STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MANUAL CHANGE TRANSMITTAL

NO. **14-2**

TITLE:	APPROVED BY:	DATE ISSUED:
Department of Transportation *Construction Manual*	Mark Leja, Chief Division of Construction	May 14, 2014
SUBJECT AREA Table of Contents and various sections of the *Construction Manual*	ISSUING UNIT Division of Construction	
SUPERSEDES CPB 07-7	DISTRIBUTION All Requested Manual Holders	

This manual change transmittal delivers the revisions of the Chapter 4, Section 6-2 of the *Construction Manual.* Updated sections may contain updated language, information, corrections, and references resulting from updates to the 2010 *Standard Specifications*, and from policy, and procedural changes. Change bars in the margins of the revised sections indicate text that was changed or added.

Please update your manual according to the table below.

Section	Incorporates	Remove Old Page(s)	Insert New/Revised Page(s)
Table of Contents	None	TOC.4	TOC.4
Goldenrod, Chapter 6, Section 2, "Acceptance of Manufactured or Fabricated Material and Products"	None	6-2.i	6-2.i thru 6-2.ii
Chapter 6, Section 2, "Acceptance of Manufactured or Fabricated Material and Products"	CPB 07-7	6-2.1 thru 6-2.14	6-2.1 thru 6-2.35

Section 6-2, "Acceptance of Manufactured or Fabricated Material and Products"

- Converts SI units to US customary units.
- Revises section title to align with section focus on Acceptance of Manufactured or Fabricated Materials and Products.
- Added reference section for manuals and test methods.
- Section 6-202A "Contractor" has been updated and includes details on certificates of compliance, shop drawings, and quality control plans.

- Section 6-202B “Office of Materials Engineering and Testing Services” is now Section to 6-202C. This section has been completely revised and now includes inspection and release process details for manufactured or fabricated materials and products.
- Section 6-202D (2) “Source Inspection” is now Section 6-203A. This section has been completely revised and includes a flowchart for source inspection and release process.
- Added Section 6-203A(3) “Nonconforming materials at the Source” commonly referred to as “blue tag process”.
- Moves Table 6-2.2, “Inspection of Fabricated and Manufactured Materials” to Table 6-2.1.
- Adds new Table 6-2.2, “Materials Acceptance Based on Authorized Materials List.”
- Adds new Table 6-2.3, “Materials Accepted by Certificate of Compliance.”
- Deletes Table 6-2.1, “Materials Accepted by Resident Engineer” which is replaced by Table 6-2.2, “Materials Acceptance Based on Authorized Materials List” and Table 6-2.3, “Materials Accepted by Certificate of Compliance.”
- Incorporates CPB 07-7, “Release Procedures for Materials Requiring Fit-for-Purpose Decisions”

CONSTRUCTION MANUAL

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Chapter-Section

Section 2 Acceptance of Manufactured or Fabricated Materials and Products

This manual is being updated to reflect changes from the 2006 to the 2010 *Standard Specifications*. Bracketed section numbers refer to the 2006 *Standard Specifications*.

Section 2 Acceptance of Manufactured or Fabricated Materials and Products

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6-201 General

6-201 General

This section describes Caltrans procedures for acceptance of manufactured or fabricated materials and products. This section also describes the types of materials that are considered "manufactured material" and provides guidelines for sampling these materials.

Sampling and testing materials and products must be done in accordance with contract specifications. Sampling and testing are of equal importance for assuring materials and products meet acceptance specifications.

The contractor is responsible for notifying the resident engineer of the need for inspection and acceptance testing of manufactured materials and products by submitting Form CEM-3101, "Notice of Materials to Be Used," early in the project.

The resident engineer needs to be knowledgeable about acceptance methods used for different manufactured or fabricated materials and products, including:

- Source inspection and testing.
- Manufacturer certificate of compliance.
- Manufacturer certificate of compliance with additional attachments.
- Field release of material.
- Field samples of manufactured materials or products.

When field sampling of manufactured or fabricated materials or products is required, the resident engineer is responsible for the "chain of custody" for material and product acceptance samples. Material acceptance samples must be under the control of Caltrans from taking possession at the sampling point to when the sample is tested. The chain of custody for material and product samples is an important part of the Caltrans quality assurance program.

6-201A References

- *Independent Assurance Manual*, Division of Engineering Services, Materials Engineering and Testing Services, State of California, Department of Transportation, available at:

  http://www.dot.ca.gov/hq/esc/Translab/ormt/IA_reports/index.htm

- *Bridge Construction Records and Procedures*, Volume II, Division of Engineering Services, Office of Structures Construction, State of California, Department of Transportation, available at:

  http://www.dot.ca.gov/hq/esc/construction/manuals/

- California Test (CT-___), Division of Engineering Services, Materials Engineering and Testing Services (METS), State of California, Department of Transportation, available at:

  http://www.dot.ca.gov/hq/esc/ctms/index.html

- AASHTO, ASTM, and other test methods are available at IHS Standards Expert website (by clicking on "IHS Specs & Stds Search"), accessible by Caltrans staff at:

  http://onramp.dot.ca.gov/hq/des/spi/

- J2 Database, Office of Structures Materials (OSM) electronic materials management database where each project's test results and CEM-3101 responses are captured along with other METS project-related information, available at:

  http://onramp.dot.ca.gov/hq/esc/mets/structure_materials/

- *Materials Plant Quality Program*, Division of Construction, State of California, Department of Transportation, available at:

  http://www.dot.ca.gov/hq/construc/hma/

- *Office of Structural Materials Practices and Procedures Manual (OSMPP)*, methods and procedures to provide consistent quality assurance and source inspection, available at:

  http://www.dot.ca.gov/hq/esc/Translab/OSM/documents/smdocuments/OSMPP.pdf

- *Overhead Sign Structures Guide*, Division of Engineering Services, Office of Structures Design, State of California, Department of Transportation, available at:

  http://onramp.dot.ca.gov/hq/des/spi/design_and_technical_services/docs/Overhead%20Sign%20Structures%20Guide.pdf

6-202 Responsibilities for Acceptance of Manufactured or Fabricated Materials and Products

6-202 Responsibilities for Acceptance of Manufactured or Fabricated Materials and Products

The following describes the responsibilities for acceptance of manufactured or fabricated materials and products.

6-202A Contractor

The contractor is responsible for providing materials that comply with the contract specifications. The contractor is responsible for the quality of materials and, where required by the specifications, must provide a notice of materials to be used, shop drawings, certificates of compliance, mill test reports, quality control plans, and quality control test results. The contractor must use materials from the authorized materials list, provide fabricated materials from audited facilities, and use materials that comply with Buy America requirements.

6-202A (1) Notice of Materials to Be Used

The contractor is responsible for submitting Form CEM-3101, "Notice of Materials to Be Used," to the resident engineer for all materials to be used on the project. The contractor must provide sufficient advance notification to the resident engineer on the source and location of materials to be inspected and tested so that the work will not be delayed. Section 6, "Control of Materials," of the *Standard Specifications* requires the contractor to list on Form CEM-3101 all sources of materials and locations where these materials are available for inspection. Receiving this form in a timely manner is critical to the success of the materials management process.

The contractor can get Form CEM-3101 at:

http://www.dot.ca.gov/hq/esc/Translab/OSM/osmma.htm

The back of the form contains detailed completion instructions.

6-202A (2) Certificates of Compliance, Mill Test Reports, and Buy America Requirements

The *Standard Specifications* requires the contractor to submit a certificate of compliance for various materials before they are incorporated into the work. Section 6-3.05E, "Certificates of Compliance," of the *Standard Specifications* states that when a certificate of compliance is required it must:

- Be submitted for each lot of material and clearly indicate what lot is included in the certificate.
- Be signed by the producer of the material stating that it complies with the contract.

The intent of the certificate of compliance is to communicate to Caltrans that the contractor has accepted the material and is confident that it complies with the contract specifications. The contractor is responsible for providing the certificate of compliance prior to incorporating material into the project. For materials that are delivered to the job site to be accepted that are based on a certificate of compliance, the certificate of compliance and any supporting documentation must accompany the material to the job site.

Table 6-2.3, "Materials Accepted by Certificate of Compliance," provides a list of materials requiring a certificate of compliance as well as any additional documents.

The *Standard Specifications* require the contractor to provide certified test reports along with the certificate of compliance for various materials. For steel, this test data is commonly known as a mill test report. A certified mill test report is required for each heat and must contain physical and chemical analysis of the material. The requirements for the mill test report vary depending on the section of the *Standard Specifications* the material falls under.

Section 6-2.05, "Buy America," of the *Standard Specifications* provides detailed information on Buy America requirements. The contractor is responsible for providing certificates of compliance and mill test reports that clearly indicate the material meets the Buy America requirements. The following are examples of acceptable language included in the certificate of compliance to verify Buy America compliance:

"All melting and manufacturing processes for the product occurred in U.S."
"100% melted and manufactured in the U.S.A."

6-202A (3) Shop Drawings

The *Standard Specifications* requires the contractor to submit shop drawings for review by Caltrans for certain structures such as structural steel and structural precast concrete. The shop drawings must include both shop details and erection plans. For more information on submittal and authorization of shop details and erection plans, refer to the *Standard Specifications*.

Contractors must submit shop drawings for overhead sign structures. For more information on submittal and authorization of shop drawings, refer to the *Overhead Sign Structures Manual*. Section 4-56, "Signs," of this manual contains additional information.

Prior to Caltrans performing any source inspection, the contractor is required to have a copy of the authorized shop drawings at the location of inspection.

6-202A (4) Quality Control Plans

The *Standard Specifications* requires the contractor to submit a quality control plan for certain types of production. Information on quality control plans for those production types is provided in the *Standard Specifications* as follows:

- Section 11-2: precast concrete
- Section 11-3: welding
- Section 39-2: hot mix asphalt
- Section 40-1: concrete pavement
- Section 56-2: sign panels
- Section 59-2: paint

The resident engineer does not allow work to begin until the quality control plan is authorized for that production. For more information on the contents of quality control plans, refer to the *Standard Specifications*.

Specifications for welded products usually require the contractor to submit the fabricator's welding quality control plan to the resident engineer for authorization prior to manufacturing any products for Caltrans. For details on quality control plans for welding, refer to Section 180, "Welding," of *Bridge Construction Records and Procedures*, Volume II.

METS Office of Structures Materials (OSM) has information on quality control plan requirements for welding, available at:

http://www.dot.ca.gov/hq/esc/Translab/OSM/documents/smdocuments/Welding_Quality_Control_Plan_Req.doc

6-202B Resident Engineer

The resident engineer must ensure that materials entering the work comply with the requirements in the contract specifications.

6-202B (1) Notice of Materials to be Used

The resident engineer must ensure that the contractor submits Form CEM-3101, "Notice of Materials to Be Used," for all materials. If the contractor does not submit

Form CEM-3101 before the preconstruction conference, provide a list to the contractor during the preconstruction meeting of materials that are required to be listed on Form CEM-3101.

If the sources of all materials are not known, the contractor may submit a partial list of materials sources on Form CEM-3101 and submit Form CEM-3101 supplements as soon as other sources are known.

METS developed the J2 database for tracking project materials requirements, Form CEM-3101 processing, materials test results, and source inspection. Entering the contract number at the top of the database in the "Projects" box opens that project's main page. Clicking on the "3101 Report" tab opens a list of all the bid items requiring CEM-3101s for the project and what CEM-3101s have been received. The list shows the name and address of the supplier and the date the CEM-3101 was received.

Assistance in developing a list of project materials that require Form CEM-3101 and in navigating the J2 database is available from the structural materials representative (SMR) for the project. SMR contact information is available at:

http://www.dot.ca.gov/hq/esc/Translab/OSM/documents/smdocuments/StructuralMaterialsRepresentatives.pdf

The contractor's submitted Form CEM-3101 must include the following information:

- The contract number and the contract items for which the material will be used. If the contractor uses a project number (different from the Caltrans contract number), include that number.
- The name, address, and telephone number of the manufacturer.
- The name, address, and telephone number of the supplier or manufacturer where the material can be inspected.
- If the source of material is out-of-state, also include the name, address, and telephone number of the contractor or subcontractor placing the order and the order number.

Check Form CEM-3101 for the required information and for completeness. To ensure that all structural materials are listed, a list of materials necessary based on contract bid item is available at:

http://www.dot.ca.gov/hq/esc/Translab/OSM/j2_item_categories.php

If the contractor's Form CEM-3101 is incomplete or incorrect, require the contractor to complete the form. When the contractor's Form CEM-3101 has been reviewed and is complete, promptly distribute Form CEM-3101 copies, including one to METS. The resident engineer sends Form CEM-3101 to the materials administrator at:

Materials Administrator, Mail Station #5
Materials Engineering & Testing Services
5900 Folsom Blvd, Sacramento, CA 95819
Fax: (916) 227-7084

METS will make required assignments for sampling, testing, and inspection of materials as noted in Section 6-202C, "Materials Engineering and Testing Services," of this manual.

6-202B (2) Job Site Materials Inspection

Based on assignment of materials inspection from METS to the resident engineer and the information shown on Form CEM-3101, the resident engineer must identify the appropriate district samplers, testers, and inspectors. Following is a partial list of those who may need to be notified to perform material acceptance:

- District staff who will be obtaining samples and tests on each material.
- District staff who will be obtaining samples for each material accepted on the basis of a certificate of compliance. Testing is normally done by METS.
- Office of Structures Construction review and authorization of shop drawings for overhead sign structures.
- District weights and measures coordinator to inspect materials plants in accordance with California Test 109, "Method for Testing of Material Production Plants," or the *Material Plant Quality Program* (MPQP).

6-202B (3) Authorized Facilities Audit List

Some structural materials such as structural precast concrete, overhead signs and poles, and steel pipe piling must be fabricated at a facility on the authorized facility audit list that shows fabricators who have successfully completed Caltrans' facility audit. If these materials are included in the scope of work, ensure that the contractor is aware of these requirements. Information on the authorized facility audit list is available at:

http://www.dot.ca.gov/hq/esc/Translab/OSM/documents/smdocuments/Internet_auditlisting.pdf

6-202B (4) Job Site Materials Production Plants

The resident engineer must ensure materials production plants, such as hot mix asphalt plants and concrete plants, meet specifications prior to producing material for Caltrans. Request assistance from the district weights and measures coordinator for inspecting:

- Hot mix asphalt plants.
- Concrete plants.
- Volumetric proportioning plants (rapid strength concrete and pavement bituminous seals).

Section 9-1.02 [*9-1.01*], "Measurement," of the *Standard Specifications* indicates the general requirements for weighing, measuring, or metering devices and the requirement to place security seals on material plant controllers. The district weights and measures coordinator will follow California Test 109, "Method for Testing of Material Production Plants," or the MPQP and the contract specifications for material plant authorization.

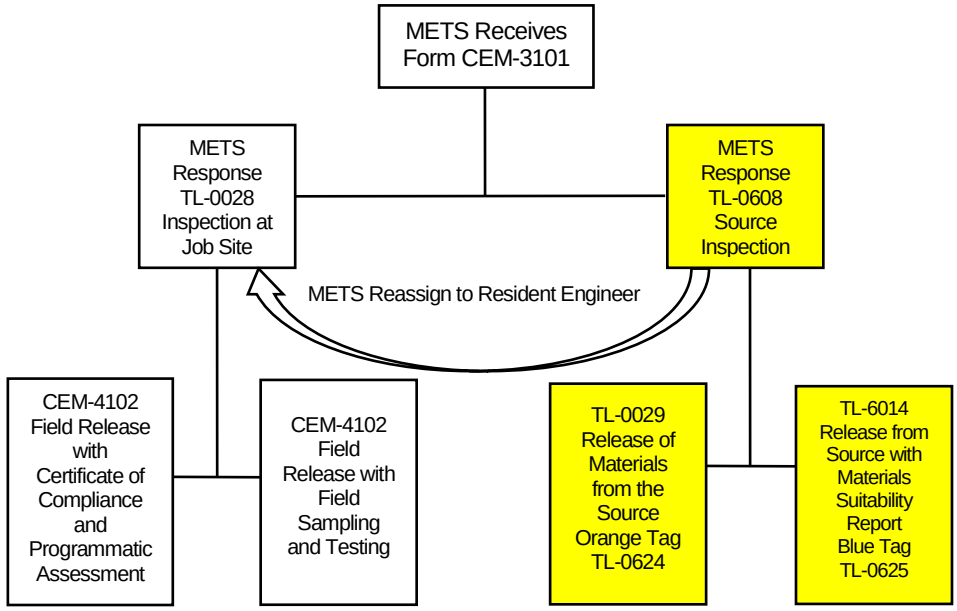
6-202C Materials Engineering and Testing Services

METS assigns personnel for sampling, testing, and inspecting manufactured materials and products, usually at the source of supply. Manufactured materials and products shown in Table 6-2.3, "Materials Accepted by Certificate of Compliance," in Section 6-203C of this manual, are the responsibility of METS but have been delegated to the resident engineer for inspection.

METS assigns the responsibility for sampling, testing, and inspecting manufactured materials and products based on the information submitted on Form CEM-3101. METS offices in Sacramento, San Francisco Bay Area, or Los Angeles conduct most of the inspections. METS may assign sampling, testing, and inspecting of manufactured materials and products to the district materials engineer, resident engineer, or a commercial laboratory.

The METS process for inspecting and releasing manufactured or fabricated materials or products is shown in Figure 6-2.1, "Inspection and Release Flowchart—Source Inspection."

Figure 6-2.1 Inspection and Release Flowchart—Source Inspection



6-202C (1) Processing Form CEM-3101

Once Form CEM-3101 is received by the materials administrator, it is routed to the appropriate METS office for processing. Any questions regarding Form CEM-3101 processing by METS may be routed to the project SMR. Structural materials listed on Form CEM-3101 are processed by the quality assurance and source inspection (QASI) office assigned to that project.

6-202C (2) Form TL-0028, "Notice Of Materials to Be Inspected at Job Site"

If it is determined that the material does not require source inspection, METS will assign inspection to the job site by completing Form TL-0028, "Notice of Materials to Be Inspected at Jobsite," for that material item. This form indicates that the material item does not require source inspection from Caltrans at this time. METS will send Form TL-0028 to the resident engineer, prime contractor, and suppliers to inform them that source inspection is not required prior to shipment to the job site.

The resident engineer will release these materials at the job site using Form CEM-4102, "Materials Inspected and Released on Job." Section 6-3, "Field Tests," of this

manual contains details on testing that occurs at the job site. Depending on the material, the resident engineer bases the field material acceptance on various methods. Refer to Section 6-203D of this manual for the field inspection and release procedures.

6-202C (3) Form TL-0608, "Notice Of Materials to Be Furnished"

If it is determined that the material requires source inspection prior to shipment to the job site, METS will issue Form TL-0608, "Notice of Materials to Be Furnished," to the resident engineer, contractor, and supplier. A hard copy of Form TL-0038, "Inspection Request," is mailed with Form TL-0608 to the supplier. The inspection request form is to be used by the contractor or any subcontractors to inform METS when the material is ready for inspection.

Source inspection by Caltrans is detailed in the OSMPP manual and described in Section 6-202C of this manual.

6-202C (4) Form TL-0038, "Inspection Request"

Form TL-0038, "Inspection Request," is used by the contractor or supplier to inform Caltrans that material located away from the job site is ready for inspection. If the contractor has received a Form TL-0608 for an item, Caltrans will be expecting a Form TL-0038 to initiate the source inspection.

Form TL-0038 and instructions for submitting the request are available at:

http://www.dot.ca.gov/hq/esc/Translab/OSM/smbforms.htm

It is important to remind the contractor that, in accordance with Section 6-3.05C, "Material Source Inspection and Testing," of the *Standard Specifications*, the inspection request must be submitted:

- At least 3 business days before the requested inspection date for a material source within California.
- At least 5 business days before the requested inspection date for a material source outside California but within the U.S.
- Fifty days before the planned production start for a material source outside the U.S. Notify the resident engineer at least 20 days before the actual start.

The resident engineer may also use Form TL-0038 to request field inspection by METS for structural items such as field welding.

6-202D Assignment to Resident Engineer

METS may assign inspection of manufactured or fabricated materials and products for which they have acceptance responsibility back to the resident engineer. Refer to Section 6-203D of this manual for details on inspection and release.

6-203 Manufactured or Fabricated Materials and Products Acceptance

6-203 Manufactured or Fabricated Materials and Products Acceptance

The resident engineer must ensure that materials entering the work meet the contract specifications acceptance criteria. Materials acceptance can be based on:

- Source inspection.
- Product on authorized materials list.

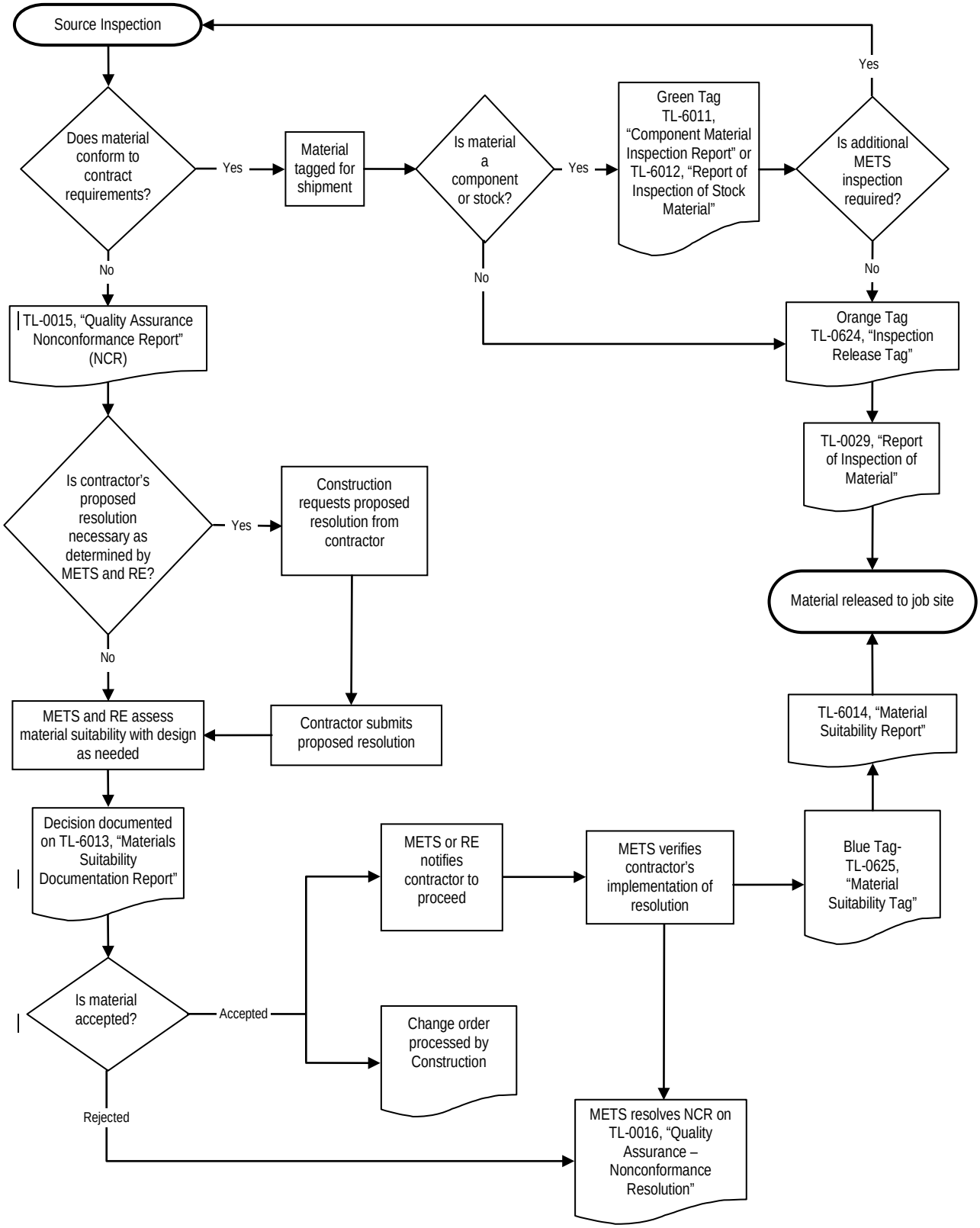
- Certificate of compliance.
- Certificate of compliance with accompanying documents.
- Field inspection and release by the resident engineer.

If the material delivered to the job site lacks proper identification, the report of inspection is unconfirmed, or the acceptability of the material is questionable, do not allow materials to be incorporated in the work until they have been found to comply with the specifications. Contact the assigned inspection unit to verify testing or submit samples for new acceptance tests.

6-203A Source Inspection

METS is responsible for the source inspection process shown in Figure 6-2.2, "Source Inspection Flowchart."

Figure 6-2.2 Source Inspection Flowchart



When a material listed on Form CEM-3101 is assigned a Form TL-0608, source inspection is required prior to shipment of the material to the job site and final acceptance. Table 6-2.1, "Inspection of Fabricated and Manufactured Materials," provides a list of common materials on Caltrans projects and some of the primary source inspection activities.

A METS inspector will travel to the source of the material and perform inspection, sampling, verification testing, and material release as necessary. Complex fabrication such as with precast prestressed concrete members and structural steel typically requires inspection during fabrication (in-process inspection).

METS must receive all information that could affect materials that are source inspected. Forward all copies of authorized shop drawings as well as notification of approved change orders to the SMR for the project. Forward to METS copies of approved shop drawings without established distributions (for example, buildings or small structures) and notification of approvals (such as paint color) or change orders. METS should receive copies of all correspondence with contractors or suppliers that may affect the fabrication.

Some inspections require out-of-state travel. It is important for METS to receive all documents before travel to ensure timely inspection and release. For instance, light poles are manufactured at various suppliers throughout the U.S.; therefore, it is crucial that authorized shop drawings are available for the METS inspector to be able to perform inspection and release. The travel time for such inspections is significant. Coordination between resident engineer and METS is crucial for timely release of the poles.

In addition to source inspection, METS performs sampling and testing for certain materials in conformance with associated standards as a part of the quality assurance program. The list of additional tests performed by METS is available in detail in the OSMPP manual.

The main point of contact for the resident engineer for anything related to source inspection is the SMR assigned to the project. SMR contact information is available at:

http://www.dot.ca.gov/hq/esc/Translab/OSM/documents/smdocuments/StructuralMaterialsRepresentatives.pdf

6-203A (1) Inspection Requests and Dispatching

The contractor is responsible for submitting Form TL-0038, "Inspection Request," to the appropriate METS QASI office with sufficient advance notice as described in Section 6-3.05C, "Material Source Inspection and Testing," of the *Standard Specifications*. The appropriate office to send Form TL-0038 is available at the METS website:

http://www.dot.ca.gov/hq/esc/Translab/OSM/smbforms.htm

This website allows the contractor to determine the appropriate QASI office by selecting the county in which the project is located from a list. The TL-0038 can come from the contractor or their subcontractors.

Each QASI office has a dispatcher who receives the TL-0038s and schedules inspections accordingly.

6-203A (2) Material Inspection—Sampling and Release

The SMR assists the resident engineer with management of source-inspected materials. The METS inspector acts as the eyes and ears of the SMR and resident engineer at the material's source. Inspected materials are identified with a unique inspector lot number that correlates the material with reports and release tags.

The METS inspector assesses the source's quality control methods and reviews the certificates of compliance and any additional documentation such as mill test reports. The METS inspector also performs random visual inspection of the material and any other required inspections such as non-destructive testing. For more information on the types of inspection required for common materials, refer to Table 6-2.1 of this manual and the OSMPP manual.

If sampling of the material is required at the source, the METS inspector will randomly sample the material at the required frequency and fill out a TL-0101, "Sample Identification Card," to accompany the material to the Transportation Laboratory. Sampling may be performed in the field by either the METS inspector or field construction staff. The material's certificate of compliance and any additional documents must be sent with the material to the lab as well. If the material is undergoing mechanical testing, the resident engineer can track the testing progress by using the J2 database and clicking on the "SMTL Test Reports" tab for the project.

If the material is found to be acceptable, the inspector identifies it with Form TL-0624, "Inspection Release Tag," commonly known as an orange tag. METS inspectors will not necessarily tag every bundle and piece in a shipment. If there are many components going out in one shipment, it is common that a single orange tag will be placed on the load. The orange tag will correlate to the certificate of compliance and bill of materials with the inspector's unique lot number. This tells the resident engineer what material the tag covers.

After the material is orange-tagged for release, the METS inspector enters the lot number, a description, and quantity of materials inspected on Form TL-0029, "Report of Inspection of Material." A completed copy of Form TL-0029 is sent to the resident engineer for the project records.

Certain materials are included in the METS authorization-to-deliver program. Source inspection for these materials is different from typical procedures in that it includes a recurring audit at a prescribed frequency, with material sampling and testing. If the facility is approved to be in the authorization-to-deliver program, they are authorized to ship material to the job site without receiving a physical tag for the material. A TL-0029AD, "Report of Inspection of Material (Authorization to Deliver)," is produced by METS and sent to the resident engineer and the supplier notifying them that the material is acceptable to be shipped. The resident engineer should not expect to obtain a tag from the material if a TL-0029AD report was received. However, the resident engineer should match the TL-0029AD report with the actual shipped material quantities and certificate of compliance to ensure that the material arrives within a reasonable timeframe.

When source-inspected materials arrive on the job site, the attached Form TL-0624 informs the resident engineer to permit use of the materials. The attached form shows the identifying lot number, the inspector's initials, and the date of inspection. If the item does not lend itself to attaching of tags, such as reinforced concrete pipe, the inspector marks the lot number on each separate piece. In some instances, when there is a

possibility of losing tags, the inspector both attaches tags and marks a lot number on the pieces. METS inspectors will not necessarily tag every bundle and piece in a shipment (with the exception of reinforced concrete pipe).

It is important to note that the resident engineer must inspect the materials for damage that may have occurred during shipping or storage and for general workmanship and conformance to planned shape or dimensions. Table 6-2.1 of this manual provides examples of types of field inspections for common materials.

The resident engineer may not receive the completed Form TL-0029 until after the materials have arrived at the job site. The resident engineer must ensure the correct material was shipped to the job site by verifying that the lot number and quantity of material shown on Form TL-0029 matches the identifying information, such as Form TL-0624, that was attached to or marked on the materials. Notify the project SMR of any discrepancies so that an investigation can be conducted.

The resident engineer must inform the assigned METS inspection office if Form TL-0029 is not received within 15 days after receipt of materials.

For in-process inspections, METS will produce an inspection report, unique to the type of inspection, and distribute it to the resident engineer for review and incorporation into the project files. More information on the various types of inspection reports is in the OSMPP manual.

6-203A (3) Nonconforming Materials at the Source

If the inspector observes that the material does not comply with the specifications at the requested time of release, the manufacturer or fabricator is notified and allowed one work shift to correct. If the material cannot be brought into conformance within the time period, METS will send a TL-0015, "Quality Assurance Nonconformance Report," (NCR) to the resident engineer within 24 hours of the observation. The resident engineer then sends a letter to the contractor informing them of the NCR and requesting a written response to resolve the issue.

The purpose of the NCR is to formally document the reason the material does not meet the specifications and to prompt the contractor to propose resolution and prevention measures in the response letter. This report is input into the J2 database under the "Issues" tab so that the information is available to Caltrans staff outside the project to help avoid future issues statewide.

When the resolution letter is submitted by the contractor, the resident engineer and METS will perform a review. If the resolution is insufficient, the contractor will be notified and allowed to revise the letter and resubmit. If the resident engineer decides that the material is not suitable for the project, it will be rejected and prohibited from incorporation into the project.

If the letter is found to be acceptable, METS will issue a TL-0016, "Quality Assurance-Nonconformance Resolution," to the resident engineer recommending a resolution and closure of the issue. In some cases, the material is found to be suitable for the intended purpose by the resident engineer, METS, and the engineer of record for project design, but it does not meet the contract specifications. In this case, METS will produce a TL-6013, "Material Suitability Documentation Report," to document the engineering judgment used to determine the material to be suitable and concurrence from the resident engineer, METS, and engineer of record for project design. Once

authorized, the material can be released by the inspector by placing a TL-0625, "Material Suitability Tag," (blue tag) onto the material in a similar fashion as with an orange tag. A TL-6014, "Material Suitability Report," is written in place of a TL-0029 and sent to the resident engineer.

- When METS and the resident engineer disagree about whether the material is suitable or unsuitable, the METS Office of Structural Materials senior engineer and the construction engineer discuss and resolve the disagreement. When consensus is not achieved at this level, the issue must be elevated to the appropriate supervisors and a mutual solution reached.
- The blue tag is only a release of the material from the source. The resident engineer may need to prepare a change order to address acceptance of the material. Section 5-302, "Change Order Policy," of this manual includes guidance for deciding whether a change order is needed. When a change order is needed, it must be approved prior to incorporating the material into the work. The resident engineer sends METS copies of approved change orders addressing blue tag issues. The project's materials certification memorandum must include material that is approved for use but does not meet original contract specifications.

Figure 6-2.1, "Source Inspection Flowchart," shows the source inspection process, including what happens when a material is not in compliance with the specifications.

6-203A (4) Source Inspection Expense Deductions

Due to the costs incurred by Caltrans when traveling for source inspection to material sources that are far away from the job site, Section 6-3.05B, "Source Inspection Expense Deductions," of the *Standard Specifications* provides the details for deductions to be taken when applicable. To determine where inspections have taken place for a project, the resident engineer can review the inspection reports that provide inspection locations.

6-203A (5) Source Inspected Materials Acceptance

The resident engineer and METS share the responsibility for inspection of materials at the source. The resident engineer has the sole responsibility for acceptance of material and may determine that materials are not acceptable for a project based on any of the following reasons:

- Damaged materials: The material may be damaged in shipment or installation.
- Material defects: It is not always practical for METS to make a 100 percent piece-by-piece inspection. The inspection is usually random sampling. The resident engineer or assistant resident engineer should check for visually detectable defects or damage.
- Incorrect wall thickness of metal culvert pipe: A given size of metal culvert pipe may vary in required thickness at various locations with different fill heights. METS inspectors cannot guarantee that a given piece of pipe will be placed at the proper location. They can only check the pipe for specified markings and determine that the measurement is within tolerance for the indicated thickness. Fit of band couplers should also be checked at the job site.
- Incorrect reinforced concrete pipe wall thickness: Some contracts require special wall thickness of reinforced concrete pipe at certain locations in the project, and

the METS inspector would not know the specific job site location of that particular pipe when the pipe is released. The inspector can only determine that it fits one of the types specified.

- Specifications and change orders: The specifications may be difficult to interpret or the source inspector is not aware of a change order.

Another situation not controllable by inspection at the source is the transfer of materials from one contract to another. The inspector can confirm (by a copy of the original inspection report) that a given amount of material with a given lot number was inspected for the first contract. Identifying the material as that received on the first job under the original inspection report and monitoring its transfer from one job to another are responsibilities of the resident engineers involved. Such transfers should not be allowed unless the material is positively identified or is of a type (such as fencing or reinforcing steel) that can be resampled and retested in the event identification is lost or is questionable.

Table 6-2.1 lists manufactured or fabricated materials and products that are usually inspected at the site of manufacture or fabrication and indicates items that are checked by the inspector at the source. Table 6-2.1 also includes items that must be checked or rechecked at the job site to ensure that the materials are acceptable. The table does not cover all manufactured or fabricated materials and products but provides typical examples.

Table 6-2.1 does not provide a complete list of inspection procedures. Verification at the source of fabrication does not preclude acceptance by the resident engineer at the job site. For more details on the inspection procedures, refer to Section 6-3, "Field Tests," of this manual and the OSMPP manual.

Table 6-2.1 Inspection of Fabricated and Manufactured Materials (1 of 3)

Product	Items Inspected and Tested by METS	Items to Check at Job Site
Bolts, nuts, and washers	Material sampling and testing including galvanizing, visual inspection.	Visible defects, dimensions, threads, galvanizing, marking for correct type fit of nuts. Make sure high-strength bolts and nuts are used where specified and nuts are lubricated properly. (Refer to *Bridge Construction Records and Procedures*.)
Curing compound (chlorinated rubber type)	Material tests by batch or lot, check marking. (Other types accepted at job site if properly packaged and labeled.)	Proper mixing, marking, check sample. Check for specified type of container and correct marking.
Bearing, elastomeric bearing pads - steel reinforced, PTFE bearing	Material sampling and specified tests, visual and dimensional inspection certification.	Damage, defects, uniformity, dimensions.
Electrical items-controllers, luminaries, signal heads, conductors, etc.	Controllers: complete tests and inspection. Luminaries: random tests, visual inspection. Signal heads, switches, and so on: visual inspection plans, type, operational check, and so on. Conductors: random tests.	Shipping damage, defects, conformance to plans, type, operational check, and so on. Check loop detectors for operation under field conditions inspection. See that all conductors are correct type and size.
Epoxy	Materials sampling and specified tests, markings, packaging.	Proper material for intended use, excessive thickening or crystallization, proper mixing.
Forgings, steel	METS inspection and tests upon request from resident engineer. Material tests, visual and dimensional inspection.	Size, uniformity, surface defects, warping (permit no repairs).
Girders, precast prestressed concrete	Material verification, in-process inspection of fabrication (forms, steel placement, stressing, concrete, and so on) workmanship, dimensions, conformance to plans.	Damage, workmanship, exposed steel dimensions, finish, cracks, or other defects.
Girders, structural steel	Material verification, check sample testing, qualifications of welders, inspection during fabrication, nondestructive testing, preparation and painting in the shop, conformance to plans and authorized shop drawings, proper joint preparation for shop-bolted connections.	Damage to members or paint: defects in steel; camber condition of paint; dimensions; condition of holes; straightness and squareness of members.
Joint seal, type A field mixed polyurethane or silicone sealant	Material sampling and testing by batch or lot.	Proper components, proper mixing, marking. Damage, workmanship, correct movement rating (from test report), size and type, lot and batch identification. (Refer to *Bridge Construction Records and Procedures*.)

Table 6-2.1 Inspection of Fabricated and Manufactured Materials (2 of 3)

Product	Items Inspected and Tested by METS	Items to Check at Job Site
Joint seal, type B preformed elastomeric joint seal	Material sampling and testing.	Damage, workmanship, correct movement rating (from test report), size and type.
Markers, pavement	Tests of each batch or lot, random inspection.	Damage, surface defects.
Mechanical equipment, scales, pumps truck inspection stations, roadside rests	Inspection usually assigned to resident engineer. Consult with Office of Structure Design, Mechanical & Electrical Stations, for assistance if required.	Damage, installation details, workmanship.
Metal beam guard rail	METS inspection and testing of galvanizing upon request by resident engineer.	Damage to rail or galvanizing, workmanship of rail and galvanizing, dimensions, conditions of holes, and so on.
Metal crib wall	METS inspection and testing of galvanizing upon request by resident engineer.	Dimensions, workmanship, galvanizing, specified bolts.
Miscellaneous iron and steel, misc. bridge metal, bearing assemblies, rings and covers, frames and grates, etc.	Materials sampling and testing as specified, qualification of welders, inspection of fabrication, galvanizing, dimensions.	Damage, welding or fabrication defects, conformance to drawings, galvanizing defects, grinding specified coating.
Paint	Materials sampling and testing by batch or lot.	Lumps, hard setting, color, marking of cans, adherence, surface preparation, lot numbers (same as on inspection report).
Piling, precast prestressed concrete	Material verification, in-process inspection of fabrication (forms, steel placement, stressing, concrete, and so on) workmanship, dimensions, conformance to plans.	Damage, workmanship (cracks, spalling, and so on), painting of strand ends, straightness.
Piling, steel pipe	Material verification, weld inspection of welding if field splices are necessary.	Damage to members, overlooked fabrication details, dimensions.
Piling, timber	Refer to “Timber and plastic timber, general.” Check for straightness, required treatment.	Check for straightness, required treatment, dimensions.
Pipe, galvanized	Material sampling and testing. Check galvanizing thickness.	Size, uniformity, surface defects (permit no repairs).
Poles, lighting	Material verification, inspection and review of welding and galvanizing, visual and dimensional inspection.	Dimensions, welds, workmanship, galvanizing type.
Prestressing strand	Material sampling and testing, package and storage, visual inspection when possible.	Check strand for rust, damage, surface defects. Check tags for stressing information.

Table 6-2.1 Inspection of Fabricated and Manufactured Materials (3 of 3)

Product	Items Inspected and Tested by METS	Items to Check at Job Site
Reinforced concrete pipe	Material verification, witness testing, visual inspection, dimensions, elliptical steel markings. Only for reinforced concrete pipe with diameter greater than 60 inches, unless requested by resident engineer.	Damage, defects, exposed steel, dimensions (specific locations per plans), straightness, concentricity.
Railings, barriers Bridge railing, barrier, and so on	Material tests, welder qualifications, welding and fabrication, galvanizing.	Damage to rail or galvanizing; fabrication or galvanizing defect, fit of sleeves, dimensions; types of bolts or nuts furnished.
Reinforcement splices: welded or mechanical couplers	METS sampling and testing, material verification.	Refer to *Bridge Construction Records and Procedures*.
Sign structures	Material verification, qualification of welders, inspection during and after fabrication, dimensions, cleaning and painting or galvanizing, and so on.	Damage, general workmanship, general conformance to requirements, position of sign panels, final check of electrical equipment for illuminated signs, proper nuts and bolts, properly torqued.
Signs, changeable message	Fabrication, operation, workmanship.	Refer to Section 4-56, "Signs," of this manual.
Steel, flooring and grating	METS inspection and tests upon request from resident engineer.	Workmanship, dimensions.
Structural steel	Material verification, qualifications of welders, inspection during fabrication, nondestructive testing, preparation and painting in the shop, conformance to plans and authorized shop drawings, proper joint preparation for shop-bolted connections.	Damage to members or paint: defects in steel or in welds; overlooked fabrication details; camber condition of paint; dimensions; condition of holes; proper bolts and nut markings; proper torquing; straightness and squareness of members.
Timber and plastic timber, general (see also "Piling, timber")	Witness plastic lumber testing.	Timber is usually inspected in the pile, so pieces should be inspected at the job site for damage, grade, deposits of excess preservative, etc. Some checking of dimensions also may be advisable. METS is available for advice or assistance as necessary.
Welded steel pipe	METS inspection and testing upon request of the resident engineer. Material tests, welder qualifications, welding inspection; and spark testing, marking, dimensions.	Shipping damage, visible defects in pipe or coating marking, dimensions.
Wire mesh reinforcing	Materials sampling and testing.	Rust and broken welds.

6-203A (6) Materials Manufactured to Caltrans-Specified Formulation

The *Standard Specifications* requires that certain products be manufactured to state specifications. Occasionally, composition of the specified formulation is changed and the newer specification results in an equal or better product. Materials manufactured under specifications newer than those that apply to a particular project are acceptable for use. METS inspectors release such materials, and resident engineers may permit use of such materials without change orders unless specifically advised to the contrary. State specification numbers for manufacturer materials are shown in the *Standard Specifications* or special provisions.

Paint manufactured under state specifications is sampled at the factory, tested by METS, and identified by lot numbers before shipment to the project.

6-203B Materials Accepted on the Basis of Authorized Materials List

The *Standard Specifications* identifies materials that must be on an authorized materials list. The list is available at:

http://www.dot.ca.gov/hq/esc/approved_products_list/

The engineer must ensure materials or products listed in Table 6-2.2, "Materials Acceptance Based on Authorized Materials List," are shown on the appropriate authorized materials list before the material is used on the project. Materials shown on the authorized materials list may also require a certificate of compliance or sampling and testing for acceptance.

Table 6-2.2 Materials Acceptance Based on Authorized Materials List (1 of 2)

Material or Product	Authorized Materials List
Alternative sound wall system	
Channelizers	Signing and delineation materials
Chemical adhesive Drilling and bonding dowels	Chemical adhesives / cartridge epoxies
Crack sealant	Flexible pavement crack treatment material
Concrete admixtures	Chemical admixtures for concrete
Concrete Cementitious material	Cementitious material —authorized list of materials
Concrete Innocuous aggregate	Innocuous aggregates for concrete
Concrete anchorage devices	Concrete inserts
Corrosion protection system	Corrosion protective coverings
Corrosion protection covering for splices	Corrosion protective coverings
Delineators	Signing and delineation materials
Detectable warning surface	Detectable warning surface
Earth retaining system	Earth retaining systems
Electrical Battery backup external cabinet	External battery backup system cabinet
Electrical LED signal modules	LED traffic signals
Epoxy powder	Fusion-bonded epoxy powder
Markers	Signing and delineation materials
Mechanical couplers	Steel reinforcing couplers
Organic zinc-rich primer	Organic zinc-rich primer list
Pavement markers	Signing and delineation materials
Pavement traffic stripe and marking tape	Signing and delineation materials
Plastic blocks	

Table 6-2.2 Materials Acceptance Based on Authorized Materials List (2 of 2)

Material or Product	Authorized Materials List
Post-tensioning prestressing system	Pre-approved systems (full list and details)
Precast portland-cement-based repair material	Precast portland-cement-based repair material
Reflectors	Signing and delineation materials
Reinforcement Headed bar	Headed bar reinforcement
Reinforcement Resistance-butt-welded splices	
Retroreflective • Retroreflective sheeting for barricades • Retroreflective bands for portable delineators • Retroreflective sheeting for construction area signs • Retroreflective sheeting for channelizers • Reflectors for Type K temporary railing • Retroreflective cone sleeves • White and orange-colored retroreflective stripes for plastic traffic drums • Portable signs Type VI, retroreflective, elastomeric roll-up fabric	Signing and delineation materials
Signs Retroreflective sheeting	Signing and delineation materials
Signs Fiberglass-reinforced plastic panels	Signing and delineation materials
Silane waterproofing	Silane reactive penetrating sealers
Temporary crash cushion Sand-filled	Highway safety features
Temporary traffic control devices Category 2	Acceptable, crashworthy Category 2 hardware for work zones
Temporary traffic control devices Category 3	Highway safety features
Thread locking systems	Anaerobic thread locking systems
Undercoating for ungalvanized sign structures	
Warm mix asphalt	Warm mix asphalt—approved technologies

6-203C Materials Accepted on the Basis of a Certificate of Compliance

In accordance with Section 6-3.05E [*6-1.07*], "Certificates of Compliance," of the *Standard Specifications*, the engineer may permit the use of certain materials before sampling and testing if accompanied by a certificate of compliance.

Acceptance based on certificates of compliance is used for products for which the industry has demonstrated a high degree of reliability in meeting specifications. METS performs a programmatic assessment on a periodic basis of materials that do not receive source inspection.

METS notifies the resident engineer when material from any producer is not acceptable on the basis of a certificate of compliance. The resident engineer must notify the contractor when material cannot be accepted based on a certificate of compliance and require submittal of samples for testing prior to use on the project.

Certificates of compliance should contain the following information:

- Name of company.
- Lot number traceable to a specific lot.
- A statement naming the applicable type and brand, and that the materials meet the requirements of the *Standard Specifications*, the special provisions, or both.
- Contract number.
- Signature of responsible officer of the company.

Materials accepted based on a certificate of compliance arrive on the job site without inspection by METS and Form TL-0029, "Report of Inspection of Material." When required by the *Standard Specifications* or the special provisions, ensure that these materials have a certificate of compliance and any required additional backup documentation, such as mill test reports for steel, pressure treating reports for timber, and concrete test reports, that show the materials comply with the specifications. Table 6-2.3 shows materials in the *Standard Specifications* that are accepted based on a certificate of compliance.

In addition to the materials listed in Table 6-2.3, in accordance with Section 6-3.05E, "Certificates of Compliance," of the *Standard Specifications*, a certificate of compliance is required for material produced outside the U.S.

Contact the project SMR regarding any feedback or additional detail for the following:

- Programmatic assessment.
- Systematic concerns regarding certain materials types.

Table 6-2.3 Materials Accepted by Certificate of Compliance (1 of 8)

Material/Product	Remarks (Including Requirements for Additional Backup Information Required with Certificate of Compliance)
Alternative earth retaining systems	Must state that the supplied material complies with the index criteria for the system at the time of prequalification.
Asphalt	Certificate of compliances must include the following: 1. Name and location of the supplier. 2. Grade of the asphalt. 3. The date and time of shipment. 4. A unique shipment number, such as a bill of lading number or manifest number. 5. A statement confirming that the transport vehicle was checked before loading and was found acceptable for the asphalt shipped. 6. The following wording: *" (Supplier name) hereby certifies that the asphalt product accompanying this certification was produced in accordance with the California Department of Transportation's Certification Program for Suppliers of Asphalt, and that this product complies in all respects with the requirements of the applicable specifications for the asphalt product identified on this document.* *I hereby certify by my signature that I have the authority to represent the supplier providing the accompanying asphalt product."*
Asphaltic emulsion	Certificate of compliance must include the following: 1. Shipment number and shipment date. 2. Source refinery, consignee, and destination. 3. Type and description of material with specific gravity and quantity. 4. Contract or purchase order number. 5. Signature by the manufacturer of the material and a statement that the material complies with the contract.
Asbestos cement pipe	
Asbestos sheet packing	
Asphalt modifier	Test results required with each truckload.
Asphalt rubber joint sealant	A certified test report of the results for the required tests performed within 12 months before the proposed use.
Backer rods	Must include manufacturer's statement of compatibility with the joint sealant to be used.
Barbed wire	
Blast cleaning material	
Bonding agent for repairing spalled surface area	Submittal of certificate of compliance required for contracts of less than 60 working days.
Bonding material	
Brick	
Cable-type restrainers Lock nuts	Certificate of compliance must be submitted with a copy of each required test report.
Cast iron pipe	
Cast iron manhole rings and covers	

Table 6-2.3 Materials Accepted by Certificate of Compliance (2 of 8)

Material/Product	Remarks (Including Requirements for Additional Backup Information Required with Certificate of Compliance)
Chemical adhesive for bonding tie bars and dowel bars in concrete pavement	
Chemical adhesive for structures	Certificate of compliance must state compliance with ICBO AC 58 and Caltrans. Augmentation/Revisions to ICBO AC 58.
Concrete Admixture	Certificate of compliance from the manufacturer must certify that the admixture furnished is the same as that previously authorized or the authorized materials list.
Concrete Cementitious material	Certificate of compliance must include the source name and location. If the cementitious material is delivered directly to the job site, the certificate of compliance must be signed by the cementitious material supplier. If the cementitious material is used in ready-mixed concrete, the certificate of compliance must be signed by the concrete manufacturer. If blended cement is used, the certificate of compliance must include a statement signed by the blended cement supplier that shows the actual percentage of supplementary cementitious material, by weight, in the blend.
Concrete Curing compound	Certificate of compliance must include: 1. Test results for the tests specified in Section 90-1.01D(6) [*90-7.01B*] of the *Standard Specifications*. 2. Certification that the material was tested within 12 months before use.
Concrete Minor concrete	Before placing minor concrete from a source not previously used on the contract, a certificate of compliance stating that the minor concrete to be furnished complies with the contract requirements, including the specified minimum cementitious material content.
Ceramic tile	
Chain link fencing and railing	Certificate required for protective coating system.
Concrete anchorage devices	
Concrete pipe Circular reinforced direct design method, less than 60 inches in diameter	Certificate of compliance must: 1. Be signed by the manufacturer's quality control representative. 2. State that all materials and workmanship comply with the specifications and authorized shop drawings.
Copper pipe	
Corrugated metal pipe	
Crack sealant	Certificate of compliance must include: 1. Manufacturer's name 2. Production location 3. Product brand or trade name 4. Product designation 5. Batch or lot number 6. Crack treatment material type 7. Contractor or subcontractor name 8. Contract number 9. Lot size 10. Shipment date 11. Manufacturer's signature
Crash cushions	
Crumb rubber modifier	Test results required with each truck load.

Table 6-2.3 Materials Accepted by Certificate of Compliance (3 of 8)

Material/Product	Remarks (Including Requirements for Additional Backup Information Required with Certificate of Compliance)
Culvert markers	
Delineators	Certificate of compliance required for: • Metal target plates • Enamel coating • Retroreflective sheeting
Dowel bar baskets	
Drop inlet grates and frames	
Drain tile	
Drip irrigation line	
Elastomeric bearing pads Plain	Certified test results for the elastomer. METS samples and tests bearing pads.
Elastomeric bearing pads Steel-reinforced	Certified test results. METS samples and tests bearing pads.
Electrical Battery backup system	Certificates of compliance is required for: • External cabinet • Batteries
Electrical Conductor	
Electrical Conduit (galvanized and plastic)	
Electrical Equipment	
Electrical Pull boxes (concrete and plastic)	
Electrical Service cabinets	
Epoxy	
Epoxy powder coating for dowel bars and tie bars	METS samples and tests epoxy coating.
Erosion control	Certificate of compliance is required for: • Straw • Fiber • Rolled erosion control product • Fasteners Certificate of compliance with attachments is required for: • Tackifier • Bonded fiber matrix • Polymer-stabilized fiber matrix

Table 6-2.3 Materials Accepted by Certificate of Compliance (4 of 8)

Material/Product	Remarks (Including Requirements for Additional Backup Information Required with Certificate of Compliance)
Erosion control (continued)	Certificates of compliance attachments include: 1. Material Safety Data Sheet. 2. Product label. 3. List of applicable nonvisible pollutant indicators for soil amendment and stabilization products as shown in the table titled "Pollutant Testing Guidance Table" in the Caltrans *Construction Site Monitoring Program Guidance Manual.* 4. Report of acute and chronic toxicity tests on aquatic organisms conforming to EPA methods. 5. List of ingredients, including chemical formulation. 6. Properties of polyacrylamide in tackifier including: (1) percent purity by weight, (2) percent active content, (3) average molecular weight, and (4) charge density.
Expansion joint filler	
Fiberglass pipe	Certificate of compliance must be submitted with laboratory test results.
Filler material for repairing spalled surface areas	Submittal of certificate of compliance required for contracts of less than 60 working days.
Gabions	If PVC coating is shown, a suitable UV resistance additive must be blended with the PVC and the additive must be shown on the certificate of compliance.
Geocomposite drain	Certificate of compliance must certify that the drain produces the specified flow rate. The certificate must be accompanied by a flow capability graph for the geocomposite drain showing flow rates and the externally applied pressures and hydraulic gradients. Verification must be by an authorized laboratory for the flow capability graph.
Geosynthetics	Test sample representing each lot and minimum average roll value.
Glass beads	
Glue laminated timbers and decking	
Guide markers	
Irrigation hose	
Irrigation pipe	Certificate of compliance required for: • Polyethylene pipe. • Plastic pipe supply line for pipe with wall thickness of the bell less than the specified minimum wall thickness of the pipe.
Joint filler material	
Joint seals (Type A and AL)	Certified test report for each batch of sealant.
Joint seal (Type B)	Certificate of compliance required for: • Elastomeric joint seal • Lubricant-adhesive Certificate of compliance must be submitted with certified test report for each lot of elastomeric joint seal and lubricant-adhesive. Test reports must include the seal movement rating, the manufacturer's minimum uncompressed width, and test results. METS samples and tests joint seal.

Table 6-2.3 Materials Accepted by Certificate of Compliance (5 of 8)

Material/Product	Remarks (Including Requirements for Additional Backup Information Required with Certificate of Compliance)
Joint seal Alternate joint seal assemblies	For alternative joint seal assemblies, a certificate of compliance must be submitted for each shipment of joint seal materials. The certificate must state that the materials and fabrication involved comply with the specifications and the data submitted in obtaining the authorization for the alternative joint seal assembly. METS samples and tests joint seal assemblies.
Joint seal Joint seal assemblies	METS samples and tests joint seal assemblies.
Lime	Certificate of compliance must include a statement certifying the lime furnished is the same as on the authorized material source list.
Machine spiral wound PVC pipeliners	Certificate of compliance for each reel of PVC strip must include: 1. Name of manufacturer 2. Plant location 3. Date of manufacture and shift 4. Cell classification 5. Unit mass 6. Average pipeliner stiffness and profile type
Markers	Certificate of compliance required for: • Metal target plates • Enamel coating • Retroreflective sheeting
Masonry block	Certificate of compliance required for: • Concrete masonry units • Aggregate for grout • Grout
Micro surfacing emulsion	
Mulch	
Open steel flooring and grating	
Overside drains	Certificate of compliance based on steel materials, aluminum materials or plastic materials.
Parking area seal material	
Pavement markers	
Pavement marking Paint or thermoplastic	
Plastic lumber	Laboratory test report.
Plastic traffic drums	
Plastic pipe for drainage	Certificate of compliance must include average pipe stiffness, resin material cell classification, and date of manufacture. For corrugated polyethylene pipe, manufacturer's copy of plant audits and test results from the National Transportation Products Evaluation Program for the current cycle of testing for each pipe diameter furnished.
Portable changeable message sign	

Table 6-2.3 Materials Accepted by Certificate of Compliance (6 of 8)

Material/Product	Remarks (Including Requirements for Additional Backup Information Required with Certificate of Compliance)
Precast concrete Cementitious material used in precast concrete products	Certificate of compliance must be signed by the precast concrete product manufacturer.
Precast concrete Box culverts	Certificate of compliance must signed by the manufacturer's quality control representative for each shipment.
Precast concrete members	Certificate of compliance is for materials and workmanship incorporated in the work, and for testing and inspections that have been performed.
Precast raised traffic bars	
Preformed compression seal for concrete pavement	
Preformed membrane sheet	Must include type of sheet and the conditioner or primer application rates.
PTFE bearing materials	
Rapid strength concrete	Certificate of compliance is required for each delivery of aggregate, cementitious material, and admixtures used for calibration tests. The certificate of compliance must state that the source of the materials used for the calibration tests is the same source as to be used for the planned work.
Reinforcement	You may request that the contractor submits with certificate of compliance: 1. Copy of the certified mill test report for each heat and size of reinforcing steel showing physical and chemical analysis. 2. Two copies of a list of all reinforcement before starting reinforcement placement.
Reinforcement Epoxy-coated	Certificate of compliance for each shipment of epoxy-coated reinforcement must be submitted with: 1. Certification that the coated reinforcement complies with ASTM A 775/A 775M for bar reinforcement or ASTM A 884/A 884M, Class A, Type 1, for wire reinforcement. 2. All certifications specified in ASTM A 775/A 775M for bar reinforcement or ASTM A 884/A 884M for wire reinforcement. METS samples and tests epoxy coating.
Reinforcement Epoxy-coated prefabricated reinforcement	Certificate of compliance for each shipment of epoxy-coated prefabricated reinforcement must be submitted with: 1. Certification that the coated reinforcement complies with ASTM A 934/A 934M for bar reinforcement or ASTM A 884/A 884M Class A, Type 2 for wire reinforcement. 2. All certifications specified in ASTM A 934/A 934M for bar reinforcement or ASTM A 884/A 884M for wire reinforcement. METS samples and tests epoxy coating.
Reinforcement Epoxy-coating patching materials	Certificate of compliance for the patching material must include certification that the patching material is compatible with the epoxy powder to be used.
Reinforcement Headed bar	Certificate of compliance for each shipment of headed bar reinforcement must be submitted with: 1. Mill test reports for the: 1.1. Bar reinforcement 1.2. Head material 2. Production test reports 3. Daily production logs METS samples and tests headed bar.

Table 6-2.3 Materials Accepted by Certificate of Compliance (7 of 8)

Material/Product	Remarks (Including Requirements for Additional Backup Information Required with Certificate of Compliance)
Reinforcement Splice material	Certificate of compliance for each shipment of splice material must be submitted with: 1. Type or series identification of the splice material, including tracking information for traceability. 2. Grade and size number of reinforcement to be spliced. 3. Statement that the splice material complies with the type of mechanical splice on the authorized material list. 4. For resistance-butt-welded material: 4.1. Heat number 4.2. Lot number 4.3. Mill certificates METS samples and tests reinforcement splices.
Sheet metal	
Sign panels	Certificates of compliance required for: • Aluminum sheeting • Retroreflective sheeting • Screened-process colors • Nonreflective, opaque, black film • Protective-overlay film
Silicone joint sealant	A certified test report of the results for the required tests performed within 12 months before the proposed use.
Slotted edge drain	
Snow poles	
Snow plow deflectors polyethylene material	
Soil amendment	
Steel crib wall	
Steel pipe piles	The certificate of compliance must be signed by the plant's quality control representative. The quality control representative must be on record with the Office of Structural Materials. Certificate of compliance must include: 1. Statement that all materials and workmanship incorporated in the work and all required tests and inspections of this work have been performed as described. 2. Certified mill test reports for each heat number of steel used in pipe piles being furnished. 3. Test reports for tensile, chemical, and any specified non-destructive test (NDT) must be based on test samples taken from the base metal, steel, coil, or from the manufactured or fabricated piles. 4. Calculated carbon equivalent. The carbon equivalent may be shown on the mill test report.
Structural plate culverts	Certificate of compliance required for: • Structural metal plate pipe • Arches • Pipe arches • Metal liner plate pipe
Structural shape steel piles	Certificate of compliance must include a statement that all materials and workmanship incorporated in the work and all required tests and inspections of this work have been performed as described.

Table 6-2.3 Materials Accepted by Certificate of Compliance (8 of 8)

Material/Product	Remarks (Including Requirements for Additional Backup Information Required with Certificate of Compliance)
Structural composite lumber used in falsework	
Structural steel thermal spray coat Wire feedstock	
Styrofoam filler	
Subsurface drain	
Temporary concrete washout	Certificate of compliance required for: • Gravel-filled bag • Plastic liner
Temporary fence (Type ESA)	Certificate of compliance required for: • High visibility fabric • Safety caps for metal posts
Temporary linear sediment barrier	Certificate of compliance required for: • Fiber roll • Safety cap for metal posts • Silt fence fabric • Sediment filter bag • Foam barrier • Gravel-filled bag fabric
Temporary railing (Type K)	
Thermoplastic	
Tie bars	METS samples and tests epoxy coating.
Tie bar baskets	METS samples and tests epoxy coating.
Timber products (treated and untreated)	Certificate of compliance for timber and lumber must state the species of the material to be shipped and include a certified grading report. If treated, certified treating report.
Threaded tie bar splice couplers	
Traffic stripe Paint or thermoplastic	
Turf sod	
Underdrains	Certificate of compliance required for: • Type of pipe • Tubing • Fitting
Waterproofing fabric	
Waterstop	Certificate of compliance for waterstop material must state compliance with paragraph 6 of Army Corps of Engineers CRD-C 572.
Welded wire fabric	
Wire mesh fencing	

When material delivered with a certificate of compliance is improperly certified, or any part of it is found not to comply with specifications, reject the entire shipment and notify METS immediately.

Procedures for sampling and testing materials accepted by certificate of compliance vary depending on the material. Following are some details covering the sampling of materials accepted by certificate of compliance.

6-203C (1) Asphalt

Certification for asphalt must comply with Caltrans' *Certification Program for Suppliers of Asphalt*. Program requirements, procedures, and a list of authorized material sources, are available on the METS website:

http://www.dot.ca.gov/hq/esc/approved_products_list/

When asphalt arrives at the job site or at the plant accompanied by a certificate of compliance, accept the shipment for use and sample and test for acceptance during use. When shipments of asphalt arrive without certificates of compliance, sample the asphalt and do not allow use prior to receiving acceptance test results.

All samples of asphalt, along with the necessary forms and tickets, are sent to Engineering Services, Office of Materials Engineering and Testing Services, 5900 Folsom Boulevard, Sacramento, California 95819. Ship sample cans two at a time, in the cardboard cartons used for shipping samples of the completed mix. Take samples in the amount and frequency shown in the tables in Section 6-1, "Sample Types and Frequencies," of this manual.

Asphalt is very hot; therefore, for safety reasons, the acceptance samples must be sampled by the contractor. The resident engineer must witness the contractor taking acceptance samples. The resident engineer must determine when the sample is to be taken and then observe that the sample is taken in accordance with California Test 125, "Methods of Test for Sampling Highway Materials and Products Used in the Roadway Structural Sections," or sampling requirements specified in contract special provisions. Take possession of the sample from the contractor and transport it to a Caltrans office or the testing laboratory.

After obtaining a sample from a plant storage tank, write the shipment number on Form TL-0101, "Sample Identification Card."

METS sends test results to the district materials engineer and to the resident engineer.

6-203C (2) Asphalt Rubber Latex Joint Filler

Submit samples in 1-quart friction-top cans. Sample after the contents of the drum have been stirred thoroughly and brought to a uniform consistency and before the setting powder has been added. Note the batch number and the shipment number on Form TL-0101.

6-203C (3) Two-Component Joint Sealing Compounds

This material is usually in 2-gallon pails. Each pail requires a manufacturer's lot number. Before sampling, stir thoroughly. Samples should be taken in the amount and frequency shown in the tables in Section 6-1, "Sample Types and Frequencies," of this manual.

6-203C (4) Cement

For cement delivered directly to the job site by the manufacturer, require one certificate of compliance for each shipment.

A single certificate for each brand may certify the cement used in ready-mixed concrete by the vendor of the concrete, to cover all deliveries in a single day. It must show:

- The name or brand of cement.
- Mill source.
- The total number of cubic yards of concrete delivered under the certificate.
- A complete list of individual deliveries, identified by delivery slip number or other suitable identification.

A single certificate may cover all deliveries of precast products in a single lot. It must show the name or brand of cement and the length of each size of pipe or the number of precast units of other types represented.

METS inspects precast products, including pipe, made at a plant other than that of the contractors at the job site. When such inspection is complete, the resident engineer is relieved of responsibility for obtaining certificates of compliance and sampling of cement. The inspector at the precast product plant will handle cement inspection approximately as outlined for ready-mixed concrete.

Certificates of compliance for cement are inspected and filed by the resident engineer. In the event of a cement test failure, forward copies of certificates to METS.

Sample cement in accordance with the frequencies shown in Section 6-1, "Sample Types and Frequencies," of this manual, and in accordance with California Test 125, "Method of Test for Sampling Highway Materials and Products Used in the Roadway Structural Sections."

Where plant facilities include a cement auger, the cement samples may be obtained by a pipe-sleeve sampling device or by any other convenient method.

A full 8 pounds is sampled at one time, not in smaller increments. Close the bag immediately, leaving room for the cement to shift. Place the sealed bag in a second plastic bag with the white copy of Form TL-0518, "Job Cement Samples Record." Form TL-0518 should show the certificate of compliance serial number, cement brand and type, name of mill or vendor, date, time sampled, and contract number.

After identification, box the cement samples in corrugated cartons, designed to hold single 8-pound samples, or in concrete cylinder cartons, which will hold six samples. Ship no more than six samples in any one container.

Mark the shipping carton "Cement Sample," and ship it to METS.

Test reports of cement are issued by METS. Acceptability of current shipments from the mill will be shown on the report, but the reports may not actually include results of samples taken from a specific project. The test reports, however, are applicable to each contract identified on a test report. When a project has special requirements for cement, or if there are other non-routine conditions, submit special samples with instructions that they be tested and reported for the specific project.

6-203C (5) Paint

Sample all paint in the field, except paint specified as commercial quality, and send the samples to METS for testing in accordance with the frequency shown in Section 6-1, "Sample Types and Frequencies," of this manual.

For bridges and other major structures, do not allow the paint to be used until the test results of field samples are available. For other miscellaneous painting, properly inspected and identified paint may be used pending test results.

Send paint samples from the field to METS as soon as it is received on the project. During the progress of the job, take special check samples when the paint exhibits hard settling or potential contamination of paint is suspected.

Proper sampling to obtain a representative portion of the paint is mandatory.

Use the following sampling methods:

- For bridges and other major structures, or whenever large quantities are involved, send an unopened 5-gallon bucket to METS. METS will return unused portions to the job.
- For smaller samples:
    1. Pour the top liquid into a clean container as large as the one being sampled.
    2. Stir the settled portion of the paint with a paddle, gradually reincorporating the decanted liquid a little at a time until all has been added.
    3. "Box" the paint by pouring it back and forth between the two containers at least five or six times or until the paint is mixed thoroughly.
    4. Take a gallon sample immediately.

Send all samples to METS, along with all pertinent information. Use Form TL-0101, "Sample Identification Card."

When the paint is Department-furnished, check samples will not be required.

6-203C (6) Pavement Traffic Stripe and Marking Materials

California Test 406, "Method of Test for Field-Sampling of Pavement Marking Materials," describes procedures for obtaining samples of pavement-marking materials from a factory-sealed bag, bulk container, or stripe-application equipment. Circumstances at the job site often affect where to gather the sample. Field-striping inspectors must follow the procedures in California Test 406 to ensure that representative samples are taken of pavement-marking materials.

Field sampling must be initiated by the striping inspector or the resident engineer under the following conditions:

- The material is more than 1 year old (based on the date of manufacture).
- Product tampering or adulteration is suspected.
- Adequate proof that the product has been pretested and approved is not provided (for example, missing batch approval paperwork or other product/batch number discrepancies on containers or paperwork).

Where large quantities of pavement-marking materials are being applied, random quality assurance sampling of these materials is advisable.

Samples of pavement-marking materials in unopened factory-sealed bags are preferred. Factory-sealed bags are labeled with the manufacturer's name and batch number, which makes identification easier. When sampling glass beads and thermoplastic, collect the following sample quantity to ensure a representative sample:

- One unopened 50-pound bag of glass beads of the same manufacturer and lot number being used in the striping operation.
- One unopened 50-pound bag of thermoplastic of the same manufacturer and lot number being used in the striping operation.

For paint, bulk containers can be sampled only when the material is first homogeneously mixed using appropriately sized mixing equipment. For bulk containers of paint, obtain a 1-quart sample. Multiple samples are necessary when sampling paint directly from the application equipment to ensure that the product is homogeneously mixed. Each grab sample must be approximately 1 quart and submitted separately.

Label samples of pavement-marking materials according to where and how they were gathered at the job site. Include pertinent information on Form TL-0101, "Sample Identification Card," and send samples to METS for testing.

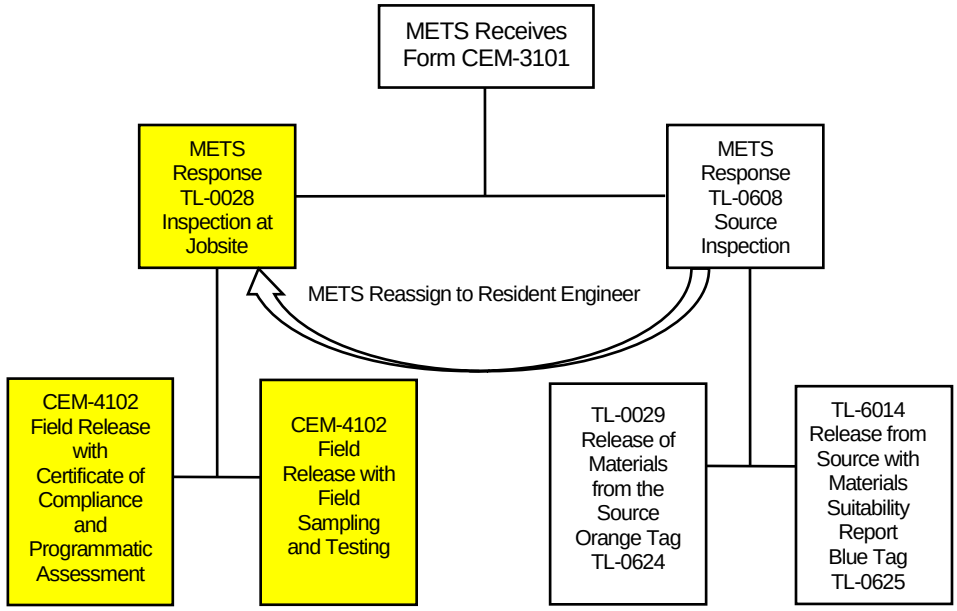
6-203C (7) Reinforcement

Refer to Section 4-52, "Reinforcement," of this manual for details.

6-203D Field Inspection and Release by the Resident Engineer

METS may assign inspection of manufactured or fabricated materials and products for which they have acceptance responsibility back to the resident engineer. The process to be followed for inspection at the job site is shown in Figure 6-2.3, "Inspection and Release Flowchart—Inspection at Job Site."

Figure 6-2.3 Inspection and Release Flowchart—Inspection at Job Site



METS assigns inspection responsibility to the resident engineer using Form TL-0028, "Notice of Materials to Be Inspected at Jobsite."

Upon receipt of Form TL-0028, the resident engineer should inform the contractor that the material will be inspected, and if required, sampled, on the job site. When testing of material is required, inform the contractor of the approximate testing turnaround time so that the contractor can obtain the material sufficiently in advance of using the material in the work to allow for sampling and testing.

Materials may be accepted based on required certificates of compliance or sampling and testing and visual inspection. When material will be accepted and released at the job site by use of a certificate of compliance, the required certificates of compliance should accompany the material to the job site and be retained in the project files. Sample materials in accordance with the tables at the end of Section 6-1, "Sample Types and Frequencies," of this manual, or as requested by METS.

Field inspect and release materials assigned by METS at the job site using Form CEM-4102, "Materials Inspected and Released on Job." Refer to Section 6-3, "Field Tests," of this manual for details.