

106 CONTROL OF MATERIALS

106.01 Source of Supply and Quality Requirements

Subsection 106.01 requires the use of new materials unless noted otherwise elsewhere in the contract documents. New means unused, not previously placed in service, and the same appearance, quality, dimensions, and performance as material direct from the factory or fabrication plant. For example, corrugated pipe salvaged by the contractor from a previous project does not qualify as new pipe. The Resident Engineer may still allow the pipe, but at a reduced unit price. On the other hand, unused concrete pipe that has been sitting in a pipe supplier's yard for a few years may qualify as new if it is undamaged and in the same basic condition as the day it was cast.

Inspectors should be careful about the water the contractor uses for dust palliative, compaction, cleanup, or landscape establishment. Untreated effluent from industrial or mining operations must not be used. Effluent from these sources may contain hazardous microbes or chemicals that pose a health risk to everyone at the site. In general, potable water or water from an approved lake, stream, or irrigation canal is acceptable for construction work.

106.04 Tests and Acceptance of Material

When contractor Quality Control is specified it is the intent to place the responsibility of materials quality control (or process control) with the contractor. Only certain construction materials will fall under this quality control specification. When the bid quantity for the following items exceeds the minimum amount then Special Provisions will require contractor Quality Control: Subsections 106.04 (B) & (C) are geared toward the sampling, testing, and control of these materials. No quality control plans will be required. See Special Provisions for item 9240170 for contractor Quality Control measurement and payment.

Type of Material	Subsection	Minimum Bid Quantity
Earthwork	203-2.02	5,000 cubic yards
Aggregate Bases & Subbases	303-3.04	1,000 cubic yards
End Product AC & MA	416-5	Any and all
SHRP End Product AC & MA	417-5	Any and all
Pipe Bedding & Backfill	501-3.01(A)	60" diameter, or length>600 ft.
Concrete (Structural & Paving)	1006-4.01(A)	300 cubic yards

The specification requires the Quality Control Manager to be a qualified employee of the contractor. Qualified is interpreted to mean someone who is empowered at the project site to reject materials without the approval from someone else within the contractor's organization. This could be a superintendent, foreperson, quality control supervisor, or any other person who has management authority. However, this person must be at the project site during all construction activities related to the materials covered under the quality control specification.

The Quality Control Supervisor and the Testing Technicians are required to be employees of the same lab that has been certified for materials testing work on the project. This requirement ensures that only testing equipment and employees covered by the lab certification are used. The Contractor cannot use their own employees to do material testing unless they have their own approved testing lab.

The contractors often ask why ADOT needs to enforce the qualification requirements for the contractor's quality control personnel. They point out that ADOT still does acceptance testing anyway.

One reason is that ADOT wants competent people doing the testing so the test results are accurate and unbiased by the testing procedure itself. Qualified people provide some assurance that a testing person is competent enough under various work conditions to minimize the influence of the testing procedure on the test results.

Another reason is that the contractor's materials testing procedures must consistently meet some minimum standards so ADOT's acceptance testing won't turn out to be the contractor's actual quality control. If the acceptance testing becomes the quality control for the contractor, the chances for rework are high since acceptance testing is usually done after work completion.

Resident Engineers may withhold payments for quality control work if the contractor does not follow the sampling and testing requirement in the Standard Specifications and Special Provisions. In addition, failure of the contractor to submit current Weekly Quality Control Reports will be grounds for the Engineer to deduct monies from the contractor's progress payment. Refer to Section 9240170 of the Special Provisions for determination of amount to be withheld. In some cases the Resident Engineer may need to temporarily shut down material processing operations until the contractor can comply with the sampling and testing procedures required by the Department.

Even though the contractor is performing quality control sampling and testing, Inspectors and Project Supervisors still need to sample and test for acceptance. This "side-by-side" testing may seem redundant; however, ADOT's testing should be done as the final and independent check of the materials. The frequencies for acceptance sampling and testing should be at the same rates as in the Sampling Guide Schedule of the ADOT Materials Testing Manual.

106.05 Certificates

Materials incorporated into the project and devices used during construction of the project - are accepted either by sampling and testing, or by certification. Materials accepted by certification are certified to meet project specification requirements (Certificate of Compliance) and may also require associated test results to confirm conformance (Certificate of Analysis). All components of the certification as stipulated in Section 106.05 must be included in the certificate.

When a certificate is required, the section of the specification associated with the bid item will state which type(s) of certification is necessary. For some materials, in lieu of a certification, sampling and testing by the Department may be performed and allowance for such will be stated in the specifications.

Some materials are pre-certified by the Department and the documentation for such resides with the associated technical group or section. When pre-certified material arrives to the project, before it may be incorporated into the project, the construction unit must verify that proper documentation is on file with the Department for the production lot(s) to which the material is associated. If no certification is on file, the contractor must provide an acceptable certification or material must be sampled, tested, and certified by the Department prior to it being used on the project.

Some materials have additional certification requirements, such as "Buy America," which must be adhered to depending on funding sources. Refer to the "Buy America" section of the Project Special Provisions for more information on materials and bid items to which the Buy America requirements apply.

With regard to materials requiring certification and contractor payments, the Department should only pay for materials which have been properly certified, meaning the Construction Unit has received from the contractor an acceptable certification for the material and the material for which payment has been requested is represented by such certification. No payment will be made for materials which the Department does not have proper certification. Therefore, upon receipt of a contractor request for payment by the Construction Office, the list of items and quantities for which payment has been requested should be provided to the Materials Coordinator to

confirm that acceptable certifications and test results are on file. In the event that acceptable certification or test results are not on file, the Materials Coordinator should notify the Office Manager immediately to afford the contractor the opportunity to gather and provide necessary documentation prior to the contractor payment deadline.

The project team must maintain a log of all materials/items on the project that require certification. The Certification Log is maintained by the Project Materials Coordinator and the completed Certification Log is included as an attachment to the Final Materials Certification. To ensure no certifications are overlooked, prior to the Pre-Construction Meeting, the Materials Coordinator should review the bid items included in the project and the associated sections of the Standard Specifications and Project Special Provisions and identify all materials, items, and ancillary features which require certification and pre-populate the Certification Log.

Sometimes overlooked are certifications for products which appear on the Department's Approved Products List (APL). Despite being on the APL, receipt of proper certification for the specific materials/products incorporated into the project must be provided by the contractor.

On occasion, commercially available products will be utilized for which no certification documentation is readily available and it is impractical for the contractor to attempt to provide such. If this occurs, consult with the appropriate technical section to determine if use of the material is acceptable or if further testing is necessary.

Some products such as release agents, geogrid, and other geotextiles have been evaluated by the National Transportation Product Evaluation Program (NTPEP) and project specifications may require use of products which have been certified under this program. For these products, if not provided directly by the contractor, the Materials Coordinator may access NTPEP's DataMine on the NTPEP website and confirm that the appropriate certifications exist for the specific product intended to be used by the contractor. This typically includes the requirement for a Certificate of Analysis to be on file with NTPEP, the Materials Coordinator should maintain a separate copy of the certification for the project file.

All Certifications are reviewed by the Materials Coordinator for correctness and completeness. Certifications that do not meet requirements should be returned promptly and the reasons for rejection communicated to the contractor. However, if at any time the validity of a certification for material is questionable, the Materials Coordinator should contact Materials Group to confirm adequacy.

106.09 Storage of Materials

Material stored on the project should be observed to determine whether the storage practices may be harmful. Potentially harmful practices include stacking too high (causing bending, denting, or crushing), exposing to weather, or providing inadequate base (causing soiling, staining, or rusting).

Aggregate and similar materials are also subject to certain storage requirements. Specific requirements are discussed in the section associated with the type of material for which the aggregate will be used. It is important to be aware of the condition of the stockpiled material at the time of sampling for acceptance and to ensure that the material has not deteriorated or become contaminated prior to being used for production.

No partial payments should be made if materials are not stored in a manner that will provide adequate protection. Adequate protection is that which will preserve materials in their original condition.

If material is damaged in storage, any payment for material allowance should be recovered until the damage is repaired or the material is replaced.

106.11 Unacceptable Materials

When materials that are incorporated into the project fail to meet the requirements of the Specifications, the standard course of action taken by the Resident Engineer shall be to order the contractor to remove and replace the failing materials with such materials meeting the requirements of the Specifications. In some cases, the Specifications allow for failing material to remain in place at a reduction in cost, otherwise known as a “penalty”, depending on the property and severity of the deviation.

In instances when no penalty structure exists in the Specifications, but the Department allows for the material to remain in place, the Resident Engineer will need to obtain written concurrence from both the State Construction Engineer and the State Materials Engineer, stating that the material may remain at a reduce unit cost, and will then need to memorialize the penalty with a procedural change order.

106.12 Department-Furnished Material (DFM)

When ADOT furnishes material for the contractor to use on the project, the Department is responsible for the quality and quantity of the material supplied. When the contractor takes control of the material, the contractor becomes responsible for the material.

Requesting DFM for a construction project during the design phase:

- The project design team makes a determination that the normal process of bidding the project, and requiring the contractor to provide the traffic signal or lighting materials as part of the standard pay items, will not allow the work to be finished prior to the scheduled completion date.
- The Project Manager identifies whether there is federal funding for the traffic signal or lighting construction
 - If so, the Project Manager must submit a letter of justification to the Federal Highways Administration (FHWA) project administrator outlining the reason the project should use DFM
 - The letter of justification to the FHWA must be approved by the project administrator prior to advertising for bid
 - For federally funded projects less than 25 million dollars (<25M), the Project Manager submits a letter of justification to the State Traffic Engineer for approval
- Upon receipt of the FHWA approval, the Project Manager should forward the letter of justification to use DFM and the FHWA authorization to the Traffic Operations Manager for Signal and Lighting
 - The request to the Traffic Operations Section (TOS) should have a cover letter that identifies the anticipated project time frames and the estimated equipment and quantities that are needed
 - Note: Typically the traffic signal and lighting designer will be able to provide the estimated traffic signal and lighting equipment quantities that are needed at the 60% stage of the design. The request may require modification of the type and number of items by the PM when the project design is completed
- TOS will inform the Project Manager of their decision
- If the project does not have federal funding the FHWA authorization is not necessary and that entire step can be eliminated
- The traffic signal and lighting designer must insert project specifications that explain what procedures are required of the contractor to be issued the DFM from TOS. The specification is available electronically
- The designer must use the correct item number and description (identified on the Agreement Estimate) for those items being supplied by TOS
 - Typically the item number has “Department Furnished” in parenthesis following the item description
 - It is important that the correct bid item number is used to provide an audit trail
 - The designer must verify with the Traffic Design and the Contracts and Specifications

representatives that the correct bid item numbers are being used in the estimate

- The designer must submit, through the Project Manager, the final and complete list of DFM to TOS when the project is advertised. This allows TOS to know what and how many items they must have on hand to issue to the contractor
 - Items that are not in stock, or normally not carried in stock, must be ordered and that process will not take place until the project is advertised
- During the design phase of the project it is important that the signal designer communicate through the Traffic Design representative to ensure that the type and quantity of materials needed for the design will be available for the project at the estimated construction date
- Once a project that requires DFM is advertised, the designer must provide the final plans, special provisions, and the complete list of all items to be furnished to TOS
- When the project is awarded and the pre-construction/partnering meeting is scheduled, the TOS representatives should be included so those specific questions relating to DFM can be resolved. It is also important that the initial construction schedule for the entire project be provided to the TOS representative. If TOS cannot send a representative, the Resident Engineer should provide a copy of the construction schedule to TOS
- When the time approaches for the contractor to receive the materials, the RE must submit to the TOS, in writing, the date and time that the contractor intends to pick up the materials. Before any materials are released from the TOS Warehouse, the RE must provide a copy of the Agreement Estimate showing the DFM. TOS should verify that all items released to the contractor are approved and included in the contract
Note: The special provision requires “10 days written notice from the contractor before picking up the materials. The department-furnished materials will not be issued without a contractor supervisor and an ADOT inspector present at the supply center to verify and sign for the materials”
- After all the materials have been issued to the contractor, TOS submits an invoice, identifying the item number, description and quantity from the Agreement Estimate, and the purchased material cost charged against the project TRACS number to Contract Accounting (and a copy to the RE for filing in the project DFM folder), with a copy of the initial request/approval to use DFM, and the TOS response, if applicable. A copy of the FHWA letter approving the use of DFM must be provided along with the invoice, in order for the costs to be charged to the construction project TRACS number as a federally eligible cost
- Contract Accounting reviews the invoice and transfers the cost of the materials from the TOS TRACS number for DFM to the construction project TRACS number, accompanied by the appropriate construction Org number

Sometimes these project elements are identified as advance procurement items. The project manager still follows the outlined process with the exception of setting up a 01X subphase. This can only be done if this phase can be funded. If this path is chosen then the Field Office administering the construction project will need to be involved. The designer, TSMO, project manager and the RE work together to provide the specifications and quantities to obtain quotes from vendors. An ADOT yard will need to be identified for delivery. Depending on where the yard is located drives what group will issue the Purchase Order. For instance, if an ADOT construction yard is available then the field office will have to issue the PO. If an ADOT maintenance yard is identified then that office will need to assist with issuing the PO.

Requesting DFM for a construction project during the construction phase:

- The Resident Engineer (RE), in consultation with the Regional Traffic Engineer, determines that a Change Order is necessary requiring additional, or different, traffic signal materials than what was originally called for in the project plans
- The designer or RE determines if the contractor can receive the necessary materials through his vendor in time to meet the project time constraints. If so, the materials are provided by the contractor
- If the contractor cannot provide the materials in time to meet the project time constraints the designer or RE contacts TOS to determine if the materials needed for the Change Order are available

- If the RE determines that DFM is necessary, the RE must submit a formal request to TOS outlining the justification for the request. The request must include the project description, project number, TRACS number and if the project is federally funded
- The contractor's bid item should be reduced by the invoice amount of the DFM in the Change Order
- Generally, the contractor shall not be eligible for any additional incentive payment due to their request for DFM that would not be earned without the DFM. All projects with this incentive situation should receive approval from the Assistant State Engineer for Construction prior to making any incentive payments
- If the project is federally funded, the RE must receive prior written approval from the FHWA administrator to use DFM on the project. For federally funded projects less than 25 million dollars (<\$25M), the Project Manager must submit a letter of justification to the State Traffic Engineer for approval
Note: Sample request letters to FHWA are available electronically
- The request for DFM is submitted to TOS, with the FHWA authorization if federally funded
- If TOS approves, TOS will respond to the RE with the time and date the requested DFM materials will be available for the contractor to be picked up
- The RE must execute a Change Order that includes sealed traffic signal sheets reflecting the design modifications. Other requirements are: DFM specifications, bid items that reflect the material and related installation cost of DFM, and price deduction for materials not used, (or salvaged to ADOT for the new materials no longer to be installed on the project)
- After the field office issues the Change Order the contractor can pick up the materials. The contractor must submit in writing the date and time that he intends to pick-up the materials. No materials will be released from the TOS Warehouse unless the fully executed Change Order is provided to TOS
Note: The special provision requires "10 days written notice from the contractor before picking up the materials. The department-furnished materials will not be issued without a contractor supervisor and an ADOT inspector present at the supply center to verify and sign for the materials"
- After all the materials have been issued to the contractor, TOS submits an invoice for purchased materials charged against the project TRACS number and the applicable construction Org to Contract Accounting (and a copy to the RE for filing in the project DFM folder), with a copy of the Change Order to use DFM, and the TOS response, if applicable. A copy of the FHWA letter approving the use of DFM must be provided along with the invoice, in order for the costs to be charged to the construction project TRACS number as a federally eligible cost

Salvaged Material

Materials may be designated by the project plans and/or special provisions to be removed and salvaged from the project and delivered to the supervisor of a designated ADOT yard. In these cases the following must be adhered to:

- The project supervisor must coordinate with the Traffic Signal and Lighting Operations Manager to determine if any of the material is suitable to transfer to the Warehouse
- Inspection must occur to determine material condition is adequate prior to transport
- The determination should be documented
- If the determination is made that the material is not needed or the condition does not warrant transfer, it is imperative that a Change Order be executed to document the disposal of the material. Any questions should be directed to the Traffic Operations Manager for Signal and Lighting (MD013R)
- Complete the Receipt for Salvaged Materials form and keep in project files. At final closeout, submit a copy to Field Reports

The Resident Engineer should document the condition of the material and verify its quantity before it is released to the contractor. This protects the Department if the material is later mishandled. Some testing may need to be

done on the material to accurately determine its quality. A letter or another form of documentation should be used to establish when the material was officially turned over to the contractor.

106.15 Domestic Materials

On projects with federal aid funding the Special Provisions will require the contractor to certify that certain materials were produced, or processed in the United States. The Inspector must read the Special Provisions for each project and ensure contractor compliance.



RECEIPT FOR SALVAGED MATERIALS

The miscellaneous salvaged materials listed below have been received as follows:

From Project No: _____

Contractor: _____

Materials were delivered to:

Location _____

Field Office (Unit) _____ Date Received: _____

Description of Materials:

Guardrail Panels: _____ LF End/Terminals: _____ Ea

Guardrail Posts: _____ Ea Block: _____ Ea

Bridge Rail: Type: _____

Traffic Signals: Type: _____ No. _____

Light Poles: Type: _____ No. _____

Sign Structures/Post: _____ No. _____

Signs: _____

Drainage Pipe: Type: _____ Dia.: _____ inch _____ LF

Piling: Type: _____ _____ LF

Milled AC: _____ CY AB: _____ CY

Other: (BCT, assemblies, fence, gate, delineators, etc.)

Describe:

Received From: _____	_____	_____	(Contractor Rep.)
Printed Name	Signature	Date	
Received By: _____	_____	_____	(ADOT or LPA Representative)
Printed Name	Signature	Date	
Project Engineer/Inspector: _____	_____	_____	
Printed Name	Signature	Date	

Original: Project Files
cc: Field Reports

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