Section 6 Control of Materials

Section 6
Control of
Materials

3-601 General

3-601
General

The service life of a properly designed highway depends on the construction method and quality of materials used in the highway's construction. The resident engineer must ensure that materials used in the work comply with specifications. This section presents some general guidelines for ensuring that specifications are met. More specific instructions are covered in Chapter 6-2, "Acceptance of Manufactured Material and Sampling Methods," of the *Construction Manual* (manual). Section 6, "Control of Materials," of the *Standard Specifications*, describes the contractor's responsibilities regarding materials.

Caltrans' Office of Materials Engineering and Testing Services (METS) will assign inspectors for materials that require inspection during manufacture or at the source of supply. Resident engineers must obtain a properly completed Form CEM-3101, "Notice of Materials to Be Used," which lists the contractor's sources of materials and the location at which those materials can be inspected. Review this form to ensure that all expected materials are included. To check the form, use as a guide Table 6-2.1, "Inspection of Fabricated and Manufactured Materials," at the end of Section 6-2, "Acceptance of Manufactured Material and Sampling Methods." The resident engineer should forward the completed form to METS. METS will ensure the proper assignment of inspectors and notify the suppliers of the required inspections.

Do not allow any material to be incorporated into the work until the required evidence or certificate of inspection has been received and until the field inspection has been completed at the job site.

3-602 State-Furnished Materials

3-602
State-Furnished
Materials

Section 6-1.02, "State-Furnished Materials," of the *Standard Specifications* describes the conditions under which the contractor can receive state-furnished materials. The resident engineer's duties related to these materials include the following:

- Review the special provisions for materials to be furnished. For materials manufactured specifically for the project, such as signs, check with the district unit responsible for ordering them to ensure they will be available when the contractor requests.
- Obtain the contractor's written request for all state-furnished materials. Retain a copy of the request in the project file (under Category 52, "Charges to Total Contract Allotment").
- Ensure the contractor signs a receipt for the materials when they are delivered. Retain a copy of the receipt in the project file.
- If state-furnished materials are damaged or lost, deduct a sufficient amount from the contractor's monthly estimate to cover the estimated cost of repair or replacement, pending such repair or replacement.

- Ensure the return of state-furnished material that has not been used in the work.

3-603 Defective Materials

3-603 Defective Materials

Section 6-1.04, "Defective Materials," of the *Standard Specifications*, provides for the rejection and removal of material that does not meet specification requirements. Except for material that is permitted to remain in place under the specifications for "contract compliance" and "operating range", reject material represented by a test result not meeting the specified requirement. See Section 3-508, "Removal of Rejected and Unauthorized Work," of this manual for guidelines on removal of rejected and unauthorized work.

3-604 Trade Names and Alternatives

3-604 Trade Names and Alternatives

When trade names are used to designate required products, the contractor may furnish other products that are of equal or better quality. Consult with the responsible unit (the design unit, traffic unit, or METS, among others) in making decisions about the acceptability of substitutes.

3-605 Certificates of Compliance

3-605 Certificates of Compliance

For a discussion about certificates of compliance, refer to the subsections entitled "Materials Accepted on the Basis of a 'Certificate of Compliance'" in Section 6-2, "Acceptance of Manufactured Material and Sampling Methods" of this manual. Section 6-1.08, "Foreign Materials," of the *Standard Specification*s, includes the requirements for using foreign materials. A certificate of compliance from the manufacturer (not the contractor) showing compliance with Buy America requirements must accompany all steel and iron products incorporated into a federal aid project. The resident engineer must ensure receipt of the required certificates of compliance and mill test reports.

<u>3-605A Buy America Requirements</u>

The Buy America requirements contained within the United States Code of Federal Regulations, Title 23, Section 635.410 (23CFR635.410) apply to all federal aid projects. Federal aid projects contain special provisions that cover these requirements. Buy America requirements apply to all foreign steel, iron materials, and manufactured iron regardless of the percentage they comprise in a manufactured product or the form they may take. A discussion of the Buy America requirements should be included in preconstruction conferences for federal aid projects.

The contractor will furnish and install only domestic steel and iron materials in federal aid projects, in conformance with the provisions of 23CFR635.410. To be considered a domestic material, all manufacturing processes must take place domestically. Manufacturing begins with the initial melting and mixing and continues through the bending and coating stages. If a domestic product is taken out of the United States for any process, it becomes a foreign source of material. The manufacturing process for steel and iron products is considered complete when the product is ready for use in items such as fencing, posts and girders. It could also be considered complete if the material could be incorporated as components of a more complex product through a further manufacturing process, as is the case for a traffic signal head. The final assembly process does not need to be accomplished domestically so long as the steel or iron component is only installed and no manufacturing process is performed on the steel or iron component.

3-605A(1) Resident Engineer Approval of Minimum Use Requirements

Buy America requiements do not apply to a minimal use of iron and steel materials incorporated in the work provided that all foreign source items do not exceed one tenth of 1 percent (0.1 percent) of the total contract cost or $2,500, whichever is greater. Before incorporating any foreign steel materials into the work, the contractor must submit documentation of the quantity and value of any foreign steel to the resident engineer. Review the documentation to determine if it supports the minimum use rule before allowing the material to be incorporated into the project. If the minimum use rule applies, approve the exception in writing. This applies as a one-time total exemption for each contract, not for each purchase. File the documentation, exceptions, and a running total of the value of foreign iron and steel allowed under the minimal use allowance under Category 41, "Report of Inspection of Materials." Foreign steel materials that exceed the minimal Buy America requirements cannot be designated as non-participating and therefore require a waiver. (See Section 3-605A(2)).

3-605A(2) Federal Highway Administration Approval of Waivers

Caltrans does not have the authority to waive the use of foreign steel and iron in federal aid projects without FHWA approval. The California FHWA Division administrator may grant waivers only upon receiving concurrence from FHWA headquarters in Washington D.C. Approval or denial may take several months.

The contractor must submit the following information to the resident engineer when requesting a waiver to Buy America requirements:

- A detailed description of the waiver item.
- Item cost – obtained from the manufacturer or supplier.
- The country of origin for the product.
- The reason for the waiver.

The resident engineer must provide the following information when preparing a waiver request for the FHWA engineer:

- The contractor's waiver submission.
- Federal aid project number, description, and location.
- Analysis of redesigns using alternate or approved equal domestic product for the project.

FHWA approval of the waiver is required prior to allowing foreign steel or iron into the project. Allowing foreign steel or iron products into a federal aid project without an FHWA approved waiver can result in the loss of all federal funds for the project.

3-606 Out-of-State Fabrication

3-606 Out-of-State Fabrication

Sections 49, 51, 55, 56, and 75 of the *Standard Specifications* include reductions in payment for fabrication at some distance from Sacramento and Los Angeles. In addition, some special provisions may modify the amount to be deducted. Deduct the appropriate amount, applying it as an administrative deduction on estimates that include payment for the item. Use a standard description of "Out of State Inspect" on Form CEM-6101, "Project Record-Estimate Request." This deduction should be made in whole, when appropriate. However, if the deduction is rather large, the resident engineer has the option to deduct incremental amounts until the full deduction is made.

3-607 Local Materials

3-607 Local Materials

Section 6-2, "Local Materials," of the *Standard Specifications*, covers the requirements for the use of local materials and the resident engineer's responsibility for testing the materials.

Section 6-2.02, "Possible Local Material Sources," of the *Standard Specifications* requires the contractor to execute certain documents when obtaining materials from property owners with whom Caltrans has arranged the use of such materials. These documents are titled "Supplemental Materials Site Agreement (1) and (2)." Samples of agreement (1) and agreement (2) follow:

Supplemental Materials Site

Agreement (1)

Contract No. _____
District _____
Date _____

TO:_____
District Director, District
, California

Dear _____,

In accordance with Section 6.2, "Local Materials," of the *Standard Specifications*, here is the agreement for using the materials source for the subject Contract, as required before removal of said materials:

WHEREAS, Contractor has entered into Contract No. ____ with the State of California, Department of Transportation, hereinafter called "Department," for the performance of _____ work on road _____, and

WHEREAS, Department has entered into an agreement dated _____,with _____for the obtaining of materials from the property described in said arrangement.

NOW THEREFORE, pursuant to the terms of said arrangement and of said Contract No. _____, Contractor hereby agrees to comply with all terms and conditions of said arrangement between the Department and said property owner and further agrees to hold said property owner harmless from all claims for injury to persons or damage to property resulting from Contractor's operations on owner's property.

DATE _____ _____
Contractor
By
Authorized Agent
Title _____

Origin.-Dist. Director
Dupl.-Contr.
Trip. -Prop. Owner
Quad. -Res. Engr.

Supplemental Materials Site

Agreement (2)

Contract No.
District
Date _____

TO: _____
District Director, District
_____, California
Dear _____,

In accordance with Section 6.2, "Local Materials," of the *Standard Specifications*, here is the agreement for using the materials source for subject Contract, as required before removal of said materials:

WHEREAS, Contractor has entered into Contract No. _____ with the State of California, Department of Transportation, hereinafter called "Department," for the performance of _____ work on road _____, and

WHEREAS, pursuant to the authority of said Contract, _____, Contractor and _____, Owner, have entered into an agreement under which Contractor may obtain materials from Owner's property.

NOW THEREFORE, pursuant to said Contract No. ____, Contractor and Owner hereby notify Department that materials obtained by Contractor from Owner's property will be obtained pursuant to agreement between Contractor and Owner and not pursuant to the arrangement between Department and Owner, dated _____, 19____, and Owner specifically agrees that the Department is hereby released from any and all obligations to Owner under Department's said arrangement with Owner.

DATE

Owner

DATE _____ _____

Contractor

By

Title _____

Authorized Agent

Origin. -Dist. Director
Dupl. -Contr.
Trip. -Prop. Owner
Quad. -Res. Engr.

When the contractor makes new agreements with property owners, revising the terms of the state-owner agreement, the new agreements supersedes Caltrans' agreement. The resident engineer must review these agreements to ensure that the state is relieved of its obligations under the terms of the original agreement.

The resident engineer must determine whether royalties should be deducted from payments to the contractor. Normally, under agreement (1) above, Caltrans will pay the owner of the materials site, and therefore, deductions must be made from estimates. In the case of county-consummated agreements, royalties usually are deducted in a similar way.

3-607A Compliance with Materials or Disposal Agreements

Designated sites may be made available for contractors use under Caltrans "Disposal, Staging and Borrow" (DSB) policy discussed in Section 7-103D. If designated sites are not available, the contractor must obtain and present to the resident engineer all documentation required by agencies having jurisdiction over the site. This required documentation may include permits, environmental studies, or other information. Ensure the arrangement of a joint meeting of the resident engineer, the contractor and other agencies that have an interest in clearing.

The specifications for both material sources and disposal sites state the resident engineer may require the contractor to submit written evidence that the owner is satisfied that the contractor has satisfactorily complied with the provisions of either agreement (1) or (2). The resident engineer must determine, preferably through written evidence, whether or not the owner is satisfied.

If the owner is not satisfied, the district must determine what additional work is necessary before recommending acceptance of the contract. The district must also advise the contractor accordingly. The district must not delay recommending acceptance if the resident engineer determines the contractor has complied with the terms of the agreement.

3-607B Public Interest Determination

Whenever local materials will be removed from mandatory sources, the resident engineer must write a public interest determination if the project includes federal financing. Mandatory sources include sources within state right-of-ways but outside the project's limits. Normally, the resident engineer makes the determination before advertising. The purpose of a public interest determination is to establish clearly that a manditory material source will serve the public interest, versus simply public or private property.

Certain designated sites do not require preparation of a public interest determination if they meet all of the following criteria:

- the designated site was identified and included in the project's environmental studies and documents during project development;
- the site was identified as and included in the materials handout during the bidding as a designated site;
- agreements for use of the site were negotiated with the site's owner.

Occasionally it becomes necessary to obtain additional embankment material from outside the local area even though the contract does not contain a clause allowing the contractor to import non-local material. Thus, the contract does not have an item for "imported borrow." Under these circumstances, it is normal practice for Caltrans to locate a source for this material.

In accordance with the State Contract Act, aggregate sources must comply with the Surface Mining and Reclamation Act of 1975 (SMARA). Refer to Chapter 7, "Environmental," of this manual for further information on SMARA requirements.

If the contract change order directs the contractor to obtain material from Caltrans' chosen source, the Federal Highway Administration (FHWA) considers the source mandatory. The FHWA then requires written approval of a public interest determination before approval of the contract change order.

At a minimum, the public interest determination, written by the resident engineer, must include the following:

- The reason the chosen source is the most economical. If the determination is not based on economy, other reasons such as public safety or convenience must be included.
- The alternatives considered.
- The effect on the value of the material site.

All such sites are subject to compliance with SMARA. Mining operations determined to be in compliance are listed on the AB 3098 SMARA Eligible List. This list can be obtained from the Division of Construction or at the Department of Conservation's web site at http://www.consrv.ca.gov/omr/SMARA/3098-list. Also, see Section 7-103D to determine if the proposed materials site is exempt from SMARA.

The FHWA must then approve the resident engineer's determination. One method of submitting a public interest determination for approval is to include the required statements on Form CEM-4903, "CCO Memorandum." The Division of Construction will pursue approval of the public interest determination before approval of the contract change order. To expedite approval of the contract change order, the resident engineer should, whenever possible, send the public interest determination to the Division of Construction before submission of the contract change order.

The above requirements do not apply to "local borrow," as defined in Section 19-7, "Borrow Excavation," of the *Standard Specifications*.

3-607C Disposal of Material

Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the *Standard Specifications*, and Section 7-103D, "Environmental Rules and Requirements," of this manual, cover the requirements for the contractor's disposal of materials (unless modified by special provisions). When required to execute documents related to disposal sites, the contractor should use agreements similar to those shown earlier in this section for material sites, with the wording modified to indicate disposal sites instead.

3-608 Testing

3-608 Testing

The *Standard Specifications* contain references to the standards and tests of the American Association of State Highway and Transportation Officials (AASHTO) and the American Society for Testing and Materials (ASTM). These standards and tests may, or may not, be readily available to the resident engineer. Note any references to these tests well in advance of need, and obtain any necessary copies of them from the district materials engineer. It is not practical to supply each resident engineer with complete AASHTO and ASTM standard test procedures.

Whenever samples are taken from materials sites, the resident engineer must ensure the samples are representative of material being used. Degradation and segregation may occur in aggregates between the processing operation and their incorporation

in the work. The resident engineer cannot assume that material satisfactorily tested at the source or at the processing plant is still satisfactory at the job site. To ensure specification compliance, test at the frequencies shown in the specifications as the material is being incorporated into the work.

3-608A Operating Range and Contract Compliance

Section 25, "Aggregate Subbases," Section 26, "Aggregate Bases," Section 27, Cement-treated Bases," Section 28, "Lean Concrete Base," Section 39, "Asphalt Concrete," and Section 90, "Portland Cement Concrete," of the *Standard Specifications*, all contain provisions for an acceptable range of test results and unacceptable results for aggregate gradation tests. If a test result fails to meet the requirements of the operating range but meets contract compliance, the contractor usually needs to make some change in operations to ensure subsequent test results meet the "Operating Range" requirements. The resident engineer should document the contractor's actions and any off-site testing done before the next day's work.

If a test result fails to meet the specified value for contract compliance, the result should be treated just like any other failing test result. However, if the contractor writes a request, the resident engineer may consider leaving the material in place and applying the specified deduction, if the specifications allow. The contractor's written request, along with documentation for reasons for leaving the material in place and the contractor's actions, is sufficient for the contract records. A contract change order accepting out-of-specification material is not required in this case because the specifications provide the procedure for acceptance.

The resident engineer must inform the contractor promptly of test results that indicate unacceptable or borderline work. The contractor must be advised that all test results are available for the contractor's inspection. Accordingly, test results must remain in the project files for ready accessibility.

3-609 Testing by Contractor

3-609 Testing by Contractor

The contractor must be satisfied at all times that the quality of materials entering the work and the work performed, regardless of who supplies the materials or performs the work, will meet the contract requirements. For acceptance of materials or work, resident engineers must not use as documentation any tests the contractor performs to control the work. Perform and record acceptance tests as required by Section 6-1, "Sample Types and Frequencies," of this manual.

3-610 Suspected Fraudulent Test and Inspection Reports

3-610 Suspected Fraudulent Test and Inspection Reports

When fraudulent tests or inspection reports are suspected, discuss the situation with the Division of Construction field coordinator. Contact the Office of Materials Engineering and Testing Services for assistance in evaluating the reports. Retest the material represented by suspect tests, as appropriate. If after investigating, fraud is still suspected, the deputy district director provides the facts in writing to the Division of Construction field coordinator.