantified ahead of time. Since Change Order prices are generally agreed on before the extra work begins, contractors may include many contingencies in their cost estimates to offset any perceived risks.

A Change Order is also used to add time to a contract. The contractor initiates this using the "Request for Extension of Time" form which categorizes the total time requested as compensatory and/or non-compensatory

(see Construction Manual 108.08). The Resident Engineer reviews the contractor's request and recommends, to the District Engineer, the number of additional days to be added. In the recommendation, the Resident Engineer includes whether or not any time is compensatory. All Change Orders to extend contract time with compensation requires an analysis of the 'per day' rate of compensation. This analysis is prepared with the assistance of the State Construction Engineer, who reviews all compensatory time requests for guidance in price negotiations. Contract line item 1080800 Contract Time Extended Overhead with an Each-Day unit price is created. The District Engineer grants final approval for time extensions.

The authorization levels for time extension compensation remain unchanged. After the contractor signs the form, agreeing with the District Engineer's decision, the Resident Engineer prepares a Change Order. If the contractor does not agree with the District Engineer's decision, the Resident Engineer prepares an Escalation to the State Engineer.

Time Extensions add days to Working Day & Calendar Day contracts. Changes to FIXED DATE Contracts require that the contract's completion date be deleted and a new Fixed Date established for completion.

All Change Orders adjusting contract time shall be signed by the District Engineer or Assistant District Engineer.

Change Orders adjusting contract time can be combined with other contract changes as long as you do not lump different types of contract changes within one change order.

A Procedural Change Order is used when the cost of the change is zero – generally for additions or deletions to plans or specifications, or to extend contract time without compensation.

The Force Account (FA)

The Force Account should be the Supplemental Agreement of last resort because it is the most expensive and administratively tedious. The Force Account is used for contract changes in which the amount of work is difficult to quantify (such as an emergency situation) or the financial risks of performing the work are too high for the contractor. The RE estimates ahead of time what he or she believes the extra work will cost and gets the necessary approvals to establish the force account. Once the work begins, daily records are kept of the labor, materials, and equipment used to accomplish the extra work. The contractor takes these daily records and invoices the Department for the work, based upon section 109.04(D) of the applicable Standard Specifications using the prime contractor Force Account Weekly Detail. The field office reviews and approves these details by comparing the contractor's documentation to the Inspectors documentation before paying the contractor.

To sum up, the Force Account is best used when:

- Defining the work clearly and accurately enough for a change order is too difficult
- The extra work needs to begin right away
- The RE and the contractor cannot agree on costs

Line item force accounts are not to be replaced by a supplemental agreement. In order to maintain Statewide consistency, if the Resident Engineer feels that a supplemental agreement is a more suitable administration tool for the element of work represented by the line item force account, concurrence from the State Construction Engineer or ASE is required prior to generating a supplemental agreement.

Investigation and Preparation

Subsection 104.02, Revisions to the Contract, in the Construction Manual, describes the different types of contract changes and the process for analyzing any contract change. In 104.02 we said that the Resident Engineer must basically answer these four questions when analyzing a contract change:

- Was there a contract change (What was the change)
- Who caused the change
- What are the impacts of the change
- What are the costs

Subsection 104.02 should be referred to when investigating and analyzing any contract change.

The results of analyzing a contract change are documented in the supplemental agreement. See section on “Documentation” that follows.

Cost Analysis

An independent RE’s cost analysis is required for all Supplemental Agreements including Force Accounts, Letters of Agreement and Change Orders (including Time Extensions). Cost analysis for time extension Change Orders with Compensatory time require consultation with the State Construction Engineer. Cost analyses for extra work are best done by carefully examining the impacts of the change first, then looking at costs last.

Here is a rudimentary procedure that can be used on any cost analysis that will keep you focused on analyzing the impacts first before you are ready to examine costs:

Quantify the Extra Work

This means calculating the amount of work that has to be performed: such as cubic yards of dirt to move, linear feet of guardrail to install, or pounds of rebar to eliminate. The trick here is not only calculating the quantity correctly, but also selecting the correct unit of measurement. Your selection should be based on industry practice and what unit of measurement best represents how the work will be performed. For example, excavation work is usually done on a cubic yard basis because excavation work involves moving volumes of material. On the other hand, structural concrete is usually estimated on a square yard basis and not by the cubic yard basis ADOT uses to measure it for payment; however, most of the expense in structural concrete is in the formwork and not in the amount of concrete used. Selecting the correct unit of measurement is an important element in producing an accurate analysis.

Analyze the Construction of the Work

Construct the work in your mind. Write down all the different steps that have to be followed (continuously ask yourself who will do what, where, when, and how?). This is where your analytical thinking as a technician or engineer is of prime importance. One reason project supervisors' estimates are usually less than the contractor's on extra work is that Project Supervisors fail to take into account all the little hidden extras that add to the cost of the work (e.g., additional crane time may be needed to lift extra rebar from a delivery truck to a bridge deck).

Select the Crew Size, Equipment and Materials Needed to Complete the Work

Once you have decided how you’re going to build the work and have broken it down into smaller, definable units, then it is simply a matter of selecting the appropriate resources for the work. This selection is based on judgment as well as availability of the needed resources.

Estimate Production Rates

Here a lot of judgment is involved and often historical data can be used. Some of the more experienced inspectors may be able to help estimate how long the work will take. Sometimes you just have to assume a rate. Two things to remember are that no one works a 60-minute hour or less than half a shift.

Calculate Direct Costs

Up to this point, we haven't even mentioned costs and yet a lot of analysis has already been done. Good cost estimates are often the result of understanding how to build the work (steps 1 through 4) more than having accurate numbers on costs. On the other hand, don't be afraid to call material suppliers and to use the contractor's payrolls to improve your accuracy.

Another source of historical cost information is RS Means Heavy Construction Cost Data. This cost guide is published yearly and contains unit cost information as well as information on production rates and crew sizes.

Direct costs usually include project overhead, but not home office overhead. Don't forget incidental costs for things like haul roads, water, and waste disposal.

Add up all costs:

- Labor which includes burden and fringes. The use of Certified Payrolls for actual employees' pay data and fringe amount is preferred. The labor plus burden is calculated on $\text{Wages} \times 1.35$. Labor burden is the total of all indirect labor costs necessary for an employee to perform the work that they are hired to do. It includes Social Security and Medicare Tax, Worker's Comp (Insurance the employer must purchase), State and Federal Unemployment Insurance, training, paid holidays, use of vehicles, computers, PPE, office, office furniture, equipment, supplies, etc. Fringes are the non-take home portion of wages which include Pension/401K, paid vacation and sick leave, contributions to health insurance, etc. ADOT verifies Fringe benefit rates from certified payrolls.
- Equipment costs: Here the Rental Rate Blue Book (Equipment Watch) is invaluable
- Materials: The delivered cost of AB, pipe, concrete, etc.

Add Markups and Arrive at a Grand Total or Unit Price

Profit and overhead is calculated as 15% of the total of all Labor, Equipment and Material costs for work done by the prime contractor. Work done by subcontractors is calculated as 20% of the total (assume a proposal from subcontractor already includes his 15% P & OH mark up, whether stated or not. The prime contractor receives an additional 5% to make the total 20% only on the portion of the work done by the subcontractor.

This is cost estimating in its most general form. Think of it as a central theme with many variations since the type of work and the needs of the estimator often have a great influence on the way in which the estimate is carried out. Applying these basic steps in order, for even the most complex analysis, will improve your accuracy by keeping you focused on the cost analysis process rather than on the bottom-line result.

Negotiating

Subsection 104.03 and the partnering process should be viewed as a valuable tool to negotiate the contract change amount, if any. If the extra work is not covered by an existing item, the Resident Engineer and the contractor may be able to negotiate a new unit price for the work and establish a new item or items in the supplemental agreement. If the contractor proposes a new item or unit price, a detailed cost analysis must be provided as directed in Subsection 109.04(C). The cost analysis should include a breakdown of the estimated time for labor (including labor classifications) and the estimated costs of materials and equipment. The total cost of the extra work is divided by the units of work to arrive at a unit price for the work.

The contractor's cost proposal must be analyzed by a thorough review by the RE. The contractor's analysis should be compared with the RE's analysis. The RE should be completely satisfied that the contractor's cost analysis is

equitable and fair before accepting it as part of the supplemental agreement. Both the contractor's and the RE's cost analysis must accompany the supplemental agreement package.

Some REs think that contractors try to take advantage of the Department when a change order arises. This is usually not the case. The contractor is no longer in a competitive bid situation after they're awarded the project, so there is no reason for them to assume unnecessary risk. This lack of risk taking is typically reflected in contractors' change order prices.

Authorization

Authorization Levels

1. Resident Engineers: REs are authorized to approve changes to the contract that do not exceed \$200,000. This authorization will include changes in contract specifications, design and unit price adjustments. Contact and consensus with both the Project Manager and project designer will be required on design changes that are greater than \$25,000. Project Managers should also be kept informed of all other significant changes. If the RE cannot reach a consensus with the Project Manager and designer on a change, then the issue should be immediately escalated.
2. District Engineer: The District Engineer will have authority to approve changes to the contract that equal or exceed \$200,000 but are less than or equal to \$1,000,000. This authorization will include changes in specifications, design, and unit price adjustments. Concurrence from the Project Manager and the designer will be needed on all design related changes. The approval of the State Construction Engineer is required for all Specification changes. In addition, the District Engineer may delegate this authority to the Assistant District Engineer. In the absence of the District Engineer, the State Construction Engineer will assume and may also delegate this authority.
3. Deputy State Engineer: The Deputy State Engineer will have authority to approve all supplemental agreements that exceed \$1,000,000 but are less than \$2,000,000. This authorization will include changes in specifications, design, and unit price adjustments. Concurrence from the Project Manager and designer will be needed on all design related changes.
4. State Engineer: The State Engineer will have the authority to approve all supplemental agreements that exceed \$2,000,000 but do not exceed \$25,000,000.. This authorization will include changes in specifications, design, and unit price adjustments.
5. ADOT Director: The ADOT Director will have the authority to approve all supplemental agreements that exceed \$25,000,000.

When cumulative changes to the contract exceed 2% of the contract amount, a Resident Engineer or District Engineer must have concurrence from the State Construction Engineer. The easiest way to do this is to have the SCE initial the CRN. Nothing is triggered in the FAST system for this concurrence. The RE is responsible for monitoring the cumulative value of all changes to the original contract amount. The RE must verify the project budget can accommodate all supplemental agreement amounts by referencing the Finance Card found in the Contract Card of your FAST Desktop. If not, a Budget Increase Request must be submitted and approved by the State Construction Engineer.

Signatures

The person approving for the State of Arizona (below the line) coincides with the dollar amount authorized. RE's sign below the line when the CO does not exceed \$200,000 or include a time extension, because they are approving for the State of Arizona.

RE's sign above the line when the CO is over \$200,000 and/or includes a time extension because the DE, Assistant DE, Deputy State Engineer, or the State Engineer sign below the line (according to their authority level), approving for the State of Arizona.

NOTE: The RE only needs to sign the CO once. They do not need to sign both above and below the line.

FHWA APPROVAL is required for all FHWA Full Oversight projects, aka PoDI (Projects of Divisional Interest). FHWA approval is also required on major change orders and claims (over \$1 million, 20% of total project costs, work outside project limits, or major changes of scope). FHWA Full Oversight projects can be identified by the last letter in the Project Number. N or S (National Highway System – NHS). X or F (non NHS). Project numbers that end in an A, T, or D are in the Certification Acceptance program. See the FHWA and ADOT Stewardship and Oversight Agreement for Arizona signed in effect April 2015.

Contacts For Supplemental Agreements

The authorization levels discussed previously apply to the financial approval of a supplemental agreement. Changes that require alterations to the specifications, ADOT design policy or design details have to be agreed upon by the appropriate ADOT technical section. Major design changes must receive technical authorization before the cost of the change can be approved. Any official letters, plan revisions or relevant documentation provided by the technical section should be included in the final supplemental agreement. Additionally, the technical contact must be documented in the Supplemental Agreement Tracking System (SATS) Contract Revision Notification (CRN) screen.

The ADOT technical managers include Project Management, Construction Group, Materials, Roadway, Environmental, Traffic Engineering, Engineering Technical Group, Right of Way and Bridge.

If any technical manager does not agree with the proposed Supplemental Agreement, the agreement must be escalated to the applicable Deputy State Engineer(s) for resolution and approval.

For all federally funded projects, the Federal Highways Administration needs to be advised that the supplemental agreement is being processed.

The District Engineer has authority to approve supplemental agreements for federal-aid projects in the certification acceptance program. Although FHWA does not need to approve these supplemental agreements, they do need to be advised that the supplemental agreement is being processed. FHWA contacts are required on all federal-aid projects not in the certification acceptance program. Any local government or agency participating on a project must also be contacted.

For any federally funded alternative delivery projects, the Federal Highways Administration must be advised that a supplemental agreement is being processed even if they are not participating in the associated cost of the supplemental agreement. This notification process requires a Contract Modification Request (CMR) be submitted by the RE, and be approved by FHWA prior to the contractor starting any work related to the supplemental agreement.

Additionally, local government or private agencies affected by changes made within a supplemental agreement must also be notified.

If applicable, the responsible Local Public Agency (LPA) should sign all supplemental agreements for contract changes they have agreed to participate in or pay for.

Escalation of Supplemental Agreements

Should there be an internal lack of consensus on any proposed supplemental agreement, the DE, RE, Project Manager, and the project management team should make every effort to reach a satisfactory solution. If necessary, the issue may be escalated to the State Construction Engineer or the Deputy State Engineer, who will then attempt to resolve the issue to the satisfaction of all concerned.

Documentation**Alternative Delivery Projects**

For all Supplemental Agreements written on CMAR or Design-Build projects the approval process begins with the Resident Engineer initiating an Alternative Delivery Contract Modification Request form.

Contract Revision Notification Requirements for Supplemental Agreements

See Exhibit 109.04-1 Contract Revision Notification

The purpose of Contract Revision Notification Documents is to provide documentation that details ADOT approvals and contractor acceptance of contract changes. No payment can be generated until all required approval dates have been entered into the Contract Revision Notification Approvals SATS screen (and saved). The Initiation date is when the Resident Engineer reaches an agreement with the contractor to begin work, or directs the work to be done by Force Account. (See block “C” on the Timeline for Contract Modification diagram). The Contract Revision Notification is important because it documents that authorized approvals for contract changes have been obtained so that work and payment can proceed before a detailed Supplemental Agreement is signed as the official contract document. In cases where exact costs cannot be determined, the contractor and the Resident Engineer shall prepare a cost estimate and the Resident Engineer shall document the work as if it were a force account until an exact cost can be agreed upon. However, if the exact cost cannot be determined prior to the beginning of work associated with the Supplemental Agreement, the contractor and the Resident Engineer shall document the work as a force account. A force account (supplemental agreement) cannot be converted to a change order after the supplemental agreement has been created in SATS and/or payment has been made. A completed formal detailed Supplemental Agreement with exact cost shall be completed within 60 calendar days following the Initiation date on the Contract Revision Notification.

Under current requirements with the ADOT/FHWA Agreement, FHWA personnel shall be kept informed of all changes to projects over \$1 million on the interstate highway system.

The Resident Engineer or his designee shall use the SATS program in the FAST Data Base to prepare the Contract Revision Notification Document. The following contacts will be made:

- The person authorizing the change (see “Authorization Levels” above)
- The State Construction Engineer and the Project Manager if the Supplemental Agreement cost warrants (see “Authorization Levels” above)
- If the design was modified, the name of the registrant that was contacted as specified under “Sealing Change Orders” below
- The person contacted within the appropriate ADOT technical section if ADOT Standard Specifications, Special Provisions, or Standard Drawings were altered (see “Contacts for Supplemental Agreements” above)
- Federal Highway Administration
- Local government contacts

The original will be filed in the project files, with additional copies distributed to:

- Field Reports
- Local Government and/or FHWA as applicable
- All other contacts specified in the Contract Revision Notification

Office Procedure For Contract Revision Notification (CRN)

1. Start the coordination for the Contract Revision Notification as soon as you know that a contract change will occur. A guide to assist in creating CRN's & SA's can be found in the SATS User Guide.
2. As soon as you feel the document is complete, advise the RE for a final review to make any needed edits.
3. Place an electronic copy of the unsigned completed CRN in the project file.
4. Send the document to be initialed by the Resident Engineer and their upline manager via DocuSign.
- 5.
6. The Supplemental Agreement Checklist found at Field Reports reference site and shall be attached as the front cover page of this package.
7. When the supplemental agreement document has been completed, attach a copy of the Contract Revision Notification document behind the Supplemental Agreement Checklist cover page.
 - **NOTE:** To avoid issues during project closeout, the current FAST Program requires the Contract Revision Notification (CRN) and the Supplemental Agreement (SA) dollars to match. If the final negotiated cost of the supplemental agreement has changed from the original estimated cost included in the original CRN, the estimated CRN dollar amount shown in FAST must be changed to reflect the final negotiated cost on the SA. The revised CRN should then be reprinted and resubmitted for signatures prior to attaching the CRN to the SA document.

Supplemental Agreement Forms

Immediately following distribution of the Contract Revision Notification Documents, the RE or his designee should proceed with the preparation of the formal supplemental agreement. The completed formal supplemental agreement will be completed 60 calendar days following the Initiation date on the Contract Revision Notification.

The text of a change order (see Exhibit 109.04-2 Change Order Agreement for Non-Compensatory Time) consists of:

- The Request (a list of the work items Increased, Decreased, or Created)
- The Reason for the work
- Specifications/Stipulations added, modified, or deleted to the contract. They can either be attached or referenced
- Pay item adjustments (Increased, Decreased, or Created item list with unit of measure and cost effects of the work)

The text of a Change Order for an extension of contract time (see Exhibit 109.04-3 Procedural Change Order [Non-Compensatory]) consists of:

- The Request – an extension of contract time
- The Reason for the additional time
- Specifications/Stipulations added, modified, or deleted to the contract. They can be either attached or referenced
- Pay item adjustment for a compensatory time extension only (establish Pay Item 1080800 Contract Time Extended Overhead at EACH/DAY cost established in agreement)

- The signed “Request for Extension of Time” form must be attached. If compensatory time is granted, then an analysis of the overhead per day cost, prepared in consultation with the State Construction Engineer must be included

Similarly, the text of a force account work request (see Exhibit 109.04-5 Force Account Agreement) consists of:

- The Request; a description of the extra work
- The Reason for the work
- The cost breakdown of the estimated labor, materials, and equipment required to perform the extra work

The RE should also consider using drawings, photographs, and quotations from the specifications or developing unique provisions to make supplemental agreements clearer and more authoritative.

An explanation of rate establishment may also be required on a force account work request if the hourly rate for a particular type of equipment is not covered in the Rental Rate Blue Book for Construction Equipment.

A Supplemental Agreement is usually signed first by the contractor, then sent to the RE for signature. The supplemental agreement is then sent to the District office for approval and signature (if needed), and to FHWA if a PODI. The supplemental agreement and all attachments are then forwarded to Field Reports for processing. All of this can be done through the SA template on Docusign.

Use the Supplemental Agreement exactly as it is printed from SATS. Do not modify it by clipping, cutting & pasting, or montaging. All printed pages must be signed (executed) by all parties to the Supplemental Agreement.

Each letter agreement of authorization will include the following information (see Exhibit 109.04-6 Letter Agreement):

- The TRACS number, project number and date of authorization
- A description of the work
- Reason for the work authorized
- The Lump Sum cost of the alteration

The Resident Engineer must make a thorough analysis of the contractor’s cost proposal and be completely satisfied that it is equitable before negotiating the cost of the Supplemental Agreement.

The Resident Engineer’s review will be in the form of a completely independent cost analysis, which will be attached to the Letter of Agreement package and forwarded to Field Reports with a copy retained in the project office.

The person signing for the contractor for all Supplemental Agreements must be listed on the Authorized Signature Form.



Arizona Department of Transportation

Infrastructure Delivery and Operations Division

Contract Revision Notification

04/15/2022

Approval Date: 5/5/2021 (RE)

To: Brenden Foley
Asst District Engineer

From: Brent Allman
Resident Engineer

Tracs #	Project #	Project Name			
F024301C	160-A-(209)T	WARRIOR DRIVE - MP 324.5			
Contractor		Contract Amt	Contingency %	Contingency Adjustment %	Contingency Amt
Mountain High Excavating, LLC		\$707,699.00	5 %	0 %	\$35,384.95
Estimated SA Amt	Estimated Percentage of Contract		SA Amt to Date	SA % of Contract to Date	
\$29,822.73	4.21 %		\$14,696.00	2.08 %	
Agreement Type	Document Num	SATS Doc Num	Initiation Date		
Change Order		2	05/03/2021		
Reason Code	Plans, Revisions, and Oversight				

Brief Description
Seeding and Wattles

SA Description
During construction it was discovered that seeding and wattles would be required for final stabilization due to the actual area of disturbance. This CO would compensate the contractor for the additional work. A time extension of seven calendar days has been determined as the critical path is effected due to the additional work.

Prime Designer
ADOT Traffic Design

Contacts

Name	Title	Date Contacted	Comments
Ammon Heier	Federal	04/26/2021	via email
David Casselbury	Statewide Landscape Architect	04/26/2021	via email
Robert Stevens	District Env. Coord.	04/26/2021	via email
William P. Fay	State Construction Engineer	04/13/2021	concured

Exhibit 109.04-1 Contract Revision Notification

	Arizona Department of Transportation Infrastructure Delivery and Operations Division Supplemental Agreement 04/15/2022		
Change Order No. 2			
Approval Date: 5/6/2021 (RE)			
Tracs No: F024301C	Project No: 160-A-(209)T	Org: 4352	NorthCent
Project Name: WARRIOR DRIVE - MP 324.5		Contractor: Mountain High Excavating, LLC	

X Federal Aid
Non-Federal Aid

Request:
 To create ITEMS: 8050003 Seeding (Class II), 8101021 Erosion Control (Wattles) (9"), 9010002 Mobilization

Reason:
 During construction it was discovered that seeding and wattles would be required for final stabilization due to the actual area of disturbance. This CO will compensate the contractor for the additional work. A time extension of seven calendar days is warranted and agreed to, as the critical path is affected due to the additional work.

Specifications/Stipulations:
 This Supplemental Agreement shall comply with Sec 8050003 or as directed by the engineer. This Supplemental Agreement constitutes full and final compensation for any and all costs, direct or indirect, related to this project, including but not limited to time, labor, services, overhead, profit, and damages. By executing this Supplemental Agreement the contractor expressly agrees to hold ADOT harmless and expressly waives the right to pursue any further claims or requests for compensation related to this contract modification. All other outstanding terms and conditions of the original contract and specifications are still valid towards this supplemental agreement.

Pay Item Adjustments					
Sec	Item Nbr	Description	Unit	Unit Price	Quantity
1	8050003	SEEDING (CLASS II)	ACRE	6,010.92	4.000
1	8101021	EROSION CONTROL (WATTLES) (9")	L.FT.	10.60	400.000
1	9010002	MOBILIZATION	EACH	1,539.05	1.000
					Total
					\$29,822.73

Date: _____	Date: _____	Date: _____	Date: _____
Resident Engineer	City/County Engineer		Field Reports

For valuable considerations, it is mutually agreed that the matter detailed above shall be done and payment made as shown herein for a Supplemental Agreement Change Order, all in accordance with the terms of the contract. For work being performed as a Supplemental Agreement Force Account Work Order, final payment shall be made as stipulated in the Standard Specifications and its supplements upon completion of said work.

Date: _____	Date: _____	Date: _____
Approved for: Mountain High Excavating, LLC Contractor	Approved for State of Arizona	☐ Approved without Federal participation ☐ Approved with Federal participation
By: _____	By: _____	By: _____

Page 1 of 2

Exhibit 109.04-2a Change Order Agreement (Non-Compensatory Time)



Arizona Department of Transportation
Infrastructure Delivery and Operations Division
Supplemental Agreement
04/15/2022

Change Order No. 2

Approval Date: 5/6/2021 (RE)

Tracs No: F024301C

Project No: 160-A-(209)T

Org: 4352

NorthCent

Project Name: WARRIOR DRIVE - MP 324.5

Contractor: Mountain High Excavating, LLC

	Plus	Minus
Total Difference:	\$29,822.73	

An Extension of Contract Time is Authorized for 7 days as a result of this Supplemental Agreement.

Date: _____ Date: _____ Date: _____ Date: _____

Resident Engineer

City/County Engineer

Field Reports

For valuable considerations, it is mutually agreed that the matter detailed above shall be done and payment made as shown herein for a Supplemental Agreement Change Order, all in accordance with the terms of the contract. For work being performed as a Supplemental Agreement Force Account Work Order, final payment shall be made as stipulated in the Standard Specifications and its supplements upon completion of said work.

Date: _____

Date: _____

Date: _____

Approved for:
Mountain High Excavating, LLC
Contractor

Approved for State of Arizona

___ Approved without Federal participation
___ Approved with Federal participation

By: _____

By: _____

By: _____

DocuSign Envelope ID: 12FCA4AA-4562-443F-B85C-CF4B0547A30B



ARIZONA DEPARTMENT OF TRANSPORTATION REQUEST FOR EXTENSION OF TIME

Project No. 160-A(209)T TRACS No. F024301C Request No. 001
 Project Name Tuba City Four Corners Highway (US 160) Contractor Mountain High Excavating, LLC

Working Days ☐ Calendar Days ☒ Fixed Date ☐
 Total Days Requested 7 Requested Amended Fixed Date 7/25/2021

The work has been impacted for the following **attached** reasons. Include a schedule (CPM if applicable) detailing the impact to the contract. **ALL ATTACHED JUSTIFICATION DOCUMENTS MUST SHOW TRACS NUMBER, REQUEST NUMBER AND CONTRACTOR.**

Compensatory Days Requested N/A Non-Compensatory Days Requested 7

Joseph B. Dutson Project Manager 4/1/2021
 Contractor Signature Title Date

Joseph B. Dutson

Contractor Printed Name

The days claimed and reasons thereof have been studied. If fewer days are recommended than claimed, attach explanation.

Compensatory Days Recommended N/A Non-Compensatory Days Recommended 7

NOTE: If compensatory days are requested, attach the consultation e-mail FROM the Assistant State Engineer for Construction.

SM Brent Allman 4/26/2021
 Sr./Resident Engineer Date

NOTE: This recommendation must be sent to the District Engineer for approval.

Compensatory Days Approved N/A N/A N/A Non-Compensatory Days Approved 7

DocuSigned by: Andrea Morrish 4/26/2021
 District Engineer 4/26/2021 Date

NOTE: If approved date differs from Contractor's request, return for concurrence.

Contractor Concurrence Signature Title Date

Contractor Concurrence Printed Name

IF THE CONTRACTOR DOES NOT AGREE THE ESCALATION PROCESS MUST BE FOLLOWED.

After a review of the facts,
 an additional _____ Compensatory Days and _____ Non-Compensatory Days are approved.

Federal Highway Administration Date

After Signatures, a Change Order must be executed in accordance with Standard Specification 108.08.

The Request for Extension of Time and all documentation must be attached to completed Change Order. 05/20/21

Exhibit 109.04-2c Change Order Agreement (Non-Compensatory Time)



Arizona Department of Transportation
 Intermodal Transportation Division
 Supplemental Agreement
 03/27/2015

	Arizona Department of Transportation Intermodal Transportation Division Supplemental Agreement 03/27/2015	
Procedural Change Order No. 13		
Approval Date: 1/16/2015 (em)		
Tracs No: H615501C Globe	Project No: STP 188-A(001)B	Org: 1111
Project Name: WHEATFIELDS - US 60	Contractor: FNF CONSTRUCTION, INC.	
An Extension of Contract Time is Authorized for 30 days as a result of this Supplemental Agreement.		
Date: _____	Date: _____	Date: _____
_____	_____	_____
Resident Engineer	City/County Engineer	Field Reports
For valuable considerations, it is mutually agreed that the matter detailed above shall be done and payment made as shown herein for a Supplemental Agreement Change Order, all in accordance with the terms of the contract. For work being performed as a Supplemental Agreement Force Account Work Order, final payment shall be made as stipulated in the Standard Specifications and its supplements upon completion of said work.		
Date: _____	Date: _____	Date: _____
Approved for: FNF CONSTRUCTION, INC. Contractor	Approved for State of Arizona	☐ Approved without Federal participation ☐ Approved with Federal participation
By: _____	By: _____ District Engineer	By: _____

Exhibit 109.04-2d Procedural Change Order (Non-Compensatory Time)



Arizona Department of Transportation
Infrastructure Delivery and Operations Division
Supplemental Agreement
06/07/2023

Force Account No. 8

Approval Date: 11/19/2021 (RE)

Tracs No: F012101C

Project No: 101-B(213)S

Org: 4678

Central

Project Name: I-17 - PIMA RD

Contractor: COFFMAN AMES JOINT VENTURE

☐ Federal Aid
☒ Non-Federal Aid

Request:

To create FA #08 – Repair Damaged Conduit at WB SR101 and Hayden:

Reason:

At approximate Sta. 1900+00 LT Sturgeon discovered a separated conduit coupler between conduit run #6 & #7. The damage to the conduit, the conductors and possibly the fiber contained within, was caused by poor craftsmanship and the improper use of a conduit coupler not designed for this type of application. This work was not performed by this project's electrical contractor, nor was the damage a direct result of any work performed by the contractor on the SR101 Design Build Project.

This repair work will consist of repairs to the 3" conduit connection with a project approved slip repair coupling, replacement of approximately 9,600 LF of Loop Detector Lead-in-cable and if necessary, the replacement of approximately 600 LF of 12 Strand Fiber.

Specifications/Stipulations:

All work shall comply with the SR101 I-17 - Pima/Princess contract documents including but not limited to:

- DR 309 - Traffic: Signals and Lighting
- DR 313 - ITS Improvements
- DR 2000 - Intelligent Transportation System (ITS)

Request for Information:

- RFI-226

Plan Sheets:

- T-22.114

Date: _____	Date: _____	Date: _____	Date: _____
Resident Engineer	City/County Engineer		Field Reports

For valuable considerations, it is mutually agreed that the matter detailed above shall be done and payment made as shown herein for a Supplemental Agreement Change Order, all in accordance with the terms of the contract. For work being performed as a Supplemental Agreement Force Account Work Order, final payment shall be made as stipulated in the Standard Specifications and its supplements upon completion of said work.

Date: _____	Date: _____	Date: _____
Approved for: COFFMAN AMES JOINT VENTURE Contractor	Approved for State of Arizona	☐ Approved without Federal participation ☐ Approved with Federal participation
By: _____	By: _____	By: _____

Exhibit 109.04-2e Procedural Change Order (Non-Compensatory Time)



Arizona Department of Transportation
Infrastructure Delivery and Operations Division
Supplemental Agreement
06/07/2023

Force Account No. 8

Approval Date: 11/19/2021 (RE)

Tracs No: F012101C

Project No: 101-B-(213)S

Org: 4678

Central

Project Name: I-17 - PIMA RD

Contractor: COFFMAN AMES JOINT VENTURE

Force Account Adjustments:

Section:	1	Labor:		4,000.00	
	1				
		Equipment:		2,000.00	
		Materials:		14,000.00	
		Fa Amount:		20,000.00	Original Request Amount 20,000.00
		Total Difference:	Plus	\$20,000.00	Minus

No Extension of Contract Time is Authorized for this Supplemental Agreement.

Date: _____ Date: _____ Date: _____ Date: _____

Resident Engineer

City/County Engineer

Field Reports

For valuable considerations, it is mutually agreed that the matter detailed above shall be done and payment made as shown herein for a Supplemental Agreement Change Order, all in accordance with the terms of the contract. For work being performed as a Supplemental Agreement Force Account Work Order, final payment shall be made as stipulated in the Standard Specifications and its supplements upon completion of said work.

Date: _____

Date: _____

Date: _____

Approved for:
COFFMAN AMES JOINT VENTURE
Contractor

Approved for State of Arizona

___ Approved without Federal participation
___ Approved with Federal participation

By: _____

By: _____

By: _____

Exhibit 109.04-5 Force Account Agreement



Arizona Department of Transportation
Infrastructure Delivery and Operations Division

Contract Revision Notification

07/14/2023

Approval Date: 11/9/2022 (RE)

To: Kirk Kiser
Asst District Engineer

From: Sara Howard
Senior Resident Engineer

Tracs#	Project #	Project Name			
F042401C	303-A-NFA	51st Ave and 43rd Ave Interch			
Contractor	Contract Amt	Contingency %	Contingency Adjustment %	Contingency Amt	
FISHER SAND & GRAVEL CO.	\$70,057,597.22	5 %	0 %	\$3,502,879.86	
Estimated SA Amt	Estimated Percentage of Contract	SA Amt to Date	SA % of Contract to Date		
\$1,173.77	0 %	\$.00	0 %		
Agreement Type	Document Num	SATS Doc Num	Initiation Date		
Letter of Agreement		1	11/08/2022		
Reason Code	Other				

Brief Description
Partnering Workshop Cost

SA Description

The Partnering Workshop for the project was held on August 31, 2022. The cost of the catering was \$2,347.54. The Department and the Contractor will equally share the catering cost per paragraph 104.01 (B) of the Standard Specifications. This letter of Agreement will compensate the Contractor for the amount of \$1,173.77.

Prime Designer
Jacobs Engineering Group Inc.

Exhibit 109.04-6a Letter Agreement



Arizona Department of Transportation
Infrastructure Delivery and Operations Division
Supplemental Agreement
07/14/2023

Letter of Agreement No. 1

Approval Date: 11/9/2022 (RE)

Tracs No: F042401C

Project No: 303-ANFA

Org: 4676

Central

Project Name: 51st Ave and 43rd Ave Interch

Contractor: FISHER SAND & GRAVEL CO.

☐ Federal Aid
☒ Non-Federal Aid

Request:

To create:

Item 9240101 Miscellaneous Work (Resident Engineer Use Only)

Reason:

The Partnering Workshop for the project was held on August 31, 2022. The cost of the catering was \$2,347.54. The Department and the Contractor will equally share the catering cost per paragraph 104.01 (B) of the Standard Specifications. This letter of Agreement will compensate the Contractor for the amount of \$1,173.77.

Specifications/Stipulations:

This supplemental agreement is to compensate the contractor half of the partnering costs in accordance with 104.01 (B)

Pay Item Adjustments		Description	Unit	Unit Price	Quantity	Amount
Sec	Item Nbr					
1	9240101	MISCELLANEOUS WORK (RESIDENT ENGINEER USE ONLY)	L SUM	1.00	.000	\$.00
		Subitem: 1 - Partnering Costs		1.00	1,173.770	\$1,173.77
Total						\$1,173.77

Total Difference: Plus \$1,173.77 Minus

No Extension of Contract Time is Authorized for this Supplemental Agreement.

Approved for ADOT

Sara Howard

Date

Approved for: FISHER SAND & GRAVEL CO.

Contractor Signature

Date

Cc: Field Reports

Page 1 of 1

Exhibit 109.04-6b Letter Agreement

ARIZONA DEPARTMENT OF TRANSPORTATION

OFFICE MEMO

08/23/2023

TO:	ELISE MAZA Finance Administrator		
FROM:	BILL FAY State Construction Engineer Construction Group, MD 172A	R.E. Name Resident Engineer	Date:
THRU:	MATT MOUL Deputy State Engineer Statewide Operations, 102A	ADE or DE Name Assistant District Engineer	Date:
RE:	Project#, TRACS # Project Name Project Location		
UNIT:	Unit No.		
Funding Source:	Be Specific - could be "Contingency" or "City of XX" or??		

Original Contract Amount		
"Construction":	1,131,980.00	
Five Percent Contingency:	56,599.00	
Public Relations:	5,000.00	
CE:	192,381.00	17%
Incentives:	-	
Other:	4,691.00	
Post Design:	9,056.00	
ICAP	138,571.00	
Original Construction Budget:	1,538,278.00	
Previous Requested Budget		
Increase(s)	227,562.72	
Revised Construction Budget:	1,765,840.72	
Actual Contractor Pay:	1,254,796.24	
Actual Other Construction:	387.82	
Actual Public Relations:	10,679.96	
Actual Total CE:	321,382.05	28.39%
Actual Post Design:	9,029.47	
Actual ICAP Charges	148,123.82	
Total Charges:	1,744,399.36	
Contract Work Remaining /		
Overruns:	25,000.00	
Additional Public Relations:	-	
Additional CE Costs:	15,000.00	1.33%
Additional Post Design:	5,000.00	
Additional Suppl. Agree:	-	
Additional Costs:	-	
Proposed New Construction	1,641,275.54	

Budget:

Requested Construction Amount:	14,005.82	ICAP Request 10.7%	1,498.62
Total Requested	15,504.44	\$ 15,504.44	\$ -
		FA Request	NFA Request

Reason for Increase:

Be specific, do not use abbreviations. If Local Government Project, submit any written documentation from LPA agreeing to cover increase.

I recommend that the budget for this project be increased to accommodate this additional work.

Bill Fay
State Construction Engineer

Date:

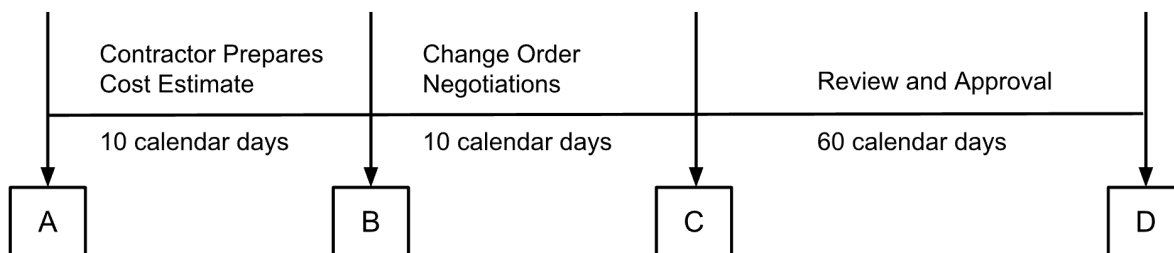
Matt Moul
Deputy State Engineer

Date:

Elise Maza
Resource Administration

Date:

Exhibit 109.04-7 Request for Budget Increase

Timeline for Contract Modification

A. The contractor or ADOT identifies additional work that is not included in the contract:

1. The contractor is asked to prepare a detailed cost estimate or unit prices for the work, Std Spec 109.04C specifies 10 calendar days for the contractor to prepare a cost estimate
2. ADOT will prepare an independent cost analysis
3. If work is required to start prior to "C", ADOT starts documenting the work as if it were Force Account

B. Cost Estimate is received from the contractor:

1. Start Change Order negotiations [see 109.04(C)]
 2. If the cost estimate is not received from the contractor on time or if a contract price adjustment cannot be agreed upon, the work is processed as a Force Account and the Resident Engineer will prepare the Force Account request. [see 109.04(D)]
- C. Initiation Date:
1. ADOT and contractor agree to proceed as either a Change Order or Force Account.
 2. Contract Revision Notification Document completed for a Force Account or a Change Order.
- D. Change Order is completed and signed as the official contract document.

Sealing Change Orders

Resident Engineers are responsible for sealing Change Orders only when they have been in responsible supervisory charge of a design issue. Design issues include changes to or the creation of drawings or technical specifications covering the quality or performance of the finished construction work. For example, seals are not required for contract administrative issues such as quantity, cost, and time adjustments.

When the change is to a plan sheet/drawing sealed by a Professional Engineer or Landscape Architect, the RE shall coordinate with the registrant. When consulting designers develop changes, they shall send sealed drawings or specifications to the RE for inclusion with the Change Order. When a value engineering proposal requiring new drawings is submitted, it shall be sealed by the contractor's registered engineer prior to final approval of the proposal. When an issue has been escalated beyond the Resident Engineer, it shall be sealed by the responsible registrant making the final decision. Drawings and specifications must be sealed in accordance with Article R4-30-304(A)(3) of the Code & Rules of the Arizona State Board of Technical Registration.

All Change Order forms must originate from and be tracked by the RE in the same manner as all other Change Orders. Any new or revised sealed drawings or specifications shall be attached to the Supplemental Agreement forms or referenced on the first page of the form.

Force Account Work

Procedures

On a Force Account the Department has a right to direct the work. In other words, Inspectors, Project Supervisors, and the Resident Engineer can control how the work is performed and what labor, materials and equipment the contractor uses. They can also decide what to include and exclude on a Force Account. The contractor's foreman or forewoman should still retain day-to-day supervisory control over the labor and equipment to ensure their efficient and economical use.

Inspectors must track daily the contractor's labor and equipment hours as well as the materials used for Force Account work. The Force Account Daily Report form is used to track Force Account work. The Force Account Daily Report is found in PEN on the Daily Diary screen or in the Forms section of this manual.

A copy of the ADOT Inspectors Force Account Daily Report is given to the contractor. The contractor prepares the contractors Force Account Weekly Detail which is located on the contractors Website under Forms. Once completed the detail is submitted to the field office along with certified payrolls, Equipment Watch RRBB for each piece of equipment used, equipment rental invoices, and material invoices. The field office reviews the detail and back-up documentation attached. If there are charges on the detail that are not accompanied by the proper documentation or if information is incorrect on the detail, note the discrepancies and notify the contractor. Do not make the payment until the detail is accurate and complete.

Partial payments for material on hand are not allowed on force accounts.

Force Account details are to be submitted to field reports no later than 5 days after the payment is made.

Force Account Markups

Hourly payroll labor rates (including the hourly fringe benefit amount) are multiplied by 1.5 to arrive at a gross regular pay rate for labor used on a Force Account. This 50 percent markup on labor is intended to cover the contractor's expenses for:

- Payroll taxes
- FICA
- Social security
- Medicare
- Workers compensation
- Liability insurance
- Project overhead and profit (including the administrative overhead for the Force Account)

No additional markups are allowed for the contractor's labor costs, even if the contractor can prove that actual costs for the expenses listed above are greater than the 50 percent markup.

Subsistence and travel allowances paid to the worker are not allowed this 50 percent markup.

The subcontractor work and the costs of materials supplied to a force account are also marked up to offset the contractor's administrative and handling costs. See Subsections 109.04(D)(7).

Outside rented equipment is eligible for reimbursement at the invoiced rate plus a 10 percent markup, plus the hourly operating cost (HOC). $[(\text{Rental Invoice} \times 1.10) + \text{HOC}]$. No stand-by time is reimbursed to the contractor for outside rented equipment.

Should the Force Account have an owner-operator, the owner of a truck or water truck can be treated as an owner-operator only when the person who owns the truck is the one driving it. For example, if the contractor hires Steven Red of Big Red's Trucking to haul material, then Steven Red has to be the driver of the truck. The truck must be registered to Steven Red and a subcontract will be required. Steven Red cannot hire Joe Smith to drive Steven Red's truck and be considered an owner-operator.

Administering Force Accounts

Refer to ADOT's Force Accounting (TCH 3042) course for information on documenting and processing Force Account work. Registration for the course can be done through the ADOT Learning and Development intranet website on the ADOTNet.

The Rental Rate Blue Book is available on the ADOTNet located on the Construction Group intranet. Each user will need to obtain login credentials, provided by Equipment Watch, to view and lookup blue book rental rates. There is a link in the Construction Group intranet to "Request Access to RRBB".

109.05 Eliminated Items

Both 109.05 and 102.06 allow the Department to eliminate contract items (items not used – quantities reduced to zero). If items are not used by the Department, the contractor may request an equitable adjustment in the contract amount in accordance with Subsection 108.11.

It is very important for the Resident Engineer to notify the contractor in writing as soon as possible about an eliminated item. This ensures the contractor will stop any further work on the item. It is important for the contractor to immediately notify any subcontractors or materials suppliers affected by the elimination so they can stop any related work.

Under 108.11, the Department allows the contractor, subcontractors, and affected Material Suppliers to recover any direct expenses related to an eliminated item up to the notification date. Such expenses may include:

- Materials already fabricated that cannot be returned or used elsewhere, e.g. custom cut and bent rebar
- Restocking fees for materials already delivered to the contractor
- Labor time used in producing shop drawings, cut sheets, and other preparation costs directly related to the eliminated item
- Charges for delivering or picking up materials
- Plant setup or mobilization efforts for the eliminated item
- Reasonable profit and direct overhead for expenses incurred to date

Lost profit, lost home office overhead, and any other money lost due to the eliminated item cannot be recovered. Even if the contractor claims the eliminated item contains a disproportionate amount of overhead, profit, or uncut subcontract work, the item should be eliminated at its contract unit price (see Subsection 109.03). Only actual expenses directly related to the eliminated work should be added back into the contract.

109.06 Partial Payments and Retention

All contractor pay estimates are generated as a PDF and Docusign is used for all signatures required.

Monthly Progress Payments

Payment Procedures

Construction progress estimates are prepared monthly, compensating the contractor for work performed and completed and for materials furnished during the preceding month. The monthly cutoff date is 10 business days (excluding state holidays) prior to the third Wednesday of the month. The progress estimates are due at Field Reports Section by noon on the 5th working day after the monthly cutoff date. Contractors are paid on the third Wednesday of the month. The Monthly Estimate and Contractor Pay dates are shown on the ADOT calendar.

The Department does have the right to withhold part or all of the monthly progress payments if the project work or project progress is unsatisfactory or required certifications have not been received. If the Resident Engineer is suspicious of the contractor's ability to complete the project, a meeting with the contractor and the District Engineer should be held to discuss the issue before any payments are withheld (also refer to Subsection 108.04 of this manual on project delays).

There are unique situations where cash flow payments may be made to the contractor in order to advance certain aspects or elements of work. A Supplemental Agreement is required to be generated in these situations. In order to maintain statewide consistency, approval is needed from the State Construction Engineer or the Assistant State Construction Engineer prior to the generation of the Supplemental Agreement for a cash flow payment.

Work performed under a supplemental agreement cannot be paid for until a pay item is established in CPE. Force account documentation shall be submitted to Field Reports in the same month payment is made. Please ensure

that all documents are submitted to Field Reports in a timely manner. Payment may be made if emergency approval has been obtained in accordance with Subsection 109.04 of this manual.

If a supplemental agreement is considered “not eligible” for federal assistance, then the items included in the agreement must be shown in the non-FA portion of the monthly estimate.

Prescribed penalties for work items failing to meet specification requirements (e.g. PCCP smoothness or compaction on end-product AC) do not require a supplemental agreement. The field office creates a separate pay item found on the Spec. Pay Item List located in Chapter 12 and may notify the contractor in writing of the penalty adjustments. The same procedure applies to contract bonuses.

Agreed upon penalties not prescribed in a specification require a Procedural Change Order. The field office creates Spec. Pay Item 1090035 to apply the penalty.

Lump sum items in the original contract may be paid for on the monthly estimates if the amount of work, in the opinion of the Resident Engineer, is of sufficient magnitude to warrant partial payment. For lump sum structures, the contractor should submit an estimate of the quantities desired for partial payment at least two days prior to the cut-off date (see Subsection 109.10).

When the monthly progress payment is zero (negative and positive payment offsets) or negative, an estimate still needs to be saved and transmitted to Field Reports. For a negative estimate, the prime contractor needs to let the Department know how they would like that processed, whether writing a check or having it taken out of another current estimate.

Documenting Payment

Quantities developed for the monthly progress estimate should be based on sound engineering procedures rather than on arbitrary selection of quantities that help expedite payment. See Subsection 109.01 of this manual and the Pay Item Documentation for Inspectors cited in the references at the end of this chapter for further information on documenting pay quantities.

The monthly pay estimates are prepared on a computer program titled, Construction Progress Estimate. Pay item quantities taken from the Inspectors’ diaries are entered into the program, which prepares a pay estimate for the Department.

As the pay estimate is prepared, the importance of entering only quantities documented in a daily diary cannot be overemphasized. Pay quantity entries and other entries should not just appear on the progress estimate. Sufficient backup documentation, e.g. diaries, supplemental agreements, invoices, and others, needs to support each entry.

If corrections need to be made for previously paid quantities that are incorrect, the corrections need to be documented (typically in a diary). All payment documentation must be kept as part of the project records and may be subject to periodic audit.

When preparing the monthly progress estimate, the Resident Engineer and the contractor’s superintendent should review all quantities of work completed. Should there be pay item quantities on which the two parties disagree, the disagreement needs to be resolved (through escalation if needed) prior to transmittal of the next month’s estimate. Before transmitting the estimate to Field Reports, the RE must assure there are enough funds to process. A supplemental monthly payment estimate may be transmitted if resolution occurs early within the next monthly payment period and considerable payment is involved. The subcontractors and Material Suppliers should be supplied with copies of the monthly progress estimate and/or MPT Traffic Control Sheets upon request.

Supplemental Estimates

Contact Field Reports for further instruction if there is a need to produce a supplemental estimate.

Payment Reporting and Sanctions

The contractor shall report on a monthly basis indicating the amounts that have been paid to all Reportable Contracts. Reportable Contracts is defined as any subcontractor, of any tier, DBE or non-DBE, whose work is performed on behalf of the prime contractor. The prime contractor is to report all payments made to the Department's web-based DBE & OJT Online Reporting System (DOORS) website. The reporting for payments made on all Reportable Contracts shall be recorded by the 15th day of the current month for all payments made from the previous month's monthly estimate.

If a zero or negative estimate is saved, the Field Office or the contractor needs to reach out to BECO to have an audit opened for the reporting month.

Example: Work performed in July is paid on the July Monthly Estimate. The July Monthly Estimate payments will be recorded on the August Audit in DOORS. The deadline for all reportable contracts to be entered into DOORS for the August Audit is September 15th.

For each month that a contractor fails to submit timely payment information in DOORS:

\$5000.00 will be retained as sanctions from the monies due to the contractor regardless of how many reportable contracts were not made for that month

After 90 consecutive days of non-reporting, the sanctions will increase to \$10,000.00 for each subsequent month that payment was not reported.

Sanctions are to be applied in the same month that non-reporting takes place, regardless if the sanction is being escalated by the contractor.

Only the State Engineer for Construction has the authority to waive payment reporting sanctions.

Prompt Payment

For any prompt payment questions or sanctions the Field Office is to contact BECO.

109.07 Partial Payment for Material on Hand

Subsection 109.07 provides a list of contract items that are eligible for a partial payment when the materials needed to construct those items are stockpiled by the contractor or a materials supplier. The partial payment factor is applied to the unit price of the item.

To qualify for a partial payment on stockpiled materials, the following conditions must be met.

- The Resident Engineer must be satisfied with the progress of the project
- When applicable, the stockpiled material should have been tested and the material must have passed the test(s)
- When applicable, acceptable certificates of compliance for the material have been received by the Department
- The material is stockpiled on the project, or if stockpiled off the project (including commercial material sources), the material is located in a separate area away from the main inventory

The purpose of this partial payment is to promptly compensate the Material Suppliers for materials produced for the project. The intent is not to finance their inventory. Once a partial payment is made, the Material Supplier should not be allowed to sell the material to other customers.

Resident Engineers have the authority to deny partial payment for material stockpiled at commercial sources if the material cannot reasonably be separated from the main inventory, or if the Resident Engineer suspects the Material Supplier is in financial trouble. In either case, the material should be delivered to the project site or the contractor's yard before a partial payment is made.

When material is being produced or stockpiled on private property, the contractor must submit a letter to the Resident Engineer from the private property owner granting permission to produce or stockpile the material (refer to Subsection 107.11 of this manual).

Partial payments for materials not listed in the table can be made without the need for a supplemental agreement. The previous conditions for partial payment eligibility must be met, and both the Resident Engineer and contractor must agree on a partial payment factor. Partial payment for lump sum items or items measured individually (each) are to be based on Material Supplier's invoices or actual cost records.

If an item receives a material on hand payment and the quantity underruns in the field the inventory must be depleted in the FAST system. For example: the bid schedule shows 1,000 LF of fence and the contractor asks for the material payment for 1,000 LF of fence. After the item is complete only 900 LF of fence is needed, the material paid previously needs to be taken back since it wasn't installed.

109.09 Acceptance and Final Payment

Once a final acceptance letter has been written for the project (see Subsection 105.20 of this manual), the Field Office can begin to close out the project.

Closing out a project involves verifying that all paperwork is complete for the project and preparing the final estimate.

Semi-Final Estimate

As the Field Office closes out a project and finalizes the documentation, additional payments may need to be made to the contractor as quantities are checked and documents received. Prior to transmitting a semifinal, notify Field Reports. Semi-finals should be generated with an SF after the estimate number. The Field Office may submit as many semi-final estimates as needed to pay for remaining quantities.

Final Estimate and Support Documentation

The final estimate shows the total as-built quantities of all contract items. All quantities shall be reviewed and approved by the Resident Engineer. The Field Office does not save the final estimate in FAST. The Resident Engineer and contractor sign it, certifying that the quantities reported are final and correct. For guidance, see the Project Final Checklist in Chapter 1207 of the manual. To expedite final processing and payment to the contractor, final estimates must be delivered to Field Reports no later than 45 calendar days after the date of acceptance of the project. If delays are anticipated, the Resident Engineer must notify Field Reports explaining the reason for the delay and providing an expected delivery date. Quantity calculations and other project records (payrolls, certifications, Force Account details, etc.) should be kept up-to-date throughout the life of the project so the final estimate can be submitted promptly.

109.10 Lump Sum Payment for Structures

(A) General

Measuring quantities for a large structure can become a very tedious and time-consuming undertaking. The intent of paying for structures on a lump sum basis is to minimize measurement and record keeping requirements. When significant quantity variations ($\pm 5\%$ or more) do occur in structural concrete, structural steel, rebar, structural excavation, and structure backfill, the Department does allow measurement for payment. However, the burden of proof is on the contractor, who must substantiate the variation.

In allowing compensation for significant quantity variations, the Department is purposely trying to discourage contingencies in contractors' bids. This protects the contractor from unexpected quantity variations because the Department is willing to take that risk.

(B) Adjustments Due To Quantity Variations

The Inspector should be aware that there are differences between the documented quantities of steel and concrete versus the actual quantities used. These differences are caused by:

- The yield effect of batched concrete
- Imperfections and deflections of formwork
- Concrete spillage and waste
- Rebar and steel that may be shown on cut sheets but are not needed in the structure or used as placement aids
- Approximations made by the Designers in calculating quantities

With this in mind, it is a good idea for the Inspectors to track the amount of concrete and steel that go into a structure not only for partial payment purposes, but in case significant quantity variations do occur. Inspectors should collect copies of all steel cut sheets and concrete tickets for future reference.

The contractor may use steel cut sheets and concrete batch tickets to substantiate quantity variations. When this occurs, the Resident Engineer should involve the Designer of the structure, who should verify the original quantity calculations and make any adjustment due to as-built conditions. If the Designers cannot find more than a 5 percent variation, then it is up to the contractor to produce detailed calculations showing the variations. Cut sheets and concrete tickets cannot be used alone in determining quantity variations. Instead, the contractor should use as-built dimensions and the plan sheets to calculate any quantity changes.

The Department's review of the contractor's calculations should be to ensure that sound engineering and mathematical procedures are used. The intent is not to do the calculations for the contractor, but to verify the accuracy of the calculations.

Variations in structural excavation and structure backfill quantities should be limited to changes in pay limits shown in Standard Details B-19.30, .40 and .50. A change in pay limits would occur only if the original ground line is different than the one used by the Designers, or if the Designers had made some type of calculation error or incorrect assumption when computing the pay quantities. Differences due to the contractor exceeding the pay limits for constructability reasons (e.g. sloping the excavation) do not qualify for quantity adjustments.

(C) Adjustments Due to Revisions Ordered By The Engineer

When Designers make changes to a structure, any bid item affected by the change is treated as a major item. As a result, the item should be increased or decreased up to 25 percent before an adjustment in the unit price is required, see Subsection 104.02(D)(4)(b). However, since the structure is paid for on a lump sum basis, a change order will be needed to adjust both the quantity of the affected item(s) and the lump sum structure price. Typically, any quantity adjustments are shown as a separate line item on a change order. The original lump sum structure item is deleted, and a new lump sum structure item is added.

(D) Payment

Partial payments for lump sum structures are usually made by collecting delivery tickets for materials incorporated into the structure. This includes concrete tickets, steel cut-sheets, weigh tickets for structure backfill, and invoices for girders and bearing devices. As mentioned in Subsection 109.10(B) of this manual, delivery tickets do not represent the actual amount of material used in a structure. However, for partial payment purposes, delivery tickets and invoices are a close approximation. The contractor is required to turn in a list of quantities for each structure before the monthly cutoff date. The Inspector or Project Supervisor should review this list with the structures foreperson and get an agreement on quantities before the Field Office processes the monthly pay estimate.

Final payment for a lump sum structure is based on the lump sum amount. The total of the extended amounts for all the quantities must equal the lump sum amount. The total cannot be higher or lower, regardless of their summation. If the Resident Engineer or the contractor believes there is an error in the bid quantities, then adjustments are handled under Subsection 109.10(B) or (C).

109.12 Fuel Cost Adjustments**General**

When the Fuel Cost Adjustment is part of the contract, the Department will adjust the monthly progress payments up or down as appropriate for cost fluctuations in diesel fuel as determined in accordance with (109FUEL, 02/10/12).

If the 109.12 Fuel Cost Adjustment specification is not in the contract, Field Reports will check the "Excl Diesel" marker on the contract card when setting up the project. This will keep the Diesel Fuel Price Adjustments report from automatically generating.

The Diesel Fuel Price Adjustments Report is automatically generated per project, in FAST, Price Adjustment Program, after each monthly progress estimate is saved. The report will continue generating the adjusted fuel cost until substantial completion has been given.

The adjusted fuel cost is the monthly payment amount due to the contractor for the month prior.

After you have saved the first monthly progress estimate, you will go into the FAST, Price Adjustment program. Under the subtitle Tax Rates, choose Tax Rate Entry and enter the tax rate for your project. When entering the tax rate you will also be required to enter an "As of Date"; this will be the Date Bids Opened. If the tax rate for your project changes during the course of the project, you will go in and add the new tax rate. The "As of Date" will be the effective date of the new tax rate. If your project is on Tribal Land your contractor may be required to pay Tribal Tax. If applicable, you will enter the Tribal Tax as Other.

Go to the Office Managers web page, Price Adjustment Instructions for assistance.

For each month following the monthly progress estimate, go into the Price Adjustment Program and generate a Diesel Fuel Price Adjustments Report. If the total Adjusted Fuel Cost for that Monthly Estimate exceeds zero dollars plus or minus, this is the dollar amount of diesel fuel adjustment for the month.

To pay for these adjustments, the field office needs to create Pay Item 1090001, Diesel Fuel Price Adjustment. This Item should be created for a Unit Price of \$1.00 and a Quantity of 0. This should be a lump sum open account where the price adjustments can be made. The field office shall also build Subitems for each pay estimate in which a price adjustment.

109.14 Increased Federal Share - Technology and Innovation Deployment Program (TIDP)

For projects that include innovative technologies and have been approved for Increased Federal Share, the project team should closely adhere to specifications established for use or inclusion of the innovative technology in the project. Once the application is approved by the FHWA, if any changes in project scope or procedural change orders are being considered, which directly or indirectly affect the deployment of the innovative technology, this must be discussed with the Project Manager and FHWA Area Engineer to confirm the project remains eligible to receive the Increased Federal Share.

At the conclusion of the project, a “lessons learned” meeting or workshop is held to review the implementation of the innovative technology and determine a course of action for subsequent use, adoption into standard practice, and/or refinement of the technology. Therefore, a collective effort to capture and document the effectiveness of the technology, challenges associated with its use, and strategies to more effectively use or deploy the technology should occur throughout the project. This effort should be led by a member of the associated technical group as well as a member of the construction unit who will be directly involved in monitoring activities or inspecting items which include the technology.

The project should discuss the innovative technology during the Partnering Workshop and Pre-Construction Meeting, as well as during any weekly or pre-activity meetings, as appropriate.

109.15 Draw Schedule

Projects that are programmed for over \$18 million or have a contract time longer than 18 months will have this specification in their project Special Provisions. This needs to be provided at the Preconstruction meeting.

A sample draw schedule is as follows:

Draw No.	Month	Amount	% of Total	% Complete
1	March 2021	\$369,686.13	1.08%	1.08%
2	April 2021	\$533,038.86	1.55%	2.63%
3	May 2021	\$802,432.05	2.33%	4.96%
4	June 2021	\$1,238,865.36	3.60%	8.56%
5	July 2021	\$2,690,461.82	7.83%	16.39%
6	August 2021	\$3,692,664.18	10.74%	27.14%
7	September 2021	\$2,787,485.87	8.11%	35.24%

8	October 2021	\$3,657,234.84	10.64%	45.88%
9	November 2021	\$3,844,081.98	11.18%	57.07%
10	December 2021	\$2,091,211.53	6.08%	63.15%
11	January 2022	\$1,403,978.95	4.08%	67.24%
12	February 2022	\$1,381,300.93	4.02%	71.25%
13	March 2022	\$892,959.33	2.60%	73.85%
14	April 2022	\$341,820.38	0.99%	74.85%
15	May 2022	\$1,653,591.34	4.81%	79.66%
16	June 2022	\$2,353,877.50	6.85%	86.51%
17	July 2022	\$2,156,895.20	6.27%	92.78%
18	August 2022	\$2,279,593.55	6.63%	99.41%
19	September 2022	\$158,161.63	0.46%	99.87%
20	October 2022	\$43,652.57	0.13%	100.00%
Total:		\$34,372,994.00		

This form is to be provided to the FMS group upon receipt.

109.16 Bituminous Material Price Adjustment

Bituminous Material Price Adjustments Due to Market Price Changes

The price of crude oil and its byproducts change daily. Price fluctuations in crude oil can be volatile and influenced by world events. To eliminate the risk contractors take in bidding work that uses large amounts of bituminous materials, the Department allows monthly price adjustments to asphalt cement, liquid asphalt, and emulsified asphalt used on the project. The price adjustments are based on the selling prices of asphalt cement listed in the Asphalt Weekly Monitor. ADOT's Contracts and Specifications Section publishes a monthly Bituminous Material Price Adjustment bulletin which indicates the average price for asphalt cement that month.

The price adjustment is the difference between the asphalt cement price when the asphalt was used on the project and when the project was bid, times a factor for the type of bituminous material. For example, if the price of asphalt cement was \$120 per ton when the project was bid and the price changed to \$100 when the asphalt cement was purchased and delivered to the project, then a \$20 deduction would be made for each ton of asphalt cement used. The adjustment for emulsified asphalt would be $\$20 \times 60\% = \12 per ton used, and the adjustment for asphalt-rubber material would be $\$20 \times 80\% = \16 per ton used. The method for calculating price adjustment is revised periodically, so always see the Special Provision for the latest method.

To pay for these adjustments, the field office needs to create pay item 4040000, Bituminous Material Price Adjustment. This should be a lump sum, open account where a price adjustment for different bituminous materials used on the project can be paid.

Exhibit 109-16-1 is an example of the recap the field office produces. This recap should be sent to Field Reports when submitting the final estimate for the project.

Note that a pay adjustment factor of 0.6 is shown in Exhibit 109-16-1 for emulsified asphalts. As mentioned previously under Tack Coats, emulsified asphalts contain only 60% asphalt cement. The pay factor adjustment accounts for the water in the emulsion. For the special type of emulsion, a pay factor adjustment of 0.3 is used since only 30% of the diluted emulsion contains asphalt cement.

The final recap, (Exhibit 109-16-1) should contain the following:

- Price of asphalt cement at bid time
- The pay times affected
- The month the material was used
- The price at the time of use
- Difference between current and bid prices
- Total tons for the month
- Pay factor (when applicable)
- Total net adjustment (should equal the lump sum amount for pay item 4040000)

Documentation Requirements for Bituminous Materials

Office documentation requirements needed for final payment include:

- Invoices
- Recap sheet(s) (Exhibit 109-16-1) of bituminous treatments used on the project containing:
 - Date material used
 - Pay tons
 - Weigh backs (when partial loads are used)
 - Cumulative totals

The office documentation should be submitted to Field Reports for review with the final estimate.

BITUMINOUS MATERIAL PRICE ADJUSTMENTS**ADJUSTMENT REPORT BY PROJECT**

PROJECT H668901C
 EHRENBURG - PHOENIX HWY
 CM-010-B(200)A
CONTRACTOR COFFMAN SPECIALTIES, INC.
BID DATE 10/27/2006
SUBSTANTIAL COMPLETION DATE 08/08/2007
INITIAL COST 383.00

4040111 BITUMINOUS TACK COAT (SS-1)**Section 1**

Lot	Date	Price	Diff	Tons	Factor	50:50	Pretax Adj	Sales Tax	Other Tax	Adjustment
01	04/29/2007	321.00	-62.00	0.73	0.3	Y	-13.58	-0.71	0.00	-14.29
02	07/02/2007	327.00	-56.00	1.54	0.3	Y	-25.87	-1.36	0.00	-27.23
02a	07/10/2007	327.00	-56.00	2.69	0.3	Y	-45.19	-2.38	0.00	-47.57
				4.96			-84.64	-4.45	0.00	-89.09

4040282 ASPHALT BINDER (PG 76-16) (PG 76-XX)**Section 1**

Lot	Date	Price	Diff	Tons	Factor	50:50	Pretax Adj	Sales Tax	Other Tax	Adjustment
01	04/29/2007	321.00	-62.00	42.02	1.0	N	-2,605.24	-137.17	0.00	-2,742.41
02	07/02/2007	327.00	-56.00	39.63	1.0	N	-2,219.28	-116.85	0.00	-2,336.13
				81.65			-4,824.52	-254.02	0.00	-5,078.54
		TOTALS		86.61			-4,909.16	-258.47	0.00	-5,167.63

Exhibit 109-16-1. Bituminous Material Price Adjustment Example