



QUALITY ASSURANCE PROGRAM (QAP)

City of South San Francisco DEPARTMENT OF PUBLIC WORKS

The purpose of this program is to provide assurance that the materials incorporated into each construction project conform to the contract specifications.

- This QAP shall be *updated* every *five years* minimum
- This QAP shall be updated if changes are made to the test methods or to the testing and sampling frequencies.
- This QAP is incomplete without attachments 1 through 3.

Approved By:

Matthew Rubles, P.E., Principal Engineer

Date:

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Projects OFF the State Highway System, follow the QA procedures outlined in this document

Projects ON the State Hwy System, follow the QA procedures outlined in the following Caltrans manuals:

- ***Construction Manual***
- ***Local Agency Resident Engineer Construction Manual Supplement***
- ***Bridge Construction Records and Procedures Manual***
- ***Local Assistance Structure Representative Guidelines***

I. DEFINITION OF TERMS

Quality Assurance Program (QAP): A sampling, testing and inspection program to provide assurance that the materials and workmanship incorporated into the project conform to the contract specifications. The main elements of a QAP are the Material Acceptance Program and the Independent Assurance Sampling and Testing Program.

Material Acceptance Program: Sampling, testing, inspection, and certification of project materials to determine compliance with the contract specifications. Materials shall be accepted by one or more of the following methods, as allowed for in this document and the contract specifications: *Acceptance Testing, Manufacturer's Certificate of Compliance, Source Inspection, or field inspection.*

Acceptance Testing (AT): Testing of project materials to determine compliance with the contract specification criteria.

Certificate of Compliance: A signed document from the materials manufacturer committing that the delivered goods meet the contract specifications.

Source Inspection: Sampling, testing and/or inspection of manufactured or prefabricated structural materials at a location other than the job site, generally at the manufactured location.

Independent Assurance Program (IAP): A program that verifies that AT is being performed correctly by certified testers using qualified laboratories and calibrated equipment.

II. MATERIALS ACCEPTANCE PROGRAM

Material incorporated into the work shall be accepted by one or more of the following methods, as specified in the contract specifications and this document:

1. *Field Sampling and Acceptance Testing*
2. *Source Inspection and Testing*
3. *Manufacturer's Certificate of Compliance* (with attachments if required)
4. *Visual Inspection* (for minor quantities)

FIELD SAMPLING AND ACCEPTANCE TESTING:

General:

- Acceptance sampling and testing shall be performed by certified materials personnel.
- Acceptance testing will be performed utilizing accredited materials laboratories and properly calibrated equipment.
- Certifications and accreditations shall be specific to the tests being performed.
- A materials testing results log shall be maintained for any test method performed more than once on a project.
- Test results for materials incorporated into the work shall be in compliance with the contract specifications.
- Actions taken regarding material with failing test results shall be fully documented, including details documenting remove/replace, rework/re-test, and deduction/CCO.
- Justification shall be provided for any failing material allowed to remain in place.

Acceptance Sampling and Testing Locations and Frequencies:

- Sample and testing locations and frequencies shall be in accordance with the contract specifications.
- If not specified in the contract documents, sampling and testing locations and frequencies shall be as shown in **Attachment No. 1, Acceptance Sampling and Testing Frequencies**.
- When sampling products such as Portland cement concrete, cement-treated base, hot mix asphalt, or similar materials; sampling shall be varied with respect to the time of the day, insofar as possible, in order to *avoid a predictable sampling routine*.

Acceptance Test Methods:

- The test methods used shall be *as specified in the contract documents*.
- For a material specified to comply with a property shown in the following table, the Agency tests under the corresponding test shown:

Test Property	Test
Relative compaction	CT 216 or 231
Sand equivalent	CT 217
Resistance (R-value)	CT 301
Grading (sieve analysis)	CT 202
Durability index	CT 229
Cleanness Value	CT 227

Acceptance Testing Laboratory:

- Acceptance testing will be performed by:
 - ✓ Consultant Materials Laboratory
 - ✓ Other: City of South San Francisco On-Call Testing Laboratory
- The materials lab shall be under the responsible management of a *California Registered Engineer* with experience in sampling, inspection, and testing of construction materials.
- The Engineer shall *certify* the results of all tests performed by laboratory personnel under the Engineer’s supervision.
- The Laboratory shall be properly qualified.
- The Laboratory testing personnel shall be appropriately certified.
- Testing equipment shall be properly calibrated.
- Laboratories shall comply with Section IV, *Independent Assurance Program*, of this document.

Reporting Acceptance Test Results:

- The laboratory shall report test results to the RE as soon as possible by email or telephone.
- Copies of complete material test result reports, including data and calculation sheets, shall be provided to the RE in accordance with the following timetable:

Timetable for Providing Full Test Results to the RE

If the material is sampled... and the test performed is... submit results to the RE within ...

at the material plant	Sieve Analysis, or Sand Equivalent (SE), or Cleanness Value (CV)	24 hours
at the job site	Compaction and/or maximum density	24 hours
	Sieve Analysis, or Sand Equivalent (SE), or Cleanness Value (CV)	72 hours
	R value, or	96 hours
	Asphalt extraction	

Acceptance Testing Summary Logs

- The RE shall maintain a testing summary log for each test method performed more than once on the project (CT 217, CT 202 etc...), and for each salient feature (structure backfill, subgrade, etc...).
- **Attachment 2, Testing Result Summary Log** form shall be used.
 - The Testing Result Summary Log must include the information:
 - Name and ID Number of the Test Method Performed
 - Date Tested
 - Name Of Tester
 - Location
 - Approximate Quantity of Material Represented by the Test
 - Required Passing Result
 - Actual Test Result
 - Resolution of any Failing Results
- The RE shall use the log to track that:
 - Sampling is performed at the required frequencies;
 - Acceptance tests are performed at the required frequencies;
 - Tester certifications are current and on file; and
 - all failing tests have been mitigated and documented.

MANUFACTURER'S CERTIFICATES OF COMPLIANCE:

General:

- Various manufactured materials may be accepted for incorporation into the work without sampling or testing, on the basis of a certificate from the manufacturer.
- *Where required by the contract specifications*, the contractor shall submit a certificate of compliance.
- Where required by the contract, the contractor shall *attach test data or other documents* to the certificate of compliance.
- The RE may perform sampling and testing on such materials at any time.
- Certificates of compliance **shall**:
 - Be submitted by the Contractor before the material is incorporated into the work;
 - Accompany the material to the job site.
 - Identify the lot (or heat) number for each lot delivered;
 - Include the contract number;
 - Include test data and other documents when required.
 - State that the material complies with the contract specifications; and
 - Be signed by the producer of the material.

List of Materials Accepted by Certificate of Compliance:

- This agency uses the Caltrans 2018 Standard Specifications.
- In accordance with the Caltrans 2018 Standard Specifications the materials listed in Appendix 3 may be accepted by Certificate of Compliance.
- This list may be supplemented or amended by the contract Special Provisions or Technical Provisions

SOURCE INSPECTION AND TESTING:

- Some manufactured or pre-fabricated structural materials will be inspected or tested prior to arrival at the jobsite, generally at the manufacturer's location (a.k.a. source inspected.)
- Structural items categorized as "catastrophic consequences of failure" or "significant safety concern" may be source inspected. Materials that might be source inspected include: structural steel, precast pre-stressed concrete girders and pilings; RCP greater than 60", joint seals, bearing pads, lighting and signal poles, sign structures, electrical items.
- The RE may reject source inspected material at the job site if deemed not acceptable, including:
 - Material damage in shipment or installation;
 - Defective material (source inspection is usually a random sampling and may not have checked 100% of the material.)

- The following materials laboratories will be used to perform source inspection and testing.
 - ✓ Consultant Materials Laboratory
 - ✓ Other: City of South San Francisco On-Call Materials Laboratory

ACCEPTANCE OF MINOR QUANTITIES WITHOUT TESTING (VISUAL INSPECTION):

General:

- Relatively minor quantities of construction materials may be accepted without testing.
- The following 3 conditions must be met:
 1. Visual examination of the material is performed.
 2. The manufacturer or supplier has recently furnished similar materials found to be satisfactory using normal sampling and testing requirements.
 3. The manufacturer (or supplier in the case of HMA or concrete) provides certification that the material furnished complies with the contract specifications.

Approximate quantities that may be accepted by visual inspection:

- *Aggregates* other than for use in Portland Cement Concrete, not to exceed:
 - 100 tons per day, nor
 - 500 tons per project
- *Bituminous mixtures* (example: HMA), not to exceed
 - 50 tons per day.
 - If project total is less than 500 tons., sample at engineer's discretion
- *Bituminous material* (example: Liquid Asphalt), not to exceed:
 - 100 gallons per project

III. INDEPENDENT ASSURANCE (IA) PROGRAM

GENERAL:

- The IA program shall verify that:
 - Sampling and testing procedures are being performed correctly
 - All AT performed on the project uses a *qualified laboratory and certified testing personnel*.
 - All testing equipment is in good condition and properly *calibrated*.
- A complete review of AT shall be performed by IA program personnel, or an independent materials laboratory chosen by the agency, when unresolved discrepancies related to poor correlation between acceptance tester's results and other test results occur.
- The IA program duties, including certification of testers and qualification of lab, shall be executed by:
 - ✓ Local Agency designated IA person (this person shall not perform any AT)
 - ✓ Caltrans (for CT test methods only)
 - ✓ Consultant (this consultant shall be different from AT consultant)
- IA shall be performed on every type of materials test required for the project.
- IA samples and tests shall *not* be used for determining compliance with contract requirements.

LABORATORY QUALIFICATION:

- The AT materials laboratory shall participate and comply with one or more of the following Correlation Testing Programs:
 - a. AASHTO Materials Reference Laboratory (AMRL)
 - b. Cement and Concrete Reference Laboratory (CCRL)
 - c. Caltrans' Reference Samples Program (RSP)
- The AT Laboratory qualification shall occur *annually*.
- A copy of the current laboratory qualification shall be kept in the project records.

TESTER CERTIFICATION:

- Sampling and testing personnel shall be certified for a maximum of two years by one or more of the following Personnel Certification Programs:
 - ✓ CT Materials Engineer and/or CT METS IA Representative (for CT tests only)
 - ✓ American Concrete Institute
 - ✓ National Institute of Certification of Engineering Technologies
 - ✓ A consultant lab qualified for such purposes.

- Proficiency tests shall be performed for testers to be certified on Sieve Analysis, Sand Equivalent, and Cleanness Value tests. All other types shall be witness tests.
- A copy of each tester's current and applicable certifications shall be kept in the project files.

EQUIPMENT CERTIFICATION/CALIBRATION:

- Laboratory testing equipment shall be:
 - Capable of performing the tests required.
 - Be in good working order.
 - Be calibrated at least *once each year*.
 - Be calibrated by impartial means using devices of accuracy traceable to the ***National Institute of Standards and Technology***.
 - Have a *decal* firmly affixed to each piece of equipment showing the date of the last calibration.

IV. RESIDENT ENGINEER'S CERTIFICATION OF PROJECT MATERIALS:

- The RE shall complete and sign LAPM **Exhibit 17-G, "Materials Certificate"** of the Local Assistance Procedures Manual (LAPM), upon completion of a federal-aid project,
- The form shall *explain and justify* all materials incorporated into the work which did not conform to specifications, including changes by virtue of contract change orders.
- The form shall be filed in the project records.
- The form shall be included in the Report of Expenditures submitted to the Caltrans District Local Assistance Engineer.

V. PROJECT QAP RECORDS:

- Each project shall have the quality assurance documents on file, organized, and indexed in the following categories:
 - Copy of Quality Assurance Plan
 - Certs. of Proficiency-Testers and Samplers (Exh. 16-D TL-0111)
 - Cert. of Qualification for Testing Laboratory (TL-0113)
 - Notice of Materials to be Used (Exh. 16-I)
 - Acceptance Testing Summary Logs and Test Results
 - Certificates of Compliance, including Buy American Certificates
 - Source inspection records and reports.
 - Materials Certification (Exh. 17-G)

- All project records shall be available in a single locations for inspection by auditors and reviewers:
 - At any time during the project
 - For three years following the date of final project voucher.

VI. ATTACHMENTS

- ATTACHMENT NO. 1 - Acceptance Sampling and Testing Frequencies
- ATTACHMENT NO. 2 - Test Results Summary Log
- ATTACHMENT NO. 3 - List of Materials Accepted by Certificate of Compliance from Caltrans Construction Manual, September 2019

Sample for Local Agency QAPs			
Sampling and Testing Frequency Table for projects OFF the SHS.			
HOT MIX ASPHALT (HMA) / ASPHALT CONCRETE (AC)			
Quality Characteristic	Test Method	Minimum Sampling and Testing Frequency	Location/Time of Sampling
Aggregate Gradation (Sieve)	CT 202	1 Per 1000 Tons or Part Thereof ; Minimum 1 per day during production/placement of at least 300 tons per day.	At Plant Per CT 125 (a)
Sand Equivalent	CT 217		
Asphalt Binder Content	CT 382		
In-Place Density and Relative Compaction (Nuclear)	Nuclear (b) CT 375 or ASTM D2950 (c)	1 Per 1000 Tons or Part Thereof ; Minimum 1 per day during production/placement of at least 300 tons per day. (b)	Random Locations Per CT 375 (c)
Theoretical Maximum Specific Gravity and Density (Rice)	CT 309		
HMA Moisture Content	CT 226 or CT 370	1 Per Day During Production/Placement of At Least 300 Tons Per Day	Loose Mix Behind Paver Per CT 125
Stabilometer Value (d)	CT 366		
Asphalt Binder	Sample per Section 92	Sample 1 min. per day for production over 300 tons per day; See (f) regarding testing.	At Plant Per CT 125
Smoothness	12-foot Straightedge	As necessary to confirm contract compliance.	Final Pavement Surface

**Attachment 1:
Sampling and Testing Frequency Table -
For projects OFF the State Hwy System,
page 1 of 3.**

- (a) Exact tonnage of sample location to be determined by Random Sampling Plans
- (b) Compaction determined by Nuclear Density Device. Core testing required if compaction fails the nuclear test
- (c) Correlation between core densities and nuclear device required only if compaction fails the nuclear test
- (d) Report the average of 3 tested briquettes from a single split source
- (e) Use CT 309 to determine maximum theoretical density in lieu of CT 367 calculated maximum theoretical density
- (f) No testing required unless warranted by concern ; sample and store until completion of project

SUBGRADE (DISTURBED BASEMENT SOIL) OR EMBANKMENT

Quality Characteristic	Test Method	Minimum Sampling and Testing Frequency	Location/Time of Sampling
Maximum Density and Relative Compaction	CT 216/CT 231	1 Min. Test per 5000 sq ft under vehicle traveled way and shoulder 1 Min. Test Per 300 linear foot under sidewalk	Random locations as determined by the Engineer in place after compaction.

AGGREGATE BASES AND SUBBASES, IMPORTED BORROW

Quality Characteristic	Test Method	Minimum Sampling and Testing Frequency	Location/Time of Sampling
Sieve Analysis	CT 202		
R-Value	CT 301	1 Min. Test Per Material Source	Sample from site stockpile/plant prior to placement.
Sand Equivalent	CT 217		
Maximum Density and Relative Compaction	CT 216/CT 231	1 Min. Test per 5000 sq ft	Random locations as determined by the Engineer in place after compaction.

STRUCTURE BACKFILL, SELECT BACKFILL

Quality Characteristic	Test Method	Minimum Sampling and Testing Frequency	Location/Time of Sampling
Sieve Analysis	CT 202		
R-Value	CT 301	1 Min. Test Per Material Source	Sample from site stockpile/plant prior to placement
Sand Equivalent	CT 217		
Maximum Density and Relative Compaction	CT 216/CT 231	1 Min. Test Per 2 Vertical Lifts of Placement	Random locations as determined by the Engineer in place after compaction.

**Attachment 1:
Sampling and Testing Frequency Table -
For projects OFF the State Hwy System,
page 2 of 3.**

PORTLAND CEMENT CONCRETE (PCC) - STRUCTURAL AND SIGNAL/LIGHTING FOUNDATIONS

COARSE AGGREGATE		Minimum Sampling and Testing Frequency	Location/Time of Sampling
Quality Characteristic	Test Method		
Sieve Analysis	CT 202	1 min. test per 500 cu yds and per each material source ; 1 min. test on smaller projects; if bridge, 1 min. set per separate pour per abutment/pier/deck.	Sample from site stockpile/plant prior to placement
Cleaness Value	CT 227		

FINE AGGREGATE		Minimum Sampling and Testing Frequency	Location/Time of Sampling
Quality Characteristic	Test Method		
Sieve Analysis	CT 202	1 min. test per 500 cu yds and per each material source ; 1 min. test on smaller projects; if bridge, 1 min. set per separate pour per abutment/pier/deck.	Sample from site stockpile/plant prior to placement
Sand Equivalent	CT 217		

WET MIX		Minimum Sampling and Testing Frequency	Location/Time of Sampling
Quality Characteristic	Test Method		
Slump/Penetration	CT 533	2 per day	Sample from truck/work site
Cylinders	CT 539/540	1 min. set of 3 per day; if bridge, 1 min. set per separate pour of abutment/pier/deck.	

**Attachment 1:
Sampling and Testing Frequency Table -
For projects OFF the State Hwy System,
page 3 of 3.**

**Attachment 2:
Testing Result Summary Log**

Test Result Summary Log

Project Name: _____
 Contract Number: _____

Test Method Name and Number: _____

Test Number	Date Sampled	Name of Tester/ Company * Tester Certification of file:	Production		Test Results			Remarks
			Location (Streets, depths, etc)	Production Quantity Represented	Required Results	Actual Results	Pass/Fail	
1								Include explanation for any failing test results note test number of any repeat.
2								
3								
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Attachment 3

**List of Materials Accepted by Certificate of Compliance
from Caltrans Construction Manual, September 2019**

Attachment 3

Table 6-2.3. Materials Accepted by Certificate of Compliance (1 of 12)

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	<p>Certificates of compliance must include the following:</p> <ol style="list-style-type: none"> 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: "<i>(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> <p><i>I hereby certify by my signature that I have the authority to represent the supplier providing the accompanying asphalt product."</i></p>
Asphaltic emulsion	<p>Certificate of compliance must include the following:</p> <ol style="list-style-type: none"> 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	

Attachment 3

Table 6-2.3. Materials Accepted by Certificate of Compliance (2 of 12)

Material/Product	Remarks (Including Requirements for Additional Backup Information Required with Certificate of Compliance)
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	
Chemical adhesive for bonding tie bars and dowel bars in concrete pavement	
Chemical adhesive for structures	Certificate of compliance must state compliance with ICBO AC58 and Caltrans. Augmentation/Revisions to ICBO AC58.
Concrete Admixture	Certificate of compliance from the manufacturer must certify that the admixture furnished is the same as that previously authorized for the Authorized Material List.
Concrete Cementitious material	<p>Certificate of compliance must include the source name and location.</p> <p>If the cementitious material is delivered directly to the job site, the certificate of compliance must be signed by the cementitious material supplier.</p> <p>If the cementitious material is used in ready-mixed concrete, the certificate of compliance must be signed by the concrete manufacturer.</p> <p>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.</p>
Concrete Curing compound	<p>Certificate of compliance must include:</p> <ol style="list-style-type: none"> 1. Test results for the tests specified in Section 90-1.01D(6), "Curing Compound," of the <i>Standard Specifications</i>. 2. Certification that the material was tested within 12 months before use.

Attachment 3

Table 6-2.3. Materials Accepted by Certificate of Compliance (3 of 12)

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: <ol style="list-style-type: none"> 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: <ol style="list-style-type: none"> 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 truckload.
Culvert markers	
Delineators	Certificate of compliance required for: <ul style="list-style-type: none"> • Metal target plates • Enamel coating • Retroreflective sheeting

Attachment 3

Table 6-2.3. Materials Accepted by Certificate of Compliance (4 of 12)

Material/Product	Remarks (Including Requirements for Additional Backup Information Required with Certificate of Compliance)
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 are required for: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • Straw • Fiber • Rolled erosion control product • Fasteners

Attachment 3

Table 6-2.3. Materials Accepted by Certificate of Compliance (5 of 12)

Material/Product	Remarks (Including Requirements for Additional Backup Information Required with Certificate of Compliance)
Erosion control (continued)	Certificate of compliance with attachments is required for: <ul style="list-style-type: none"> • Tackifier • Bonded fiber matrix Polymer-stabilized fiber matrix Certificates of compliance attachments include: <ol style="list-style-type: none"> 1. Safety data sheet 2. Product label 3. List of applicable, nonvisible pollutant indicators for soil amendment and stabilization products as shown in the table "Pollutant Testing Guidance Table" in the Caltrans <i>Construction Site Monitoring Program Guidance Manual</i> 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 resistant 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.

Attachment 3

Table 6-2.3. Materials Accepted by Certificate of Compliance (6 of 12)

Material/Product	Remarks (Including Requirements for Additional Backup Information Required with Certificate of Compliance)
Glass beads	Certificate of compliance by lot or batch and test data from an independent laboratory.
Glue laminated timbers and decking	
Guide markers	
Irrigation hose	
Irrigation pipe	Certificate of compliance required for: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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.
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 List.

Attachment 3

Table 6-2.3. Materials Accepted by Certificate of Compliance (7 of 12)

Material/Product	Remarks (Including Requirements for Additional Backup Information Required with Certificate of Compliance)
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: <ul style="list-style-type: none"> • Metal target plates • Enamel coating • Retroreflective sheeting
Masonry block	Certificate of compliance required for: <ul style="list-style-type: none"> • 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	
Plastic lumber	Certificate of compliance for each shipment of plastic lumber, that must be accompanied by a 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.

Attachment 3

Table 6-2.3. Materials Accepted by Certificate of Compliance (8 of 12)

Material/Product	Remarks (Including Requirements for Additional Backup Information Required with Certificate of Compliance)
Portable changeable message sign	
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.

Attachment 3

Table 6-2.3. Materials Accepted by Certificate of Compliance (9 of 12)

Material/Product	Remarks (Including Requirements for Additional Backup Information Required with Certificate of Compliance)
Reinforcement Epoxy-coated prefabricated reinforcement	<p>Certificate of compliance for each shipment of epoxy-coated prefabricated reinforcement must be submitted with:</p> <ol style="list-style-type: none"> 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. <p>METS samples and tests epoxy coating.</p>
Reinforcement Epoxy-coating patching materials	<p>Certificate of compliance for the patching material must include certification that the patching material is compatible with the epoxy powder to be used.</p>
Reinforcement Headed bar	<p>Certificate of compliance for each shipment of headed bar reinforcement must be submitted with:</p> <ol style="list-style-type: none"> 1. Mill test reports for the: <ol style="list-style-type: none"> 1.1. Bar reinforcement 1.2. Head material 2. Production test reports 3. Daily production logs <p>METS samples and tests headed bar.</p>
Reinforcement Splice material	<p>Certificate of compliance for each shipment of splice material must be submitted with:</p> <ol style="list-style-type: none"> 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: <ol style="list-style-type: none"> 4.1. Heat number 4.2. Lot number 4.3. Mill certificates <p>METS samples and tests reinforcement splices.</p>
Sheet metal	

Attachment 3

Table 6-2.3. Materials Accepted by Certificate of Compliance (10 of 12)

Material/Product	Remarks (Including Requirements for Additional Backup Information Required with Certificate of Compliance)
Sign panels	Certificates of compliance required for: <ul style="list-style-type: none"> • 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 Structural Materials. Certificate of compliance must include: <ol style="list-style-type: none"> 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 nondestructive test 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: <ul style="list-style-type: none"> • Structural metal plate pipe • Arches • Pipe arches • Metal liner plate pipe

Attachment 3

Table 6-2.3. Materials Accepted by Certificate of Compliance (11 of 12)

Material/Product	Remarks (Including Requirements for Additional Backup Information Required with Certificate of Compliance)
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.
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: <ul style="list-style-type: none"> • Gravel-filled bag • Plastic liner
Temporary fence (Type ESA)	Certificate of compliance required for: <ul style="list-style-type: none"> • High visibility fabric • Safety caps for metal posts
Temporary linear sediment barrier	Certificate of compliance required for: <ul style="list-style-type: none"> • Fiber roll • Safety cap for metal posts • Silt fence fabric • Sediment filter bag • Foam barrier • Gravel-filled bag fabric
Temporary railing (Type K)	
Thermoplastic traffic stripes and pavement markings	Certificate of compliance by lot of batch and test data report from an independent laboratory. Obtain a minimum 1-foot length of stripe test sample.
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	

Attachment 3

Table 6-2.3. Materials Accepted by Certificate of Compliance (12 of 12)

Turf sod	
Two-component paint traffic stripes and pavement markings	Certificate of compliance by lot or batch. Obtain a 50-foot test section before application of paint.
Underdrains	Certificate of compliance required for: <ul style="list-style-type: none"> • 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	
Wood Structures	Certificate of compliance for timber and lumber stating the species of the material to be shipped and including a certified grading report. If timber is treated, include a certified treating report. Certificate of compliance for glued laminated timbers and decking.