POLICY

As stated in the June 18, 2001, Division of Engineering Services (DES) Decision Document #9, the DES–Materials Engineering and Testing Services and Geotechnical Services (METS/GS) is responsible for creating, maintaining and updating most of the California Test Methods (CTMs) and is responsible for posting all CTMs on the Internet.

To assist in the creation of a new CTM and modification of an existing CTM, METS issued METS Directive 08 on May 1, 2007, in which a two-column format was specified. This revised METS Directive 08 Revision Number 1 eliminates the use of the two-column format when creating a new CTM or modifying an existing CTM. Current CTMs are not required to be reformatted until they are revised.

The following procedures should be used when creating or modifying a CTM.

PROCEDURE FOR THE CREATION OF A NEW CTM

1. The METS/GS owner of the CTM does the following:

    a. Contacts the CTM Archive Coordinator to get the current CTM template for proper format.

    b. Contacts the CTM Archive Coordinator, to select a CTM number as follows:

        Use the next number in sequence following the last number in the series, or with the appropriate Office Chief's approval, select a number not currently used within the series.

    c. Adds pertinent information on the template and save draft CTM as a Word file.

    d. The METS/GS owner of the CTM circulates the draft CTM to the District Materials Engineers (DMEs) and users of the CTM for at least two weeks soliciting their input and making modifications if needed. This step may be omitted if the correction is grammatical/editorial in nature and does not affect the test protocol or if this test is only performed by staff at the Transportation Laboratory in Sacramento.

    e. Forwards draft to the office clerical to format and proofread.

    f. Once finalized, circulate and obtain approvals from the CTM owner Senior/Branch Chief and Office Chief on the sign-off sheet.

g. Email the finalized electronic Word file and also give a hardcopy of the CTM with the original sign off sheet (with all of the signed approvals) to the CTM Archive Coordinator for format review and conversion to PDF file.

2. After receiving the paper copy signed by the METS/GS Deputy Division Chief, the CTM Archive Coordinator will do the following:

a. Create a space on the CTM web page and upload the new CTM to the site.

b. The CTM Archive Coordinator verifies the CTM and photos, charts, etc. are all displayed properly. The CTM web site is http://www.dot.ca.gov/hq/esc/ctms/index.html.

c. After verification, the CTM Archive Coordinator will notify the internal users of the CTM that a new/revised CTM has been created and will include the CTM number and reason for the creation (or change) in the notification e-mail.

PROCEDURE FOR THE MODIFICATION OF AN EXISTING CTM

1. Contact the CTM Archive Coordinator for the original Word file (electronic copy of the most current CTM available). If the electronic file no longer exists, get the latest template and redo the CTM.

2. Make appropriate changes to the CTM and use "revision marks" in the right margin to denote where changes have occurred.

3. Follow steps 1 a. through 1g. and 2 a. through 2c. in the above procedures to create or modify a CTM.

TOOLS TO ASSIST YOU

Attached are the Basic CTM Formatting Guidelines (Attachment A), California Test Method Sign-Off Sheet for new and revised CTM (Attachment B), an example of a California Test Method (Attachment C), and the CTM Contact List (Attachment D).

Philip J. Stolarski

PHILIP J. STOLARSKI
State Materials Engineer
Deputy Division Chief
Materials Engineering and Testing Services and
Geotechnical Services
Division of Engineering Services

Attachments

ATTACHMENT A

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY

Final will not include the day } **California Test Number**
December 7, 2011

DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Transportation Laboratory
5900 Folsom Blvd.
Sacramento, California 95819-4612

NAME OF TEST
(Arial style, size 12, Bold, 15 pt before & after)

START ALL TEST METHODS WITH "METHOD OF TEST FOR . . . "
Do not include "Determining"

Format all CTMs as follows:

ALWAYS single space between Headings, Sections and Paragraphs; ALWAYS use default tab settings.

A. HEADING – CAPITAL LETTERS (Arial style, size 10, Bold, Lettered)

Use the ¶ to make the "space after"

Body – LETTER (Bookman Old Style, left justify)

1. Heading – Number (Bookman Old Style, size 10, left justify wraparound)

Place a punctuation at the end of each "series" item - either (.) period or (,) comma and end the sentence.

Body – Number (Bookman Old Style, size 10, left justify wraparound)

a. Heading – letter (Bookman Old Style, size 10, left justify wraparound)

Body – letter (Bookman Old Style, size 10, left justify wraparound)

(1) Heading – (number) (Bookman Old Style, size 10, left justify wraparound)

Body – (number)(Bookman Old Style, size 10, left justify wraparound)

e.g. = for example i.e. = that is . . .

NOTE: All capitals
Do not number Notes
Align "NOTE" with the indent of the section it relates to

For Example:	c. This subsection requires a note. NOTE: Note aligns with the indented text portion.

A. SCOPE

(If possible start all CTMs -- "This test method describes the procedure . . .")

B. REFERENCES

(All Section Titles -- attach to at least the first sentence in the Body of the Section using "Paragraph" Keep with Next or Keep Lines Together.)

California Test ### – Name
AASHTO T ## – Name
ASTM C ## – Name

Do not use "Standard Method of Test.. . ." for any reference.
ASTM ~~Designation~~ X ### - ASTM X ###
Do not use - "Designation"
Use space between Letter and Number

C. APPARATUS

(Generally, no lead sentence – just a numbered list. List only essential equipment. This doesn't have to be an exhaustive list.)

1. Equipment

D. SAMPLES

(If there is something unusual about sample preparation, storage, and handling include it here.)

E. PROCEDURE
May require "Part"
Use "E. PROCEDURE"
Then "Parts"

Keep Title of Section with the body of the Section.

E. PROCEDURE

PART 1. TITLE
1A. SUBTITLE
1. **Begin Text (See CT111)**
2A.

F. CALCULATIONS
G. REPORTING OF RESULTS
H. PRECAUTIONS

I. HEALTH AND SAFETY

(ALWAYS INCLUDE THIS STATEMENT)

It is the responsibility of the user of this test method to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use. Prior to handling, testing or disposing of any materials, testers must be knowledgeable about safe laboratory practices, hazards and exposure, chemical procurement and storage, and personal protective apparel and equipment.

Caltrans Laboratory Safety Manual is available at:

http://www.dot.ca.gov/hq/esc/ctms/pdf/lab_safety_manual.pdf

(Add any unusual and important safety warnings – i.e., "Comply with requirements of nuclear license.")

End of Text
(California Test ZZZ contains X pages)

TABLE #

Table Title

Column Heading	Column # (if used) Column Heading	Column Heading	
		Column Subheading	Column Subheading
Row Heading		--[b]	

Note: A general note applies to the table as a whole
[a] Use alpha ([a]) or symbol (*) to reference notes to specific table elements
[b] Use -- (dash-no space-dash) to fill in ALL empty cells in a table

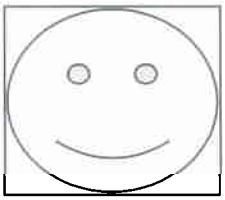


FIGURE #. Figure Title

Other "Always" Protocols

- Use "in accordance with" when directing to another CT or Section.
  Example: "Sample aggregate in accordance with California Test 125."

- Do not use names of test methods when they are referenced in the body of the text
  Example: "Oven-dry the fine-aggregate sample at 230°F ± 9°F to constant weight in accordance with California Test 226, ~~"Determination of Moisture Content by Oven Drying"~~."

  Also, do not use name of Parts of the same test method.
  Example: "a combination sieve shaker-agitator is allowable when it meets the above requirements for shaking (Section C.3)".

- Numerals:

SI	US
100	100
2000	2,000
30 000	30,000
400 000	400,000
5 000 000	5,000,000

- Space between number and symbol; i.e., 45 %, 25 in., 500 mL - - Except Temperatures, i.e., 57°F

- Use nonbreaking space between numbers and symbols (shift+ctrl+space = nonbreaking space) - 45 ft

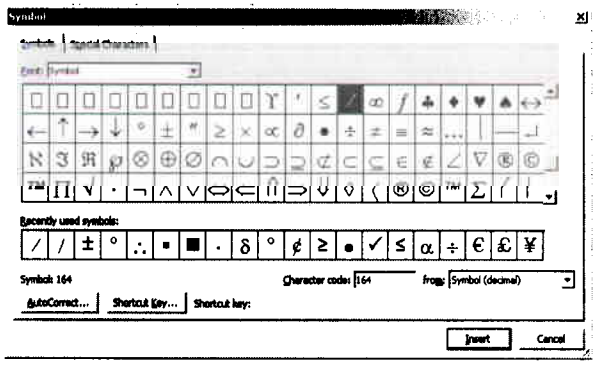
- If you spell out number, spell out unit of measurement - i.e., one foot measures are best.

- Do not add an "s" to an abbreviation of a measurement unit to show plural.

- Do not use decimals of inches – ~~0.6 in.~~ should be ⅝ in.

- Write ranges of values with units as - 5 to 10 in. or 15.0 to 30.0 ft

- Write all dimensions as 5 in. × 6 in. not 5 in. by 6 in. or 5 × 6 in.
  (Use "×" from Symbol)



- Write all fractions as $5\frac{5}{8}$ not 5 5/8, 5-5/8 or 5-5/8

  2½, 5¾ (Microsoft made these fractions)
  $^{35}/_{8}$ $6^{4}/_{5}$ superscript/subscript
  Use "⁄" from Symbol

- Do not use the symbol for inch or seconds (") or the symbol for minutes (').

- Write tolerances - 50°F ± 5°F

  10 in. ± ½ in.

  50 ft ± 0.01 ft

- Use vs. not vs or versus

Equations and Formulas:

- Use Microsoft Equation Editor for equations and formulas.
  (Click - Insert > Object > Microsoft Equation > OK)
  Create the equation in the equation window – select and fill appropriate symbol(s) (location(s))

  Example : $60 + (90 - 70)\left[\frac{100 - 60}{100 - 70}\right] = 86.67$

  To align "Example" with the formula, put "Example" in equation maker.

  Align variables, =, and equation or definition:

  Example: X = First unknown
  W = Last unknown

1. Determine the volume of concrete, S, per batch:

   Center on text width.

   $$S = (W_a + W_f + W_c + W_w)$$

   Align "Where:" with text and put first variable & definition on line with "Where".

   Where: S = Volume of concrete per batch, ft^3

   W_a = Total weight of cement in the batch, lb

   Align - - variable, "=", and definitions

CTM Units and Protocols

Unit abbreviations

U.S. Measures

Length:

in. inch, inches (with period to distinguish it from the word "in")
- in^3 cubic inch, cubic inches (alternate – cu. in. – use discretion)
- in square inch, square inches (alternate – sq. in. – use discretion)

ft foot, feet (no period)
- ft^3 cubic foot, cubic feet (alternate – cu. ft. – use discretion)
- ft^2 square foot, square feet (alternate – sq. ft. – use discretion)
- ft^3/s cubic feet per second (alternate – cfs – use discretion)

yd yard, yards (no period)
- yd^3 cubic yard, cubic yards (alternate – cu. yd. – use discretion)
- yd^2 square yard, square yards (alternate – cu. yd. – use discretion)

mph miles per hour

Liquid:

gal gallon, gallons (no period)

qt quart, quarts (no period)

Weight:

lb pound, pounds (no period)
- lb/ft^3 pounds per cubic foot (alternate – pcf – use discretion)
- lb/in^3 pounds per cubic inch (alternate – pci – use discretion)
- lb/ft^2 pounds per square foot (alternate – psf – use discretion)
- lb/in^3 pounds per square inch (alternate – psi – use discretion)

oz ounce (no period)

Metric (SI) Units

g gram (many CTMs still use grams (g) for weighing) (no period)

L, mL liter, milliliter (many CTMs still use liters (L) for measuring) (no period)

Time

hr hour, hours (no period)

min minute, minutes (no period)

s second, seconds (no period)

Standardized Phrases

- Oven-dry the aggregate to be tested at 230°F ± 9°F in accordance with California Test 226.

NOTE: When testing aggregate samples containing reclaimed asphalt pavement (RAP), the oven drying temperature must not exceed 100°F.

- Balance: a balance or scale with capacity of _____, sensitive to ____ % of the weight of the sample to be weighed or accuracy of _____.
- Tamping rod: a round, straight steel rod with a diameter of $\frac{5}{8}$ in. ± $\frac{1}{16}$ in. and length of at least 4 in. greater than the depth of the measure in which rodding is to be performed, but not more than 24 in. One or both ends of the tamping rod must be rounded to a hemispherical tip of the same diameter as the rod.
- Filling and compacting with a tamping rod:
  (1) Place the measure on a level, firm surface.
  (2) Using a scoop, fill the measure in 3 layers of equal depth. Move the scoop around the perimeter of the measure opening to ensure an even distribution of the material with minimal segregation. Fill the topmost layer to over flowing. Level the surface of each layer with the fingers prior to tamping.
- Rod each layer 25 times with the rounded end of the tamping rod, distributing the strokes evenly over the surface of the layer
- While rodding the first layer, penetrate nearly full depth into the layer, but avoid striking the bottom of the base.
- While rodding the second and third layers, penetrate approximately 1 in. into the layer below with each stroke.
- After each layer is rodded, tap the sides of the measure with a hand or stake or jig the measure (this will be determined by container or process) using such force so as to close any voids left by the tamping rod and to release any large bubbles of air that may have been trapped.
  (1) Level the surface of the compacted aggregate with the fingers or a straightedge in such a way that any slight projections of the larger pieces of coarse aggregate approximately balance the larger voids in the surface below the top of the measure.
- ~~Nominal Maximum Aggregate Size~~ Use HMA aggregate size
- Standard words -- asphalt binder
  theoretical maximum specific gravity
  reclaimed asphalt pavement (RAP)

ATTACHMENT B

REVISED or New

California Test Method
Sign Off Sheet

CTM XXX

Revision Facilitator _____ Phone #: _____

CTM Activity/Status	Contact Person	Initials	Date
Technical Reviewer			Begin End
Dates Circulated to DPM From / / To / /			
Dates Circulated to DMEs From / / To / /			
Dates Circulated to Industry From / / To / /			
Formatted & Reviewed – Office Secretary **			Begin End
	Submittal Date		
Approved by Senior/Branch Chief - METS			
Approved by Office Chief - METS			
Review for Construction Procedure Bulletin (CPD) Changes Needed? Yes ( ) No ( )	Chuck Suzko – HQ Const		
Review of Specifications Changes Needed? Yes ( ) No ( )			
Specifications Changed? Yes ( ) No ( )	Jill Sewell – DES-OE		
Forwarded to IA Senior New IA Test Needed? Yes ( ) No ( )	Cathrina Barros		
Forwarded to Archive Coordinator	Amanda Huynh		
Submitted to Deputy Division Chief - METS	Phil Stolarski		

Comments:

Changed units of measure from metric to US standard units as appropriate, and reformatted to single column at industry request.

* If CTM is new and has not been assigned a number, contact Archive Coordinator for NEW number.
** Place electronic copy of test method in Office common folder.

California Test 223
June 2012

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY

DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Transportation Laboratory
5900 Folsom Blvd.
Sacramento, California 95819-4612

METHOD OF TEST FOR SURFACE MOISTURE IN CONCRETE AGGREGATES BY THE DISPLACEMENT METHOD (FIELD METHOD)

A. SCOPE

This test method describes a rapid procedure used in the field for determining the percentage of surface moisture in both fine and coarse concrete aggregates by displacement in water. Surface moisture is defined as moisture in excess of that contained by the aggregate when in a saturated surface-dried condition. This is the value desired in correcting the batch weights for portland cement concrete. The accuracy of the method depends upon accurate information on the bulk specific gravity of the material in a saturated surface-dry condition.

B. REFERENCES

ASTM C138/C138M - Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete

C. APPARATUS

The apparatus shall consist of the following:

1. A balance having a capacity of 20 kg and accuracy of 1 g.

2. A galvanized water pail, 12 to 14 qt size.

3. A suitable container for the immersion of the pail and sample in water. A 20 in. diameter container or pail approximately 24 in. high may be used.

4. A brass or galvanized rod about $^{3}/_{16}$ in. in diameter with open hooks on each end. The rod should preferably be made in two detachable sections; the upper section is attached to the center of the scale pan and becomes part of the tare weight. This upper section is of such length that its lower end remains above the surface of the water in the container and in a convenient position for attaching and removing the lower section from which the pail is suspended when weighing in water.

5. A bench or table to support the balance over the water container with sufficient clearance to permit inserting the pail into the water container. Make an opening in the bench to permit suspending the hooked rod from the center of the balance pan. See Figure 1 for a suitable arrangement.

6. A spoon, rod, or other suitable device for stirring and removing trapped air from the sample when it is inundated in the pail. (The hand may be used if desired.)

D. PREPARATION OF SAMPLE

Select a representative sample of the fine or coarse aggregate weighing approximately 8 kg. Cover the sample to minimize evaporation.

E. TEST PROCEDURE

1. Record all weights to the nearest gram.

2. Weigh the empty pail and record as tare weight of pail, W_1.

3. Submerge the pail as shown in Figure 1. Exercise care when immersing to see that no air is trapped under the pail. Adjust the water level in the container to intersect the straight portion of the lower section of the hook-ended rod. Place a reference mark at this intersection of the rod with the water surface or insert an overflow spout through the side of the water container at this level. Adjust to this same water level within ± 1 in. for all future "in water" weighings. Weigh the pail and rod in water and record as weight, W_2.

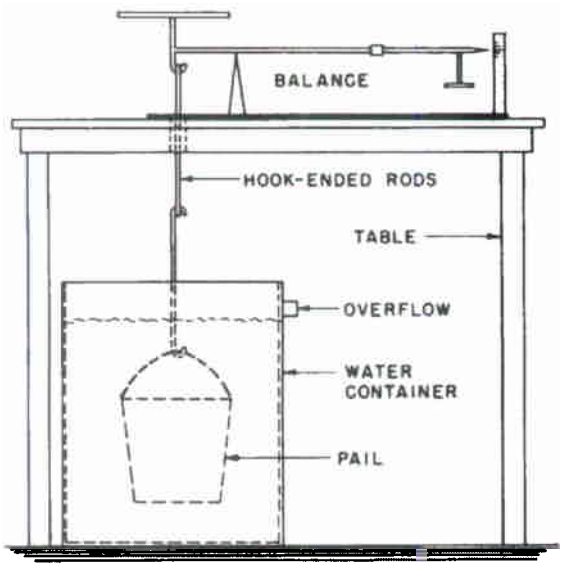


FIGURE 1. Apparatus for Immersion of the Pail in Water

4. Remove the pail from the water container, wipe off moisture, and weigh the test sample of aggregate in the pail. Weigh the aggregate as rapidly as possible to prevent the evaporation of the surface moisture. Record this weight as W_3.

5. Remove the pail and sample from the balance and add enough water to the pail to completely inundate the sample. Stir the inundated sample with the spoon, rod, or hand in order to remove any entrapped air.

6. Add enough water to almost fill the pail and attach the pail to the balance by means of the hook-ended rod. Lower and immerse the pail and sample to within ± 1 in. of the same level where the pail was submerged when filled with water only (See E.3.). Exercise care when immersing to see that no air is trapped under the pail. Weigh the pail, rod, and sample in water and record as weight, W_4.

F. CALCULATIONS

1. The weight of the sample in water is equal to the weight of the pail, rod, and sample in water minus the weight of the pail and rod in water.

$$W_w = W_4 - W_2$$

2. The weight of the sample in air is equal to the weight of the sample and the dry pail in air minus the tare weight of the pail.

$$W_a = W_3 - W_1$$

3. Calculate the percentage of surface moisture in terms of the saturated surface-dry aggregate from the following formula.

$$P = \left(\frac{W_a}{W_w\left(\frac{G}{G-1}\right)} - 1 \right) \times 100$$

where: P = Surface moisture of the aggregate in terms of saturated surface-dry aggregate, %
W_a = Weight of sample in air, g
W_w = Weight of sample in water, g; and
G = Bulk specific gravity, saturated surface-dry basis.

G. NOTES

A negative value of "*P*" indicates that the moisture in the sample is less than that required for saturation and that the aggregate will absorb water from the concrete during mixing.

The complete determination requires between 2 to 3 min to perform.

This test method is based on the premise that large samples are more representative.

H. HEALTH AND SAFETY

It is the responsibility of the user of this test method to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use. Prior to handling, testing or disposing of any materials, testers must be knowledgeable about safe laboratory practices, hazards and exposure, chemical procurement and storage, and personal protective apparel and equipment. Caltrans Laboratory Safety Manual is available at:

http://www.dot.ca.gov/hq/esc/ctms/pdf/lab_safety_manual.pdf

Users of this method do so at their own risk.

End of Text
(California Test 223 contains 3 pages)

CTM Contact List

ATTACHMENT D

CTM #	CTM Title	Contact Person
101	Method of Operation and Calibration of the Mechanical Compactor	Sam Kianfar sam.kianfar@dot.ca.gov
102	Mechanics, Operation, Calibration, and Diaphragm Installation of the Stabilometer	Sam Kianfar sam.kianfar@dot.ca.gov
103	Method of Test for Calibration of Expansion Pressure Devices	Sam Kianfar sam.kianfar@dot.ca.gov
104	Operation and Calibration of the Electronic Hydraulic Kneading Compactor	Sam Kianfar sam.kianfar@dot.ca.gov
105	Calculations Pertaining to Gradings and Specific Gravities	Rosme Aguilar rosme_aguilar@dot.ca.gov
106	Definitions of Terms Relating to Specific Gravity	Rosme Aguilar rosme_aguilar@dot.ca.gov
107	Method of Operation of the Mechanical Spader	Frank Chavez frank_chavez@dot.ca.gov
109	Method of Testing of Material Production Plants	Sam Kianfar sam.kianfar@dot.ca.gov
110	Method of Calibration of Compaction Test Equipment	Gem-Yeu Ma gem-yeu_ma@dot.ca.gov
111	Developing Density and Moisture Calibration tables for Nuclear Gauge	Gem-Yeu Ma gem-yeu_ma@dot.ca.gov
112	Method for Installation and Use of Embankment Settlement Devices	Gem-Yeu Ma gem-yeu_ma@dot.ca.gov
113	Method for Evaluating the Capabilities of Asphalt Concrete Compactors	Sam Kianfar sam.kianfar@dot.ca.gov
114	Method for Calibration of the California Portable Skid Tester	Albert Vasquez albert_vasquez@dot.ca.gov
115	Method of Calibration of Pressure Type Air Meters	Rosme Aguilar rosme_aguilar@dot.ca.gov
~~**120**~~	~~Criteria for Selection of Permeable Materials~~	~~Yung Chung yung_chung@dot.ca.gov~~
121	Administrative Instructions for Use of Nuclear Gages	Gem-Yeu Ma gem-yeu_ma@dot.ca.gov

CTM Contact List ATTACHMENT D

CTM #	CTM Title	Contact Person
125	Method of Test Sampling Highway Materials and Products Used in the Roadway Structural Sections	Albert Vasquez albert_vasquez@dot.ca.gov
~~130~~	~~Geotechnical Design Reports and Materials Reports~~	~~Shira Rajendra shira_rajendra@dot.ca.gov~~
201	Soil and Aggregate Sample Preparation	Rosme Aguilar rosme_aguilar@dot.ca.gov
202	Sieve Analysis of Fine and Coarse Aggregates	Rosme Aguilar rosme_aguilar@dot.ca.gov
203	Mechanical Analysis of Soils	Yung Chung yung_chung@dot.ca.gov
204	Plasticity Index of Soils	Yung Chung yung_chung@dot.ca.gov
205	Determining Percentage of Crushed Particles	Rosme Aguilar rosme_aguilar@dot.ca.gov
206	Specific Gravity and Absorption of Coarse Aggregate	Rosme Aguilar rosme_aguilar@dot.ca.gov
207	Specific Gravity and Absorption of Fine Aggregate	Rosme Aguilar rosme_aguilar@dot.ca.gov
208	Apparent Specific Gravity of Fine Aggregates	Rosme Aguilar rosme_aguilar@dot.ca.gov
209	Specific Gravity of Soils	Yung Chung yung_chung@dot.ca.gov
211	Abrasion of Coarse Aggregate by Use of the Los Angeles Rattler Machine	Rosme Aguilar rosme_aguilar@dot.ca.gov
212	Unit Weight of Aggregate	Rosme Aguilar rosme_aguilar@dot.ca.gov
213	Organic Impurities in Concrete Sand	Rosme Aguilar rosme_aguilar@dot.ca.gov
214	Soundness of Aggregates by Use of Sodium Sulfate	Rosme Aguilar rosme_aguilar@dot.ca.gov
~~215~~	~~Petrographic Examination of~~ Mineral Aggregates	~~Yung Chung~~ yung_chung@dot.ca.gov
216	Relative Compaction of Untreated and Treated Soils and Aggregates	Yung Chung yung_chung@dot.ca.gov
217	Sand Equivalent	Rosme Aguilar rosme_aguilar@dot.ca.gov
219	Consolidation of Soils	Yung Chung yung_chung@dot.ca.gov
220	Permeability of Soils	Yung Chung yung_chung@dot.ca.gov
221	Unconfined Compression of Soils	Yung Chung yung_chung@dot.ca.gov

CTM Contact List ATTACHMENT D

CTM #	CTM Title	Contact Person
223	Surface Moisture in Concrete Aggregates by the Displacement Method (Field Method)	Rosme Aguilar rosme_aguilar@dot.ca.gov
224	Bulk Specific Gravity (S.S.D.) of Coarse Aggregate by the Displacement Method (Field Method)	Rosme Aguilar rosme_aguilar@dot.ca.gov
225	Bulk Specific Gravity (S.S.D.) of Fine Aggregate by the Displacement Method (Field Method)	Rosme Aguilar rosme_aguilar@dot.ca.gov
226	Determination of Moisture Content by Oven Drying	Rosme Aguilar rosme_aguilar@dot.ca.gov
227	Evaluating Cleanness of Coarse Aggregate	Rosme Aguilar rosme_aguilar@dot.ca.gov
228	Lineal Shrinkage of Soils (Bar Method)	Yung Chung yung_chung@dot.ca.gov
229	Durability Index	Rosme Aguilar rosme_aguilar@dot.ca.gov
~~**230**~~	~~Triaxial Compression of Soils~~	~~Yung Chung yung_chung@dot.ca.gov~~
231	Method of Test for Relative Compaction of Untreated and Treated Soils and Aggregates Using Nuclear Gage	Yung Chung yung_chung@dot.ca.gov
~~**232**~~	~~Large-Scale Triaxial Compression of Soils~~ (Test method is currently inactive - refer to contact for further information)	~~Yung Chung yung_chung@dot.ca.gov~~
233	Method of ascertaining the Homogeneity of Concrete in Cast-in-drilled-hole (Cidh) piles using the Gamma-Gamma test method	Doug Brittsan douglas_brittsan@dot.ca.gov
234	Uncompacted Void Content of Fine Aggregates	Rosme Aguilar rosme_aguilar@dot.ca.gov
235	Percentage of Flat and Elongated Particles in Coarse Aggregate	Rosme Aguilar rosme_aguilar@dot.ca.gov
301	Resistance "R" Value of Treated and Untreated Bases, Subbases and Basement Soils (Stabilometer)	Rosme Aguilar rosme_aguilar@dot.ca.gov
302	Method of Test for Film Stripping	Frank Chavez frank_chavez@dot.ca.gov
303	Centrifuge Kerosene Equivalent and Approximate Bitumen Ratio (ABR)	Frank Chavez frank_chavez@dot.ca.gov
304	Preparation of Bituminous Mixtures for Testing	Frank Chavez frank_chavez@dot.ca.gov

CTM Contact List

ATTACHMENT D

CTM #	CTM Title	Contact Person
305	Swell of Bituminous Mixtures	Frank Chavez frank_chavez@dot.ca.gov
307	Moisture Vapor Susceptibility of Bituminous Mixtures	Frank Chavez frank_chavez@dot.ca.gov
308	Bulk Specific Gravity and Weight Per Cubic Foot of Bituminous Mixture	Frank Chavez frank_chavez@dot.ca.gov
309	Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures	Frank Chavez frank_chavez@dot.ca.gov
310	Determination of Asphalt and Moisture Contents of Bituminous Mixtures by Hot Solvent Extraction	Frank Chavez frank_chavez@dot.ca.gov
312	Designing and Testing Classes "A" and "B" Cement Treated Bases (Test method is currently inactive - refer to contact for further information)	Rosme Aguilar rosme_aguilar@dot.ca.gov
330	Residue by Evaporation of Emulsified Asphalt	Tracey Hall tracey_hall@dot.ca.gov
331	Residue by Evaporation of Latex Modified Asphalt Emulsion	Tracey Hall tracey_hall@dot.ca.gov
332	Recovery from Deformation of Latex Modified Asphalt Emulsion Residue	Tracey Hall tracey_hall@dot.ca.gov
337	Determining the Effect of Heat and Air on Asphaltic Materials	Tracey Hall tracey_hall@dot.ca.gov
338	Determination of Cement or Lime Content in Treated Aggregate by the Titration Method	Rosme Aguilar rosme_aguilar@dot.ca.gov
339	Field Test for the Determination of Distributor Spread Rate	Hot Mix Asphalt Lab
341	Measuring the Permeability of Bituminous Pavements and Seal Coats	Hot Mix Asphalt Lab
342	Surface Skid Resistance with the California Portable Skid Tester	Albert Vasquez albert_vasquez@dot.ca.gov
345	Determining the Quantity of Asphalt Rejuvenating Agent Required for an Asphaltic Pavement	Tracey Hall tracey_hall@dot.ca.gov
346	Determining the Effect of Heat and Air on a Moving Film of Asphalt (Rolling Thin Film Oven Test)	Tracey Hall tracey_hall@dot.ca.gov
351	Determining the Percent of Residue of Emulsified Asphalt Rejuvenating Agents	Tracey Hall tracey_hall@dot.ca.gov

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CTM #	CTM Title	Contact Person
354	Evaluating the Expansive Potential of Soils Below Rigid Pavements (Third-Cycle Expansion Pressure Test)	Rosme Aguilar rosme_aguilar@dot.ca.gov
356	Determining Overlay Requirements by Pavement Deflection Measurements	Albert Vasquez albert_vasquez@dot.ca.gov
358	Determining Permeability of Thin Membranes Under Asphalt Concrete	Albert Vasquez albert_vasquez@dot.ca.gov
359	Predicting K-Values of Existing Asphalt Concrete Roadways from Pavement Deflection Measurements	Albert Vasquez albert_vasquez@dot.ca.gov
360	Surface Abrasion of Compacted Bituminous Mixtures	Tracey Hall tracey_hall@dot.ca.gov
362	Determining Asphalt Content in Bituminous Mixtures by Vacuum Extraction	Tracey Hall tracey_hall@dot.ca.gov
365	Micro-Recovery of Asphalt from Bituminous Cores and Samples of Loose Asphalt-Aggregate Mixtures	Frank Chavez frank_chavez@dot.ca.gov
366	Stabilometer Value	Tracey Hall tracey_hall@dot.ca.gov
367	Recommending Optimum Bitumen Content (OBC)	Tracey Hall tracey_hall@dot.ca.gov
368	Determining Optimum Bitumen Content (OBC) for Open Graded Asphalt Concrete	Frank Chavez frank_chavez@dot.ca.gov
370	Determining Moisture Content of Asphalt Mixtures or Mineral Aggregate Using Microwave Ovens	Frank Chavez frank_chavez@dot.ca.gov
371	Resistance of Compacted Bituminous Mixture to Moisture Induced Damage	Frank Chavez frank_chavez@dot.ca.gov
373	Unconfined Compressive Strength of Lime Treated Soils and Aggregates	Rosme Aguilar rosme_aguilar@dot.ca.gov
374	Determining Asphalt Durability Using the California Tilt-Oven Durability Test	Hot Mix Asphalt Lab
375	Determining the In-Place Density and Relative Compaction of AC Pavement	Frank Chavez frank_chavez@dot.ca.gov

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CTM #	CTM Title	Contact Person
377	Determining the Percent and Grade of Recycling Agent to Use for Hot Recycling of Asphalt Concrete	Tracey Hall tracey_hall@dot.ca.gov
378	Percent and Grade of Recycling Agent to Use for Cold Recycling of Asphalt Concrete	Frank Chavez frank_chavez@dot.ca.gov
379	Determining Asphalt Content of Bituminous Mixtures (Troxler Nuclear Gauge Model 3241)	Tracey Hall tracey_hall@dot.ca.gov
380	Recovering Asphalt Materials by Modified (IA) Abson Recovery	Frank Chavez frank_chavez@dot.ca.gov
381	Determination of Asphalt Binder Properties using a Dynamic Shear Rheometer	Frank Chavez frank_chavez@dot.ca.gov
382	Determination of Asphalt Content of Bituminous Mixtures by the Ignition Method	Frank Chavez frank_chavez@dot.ca.gov
401	Latex Concentration in Asphalt Emulsions	Lisa Dobeck lisa_dobeck@dot.ca.gov
402	Testing Paints and Related Materials	Mitch Gipson mitch_gipson@dot.ca.gov
403	Testing Cement Treated Base and Concrete for Calcium Oxide	Lisa Dobeck lisa_dobeck@dot.ca.gov
404	Chemical Analysis of Portland Cement	Lisa Dobeck lisa_dobeck@dot.ca.gov
405	Chemical Analysis of Water	Lisa Dobeck lisa_dobeck@dot.ca.gov
406	Field Sampling of Pavement Marking Materials	Mitch Gipson mitch_gipson@dot.ca.gov
413	Testing Cold Applied Two Component Polysulfide Polymer Type joint Sealing Compound	Lisa Dobeck lisa_dobeck@dot.ca.gov
414	Free Lime in Hydrated Lime	Lisa Dobeck lisa_dobeck@dot.ca.gov
415	Determining the Chloride Content in Organic Additives for Portland Cement Concrete	Lisa Dobeck lisa_dobeck@dot.ca.gov
416	Comparisons of Additives for Portland Cement Concrete	Lisa Dobeck lisa_dobeck@dot.ca.gov
417	Soils and Waters for Sulfate Content	Lisa Dobeck lisa_dobeck@dot.ca.gov
419	Evaluating Epoxy Resin Systems at Low Temperatures by Flexural-Creep Measurements	Rosme Aguilar rosme_aguilar@dot.ca.gov

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CTM #	CTM Title	Contact Person
420	Cleanness and Soundness of PCC Surfaces and Quality of Resinous Cement Overlays	Rosme Aguilar rosme_aguilar@dot.ca.gov
421	Determination of Pigments and Extenders in Paints and Coatings	Mitch Gipson mitch_gipson@dot.ca.gov
422	Testing Soils and Waters for Chloride Content	Lisa Dobeck lisa_dobeck@dot.ca.gov
423	Testing Thermoplastic Traffic Line Material	Mitch Gipson mitch_gipson@dot.ca.gov
~~424~~	~~Testing Soils and Waters for Conductivity~~	~~Lisa Dobeck lisa_dobeck@dot.ca.gov~~
434	Testing Epoxy Resin Adhesives, Binders and Sealants	Lisa Dobeck lisa_dobeck@dot.ca.gov
435	Testing Two-Component Machine-Mixed Polyurethane Sealants	Lisa Dobeck lisa_dobeck@dot.ca.gov
~~437~~	~~Test for Thermo-Applied Pavement Striping Granules~~	~~Mitch Gipson mitch_gipson@dot.ca.gov~~
438	Method for Determination of Rheological Properties of Chemical Adhesives Using a Dynamic Shear Rheometer	Albert Vasquez albert_vasquez@dot.ca.gov
440	Flexible Bituminous Adhesive	Lisa Dobeck lisa_dobeck@dot.ca.gov
504	Determining Air Content of Freshly Mixed Concrete by the Pressure Method	Rosme Aguilar rosme_aguilar@dot.ca.gov
515	Relative Mortar Strength of Portland Cement Concrete Sand	Rosme Aguilar rosme_aguilar@dot.ca.gov
518	Unit Weight of Fresh Concrete	Rosme Aguilar rosme_aguilar@dot.ca.gov
521	Compressive Strength of Molded Concrete Cylinders	Rosme Aguilar rosme_aguilar@dot.ca.gov
522	Chord Modulus of Elasticity of Concrete (Compressometer Method)	Rosme Aguilar rosme_aguilar@dot.ca.gov
523	Flexural Strength of Concrete (Using Simple Beam with Center-Point Loading)	Rosme Aguilar rosme_aguilar@dot.ca.gov
524	Method of Test for Flexural Strength of Rapid Strength Concrete	Rosme Aguilar rosme_aguilar@dot.ca.gov
526	Operation of California Profilograph and Evaluation of Profiles	Albert Vasquez albert_vasquez@dot.ca.gov
527	Expansion in Water and Contraction in Air of Portland Cement Mortar	Rosme Aguilar rosme_aguilar@dot.ca.gov

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CTM #	CTM Title	Contact Person
528	Freeze-Thaw Resistance of Aggregates in Air-Entrained Concrete (Powers Procedure)	Rosme Aguilar rosme_aguilar@dot.ca.gov
529	Proportions of Coarse Aggregate in Fresh Concrete	Rosme Aguilar rosme_aguilar@dot.ca.gov
530	Effect of Water-Reducing and Set-Retarding Admixtures on the Drying Shrinkage of Concrete	Rosme Aguilar rosme_aguilar@dot.ca.gov
531	Determining Length of Drilled Concrete Cores	Rosme Aguilar rosme_aguilar@dot.ca.gov
533	Test for Ball Penetration in Fresh Portland Cement Concrete	Rosme Aguilar rosme_aguilar@dot.ca.gov
534	Test for Water Retention Efficiency of Liquid Membrane-Forming Concrete Curing Compounds	Lisa Dobeck lisa_dobeck@dot.ca.gov
535	Determining the Application Rates of Concrete Curing Compounds in the Field	Rosme Aguilar rosme_aguilar@dot.ca.gov
536	Determining a Recommended Cement Content for Portland Cement Concrete Pavements	Rosme Aguilar rosme_aguilar@dot.ca.gov
537	Determining the Drying Shrinkage of Lightweight Concrete	Rosme Aguilar rosme_aguilar@dot.ca.gov
539	Sampling Fresh Concrete	Rosme Aguilar rosme_aguilar@dot.ca.gov
540	Making, Handling, and Storing Concrete Compressive Test Specimens in the Field	Rosme Aguilar rosme_aguilar@dot.ca.gov
541	Flow of Grout Mixtures (Flow Cone Method)	Rosme Aguilar rosme_aguilar@dot.ca.gov
543	Determining Air Content of Freshly Mixed Concrete by the Volumetric Method	Rosme Aguilar rosme_aguilar@dot.ca.gov
547	Operation of Bridge Profilograph and Evaluation of Profiles	Albert Vasquez albert_vasquez@dot.ca.gov
548	Evaluation of Aggregate for Lean Concrete Base (LCB)	Rosme Aguilar rosme_aguilar@dot.ca.gov
549	Prequalification of Concrete Aggregate	Rosme Aguilar rosme_aguilar@dot.ca.gov
550	Determining the Surface Abrasion Resistance of Concrete Specimens	Rosme Aguilar rosme_aguilar@dot.ca.gov
551	Testing Materials for Overlaying and Repairing Portland Cement Concrete Pavements and Structures	Rosme Aguilar rosme_aguilar@dot.ca.gov

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CTM #	CTM Title	Contact Person
552	Method of Test for Relative Compaction of Polymer Concrete Utilizing Nuclear Gauges	Rosme Aguilar rosme_aguilar@dot.ca.gov
553	Testing Thermal Stability of Mortar Made with Hydraulic Cement	Rosme Aguilar rosme_aguilar@dot.ca.gov
554	Sampling for and Reporting the Results of Tests for Alkali Silica Reactivity	Rosme Aguilar rosme_aguilar@dot.ca.gov
556	Method of Test for Slump of Fresh Portland Cement Concrete	Rosme Aguilar rosme_aguilar@dot.ca.gov
557	Method of Test for Temperature of Fresh Mixed Portland Cement Concrete	Rosme Aguilar rosme_aguilar@dot.ca.gov
559	Method for determining Cementitious Materials Content or Water/Cement Ratio for Portland Cement Concrete Pavements	Rosme Aguilar rosme_aguilar@dot.ca.gov
~~602~~	~~Reflectance of Highway Reflector Buttons (Optical Requirements)~~	~~Mitch Gipson mitch_gipson@dot.ca.gov~~
~~603~~	~~Moisture Seal of Highway Reflector Buttons~~	~~Lisa Dobeck lisa_dobeck@dot.ca.gov~~
604	Luminous Intensity of Traffic Signal Sections	Craig Fearn craig_fearn@dot.ca.gov
605	Deflection of Plastic Traffic Signal Face	Craig Fearn craig_fearn@dot.ca.gov
606	Luminance of Pedestrian Signal Face	Craig Fearn craig_fearn@dot.ca.gov
608	High Pressure Sodium Lamp Multiple Supply Ballasts	Craig Fearn craig_fearn@dot.ca.gov
610	Expected Life Performance and Lumens of HPS Lamps	Craig Fearn craig_fearn@dot.ca.gov
611	Testing Durability of Mast Arm-mounted Luminaires	Craig Fearn craig_fearn@dot.ca.gov
~~**620**~~	~~Testing Rubber Hose~~	~~Lisa Dobeck lisa_dobeck@dot.ca.gov~~
635	Test for Diameter of Wire and Thickness of Insulation (Electrical Conductors)	Lisa Dobeck lisa_dobeck@dot.ca.gov
642	Reflectance of Reflective Sheeting for Highway Signs	Lisa Dobeck lisa_dobeck@dot.ca.gov
643	Estimating the Service Life of Metal Culverts	Leo Martinez leo_martinez@dot.ca.gov
644	Shear Strength of Brick Cores	Rosme Aguilar rosme_aguilar@dot.ca.gov
645	Paint Adherence of Baked Enamel Signs and Guide Plates	Lisa Dobeck lisa_dobeck@dot.ca.gov

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CTM #	CTM Title	Contact Person
646	Series Multiple Transformers	Craig Fearn craig_fearn@dot.ca.gov
650	Specular Reflector Material	Lisa Dobeck lisa_dobeck@dot.ca.gov
651	Diffuse Light Transmission Factor of Large Reinforced Plastic Panels	Craig Fearn craig_fearn@dot.ca.gov
~~**652**~~	~~Ascertaining Thickness of Spelter Coating on Galvanized Products~~ (Replaced by ASTM A 123/123M-97 and ASTM A 153/153M)	~~Rosme Aguilar~~ ~~rosme_aguilar@dot.ca.gov~~
658	Function and Pre-installation Inspection of Traffic Signal Systems	Craig Fearn craig_fearn@dot.ca.gov
659	Environmental Operation of Traffic Signal Systems	Craig Fearn craig_fearn@dot.ca.gov
660	Evaluating Color by Means of Chromaticity Coordinates	Lisa Dobeck lisa_dobeck@dot.ca.gov
662	Seam Quality Control Standard for Helical Lock Seam Corrugated Metal Pipe	Rosme Aguilar rosme_aguilar@dot.ca.gov
663	Testing of Bridge Bearing Pads	Rosme Aguilar rosme_aguilar@dot.ca.gov
664	Crushing of Longitudinally Welded Steel Tubular Products (Universal Crushing Test)	Rosme Aguilar rosme_aguilar@dot.ca.gov
665	Seam Quality Control of Helical Continuously Welded Seam Corrugated Metal Pipe	Rosme Aguilar rosme_aguilar@dot.ca.gov
666	Fracture and Defection of Metal Traffic Signal Section Housing	Rosme Aguilar rosme_aguilar@dot.ca.gov
667	Power Line Transient Susceptibility	Craig Fearn craig_fearn@dot.ca.gov
669	Non-Reflective and Reflective Pavement Markers	Mitch Gipson mitch_gipson@dot.ca.gov
670	Steel Reinforcing Bar Mechanical Butt Splices	Rosme Aguilar rosme_aguilar@dot.ca.gov
671	Evaluating Painted Metal Target Plate Material	Lisa Dobeck lisa_dobeck@dot.ca.gov
673	Determining Movement Rating of Type B1 and B2 Preformed Elastomeric Joint Seals	Rosme Aguilar rosme_aguilar@dot.ca.gov
674	Testing Fence Posts and Braces	Rosme Aguilar rosme_aguilar@dot.ca.gov
677	Testing for Tension in Prestressing Strand with the Vibra-Tension, Model ET-U	Rosme Aguilar rosme_aguilar@dot.ca.gov

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CTM #	CTM Title	Contact Person
678	Luminaire Isolux Diagrams	Craig Fearn craig_fearn@dot.ca.gov
679	Mercury Lamp Multiple Circuit Ballasts	Craig Fearn craig_fearn@dot.ca.gov
680	Determining the Strength of Headlight Glare Screen Posts	Rosme Aguilar rosme_aguilar@dot.ca.gov
681	Testing Creep Performance of Concrete Anchorage Devices	Rosme Aguilar rosme_aguilar@dot.ca.gov
682	Determining Ultimate Tensile Strength of Cast-In-Place Concrete Inserts	Rosme Aguilar rosme_aguilar@dot.ca.gov
683	Testing Deflection and Bending Strength of Fiber-Reinforced Plastic Poles	Rosme Aguilar rosme_aguilar@dot.ca.gov
684	Test for Anti-Graffiti Materials on Retroreflective Sheeting for Highway Sign	Lisa Dobeck lisa_dobeck@dot.ca.gov
685	Method for Holiday Detectionin Epoxy-Coated Reinforcing Steel	Rosme Aguilar rosme_aguilar@dot.ca.gov
686	Method for Evaluating Bend Test Results of Fusion-Bonded Epoxy Coatings	Rosme Aguilar rosme_aguilar@dot.ca.gov
687	Method of Testing for Measuring Epoxy Coating Thickness on Steel Reinforcing Bars, Wire Mesh, and Dowel Bars	Rosme Aguilar rosme_aguilar@dot.ca.gov