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PAYMENT FOR LEFTOVER MATERIALS

Article 109-6 of the Specifications provides that the Department of Transportation will reimburse the Contractor for leftover materials on a project subject to the following requirements:

1. The Contractor must request reimbursement.
2. The materials must have been delivered to the project.
3. The materials must meet the requirements of the contract.
4. The leftover materials must have been developed due to:
   A. revisions or elimination of items by the Engineer, or
   B. discrepancies in the plans or contract.

To ensure the Department is not encumbered with expenses for materials not needed, the Resident Engineer should make every effort to provide stakeout far enough in advance to provide the Contractor with order lengths and/or quantities of work required. Particular care should be given to coordinating the stakeout with the Contractor's placing orders of non-stock items not used by the Department.

The Contractor should make written request to the Resident Engineer for reimbursement for leftover materials. The request shall include original and duplicate itemized invoice from the Contractor to the Department, listing the quantity and invoice price. The invoice price shall include the purchase cost, including taxes paid when purchased, and delivery cost. The request shall also include a copy of the original purchase invoice plus a detailed breakdown of the Contractor's handling cost.

Upon receipt of the request, the Resident Engineer should verify the quantity of materials, verify the accuracy of the invoice, and evaluate the Department's need for the materials. When the materials are not needed by the Department, the Resident Engineer should request the Contractor to provide an invoice reflecting the salvage value of the material retained by him or his cost for disposal of the leftover material.

The Resident Engineer should submit an estimated cost for disposition of the leftover materials to the Division Engineer and recommend one of the following four methods of disposal for the leftover materials:

1. The Contractor retains the materials and the Department pays the Contractor for the cost of the materials less any salvage value.
2. The Contractor returns the materials to the materials supplier and the Department pays the Contractor for the cost of handling and restocking the materials.
3. The Department picks up and disposes of the leftover materials.
4. The Department picks up and places the materials in inventory for its use, and the Department pays the Contractor for the cost of the materials plus handling.

The Division Engineer will evaluate the Resident Engineer's recommendation and advice as to the method for disposal of the leftover materials. The Resident Engineer enters the Line Item through the Contract Adjustments function in HiCAMS using either Review Eliminated Contract Items or Review Leftover Materials.

.

SUPPLEMENTAL AGREEMENTS

A Supplemental Agreement is an agreement between the Department and the Contractor that amends the contract as necessary to satisfactorily complete the proposed construction. The modifications to the contract may affect the work requirements (104-3), unit prices of an existing contract item (104-5), addition of new work items (extra work) (104-7), contract time(s) or other terms of the contract.

The information contained in the Supplemental Agreement becomes a part of the contract documents. It is important that the language and the quantities contained in that document be precise. In order to author a Supplemental Agreement that is precise, the Resident Engineer must completely understand the change and be able to explain the change to the Contractor. Such understanding and explanation permits the Resident Engineer and the Contractor to enter into the negotiation phase of the Supplemental Agreement fully understanding the scope of the work. It is important to begin investigating the need and perceived fair price of Supplemental Agreement work without delay so thoroughness is not sacrificed for urgency. There will be rare occasions where work must proceed immediately, however this is the exception, not the rule. It is important that both parties understand the fact that this will not likely be their last negotiation so preserving the relationship has advantages. The Resident Engineer should request whatever documentation is necessary to justify the cost of performing work by Supplemental Agreement. It is helpful if the Contractor submits his price with the Supplemental Agreement Standard Pricing Information form. (See **the Form and Example** in this section of the Manual).

When the estimated total cost of the affected work is equal to or less than the amount specified in Article 104-8(A) of the Standard Specifications and the terms for performing the work have been mutually agreed to, the Contractor may begin work before executing the Supplemental Agreement. The terms shall include agreed prices, materials to be used in the work and modification to the contract time. In all other instances, the Supplemental Agreement must be approved by the Engineer and executed by the Contractor and the Department prior to the work being performed.

FHWA concurrence must be obtained on **step-by-step projects** before the work is performed on all Supplemental Agreements.

The Resident Engineer will negotiate all terms of the Supplemental Agreement with the Contractor's representative. During these negotiations, the Resident Engineer will confer with the Department's representative with authority to approve the Supplemental Agreement. Supplemental Agreements will be created in and approved through HiCAMS by appropriate Department and FHWA representatives. It is the Resident Engineer's responsibility to obtain FHWA concurrence. In addition to the terms that appear on the signed Supplemental Agreement, the Resident Engineer will document in HiCAMS justifications for performing the work and for the terms contained in the signed Supplemental Agreement. The electronic approval in HiCAMS is the official record of that action. After approval of the Supplemental Agreement by the Department, the Contractor signs the Supplemental, the Resident will enter "Contractual Concurrence" in HiCAMS, and the Resident Engineer will also execute the Supplemental Agreement in HICAMS for the Department. Prior to payment for the work, approval of the Supplemental Agreement by all parties (including FHWA) must be documented in HiCAMS.

Should the Contractor not concur with the agreement as approved and the Department is agreeable to changes requested by the Contractor, the Supplemental

Agreement should be marked as "Contractor Non-concurrence" or "Void" in HiCAMS. When the status is changed to "Contractor Non-Concurrence" the Supplemental Agreement can be revised as appropriate and resubmitted for approval. After the Contractor signs the agreement, the Resident Engineer will sign and execute the agreement; **forward the original approved Supplemental Agreement to the State Construction Engineer with any attachments**, and distribute copies of the agreement to the Contractor with any attachments. The Resident Engineer should note the Contractor's concurrence of the Supplemental Agreement in HiCAMS, which will then automatically create appropriate pay items and modify the contract times as specified in the agreement in HiCAMS. The Resident Engineer should promptly scan the Supplemental Agreement into the Department's Financial Management system (BSIP or SAP).

Since hard copies of Supplemental Agreements will not be distributed to most parties, it is important that all requirements be included in the agreement or incorporated by reference. Electronic copies of many standard contract provisions can be obtained from the Design Services web site or from the Contract Officer. When requirements cannot be incorporated into the electronic copy of the agreement, a copy of those requirements should be attached to the original, Resident Engineer's, and Contractor's copies. When material requirements are not included in the electronic Supplemental Agreement, a hard copy of the agreement and material requirements should be forwarded to the State Materials Engineer.

Supplemental Agreement approval authority for the Department, both verbal and written, is vested in the following individuals. This authority is extended for both the approval of the negotiated prices for extra work and extension of contract time necessary to accomplish the extra work.

- Resident Engineer: - Supplemental Agreements for all Articles of the Specifications up to $50,000 and associated time up to 30 days on all projects.
- Division Engineer: - Supplemental Agreements for all Articles of the Specifications unlimited authority for compensation and time on all projects.
- Bridge Construction / Roadway Construction Engineer: - Reviews Supplemental Agreements greater than $50,000 and time extensions greater than 30 days.
- State Construction Engineer: - Reviews Supplemental Agreements greater than $100,000 and time extensions greater than 90 days.

The Bridge Construction / Roadway Construction Engineer or State Construction Engineer review must be made prior to forwarding the Supplemental Agreement to the contractor for his signature.

SUPPLEMENTAL AGREEMENT PREPARATION AND NEGOTIATING

SCOPE OF WORK

Definition – The work involved to satisfactorily complete an assigned project in ***accordance with the plans, specifications, special provisions, contract, etc.*** An easy way to understand the scope of work is to ask yourself this question: What is the objective of this construction project?

Each individual entering into a Supplemental Agreement to the contract should first, fully understand the scope of work for the contract and second fully understand the scope of work for the proposed Supplemental Agreement. You should also make sure the

Supplemental Agreement is in the scope of work for that contract. To put it simply, is this contract change necessary for the satisfactory completion of the work? Once this is determined, you must begin the process of creating the Supplemental Agreement. Typically, you decide what items are needed and how they will be paid. Will there be many line items or just one? What quantities need to be estimated for the amount of work? Will this Supplemental Agreement impact the controlling operation or create potential delays? Have all the materials, labor, and equipment been thought out completely? There are many questions you need to ask yourself prior to starting a Supplemental Agreement. These questions need to be communicated to the contractor to make sure they are fully aware of the work that they will be asked to perform. Remember the more informed the contractor is the less liability they have to put into their prices. When you are satisfied with the answers to all these questions and you are ready to proceed, again ask yourself; is this Supplemental Agreement necessary for the satisfactory completion of work? If you have any doubts or unresolved questions, discuss your concerns with your Construction Engineer.

Once the contractor has submitted his price and breakdown for the Supplemental Agreement, you should compare the prices with the state bid averages to ensure reasonable conformity for the cost of work. There will be times when you will not be in agreement with the contractors' prices. Before you instruct the contractor to proceed with the work as Force Account, thoroughly review the contractors' price and time requests. If you believe the prices are not reasonable, communicate with the contractor keeping the following items in mind:

MATERIALS

The materials used in the work may be unique to the operation and may not be readily available. There also may need to be additional time, beyond the time needed for construction, for material manufacturing or fabrication. In addition, keep in mind the NCDOT sampling and testing procedures and how this will affect the cost and time.

LABOR

Some work will require skilled laborers. It may also be work that even few skilled laborers are able to perform. This may cost the contractor more to utilize a subcontractor that has skilled labor to perform this work. This may also add to the time required to perform the work.

EQUIPMENT

As with labor, the equipment necessary for the work may be unique. When this is the situation, the availability and cost to buy, lease, or rent this equipment has to be considered.

TIMING

In addition to analyzing the materials, labor, and equipment, you should review the timing of the work. The time of the year, delays to the project and the affected operations are all items you need to consider. Most work will obviously take more time during winter months than performing the same type of work in the summer. However, you might also want to consider the Supplemental Agreement work performed could push the controlling operation into winter months. This will affect the contract time especially if the controlling operation has seasonal limitations.

Creating a supplemental agreement can become very complicated when you take all these items into consideration. The entire process can take some time from beginning to approval, so it is important to stay involved and keep an open line of communication with the contractor to expedite the process. Hopefully, with a good and thorough understanding of the scope of work of the supplemental agreement, this process will go smoothly.

PRICING

The following information is provided as guidelines or tips to be used when negotiating the prices for Supplemental Agreements. All information may not be applicable for your Supplemental Agreement.

- If the Supplemental Agreement is for work covered by the Specifications, reference the specification and use the corresponding method of measurement and basis of payment.
- Estimate quantities for the Supplemental Agreement as closely as possible.
- Unless otherwise stated in the Supplemental Agreement, treat all work as a minor contract item and treat overruns in accordance with Article 104-5.
- When asking the Contractor to submit prices, ask for a detailed breakdown of costs for each Contractor/subcontractor involved in the work.
- To assist in the review of the submitted prices, the submittals should be in the form of force account records, containing personnel, materials, equipment, markups, etc.
- The Resident Engineer should review the submitted prices for use in his approval or for use in his recommendation to the next level of approval.
- In the review of prices, the Resident Engineer may seek assistance from other units in the Department which normally prepare cost estimates. Examples of the units are:
  - Technical Services (formally Project Services)
  - Roadway Design
  - Structure Design
  - Signing and Delineation
  - District Office
- Compare the prices to Supplemental Agreements on other projects
- Call rental agencies to determine rates for rental equipment.
- Some contractors have separate equipment divisions and equipment rates will be determined by these internal rental rates.
- Compare the prices to the State Bid Averages, but use them only as a guide.
- Try to match the prices to projects, which most resemble your project. Factors to consider include geographical location, quantities, etc.
- Lump sum prices such as LS grading, evavote joint seals, reinforced bridge approach fills, etc., are nearly impossible to compare.
- It is important to remember that the bid averages represent prices for work performed under the most economical conditions while the work for Supplemental Agreements may not be performed under the most economical or efficient conditions.
- When comparing costs, many factors need to be considered. These include:
  - The resources available on the job to perform the work?
  - Will resources be pulled from other work on the job or do they have to be brought in to supplement those already on the job?

- How will the Supplemental Agreement work affect other work on the job?
- How much risk does the work involve?
- Do the prices of materials differ significantly from those prices being compared to? This can be important to consider when escalation for materials such as steel is occurring.
- Is the equipment available on the job the most efficient available to perform the work? Is it more economical to perform the work with a readily available piece of equipment which is less efficient or bring in a more efficient piece of equipment?
- What timeframe is available to perform the work? Can it be scheduled for the most optimum time or is there an immediate need?

RISK

When negotiating Supplemental Agreements all parties must consider the risks. A certain level of risk is inherent in contracting and neither contractors nor the Department should assume all the risk. For instance, assume a Supplemental Agreement includes adding a driveway after the project is almost complete. The driveway will probably take two weeks to complete. It is the near the end of the construction season and the contractor fears he may be caught by the weather. It would be reasonable to allow the contractor some consideration for extra time if the weather looks like it may be a problem, but not to grant the contractor an entire winter shutdown.

Three questions to consider when evaluating risk are:

- What can go wrong?
- How likely is it to happen?
- What will it cost?

Consider a contractor pricing a Supplemental Agreement for laying a pipe at a location not shown on the plans where he has no geotechnical information. What can go wrong? He could hit rock. He could dig into an area of soil contaminated by hazardous waste. He could dig up an historical artifact and be suspended for months while authorities investigate. The list of possibilities goes on, but how likely is each of these to happen?

If all other areas of the job have been excavated and you have only encountered sand, rock probably won't be a problem, but if you are at the end of a presplit cut you would think differently. If you are working beside a forest of virgin timber, waste probably won't be a concern. If a 60-year-old chemical plant once stood on the property there may be trouble.

Each situation is different, and the more information you can use to make a decision, the more accurately you can assess the risk. The Engineer must be familiar with all aspects of the work in order to come to a fair decision when evaluating the contractors' price and time extensions. Bid averages should only be used as a guide. If you are not familiar with the specifics of the individual project you can not fairly evaluate the submitted prices.

Some factors that could affect risk are:

1. Effect of added work on existing work
2. Weather
3. Material supply uncertainties
4. Time needed for work
5. Subsurface composition
6. Subcontractors
7. Utilities

Consider alternatives to reduce risk. For instance, if you agree with the contractor on all aspects of the work except the time involved, you could separate this issue out. Pay for all other items of the work except the labor, and add a separate item for the crew on an hourly basis.

MARKUP

After a contractor figures the direct costs associated with the work he then will add the markup. Generally markup consists of labor burden, office burden and profit.

Labor burden is money paid by the employer in addition to salaries. This would be for items such as holidays, sick leave, vacation leave, insurance, workers compensation and other benefits. This overhead is applied to the labor costs before the total overhead is calculated. On force account work we generally allow 35%.

Office burden is basically the cost of doing business. A contractor must have an office, office staff, office equipment, utilities, supplies and other indirect costs associated with doing business, and these are expenses that must be paid from some source. This may be in the 5% to 25% range, depending on the size of the business.

Profit is what keeps contractors in business and is not a dirty word. A rule of thumb the Department has sometimes followed in the past is 10% is a good percentage for profit. This may vary widely across the State and the Engineer must use good judgement when trying to determine if the contractor has supplied a good number for profit.

If a subcontractor is performing the work he will include markup in his price. The prime contractor can also include markup for his administration duties and any support work that may be required for that item of work.

WORDING OF DESCRIPTION, LOCATION AND JUSTIFICATION AND CONTRACT TIME

When completing the Supplemental Agreement (Form 880) there are two sections that detail the terms of the supplemental work. The Description, Location, Justification should thoroughly describe the work to be performed and the reason has been added to the contract. The Contract Time describes the terms of extending contract time(s) due to the work to be performed. Refer to the following information when completing these sections.

Description, Location, Justification:
The first sentence in the HICAMS description should summarize the change. (This will permit rapid retrieval of a particular Supplemental Agreement without having to review several.)

- A detailed description of the exact change
- The location of any work to be performed
- The location of any work to be performed
- The justification or necessity for the change, including any related circumstances
- This should be written so someone with no knowledge of the project fully understands the reason for the Supplemental Agreement
- The Standard Specification that allows the modification of the work
- The Standard Specification applicable to the affected work
- If a Standard Specification cannot be referenced, then a specification must be included which details the description, materials, construction methods, method of measurement and basis of payment.
- Include any standard or special provision that will be amended as a part of this Supplemental Agreement, such as 104-5, Overruns and Underruns of Contract Quantities
- Will AC or fuel price adjustment be a part of this SA?

EXAMPLES

Supplemental Agreement 1

Description
Force Main Sewer Line - The Utility Design Section issued a plan revision that changed the size and type of material to be used for the force main sewer line. These changes constitute an alteration of plans as defined by Article 104-3 of the 2006 Standard Specifications. The Contractor shall provide and install the materials indicated on the revised plans. Materials, construction methods, method of measurement and basis of payment shall be in accordance with the Project Special Provisions and Sections 1510 and 1520 of the 2002 Standard Specifications. Any 12 inch DI force main sewer pipe, sewer lined, not used on the project will be treated as leftover materials in accordance with Article 109-5 of the 2006 Standard Specifications.

Justification
A field investigation by the Department, contractor and the City of Light revealed the existing force main sewer line is 12 inches in diameter rather than the 16 inches as indicated on the plans and the existing water line is 16 inches in diameter rather than the 18 inches as indicated on the plans. These discrepancies necessitate the two steel encasement pipes provided for these lines be reduced in diameter from 36 inches to 24 inches for the force main sewer line and from 42 inches to 30 inches for the water line. The actual pipe size for both the existing force main sewer line and the water line are smaller than indicated on the plans, which required a plan revision.

Supplemental Agreement 2

Description
1350mm CSP Y-9 Detour – Compensate Contractor for installation of approximately 27.6 meters of temporary 1350mm corrugated steel pipe (CSP) at station 25+66 –Y9-Detour as shown on Plan Sheet 2-S. The work shall be performed in accordance with Articles 300 and 310 of the 2006 Standard Specifications for Roads and Structures. Payment for installation and removal of the pipe shall be in accordance with the Project Special Provision for Temporary Detours (page 36 of the Contract)

Justification
The pipe is shown as 1350mm CSP on the roadway plan sheet 2-S, but as a 1350mm Reinforced Concrete Pipe (RCP) on the Pipe Summary sheet 3-X. There is no Line Item in the Contract for 1350mm CSP, only 1350mm RCP. However, due to the temporary nature of the pipe; the Engineer has elected to use CSP.

Supplemental Agreement 3

Description
CSXT Slope Protection – This supplemental agreement is written to establish pricing for items necessary to complete the slope protection work required by CSX Transportation as described in the attached memorandum dated 03-02-2006 from CSX Transportation. The above described work is located at bridges 1B and 2B, End Bent 1, Station 123+38.105 – L-. This work shall be completed in accordance with Sections 412 and 876 of the 2006 NCDOT Standard Specifications.

Justification
This work is required by CSX Transportation to provide slope protection adjacent to their railroad tracks. There were no provisions in the original plans or contract that described how this work needed to be constructed.

CONTRACT TIME:

Contract Time is the section of the Supplemental Agreement that details the terms of the agreement regarding time extensions. When determining whether a time extension should be granted, it should be decided if the work clearly affects the controlling operation or has become the controlling operation. Consideration should also be given to how a time extension will affect the completion date and seasonal limitations. It is a good practice to try to resolve time while preparing the Supplemental Agreement.

The Supplemental Agreement generally affects the contract time by delaying the controlling operation or as a result of the dollar value of the work. If it is determined that a time extension is warranted, the Contract Time Tab should be used to indicate how the time extension will be granted.

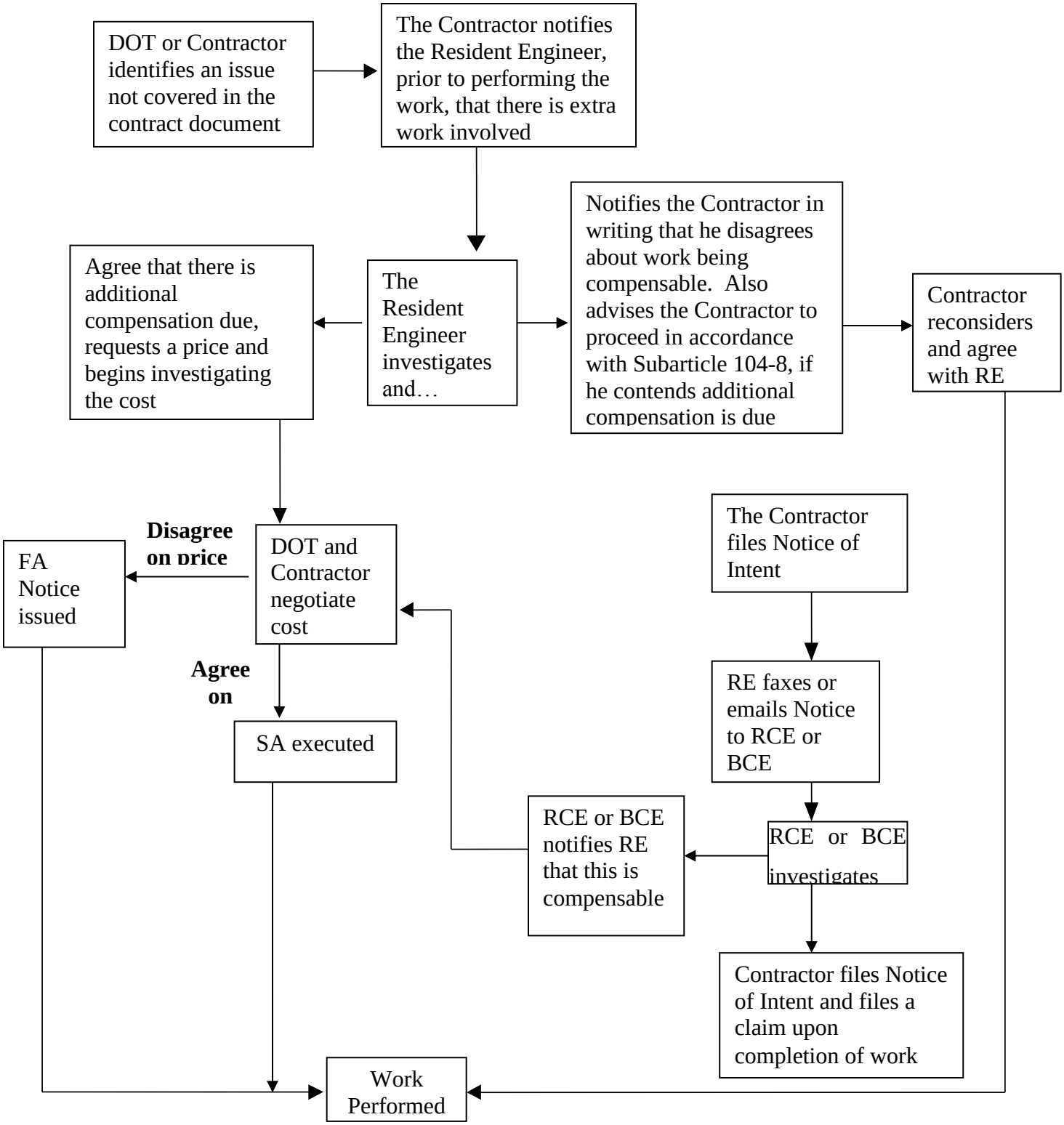
However, there are circumstances when the work described in the supplemental agreement does not affect the controlling operation nor does it warrant a pro rata time extension in accordance with subarticle 108-10(B)1 of the Standard Specifications. If the Supplemental Agreement work does not extend the completion date and should not be used in calculation of Pro Rata, then the Contract Times Tab should not be used to indicate that no time extension shall be granted; instead a statement must be used in the Description section to specify the contract time term of the supplemental agreement.

Example of language that should be used is as follows: ***No contract time extensions under Subarticle 108-10(B)1 will be allowed for the work covered under this Supplemental Agreement.***

FORCE ACCOUNT WORK

When terms for modification of the contract are not documented by a Supplemental Agreement and it is necessary to perform extra or altered work, the Resident Engineer will issue a force account notice prior to the Contractor beginning work. Force Account construction approval authority for the Department is the same as that specified above for Supplemental Agreements. Extension of the contract time for work compensated on a force account basis shall be as provided in Subarticle 108-10(B)1 or Subarticle 108-10(B)4 of the Standard Specifications.

SUPPLEMENTAL AGREEMENT CHART



CHECK LIST FOR COMPLETION OF SUPPLEMENTAL AGREEMENT

Approval Authority: _____

		YES	NO
1.	In Section 1, is the "Description, Location, and Justification for Change" fully described and in such detail so that if separated from other correspondence, the agreement will stand on its own merit?	_____	_____
	• Is the need for the change fully detailed?	_____	_____
	• Is the article of the Specifications that allows the change identified?	_____	_____
	• Is the article of the Specifications that pertains to the affected work identified?	_____	_____
	• If the Specifications are not applicable to the work to be performed, has a specification including description, materials, construction methods, method of measurement, and basis of payment been attached to and made a part of the agreement?	_____	_____
	• Have any special conditions pertaining to the agreement been clearly identified?	_____	_____
2.	Has the approval authority for this category of agreement been consulted on any negotiated prices?	_____	_____
3.	Has the Work Order Breakdown for Supplemental Agreement (Form 881), been attached to the original copy of the agreement that is to be submitted to the State Construction Engineer? (This is for multiple work order contracts only.)	_____	_____
4.	Does the extension grant any time other than time for performance of the extra work?	_____	_____
	• If so, has the Approval Authority approved the extension?	_____	_____
	• Was the extension other than time for performance of the extra work documented in the justification?	_____	_____
5.	Have appropriate signatures and dates been completed?		
6.	Has the Supplemental agreement been scanned into SAP?	_____	_____

FORCE ACCOUNT WORK

The Resident Engineer is required by Article 104-8(A)2 of the Specifications to issue a force account notice to the Contractor prior to work being performed on a force account basis. See the sample Force Account notice at the end of this subsection.

Once approval of the work has been granted, the force account notice has been issued and the Contractor has submitted wage rates and equipment information, the Resident Engineer may authorize the commencement of force account work.

On projects requiring Federal Highway Administration (FHWA) Step-by-Step method approval, the Resident Engineer should submit Force Account Documentation (Supplemental Agreement Form 880) to document the change prior to the initiation of the work. Once the force account work has been approved, the Contractor may be allowed to begin the work.

GENERAL

The following items represent guidelines and comments on the provision requirements for labor, materials, equipment, miscellaneous, subcontracting, bond, insurance and tax, and general:

1. **Labor:** It is the intent of this provision that the Contractor should receive payment for hours worked, including normal rest periods and breaks, necessary standby periods, minor delays less than 1/2 day caused by weather, etc., for all laborers, operators, and first line supervisors, or foremen performing the work. No payment will be made for lunch periods, delays of more than 1/2 day caused by weather, hours worked on items other than those covered by the force account notice, or other nonproductive periods. The Resident Engineer should approve the wage rates submitted by the Contractor prior to authorizing the work. On federally-funded projects, the wage rates should be compared to previously submitted payrolls and the minimum wage rates indicated in the contract. On nonfederally-funded projects, the Resident Engineer may request the Contractor to present copies of past payrolls for comparison if the wage rates appear excessive. **Only base wages are to be used in the calculation of payment**. Any benefits, such as vacation, retirement, medical, etc., that may be shown on the payroll are not to be included in the records. The percentage additives will be full compensation for overhead, benefits, contingencies, and all other costs associated with labor for the specific force account work.
2. **Subsistence and Travel Allowances:** The Contractor will receive payment for subsistence equal to the lesser amount paid by the Contractor or the current maximum in-state rate for State employees. If the Contractor pays for the actual cost of subsistence, then the Contractor must separate the costs paid for meals and lodging, and then each will be compared to the in-state rate for State employees separately. There are two methods that may be used for compensation for subsistence. Method A will be used when the Contractor pays for the actual cost of meals and/or lodging. Method B will be used when the Contractor pays a daily allowance for meals and/or lodging. These two methods may be combined if the Contractor pays for both actual costs and gives a daily allowance, similar to the method in-state employees are paid for subsistence costs.

3. **Materials:** The Contractor will receive the actual cost of all authorized and accepted materials used in the work. In checking the Contractor's furnished records for materials, particular attention should be given to invoices that contain discount provisions, such as "*Take 2% discount off invoice if paid within 15 days.*" If an invoice contains a discount provision, a canceled check or other documentation may be necessary to verify the actual cost of the material.
4. **Equipment:** Since the Monthly Blue Book Rental Rates for Construction Equipment (Blue Book) is systematically revised, **care should be taken to ensure that the data being used is concurrent with the dates on which the work is performed**. It is not uncommon that the rate for the same piece of equipment may change during the force account work. The rate adjustment factors vary for different types and pieces of equipment. Therefore, the factors must be taken from the beginning of each section used. For discontinued equipment, which is denoted with an asterisk in the Blue Book, the adjustment factor for equipment age is calculated in accordance with the procedure outlined in the instructions at the beginning of each section. The **additive payment** for equipment listed in the Blue Book is equal to 100 percent of the Blue Book's **Estimated Operating Cost Per Hour**.

   The N. C. Department of Transportation uses the electronic version of the Monthly Blue Book Rental Rates for Construction Equipment (Blue Book) and it is available to N. C. Department of Transportation employees on the Inside NCDOT Transportation Services Page under Division of Highway-Chief Engineer. The web address for the Operations page is as follows.

   https://inside.ncdot.gov/TransportationServices/Pages/Division%20of%20Highways%20-%20Chief%20Engineer.aspx

   Please note that if the electronic Blue Book is used to determine equipment rates, the documentation needed on the force account forms in lieu of "Chapter and Page" is "Electronic Blue Book."

   If rental rates for the equipment are not listed in the Blue Book, the rate will be established using the prevailing rental rates being paid in the area of the project for such equipment. The Resident Engineer should verify the prevailing rental rates using sources of information available to him. If the rates appear to be excessive and the Contractor and Resident Engineer cannot reach an agreement relative to the prevailing rate, the matter will be resolved by the State Construction Engineer. The additive payment for equipment not listed in the Blue Book will be 15 percent of the prevailing rental rate.

   In the event equipment is rented from a commercial rental agency for the purpose of performing the work and is used for a period less than the minimum rental period, the Contractor will receive payment based on the actual invoice rate for the minimum time period that the equipment can be rented. **The additive payment will be 15 percent of the calculated hourly invoice rate for all hours the equipment is in-use**. **No additive payment will be made for hours the equipment is not in-use**.

Example:
If the minimum equipment rental period is one week for a certain piece of equipment and the work is performed in eight hours, the Contractor would be paid the actual invoice for a one week rental. The additive payment would be calculated as follows:

$$\frac{\text{The weekly invoice rate}}{\text{40 hours/week}} \times \text{eight hours of use} \times 15 \text{ percent} = \text{Total Additive Payment}$$

When the minimum rental period exceeds the period of use as above, the equipment may not be used on any work other than the force account work without making an adjustment in the rental rate. The commercial rental agency cannot be the Contractor, another Contractor, an affiliate of the Contractor, or an affiliate of another Contractor.

When the Engineer directs equipment to be held in ready or standby, payment will be 50 percent of the rate paid for equipment in-use. The maximum amount of time for which payment will be made for equipment held in ready is 8 hours/day minus hours in-use and 40 hours/week minus hours in-use. No additive payment will be made for equipment held in ready.

No transportation costs will be allowable if the equipment is in-use in the same vicinity of the work on the project prior to beginning the force account work. The cost of moving a piece of equipment on a "low boy" tractor-trailer from one location of the project to the force account work is an eligible expense. If the equipment is used on contract item work in the same vicinity after completion of the force account work, no compensation for return transportation cost will be allowed.

5. **Owner-Operated Equipment:** The costs for Owner-Operated Equipment will be calculated separately from non-Owner-Operated Equipment, but will be considered as a subcontractor for the purpose of the calculation of additives.
6. **Miscellaneous: General superintendence is not an eligible expense under force account**. This should not be confused with the titles some Contractors use for their supervisors on contract construction work. These provisions provide payment for the actual hours the first line supervisor is actually engaged in the performance of the work. **The Contractor should only be compensated for those hours the first line supervisor is engaged in the work**.
7. **Subcontracting:** The Resident Engineer should ensure that the compensation provided in this item is applied only to work performed by approved Subcontractors. These lump sum payments and percentages will be added to the total cost of the Subcontractor's work plus additives.
8. **Overhead and Profit:** The Contractor will receive an additive payment of 10% of the force account total, with the exception of the portion of the work included with Materials, Owner-Operated Equipment, and Subcontracting. All subcontractors will receive an additive payment of 10% of the force account total pertaining to the work performed by their firm, with the exception of the portion of the work included with Materials and Owner-Operated Equipment. Owner-Operated Equipment is considered a subcontractor for the purpose of this additive payment.
9. **Bond, Insurance, and Tax:** The cost of worker's compensation insurance premiums, unemployment insurance contributions, and social security taxes are normally computed as a percentage of labor while the cost of bond premiums are normally based upon total revenues. The cost of liability and property damage

insurance may be computed as a percentage of labor or by other means and the Contractor should clarify how his rate is computed. If the Contractor elects to submit an annualized composite percentage for bond, insurance and tax, he must furnish satisfactory evidence of the percentage in writing to the Engineer.

10. **General:** The Resident Engineer will maintain the payment records for all force account work. A copy of the records will be given to the Contractor, if requested, at the end of each day on which the work is performed. The Resident Engineer should note the effect of the addition of force account work on contract time. Any requests for time extensions relating to the force account work must be made in accordance with Article 108-10 of the Specifications.

DOCUMENTATION OF FORCE ACCOUNT WORK

The Resident Engineer will maintain detailed records of all force account work. These records should be detailed on the Detailed Statement of Force Account Work forms as follows:

1. Summary (Form 480)
2. Material (Form 480A)
3. Labor/Labor Overtime/Labor Summary/Labor Additives/Travel (Form 480B)
4. Equipment/Rental Equipment/Standby or Idle Equipment/Owner-Operated Equipment (Form 480C)

Detailed Statement of Force Account Work forms should be prepared for each partial pay estimate to document amounts paid to the Contractor. These completed forms will be retained by the Resident Engineer and submitted with the final estimate assembly. All information included on the Detailed Statement of Force Account Work forms should be in accordance with Article 109-3 of the Specifications. See **Forms and Examples** in this section of the Manual.

DETAILED STATEMENT OF FORCE ACCOUNT WORK
SUMMARY - FORM 480

This form provides a summarization of all Contractor and Subcontractor(s) activity for each week that force account work is performed. A separate Form 480 should be utilized for each Subcontractor. A total of all work performed by Subcontractors should be included in the Contractor Summary section on Form 480. When force account work is more than one week in duration, a separate Form 480 should be utilized to provide the total amount for all weekly totals.

The following items should be included on Form 480. See **Forms and Examples** in this section of the Manual.

1. **Authorized By Letter Dated:** Include the date of the Force Account Authorization letter sent to the Contractor.
2. **Contract Number:** The contract number for the project.
3. **WBS Element Number:** The specific work order number on which the force account work is being performed.
4. **F. A. No.:** The Federal Highway Administration project number.
5. **County:** The county(ies) in which the project is located.

6. **Contractor:** The prime Contractor as included in the contract.
7. **Subcontractor:** The name of the authorized Subcontractor performing the work. A separate Form 480 should be utilized for each Subcontractor performing force account work.
8. **Week Ending:** The date of the end of the week. This is always Saturday.

The following items are included on Form 480 for summation of Subcontractor force account work:

9. **Amount:** The total dollar figure for the appropriate item of the force account work for the week from the appropriate forms, including materials, labor additives, labor, labor overtime, travel allowances, standby or idle labor, equipment, standby or idle equipment, rental equipment, if applicable.
10. **Additive Amount:** The total dollar amount of the additive calculated in accordance with the Specifications.
11. **Transportation Costs:** This item applies only to equipment and standby or idle equipment. This amount must be approved by the Resident Engineer prior to inclusion for payment.
12. **Subtotal:** Total dollar amount of each item plus the appropriate additive amount.
13. **Remarks:** Any clarifying information about the item should be included here.
14. **Overhead and Profit:** This is an additive payment equal 10 percent of the specific force account total of work performed by a subcontractor for overhead and profit. It includes the amounts for labor, labor overtime, labor additives, travel allowances, equipment, stand by or idle equipment and rental equipment.
15. **Subcontractor Total:** The sum of all subtotaled amounts for each item performed by the Subcontractor for the subject week.

The following items are included on Form 480 for summation of Contractor force account work:

16. **Amount:** The total dollar figure for the appropriate item of the force account work for the week from the appropriate forms, including materials, labor additives, labor, labor overtime, travel allowances, standby, or idle labor, equipment, standby, or idle equipment, rental equipment, if applicable.
17. **Additive Amount:** The total dollar amount of the additive calculated in accordance to the Specifications.
18. **Transportation Costs:** This item applies only to equipment and standby, or idle equipment. This amount must be approved by the Resident Engineer prior to inclusion for payment.
19. **Subtotal:** Total dollar amount of each item plus the appropriate additive amount.
20. **Remarks:** Any clarifying information about the item should be included here.
21. **Subcontracting Cost:** This is the Subcontracting Administrative Cost which is computed as shown at the bottom of Form 480 Summary.
22. **Overhead and Profit:** This is an additive payment equal 10 percent of the specific force account total of work performed for overhead and profit. It includes the amounts for labor, labor overtime, labor additives, travel allowances, equipment, stand by or idle equipment, rental equipment, and the subcontractor's total.

23. **Force Account Total:** The sum of all subtotaled amounts including work performed by the Contractor and Subcontractor costs and additives.

The following items are included on Form 480 for documentation and approval of the force account work:

24. **Resident Engineer:** The Resident Engineer should review the force account work for concurrence with the Specifications and sign the certification for the force account work performed.
25. **Division Engineer:** The Division Engineer should review and sign the form for approval for the force account work prior to the submission of the final estimate assembly.

MATERIALS (FORM 480A)

This form provides documentation for all materials incorporated into the accepted project.

The following items should be included on Form 480A. See **Forms and Examples** in this section of the Manual.

1. **Authorized By Letter Dated:** Include the date of the Force Account Authorization letter sent to the Contractor.
2. **Contract Number:** The contract number for the project.
3. **WBS Element Number:** The specific work order number on which the force account work is being performed.
4. **F. A. No.:** The Federal Highway Administration project number.
5. **County:** The county(ies) in which the project is located.
6. **Contractor:** The prime Contractor as included in the contract.
7. **Subcontractor:** The name of the authorized Subcontractor performing the work. A separate Form 480 should be utilized for each Subcontractor performing force account work.
8. **Week Ending:** The date of the end of the week. This is always Saturday.

The following items are included on Form 480A for documentation of materials incorporated into the force account work:

9. **Material Description:** Description of materials including: size, type, weight, class, grade, etc.
10. **Unit:** An appropriate pay unit as established by the Resident Engineer in accordance with the Specifications, plans, and contract, such as linear meter (linear foot), etc. It is acceptable to list categories of items, such as forming materials - lumber, plywood, nails, caulk, etc., and pay for the items by the invoice cost as a lump sum. However, if materials are not incorporated into the work or necessary for construction of the completed and accepted work, deductions of those items should be included in the **Quantity** column.
11. **Cost Per Unit:** Material invoice cost of each material per pay unit including sales tax, if applicable. The unit price should be reduced for applicable discounts and increased for any applicable transportation costs if not included in any other force

account item(s), such as equipment, labor, etc. A copy of the actual invoice for the materials incorporated into the work should be submitted with Form 480A.

12. **Quantity:** Total approved quantity of material(s) utilized for the period in question. All materials received on the project should be documented on a Material Received Report for the appropriate line code for the force account work. Any certifications, etc., required for the materials should also be included.
13. **Amount:** The total dollar amount, **Cost Per Unit** x **Quantity**, for each material incorporated into the force account work.
14. **Remarks:** Any clarifying information about the item should be included here.
15. **Material Subtotal:** The sum of all dollar amounts of each item.
16. **Sales Tax:** Amount of sales tax paid for materials.
17. **Transportation Cost:** The amount charged to the Contractor for the delivery of materials.
18. **Material Total:** The total cost of the material, sales tax and transportation cost.

The following items are included on Form 480A for documentation and approval of the force account work:

19. **Resident Engineer:** The Resident Engineer should review the force account work for concurrence with the Specifications and sign the certification for the force account work performed.
20. **Division Engineer:** The Division Engineer should review and sign the form for approval for the force account work prior to the submission of the final estimate assembly.

LABOR/LABOR-OVERTIME/LABOR ADDITIVES/TRAVEL (FORM 480B)

This form provides for all approved costs of labor and standby, or idle labor incurred as a result of the force account work. It also provides documentation for all direct costs associated with bonds, liability, and special insurance, workers compensation insurance, Social Security taxes, etc., incurred as a result of the force account work. A separate Form 480B should be utilized for each Subcontractor.

The following items should be included on Form 480B. See **Forms and Examples** in this section of the Manual.

1. **Authorized By Letter Dated:** Include the date of the Force Account Authorization letter sent to the Contractor.
2. **Contract Number:** The contract number for the project.
3. **WBS Element Number:** The specific work order number on which the force account work is being performed.
4. **F. A. No.:** The Federal Highway Administration project number.
5. **County:** The county(ies) in which the project is located.
6. **Contractor:** The prime Contractor as included in the contract.
7. **Subcontractor:** The name of the authorized Subcontractor performing the work. A separate Form 480B should be utilized for each Subcontractor performing force account work.
8. **Week Ending:** The date of the end of the week. This is always Saturday.

The following items are included on Form 480B for both **Labor and Standby, or Idle Labor** documentation of the force account work, and for documentation of labor overtime incurred as a result of the force account work:

9. **Name:** The names of all Contractor or Subcontractor personnel authorized to perform the force account work. This includes labor to be held in-ready or idle labor.
10. **Classification:** The classification or payroll job title of each person listed under name. These should be consistent with any prior payrolls submitted by the Contractor or Subcontractor.
11. **Sunday *through* Saturday:** The actual number of hours each day the personnel were utilized, in standby or idled. This is recorded to the 0.1 hour. The total hours paid is limited to 8 hours per day and 40 hours per week unless authorized by the Resident Engineer.
12. **Total Hours:** The sum of all number of hours the personnel were utilized, including standby or idled, recorded to the 0.1 hour. The total hours paid is limited to 40 hours per week unless authorized by the Resident Engineer.
13. **Base Wage Rate:** The approved wage rate excluding additives for the classification. These should be consistent with any prior payrolls submitted by the Contractor or Subcontractor.
14. **Amount:** The total dollar amount, **Total Hours** x **Base Wage Rate**, for each individual.
15. **Labor Subtotal and Standby, or Idle labor Subtotal:** The sum of all dollar amounts of labor for person.

The following items are included on Form 480B for documentation of **Labor Additives** incurred as a result of the force account work:

16. **Bond, Insurance & Taxes - Item:** Include any costs paid by the Contractor or Subcontractor for bonds, insurance, and taxes, including contract bond premiums; liability, general, special, or project related insurance required by the contract; worker's compensation insurance, Social Security taxes, etc.
17. **Rate:** The Contractor and/or Subcontractor must furnish current rates for all bonds, insurance and taxes to the Resident Engineer. A copy of the provided rates for each force account summary should be included in the final estimate assembly.
18. **Applicable Quantity:** The quantity for each bond, insurance and tax rate, such as total revenue, number of $1,000 or $100 increments of payroll excluding additives, Subcontractor costs, etc. Since these rates and procedures vary greatly among Contractors and Subcontractors, the Resident Engineer should request detailed information if it is unclear exactly how these quantities or amounts are calculated.
19. **Amount:** The total dollar amount, **Rate** x **Applicable Quantity**, for each item of bond, insurance and tax.
20. **Remarks:** Any clarifying information about the item should be included here.
21. **Subtotal of Submitted Payroll Additives:** The sum of all dollar amounts of each item.

The following items are included on Form 480B for documentation of **Travel and Subsistence, Method A**, incurred as a result of the force account work. This method is to be used when an employee is accountable for actual expenses:

22. **Employees Name & Dates of Travel:** The names of all Contractor or Subcontractor personnel authorized to perform the force account work, and the dates of travel allowance for each employee.
23. **Cost of Meals:** The actual cost of meals for one day.
24. **Lodging Cost per Day:** The actual cost of lodging for one day.
25. **Amount Submitted:** The total dollar amount, of **Cost of Meals** + **Cost per Day**, for each employee.
26. **Allowable Amount:** The lesser dollar amount of the **Amount Submitted** and the current In-State Rate for State Employees.
27. **Travel and Subsistence Subtotal:** The sum of all **Allowable Amount** for each item.

The following items are included on Form 480B for documentation of **Travel and Subsistence, Method B**, incurred as a result of the force account work. This method is to be used when an employee is given a daily allowance and is not accountable for actual expenses:

28. **Employees Name & Dates of Travel:** The names of all Contractor or Subcontractor personnel and the last 4 digits of their Social Security Number authorized to perform the force account work, and the dates of travel allowance for each employee.
29. **Contractor Per Diem None Accountable:** The amount of per diem reimbursement for the employee, as verified by the Contractor.
30. **Length of Stay:** The number of days that the employee was given a per diem reimbursement.
31. **Amount Submitted:** The total dollar amount, **Contractor Per Diem None Accountable** x **Length of Stay**, for each employee.
32. **Allowable amount:** The lesser dollar amount of the **Amount Submitted** and the amount allowed for current In-State Rate for State Employees.
33. **Travel and Subsistence Subtotal:** The sum of all **Allowable Amount** for each item.

The following items are included on Form 480 for documentation and approval of the force account work:

34. **Resident Engineer:** The Resident Engineer should review the force account work for concurrence with the Specifications and sign the certification for the force account work performed.
35. **Division Engineer:** The Division Engineer should review and sign the form for approval for the force account work prior to the submission of the final estimate assembly.

EQUIPMENT/RENTAL EQUIPMENT/STANDBY OR IDLE EQUIPMENT/OWNER-OPERATED EQUIPMENT (FORM 480C)

This form provides for all approved costs of equipment, rental equipment, standby or idle equipment, and owner-operated equipment incurred as a result of the force account work. A separate Form 480C should be utilized for each Subcontractor. Equipment not listed in the Blue Book should be entered in the Rental Equipment section of the form.

The following items should be included on Form 480C. See **Forms and Examples** in this section of the Manual.

1. **Authorized By Letter Dated:** Include the date of the Force Account Authorization letter sent to the Contractor.
2. **Contract Number:** The contract number for the project.
3. **WBS Element Number:** The specific work order number on which the force account work is being performed.
4. **F. A. No.:** The Federal Highway Administration project number.
5. **County:** The county(ies) in which the project is located.
6. **Contractor:** The prime Contractor as included in the contract.
7. **Subcontractor:** The name of the authorized Subcontractor performing the work. A separate Form 480C should be utilized for each Subcontractor performing force account work.
8. **Week Ending:** The date of the end of the week. This is always Saturday.

The following items are included on Form 480C for Equipment documentation of the force account work:

9. **Equipment - Description:** The name, model, type, kind, and features of approved equipment for the force account work.
10. **Model Year:** The year in which the piece of equipment was manufactured. This may require the individual serial number of the piece of equipment to determine the model year.
11. **Blue Book Chapter & Page:** The actual section number and page number on which the piece of equipment is found in the Monthly Blue Book Rental Rates for Construction Equipment (Blue Book).
12. **Base Monthly Rate:** The dollar amount included for the monthly rental of the piece of equipment in the Monthly Blue Book Rental Rates for Construction Equipment.
13. **Age Adjustment Factor:** This is a multiplication factor found in the front of each section or chapter of the Monthly Blue Book Rental Rates for Construction Equipment that adjusts the rental price for the age of the equipment. These factors vary by type of equipment for each section or chapter of the Blue Book. This should be recorded to three decimal places, as provided in the Blue Book.
14. **Regional Adjustment Factor:** This is a multiplication factor found in the front of each section or chapter of the Monthly Blue Book Rental Rates for Construction Equipment that adjusts the rental price for the area of the United States where the equipment is located. This should be recorded to three decimal places as provided in the Blue Book.

15. **Operating Costs Per Hour:** The dollar amount included in the Monthly Blue Book Rental Rates for Construction Equipment for costs associated with operating the piece of equipment for one hour.
16. **Adjustment Hourly Rate:** For operating equipment, this rate equals the Base Monthly Rate, adjusted by the age and region factors, divided by 176, plus 100 percent of the Blue Book estimated operating cost per hour. This rate will be paid for all approved hours the equipment is in use.
17. **Sunday *through* Saturday:** The actual number of hours each day the equipment was in-use. This is recorded to the 0.1 hour. The total hours are limited to eight hours per day and 40 hours per week unless authorized by the Resident Engineer.
18. **Total Hours:** The sum of all hours the piece of equipment is in use, recorded to the 0.1 hour. The total hours are limited to 40 hours per week unless authorized by the Resident Engineer.
19. **Amount:** The total dollar amount, **Adjusted Hour Rate** x **Total Hours**, for each piece of equipment.
20. **Remarks:** Any clarifying information about the equipment should be included here.
21. **Equipment Subtotal:** The sum of all dollar amounts of each piece of equipment authorized.

The following items are included on Form 480C for Rental Equipment documentation of the force account work:

22. **Rental Equipment - Description:** The name, model, type, kind, and features of approved rental equipment for the force account work.
23. **Minimum Rental Period:** The shortest period of time the piece of equipment can be rented, such as one day, three days, one week, one month, etc.
24. **Rental Rate:** The rate charged for the minimum rental period for the piece of equipment, such as $70/day, $325/week, etc. The Resident Engineer should use good judgment and consider longer equipment rental periods if it is anticipated that the equipment will be needed longer than the minimum rental period. The State Construction Engineer should be consulted if questions arise.
25. **Actual No. of Rental Periods:** The number of minimum rental periods for which the equipment is authorized, such as 2 one-week periods, 4 two-day periods, 1 one-month period, etc.
26. **Rental Amount:** The total dollar amount, **Rental Rate** x **Actual No. of Rental Periods**, for each piece of equipment authorized.
27. **Rental Equipment Subtotal:** The sum of all dollar amounts of each piece of rental equipment authorized.
28. **Sunday *through* Saturday:** The actual number of hours each day the equipment was in-use. This is recorded to the 0.1 hour. The total hours are limited to 8 hours per day and 40 hours per week unless authorized by the Resident Engineer.
29. **Total Hours:** The sum of all hours the piece of rental equipment is in use recorded to the 0.1 hour. The total hours are limited to 40 hours per week unless authorized by the Resident Engineer.
30. **Rental Additive Amount:** The additive rate is equal to 15 percent of the product of the **Rental Rate** for the **Minimum Rental Period** divided by the appropriate number of hours, such as eight hours/day, 40 hours/week, or 176 hours/month, times

the **Total Hours** the equipment was operating. No additive payment is made for rental equipment that is in standby or idled.

31. **Remarks:** Any clarifying information about the equipment should be included here.
32. **Rental Equipment Additive Subtotal:** The sum of all rental additive dollar amounts for each piece of rental equipment authorized.

The following items are included on Form 480C for Standby or Idle Equipment documentation of the force account work:

33. **Standby or Idle Equipment - Description:** The name, model, type, kind, and features of approved rental equipment for the force account work.
34. **Model Year:** The year in which the piece of equipment was manufactured. This may require the individual serial number of the piece of equipment to determine the model year.
35. **Blue Book Chapter & Page:** The actual section number and page number on which the piece of equipment is found in the Monthly Blue Book Rental Rates for Construction Equipment (Blue Book).
36. **Base Monthly Rate:** The dollar amount included for the monthly rental of the piece of equipment in the Monthly Blue Book Rental Rates for Construction Equipment.
37. **Age Adjustment Factor:** This is a multiplication factor found in the front of each section or chapter of the Monthly Blue Book Rental Rates for Construction Equipment that adjusts the rental price for the age of the equipment. These factors vary by type of equipment for each section or chapter of the Blue Book. This should be recorded to three decimal places, as provided in the Blue Book.
38. **Regional Adjustment Factor:** This is a multiplication factor found in the front of each section or chapter of the Monthly Blue Book Rental Rates for Construction Equipment that adjusts the rental price for the area of the United States where the equipment is located. This should be recorded to three decimal places as provided in the Blue Book.
39. **Adjustment Hourly Rate:** For operating equipment, this rate equals the Base Monthly Rate, adjusted by the age and region factors, divided by 176, times 50 percent. This rate will be paid for all approved hours the equipment is in use.
40. **Sunday *through* Saturday:** The actual number of hours each day the equipment was on standby or was idle. This is recorded to the 0.1 hour. The total hours are limited to eight hours per day less hours in use and 40 hours per week less hours in use unless authorized by the Resident Engineer.
41. **Total Hours:** The sum of all hours the piece of equipment was on standby or idle less hours in use, recorded to the 0.1 hour. The total hours are limited to 40 hours per week less hours in use unless authorized by the Resident Engineer.
42. **Amount:** The total dollar amount, **Adjusted Hourly Rate** x **Total Hours**, for each piece of equipment.
43. **Remarks:** Any clarifying information about the equipment should be included here.
44. **Standby or Idle Equipment Subtotal:** The sum of all dollar amounts of each piece of equipment authorized.

The following items are included on Form 480C for Owner/Operated Equipment documentation of the force account work:

45. **Owner/Operated Rental Equipment Description:** The name, model, type, kind, and features of approved rental equipment for the force account work.
46. **Minimum Rental Period:** The shortest period of time the piece of equipment can be rented, such as one day, three days, one week, one month, etc.
47. **Rental Rate:** The rate charged for the minimum rental period for the piece of equipment, such as $70/day, $325/week, etc. The Resident Engineer should use good judgment and consider longer equipment rental periods if it is anticipated that the equipment will be needed longer than the minimum rental period. The State Construction Engineer should be consulted if questions arise.
48. **Actual No. of Rental Periods:** The number of minimum rental periods for which the equipment is authorized, such as 2 one-week periods, 4 two-day periods, 1 one-month period, etc.
49. **Rental Amount:** The total dollar amount, **Rental Rate** x **Actual No. of Rental Periods**, for each piece of equipment authorized.
50. **Rental Equipment Subtotal:** The sum of all dollar amounts of each piece of rental equipment authorized.
51. **Sunday *through* Saturday:** The actual number of hours each day the equipment was in-use. This is recorded to the 0.1 hour. The total hours are limited to 8 hours per day and 40 hours per week unless authorized by the Resident Engineer.
52. **Total Hours:** The sum of all hours the piece of rental equipment is in use recorded to the 0.1 hour. The total hours are limited to 40 hours per week unless authorized by the Resident Engineer.
53. **Remarks:** Any clarifying information about the equipment should be included here.

NOTE: No additive is provided for Owner-Operated Equipment.

The following items are included on Form 480C for Fully Maintained Owner/Operated Equipment documentation of the force account work:

54. **Fully Maintained Owner/Operated Rental Equipment Description:** The name, model, type, kind, and features of approved rental equipment for the force account work.
55. **Minimum Rental Period:** The shortest period of time the piece of equipment can be rented, such as one day, three days, one week, one month, etc.
56. **Rental Rate:** The rate charged for the minimum rental period for the piece of equipment, such as $70/day, $325/week, etc. The Resident Engineer should use good judgment and consider longer equipment rental periods if it is anticipated that the equipment will be needed longer than the minimum rental period. The State Construction Engineer should be consulted if questions arise.
57. **Actual No. of Rental Periods:** The number of minimum rental periods for which the equipment is authorized, such as 2 one-week periods, 4 two-day periods, 1 one-month period, etc.

58. **Rental Amount:** The total dollar amount, **Rental Rate** x **Actual No. of Rental Periods**, for each piece of equipment authorized.
59. **Rental Equipment Subtotal:** The sum of all dollar amounts of each piece of rental equipment authorized.
60. **Sunday *through* Saturday:** The actual number of hours each day the equipment was in-use. This is recorded to the 0.1 hour. The total hours are limited to 8 hours per day and 40 hours per week unless authorized by the Resident Engineer.
61. **Total Hours:** The sum of all hours the piece of rental equipment is in use recorded to the 0.1 hour. The total hours are limited to 40 hours per week unless authorized by the Resident Engineer.
62. **Remarks:** Any clarifying information about the equipment should be included here.

NOTE: No additive is provided for Fully Maintained Owner-Operated Equipment.

The following items are included on Form 480 for documentation and approval of the force account work:

63. **Resident Engineer:** The Resident Engineer should review the force account work for concurrence with the Specifications and sign the certification for the force account work performed.
64. **Division Engineer:** The Division Engineer should review and sign the form for approval for the force account work prior to the submission of the final estimate assembly.

Form 480 Summary

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

Contract Number: (2)

DETAILED STATEMENT OF FORCE ACCOUNT WORK

SUMMARY

AUTHORIZED BY LETTER DATED: (1)

WBS ELEMENT: (3) F. A. No.: (4) COUNTY: (5) CONTRACTOR: (6)

SUBCONTRACTOR : (7) Week Ending: (8)

SUBCONTRACTOR SUMMARY ITEM	AMOUNT (A)	ADDITIVE (B)	ADDITIVE AMOUNT (A)x(B)=(C)	TRANSPORTATION COSTS (D)	SUBTOTAL (A)+(C) OR (A)+(D)	REMARKS
	(9)		(10)	(11)	(12)	(13)
MATERIALS	$ -	15%	$ -		$ -	
LABOR ADDITIVES	$ -				$ -	
LABOR	$ -				$ -	
LABOR OVERTIME	$ -				$ -	
TRAVEL ALLOWNACES	$ -				$ -	
STANDBY OR IDLE LABOR	$ -				$ -	
EQUIPMENT	$ -			$ -	$ -	
STANDBY OR IDLE EQUIPMENT	$ -			$ -	$ -	
RENTAL EQUIPMENT	$ -		$ -	$ -	$ -	
OWNER-OPERATED EQUIPMENT	$ -				$ -	
OVERHEAD AND PROFIT	(14)				$ -	
				SUB-CONTRACTOR TOTAL:	(15)	

CONTRACTOR SUMMARY ITEM	AMOUNT (A)	ADDITIVE (B)	ADDITIVE AMOUNT (A)x(B)=(C)	TRANSPORTATION COSTS (D)	SUBTOTAL (A)+(C) OR (A)+(D)	REMARKS
	(16)		(17)	(18)	(19)	(20)
MATERIALS		15%	$ -		$ -	
LABOR ADDITIVES					$ -	
LABOR					$ -	
LABOR OVERTIME					$ -	
TRAVEL ALLOWANCES					$ -	
STANDBY OR IDLE LABOR					$ -	
EQUIPMENT				$ -	$ -	
STANDBY OR IDLE EQUIPMENT				$ -	$ -	
RENTAL EQUIPMENT			$ -	$ -	$ -	
SUBCONTRACTORS TOTAL	(21)		(21)		$ -	
OVERHEAD AND PROFIT	(22)				$ -	
				FORCE ACCOUNT TOTAL:	(23)	

*SUBCONTRACTING ADMINISTRATIVE COSTS

Total Subcontracting Cost	Rate Schedule
$0.00 to $10,000.00	10%
Above $10,000.00	$1000.00 + 5% above $10,000.00

CERTIFICATION:

I hereby certify that the quantities and amounts herein shown were compiled by me and are correct to the best of my knowledge and belief, and that the work has been performed and the materials used in accordance with the Plans and Specifications heretofore approved for same.

(24)

RESIDENT ENGINEER

APPROVED: (25)

DIVISION ENGINEER

Form 480A Labor

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DETAILED STATEMENT OF FORCE ACCOUNT WORK

MATERIALS

CONTRACT NO. (2) AUTHORIZED BY LETTER DATED: (1)

WBS ELEMENT: (3) F.A. NO. : (4) COUNTY: (5) CONTRACTOR: (6)

SUBCONTRACTOR : (7) WEEK ENDING: (8)

MATERIALS (Including Transportation Costs) MATERIAL DESCRIPTION	**UNIT**	**COST PER UNIT**	**QUANTITY**	**AMOUNT**	**REMARKS**
(9)	(10)	(11)	(12)	(13)	(14)

MATERIAL SUBTOTAL:	(15)
SALES TAX:	(16)
TRANSPORTATION COST:	(17)
MATERIAL TOTAL:	(18)

CERTIFICATION:

I hereby certify that the quantities and amounts herein shown were compiled by me and are correct to the best of my knowledge and belief, and that the work has been performed and the materials used in accordance with the Plans and Specifications heretofore approved for same.

(19) APPROVED: (20)

RESIDENT ENGINEER *DIVISION ENGINEER*

Form 480B Labor

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DETAILED STATEMENT OF FORCE ACCOUNT WORK

LABOR / STANDBY OR IDLE LABOR

CONTRACT NO. (2) AUTHORIZED BY LETTER DATED: (1)

STATE PROJECT: (3) FA#: (4) COUNTY: (5) CONTRACTOR: (6)

SUBCONTRACTOR : (7) WEEK ENDING: (8)

LABOR NAME	CLASSIFICATION	S	M	T	W	T	F	S	TOTAL HOURS	BASE WAGE RATE	AMOUNT
(9)	(10)	(11)	(11)	(11)	(11)	(11)	(11)	(11)	(12)	(13)	(14)
										LABOR SUBTOTAL:	(15)

STANDBY OR IDLE LABOR NAME	CLASSIFICATION	S	M	T	W	T	F	S	TOTAL HOURS	BASE WAGE RATE	AMOUNT
(9)	(10)	(11)	(11)	(11)	(11)	(11)	(11)	(11)	(12)	(13)	(14)
										STANDBY OR IDLE LABOR SUB-TOTAL:	(15)

CERTIFICATION:

I hereby certify that the quantities and amounts herein shown were compiled by me and are correct to the best of my knowledge and belief, and that the work has been performed and the materials used in accordance with the Plans and Specifications heretofore approved for same.

APPROVED:

RESIDENT ENGINEER *DIVISION ENGINEER*

Form 480B Labor Overtime

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DETAILED STATEMENT OF FORCE ACCOUNT WORK

LABOR OVERTIME

CONTRACT NO. (2) AUTHORIZED BY LETTER DATED: (1)

STATE PROJECT: (3) FA#: (4) COUNTY: (5) CONTRACTOR: (6)

SUBCONTRACTOR: (7) WEEK ENDING: (8)

LABOR NAME	CLASSIFICATION	S	M	T	W	T	F	S	TOTAL HOURS	BASE WAGE RATE	AMOUNT
(9)	(10)	(11)	(11)	(11)	(11)	(11)	(11)	(11)	(12)	(13)	(14)
										LABOR SUBTOTAL:	(15)

STANDBY OR IDLE LABOR NAME	CLASSIFICATION	S	M	T	W	T	F	S	TOTAL HOURS	BASE WAGE RATE	AMOUNT
(9)	(10)	(11)	(11)	(11)	(11)	(11)	(11)	(11)	(12)	(13)	(14)
										STANDBY OR IDLE LABOR SUB-TOTAL:	(15)

CERTIFICATION:

I hereby certify that the quantities and amounts herein shown were compiled by me and are correct to the best of my knowledge and belief, and that the work has been performed and the materials used in accordance with the Plans and Specifications heretofore approved for same.

APPROVED:

RESIDENT ENGINEER *DIVISION ENGINEER*

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DETAILED STATEMENT OF FORCE ACCOUNT WORK

PAYROLL SUMMARY

CONTRACT NO. (2) AUTHORIZED BY LETTER DATED: (1)

STATE PROJECT: (3) F.A. NO. : (4) COUNTY: (5) CONTRACTOR: (6)

SUBCONTRACTOR : (7) WEEK ENDING: (8)

LABOR SUMMARY

ITEM	AMOUNT

CERTIFICATION:

I hereby certify that the quantities and amounts herein shown were compiled by me and are correct to the best of my knowledge and belief, and that the work has been performed and the materials used in accordance with the Plans and Specifications heretofore approved for same.

_____ APPROVED: _____

RESIDENT ENGINEER *DIVISION ENGINEER*

Form 480B Labor Additives

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DETAILED STATEMENT OF FORCE ACCOUNT WORK
PAYROLL ADDITIVES

CONTRACT NO. (2) AUTHORIZED BY LETTER DATED: (1)

STATE PROJECT: (3) F.A. NO. : (4) COUNTY: (5) CONTRACTOR: (6)
SUBCONTRACTOR : (7) WEEK ENDING: (8)

BOND, INSURANCE AND TAXES ITEM	**RATE** (PROVIDED BY CONTRACTOR)	**APPLICABLE QUANTITY**	**AMOUNT**	**REMARKS**
(16)	(17)	(18)	(19)	(20)
SUBTOTAL OF SUBMIITED PAYROLL ADDITIVES			(21)	

SECTION 109-3A ALLOWS 35% ADDITIVE IF ACTUAL LABOR BURDEN RATES CANNOT BE VERIFIED. (TOTAL LABOR * 35%)

ALLOWABLE PAYROLL ADDITIVE

CERTIFICATION:

I hereby certify that the quantities and amounts herein shown were compiled by me and are correct to the best of my knowledge and belief, and that the work has been performed and the materials used in accordance with the Plans and Specifications heretofore approved for same.

APPROVED:

RESIDENT ENGINEER *DIVISION ENGINEER*

Form 480B Labor Travel
Method “A”

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DETAILED STATEMENT OF FORCE ACCOUNT WORK

TRAVEL AND SUBSISTENCE

CONTRACT NO. (2) AUTHORIZED BY LETTER DATED: (1)

METHOD "A"

WBS ELEMENT: (3) F.A. NO. : (4) COUNTY: (5) CONTRACTOR: (6)

SUBCONTRACTOR : (7) WEEK ENDING: (8)

Employees Name & Dates of Travel	COST OF MEALS	COST PER DAY	AMOUNT SUBMITTED	ALLOWABLE AMOUNT	REMARKS
(22)	(23)	(24)	(25)	(26)	
			TRAVEL AND SUBSITENCE SUBTOTAL:	(27)	

ARTICLE 109-3B ALLOWS FOR COMPENSATION AT THE CURRENT IN-STATE RATE FOR STATE EMPLOYEES. RATE AS OF JULY 1, _____ IS $ _____ .
MEAL ALLOWANCE PER DAY IS $ ____ , ROOM RATE IS $ _____.

CERTIFICATION:

I hereby certify that the quantities and amounts herein shown were compiled by me and are correct to the best of my knowledge and belief, and that the work has been performed and the materials used in accordance with the Plans and Specifications heretofore approved for same.

_____ APPROVED: _____

RESIDENT ENGINEER *DIVISION ENGINEER*

Form 480B Labor Travel
Method "B"

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DETAILED STATEMENT OF FORCE ACCOUNT WORK
TRAVEL AND SUBSISTENCE
AUTHORIZED BY LETTER DATED: (1)
Method B

CONTRACT NO.: (2)
WBS ELEMENT : (3) F.A. NO. : (4) COUNTY: (5) CONTRACTOR: (6)
SUBCONTRACTOR : (7) WEEK ENDING: (8)

Employees Name & Date of Travel	CONTRACTOR PER DIEM NONE ACCOUNTABLE	LENGTH OF STAY	AMOUNT SUBMITTED	ALLOWABLE AMOUNT
(28)	(29)	(30)	(31)	(32)
	TRAVEL AND SUBSITENCE SUBTOTAL:			(33)

ARTICLE 109-3B ALLOWS FOR COMPENSATION AT THE CURRENT IN-STATE RATE FOR STATE EMPLOYEES. RATE AS OF JULY 1, _____ IS $ _____ .
MEAL ALLOWANCE PER DAY IS $ ____ , ROOM RATE IS $ _____.

CERTIFICATION:
I hereby certify that the quantities and amounts herein shown were compiled by me and are correct to the best of my knowledge and belief, and that the work has been performed and the materials used in accordance with the Plans and Specifications heretofore approved for same.

(34) APPROVED: (35)
RESIDENT ENGINEER *DIVISION ENGINEER*

Form 480B Travel Summary

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DETAILED STATEMENT OF FORCE ACCOUNT WORK

TRAVEL SUMMARY

CONTRACT NO. (2) AUTHORIZED BY LETTER DATED: (1)

STATE PROJECT: (3) F.A. NO. : (4) COUNTY: (5) CONTRACTOR: (6)

SUBCONTRACTOR : (7) WEEK ENDING: (8)

LABOR SUMMARY

ITEM	AMOUNT

CERTIFICATION:

I hereby certify that the quantities and amounts herein shown were compiled by me and are correct to the best of my knowledge and belief, and that the work has been performed and the materials used in accordance with the Plans and Specifications heretofore approved for same.

_____ APPROVED: _____

RESIDENT ENGINEER *DIVISION ENGINEER*

Form 480C Equipment

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DETAILED STATEMENT OF FORCE ACCOUNT WORK

EQUIPMENT / RENTAL EQUIPMENT / STANDBY OR IDLE EQUIPMENT

AUTHORIZED BY LETTER DATED: (1)

CONTRACT NO. (2)

STATE PROJECT NO: (3) F. A. NO.: (4) COUNTY: (5) CONTRACTOR: (6)

SUBCONTRACTOR : (7) WEEK ENDING: (8)

EQUIPMENT DESCRIPTION	YEAR OF MODEL	BLUE BOOK CHAPTER AND PAGE	BASE MONTHLY RATE (A)	AGE ADJ FACTOR (B)	REGION ADJUST FACTOR (C)	OPER COST per HR (D)	ADJ HRLY RATE*	S	M	T	W	T	F	S	TOTAL HOURS	AMOUNT	REMARKS
(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(17)	(17)	(17)	(17)	(17)	(17)	(18)	(19)	(20)

* ADJUSTMENT HOURLY RATE = (A*B*C/176) + 1.0*D

EQUIPMENT SUBTOTAL: (21)

RENTAL EQUIPMENT DESCRIPTION	MINIMUM RENTAL PERIOD	RENTAL RATE	ACT. NO. of RENTAL PERIODS	RENTAL AMOUNT	S	M	T	W	T	F	S	TOTAL HOURS OPER	RENTAL ADDITIVE AMOUNT **	REMARKS
(22)	(23)	(24)	(25)	(26)	(28)	(28)	(28)	(28)	(28)	(28)	(28)	(29)	(30)	(31)

RENTAL EQUIPMENT SUBTOTAL: (27) ***RENTAL EQUIP. ADDITIVE SUBTOTAL:*** (32)

** RENTAL ADDITIVE (WEEKLY RATES) = ((RENTAL RATE TIMES TOTAL HOURS OPERATED) DIVIDED BY 40) X .15

RENTAL ADDITIVE (DAILY RATES) = ((RENTAL RATES TIMES TOTAL HOURS OPERATED) DIVIDED BY 8) X .15

STANDBY OR IDLE EQUIPMENT DESCRIPTION	YEAR OF MODEL	BLUE BOOK CHAPTER AND PAGE	BASE MONTHLY RATE	AGE ADJUST FACTOR	REGION ADJUST FACTOR	ADJUSTMENT HOURLY RATE (A*B*C/176)*0.5	S	M	T	W	T	F	S	TOTAL HOURS	AMOUNT	REMARKS
(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)	(40)	(40)	(40)	(40)	(40)	(40)	(41)	(42)	(43)

STANDBY OR IDLE EQUIP. SUBTOTAL: (44)

CERTIFICATION:

I hereby certify that the quantities and amounts herein shown were compiled by me and are correct to the best of my knowledge and belief, and that the work has been performed and the materials used in accordance with the Plans and Specifications heretofore approved for same.

APPROVED:

RESIDENT ENGINEER *DIVISION ENGINEER*

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DETAILED STATEMENT OF FORCE ACCOUNT WORK

OWNER-OPERATED EQUIPMENT / FULLY MAINTAINED & OWNER OPERATED TRUCKS

AUTHORIZED BY LETTER DATED: (1)

CONTRACT NO. (2)

WBS ELEMENT NO: (3) F. A. NO.: (4) COUNTY: (5) CONTRACTOR: (6)

SUBCONTRACTOR : (7) WEEK ENDING: (8)

OWNER/OPERATED EQUIPMENT DESCRIPTION	MINIMUM RENTAL PERIOD	RENTAL RATE	ACT. NO. of RENTAL PERIODS	RENTAL AMOUNT	#REF! S	#REF! M	#REF! T	#REF! W	#REF! T	#REF! F	#REF! S	TOTAL HOURS OPER	REMARKS
(45)	(46)	(47)	(48)	(49)	(51)	(51)	(51)	(51)	(51)	(51)	(51)	(52)	(53)
			RENTAL EQUIPMENT SUBTOTAL:	(50)									(55)

FULLY MAINTAINED OWNER OPERATED EQUIPMENT	MINIMUM RENTAL PERIOD	RENTAL RATE	ACT. NO. of RENTAL PERIODS	RENTAL AMOUNT	#REF! S	#REF! M	#REF! T	#REF! W	#REF! T	#REF! F	#REF! S	TOTAL HOURS OPER	REMARKS
(54)	(55)	(56)	(57)	(58)	(60)	(60)	(60)	(60)	(60)	(60)	(60)	(61)	(62)
			RENTAL EQUIPMENT SUBTOTAL:	(59)									

CERTIFICATION:

I hereby certify that the quantities and amounts herein shown were compiled by me and are correct to the best of my knowledge and belief, and that the work has been performed and the materials used in accordance with the Plans and Specifications heretofore approved for same.

(63)
RESIDENT ENGINEER

APPROVED: (64)
DIVISION ENGINEER

FORCE ACCOUNT NOTICE - SAMPLE

(Date)

Contract No.: *(#)*
Project No.: *(#)*
F. A. No.: *(#)*
County: *(Name of County(ies))*

Description: *(TIP Number - Description of the Project)*

Subject: Force Account Notice

Mr. John Doe *(Person Authorized to Sign Supplemental Agreements)*
ACME Construction Company, Incorporated
100 Main Street
Mayberry, North Carolina 13000-1234

Dear Mr. Doe:

I am writing to advise you that the basis of payment for the following work will be Force Account in accordance with Articles *104-3 or 104-7* and 109-3 of the 2006 Standard Specifications for Roads and Structures:

Include here the exact location and detailed description of the work to be performed by Force Account.

Prior to beginning this work, it will be necessary for you to submit to this office for approval a list of wage rates for the following labor classifications which have been determined to be necessary for the work:

Include here the list of labor classifications that will be necessary to complete the Force Account work.

It will also be necessary for you to submit to this office, prior to beginning work, a list of the required numbers and types of equipment including the manufacturer's name, type, model, serial number, and year of manufacture for which you will receive hourly rental in accordance with Article 109-3 of the Standard Specifications:

Include here the list of required equipment and number of each that will be necessary to complete the Force Account work.

It has been determined that the following material will be required for the work:

Include here a list of required material(s) that will be necessary to complete the Force Account work.

Please be advised that the use of any labor classifications, equipment, or material not included herein, must be approved prior to use.

Sincerely,

(Signature)

I. M. Resident, PE
Resident Engineer

cc-
Division Engineer
State Construction Engineer
Project Inspector
Roadway Construction Engineer or Bridge Construction Engineer

FORCE ACCOUNT CONSTRUCTION METHOD ON FEDERAL AID PROJECT

The term "force account construction method" refers to construction work the Department performs on a federal aid project using its own forces. Specifically it means the direct performance of highway construction work by the Department using labor, equipment, material, and supplies furnished by the Department. This method of constructions is only intended to be used in special circumstances with the required construction is the result of an "emergency" situation or when force account construction is more practical and more cost effective than competitive bidding practices.

All Force Account Construction work shall be performed in accordance with FHWA Order No. 5060.1 titled *FHWA Policy on Agency Force Account Use.* This order can be viewed in detailed at

http://www.fhwa.dot.gov/legsregs/direcives/orders/5060.3htm

Before performing work using the force account construction method the contract administrator requesting this method of construction and the final approval authority should review the above referenced order and consider and verify the following:

The Department has the experience, resources, and demonstrated ability to complete the work with as the same level of quality as that expected if the work was performed through the competitively bid construction process.

Performance of the work with Department forces is more cost effective than the cost at competitively bid prices.

Performance of the work with Department forces will not compromise the attainment of the approved Disadvantaged Business Enterprise (DBE) goal.

Approval must be obtained from the Division Engineer prior to commencement of Force Account Construction work. This contract administrator should submit Form (881-FAC) "Request to Perform Force Account Construction on Federal Aid Project" to the Division Engineer. The form can be found on the NCDOT website at the following web addresses.

https://connect.ncdot.gov/projects/construction/Pages/Construction-Resources.aspx

A cost comparison estimate that shows the comparison between the force account construction method and competitively bid construction must be included with the request (see the example at the end of this section.) Also include documentation where prior attempts to bid the work were unsuccessful due to high bids or a lack of bids. The Division Engineer's authority level for approving this method of construction is $50,000 on Delegated Authority projects only. All requests over $50,000 must be approved by the Chief Engineer. The use of Force Account Construction method on Full Oversight projects (Step-by-Step) must be approved by FHWA. Once approval has been obtained, work may commerce with charges being posted to the original project WBS element.

Once all work has been completed, a verification estimate should be performed to compare the actual cost to the estimate to validate the used of this method of construction for future reference.

Form 881- FAC
8/12
DRAFT 8-28-12

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Request to Perform Force Account Construction on Federal Aid Project

The term Force Account Construction refers to construction work NCDOT performs on a federal funded project using its own forces. Specifically it means the direct performance of highway construction work by NCDOT by use of labor, equipment, materials, and supplies furnished by NCDOT and used under its contract terms. All Force Account Construction shall be performed in accordance with the FHWA Order titled "FHWA Policy on Agency Force Account Use". Approval must be granted by the Division Engineer prior to commencement of Force Account Construction. The Division Engineer's authority is limited to a maximum of $50,000 on Delegated Authority projects only. Amounts in excess of $50,000 must be approved by the Chief Engineer. Force Account Construction on Full Oversight projects (Step-by-Step) must be approved by FHWA.

CONTRACT NO: _____ **WBS NO:** _____

TIP NO: _____ **FEDERAL AID NO:** _____

COUNTY: _____

1. Description of the Force Account work:

2. Justification (Emergency or More Cost Effective):

3. Estimated Cost and Cost Comparison Documentation:
(Summarize here and include actual documentation as an attachment)

Requested By: _____ Division Maintenance Engineer **DATE:** _____	**Approval Granted:** _____ Division Engineer **DATE:** _____
Approval Granted (Only required for work over $50,000): _____ Chief Engineer **DATE:** _____	**Approval Granted** (Full Oversight Projects Only): _____ FHWA **DATE:** _____

Example Force Account Construction Method Cost Analysis

[1]Estimate of Competitively Bid Construction

Item	Cost
Mobilization	**$ 1,000.00**
Pavement Markings - Paint (11,000 lf @ $0.50/lf)	**$ 5,500.00**
Traffic Control	**$ 1,000.00**
Total Cost	$ 7,500.00

Estimate of NCDOT Force Account Construction

Item	Cost
[2]Labor	**$ 675.00**
[3]Equipment	**$ 573.50**
[4]Materials	**$ 2,125.30**
Total Cost	$ 3,373.80

Difference in Estimated Cost	$ 4,126.20

Notes

1. When preparing the Estimate of Bid Construction, use contract prices if work is performed on an existing contract and the items are available. Otherwise use bid averages or independent estimate performed by the Division Contract Officer.
2. Labor should be calculated using current Activity Rates for the cost center. These can be found using transaction KSBT in SAP.
3. Use the Department's actual equipment rental rate for the cost center. This is found using ZPSR15 in SAP. If the equipment is under rental agreement, use the quoted or invoiced price and include as an attachment.
4. Include an itemized list of materials with supplier quotes.
5. Include documentation if prior attempts to bid the work resulted in high bids or lack of bids.

CONSTRUCTION PROCEDURE FOR CLAIMS

ACTIVE CLAIM

The following is the current procedures for processing Active Claims:

- Resident Engineer approval authority is $50,000 and 30 days for active claims under all Articles of the Specifications. Resident Engineer **can not** deny any active claim.
- Division Engineer approval and denial authority for active claims is unlimited under all Articles of the specifications.
- Bridge Construction / Roadway Construction Engineer reviews all active claims over $50,000 and 30 days.
- State Construction Engineer reviews all active claims over $100,000 and 90 days.
- Bridge Construction / Roadway Construction Engineer and State Construction Engineer active claim review must be made prior to notifying the contractor of the Department's decision. Any approval of claims outside of those allowed by the Specifications must be forwarded to the State Construction Engineer for approval.
- If the dollar value or time on a specific claim exceeds the thresholds listed above then the entire claim should be forwarded for review. (Do not breakout issues and forward parts of the claim)

All individuals that approve, deny, or make recommendations on an active claim should use the appropriate Claims Resolution Form (CRF) for documentation. The current form can be found on the Construction Unit's Web Site.

When notifying the contractor about a decision on an active claim the Engineer **should not** send a copy of the Claims Resolution Form. A letter should be written that tells the contractor whether the claim has been granted or denied, and an explanation should be given explaining the Department's position. Once a final decision has been made on an active claim, the contractor cannot resubmit it again until the project closeout conference. At the project closeout conference the claim can be re-evaluated if the contractor has additional information available that could change the original decision.

The following is the current turnaround times for processing Active Claims:

Claims up to $50,000 and 30 days

- Contractor submits claim
- Resident Engineer review and approves within 10 days (if claim is to be denied see below)
- If Resident Engineer recommends denial of claim then the request should be forwarded to the Division Engineer within 10 days
- Division Engineer reviews Resident Engineer's recommendation of denial and approves or denies the claim within 10 days
- TOTAL PROCESS COMPLETE WITHIN ONE MONTH
-

Claims between $50,000 and $100,000 and up to 90 days

- Contractor submits claim
- Resident Engineer reviews and sends recommendation for Bridge Construction / Roadway Construction Engineer review within 20 days

- Bridge Construction / Roadway Construction Engineer reviews and forwards to Division Engineer with comments within 5 days
- Division Engineer review and decision within 5 days
- PROCESS COMPLETE WITHIN SIX WEEKS

Claims over $100,000 and over 90 days

- Contractor submits claim
- Resident Engineer review and send recommendation for Bridge Construction / Roadway Construction Engineer review within 30 days
- Bridge Construction / Roadway Construction Engineer (State Construction Engineer) reviews and forwards to Division Engineer with comments within 10 days
- Division Engineer review and decision within 10 days
- PROCESS COMPLETE WITHIN 2 ½ MONTHS

FINAL CLAIMS

All final claims should be submitted from the contractor directly to the State Construction Engineer. An active claim becomes a final claim once it has gone through the active claim process and project closeout process, and the contractor still believes he is due additional compensation and / or an extension in the contract completion date. These final claims will be reviewed and responded to by the State Construction Engineer as part of the final estimate process.

PROJECT CLOSEOUT CONFERENCE

After the Final Estimate has been prepared by the Resident Engineer, checked by the Division and the Notification of Final Quantities has been sent to the Contractor, a Project Closeout Conference should be held with the Contractor to discuss any outstanding issues on the project. These issues would include quantity discrepancies and claims for additional compensation and / or extension of contract times. This conference can also be used to discuss any positive or negative aspects of the project.

On projects that are $10 million or less the Project Closeout Conference should be held within 60 days of final acceptance. On projects that are over $10 million the Project Closeout Conference should be held within 90 days of final acceptance. These time frames give the Contractor 30 days to review the quantities before a Project Closeout Conference is held.

The Resident Engineer in conjunction with the Contractor should determine the issues to be discussed at the Project Closeout Conference. The Contractor needs to send the Resident Engineer all of his information that pertains to any of the outstanding issues prior to the conference. This is particularly important for the claim issues because it will give the Department time to investigate these issues, and can thoroughly explain our position to the Contractor. The Resident Engineer should request the Contractor bring the documents that are required for processing the final estimate as stated in Article 109-10 of the Standard Specifications. The Resident Engineer should also prepare a written agenda and distribute it to all the involved parties prior to the meeting. All Project Closeout Conferences should include the following agenda items:

- Final Quantity Review
- Outstanding Claims
- Current Final Estimate Amount
- Breakdown of Liquidated Damages withheld
- Final Documents needed to close out project
- DBE/MB/WB Reported Payments
- Review of Final Claims Process

The attendees of the Project Closeout Conference should be the Division Engineer and/or Division Construction Engineer, Resident Engineer, Assistant Resident Engineer, appropriate Construction Unit Staff, Prime Contractor and appropriate Subcontractors. It is the Prime Contractor's responsibility to invite the Subcontractors.

While all issues may not be resolved at the Project Closeout Conference, it does allow open discussion of the outstanding issues by all the involved parties. The Division Engineer has the authority to approve or deny all claims for additional compensation and extensions of contract times under all Articles of the Specifications. This will allow many claim issues to be resolved at the Project Closeout Conference.

If ALL issues are resolved during the closeout conference, the Engineer should promptly make the necessary corrections to the final estimate assembly, and document any claim issues in HiCAMS using the Project Closeout Conference Form. The Construction Unit representative will provide the Closeout Conference Form. The form must be signed by the Contractor and the Construction Unit representative. The Contractor's signature on the form signifies that he agrees with all of the final quantities and there are no further claims on the project and will suffice as his Statement of Final Claims as required under Article 109-10. The Division Engineer should then notify the Contractor of the results of the approved changes in the final estimate and any adjustments in compensation or extensions contract time. The final estimate assembly and final documents (Consent of Surety and Affidavit) should then be submitted to the State Construction Engineer.

If at the completion of the Project Closeout Conference there are still unresolved claim issues, the Project Closeout Conference Form **should not** be used to document the **resolved issues**. In this case, any claim issues that are resolved at the conference should be documented as Active Claims in HiCAMS, using the appropriate Claims Resolution Form that is used for Active Claims.

The Contractor should be advised to submit all unresolved issues, from the Closeout Conference, as part of his final claim letter, which should be sent directly to the State Construction Engineer. These final claims will be reviewed and responded to by the State Construction Engineer as part of the final estimate process.

PROCEDURES FOR RECORDING INFORMATION RELATING TO PAY ITEMS FOR A CONTRACT

These procedures are to be applied to those records that are used to form the basis of payment for contract pay items. Project workbooks that pertain to the engineering control of a project will be kept in accordance with the Engineering Control Division of this Manual. In reviewing these procedures and attachments, you will note that the term "source document" is used. This term is defined as the original entry or record that establishes payment for a contract item. **There will be a source document for each pay item included in the contract. All entries pertaining to pay items should be originally entered in a bound book (pay record, level, or field), ticket book, or on a specified form. These entries are to be made when final measurements are taken or estimated quantities are determined for payment and not copied from scratch notes to a bound book at a later date.**

It is not the intent that a separate bound book be used for each item. Different items can and in most instances should be recorded in the same book. In some instances entries for the same item will be shown in several different books.

All books used to form the basis of payment should be labeled, Pay Record Book, (PRB) and should be consecutively numbered as they are put into use. The first book used to record items for any project should be Pay Record Book Number 1.

All books used to document estimated quantities for items should be labeled Estimate Work Book (EWB) and should be consecutively numbered as they are put into use.

There are many items that are measured and paid for based upon the surface area but are constructed according to a specific depth or thickness. Examples of these items would be concrete paved ditch, concrete driveways, and concrete sidewalk. If an item of this nature is measured for pay purposes by the Technician while the work is being performed, a statement should be placed in the book containing the measurements indicating that the material has been constructed according to the specified depth or thickness. This statement should be made for each day that an entry is made. Measurements not made for pay purposes should be recorded by the Technician in the Inspector's Daily Report.

The following procedures do not contain all items that are included in a contract but only examples of the general type of items. If there is an item contained in a contract that does not specifically fall into any of the described categories, you must adjust the procedures to fit the individual item. You should follow the **Specific Instructions Pertaining to All Entries Made in Pay Record Books and Estimate Work Books** explained in the following section.

SPECIFIC INSTRUCTIONS PERTAINING TO ALL ENTRIES MADE IN PAY RECORD BOOKS AND ESTIMATE WORK BOOKS

All entries made in Pay Record and Estimate Work Books that relate to pay items are to conform to the instructions listed below:

1. **All entries and computations made in Pay Record and Estimate Work Books are to include sufficient detail so they can be identified, checked, and verified by others.** All entries made in Pay Record and Estimate Work Books should be neat and kept in such a manner that they can be easily read by others.
2. **There should be no erasures in any Pay Record or Estimate Work Book.** Entries that are in error should be struck with a single line and the initials of the individual voiding the entry noted. Corrected entries should be placed immediately above the voided entry.
3. **Pay Record and Estimate Work Books used by project personnel will be the bound pay record, level, and field books that are issued by the Department.** Loose-leaf notebooks are not to be used for project records.
4. **The date and initials of the individual making an entry in Pay Record and Estimate Work Books should be shown for each entry or at the top or bottom of the page when all entries on a page have been made by a single individual**.
5. **All Pay Record and Estimate Work Books are to contain a current index and all pages will be numbered.**
6. **No Pay Record Book is to be copied prior to submission with the final estimate.** The original Pay Record Books containing the information recorded initially, regardless of condition, will be submitted with the final estimate.
7. **Any computations made in the Pay Record Book will be checked and the initials of the individual checking the computations will be shown.**
8. **No records or notes pertaining to a project will be kept on scratch paper.** All notes and records should be entered into either bound Pay Record or Estimate Work Books.
9. **All Pay Record and Estimate Work Books used on a project should be consecutively numbered as they are put into use. A separate set of numbers should be used for Pay Record and Estimate Work Books.** A record should be kept in the Resident Engineer's office showing the number of books that have been assigned to any project at any time. The numbers assigned to the books should be consecutively numbered, starting with number one for the first book used on each project. The number of an individual book should be clearly marked on the outside cover of the book when it is put into use.
10. **A list of the names and initials of each individual who enters information or initials entries in the pay record book should be placed in the front of each book.**
11. **In a section entitled "General Notes" include information helpful in the checking of the final estimate.** Also include information that may help an individual to readily understand the entries in the pay record book in the future.
12. **The Remarks column should be used to aid an individual reviewing an item at a future date.** Also include information that may help an individual to readily understand a specific entry in the pay record book in the future.
13. **All measurements are to conform to instructions contained elsewhere in this section.**

14. **Each pay record book should have individual page totals for each item entered. However, at the Resident Engineer's discretion, an estimate total (a HiCAMS entry for each line item paid on an estimate) may be used in lieu of individual page totals. If an estimate total is used, then your total may span more than one page, as some line items may have many pages of entries between estimates (i.e., Seeding and Mulching or Borrow by truck count) and some line items have only one or two entries during the entire project (i.e., Mobilization or Fine Grading).**
15. **When a contract item listed in a Pay Record Book has not been utilized and no payment will be made, the Engineer should make a statement in the Pay Record Book to this effect.** The statement should be initialed by the Engineer.

ROADWAY ITEMS

LUMP SUM ITEMS

Items included in the contract that do not have measurements associated with them are considered lump sum items, such as clearing and grubbing, building removal, demolition items, mobilization, contract surveying, software, etc.

Normally there is no direct measurement to document that this type of work has been completed although it is obvious the work has been completed by the subsequent phases of construction. **To provide a uniform means of showing that lump sum items have been completed, the Engineer will make a statement in a pay record book that the item has been completed. This entry should be made either when the item of work is completed or when the item has been totally paid for in accordance with the contract requirements.** The statement should be initialed by either the Technician responsible for the work, or the Engineer.

When projects contain **more than one** work order, the distribution of lump sum items charged to each work order that is computed by HiCAMS should be recorded in the pay record book. Other lump sum items of work that are performed at a specific site are applicable to the work order where the work is performed.

PER EACH ITEMS

Per each items are items that are bid on a per each basis, including masonry drainage structures, adjustment of manholes and valve boxes, right-of-way markers, traffic signal controllers, landscaping items, etc., that are not a component part of another item.

Entries made in a pay record book will constitute the basis of payment for the item or items involved. As the item is counted in the field, the quantity should be entered into the pay record book. After the item of work has been completed, the quantities of the item involved will be totaled in the book. The pay record books in which the entries are made will be submitted with the final estimate. All right-of-way markers and drainage structures including catch basins, drop inlets, manholes, spring boxes, endwalls, open-end pipe, etc., should be numbered on the plans and correspondingly in the pay record books as a cross-reference.

Item No. - Description Page No.

Number	Station	Lt./Rt.	Quantity	Date	Initials	Remarks

CUBIC MEASUREMENT ITEMS

There are three ways used to compute volumetric quantities. Each method requires its own general form of record keeping and each will be discussed separately.

1. **Materials That Are Computed By The Average End Area Method or Digital Terrain Modeling:** Examples of these materials include unclassified excavation, borrow excavation, undercut excavation, soil-type base course, and drainage ditch excavation.

   The notes that are taken in the field will be recorded in the manner specified in the Engineering Control section of this Manual and in compliance with the specific instructions herein.

2. **Materials Computed By Length-Depth-Width (XYZ) Measurements:** Examples of these items include concrete items, brick masonry items, unclassified excavation, undercut excavation, drainage ditch excavation, and subdrain excavation.

   There are many items paid for according to cubic yardage measurements that are constructed according to a standard that has the volume computed for various dimensions. If an item of this nature is involved, the variable dimensions should be measured and recorded in the book with the nonvariable dimensions shown as being standard. The computed volume from the standard should, where applicable, be used. The standard number used should be placed in the pay record book for each drainage structure so that anyone checking computations can determine what standard was utilized.

   Items without a standard should be measured and the measurements and sketches placed in a pay record book. Where possible, the necessary computations will be done in the pay record book. Pay record book(s) will be submitted with the final estimate. See **Forms and Examples** in this section of the Manual.

3. **Quantities Determined By Truck Measurements:** Examples of these items include borrow excavation and select granular material. When material that is paid for by truck measurement is brought onto the project, entries should be made in the pay record book for that particular item. These quantities are based upon a master list of truck measurements that should be entered into the pay record book. The Technician should ensure that the truck has been filled to the same limits as those made for the measurements of each individual truck. **Ticket books are no longer required.** If ticket books are used, the Engineer's signature on each book is not required if the Technician has signed the tickets to document that the material was incorporated into the work. Pay record book(s) will be submitted with the final estimate. See **Forms and Examples** in this section of the Manual.

LINEAR MEASUREMENT ITEMS

Items that are measured and paid for based on length (foot) include curb, curb and gutter, guardrail, pipe, fence, etc. As an item is measured, the measurement should be placed directly into a pay record book, along with any remarks, diagrams, or sketches necessary. The entries made in the pay record book should contain the basic information shown below and be in compliance with the specific instructions herein. The information shown could be entered into the pay record book for the item of curb and gutter as follows. See **Forms and Examples** in this section of the Manual.

Item No. - 760mm Concrete Curb and Gutter Page No.

Station	Station	Length	Quantity	Date	Initials	Remarks

SQUARE MEASUREMENT ITEMS

Items that are measured and paid for on a square unit basis (square foot, square yard, etc.), would include items such as asphalt surface treatment (AST), paved islands, Portland cement concrete pavement.

As the item is measured, the measurements taken should be placed in a pay record book with any necessary remarks, sketches, or diagrams necessary. All entries should be in compliance with the specific instructions herein. Entries made in the books should contain the following information:

Item No. - Description Page No.

Station	Station	Length	Width	Area	Date	Initials	Remarks

If the item cannot be computed directly in the book, all computations and areas should be shown in the final estimate assembly. Where applicable, the total amount of the item will be shown in the pay record book.

The pay record books in which the measurements were placed should be submitted with the final estimate. See **Forms and Examples** in this section of the Manual.

WEIGHT ITEMS

Items that are measured and paid for on a weight basis include aggregate materials and asphalt plant mixtures.

The applicable provisions of this section of the Manual should be followed for any item that is paid for on a weight basis. See **Weight Tickets as Basis of Payment** in this section of the Manual.

When placing an asphalt plant mix the Asphalt Roadway Technician should check that the approved job mix formula that is shown on the ticket matches the type of mix that is required by the plan typical section. The weight tickets shall be the source documentation for all asphalt binder that is paid for on the project.

PIPE - OTHER THAN SUBDRAIN

Prior to beginning work on a project, a pay record book for pipe should be set up as shown in **Forms and Examples** in this section of the Manual.

The following is one suggested method of setting up a pay record book for pipe. The Engineer should decide, based on his individual circumstances, the method that should be used to best eliminate errors of omission, duplications, etc.

Example:

Where possible, the pay record book for pipe should be set up before pipe operations begin. In setting up this book, sufficient space should be allowed between planned pipe lines to accommodate additions, modifications, installing portions of the pipe line on different dates, etc. The pay record book should be divided into sections with each section containing only one size and type of pipe. Many Engineers prefer to place each planned pipe line on a separate page in the pay record book. The Technician inspecting the pipe will maintain the pay record book and make appropriate entries as each line of pipe is installed.

PROOF ROLLING

The procedures outlined in **Proof Rolling Documentation** in this section of the Manual should be followed.

FERTILIZER OR FERTILIZER TOPDRESSING

If the analysis of the fertilizer differs from the specified analysis, the application rate and the pay quantity must be converted to an equivalent quantity of fertilizer of the specified analysis. Examples of these conversions are included in **Section 16** of this Manual.

If the material is shipped to the project in bulk form, it should be handled in the same manner as minor amounts of material in accordance with procedures set forth elsewhere in this Manual.

If the material is shipped to the project in bags, the number of bags used should be counted and the count placed in the pay record book. See **Forms and Examples** in this section of the Manual.

If the material is in liquid state, it should be converted to its equivalent dry weight. The Roadside Environmental Unit should be consulted for the conversion factor for the specified fertilizer. This conversion calculation should be shown in the pay record book that is submitted with the final estimate assembly.

PRIME COAT AND ASPHALT CURING SEAL

On all projects where a prime coat or an asphalt curing seal is required, a shot record should be maintained in the pay record book. See **Prime Coat and Asphalt Curing Seal Applications** in this section of the Manual. Also, see **Forms and Examples** in this section of the Manual.

INDIVIDUAL ITEMS THAT HAVE DIFFERENT UNITS OF MEASUREMENT

In addition to the previously listed items, there are many individual items that are considered as being an integral part of an assembly that have different units of measurement. In listing these items they will be shown in the same pay record book that is used for the major item of the assembly. These examples are not inclusive of all items

that would fall under this category. However, they are intended to serve only as illustrative examples.

1. **Guardrail**: This item is paid for on a linear foot basis but the terminal section and anchor unit, which are integral parts of this item, are paid for on a per each basis. In this instance, the guardrail and terminal sections or anchor units would be shown in the same book since the measurement for guardrail elements and the count of the terminal sections are made at the same time.
2. **Subdrain and Related Items:** The subdrain pipe itself is measured and paid for on a linear foot basis. However, the excavation and aggregate backfill is paid for on a cubic yard basis. These items would also be grouped together. Wyes, tees, and elbows used in connection with subdrain are paid for on a per each basis but are included with the other subdrain items.
3. **Pipe End Sections for Pipe Culverts:** The number of pipe end sections that are placed on a pipe line should be included in the pipe pay record book, but should be shown separately from the pipe line since the pipe end sections may be placed at a later date.
4. **Fence:** The fence material is paid for on a linear foot basis but the posts and gates are paid for separately on a per each basis. These units of measurement should be shown separately in the same pay record book.
5. **Grates, Frames, etc., That Are An Integral Part of Minor Drainage Structures**: The grates, frames, etc., are paid on a per each basis and should be shown separately in the same pay record book that is used for the minor structures.
6. **Signing Items:** Signing items carry a variety of units of measurements. These should be recorded based on payment units. See **Forms and Examples** in this section of the Manual.

As a general rule, when various pay items are utilized and incorporated into the project simultaneously, the measurements and documentation for payment should be recorded separately but the items should not be shown in separate pay record books.

STRUCTURE ITEMS

SUPERSTRUCTURE ITEMS

Superstructures that are constructed without any plan changes contain many items that are computed and paid for according to plan quantities. Examples of these items are reinforcing steel, reinforced concrete deck slab, structural steel, concrete, prestressed concrete members, and structural timber. Where the plans have not been changed, the structure Inspector should perform the following to document that the superstructure has been constructed according to the plans:

1. As an item or any part, where applicable, is incorporated into a superstructure, the Inspector should make a statement to this effect in the structure pay record book. This entry should be placed in the portion of the book that pertains to the structure involved.

Example:
"Reinforcing Steel, Span A, completed according to plans this date - 8/3/98. *HET*."

2. In those instances where the plan dimensions are changed, appropriate diagrams, sketches, computations, and explanation of the changes should be shown in its appropriate location in the structure pay record book. These entries should be in conformance with the specific instructions listed in this section of the Manual.

SUBSTRUCTURE ITEMS

Items composing the substructure are generally subject to more change than a superstructure. If the substructure items have not been changed over that shown in the plans, they will be supported for payment in the same manner as superstructure items. Where these items have been changed, appropriate diagrams, sketches, measurements, and computations should be shown in the structure pay record book.

LUMP SUM ITEMS - NOT CONSIDERED A COMPONENT OF ANY ONE STRUCTURE PAY ITEM

Examples of these items include: mobilization, construction, maintenance and removal of temporary crossings, removal of existing structure; maintenance and removal of existing structure, etc.

Items of this type will be handled in the same manner as lump sum roadway items.

BEARING PILES

Piles are paid for on a linear meter (linear foot) basis. The Construction Technician inspecting the structure should maintain a pile record for all piles driven. This record should be kept separately for each structure that contains piles and should be kept in the structure pay record book for the specific structure involved.

SHEET PILES

The length of the wall specified on the plans may be revised by the State Construction Engineer as necessary for adequate protection of the area involved. Payment in such cases will be at the unit bid price.

Any variation in the height of the wall or length of sheet piles called for in the plans will be documented by a Supplemental Agreement. If variations requiring a Supplemental Agreement occur, the Resident Engineer will add the following information in the structure pay record book:

1. Diagram showing location in wall of pile or piles involved.
2. Table showing length driven, cut-off splice or build-up, and length in place.

The quantity of sheet piles to be paid will be computed using the length of the sheet piles times the nominal width of the sheet piles.

EXCAVATION - CUBIC METER (CUBIC YARD)

The cross-sections for the original and final cross-sections should be recorded in the structure pay record book. If original readings are computed from the theoretical roadway cross-section, they should be included in the structure pay record book and noted as "*Computed from Theoretical Roadway Section*." Cross-sections should be plotted on supplemental cross-section sheets to be included in the **As-Constructed Plans** or other approved methods utilized to compute the volume. The volumetric computations should be on earthwork computation sheets.

Where there have been no changes authorized in writing by the Resident Engineer for the bottom of footing elevation shown on the original plans, payment for excavation will be to the bottom of footing elevation called for on the original plans with no allowance for irregularities. Cross-sections will show the actual **As-Constructed** condition and the area below plan elevation will be titled "**Nonpay Area**."

Where the Resident Engineer authorized either the lowering or raising of a footing, payment will be made for all material excavated within the horizontal limitations shown in the Specifications and authorization will be noted under the **General Notes** section of the structure pay record book along with the date authorization was given.

CULVERT EXCAVATION

The **Engineering Control** section of this Manual includes information on the method used for estimating box culvert excavation. Attention is called to the fact that it is considered the Contractor's responsibility to view the culvert site before bidding and to satisfy himself as to whether the plan quantity is a reasonable estimate. Payment will be in accordance with the Specifications for this item.

Conditioning RCBC Foundations

Use the procedure for Aggregate Base Course for documentation and record the station or location where the stone is placed on cover of ticket book(s). See **Weight Tickets as Basis of Payment** in this section of the Manual.

SPECIAL ITEMS

There are other items that on occasion are included as a part of a structure. These items may be either by separate bid items or the cost included in other items of work. Examples of these items include: hangers for utility installations, special facing materials, etc. Any of these items will generally fall into one of the above categories from the standpoint of documentation of installation and/or payment and should be shown in the structure pay record book in the manner that is applicable.

CLASS A CONCRETE

Where there have been no changes authorized in writing by the Resident Engineer for the bottom of footing elevation shown on the original plans, payment for Class A concrete will be to the bottom of footing elevation called for on the original plans with no allowance for irregularities. Cross-sections will show the actual **As-Constructed** condition and the area below plan elevation will be titled "**Nonpay Area**."

Where the Resident Engineer authorizes either the lowering or raising of a footing, payment will be made for all the concrete placed within the horizontal limits specified on the plans. Authorization will be noted under the **General Notes** section of the structure pay record book along with the date the authorization was given.

SOURCE DOCUMENTS, MEASUREMENTS AND SIGNIFICANT FIGURES

The Highway Construction and Materials System (HiCAMS) allows entry of up to three digits to the right of the decimal. This does not mean that those three digits must all be greater than zero.

Unless the Standard Specifications indicate a Method of Measurement (see examples below), Pay Items should be measured to the nearest reasonable digit and entered in HiCAMS up to three places. It is important to be consistent in the computations for each entry for a single line item. If the first entries for a line item are rounded to two places, all subsequent entries for that line item should be rounded to two places.

If the computed numbers must be rounded so that the number of digits does not exceed the three places allowed in HiCAMS, the following rules of rounding off should be used:

1. When the digits to be rounded are **0, 1, 2, 3, or 4**, the preceding digit should not be changed and the trailing digit should be dropped.
2. When the digits to be rounded are **5, 6, 7, 8, or 9**, the preceding digit should be increased by one and the trailing digit should be dropped.
3. For example, 24.3964 could be rounded to 24.396, 24.40, 24.4, or 24, depending on what was being measured. The measurement 24.8938 would be rounded to 24.894, 24.89, 24.9, or 25.

Any quantity taken from tables included in the Roadway Standard Drawings or Roadway Design Manual should be entered in the pay record book or source document rounded to three places.

Examples of Method of Measurement instructions (CAUTION: this list is not all-inclusive!)

260-4 *Proof Rolling* will be measured and paid for as the actual number of hours, measured to the nearest 0.1 hour. If proof rolling occurred for 2 hours and 20 minutes, the Pay Record entry in HiCAMS would be 2.300 HR

310-6 Measurement of pipe is made by counting the number of joints used and multiplying by the length of the joint to obtain number of linear feet of pipe installed and accepted. Measurements of partial joints are made along the longest length of the partial joint to the nearest 0.1 of a foot. If the contractor laid 3 joints at 8 feet per joint, and one section of 15 inches long, the Pay Record entry in HiCAMS would 25.300 LF

320-4 *Corrugated Steel Structural Plate Pipe or Pipe Arch* will be measured and paid for as the actual number of linear feet of pipe or pipe arch, measured to the nearest foot. If the pipe arch measured 109' 2", the HiCAMS entry would be 109.000 LF. If the pipe arch measured 109' 8", the HiCAMS entry would be 110.000 LF.

340-4 *Pipe Removal* will be measured and paid for as the actual number of linear feet of pipe and flared end sections, measured to the nearest 0.1 foot. If the contractor

removed 55" of pipe, the HiCAMS entry would be 4.600 LF. (To calculate this, divide 55 inches of pipe by 12 inches per foot = 55/12 = 4.58333.)

816-4 *Shoulder Drain* will be measured and paid as the number of linear feet of shoulder drain which has been completed and accepted, measured to the nearest foot. If the contractor lays 48' 6" of shoulder drain pipe, the HiCAMS entry would be 49.000 LF

840-4 *Masonry Drainage Structure* exceeding a height of 5.0 feet to be measured and paid for in linear feet for the portion of the drainage structure exceeding a height of 5.0 feet. The height will be measured vertically to the nearest tenth of a foot from the top of the bottom slab to the top of the wall. If the box measured 7' 8", the HiCAMS entry would be 7.700 LF.

901-4 Sign fabrication will be measured and paid for as the actual number of square feet of sign areas that have been acceptably fabricated. In measuring this quantity, the sign face areas will be calculated to the nearest 1/100 of a square foot using the dimensions shown in the contract. If the sign measurement is 1' 4" by 7' 0", the HiCAMS entry would be 9.33 SF.

In the event a contract contains more than one work order number, the partial pay estimate quantity and the final contract quantity should be computed first by carrying the computations for each work order to one more decimal place than the **Pay To** figure. The quantity for each work order for partial pay estimates should then be added together and placed on the partial pay estimate. The quantity for each work order for the final contract quantity should then be added together and rounded off to the **Pay To** figure. Once you have arrived at the final contract quantity, individual work order quantities should be adjusted (rounded off) so that the sum of the individual work orders equals the final contract **Pay To** quantity.

Example:
Quantities for a contract containing more than one project:

	WBS Element 3.4465.5		WBS Element 3.4455.6		Total Contract Quantity	
Item	Computed Quantity	Pay Quantity	Computed Quantity	Pay Quantity	Computed Quantity	Final Pay Quantity
Mobilization	56.4% =	56%	43.4% =	44%	99.8% =	100%
Unclassified Excavation	43.2M3 =	43M3	38.4M3 =	39M3	81.6M3 =	82M3
Borrow Excavation	36.1M3 =	36M3	20.2M3 =	20M3	56.3M3 =	56M3

See Article 109-1 of the Specifications and this Manual for procedures for the measurement of pay quantities.

See **Forms and Examples** in this section of the Manual.

WEIGHT TICKETS AS A BASIS OF PAYMENT

GENERAL

The following procedures should be used for the receipt of and documentation for payment of materials when weight tickets are the basis of payment. Reference should also be made to Article 106-7 of the Specifications and this Manual.

TICKETS ISSUED FOR PAYMENT BY WEIGHT

When material is to be paid for on a weight basis, the Contractor is required to furnish platform scales or other weighing devices certified by the North Carolina Department of Agriculture. The scales must be operated by a North Carolina public weighmaster, and a certified weight certificate must be issued in the form of a ticket.

All platform scales should be of sufficient length to permit weighing of the hauling equipment in such a manner that when weighing trucks with trailers, the entire hauling unit can be weighed as a unit. If the platform scale is not of sufficient length, the truck and trailer should be detached and weighed separately.

Upon delivery of materials paid for by weight, the Contractor should immediately give the weight ticket to the construction technician performing the inspection.

Upon receipt, the construction technician should make sure the ticket is legible and the following information has been listed on the ticket:

1. The Department Contract Number/WBS Number .
2. The date the ticket is issued.
3. The time the ticket is issued if the material is asphalt plant mix or plant mixed cement treated base course.
4. The type of material represented by the weight ticket.
5. The gross weight of the vehicle. (platform scales)
6. The tare weight of the vehicle. (platform scales)
7. The net weight of the material.
8. The location of the quarry or plant where the material came from.
9. The number of the truck transporting the material.
10. The name of the prime Contractor for the project.
11. The stamp **or** number of the public weighmaster weighing the material.
12. The signature or initials of the public weighmaster **in ink**.
13. The appropriate Job Mix Formula (JMF) number for the asphalt plant mix.

When trucks with the same identification number are being used by the Contractor, care should be taken to ensure that sufficient additional information is noted such that the trucks can be distinguished from one another.

Upon determining that all required information has been furnished on the weight certificate, the Inspector should then list the following information on the ticket:

1. Contract Number/WBS Element Number if not shown on the ticket.
2. WBS Element Number if different from that shown on the ticket.
3. Contract item number by which material will be paid.
4. Location where the material was placed.

5. Date the material was placed if it is different from the date the ticket was issued, such as erosion control stone stockpiled on a previous date anticipating inclimate weather.
6. Construction Technician's signature on the first ticket for the day and initials on subsequent tickets.
7. Quantity reduction for unused portion of material and reason should be shown clearly on the ticket.
8. The time the ticket is received for asphalt plant mix or plant mixed cement treated base course.

Tickets for each day should be bound separately with the total for the day shown on the front cover.

Exception:
When a small number of tickets (typically 5 or less) are received on a particular date, these tickets may be bound with similar tickets for other dates. The total for each date should be shown on the cover of the ticket book.

PROOF ROLLING DAILY REPORT

The Proof Rolling Daily Report (M&T Form 507) documents proof rolling operations and serves as a pay record that supports final payment for proof rolling. Since the form serves as a source document for payment, proof rolling need not be recorded in a pay record book. M&T Form 507 can be obtained from the Materials & Tests Unit stockroom.

The report should be completed daily for each proof rolling operation. It should be signed by the Resident Engineer after being reviewed to indicate concurrence with the contents and to signify acceptance of the report as a source document for payment purposes. **The Inspector should not place the Resident Engineer's name on the report in lieu of the Resident Engineer reviewing the report**.

The Proof Rolling Daily Report should contain the following information:

1. **Date:** The date the work is performed. A separate report must be completed for each crew, each day, and/or each work order.
2. **Project No.:** The project contract number or WBS Number. In the case of multi-WBS Numbers, use the WBS Number applicable to the location of the work being performed.
3. **ID No.:** The Transportation Improvement Plan (TIP) number for the project.
4. **Report No.:** The number of the report. Each WBS Number should have its own sequentially numbered set of reports.
5. **County:** The county or counties where the project is located.
6. **Make of Roller:** The make of roller used for proof rolling, including the model number.
7. **Tire Size and No. Plies:** The size of the tires and the number of plies the tires have, such as 20 x 28 (36 ply). All tires should be the same manufacturer and size.
8. **Weight:** This should be the gross weight of the proof roller in tons.
9. **Air Pressure:** This is the air pressure of each tire, checked on a daily basis. Incorrect tire air pressure can cause the weight of the proof roller to be unequally distributed during the proof rolling process. This may prevent the proof roller from detecting unstable areas. The recommended tire pressure is 68-72 psi.
10. **Time:** The Inspector should record the time started and stopped in this section of the report to the nearest minute. The number of **Hours Rolled** should be determined by dividing the total number of minutes included in the start and stop times by 60. This number should be recorded to the nearest 0.1 hour. The Contractor is paid for all initial proof rolling. In the event of failure due to the Contractor's negligence or weather, the Contractor is required to perform corrective measures and proof roll the failed area at no cost to the Department. Proof rolling hours for which payment is not to be made as provided by Section 260 of the Specifications will be kept separate from proof rolling hours for which payment is to be made (see **Failures** below).
11. **Area Rolled:** Areas that have passed proof rolling requirements of the contract should be recorded by specific station number in this section of the form along with the number of coverages performed. Proof rolling is typically performed on all areas of a project. Special emphasis should be placed on grade points, undercuts, or other questionable areas.
12. **Failures:** The areas that failed proof rolling should be recorded by specific station number in this section of the form. Each failure should be noted by identifiable

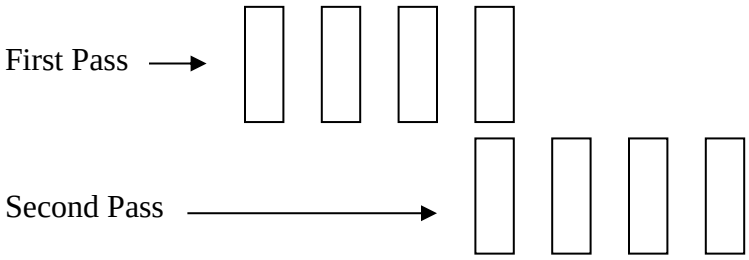
asterisks. Sufficient information to document the failure should be provided as listed below:

13. **Cause of Failure:** Document the reason the subgrade failed the proof rolling and any conditions at the specific location.
14. **Method of Correction:** Document what corrective measures were performed by the Contractor to correct the section. Do not allow the Contractor to wait several days and proof roll again without performing corrective measures. A second coverage on a previous failure area should be noted as such. A definition of coverage is shown at the bottom of the form.
15. **Remarks:** Any remarks regarding payment for work and the Contractor's performance should be recorded in this section of the report for each area.
16. **Signature:** The Technician who observed the operation should sign the report. The Resident Engineer should also review and sign the report.

A copy of each report should be sent to the Division Engineer and Geotechnical Unit for review. The original report remains in the Resident Engineer's project file until completion of the project. Original proof rolling daily reports are submitted with the final estimate assembly as source documentation.

Proof rolling reports should be numbered consecutively, except when failures occur. If a section that has been proof rolled fails, the next report that covers that section should have a letter designation that continues progressively with each report until it passes. For example, if a section on report 1 fails, that area should be shown on report 1A the next time it is rolled. If it does not pass on that report, it will next be shown on report 1B. This will better enable project personnel to ensure all failing areas are re-rolled.

The correct proof rolling procedure is accomplished by operating the proof roller in the following manner:



M&T Form 507
(Rev. 3/97)

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

PROOF ROLLING

Daily Report

Date: (1)

Project No.: (2) **ID No.:** (3) **Report No.:** (4)

County: (5) **Make of Roller:** (6)

Tire Size and No. Plies: (7) **Weight (Tons Gross):** (8)
Use 48-50 Tons

Air Pressure (Checked Daily): (9) PSI
Use 68-72 psi

Time: Started: (10) Stopped: (10) Hours Rolled: (10)
(Units, Decimals)

Started: _____ Stopped: _____

Started: _____ Stopped: _____

Area Rolled: Sta. (11) to Sta. (11) Coverages:* (11)

Sta. _____ to Sta. _____ Coverages:* _____

Sta. _____ to Sta. _____ Coverages:* _____

Failures: ** Sta. (12) to Sta. (12)

*** Sta. _____ to Sta. _____

**** Sta. _____ to Sta. _____

Cause of Failure: (13)

Method of Correction: (14)

Remarks: (15)

*A coverage is considered that stage in the rolling procedure when the entire width of the section designated has been in contact with the pneumatic tires of the roller.

Inspector: (16)

SIGNED

Resident Engineer: (16)

c: Geotechnical Unit
Division Engineer

Example

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

PROOF ROLLING

Daily Report

Date: 7-12-98

Project No.: 8.1234567 **ID No.:** R-1234A **Report No.:** 3

County: Peavey **Make of Roller:** Ferguson

Tire Size and No. Plies: 18.00 x 25 (32 Ply) **Weight (Tons Gross):** 49.2 Tons

Use 43-46 Metric Tons (48-50 Tons)

Air Pressure (Checked Daily): 70, 70, 69, 71 MPa. (PSI)

Use 460-500 Mpa (68-72 psi)

Time: Started: 7:51 a.m. Stopped: 8:21 a.m. Hours Rolled: 1.3 (Units, Decimals)

Started: 8:50 a.m. Stopped: 9:08 a.m.

Started: 10:04 a.m. Stopped: 10:36 a.m.

Area Rolled: Sta. 11+00 Rt -L- to Sta. 16+50 Rt -L- Coverages:* 1

Sta. 16+50 Rt -L- to Sta. 21+75 Rt -L- Coverages:* 1

Sta. 21+75 Lt -L- to Sta. 30+00 Lt -L- Coverages:* 1

Failures: ** Sta. 17+25 Rt -L- to Sta. 18+75 Rt -L-

*** Sta. 22+00 Lt -L- to Sta. 26+50 Lt -L-

Sta. to Sta.

Cause of Failure: ** Excessive moisture due to improper drainage (standing water on subgrade).

*** Unsuitable material was encountered one foot below subgrade in cut section.

Method of Correction: ** Contractor aerated, recompacted, and re-rolled subgrade.

*** Contractor undercut unsuitable material and replaced with approved borrow material, recompacted, and re-rolled material.

Remarks: ** All work at Contractor's expense.

*** All work performed at state's expense including re-proof rolling (see Report #2)

*A coverage is considered that stage in the rolling procedure when the entire width of the section designated has been in contact with the pneumatic tires of the roller.

SIGNED

Inspector: I. M. Inspector

Resident Engineer: I. M. Resident

c: Geotechnical Unit
Division Engineer
File

PRIME COAT & ASPHALT CURING SEAL APPLICATIONS

GENERAL

The following procedures should be used to determine and record pay quantities for prime coat and asphalt curing seal items. Prime coats are used to treat non-asphalt base courses while asphalt curing seals are typically used in conjunction with lime treated soil, cement treated base course, and soil cement base.

MEASUREMENT

The quantity of prime coat and asphalt curing seal to be paid for will be measured at the directed application temperature in gallons. The liquid asphalt should be free of air bubbles and foam at the time of measurement. Recorded measurements in gallons should be made before and after the liquid asphalt material is applied. The directed and actual application rates of gallons/square yard must also be recorded.

DEDUCTION

Articles 543-5 and 600-9 provide for a deduction in the measured quantity of liquid asphalt if the Contractor exceeds a directed application rate by more than the following tolerances:

1. Asphalt curing seal: 0.02 gallons/square yard
2. Prime coat: 0.03 gallons/square yard

If the actual application rate, gallons/square yard is greater than the directed application rate **plus** the allowable tolerance, then a deduction in the measured gallons must be made. The following examples show how this deduction would be determined.

Examples:
2420 gallons of prime coat are applied to 4950.5 square yards of ABC. This represents an actual application rate of 0.489 gallons/square yard. The directed rate was 0.40 gallons/square yard. Since the actual rate (0.489) is greater than the directed rate plus 0.03 (0.40 + 0.03 = 0.43), a deduction must be made:

(Actual Rate - (Directed Rate + Tolerance)) x square yards = gallons to be deducted
(0.489 - (0.40 + 0.03)) x 4950.5 square yards = **292.1 gallons to be deducted**

675 gallons of asphalt curing seal are applied to 3533.3 square yards of lime treated soil. This represents an actual application rate of 0.191 gallons/square yard. The directed rate was 0.150 gallons/square yard. Since the actual rate (0.191) is greater than the directed rate plus 0.02 (0.150 + 0.02 = 0.170), a deduction must be made:

(Actual Rate - (Directed Rate + Tolerance)) x square yards = gallons to be deducted
(0.191 - (0.150 + 0.02)) x 3533.3 = **74.2 gallons to be deducted**

This quantity should be recorded with a minus sign in the appropriate pay record book. Calculations to determine deductions should be placed directly in the pay record book adjacent to the original measurements and computations for each application of asphalt curing seal or prime coat. See **Forms and Examples** in this section of the Manual.

DOCUMENTATION OF PARTIAL PAY ESTIMATES

GENERAL

Partial payments to the Contractor are based on estimates that are prepared by the Resident Engineer's office at least once each month provided sufficient work has been performed. These partial payments are approximate only and will be subject to correction on the final estimate payment. However, the Resident Engineer should make certain that adequate measurements are being made to ensure that pay estimate quantities are substantially correct. The Contractor should always receive full compensation for all satisfactory work completed during each partial payment period. The Resident Engineer should also make sure that all quantities in each estimate period are completely supported in terms of documentation along with appropriate explanations whenever the quantities are estimated.

SOURCE DOCUMENTS FOR PAYMENT

Pay quantities should be supported by weight tickets, pay record books, force account records, computer printouts for earthwork, and temporarily by entries in Estimate Work Books. **Items of work that are conducive to final measurements as the work is performed should be entered directly into the appropriate pay record book.** It is desirable to record items directly in the appropriate pay record book, if possible, instead of in an Estimate Work Book.

ESTIMATE WORK BOOKS

Estimate Work Books should be maintained in the same manner as a pay record book except that the quantities in the Estimate Work Book are estimated and an explanation is included for each quantity to support its derivation and payment. **All estimated quantities paid on a partial pay estimate should be appropriately entered and supported in an Estimate Work Book.** Whenever the final measurements are made and a quantity is determined, it should be entered as usual in a pay record book and the estimated quantity voided from the Estimate Work Book. These books should be retained by the Resident Engineer's office until the Division and Resident Engineer's project files are merged after completion of the project. At this time, the Estimate Work Books should be destroyed.

Items that may be included in an Estimate Work Book are earthwork, fence, curb and gutter, paved ditch, slope protection, incomplete structure components, etc.

Example:
An area on a project is undercut for several hundred feet, which requires the survey party to take original and final cross-sections. The necessary sections are taken prior to backfill. However, the sections cannot be plotted and computed to the exact quantity prior to submission of the partial pay estimate. It is appropriate in such an instance for the Resident Engineer's office to estimate the undercut quantity by the XYZ average end area method, or even by the box method. This estimated quantity and explanation should be entered in an Estimate Work Book until the cross-sections are plotted and computed and an exact quantity is known. **The estimated quantity would then be marked void, but should remain legible for possible future reference.** See **Forms and Examples** in this section of the Manual.

ESTIMATED EARTHWORK QUANTITIES

All estimated earthwork quantities should be determined by acceptable methods and maintained in an Estimate Work Book with a clear explanation as to the method used for determining the quantities. Acceptable methods for estimating earthwork quantities are cross-sectioning, balance point computations, photogrammetry, and the XYZ average end area method. **The Contractor's load counts alone are not to be used to estimate earthwork quantities. However, they can be used as a check for earthwork quantities estimated by acceptable methods.**

DOCUMENTATION PROCEDURES

Notation should be made on the original source documentation to indicate quantities have been included for payment. This procedure should lessen the possibility of duplicate payment of quantities on subsequent estimates. An example of such notation would be a line drawn across the page with the estimate number and quantity shown below the line or a notation in the comments section including the estimate number, quantity paid, and initials. See **Forms and Examples** in this section of the Manual.

Subtotals which represent paid quantities should not be shown in the quantity column of documentation to avoid the possibility of including that quantity when calculating the page total. Using a different color pencil (any color except blue or red) to make paid quantity notations would also help to avoid this possibility.

PREPARATION OF PARTIAL PAY ESTIMATES

GENERAL

Partial pay estimates are prepared by the Resident Engineer's office at least once each month if sufficient work has been performed.

ESTIMATE PERIOD

The Resident Engineer establishes the date of the end of the estimate period to be either the 7th, 15th, 22nd, or last day of each month. The Resident Engineer will alternately assign these dates to each new project to ensure an equal distribution of estimate ending periods. The Resident Engineer **should not** deviate from the required alternate assignment of dates.

ALLOWABLE PREPARATION TIME

Preparation of partial pay estimates in a timely manner is very important and it is the Resident Engineer's responsibility to ensure that this work is given a high priority. The estimate for minor projects, such as resurfacing, safety, signing, lighting, landscaping, traffic signal installation, guardrail, pavement markings, bridge painting, bridge replacement, no plan projects, etc., should be processed **within two work days** after the end of the estimate period. The estimate for all other projects should be processed **within four work days** after the end of the estimate period.

Exception:
For major construction projects, those that the contract amount exceeds $25,000,000 the partial pay estimate should be processed **within five work days** after the end of the estimate period.

The estimate for completed work should always be processed for payment at the earliest practical time. **Estimates should not be delayed at the Contractor's request for late arrival of material payment documents, for inclusion of pay item work performed after the estimate ending period, such as a bridge deck pour, or for any other reason.** Payment for such items can be made on the next regular or mid-period partial payment, as applicable.

MID-PERIOD PARTIAL PAYMENTS

Article 109-4 of the Specifications provides that partial payments may be made twice each month if, in the judgment of the Engineer, the amount of work performed is sufficient to warrant such payment. This decision will be made by the Resident Engineer. As a general rule, if the Contractor requests an additional estimate and the amount due for half a month exceeds $150,000, the request should be approved. The amount due may consist partially or solely of material payment requests. However, estimates prepared in the middle of the regular estimate period should not include all items of work that have been performed, but only those items that represent a significant payment to the Contractor. No more than ten pay items would typically be included in such an estimate which should allow it to be processed within two work days after the mid-period date.

INSUFFICIENT WORK FOR PAYMENT

If, after the estimate is compiled and generated, the amount of work is less than $10,000 enter a comment to that effect in the Comment box, **but do not Forward the estimate. The Resident Engineer should notify the Contractor in writing that an estimate will not be processed for an estimate period when the amount of work performed during the period is less than $10,000 or when the amount of anticipated liquidated damages to be withheld exceeds the amount due on the estimate.** A copy of this notification should be forwarded to the State Construction Engineer and the Division Engineer.

CERTIFIED PAYROLLS

For those projects that contractually require the Contractor to submit certified payrolls, the partial pay estimate should not be processed until all required payrolls and/or supplemental payrolls have been received and checked by the Resident Engineer's office. The required payrolls for a particular estimate are those payrolls through the week ending no earlier than four weeks prior to the end of the partial pay period. **Seven days prior to the end of the estimate period, the Resident Engineer should review the submitted payrolls and advise the Contractor in writing of any needed payrolls or supplemental payrolls and/or any errors found in the payrolls. If the Resident Engineer lacks any required payroll document such that the estimate must be retained until their receipt, the Contractor should be notified immediately in writing.** Such notification should state why the estimate is being retained and what documents are necessary in order for the estimate to be processed. A copy of this notification should be sent to the State Construction Engineer and Division Engineer. Although the estimate must be retained until receipt of information from the Contractor, the estimate should still be entered into HiCAMS and generated, but not forwarded until the payrolls are in order. **Additional information regarding certified payrolls, the FHWA, and the Davis Bacon Act may be found in Division 1 of the Construction Manual under Article 107-22 *Wages and Conditions of Employment.***

Note: There are circumstances where an exception to this policy of retaining a partial pay estimate due to lack of required payroll documents can be made by the Division Engineer. See the following example.

Example:
Suppose that a Subcontractor were to default on his subcontract agreement with the prime Contractor and refuse to submit his remaining payrolls prior to termination. In such an instance it would be permissible to document the circumstances and post the estimate without the required payrolls. **The Division Engineer should always be consulted if there are compelling reasons to process an estimate but all required documents are not available from the Contractor.**

MATERIALS RECEIVED

The Resident Engineer should perform reviews of the material received reports to ensure the quantities of material received is in line with the quantities paid and that all appropriate documentation has been submitted for the materials in accordance with the Minimum Sampling

Guide. If any information is missing, the Resident Engineer should notify the contractor in writing of the specific information needed.

ESTIMATE PROCESSING PROCEDURES

Partial pay estimates are prepared by use of the Highway Construction and Materials System, or HiCAMS. For more information on using HiCAMS visit the HiCAMS User Guides on the web at https://connect.ncdot.gov/projects/construction/Pages/default.aspx

The Resident Engineer should obtain a printout from the HiCAMS Standard Reports list titled "Contract Line Item Quantity Report" prior to the end of the estimate period. This printout should serve as a worksheet on which current quantities calculated by the Resident Engineer's staff can be listed. This worksheet should be used as a guide when entering quantities and references in HiCAMS. See **Documentation of Partial Pay Estimates** in this section of the Manual.

Enter quantities and prepayments, review times, and generate the estimate following the procedures outlined in the User Guide. Any pertinent remarks pertaining to the estimate that are desired to show on the estimate cover page should be entered in the Remarks block of the Generate Estimates screen. These might include statements such as "Materials Estimate Only", "Estimate Submitted to Correct Quantities", or "Anticipated Liquidated Damages". **In addition, the contractual overrun should be computed and listed in the remarks block if the Percent Complete calculated by HiCAMS is 10 percent or more behind the % Complete by Progress Chart. The contractual overrun or underrun also should be computed and listed here if the percent of contract time elapsed exceeds the Percent Complete by more than 15 percent.** The contractual overrun is computed in accordance with Article 108-10(B)1 of the Specifications.

REVIEW ESTIMATE SCREEN

1. **% Complete by Progress Chart:** On the Review Estimates screen, General tab, enter % Complete by Progress Chart. This percent complete is obtained from the approved progress schedule. This is the percentage complete by a particular estimate date as anticipated by the Contractor. Do not include a percent symbol.
2. **Overrun/Underrun to Date:** This is the dollar amount of overrun or underrun of quantities through the estimate period. An overrun or underrun of an item can occur on any portion of the work and must be identified at the time it occurs. The overrun or underrun is a result of the comparison of the original estimated or plan quantity and the actual quantity required to perform the item of work. For instance, if the length of a line of storm drainage or width of a concrete drive varies from what is shown on the plans, the overrun or underrun must be shown at the time it occurs even though the contract item has not been completed and does not exceed the original or plan estimated quantity. The dollar amount of overrun or underrun must be kept current as the work progresses.

Examples:

128 feet of 24 inch R.C. pipe were placed during the estimate period. However, plan quantities show 136 feet of 24 inch R.C. pipe were required to complete this portion of the work. This would constitute an underrun on that date of 8 feet of 24 inch R.C. pipe.

The plan quantities include 10,000 cubic yards of borrow excavation through the balance points completed. However, according to the best estimate available, 15,000 cubic yards of borrow have been placed. This would constitute an overrun on that date of 5,000 cubic yards of borrow.

The amount of overrun or underrun to be placed in the **Overrun/Underrun to Date** is the **fiscal** overrun or underrun. The fiscal overrun or underrun is computed by combining overruns and underruns for all items of work performed to date. Supplemental agreement items included on the estimate also are used in the computation of the overrun or underrun. **The items listed in Article 108-10(B)1 of the Specifications are not excluded in the computation of this percentage.** The overrun or underrun figure must be entered in order for the system to accurately calculate the **Percent Complete** and the **Percent Retainage**.

3. **Open to Traffic Date:** If the project is new construction, or traffic is detoured off site, enter the date the project is expected to be, or has been, opened to traffic. If traffic is maintained through the project or detoured on site, leave blank.
4. **Estimated Completion Date:** This is the date that the Resident Engineer anticipates when all work required in the contract will be complete.

OPEN ISSUES

The Resident Engineer should review the Open Issues tab located on the Review Estimates window, to check for any "open issues" on contracts prior to sending a partial or final estimate to the Construction Unit. An open issue is an outstanding item related to contract administration and material acceptance that may require action by users. It is important that the Open Issues tab is reviewed because the outstanding item may result in the assessment of penalties and action should be taken in a timely manner as the penalty may have cost implications to the prime contractor, subcontractors or material suppliers. The Open Issues tab has a "Go To" Button to allow easy and direct navigation to the source of the issue, where the corrective action can be performed.

The following are procedures that should be implemented concerning the processing of pay reductions:

1. Review the Open Issues tab for each contract a minimum of one a month as part of the monthly estimating processing.
2. Take appropriate action on all open issues. Action should be timely enough that any penalty assessment can be included on the partial estimate covering the period in which the work was performed.
3. Notify the prime contractor in writing of any penalties that will be assessed on the partial pay estimate.
4. Notify the prime contractor in writing of any pending pay adjustments that cannot be completed prior to processing of the partial pay estimate due to investigations. Investigations should be completed within 30 days and a follow up letter sent providing formal disposition of the issue.

Additional information regarding the Open Issues Tab can be found in the User Guide "Review Estimates-Open Issues Tab." The User Guide can be accessed from the HiCAMS Help menu.

DAMAGES TAB (ANTICIPATED LIQUIDATED DAMAGES)

The Resident Engineer should determine each estimate period if liquidated damages are anticipated. If anticipated liquidated damages are not withheld during the life of the project, the Department may be forced to forego the opportunity to recoup monies due. Liquidated damages are assessable whenever work is not completed by the completion date or completion time specified in the contract. **Anticipated liquidated damages may be assessed when it is apparent that work will not be completed by the contract completion date or time.**

The Resident Engineer should review the contract completion date and any intermediate completion dates or times included in the contract to determine if anticipated liquidated damages should be withheld**. Extensions or anticipated extensions of contract time should be considered.** Additional contract time will only be allowed as specified in Article 108-10(B) of the Specifications. Pro rata time extensions are based on contractual overruns as computed in Article 108-10(B)1. A comment regarding the assessment of anticipated liquidated damages should be included in the *Estimate Contract Time Comment* window of any contract time for which damages are anticipated.

As there is no longer retainage on contracts, it is essential that the Resident Engineer make accurate assessments of anticipated liquidated damages on all estimates.

SUBMITTING PARTIAL PAY ESTIMATES

After the Review Estimates screen has been updated, the estimate should be forwarded to the Construction Unit for review. The Construction Unit will review the estimate the **same day or the following work day** after it is forwarded and deduct anticipated liquidated damages. After this review, the estimate will be forwarded by the Construction Unit to the Fiscal Section for payment. Until the estimate is paid by Fiscal, a request to stop payment can be made using the Interrupt button. If the processing can be stopped the status will become Pending CCU Approval and a request must be made to the Construction Unit to reject the estimate back to the Resident Engineer's Office for changes or corrections.

PAYMENT FOR MOBILIZATION

CONTRACTS OTHER THAN RESURFACING

Payment for mobilization will be made with the first and second partial pay estimates paid on the contract. Payment will be made at the rate of 50 percent of the lump sum price for mobilization on each of these partial pay estimates.

Exception:
If the amount bid for mobilization exceeds 5 percent of the total contract bid amount, 2-1/2 percent of the total contract amount bid will be paid on each of the first two partial pay estimates, if sufficient work has been performed. That portion of the mobilization item which exceeds 5 percent of the total contract bid amount will be paid on the last partial pay estimate.

Example:
Payment for mobilization would be made as follows on a $1,000,000 contract in which the amount bid for mobilization is $55,000:

Partial Pay Estimate Number 1 - $25,000
Partial Pay Estimate Number 2 - $25,000
Last Partial Pay Estimate - $5,000

RESURFACING CONTRACTS

Contracts that are composed primarily of resurfacing existing pavement will typically have an accelerated payment schedule for mobilization. Payment of 100 percent for the mobilization lump sum price will be made with the first partial pay estimate.

Exception:
If the amount bid for mobilization exceeds 5 percent of the total contract bid amount, 5 percent of the total contract bid amount should be paid on the first partial pay estimate. That portion of the mobilization item which exceeds 5 percent of the total contract bid amount should be paid on the last partial pay estimate.

Example:
Using the same figures as shown in the previous example, payment for mobilization would be made as follows:

Partial Pay Estimate Number 1 - $50,000
Last Partial Pay Estimate - $5,000

PAYMENT FOR STRUCTURAL STEEL

GENERAL

Reference is made to Article 440-10 of the Specifications and Section 4 of this Manual which limits partial payments for structural steel to 95 percent of the pro rated bid price for the steel involved when no field painting has been performed and there is no separate bid item for painting structural steel.

Currently, the majority of all bridges with steel beams or plate girders are being designed with Paint System 4 or unpainted steel. Field painting under Paint System 4 is limited to touch-up and an appearance coat on the outside of exterior beams.

After complete erection of structural steel for any structural unit, the following payment will be allowed on the monthly estimate:

1. Paint System 4 - 99.5 percent of the bid price.
2. Unpainted Steel - 100 percent of the bid price.

Typically, unless all structural steel on the project is erected within one estimate period, the above percentages will apply to the appropriate pro rata portion of the lump sum bid price. After field painting is satisfactorily completed, the retained percentage for Paint System 4 should be included in the next partial pay estimate.

All allowed percentages will be subject to retainage in accordance with the Specifications.

MATERIAL PAYMENTS FOR UNFABRICATED STRUCTURAL STEEL

Material payments for unfabricated structural steel will be allowed in accordance with Article 109-5 of the Specifications. Payment can be made in an amount that is up to 95 percent of the invoice price from the supplier including shipping, handling, and other cost directly attributable to the delivery of the unfabricated steel material. This payment will be allowed under the following conditions:

1. The Resident Engineer verifies that 95 percent of the invoice price, which represents that particular materials payment, is equal to or greater than $10,000 and the listed material on the invoice is identifiable to a specific structure. Invoices for material from more than one structure should be separated and assigned to each structure accordingly. Payment may include the cost of preparing shop drawings **after** the drawings have been approved.
2. The Resident Engineer should request the Materials & Tests Unit to inspect the material and verify the location and acceptability of the material. The material should be in a separate location from other material and should be positively identifiable to the respective project.
3. As a part of each request for an unfabricated materials payment, a distribution of material and the related costs identified to specific spans on each structure should be included. Receipt of this distribution should be required to allow compensation for fabricating cost on a per span basis.

This procedure as outlined above should be followed in order to convey a consistent and uniform method for making material payments for unfabricated structural steel.

When a previous unfabricated material payment exists on a specific structure, requests for fabricating cost will be allowed on a per span basis. Invoice costs for fabricated structural steel shall include and list previous payments for unfabricated material and associated costs; therefore, these previous unfabricated material costs will be deducted from the invoice cost of the fabricated structural steel prior to making the materials payment. **In no case shall the total material payment for the unfabricated and the fabricated costs exceed 95 percent of the total invoice cost of the fabricated structural steel.**

FEMA CERTIFICATION

In order to comply with NCDOT's Memorandum of Agreement with the Federal Emergency Management Agency (FEMA), the Department must provide certification that projects with structures crossing FEMA streams have been completed in accordance with the agreed project commitments. The Hydraulics Unit is responsible for insuring that the Department meets FEMA compliance. In order to assist the Hydraulics Unit in this task, the person administering the project must provide a certification that the project has been constructed in accordance with the approved plans. Any alignment or grade deviation from the original plans that could affect hydraulic conveyance must be approved by the Hydraulic engineer prior to construction. An approved deviation should be marked on the appropriate plan sheet prior to certification.

Projects which require certification will be identified in three ways. Examples of the three identifications are included at the end of this section.

1) There will be Hydraulics project commitment and a Division commitment in the green sheets of the contract.
2) A letter will be sent from the Hydraulics Unit to the project administrator at the beginning of the project outlining the requirements.
3) The appropriate sheets on the plans requiring certification will have a title block for the certification. On bridge and culvert projects, the general layout sheet will contain the title block. The roadway profile sheet corresponding to the culvert location will not have a title block but should be attached to the certification.

The certification should be made upon completion of the work in the floodplain. All approach fills, unclassified structure excavation, bents, and superstructure members should be complete prior to making the certification. The certification should be made on half-sized plan sheets and sent to the State Hydraulics Engineer. It is preferred that the certification be transmitted electronically (PDF); however, a hard-copy through the courier service is also acceptable.

GREEN-SHEETS FEMA CERTIFICATION COMMITMENT

HYDRAULICS PROJECT COMMITMENT REGARDING FEMA COORDINATION:

The Hydraulics Unit will coordinate with the NC Floodplain Mapping Program (FMP), to determine status of project with regard to applicability of NCDOT'S Memorandum of Agreement, or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR).

DIVISION COMMITMENT:

This project involves construction activities on or adjacent to FEMA-regulated stream(s). Therefore, the Division shall submit sealed as –built constructions plans to the Hydraulics Unit upon completion of project construction, certifying that the drainage structure(s) and roadway embankment that are located within the 100-year floodplain were built as shown in the construction plans, both horizontally and vertically.

SAMPLE AS-BUILT LETTER FROM HYDRAULICS

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

August 30, 2011

STATE PROJECT :	WBS 123456.3.3 (I-2345AB)
COUNTY	Narrow
DESCRIPTION	I-27 North of SR 2222 to North of NC 51

MEMORANDUM TO: I. M. Division, P. E.
Division Engineer

FROM: I. M Engineer, P. E.
Hydraulics Unit

SUBJECT: As-Built Plans

This is a request for as-built plans for the crossing of Madkin River once the project is complete. Please certify the plans (1/2 size Structure Design's general layout and Roadway's corresponding profile sheet), and send to me. This is requested to meet FEMA compliance.

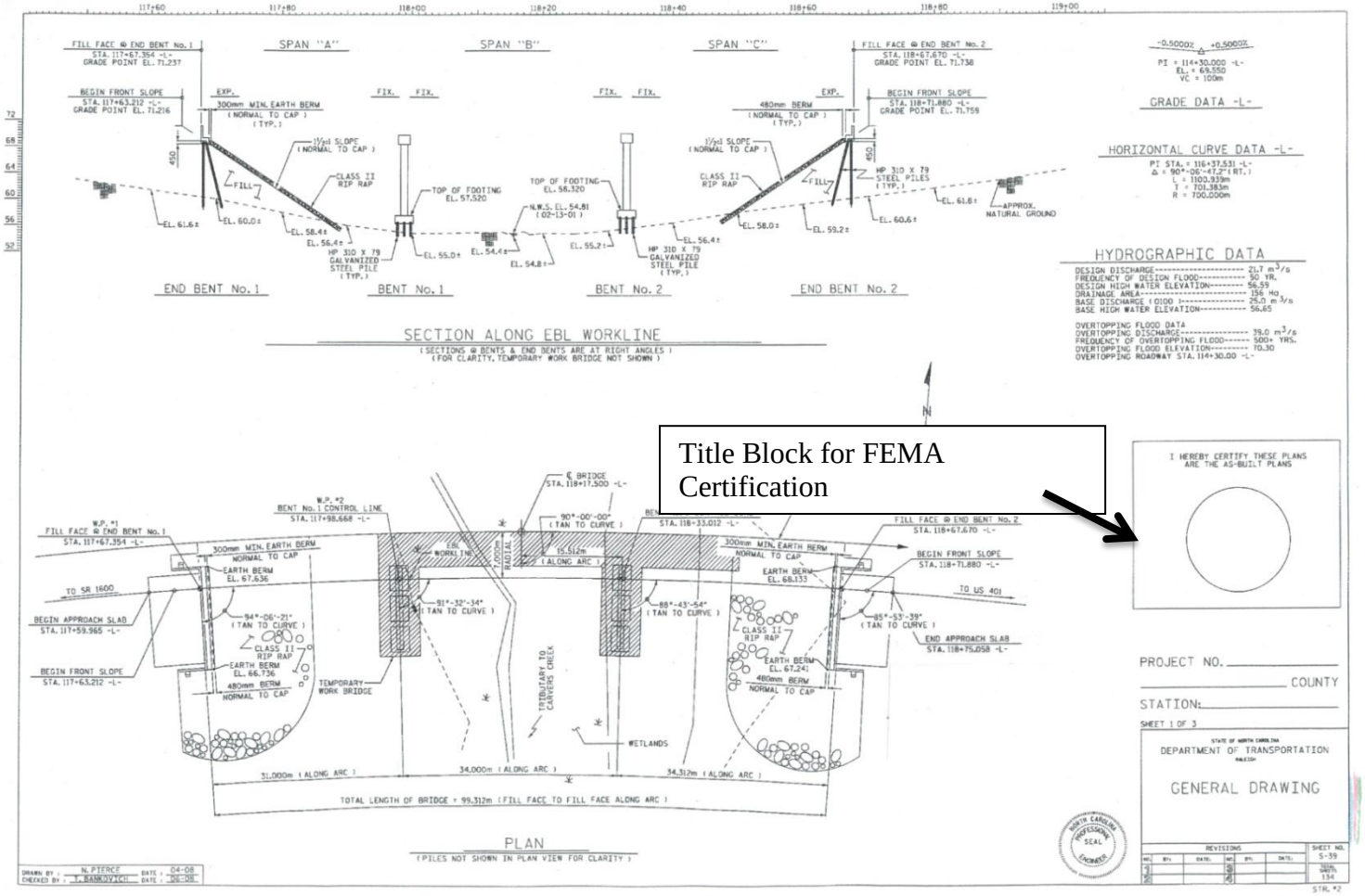
Should you have any questions, or desire additional information, please do not hesitate to call (919-707-6700).

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
HYDRAULIC UNIT
1590 MAIL SERVICE CENTER
RALEIGH NC 27699-1590

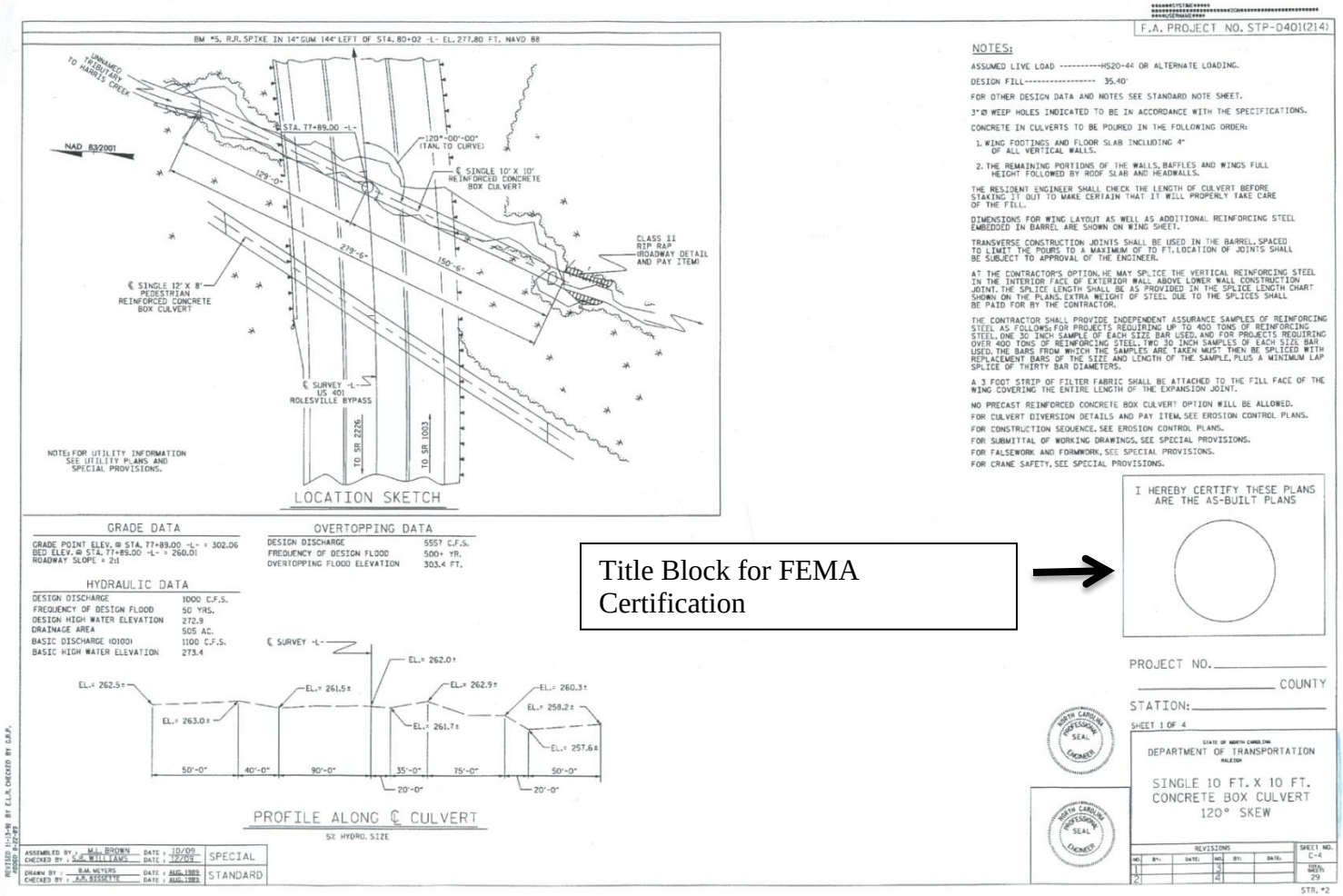
TELEPHONE: 919-707-6700
FAX: 919-733-8441
WEBSITE: WWW.NCDOT.ORG/DOH/

LOCATION:
CENTURY CENTER COMPLEX
BUILDING B
1020 BIRCH RIDGE DRIVE
RALEIGH NC

FEMA CERTIFICATION SAMPLE BRIDGE PLAN SHEET



FEMA CERTIFICATION SAMPLE CULVERT PLAN SHEET



Title Block for FEMA Certification

BILL OF SALE AND CONSENT OF SURETY

The following are samples of a Bill of Sale and Consent of Surety that are to be used as a reference for formatting such documents. These documents may vary in their format depending upon individual circumstances, and companies, or individuals involved.

The Bill of Sale and Consent of Surety are required in Article 109-5 of the Specifications prior to payment to the Contractor for materials delivered on the project.

BILL OF SALE - MATERIALS SAMPLE

State of North Carolina

County of _____*(County Name)*_____

Bill of Sale

KNOW ALL MEN BY THESE PRESENTS that ___*(Full Name of Prime Contractor)*___ party of the first part, a _____*(Corporation/Partnership/Sole Partnership)*_____, with its principle place of business located in ___*(City or Town, State or Province, Country)*_____, in consideration of the sum of ____*(Total Dollar Amount)*_____ dollars ($ _____*(Dollars)*_____), in hand paid by the North Carolina Department of Transportation, an agency of the State of North Carolina and party of the second part, the receipt of which is hereby acknowledged, does hereby grant, bargain, sell, transfer, and deliver unto the party of the second part, its successors and assigns, the following personal property:

(List Description of the Personal Property Here)

TO HAVE AND TO HOLD the above described personal property, the party of the second part, its successors and assigns to their own use forever.

The party of the first part covenants with the party of the second part that it is the lawful owner of the personal property described above; that the personal property is free from encumbrances; that it has the right to convey the personal property described above; and that it will warrant and defend the same against the lawful claims and demands of all persons whomsoever.

IN WITNESS THEREOF, the party of the first part does hereunto set its hand and affix its seal this _*(Number)*_ day of _____*(Month)*_____ , __*(Year)*__.

_____*(Contractor's Authorized Representative)*_____

(SEAL)

_____*(Full Name of Contractor)*_____

CONTRACTOR

_____*(Full Name of Notary Public)*_____

Sworn to and subscribed before me this the _*(Number)*_ day of _____*(Month)*_____, __*(Year)*__
.

My Commission Expires:

(MM) / *(DD)* / *(Year)*

CONSENT OF SURETY - MATERIALS SAMPLE

(Resident Engineer)
North Carolina Department of Transportation
Division of Highways
(Resident Engineer's Local Address)

Dear Sir :

The Contractor, *(Contractor's Full Name)*, for North Carolina Project Number: *(Project Number)*, in *(Name of County)* County, whose performance we have guaranteed by our Bond Number *(Bond Number)*, has requested that we give our consent to the payment, at your option, for the following material stockpiled for use on this project in accordance with the Article 109-5 of the Standard Specifications for Roads and Structures:

(Brief Description of Material)

We hereby give our consent to the payment of the materials estimate and agree that such action on your part will not operate to qualify nor invalidate the Bond.

Sincerely,

(Bond Company)

By: *(Bond Company Representative)*

Seal of Surety

PERMIT BOND

The Permit Bond is required in Article 105-15 of the Specifications. When the Department has placed or places load restrictions on potential haul roads adjacent to projects, the Contractor may exceed those load restrictions if he provides a Permit Bond and is issued a Special 'Light Traffic Roads' Permit from the Department, which are agreements that provide the following:

1. Maintenance of the road by the Contractor to the satisfaction of the Engineer during the haul period.
2. Repair by the Contractor of all damages to the road after the haul period is complete. This includes damages by all parties, not only the Contractor.
3. Furnishing of a bond by the Contractor in an appropriate amount determined by the Engineer.
4. Assumption of all costs for strengthening any bridges which may be necessary to carry weights up to the legal load limits.
5. Indemnification of the Department form all claims from third parties due to hauling, maintenance, lack of maintenance, repair, or lack of repair, etc.

The following is a sample copy of a Permit Bond and a Special 'Light Traffic Roads' Permit. Refer also to Section 105-15 of the Specifications and Section 1 of this Manual

PERMIT BOND-SAMPLE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION BOND NO._____

KNOW ALL MEN BY THESE PRESENT, THAT WE ___*Full Name of Prime Contractor*___ _____, hereinafter call the 'Principal', and _____*Corporation/Partnership/Sole Partnership*_____, a corporation incorporated under the laws of the State of _____*Name of State*_____, hereafter called the 'Surety', are held and firmly bound unto the Department of Transportation, an agency of the State of North Carolina, the sum of _____*Total Dollar Amount*_____ Dollars ($__Dollars_____), for the payment thereof said Principal and Surety bind themselves firmly by
these present.

WHEREAS, for a period of one year following the date of this Bond, the Principal, after application to and the issuance of a special permit by the Department of Transportation, will move overweight loads over the highways of North Carolina on routes specified in the special permit.

NOW, THEREFORE, the condition of this obligation is such, that if the Principal shall faithfully perform all of the conditions on which the said special permits are issued and shall indemnify and save harmless the Department of Transportation from all loss, cost, or damage which it may suffer by reason of the failure of the Principle so to do, then this obligation shall be void, otherwise to remain in full force and effect.

SIGNED, SEALED, AND DATED this ___*Number*___day of _____*Month*_____, 20_____*Year*_____.

_____

By ___*Full Name of Prime Contractor*___
PRINCIPAL

_____Full Name of_____
SURETY

By _____

_____*Surety's Authorized Representative*_____
LICENSED RESIDENT AGENT

Countersigned:

Attached power of attorney unless
executed by authorized corporate
official of surety

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
SPECIAL 'LIGHT TRAFFIC ROADS' PERMIT

Issued To _____ Date _____
Name of Company

_____
Address

_____
City

It is understood and agreed that the following stipulations will apply in connection with hauling over SR _____ from _____ to _____ in _____ County in conjunction with Project _____.

1. Prior to commencing your hauling operations, a representative of your company and the Department of Transportation will make a conditions survey of the pavement and structures on the segment(s) of road to be used, the results of which will be recorded by the Department of Transportation personnel. A copy of the results will be furnished to your company. Upon the completion of the initial inspection of the roads, the Department of Transportation will remove the 13,000 pound per axle load limit restriction signs from the roads in questions and load limits up to 20,000 pounds per axle will be permitted. The holding of the bond does in no way authorize equipment belonging to your company, or rented, or leased by your company, to exceed the statutory legal weight limit of 20,000 pound per axle for the respective vehicles in use. After removal of restrictions, any and all damage to pavement and structures will become the responsibility of your company for the duration of the hauling operations, and a reasonable length of time thereafter. Also, during your hauling operations, it will be the responsibility of your company to maintain the state of repair of the pavement and structures on the segment of roads in question in a condition satisfactory to the Department of Transportation Standard Specifications for Roads and Structures, dated July 1, 1978. Upon termination of hauling operations another joint inspection will be made of the pavement and structures, so as to determine the extent of your company's liability and your company will be notified.

2. In the event that your company refuses to keep the segment of roads in question in an acceptable state of repair during hauling operations, or upon suspension of hauling operations, if your company refuses to restore the road(s) to a conditions as good as it was prior to the beginning of hauling operations, the required work will be performed by the Department of Transportation forces and your company will be invoiced for the actual cost to repairs, including cost for supervision and overhead. In the event this situation arises, your bond will remain in effect until such time as your company's indebtedness to the Department of Transportation is satisfied.

_____
(Name of Company)

By_____
(Title)

NORTH CAOLINA DEPARMENT OF TRANSPORTION

By _____
Division Engineer

FINAL ESTIMATE ASSEMBLY PREPARATION PROCEDURES

GENERAL

Documentation for the preparation of the final estimate assembly should begin when the construction of a project begins. A set of plans should be designated for recording construction changes and completion of items of work. Plan changes should be kept up to date so the information can be quickly transferred to the prints included in the final estimate assembly. Ticket and pay record quantities should be computed and recorded in HiCAMS when partial payments are made. As soon as practical, the ticket and pay records should be checked and verified in HiCAMS. No further action is required for such records prior to submission of the final estimate unless changes are made in the records. The final estimate should be prepared in accordance with the "Preparation and Checking" procedure below.

The Division Engineer should perform a quality assurance check of the pay quantities and As-constructed Plans. After the quality assurance check by the Division Engineer, he shall notify the Contractor in writing of the final quantities and apparent liquidated damages. The quality assurance check should be performed as specified in "Preparation and Checking by the Division Engineer" procedure below.

For the purpose of establishing the schedule for preparation and submission of the final estimate assembly, contracts are be broken into two classes as follows:

a. Major contracts: major grading; grading and structure; paving, widening, and rehabilitation; and turnkey projects. These contracts typically have a total cost of more than $10 million.
b. Minor contracts: all other contracts

Schedule for Final Estimates after Contract Acceptance

	Major Contracts	Minor Contracts
Preparation and checking by Resident Engineer	45 days	30 days
Quality assurance check by Division Engineer	15 days	15 days

PREPARATION AND CHECKING

BY THE RESIDENT ENGINEER

The Resident Engineer should prioritize preparation of the various portions of the final estimate, beginning with those portions that will require the most time to complete. For example, preparation of As-Constructed Plans and calculation of excavation quantities (including submission of data to the Photogrammetry Unit) frequently require considerable time to complete. These items should be a high priority and performed as soon as practical. The Resident Engineer should record and compute pay quantities in accordance with the procedures contained in the "Records and Reports" section of the Construction Manual. The Resident Engineer should also make a 100% check of every calculation of quantities for which payment is included on the final estimate. Each calculation check should be made as soon as practical and by someone other than the person making the original calculation. After the calculations have been checked, the

quantity should be verified in HiCAMS. Detailed instructions on checking individual Line Items are included in the section entitled "Final Estimate Checking Procedures".

After the final inspection has been made and the project accepted, the Acceptance Date should be entered on the Completion Tab of the Review Contract Details window of HiCAMS. This action is the trigger which causes the project to be removed from the online "Construction Progress Report". Then, the Resident Engineer should prepare the final estimate assembly.

After the Final Quantities have been updated in HiCAMS, the following areas should be reviewed and completed.

1. Verify the Final Quantities: This can be done throughout the life of the project after the source document has been checked, but must be complete before submission of the Final Estimate.
2. Material Prepayment Balances: All Material Prepayment balances on the Prepayments Tab of Review Estimates should be zero. If balances remain, enter the Previous Quantity amount in the Actual Reduction field. You do not need to generate the estimate for these reductions to take effect.
3. Price Adjustment Recommendations: All PARs must be closed prior to forwarding the estimate. Go to the Review Pay Adjustment Recommendations window and check the Status column. Any PAR whose Status is not Closed, needs to be closed now. If a QA-2B Density PAR is not closed, contact the Construction Unit for assistance.
4. Failing Samples: Review the View Pending Contract Samples listing for any Project Acceptance Samples which have a Sample Status of Does Not Meet Specs. These samples require a disposition quantity and a Sample Disposition Comment. Penalties can also be applied by clicking the PAR button on the Sample.
5. Field Inspection Reports: Field Inspection reports for Concrete Pavement, Corrugated Metal Pipe, and Guardrail which have failing Materials and no Disposition Comment must have a comment entered.
6. Failing Densities: All Failing Asphalt Densities should have a Pay Adjustment Recommendation and Pay Factor associated with them. Failing Densities are identified on the Standard Report called Density Asphalt QC Lots.

When the calculation of all quantities has been checked and verified in HiCAMS, the estimate should be reviewed to determine the current amount of the estimate. A special estimate should be processed when there is a significant current amount, whether an increase or a decrease. The Resident Engineer should use his judgment in determining when another partial estimate should be processed. **A partial estimate should normally be processed when the current amount of the final estimate is more than $5,000, a change is warranted in the amount of liquidated damages withheld, or processing of the final estimate may be delayed**. To process another partial estimate, change the estimate type in HiCAMS to partial and generate the estimate. When another partial estimate is processed, the Resident Engineer must generate the final estimate after the partial estimate is paid. The Final Estimate Assembly should be prepared according to the procedure below. The final estimate in HiCAMS and the Final Estimate Assembly should be forwarded to the Division Engineer.

The Resident Engineer is also responsible for completing the DBE/MB/WB Subcontract Commitment Payment Summary for each contract that has DBE/MB/WB goals. This is used to summarize the actual use of DBE/MB/WB participation as compared to the commitments stated in the contract by the prime contractor. The form is accessible on the Construction Unit website under Construction Resources, Construction Forms. Additional information regarding the DBE/MB/WB Subcontract Summary is included in this manual later in the Final Estimate section.

BY THE DIVISION ENGINEER

The Division Engineer should review the final estimate assembly for completeness and procedural compliance. He should also perform a quality assurance check of the pay quantities and As-constructed Plans. This check may be made by another Resident Engineer or at the Division office and should have all check marks identified by **blue pencil or blue ink**. The initials of the individual making the check marks should be placed on the title sheet and on the personnel page of Pay Record Book Number 1. The quality assurance check should consist of **not less than 25%** of the entire estimate. When the quality assurance check demonstrates that the final estimate assembly is incomplete, was not prepared in accordance with procedures, or the frequency of errors is unacceptable; the estimate should be returned to the Resident Engineer for correction or a 100% check made of the final estimate assembly.

After the quality assurance check by the Division Engineer, he shall send the Contractor the **Notification of Final Quantities** letter; which includes the final quantities and apparent liquidated damages as specified in Article 109-9 of the Specifications. The letter shall also request that the Contractor submit the documents required by Article 109-10 for payment of the final estimate to the State Construction Engineer. **Note: Form FHWA-47 is no longer required on any project.** The Contractor should be informed that the final estimate would be held in the Division office for review until a specified date. The period allowed for review should be approximately two weeks for minor contracts and three weeks for major contracts after the date of the letter.

The Contractor should be requested to advise in writing as to whether or not he desires to review the estimate. The final estimate assembly should be submitted to the Construction Unit immediately after the Contractor advises he does not desire to review the final estimate or immediately after the specified date unless the Contractor requests in writing that the final estimate be held beyond the specified date for his review. The Division Engineer should limit the time the final estimate is retained for the Contractor's review to no more than 30 days unless a meeting has been scheduled with the Contractor to review the final quantities.

A Project Closeout Conference may be held in accordance with the procedures below after the quality assurance check is complete and the Contractor has had sufficient time to review the final quantities and identify the claim issues.

Following the closeout conference or review of the final quantities by the Contractor, necessary corrections should be made to the final estimate assembly and updated in HiCAMS. The Division Engineer should sign the necessary documents, and the final estimate assembly should be transmitted to the office of the State Construction Engineer immediately after the QA check is complete and after:

1. The contractor advises he does not desire to review the final estimate

OR

2. The date specified for the Contractor to review the final estimate has passed without reply from the Contractor

OR

3. The Contractor reviews the final estimate or a closeout conference is held.

The estimate should be forwarded to the Construction Unit in HiCAMS.

BY THE CONSTRUCTION UNIT

The Construction Unit will perform a procedural audit of the final estimate submitted by the Division Engineer. The Final Estimate quantities will not change if errors are found during the audit, but the Division Engineer will be notified in writing of the errors. The Construction Unit will also review the As-Constructed Plans and perform an audit of DBE/MB/WB payment reporting and utilization.

THE FINAL ESTIMATE ASSEMBLY

The Final Estimate Assembly consists of the following items:

- Transmittal Letter
- Contract Time Extension Report
- Liquidated Damages Report
- Contractual Overrun Calculations Sheets
- As Constructed Plans and Cross-Sections (if applicable)
- Supporting Documents
- DBE/MB/WB Subcontract Commitment Summary

TRANSMITTAL LETTER

A Transmittal Letter should be submitted for all final estimate assemblies and should be distributed as follows:

Original - State Construction Engineer
File Copy - Retained by Division Engineer
Copy - Resident Engineer

The completion date shown in the letter must agree with the completion date shown on all correspondence and that shown in the Project Diary.

The portion of the letter that pertains to an overrun in the contract time must be in detail including intermediate completion dates. If the project was not completed on or before the original or revised completion date, the percent of contractual overrun/underrun must be calculated. The percent overrun/underrun is computed in accordance with Article 108-10(B)1 of the Specifications, excluding Supplemental Agreements that extend the contract time and other items listed therein. (See details of calculating the contractual overrun below.)

For Ticket Books, abbreviation of names is acceptable and contract line item numbers should be used rather that line item descriptions.

CONTRACT TIME EXTENSION REPORT

The Contract Time Extension Report is printed from Standard Reports in HiCAMS.

LIQUIDATED DAMAGES REPORT

The Liquidated Damages report is printed from the HiCAMS Review Estimates window. Change the Estimate Report Type to "Estimate Report for Contractors" and print the page entitled "Assessment of Liquidated Damages".

CONTRACTUAL OVERRUN CALCULATION SHEETS

Copies of any correspondence or other documentation granting time are to be attached to the Final Estimate Transmittal Letter, and the time extensions entered in HiCAMS. Although not an extension of contract time, also attach copies of the documentation for any waiver of liquidated damages due to seasonal limitations.

If the project was not completed on or before the original or revised completion date, the percent of contractual overrun/underrun and any pro-rata time extension must be calculated. The percent overrun/underrun is calculated in accordance with Article 108-10(B)1 of the Specifications, excluding Supplemental Agreements that extend the contract time and other items listed therein. Calculations for the percent contractual overrun/underrun and pro-rata time should be attached to the Final Estimate Transmittal Letter. The Contractual Overrun figure calculated should be entered in HiCAMS on the Review Estimates Window Completion Tab in the field labeled Adjusted Overrun/Underrun Amount. It may or may not agree with the HiCAMS Contractual Overrun/Underrun Amount. If a pro-rata time extension is allowed, it should be entered in HiCAMS on the Review Estimates Window Damages Tab for the appropriate Contract Time.

If a Supplemental Agreement that extends the contract time overruns in time, it is treated as a separate contract. The dollar amount of overrun applicable to the Supplemental Agreement is applied to the original estimated amount of the Supplemental Agreement and additional time is allowed in accordance with Article 108-10(B)2 of the Specifications. A breakdown of the original and final quantities involved in the work should be prepared for each Supplemental Agreement that grants time. It must show the monetary value for the affected pay items. These breakdowns and the calculations for the percent contractual overrun/underrun and any pro-rata time should be attached to the Final Estimate Transmittal Letter. The pro rata time extensions for the Supplemental Agreements should be aggregated with any other pro rata for that Contract Time and entered in the pro rata field on the Damages Tab in the Review Estimates window. *In the event that the Supplemental Agreement was intended to grant time to more than one Contract Time and that time extension was omitted, a Department Initiated Claim should be entered extending the remaining Contract Time(s).*

Should a project have one or more intermediate contract times, each is to be treated on the same basis as contract time when calculating pro rata time extensions, as indicated in Article 108-10(A) of the Specifications. All intermediate contract times should be reviewed and the Work Completion Dates or times entered in HiCAMS on the Dates and Damages tab of the Contract Times window. If the intermediate contract time overruns in time, the percent of contractual overrun/underrun and any pro-rata time extension must be calculated. A breakdown of the original and final quantities involved in the work should be prepared for each intermediate contract time that overruns in time. It must show the monetary value for the affected pay items. These breakdowns and the calculations for the percent contractual overrun/underrun and any pro-rata time should be

attached to the Final Estimate Transmittal Letter. Any time extension should be entered in HiCAMS on the Damages Tab of the Review Estimates window.

After all authorized time extensions have been entered in HiCAMS, a copy of the Contract Time Extension Report should be printed out and attached to the Final Estimate Transmittal Form.

AS-CONSTRUCTED PLANS AND CROSS-SECTIONS

As construction of the project nears completion, the Resident Engineer should request **full size** plans for the production of the As-Constructed Plans. The request (email is acceptable) should be to the Contract Standards and Development Unit, Records and Documentation Management Officer, and should specify which print sets are needed, such as roadway, structure, utilities, etc. **The As-Constructed Plans will be scanned and stored electronically so it is essential that all entries are neat and legible**.
NOTE: As-Constructed Plans are not required for projects such as resurfacing and demolition.

On the right side of the cover sheet, the Division Right-of-Way Agent should sign the following certification: "Final right-of-way has been checked."

The following are requirements for various sheets of the As-Constructed Plans. The sheets are listed in the order they should appear in the As-Constructed Plans:

1. **Cover Sheet:** This should be Sheet Number 1 of this portion of the assembly. Page numbers should be shown in the upper right hand corner. Page numbers should be numbered consecutively for all sheets thereafter. The number of total sheets should be shown on each page.
2. **Original Plan Title Sheet:** This is the original plan title sheet that was included as part of the project plans. Any changes in the original equalities or project lengths should be shown in their appropriate locations.
3. **Typical Sections:** All typical sections that were used in the construction of the project should be included.
4. **General Note Sheet:** If a revised standard is used in the construction of any item, this revision should be indicated on this sheet.
5. **Summary Sheets:** The **List of Pipe, Endwalls, Etc**. summary sheet should be included in the As-Constructed Plans, **but the quantities should not be revised and it is not necessary to line through the quantities. However, a note should be prominently placed stating "For as-constructed lengths, see plan sheets".** Other summary sheets, such as guardrail, earthwork, etc., should not be included in the As-Constructed Plans.
6. **Plan and Profile Sheets:** The plan and profile sheet should show the following information:
   A. Location of all right-of-way markers. These markers should be consecutively numbered starting at the beginning of the project. These same numbers should be recorded in the pay record book.
   B. The final location of all control of access lines, if applicable, should be shown. **These may or may not coincide with the right-of-way lines**.
   C. The location of all pipe lines. **The length laid for all pipe lines except subdrain and shoulder drain should be shown on the plan sheets**.
   D. The location of all subdrain and shoulder drain lines should be shown. Information should include station, line, and left, or right. This information can

be drawn on each roadway plan sheet, drawn on a supplemental plan sheet and placed immediately after the roadway plan sheet, or summarized in a tabular format on each roadway plan sheet.

E. Any changes in the right-of-way limits.

F. If a revised standard is used for any item during construction, this revised standard should be indicated on the plan sheet in the As-Constructed Plans. This should be accomplished by neatly lining through with one inked line the standard indicated on the original plans and placing the corrected information above or beside the original information.

G. The location of all fencing that has been placed.

H. Where possible, show sketches of all borrow and waste pits.

I. Where applicable, note those existing roads that are to be abandoned, obliterated, or left in place and retained on the State Roads System.

J. All channel changes.

K. All changes in the horizontal or vertical alignment. These changes should be shown in black ink. If the revision is such that it cannot be shown on the existing plan sheet, then a new plan sheet should be drawn. This sheet should show all appropriate topography, such as driveways, sidewalks, etc., right-of-way and property lines, curve data, and bearings.

7. **Cross-Section Sheets:** Original roadway plan cross-sections should not be included in the As-Constructed Plans. Cross-sections utilized for computation of quantities should be prepared as follows:

   A. A black pencil should be used to denote the original ground and a red pencil to denote final subgrade and side slopes on all cross-sections.

   B. The names of the individuals who computed and checked the cross-sections should be shown in the lower right hand corner of the last sheet of cross-sections. If several different people did this work, each should identify his own work.

   C. Cross-sections should normally be plotted to a minimum scale of one-inch equals five feet horizontal and vertical. However, if necessary, the scale may be adjusted.

   D. Original and final cross-sections of fill areas are to be shown and computed only when there is waste to be deducted.

   E. All cross-sections should be plotted with the stations running up the sheet.

   F. Any material removed below subgrade should be clearly identified on the cross-sections in blue pencil or blue ink.

   G. The pay record book(s) in which the cross-sections were recorded along with the page numbers where the information can be found should be shown on the first cross-section sheet.

8. **As-Constructed Plan Sheets for Structures:** These plans should be revised in so far as dimensions and elevations are concerned. **Where corrections are made, strike through - but leave legible - the original elevations and dimensions, and insert the corrected information over or beside the original information**.

   A. All necessary sketches and computations to document the final quantities should be shown in the pay record book except the actual plotting of rod readings and the area computations of the cross-sections. If used, this information is to be shown on supplementary sheets in the As-Constructed Plans. The initials of the individuals plotting and checking the cross-sections and computing the areas as well as the date that the work was done should be shown.

B. Where extra depth concrete is involved with excavation cross-sections, they should be handled in the same manner. See **Specific Instructions Pertaining to All Entries Made in Pay Record Books and Estimate Work Books - Structure Items: Excavation** and **Class A Concrete** in this section of the Manual.

C. Piles should be numbered and pay lengths shown for each component of the structure

D. All corrections made on the As-Constructed Plans should be made with black ink.

9. **Computation Sheets for Items not Computed in Pay Record Books:** It is the intent of the procedures established by this section of the Manual that all computations concerning pay items should be made in the pay record book in which the measurements were recorded. It is recognized that there will be instances where this is not possible. In these instances the following procedures should be used:

A. Sheets should be included in this portion of the assembly that contain the necessary sketches and computations.

B. The computations should be clearly labeled and the pay record book number(s) and page number(s) where the original measurements were recorded should be shown.

The initials of the individual who made the computations and the individual who checked them should be shown on the computation sheets.

10. Signing plans should be included in the As-Constructed plans.

SUPPORTING DOCUMENTS

PAY RECORD BOOKS

All pay record books should be submitted as part of the final estimate assembly. The contract number should be shown on the cover of each book. The total number of pay record books should be shown on the cover of each book, such as Number 1 of 12, Number 2 of 12, etc. There should be only one series of book numbers for a given contract. Do not create a separate series for structures. Do not summarize pay record books, but do total each page.

TICKET BOOKS

Tickets issued for payment by weight in accordance with the Construction Manual should be securely bound prior to transmission of the assembly. There should be one numerical sequence of ticket book numbers for each line item.

COMPUTER EARTHWORK COMPUTATION SHEETS

When the quantity of an item is determined by the use of the Photogrammetry Unit, the original printed sheets that are transmitted to the Resident Engineer should be checked by the Resident Engineer and included as a part of the assembly.

The visual display of earthwork computations furnished from the Photogrammetry Unit can be discarded at the discretion of the Resident Engineer.

EARTHWORK COMUPATION SHEETS

If any quantities are manually calculated, Earthwork Computation Sheets **(**Form 220) should be used for the computation of unclassified excavation. Earthwork Computation Sheets **(**Form 230) should be used for the computation of borrow

excavation. The first sheet of the computation sheets should be a summary of sources of borrow or unclassified excavation and their individual totals as well as the grand total for the item for individual lines, such as L, L-1, Y-1, etc. The sheets in which the computations for the individual line or source totals should be shown.

COMPUTING IRREGULAR SURFACES

The Roadway Design Manual prepared by the Roadway Design Unit contains tables that can be used for computing the area of irregular surfaces.

SUPPLEMENTAL AGREEMENTS, COMPLETION DATE EXTENSIONS, AND RELEASE OF CLAIM

A copy of correspondence authorizing an extension of the completion date(s), executed Releases of Claim, all active claim resolutions, and all signed, original Supplemental Agreements not previously submitted to the Central Construction Unit should be submitted with the final estimate assembly. Supplemental Agreements which grant time require special treatment. This topic is addressed further in the section "Contractual Overrun Calculation Sheets"

PROJECT DIARIES

Any important dates or entries should be shown in an index on the inside cover of the project diary. These dates and notes would refer to entries in the project diary that would aid in the review of the project concerning liquidated damages, adjustments in compensation, or aid in the checking of the final estimate. All project diary books should be numbered consecutively in chronological order. The total number of project diary books should be shown on the cover of each book, such as Number 1 of 7, Number 2 of 7 , etc.

DBE/MB/WB SUBCONTRACT COMMITMENT SUMMARY

The information pertinent for this summary is subcontractor payments, and replacements of any committed DBE/MB/WB subcontractor. The summary form should only be completed for subcontractors who were submitted as committed DBE/MB/WB subcontractors to fulfill the goals in the contract. When completing this form, it is suggested that the Resident Engineer use the following items as deemed appropriate.

1. Contract (Project Special Provisions).
2. DBE/ MB/WB Replacement documentation.
3. NCDOT DBE Payment Tracking System located on NCDOT webpage.
4. DBE Payment Report in HiCAMS under Standard Reports.

A copy of this form is located in the **Forms and Examples section of Records and Reports.** The form is accessible on the Construction Unit website under Construction Resources, Construction Forms.

STATUS OF FINAL ESTIMATE

The Status of Final Estimate Report is a quarterly report compiled by the Construction Unit and distributed to the Division Engineers, with copies to the Chief Engineer-Operations, Director of Field Support, Division Construction Engineers and the Roadway/Bridge Construction Engineers. This report lists all the contracts whose final estimate submission to the Construction Unit is overdue in accordance with the schedule for final estimates located in the Final Estimates Assembly Preparation Procedures section above. The report also denotes contracts that have appeared on the list more than one time, with an asterisk **(*)**. If a contract appears on the Status of Final Estimates report more than once, the Division Engineer is required to submit a letter to the Chief Engineer detailing his plan to complete the final estimate.

FINAL ESTIMATE CHECKING PROCEDURES

1. **Lump Sum Items**
   A. Contracts including only one project number:
      (i) Verify the Resident Engineer's, Assistant Resident Engineer's, or the responsible Inspector's certification of item completion in the pay record book.
      (ii) Check amount shown on final estimate to be the same as contract bid price unless revised by Supplemental Agreement.
   B. Contracts with two or more work order numbers:
      (i) Verify the Resident Engineer's, Assistant Resident Engineer's, or the responsible Inspector's certification of item completion in the pay record book.
      (ii) Check amount shown on final estimate to be same as contract bid price unless revised by Supplemental Agreement.
   C. Check work order amounts to determine if percentage of total amount is correct in accordance with procedure for **Lump Sum Items** located elsewhere in this section of the Manual.
2. **Supplemental Clearing and Grubbing**
   A. Visual check to verify that measurements do not overlap.
   B. Visual check of dimensions from sketch to computation sheet.
   C. Check all computations and totals.
3. **Excavation Items (Roadway)**
   A. Quantities computed by plotted cross-sections:
      (i) Visual check for reasonableness of plotting and stationing including equalities. Questionable shots or stationing checked against plans and/or pay record book. Verify that all interpolated tie-shots are entered in final cross-section book.
      (ii) Every cross-section checked including plotting.
      (iii) Visual check made of each area from cross-section sheet to computation sheet.
      (iv) All computations and totals checked.
      (v) Verify that the earthwork summary sheet total is added to quantities computed by other methods.
   B. Quantities computed by X, Y, Z Method:
      (i) All computations and totals checked.

(ii) Verify that this total is added to quantities computed by other methods.

C. Quantities computed electronically, such as computer, calculator, etc.:
   (i) Printout checked visually for stationing, equalities, and reasonableness with plan data.
   (ii) Check visual display of cross-sections for errors.
   (iii) Verify that subtotals are computed and added to quantities computed by other methods.

D. Quantities computed by truck volume:
   (i) Check computations for each truck volume including shrinkage.
   (ii) Visual verification of each entry to computed volume.
   (iii) Verify each page totaled and the pay record book summarized.
   (iv) Check all totals.
   (v) Verify that the total is added to quantities computed by other methods.

4. **Excavation Items (Structure)**
   A. Determine that original and final levels have been recorded in the pay record book. Original computed levels from the theoretical roadway section must be recorded in the pay record book and so noted.
   B. Verify that cross-section sheets are included in the As-Constructed Plans and the readings from the pay record book accurately plotted thereon.
   C. Verify that the cross-sectional areas have been accurately computed.
   D. Verify that accurate volumetric computations of the above areas have been made in the structure pay record book or on computation sheets.
   E. Verify that a layout showing where the various cross-sections were taken has been furnished.
5. **Subdrain Excavation (Computed by length, width, and depth)**
   A. Verify the length is in agreement with length of pipe, wyes, tees, and elbows. If it is not, verify the explanation in the pay record book.
   B. Verify width for compliance with plan detail.
   C. Check all computations and totals.
6. **Removal of Existing Pavement**
   A. Verify basis of payment in the Specifications.
   B. Verify pay record book(s) against plans.
   C. Check all computations and totals.
   D. Verify to see if the volume of the pavement has been deducted from any excavation items, where appropriate.
7. **ABC (Including subgrade stabilization and CTBC)**
   A. By truck weight:
      (i) **Completely** check all books.
      (ii) Check each days total from books to daily summary sheet.
   B. Unit price reduction:
      (i) Verify calculation for price reduction.
      (ii) Verify correct percent is entered in the Review Pay Adjustment Recommendation Details window.
      (iii) Verify that the Pay Factor has been created and the payment is made at the proper reduced price.
8. **Proof Rolling**
   A. Verify pay record book(s) entries against plans.
   B. Check all time calculations including totals.

9. **Portland Cement (CTBC)**
   A. Check contract for method of measurement.
   B. Check all calculations from percent cement content.
10. **Asphalt Binder**
   A. Verify all price adjustments have been applied to the proper line item based on the JMF of the Ticket Book.
11. **AST**
   A. Verify plan width dimensions against those used in computations.
   B. Check all computations including totals.
12. **PCCP, Concrete Rip Rap, Plain Rip Rap, Shoulder Gutter, Paved Ditch, Concrete Sidewalk, Concrete Driveway, Concrete Pavement, Concrete Islands (Monolithic)**
   A. Verify dimensions shown in pay record book sketch to computations.
   B. Check all computations and totals.
   C. Concrete pavement
      (i) - Verify that Field Inspection Reports have been entered.
      (ii) Review the Recommend Pay Factor tab of the Field Inspection reports for any Lots that have a Recommended Pay factor of less than 100%, and verify that a Disposition has been selected.
      (iii) For those Lots having a status of Does Not Meet Specs – Pay Adjustment, confirm that a PAR has been created and the Pay Factor applied.
13. **Minor Structures - Retaining Walls, Concrete Steps and Collars, Endwalls, Catch Basins, Junction Boxes, Drop Inlets, Manholes, Spring Boxes, and Dry Rubble Masonry**
   A. Verify dimensions from pay record book sketch to computations or verify take-off of standard sheet quantity.
   B. Check all computations including totals.
   C. Verify pay record book(s) against As-Constructed Plans and determine if all pipe deductions for pipe entering box have been made.
   D. Verify minor drainage structures to ensure that pay limits established by the Specifications have not been exceeded for depth, etc.
14. **Pipe Culvert Items (All including flared end sections, tees, and elbows)**
   A. Verify location and lengths of pipe from pay record book(s) to plan and profile notes.
   B. Check all totals.
15. **Subdrain and Shoulder Drain Fine Aggregate**
   A. Check in same manner as listed in **Subdrain Excavation** (see Item Number 5) with additional check made for deductions of pipe and fittings.
   B. Verify depth to ensure pay limits established by the Specifications have not been exceeded.
   C. Verify that all information has been placed on plan sheets or supplemental sheets in the As-Constructed Plans.
16. **Reinforcing Steel**
   A. Verify weight listed in pay record book(s) against weights included in the plans.
   B. Check all totals.

17. **Grates, Frames and Hoods, Frames and Covers, Grates and Frames**
   A. Verify these items similar to **Minor Structures** (see Item Number 13).
   B. Check all totals.

18. **Adjustment of Manholes, Catch Basins, Valve Boxes and Meter Boxes**
    A. Verify pay record book(s) against plans for locations.
    B. Check all totals.
    C. Verify that Specification limits are not exceeded. If so, verify that this is paid as new construction.
19. **Combination Curb and Gutter, Concrete Noses (Monolithic), Steel Beam Guard Rail, Steel Beam Guard Rail - Shop Curved, Steel Beam Guard Rail - Doubled Faced, Steel Beam Guard Rail Terminal Sections, Steel Beam Guard Rail Nose Sections, Fence, Fence Post, Fence Reset, Additional Barbed Wire, Gates, Curb (Concrete or Bituminous), 8" C.S. Pipe and Elbows, Galvanized Metal Funnels**
    A. Each of the above should be checked in approximately the same manner. Verify station location in pay record book(s) to the plans.
    B. Verify extra length fence posts conversion in accordance with Specifications.
    C. Check quantity totals.
20. **Right-of-Way Markers**
    A. Verify each entry for each marker in the pay record book(s) to the plans, where the markers are numbered in numerical sequence.
    B. Verify the total number of markers in the pay record book(s). This should check the highest numbered marker on the plan sheets less deleted markers.
21. **Seeding and Mulching**
    A. Verify that measurements are recorded for all areas along the project.
    B. Verify the locations of all borrow and waste areas to see if payment for erosion control is due.
    C. Check all computations and total.
    D. Verify appropriate Incentives have been applied per Contract requirements.
22. **Erosion Control Matting**
    A. Check computations in the pay record book(s). Verify that the 4 inch (100 millimeter) overlap on double widths of fabric is deducted from the total double width of the fabric such that when two 4 feet (1.2 meters) widths are installed, the pay width is 7.7 feet (2.3 meters), not 8.0 feet (2.4 meters).
    B. Check the computations and the total.
23. **Fertilizer Top Dressing**
    A. Bulk Form:
        (i) Check all computations and totals.
        (ii) Verify this total against the invoices to see that invoice is equal to or greater than the amount applied for pay.
    B. Bag Form:
        (i) Check all computations and totals.
        (ii) Verify that the total number of bags multiplied by the weight per bag is equal to or greater than the amount applied for pay.
24. **Utility Items and Railroad Items**
    A. Verify the Special Provisions for the method of payment for each item.
    B. Verify the utility plans and railroad drawings against the pay record book(s).
    C. Check the total for each item using the procedures of similar roadway items.
25. **Planting**
    A. Verify pay record book(s) against plans.
    B. Check all computations and totals.

26. **Presplitting Rock**
    A. Verify the requirements in the Special Provisions for the pay area.
    B. Check all computations, deductions made and totals.
27. **Type A, B, C, D, E, and F Signs**
    A. Verify the signs from the plans against the pay record book(s) to ensure the inclusion of all proposed signs and any added signs.
    B. Verify sign numbers from the pay record book(s) to the signing chart in the plans.
    C. Verify the dimensions from the chart, the number of signs, and the sign area.
    D. Check all computations and totals.
28. **Beam and Pipe Sign Supports**
    A. From the signing charts, verify the number, size, type, kind, and weight of supports. Note that the sign number and number of signs required have been previously checked to this chart.
    B. Check the weight total for each type and kind of support:
        (i) Type = Simple or Break-Away.
        (ii) Kind = WF, I, or Pipe.
29. **Class A Concrete Footings (Reinforced and Plain)**
    A. Size of footings:
        (i) By using the Kind of Support column on the foundation data table, verify the footing diameter, depth, and whether or not the footing is reinforced.
        (ii) Verify the diameter and depth for channel post footings in the footing detail.
    B. Check all computations and totals.
30. **Variable Length Channel Post**
    A. Verify the number of channel post required from the charts for Types D, E, and F Signs.
    B. Check all computations and totals.
31. **7' Channel Delineator Post and Delineators**
    Check all computations and totals in the pay record book(s).
32. **Piles**
    A. Verify that the following have accurately been shown:
        (i) Length driven.
        (ii) Length splice.
        (iii) Length buildup.
        (iv) Length cutoff.
        (v) Pay length.
        (vi) Pile driving data including bearing obtained, Inspector's initials and date driven.
    B. Verify that the pay length of each pile has been shown on the As-Constructed Plans for each component of the structure.
33. **Stone Conditioning for Reinforced Concrete Box Culverts (RCBC)**
    A. Verify that the same documentation is required as for roadway work.
    B. Verify that accurately computed tickets have been kept separate from pipe foundation conditioning or any other roadway work and clearly marked with station location.
    C. Verify that the pay quantity has been entered in the summary.
    D. Verify that an allowance has been made for waste or nonpay quantities, such as stone for weep holes, etc.
    E. Check all calculations and totals.

34. **Waterproofing and Damp proofing**
    A. Verify that sketches and/or sufficiently detailed information has been provided.
    B. Check all computations and totals.
35. **Supplemental Agreements**
    A. Review the terms of the Supplemental Agreement to become familiar with the method of measurement and basis of payment.
    B. Check all computations and totals.
    C. Check Supplemental Agreements granting time for pro rata extensions.
36. **Force Account Work**
    A. Verify wage rates used against those agreed upon prior to beginning the work.
    B. Verify all equipment rental rates against Blue Book rental rates and/or prevailing rates for dates the work was performed.
    C. Verify all percentage additives per the Specifications.
    D. Check all computations and totals.
    E. Verify that the Division Engineer and the Resident Engineer have signed all Force Account forms and summaries.

PROJECT CERTIFICATION

Materials Certification is the process by which the NCDOT certifies that all materials and workmanship on all projects are in compliance with the specifications. The Quality Systems Section within the Materials and Tests Unit (M & T) is responsible for conducting the Material Certification Review to ensure that accurate and sufficient documentation is available to verify the acceptable testing and inspection of critical materials and products used to build the project. The Materials Certification Review will begin within ten days after the "Acceptance Date Approval Alert" has been received by M & T, through the HiCAMS. The following is a limited list of items that will be reviewed:

- Sampling and Testing in accordance with the Minimum Sampling Guide (MSG).
- Independent Assurance.
- QC/QA Programs.
- Certified Laboratories and Sampling and Testing Technicians.
- Pay Reductions.
- Conversion Factors.
- Alternate ID's.
- Material Receipts.
- "Buy America" Letter.
- Contract Bill of Materials (CBOM.)
- Inspection Reports.

If the evaluation determines that there are shortages of acceptable test reports or unresolved discrepancies, the Resident Engineer will be asked to address these issues. The Project Certification Process Flow chart is included at the end of this section.

The Materials Certification Review may be performed after acceptance of the project, but the process begins the first day of the project. The people who are vital in the project certification process are the project personnel (Resident Engineer, project inspectors) and M & T personnel. The responsibilities of each are listed below.

- Project Personnel
  - Inspectors
    - Sampling and inspection of project produced material in accordance with the MSG.
    - Verifying that pre-certified/pretested material have the proper documentation and approval (stamp or Alternate ID.)
    - Material Receipts entered in HiCAMS in a timely manner.
    - Obtaining the correct certifications for materials.
  - Resident Engineers
    - Ensuring test results are entered in HiCAMS.
    - Addressing test shortages and discrepancies.
- Materials and Tests Unit
  - Pretested material (precast and pre-stress.)
  - Independent Assurance.
  - Area Materials personnel (Section Materials Specialist and Area Materials Engineers) auditing/reviewing project specific materials to insure compliance with MSG and Specifications.

The Quality Systems Section will complete the Materials Certification Review and prepare a Non-Participation Letter for the State Materials Engineer. If all discrepancies were not resolved the letter will be sent to the Division Engineer. If the Division Engineer receives a Non-Participation letter then one or more of the following discrepancies have occurred.

- The required number of samples was not obtained for a specific material.
- The required documentation (certification type) was not obtained for a specific material.
- The material was not approved or supplied from an "Approved Source."
- No Material Received Report (MRR).
- No/incorrect alternate ID.
- Materials were not removed from the CBOM.
- Temporary Items.
- M & T did not receive the Asphalt Roadway Inspection Reports (Form 605).
- No/insufficient embankment and/or subgrade density tests.
- ABC issues.
- Conversion factors.

If the Division Engineer receives a Non-Participation Letter, the Resident Engineer should check HiCAMS for notes and emails in the "Materials Pre-Certification" module, review the discrepancies, and collect the needed documentation. The Resident Engineer may contact the following M & T personnel, should there be any questions regarding the Non-Participation letter.

- Materials Operations Engineer (919) 329-4220
- Quality Systems Engineer (919) 329-8495

Project Certification Process

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Audit Process

- Routine audits will be performed by M&T representative's though-out life of the project.
- Types of audits performed:
  - Initial Review Audit
  - Quarterly Review Audit
  - Project Certification Review Audit
- Audits will be reviewed and/or sent to RE and Division personnel.

Project is completed

Notification

- "Acceptance Date Approval Alert"
- Received through HiCAMS
- Opened and reviewed by Record Section Specialist (within 10 days from alert)

Beginning Of Material Review Process

- Performed by Records Specialist
- Go into HiCAMS/Functions/Project Certification/Review Project Certification
  - Review LI discrepancies
  - Review sampling discrepancies
  - Insert notes to resolve discrepancies
  - Initial 30 days to resolve discrepancies
- E-mail Notifications – "Material Review Has Begun":
  - Project Personnel
  - M&T Personnel

Completion Of Material Review Process

- During 30 day review process
  - Routinely review notes placed by project personnel to resolve discrepancies.
  - All notes should be placed in HiCAMS/Functions/Project Certification/Review Project Certification – on appropriate LI
  - Notes should include details and names
- E-mail Notifications – "Material Review Is Complete"
  - Sent at end of 30 day review process
  - M&T Personnel

Exceptions Report Complete

- Federal Compliance Engineer and Quality Systems Engineer will review unresolved discrepancies.
- Email and follow-up phone calls will be made to RE's office to resolve issues.
- Email and follow-up phone calls will be made to AME's office to resolve issues.
- Project personnel should place detailed notes in HiCAMS/Functions/Project Certification/Review Project Certification – on appropriate LI
- Final notes regarding discrepancies will be place by M&T in HiCAMS/Functions/Project Certification/Review Material Pre-Certification (only M&T can place comments/notes in this module, RE personnel can view comments/notes)
- E-mail Notifications – "Exceptions Report Complete"
  - M&T Personnel
  - RE Personnel
- Compliance Time = 30 Days

Final Certification Review

- Materials Operation Manager will perform final review.
- The non-participant letter will be issued.
- If "0" funds are established, letter will be sent.
- If non-participant funds are established, the letter will be scanned and sent to Division Engineer via email.
- Compliance Time = 30 days

Non-Part Letter Sent

- Copies of non-participant letter will be distributed to FHWA and Division personnel.
- The 1446B will be sent to Division personnel.
- Copy of final letter will be placed in M&T's records.
- Update in HiCAMS.

DESIGN BUILD CONTRACT ADMINISTRATION GUIDELINES

Although design build (DB) projects are bid differently than bid build projects, the required documentation and project certification remains much the same. In addition to the progress schedule, narrative, etc. that are required for all projects, DB projects require a Schedule of Values, a Table of Quantities, and an Estimated Payout Submittal. These documents provide additional information for use in establishing funding levels, preparation of monthly estimates, materials tracking and project certification. These required documents are outlined below.

Contract administration of DB projects through HiCAMS is unique in that partial payments are made to generally one line item set up for the contract. Additional line items may be established throughout the life of the contract for Supplemental Agreements, AC and Fuel Adjustments, Penalties, etc. The current HiCAMS User Guide for Design Build Contracts should be reviewed for additional assistance. Materials tracking in HiCAMS for a DB contract is administered through work items. Work items are established from the Table of Quantities supplied by the contractor and are entered as such in HiCAMS. From the work items, queries can be generated to monitor and track materials used and work accomplished for monthly pay estimates and project certification. Although the project is paid as a lump sum for the work bid, it is still imperative that materials be tracked and that proper sampling be performed as required in the Minimum Sampling Guide. Having a lump sum bid amount does not relieve the Department from making monthly payments based on work accomplished to date or from project certification requirements.

A project set up meeting should be scheduled for DB projects to ensure the contractor has supplied the required documents outlined below and to ensure that the project is set up properly in HiCAMS. The meeting should include the Resident Engineer (RE) and staff, Materials and Tests representatives, Roadway Construction/Bridge Construction Engineer and any others that may be needed.

Required Documents:

Progress Schedule – The progress schedule shall be submitted by the Design Build Team (DBT) within 30 calendar days of receiving the Notice of Award. The Department will review the progress schedule within 21 calendar days or receipt. The DBT shall make any necessary corrections and adjustments to the progress schedule as required by the Department's review within 7 calendar days and the Department will review the revised progress schedule within 7 calendar days of receipt. The progress schedule shall also include a written narrative in accordance with the specifications.

Schedule of Values – A Schedule of Values is a schedule of work items necessary to complete the work, along with the progress of each work item, primarily for the purpose of partial payments. The Schedule of Values shall be submitted within 30 days of the date of award. Each item shall be assigned a cost and a quantity. The Schedule of

Values shall be revised with each update to the progress schedule as described in Article 108-2 of the Specifications, as revised by the contract Standard Special Provisions.

Table of Quantities – A Table of Quantities is a listing of **work items** (corresponding to the items in the Trns*port pay item list) that contributes to a project completion. The table shall include estimated quantities for each work item. The Table of Quantities shall be submitted within 30 days of the date of award. A Certified Table of Quantities shall be submitted with each pay request and shall indicate that the information accurately represents the materials used for the work performed for which payment is requested. The Table of Quantities shall be updated and resubmitted within 14 days of when a set of plans is sealed as RFC Plans and whenever there are substantial changes to the quantities on previously incorporated RFC plans.

Estimated Payout Submittal - The Estimated Payout Submittal is used to establish monthly **funding** levels and is to be submitted by the 6th day after opening of the Price Proposal. This is to be updated on the 15th of March, June, September and December of each year. This is not to be used for monthly payment purposes.

Materials and Monthly Estimates:

Receiving Materials – Materials incorporated into the project must be received for DB projects just as they are for other projects including tickets, bills of lading, alternate ID lists, invoices, certifications, etc. Tickets entered for work items are automatically checked "Do Not Pay – Other Payment Method" and this eliminates the possibility of double paying the contractor. Since ticket books are entered as "Do Not Pay", queries will be utilized to obtain quantities used to calculate AC and Fuel Adjustments.

Processing of Monthly Estimates – The processing of monthly estimates for DB projects differs from other projects, in that payments are entered as a percentage of the line item established for the lump sum bid amount, based on quantities of work items that have been accomplished for the month, as submitted by the contractor and verified by the Department. The Resident Engineer's staff should maintain Monthly Estimate Books (MEB) for tracking the work performed in the same manner that Pay Record Books are maintained for other projects. Other Pay Record Books shall be maintained for the Lump Sum Bid Amount as well as for supplemental agreements and other line items that may be added. Ticket books for direct payment work items should be separated from incidental ticket books for the lump sum item and submitted with final documentation. The quantities and locations of materials used should be recorded in the MEB's as work is performed. The Technicians and Contractor's personnel should compare and agree to the quantities of work performed prior to the Contractor submitting a Pay Request based on the Schedule of Values. The amount paid on a Monthly Estimate will be derived from the verified Pay Request submitted by the Contractor based on the work accomplished as detailed in the certified Table of Quantities. The dollar amount of work submitted is divided by the Lump sum amount per line item, and rounded to three places for HiCAMS pay record entry. The payment amount calculated by multiplying the pay record quantity

times the Lump Sum amount generally does not exactly match the requested payment amount. These discrepancies resolve when the payment amounts total 1.000 Lump Sum.

AC/Fuel Adjustments – AC and Fuel adjustments must be calculated manually outside of HiCAMS. The calculated dollar amount paid or deducted is entered as a pay record against line items added using the "Review Other Line Items" function. Penalty line items, except for Density failures, are added by the Construction Unit.

Materials Certification – Upon completion of the project, the contractor shall submit a certified final Table of Quantities along with the final As Constructed Plans for the project. These certified final quantities will be used as a basis for ensuring that the minimum sampling has been performed for project certification.

Miscellaneous Items:

Subcontract Agreement Forms (SAF) – The contractor is required to submit the SAFs for DB projects as for any other project. Even though there is only one line item for the contract and the SAF is entered in HiCAMS as a partial items of work; the SAF should include a breakdown of the work items and values for each item of work to be performed by the subcontractor. This information can be used for DBE tracking purposes, negotiations during supplemental agreements, etc. When the SAF is entered in HiCAMS, generally only one item will be entered as a percentage of the lump sum bid amount for Design and Construction. The work items for which the subcontractor is performing should be noted in the Comments section of the HiCAMS entry. This will identify the work being performed especially for committed items for DBE/MB/WB firms.

DBE/MB/WB Tracking – The same tracking and monitoring of DBE/MB/WB participation is required for DB projects as for other projects. Typically at the time of bid, only a dollar value may be shown for each committed subcontractor. As noted previously, the contractor should submit on the SAF the individual work items from the Table of Quantities that the firm is committed to perform. The quantities shown on the SAF should be used to ensure compliance of the DBE/MB/WB Special Provisions. Since the item is entered as a percentage of the lump sum item, the Standard Report entitled DBE Payment Report in HiCAMS will not give an accurate value of the work performed by the DBE for comparison to the payments reported in the Payment Tracking database. Therefore, tracking will have to be performed manually by comparing the latest pay request from the contractor to what has been entered in the database.

PROJECT CLOSEOUT PROCESS FOR DIVISION LET CONRACTS

Project Acceptance

After completion of all items of work, a final inspection of the project is held. Division personnel are responsible for scheduling the final inspection and acceptance of the project. The Construction Unit Area Bridge or Roadway Engineer may also attend, upon request. Once the final inspection is held and all recommendations are complete, the Division should notify the Contractor of final acceptance of the project. (See example letter.)

Active and Final Claims:

The Division Engineer has the final approval authority for both "active" and "final" claims. Upon request, the Construction Unit will review and respond to final claims for Division let projects. The Construction Unit should be consulted for review of all claims and supplemental agreements that exceed $50,000. The Resident Engineer or other project administrator should provide a written response for all active claims. The Division Engineer should provide a written response to the Contractor indicating the claim decisions for final claims. More detail regarding this letter is provided below.

Processing the Final Estimate:

The Resident Engineer or other project administrator will prepare the final estimate assembly and send it to the Division for final review prior to processing the final estimate.

(Note that final estimate assemblies or other documents normally sent to the Construction Unit for centrally let projects should not be sent to the Construction Unit for Division Let Contracts. This holds true for Division Let projects handled as a Purchase Order Contracts or set up in HiCAMS as "D" projects.)

Once the Division reviews the final estimate, the Division should send the Contractor a Notification of Final Quantities letter by certified mail. The Notification of Final Quantities letter notifies the Contractor of the final quantities, the assessment of any liquidated damages, if any are assessed, and requests the final project documents in accordance with Article 109-10; Consent of Surety, if required, Affidavit and Final Claim letter or letter of no final claim. The Consent of Surety is not required if a bond was not required for a contract. If the project is a low risk project, such as a sidewalk extension, you do not need to get the final documents. Examples of the Consent of Surety and Affidavit should be attached to the Notification of Final Quantities letter and may be found on the Construction Unit's web page under Construction Manual and Project Closeout/Project Closeout. Use the web address listed below, and click on “Project Closeout” to view the closeout documents.

https://connect.ncdot.gov/projects/construction/Pages/Construction-Manual.aspx

The final documents should be sent to the Division and not the Construction Unit and retained with the project files at the Division. The Division should allow time for the Contractor to review the quantities and resolve any disputed items.

A Closeout Conference may be held with the Contractor to resolve outstanding project issues. If all of the outstanding project issues are resolved at a Closeout Conference, the Division Engineer (or his designee) should complete the Division Closeout Conference Form, which may be found on the Construction Unit’s web page located at the following address.

https://connect.ncdot.gov/projects/construction/Pages/Construction-Resources.aspx

Both the Contractor and the Division Engineer should sign and date the Division Closeout Conference Form. Note that this form will then serve as the final claim letter. In addition, the Contractor waives his rights to file a verified claim if a Division Closeout Conference Form was signed stating his agreement that all issues were resolved. If **ALL** of the outstanding project issues are not resolved, then the Contractor should not sign the Division Closeout Conference Form and should proceed with filing a final claim. If **ALL** issues are not resolved, but some were resolved the Division should complete a Claim Resolution Form (Form CFR-D) and enter the resolved issues in HiCAMS as an active claim(s) and the Contractor may proceed with filling a final claim. The Claim Resolution Division Form can be found on the Construction Unit's web page at the following address.

https://connect.ncdot.gov/projects/construction/Pages/Construction-Resources.aspx

The Division's written review of the final claim is a Payment of Final Estimate letter that should include justification of the Division's decisions for all final claim issues, and a copy of the statement of final estimate, and a copy of General Statute 136-29 (Verified Claim information), which can be found on the Construction Unit's web page under Construction Manual and Project Closeout. Use the web address listed below, and click on "Project Closeout" to view the closeout documents.

https://connect.ncdot.gov/projects/construction/Pages/Construction-Manual.aspx

This letter should be sent to the Contractor after the Final Estimate has been processed in HiCAMS. (Example letter provided below.)

Prior to processing the final estimate, verify payments have been made to the committed Disadvantaged Business Enterprise firms in accordance with the contract commitments. Use the DBE/MBE/WBE Subcontract Commitment Payment Summary form to document if the Contractor satisfactorily fulfilled his commitments. This form can be found on the Construction Unit web page under Construction Manual and Project Closeout. Use the web address listed below, and click on "Project Closeout" to view the closeout documents.

https://connect.ncdot.gov/projects/construction/Pages/Construction-Manual.aspx

Once the Division Engineer is satisfied that all issues have been resolved, the final estimate checked, DBE payments have been verified and the final documents have been received, the final estimate should be processed. Documentation of all final claims or Closeout Conferences shall be entered in HiCAMS as a "Final Claim," with the Division's decision (Recommendation in HiCAMS).

After processing the final estimate, the Division Engineer should send the Contractor by certified mail the Payment of Final Estimate letter with a copy of the final estimate statement and the procedures for filing a verified claim. Example letters can be seen in the project *Closeout Process for Division and Locally Administered Federal Funded Projects Webinar (March 24, 2011)* located on the Construction Unit's web page (web address is provided below.) If the Contractor files a verified claim on the project, he must do so within 60 days following receipt of the final statement. The certified mail receipt date documents the beginning of the 60-day time frame for filing a verified claim.

List of Letters

The following letters were discussed in the project closeout process and examples of each can be found in the ***Project Closeout Process for Division and Locally Administered Federal Funded Projects*** *Webinar (March 24, 2011)* located on the Construction Unit's web page under Construction Manual and Project Closeout. Use the web address listed below, and click on "Project Closeout" to view the closeout documents.
https://connect.ncdot.gov/projects/construction/Pages/Construction-Manual.aspx

- Final Acceptance of Project
- Notification of Final Quantities
- Final Claim Review
- Positive Estimate with no final claim
- Zero Estimate with no final claim
- Overpayment Letter

FINAL VOUCHER PROCESS FOR FEDERALLY FUNDED CONTRACTS

GENERAL

Federally funded contracts are required to be accepted by the Federal Highway Administration (FHWA) to enable the Department to be reimbursed for project expenditures. For most projects the FHWA has delegated the Department the authority to complete the FHWA Final Acceptance Report (Form 1446B) for submission. For projects designated as full oversight, (step by step) FHWA retains approval of this process. Therefore, upon final payment of a delegated federally funded contract, a completed Form 1446B and 1446B Checklist, which includes project description information and pertinent dates, should be submitted to the FHWA. (See examples at the end of this section.)

Federally funded contracts are administered differently and the final voucher process differs a little for each type of administration. The administration of each contracts are categorized by the type of letting which is listed below along with the final voucher process.

CENTRALLY LET FEDERALLY FUNDED CONTRACTS

After the final estimate has been paid and a verified claim is not anticipated or the verified claim process (including mediation and lawsuit) has been completed, the State Construction Engineer should ensure that all commitments for the project are removed in the NCDOT fiscal accounting system, SAP. Check the status of commitments using the SAP function ZPSR01.

Once all commitments have been removed, the State Construction Engineer will complete Form 1446B and the 1446B Checklist in HiCAMS. The State Construction Engineer will forward the completed form and checklist (in HiCAMS) to the State Materials Engineer for the materials certification. The instructions for completing Form 1446B and the 1446B Checklist are in the HiCAMS User Guide - Manual Topic 13 "*Project Closeout*", located on the Construction Unit webpage at the address below.

https://connect.ncdot.gov/projects/construction/Pages/HiCAMS-Manual.aspx

Once the materials certification is complete, the State Materials Engineer will complete the certification portions of Form 1446B and the 1446B Checklist and forward both to the North Carolina Department of Transportation – Federal Funds Management Unit (FFMU) to process for FHWA reimbursement (final voucher.) The Division Contract Administrator can check the status of payment of the final voucher using SAP transaction code ZF22. The date of the payment of the final voucher will begin the period for retention of project records. See the Retention and Storage of Project Records and Documents in this section for additional information about retention of records.

DIVISION LET FERERALLY FUNDED CONTRACTS

After the final estimate has been paid and a verified claim is not anticipated or the verified claim process (including mediation and lawsuit) has been completed, the Division Engineer should ensure that all commitments for the contract are removed in the NCDOT fiscal accounting system, SAP. Check the status of commitments using the SAP function ZPSR01.

Once all commitments have been removed, the Division Engineer (or delegate) will complete Form 1446B and the 1446B Checklist in HiCAMS. The Division Engineer will forward the completed form and checklist (in HiCAMS) to the State Materials Engineer for the materials certification. The instructions for completing Form 1446B and the 1446B Checklist are in the HiCAMS User Guide - Manual Topic 13 "*Project Closeout*", located on the Construction Unit webpage at the address below.

https://connect.ncdot.gov/projects/construction/Pages/HiCAMS-Manual.aspx

Once the materials certification is complete, the State Materials Engineer will complete the certification portions of Form 1446B and the 1446B Checklist and forward both to the North Carolina Department of Transportation – Federal Funds Management Unit (FFMU) to process for FHWA reimbursement (final voucher.) The Division Contract Administrator can check the status of payment of the final voucher using SAP transaction code ZF22. The date of the payment of the final voucher will begin the period for retention of project records. See the Retention and Storage of Project Records and Documents in this section for additional information about retention of records.

LOCALLY ADMINISTERED, FEDERALLY FUNDED CONTRACTS

After the final estimate has been paid and a verified claim is not anticipated or the verified claim process (including mediation and lawsuit) has been completed, the Division Engineer should ensure that all commitments for the contract are removed in the NCDOT fiscal accounting system, SAP. Check the status of commitments using the SAP function ZPSR01.

Once all commitments have been removed, the Division Engineer should complete and sign Form 1446B and attach the 1446B Checklist and a copy of the final estimate. **(Please note that Form 1446B and the 1446B Checklist for Locally Administered, Federally Funded Contracts are to be completed outside of HiCAMS. These forms can be assessed for the Construction Unit web page under Construction Resources.)** This package should be forwarded to the State Materials Engineer for the materials certification. Upon completion of the materials certification, the State Materials Engineer will sign the Form 1446B and send the completed package to the North Carolina Department of Transportation - Federal Funds Management Unit (FFMU)

to process for FHWA reimbursement (final voucher.) The Division Contract Administrator can check the status of payment of the Final Voucher using SAP transaction code ZF22. The date of the payment of the final voucher will begin the period for retention of contract records. See the Retention and Storage of Project Records and Documents in this section, for additional information. The Division Engineer should notify the Local Government Agency of the voucher dated by certified letter, (see example letter as the end of this section.)

NCDOT FINAL ACCEPTANCE REPORT FORM 1446B

For NCDOT Delegated Authority Projects

Contract Number:	C123456	Division:	15
WBS Number:	12345.3.1	F.A. #:	STM-222(22)
TIP Number:	B-1234	County:	Handy

Project Location	BRIDGE OVER LOUNGE CREEK AND APPROACHES ON NC 22

Project Scope	GRADING, DRAINAGE, PAVING, AND STRUCTURES

Letting Date	3/17/2009
Date Work Started	4/24/2009
Date Accepted by NCDOT	9/24/2010
Date Final Estimate Paid	11/16/2010

☒ Procedures and controls were sufficient to assure that this project was completed in reasonable close conformance with the approved plans and specifications including authorized changes and extra work.

Remarks: If applicable note deficiencies below

Accept of Project – Division Engineer	Materials Certification– State Materials Engineer
Signature: I. M. DIVISION	Signature
Date: 2/22/2011	Date

cc: State Construction Engineer
Project Management Unit
Federal Funds Management Unit
FHWA – Operations Engineer

FHWA, NC Division
Final Acceptance Checklist for NCDOT Delegated Authority Projects

Project Information:

TIP No.: B-1234	Federal-aid No.: STM-222(22)		Contract No C123456	
Project Description: BRIDGE OVER LOUNGE CREEK AND APPROACHES ON NC 22				
NCDOT Division: 15				
Date Awarded: 03/25/2009	Approved Date: 04/06/2099			
Time Started: 04/27/2009	Work Started: 04/27/2009			
Contract Days: 614	Revised Contract Days: 617			
Completion Date: 08/03/2010	State Acceptance Date: 09/24/2010			
Liquidated Damages (No. of days and total amount): $800.00				
Material Certification	Yes X	No	N/A	
Proposed Final Estimate	Yes X	No	N/A	ATTACHED
Contractor's Written Statement of Claims (Submitted Separately)	Yes X	No	N/A	SEE HICAMS
List of Supplemental Agreements	Yes X	No	N/A	SEE HICAMS
(Participating / Non-Participating)	Yes X	No	N/A	$49,542.40
List of Time Extensions	Yes X	No	N/A	SEE HICAMS
Utilization of DBE	Yes X	No	N/A	
Additional Information:				
(Original – Project File cc – FHWA – with Proposed Final Estimate)				

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

May 21, 2012

Mr. Ken Neil, Engineering Manager
Town of Municipal
555 Town Lane
Municipal, North Carolina 27555

Subject: Final Voucher Date
Project: U-1111
WBS Element: 33333.3.1
F. A. Number: 0701603

Dear Mr. Neil:

The FHWA has established a final voucher date of **May 8, 2012** for the above referenced project. The Minimum Records Retention Period is five years for the Final Voucher Date or **May 8, 2017**.

The Town of Municipal is responsible for maintaining all records for this minimum retention period.

Please note that project records are subject to audit by Federal agencies for a minimum of three (3) years after acceptance of the project. The Town of Municipal will be responsible for providing reasonable access to all project records for audit or review during the entire retention period until May 8, 2017. Agencies that may audit your records include, but are not limited to:

- FHWA (NC Division Office, USDOT Headquarters, FHWA Office of Inspector General)
- NCDOT (Office of Inspector General, Fiscal management Division, Local Programs Management Office)
- NC Office of State Budget and Management
- NC Office of Economic Recovery and Investment
- NC Auditor's Office

If you have any questions, please advise.

Sincerely,

D. E. Engineer, P. E.
Division Engineer

DEE/srw

cc: State Construction Engineer
State Materials Engineer
Manager of Program Management Office (LPMO)

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
DIVISION 15 OFFICE
1515 MAIL SERVICE CENTER
GREAT, NC 27555-1515

TELEPHONE: 919-555-5151
FAX: 919-555-5152

WEBSITE: WWW.NCDOT.ORG

LOCATION:
DIVISION 15 OFFICE
123 DIVISION ROAD
GREAT, NC 27555

RETENTION AND STORAGE OF PROJECT RECORDS AND DOCUMENTS

These procedures establish a uniform system of handling project records after completion of a project. The Resident Engineer will maintain project files during the course of the project in accordance with procedures included in this subsection of the Manual. The Final Estimate Assembly will be prepared and submitted in accordance with the procedures in this section of the Manual.

The following procedures for retention and storage of project records will be used on all projects:

1. **Resident Engineer's Files:** After submission of the final estimate assembly, the Resident Engineer should hold the remaining portion of the project files until the State Construction Engineer notifies the Division Engineer to process all affected project records. At this time, the Resident Engineer will process records as follows:
   A. Non federally-funded projects:
      (i) The project files will be submitted to the Division office to be screened and merged with the Division's project files.
      (ii) Project work books not included in transmission of the final estimate shall be retained in the Resident Engineer's office **for one year** after the notification from the State Construction Engineer and then destroyed.
   B. Federally-funded projects:
      (i) The project files will be submitted to the Division office to be screened and merged with the Division's project files.
      (ii) Project work books not included in transmission of the final estimate assembly will be bound together and submitted to the Division office for storage for a period of **at least three years after payment of the final voucher** by the Federal Highway Administration.
2. **Division Engineer's File:** The State Construction Engineer will notify the Division Engineer when the project records are to be processed in accordance with the procedure for retention and storage of records. Upon receipt of records from the Resident Engineer, the following procedures should then be applied to all state and federally-funded projects:
   A. The Division Engineer's file will be combined with the file received from the Resident Engineer and all duplications eliminated.
   B. The composite file will then be sent to Highway Records Section in Raleigh for further handling.

The Division Engineer may at his discretion maintain a skeleton reference file containing items, such as the contract, as-built plans, estimates, and correspondence documenting unusual circumstances or conditions. Any encroachment contracts should be removed from this file and placed in a separate file for reference and administrative purposes.

12 MONTH PROJECT GUARANTEES

All centrally let contracts with the exception of resurfacing contracts contain a 12 Month Project Guarantee provision, following the project acceptance date. The Contractor is responsible for any defects in the materials or workmanship of the major components of the project for a 12 month period. Examples of the major components include pavement structures, bridge components and sign structures. Near the end of the 12 month period, the Department will review the project to determine if the project guarantee needs to be invoked. When a partial acceptance is made for completed items of work prior to the final project acceptance, the 12 month period begins on the date of partial acceptance for those items included in the partial acceptance. Below are the procedures for administering the 12 Month Project Guarantee provision. .

The Division Construction Engineer and the Resident Engineer will receive a HiCAMS notification both two months and one month prior to the expiration of the guarantee (if the Resident Engineer has set the guarantee indicator and appropriate guarantee time frame during the contract activation process and entered the acceptance date in HiCAMS in a timely manner.) The Division Construction Engineer and the Resident Engineer are responsible for performing review with the following personnel (as applicable), the Bridge/Roadway Construction Engineer, a representative from the District Engineer's Office and a representative from Division Bridge Maintenance.

Notifications shall be given to the Contractor whether or not corrective action is required. When remedial work is necessary related to the guarantee, the Division Engineer will notify the Contractor by Certified Mail prior to the expiration date of the guarantee, detailing the items to be corrected. If the Contractor disputes any of the items of the work requested, he is required to provide a written description of the disputed work with a detailed explanation to the Division Engineer. After the review of the Contractor's submission of information, if the Division Engineer intends to pursue the repairs under the term of the guarantee, the Division Engineers shall forward the information to the State Construction Engineer. The State Construction Engineer will review the information and provide a written response to the Division Engineer for further handling of the necessary repairs.

Once all the repairs have been made, the Division Construction Engineer will make a final review of the repairs and send a letter to the Contractor, with a copy to the State Construction Engineer, indicating that all repairs have been made and the project guarantee has been satisfied.

Sample Letter - No Corrections Required

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

July 6, 2011

Contract : C222222
WBS No.: 12345.3.1
County: Narrow
Description: I-27 North of SR 2111 (Lake Road) to North of NC 15

Subject: 12 Month Guarantee Review

Mr. P. C. Contractor
World Builders, Incorporated
P.O. Box 999
Talltrees, North Carolina 28888

Dear. Mr. Contractor:

A review of the above project was completed June 26, 2011 to determine if any items were subject to repair in accordance with the 12 Month Guarantee provisions. No items were found that will require corrective action under the terms of the contract.

Sincerely,

I. M. Engineer, P. E.
Division Engineer

cc: State Construction Engineer
Bridge Construction Engineer
Roadway Construction Engineer
Resident Engineer

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
DIVISION 1 OFFICE
1999 MAIL SERVICE CENTER
RALEIGH NC 27699-1999

TELEPHONE: 919-707-1000
FAX: 919-733-2222
WEBSITE: WWW.NCDOT.ORG

LOCATION:
NCDOT DIVISION OFFICE
113 DIVISION DRIVE
RALEIGH NC

Sample Letter – Corrections Required

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

July 10, 2011

Contract : C221111
WBS No.: 12345.3.1
County: Narrow
Description: NC 15 North of SR 2111 (Colt Road) to North of NC 72

Subject: 12 Month Guarantee Review

Mr. B. T. Contractor
Drummer Contractors, Incorporated
P.O. Box 777
Big Town, North Carolina 27777

Dear. Mr. Contractor:

The 12 Month Guarantee for the above referenced project is scheduled to expire June 25, 2011. Those in attendance were the contractor's Project Manager, the Resident Engineer, Roadway Construction Engineer, Division Bridge Maintenance Engineer, and Bridge Maintenance Supervisor.

During the inspection, it was determined there were discrepancies that will need to be addressed; the specific issues are noted in the attached Field Inspection Report.

Please submit a schedule and method you propose for the repairs to the Resident Engineer for review.

Sincerely,

I. M. Engineer, P. E.
Division Engineer

cc: State Highway Administrator
State Construction Engineer
Bridge Construction Engineer
Roadway Construction Engineer
Resident Engineer

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
DIVISION 1 OFFICE
1999 MAIL SERVICE CENTER
RALEIGH NC 27699-1999

TELEPHONE: 919-707-1000
FAX: 919-733-2222
WEBSITE: WWW.NCDOT.ORG

LOCATION:
NCDOT DIVISION OFFICE
113 DIVISION DRIVE
RALEIGH NC

CONSTRUCTION QUALITY INDEX EVALUATION

The Construction Quality Index (CQI) Evaluation is an evaluation of all centrally let contracts with the exception of resurfacing contracts. This evaluation provides a mechanism to determine if there are specific construction elements that are causing maintenance related issues after the final acceptance of a project. The evaluation also provides a method to identify potential needed changes to the standard design details or specifications.

The CQI evaluation review should be performed approximately 10 months after the acceptance of a project. (This review should coincide with the 12 Month Project Guarantee review for those projects that require both reviews). The CQI reviews are performed by the Division Construction Engineer (DCE), Division Maintenance Engineer (or assigned delegate), Resident Engineer and the Roadway and/or Bridge Construction Engineers. Each person reviewing the project should evaluate the project individually and record your ratings on the Construction Quality Index Evaluation Form. The DCE is responsible for averaging the individual evaluations and submitting one composite evaluation for each contract to the Construction Unit.

The Construction Quality Evaluation Form and its guidelines can be found in HiCAMS, Click on Project Closeout under Functions.

LOCALLY ADMINISTERED CONTRACTS

The Department allocates funding to Local Government Agencies (LGA) provided through the federal government (primarily the Federal Highway Administration (FHWA) and/or the state government, which is appropriated by the NC General Assembly. A LGA may be a municipality, county, state agency or a non-profit organization. The funds allocated to a LGA are used to construct a transportation project or deliver a transportation program. These projects are known as locally administered projects. NCDOT includes locally administered projects in the 5-Year Work Plan to receive federal or state funding based on recommendations of Municipal or Rural Planning Organizations, NCDOT staff and Board of Transportation Members.

The Department's Transportation Program Management - Local Programs Management Office (LPM Office) is the contact for NCDOT with the LGA. The LPM Office establishes policy and procedures for the projects administered by a Local Government Agency and is responsible for the overall compliance of applicable state and federal regulations regarding these projects. The Local Programs Management Office works with the LGA from programming the project in the 5-Year Work Plan to the construction phase of the project, and is responsible for obtaining execution of the Project Agreement. The Project Agreement outlines the description and scope of the project, funding participation, the completion dates of the preconstruction and construction phases, provisions concerning the environmental document, design, right of way, construction administration, construction, maintenance, the terms of reimbursement and the reporting requirements.

The LGA is responsible for the design, construction and the contract administration of the project, and the Department is responsible for the project oversight to ensure that reasonable processes are being followed in the administration of the contract, that the project is constructed in accordance with the NCDOT Standard Specifications for Roads and Structures and the funds are expended appropriately and

within the amounts established in the Project Agreement. The LGA will perform the daily contract administration duties such as project reviews, project documentation, materials sampling and testing, Disadvantaged Business Enterprise/Minority Business Enterprise/Women Business Enterprise compliance reporting and submission of project invoices. Supplemental agreements and claims granting additional compensation , which the LGA wants to consider for reimbursement through state or federal funding, must have prior concurrence from the Department. The LGA shall notify the Department of any claims, supplemental agreements or work beyond the scope of the original agreement and provide the required documentation for review and concurrence. The Department's review and concurrence is to determine if the subject work is eligible for funding reimbursement. Approval authority remains with the LGA.

During the construction phase, the Department's Division personnel will act as the primary contact with the LGA. Communication between the Division and the Local Programs Management Office should be maintained throughout the construction phase. The Local Programs Management Office should be notified of the following.

- LGA begins construction
- Any change order that requires the amendment of the Original Project Agreement
- Changes to funding or milestone (completion) dates
- Notice of project acceptance

The Department has developed an oversight plan for the construction phase of locally administered projects. The plan is attached and it outlines the duties of Division personnel, Construction Unit field engineers and the LGA.

Locally Administered Construction Oversight Guidelines

Division Construction Engineer (DCE) Duties

- Prior to preconstruction conference, review any Professional and Engineering Service Agreements for conformance with Department procedures. Ensure that the Professional Management Services Unit of the Division of Technical Services reviews agreements with Private Engineering Firms (PEFs) to provide Construction Engineering and Inspections (CEI) services.
    - PEFs that perform design work for the project may not be utilized to perform CEI services. Local Agencies may submit a request for an exemption to this policy to the State Construction Engineer. Exemptions may be approved depending on the scope of work.
    - PEFs must be prequalified to perform CEI services.
    - Certified Technicians must be provided to test and inspect items of work that require sampling, testing and inspecting by certified technicians (i.e. concrete, asphalt, densities). This applies to projects administered by PEF or Local Government Agency (LGA) staff.
- Review reporting requirements at the preconstruction conference.
- Prior to beginning work, review contract administration requirements and financial status (remaining balance of Agreement amount) with the LGA.
- Assign a DOT representative to provide project oversight.
- Monitor expenditures – Construction and CEI – and advise LGA in writing if the Agreement amount is exceeded or is anticipated to be exceeded.
- Review for concurrence claims and Supplemental Agreements in accordance with the Department's established thresholds. The Department's review and concurrence is to determine if the subject work is eligible for funding reimbursement. Approval authority remains with the LGA.
- Final inspection and written notice to LGA of required corrective work.
- Final review of project records to determine conformance with required procedures prior to final reimbursement.
- Ensure all commitments for the project have been removed in SAP after final payment or completion of the verified claim process. Check the status of commitments using the SAP function code ZPSR01.
- Complete Form 1446B** (FHWA Final Acceptance Report) and the 1446B Checklist. Attach invoices for all charges, copy of final payment, a list of supplemental agreements and a list of time extensions, if applicable. Forward this package to the State Materials and Tests Engineer for material certification.
- The Division Contract Administrator should check the status of payment of the Final Voucher** using SAP transaction code ZF22. The date of the payment of the final voucher will begin the period for retention of project records. See the Retention and Storage of Project Records and Documents in Records and Reports, for additional information about retention of records.

Resident Engineer (RE) or other DOT Representative Duties

- Attend Preconstruction Conference.
- Attend Monthly Construction and other regularly scheduled construction meetings.

- Ensure that the private engineering firm used to perform construction administration is prequalified to perform Construction Engineering and Inspection by NCDOT. Also, ensure technicians who perform sampling and testing for project acceptance possess the appropriate certifications.
- Review project as needed but a minimum of monthly. A monthly report shall be prepared and sent to the responsible agency documenting the following contract elements.
    - Pay record documentation.
    - Weigh Tickets
    - Daily inspection reports.
    - Disadvantaged Business Enterprise/Minority Business Enterprise/Women Business Enterprise participation and tracking.
    - Materials received documentation.
    - Minimum sampling and testing of materials.
    - Certified Payroll submittal. **
    - Contract change documentation – Supplemental Agreements and Claims - For Supplemental Agreements, the RE / DOT Representative shall review the Project Agreement to verify that the supplemental work is within the original scope of work and to ensure funding is available for the change order. The Local Programs Management Office shall be contacted if an amendment to the agreement or a change in funding is necessary.
    - Documentation of penalties / acceptance as reasonably close conformance.
- Review for concurrence all claims and Supplemental Agreements in accordance with the Department's established thresholds. Concurrence with Supplemental Agreements required prior to beginning the supplemental work. The Department 's review and concurrence is to determine if the subject work is eligible for funding reimbursement. Approval authority remains with the LGA.
- Enter submitted DBE-IS forms into SAP.
- Process invoices submitted by the LGA for reimbursement.
- Final project review – schedule DCE for final inspection, when appropriate.

Roadway Construction Engineer / Bridge Construction Engineer Duties

- Provide reporting and contract administration training upon request from DCE or RE.
- Review Claims and Supplemental Agreements in accordance with the Department's established thresholds.
- Perform final inspection, when requested by the DCE.

Local Government Agency Duties

- Provide daily contract administration.
- Provide project documentation in accordance with the Department's policy and procedures and in accordance with Federal regulations.
- Ensure that the private engineering firm utilized for construction administration is prequalified to perform Construction Engineering and Inspection by NCDOT. Also, ensure the technicians who perform the sampling testing for project acceptance possess the appropriate certifications
- Ensure Disadvantaged Business Enterprise/Minority Business Enterprise/Women Business Enterprise compliance. Submit DBE-IS forms with invoices to

document Disadvantaged Business Enterprise/Minority Business Enterprise/Women Business Enterprise program compliance.

- Contact RE or DOT Representative when Supplemental Agreements or Claims need review and concurrence.
- Contact RE or DOT Representative prior to performing any work outside the original scope of the project or when there are questions regarding the Department's policy and procedures.

Present project invoices to the RE or other assigned Division staff for reimbursement of costs as included in the Project Agreement. Invoices should include all appropriate documentation and project records to support the invoice payment request**.**

****Note: The FHWA 1446B process, Final Vouchers, and submittal of Certified Payrolls only apply to projects that receive federal funding.**

<u>*Exceptions for Locally Administered Greenway and Multi-Use Path Projects</u>

Note: The following exceptions listed herein do not apply to portions of the greenway or multi-use path project that contain bridge or pedestrian culvert construction components or retaining walls greater than 10'.

- Daily inspection reports are not required but recommended. The LGA must have a properly NCDOT certified inspector when placing concrete, aggregate base course, and asphalt. An inspector must also be present when traffic is impacted by lane closures or work is performed adjacent to a travel way.
- Daily Asphalt Reports are not required.
- Physical measurements must be recorded for any line item paid in units. Pay record documentation should be kept by Line Item and in a format that is easily reviewed.
- Weigh tickets are required for materials paid by the ton. Weigh Tickets should be received and maintained by Line Item and kept in date order.
- Measurements must also be recorded for lump sum contracts in order to document the quantity of work accomplished.
- The Local Government Agency is required to submit a Letter of Certification by a licensed Professional Engineer to the NCDOT State Materials Engineer certifying that the materials incorporated in the construction work were in conformity with all applicable standards, specifications and plans.
- Refer to the Modified Minimum Sampling Guide (MSG) for Greenways and Multi-Use Paths on the following page for guidance regarding minimum sampling requirements.

Modified Minimum Sampling Guide (MSG) for Greenways and Multi-Use Paths

9-17-13

MSG Group	How Accepted	Additional Requirements	Other
Aggregate	Must come from a plant on the NCDOT Approved List and participating in the Aggregate Quality Control/Quality Assurance Program.	Roadway Assurance is Optional for Aggregate Base Course	92% (Nuclear or Conventional) for Aggregate Base Course
Asphalt	Must come from a plant on our approved list and participating in the NCDOT Quality Management System; Must use a NCDOT Approved Mix Design and Job Mix formula that has been used on a NCDOT project.	610-9 revised mix per QMS	Compaction – 85% every 5,000 ft., minimum of one per project
Cementious Materials	Must come from a NCDOT approved source; Type 3 certification		
Concrete (Class B only)	Must come from a concrete plant on the NCDOT Approved List. Must use a Concrete Mix Design that has been used on a NCDOT project. Project specific mix approval is not required.	Minimum of one set of cylinders per project to test compressive strength	All other classes per Standard MSG
Fencing Materials	Type 6		Buy America
Grading	N/A (Sampling and /or Visual)	Visual Inspection plus minimum of one embankment density and one subgrade density per project	Embankment 90%, subgrade 92%
Guardrail	Must come from plant on the NCDOT Approved List	Guardrail marking should be visually inspected to ensure that it came from NCDOT approved source	Buy America
Landscape	Type 6 Certification		
Paints and Coatings	Type 3, Type 4, Type 6		

Modified Minimum Sampling Guide (MSG) for Greenways and Multi-Use Paths (con't.)

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MSG Group	How Accepted	Additional Requirements	Other
Pipe	Drainage – NCDOT Approved Plant, NCDOT stamped, tagged, sticker. Water/Sewer Type 3 certification or Type 6	Product markings should be visually inspected to insure that it came from NCDOT approved source	Buy America
Precast	Must come from a NCDOT Approved Plant. NCDOT stamped, tagged or stickered; For Incidental items only need Type 6	Product marking should be visually inspected to insure that it came from NCDOT personnel	Buy America
Prestress	Must come from NCDOT Approved Plant and be NCDOT stamped	Field Inspection Report conducted at plant by NCDOT personnel	Buy America
Steel	Various req. NCDOT Approved Producers, Type1, Type 3, Type 4, Type 6		Buy America
Traffic Control	Type 3, Type 4, Type 7		
Utilities	Type 3, Type 6		By America

Note – Materials received that are not listed on this table should be received in accordance with the NCDOT Minimum Sampling Guide.