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The purpose of this manual change transmittal is to provide updates and corrections to the 2001 edition of the Caltrans *Construction Manual*. Please update your manual in accordance with the table below. The relevant pages are indicated in the table.

Section(s)	Remove Old Page(s)	Insert New/Revised Page(s)
6-2, "Acceptance of Manufactured Material and Sampling Methods"	6-2.11	6-2.11 thru 6-2.14
Index	None	I-1 thru I-15
4-86, "Signals, Lighting and Electrical Systems"	None	4-86.i
4-90, "Portland Cement Concrete"	None	4-90.i
6-2, "Acceptance of Manufactured Material and Sampling Methods"	6-2.i	6-2.i

Sample deposits that have no open faces by means of test holes. When sampling material sites, select depth and spacing of test holes considering the probable method of operating the pit. In general, dozers will combine the material laterally. A shovel will remove the material vertically. Test results in a “spotty” pit may be misleading to the extent that operations may be too expensive in order to make the required grading.

If at all possible, use a dozer or shovel to open up the pit before sampling rather than depending on test holes.

6-203E Processed Aggregates

Sample processed aggregates, from locations such as stockpiles, transportation units, conveyors, or windrows in accordance with California Test 125, “Sampling Highway Materials and Products Used in the Roadway Structural Sections.”

Table 6-2.2 Inspection of Fabricated and Manufactured Materials (1 of 3)

PRODUCT	ITEMS TESTED BY METS	ITEMS TO CHECK AT JOB SITE
Asphalt plank	Tests workmanship and dimensions	Workmanship and dimensions
Bolts and nuts	Tests, visual spot-check, marking. Spot-check galvanized high strength (ASTM A 325) nuts for proper lubricant	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. (See Office of Structure Construction Records and Procedures.)
Ceramic tile	Tests, visual inspection in stack.	Damage, defects, dimensions
Casting, iron and steel, bronze	Material tests, visual and dimensional inspection	Dimensions, fillets, unauthorized repairs (welds fillers), defects
Clay pipe and drain tile	Tests, visual inspection, dimensions, marking	Damage, cracks and other defects, marking, straightness.
Concrete pipe	Tests, visual inspection, dimensions, elliptical steel markings	Damage, defects, exposed steel, dimensions, specific locations per plans), straightness, concentricity.
Corrugated metal pipe and structural plate pipe	Check mechanical tests, check coating tests, metal thickness (as marked), workmanship, diameter, etc. (spot-check), markings	Damage, visible defects, damaged galvanizing proper metal thickness for specific location, damage to bituminous coating. Check for weld defects, spacing and edge distance of rivets or spot welds, fit or bands, etc.
Curing compound (Chlorinated rubber type)	Material tests, marking. (Other types accepted at jobsite if properly packaged and labeled).	Proper mixing, marking, check sample. Check for specified type of container and correct marking.
Elastomeric bearing pads	Specifies tests, visual and dimensional inspection certification	Damage, defects, uniformity, dimensions
Electrical items, luminaries, controllers, signal heads, conductors, etc.	Controllers - complete tests and inspection Luminaries - random tests, visual inspection Signal heads, switches, etc. - visual inspection plans, type, operational check, etc. Conductors - random tests	Shipping damage, defects, conformance to plans, type, operational check, etc. Check loop detectors for operation under field conditions inspection. See that all conductors are correct type and size.
Epoxy	Specified tests, markings, packaging	Proper material for intended use, excessive thickening or crystallization, proper mixing
Expanded polystyrene	Material tests, general condition	Dimensions, general condition
Fencing, mesh, posts, gates, etc.	Coating and mechanical tests, visual inspection, dimensions	Damage, dimensions, general workmanship, galvanizing, condition of wood posts
Forgings, steel	Material tests, visual and dimensional inspection	Size, uniformity, surface defects, warping (permit no repairs).

Table 6-2.2 Inspection of Fabricated and Manufactured Materials (2 of 3)

PRODUCT	ITEMS TESTED BY METS	ITEMS TO CHECK AT JOB SITE
Girders, concrete, precast, prestressed	Material tests, stressing and fabrication inspection (forms steel placement, concrete, etc.) workmanship, dimensions, conformance to plans	Damage, workmanship, exposed steel dimensions, finish, cracks or other defects
Head gates	Material check, visual and dimensional inspection	Damage, workmanship, dimensions, type
Joints Pourable joint sealing compound Premolded expansion joint filler	Lab tests, visual check Tests of each roll, visual inspection	Proper components, proper mixing, marking. Damage, workmanship, correct movement rating (from test report), size and type, lot and batch identification (See the <i>Bridge Construction Records and Procedures Manual</i> .)
Markers, pavement	Tests of each lot, random inspection	Damage, surface defects
Mechanical equipment, scales, pumps truck inspection stations, roadside rests	Inspection usually assigned to resident engineer. Consult with the Office of Structure Design, Mechanical & Electrical Stations, for assistance if required.	Damage, installation details, workmanship
Metal crib wall	Tests, visual inspection, galvanizing, dimensions.	Dimensions, workmanship, galvanizing, specified bolts
Miscellaneous iron and steel, misc. bridge metal, bearing assemblies, rings and covers frames and grates, etc.	Sampling and testing as specified, qualification of welders, inspection of fabrication, dimensions	Damage, welding or fabrication defects, conformance to drawings, galvanizing defects, grinding specified coating.
Paint	Specified tests, markings	Lumps, hard setting, color, marking of cans adherence, surface preparation, lot numbers(same as on inspection report).
Piling Concrete Sheet (when specified as cont. item)	Material check, stressing, fabrication, workmanship Tests, dimensions, workmanship	Damage, workmanship (cracks, spalling, etc.) painting of strand ends, conformance to plans, straightness. Dimensions and workmanship
Timber	See Timber, General. Check for straightness, required, treatment	Check for straightness, required treatment, dimensions
Pipe, galvanized	Coating tests, visual and dimensional inspection	Size, uniformity, surface defects (permit no repairs)
Pipe, plastic	Material, tests, dimensions, workmanship and markings	Dimensions, workmanship, markings
Poles, lighting	Material and weld tests, visual and dimensional inspection	Dimensions, welds, workmanship, galvanizing type
Prestressing strand	Mechanical tests, wrapping, visual inspection when possible	Check strand for rust, damage, surface defects. Check tags for stressing information.

Table 6-2.2 Inspection of Fabricated and Manufactured Materials (3 of 3)

PRODUCT	ITEMS TESTED BY METS	ITEMS TO CHECK AT JOB SITE
Pull boxes (concrete)	Reinforcement, dimensions, workmanship	Cracks, rock pockets, exposed steel, dimensions
Railings, barriers Bridge railing, barrier, etc.	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
Metal beam guard rail	Material tests, fabrication, radius, dimensions, punching of holes, galvanizing, marking	Damage to rail or galvanizing; workmanship of rail and galvanizing; dimensions; conditions of holes, etc.
Railroad rail	Weight, general condition, rust	Dimensions, rust
Raised bars (precast)	Strength tests, visual inspection	Damage, surface defects, color
Sign structures	Material tests, qualification of welders, inspection during and after fabrication, dimensions, cleaning and painting or galvanizing, etc.	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	(See Section 4-56 of this manual.)
Steel, flooring and grating	Materials tests, workmanship and dimensions	Workmanship, dimensions
Structural steel	Material tests, qualifications of welders, inspection during fabrication, nondestructive testing, preparation and painting in the shop, conformance to plans and approved 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, general	Visual inspection for grade and dimensions, treatment; retention and penetration; analysis of preservative; marking (See Piling, timber, also.)	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.
Waterstop	Material tests, finish dimensions, uniformity	Finish, dimensions, uniformity
Welded steel pipe	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 tests, visual inspection	Rust and broken welds

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4-8603B Standards

4-8603C Conduit

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Example 4-86.1 Example Checklist

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4-9002B Aggregate Gradings

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4-9002H Design of Mix

4-9002H (1) *Selecting Proportions*

4-9002H (1a) *Cement Content*

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Table 6-90.1 Estimate of Free Water Content for Initial Design

4-9002H (1c) *Combined Grading of Aggregate*

4-9002H (2) *Computations for Mix Design*

Example 4-90.1 Sieve Analysis and Combined Grading for Portland Cement Concrete, 37.5 mm Maximum

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4-9002H (2b) *Absolute Volumes*

4-9002H (2c) *Quantities Per Cubic Meter*

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4-9003A Proportioning and Mixing Operations

4-9003B Mixing and Transporting

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4-9004 Measurement and Payment

Section 2 Acceptance of Manufactured Material and Sampling Methods

6-201 General

6-202 Responsibilities and Procedures for Acceptance of Materials

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6-202B Office of Materials Engineering and Testing Services

6-202B (1) *Source Inspection*

6-202B (2) *Assignment to a unit of METS or a District Materials Laboratory*

6-202B (3) *Form TL-0624, "Inspection Release Tag."*

6-202B (4) *Assignment to a commercial laboratory*

6-202B (5) *Assignment to the Resident Engineer.*

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6-202D (1) *Inspection Verification*

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6-202E Materials Accepted on the Basis of a "Certificate of Compliance"

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6-202E (3) *Two-component Joint Sealing Compounds*

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6-202E (5) *Reinforcement*

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Table 6-2.1 Materials Accepted by Resident Engineer

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6-203B Concrete Curing Compounds

6-203C Epoxy

6-203D Unprocessed Soils and Aggregates

6-203D (1) *Stone from Ledges and Quarries*

6-203D (2) *Material Sites of Sand, Gravel, or Soil*

6-203E Processed Aggregates

Table 6-2.1 Inspection of Fabricated and Manufactured Materials