

## QUALITY ASSURANCE PROGRAM (QAP) AGENCY: County of Mono

The County of Mono has established the following Quality Assurance Program (QAP) to provide assurance that the quality of materials incorporated into County construction projects are in conformance with the requirements of the approved plans and contract specifications, including approved changes. The terms of the QAP will be every five years starting from the date of the original activation of this QAP, or upon changes of testing frequencies or to the tests themselves. Testing Standards are found as Appendix A to this document.

## **DEFINITION OF TERMS**

- <u>Acceptance Testing (AT)</u> Sampling and testing, or inspection, to determine the degree of compliance with contract requirements.
- <u>Independent Assurance Program (IAP)</u> Verification that AT is being performed correctly by qualified testers and laboratories.
- Quality Assurance Program (QAP) A sampling and testing program that will provide assurance that the materials and workmanship incorporated into the construction project are in conformance with the contract specifications. The main elements of a QAP are the AT and IAP.
- <u>Source Inspection</u> AT of manufactured and prefabricated materials at locations other than the job site, generally at the manufactured location.

## MATERIALS LABORATORY

The County will use their own materials laboratory or a private consultant materials laboratory to perform Acceptance Testing (AT) on Federal-aid and other designated projects. The materials laboratory 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 materials laboratory shall contain certified test equipment capable of performing the tests conforming to the provisions of this QAP.

The materials laboratory used shall provide documentation that the laboratory complies with the following procedures:

- 1. <u>Correlation Testing Program</u> The materials laboratory shall be a participant in one or more of the following testing programs:
  - a. AASHTO Materials Reference Laboratory (AMRL)
  - b. Cement and Concrete Reference Laboratory (CCRL)
  - c. Caltrans' Reference Samples Program (RSP)
- 2. <u>Certification of Personnel</u> The materials laboratory shall employ personnel who are certified by one or more of the following:
  - a. Caltrans District Materials Engineer
  - b. Nationally recognized non-Caltrans organizations such as the American Concrete Institute, Asphalt Institute, National Institute of Certification of Engineering Technologies, etc.
  - c. Other recognized organizations approved by the State of California and/or recognized by local governments or private associations.
- 3. Laboratory and Testing Equipment The materials laboratory shall only use laboratory and testing

equipment that is in good working order. All such equipment shall be calibrated at least once each year. All testing equipment must be calibrated by impartial means using devices of accuracy traceable to the National Institute of Standards and Technology. A decal shall be firmly affixed to each piece of equipment showing the date of the last calibration. All testing equipment calibration decals shall be checked as part of the IAP.

## **ACCEPTANCE TESTING (AT)**

AT will be performed by a materials laboratory certified to perform the required tests. The tests results will be used to ensure that all materials incorporated into the project are in compliance with the contract specifications. Testing methods will be in accordance with the CT Methods or a national recognized standard (i.e., AASHTO, ASTM, etc.) as specified in the contract specifications.

Sample locations and frequencies may be in accordance with the contract specifications. If not so specified in the contract specifications, samples shall be taken at the locations and frequencies as shown in Appendix A. Materials not included in Appendix A shall be tested in accordance with the Quality Assurance Program Manual for Use by Local Agencies (Manual) as produced by the California Department of Transportation.

## **INDEPENDENT ASSURANCE PROGRAM (IAP)**

IAP shall be provided by personnel from Caltrans, the Agency's certified materials laboratory, or consultant's certified materials laboratory. IAP will be used to verify that sampling and testing procedures are being performed properly and that all testing equipment is in good condition and properly calibrated.

IAP personnel shall be certified in all required testing procedures, as part of IAP, and shall not be involved in any aspect of AT. IAP shall be performed on every type of materials test required for the project. Proficiency tests shall be performed on Sieve Analysis, Sand Equivalent, and Cleanness Value tests. All other types of IAP shall be witness tests.

Poor correlation between acceptance tester's results and other test results may indicate probable deficiencies with the acceptance sampling and testing procedures. In cases of unresolved discrepancies, a complete review of AT shall be performed by IAP personnel or an independent materials laboratory chosen by the Agency. IAP samples and tests are not to be used for determining compliance with contract requirements. Compliance with contract requirements is determined only by AT.

## REPORTING ACCEPTANCE TESTING RESULTS

The following are time periods for reporting material test results to the Resident Engineer:

- When the aggregate is sampled at material plants, test results for Sieve Analysis, Sand Equivalent and Cleanness Value should be submitted to the Resident Engineer within two working days after sampling.
- When materials are sampled at the job site, test results for compaction and maximum density should be submitted to the Resident Engineer within two working days after sampling.
- When soils and aggregates are sampled at the job site:
  - (1) Test results for Sieve Analysis, Sand Equivalent and Cleanness Value should be submitted to the Resident Engineer within three working days after sampling.
  - (2) Test results for "R" Value and asphalt concrete extraction should be submitted to the Resident Engineer within four working days after sampling.

When sampling products such as Portland Cement Concrete (PCC), cement-treated base (CTB), hot mix asphalt (HMA), and other such materials; the time of such sampling shall be varied with respect to the time of the day insofar as possible, in order to avoid a predictable sampling routine. The reporting of AT results, if not performed by the Resident Engineer's staff, shall be done on an expedited basis such as by fax, e-mail or telephone.

## TESTING OF MANUFACTURED MATERIALS

A list of materials that can be typically accepted on the basis of certificates of compliance during construction is found in Appendix A. All certificates of compliance shall conform to the requirements of the contract specifications, for examples see Appendix J of the Manual.

Should the Agency request Caltrans to conduct the source inspection and the request is accepted, all sampling, testing, and acceptance of manufactured and prefabricated materials will be performed by Caltrans' Office of Materials Engineering and Testing Services.

For Federal-aid projects on the National Highway System (NHS), Caltrans will assist in certifying the materials laboratory, and the acceptance samplers and testers. For Federal-aid projects off the NHS, Caltrans may be able to assist in certifying the materials laboratory, and the acceptance samplers and testers.

## PROJECT CERTIFICATION

Upon completion of a Federal-aid project, a "Materials Certificate" shall be completed by the Resident Engineer. The Agency shall include a "Materials Certificate" in the Report of Expenditures submitted to the Caltrans District Director, Attention: District Local Assistance Engineer. A copy of the "Materials Certificate" shall also be included in the Agency's construction records. The Resident Engineer in charge of the construction function for the Agency shall sign the certificate. All materials incorporated into the work which did not conform to specifications must be explained and justified on the "Materials Certification", including changes by virtue of contract change orders. See Appendix K of the Manual.

### **RECORDS**

All material records of samples and tests, material releases and certificates of compliance for the construction project shall be incorporated into the Resident Engineer's project file. If a Federal-aid project:

- The files shall be organized as described in Section 16.8 "Project Files" of the Local Assistance Procedures Manual.
- It is recommended that the complete project file be available at a single location for inspection by Caltrans and Federal Highway Administration (FHWA) personnel.
- The project files shall be available for at least three years following the date of final project voucher.
- The use of a "Log Summary," as shown in Appendix H of the Manual, facilitates reviews of material sampling and testing by Caltrans and FHWA and assists the Resident Engineer in tracking the frequency of testing.

When two or more projects are being furnished identical materials simultaneously from the same plant, it is not necessary to take separate samples or perform separate tests for each project; however, copies of the test reports are to be provided for each of the projects to complete the records.

APPROVED BY: (

(Signature)

(CE# and Expiration Date)

NAME: Evan Nikirk

DATE: 12.09.09

TITLE: Public Works Director, County of Mono

# Mono County Department of Public Works

## Appendix A - Acceptance Sampling and Testing Frequencies **Quality Assurance Program**

Construction Materials Accepted by a Certificate of Compliance 123

Soil Amendment

Fly Ash Fiber

Geotextile Fabric

Stabilizing Emulsion Mulch

Plastic Pipe

Reinforcing Steel

Structural Timber and Lumber

Freated Timber and Lumber

Timber and Lumber

Culvert and Drainage Pipe Joins

Corrugated Steel Pipe and Corrugated Steel Pipe Arches Reinforced Concrete Pipe

Structural Metal Plate Pipe Arches and Pipe Arches

Perforated Steel Pipe

Polyvinyi Chloride Pipe and Polyethylene Tubing

Steel Entrance Tapers, Pipe Down Drains, Reduces, Coupling Bands and Slip Joints

Aluminum Pipe (Entrance Tapers, Arches, Pipe Down Drains, Reduces, Coupling Bands, and Sip Joints)

Metal Target Plates Electrical Conductors

Portland Cement

Minor Concrete

Air Entrainment Mixture

Water Reducers and Set Retarders

Waterstop

<sup>1</sup>If Caltrans Standard Specifications May 2006 is part of contract specifications.

<sup>2</sup>Usually these items are inspected at the site of manufature or fabrication and reinspected after delivery to the job site.

<sup>3</sup>Mono County reserves the right to test any material supplied for County projects. The conditions of this QAP can be overriden by the conditions of the Standard Specifications.

## Testing and Sampling Requirements

# Portland Cement (Hydraulic Cement)

ſř.		1		
	Description of Comments	If testing appears warranted, fabricate six 2-in	The state of the s	coment. Test for commercial attenuation
Tunical Toct Marthods	Typical Test Wellious	ASTM C109, CT 515, AASHTO	r T106	
Sampling/Testing Frequency		If the product is accepted based on a Certificate of Compliance, testing is not ASTM C109, CT 515, AASHTO If testing appears warranted, fabricate of 2-in	required. If the product is not accepted using a Certificate of Compliance, test at 1106	least once per job.
Sample Size	1 O. I	&-ID. sample		
Materials to be Samples or Tested	Compant (Tooting Only)	רבווובוור (בממוון סוווא)		

# Portland Cement Concete (Hydraulic Cement Concrete)

Matarials to be Complete on Testan				
יוומרבו ומו באלווואר אם מי ובאנבים	Sample Size	Sampling/Testing Frequency	Typical Test Methods	Description or Comments
Aggregate for Hydraulic Cement Concrete 50-lb. sample	50-lb. sample	Take one aggregate sample for 1,000 CY of PCC/HCC concrete. Test at least one ASTM D75, CT 175, AASHTO, Sample aggregate from hole or honore from	ASTM D75 CT 125 AASHTO	Sample aggregate from holt or houser (candom
(Sampling & Testing)		sample per job.	M6 T2 M80	Sample aggregate moist percon souper (random
Water (Sampling & Testing)	Take a two-quart sample using a clean If the w	Take a two-quart sample using a clean If the water is clean with no record of chlorides or sulfates greater than 1%, no (7.405, C7.417)		(f feeting annears warranted fact for chlorides and
	plastic jug (with lining) and sealed lid. testing is required. I Sample at the point of use.	testing is required. If the water is dirty, do not use it. Test only when the chloride AASHTO R23 or sulfates are suspected to be greater than 1%.	le AASHTO R23	suffates.

ic Cement Concrete	ij	
ē	ı	
ũ	ı	
ō	1	
Ų	1	
2	J	
ē	1	
5	1	
lic Ce	I	
Ų.	I	
aufi	I	
5	I	
	ì	
£	1	
t Concete (Hyd	1	
ement Concete	IĮ	
9	IJ	
Ξ	I	
೮	11	
Ħ	II	
õ	II	
ment	II	
	ļ	
777		
ĕ	l	
tlan	Il	
발	Il	
8	ı	
_	Ŀ	

Materials to be Samples or Tested	Samula Siza			
Air Entraining Admixtures (Sampling 8.	Total	Sampling/ testing Frequency	Typical Test Methods	Description or Comments
Testing	John of the control o	Take a user your sample builg a cleah, if the product is accepted based on a Certificate of Compliance, testing is not lined can or plastic bottle, if liquid. If required. If not, take one sample per job. Prior to sampling, check with Caltrans powder, take a 2.5-ib. sample.  (METS) for acceptable brands and dosage rates.	ASTM C233, AASHTO M154, T157, C260	If testing appears warranted, test for chlorides and sulfates. Admixtures with sulfates and chlorides greater than 1% should not be used.
Water Reducers or Set Retarders (Sampling & Testing)	if liquid, take a 1-qt. sample using a clean plastic can. If powder, take a 2.5- lb. sample.	Water Reducers or Set Retarders (Sampling If liquid, take a 1-qt. sample using a If the product is accepted based on a Certificate of Compliance, testing is not clean plastic can. If powder, take a 2.5- required. If not, test once per job. Prior to using this product, please check with lb. sample.	ASTM C494, AASHTO M194	If testing appears warranted, test for chlorides and sulfates. Admixtures with sulfates and chlorides greater than 1% should not be used.
(89		When tests are required, take at least one sample for each 500 to 1,000 CY of ${\rm PCC/HCC}$	ASTM C172, C685, CT 539,	This describes a method to sample freshly-mixed
Freshly-Mixed Concrete (Testing)	Approx. 150 lb. (or 1 CF) near mixer discharge.	On projects with 500 CY or more, test at least one sample per job.	ASTM C143, AASHTO T119	Controller. This test determines the slump of the freshly-mixed
Freshly-Mixed Concrete (Testing)	Approx. 150 lb. (or 1 CF) near mixer discharge.	On projects with 500 CY or more, test at least one sample per job.	ASTM C360, CT 533	concrete. This test determines the ball penetration of the
Freshly-Mixed Concrete (Testing)	Approx. 150 lb. (or 1 CF) near mixer discharge.	On projects with 500 CY or more and concrete exposed to freeze-thaw cycles, test ASTM C231, CT 504, AASHTO at least one sample ner inh	ASTM C231, CT 504, AASHTO	freshly-mixed concrete. This test determines the air content of freshly-mixed
Freshly-Mixed Concrete (Testing)	Approx. 150 lb. (or 1 CF) near mixer discharge.	nore, test at least one sample per job.	ASTM C138, CT 518, AASHTO	concrete (pressure method). This test determines the unit weight of freshly-mixed
Freshly-Mixed Concrete (Testing)	Approx. 150 lb. (or 1 CF) near mixer discharge.	1121 Fabricate at least two concrete cylinders per project. Test for compressive strenth ASTM C39, CT 521, AASHTO at least once for each 500 to 1,000 CY of concrete.	1121 ASTM C39, CT 521, AASHTO T22	concrete. This test is used to fabricate 6" x 12" concrete Cylinders. Compressive strenths are determined,
Freshly-Mixed Concrete (Testing)	Approx. 210 lb. of concrete are needed to fabricate three concrete beams.	On sample set for each 500 to 1,000 CY of concrete.	ASTM C78, CT 31, AASHTO T97, T23	when needed. This test is used to determine the fexural strenth of simple conrete beams in third-point loading.

Soils and Aggregates				
Materials to be Samples or Tested	Sample Size	Sampling/Testing Frequency	Translate Mosts ade	
Aggregate (Sampling)	One 50-lb. sample	Take one sample for every 500 to 1,000 tons of materials. Test at least one sample per project.	ASTM D75, CT 125, AASHTO	This test describes the procedures to sample aggregate from the belt or hopper (random basis).
Fine Aggregates (Testing)	One 50-lb. sample	Take one sample for every 500 to 1,000 tons of materials. Test at least one sample per project.	ASTM C128, CT 208, AASHTO T84	ASTM C128, CT 208, AASHTO This test determines the apparent specific gravity of fine aggregates for bituminous mixes, cement treated bases, and aggregate bases.
Fine Aggregates (Testing)	One 50-lb. sample	Take one sample for every 500 to 1,000 tons of materials. Test at least one sample per project.	ASTM C128, CT 207, AASHTO T84	ASTM C128, CT 207, AASHTO This test determines the bulk specific gravity (SSD) and the absorption of material passing the No. 4
Course Aggregates (Testing)	One 50-lb. sample	Take one sample for every 500 to 1,000 tons of materials. Test at least one sample per project	CT 206	sieve. This test detemines the cleanness of coarse
Course Aggregates (Testing)	One 50-lb. sample	Take one sample for every 500 to 1,000 tons of materials. Test at least one sample per project.	ASTM C127, CT 277, AASHTO T85	aggregate. This test deterines the specific gravity and absorption of coarse aggregate (material retained on the No. 4
Soils and Aggregates (Testing)	One 50-lb. sample	Take one sample for every 500 to 1,000 tons of materials. Test at least one sample per project.	ASTM C136, CT 202, AASHTO	ASTM C136, CT 202, AASHTO This test determines the gradation of soils and
Soils and Aggregates (Testing)	One 50-lb. sample	Take one sample for every 500 to 1,000 tons of materials. Test at least one sample per project.	ASTM D2419, CT 217, AASHTO	obsiregates by sieve analysis. ASTM D2419, CT 217, AASHTO This test determines the Sand Equivalent of soils and
Soils and Aggregates (Testing)	One 50-lb. sample	Take one sample for every 500 to 1,000 tons of materials. Test at least one sample per project.	ASTM C117, AASHTO T11	aggregates. This test determines the gradation of materials finer than the No. 200 sieve (by washing method)

sting) sting) sting)	Take one sample for every 500 to 1,000 tons of materials. Test at least one sample per project. Take one sample for every 500 to 1,000 tons of materials. Test at least one	יייים וביר ואוביניוסמי	Description or Comments
Sting]		ASTM D3744, CT 229, AASHTO	ASTM D3744, CT 229, AASHTO This test determines the Durability index of soils and
ssting] ssting]		T210	aggregates.
sting]		ASTM D2844, CT 301, AASHTO	ASTM D2844, CT 301, AASHTO This test determines the Resistance Value (R-) and
	sample per project.	T190	expansion pressure of compacted materials.
Sting)	ne sample for every 500 to 1,000 tons of materials. Test at least one	ASTM D2922, CT 231, AASHTO	ASTM D2922, CT 231, AASHTO This test determines field densities using the nuclear
sting)	sample per project.	T238	gage.
<b>16.6</b>	Take one sample for every 500 to 1,000 tons of materials. Test at least one	ASTM D3017, CT 231, AASHTO	ASTM D3017, CT 231, AASHTO This test determines the water content using the
<b>183</b>	sample per project.	T239	nuclear gage.
	Sample once per job at the asphalt concrete plant.	CT 125, ASTM D979, AASHTO	i 0
		T168, T48	sample the asphait binder.
	e once per job at the asphalt concrete plant.	ASTM 092, D117, AASHTO T48	ASTM 092, D117, AASHTO T48. This test determines the flash point of the asphalt
			binder (by Cleveland open cup).
	One 0.5-gal. sample placed in a clean. Obtain one sample at the asphalt concrete plant for each 1,000 tons of asphalt	ASTM D2872, D92, CT 346,	This test determines the rolling thin-film oven test
	e placed.	AASHTO T240, T48	(RTFO).
	One 0.5-gal. sample placed in a clean, Obtain one sample at the asphalt concrete plant for each 1,000 tons of asphalt	ASTM D2042, AASHTO T44	This test determines the solubility of asphalt material
	e placed.		in trichloroethylene.
One 0.5-gal. sample placed in a clean, sealed can.  One 0.5-gal. sample placed in a clean, sealed can.  One 0.5-gal. sample placed in a clean, sealed can.	One 0.5-gal. sample placed in a clean. Obtain one sample at the asphalt concrete plant for each 1,000 tons of asphalt	ASTM D2171, AASHTO T202	This test determines the dynamic viscosity, (absolute
One 0.5-gal. sample placed in a clean, sealed can.  One 0.5-gal. sample placed in a clean, sealed can.  One 0.5-gal. sample placed in a clean, sealed can.	e placed.		viscosity of asphalt @ 140 degrees F by the Vacuum
One 0.5-gal. sample placed in a clean, sealed can.  One 0.5-gal. sample placed in a clean, sealed can.  One 0.5-gal. sample placed in a clean, sealed can.			Capillary Viscometer Poises).
One 0.5-gal. sample placed in a clean, sealed can. One 0.5-gal. sample placed in a clean, sealed can.	One 0.5-gal. sample placed in a clean, Obtain one sample at the asphalt concrete plant for each 1,000 tons of asphalt	ASTM D5, AASHTO T49	This test determines the penetration of bituminous
One 0.5-gal. sample placed in a clean, sealed can. One 0.5-gal. sample placed in a clean, sealed can.	e placed.		material @ 77 degrees F and percentage of original
One 0.5-gal. sample placed in a clean, sealed can. One 0.5-gal. sample placed in a clean, sealed can.			penetration from the residue.
Sealed can.  Che 0.5-gal. sample placed in a clean, sealed can.	One 0.5-gal. sample placed in a clean, Obtain one sample at the asphalt concrete plant for each 1,000 tons of asphalt	ASTM D113, AASHTO T51	This test determines the ductility of asphalt @ 77
One 0.5-gal. sample placed in a clean, sealed can.	e placed.		degrees F.
Sealed can. One O Seal cample alread in a gland	Obtain one sample at the asphalt concrete plant for each 1,000 tons of asphalt	ASTM D2170, AASHTO T201	This test determines the kinematic viscosity of
Cook a si basela alamas lass D oca	e placed.		asphalt @ 275 degrees F (Centistoke).
יכווב חים בשווחום אפוניום חים ביותי	Obtain one sample at the asphalt concrete plant for each 1,000 tons of asphalt	ASTM D2171, AASHTO T202	This test determines the dyamic viscosity (asolute
sealed can. conrete placed,	e piaced.		viscosity of asphalt @ 140 degrees F by the Vacuum
Asphalf Ripder (Testing)	man common manura na series of the series of		Capillary Viscometer Poises).
	Former sample at the aspiral contrible plant for each 1,000 tons of asphalt	AS IN U36, AASH IU I 53	the test determines the softening point of asphalt.

Asphalt Emulsified				
Materials to be Samples or Tested	Sample Size	Sampling/Testing Frequency	Typical Test Methods	:Description or Comments
Emulsified Asphalt (Sampling)	One 0.5-gai. sample placed in a clean,	One 0.5-gai. sample placed in a clean, Obtain one sample at the asphalt concrete plant for each 1,000 tons of asphalt	ASTM D140, D979, CT 125,	This test describes the procedure to sample the
	sealed can.	conrete placed.	AASHTO 740, 7168	emulsified asphalt.
Emulsified Asphalt (Testing)	One 0.5-gal. sample placed in a clean,	One 0.5-gal. sample placed in a clean, Obtain one sample at the asphalt concrete plant for each 1,000 tons of asphalt	ASTM D244, AASHTO T59	This test determines the sieve retention of emulsified
	sealed can.	conrete placed.		asphait.
Emulsified Asphalt (Testing)	One 0.5-gal. sample placed in a clean,	One 0.5-gal. sample placed in a clean, Obtain one sample at the asphalt concrete plant for each 1,000 tons of asphalt	ASTM D244, AASHTO T59	This test determines the weight per gallon of
	sealed can.	conrete placed.		emulsified asphalt,
Emulsified Asphalt (Testing)	One 0.5-gal, sample placed in a clean,	One 0.5-gal. sample placed in a clean. Obtain one sample at the asphalt concrete plant for each 1,000 tons of asphalt	ASTM D244, AASHTO T59	This test determines the penetration of the
	sealed can.	conrete placed,		emulsified asphalt.
Emulsified Asphalt (Testing)	One 0.5-gal. sample placed in a clean,	One 0.5-gal. sample placed in a clean, Obtain one sample at the asphalt concrete plant for each 1,000 tons of asphalt		ASTM D244, CT 330, AASHTO This test determines the residue @325 degrees F
	sealed can.	conrete placed.	159	evaporation of emulsified asphalt.
Emulsified Asphalt (Testing)	One 0.5-gai. sample placed in a clean,	One 0.5-gai. sample placed in a clean, Obtain one sample at the asphalt concrete plant for each 1,000 tons of asphalt	ASTM D4402, AASHTO T201	This test determines the Brookfield viscosity.
	sealed can.	conrete placed.		-

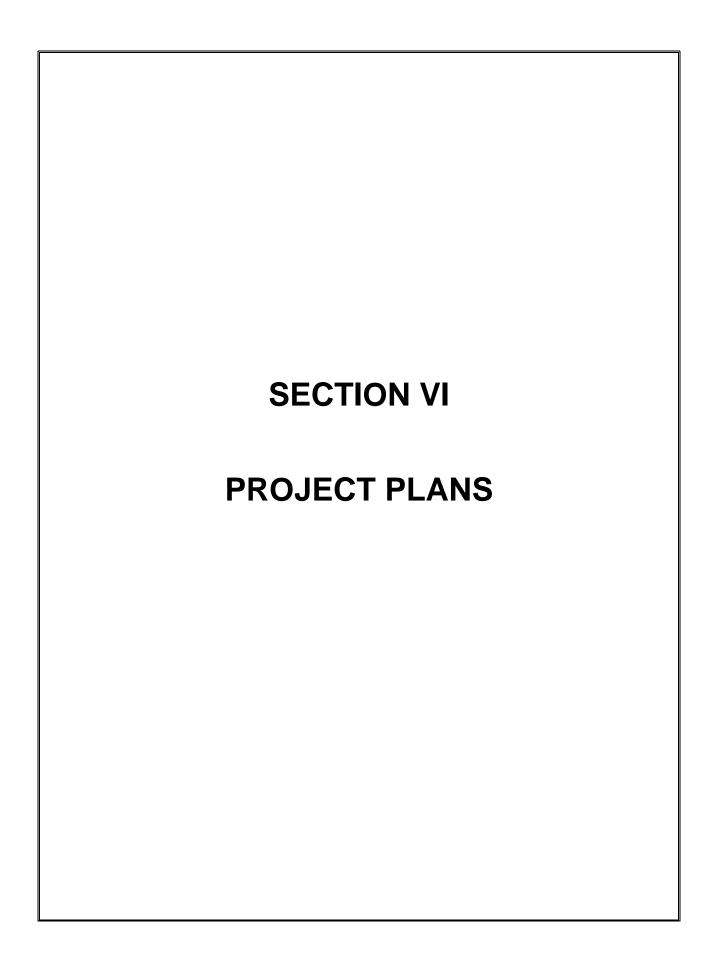
Ø.
Œ
, is
Ξ
2
۷.
щ
~
0
-
2
ě١

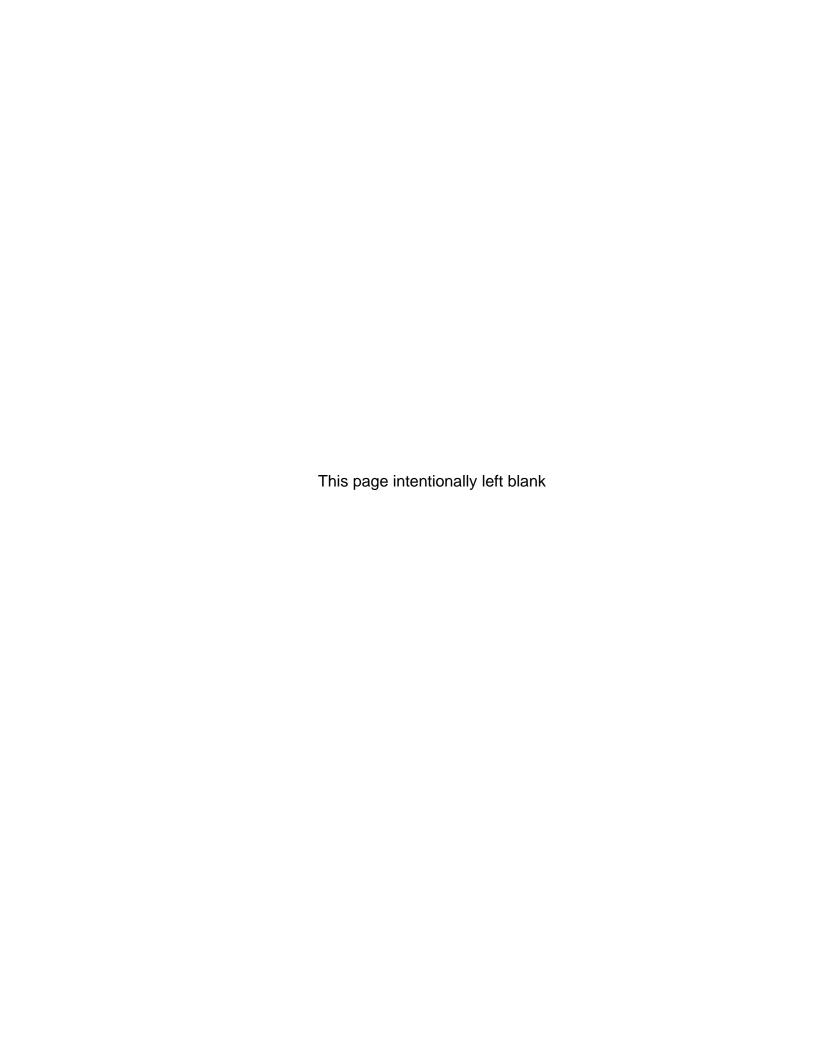
- Concrete	
Concrete	•
_	
4spha	Ì
halt (	ŀ
x Aspi	
Hot Mix,	
-	١

HOT IMIX ASPITAIT (ASPITAIT CONCRETE) - Concrete	crete			
Materials to be Samples or Tested	Sample Size	Sampling/Testing Frequency	Typical Test Methods	Description or Commonts
Asphalt Concrete (Sampling)	Obtain one 30-lb. sample each day of production.	Obtain one 30-lb. sample each day of Obtain one sample at the asphalt concrete plant for each 5,000 tons of asphalt production.	ASTM D75, D140, D979, CT	This test describes the procedure to sample the
Asphalt Concrete (Testing)	4" x 8" cores	Take one 4" x 8" core for every 500 feet of paved roadway.	ASTIN D1188, 01560, D1561, This test D5561, CT 304, AASHTO T246, samples.	asphait concrete. This test determines the field density of street samples.
Asphalt Concrete (Testing)	Obtain one 30-lb. sample for each day of production.	Obtain one 30-lb. sample for each day. Obtain one sample for every five cores taken. of production.	ASTM D1188, D1560, D1561, D5361, D5361, CT 304, AASHTO T246,	ASTM D1188, D1560, D1561, This test determines the laboratory density and D5361, CT 304, AASHTO T246, relative compaction of asphalt concrete.
Asphalt Concrete (Testing)	4" x 8" cores	Obtain one sample for every five cores taken.	1 D2726, D1188, D5361	This test determines the specific gravity of compacted bituminous mixture dense-graded or non-
Asphalt Concrete (Testing)	One 30-lb. sample.	Obtain one sample at the asphalt concrete plant for each 1,000 tons of asphalt conrete.	ASTM D1559, AASHTO T245	absolutive. This test determines the resistance to plastic flow of payared mixes as determined by the Marshall
Asphalt Concrete (Testing)	One 30-lb. sample.	Obtain one sample at the asphalt concrete plant for each 1,000 tons of asphalt conrete.	ASTM C117, D2172 (use Method B) AASHTO T164	This test determines the screen analysis of aggregates
Asphalt Concrete (Testing)	Sample any test location (random basis).	Obtain one sample at the asphalt concrete plant for each 1,000 tons of asphalt cornete.	ASTM D2950, CT 375	This test determines the nuclear field density of in-
Asphalt Concrete (Testing)	One 10-fb. sample.	Obtain one sample during every day of production.	ASTM D1560, D1561, CT 366, AASHTO T246, T247	place aspirat concrete. This test determines the stability value of asphalt
Slurry Seals (Sample)	One 0.5-gal. sample in a clean, dry plastic container.	Obtain one sample per truck.	ASTM D979, CT 125, AASHTO T40, T168	This test describes the procedure for sampling the
Aggregate for Slurry Seals (Testing)	One 30-lb. sample.	Obtain at least one sample per project from the belt of hopper or stockpile and test for Sand Equivalent.	ASTM 02419, CT 217, AASHTO T176	ASTM D2419, CT 217, AASHTO This test determines the Sand Equivalent of 1176
Aggregate for Slurry Seals (Testing)	One 30-lb. sample.	Obtain at least one sample per project from the belt of hopper or stockpile and test for sieve analysis of fine sand.	ASTM C117, AASHTO T11	This test determines the sieve analysis of fine sand (gradation of materials finer thatn No. 220 sieve by
Siurry Seals (Testing)	One 0.5-gal. sample in a clean, dry plastic container.	Test one sample per project and test for Abrasion.	АЅТМ ДЗ910	wasti graung). This test determines the Wet Track Abrasion Test (2) (WTAT).

กเ

Materials to be Samples or Tested	Sample Size	Sampling/Testing Frequency	Typical Test Methods	Description or Comments
Steel Strand (Testing)	Sample stand at various sizes.	pted using a Certifcate of Compliance. Sample and test at	ASTM A370, A416, E328,	This test determines the tensile strenth of uncoated
		least two steel strands per job when a Certificate of Compliance is not used.	AASHTO T244	seven-wire stress-relieved strand for pre-stressed
		tim til		8
Steel keoar (Testing)	Sample rebar at various sizes.	This item may be accepted using a Certificate of Compliance. Sample and test at ASTM A615, A370, AASHTO least two steel rebar per job when a Certificate of Compliance is not used.	ASTM A615, A370, AASHTO T244	This test determines the steel reinforcement bar tensile strenth and bend capability.





Dist | COUNTY POST MILES INDEX OF PLANS **COUNTY OF MONO** 9 MONO CR SHEET No. DESCRIPTION **DEPARTMENT OF PUBLIC WORKS** TITLE SHEET GENERAL PLAN SLOPE PROTECTION DETAILS PROJECT PLANS FOR PREVENTATIVE MAINTENANCE ON RAILING DETAILS TOPAZ LANE BRIDGE (47C-0005) IN MONO COUNTY IN THE CITY OF TOPAZ AT TOPAZ LANE ACROSS WEST WALKER RIVER TO BE SUPPLEMENTED BY STANDARD PLANS DATED 2010 LOCATION MAP TOPAZ LANE **TOPAZ LANE BRIDGE (Br. No. 47C-0005)** PLANS APPROVAL DATE **BRIDGE MAINTENANCE PROJECT** ROJECT MANAGER REGISTERED CIVIL ENGINEER PLANS APPROVAL DATE QUINCY ENGINEERING NO SCALE CONTRACT No. THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) PROJECT ID OF LICENSE AS SPECIFIED IN THE "NOTICE TO BIDDERS." USERNAME => \_USERNAME\_ CONTRACT NO.
DGN FILE => S:\Client\Mono\Topaz Lane BPMP\CAD\Topaz\_rab.dgn 14-ROAD-01

1 4

REGISTERED CIVIL ENGINEER

o. C45695

Maxwell L.

o. <u>C74940</u>

Exp. 12/31/14

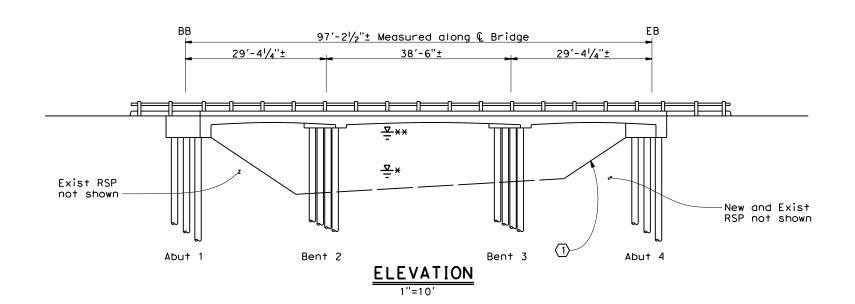
THE COUNTY OF MONO OR ITS
OFFICERS OR AGENTS SHALL NOT BE
RESPONSIBLE FOR THE ACCURACY OR
COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

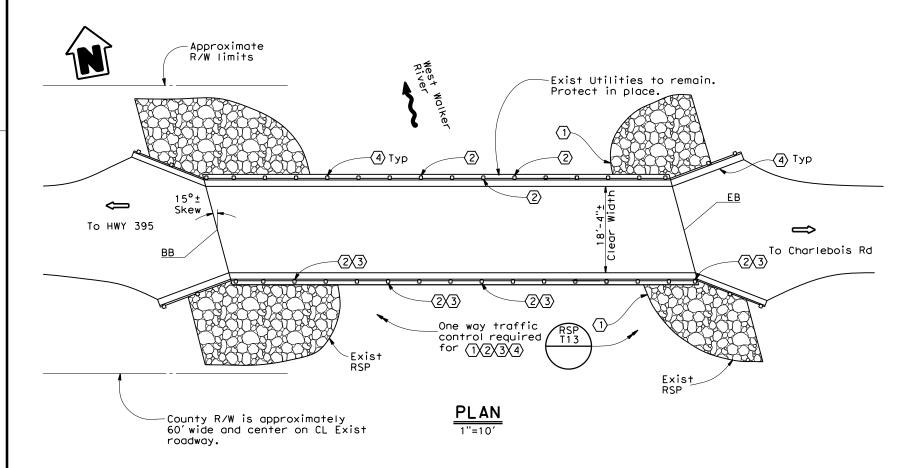
QUINCY ENGINEERING

11017 COBBLEROCK DRIVE, SUITE 100 RANCHO CORDOVA, CA 95670

N/A N/A

APPROVED AS TO IMPACT ON STATE FACILITIES AND CONFORMANCE WITH APPLICABLE STATE STANDARDS AND PRACTICES AND THAT TECHNICAL OVERSIGHT WAS PERFORMED.





The Contractor shall verify all controlling field dimensions before ordering or fabricating any material.

R. Ferguson H. Chou **MONO COUNTY** DESIGN OVERSIGHT R. Ferguson CHECKED M. Katt DETAILS AYOUT H. Chou H. Chou CHECKED A. Castillo PLANS AND SPECS DEPARTMENT OF PUBLIC WORKS SPECIFICATIONS K. Gallagher H. Chou SIGN OFF DATE DESIGN GENERAL PLAN SHEET (ENGLISH) (REV.03/14/12) ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

BRIDGE MAINTENANCE MEASURES LEGEND

(1) Abutment Scour Hole Maintenance

(2) Spall Repairs

(3) Timber Post Maintenance

(4) Timber Railing Paint Maintenance

			TOTAL PROJECT	NO	SHEETS				
9	MONO	CR		2	4				
REGISTERED CIVIL ENGINEER  PLANS APPROVAL DATE  The County or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.									
OUINCY ENGINEERING, INC 11017 Cobblerock Drive Suite 100 Rancho Cordova, CA 95670									
Kanc	sno corao	VU, CA 3361	U						

DIST COUNTY ROUTE POST MILES SHEET TOTAL

Legend:

Indicates direction of traffic flow

Indicates direction of water flow

Indicates High Water Elevation per markings on the bridge

Indicates Ordinary Water Elevation per field observations

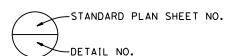
Indicates R/W limits

QUANTITIES

Prepare Water Pollution Control Program Repair Spalled Surface Area Repair Unsound Concrete LS SOFT CF Repair Unsound Concrete
Traffic Control System
Repair Post Grout Pockets
Replace Post Grout Caps
Clean and Paint Timber Railing
Rock Slope Protection (Backing No. 1, Method A)
Rock Slope Protection Fabric (Class 8)
Lead Compliance Plan
Temporary Fence (Type ESA) 32 52 ČÝ SQYD 100 LF

STANDARD PLANS DATED 2010

A10A Acronyms and Abbreviations (sheet 1 of 2)
RSP A10B Acronyms and Abbreviations (sheet 2 of 2)
A10C Symbols (sheet 1 of 3) A10C A10D Symbols (sheet 2 of 3) Symbols (sheet 3 of 3) A62C Traffic Control System Tables for Lane and Ramp Closures Traffic Control System for Lane Closure on Two Lane Conventional Highways



CONTRACT NO.: 04-4H1601

PROJECT NUMBER & PHASE: 0413000100

PREPARED FOR

1. For Abutment Scour Hole Maintenance, see "Slope Protection Details" sheet

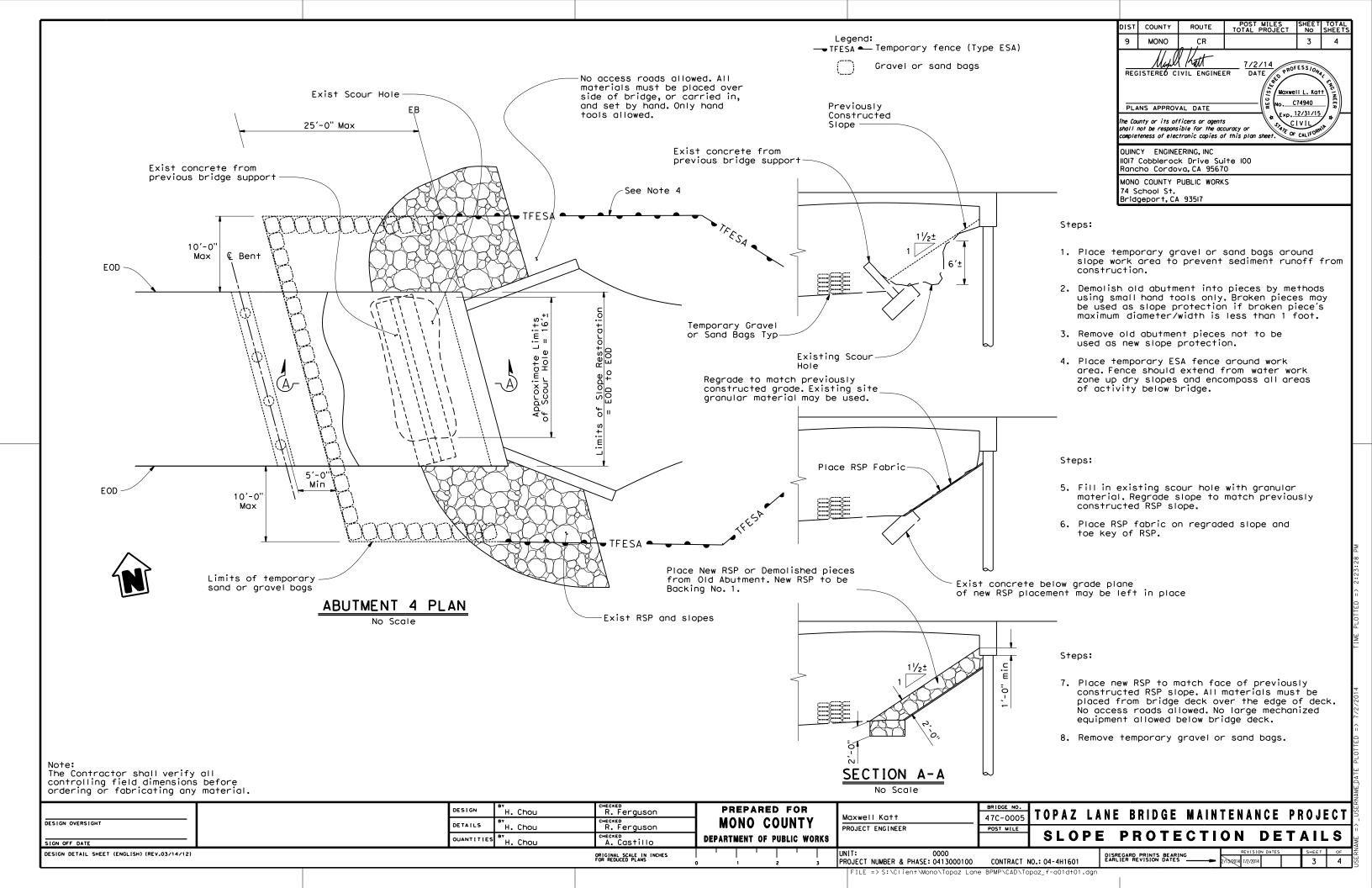
2. For Spall Repairs, see "Railing Details" sheet

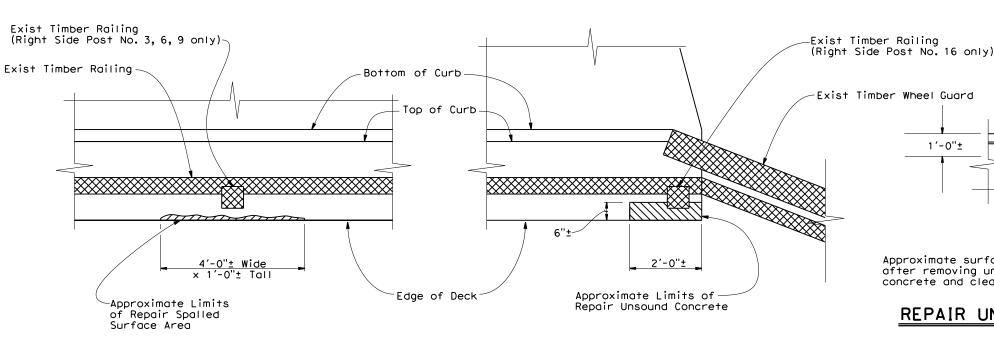
3. For Timber Railing Repairs, see "Railing Details" sheet

4. No geotechnical exploration or hydraulic analysis performed.

TOPAZ LANE BRIDGE MAINTENANCE PROJECT Maxwell Katt 47C-0005 PROJECT ENGINEER POST MILES **GENERAL PLAN** DISREGARD PRINTS BEARING EARLIER REVISION DATES -

FILE => S:\Clien+\Mono\Topaz Lane BPMP\CAD\Topaz\_a\_gp01.dgn

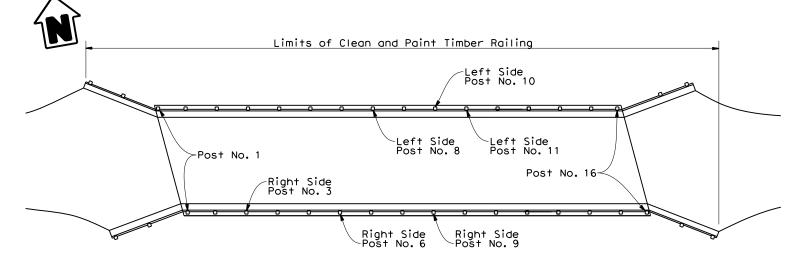




## TIMBER POST AND CONCRETE MAINTENANCE PLAN

### Maintenance for Right Side Post No. 3, 6, 9 & 16 only:

- 1. Install temporary system below bridge as required to prevent debris from entering West Walker River.
- 2. Repair Spalled Surface Area: Clean and prepare patch area. Apply bond coat of epoxy adhesive to spalled surface. Apply concrete surface patch.
- 3. Repair Unsound Concrete: All removal edges must be sawcut  $\frac{1}{2}$ " Min depth. All rebar to remain. Construct forms and place concrete to match previously constructed line and grade of bridge/rail.
- 4. Place new rammed sand and grout into post pocket for railing.
- 5. Place new sloped grout cap all the way around timber post.
- 6. Caulk and Paint Timber Railing.



The Contractor shall verify all controlling field dimensions before ordering or fabricating any material.

DESIGN DETAIL SHEET (ENGLISH) (REV.03/14/12)

DESIGN OVERSIGHT

SIGN OFF DATE

## RAILING MAINTENANCE PLAN

R. Ferguson PREPARED FOR DESIGN H. Chou MONO COUNTY R. Ferguson DETAILS H. Chou A. Castillo DEPARTMENT OF PUBLIC WORKS OUANTITIES H. Chou ORIGINAL SCALE IN INCHES

Maxwell Katt

BRIDGE NO. 47C-0005 PROJECT ENGINEER POST MILE

## TOPAZ LANE BRIDGE MAINTENANCE PROJECT

RAILING DETAILS DISREGARD PRINTS BEARING EARLIER REVISION DATES -CONTRACT NO.: 04-4H1601

The County or its officers or agents shall not be responsible for the accuracy or mpleteness of electronic copies of this plan shee 1'-0"± QUINCY ENGINEERING, INC 11017 Cobblerock Drive Suite 100 Rancho Cordova, CA 95670 MONO COUNTY PUBLIC WORKS 74 School St. Bridgeport, CA 93517 Indicates Repair Spalled New Concrete Surface Area Patch Approximate surface after removing unsound concrete and cleaning Indicates Clean and Paint

Exist concrete surface

Exist Reinf

to remain

1/2" Sawcut, Typ

MONO

CR

lull Katt

REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

4

Maxwell L. Katt C74940

Exp. 12/31/15

CIVIL F OF CALIFO

7/2/14

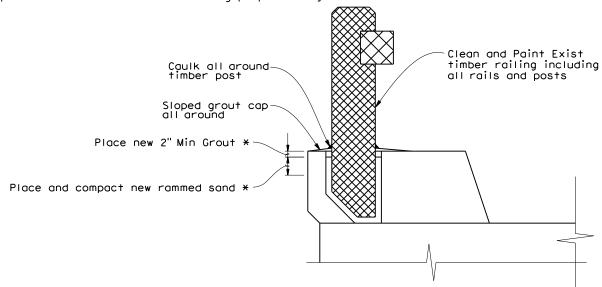
Timber Railing

Concrete

Indicates Repair Unsound

REPAIR UNSOUND CONCRETE ELEVATION

Exact limits to be determined by the Engineer. Approximate limits are for estimating purposes only.



Maintenance shown for all timber posts. For steps with asterisk (\*), perform only on Left Side Post No. 8, 10 & 11:

- 1. Remove existing grout cap
- Remove grout and rammed sand 4" Min below top of curb.
- Place and compact new rammed sand.
- 4.\* Place new grout 2" Min depth.
- 5. Place new sloped grout cap. Grout cap to be 1" Min height at post face and 2" Min width at base, all around
- 6. Place caulking seal at interface of timber post and top of grout cap.
- 7. Clean and Paint entire railing system, including all posts and rails.

## TIMBER POST MAINTENANCE DETAIL

No Scale

FILE => S:\Client\Mono\Topaz Lane BPMP\CAD\Topaz\_t-brdt01.dgn

PROJECT NUMBER & PHASE: 0413000100