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Addendum #1: Questions and Clarifications on IFB
Construction Management Services for Bus Maintenance Facility
October 11, 2019

Q1: Special Inspection & Testing: Do you envision the role of Special Inspection & Testing (for materials testing and off-site fabrication) to be a subcontract under the CM? Will the current Geotechnical Engineer (under the Design Architect) continue as the geotechnical special inspector?

A1: *The CM shall be responsible for coordinating, scheduling, and procuring special inspections and testing as required to be reimbursed by the RTA.*

Q2: Project Estimate: Can you please share a current, detailed estimate for the project?

A2: *Attached is the administrative draft of the 90% engineer's cost estimate. Note that it only addresses on-site work; the realigned Elks Lane and accompanying improvements will likely[1] be added to the successful CM bidder's contract as a future change order once the design and cost estimation is completed. It should also be noted that the canopy over the bus parking area along the center of the site is included in the base 90% bid, although it will likely be included in the construction bidding documents as an alternate; I asked Stantec/Jacobus & Yuang (cost estimator) to include the canopy in the 90% cost estimate so that I can use it as supporting information for an Air Pollution Control District grant proposal that I intend to submit next week.*

Q3: Project Funding: Can you please provide the most probable funding vehicle and the percentage of each for the project? Self-Funding, Grants, Bonds, Federal Loan Program(s).

A3: *The RTA has secured roughly $12M using a combination of FTA Section 5339(b), FTA Section 5339 and FTA Section 5307 funds, which includes approximately $8M for construction. We are also awaiting announcement of FTA Section 5339(b) awards in the coming weeks. The FTA funds will use a combination of CA TDA and Proposition 1B as local match. In any case, the construction funding gap will be handled using TIFIA, certificates of participation and/or commercial loans. Attached is a financing schedule that we have developed jointly with our financial adviser (KNN Financial) and our bond counsel (Nossaman LLP), as well as a "Sources and Uses of Funds" worksheet developed from the 60% Engineer's Cost Estimate.*

[1] By "likely," we mean that any change order request with the incumbent CM provider will be subject to normal cost/price analysis. If we are unable to agree with the incumbent, the RTA may choose to contact the Elks Lane CM work with another contractor.

Q4: On-Site Facilities: Can we assume that functional, on-site office space will be provided by the General Contractor during the construction period?

A4: *While it would be preferable for the General Contractor to provide a secure and functional on-site office for the CM, you should not presume it will be provided. The RTA can provide office space to the CM at its operating facility at 179 Cross Street.*

Q5: In section V.C.6. on page 23 for relevant experience of the proposer's team, could you please clarify the type of experience needed for "system design" and "troubleshooting"?

A5: *I'll admit that I used the Project Approach section from our commissioning procurement as a template… and neglected to remove these two. Please disregard this "system design (specify)" and "troubleshooting" criteria.*

Q6: Insurance requirements, Attachment One, Section B. 2. a.: We request that the word "project" be deleted and replace with the word "Agreement". This section currently reads that our liability policies shall be primary for any claim related to this project. We don't believe that is the intent, but would like to clarify by modifying as noted above.

A6: *The RTA is agreeable to modifying this language as requested. Section B.2.a of Attachment One is amended to read:*

> *For any claims related to this Agreement, Contractor's insurance coverage shall be primary and any insurance or self-insurance maintained by the RTA shall be excess of the Contractor's insurance and shall not contribute with it; and*

Q7: Attachment C, Section 4 (Indemnity): We request that the words "that arise out of, pertain to, or relate to" on the sixth line of the paragraph be deleted and substitute the words "to the extent caused by".

A7: *The proposed modification is not acceptable.*

Q8: Attachment C, Section 13.i (Dispute Resolution): We request the word "substantial" be changed to "the" where it appears before the word "evidence" on the tenth line of the paragraph.

A8: *The proposed modification is not acceptable.*

Q9: The Programming and Master Plan Report dated April 16, 2019 and prepared by Stantec notes an Appendix K "Battery Electric Bus Readiness Plan". Is RTA planning on future fleet electrification to meet the requirements of CARB's Innovative Clean Transit Rule? Will the selected CM be required to oversee the deployment of any Battery Electric Bus (BEB) electrical infrastructure as part of the scope of services?

A9: *Yes, the RTA is constructing this facility to BEB-ready in light of the ICT, and the CM will be expected to oversee deployment of this charging technology. Note that we do not currently use BEBs in our current fleet, nor do we have any BEBs currently on order. Phase I of the BMF's BEB project will be completed as part of the current project, and will*

include recharging infrastructure in the bus parking area for up to four BEB buses. Underground conduit will also be placed for ease of installing recharging infrastructure at each bus parking bay as our BEB fleet expands in the future.

Q10: If future BEBs are considered, does RTA have any consideration for on-site renewable generation (solar) + storage infrastructure to support charging?

A10: *The rule of thumb is that each full-day BEB requires the equivalent of one acre of solar panels, so we are planning future on-site solar and possible on-site storage to merely power the campus and to reduce peak demand charges. As mentioned above, the 90% engineer's cost estimate includes a canopy over the bus parking along the center of the site. However, due to funding constraints, this canopy may be pulled out at construction bidding and included as an alternate. That canopy and the future one along the west edge of bus parking would serve two purposes: a place to mount future solar panels funded through a Power Purchasing Agreement (PPA), and a place to mount pull-down battery recharging cables/plugs. The building is also designed to accept future mounting of solar panels (also through a PPA).*

Q11: The Mitigated Negative Declaration Study from 2017 notes electric vehicle charging stations and solar panels would also be included on the project site." Will the selected CM be required to oversee the deployment of light-duty vehicle EV infrastructure as part of the scope of services?

A11: *See answer to question #10 above.*

Q12: Section 2.B: "Does the noted $25M Project Budget include the construction of the RTA's portion of a realigned Elks Lane roadway, and accompanying stormwater and other improvements?"

A12: *As discussed in the answer to question #2 above, the referenced budget does not include realignment of Elks Lane and accompanying off-site improvements.*

Q13: Section 2.C: What is the target date to complete the final design?

A13: *RTA staff is currently reviewing 90% design documents for the on-site/base project. We expect to submit final plans to the City of San Luis Obispo this week – as soon as the printed plansets are delivered and we can write a check for expedited review. On a related note, we also expect to obtain 30% design documents for the Elks Lane realignment project by the end of October 2019, with final design completed by the end of November 2019.*

Q14: Section 3.1.4: We are looking at partnering with subconsultants to support specific scopes. Should the proposal include the qualifications of proposed sub consultants? RFP notes that "Subcontracting of specialty consultants may be permitted only with the prior written authorization by the RTA for an individual Task Order."

A14: *As long as the subconsultants are included in your proposal and the ensuing agreement, the RTA considers that authorization. In that case, you should include qualifications/resumes of the proposed subconsultants. However, if the incumbent*

decides to pursue subconsultants after the agreement is exercised, the RTA expects the incumbent to first obtain written permission.

Q15: It is assumed that all Testing & Inspection work (geotech, materials testing, etc.) will be contracted directly under RTA.

A15: *See answer to #1 above.*

Q16: Section 1: Will RTA post the sign in sheet for the October 8, 2019 pre-submittal meeting?

A16: *I spilled my lunch on the sign-in sheet (!), so I'm providing the contact info below:*

Matt Grabowski, Ardent General, matt@ardentgeneral.com
Randy Reminger, Kitchell, rrominger@kitchell.com
Rick White, Arcadis, richard.white@arcadis.com

None of these firms indicated that they are a qualified DBE.

Q17: Section 2.B: What are the sources of funding for the proposed project? Section 2.A notes that "This project is partially funded with Federal Transit Administration funds, so any agreement resulting from this CM procurement must meet all Federal requirements."

A17: *See answer to question #3 above.*

Q18: What sort of outreach has the RTA conducted to solicit DBE participation?

A18: *As noted in the RFP, the RTA has established a 5.1% DBE participation goal. Note that the 5.1% goal is not a set aside; rather, we expect each bidder to explain their efforts to meet this goal – including what sort of outreach each bidder undertook to include DBE participation in their proposal. The RTA emailed notice of our CM procurement to each California certified DBE firm that lists Construction Management as a work code and lists San Luis Obispo County as a work area. Potential bidders can access this query database at https://ucp.dot.ca.gov/licenseForm.htm.*

Q19: Page 4, section B Background indicates a wash building. Is that still the case?

A19: *Thanks for catching that mistake – the project does not include a separate wash building.*

Q20: Can the RTA provide draft/template front end procurement / contract documents for review?

A20: *Yes, please see the attached document. Note that "*Section 10 Construction Details*" and "*Section 16 Project Plans*" will be provided by Stantec Architecture once City permitting is obtained.*

JACOBUS & YUANG, INC.

SAN LUIS OBISPO REGIONAL TRANSIT AUTHORITY

BUS OPERATIONS AND MAINTENANCE FACILITY

90% CONSTRUCTION DOCUMENTS COST ESTIMATE

JYI# C2354D

October 7, 2019

PREPARED FOR:

STANTEC

BY:

FAX (213) 688-1342 or (866) 431-3256

Prepared by: Jacobus &Yuang, Inc.

PROJECT: SAN LUIS OBISPO RTC - BUS OPERATIONS & MAINTENANCE FACILITY		**JOB #:**	**C2354D**
LOCATION: SAN LUIS OBISPO, CA		**DATE:**	**07-Oct-19**
CLIENT: STANTEC		**REVISED:**	
SUBJECT: 90% CONSTRUCTION DOCUMENTS COST ESTIMATE - SUMMARY			

ITEM NO.	DESCRIPTION	EST QTY	UNIT	UNIT COST	TOTAL COST
	SUMMARY OF ESTIMATE			**$**	**$**
	COST SUMMARY				
	SITEWORK	213,422	SF	52.65	11,236,077
	ADMIN/OPS & MAINTENANCE	30,330	SF	490.96	14,890,721
	TOTAL CONSTRUCTION COST W/OUT EQUIPMENT				**26,126,798**
	MAINTENANCE EQUIPMENT - Maintenance Equipment Allowance per email received from STANTEC on 10/3/2019				
	MAINTENANCE AREAS (16,860 SF) + WASH BAY (1,800 SF)	18,660	SF		366,000
	Total Equipment Supply price				366,000
	EQUIPMENT INSTALLATION	40.00%			146,400
	ADD: PRORATES ON MAINTENANCE EQUIPMENT & INSTALLATION (NO DESIGN CONTINGENCY)	26.80%			137,344
	COMISSIONING ALLOWANCE	5.00%			14,187
	OF/OI EQUIPMENT				N.I.C.
	TOTAL ESTIMATED MAINTENANCE EQUIPMENT COST PLUS GENERAL CONTRACTOR'S PRORATES				**663,931**
	TOTAL CONSTRUCTION COST W/ MAINTENANCE EQUIPMENT				**26,790,730**

NOTES:

GENERAL NOTES

1 PRICES BASED ON MIN. 4-5 COMPETITIVE RESPONSIVE BIDS RECEIVED FROM GENERAL CONTRACTORS
2 COSTS IN THIS ESTIMATE INCLUDE LABOR BASED ON PREVAILING WAGE RATES + MATERIAL & EQUIPMENT COSTS
3 COSTS IN THIS ESTIMATE INCLUDES PREMIUM FOR BUY AMERICA REQUIREMENTS
4 ESTIMATE IS DERIVED FROM CONSTRUCTION DOCUMENTS DRAWINGS PREPARED BY STANTEC, RECEIVED 09/17/2019 & CIVIL& LANDSCAPE DRAWINGS RECEIVED 09/23/2019.

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ITEM NO.	DESCRIPTION	EST QTY	UNIT	UNIT COST	TOTAL COST

SPECIFIC EXCLUSIONS

1 F, F & E ARE EXCLUDED EXCEPT FOR MAINTENANCE AND BUS WASH EQUIPMENT PER SUMMARY ABOVE
2 THE FOLLOWING COSTS ARE EXCLUDED: PROJECT SOFT COSTS BEYOND ESTIMATED CONSTRUCTION COST, LAND COSTS, CONSTRUCTION CONTINGENCY, & TEMPORARY SWING SPACE PREPARATION
3 HAZARDOUS MATERIAL ABATEMENT
4 WALL MOUNT TELEVISION
5 FOOD SERVICE EQUIPMENT
6 UNIFORM LOCKER
7 OFF SITE IMPROVEMENTS
8 PV PANELS & CIRCUITRY
9 FUELING SYSTEM

SPECIFIC INCLUSIONS

1 DESIGN/ESTIMATE CONTINGENCY & INFLATIONARY ESCALATION
2 SITE PAVING AND BUILDING PAD OVER EXCAVATION
3 CMU AND METAL PANEL WALL SYSTEM
4 BUILT-IN BBQ READY FOR GRILL BY OWNER
5 BIKE RACK CANOPY
6 TRASH ENCLOSURE WITH ROOF DECK
7 ANTI-CLIMB SECURITY FENCING
8 OIL AND WATER SEPARATOR
9 EXHAUST SYSTEM AT WASH BAY
10 PRIMARY AND SECONDARY ELECTRICAL SERVICE CONDUITS
11 ELECTRICAL ROUGH-INS FOR VEHICLE ELECTRIFICATION
12 BUS ELECTRIFICATION DISTRIBUTION BOARD "DPEV-2" EXCLUDING UGPS AND METERING SECTION
13 SITE LIGHTING
14 INCOMING SITE COMMUNICATIONS
15 SITE SECURITY SYSTEM
16 MONUMENT SIGNAGE
17 GAS DETECTION SYSTEM ALLOWANCE
18 CAR CHARGER STATIONS (BASED ON ARCH. COMMENT AT DD STAGE)
19 PAGING SYSTEM ALLOWANCE
20 PV PANELS & RELATED CIRCUITRY

ESCALATION INCLUDED IN THE ABOVE, IS BASED ON THE FOLLOWING:

BASE MONTH	Oct-19
CONSTRUCTION START MONTH	May-20
CONSTRUCTION DURATION (MONTHS)	19
MID POINT OF CONSTRUCTION	Feb-21
% ANNUAL ESCALATION	6.00%
ALLOWANCE FOR ESCALATION (TO MIDPOINT OF CONSTRUCTION)	8.44%

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DEFINITIONS

ESTIMATE OF COST

An Estimate of Cost is prepared from a survey of the quantities of work-items prepared from written or drawn information provided at the Design Development, Working Drawing or Bid Document stage of the design.

Historical costs, information provided by contractors and suppliers, plus judgmental evaluation by the Estimator are used as appropriate as the basis for pricing.

Allowances as appropriate will be included for items of work which are not indicated on the design documents, provided that the Estimator is made aware of them, or which, in the judgement of the Estimator, are required for completion of the work.

JYI cannot, however, be responsible for items or work of an unusual nature of which we have not been informed.

BID

An offer to enter a contract to perform work for a fixed sum, to be completed within a limited period of time.

MARKET CONDITIONS

In the current market conditions for construction, our experience shows the following results on competitive bids, as a differential from JYI final estimates:

Number of bids	Percentage Differential
1.....	+ 25 to 50%
2-3.....	+ 10 to 25%
4-5.....	+ 0 to 10%
6-7.....	+ 0 to - 5%
8 or more....	+ 0 to -10%

Accordingly, it is extremely important to ensure that a minimum of 4-5 valid bids are received

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CLIENT: STANTEC		**REVISED:**	
SUBJECT: 90% CONSTRUCTION DOCUMENTS COST ESTIMATE - SITEWORK		**NET SITE AREA:**	**213,422**

ITEM NO.	DESCRIPTION	EST QTY	UNIT COST	TOTAL COST
	SUMMARY OF ESTIMATE		**$**	**$**
1.0	GENERAL REQUIREMENTS			
2.0	EXISTING CONDITIONS		0.86	184,431
31.0	EARTHWORK		3.12	665,126
32.0	EXTERIOR IMPROVEMENTS		21.34	4,554,302
33.0	UTILITIES		9.67	2,062,744
	SUBTOTAL		**34.99**	**7,466,603**
	PRORATES:			
	GENERAL CONDITIONS/GENERAL REQUIREMENTS	10.00%	3.50	746,660
	ESTIMATE/DESIGN CONTINGENCY	10.00%	3.85	821,326
	ESCALATION (TO MIDPOINT)	8.44%	3.57	762,653
	BUY AMERICA PREMIUM	3.00%	1.38	293,917
	MARKET FACTOR	2.50%	1.18	252,279
	SUBTOTAL		**48.46**	**10,343,439**
	BONDS & INSURANCE	2.00%	0.97	206,869
	CONTRACTOR'S FEE	6.50%	3.21	685,770
	TOTAL OF OPINION OF PROBABLE COST		**52.65**	**11,236,077**

SITE GROSS AREAS:

ON SITE IMPROVEMENTS	213,422	SF
MAIN BUILDING FOOTPRINT	27,370	SF
GROSS SITE AREA (ON SITE):	240,792	SF

NET SITE AREAS:

OFF SITE IMPROVEMENTS	N.I.C.	
CONCRETE HARDSCAPE/SITE WALLS	109,198	SF
ASPHALT PAVING	25,844	SF
LANDSCAPE/SWALE/BIO-RETENTION	78,380	SF
TOTAL NET SITE AREA (ON SITE):	**213,422**	**SF**

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ITEM NO.	DESCRIPTION	EST QTY		UNIT COST	TOTAL COST
1.0	**GENERAL REQUIREMENTS**				$
	SEE SUMMARY FOR GENERAL CONDITIONS				
	SUBTOTAL				
2.0	**EXISTING CONDITIONS**				$
	SITE DEMOLITION				
	REMOVE (E) FENCING/GATE	2,481	LF	6.87	17,044
	DEMO/HAUL (E) 1-STORY STICK BUILDING	1,334	SF	6.11	8,151
	SAWCUT (E) PAVING	180	LF	8.14	1,465
	REMOVE/HAUL (E) PAVING/BASE	46,700	SF	2.83	132,161
	REMOVE (E) 12" TREE	2	EA	763.34	1,527
	REMOVE (E) SEPTIC TANK, COMPLETE	1	EA	2,137.36	2,137
	DEMO (E) U/G SITE UTILITIES - ALLOWANCE	29,000	SF	0.51	14,790
	PROTECT-IN-PLACE (E) TRANSMISSION TOWER	1	EA	916.01	916
	MISC. SITE DEMO & PROTECTION WORK	1	LS	6,240.00	6,240
	SUBTOTAL				**184,431**
31.0	**EARTHWORK**				$
	SITE PREPARATION				
	SITE CLEARING - ON SITE	240,792	SF	0.05	12,040
	ROUGH GRADING	240,792	SF	0.20	48,158
	EARTHWORK				
	RAW CUT - PER CIVIL ENGINEER QTY.	7,300	CY	5.09	37,157
	BULK EXCAVATION FOR GRADED BASINS	3,568	CY	10.18	36,322
	BACKFILL & COMPACT - PER CIVIL ENGINEER QTY.	6,500	CY	12.21	79,365
	IMPORT NON-EXPANSIVE MATERIAL BELOW BUILDING	3,200	CY	42.75	136,800
	HAUL/EXPORT SURPLUS + 15% SWELL VOLUME (INCLUDING SURPLUS FROM BUILDING STRUCTURAL EXCAVATION), 2.5 HRS R/T	5,437	CY	26.90	146,261
	OVER EXCAVATION				
	SITE PAVING OVER EXCAVATION, 12"D	4,999	CY	12.72	63,582
	BUILDING PAD OVER EXCAVATION - ASSUME 5'D	6,756	CY	12.72	85,941
	EROSION CONTROL				
	EROSION CONTROL/SWPPP/BMP	240,792	SF	0.08	19,500
	SUBTOTAL				**665,126**
32.0	**EXTERIOR IMPROVEMENTS**				$
	ON SITE WORK				
	CONCRETE FLATWORK				
	CONCRETE CROSS GUTTER/SPANDREL, 9"/6"	1,124	SF	16.12	18,119
	BUS CONCRETE PAVING, 9"/6"	96,834	SF	16.12	1,560,964
	CONCRETE WALKWAY, 4"/6"	5,468	SF	9.82	53,696

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ITEM NO.	DESCRIPTION	EST QTY		UNIT COST	TOTAL COST
	EXTRA FOR ADA CURB RAMP	6	EA	763.34	4,580
	12"W CONCRETE STEP	32	LF	66.16	2,117
	12" CHEEK WALL FOR STEPS	10	LF	407.12	4,071
	6" CONCRETE RETAINING CURB, 8"D	42	LF	25.26	1,061
	6" CONCRETE CURB, 14"D + 6" AB	340	LF	33.08	11,247
	6" CONCRETE CURB, 24"D + 6" AB	1,464	LF	49.55	72,541
	24"W CURB & GUTTER, 6"/6"	1,570	LF	52.02	81,671
	36"W V-GUTTER, 8"/4"	496	LF	57.96	28,748
	RETAINING WALLS				
	6" RETAINING WAL, 3'H MAX	26	LF	137.40	3,572
	8" RETAINING WAL, 3'H MAX	46	LF	177.10	8,147
	8" RETAINING WAL, 3.5'H MAX	440	LF	206.61	90,908
	CONCRETE FOOTING/KEY	59	CY	152.67	9,004
	ASPHALT PAVING				
	ASPHALT PAVING, 3.25"/12"	25,844	SF	6.20	160,233
	TRASH ENCLOSURE				
	5" THK S.O.G PLUS FOUNDATION THICKENINGS, 26'-9" L X 7'-4" W.	1	EA	6,790.57	6,791
	HSS 2-1/2 X 2-1/2 X 1/4 COLS, AV 10' H	2	EA	217.09	434
	HSS 2-1/2 X 2-1/2 X 1/4 COLS, AV 2'-6" H ABOVE CMU	6	EA	90.46	543
	HSS 4 X 4 X 1/4 BEAMS	52	LF	45.28	2,355
	1-1/2" 18 GE. METAL DECK	239	SF	7.12	1,702
	L 2 X 2 X 1/4 ANGLE	42	LF	15.27	641
	8" CMU WALL, 12' H	40	LF	382.89	15,316
	METAL GATE/HM FRAME, (2) - 4'W X 8'H	3	PR	2,711.39	8,134
	BIKE RACK CANOPY				
	R.C. CAISSON FOOTINGS 19" DIAMETER X 2' DEEP	3	EA	271.87	816
	HSS 6 X 6 X 1/2 COLUMN, 10' L	3	EA	1,161.50	3,485
	HSS 4 X 4 X 1/4 BEAM	79	LF	58.08	4,588
	L 2 X 2 X 1/4 ANGLE	34	LF	21.37	727
	METAL ROOF DECK + PAINT DECK & STRUCTURE	151	SF	15.01	2,261
	STEEL BEAM FOR BIKE RACK MOUNTING + PAINT	25	LF	40.00	1,013
	BUILT-IN BBQ GRILL				
	8" THK X 2' H PARTIALLY GROUTED & REINFORCED CMU SIDE WALLS	67	LF	71.25	4,774
	CONCRETE FOOTING - CMU WALL, 4.67' WIDE X 19' L X 12" THK	3	CY	763.34	2,509
	CONCRETE COUNTERTOP, 6'W X 20'L X 3" thk	1	EA		OFOI
	SANTA MARIA STYLE BBQ GRILL, 36" X 72" - BUILT-IN	1	EA		OFOI
	PV PANEL CANOPY AT PARKING LOT				
	METAL FRAMED CANOPY - BY DB CONTRACTOR	14,658	SF	49.45	724,838
	STRUCTURAL COLUMN	18	EA	1,272.24	22,900
	24" DIA. PIER FOOTINGS	18	EA	591.83	10,653
	SITE WALLS, FENCING & GATES				
	8" BLOCK RET. WALL, 2'H + STEM + FOOTING	36	LF	149.42	5,379
	6'H WELDED WIRE MESH FENCE - ANTI CLIMB	165	LF	188.29	31,068

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	8'H WELDED WIRE MESH FENCE - ANTI CLIMB	1,242	LF	203.56	252,822
	STEEL GATE, 3'W X 6'H	1	EA	824.41	824
	STEEL GATE, 3'W X 8'H	1	EA	1,099.21	1,099
	STEEL SWING GATE, 20'L X 8'H - MOTORIZED	1	EA	5,597.85	5,598
	STEEL SWING GATE, 23'L X 8'H - MOTORIZED	1	EA	6,513.86	6,514
	LANDSCAPE				
	TREE, 24" BOX	17	EA	865.12	14,707
	TREE, 15 GAL	28	EA	244.27	6,840
	VINE, 1 GAL	35	EA	68.40	2,394
	SHRUB, 5 GAL	388	EA	55.98	21,720
	SHRUB, 1 GAL	698	EA	13.23	9,235
	PLANTING SOIL	958	CY	45.80	43,875
	DECORATIVE ROCK MULCH	2,255	SF	2.59	5,840
	MULCH	14,359	SF	1.78	25,559
	NON FLOAT BARK MULCH	61,766	SF	1.53	94,502
	ROOT BARRIER	553	LF	12.21	6,752
	LANDSCAPE HEADER	59	LF	10.18	601
	GRANITE BOULDER, 2'W X 2'H X 2.5'L	13	EA	301.57	3,920
	GRANITE BOULDER, 2'W X 2.5'H X 3.5'L	10	EA	301.57	3,016
	GRANITE BOULDER, 3'W X 2.5'H X 3.5 L	3	EA	882.08	2,646
	IRRIGATION	78,380	SF	3.05	239,059
	MAINTENANCE (3-MONTHS)	78,380	SF	0.38	29,784
	SITE FURNISHINGS				
	MISCELLANEOUS SITE FURNISHINGS	213,422	SF	0.07	14,940
	WASTE/RECYCLE RECEPTACLE	2	EA		OFOI
	CAFÉ STYLE TABLE, 4x4 W/ (4) CHAIRS	3	EA		OFOI
	SITE MISCELLANEOUS				
	TRUNCATED DOME	222	SF	45.80	10,168
	PIPE HANDRAIL, FLOOR MOUNT + PAINT	8	LF	184.22	1,474
*	8" PIPE BOLLARD - UTILITIES	38	EA	1,068.68	40,610
	ADA PARKING STALL STRIPING + LOGO	4	EA	239.18	957
	STD PARKING STALL STRIPING	69	EA	61.07	4,214
	EV CLEAN AIR PARKING STALL W/ SURFACE SIGNAGE	11	EA	71.25	784
	NON REVENUE PARKING STALL STRIPING	8	EA	76.33	611
	SHORT & LONG TERM BIKE PARKING	20	EA	40.71	814
	MOTORCYCLE PARKING STALL STRIPING	5	EA	50.89	254
	BUS PARKING STALL STRIPING, 12'W X 40'L	31	EA	122.13	3,786
	BUS PARKING STALL STRIPING, 12'W X 30'L	20	EA	91.60	1,832
	BUS PARKING STALL STRIPING,9'W X 18'L	27	EA	73.28	1,979
	PAVING MARKINGS/STRIPING	13	EA	152.67	1,985
	CONCRETE WHEEL STOP, 6'L	28	EA	67.17	1,881
	POLE-MOUNTED PARKING ADA STALL SIGN	4	EA	508.90	2,036
	POLE-MOUNTED PARKING ENTRY SIGN	1	EA	661.56	662
	MONUMENT SIGNAGE - RTA LOGO ON +/-3.25'H MP-1	1	EA	4,450.00	4,450
	WALL ATTACH TO 2'H X 8'L X 10" COLORED CMU WALL + FOOTING				
	MONUMENT SIGN ON 6.5' L X 4' W R.C. FOOTING	1	EA	13,340.00	13,340

PROJECT: SAN LUIS OBISPO RTC - BUS OPERATIONS & MAINTENANCE FACILITY		**JOB #:**	**C2354D**
LOCATION: SAN LUIS OBISPO, CA		**DATE:**	**07-Oct-19**
CLIENT: STANTEC		**REVISED:**	
SUBJECT: 90% CONSTRUCTION DOCUMENTS COST ESTIMATE - SITEWORK		**NET SITE AREA:**	**213,422**

ITEM NO.	DESCRIPTION	EST QTY		UNIT COST	TOTAL COST
	MISC. SITE IMPROVEMENTS ALLOWANCE	1	LS	68,280.00	68,280
	SUBTOTAL				**4,554,302**
33.0	UTILITIES				$
	STORM DRAINS				
	STREET P.O.C., 12" STORM	1	EA	11,195.69	11,196
	12" DIA. ADS PIPE + cut & patch OFF SITE	44	LF	155.99	6,864
	12" DIA. ADS PIPE	436	LF	105.10	45,826
	60" DIA. PRECAST MANHOLE	1	EA	15,266.85	15,267
	ROCK STORM OUTFALL, 4'L X 5' W X 2'THK	6	EA	1,281.66	7,690
	CURB-OPENING CATCH BASIN	4	EA	1,832.02	7,328
	DOMESTIC WATER				
	6" DIAMETER STREET P.O.C.	1	EA	9,160.11	9,160
	6" DIAMETER WATER MAIN plus cut & patch,OFF SITE	45	LF	110.95	4,993
	6" DIAMETER WATER MAIN, ON SITE	819	LF	53.79	44,054
	6" WATER THRUSTBLOCK	8	EA	422.38	3,379
	WATER VALVE & WELL	1	EA	1,800.00	1,800
	VALVES & SPECIALTIES	1	LS	6,450.00	6,450
	EXTRA FOR CW ROUGH-INS/POC TO BBQ SINK	1	EA	1,526.69	1,527
	THRUST BLOCK	19	EA	468.75	8,906
	FIRE WATER				
	4" FIRE WATER STREET P.O.C.	1	EA	6,000.00	6,000
	4" DIAMETER FIRE WATER, OFF SITE	44	LF	97.20	4,277
	4" DIAMETER FIRE WATER, ON SITE	1,523	LF	47.20	71,882
	THRUST BLOCK	19	EA	205.00	3,895
	FIRE HYDRANT	2	EA	3,850.00	7,700
	DOUBLE CHECK BACKFLOW PREVENTER	1	EA	7,200.00	7,200
	FIRE WATER VALVE & WELL, 4"	1	EA	1,500.00	1,500
	FDC	1	EA	2,574.60	2,575
	BUILDING CONNECTION	1	EA	500.00	500
	VALVES & SPECIALTIES	1	LS	7,140.00	7,140
	RECYCLED WATER				
	OFFSITE RW PIPE - ASSUME 4"	45	LF	27.72	1,247
	OFFSITE POC	1	EA	3,500.00	3,500
	RW WATER METER - ASSUME 4"	1	EA	4,800.00	4,800
	RW RPBFP ASSEMBLY - ASSUME 4"	1	EA	6,000.00	6,000
	THRUST BLOCK	3	EA	375.00	1,125
	VALVES & SPECIALTIES	1	LS	1,250.00	1,250
	SANITARY SEWER/ INDUSTRIAL WASTE				
	6" DIAMETER SANITARY STREET P.O.C.	1	EA	6,000.00	6,000
	6" DIAMETER SANITARY DRAIN PLUS CUT & PATCH, OFF SITE	20	LF	120.10	2,402
	6" DIAMETER SANITARY DRAIN, ON SITE	316	LF	70.10	22,152
	1500 GAL SAND OIL INTERCEPTOR	1	EA	18,750.00	18,750

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CLIENT: STANTEC	**REVISED:**	
SUBJECT: 90% CONSTRUCTION DOCUMENTS COST ESTIMATE - SITEWORK	**NET SITE AREA:**	**213,422**

ITEM NO.	DESCRIPTION	EST QTY		UNIT COST	TOTAL COST
	SEWER MANHOLE	1	EA	4,800.00	4,800
	SEWER CLEANOUT	1	EA	265.00	265
	BUILDING CONNECTION	2	EA	750.00	1,500
	SITE ELECTRICAL				
	PRIMARY/SECONDARY POWER SERVICE - FOR MAINTENANCE BUILDING				
	UTILITY FEE	1	LS	150,000.00	150,000
	PG&E POWER POLE CONNECTION	1	EA	10,000.00	10,000
	PG&E PRIMARY U/G VAULT, 3' X 5'	2	EA	3,630.00	7,260
	(1) 5"C.O. PG&E	847	LF	34.40	29,137
	PRIMARY SERVICE CONDUIT + DUCTBANK - FROM PG&E RISER TO PG&E VAULT #1	205	LF	194.05	39,780
	PRIMARY SERVICE CONDUIT + DUCTBANK - FROM PG&E VAULT #1 TO PG&E TRANSFORMER	190	LF	194.05	36,869
	U/G UTILITY VAULT #1	1	EA	7,650.00	7,650
	SECONDARY SERVICE - 4000A BUS DUCT, NEMA 3R	25	LF	2,610.00	65,250
	TRANSFORMER PAD/SLAB BOX, 8' X 9'	1	EA	10,860.00	10,860
	TRANSFORMER GROUNDING	1	LS	2,500.00	2,500
	CUT & PATCH (E) SIDEWALK/STREET PAVING	73	LF	55.00	4,015
	PRIMARY/SECONDARY POWER SERVICE - FOR FUTURE BUS FLEET ELECTRIFICATION				
	PRIMARY SERVICE CONDUIT + DUCTBANK - FROM PG&E VAULT #1 TO PG&E VAULT #2	195	LF	194.05	37,840
	U/G UTILITY VAULT #2	1	EA	7,650.00	7,650
	SECONDARY SERVICE CONDUIT + DUCTBANK - FROM PG&E VAULT #2 TO TRANSFORMER	155	LF	276.99	42,933
	STUB/CAP SECONDARY SERVICE CONDUIT	1	EA	450.00	450
	ROUGH-INS FOR FUTURE BUS CHARGERS (PER DWNG E100)				
	SWITCHBOARD "DPEV-2", 4000A-277/480V-3Ph-4W, NEMA 3R INCLUDES THE FFG:	1	EA	76,635.00	76,635
	- UGPS	1	EA		FUTURE
	- 4000A METER/MAIN SECTION W/ GFI	1	EA		FUTURE
	- SURGE PROTECTIVE DEVICE	1	EA		INCLUDED
	- INCOMING SECTION, 1600A/3P	1	EA		INCLUDED
	- OUTGOING SECTIONS, 300A/3P	13	EA		INCLUDED
	- OUTGOING SECTIONS, 40A/3P	4	EA		INCLUDED
	- CONCRETE PAD	60	SF	25.00	1,500
	(4) - 2" PVC CONDUIT	50	LF	30.74	1,537
	(8) - 2" PVC CONDUIT	50	LF	55.33	2,767
	(12) - 2" PVC CONDUIT	50	LF	78.39	3,919
	(16) - 2" PVC CONDUIT	50	LF	98.37	4,918
	(20) - 2" PVC CONDUIT	165	LF	122.96	20,288
	(24) - 2" PVC CONDUIT	25	LF	122.96	3,074
	(28) - 2" PVC CONDUIT	150	LF	150.63	22,594
	U/G PULLBOX, 36x24	12	EA	1,670.00	20,040
	TRENCH/DUCTBANK	540	LF	74.07	40,000

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CLIENT: STANTEC	**REVISED:**	
SUBJECT: 90% CONSTRUCTION DOCUMENTS COST ESTIMATE - SITEWORK	**NET SITE AREA:**	**213,422**

ITEM NO.	DESCRIPTION	EST QTY		UNIT COST	TOTAL COST
	ROUGH-INS FOR CHARGERS				
	(1) 1" CONDUITS	121	LF	7.17	868
	(2) 1" CONDUITS	18	LF	13.62	245
	(3) 1" CONDUITS	73	LF	19.90	1,452
	(6) 1" CONDUITS	11	LF	38.72	426
	(10) 1" CONDUITS	89	LF	70.62	6,286
	(11) - 3" PVC CONDUIT	119	LF	264.81	31,512
	U/G PULLBOX, 11X17	10	EA	442.59	4,426
	3' X 3' TRAFFIC RATED U/G PULL BOX	2	EA	2,370.00	4,740
	CAR CHARGING STATION W/ PEDESTAL (ASSUMED)	15	EA	16,184.38	242,766
	CAR CHARGING STATION W/ PEDESTAL (ITEM ADDED PER ARCH. COMMENT)	6	EA	16,184.38	97,106
	SITE POWER				
	MONUMENT SIGN POWER	1	EA	14,250.00	14,250
	GATE SITE FEEDERS	679	LF	20.00	13,580
	MISC. SITE POWER	1	LS	1,390.00	1,390
	SITE LIGHTING				
	S2A, S2B, S2C: SINGLE HEAD LED, FIXURE, 20' POLE	5	EA	9,520.00	47,600
	S3A, S3B, S3C: SINGLE HEAD LED FIXTURE, 15' POLE	18	EA	9,120.00	164,160
	HANDHOLE	24	EA	750.00	18,000
	TRASH ENCLOSURE LIGHTING - ALLOWANCE	3	EA	800.00	2,400
	BIKE RACK CANOPY LIGHTING - ALLOWANCE	3	EA	800.00	2,400
	BBQ CANOPY LED LIGHTING	6	EA	800.00	4,800
	LIGHTING CKT., PVC CONDUIT/CU WIRES	2,020	LF	15.25	30,805
	TRENCH/DUCTBANK	1,750	LF	41.67	72,917
	POWER/LIGHTING & LOW VOLTAGE SYSTEMS TO PARKING PV CANOPY				
	S5A; S5B; SURFACE, LED CANOPY, 3000K	18	EA	763.34	13,740
	S8B; SUSPENDED, 4" X 96" LED LINEAR, 3000K	2	EA	761.31	1,523
	GRC CIRCUIT /CU WIRES	500	LF	12.21	6,105
	INCOMING COMMUNICATIONS				
	CATV U/G VAULT, 2' X 4'	1	EA	1,231.53	1,232
	TEL. U/G VAULT, 2' X 4'	2	EA	1,231.53	2,463
	(4) 4" C.O. (CATC/TEL) U/G	293	LF	106.68	31,257
	CABLING - BY PROVIDER				N.I.C.
	SITE SECURITY				
	FIXED CAMERA - LIGHT POLE MOUNT	1	EA	7,000.00	7,000
	MULTI SENSOR CAMERA - LIGHT POLE MOUNT	3	EA	9,000.00	27,000
	MULTI-SENSOR CAMERA + POLE/FOOTING	2	EA	10,375.00	20,750
	CARD READER/INTERCOM + PEDESTAL	1	EA	5,500.00	5,500
	GATE CONTACT/SENSOR	1	EA	1,500.00	1,500
	U/G PULLBOX, 18x24	1	EA	1,050.00	1,050
	HANDHOLES	6	EA	808.50	4,851
	(1) - 2" PVC CONDUIT	2,320	LF	12.17	28,234
	SECURITY CABLES - 6FOSM	2,320	LF	8.15	18,908
	TRENCH/DUCTBANK	845	LF	27.78	23,472

PROJECT: SAN LUIS OBISPO RTC - BUS OPERATIONS & MAINTENANCE FACILITY	**JOB #:**	**C2354D**
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CLIENT: STANTEC	**REVISED:**	
SUBJECT: 90% CONSTRUCTION DOCUMENTS COST ESTIMATE - SITEWORK	**NET SITE AREA:**	**213,422**

ITEM NO.	DESCRIPTION	EST QTY		UNIT COST	TOTAL COST
	COMBINED DUCT BANKS (CONDUIT ELSEWHERE)				
	DUCTBANK. 1 CONDUIT	151	LF	39.58	5,977
	DUCTBANK. 2 CONDUITS	55	LF	39.58	2,177
	DUCTBANK. 5 CONDUITS	196	LF	70.37	13,793
	DUCTBANK. 10 CONDUITS	87	LF	105.56	9,183
	DUCTBANK. 11 CONDUITS	110	LF	105.56	11,611
	DUCTBANK. COMBINED SMALL CONDUITS	66	LF	39.58	2,613
	MISC. SITE UTILITY				
	MISC. SITE UTILITY SYSTEM/TESTING	1	LS	50,310.00	50,310
	SUBTOTAL				**2,062,744**

PROJECT: SAN LUIS OBISPO RTC - BUS OPERATIONS & MAINTENANCE FACILITY		**JOB #:**	**C2354D**
LOCATION: SAN LUIS OBISPO, CA		**DATE:**	**07-Oct-19**
CLIENT: STANTEC		**REVISED:**	
SUBJECT: 90% CONSTRUCTION DOCUMENTS COST ESTIMATE - ADMIN/OPS & MAINTENANCE BUILDING + WASH BAY		**BUILDING GFA:**	**30,330**

ITEM NO.	DESCRIPTION	EST QTY	UNIT	UNIT COST	TOTAL COST
	SUMMARY OF ESTIMATE			**$**	**$**
1.0	GENERAL REQUIREMENTS				
2.0	EXISTING CONDITIONS				
3.0	CONCRETE			27.76	841,965
4.0	MASONRY			18.24	553,114
5.0	METALS			38.81	1,177,196
6.0	WOOD, PLASTICS & COMPOSITES			3.27	99,103
7.0	THERMAL & MOISTURE PROTECTION			28.86	875,276
8.0	OPENINGS			20.35	617,159
9.0	FINISHES			45.59	1,382,688
10.0	SPECIALTIES			3.61	109,370
11.0	EQUIPMENT			0.75	22,634
12.0	FURNISHINGS			0.96	29,267
13.0	SPECIAL CONSTRUCTION				
14.0	CONVEYING				
21.0	FIRE SUPPRESSION			6.89	208,964
22.0	PLUMBING			19.54	592,756
23.0	HVAC			38.56	1,169,560
26.0	ELECTRICAL			53.09	1,610,277
27.0	COMMUNICATIONS			8.29	251,297
28.0	ELECTRONIC SAFETY & SECURITY			11.69	354,562
	SUBTOTAL			**$326.25**	**9,895,188**
	PRORATES:				
	GENERAL CONDITIONS/GENERAL REQUIREMENTS	10.00%		32.63	989,519
	ESTIMATE/DESIGN CONTINGENCY	10.00%		35.89	1,088,471
	ESCALATION	8.44%		33.32	1,010,713
	BUY AMERICA PREMIUM	3.00%		12.84	389,517
	MARKET FACTOR	2.50%		11.02	334,335
	SUBTOTAL			**$451.95**	**13,707,743**
	BONDS	2.00%		9.04	274,155
	CONTRACTOR'S FEE	6.50%		29.96	908,823
	TOTAL OF OPINION OF PROBABLE COST			**$490.95**	**14,890,721**
	BUILDING AREAS:				
	MAINTENANCE	13,900	SF		
	WASH BAY	1,800	SF		
	ADMIN-OPERATIONS	11,670	SF		
	MEZZANINE - SOUTH	960	SF		
	MEZZANINE - NORTH	2,000	SF		
	BUILDING GROSS FLOOR AREA	**30,330**	**SF**		

PROJECT: SAN LUIS OBISPO RTC - BUS OPERATIONS & MAINTENANCE FACILITY	**JOB #:**	**C2354D**
LOCATION: SAN LUIS OBISPO, CA	**DATE:**	**07-Oct-19**
CLIENT: STANTEC	**REVISED:**	
SUBJECT: 90% CONSTRUCTION DOCUMENTS COST ESTIMATE - ADMIN/OPS & MAINTENANCE BUILDING + WASH BAY	**BUILDING GFA:**	**30,330**

ITEM NO.	DESCRIPTION	EST QTY	UNIT	UNIT COST	TOTAL COST
1.0	GENERAL REQUIREMENTS				$
	SEE SUMMARY FOR GENERAL CONDITIONS				
	SUBTOTAL				
2.0	EXISTING CONDITIONS				$
	SEE SEPARATE SITEWORK ESTIMATE				
	SUBTOTAL				
3.0	CONCRETE				$
	BUILDING FOUNDATION				
	SPREAD FOOTING	106	CY	859.57	90,923
	WALL FOOTING	278	CY	890.00	247,205
	REPAIR BAY PIT				
	REPAIR BAY PIT, COMPLETE	1	EA	19,360.00	19,360
	WASH PIT				
	CHASSIS WASH PIT, COMPLETE	1	EA	61,260.00	61,260
	SLAB ON-GRADE/CURB				
	5" SLAB ON-GRADE + V.B./BASE	13,108	SF	9.48	124,264
	10" SLAB ON-GRADE + V.B./BASE	14,262	SF	16.07	229,190
	THICKENED SLAB	31	CY	533.90	16,449
	EXTRA FOR DEPRESSED SLAB	1,070	SF	2.67	2,857
	CONCRETE CURB, 4"W X 6"H	208	LF	13.05	2,714
	CONCRETE CURB, 6"W X 6"H	118	LF	19.77	2,333
	CONCRETE CURB, 8"W X 6"H	440	LF	26.50	11,660
	MISC. CONCRETE				
	3 1/4" LT. WT. CONCRETE TOPPING - MEZZANINE	2,960	SF	6.53	19,329
	CONCRETE TOPPING - STAIR TREADS	65	SF	13.35	868
	CONCRETE TOPPING - STAIR UPPER LANDING	20	SF	10.68	208
	MISC. CONCRETE/PADS/THICKENINGS/GROUTING ALLOWANCE	30,330	GSF	0.44	13,345
	SUBTOTAL				**841,965**
4.0	MASONRY				$
	CMU WALLS - **MAINTENANCE BOX**				
	*NOTE: TOTAL MEASURED MAINTENANCE BOX ENCLOSURE (EXT/INT) IS **15,632 SF** INCLUDING OPENINGS. QUANTITIES SHOWN BELOW ARE NET AREAS, OPENINGS WERE DEDUCTED.*				

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CLIENT: STANTEC	**REVISED:**	
SUBJECT: 90% CONSTRUCTION DOCUMENTS COST ESTIMATE - ADMIN/OPS & MAINTENANCE BUILDING + WASH BAY	**BUILDING GFA:**	**30,330**

ITEM NO.	DESCRIPTION	EST QTY	UNIT	UNIT COST	TOTAL COST
	8" COLORED EXT. CMU WALL, FULLY-GROUTED	11,188	SF	30.43	340,451
	8" COLORED INT. CMU WALL, FULLY-GROUTED	1,764	SF	30.43	53,679
	8" CMU STEM WALL	568	SF	29.36	16,676
	MAINTENANCE PARTITIONS				
	8" CMU WALL - STD PRECISION BLOCK	4,550	SF	29.36	133,588
	8" CMU STEM WALL	297	SF	29.36	8,720
	SUBTOTAL				**553,114**
5.0	METALS				$
	STEEL STRUCTURE	**73.57**	**TON**		
	HSS COLUMNS TO HIGH & LOW ROOFS	8,124	LBS	3.20	25,997
	LOW ROOF/ MEZZAINE FRAMING: W-SECTION	82,900	LBS	2.72	225,488
	LOW ROOF/ MEZZAINE FRAMING: HSS-SECTION FRAMING	8,630	LBS	3.20	27,616
	HIGH ROOF STRUCTURAL FRAMING: SJ1 JOIST, 43' L	7	EA	2,238.36	15,669
	HIGH ROOF STRUCTURAL FRAMING: SJ2 JOIST, 42'-9"	12	EA	2,251.37	27,016
	HIGH ROOF STRUCTURAL FRAMING: SJ1 JOIST, 33'-8"	1	EA	1,460.57	1,461
	HIGH ROOF STRUCTURAL FRAMING: SJ3 JOIST, 32' L	8	EA	1,388.13	11,105
	HIGH ROOF STRUCTURAL FRAMING: SJ4 JOIST, 32' L	12	EA	2,221.00	26,652
	HIGH ROOF STRUCTURAL FRAMING: 6 x 6 x 1/4 TSS, 7'-6" L	45	EA	418.88	18,850
	HIGH ROOF STRUCTURAL FRAMING: 3 X 3 X 1/4 TSS, 3'-6" L	19	EA	108.02	2,052
	HIGH ROOF STRUCTURAL FRAMING: 4 X 4 X 5/16 TSS, 8' L	2	EA	152.42	305
	HIGH ROOF STRUCTURAL FRAMING: 4 X 4 X 5/16 TSS	131	LF	43.55	5,705
	HIGH ROOF STRUCTURAL FRAMING: 6 x 6 x 1/4 TSS, 7'	17	EA	390.96	6,646
	HIGH ROOF STRUCTURAL FRAMING: W16 X 26	198	LF	76.35	15,117
	MISC. STRUCTURAL STEEL TO INCREASE LBS/SF	30,330	SF	4.40	133,452
	DETAIL STEEL	7	TON	7,474.53	54,989
	GLOSS PAINT TO EXPOSED STEEL	74	TON	533.90	39,769
	EXTRA FOR EPOXY PAINT TO WASH BAY	4	TON	3,203.37	14,161
	LOW ROOF/ MEZZ FRAME:D1 DECK, 1-1/2" X 18GE	13,029	SF	5.85	76,220
	LOW ROOF/ MEZZ FRAME:D2 DECK, 2" X 18"GE	2,907	SF	6.73	19,564
	LOW ROOF/ MEZZ FRAME:D3 DECK, 1-1/2" X 18GE	2,989	SF	5.85	17,486
	LOW ROOF/ MEZZ FRAME:D4 DECK, 1-1/2" X 18GE	14,871	SF	5.85	86,995
	C-SECTION FRAME TO ENTRY LOBBY DROPPED CEILING				
	C-SECTION FRAMING	3,136	LBS	3.20	10,034
	ANGLE IRON HANGARS	128	LBS	3.20	410
	METAL PAN STAIR				
	STRAIGHTFLIGHT, 3.25'W X 20 TREADS	1	FLT	6,593.60	6,594
	UPPER LANDING - DECK & STEEL	20	SF	53.39	1,041

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CLIENT: STANTEC	**REVISED:**	
SUBJECT: 90% CONSTRUCTION DOCUMENTS COST ESTIMATE - ADMIN/OPS & MAINTENANCE BUILDING + WASH BAY	**BUILDING GFA:**	**30,330**

ITEM NO.	DESCRIPTION	EST QTY	UNIT	UNIT COST	TOTAL COST
	METAL CANOPY				
	METAL DECK, 1 1/2" X 18 GA.	3,180	SF	5.85	18,603
	STEEL STRUCTURE	19	TON	5,338.95	101,867
	EXTRA FOR WALL BRACKET TO CMU WALL	17	EA	507.20	8,622
	PAINT TO EXPOSED STEEL	19	TON	533.90	10,187
	MAIN ENTRY CANOPY				
	DOOR/ENTRY CANOPY - STEEL TRELLISES	221	SF	56.06	12,389
	EXTRA FOR PROTRUDED STEEL	60	LF	74.75	4,485
	GLOSS PAINT TO STEEL	2	TON	533.90	1,028
	METAL ROOF SCREEN				
	6'H METAL ROOF SCREEN - STEEL FRAME W/ PERFORATED METAL PANEL (MP-3), COMPLETE	1,150	SF	37.37	42,976
	METAL FABRICATIONS				
	ROOF HATCH, 30" X 42" + 13'H LADDER	1	EA	3,523.71	3,524
	METAL LADDER, 24"W X 12'H	1	EA	1,345.42	1,345
	4.5'H INCLINED METAL LADDER W/ HANDRAILS	1	EA	1,345.42	1,345
	REMOVABLE GUARDRAIL + PAINT - MEZZ.	168	LF	240.25	40,362
	PIPE GUARDRAIL + PAINT - MEZZ.	26	LF	205.55	5,344
	PIPE HANDRAIL, WALL MOUNT + PAINT	26	LF	69.41	1,805
	CHAINLINK PARTITION, 7'H	41	LF	71.76	2,942
	CHAINLINK GATE, 3'W X 7'H	1	EA	827.54	828
	8" CONCRETE-FILLED PIPE BOLLARD + PAINT	28	EA	1,067.79	29,898
	METAL SUPPORT - WALL MOUNT TV	7	EA	453.81	3,177
	MISC. METALS ALLOWANCE	30,330	GSF	0.53	16,075
	SUBTOTAL				**1,177,196**
6.0	WOOD, PLASTICS & COMPOSITES				$
	FINISH CARPENTRY				
	16"W SOLID SURFACE COUNTERTOP - PASS THRU	6	LF	121.57	729
	24"W SOLID SURFACE COUNTERTOP - PASS THRU	14	LF	140.95	1,973
	24"W SOLID SURFACE COUNTERTOP - WALL MOUNT + WALL BRACKETS	19	LF	162.09	3,080
	24"W SOLID SURFACE COUNTERTOP W/ PLAM BASE CABINET BELOW - DISPATCH/BREAK RM.	13	LF	117.46	1,507
	24"W SOLID SURFACE COUNTERTOP - LAVATORY	21	LF	233.01	4,777
	30"W SOLID SURFACE COUNTERTOP - BREAK RM.	11	LF	256.27	2,775
	36"W SOLID SURFACE COUNTERTOP - BREAK RM.	9	LF	291.51	2,478
	24"W PLAM BASE CABINET + SOLID SURFACE TOP W/ 4"H BACKSPLASH	99	LF	440.46	43,606
	24"W X 8'H TALL CABINET, PLAM	9	LF	533.90	4,805
	PLAM UPPER CABINET, 1.5'H	14	LF	266.95	3,737
	PLAM UPPER CABINET, 2'H	8	LF	293.64	2,446
	PLAM UPPER CABINET, 2.5'H	10	LF	320.34	3,043
	PLAM UPPER CABINET, 3'H	12	LF	347.03	4,164

PROJECT: SAN LUIS OBISPO RTC - BUS OPERATIONS & MAINTENANCE FACILITY		**JOB #:**	**C2354D**
LOCATION: SAN LUIS OBISPO, CA		**DATE:**	**07-Oct-19**
CLIENT: STANTEC		**REVISED:**	
SUBJECT: 90% CONSTRUCTION DOCUMENTS COST ESTIMATE - ADMIN/OPS & MAINTENANCE BUILDING + WASH BAY		**BUILDING GFA:**	**30,330**

ITEM NO.	DESCRIPTION	EST QTY	UNIT	UNIT COST	TOTAL COST
	MAIL BOXES, 4.90'W X 5'H	1	EA	1,177.24	1,177
	UPPER CABINET		LF	293.64	
	4.67'H TRANSLUCENT RESIN PANEL SYSTEM ABOVE DISPATCH/BREAK RM. COUNTER	11	LF	112.20	1,215
	MISC. FINISH CARPENTRY ALLOWANCE	30,330	GSF	0.21	6,369
	ROUGH CARPENTRY				
	MISC. ROUGH CARPENTRY ALLOWANCE	30,330	GSF	0.37	11,222
	SUBTOTAL				**99,103**
7.0	THERMAL & MOISTURE PROTECTION				$
	ROOFING				
	THERMOPLASTIC POLYOLEFIN ROOFING	28,480	SF	20.64	587,827
	ROOFING COVERBOARD	28,480	SF	1.33	37,878
	TAPERED RIGID INSULATION, 6" MIN.	28,480	SF	4.00	113,920
	TPO MEMBRANE - ROOFSIDE PARAPET	2,513	SF	8.01	20,130
	ALLOWANCE FOR ROOF WALKWAY PAD	854	SF	8.81	7,527
	8"W PARAPET COPING - O/ CMU WALL	552	LF	26.69	14,733
	11"W PARAPET COPING - O/ STUD WALL	588	LF	29.90	17,581
	CANT STRIP	1,450	LF	5.87	8,512
	SKYLIGHT				
	TUBULAR SKYLIGHT, 10"Ø I.D. X 15'D	1	EA	1,043.58	1,044
	TUBULAR SKYLIGHT, 21"Ø I.D. X 3'D	3	EA	2,033.89	6,102
	TUBULAR SKYLIGHT, 21"Ø I.D. X 15'D	1	EA	2,542.36	2,542
	TUBULAR SKYLIGHT, 29"Ø I.D. X 4'D	6	EA	2,542.36	15,254
	STEEL-FRAMED SKYLIGHT, 2' X 4' I.D.	5	EA	2,221.00	11,105
	CANOPY				
	GLOSS PAINT TO TOP OF METAL DECK	3,180	SF	1.87	5,947
	MISCELLANEOUS				
	MISC. SHEET METAL ALLOWANCE	30,330	GSF	0.30	9,099
	CAULKING & SEALANT ALLOWANCE	30,330	GSF	0.53	16,075
	SUBTOTAL				**875,276**
8.0	OPENINGS				$
	EXTERIOR DOOR + HARDWARES				
	ALUM ROLL-UP DOOR/STEEL FRAME, 14'W X 14'H W/ SAFETY GLAZING PANELS (98 SF/DOOR), MOTORIZED	10	EA	13,603.65	136,037
	ALUM ROLL-UP DOOR/HM FRAME, 10'W X 10'H W/ (16) 4" X 15" GLAZING VISION SLATS, MOTORIZED	1	EA	6,940.64	6,941
	STEEL ROLL-UP DOOR/STEEL FRAME, 8'W X 10'H W/ (16) 4" X 15" GLAZING VISION SLATS, MOTORIZED	1	EA	5,552.51	5,553
	ALUM-GLASS DOOR/ALUM FRAME, (2) - 2.8'W X 7.4'H	1	PR	6,139.58	6,140
	ALUM-GLASS DOOR/ALUM FRAME, (2) - 3'W X 7.8'H	1	PR	6,933.70	6,934
	ALUM-GLASS DOOR/ALUM FRAME, (2) - 3.25'W X 7.9'H	2	PR	7,607.80	15,216

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CLIENT: STANTEC	**REVISED:**	
SUBJECT: 90% CONSTRUCTION DOCUMENTS COST ESTIMATE - ADMIN/OPS & MAINTENANCE BUILDING + WASH BAY	**BUILDING GFA:**	**30,330**

ITEM NO.	DESCRIPTION	EST QTY	UNIT	UNIT COST	TOTAL COST
	HM DOOR/HM FRAME, (2) - 2.83'W X 7'H	1	PR	4,220.01	4,220
	HM DOOR/HM FRAME, 3'W X 7'H	11	EA	2,354.48	25,899
	ALUM DOOR/ALUM FRAME, 3'W X 7'H	1	EA	2,514.65	2,515
	EXTRA NARROW VISION PANEL, PER LEAF	2	EA	85.42	171
	EXTRA LARGE VISION PANEL, PER LEAF	5	EA	200.21	1,001
	EXTRA FOR PANIC HARDWARE - ALLOWANCE	12	EA	1,857.68	22,292
	INTERIOR DOOR + HARDWARES				
	SC WD DOOR/ALUM FRAME, (2) - 2.83'W X 7'H, PLAM FINISH	1	PR	5,224.77	5,225
	SC WD DOOR/ALUM FRAME, 3'W X 7'H, PLAM FINISH	34	EA	2,915.07	99,112
	SC WD DOOR/ALUM FRAME, 4'W X 7'H, PLAM FINISH	1	EA	3,886.76	3,887
	SC WD DOOR/HM FRAME, 3'W X 7'H + PAINT	2	EA	2,578.71	5,157
	ALUM DOOR/ALUM FRAME, 3'W X 7'H	2	EA	2,690.83	5,382
	HM DOOR/HM FRAME, 3'W X 7'H	7	EA	2,511.44	17,580
	HM DOOR/HM FRAME, 4'W X 7'H	4	EA	2,922.54	11,690
	EXTRA LARGE VISION PANEL, PER LEAF	2	EA	200.21	400
	EXTRA LARGE LOUVER PANEL, PER LEAF	4	EA	117.46	470
	EXTRA FOR PANIC HARDWARE - ALLOWANCE	3	EA	1,770.00	5,310
	EXTERIOR GLAZINGS				
*	ALUM. STOREFRONT	467	SF	101.69	47,489
*	EXT. SIDELITE	21	SF	101.69	2,135
*	TRANSOM	12	SF	101.69	1,220
	PUNCHED WINDOWS	817	SF	90.76	74,177
	EXTRA FOR 4" FRAME EXTENSION (SUNSHADE)	279	LF	19.58	5,463
	EXTRA FOR 10" FRAME EXTENSION (SUNSHADE)	410	LF	40.45	16,585
	INTERIOR GLAZINGS				
	GLAZING ABOVE COUNTER	99	SF	74.75	7,402
	PUNCHED WINDOWS	235	SF	80.08	18,827
	SIDELITE	296	SF	80.08	23,725
	TRANSOM	36	SF	80.08	2,883
*	GLASS PARTITION	308	SF	85.42	26,309
	SLIDING GLASS DOOR, 3.33'W X 7'H - LEAD SUPERVISOR OFFICE	1	EA	3,812.01	3,812
*	UNIT COST INCREASED PER A/E				
	SUBTOTAL				**617,159**
9.0	FINISHES				$
	EXTERIOR WALL				
	6" METAL STUD	7,628	SF	8.85	67,508
	6" METAL STUD - FASCIA	1,010	SF	8.85	8,939
	6" FURRING METAL STUD - BACK OF FASCIA	150	SF	8.85	1,328

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CLIENT: STANTEC	**REVISED:**	
SUBJECT: 90% CONSTRUCTION DOCUMENTS COST ESTIMATE - ADMIN/OPS & MAINTENANCE BUILDING + WASH BAY	**BUILDING GFA:**	**30,330**

ITEM NO.	DESCRIPTION	EST QTY	UNIT	UNIT COST	TOTAL COST
	MP1 - CONCEALED-FASTENER VERTICAL METAL WALL PANEL SYSTEM + 2" RIGID INSULATION + 2" HORIZONTAL Z-GIRTS @ 24" O.C. + WEATHER BARRIER + 5/8" SHEATHING	6,332	SF	45.70	289,372
	MP2 - CONCEALED-FASTENER HORIZONTAL METAL WALL PANEL SYSTEM + 2" RIGID INSULATION + 2" VERTICAL Z-GIRTS @ 24" O.C. + WEATHER BARRIER + 5/8" SHEATHING	2,300	SF	45.70	105,110
	7/16" OSB SHEAR PANEL - EXT.	1,524	SF	3.20	4,878
	5/8" GWB SHEATHING + V.B. - ROOFSIDE PARAPET	1,413	SF	4.00	5,652
	5/8" GWB + PAINT - INT. OF EXT.	6,720	SF	4.27	28,694
	BATT INSULATION	6,720	SF	1.07	7,190
	ALLOWANCE - WATER REPELLENT TO EXT. CMU WALLS	11,188	SF	0.80	8,950
	PAINT TO INT. OF EXT. CMU WALLS	7,470	SF	1.33	9,935
*	EPOXY PAINT TO INT. OF EXT. CMU WALL - WASH BAY	2,618	SF	10.17	26,625
	EXTRA FOR FARE REVENUE DROP-OFF OPENING	1	EA	1,281.35	1,281
	INTERIOR WALL				
	3 5/8" FURRING METAL STUD	1,005	SF	7.31	7,347
	4" FURRING METAL STUD	1,172	SF	7.78	9,118
	3 5/8" METAL STUD	14,622	SF	7.31	106,887
	6" METAL STUD	4,230	SF	8.49	35,913
	3 1/2" BATT INSULATION	14,242	SF	1.04	14,812
	6" BATT INSULATION	4,170	SF	1.26	5,254
	5/8" GWB + PAINT	37,598	SF	4.27	160,543
	7/16" OSB SHEAR PANEL	1,130	SF	3.20	3,616
	FRP PANEL	764	SF	9.34	7,135
	CERAMIC WALL TILE + CEMENT BD.	2,366	SF	24.56	58,109
	PAINT TO INT. CMU WALLS	10,728	SF	1.33	14,268
*	EPOXY PAINT TO INT. CMU WALL - WASH BAY	1,900	SF	10.17	19,323
	FLOOR FINISHES **+ WALL BASES**				
	CARPET FLOOR TILE, 12" X 36"	4,788	SF	6.14	29,398
	SEALED CONCRETE EPOXY-COATED FLOOR	1,070	SF	6.14	6,570
	POLISHED CONCRETE FLOOR	5,812	SF	4.00	23,248
*	RESINOUS FLOORING - WASH BAY	1,800	SF	15.25	27,450
	LIGHT REFLECTIVE CONCRETE FLOOR	13,900	SF	3.47	48,233
	SEALED CONCRETE FLOOR	2,960	SF	1.07	3,167
	4"H RUBBER WALL BASE	2,410	LF	4.27	10,291
	TILE COVE BASE	362	LF	19.22	6,958
	CEILING, INT.				
	GYPSUM BOARD + PAINT + STUD FRAMES	2,670	SF	10.33	27,581
	ACT1 - 2x2 ACT T-BAR CEILING, WHITE	7,008	SF	6.82	47,795
	ACT2 - 2x2 ACT T-BAR CEILING, BLACK	272	SF	6.82	1,855

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CLIENT: STANTEC		**REVISED:**	
SUBJECT: 90% CONSTRUCTION DOCUMENTS COST ESTIMATE - ADMIN/OPS & MAINTENANCE BUILDING + WASH BAY		**BUILDING GFA:**	**30,330**

ITEM NO.	DESCRIPTION	EST QTY	UNIT	UNIT COST	TOTAL COST
	ACT3 - ACOUSTICAL CELING TILE, 15.75"5 X 63"L + SUBSTRATE + STUD FRAMES	710	SF	7.36	5,226
	PAINT TO EXPOSED DECK	19,670	SF	1.33	26,161
	HIGH PERFORMANCE PAINT TO EXPOSED DECK - WASH BAY	1,800	SF	10.17	18,306
*	CEILING BAFFLES	935	LF	50.85	47,545
	MISC. CEILING SOFFIT/BULKING	1	LS	4,060.00	4,060
	EXTERIOR SOFFIT				
	METAL CEILING PANEL "MP1", CONCEALED FASTENER + STUD FRAMES - SOFFIT	1,078	SF	22.16	23,888
	GLOSS PAINT U/S DECK CANOPY	3,180	SF	1.87	5,947
	MISCELLANEOUS				
	MISC. FINISHES ALLOWANCE	30,330	GSF	0.37	11,222
*	UNIT COST INCREASED PER A/E				
	SUBTOTAL				**1,382,688**
10.0	SPECIALTIES				$
	RESTROOM/JANITOR/SHOWER SPECIALTIES				
	PLASTIC TOILET PARTITION, ADA	2	EA	1,601.69	3,203
	PLASTIC TOILET PARTITION, REG.	6	EA	1,334.74	8,008
	PLASTIC URINAL SCREEN	1	EA	907.62	908
	5'L SHOWER SCREEN & DOOR	2	EA	533.90	1,068
	5'L SHOWER ROD & CURTAIN	1	EA	104.11	104
	COMBINATION TOILET TISSUE DISPENSER, SANITARY NAPKIN DISPOSAL, & TOILET SEAT COVER DISPENSER - PARTITION MOUNT	6	EA	1,740.50	10,443
	COMBINATION TOILET TISSUE DISPENSER, SANITARY NAPKIN DISPOSAL, & TOILET SEAT COVER DISPENSER - RECESSED	3	EA	2,001.57	6,005
	COMBINATION TOILET TISSUE DISPENSER & TOILET SEAT COVER DISPENSER - RECESSED	2	EA	650.82	1,302
	SANITARY NAPKIN VENDOR - RECESSED	1	EA	1,297.37	1,297
	MIRROR, 2' X 4'	3	EA	213.56	641
	MIRROR, 3' X 4'	4	EA	320.34	1,281
	PAPER TOWEL DISPENSER, SEMI-RECESSED	7	EA	480.51	3,364
	WASTE RECEPTACLE - UNDERCOUNTER	2	EA	752.79	1,506
	TOILET GRAB BAR	5	PR	352.37	1,762
	SHOWER GRAB BAR	3	PR	320.34	961
	SHOWER FOLDING SEAT	3	EA	181.52	545
	DIAPER CHANGING STATION, SEMI-RECESSED	1	EA	548.52	549
	JANITOR ACCESSORIES, PER ROOM	1	EA	427.12	427
	LACTATION ROOM SPECIALTIES				
	COMBINATION TOWEL DISPENSER & WASTE RECEPTACLE, RECESSED	1	EA	736.78	737

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CLIENT: STANTEC	**REVISED:**	
SUBJECT: 90% CONSTRUCTION DOCUMENTS COST ESTIMATE - ADMIN/OPS & MAINTENANCE BUILDING + WASH BAY	**BUILDING GFA:**	**30,330**

ITEM NO.	DESCRIPTION	EST QTY	UNIT	UNIT COST	TOTAL COST
	DIAPER CHANGING STATION, SEMI-RECESSED	1	EA	548.52	549
	MOVABLE PARTITION				
	10'H OPERABLE PARTITION - MANUAL	29	LF	800.84	23,224
	EXTRA FOR CEILING TRACK/SUPPORT	29	LF	53.39	1,548
	WALL BOARDS				
	MARKER BOARD/TACKBOARD ALLOWANCE	256	SF	21.36	5,468
	BULLETIN BOARD, 3.5'H	14	LF	93.43	1,308
	SIGNAGE				
	3.5'H RTA LOGO ATTACH TO CANOPY BEAM	1	EA	2,669.48	2,669
	4.5'H RTA LOGO ATTACH TO CANOPY BEAM	1	EA	2,669.48	2,669
	11'H SURFACE-APPLIED VINYL # SIGN TO O/H DOORS	10	EA	112.12	1,121
	12"H EXTRUDED ALUM. NUMBERS	3	EA	133.47	400
	BUILDING SIGNAGE - INTERIOR	30,330	GSF	0.53	16,075
	MISC. SPECIALTIES				
	FIRE EXTINGUISHER + CABINET	5	EA	587.28	2,936
	DEFIBRILLATOR CABINET	1	EA	694.06	694
	SAFETY STRIPING, 4"W LINE	360	LF	3.20	1,152
	MISC. SPECIALTIES ALLOWANCE	1	LS	5,445.73	5,446
	SUBTOTAL				**109,370**
11.0	EQUIPMENT				$
	MAINTENANCE/WASH EQUIPMENT				
	SEE GRAND TOTAL SUMMARY FOR EQUIPMENT ALLOWANCE INCLUDING FARE VAULT				
	ADMIN/OPS EQUIPMENT				
	WALL TV	7	EA		N.I.C.
	FOOD SERVICE EQUIPMENT				
	REFRIGERATOR - O.F.C.I.	5	EA		O.F.C.I.
	VENDING MACHINE - O.F.C.I.	2	EA		O.F.C.I.
	MICROWAVE OVEN - O.F.C.I.	3	EA		O.F.C.I.
	COFFEE BAR EQUIPMENT	3	LOC		N.I.C.
	KITCHEN/BREAK ROOM EQUIPMENT	1	LOC		N.I.C.
	EMPLOYEE STORAGE EQUIPMENT				
	UNIFORM LOCKER				N.I.C.
	PLASTIC LOCKER, 12"W X 12"D - 3-TIER	22	EA	421.78	9,279
	METAL LOCKER, 12"W X 18"D - SINGLE TIER	18	EA	443.13	7,976
	EXTRA FOR 1 1/4" X 14"W INTEGRAL WOOD BENCH ATTACH TO 30"W LOCKER BASE BELOW	18	LF	108.91	1,960
	EXTRA FOR 12"H X 12"W METAL STUD LOCKER BASE	22	LF	48.05	1,057
	EXTRA FOR 18"H X 30"W METAL STUD LOCKER BASE W/ DRAWERS	18	LF	60.06	1,081
	ADA LOCKER BENCH, 18" X 48" + WALL BRACKET	2	EA	640.67	1,281
	SUBTOTAL				**22,634**

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CLIENT: STANTEC		**REVISED:**	
SUBJECT: 90% CONSTRUCTION DOCUMENTS COST ESTIMATE - ADMIN/OPS & MAINTENANCE BUILDING + WASH BAY		**BUILDING GFA:**	**30,330**

ITEM NO.	DESCRIPTION	EST QTY	UNIT	UNIT COST	TOTAL COST
12.0	FURNISHINGS				$
	WINDOW SHADES				
	ALLOWANCE FOR WINDOW SHADES, MANUAL	2,332	SF	12.55	29,267
	FF & E				
	N.I.C.				
	SUBTOTAL				**29,267**
13.0	SPECIAL CONSTRUCTION				$
	THIS SECTION NOT APPLICABLE				
	SUBTOTAL				
14.0	CONVEYING				$
	THIS SECTION NOT APPLICABLE				
	SUBTOTAL				
21.0	FIRE SUPPRESSION				$
	FIRE PROTECTION				
	FIRE SPRINKLER SYSTEM - ENCLOSED AREAS	30,330	SF	6.14	186,226
	FIRE SPRINKLER SYSTEM - EXT. SOFFIT	4,258	SF	5.34	22,738
	SUBTOTAL				**208,964**
22.0	PLUMBING				$
	PLUMBING EQUIPMENT				
	OIL/WATER SEPARATOR				SEE SITEWORK
	HEAT PUMP WATER HEATER, 5 TONS	2	EA	11,510.78	23,022
	ELECTRIC , 20 GPM, 54 KW	1	EA	9,672.36	9,672
	HOT WATER STORAGE TANK, 119GAL /140	2	EA	4,258.35	8,517
	RECIRCULATING PUMP, BELL & GOSSET, 6 GPM	1	EA	4,041.59	4,042
	EXPANSION TANK	1	EA	1,121.18	1,121
	MASTER MIXER (TMV)	1	EA	1,334.74	1,335
	MIXING VALVE	3	EA	1,045.37	3,136
	ROUGH-INS AT EQUIPMENT	11	EA	587.28	6,460
	ROUGH-INS FOR EQUIPMENT	11	EA	3,737.27	41,110
	EQUIPMENT ANCHORS & SUPPORTS	11	EA	293.64	3,230
	PLUMBING FIXTURES				
	WATER CLOSET, ADA - FLOOR	2	EA	1,740.50	3,481
	WATER CLOSET, ADA - WALL	3	EA	2,982.34	8,947
	WATER CLOSET, REG. - WALL	6	EA	2,840.32	17,042
	URINAL - WALL	2	EA	1,922.02	3,844

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ITEM NO.	DESCRIPTION	EST QTY	UNIT	UNIT COST	TOTAL COST
	LAVATORY - WALL	3	EA	1,446.86	4,341
	LAVATORY - COUNTER	4	EA	1,206.60	4,826
	S/S SINK, 25x22 - COUNTER	3	EA	1,420.16	4,260
	S/S SINK, 29x18 + GARBAGE DISPOSER - COUNTER	1	EA	2,398.26	2,398
	UTILITY SINK, S/S - FLOOR	1	EA	800.84	801
	SHOWER, ADA	3	EA	1,708.46	5,125
	ELECTRIC WATER COOLER W/ BOTTLE FILLER	3	EA	1,927.36	5,782
	WASH FOUNTAIN	2	EA	1,404.14	2,808
	EMERGENCY EYEWASH/SHOWER W/ MIXING VALVE	3	EA	2,690.83	8,072
	WASHING MACHINE BOX CONNECTION	1	EA	1,601.69	1,602
	ROUGH-INS AT FIXTURES	36	EA	533.90	19,220
	ROUGH-INS FOR THE FIXTURES (includes all pipings & associated plumbing specialties such as floor drains, floor sinks, hose bibbs, etc.)	36	EA	5,072.00	182,592
	EXTRA FOR MAINTENANCE RPBFP	1	EA	3,737.27	3,737
	STORM DRAIN SYSTEM				
	ROOF DRAIN/OVERFLOW DRAIN + PIPINGS	7	EA	3,043.20	21,302
	REPAIR BAY PIT DRAINS + PIPINGS	1	EA	3,737.27	3,737
	CHASSIS WASH PIT DRAINS + PIPINGS	1	EA	3,737.27	3,737
	AREA DRAIN + PIPINGS	1	EA	1,254.65	1,255
	8'L TRENCH DRAIN + PIPINGS	1	EA	1,281.35	1,281
	14'L TRENCH DRAIN + PIPINGS	9	EA	2,242.36	20,181
	OTHER PLUMBING SYSTEM/MISCELLANEOUS				
	COMPRESSED AIR PIPINGS (SEE SUMMARY FOR EQUIPMENT)	14,390	SF	2.14	30,795
	OIL/PROCESS PIPINGS	12,590	SF	3.47	43,687
	WASH BAY PLUMBING	1,800	SF	26.69	48,042
	CONDENSATE DRAINS	30,330	GSF	0.27	8,189
	MISC. PLUMBING SYSTEM/TESTING	30,330	GSF	0.99	30,027
	SUBTOTAL				**592,756**
23.0	HVAC				$
	HVAC - **WASH BAY**				
	ALLOWANCE FOR EXT. WALL LOUVERS	1	LS	7,688.09	7,688
	ALLOWANCE FOR EXHAUST SYSTEM, COMPLETE	1,800	SF	12.81	23,058
	HVAC - **MAINTENANCE + MEZZANINE**				
	MAKE-UP AIR UNIT, 15000 CFM/15 HP - ROOF	1	EA	96,100.00	96,100
	ROOF EXHAUST FAN, 200 CFM	1	EA	1,067.79	1,068
	ROOF EXHAUST FAN, 1600 CFM	1	EA	4,986.58	4,987
	ROOF EXHAUST FAN, 2300 CFM	1	EA	7,154.19	7,154
	ROOF EXHAUST FAN, 3000 CFM	1	EA	7,725.46	7,725
	ROOF EXHAUST FAN, 2500 CFM/2 HP + VFD	6	EA	8,905.37	53,432
	AIR TERMINAL UNIT, 335 CFM	1	EA	1,130.00	1,130
	AIR TERMINAL UNIT, 555 CFM	1	EA	1,350.00	1,350

PROJECT: SAN LUIS OBISPO RTC - BUS OPERATIONS & MAINTENANCE FACILITY	**JOB #:**	**C2354D**
LOCATION: SAN LUIS OBISPO, CA	**DATE:**	**07-Oct-19**
CLIENT: STANTEC	**REVISED:**	
SUBJECT: 90% CONSTRUCTION DOCUMENTS COST ESTIMATE - ADMIN/OPS & MAINTENANCE BUILDING + WASH BAY	**BUILDING GFA:**	**30,330**

ITEM NO.	DESCRIPTION	EST QTY	UNIT	UNIT COST	TOTAL COST
	4'L INFRARED HEATER, 6.06 KW-480V/3P	5	EA	1,526.09	7,630
	HHWS/R ROUGH-INS FOR - AIR TERMINALS	2	EA	1,660.00	3,320
	HIGH VOLUME LOW SPEED FAN + LOCAL CONTROL + INTERFACE TO FIRE ALARM SYSTEM, COMPLETE	4	EA	2,396.12	9,584
	ROOF DUCT SUPPORT	3	EA	480.00	1,440
	MAU ROOF PAD	140	SF	20.00	2,800
	HVAC - **ADMIN/OPS**				
	AHU W/ 100% ECONOMIZER, 12500 CFM - ROOF	1	EA	134,540.00	134,540
	EXTRA FOR VFD	8	HP	430.00	3,440
	AIR TERMINAL UNIT, 260-440 CFM	5	EA	910.00	4,550
	AIR TERMINAL UNIT, 625-900 CFM	7	EA	1,280.00	8,960
	AIR TERMINAL UNIT, 1280-1550 CFM	3	EA	2,020.00	6,060
	AIR TERMINAL UNIT, 1620-1880 CFM	1	EA	2,240.00	2,240
	SPLIT SYSTEM, OUTDOOR CONDENSER, 19083 BTUH COOLING, 15354 BTUH HEATING - ROOF	2	EA	4,270.00	8,540
	SPLIT SYSTEM, INDOOR FANCOIL, 685 CFM	2	EA	2,870.00	5,740
	SPLIT SYSTEM, OUTDOOR CONDENSER, 45940 BTUH	1	EA	10,900.00	10,900
	SPLIT SYSTEM, INDOOR FANCOIL, 2000 CFM	1	EA	9,730.00	9,730
	ROOF EXHAUST FAN, 150 CFM	1	EA	1,070.00	1,070
	ROOF EXHAUST FAN, 1800 CFM	1	EA	5,338.95	5,339
	AIR-TO-FLUID HEAT PUMP, 2 MODULES, 695 MBH/96.6	1	EA	55,660.00	55,660
	EXPANSION TANK	1	EA	4,409.97	4,410
	PRIMARY HHW PUMP,SPLIT COUPLED, 3 HP	2	EA	25,947.30	51,895
	MAKE-UP WATER TANK + 1/4 HP PUMP	1	EA	8,595.71	8,596
	AIR & DIRT SEPARATOR, 140 GPM	1	EA	10,250.79	10,251
	CHEMICAL POT FEEDER	1	EA	1,320.00	1,320
	HHW ROUGH-INS AT EQUIPMENT	7	EA	800.84	5,606
	HHWS/R ROUGH-INS FOR - AIR TERMINALS	16	EA	1,660.00	26,560
	REFRIGERANT PIPING + INSULATION	80	LF	33.10	2,648
	AHU ROOF PAD	180	SF	24.20	4,356
	AIR-TO-FLUID HEAT PUMP ROOF PAD	160	SF	24.20	3,872
	DUCTWORK & ACCESSORIES (ADMIN + MAINTENANCE)				
	GI DUCTWORK, RECTANGULAR	7,059	LBS	14.65	103,414
	GI DUCTWORK, ROUND	5,410	LBS	13.39	72,440
	SS DUCTWORK	50	LBS	52.71	2,636
	WRAPPED INSULATION	8,595	SF	4.27	36,701
	LINED INSULATION	850	SF	5.87	4,990
	DUCT DIFFUSER/REGISTER	81	EA	218.90	17,731
	EXHAUST GRILLE,6"	3	EA	101.44	304
	EXHAUST GRILLE, 8"	4	EA	122.80	491
	VOLUME DAMPER	61	EA	117.46	7,165
	FLEX DUCT, 6"	13	EA	76.18	990
	FLEX DUCT, 8"	44	EA	108.91	4,792
	FLEX DUCT, 10"	8	EA	124.74	998
	FLEX DUCT, 12"	1	EA	162.54	163

PROJECT: SAN LUIS OBISPO RTC - BUS OPERATIONS & MAINTENANCE FACILITY	**JOB #:**	**C2354D**
LOCATION: SAN LUIS OBISPO, CA	**DATE:**	**07-Oct-19**
CLIENT: STANTEC	**REVISED:**	
SUBJECT: 90% CONSTRUCTION DOCUMENTS COST ESTIMATE - ADMIN/OPS & MAINTENANCE BUILDING + WASH BAY	**BUILDING GFA:**	**30,330**

ITEM NO.	DESCRIPTION	EST QTY	UNIT	UNIT COST	TOTAL COST
	4" DIAMETER PARTS WASHER EXHAUST	12	LF	53.39	641
	4" DIAM. WASHER EXHAUST	14	LF	53.39	747
	BELLMOUTH RETURN W/ WIRED MECH SCREEN	3	EA	293.64	881
	3 SF DOOR PANEL	2	EA	160.17	320
	DETECTORS AND SENSORS				
	GAS DETECTION MONITORING CONTROLLER	1	EA	2,776.25	2,776
	HORN & STROBE LIGHT	1	EA	464.49	464
	CO SENSOR	3	EA	800.84	2,403
	NO2 SENSOR	3	EA	800.84	2,403
	CARBON MONOXIDE AND NITROGEN DIOXIDE SENSOR	4	EA	1,922.02	7,688
	HVAC CONTROLS				
	AHU	1	EA	21,889.70	21,890
	AIR TERMINALS	16	EA	1,067.79	17,085
	MAKE-UP AIR	1	EA	4,271.16	4,271
	AIR-TO-FLUID HEAT PUMP	3	EA	3,200.00	9,600
	SPLIT SYSTEM	3	PR	3,203.37	9,610
	EXHAUST FAN	12	EA	1,067.79	12,813
	INFRARED HEATER	5	EA	1,067.79	5,339
	HYDRONIC SYSTEM	1	LS	9,076.22	9,076
	EMS	28,530	SF	5.07	144,647
	MISCELLANEOUS				
	MISC. HVAC SYSTEM/TESTING	28,530	SF	2.08	59,342
	SUBTOTAL				**1,169,560**
26.0	ELECTRICAL				$
	ELECTRICAL EQUIPMENT				
	IN-LINE EQUIPMENT, INCLUDES THE FFG:				
	MAIN SWITCHBOARD "MSB", 4000A-277/480V-3Ph-4W, NEMA-1 INCLUDES THE FFG:	1	EA	171,914.22	171,914
	- UGPS	1	EA		INCLUDED
	- MSB-1 SECTION W/ METER SOCKET & 2000A/3P FRAME & GFI	1	EA		INCLUDED
	- MSB-2 SECTION W/ METER SOCKET & 2000A/3P FRAME & GFI	1	EA		INCLUDED
	- MSB-3 SECTION W/ METER SOCKET & 800A/3P FRAME	1	EA		INCLUDED
	- 2000A DISTRIBUTION SECTION W/ 1-225A/3P & 1-1600A/3P OUTGOING BREAKER SECTIONS + 1-1600A/3P SPARE + SURGE PROTECTION DEVICE	1	EA		INCLUDED
	DISTRIBUTION BOARD "DPB1" - 2000A-277/480V-3Ph-4W W/ SPD & (13) OUTGOING CB SECTIONS	1	EA	62,412.34	62,412
	DISTRIBUTION PANEL "DPEV-1" - 400A-120/208V-3Ph-4W W/ SPD & (12) OUTGOING CB SECTIONS	1	EA	28,232.37	28,232

PROJECT: SAN LUIS OBISPO RTC - BUS OPERATIONS & MAINTENANCE FACILITY	**JOB #:**	**C2354D**
LOCATION: SAN LUIS OBISPO, CA	**DATE:**	**07-Oct-19**
CLIENT: STANTEC	**REVISED:**	
SUBJECT: 90% CONSTRUCTION DOCUMENTS COST ESTIMATE - ADMIN/OPS & MAINTENANCE BUILDING + WASH BAY	**BUILDING GFA:**	**30,330**

ITEM NO.	DESCRIPTION	EST QTY	UNIT	UNIT COST	TOTAL COST
	TRANSFORMER "TXEV", 75 KVA	1	EA	11,240.00	11,240
	TRANSFORMER "TX-1", 112. KVA, NEMA 3R	1	EA	14,330.00	14,330
	TRANSFORMER "TX-2", 75 KVA	1	EA	11,240.00	11,240
	TRANSFORMER "TX-1", 112. KVA, NEMA 3R	1	EA	14,330.00	14,330
	INVERTER, 15KW/15 KVA-277/480V-3Ph W/ REMOTE BYPASS CABINET	1	EA	4,760.00	4,760
	TRANSFORMER DISCONNECT SWITCH, 200A	2	EA	2,400.00	4,800
	SWITCHBOARD GROUNDING	1	EA	1,600.00	1,600
	TRANSFORMER GROUNDING	4	EA	800.84	3,203
	ASHP DISCONNECT SWITCH, 200A	1	EA	2,400.00	2,400
	AHU DISCONNECT SWITCH, 100A	1	EA	1,700.00	1,700
	MAU DISCONNECT SWITCH, 60A	1	EA	1,170.00	1,170
	PANEL BOARD				
	PANEL BOARD, 50A/3P MCB-277/480V	1	EA	3,760.00	3,760
	PANEL BOARD, 250A/3P MCB-277/480V	1	EA	6,670.00	6,670
	PANEL BOARD, 350A/3P MCB-277/480V	1	EA	9,340.00	9,340
	PANEL BOARD, 30A/3P MCB-208/120V	1	EA	2,250.00	2,250
	PANEL BOARD, 50A/3P MCB-208/120V	2	EA	3,580.00	7,160
	PANEL BOARD, 125A/3P MCB-208/120V	2	EA	4,810.00	9,620
	PANEL BOARD, 150A/3P MCB-208/120V	1	EA	5,770.00	5,770
	PANEL BOARD, 200A/3P MCB-208/120V	1	EA	6,410.00	6,410
	PORTABLE GENERATOR, WP	1	EA	12,010.00	12,010
	LCP-1	1	EA	3,200.00	3,200
	SECONDARY FEEDERS				
	2000A/3P-277/480V EMT FEEDER	40	LF	1,004.32	40,173
	1600A/3P-277/480V PVC FEEDER + DUCTBANK	240	LF	871.95	209,268
	400A/3P-277/480V EMT FEEDER	80	LF	150.41	12,033
	350A/3P-277/480V EMT FEEDER	300	LF	161.66	48,498
	250A/3P-277/480V EMT FEEDER	410	LF	96.44	39,540
	225A/3P-277/480V EMT FEEDER	80	LF	85.78	6,862
	125A/3P-277/480V EMT FEEDER	80	LF	45.26	3,621
	100A/3P-277/480V EMT FEEDER	80	LF	31.67	2,534
	50A/3P-277/480V EMT FEEDER	70	LF	18.62	1,303
	30A/3P-277/480V EMT FEEDER	80	LF	16.35	1,308
	200A/3P-208/120V EMT FEEDER	40	LF	89.57	3,583
	150A/3P-208/120V EMT FEEDER	20	LF	64.60	1,292
	125A/3P-208/120V EMT FEEDER	210	LF	57.30	12,033
	50A/3P-208/120V EMT FEEDER	10	LF	18.62	186
	30A/3P-208/120V EMT FEEDER	30	LF	18.46	554
	25A/3P-208/120V EMT FEEDER	10	LF	15.58	156
	20A/2P-208/120V EMT FEEDER	170	LF	12.50	2,125
	PORTABLE GENSET FEEDER - 277/480V	60	LF	13.40	804
	BRANCH POWER, COMPLETE				
	DUP. RECEPT.	158	EA	148.91	23,528
	DBL. DUP. RECEPT.	13	EA	194.50	2,529

PROJECT: SAN LUIS OBISPO RTC - BUS OPERATIONS & MAINTENANCE FACILITY	**JOB #:**	**C2354D**
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CLIENT: STANTEC	**REVISED:**	
SUBJECT: 90% CONSTRUCTION DOCUMENTS COST ESTIMATE - ADMIN/OPS & MAINTENANCE BUILDING + WASH BAY	**BUILDING GFA:**	**30,330**

ITEM NO.	DESCRIPTION	EST QTY	UNIT	UNIT COST	TOTAL COST
	DUP. RECEPT. - GFI	22	EA	196.84	4,330
	DUP. RECEPT. - GFI WP	6	EA	193.63	1,162
	BRANCH POWER CKT., EMT/ CU WIRES	4,975	LF	12.97	64,526
	MAINTENANCE, HVAC & PLUMBING EQUIPMENT POWER				
	MAINTENANCE EQUIPMENT POWER	30,330	GSF	1.33	40,339
	HVAC/PLUMBING EQUIPMENT POWER	51	EA	1,201.26	61,264
	LIGHTING				
	NEW LUMINAIRE - INTERIOR				
	C1; 24" X 24", RECESSED, LED TROFFER, 3500K	78	EA	350.77	27,360
	C2A; C2C; 4" X 48", SUSPENDED, LED LINEAR, 3500K	54	EA	321.94	17,385
	C2B; 4" X 72", SUSPENDED, LED LINEAR, 3500K	19	EA	864.91	16,433
	C2D; 4" X 96", SUSPENDED, LED LINEAR, 3500K	1	EA	1,153.21	1,153
	C3; SUSPENDED, 3 1/2" X 48" LED LINEAR, 3500K	20	EA	944.19	18,884
	C4; RECESSED, 4" X 48" LED LINEAR, 3500K	6	EA	728.77	4,373
	C5; 6" X 6", RECESSED, LED DOWNLIGHT, 3500K	34	EA	595.56	20,249
	C6A; C6B; C6C; SUSPENDED, 24" X 24" LED HIGHBAY,	52	EA	315.69	16,416
	C7; LED COVE LIGHT, 3500K	4	EA	320.34	1,281
	C8; NULITE, 1" X 22", SURFACE, LED LINEAR	3	EA	288.30	865
	X1; EATON, SINGLE FACE, CEILING MOUNTED EXIT	12	EA	384.40	4,613
	C9;SURFACE, LED UNDERCABINET LIGHT	8	EA	186.86	1,495
	CONTROL DEVICE				
	OS1; SURFACE, LARGE MOTION OCCUPANCY SENSOR	26	EA	400.42	10,411
	OS3; SURFACE, SMALL MOTION OCCUPANCY	15	EA	368.39	5,526
	OS4; SURFACE, CORRIDOR COVERAGE OCCUPANCY	5	EA	373.73	1,869
	OS5; SURFACE, HIGH HUMIDITY, SMALL MOTION	6	EA	368.39	2,210
	OS8; SURFACE, 1" X 22" LED LINEAR MOUNTED	3	EA	389.74	1,169
	PC; SURFACE, DAYLIGHT HARVESTING PHOTOCELL	3	EA	571.27	1,714
	C7; 15.5'L, LED COVE LIGHT, 3500K	1	EA	1,324.06	1,324
	C7; 16'L, LED COVE LIGHT, 3500K	1	EA	1,366.77	1,367
	C7; 18'L, LED COVE LIGHT, 3500K	1	EA	1,537.62	1,538
	C7; 8.5'L, LED COVE LIGHT, 3500K	1	EA	726.10	726
	NEW LUMINAIRE - EXTERIOR				
	SWITCH $	28	EA	138.81	3,887
	SWITCH - 3 WAY	10	EA	245.59	2,456
	DIMMER SWITCH	20	EA	288.30	5,766
	SWITCH, KEY OPERATED	1	EA	186.86	187
	OCCUPANCY SENSOR	3	EA	320.34	961
	S7A; SUSPENDED, 4" X 48" LED LINEAR, 3000K	3	EA	507.20	1,522
	S7B; SUSPENDED, 4" X 96" LED LINEAR, 3000K	2	EA	760.80	1,522
	S5A; S5B; SURFACE, LED CANOPY, 3000K	16	EA	507.20	8,115
	S9; SURFACE, 2" X 24" LED LINEAR, 3000K	11	EA	240.25	2,643
	S8A;NULITE, SUSPENDED, 4" X 48" LED LINEAR, 3000K	9	EA	480.51	4,325
	S8B, SUSPENDED, 4" X 96" LED LINEAR, 3000K	2	EA	961.01	1,922

PROJECT: SAN LUIS OBISPO RTC - BUS OPERATIONS & MAINTENANCE FACILITY		**JOB #:**	**C2354D**
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CLIENT: STANTEC		**REVISED:**	
SUBJECT: 90% CONSTRUCTION DOCUMENTS COST ESTIMATE - ADMIN/OPS & MAINTENANCE BUILDING + WASH BAY		**BUILDING GFA:**	**30,330**

ITEM NO.	DESCRIPTION	EST QTY	UNIT	UNIT COST	TOTAL COST
	BRANCH LIGHTING CKT., EMT/CU WIRES	9,120	LF	12.97	118,286
	MISC. LIGHTING	30,330	SF	5.34	161,962
	MISCELLANEOUS				
	MISC. ELECTRICAL SYSTEM/TESTING	30,330	GSF	5.12	155,290
	SUBTOTAL				**1,610,277**
27.0	COMMUNICATIONS				$
	TELEPHONE/DATA SYSTEM, COMPLETE				
	TELECOM RACK W/ EQUIPMENT	3	EA	6,940.64	20,822
	GROUNDING BUS BAR + GROUND WIRES	1	EA	533.90	534
	12"W CABLE TRAY	47	LF	42.96	2,019
	6"W VERTICAL CABLE GUIDE	32	LF	16.11	516
	(1)-1" CONDUIT, EMT	115	LF	11.12	1,279
	(1)-1-1/4" CONDUIT, EMT	55	LF	15.33	843
	(1)-2" CONDUIT, EMT	20	LF	20.75	415
	CONDUIT J-BOX	1	EA	48.05	48
	3/4" FIRE-RATED PLYWOOD + PAINT	47	LF	44.85	2,108
	(2) - 4" EMT CONDUIT SLEEVE, 18"L	4	EA	259.04	1,036
	DATA OUTLET	93	EA	395.08	36,742
	TEL OUTLET, MTD. IN POWER POLE	8	EA	306.99	2,456
	TEL OUTLET, 4 MTD. IN POWER POLE	2	EA	306.99	614
	TELEPHONE OUTLET	94	EA	306.99	28,857
	TELEPHONE OUTLET - AC	20	EA	306.99	6,140
	TELEPHONE OUTLET - W	1	EA	306.99	307
	SPEAKER, CEILING MOUNT	11	EA	336.35	3,700
	SPEAKER, WP	1	1	533.90	534
	SPEAKER	11	EA	443.13	4,874
	VOLUME CONTROL	2	2	122.80	246
	WIRELESS ACCESS POINT - CEILING	9	EA	827.54	7,448
	WIRELESS ACCESS POINT, WP - WALL	1	EA	907.62	908
	WIRELESS ACCESS POINT - WALL	3	EA	868.91	2,607
	CONTROL PANEL	2	EA	827.54	1,655
	VIDEO DISPLAY (VD)	11	EA	827.54	9,103
	DDKTD ETHERNET CONNECTION TO LIGHTING INVERTER	1	EA	1,601.69	1,602
	MISC./TESTING	1	LS	7,340.00	7,340
	PAGING SYSTEM				
	ALLOWANCE	1	LS	20,000.00	20,000
	CABLE TV SYSTEM				
	TV OUTLET, COMPLETE	7	EA	1,441.52	10,091
	AUDIO/VISUAL SYSTEM				
	AV OUTLET, COMPLETE	5	EA	2,375.83	11,879

PROJECT: SAN LUIS OBISPO RTC - BUS OPERATIONS & MAINTENANCE FACILITY	**JOB #:**	**C2354D**
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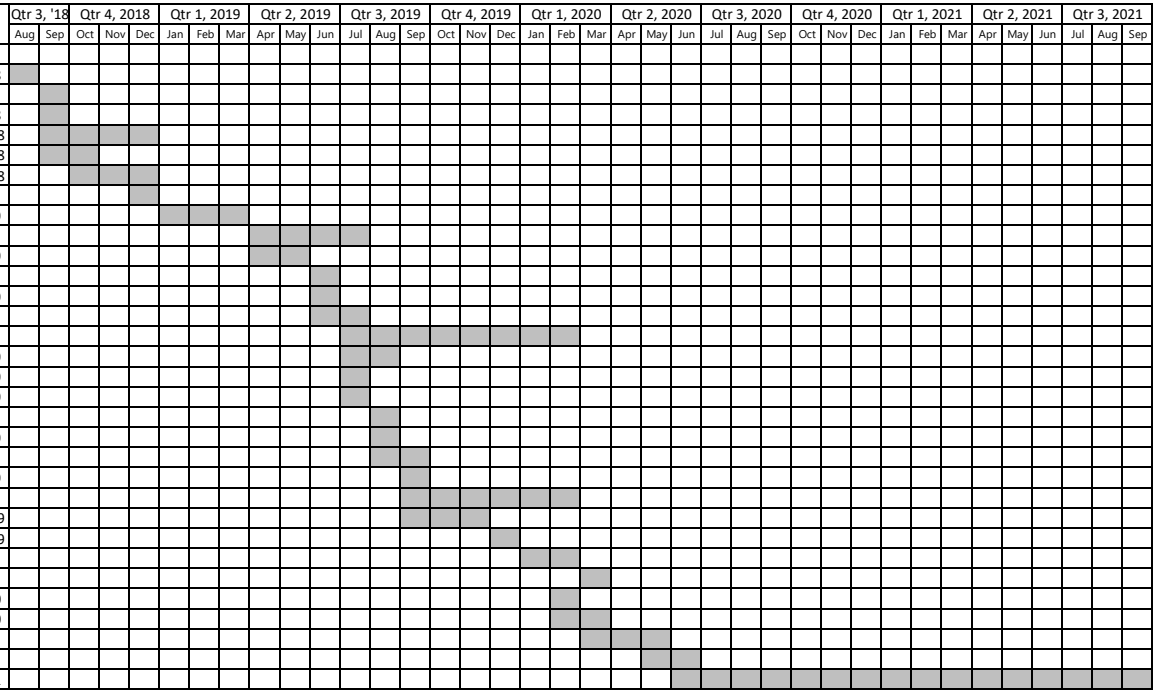
CLIENT: STANTEC	**REVISED:**	
SUBJECT: 90% CONSTRUCTION DOCUMENTS COST ESTIMATE - ADMIN/OPS & MAINTENANCE BUILDING + WASH BAY	**BUILDING GFA:**	**30,330**

ITEM NO.	DESCRIPTION	EST QTY	UNIT	UNIT COST	TOTAL COST
	GAS DETECTION				
	GAS DETECTION SYSTEM, COMPLETE - ALLOWANCE AT MAINTENANCE/WASH AREAS	16,860	SF	3.83	64,574
	SUBTOTAL				**251,297**
28.0	ELECTRONIC SAFETY & SECURITY				$
	FIRE ALARM SYSTEM				
	FIRE ALARM CONTROL PANEL	1	EA	16,016.85	16,017
	STROBE	14	EA	432.46	6,054
	STROBE, WALL	1	EA	443.13	443
	SPEAKER & STROBE	23	EA	448.47	10,315
	SPEAKER & STROBE, WP	2	EA	485.31	971
	F - PULL STATION	2	EA	368.39	737
	FS - FIRE ALARM SIGNAL	1	EA	427.12	427
	TS - TERMINAL CABINET	1	EA	2,717.53	2,718
	MM - MONITOR MODULE	1	EA	2,989.81	2,990
	R - FIRE ALARM DEVICE	1	EA	678.05	678
	D - DUCT SD	1	EA	1,083.81	1,084
	FAA - F/A ANNUNCIATOR	1	EA	5,535.42	5,535
	FA CIRCUITS, EMT/ WIRE	2400	LF	13.91	33,384
	MISC. FIRE ALRM/TESTING	30330	SF	3.20	97,056
	SECURITY SYSTEM, COMPLETE				
	NOTE: (33) CAMERAS TOTAL, (6) EACH @ SITE & (27) EACH @ BUILDING				
	SECURITY TERMINAL CABINET & RACKS	1	EA	13,347.38	13,347
	CCTV MONITOR	3	EA	1,601.69	4,805
	INTERCOM STATION	3	EA	1,089.15	3,267
	MULTI SENSOR CAMERA - EXT. WALL MOUNT	8	EA	3,203.37	25,627
	DOME FIXED CAMERA - EXT. WALL MOUNT	9	EA	1,922.02	17,298
	MULTI SENSOR CAMERA - INTERIOR (WALL)	2	EA	2,306.43	4,613
	DOME FIXED CAMERA - INTERIOR (CEILING)	7	EA	1,788.55	12,520
	DOME FIXED CAMERA - INTERIOR (360°, CEILING)	1	EA	1,868.63	1,869
	CARD READER - EXTERIOR	10	EA	1,565.65	15,657
	CARD READER - INTERIOR	21	EA	1,361.43	28,590
	INTERCOM - EXT. WALL MOUNT	2	EA	875.59	1,751
	DOOR CONTACT/SENSOR	27	EA	432.46	11,676
	SECURITY WIRES & CONDUITS	2,350	LF	13.35	31,373
	MISC./TESTING	1	LS	3,760.00	3,760
	SUBTOTAL				**354,562**

DESIGN/CONSTRUCTION SCHEDULE FOR RTA BUS MAINTENANCE FACILITY

ID	% Complete	Task Name	Duration	Start	Finish
1	1%	SLO RTA Bus Maintenance Facility Project (BMF)	986	8/22/2018	5/3/2021
2	100%	NTP	1	8/22/2018	8/22/2018
3	100%	Kick-off Meeting	1	9/5/2018	9/5/2018
4	100%	Mobilization - Engage Subs	16	9/6/2018	9/21/2018
5	100%	Task 1 - Review Existing Conditions	109	9/6/2018	12/23/2018
9	100%	Task 2 - Programming	38	9/7/2018	10/14/2018
14	100%	Task 3 - Concept Facility Design Layouts	84	10/1/2018	12/23/2018
21	100%	HOLIDAYS	9	12/24/2018	1/1/2019
22	100%	Task 4 - Schematic Design (30%)	89	1/2/2019	3/31/2019
27	100%	Task 5 - Design Development (60%)	98	4/1/2019	7/7/2019
28	100%	Working	61	4/1/2019	5/31/2019
29	100%	DD Deliverables	7	6/3/2019	6/9/2019
30	100%	Cost Estimate	14	6/10/2019	6/23/2019
31	100%	RTA Review/Approval: DD Deliverables	14	6/24/2019	7/7/2019
32	0%	Task 6 - Construction Documents (90%)	210	7/8/2019	2/2/2020
33	0%	Working	41	7/8/2019	8/17/2019
34	0%	Progress Printing 1	1	7/12/2019	7/12/2019
35	0%	Progress Printing 2	1	7/26/2019	7/26/2019
36	0%	Progress Printing 3	1	8/9/2019	8/9/2019
37	0%	90% CD Deliverables	7	8/19/2019	8/25/2019
38	0%	Cost Estimate	14	8/26/2019	9/8/2019
39	0%	RTA Review/Approval: 90% CD	7	9/9/2019	9/15/2019
40	0%	Plan Check (Permitting)	126	9/30/2019	2/2/2020
41	0%	AHJ Review	55	9/30/2019	11/23/2019
42	0%	Design team address AHJ comments	20	12/2/2019	12/21/2019
43	0%	Resubmittal to AHJ	27	1/7/2020	2/2/2020
44	0%	Task 7 - Bidding & Award		3/23/2020	
45	0%	Finalize Bid Documents	21	2/3/2020	2/23/2020
46	0%	RTA IFB	21	2/23/2020	3/14/2020
47	0%	Contractor Bidding	55	3/14/2020	5/7/2020
48	0%	Bid Review and Award	28	5/7/2020	6/3/2020
49	0%	Task 8 - Construction	551	6/3/2020	12/5/2021



FINANCING SCHEDULE FOR RTA BUS MAINTENANCE FACILITY

ID	% Complete	Task Name	Duration	Start	Finish	Qtr 1, 2019			Qtr 2, 2019			Qtr 3, 2019			Qtr 4, 2019			Qtr 1, 2020			Qtr 2, 2020			Qtr 3, 2020			Qtr 4, 2020			Qtr 1, 2021			Qtr 2, 2021			Qtr 3, 2021			Qtr 4, 2021		
						Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	100%	Analyze Plan of Finance Alternatives	63	1/31/2019	4/3/2019																																			
2	100%	Outreach to Department of Transportation	30	5/1/2019	5/30/2019																																			
3	100%	Bond Counsel Procurement	51	5/21/2019	7/10/2019																																			
4	75%	TIFIA Leter of Interest	93	5/31/2019	8/31/2019																																			
5	75%	FTA Grant 2020 Funding Cycle	92	6/1/2019	8/31/2019																																			
6	0%	TIFIA Creditworthiness Review	62	9/1/2019	11/1/2019																																			
7	0%	Indicative Credit Rating Process	46	8/1/2019	9/15/2019																																			
8	0%	Finalize Plan of Finance - TIFIA and Bank Loan	46	8/1/2019	9/15/2019																																			
9	0%	TIFIA Oral Presentation	31	9/15/2019	10/15/2019																																			
10	0%	TIFIA Application	62	10/15/2019	12/15/2019																																			
11	0%	Notification of Completeness	32	10/15/2019	11/15/2019																																			
12	0%	Formal Notification of Project Approval	62	11/15/2019	1/15/2020																																			
13	0%	Determine Go/No-Go for TIFIA If No-Go Commence Public Bond Offering	1	12/15/2019	12/15/2019																																			
14	0%	TIFIA Negotiations / Bank Negotiations	63	12/15/2019	2/15/2020																																			
15	0%	Term Sheet Issuance	63	12/15/2019	2/15/2020																																			
16	0%	Credit Agreement Execution	63	12/15/2019	2/15/2020																																			
17	0%	Funding Obligation	32	1/15/2020	2/15/2020																																			
18	0%	Receive Credit Rating on TIFIA/Bond Borrowing	1	2/15/2020	2/15/2020																																			
19	0%	Board Approval of Proposed Borrowing(s)	1	2/15/2020	2/15/2020																																			
20	0%	Price Public Bonds (if applicable)	1	3/1/2020	3/1/2020																																			
21	0%	Close Loan/Bond Sale Concurrent with Contractor Bidding	1	3/14/2020	3/14/2020																																			
22	0%	Draw on Grant/Loan/Bond Proceeds	551	6/3/2020	12/5/2021																																			

RTA Bus Maintenance: Sources and Uses of Funds

Scenario 1: Assumes No Additional FTA Grants

(Based on Budget as of 7/11/19)

		Secured Funding	
	Total Cost	**Federal Amount**	**State/Local Amount**	**Funding Gap**
Land Purchase	$1,512,602	$0	$1,512,602	$0
Environmental & Design	$2,554,486	$905,787	$1,648,699	$0
Construction				
Sitework	$5,708,963			
Building Construction	10,360,583			
Design/Construction Contingencies	3,374,604			
Esclation and Market Factors	3,182,091			
Contractor Fees and Other	1,952,645			
Comissioning, Project Manager, Permit	1,412,845			
Total Construction Costs	$25,991,731	$6,285,662	$1,537,446	$18,168,623
Furniture, Fixtures, and Expenses	$1,186,181	$0	$0	$1,186,181
Financing Costs (RTA legal, advisor, trustee, and rating agency fees)	$255,000	$0	$0	$255,000
Sub-total RTA Bus Facility Construction; FF&E; Financing Costs	**$27,432,912**	**$6,285,662**	**$1,537,446**	**$19,609,804**
Total RTA Bus Facility Budgeted Costs (Including Land & Environmental)	**$31,500,000**	**$7,191,449**	**$4,698,747**	**$19,609,804**
Total Project Cost	**$31,500,000**			
Sources of Funding				
Federal Grants	$7,191,449	23%		
State Grants	$4,698,747	15%		
TIFIA Loan	$15,435,000	49%		
Other Borrowing	$4,174,805	13%		
Total Federal Funding	**$22,626,448**	**72%**		

179 Cross Street, Suite A
San Luis Obispo, CA 93401
(805) 781-4472 Fax (805) 781-1291
www.slorta.org

CONTRACT DOCUMENTS
FOR

BUS MAINTENANCE FACILITY
SAN LUIS OBISPO, CA
CONTRACT NO. 2005

The Regional Transit Authority is a Joint Powers Agency serving residents and visitors of:

Arroyo Grande Atascadero Grover Beach Morro Bay Paso Robles Pismo Beach San Luis Obispo and The County of San Luis Obispo

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PROJECT PLANS

179 Cross Street, Suite A
San Luis Obispo, CA 93401
(805) 781-4472 Fax (805) 781-1291
www.slorta.org

SAN LUIS OBISPO REGIONAL TRANSIT AUTHORITY

NOTICE AND INSTRUCTIONS TO BIDDERS

FOR

RTA BUS MAINTENANCE FACILITY
SAN LUIS OBISPO, CA
CONTRACT NO. 1705

SAN LUIS OBISPO REGIONAL TRANSIT AUTHORITY
NOTICE TO BIDDERS

Sealed proposals will be received at the San Luis Obispo Regional Transit Authority offices, 179 Cross Street, San Luis Obispo, California, 93401 until 3:00 P.M on Monday, September 11, 2017, at which time bids will then be opened and declared at 3:15 P.M. on the above mentioned date at a public meeting at by the Executive Director, for the following Capital Project (hereinafter "Project"):

RTA BUS MAINTENANCE FACILITY
SAN LUIS OBISPO, CA
CONTRACT NO. 1705

Any bid received at the RTA offices after 3:00 P.M. on the date specified above shall not be considered, and shall be returned to the bidder unopened (i.e., a bid received one second after 3:00 P.M. shall not be considered).

Bids are required for the entire work described herein.

This bid package (also referred to herein as the "Contract Documents") are posted on the RTA's website: http://www.slorta.org/about-rta/request-for-proposals/

Any changes, additions, or deletions to these Contract Documents will be in the form of written addenda issued by the RTA. Any addenda will be posted on the website. Prospective bidders must check the website for addenda or other relevant new information at up to 5:00 P.M. the Friday before the prescribed date/time for submittal of bids. The RTA is not responsible for the failure of any prospective bidder to receive such addenda. All addenda so issued shall become a part of this Bid.

All bidders are required to acknowledge and confirm receipt of each and every addendum in their bid proposal.

Pursuant to the provisions of Section 1773 of the California Labor Code, the RTA Board of Directors has obtained from the Director of the California Department of Industrial Relations the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work for the locality in which the work is to be performed for each needed craft, classification, or type of workman. Copies of said prevailing rate of per diem wages are on file in the RTA offices and available at the California Department of Industrial Relations' website address at: www.dir.ca.gov/DLSR/PWD.

Bidders are advised that any contractor who is awarded a RTA construction project and intends to use a craft or classification not shown on the general prevailing wage determination may be

required to pay the wage rate of that craft or classification most closely related to it as shown in the general determinations effective at the time of the call for bids.

Travel and Subsistence Payments shall be in accordance with Section 1773.1 of the Labor Code. Wage rates for holiday and overtime work shall be in accordance with Section 1773 of the Labor Code. Attention is directed to the provisions in Sections 1777.5, 1777.6, and 1777.7 of the Labor Code concerning the employment of apprentices by the Contractor or any subcontractor. Attention is directed to the provisions in Section 1776 of the Labor Code concerning payroll records.

Attention is directed to the provisions in Sections 1810 – 1815 of the Labor Code concerning work hours.

Attention is directed to the provisions of Section 2-1.02, "Required Listing of Proposed Subcontractors," of the Special Provisions regarding the requirement that proposed subcontractors be listed in the bidder's proposal. A "DESIGNATION OF SUBCONTRACTORS" form for listing subcontractors, as required, is included in the section titled "Bid Proposal and Forms" of the Contract Documents. This form must be completed and submitted with bidder's bid proposal.

All bonds and endorsements thereto to be submitted pursuant to this contract shall be written by a company authorized to do surety business in the State of California.

Each bid must be accompanied by a form of bidder's security, namely cash, certified check, cashier's check, or bidder's bond, in the amount of ten percent (10%) of the total of the bid.

Within ten (10) calendar days, not including Saturdays, Sundays, and legal holidays, after receipt of notice that the contract has been awarded, the successful bidder, shall execute a written contract with the RTA in the form prescribed herein.

At the time of execution of the contract, the successful bidder shall submit the certificates of insurance stipulated in Article 7 of the Agreement, and, in addition thereto, shall furnish a "Performance Bond" in the sum of one hundred percent (100%) of the contract bid to guarantee the performance of the contract, and a "Payment Bond" in the sum of one hundred percent (100%) of the contract bid. The bond forms are included in the section titled "Agreement" of the Contract Documents.

Attention is directed to the provisions of Section 5-1.07, "Measurement and Payment," of the Special Provisions permitting the substitution of equivalent securities for any moneys withheld to ensure performance of this contract. Said Section 5-1.07 is incorporated by reference in this invitation for bid as if fully set forth at length.

Pursuant to Labor Code Section 1771.1, no contractor or subcontractor may be listed on the bid proposal for this construction project unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5.

Pursuant to Labor Code Section 1771.1, no contractor or subcontractor may be awarded this construction contract unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5.

This Project is subject to compliance monitoring and enforcement by the Department of Industrial Relations, pursuant to Labor Code Section 1771.4.

The RTA Board of Directors reserves the right to reject any or all bids, and to waive discrepancies, irregularities, informalities or any other errors in the bids or bidding, if to do so seems to best serve the public interest. The right of RTA Board of Directors to waive errors applies even if the Contract Documents state that a discrepancy, irregularity, informality or other error makes a bid nonresponsive, so long as the error does not constitute a material error.

The successful bidder must be licensed to perform the work in accordance with the laws of the State of California. Accordingly, the successful bidder shall possess a Class A general engineering contractor's license at the time this contract is awarded. In the alternative, the successful bidder shall possess a specialty contractor's license that permits the successful bidder to perform with his or her own organization contract work amounting to not less than 30% of the original total contract price and to subcontract the remaining work in accordance with Section 5-1.055, "Subcontracting," of the Amendments to the Standard Specifications. Failure of the bidder to be properly and adequately licensed shall constitute a failure to execute the contract and shall result in the forfeiture of the bidder's security.

Bidders must satisfy themselves by personal examination of the location of the proposed work and by such other means as they prefer as to the actual conditions and requirements of the work, and shall not at any time after submission of the bid dispute, complain, or assert that there was any misunderstanding in regard to the nature or amount of work to be done.

By order of the RTA Board of Directors made this 21st day of August, 2017.

RTA Executive Director

By _____
Geoff Straw

BID PROTESTS AND OTHER CHALLENGES TO AWARDS OF CONSTRUCTION CONTRACTS

Bid protests and any other challenges to the award of this construction contract must comply with the requirements described in the "Rules Governing Bid Protests and Other Challenges to Awards of Construction Contracts" ("Rules"), a copy of which is attached to this contract. In addition to the requirements described in the Rules, any bid protest must be submitted in writing to the RTA Executive Director, SLO RTA, 179 Cross Street, San Luis Obispo, CA 93401.

SPECIAL INSTRUCTIONS TO BIDDERS

All bidder Requests for Information must be submitted no later than 3:00 p.m., five (5) business days prior to the bid opening date. Requests submitted after said date may not be considered. All questions pertaining to the content of this invitation to Bid must be made in writing through the Purchasing website. Questions and responses will be posted on the Purchasing website and can be viewed by accessing the Invitation to Bid located at the Purchasing website. The identity of the entity submitting the question will not be posted. The RTA reserves the right to determine the appropriateness of comments / questions that will be posted on the website.

Attention is directed to Section 4-1.03, "Contract Submittals," of the Special Provisions regarding the time period to submit the listed items upon receipt of the fully executed contract.

Bidders must satisfy themselves by personal examination of the location of the proposed work and by such other means as they prefer as to the actual conditions and requirements of the work, and shall not at any time after submission of the bid dispute, complain, or assert that there was any misunderstanding in regard to the nature or amount of work to be done.

The U.S. Department of Transportation (DOT) provides a toll-free hotline to report bid rigging activities. Use the hotline to report bid rigging, bidder collusion, and other fraudulent activities. The hotline number is (800) 424-9071. The service is available 24 hours 7 days a week and is confidential and anonymous. The hotline is part of the DOT's effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General.

SAN LUIS OBISPO REGIONAL TRANSIT AUTHORITY

BID PROPOSAL AND FORMS

FOR

RTA BUS MAINTENANCE FACILITY

SAN LUIS OBISPO, CA
CONTRACT NO. 1705

BID PROPOSAL

TO: THE RTA BOARD OF DIRECTORS:

Pursuant to and in compliance with your Notice to Bidders, the undersigned, as bidder, declares that the only person or parties interested in this proposal as principals are those named herein; that this proposal is made without collusion with any other person, firm or corporation; that he/she is aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and he/she will comply with such provisions before commencing the performance of the work of this contract; that he/she has carefully examined the location of the proposed work, the annexed proposed form of contract, and he/she proposes, and agrees if this proposal is accepted, that he/she will contract with the RTA Board of Directors in the form of the copy of the contract annexed hereto, to provide all necessary machinery, tools, apparatus and other equipment needed, and to do all of the work and furnish all the materials specified in the contract, in the manner and the time therein prescribed, and according to the requirements of the RTA as therein set forth, and that he/she will take in full payment therefor the following unit prices, to-wit:

SEE NEXT PAGE FOR BID PROPOSAL FORM

PASO ROBLES BUS PARKING YARD, CONTRACT NO. 1705						
BID PROPOSAL						
ITEM NO.	CODE NO.	ITEM DESCRIPTION	APPROX. QUANTITY	UNIT OF MEASURE	UNIT PRICE (IN FIGURES) DOLLARS.CENTS	TOTAL AMOUNT DOLLARS.CENTS
1	050100	Construction Surveying	1	LS	LUMP SUM	
2	074016	Construction Site Management	1	LS	LUMP SUM	
3	130200	Prepare Water Pollution Control Program	1	LS	LUMP SUM	
4	130620	Temporary Drainage Inlet Protection	2	EA		
5	130640	Temporary Fiber Roll	600	LF		
6	130710	Temporary Construction Entrance	1	LS	LUMP SUM	
7	130900	Temporary Concrete Washout	1	EA		
8	13XXXX	Relocate Storage Containers	1	LS	LUMP SUM	
9	15XXXX	Septic Sewage Disposal System	1	LS	LUMP SUM	
10	170103	Clearing & Grubbing/Tree Trimming	1	LS		
11	190101	Roadway Excavation	1320	CY		
12	194001	Ditch Excavation (Infiltration Swale)	259	CY		
13	19XXXX	Trench Excavation (Gas Service)	1	LS	LUMP SUM	
14	198215	Subgrade Enhancement Geosynthetic	5600	SY		
15	198XXX	30 mil Liner	292	SY		
16	200001	Highway Planting	1	LS	LUMP SUM	
17	202032	Commercial Fertilizer (Tablet)	229	EA		
18	204099	Plant Establishment Period	1	LS		
19	205035	Wood Mulch	67	CY		
20	205062	Root Barrier	160	LF		
21	208000	Irrigation System	1	LS	LUMP SUM	
22	20XXXX	Wood Header	800	LF		
23	260203	Class 2 Aggregate Base	700	CY		
24	390132	Hot Mix Asphalt (Type A)	1104	TN		
25	394073	Place HMA Dike (Type A)	436	LF		
26	398100	Remove Asphalt Concrete Dike	100	LF		
27	398200	Cold Plane Asphalt Concrete Pavement	230	SY		
28	682040	Class 3 Permeable Material	285	CY		
29	722010	Cobblestone	61	CY		
30	730010	Minor Concrete (Type A1-6 Curb)	70	LF		
31	731504	Minor Concrete (Flush Curb, 6"x30")	320	LF		
32	760080	1" Water Service	1	LS	LUMP SUM	
33	780500	Parking Bumper (Precast Concrete, 4 ft)	25	EA		
34	780500	Parking Bumper (Precast Concrete, 8 ft)	19	EA		
35	800100	Temporary Fence (Type ESA)	500	LF		
36	800360	Chain Link Fence (Type CL-6)	665	LF		
37	803050	Remove Chain Link Fence and Gate	160	LF		
38	804000	Chain Link Sliding Gate	3	EA		
39	820840	Roadside Sign - One Post	1	EA		
40	840651	Paint Traffic Stripe & Pavement Marking	1	LS	LUMP SUM	
41	86XXXX	Electrical Systems	1	LS	LUMP SUM	
42	994650	Relocatable Modular Building	1	LS	LUMP SUM	
43	999990	Mobilization (10%)	1	LS	LUMP SUM	
					TOTAL	

Bidder represents that he/she has hereinabove set forth for each unit basis item of work a unit price and a total for the item, and for each lump sum item a total for the item, all in clearly legible figures in the respective spaces provided for that purpose. In the case of unit basis items, the amount set forth under the "Total" column is the extension of the unit price bid on the basis of the approximate quantity for the item.

In case of discrepancy between the unit price and the total set forth for a unit basis item, the unit price shall prevail, provided, however, if the amount set forth as a unit price is ambiguous, unintelligible, or uncertain for any cause, or is omitted, or is the same amount as the entry in the "Total" column, then the amount set forth in the "Total" column for the item shall prevail and shall be divided by the estimated quantity for the item and the price thus obtained shall be the unit price.

Proposals in which the prices are mathematically or materially unbalanced may be rejected. A bid is mathematically unbalanced if the bid is structured on the basis of nominal prices for some work and inflated prices for other work; that is, each element of the bid must carry its proportionate share of the total cost of the work plus profits. A bid is materially unbalanced if there is reasonable doubt that award to the bidder submitting the mathematically unbalanced bid will result in the lowest ultimate cost to the RTA.

Bidder shall execute and submit with their proposal, each of the following:

- BIDDERS INFORMATION LIST
- DESIGNATION OF SUBCONTRACTORS
- BIDDER'S NON-COLLUSION DECLARATION (STATE FORM)
- BIDDER'S BOND

Bidder declares that he/she has read, and agrees to, the Special Provisions, including, without limitation, the provisions of Sections 1, 2, 3, 4, and 5 thereof.

Bidder shall list the name and address of each subcontractor to whom the bidder proposes to directly subcontract portions of the work as required by the provisions in Section 2-1.02, "Required Listing of Proposed Subcontractors," of these Special Provisions. The list of subcontractors shall also set forth the portion of work that will be done by each subcontractor listed. The "DESIGNATION OF SUBCONTRACTORS" form for listing the subcontractors is included in the section titled "Bid Proposal and Forms" of the Contract Documents.

Accompanying this bid proposal is a bidder's bond, cash, cashier's check, or a certified check,

payable to the San Luis Obispo Regional Transit Authority, for the sum of _____

_____Dollars ($_____), said amount being at least ten percent (10%) of the total of the bid. The proceeds thereof shall become the property of the RTA if the proposal is withdrawn after the time fixed in the Notice to Bidders for the opening of

bids, or if, in case this bid is accepted by said RTA Board of Directors and such bidder has received notice that the contract has been awarded to him/her, the undersigned shall fail within ten (10) calendar days, not including Saturdays, Sundays, and legal holidays, thereafter to execute a contract with the RTA and furnish the certificates of insurance and Payment and Performance bonds required by the Contract Documents.

Otherwise, said guarantee, except a bidder's bond, will be returned to the undersigned. This bid proposal may be withdrawn, in writing, prior to the time fixed in the Notice to Bidders for the opening of bids. It is understood and agreed that this bid proposal will not be withdrawn after the time fixed in the Notice to Bidders for the opening of bids. Bidders further agree that the failure of the RTA to open bids for this project exactly at the time fixed in said Notice shall not extend the time within which bids may be withdrawn.

The undersigned bidder will sign and deliver to the RTA the written contract, together with the certificates of insurance and bonds described in the Notice to Bidders, within ten (10) calendar days, not including Saturday, Sundays, and legal holidays, after the undersigned has received notice that the contract has been awarded to him/her.

The undersigned, as bidder, declares that he/she is aware of the provisions of Section 3700 of the California Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and will comply with such provisions before commencing the performance of the work of this contract.

The bidder's execution of the signature portion of this bid proposal shall also constitute an endorsement and execution of those certifications, questionnaires, and assurances which are a part of this proposal.

ADDENDA: The undersigned acknowledges and confirms the receipt of the following Addenda:

Addenda Number	Date
_____	_____
_____	_____
_____	_____
_____	_____

and agrees that said addenda are covered in the bid proposal and shall form a part of the Contract Documents.

If bidder or other interested person is a corporation, state legal name of corporation, also names of the president, secretary, treasurer, and manager thereof; if a partnership, state true name of firm, also names of all individual co-partners composing firm; if bidder or other interested person is an individual, state first and last names in full.

Bidder warrants and represents that he/she is licensed in accordance with an Act providing for the registration of Contractors, License No. _____, Class _____, License Expiration Date _____. (Note: The successful bidder must possess the license classification specified in the Notice to Bidders upon award of this contract.)

Name of Bidder _____

Signature of Bidder _____

Printed Name and Title _____

Business Address _____

Email Address _____

Telephone Number _____

Date _____

DIR Registration No.* _____

NOTICE: If bidder is a corporation, the legal name of the corporation shall be set forth above together with the signature of the officer or officers authorized to sign contract in behalf of the corporation; if bidder is a partnership, the true name of the firm shall be set forth above together with the signature of the partner or partners authorized to sign contracts in behalf of the partnership; and if the bidder is an individual, his or her signature shall be placed above. If signature is by an agent, other than an officer of a corporation or a member of a partnership, a Power of Attorney must be on file with the RTA prior to opening of bids or submitted with the bid; otherwise, the bid will be disregarded as irregular and unauthorized.

* Pursuant to Labor Code Section 1771.1, no contractor or subcontractor may be listed on the bid proposal for this construction project unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5.

RETURN THIS FORM WITH YOUR BID PROPOSAL

BIDDERS INFORMATION SHEET

All bidders/proposers are required to provide the following information for all DBE and non-DBE contractors, who provided a proposal, bid, quote, or were contacted by the proposed prime contractor. This information is required from the proposed prime contractor and shall be submitted with their bid proposal. The RTA will use this information to maintain and update a "Bidder's List" to assist in the overall annual Disadvantaged Business Enterprise (DBE) availability goal setting process required for Federal-aid projects. This information is also being made available to other local agencies for the same purpose. *To the extent permitted by law, all information submitted will be held in strict confidence and will not be shared without your consent except as noted above.*

Contractor: □ Prime Contractor □ Subcontractor □ Supplier □ Other:

Firm Name: _____ Phone: _____

Business Address: _____ Fax: _____

License No.
and Classification: _____ Years in Business: _____

Contact Person: _____

Is the firm currently certified as a DBE by Caltrans? □ No □ Yes Cert. Number: _____

Gross Annual Receipts for last year:
□ less than $1 million □ less than $5 million □ less than $10 million
□ less than $15 million □ more than $15 million

Type of work/ services/ materials provided for this job:
□ Contractor □ Supplier □ Manufacturer □ Trucking □ Broker
□ Other (describe): _____

Contractor Specialty for this job:
□ Roadway Construction (including signing, paving, and concrete) (237310)
□ Roadway Painting/Striping (237310)
□ Highway Lighting & Signal Installation (238210)
□ Bridge Construction (237310)
□ Tunnel Construction (237990)
□ Water, Sewer, & Pipeline Construction (237110)
□ Power & Communication Transmission Line (including conduit construction) (237130)
□ Landscaping (561730)
□ Irrigation (237110)
□ Other Heavy Construction (including parks, reservoir, water & sewer treatment facilities) (237990)
□ Masonry (including retaining walls and foundations) (238140)
□ Concrete Retaining Walls (238110)
□ Building Construction (236210/236220)
□ Other (describe): _____

- Copy sheet as needed
- None of the information requested on this form is material to the RTA's determination of which Bidder's Bid is the lowest responsive bid.

RETURN THIS FORM WITH YOUR BID PROPOSAL

DESIGNATION OF SUBCONTRACTORS FORM

In compliance with the provisions of Sections 4100-4113 of the Public Contract Code of the State of California, and any amendments thereto, the undersigned bidder sets forth the following:

a. The name and location of the place of business of each subcontractor who will perform work or labor, or render service to the undersigned Prime Contractor in or about the construction of the work or improvement, or a subcontractor licensed by the State of California who, under subcontract to the Prime Contractor, specially fabricates and installs a portion of the work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half of one percent of the undersigned Prime Contractor's total bid or in the case of bids for the construction of streets and highways, including bridges, in excess of one-half of one percent or ten thousand dollars ($10,000), whichever is greater.*

b. The portion of the work that will be done by each such subcontractor. Only one subcontractor shall be listed for each such portion. If the subcontractor is not performing all of the work under the bid item number(s) listed for that subcontractor, the bidder shall set forth the portion of the work relating to said bid item number(s) that will be done by the subcontractor.

Bid Schedule Item No.	Description of Portion of Work (if applicable)	Subcontractor	License No.	DIR Reg. No.**	Address	Percent of Total Bid Price

By: _____

(Bidder's Signature/Printed Name and Title/Company Name)

NOTES: * When there is a failure to list a subcontractor, as required, the law provides that the Contractor agrees to do the work with his or her own forces. In such case, bidder must be authorized to perform said work. Any bid not complying with the provisions hereof may be rejected.

** Pursuant to Labor Code Section 1771.1, no contractor or subcontractor may be listed on the bid proposal for this construction project unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5.

RETURN THIS FORM WITH YOUR BID PROPOSAL

BIDDER'S NON-COLLUSION DECLARATION

Bidder hereby states, under penalty of perjury, that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid. I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

_____
(Name of Company)

By: _____

_____
Printed Name

_____
Title

Date: _____

RETURN THIS FORM WITH YOUR BID PROPOSAL

BIDDER'S BOND

KNOW ALL BY THESE PRESENTS:

That we, _____

_____

as Principal, and _____

_____,
as Surety, are held and firmly bound unto the San Luis Obispo Regional Transit Authority (hereinafter called "RTA") in the penal sum of Ten Percent (10%) of the total aggregate amount of the bid of the Principal above named, submitted by said Principal to the RTA for the work described below, for the payment of which sum in lawful money of the United States, well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents. In no case shall the liability of the Surety

hereunder exceed the sum of _____

_____ dollars ($_____).

THE CONDITION OF THIS OBLIGATION IS SUCH,

That whereas a bid to the RTA for certain construction specifically described as follows, for which bids are to be opened on _____, 2020, has been submitted by Principal to RTA for:

RTA BUS MAINTENANCE FACILITY
SAN LUIS OBISPO, CA
CONTRACT NO. 1705

NOW, THEREFORE, if the aforesaid Principal shall not withdraw said bid after the time fixed in the Notice to Bidders for the opening of the same, and shall within ten (10) calendar days, not including Saturdays, Sundays, and legal holidays, after receipt of written notice that the contract has been awarded to him/her, enter into a written contract with the RTA, in the prescribed form, in accordance with the bid as accepted, and file with the RTA the certificates of insurance as stipulated in Article 7 of the Agreement and the two bonds, one to guarantee faithful performance and the other to guarantee payment for labor and materials, as required by law, then this obligation shall be null and void; otherwise, it shall remain in full force and effect, and the penal sum guaranteed by this bond shall be forfeited to the RTA .

Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of said contract or to the work to be performed thereunder or the specifications accompanying the same shall in any manner affect its obligations on this bond, and it does hereby waive notice of any such change, extension, alteration, or addition.

In the event suit is brought upon said bond by the RTA and judgment is recovered, the Surety shall pay all costs incurred by the RTA in such suit, including a reasonable attorney's fee to be fixed by the court. Death of the Principal shall not relieve Surety of its obligations hereunder.

IN WITNESS WHEREOF, we have hereunto set our hands and seals on this _____ day of

_____, 2020.

_____ (Seal)

_____ (Seal)

_____ (Seal)
Principal

_____ (Seal)

_____ (Seal)

_____ (Seal)
Surety

_____

_____
Address

NOTE:
Signatures of those executing for Surety must be properly acknowledged.

SAN LUIS OBISPO REGIONAL TRANSIT AUTHORITY

CONTRACT AGREEMENT FOR

FOR

RTA BUS MAINTENANCE FACILITY SAN LUIS OBISPO, CA
CONTRACT NO. 1705

THIS AGREEMENT, made and entered into this _____ day of _____, 2017, between the San Luis Obispo Regional Transit Authority, a political subdivision of the

State of California, party of the first part, hereinafter called "RTA" and _____

_____the party of the second part, hereinafter called "Contractor".

WITNESSETH, that for and in consideration of the mutual covenants and agreements hereinafter contained, the parties hereto agree as follows:

ARTICLE 1 – WORK

That the Contractor will, at its own proper cost and expense, do all the work and furnish all the equipment and materials necessary to construct and complete in good and workmanlike manner to the satisfaction of the RTA Board of Directors, for

RTA BUS MAINTENANCE FACILITY
SAN LUIS OBISPO, CA
CONTRACT NO. 1705

all in strict accordance with the Contract Documents, including without limitation, the Project Plans, the Standard Specifications of the State of California, Department of Transportation, dated May 2006 (hereinafter called, "Standard Specifications"), the Standard Plans of the State of California, Department of Transportation, dated May 2006 (hereinafter called, "Standard Plans"), and the Special Provisions therefor, on file in the RTA offices located at 179 Cross Street, San Luis Obispo, California, 93401.

ARTICLE 2 – CONTRACT

This Agreement, together with the Notice and Instructions to Bidders, Bid Proposal and Forms, Standard Specifications, Standard Plans, the Special Provisions, including without limitation the Project Plans incorporated therein, and all addenda thereto, form the contract, and said

documents by this reference become as fully a part of this Agreement as if set forth in full and are herein sometimes referred to as "Contract" or as "Contract Documents". The terms set forth below, when utilized in said documents, shall mean as follows:

EXECUTIVE DIRECTOR: Means the RTA Executive Director, acting either directly or through properly authorized agent(s), acting within the scope of the particular duties delegated to them, including registered engineers under contract to the RTA.

BOARD SECRETARY: Means the Secretary of RTA Board of Directors.

ARTICLE 3 – CONTRACT TIMES

The Contractor shall begin work within ten (10) calendar days, not including Saturdays, Sundays, or legal holidays, from the date of receipt of the RTA's Notice to Contractor to Proceed, and the work to be accomplished under this contract shall be completed within the time limit provided in Section 4, "Prosecution and Progress of the Work", of the Special Provisions. Attention is directed to the provisions of said Section 4, "Prosecution and Progress of the Work", of the Special Provisions for the amount of liquidated damages.

ARTICLE 4 – CONTRACT PRICE

The total Contract price is the amount of the Contractor's bid as set forth in the award of the Contract approved by the RTA Board of Directors. The Contractor will receive and accept and the RTA will pay the prices specified in the attached Bid Proposal, which is incorporated herein by reference, as full compensation for furnishing all labor, materials, and equipment for doing all the work contemplated and embraced in this Agreement. To the extent permitted by law, the Contractor assumes during the progress of the work and before its acceptance, any and all loss or damage arising out of the nature of the work aforesaid or from the action of the elements, or from any unforeseen difficulties or obstructions which may arise or be encountered in the prosecution of the work until its acceptance by the RTA; and assumes any and all expenses incurred by or in consequence of the suspension or discontinuance of work, for well and faithfully completing the work, and the whole thereof, in the manner and to the requirements of the Plans, Special Provisions, Standard Specifications, Standard Plans, and the Executive Director.

ARTICLE 5 – SUBCONTRACTING

The Contractor's attention is directed to the provisions of Section 2-1.02, "Required Listing of Proposed Subcontractors," of the Special Provisions and the requirements contained therein.

Additionally, the Contractor's attention is directed to the provisions of the "Subletting and Subcontracting Fair Practices Act" set forth in Sections 4100-4114 of the Public Contract Code.

ARTICLE 6 – INTERPRETATION OF MEANING

The Contractor agrees that the Executive Director shall decide as to the meaning of the Standard Specifications, Standard Plans, and Special Provisions for the work, including without limitation the Project Plans incorporated therein, where the same may be found to be obscure or in dispute and the decision shall be final. The Executive Director shall have the right to correct any errors or omissions therein when such corrections are necessary to the proper fulfillment of the intention of the Special Provisions, Standard Specifications and Standard Plans; the action of such corrections is to take effect from the time said Executive Director gives notice thereof to the Contractor.

ARTICLE 7 – INSURANCE REQUIREMENTS

Contractor, at its sole cost, shall purchase and maintain the insurance policies set forth below on all of its operations under this Agreement. All of the insurance companies providing insurance for Contractor shall have, and provide evidence of, an A.M. Best & Co. rating of A:VII or above, unless exception is granted by Risk Manager. Further, all policies shall be maintained for the full term of this Agreement and related warranty period if applicable.

7.01 SCOPE AND LIMITS OF REQUIRED INSURANCE POLICIES

A. COMMERCIAL GENERAL LIABILITY

Policy shall include coverage at least as broad as set forth in Insurance Services Office Commercial General Liability Coverage (CG 00 01) with policy limits of not less than $1 Million ($1,000,000) per occurrence and $2 Million ($2,000,000) aggregate. Policy shall be endorsed with the following specific language or contain equivalent language in the policy:

i. The RTA, its officers, officials, employees, and volunteers are named as an additional insured for all liability arising out of the operations by or on behalf of the named insured in the performance of this Agreement. General liability coverage can be provided in the form of an endorsement to the Contractor's insurance as least as broad as ISO Form CG 20 10 11 85 or if not available, through the addition of both CG 20 10 and CG 20 37 (if a later edition is used).

ii. The insurance provided herein shall be considered primary coverage to the RTA with respect to any insurance or self-insured retention maintained by the RTA. Further, the RTA's insurance shall be considered excess insurance only and shall not be called upon to contribute to this insurance.

iii. The policy shall not be cancelled or materially changed without first giving thirty days prior written notice to the Executive Director.

B. BUSINESS AUTOMOBILE POLICY

Policy shall include coverage at least as broad as set forth in the liability section of Insurance Services Office Business Auto Coverage (CA 00 01) with policy limits of no less than $1 million dollars combined single limit for each occurrence. Said insurance shall include coverage for owned, non-owned, and hired vehicles. Policy shall be endorsed with the following specific language or contain equivalent language in the policy:

i. The RTA, its officers, officials, employees, and volunteers are named as an additional insured for all liability arising out of the operations by or on behalf of the named insured in the performance of this Agreement.

ii. The policy shall not be cancelled or materially changed without first giving thirty days prior written notice to the Executive Director.

C. WORKERS' COMPENSATION / EMPLOYERS' LIABILITY INSURANCE

i. Workers' Compensation: policy shall provide statutory limits as required by State of California. Policy shall be endorsed with the following specific language or contain equivalent language in the policy:

a. Contractor and its insurer shall waive all rights of subrogation against the RTA, its officers and employees for workers' compensation losses arising out of this Agreement.

b. The policy shall not be cancelled or materially changed without first giving thirty days prior written notice to the Executive Director.

ii. Employer's Liability: policy shall provide $1 million dollars per accident for bodily injury or disease.

If the Contractor maintains higher limits than the minimum shown above, the RTA requires and shall be entitled to coverage for the higher limits maintained by the Contractor.

7.02 DEDUCTIBLES AND SELF-INSURANCE RETENTIONS

All deductibles and/or self-insured retentions that apply to the insurance policies required herein will be declared in writing and approved by the RTA prior to commencement of this Agreement.

7.03 DOCUMENTATION

Prior to commencement of work and annually thereafter for the term of this Agreement, Contractor will provide to RTA properly executed certificates of insurance clearly evidencing the coverage, limits, and endorsements specified in this Agreement. Further, at the RTA request, the Contractor shall provide certified copies of the insurance policies within thirty days of request.

Failure of the RTA to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of the RTA to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

7.04 ABSENCE OF INSURANCE COVERAGE

RTA may direct Contractor to immediately cease all activities with respect to this Agreement if it determines that Contractor fails to carry, in full force and effect, all insurance policies with coverage levels at or above the limits specified in this Agreement. Any delays or expense caused due to stopping of work and change of insurance shall be considered Contractor's delay and expense.

7.05 SPECIAL RISKS OR CIRCUMSTANCES

The RTA reserves the right to modify these requirements, including limits, based on the nature of the risk, prior experience, insurer, coverage, or other special circumstances.

ARTICLE 8 – INDEMNIFICATION

8.01 A.1 GENERAL

To the fullest extent permitted by law, the Contractor assumes liability for and agrees, at the Contractor's sole cost and expense, to promptly and fully indemnify, protect, hold harmless and defend (even if the allegations are false, fraudulent, or groundless), the RTA, its Board and each member thereof, and their respective officials, officers, directors, employees, commission members, representatives, and agents ("Indemnitees"), from and against any and all claims, allegations, actions, suits, arbitrations, administrative proceedings, regulatory proceedings, or other legal proceeds, causes of action, demands, costs, judgments, liens, stop payment notices, penalties, liabilities, damages, losses, anticipated losses of revenues, and expenses (including, but not limited to, any fees of accountants, attorneys, experts, or other professionals, or investigation expenses), or losses of any kind or nature whatsoever, whether actual, threatened, or alleged, arising out of, resulting from, or in any way (either directly or indirectly), related to the Work, the Project or any breach of the

Contract by Contractor or any of its officers, agents, employees, Subcontractors, Sub-subcontractors, or any person performing any of the Work, pursuant to a direct or indirect contract with the Contractor ("Indemnity Claims"). Such Indemnity Claims include, but are not limited to, claims for:

1. Any activity on or use of the RTA's premises or facilities;

2. Any liability incurred due to Contractor acting outside the scope of its authority pursuant to the Contract, whether or not caused in part by an Indemnified Party;

3. The failure of Contractor or the Work to comply with any applicable law, permit, or orders;

4. Any misrepresentation, misstatement or omission with respect to any statement made in the Contract Documents or any document furnished by the Contractor in connection therewith;

5. Any breach of any duty, obligation or requirement under the Contract Documents, including, but not limited to any breach of Contractor's warranties, representations, or agreements set forth in the Contract Documents;

6. Any failure to coordinate the Work with the RTA's separate contractors;

7. Any failure to provide notice to any party as required under the Contract Documents;

8. Any failure to act in such a manner as to protect the Project from loss, cost, expense, or liability;

9. Bodily or personal injury, emotional injury, sickness or disease, or death at any time to any persons including without limitation employees of Contractor;

10. Damage or injury to real property or personal property, equipment and materials (including, but without limitation, property under the care and custody of the Contractor or the RTA) sustained by any person or persons (including, but not limited to, companies, corporations, utility company or property owner, Contractor and its employees or agents, and members of the general public);

11. Any liability imposed by applicable law including, but not limited to criminal or civil fines or penalties;

12. Any dangerous, hazardous, unsafe or defective condition of, in or on the site, of any nature whatsoever, which may exist by reason of any act, omission, neglect, or any use or occupation of the site by Contractor, its officers, agents, employees, or Subcontractors;

13. Any operation conducted upon or any use or occupation of the site by Contractor, its officers, agents, employees, or Subcontractors under or pursuant to the provisions of the Contract or otherwise;

14. Any acts, errors, omission or negligence of Contractor, its officers, agents, employees, or Subcontractors.

15. Infringement of any patent rights, licenses, copyrights or intellectual property which may be brought against the Contractor or the RTA arising out of Contractor's Work, for which the Contractor is responsible; and

16. Any and all claims against the RTA seeking compensation for labor performed or materials used or furnished to be used in the Work or alleged to have been furnished on the Project, including all incidental or consequential damages resulting to the RTA from such claims.

A.2 EFFECT OF INDEMNITEES' ACTIVE NEGLIGENCE

Contractor's obligations to indemnify and hold the Indemnitees harmless **exclude** only such portion of any Indemnity Claim that is attributable to the active negligence or willful misconduct of the Indemnitee, provided such active negligence or willful misconduct is determined by agreement of the parties or by findings of a court of competent jurisdiction. In instances where an Indemnitee's active negligence accounts for only a percentage of the liability for the Indemnity Claim involved, the obligation of Contractor will be for that entire percentage of liability for the Indemnity Claim not attributable to the active negligence or willful misconduct of the Indemnitee(s). Such obligation shall not be construed to negate, abridge or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this Article 8 A. Subject to the limits set forth herein, the Contractor, at its own expense, shall satisfy any resulting judgment that may be rendered against any Indemnitee resulting from an Indemnity Claim. The Indemnitees shall be consulted with regard to any proposed settlement.

A.3 INDEPENDENT DEFENSE OBLIGATION

The duty of the Contractor to indemnify and hold harmless the Indemnitees includes the separate and independent duty to defend the Indemnitees, which

duty arises immediately upon receipt by Contractor of the tender of any Indemnity Claim from an Indemnitee. The Contractor's obligation to defend the Indemnitee(s) shall be at Contractor's sole expense, and not be excused because of the Contractor's inability to evaluate liability or because the Contractor evaluates liability and determines that the Contractor is not liable. This duty to defend shall apply whether or not an Indemnity Claim has merit or is meritless, or which involves claims or allegations that any or all of the Indemnitees were actively, passively, or concurrently negligent, or which otherwise asserts that the Indemnitees are responsible, in whole or in part, for any Indemnity Claim. The Contractor shall respond within thirty (30) calendar days to the tender of any Indemnity Claim for defense and/or indemnity by an Indemnitee, unless the Indemnitee agrees in writing to an extension of this time. The defense provided to the Indemnitees by Contractor shall be by well-qualified, adequately insured and experienced legal counsel acceptable to the RTA.

A.4 INTENT OF PARTIES REGARDING SCOPE OF INDEMNITY

It is the intent of the parties that the Contractor and its Subcontractors of all tiers shall provide the Indemnitees with the broadest defense and indemnity permitted by Applicable Law. In the event that any of the defense, indemnity or hold harmless provisions in the Contract Documents are found to be ambiguous, or in conflict with one another, it is the parties' intent that the broadest and most expansive interpretation in favor of providing defense and/or indemnity to the Indemnitees be given effect.

A.5 WAIVER OF INDEMNITY RIGHT AGAINST INDEMNITEES

With respect to third party claims against the Contractor, to the fullest extent permitted by law, the Contractor waives any and all rights to any type of express or implied indemnity against the Indemnitees.

A.6 SUBCONTRACTOR REQUIREMENTS

In addition to the requirements set forth hereinabove, Contractor shall ensure, by written subcontract agreement, that each of Contractor's Subcontractors of every tier shall protect, defend, indemnify and hold harmless the Indemnitees with respect to Indemnity Claims arising out of, in connection with, or in any way related to each such Subcontractors' Work on the Project in the same manner in which Contractor is required to protect, defend, indemnify and hold the Indemnitees harmless. In the event Contractor fails to obtain such defense and indemnity obligations from others as required herein, Contractor agrees to be fully responsible to the Indemnitees according to the terms of this Article 8A.

A.7 NO LIMITATION OR WAIVER OF RIGHTS

Contractor's obligations under this Article 8A are in addition to any other rights or remedies that the Indemnitees may have under the law or under the Contract Documents. Contractor's indemnification and defense obligations set forth in Article 8A are separate and independent from the insurance provisions set forth in the Contract Documents, and do not limit, in any way, the applicability, scope, or obligations set forth in such insurance provisions. The purchase of insurance by the Contractor with respect to the obligations required herein shall in no event be construed as fulfillment or discharge of such obligations. In any and all claims against the Indemnitees by any employee of the Contractor, any Subcontractor, any supplier of the Contractor or Subcontractors, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the obligations under this Article 8 A shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any Subcontractor or any supplier of either of them, under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts. Failure of the RTA to monitor compliance with these requirements imposes no additional obligations on the RTA and will in no way act as a waiver of any rights hereunder.

A.8 WITHHOLDING TO SECURE OBLIGATION

In the event an Indemnity Claim arises prior to final payment to Contractor, the RTA may, in its sole discretion, reserve, retain or apply any monies due Contractor for the purpose of resolving such Indemnity Claims; provided, however, the RTA may release such funds if the Contractor provides the RTA with reasonable assurances of protection of the Indemnitees' interests. The RTA shall, in its sole discretion, determine whether such assurances are reasonable.

A.9 SURVIVAL OF INDEMNITY OBLIGATIONS

Contractor's obligations under this Article 8 A are binding on Contractor's and its Subcontractors' successors, heirs and assigns and shall survive the completion of the Work or termination of the Contractor's performance of the Work.

B.1 RESPONSIBILITY TO OTHER ENTITIES

You are responsible for any liability imposed by law and for injuries to or death of any person, including workers and the public, or damage to property. Indemnify and save harmless any county, city or district and its officers and employees connected with the work, within the limits of which county, city, or district the work is being performed, all in the same manner and to the same extent specified for the protection of the State.

ARTICLE 9 – FINAL PAYMENT

It is mutually agreed between the parties hereto, that no certificate given or payments made under this contract, shall be evidence of the performance of this contract, either wholly or in part. Final payment for the work performed under this contract shall not be made until the lapse of thirty-five (35) calendar days after the notice of completion of said work has been filed for record and no payment shall be construed to be an acceptance of any defective work or improper materials. The Contractor further agrees that acceptance by the Contractor of the final payment due under this contract, and the adjustment and payment of his/her bill rendered for any work done in accordance with any amendments of this Contract, shall be and shall operate as a release to the RTA from any and all claims or liabilities on account of work performed under this Contract except claims or liabilities for which written notice of claim or protest has been filed with the Executive Director. Besides guarantees required elsewhere, the Contractor shall and does hereby guarantee all workmanship and material for a period of one year from and after both the date of acceptance of the work and the recordation of the notice of completion by the RTA and shall repair or replace any or all work and material, together with any other portions of the work which may be displaced in so doing, that in the opinion of the RTA is or becomes defective during the period of said guarantee without expense whatsoever to the RTA.

ARTICLE 10 – CONTRACTOR'S REPRESENTATIONS

The Contractor hereby declares that he/she has read the Contract Documents pertaining to the work to be accomplished hereunder, has carefully examined the plans and detail drawings of the work to be performed and fully understands the intent and meaning of the same.

It is further stipulated and agreed that the Contractor shall keep himself/herself fully informed of all laws, ordinances, and regulations that do or may affect the conduct of the work, the materials used therein or persons engaged or employed thereupon and all such orders of bodies and tribunals having any jurisdiction over the same. If it be found that the Special Provisions or Standard Specifications for the work conflict with any such law, ordinance or regulation the Contractor shall immediately report same to the Executive Director in writing. The Contractor shall at all times observe and comply with and shall cause all his/her agents, employees, and independent contractors hired by the Contractor to observe and comply with all such existing and future laws, ordinances, regulations, or decrees.

ARTICLE 11 – APPRENTICES

Attention is directed to the provisions in Sections 1777.5, 1777.6, and 1777.7 of the Labor Code concerning the employment of apprentices by the Contractor or any subcontractor.

The Contractor and any subcontractor shall comply with the requirements of Sections 1777.5, 1777.6, and 1777.7 of the Labor Code in the employment of apprentices.

To insure compliance and complete understanding of the law relating to apprentices, and specifically the required ratio thereunder, each contractor or subcontractor should, where some question exists, contact the Division of Apprenticeship Standards, 455 Golden Gate Avenue, San Francisco, California, or one of its branch offices prior to commencement of work on this contract. Responsibility for compliance with said Labor Code Sections lies with the prime contractor.

ARTICLE 12 – PAYROLL RECORDS

Attention is directed to the provisions in Section 1776 of the Labor Code concerning Contractor and subcontractor payroll records.

The Contractor and any subcontractor shall comply with the requirements of Section 1776 of the Labor Code.

ARTICLE 13 – EQUAL EMPLOYMENT OPPORTUNITY

During the performance of this contract, Contractor agrees to comply with all of the Equal Employment Opportunity provisions of Executive Order No. 11246 of September 24, 1965, as amended by Executive Order 11375 of October 13, 1967, and as supplemented in Department of Labor regulations (41 CFR Chapter 60), including the following:

1. The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoffs or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the RTA setting forth the provisions of this nondiscrimination clause.

2. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

3. The Contractor will send to each labor union or representative of workers with which he/she has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the RTA, advising the said labor union or worker's representative of the Contractor's commitments under this Article

14 and shall post copies of the Notice in conspicuous places available to employees and applicants for employment.

4. The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations (41 CFR, Part 60) and relevant orders of the Secretary of Labor.

5. The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the RTA and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

6. In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations or orders, this contract may be cancelled, terminated or suspended in whole or in part and the Contractor may be declared ineligible for further government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation or order of the Secretary of Labor, or as otherwise provided by law.

7. The Contractor will include the provisions of this Article in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the Executive Director or the Secretary of Labor may direct as a means of enforcing such provisions including sanctions for noncompliance: provided, however, that in the event a contractor becomes involved in, or is threatened with litigation with a subcontractor or vendor as a result of such direction by the Secretary of Labor, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

ARTICLE 14 – SAFETY

All work conducted by the Contractor and/or subcontractors in the execution of this contract shall be in accordance with current CAL OSHA requirements. Full compensation for compliance with the provisions of this Article shall be considered as included in the other items of work and no additional compensation will be allowed therefor.

ARTICLE 15 – BONDS

Contractor agrees that the Payment Bond and Performance Bond attached to this Agreement are for reference purposes only, and shall not be considered a part of this Agreement or any other Contract Document. Contractor further agrees that said bonds are separate obligations of the Contractor and its surety, and that any attorney's fee provision contained in any payment bond or performance bond shall not apply to any legal action between Contractor and RTA to enforce any provision of the Contract Documents.

ARTICLE 16 – ATTORNEYS FEES

No provisions of the Contract Documents provide either the Contractor or the RTA the right to be awarded any attorney's fees and/or costs under Civil Code section 1717 in any legal action brought by either party to enforce any provision of the Contract Documents against the other party. The parties agree that any references to attorney's fees in language describing indemnification obligations do not constitute a contractual provision that would provide either the Contractor or the RTA the right to be awarded any attorney's fees and/or costs under Civil Code section 1717 in any legal action brought by either party to enforce any provision of the Contract Documents against the other party. Any other language in the Contract Documents providing for a recovery of attorney's fees shall be strictly construed as not including the recovery of any attorney's fees incurred by either Contractor or RTA in any legal action brought by either party to enforce any provision of the Contract Documents against the other party.

The parties agree that the Contract Documents contain no provisions that would allow either the Contractor or the RTA to be awarded attorney's fees and/or costs under Civil Code section 1717. Nothing in this Article affects any right by Contractor or RTA to recover attorney's fees or costs by operation of any law other than Civil Code section 1717.

In the event of any conflict between language in this Article and any other language in the Contract Documents, the language in this Article shall prevail.

ARTICLE 17 – FEDERALLY REQUIRED CONTRACT CLAUSES

This project will be partially funded using Federal Transit Administration funds. As such, the clauses below are incorporated into this Agreement between the RTA and the Contractor.

1. **ACCESS TO RECORDS AND REPORTS**

   a. Record Retention. The Contractor will retain, and will require its subcontractors of all tiers to retain, complete and readily accessible records related in whole or in part to the contract, including, but not limited to, data, documents, reports, statistics, sub-agreements, leases,

subcontracts, arrangements, other third party agreements of any type, and supporting materials related to those records.

b. Retention Period. The Contractor agrees to comply with the record retention requirements in accordance with 2 C.F.R. § 200.333. The Contractor shall maintain all books, records, accounts and reports required under this Contract for a period of at not less than three (3) years after the date of termination or expiration of this Contract, except in the event of litigation or settlement of claims arising from the performance of this Contract, in which case records shall be maintained until the disposition of all such litigation, appeals, claims or exceptions related thereto.

c. Access to Records. The Contractor agrees to provide sufficient access to FTA and its contractors to inspect and audit records and information related to performance of this contract as reasonably may be required.

d. Access to the Sites of Performance. The Contractor agrees to permit FTA and its contractors access to the sites of performance under this contract as reasonably may be required.

2. **BUY AMERICA REQUIREMENTS**

The Buy America regulation at 49 C.F.R. § 661.13 requires notification of the Buy America requirements in a recipients' bid or request for proposal for FTA funded contracts. The contractor agrees to comply with 49 U.S.C. 5323(j) and 49 C.F.R. part 661, which provide that Federal funds may not be obligated unless all steel, iron, and manufactured products used in FTA funded projects are produced in the United States, unless a waiver has been granted by FTA or the product is subject to a general waiver. General waivers are listed in 49 C.F.R. § 661.7. Separate requirements for rolling stock are set out at 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. § 661.11.

The BIDDER must submit to RTA the appropriate Buy America certification below with its bid. Bids that are not accompanied by a completed Buy America certification will be rejected as nonresponsive.

In accordance with 49 C.F.R. § 661.6, for the procurement of steel, iron or manufactured products, use the certifications below.

Certificate of Compliance with Buy America Requirements

The bidder or offeror hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j)(1), and the applicable regulations in 49 C.F.R. part 661.

Date: _____

Signature: _____

Company: _____

Name: _____

Title: _____

Certificate of Non-Compliance with Buy America Requirements

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j), but it may qualify for an exception to the requirement pursuant to 49 U.S.C. 5323(j)(2), as amended, and the applicable regulations in 49 C.F.R. § 661.7.

Date: _____

Signature: _____

Company: _____

Name: _____

Title: _____

3. **CARGO PREFERENCE REQUIREMENTS**

a. The Cargo Preference Act of 1954 requirements applies to all contracts involving equipment, materials, or commodities that may be transported by ocean vessels.

b. Cargo Preference - Use of United States-Flag Vessels: The contractor agrees:

i. to use privately owned United States-Flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to the underlying contract to the extent such vessels are available at fair and reasonable rates for United States-Flag commercial vessels.

ii. to furnish within 20 working days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, "on-board" commercial ocean bill-of-lading in English for each shipment of cargo described in the preceding paragraph to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590 and to the FTA recipient (through the contractor in the case of a subcontractor's bill-of-lading.); and

iii. to include these requirements in all subcontracts issued pursuant to this contract when the subcontract may involve the transport of equipment, material, or commodities by ocean vessel.

4. **CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT**

The Clean Air and Clean Water Act requirements apply to each contract and subcontract exceeding $150,000. Each contract and subcontract must contain a provision that requires the RTA to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401–7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251–1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

The Contractor agrees:

a. It will not use any violating facilities;

b. It will report the use of facilities placed on or likely to be placed on the U.S. EPA "List of Violating Facilities;"

c. It will report violations of use of prohibited facilities to FTA; and

d. It will comply with the inspection and other requirements of the Clean Air Act, as amended, (42 U.S.C. §§ 7401 – 7671q); and the Federal Water Pollution Control Act as amended, (33 U.S.C. §§ 1251-1387).

5. **CIVIL RIGHTS LAWS AND REGULATIONS**

The following Federal Civil Rights laws and regulations apply to all contracts.

a. Federal Equal Employment Opportunity (EEO) Requirements. These include, but are not limited to:

i. Nondiscrimination in Federal Public Transportation Programs. 49 U.S.C. § 5332, covering projects, programs, and activities financed under 49 U.S.C. Chapter 53, prohibits discrimination on the basis of race, color, religion, national origin, sex (including sexual orientation and gender identity), disability, or age, and prohibits discrimination in employment or business opportunity.

ii. Prohibition against Employment Discrimination. Title VII of the Civil Rights Act of 1964, as amended, 42 U.S.C. § 2000e, and Executive Order No. 11246, "Equal Employment Opportunity," September 24, 1965, as amended, prohibit discrimination in employment on the basis of race, color, religion, sex, or national origin.

b. Nondiscrimination on the Basis of Sex. Title IX of the Education Amendments of 1972, as amended, 20 U.S.C. § 1681 et seq. and implementing Federal regulations, "Nondiscrimination on the Basis of Sex in Education Programs or Activities Receiving Federal Financial Assistance," 49 C.F.R. part 25 prohibit discrimination on the basis of sex.

c. Nondiscrimination on the Basis of Age. The "Age Discrimination Act of 1975," as amended, 42 U.S.C. § 6101 et seq., and Department of Health and Human Services implementing regulations, "Nondiscrimination on

the Basis of Age in Programs or Activities Receiving Federal Financial Assistance," 45 C.F.R. part 90, prohibit discrimination by participants in federally assisted programs against individuals on the basis of age. The Age Discrimination in Employment Act (ADEA), 29 U.S.C. § 621 et seq., and Equal Employment Opportunity Commission (EEOC) implementing regulations, "Age Discrimination in Employment Act," 29 C.F.R. part 1625, also prohibit employment discrimination against individuals age 40 and over on the basis of age.

d. Federal Protections for Individuals with Disabilities. The Americans with Disabilities Act of 1990, as amended (ADA), 42 U.S.C. § 12101 et seq., prohibits discrimination against qualified individuals with disabilities in programs, activities, and services, and imposes specific requirements on public and private entities. Third party contractors must comply with their responsibilities under Titles I, II, III, IV, and V of the ADA in employment, public services, public accommodations, telecommunications, and other provisions, many of which are subject to regulations issued by other Federal agencies.

The following Civil Rights requirements flow down to all third party contractors and their subcontracts at every tier.

a. Civil Rights and Equal Opportunity. The RTA is an Equal Opportunity Employer. As such, the RTA agrees to comply with all applicable Federal civil rights laws and implementing regulations. Apart from inconsistent requirements imposed by Federal laws or regulations, the RTA agrees to comply with the requirements of 49 U.S.C. § 5323(h) (3) by not using any Federal assistance awarded by FTA to support procurements using exclusionary or discriminatory specifications. Under this Agreement, the Contractor shall at all times comply with the following requirements and shall include these requirements in each subcontract entered into as part thereof.

    i. **Nondiscrimination**. In accordance with Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against any employee or applicant for employment because of race, color, religion, national origin, sex, disability, or age. In addition, the Contractor agrees to comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.

    ii. **Race, Color, Religion, National Origin, Sex**. In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e et

seq., and Federal transit laws at 49 U.S.C. § 5332, the Contractor agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOL) regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 C.F.R. chapter 60, and Executive Order No. 11246, "Equal Employment Opportunity in Federal Employment," September 24, 1965, 42 U.S.C. § 2000e note, as amended by any later Executive Order that amends or supersedes it, referenced in 42 U.S.C. § 2000e note. The Contractor agrees to take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, national origin, or sex (including sexual orientation and gender identity). Such action shall include, but not be limited to, the following: employment, promotion, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

iii. **Age**. In accordance with the Age Discrimination in Employment Act, 29 U.S.C. §§ 621-634, U.S. Equal Employment Opportunity Commission (U.S. EEOC) regulations, "Age Discrimination in Employment Act," 29 C.F.R. part 1625, the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6101 et seq., U.S. Health and Human Services regulations, "Nondiscrimination on the Basis of Age in Programs or Activities Receiving Federal Financial Assistance," 45 C.F.R. part 90, and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees to refrain from discrimination against present and prospective employees for reason of age. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

iv. **Disabilities**. In accordance with section 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. § 794, the Americans with Disabilities Act of 1990, as amended, 42 U.S.C. § 12101 et seq., the Architectural Barriers Act of 1968, as amended, 42 U.S.C. § 4151 et seq., and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against individuals on the basis of disability. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

6. **DISADVANTAGED BUSINESS ENTERPRISE (DBE)**

It is the policy of the RTA and the United States Department of Transportation ("DOT") that Disadvantaged Business Enterprises ("DBEs"), as defined herein and in the Federal regulations published at 49 C.F.R. part 26, shall have an equal opportunity to participate in DOT-assisted contracts. It is also the policy of the RTA to:

a. Ensure nondiscrimination in the award and administration of DOT-assisted contracts;

b. Create a level playing field on which DBEs can compete fairly for DOT-assisted contracts;

c. Ensure that the DBE program is narrowly tailored in accordance with applicable law;

d. Ensure that only firms that fully meet 49 C.F.R. part 26 eligibility standards are permitted to participate as DBEs;

e. Help remove barriers to the participation of DBEs in DOT assisted contracts;

f. To promote the use of DBEs in all types of federally assisted contracts and procurement activities; and

g. Assist in the development of firms that can compete successfully in the marketplace outside the DBE program.

This Contract is subject to 49 C.F.R. part 26. Therefore, the Contractor must satisfy the requirements for DBE participation as set forth herein. These requirements are in addition to all other equal opportunity employment requirements of this Contract. The RTA shall make all determinations with regard to whether or not a Bidder/Offeror is in compliance with the requirements stated herein. In assessing compliance, the RTA may consider during its review of the Bidder/Offeror's submission package, the Bidder/Offeror's documented history of non-compliance with DBE requirements on previous contracts with the RTA.

Contract Assurance – The Contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this Contract. The Contractor shall carry out applicable requirements of 49 C.F.R. part 26 in the award and administration of DOT-

assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this Contract, which may result in the termination of this Contract or such other remedy as the RTA deems appropriate.

DBE Participation – For the purpose of this Contract, the RTA will accept only DBEs who are:

a. Certified, at the time of bid opening or proposal evaluation, by the Unified Certification Program (UCP); or

b. An out-of-state firm who has been certified by either a local government, state government or Federal government entity authorized to certify DBE status or an agency whose DBE certification process has received FTA approval; or

c. Certified by another agency approved by the RTA.

DBE Participation Goal – The RTA's overall DBE participation goal is set at 5.1%. This goal represents those elements of work under this Contract performed by qualified Disadvantaged Business Enterprises for amounts totaling **not less than** 5.1% of the total Contract price. Failure to meet the stated goal or demonstrate good faith efforts to achieve the stated goal at the time of proposal submission **may** render the Bidder/Offeror non-responsive.

Proposed Submission – Each Bidder/Offeror, as part of its submission, shall supply the following information:

a. A completed DBE Utilization Form (see below) that indicates the percentage and dollar value of the total bid/contract amount to be supplied by Disadvantaged Business Enterprises under this Contract.

b. A list of those qualified DBEs with whom the Bidder/Offeror intends to contract for the performance of portions of the work under the Contract, the agreed price to be paid to each DBE for work, the Contract items or parts to be performed by each DBE, a proposed timetable for the performance or delivery of the Contract item, and other information as required by the DBE Participation Schedule (see below). No work shall be included in the Schedule that the Bidder/Offeror has reason to believe the listed DBE will subcontract, at any tier, to other than another DBE. If awarded the Contract, the Bidder/Offeror may not deviate from the DBE Participation Schedule submitted in response to the bid. Any subsequent changes and/or substitutions of DBE firms will require review and written approval by the RTA.

c. An original DBE Letter of Intent (see below) from each DBE listed in the DBE Participation Schedule.

d. An original DBE Affidavit (see below) from each DBE stating that there has not been any change in its status since the date of its last certification.

Good Faith Efforts – If the Bidder/Offeror is unable to meet the goal set forth above (DBE Participation Goal), the RTA will consider the Bidder/Offeror's documented good faith efforts to meet the goal in determining responsiveness. The types of actions that the RTA will consider as part of the Bidder/Offeror's good faith efforts include, but are not limited to, the following:

a. Documented communication with the Deputy Director, who serves as RTA's DBE Coordinator (questions of IFB or RFP requirements, subcontracting opportunities, appropriate certification, will be addressed in a timely fashion);

b. Pre-bid meeting attendance. At the pre-bid meeting, the RTA generally informs potential Bidder/Offeror's of DBE subcontracting opportunities;

c. The Bidder/Offeror's own solicitations to obtain DBE involvement in general circulation media, trade association publication, minority-focus media and other reasonable and available means within sufficient time to allow DBEs to respond to the solicitation;

d. Written notification to DBEs encouraging participation in the proposed Contract; and

e. Efforts made to identify specific portions of the work that might be performed by DBEs.

The Bidder/Offeror shall provide the following details, at a minimum, of the specific efforts it made to negotiate in good faith with DBEs for elements of the Contract:

a. The names, addresses, and telephone numbers of DBEs that were contacted;

b. A description of the information provided to targeted DBEs regarding the specifications and bid proposals for portions of the work;

c. Efforts made to assist DBEs contacted in obtaining bonding or insurance required by the Bidder or the Authority.

Further, the documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted when a non-DBE subcontractor was selected over a DBE for work on the contract as required under 49 C.F.R. § 26.53(b)(2)(VI). In determining whether a Bidder has made good faith efforts, the Authority may take into account the performance of other Bidders in meeting the Contract goals. For example, if the apparent successful Bidder failed to meet the goal, but meets or exceeds the average DBE participation obtained by other Bidders, the Authority may view this as evidence of the Bidder having made good faith efforts.

Administrative Reconsideration – Within five (5) business days of being informed by the RTA that it is not responsive or responsible because it has not documented sufficient good faith efforts, the Bidder/Offeror may request administrative reconsideration. The Bidder should make this request in writing to the RTA's Deputy Director. The Deputy Director will forward the Bidder/Offeror's request to a reconsideration official who will not have played any role in the original determination that the Bidder/Offeror did not document sufficient good faith efforts.

As part of this reconsideration, the Bidder/Offeror will have the opportunity to provide written documentation or argument concerning the issue of whether it met the goal or made adequate good faith efforts to do so. The Bidder/Offeror will have the opportunity to meet in person with the assigned reconsideration official to discuss the issue of whether it met the goal or made adequate good faith efforts to do so. The RTA will send the Bidder/Offeror a written decision on its reconsideration, explaining the basis for finding that the Bidder/Offeror did or did not meet the goal or make adequate good faith efforts to do so. The result of the reconsideration process is not administratively appealable to the Department of Transportation.

Termination of DBE Subcontractor – The Contractor shall not terminate the DBE subcontractor(s) listed in the DBE Participation Schedule (see below) without the RTA's prior written consent. The RTA may provide such written consent only if the Contractor has good cause to terminate the DBE firm. Before transmitting a request to terminate, the Contractor shall give notice in writing to the DBE subcontractor of its intent to terminate and the reason for the request. The Contractor shall give the DBE five days to respond to the notice and advise of the reasons why it objects to the proposed termination. When a DBE subcontractor is terminated or fails to complete its work on the Contract for any reason, the Contractor shall make good faith efforts to find another DBE subcontractor to substitute for the original DBE and immediately notify the RTA in writing of its efforts to replace the original DBE. These good faith efforts shall be directed at finding another DBE to perform at least the same amount of work under the

Contract as the DBE that was terminated, to the extent needed to meet the Contract goal established for this procurement. Failure to comply with these requirements will be in accordance with Sanctions for Violations section below.

Continued Compliance – The RTA shall monitor the DBE compliance during the life of the Contract. In the event this procurement exceeds ninety (90) days, **it will be the responsibility of the Contractor to submit quarterly written reports to the RTA** that summarize the total DBE value for this Contract. These reports shall provide the following details:

- DBE utilization established for the Contract;
- Total value of expenditures with DBE firms for the quarter;
- The value of expenditures with each DBE firm for the quarter by race and gender;
- Total value of expenditures with DBE firms from inception of the Contract; and
- The value of expenditures with each DBE firm from the inception of the Contract by race and gender.

Reports and other correspondence must be submitted to the DBE Coordinator. Reports shall continue to be submitted quarterly until final payment is issued or until DBE participation is completed.

The successful Bidder/Offeror shall permit:

- The RTA to have access to necessary records to examine information as the RTA deems appropriate for the purpose of investigating and determining compliance with this provision, including, but not limited to, records of expenditures, invoices, and contract between the successful Bidder/Offeror and other DBE parties entered into during the life of the Contract.
- The authorized representative(s) of the RTA, the U.S. Department of Transportation, the Comptroller General of the United States, to inspect and audit all data and record of the Contractor relating to its performance under the Disadvantaged Business Enterprise Participation provision of this Contract.
- All data/record(s) pertaining to DBE shall be maintained as stated in Article 17 Access to Records above.

Sanctions for Violations – If at any time the RTA has reason to believe that the Contractor is in violation of its obligations under this Agreement or has otherwise failed to comply with terms of this Section, the RTA may, in addition to pursuing any other available legal remedy, commence proceedings, which may include but are not limited to, the following:

- Suspension of any payment or part due the Contractor until such time as the issues concerning the Contractor's compliance are resolved; and

- Termination or cancellation of the Contract, in whole or in part, unless the successful Contractor is able to demonstrate within a reasonable time that it is in compliance with the DBE terms stated herein.

DBE UTILIZATION FORM

The undersigned Bidder/Offeror has satisfied the requirements of the solicitation in the following manner (please check the appropriate space):

_____ The Bidder/Offer is committed to a minimum of _____% DBE utilization on this contract.

_____ The Bidder/Offeror (if unable to meet the DBE goal of %) is committed to a minimum of _____% DBE utilization on this contract and submits documentation demonstrating good faith efforts.

DBE PARTICIPATION SCHEDULE

The Bidder/Offeror shall complete the following information for all DBEs participating in the contract that comprises the DBE Utilization percent stated in the DBE Utilization Form. The Bidder/Offeror shall also furnish the name and telephone number of the appropriate contact person should the Authority have any questions in relation to the information furnished herein.

Name and Address	Contact Name and Telephone Number	Participation % (of Total Contract Value)	Description of Work to be Performed	Race and Gender of Firm

7. **EMPLOYEE PROTECTIONS**

Certain employee protections apply to all FTA funded contracts with particular emphasis on construction related projects. The RTA will ensure that each third party contractor complies with all federal laws, regulations, and requirements, including:

a. Prevailing Wage and Anti-Kickback – For all prime construction, alteration or repair contracts in excess of $2,000 awarded by FTA, the Contractor shall comply with the Davis-Bacon Act and the Copeland "Anti-Kickback" Act. Under 49 U.S.C. § 5333(a), prevailing wage protections apply to laborers and mechanics employed on FTA assisted construction, alteration, or repair projects. The Contractor will comply with the Davis-Bacon Act, 40 U.S.C. §§ 3141-3144, and 3146-3148 as supplemented by DOL regulations at 29 C.F.R. part 5, "Labor Standards Provisions Applicable to Contracts Governing Federally Financed and Assisted Construction." In accordance with the statute, the Contractor shall pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, the Contractor agrees to pay wages not less than once a week. The Contractor shall also comply with the Copeland "Anti-Kickback" Act (40 U.S.C. § 3145), as supplemented by DOL regulations at 29 C.F.R. part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in part by Loans or Grants from the United States." The Contractor is prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled.

b. Contract Work Hours and Safety Standards – For all contracts in excess of $100,000 that involve the employment of mechanics or laborers, the Contractor shall comply with the Contract Work Hours and Safety Standards Act (40 U.S.C. §§ 3701-3708), as supplemented by the DOL regulations at 29 C.F.R. part 5. Under 40 U.S.C. § 3702 of the Act, the Contractor shall compute the wages of every mechanic and laborer, including guards and guards, on the basis of a standard workweek of 40 hours. Work in excess of the standard workweek is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the workweek. The requirements of 40 U.S.C. § 3704 are applicable to construction work and provide that no laborer or mechanic be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchase of supplies or materials or articles ordinarily available on

the open market, or to contracts for transportation or transmission of intelligence.

In the event of any violation of the clause set forth herein, the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, the Contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of this clause in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by this clause.

The FTA shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the Contractor or subcontractor under any such contract or any other Federal contract with the same prime Contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime Contractor, such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in this section.

The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime Contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in this agreement.

8. **ENERGY CONSERVATION**

The Energy Policy and Conservation requirements are applicable to all contracts. The RTA agrees to, and assures that its subrecipients, if any, will comply with the mandatory energy standards and policies of its state energy conservation plans under the Energy Policy and Conservation Act, as amended, 42 U.S.C. § 6201 et seq., and perform an energy assessment for any building constructed, reconstructed, or modified with federal assistance as required under FTA regulations, “Requirements for Energy Assessments,” 49 C.F.R. part 622, subpart C.

The contractor and all subcontractors agree to comply with mandatory standards and policies relating to energy efficiency, which are contained in the

state energy conservation plan issued in compliance with the Energy Policy and Conservation Act.

9. **GOVERNMENT-WIDE DEBARMENT AND SUSPENSION**

The Contractor shall comply and facilitate compliance with U.S. DOT regulations, "Nonprocurement Suspension and Debarment," 2 C.F.R. part 1200, which adopts and supplements the U.S. Office of Management and Budget (U.S. OMB) "Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement)," 2 C.F.R. part 180. These provisions apply to each contract at any tier of $25,000 or more, and to each contract at any tier for a federally required audit (irrespective of the contract amount), and to each contract at any tier that must be approved by an FTA official irrespective of the contract amount. As such, the Contractor shall verify that its principals, affiliates, and subcontractors are eligible to participate in this federally funded contract and are not presently declared by any Federal department or agency to be:

a. Debarred from participation in any federally assisted Award;

b. Suspended from participation in any federally assisted Award;

c. Proposed for debarment from participation in any federally assisted Award;

d. Declared ineligible to participate in any federally assisted Award;

e. Voluntarily excluded from participation in any federally assisted Award; or

f. Disqualified from participation in ay federally assisted Award.

By signing and submitting its bid or proposal, the bidder or proposer certifies as follows:

The certification in this clause is a material representation of fact relied upon by the RTA. If it is later determined by the RTA that the bidder or proposer knowingly rendered an erroneous certification, in addition to remedies available to the RTA, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The bidder or proposer agrees to comply with the requirements of 2 C.F.R. part 180, subpart C, as supplemented by 2 C.F.R. part 1200, while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or proposer

further agrees to include a provision requiring such compliance in its lower tier covered transactions.

10. **LOBBYING RESTRICTIONS**

The undersigned certifies, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

c. The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

d. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

11. **NO GOVERNMENT OBLIGATION TO THIRD PARTIES**

The RTA and Contractor acknowledge and agree that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the underlying Contract, absent the express written consent by the

Federal Government, the Federal Government is not a party to this Contract and shall not be subject to any obligations or liabilities to the RTA, Contractor or any other party (whether or not a party to that contract) pertaining to any matter resulting from the underlying Contract. The Contractor agrees to include the above clause in each subcontract financed in whole or in part with Federal assistance provided by the FTA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions.

12. **PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS AND RELATED ACTS**

The Contractor acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. § 3801 et seq. and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 C.F.R. part 31, apply to its actions pertaining to this Project. Upon execution of the underlying contract, the Contractor certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to be made, pertaining to the underlying contract or the FTA assisted project for which this contract work is being performed. In addition to other penalties that may be applicable, the Contractor further acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the Federal Government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 on the Contractor to the extent the Federal Government deems appropriate.

The Contractor also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under a contract connected with a project that is financed in whole or in part with Federal assistance originally awarded by FTA under the authority of 49 U.S.C. chapter 53, the Government reserves the right to impose the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5323(l) on the Contractor, to the extent the Federal Government deems appropriate.

The Contractor agrees to include the above two clauses in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clauses shall not be modified, except to identify the subcontractor who will be subject to the provisions.

13. **RECYCLED PRODUCTS**

The Contractor agrees to provide a preference for those products and services that conserve natural resources, protect the environment, and are energy efficient by complying with and facilitating compliance with Section 6002 of the

Resource Conservation and Recovery Act, as amended, 42 U.S.C. § 6962, and U.S. Environmental Protection Agency (U.S. EPA), "Comprehensive Procurement Guideline for Products Containing Recovered Materials," 40 C.F.R. part 247.

14. SAFE OPERATION OF MOTOR VEHICLES

The Contractor is encouraged to adopt and promote on-the-job seat belt use policies and programs for its employees and other personnel that operate company-owned vehicles, company-rented vehicles, or personally operated vehicles. The terms "company-owned" and "company-leased" refer to vehicles owned or leased either by the Contractor or by RTA.

The Contractor agrees to adopt and enforce workplace safety policies to decrease crashes caused by distracted drivers, including policies to ban text messaging while using an electronic device supplied by an employer, and driving a vehicle the driver owns or rents, a vehicle Contactor owns, leases, or rents, or a privately-owned vehicle when on official business in connection with the work performed under this agreement.

15. SEISMIC SAFETY

The Contractor agrees that any new building or addition to an existing building will be designed and constructed in accordance with the standards for Seismic Safety required in Department of Transportation (DOT) Seismic Safety Regulations 49 C.F.R. part 41 and will certify to compliance to the extent required by the regulation. The contractor also agrees to ensure that all work performed under this contract, including work performed by a subcontractor, is in compliance with the standards required by the Seismic Safety regulations and the certification of compliance issued on the project.

16. TERMINATION

Termination for Convenience (General Provision) – The RTA may terminate this contract, in whole or in part, at any time by written notice to the Contractor when it is in the RTA's best interest. The Contractor shall be paid its costs, including contract closeout costs, and profit on work performed up to the time of termination. The Contractor shall promptly submit its termination claim to RTA to be paid the Contractor. If the Contractor has any property in its possession belonging to RTA, the Contractor will account for the same, and dispose of it in the manner RTA directs.

Termination for Default, Breach or Cause (General Provision)
If the Contractor does not deliver supplies in accordance with the contract delivery schedule, or if the contract is for services, the Contractor fails to

perform in the manner called for in the contract, or if the Contractor fails to comply with any other provisions of the contract, the RTA may terminate this contract for default. Termination shall be effected by serving a Notice of Termination on the Contractor setting forth the manner in which the Contractor is in default. The Contractor will be paid only the contract price for supplies delivered and accepted, or services performed in accordance with the manner of performance set forth in the contract.

If it is later determined by the RTA that the Contractor had an excusable reason for not performing, such as a strike, fire, or flood, events which are not the fault of or are beyond the control of the Contractor, the RTA, after setting up a new delivery of performance schedule, may allow the Contractor to continue work, or treat the termination as a Termination for Convenience.

Opportunity to Cure (General Provision) – The RTA, in its sole discretion may, in the case of a termination for breach or default, allow the Contractor [an appropriately short period of time] in which to cure the defect. In such case, the Notice of Termination will state the time period in which cure is permitted and other appropriate conditions.

If Contractor fails to remedy to RTA's satisfaction the breach or default of any of the terms, covenants, or conditions of this Contract within [10 days] after receipt by Contractor of written notice from RTA setting forth the nature of said breach or default, RTA shall have the right to terminate the contract without any further obligation to Contractor. Any such termination for default shall not in any way operate to preclude RTA from also pursuing all available remedies against Contractor and its sureties for said breach or default.

Waiver of Remedies for any Breach – In the event that RTA elects to waive its remedies for any breach by Contractor of any covenant, term or condition of this contract, such waiver by RTA shall not limit RTA's remedies for any succeeding breach of that or of any other covenant, term, or condition of this contract.

Termination for Default (Construction) – If the Contractor refuses or fails to prosecute the work or any separable part, with the diligence that will ensure its completion within the time specified in this contract or any extension or fails to complete the work within this time, or if the Contractor fails to comply with any other provision of this contract, RTA may terminate this contract for default. The RTA shall terminate by delivering to the Contractor a Notice of Termination specifying the nature of the default. In this event, the RTA may take over the work and compete it by contract or otherwise, and may take possession of and use any materials, appliances, and plant on the work site necessary for completing the work. The Contractor and its sureties shall be liable for any damage to the RTA resulting from the Contractor's refusal or failure to complete

the work within specified time, whether or not the Contractor's right to proceed with the work is terminated. This liability includes any increased costs incurred by the RTA in completing the work.

The Contractor's right to proceed shall not be terminated nor shall the Contractor be charged with damages under this clause if:

a. The delay in completing the work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor. Examples of such causes include: acts of God, acts of the RTA, acts of another contractor in the performance of a contract with the RTA, epidemics, quarantine restrictions, strikes, freight embargoes; and

b. The Contractor, within 10 days from the beginning of any delay, notifies the RTA in writing of the causes of delay. If, in the judgment of the RTA, the delay is excusable, the time for completing the work shall be extended. The judgment of the RTA shall be final and conclusive for the parties, but subject to appeal under the Disputes clause(s) of this contract.

If, after termination of the Contractor's right to proceed, it is determined that the Contractor was not in default, or that the delay was excusable, the rights and obligations of the parties will be the same as if the termination had been issued for the convenience of the RTA.

17. **VIOLATION AND BREACH OF CONTRACT**

The RTA shall have the following rights in the event that the RTA deems the Contractor guilty of a breach of any term under the Contract.

a. The right to take over and complete the work or any part thereof as agency for and at the expense of the Contractor, either directly or through other contractors;

b. The right to cancel this Contract as to any or all of the work yet to be performed;

c. The right to specific performance, an injunction or any other appropriate equitable remedy; and

d. The right to money damages.

Rights and Remedies of Contractor – Inasmuch as the Contractor can be adequately compensated by money damages for any breach of this Contract,

which may be committed by the RTA, the Contractor expressly agrees that no default, act or omission of the RTA shall constitute a material breach of this Contract, entitling Contractor to cancel or rescind the Contract (unless the RTA directs Contractor to do so) or to suspend or abandon performance.

Remedies – Substantial failure of the Contractor to complete the Project in accordance with the terms of this Agreement will be a default of this Agreement. In the event of a default, the RTA will have all remedies in law and equity, including the right to specific performance, without further assistance, and the rights to termination or suspension as provided herein. The Contractor recognizes that in the event of a breach of this Agreement by the Contractor before the RTA takes action contemplated herein, the RTA will provide the Contractor with sixty (60) days written notice that the RTA considers that such a breach has occurred and will provide the Contractor a reasonable period of time to respond and to take necessary corrective action.

Disputes

- Example 1: Disputes arising in the performance of this Contract that are not resolved by agreement of the parties shall be decided in writing by the authorized representative of RTA's Deputy Director. This decision shall be final and conclusive unless within [10] days from the date of receipt of its copy, the Contractor mails or otherwise furnishes a written appeal to the [title of employee]. In connection with any such appeal, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its position. The decision of the Deputy Director shall be binding upon the Contractor and the Contractor shall abide be the decision.

- Example 2: The RTA and the Contractor intend to resolve all disputes under this Agreement to the best of their abilities in an informal manner. To accomplish this end, the parties will use an Alternative Dispute Resolution process to resolve disputes in a manner designed to avoid litigation. In general, the parties contemplate that the Alternative Dispute Resolution process will include, at a minimum, an attempt to resolve disputes through communications between their staffs, and, if resolution is not reached at that level, a procedure for review and action on such disputes by appropriate management level officials within the RTA and the Contractor's organization.

In the event that a resolution of the dispute is not mutually agreed upon, the parties can agree to mediate the dispute or proceed with litigation. Notwithstanding any provision of this section, or any other provision of this Contract, it is expressly agreed and understood that any court proceeding arising

out of a dispute under the Contract shall be heard by a Court de novo and the court shall not be limited in such proceeding to the issue of whether the Authority acted in an arbitrary, capricious or grossly erroneous manner.

Pending final settlement of any dispute, the parties shall proceed diligently with the performance of the Contract, and in accordance with the RTA's direction or decisions made thereof.

Performance during Dispute – Unless otherwise directed by the RTA, Contractor shall continue performance under this Contract while matters in dispute are being resolved.

Claims for Damages – Should either party to the Contract suffer injury or damage to person or property because of any act or omission of the party or of any of its employees, agents or others for whose acts it is legally liable, a claim for damages therefor shall be made in writing to such other party within a reasonable time after the first observance of such injury or damage.

Remedies – Unless this Contract provides otherwise, all claims, counterclaims, disputes and other matters in question between the RTA and the Contractor arising out of or relating to this agreement or its breach will be decided by arbitration if the parties mutually agree, or in a court of competent jurisdiction within the State in which the RTA is located.

Rights and Remedies – The duties and obligations imposed by the Contract documents and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law. No action or failure to act by the RTA or Contractor shall constitute a waiver of any right or duty afforded any of them under the Contract, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

IN WITNESS WHEREOF, the parties to these presents have hereunto set their hands the year and date first above written, being authorized thereto.

SAN LUIS OBISPO REGIONAL TRANSIT AUTHORITY

GEOFF STRAW
RTA Executive Director

By: _____

Date: _____

APPROVED AS TO FORM AND LEGAL EFFECT:

TIMOTHY MCNULTY
RTA Counsel

By: _____

Date: _____

CONTRACTOR

_____

By: _____

Date: _____

_____
Printed Name and Title
(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign)

By: _____
Printed Name and Title

Date: _____

Address for giving notices:

_____

_____

_____

PERFORMANCE BOND

KNOW ALL BY THESE PRESENTS: That

WHEREAS, the RTA Board of Directors has awarded to _____

_____

(hereinafter designated as "Principal") a contract for construction of the **RTA Bus Maintenance Facility**; and

WHEREAS, said Principal is required under the terms of said contract to furnish a bond for the faithful performance of said contract;

NOW, THEREFORE, we, the Principal and _____

_____,

as Surety, are held and firmly bound unto the San Luis Obispo Regional Transit Authority, (hereinafter called "RTA"), in the penal sum of _____

_____,

($ _____), lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

The condition of this obligation is such that if the above bounded Principal, his or its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions and agreements in the said contract and any alteration thereof made as therein provided, on his/her or their part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify and save harmless RTA, its officers, agents, and employees, as therein stipulated, then this obligation shall become null and void; otherwise it shall be and remain in full force virtue and effect.

And the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the same shall in any manner affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration, or additions to the terms of the contract or to the work or to the specifications.

In the event suit is brought upon this bond by RTA and judgment is recovered, Surety shall pay all costs incurred by RTA in such suit, including a reasonable attorney's fee to be fixed by the Court.

Death of the Principal shall not relieve Surety of its obligations hereunder.

IN WITNESS WHEREOF, one identical counterpart of this instrument, which shall for all purposes be deemed an original thereof, has been duly executed by Principal and Surety

above named, on the _____ day of _____, 2017.

_____ (Seal)

_____ (Seal)

_____ (Seal)
Principal

_____ (Seal)

_____ (Seal)

_____ (Seal)
Surety

_____

_____
Address

NOTE:
Signatures of those executing for Surety must be properly acknowledged.

PAYMENT BOND

KNOW ALL BY THESE PRESENTS: That

WHEREAS, the RTA Board of Directors has awarded to _____

_____

(hereinafter designated as "Principal") have entered into an agreement for construction of the **RTA BUS MAINTENANCE FACILITY**, which said Agreement, and all of the Contract Documents attached to or forming a part of said Agreement, are hereby referred to and made a part hereof; and

WHEREAS, pursuant to law, the Principal is required before entering upon the performance of the Work, to file a good and sufficient bond with the body by whom the contract is awarded, to secure claims to which reference is made in Sections 3247 through 3252, inclusive, of the Civil Code of California, and Sections 3181, 3110, 3111 and 3112 of the Civil Code of California,

NOW, THEREFORE, we, the Principal and the undersigned _____

_____

as corporate surety, are held and firmly bound unto the San Luis Obispo Regional Transit Authority, (hereinafter called "RTA"), and unto all laborers, materialmen, and other persons

referred to in said statutes in the sum of _____

_____ ($ _____), lawful money of the United States for the payment of which sum well and truly made, we bind ourselves, our heirs, executors, administrators, successors, or assigns, jointly and severally by these presents.

The condition of this obligation is such that if the said Principal, his/her or its heirs, executors, administrators, successors or assigns, or subcontractors, shall fail to pay any of the persons named in Civil Code Section 3181, or amounts due under the Unemployment Insurance Code with respect to work or labor performed by any such claimant, or any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of the Principal and his/her subcontractors pursuant to Section 13020 of the Unemployment Insurance Code, with respect to such work and labor, that the surety herein will pay for the same in an amount not exceeding the sum specified in this bond, otherwise the above obligation shall be void. In case suit is brought upon this bond, the said surety will pay a reasonable attorney's fee to be fixed by the court.

This bond shall inure to the benefit of any of the persons named in Civil Code Section 3181 as to give a right of action to such persons or their assigns in any suit brought upon this bond.

Should the condition of this bond be fully performed, then this obligation shall become null and void, otherwise it shall be and remain in full force, virtue, and effect.

And the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the same shall in any manner affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration, or additions to the terms of the contract or to the work or to the specifications.

Death of the Principal shall not relieve Surety of its obligations hereunder.

IN WITNESS WHEREOF one identical counterpart of this instrument, which shall for all purposes be deemed an original thereof, has been duly executed by the Principal and Surety above named, on the_____ day of _____, 2017.

_____ (Seal)

_____ (Seal)

_____ (Seal)
Principal

_____ (Seal)

_____ (Seal)

_____ (Seal)
Surety

_____

_____
Address

NOTE:
Signatures of those executing for Surety must be properly acknowledged.

SECTION 6. ***(BLANK)***

SECTION 7. ***(BLANK)***

SECTION 8. ***(BLANK)***

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SAN LUIS OBISPO REGIONAL TRANSIT AUTHORITY

SPECIAL PROVISIONS

FOR

RTA BUS MAINTENANCE FACILITY
SAN LUIS OBISPO, CA
CONTRACT NO. 1705

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<<<INSERT SECOND OF TWO PAGES OF SECTION 10 THAT INCLUDE ENGINEER'S STAMPS>>

SECTION 1. SPECIFICATIONS AND PLANS

1-1.01 SPECIFICATIONS AND PLANS

The work embraced herein shall be done in accordance with the Standard Specifications of the State of California, Department of Transportation, dated May 2006 (hereinafter called, "Standard Specifications"), the Standard Plans of the State of California, Department of Transportation, dated May 2015 (hereinafter called, "Standard Plans"), except to the extent said Standard Specifications and/or Standard Plans are modified by these Special Provisions or any other portion of the Contract Documents. Wherever State Agencies, Departments, or Officers are referred to in the above mentioned Standard Specifications and Standard Plans, the comparable RTA Agency, Department, or Officer having jurisdiction shall be meant thereby for the purpose of these Contract Documents.

The RTA hereby elects under Public Contract Code § 20396 to have said applicable provisions of the Standard Specifications and Standard Plans referenced above, including those provisions modified by these Special Provisions, governed by the State Contract Act to the extent, and only to the extent, one or both of the following conditions is satisfied: (1) the applicable provisions of the Standard Specifications or Standard Plans expressly refer to the State Contract Act; or (2) the RTA would lack the authority to implement the applicable provisions of the Standard Specifications or Standard Plans absent the RTA's election to have the RTA's implementation of the provisions governed by the State Contract Act.

No amendment by the Department of Transportation to the Standard Specifications shall apply to these Contract Documents unless the amendment is expressly set forth in these Special Provisions.

1-1.02 ORDER OF PRECEDENCE

In the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following order of precedence:

1. Permits and other governmental approvals;

2. Change Orders and Construction Change Directives, issued after execution of the Agreement;

3. Agreement;

4. Special Provisions;

5. Project Plans;

6. Revised Standard Specifications that are included in the Contract Documents;

7. Revised Standard Plans that are included in the Contract Documents;

8. Standard Specifications;

9. Standard Plans;

10. Bidding Documents.

In the event of conflicts or discrepancies within the Contract Documents, interpretations will be based on the following order of precedence:

1. Written numbers and notes on a drawing govern over graphics:
2. A detail drawing governs over a general drawing;
3. A detail specification governs over a general specification;
4. A specification in a section governs over a specification referenced by that section.

SECTION 2. PROPOSAL REQUIREMENTS AND CONDITIONS

2-1.01 PROPOSAL REQUIREMENTS AND CONDITIONS

Attention is directed to the provisions in Section 2, "Proposal Requirements and Conditions," of the Standard Specifications and these Special Provisions for the requirements and conditions which the bidder must observe in preparation and the submission of their bid.

Pursuant to Labor Code Section 1771.1, no contractor or subcontractor may be listed on the bid proposal for this construction project unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5. Pursuant to Labor Code Section 1771.1, no contractor or subcontractor may be awarded this construction contract unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5.

This Project is subject to compliance monitoring and enforcement by the Department of Industrial Relations, pursuant to Labor Code Section 1771.4. The bidder's bond shall conform to the bond form in the section titled "Bid Proposal and Forms" of the Contract Documents and shall be properly filled out and executed. The bidder's bond form included in the Contract Documents may be used.

The following provisions for Section 2, "Proposal Requirements and Conditions," of the Standard Specifications are hereby modified as set forth hereafter.

Section 2-1.03, "Examination of Plans, Specifications, Contract, and Site of Work," of the Standard Specifications is hereby amended by modifying the first sentence of the 5th paragraph to read: "Inspection of such records may be made at the RTA offices."

Section 2-1.05, "Proposal Forms" of the Standard Specifications, is hereby amended by substituting the words, "General and Special Provisions" for the words, "Proposal and Contract" in the first sentence of the 2nd paragraph and by substituting the words, "Notice to Bidders" for the words, "Notice to Contractors" in the first sentence of the 3rd paragraph. The 4th paragraph is hereby amended to read: "Proposal forms shall be obtained from the RTA offices, 179 Cross Street, San Luis Obispo, CA 93401." The 5th paragraph is hereby deleted.

Section 2-1.07, "Proposal Guaranty" of the Standard Specifications, is hereby amended by substituting the words, "made payable to the San Luis Obispo Regional Transit Authority" for the words, "made payable to the Director of Transportation" in the first paragraph. The 2nd paragraph is hereby amended by adding the following sentence, "The provisions of the Public Contract Code § 10181 are applicable to this contract." The first sentence of the last paragraph is hereby amended by substituting the words,

"General and Special Provisions" for the words, "Proposal and Contract". The last sentence of the last paragraph is hereby deleted.

Section 2-1.08, "Withdrawal of Proposals" of the Standard Specifications, is hereby amended by substituting the words, "RTA Executive Director" for the words, "Office Engineer, Division of Construction" in the first sentence. The last sentence is hereby amended by modifying it to read: "Any bid received at the RTA offices after the date and time specified in the Notice to Bidders shall not be considered and shall be returned to the bidder unopened nor may any bid be withdrawn after the time fixed in the public notice for the opening of bids."

Section 2-1.105, "Previous Disqualification, Removal or Other Prevention of Bidding", of the Standard Specifications, is hereby amended by deleting the first paragraph.

Section 2-1.108, "Compliance with Orders of the National Labor Relations Board", of the Standard Specifications, is hereby amended by modifying the last paragraph to read: "The statement required by said Section 10232 is included in the section titled "Bid Proposal and Forms" of the Contract Documents."

Section 2-1.11, "Ineligibility to Contract", of the Standard Specifications is hereby amended by modifying the last paragraph to read: "A form for the statement required by Section 10285.1 is included in the section titled "Bid Proposal and Forms" of the Contract Documents."

2-1.02 REQUIRED LISTING OF PROPOSED SUBCONTRACTORS

The designated subcontractors listed in the bidder's proposal shall list therein the name and address of all subcontractors to whom the bidder proposes to subcontract portions of the work in an amount in excess of 1/2 of one percent of the total bid, or in the case of bids for the construction of streets and highways, including bridges, in excess of 1/2 of the one percent or $10,000, whichever is greater, in accordance with the Subletting and Subcontracting Fair Practices Act commencing with Section 4100 of the Public Contract Code. The bidder's attention is invited to other provisions of said Act related to the imposition of penalties for a failure to observe its provisions by using unauthorized subcontractors or by making unauthorized substitutions.

The "DESIGNATION OF SUBCONTRACTORS" form for the designation of subcontractors, as required herein, is included in the section titled "Bid Proposal and Forms" of the Contract Documents and shall be completely filled out, signed by the bidder, and submitted with the bid proposal.

SECTION 3. AWARD AND EXECUTION OF CONTRACT

3-1.01 AWARD OF CONTRACT

Attention is directed to the provisions of Section 3, "Award and Execution of Contract," of the Standard Specifications and these Special Provisions for the requirements and conditions concerning award and execution of the contract.

The award of contract, if it be awarded, will be to the lowest responsible bidder whose proposal complies with all of the requirements prescribed. Such award, if made, will be made within 45 calendar days after the opening of proposals.

If the lowest responsible bidder refuses or fails to execute the contract, the RTA Board of Directors may award the contract to the second lowest responsible bidder. Such award, if made, will be made within 75 calendar days after the opening of proposals. If the second lowest responsible bidder refuses or fails to execute the contract, the RTA Board of Directors may award the contract to the third lowest responsible bidder. Such award, if made, will be made within 105 calendar days after the opening of proposals. The periods of time specified above within which the award of contract may be made shall be subject to extension for such further period as may be agreed upon in writing between the RTA and the bidder concerned.

3-1.02 CONTRACT BONDS

The successful bidder shall furnish two (2) bonds:

1. The Payment Bond to secure the claim payments of laborers, workers, mechanics, or materialmen providing goods, labor, or services under the contract. This bond shall be equal to one hundred percent (100%) of the total contract bid.

2. The Performance Bond to guarantee the faithful performance of the contract. This bond shall be equal to one hundred percent (100%) of the total contract bid.

Forms for the two (2) required bonds are included in the section titled "Bid Proposal and Forms" of the Contract Documents.

Surety on said bonds must agree that death of the Contractor shall not relieve the surety of its obligation hereunder. The said surety, for the value received, must stipulate and agree that all alterations, extension of time, extra and additional work, and other changes authorized by these Specifications or any part of the contract may be made without securing consent of the surety on the contract bonds, and such actions shall not in any way affect the obligations of the surety on the bonds.

Attention is directed to the provisions in Section 6-1.075, “Guarantee,” of the Amendments to the Standard Specifications.

3-1.03 EXECUTION OF CONTRACT

The contract shall be signed by the successful bidder and returned, together with the contract bonds, copy of insurance policies, and Certificates of Insurance, with documents to verify any self-insurance coverage within ten (10) calendar days, not including Saturdays, Sundays, and legal holidays, after the bidder has received the contract for execution.

The contract shall not be deemed executed by the successful bidder unless all of the above documents are received by the RTA with the signed contract within said time period. The bidder’s security may be forfeited for failure to execute the contract within the time specified.

SECTION 4. PROSECUTION AND PROGRESS OF THE WORK

4-1.01 GENERAL

Attention is directed to the provisions in Section 8, "Prosecution and Progress," of the Standard Specifications and these Special Provisions.

The Contractor shall begin work within ten (10) working days from the date of receipt of the RTA's "Notice to Proceed."

This work shall be diligently prosecuted to completion before the expiration of 75 WORKING DAYS from the date of receipt of the RTA's "Notice to Proceed." The Contractor shall not begin work in advance of receiving the RTA's "Notice to Proceed."

4-1.02 LIQUIDATED DAMAGES

Attention is directed to Section 8-1.07, "Liquidated Damages," of the Standard Specifications and these Special Provisions.

It is agreed by the parties to the contract that in the case all the work called for under the contract in all parts and requirements is not finished or completed within the number of working days as set forth in these Special Provisions, damage will be sustained by the RTA, and that it is and will be impractical and extremely difficult to ascertain and determine the actual damage which the RTA will sustain in the event of and by reason of such delay; and it is therefore agreed that the Contractor will pay to the RTA the sum of FIVE HUNDRED DOLLARS ($500.00) per day for each and every calendar days delay in finishing the work in excess of the number of working days prescribed above as liquidated and agreed damages; and the Contractor agrees to pay said liquidated damages herein provided for, and further agrees that the RTA may deduct the amount thereof from any moneys due or that may become due the Contractor under the contract.

4-1.03 CONTRACT SUBMITTALS

The Contractor shall submit the following to the RTA Executive Director and the RTA's contracted Engineer within ten (10) calendar days, not including Saturdays, Sundays, and legal holidays, of the Contractor's receipt of the fully executed contract:

- Storm Water Pollution Prevention Plan or Water Pollution Control Plan (as required by the Special Provisions) – 3 copies

- Construction and Demolition Recycling Plan

- Proposed Progress Schedule

- Identity of Project Safety Officer

The Contractor shall allow ten (10) days, not including Saturdays, Sundays, and legal holidays, for the Engineer's review. The Contractor shall revise and resubmit the submittal within five (5) days, not including Saturdays, Sundays, and legal holidays, of receipt of the Engineer's comments. No claim will be allowed for damages or extensions of time because of delays in work resulting from rejection of the submittals or from revisions and resubmittal of the submittals. The number of working days within which the Contractor must complete the work under this contract shall be reduced by 1 working day for each day the Contractor fails to submit or resubmit the required submittal to the Engineer within the prescribed time allowances.

The Engineer's review and approval shall not waive any contract requirements and shall not relieve the Contractor from complying with Federal, State, and local laws, regulations, and requirements. No claim will be allowed for damages or extensions of time because of delays in work resulting from any documents submitted by Contractor to any federal, state, or local agency that are determined by such agency to be incomplete or not in compliance with any applicable laws regulations, or requirements.

4-1.04 MANDATORY PRE-CONSTRUCTION CONFERENCE

Prior to the issuance of the "Notice to Proceed" a mandatory pre-construction conference will be held at the office of the Construction Engineer for the purpose of discussing with the Contractor the scope of work, contract drawings, specifications, existing conditions, materials to be ordered, equipment to be used, and all essential matters pertaining to the prosecution and the satisfactory completion of the project as required. The Contractor's representatives at this conference shall include major superintendents and shall include major subcontractors' representatives. So long as the RTA provides the Contractor at least five calendar days advance notice of the date and time of said conference. The number of working days within which the Contractor must complete the work under this contract shall be reduced by 1 working day for each day said conference is delayed by the Contractor's failure to attend the conference with the appropriate representatives.

A written record of attendance and items discussed will be made by the Engineer and a copy of the record kept in the Engineer's files. If for any reason a preconstruction conference is not held the Engineer will notify the Contractor in writing.

SECTION 5. GENERAL AND MISCELLANEOUS

5-1.01 DEFINITIONS AND TERMS

Attention is directed to the provisions in Section 1, "Definitions and Terms," of the Standard Specifications with the modifications as set forth hereafter.

Section 1-1.13, "Department," of the Standard Specifications is hereby amended to read: "The San Luis Obispo Regional Transit Authority."

Section 1-1.15, "Director," of the Standard Specifications is hereby amended to read: "The Executive Director of the San Luis Obispo Regional Transit Authority."

Section 1-1.18, "Engineer," of the Standard Specifications is hereby amended to read: "Any duly authorized representative contracting with the San Luis Obispo Regional Transit Authority acting within the scope of the particular duties delegated to them."

Section 1-1.19, "Engineer's Estimate," of the Standard Specifications is hereby amended to read: "The contract bid form indicating the approximate quantities of work to be performed as contained in the Bid Proposal."

Section 1-1.26, "Liquidated Damages," of the Standard Specifications is hereby amended to read: "The amount prescribed in Section 4, "Prosecution and Progress of the Work," of the Special Provisions pursuant to Government Code Section 53069.85, to be paid to the RTA or to be deducted from any payments due, or to become due, the Contractor for each day's delay in completing the whole or any specified portion of work beyond the time allowed in the Contract Documents."

Section 1-1.39, "State," of the Standard Specifications is hereby amended to read: "The State of California and its political subdivision, the San Luis Obispo Regional Transit Authority."

Section 1-1.40, "State Contract Act," of the Standard Specifications is hereby amended to read: "Only those sections or provisions of Chapter 1 of Part 2 of Division 2 of the Public Contract Code (Section 10100 et seq.) which are specifically incorporated into this contract are applicable to this contract. All other sections and provisions of Chapter 1 of Part 2 of Division 2 of the Public Contract Code are not applicable to this contract and do not constitute a part hereof."

5-1.02 SCOPE OF WORK

Attention is directed to the provisions in Section 4, "Scope of Work," of the Standard Specifications with the modifications as set forth hereafter.

Section 4-1.03B(1), “Increases of More Than 25 Percent,” of the Standard Specifications is amended by adding the following sentence to the last paragraph: “Additionally, such written request by the Contractor shall be accompanied by adequate, detailed data to support actual costs incurred.”

Section 4-1.03B(2), “Decreases of More Than 25 Percent, “ of the Standard Specifications is hereby amended by modifying the first sentence of the first paragraph to read: “Should the total pay quantity of any item of work required under the contract be less than 75 percent of the Engineer’s Estimate therefor, the Engineer may reserve the right to make no adjustment in the corresponding unit price for that item if he/she so elects, except that an adjustment in compensation pursuant to this Section will be made if requested in writing by the Contractor. Additionally, such written request by the Contractor shall be accompanied by adequate, detailed data to support actual costs incurred.”

Section 4-1.03D, “Extra Work,” of the Standard Specifications is hereby amended by adding the following sentences to the 2nd paragraph: “All extra work shall be reported daily by the Contractor upon forms furnished by the Engineer, signed by both parties at the conclusion of each workday. Said daily extra work reports shall thereafter be considered the true record of the extra work performed and shall become the basis of payment therefor.”

5-1.03 CONTROL OF WORK

The Engineer will not have control over, be in charge of, nor be responsible for construction means, methods, techniques, sequences, or procedures, or for the safety precautions and programs in connection with the work, since these are solely Contractor’s responsibility, unless otherwise required by the Contract Documents.

Attention is directed to Section 5, “Control of Work,” of the Standard Specifications with the modifications as set forth hereafter.

Section 5-1.07, “Lines and Grades,” of the Standard Specifications is hereby amended to read: “Stakes or marks shall be the responsibility of the Contractor and will be set by the Contractor’s Surveyor as necessary to establish the lines and grades required for completion of the work specified in these specifications, on the plans, and in the Special Provisions.

In the event stakes and marks are destroyed or damaged, the stakes and marks will be replaced by the Contractor’s Surveyor at no cost to the RTA. The Contractor shall be responsible for all costs associated with setting, replacement or restoration of construction stakes and marks.

Section 5-1.116, “Differing Site Conditions,” of the Amendments to the Standard Specifications is hereby amended by including the following language from Section 7104 of the Public Contract Code: “7104. Any public works contract of a local public entity which involves digging trenches or other excavations that extend deeper than four feet below the surface shall contain a clause which provides the following: (a) That the contractor shall promptly, and before the

following conditions are disturbed, notify the public entity, in writing, of any: (1) Material that the contractor believes may be material that is hazardous waste, as defined in Section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law. (2) Subsurface or latent physical conditions at the site differing from those indicated. (3) Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the contract. (b) That the public entity shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the contractor's cost of, or the time required for, performance of any part of the work shall issue a change order under the procedures described in the contract. (c) That, in the event that a dispute arises between the public entity and the contractor whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the contractor's cost of, or time required for, performance of any part of the work, the contractor shall not be excused from any scheduled completion date provided for by the contract, but shall proceed with all work to be performed under the contract. The contractor shall retain any and all rights provided either by contract or by law which pertain to the resolution of disputes and protests between the contracting parties."

5-1.04 PREVAILING WAGE

Attention is directed to the provisions in Section 7-1.01A(2), "Prevailing Wage," of the Standard Specifications and these Special Provisions.

Pursuant to the provisions of Section 1773 of the California Labor Code, the RTA Board of Directors has obtained from the Director of the California Department of Industrial Relations the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work for the locality in which the work is to be performed for each needed craft, classification, or type of workman. Copies of said prevailing rate of per diem wages are on file in the RTA offices and available at the California Department of Industrial Relations' web site at: www.dir.ca.gov/DLSR/PWD.

The wage rates determined by the Director of Industrial Relations refer to expiration dates. Prevailing wage determinations with a single asterisk after the expiration date are in effect on the date of advertisement for bids and are good for the life of the contract. Prevailing wage determinations with double asterisks after the expiration date indicate that the wage rate to be paid for work performed after this date has been determined. If work is to extend past this date, the new rate shall be paid and incorporated in the contract. The Contractor shall contact the Department of Industrial Relations as indicated in the wage rate determinations to obtain predetermined wage changes.

Pursuant to Section 1773.2 of the Labor Code, a copy of said general prevailing rates shall be posted by the Contractor in a prominent place at the site of the work.

Additionally, the Director of Industrial Relations has reserved the right to issue corrected wage determinations for certain crafts contained in the prevailing wage determinations applicable to this contract. These corrected prevailing wage rates shall apply to this contract in the same manner as if they had been published in the prevailing wage determinations applicable to this contract. These revisions to the general prevailing wage rates are on file at the RTA offices and available at the California Department of Industrial Relations' web site at: www.dir.ca.gov/DLSR/PWD.

Additionally, changes in general prevailing wage determinations which conform to Labor Code Section 1773.6 and Title 8 California Code of Regulations Section 16204 shall apply to the contract when issued by the Director of Industrial Relations at least ten (10) calendar days prior to the date of the Notice to Bidders for the project. Changes, if any, to the general prevailing wage rate will be on file at the RTA offices and available at the California Department of Industrial Relations' web site at: www.dir.ca.gov/DLSR/PWD.

5-1.05 PRESERVATION OF PROPERTY

Attention is directed to the provisions in Section 7-1.11, "Preservation of Property," of the Standard Specifications is hereby amended by adding the following to the end of the second paragraph: "Pursuant to Section 8771(b) of the California Business and Professions Code, existing survey monuments that control the location of subdivisions, tracts, boundaries, roads, streets, or highways, or provide survey control that are within or adjacent to the Contractor's operations, shall be located and referenced by or under the direction of a licensed land surveyor or registered civil engineer prior to the time when any streets, highways, other rights-of-way, or easements are improved, constructed, reconstructed, maintained, resurfaced, or relocated. In the event that any existing survey monument is disturbed in any way by the Contractor's operations as determined by a licensed land surveyor or registered civil engineer, they shall be reset accordingly and a corner record shall be filed with the county surveyor prior to the recording of a certificate of completion for the project. Full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in locating existing survey monuments by or under the direction of a licensed land surveyor or registered civil engineer, resetting any disturbed survey monument and filing a corner record, shall be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed therefor."

5-1.06 PROGRESS SCHEDULE

Progress schedules will be required for this contract and shall conform to the provisions in Section 8-1.04, "Progress Schedules," of the Standard Specifications.

The Contractor shall submit to the Engineer a practicable progress schedule in conformance with the provisions in Section 4-1.03, "Contract Submittals," of these Special Provisions, and within 5 working days of the Engineer's written request at any other time.

5-1.07 MEASUREMENT AND PAYMENT

Attention is directed to the provisions in Section 9, "Measurement and Payment," of the Standard Specifications with the modifications as set forth hereafter.

The 13th paragraph of Section 9-1.01, "Measurement of Quantities," of the Standard Specifications shall be amended to read as follow: "Whenever pay quantities of materials are determined by weighting, the scales shall be operated by a weighmaster licensed in accordance with provisions of the California Business and Professions Code, Division 5, Chapter 7. The Contractor shall furnish a Public Weighmaster's certificate, or a private Weighmaster's certificate (load slip) with each load and a Daily Record of Platform Scale Weights. The Weighmaster's certificates shall be numbered consecutively to correspond with the Daily Record of Platform Scale Weights. The Daily Record of Platform Scale Weights shall be prepared using a form supplied by the RTA and shall be delivered to the Engineer at the end of each day. Contractor shall provide the RTA sufficient advance notice so as to enable a representative of the RTA to be present to witness the Weighing and check the Daily Record of Platform Scale Weights.

Should the Contractor, in conjunction with or subsequent to the assertion of a potential claim, request inspection and copying of documents or records in the possession of the RTA that pertain to the potential claim, the Contractor shall make its records of the project, as deemed by the RTA to be pertinent to the potential claim, available to the RTA for inspection and copying."

Section 9-1.05, "Stop Notices," of the Standard Specifications is hereby amended by adding the following statement: "Stop notice information may be obtained from the RTA Executive Director."

Section 9-1.06 "Partial Payments," of the Standard Specifications is hereby amended by deleting the first sentence of the first paragraph and inserting the following at the beginning of the section:

General

Based upon Applications for Payment submitted to the Engineer by the Contractor, the RTA shall make progress payments to the Contractor as provided below and elsewhere in the Contract Documents. The pay period covered by each Application for Payment shall be one calendar month ending on the 20th day of the month. The Contractor shall submit each Application for Payment to the Engineer by the last day of each month.

Applications for Payment shall indicate the percentage of completion of each portion of the Work for which a lump sum price is specified as of the end of the period covered by the Application for Payment.

Application for Payment

Contractor shall submit to the Engineer an Application for Payment (on a form provided by the Engineer) for Work completed in accordance with the measurement of quantities. Such application shall be supported by such data substantiating the Contractor's right to payment as the Engineer may require.

Each Application for Payment shall be reviewed by the Engineer as soon as practicable after receipt for the purpose of determining that the Application for Payment is a "proper" payment request, accurately reflecting the value of Work completed. An Application for Payment shall be deemed "proper" only if it is properly completed and submitted on the proper forms. The Engineer shall have the right to adjust any estimate of quantity and to subsequently correct any error made in any Application for Payment.

The RTA shall make payment to the Contractor not later than thirty (30) calendar days after the Engineer's verification and approval that an Application for Payment is undisputed and properly submitted.

The Contractor may elect to allow an alternative procedure for processing monthly applications for payment whereby the Engineer prepares monthly progress payment estimates. To initiate such alternative procedure, the Contractor shall submit to the Engineer a written request (before the 10th day of the month) which authorizes the Engineer to prepare the monthly progress payment estimates for all remaining payments due under the Contract. Under such alternative procedure, the RTA, once in each month, shall cause an estimate in writing to be made by the Engineer, and the Contractor's signature approving the progress payment estimate shall be considered to be "receipt of an undisputed and properly submitted payment request" from the Contractor under Section 20104.50 of the California Public Contract Code, and the RTA shall make payment to the Contractor within thirty (30) calendar days after such receipt.

Applications for Payment shall include the following:

Contractor's Verification: Contractor has carefully prepared this entire document and hereby attests that the quantities and amounts stated herein accurately represent the total work that has been performed in compliance with the Contract Documents. Contractor will pay any released retainage to subcontractor due to accepted complete work of the Subcontractors portion of the work within 30 days of receipt of payment as required under 49 CFR Part 26 sub section 26.29(b)(3).

Under ***the alternative procedure*** described above, progress pay estimates prepared by the Engineer shall include the following:

Contractor's Verification: Contractor has carefully reviewed this entire document and hereby attests that the quantities and amounts stated herein accurately represent the total work that

has been performed in compliance with the Contract Documents. Contractor will pay any released retainage to subcontractor due to accepted complete work of the Subcontractors portion of the work within 30 days of receipt of payment as required under 49 CFR Part 26 sub section 26.29(b)(3).

Section 9-1.06, "Partial Payments," of the Standard Specifications is hereby amended by modifying the third paragraph to read, "In the event the RTA is withholding retainage for incremental portions of work pursuant to Section 5-1.17 "Prompt Payment of Funds Withheld to Subcontractors," of these Special Provisions, or for acceptable materials pursuant to the first paragraph of said Section 9-1.06: (1) The RTA shall retain 5 percent of the estimated value of the work done and/or 5 percent of the estimated value of materials eligible for partial payment that has been furnished and delivered and unused or furnished and stored in accordance with the provisions in the first paragraph of Section 9-1.06 as part security for the fulfillment of the contract by the Contractor from each progress payment made; and (2) the RTA shall pay respective retained amount(s) with subsequent payments upon acceptance of portions of the work, as determined by the Engineer."

Section 9-1.065, "Payment of Withheld Funds," of the Standard Specifications is hereby amended to read: "Attention is directed to Section 9-1.06, "Partial Payments," of the Standard Specifications, to these Special Provisions and in particular to the retention provisions therein. Upon the Contractor's request, the RTA will make payment to the Contractor of funds withheld to ensure performance of this contract if the Contractor, in accordance with Public Contract Code Section 22300, deposits in escrow with the RTA, or with a state or federally chartered bank in California securities equivalent to the amount withheld. Securities eligible for investment under this section shall include bank or savings and loan certificates of deposit, the securities enumerated in Government Code Section 16430, interest bearing demand deposit accounts, standby letters of credit, or any other security mutually agreed to by the Contractor and the RTA. Upon satisfactory completion of the contract, the securities shall be returned to the Contractor. Alternatively, the Contractor may request that the RTA make payment of retention earned directly to the escrow agent as provided in subdivision (b) of Section 22300 of the Public Contract Code.

5-1.08 CLAIMS

This Section 5-1.08 (including its subsections below) replace and supersede Section 9-1.04, "Notice of Potential Claim," of the Standard Specifications.

A "Claim" means any separate demand or assertion by the Contractor that requests an adjustment of Contract Price (including any requests for payment of additional money) and/or an adjustment of Contract Times (including any requests for time extension), or requests any other form of relief or remedy whatsoever relating to this Contract, regardless of whether the basis of demand or assertion arises from an interpretation of the Contract Documents, an action or inaction of one of the parties or its representative(s), or any other event, issue, or circumstance whatsoever.

Only a Notice of Final Claim submitted in strict compliance with all of the requirements of this Section 5-1.08 (including but not limited to the requirements relating to an Initial Notice of Potential Claim and Supplemental Notice(s) of Potential Claim) shall be deemed a valid Claim under these Contract Documents.

For purposes of this Section 5-1.08, any and all work relating to a Claim shall be referred to as "Disputed Work".

5-1.08A GENERAL

5-1.08A(1) Mandatory Procedure and Condition Precedent

(a) All Claims must be in strict compliance with the requirements of this Section 5-1.08, regardless of whether the Claim is at the "Potential Claim" stage (described below), or is a "Final Claim" (referenced below). All costs incurred by the Contractor in complying with the provisions of this Section 51.08 shall be borne solely by the Contractor, shall be the Contractor's sole responsibility and shall be non-reimbursable.

(b) Compliance with these requirements is a condition precedent to the Contractor's ability to exercise any rights or remedies that may otherwise be available to Contractor under the Contract Documents or any applicable Laws or Regulations relating to the Claim. No action or inaction by the Contractor or the Engineer to try to resolve any Claim(s) through agreement (including Change Order), mediation, settlement, or any other means shall excuse the Contractor from complying with the requirements of this Section 5-1.08.

(c) Section 5-1.08 shall be interpreted in a manner consistent with Public Contract Code sections 9204 and 20104 - 20104.6. To the extent there is any conflict between Section 5-1.08 and these statutes, the statutory provisions shall prevail. The text of Public Contract Code sections 9204 and 20104 -20104.6 is attached to these Contract Documents as Section 15 "Public Contract Code Sections 9204 and 20104 - 20104.6."

(d) In the event of any conflict between Section 5-1.08 and any other language in the Contract Documents, the provisions of Section 5-1.08 shall take precedence over any such conflicting language.

5-1.08A(2) Contractor's Continuing Obligations.

(a) At all times during the processing of the Contractor's Claim, the Contractor shall diligently proceed with the performance of the Disputed Work and other Work, unless otherwise specified or directed by the Engineer.

(b) The Contractor shall provide the Engineer the opportunity to examine the site of the Disputed Work as soon as reasonably possible, and in no event later than 24 hours after the event, issue, or circumstance from which the Claim arises. Throughout the processing of the Contractor's Claim, the Contractor shall provide the Engineer a reasonable opportunity to examine the site of the Disputed Work, and in no event shall access be denied for more than 24 hours of the Engineer's written request therefor.

(c) The Contractor shall promptly respond to any requests for further information or documentation regarding the Contractor's Claim. If the Contractor fails to provide an adequate written response to the Engineer within fifteen (15) days of the Engineer's written request for such further documentation or information, the Contractor shall be deemed to have waived its Claim. If the further documentation or information requested by the Engineer would, in the opinion of the Engineer, reasonably take the Contractor more than fifteen (15) days to comply with, the written request shall provide the Contractor a specific response deadline that is commensurate to a reasonable response time.

(d) Throughout the performance of the Disputed Work, the Contractor shall maintain records that provide a clear distinction between the incurred direct costs of Disputed Work and other Work. The Contractor shall allow the Engineer prompt access to those Contractor records that the Engineer deems necessary to evaluate the Claim, and in no event shall access be denied for more than five (5) days of the date of the Engineer's written request. The Contractor's failure to comply with the provisions of this Section 5-1.08 shall constitute a waiver of the Contractor's Claim.

(e) All Subcontractor's and material supplier's claims of any type shall be brought only through Contractor pursuant to the provisions of this Section 5-1.08. Under no circumstances shall any Subcontractor or material supplier make any direct claim against the RTA. All requirements in this Section relating to the Engineer's right to request further information and documentation regarding a Claim, and the Engineer's right to direct access to records deemed relevant to a Claim, shall apply equally to any such information, documentation or records of a subcontractor or material supplier relating to a pass-through claim submitted by the Contractor.

(f) Except where provided by law, or elsewhere in these Contract Documents, THE RTA SHALL NOT BE LIABLE FOR SPECIAL OR CONSEQUENTIAL DAMAGES AND THE CONTRACTOR SHALL NOT INCLUDE THEM IN ITS CLAIMS. Contractor shall be limited in its recovery on any Claim(s) to the adjustments allowed in the Contract Documents.

(g) During each step in the processing of the Contractor's Claim, each notice shall be accompanied by the Contractor's written statement that the adjustment or relief claimed is the entire adjustment or relief to which the claimant believes it is entitled as a result of the event, issue, or circumstance giving rise to the Claim.

(h) The Contractor shall be responsible for providing written evidence of the date any of the notices referenced in Section 5-1.08 above were provided to Engineer, and shall provide Engineer a copy of such written evidence within five (5) days of a request thereof. Such evidence shall be either a written receipt of actual delivery from U.S. Postal Service or other reputable delivery service, or by the recipient's written acknowledgement of receipt.

(i) The rights of the Engineer to request further records, documents, or information from the Contractor regarding a Claim are for the sole benefit of the Engineer, and may be exercised at his/her sole discretion. Any failure by the Engineer to exercise its rights does not provide the Contractor any excuse for not providing all of the records, documents, and other information it is required to provide under Section 5-1.08 or any other provision of the Contract Documents.

(j) Contractor's compliance with the provisions of this Section 5-1.08 shall not excuse Contractor's failure to comply with any additional requirements set forth in the Contract Documents, including but not limited to, any provisions relating to Contractor's obligation to provide any notice, information, documentation, inspections, site access, or any other requirements relating to any event, issue, or circumstance relating to the Contract.

(k) Under no circumstances may the Contractor submit an Initial Notice of Potential Claim, Supplemental Notice of Potential Claim, or Notice of Final Claim after the date of final payment. Any such notices submitted after the date of final payment shall be null and void.

(l) All of the above requirements are applicable during each and every step in the processing of the Contractor's Claim, and are applicable regardless of whether the Claim is at the "Potential Claim" stage or is a "Final Claim". The RTA reserves the right to reject any information or documentation submitted by a Contractor after any applicable time deadline for submitting the information or documentation set forth in this Section.

5-1.08A(3) Claim Identification Number

(a) The Contractor shall assign an exclusive identification number for each potential Claim, determined by chronological sequencing, based on the date of the potential Claim. The nature and circumstances involved in the dispute shall remain consistent throughout the processing of the Claim.

(b) The exclusive identification number for each Claim shall be used on the following corresponding documents:
    i. Initial Notice of Potential Claim.
    ii. Supplemental Notice of Potential Claim.

iii. Notice of Final Claim.
iv. Contractor's written statement of Claims

5-1.08A(4) Initial Notice of Potential Claim

(a) Promptly upon becoming aware of any event, issue, or circumstance which the Contractor believes provides a basis for an adjustment of Contract Price and/or Contract Times, or other relief, Contractor shall provide a signed written Initial Notice of Potential Claim to the Engineer. The Initial Notice of Potential Claim shall be submitted before commencing any Disputed Work (except when exigent circumstances require immediate action by the Contractor), or within five (5) days of the event, issue, or circumstance from which the Claim arises, whichever is earlier.

(b) The Initial Notice of Potential Claim shall clearly state the Contractor's grounds for seeking an adjustment in Contract Price and/or Contract Times or other relief, the nature and circumstances of the Disputed Work, the relief or adjustment sought by the Contractor for the Disputed Work. The Initial Notice of Potential Claim shall be submitted on a form furnished by the Engineer and shall be certified under penalty of perjury with reference to the California False Claims Act, Government Code Sections 12650-12655.

(c) After reviewing the Initial Notice of Potential Claim, the Engineer may provide a written response thereto or may decide to delay providing a response until the Contractor provides further information regarding the potential Claim pursuant to the provisions of this Section 5-1.08.

5-1.08A(5) Supplemental Notice of Potential Claim

(a) Within fifteen (15) days of submitting the Initial Notice of Potential Claim, the Contractor shall submit a signed Supplemental Notice of Potential Claim to Engineer that provides the following information:

i. The complete nature and circumstances of the dispute that caused the potential Claim.

ii. The contract provisions that provide the basis of the potential Claim.

iii. The requested adjustment of Contract Price, if any, and the estimated cost of the potential Claim, including an itemized breakdown of individual costs and how each estimate was determined.

iv. The requested adjustment of Contract Time, if any, and a time impact analysis of the schedule that illustrates the effect on the scheduled completion date due to schedule changes or disruptions.

(b) The information provided by the Contractor shall provide the Contractor's complete reasoning for additional compensation or adjustments and shall be as complete as reasonably possible.

(c) The Supplemental Notice of Potential Claim shall be submitted on a form furnished by Engineer and shall be certified under penalty of perjury with reference to the California False Claims Act, Government Code Sections 12650-12655. If at any time the estimated cost of the potential Claim or effect on the Progress Schedule changes, Contractor shall update information in items 3 and 4 above as soon as the change is recognized and submit this information to Engineer.

(d) If the Disputed Work is not completed within thirty (30) days, the Contractor shall, every thirty (30) days until the Disputed Work ceases, submit to the Engineer an updated Supplemental Notice of Potential Claim that shall update and quantify all of the information required in the Supplemental Notice of Potential Claim. The Contractor's failure to so quantify costs and schedule impacts every thirty (30) days shall result in a waiver of the Claim for that 30-day period. Any supplemental notice or updated notice that states that the requested adjustment of Contract Price and/or Contract Time will be provided or determined at a later date, or that any damages, costs, schedule impacts, and/or any other analysis will be provided or determined at a later date, shall be deemed to be not in compliance with this Section 5-1.08, and shall result in the Contractor waiving its Claim.

(e) After reviewing the Supplemental Notice of Potential Claim or updated Supplemental Notice of Potential Claim, the Engineer may provide a written response thereto or may decide to delay providing a response until the Contractor provides further information regarding the potential Claim pursuant to the provisions of this Section 5-1.08.

5-1.08A(6) Notice of Final Claim.

As soon as reasonably practical upon completion of the Disputed Work, and no later than thirty (30) days after completion of the Disputed Work, the Contractor shall submit to the Engineer a Notice of Final Claim containing a full and final documentation of the Claim including, but not limited to, the following information:

(a) A detailed factual narration of events fully describing the nature and circumstances that caused the dispute, including, but not limited to, necessary dates, locations, and items of Work affected by the dispute.

(b) The specific provisions of the Contract that support the Claim and a statement of the reasons these provisions support and provide a basis for entitlement of the Claim.

(c) When additional monetary compensation is requested, the exact amount requested calculated in conformance with the Contract Documents and shall include an itemized breakdown of individual costs. These costs shall be segregated into the following cost categories:

    i. Labor – A listing of individuals, classifications, regular hours and overtime hours worked, dates worked, hourly labor rates, and other pertinent information related to the requested reimbursement of labor costs.

    ii. Materials – Invoices, purchase orders, location of materials either stored or incorporated into the work, dates materials were transported to the project or incorporated into the work, and other pertinent information related to the requested reimbursement of material costs.

    iii. Equipment – Listing of detailed description (make, model, and serial number), hours of use, dates of use, and equipment rates. Equipment rates shall be at the applicable State rental rate as listed in the Department of Transportation publication entitled “Labor Surcharge and Equipment Rental Rates,” in effect when the Disputed Work was performed.

    iv. Other categories as specified by Contractor or Engineer.

(d) When an adjustment of Contract Time is requested the following information shall be provided:

    i. The chronology of the specific dates for which Contract Time is being requested.

    ii. The specific reasons for entitlement to a Contract Time adjustment.

    iii. The specific provisions of the Contract that provide the basis for the requested Contract Time adjustment.

    iv. A detailed time impact analysis of the schedule. The time impact analysis shall show the effect of changes or disruptions on the scheduled completion date to demonstrate entitlement to a Contract Time adjustment.

(e) The listing, identification, and production of copies of all documents the Contractor believes support its Claim and the date, time, circumstances, details and substance of any oral communications that the Contractor believes support the Claim.

The Notice of Final Claim shall be submitted on a form furnished by the Engineer and shall be certified under penalty of perjury with reference to the California False Claims Act, Government Code Sections 12650-12655.

No Notice of Final Claim will be considered that does not have the same nature and circumstances, and basis of Claim as those specified on the Initial and Supplemental Notices of Potential Claim.

5-1.08A(7) Response to Notice of Final Claim.

(a) Date of Final Decision in Response to Final Claim – In the event a valid written decision is not provided to the Contractor within the time prescribed in this Section 5-1.08, the Claim shall be deemed denied on the last day a written response was due. The date upon which the Claim is approved or denied pursuant to the provisions of this Section 5-1.08, shall constitute the date of the final decision on the Claim under the provisions of this Section 5-1.08. The date of the final decision on a Claim can only be changed by a subsequent writing signed by Engineer and RTA that expressly states that the date of the final decision on the Claim has been changed to a new specific date."

(b) Public Contract Code Requirements for Claims Less Than or Equal to $375,000.

i. Written Response to Claims of less than $50,000 – For Claims of less than fifty thousand dollars ($50,000), the Engineer shall respond in writing to the Notice of Final Claim within forty-five (45) days of receipt thereof, or may request, in writing, within thirty (30) days of said receipt, any additional documentation relating to the Claim or any defenses to the Claim the RTA may have against the Contractor. The Contractor shall comply with the request within the reasonable time deadlines provided by the Engineer in the request. If additional information is thereafter required, it shall be requested and provided upon mutual agreement of the RTA and the Contractor. The written response to the Notice of Final Claim shall be submitted to the Contractor within fifteen (15) days after receipt of the further documentation or within a period of time no greater than that taken by the Contractor in producing the additional information, whichever is greater.

ii. Written Response to Claims Over $50,000 and Less Than or Equal to $375,000 – For Claims of over fifty thousand dollars ($50,000) and less than or equal to three hundred seventy-five thousand dollars ($375,000), the Engineer shall respond in writing to the Notice of Final Claim within sixty (60) days of receipt thereof, or may request, in writing, within thirty (30) days of said receipt, any additional documentation relating to the Claim or any defenses to the Claim the County may have against the Contractor. The Contractor shall comply with the request within the reasonable time deadlines provided by Engineer in the request. If additional information is thereafter required, it shall be requested and

provided upon mutual agreement of the RTA and the Contractor. The written response to the Notice of Final Claim shall be submitted to the Contractor within thirty (30) days after receipt of the further documentation, or within a period of time no greater than that taken by the Contractor in producing the additional information or requested documentation, whichever is greater.

iii. Right to Meet and Confer For Claims Less Than or Equal to $375,000 – For Claims less than or equal to $375,000, if the Contractor disputes the written response to the Claim, or if a written response is not submitted within the time prescribed above, the Contractor may so notify the Engineer and RTA, in writing, either within fifteen (15) days of receipt of the written response or within fifteen (15) days of the Engineer's failure to respond within the time prescribed, respectively, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon such a timely demand by the Contractor, the Engineer shall schedule a meet and confer conference within thirty (30) days for settlement of the dispute. Within thirty (30) days after such conference, a final written response to the Claim shall be issued which will serve as the new final decision on the Claim. Pursuant to Public Contract Code section 20104.6, the RTA shall not fail to pay money as to any portion of a Claim which is undisputed, except as otherwise provided in the Contract Documents.

(c) For Claims Greater Than $375,000 – For Claims over three hundred seventy-five thousand dollars ($375,000), the Engineer shall respond in writing to the Notice of Final Claim within sixty (60) days of receipt thereof Claim, or may request, in writing, within forty-five (45) days of said receipt, any additional information or documentation relating to the Claim or any defenses to the Claim the RTA may have against the Contractor. The Contractor shall comply with the request within the reasonable time deadline provided by the Engineer in the request. If any additional information is thereafter requested by the Engineer, it shall likewise be provided by the Contractor within the reasonable time deadline provided by the Engineer in such follow-up request. The written response to the Notice of Final Claim shall be submitted to the Contractor within thirty (30) days after receipt of such further information and documentation, or within a period of time no greater than that taken by the Contractor in producing the additional information or documentation, whichever is greater. The Contractor may request an informal conference to meet and confer for settlement of the issues in dispute, but the Contractor shall have no right to demand such a conference. Neither the requesting of any such conference by the Contractor or the Engineer, nor the holding of such conference shall affect the date of the final decision on the Claim. No written communications of the Engineer and/or the RTA sent to the Contractor after any such conference will change the date of the final decision on the Claim unless the writing expressly states that the date of the final decision is being changed to a new specific date.

(d) Public Contract Code Section 9204 – If a Notice of Final Claim (submitted in compliance with all of the requirements of this Section 5-1.08) is sent to the RTA by registered mail or certified mail with return receipt requested, the provisions of Public Contract Code (PCC) Section 9204 shall be applicable to the extent the Notice of Final Claim states a Claim under PCC 9204.

5-1.08A(8) Exclusive Remedy

The administration of a Claim as provided in this Section 5-1.08, including the Contractor's performance of its duties and obligations specified in this Section 5-1.08 is the Contractor's sole and exclusive remedy for disputes of all types pertaining to the payment of money, extension of time, the adjustment or interpretation of the Contract Documents terms or other contractual or tort relief arising from the Contract Documents. This exclusive remedy and the limitation of liability (expressed herein and elsewhere throughout the Contract Documents) apply notwithstanding the completion, termination, suspension, cancellation, breach, or rescission of the Work or the Contract Documents, the negligence or strict liability of the RTA, its representatives, consultants, or agents, or the transfer of Work or the Project to the RTA for any reason whatsoever.

The Contractor waives and covenants not to raise any claims of waiver, estoppel, release, bar, or any other type of excuse for non-compliance with these Section 5-1.08 requirements. Compliance with the procedures described in this Section 5-1.08 is a condition precedent to the right to file a Government Code Claim, commence litigation, or commence any other legal action. Claim(s) or issue(s) not raised in a timely Claim submitted under this Section 5-1.08 may not be asserted in any subsequent Government Code Claim, litigation, or legal action. Under no circumstances shall the RTA be deemed to have waived any provision under this Section 5-1.08.

5-1.08B OTHER REQUIREMENTS RELATING TO CLAIMS

5-1.08B(1) Government Code Claim Requirements

For all Claims not resolved as a result of the Section 5-1.08A procedures, the Contractor must submit each Claim in a Government Code Section 910 form of claim for final investigation and consideration of its settlement prior to initiation of any litigation on any such Claim, as required by Government Code Section 945.4. Pursuant to Government Code Section 930.2, the one-year period in Government Code Section 911.2 is hereby reduced to 150 days. This time deadline is measured from the accrual date of each separate cause of action.

5-1.08B(2) Tolling

For each unresolved Claim properly processed by the Contractor in accordance with Section 5-1.08A, the running of the period of time within which a Government Code claim must be

submitted shall be tolled during the time the Contractor is processing the Claim in compliance with Section 5-1.08A. Under no circumstances shall the time for submitting a Government Code Claim be extended beyond 150 days of the date of the final decision on the Claim under Section 5-1.08A. The Contractor waives the right to pursue or submit any Claims not processed in accordance with Section 5-1.08A.

Other than as expressly provided above, the time deadline for filing a Government Code claim shall not be tolled by any action or inaction by the Contractor, the Engineer, or the RTA, including but not limited to any action or inaction to try to resolve the Claim through negotiation, mediation, settlement, agreement (including Change Order), or by any other means, other than by a separate written tolling agreement expressly approved as to form (on the face of the agreement) by the RTA Counsel's Office.

5-1.09 AUDIT OF RECORDS

The Contractor shall maintain and make available for examination and audit by the State Auditor General and/or duly authorized representatives of the RTA, State, County, or Federal Governments, all books, papers, accounting records, and other documents pertaining to the cost and performance of this contract.

The Contractor shall retain said books, papers, accounting records, and other documents for a period of three years after the date of final payment under this contract (Government Code Section 8546.7).

5-1.10 CONTRACTOR'S REPORTS

The Contractor shall complete a daily report indicating location worked, total manpower per construction trade for each task, major equipment on site, each subcontractor's manpower and equipment, weather conditions, and other related information involved in the performance of the work. The daily report shall be completed on forms furnished by the Engineer and shall be submitted to the Engineer at the conclusion of each workday. The report shall comment on the daily progress and status of the work within each major component of the work.

5-1.11 REMOVAL OF ASBESTOS AND HAZARDOUS SUBSTANCES

When the presence of asbestos or hazardous substances are not shown on the plans or indicated in the specifications and the Contractor encounters materials which the Contractor reasonably believes to be asbestos or a hazardous substance as defined in Section 25914.1 of the Health and Safety Code, and the asbestos or hazardous substance has not been rendered harmless, the Contractor may continue work in unaffected areas reasonably believed to be safe.

The Contractor shall immediately cease work in the affected area and report the condition to the Engineer in writing. In conformance with Section 25914.1 of the Health and Safety Code,

removal of asbestos or hazardous substances including exploratory work to identify and determine the extent of the asbestos or hazardous substance will be performed by separate contract.

If delay of work in the area delays the current controlling operation, the delay will be considered a right of way delay and the Contractor will be compensated for the delay in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

5-1.12 SUBCONTRACTING

No subcontract releases the Contractor from the contract or relieves the Contractor of their responsibility for a subcontractor's work.

If the Contractor violates Public Contract Code §4100 et seq., the RTA may exercise the remedies provided under Public Contract Code §4100. The RTA may refer the violation to the Contractors State License Board as provided under Public Contract Code §4111.

The Contractor shall perform work equaling at least 30 percent of the value of the original total bid with the Contractor's own employees and equipment, owned or rented, with or without operators.

Each subcontract shall comply with the contract.

Each subcontractor shall have an active and valid State contractor's license with a classification appropriate for the work to be performed (Business and Professions Code, §7000 et seq.).

The Contractor shall submit copies of subcontracts upon request by the Engineer.

The Contractor shall submit a Subcontracting Request form prior to commencement of that portion of the work.

The Contractor shall not use a debarred subcontractor. Pursuant to the provisions in Section 1777.1 of the Labor Code, the Labor Commissioner publishes and distributes a list of contractors ineligible to perform work as a subcontractor on a public works project. This list of debarred contractors is available from the Department of Industrial Relations web site at: http://www.dir.ca.gov/DLSE/Debar.html.

Upon request by the Engineer, the Contractor shall immediately remove and not again use a subcontractor who fails to prosecute the work satisfactorily.

5-1.13 CONSTRUCTION SUBMITTALS

Construction project submittals, including shop drawings and manufacturer's product specifications, shall be supplied for all material, equipment items, and for other items of work required by its contract documents. The Contractor shall supply five copies of manufacturer's scaled, dimensioned shop drawings complete with all information required to describe the item and demonstrate compliance with contract drawings and these specifications. Submittals will only be accepted from the Contractor (not sub-contractor or material supplier). Neither fabrication nor onsite preparation shall be started before receipt of written review from the RTA.

Each submittal shall be sequentially numbered, dated, and appropriately titled with the specification number and description.

The Contractor's responsibility for errors, omissions, and deviations from the requirements of the contract documents in submittals is not relieved by the RTA's review. The Contractor shall be responsible for confirming and correlating all quantities and dimensions, the compatibility of different components, selecting fabrication processes and techniques of construction, coordinating its work with that of other trades or other contractors at the site, and performing its work in a safe and satisfactory manner. The RTA will require 10 working days for submittal review. No claim will be allowed for damages or extensions of time because of delays in work resulting from rejection of material or from revisions and resubmittal of shop drawings, project data, or samples.

Resubmittals will be reviewed and returned in the same review period as the original submittals. It is considered reasonable that the Contractor shall make a complete and acceptable submittal by the second submission. The Engineer reserves that right to withhold monies due to the Contractor to cover additional costs of any review beyond the second submittal. Full compensation for preparing submittals and shop drawings, as required, shall be considered as included in the contract items of work involved and no additional compensation will be allowed therefor.

5-1.14 LEGAL ADDRESS OF THE CONTRACTOR

Both the address given in the proposal and the Contractor's office in the vicinity of the work are hereby designated as places to either of which drawings, letters, notices, or other articles or communications to the Contractor may be mailed, transmitted electronically, or delivered. The mailing, electronic transmission, or delivery at either of these places shall be deemed sufficient notice thereof upon the Contractor.

Nothing herein contained shall be deemed to preclude the service of any drawing, letter, notice, article, or communication to, or upon, the Contractor or Contractor's representative personally. The address named in the proposal may be changed at any time by written notice from the Contractor to the Engineer.

5-1.15 WEEKLY PROGRESS MEETINGS

Weekly meetings shall be held at the project site to review the progress of the work and to discuss any problems that may have occurred. Meeting shall include the Engineer, inspectors, and the Contractor's foreman. The Contractor shall provide an updated schedule at the weekly meeting. Full compensation for preparing updated schedules and attending the progress meetings, as required, shall be considered as included in the contract items of work involved and no additional compensation will be allowed therefor.

5-1.16 SURFACE MINING AND RECLAMATION ACT

Imported borrow or aggregate material must come from a surface mine permitted under the Surface Mining and Reclamation Act of 1975 (SMARA), Pub Res Code § 2710, et seq., or from an exempt site.

The Department of Conservation, Office of Mine Reclamation maintains a list of permitted mine sites. For the list of permitted sites, go to: http://www.conservation.ca.gov/omr/ab_3098_list

If Contractor obtains import borrow or aggregate material from a surface mine not on this list, Contractor shall submit written proof the mine is exempt from SMARA to the Engineer.

5-1.17 SUPPLEMENTAL WORK PAYMENTS

Certain extra work to be performed on this project has been designated in the bid proposal as a contract item of work. For bidding purposes, the Contractor shall deem the amount set forth in the "Total Amount" column for the designated item as the maximum amount allotted for said item of extra work.

The RTA reserves the right to increase, decrease or entirely eliminate any supplemental work item in this contract without penalty. Notwithstanding any other provision to the contrary (including but not limited to section 4-1.03B(3) of the Standard Specifications), the Contractor has no right to receive any payment(s) for Supplemental Work that is decreased or entirely eliminated by the RTA.

Exhibit 11

US DEPARTMENT OF LABOR WAGE DETERMINATION FOR RTA BUS MAINTENANCE FACILITY PROJECT

General Decision Number: CA170019 08/04/2017 CA19

Commented [GS1]: UPDATE this whole document right before bidding

Superseded General Decision Number: CA20160019

State: California

Construction Types: Building, Heavy (Heavy and Dredging) and Highway

County: San Luis Obispo County in California.

BUILDING, DREDGING (does not include hopper dredge work), HEAVY (does not include water well drilling, AND HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.20 for calendar year 2017 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.20 (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2017. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/06/2017
1	01/20/2017
2	01/27/2017
3	02/17/2017
4	03/10/2017
5	04/07/2017
6	04/21/2017
7	05/12/2017
8	05/26/2017
9	06/02/2017
10	07/07/2017
11	07/14/2017
12	07/28/2017
13	08/04/2017

ASBE0005-002 07/04/2016

	Rates	Fringes
Asbestos Workers/Insulator (Includes the application of all insulating materials, protective coverings, coatings, and finishes to all types of mechanical systems)	$ 38.37	20.13
Fire Stop Technician (Application of Firestopping Materials for wall openings and penetrations in walls, floors, ceilings and curtain walls)	$ 26.15	17.31

ASBE0005-004 07/04/2016

	Rates	Fringes
Asbestos Removal worker/hazardous material handler (Includes preparation, wetting, stripping, removal, scrapping, vacuuming, bagging and disposing of all insulation materials from mechanical systems, whether they contain asbestos or not)	$ 18.38	10.82

BOIL0092-004 10/01/2012

Area within a 25 mile radius of City of Santa Maria

	Rates	Fringes
BOILERMAKER	$ 41.17	28.27

BOIL0549-007 10/01/2016

Remainder of County outside a 25 mile radius of City of Santa Maria

	Rates	Fringes
BOILERMAKER	$ 39.68	35.71

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* BRCA0004-006 05/01/2017

	Rates	Fringes
BRICKLAYER; MARBLE SETTER	$ 38.69	14.45

*The wage scale for prevailing wage projects performed in Blythe, China lake, Death Valley, Fort Irwin, Twenty-Nine Palms, Needles and 1-15 corridor (Barstow to the Nevada State Line) will be Three Dollars ($3.00) above the standard San Bernardino/Riverside County hourly wage rate

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BRCA0018-008 06/01/2016

	Rates	Fringes
MARBLE FINISHER	$ 29.20	12.93
TILE FINISHER	$ 24.53	4.19

BRCA0018-011 06/01/2016

	Rates	Fringes
TILE LAYER	$ 35.89	16.24

CARP0409-001 07/01/2016

	Rates	Fringes
CARPENTER		
(1) Carpenter, Cabinet Installer, Insulation Installer, Hardwood Floor Worker and acoustical installer	$ 39.83	15.50
(2) Millwright	$ 40.90	15.50
(3) Piledrivermen/Derrick Bargeman, Bridge or Dock Carpenter, Heavy Framer,Rock Bargeman or Scowman, Rockslinger, Shingler (Commercial)	$ 40.53	15.50
(4) Pneumatic Nailer, Power Stapler	$ 40.09	15.50
(5) Sawfiler	$ 39.83	15.50
(6) Scaffold Builder	$ 31.60	15.50
(7) Table Power Saw Operator	$ 40.93	15.50

FOOTNOTE: Work of forming in the construction of open cut sewers or storm drains, on operations in which horizontal lagging is used in conjunction with steel H-Beams driven or placed in pre- drilled holes, for that portion of a lagged trench

against which concrete is poured, namely, as a substitute for back forms (which work is performed by piledrivers): $0.13 per hour additional.

CARP0409-005 07/01/2015

	Rates	Fringes
Drywall		
DRYWALL INSTALLER/LATHER	$ 40.40	15.03
STOCKER/SCRAPPER	$ 10.00	7.17

CARP0409-008 08/01/2010

	Rates	Fringes
Modular Furniture Installer	$ 17.00	7.41

ELEC0639-001 01/01/2017

	Rates	Fringes
Electricians		
Wireman/Technician	$ 41.00	20.01

FOOTNOTES:

CABLE SPLICER: 10% additional per hour above Wireman/Technician basic hourly rate.

Work from trusses, swinging scaffolds, open ladders, scaffolds, bosun chairs, stacks or towers, where subject to a direct fall from the ground floor or support structure from a distance of fifty (50) feet to ninety (90) feet: to be paid time and one-half. Work from trusses, swinging scaffolds, open ladders, scaffolds, bosun chairs, stacks or towers, where subject to a direct fall from the ground floor or support structure from a distance over ninety (90) feet: to be paid double the regular straight time rate of pay.

Where workers are required to work under compressed air or in areas where injurious gases, dust or fumes are present in amounts necessitating the use of gas masks or self-contained breathing apparatus (particle masks are not considered self-contained breathing apparatus) or where workers work on poles at a distance of seventy-five (75) feet or more from the ground: to be paid a bonus of straight time pay. This shall be at a minimum of one hour, and thereafter, each succeeding hour or fraction thereof shall constitute an hour at the bonus rate.

Tunnel work: to be paid at the time and one-quarter hourly rate.

All employers may request workmen to report direct to a job within a free zone to include everything west of ten (10) miles east of Highway 101, as the crow flies, and then (10) miles north and south of Highway 46, as the crow flies, to the junction of Highway 41 and Highway 46. Everything outside this area shall be paid at full subsistence provide said job is of five (5) days duration or more and provide there is storage on the job for the Employee's tools. The Employer will be responsible for loss of tools under such circumstances. (Road: The most direct route on a surfaced road).

On all jobs or projects outside the free zone, as stated above, Employees may be required to report to the job site in their own transportation at the regular starting time and remain on the job site until the regular quitting time and these shall be paid at fifty dollars ($50.00) per day or fifty-one cents ($0.51) per mile for each road mile from shop to job and job to shop (round trip). (Day worked shall mean at least four (4) hours on the job unless sent home on account of weather, emergency, sickness, or injury).

The Employer shall pay for traveling time and furnish transportation from shop to job, job to job, and job to shop. Travel time shall be at the appropriate rate of pay for that day of the week. (Monday through Friday, straight time, Saturday and Sunday, double time.)

ELEC0639-003 12/26/2016

COMMUNICATIONS AND SYSTEMS WORK

SAN LUIS OBISPO COUNTY

	Rates	Fringes
Communications System		
Installer	$ 32.50	11.66
Technician	$ 30.89	11.66

SCOPE OF WORK: Installation, testing, service and maintenance of systems utilizing the transmission and/or transference of voice, sound, vision and digital for commercial, educational, security and entertainment purposes for the following: TV monitoring and surveillance, background - foreground music, intercom and telephone interconnect, microwave transmission, multi-media, multiplex, nurse call systems, radio page, burglar alarms and fire alarm (see last paragraph below).

Communication Systems that transmit or receive information and/or control systems that are intrinsic to the above listed systems; inclusion or exclusion of terminations and testings of conductors determined by their function; excluding all other data systems or multiple systems which include control function or power supply; excluding installation of raceway systems, conduit systems, line voltage work, and energy management systems.

Fire alarm work shall be performed at the current inside electrician total cost package.

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* ELEC1245-001 06/01/2017

	Rates	Fringes
LINE CONSTRUCTION		
(1) Lineman; Cable splicer	$ 55.49	3%+17.65
(2) Equipment specialist (operates crawler tractors, commercial motor vehicles, backhoes, trenchers, cranes (50 tons and below), overhead & underground distribution line equipment)	$ 44.32	3%+17.65
(3) Groundman	$ 33.89	3%+17.65
(4) Powderman	$ 49.55	3%+17.65

HOLIDAYS: New Year's Day, M.L. King Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day and day after Thanksgiving, Christmas Day

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ELEV0008-003 01/01/2017

	Rates	Fringes
ELEVATOR MECHANIC	$ 63.44	31.585

FOOTNOTE:
PAID VACATION: Employer contributes 8% of regular hourly rate as vacation pay credit for employees with more than 5 years of service, and 6% for 6 months to 5 years of service.

PAID HOLIDAYS: New Years Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, Friday after Thanksgiving, and Christmas Day.

ENGI0012-003 07/01/2016

	Rates	Fringes
OPERATOR: Power Equipment (All Other Work)		

GROUP 1	$ 39.95	23.35
GROUP 2	$ 40.73	23.35
GROUP 3	$ 41.02	23.35
GROUP 4	$ 42.51	23.35
GROUP 5	$ 41.86	23.35
GROUP 6	$ 41.83	23.35
GROUP 8	$ 42.84	23.35
GROUP 9	$ 42.19	23.35
GROUP 10	$ 42.96	23.35
GROUP 11	$ 42.31	23.35
GROUP 12	$ 43.13	23.35
GROUP 13	$ 43.23	23.35
GROUP 14	$ 43.26	23.35
GROUP 15	$ 43.34	23.35
GROUP 16	$ 43.46	23.35
GROUP 17	$ 43.63	23.35
GROUP 18	$ 43.73	23.35
GROUP 19	$ 43.84	23.35
GROUP 20	$ 43.96	23.35
GROUP 21	$ 44.13	23.35
GROUP 22	$ 44.23	23.35
GROUP 23	$ 44.34	23.35
GROUP 24	$ 44.46	23.35
GROUP 25	$ 44.63	23.35

OPERATOR: Power Equipment (Cranes, Piledriving & Hoisting)

GROUP 1	$ 43.20	22.15
GROUP 2	$ 43.98	22.15
GROUP 3	$ 44.27	22.15
GROUP 4	$ 44.41	22.15
GROUP 5	$ 44.63	22.15
GROUP 6	$ 44.74	22.15
GROUP 7	$ 44.86	22.15
GROUP 8	$ 45.03	22.15
GROUP 9	$ 45.20	22.15
GROUP 10	$ 46.20	22.15
GROUP 11	$ 47.20	22.15
GROUP 12	$ 48.20	22.15
GROUP 13	$ 49.20	22.15

OPERATOR: Power Equipment (Tunnel Work)

GROUP 1	$ 41.80	23.35
GROUP 2	$ 42.58	23.35
GROUP 3	$ 42.87	23.35
GROUP 4	$ 43.01	23.35
GROUP 5	$ 43.23	23.35
GROUP 6	$ 43.34	23.35
GROUP 7	$ 43.46	23.35

PREMIUM PAY:
$3.75 per hour shall be paid on all Power Equipment Operator work on the followng Military Bases: China Lake Naval Reserve, Vandenberg AFB, Point Arguello, Seely Naval Base, Fort Irwin, Nebo Annex Marine Base, Marine Corp Logistics Base Yermo, Edwards AFB, 29 Palms Marine Base and Camp Pendleton

Workers required to suit up and work in a hazardous material environment: $2.00 per hour additional. Combination mixer and compressor operator on gunite work shall be classified as a concrete mobile mixer operator.

SEE ZONE DEFINITIONS AFTER CLASSIFICATIONS

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Bargeman; Brakeman; Compressor operator; Ditch Witch, with seat or similar type equipment; Elevator operator-inside; Engineer Oiler; Forklift operator (includes loed, lull or similar types under 5 tons; Generator operator; Generator, pump or compressor plant operator; Pump operator; Signalman; Switchman

GROUP 2: Asphalt-rubber plant operator (nurse tank operator); Concrete mixer operator-skip type; Conveyor operator; Fireman; Forklift operator (includes loed, lull or similar types over 5 tons; Hydrostatic pump operator; oiler crusher (asphalt or concrete plant); Petromat laydown machine; PJU side dum jack; Screening and conveyor machine operator (or similar types); Skiploader (wheel type up to 3/4 yd. without attachment); Tar pot fireman; Temporary heating plant operator; Trenching machine oiler

GROUP 3: Asphalt-rubber blend operator; Bobcat or similar type (Skid steer); Equipment greaser (rack); Ford Ferguson (with dragtype attachments); Helicopter radioman (ground); Stationary pipe wrapping and cleaning machine operator

GROUP 4: Asphalt plant fireman; Backhoe operator (mini-max or similar type); Boring machine operator; Boxman or mixerman (asphalt or concrete); Chip spreading machine operator; Concrete cleaning decontamination machine operator; Concrete Pump Operator (small portable); Drilling machine operator, small auger types (Texoma super economatic or similar types - Hughes 100 or 200 or similar types - drilling depth of 30' maximum); Equipment greaser (grease truck); Guard rail post driver operator; Highline cableway signalman; Hydra-hammer-aero stomper; Micro Tunneling (above ground tunnel); Power concrete curing machine operator; Power concrete saw operator; Power-driven jumbo form setter operator; Power sweeper operator; Rock Wheel Saw/Trencher; Roller operator (compacting); Screed operator (asphalt or concrete); Trenching machine operator (up to 6 ft.); Vacuum or much truck

GROUP 5: Equipment Greaser (Grease Truck/Multi Shift).

GROUP 6: Articulating material hauler; Asphalt plant engineer; Batch plant operator; Bit sharpener; Concrete joint machine operator (canal and similar type); Concrete planer operator; Dandy digger; Deck engine operator; Derrickman (oilfield type); Drilling machine operator, bucket or auger types (Calweld 100 bucket or similar types - Watson 1000 auger or similar types - Texoma 330, 500 or 600 auger or similar types - drilling depth of 45' maximum); Drilling machine operator; Hydrographic seeder machine operator (straw, pulp or seed), Jackson track maintainer, or similar type; Kalamazoo Switch tamper, or similar type; Machine tool operator; Maginnis internal full slab vibrator, Mechanical berm, curb or gutter(concrete or asphalt); Mechanical finisher operator (concrete, Clary-Johnson-Bidwell or similar); Micro tunnel system (below ground); Pavement breaker operator (truck mounted); Road oil mixing machine operator; Roller operator (asphalt or finish), rubber-tired earth moving equipment (single engine, up to and including 25 yds. struck); Self-propelled tar pipelining machine operator; Skiploader operator (crawler and wheel type, over 3/4 yd. and up to and including 1-1/2 yds.); Slip form pump operator (power driven hydraulic lifting device for concrete forms); Tractor operator-bulldozer, tamper-scraper (single engine, up to 100 h.p. flywheel and similar types, up to and including D-5 and similar types); Tugger hoist operator (1 drum); Ultra high pressure waterjet cutting tool system operator; Vacuum blasting machine operator

GROUP 8: Asphalt or concrete spreading operator (tamping or finishing); Asphalt paving machine operator (Barber Greene or similar type); Asphalt-rubber distribution operator; Backhoe operator (up to and including 3/4 yd.), small ford, Case or similar; Cast-in-place pipe laying machine operator; Combination mixer and compressor operator (gunite work); Compactor operator (self-propelled); Concrete mixer operator (paving); Crushing plant operator; Drill Doctor; Drilling machine operator, Bucket or auger types (Calweld 150 bucket or similar types - Watson 1500, 2000 2500 auger or similar types - Texoma 700, 800 auger or similar types - drilling depth of 60' maximum); Elevating grader operator; Grade checker; Gradall operator; Grouting machine operator; Heavy-duty repairman; Heavy equipment robotics operator; Kalamazoo balliste regulator or similar type; Kolman belt loader and similar type; Le Tourneau blob compactor or similar type; Loader operator (Athey, Euclid, Sierra and similar types); Mobark Chipper or similar; Ozzie padder or similar types; P.C. slot saw; Pneumatic concrete placing machine operator (Hackley-Presswell or similar type); Pumpcrete gun operator; Rock Drill or similar types; Rotary drill operator (excluding caisson type); Rubber-tired earth-moving equipment operator (single engine, caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. up to and including 50 cu. yds. struck); Rubber-tired earth-moving equipment operator (multiple engine up to and including 25 yds. struck); Rubber-tired scraper operator (self-loading paddle wheel type-John Deere, 1040 and similar single unit); Self-propelled curb and gutter machine operator; Shuttle buggy; Skiploader operator (crawler and wheel type over 1-1/2 yds. up to and including 6-1/2 yds.); Soil remediation plant operator; Surface heaters and planer operator; Tractor compressor drill combination operator; Tractor operator (any type larger than D-5 - 100 flywheel h.p. and over, or similar-bulldozer, tamper, scraper and push tractor single engine); Tractor operator (boom attachments), Traveling pipe wrapping, cleaning and bendng machine operator; Trenching machine operator (over 6 ft. depth capacity, manufacturer's rating); trenching Machine with Road Miner attachment (over 6 ft depth capacity): Ultra high pressure waterjet cutting tool system mechanic; Water pull (compaction) operator

GROUP 9: Heavy Duty Repairman

GROUP 10: Drilling machine operator, Bucket or auger types (Calweld 200 B bucket or similar types-Watson 3000 or 5000 auger or similar types-Texoma 900 auger or similar types-drilling depth of 105' maximum); Dual drum mixer, dynamic compactor LDC350 (or similar types); Monorail locomotive operator (diesel, gas or electric); Motor patrol-blade operator (single engine); Multiple engine tractor operator (Euclid and similar type-except Quad 9 cat.); Rubber-tired earth-moving equipment operator (single engine, over 50 yds. struck); Pneumatic pipe ramming tool and similar types; Prestressed wrapping machine operator; Rubber-tired earth-moving equipment operator (single engine, over 50 yds. struck); Rubber tired earth moving equipment operator (multiple engine, Euclid, caterpillar and similar over 25 yds. and up to 50 yds. struck), Tower crane repairman; Tractor loader operator (crawler and wheel type over 6-1/2 yds.); Woods mixer operator (and similar Pugmill equipment)

GROUP 11: Heavy Duty Repairman - Welder Combination, Welder - Certified.

GROUP 12: Auto grader operator; Automatic slip form operator; Drilling machine operator, bucket or auger types (Calweld, auger 200 CA or similar types - Watson, auger 6000 or similar types - Hughes Super Duty, auger 200 or similar types - drilling depth of 175' maximum); Hoe ram or similar with compressor; Mass excavator operator less tha 750 cu. yards; Mechanical finishing machine operator; Mobile form traveler operator; Motor patrol operator (multi-engine); Pipe mobile machine operator; Rubber-tired earth- moving equipment operator (multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck); Rubber-tired self- loading scraper operator (paddle-wheel-auger type self-loading - two (2) or more units)

GROUP 13: Rubber-tired earth-moving equipment operator operating equipment with push-pull system (single engine, up to and including 25 yds. struck)

GROUP 14: Canal liner operator; Canal trimmer operator; Remote- control earth-moving equipment operator (operating a second piece of equipment: $1.00 per hour additional); Wheel excavator operator (over 750 cu. yds.)

GROUP 15: Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (single engine, Caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. and up to and including 50 yds. struck); Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (multiple engine-up to and including 25 yds. struck)

GROUP 16: Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (single engine, over 50 yds. struck); Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (multiple engine, Euclid, Caterpillar and similar, over 25 yds. and up to 50 yds. struck)

GROUP 17: Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (multiple engine, Euclid, Caterpillar and similar, over 50 cu. yds. struck); Tandem tractor operator (operating crawler type tractors in tandem - Quad 9 and similar type)

GROUP 18: Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - single engine, up to and including 25 yds. struck)

GROUP 19: Rotex concrete belt operator (or similar types); Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - single engine, Caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds.and up to and including 50 cu. yds. struck); Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - multiple engine, up to and including 25 yds. struck)

GROUP 20: Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - single engine, over 50 yds. struck); Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps, and similar types in any combination, excluding compaction units - multiple engine, Euclid, Caterpillar and similar, over 25 yds. and up to 50 yds. struck)

GROUP 21: Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck)

GROUP 22: Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (single engine, up to and including 25 yds. struck)

GROUP 23: Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (single engine, Caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. and up to and including 50 yds. struck); Rubber-tired earth-moving equipment operator, operating with the tandem push-pull system (multiple engine, up to and including 25 yds. struck)

GROUP 24: Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (single engine, over 50 yds. struck); Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (multiple engine, Euclid, Caterpillar and similar, over 25 yds. and up to 50 yds. struck)

GROUP 25: Concrete pump operator-truck mounted; Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck)

CRANES, PILEDRIVING AND HOISTING EQUIPMENT CLASSIFICATIONS

GROUP 1: Engineer oiler; Fork lift operator (includes loed, lull or similar types)

GROUP 2: Truck crane oiler

GROUP 3: A-frame or winch truck operator; Ross carrier operator (jobsite)

GROUP 4: Bridge-type unloader and turntable operator; Helicopter hoist operator

GROUP 5: Hydraulic boom truck; Stinger crane (Austin-Western or similar type); Tugger hoist operator (1 drum)

GROUP 6: Bridge crane operator; Cretor crane operator; Hoist operator (Chicago boom and similar type); Lift mobile operator; Lift slab machine operator (Vagtborg and similar types); Material hoist and/or manlift operator; Polar gantry crane operator; Self Climbing scaffold (or similar type); Shovel, backhoe, dragline, clamshell operator (over 3/4 yd. and up to 5 cu. yds. mrc); Tugger hoist operator

GROUP 7: Pedestal crane operator; Shovel, backhoe, dragline, clamshell operator (over 5 cu. yds. mrc); Tower crane repair; Tugger hoist operator (3 drum)

GROUP 8: Crane operator (up to and including 25 ton capacity); Crawler transporter operator; Derrick barge operator (up to and including 25 ton capacity); Hoist operator, stiff legs, Guy derrick or similar type (up to and including 25 ton capacity); Shovel, backhoe, dragline, clamshell operator (over 7 cu. yds., M.R.C.)

GROUP 9: Crane operator (over 25 tons and up to and including 50 tons mrc); Derrick barge operator (over 25 tons up to and including 50 tons mrc); Highline cableway operator; Hoist operator, stiff legs, Guy derrick or similar type (over 25 tons up to and including 50 tons mrc); K-crane operator; Polar crane operator; Self erecting tower crane operator maximum lifting capacity ten tons

GROUP 10: Crane operator (over 50 tons and up to and including 100 tons mrc); Derrick barge operator (over 50 tons up to and including 100 tons mrc); Hoist operator, stiff legs, Guy derrick or similar type (over 50 tons up to and including 100 tons mrc), Mobile tower crane operator (over 50 tons, up to and including 100 tons M.R.C.); Tower crane operator and tower gantry

GROUP 11: Crane operator (over 100 tons and up to and including 200 tons mrc); Derrick barge operator (over 100 tons up to and including 200 tons mrc); Hoist operator, stiff legs, Guy derrick or similar type (over 100 tons up to and including 200 tons mrc); Mobile tower crane operator (over 100 tons up to and including 200 tons mrc)

GROUP 12: Crane operator (over 200 tons up to and including 300 tons mrc); Derrick barge operator (over 200 tons up to and including 300 tons mrc); Hoist operator, stiff legs, Guy derrick or similar type (over 200 tons, up to and including 300 tons mrc); Mobile tower crane operator (over 200 tons, up to and including 300 tons mrc)

GROUP 13: Crane operator (over 300 tons); Derrick barge operator (over 300 tons); Helicopter pilot; Hoist operator, stiff legs, Guy derrick or similar type (over 300 tons); Mobile tower crane operator (over 300 tons)

TUNNEL CLASSIFICATIONS

GROUP 1: Skiploader (wheel type up to 3/4 yd. without attachment)

GROUP 2: Power-driven jumbo form setter operator

GROUP 3: Dinkey locomotive or motorperson (up to and including 10 tons)

GROUP 4: Bit sharpener; Equipment greaser (grease truck); Slip form pump operator (power-driven hydraulic lifting device for concrete forms); Tugger hoist operator (1 drum); Tunnel locomotive operator (over 10 and up to and including 30 tons)

GROUP 5: Backhoe operator (up to and including 3/4 yd.); Small Ford, Case or similar; Drill doctor; Grouting machine operator; Heading shield operator; Heavy-duty repairperson; Loader operator (Athey, Euclid, Sierra and similar types); Mucking machine operator (1/4 yd., rubber-tired, rail or track type); Pneumatic concrete placing machine operator (Hackley-Presswell or similar type); Pneumatic heading shield (tunnel); Pumpcrete gun operator; Tractor compressor drill combination operator; Tugger hoist operator (2 drum); Tunnel locomotive operator (over 30 tons)

GROUP 6: Heavy Duty Repairman

GROUP 7: Tunnel mole boring machine operator

ENGINEERS ZONES

$1.00 additional per hour for all of IMPERIAL County and the portions of KERN, RIVERSIDE & SAN BERNARDINO Counties asdefined below:

That area within the following Boundary: Begin in San Bernardino County, approximately 3 miles NE of the intersection of I-15 and the California State line at that point which is the NW corner of Section 1, T17N,m R14E, San Bernardino Meridian. Continue W in a straight line to that point which is the SW corner of the northwest quarter of Section 6, T27S, R42E, Mt. Diablo Meridian. Continue North to the intersection with the Inyo County Boundary at that point which is the NE corner of the western half of the northern quarter of Section 6, T25S, R42E, MDM. Continue W along the Inyo and San Bernardino County boundary until the intersection with Kern County, as that point which is the SE corner of Section 34, T24S, R40E, MDM. Continue W along the Inyo and Kern County boundary until the intersection with Tulare County, at that point which is the SW corner of the SE quarter of Section 32, T24S, R37E, MDM. Continue W along the Kern and Tulare County boundary, until that point which is the NW corner of T25S, R32E, MDM. Continue S following R32E lines to the NW corner of T31S, R32E, MDM. Continue W to the NW corner of T31S, R31E, MDM. Continue S to the SW corner of T32S, R31E, MDM. Continue W to SW corner of SE quarter of Section 34, T32S, R30E, MDM. Continue S to SW corner of T11N, R17W, SBM. Continue E along south boundary of T11N, SBM to SW corner of T11N, R7W, SBM. Continue S to SW corner of T9N, R7W, SBM. Continue E along south boundary of T9N, SBM to SW corner of T9N, R1E, SBM. Continue S along west boundary of R1E, SMB to Riverside County line at the SW corner of T1S, R1E, SBM. Continue E along south boundary of T1s, SBM (Riverside County Line) to SW corner of T1S, R10E, SBM. Continue S along west boundary of R10E, SBM to Imperial County line at the SW corner of T8S, R10E, SBM. Continue W along Imperial and Riverside county line to NW corner of T9S, R9E, SBM. Continue S along the boundary between Imperial and San Diego Counties, along the west edge of R9E, SBM to the south boundary of Imperial County/California state line. Follow the California state line west to Arizona state line, then north to Nevada state line, then continuing NW back to start at the point which is the NW corner of Section 1, T17N, R14E, SBM

$1.00 additional per hour for portions of SAN LUIS OBISPO, KERN, SANTA BARBARA & VENTURA as defined below:

That area within the following Boundary: Begin approximately 5 miles north of the community of Cholame, on the Monterey County and San Luis Obispo County boundary at the NW corner of T25S, R16E, Mt. Diablo Meridian. Continue south along the west side of R16E to the SW corner of T30S, R16E, MDM. Continue E to SW corner of T30S, R17E, MDM. Continue S to SW corner of T31S, R17E, MDM. Continue E to SW corner of T31S, R18E, MDM. Continue S along West side of R18E, MDM as it crosses into San Bernardino Meridian numbering area and becomes R30W. Follow the west side of R30W, SBM to the SW corner of T9N, R30W, SBM. Continue E along the south edge of T9N, SBM to the Santa Barbara County and Ventura County boundary at that point whch is the SW corner of Section 34.T9N, R24W, SBM, continue S along the Ventura County line to that point which is the SW corner of the SE quarter of Section 32, T7N, R24W, SBM. Continue E along the south edge of T7N, SBM to the SE corner to T7N, R21W, SBM. Continue N along East side of R21W, SBM to Ventura County and Kern County boundary at the NE corner of T8N, R21W. Continue W

along the Ventura County and Kern County boundary to the SE corner of T9N, R21W. Continue North along the East edge of R21W, SBM to the NE corner of T12N, R21W, SBM. Continue West along the north edge of T12N, SBM to the SE corner of T32S, R21E, MDM. [T12N SBM is a think strip between T11N SBM and T32S MDM]. Continue North along the East side of R21E, MDM to the Kings County and Kern County border at the NE corner of T25S, R21E, MDM, continue West along the Kings County and Kern County Boundary until the intersection of San Luis Obispo County. Continue west along the Kings County and San Luis Obispo County boundary until the intersection with Monterey County. Continue West along the Monterey County and San Luis Obispo County boundary to the beginning point at the NW corner of T25S, R16E, MDM.

$2.00 additional per hour for INYO and MONO Counties and the Northern portion of SAN BERNARDINO County as defined below:

That area within the following Boundary: Begin at the intersection of the northern boundary of Mono County and the California state line at the point which is the center of Section 17, T10N, R22E, Mt. Diablo Meridian. Continue S then SE along the entire western boundary of Mono County, until it reaches Inyo County at the point which is the NE corner of the Western half of the NW quarter of Section 2, T8S, R29E, MDM. Continue SSE along the entire western boundary of Inyo County, until the intersection with Kern County at the point which is the SW corner of the SE 1/4 of Section 32, T24S, R37E, MDM. Continue E along the Inyo and Kern County boundary until the intersection with San Bernardino County at that point which is the SE corner of section 34, T24S, R40E, MDM. Continue E along the Inyo and San Bernardino County boundary until the point which is the NE corner of the Western half of the NW quarter of Section 6, T25S, R42E, MDM. Continue S to that point which is the SW corner of the NW quarter of Section 6, T27S, R42E, MDM. Continue E in a straight line to the California and Nevada state border at the point which is the NW corner of Section 1, T17N, R14E, San Bernardino Meridian. Then continue NW along the state line to the starting point, which is the center of Section 18, T10N, R22E, MDM.

REMAINING AREA NOT DEFINED ABOVE RECIEVES BASE RATE

ENGI0012-004 08/01/2015

	Rates	Fringes
OPERATOR: Power Equipment (DREDGING)		
(1) Leverman	$ 49.50	23.60
(2) Dredge dozer	$ 43.53	23.60
(3) Deckmate	$ 43.42	23.60
(4) Winch operator (stern winch on dredge)	$ 42.87	23.60
(5) Fireman-Oiler, Deckhand, Bargeman, Leveehand	$ 42.33	23.60
(6) Barge Mate	$ 42.94	23.60

IRON0377-002 07/01/2016

	Rates	Fringes
Ironworkers:		
Fence Erector	$ 28.33	20.64
Ornamental, Reinforcing and Structural	$ 34.75	29.20

PREMIUM PAY:

$6.00 additional per hour at the following locations:

China Lake Naval Test Station, Chocolate Mountains Naval Reserve-Niland, Edwards AFB, Fort Irwin Military Station, Fort Irwin Training Center-Goldstone, San Clemente Island, San Nicholas Island, Susanville Federal Prison, 29 Palms - Marine Corps, U.S. Marine Base - Barstow, U.S. Naval Air Facility - Sealey, Vandenberg AFB

$4.00 additional per hour at the following locations:

Army Defense Language Institute - Monterey, Fallon Air Base, Naval Post Graduate School - Monterey, Yermo Marine Corps Logistics Center

$2.00 additional per hour at the following locations:

Port Hueneme, Port Mugu, U.S. Coast Guard Station - Two Rock

LABO0220-001 07/03/2017

	Rates	Fringes
LABORER (TUNNEL)		
GROUP 1	$ 39.04	18.24
GROUP 2	$ 39.36	18.24
GROUP 3	$ 39.82	18.24
GROUP 4	$ 40.51	18.24
LABORER		
GROUP 1	$ 32.34	19.07
GROUP 2	$ 32.89	19.07
GROUP 3	$ 33.44	19.07
GROUP 4	$ 34.99	19.07
GROUP 5	$ 35.34	19.07

LABORER CLASSIFICATIONS

GROUP 1: Cleaning and handling of panel forms; Concrete screeding for rough strike-off; Concrete, water curing; Demolition laborer, the cleaning of brick if performed by a worker performing any other phase of demolition work, and the cleaning of lumber; Fire watcher, limber, brush loader, piler and debris handler; Flag person; Gas, oil and/or water pipeline laborer; Laborer, asphalt-rubber material loader; Laborer, general or construction; Laborer, general clean-up; Laborer, landscaping; Laborer, jetting; Laborer, temporary water and air lines; Material hose operator (walls, slabs, floors and decks); Plugging, filling of shee bolt holes; Dry packing of concrete; Railroad maintenance, repair track person and road beds; Streetcar and railroad construction track laborers; Rigging and signaling; Scaler; Slip form raiser; Tar and mortar; Tool crib or tool house laborer; Traffic control by any method; Window cleaner; Wire mesh pulling - all concrete pouring operations

GROUP 2: Asphalt shoveler; Cement dumper (on 1 yd. or larger mixer and handling bulk cement); Cesspool digger and installer; Chucktender; Chute handler, pouring concrete, the handling of the chute from readymix trucks, such as walls, slabs, decks, floors, foundation, footings, curbs, gutters and sidewalks; Concrete curer, impervious membrane and form oiler; Cutting torch operator (demolition); Fine grader, highways and street paving, airport, runways and similar type heavy construction; Gas, oil and/or water pipeline wrapper - pot tender and form person; Guinea chaser; Headerboard person - asphalt; Laborer, packing rod steel and pans; Membrane vapor barrier installer; Power broom sweeper (small); Riprap stonepaver, placing stone or wet sacked concrete; Roto scraper and tiller; Sandblaster (pot tender); Septic tank digger and installer(lead); Tank scaler and cleaner; Tree climber, faller, chain saw operator, Pittsburgh chipper and similar type brush shredder; Underground laborer, including caisson bellower

GROUP 3: Buggymobile person; Concrete cutting torch; Concrete pile cutter; Driller, jackhammer, 2-1/2 ft. drill steel or longer; Dri-pak-it machine; Gas, oil and/or water pipeline wrapper, 6-in. pipe and over, by any method, inside and out; High scaler (including drilling of same); Hydro seeder and similar type; Impact wrench multi-plate; Kettle person, pot person and workers applying asphalt, lay-kold, creosote, lime caustic and similar type materials ("applying" means applying, dipping, brushing or handling of such materials for pipe wrapping and waterproofing); Operator of pneumatic, gas, electric tools, vibrating machine, pavement breaker, air blasting, come-alongs, and similar mechanical tools not separately classified herein; Pipelayer's backup person, coating, grouting, making of joints, sealing, caulking, diapering and including rubber gasket joints, pointing and any and all other services; Rock slinger; Rotary scarifier or multiple head concrete chipping scarifier; Steel headerboard and guideline setter; Tamper, Barko, Wacker and similar type; Trenching machine, hand-propelled

GROUP 4: Asphalt raker, lute person, ironer, asphalt dump person, and asphalt spreader boxes (all types); Concrete core cutter (walls, floors or ceilings), grinder or sander; Concrete saw person, cutting walls or flat work, scoring old or new

concrete; Cribber, shorer, lagging, sheeting and trench bracing, hand-guided lagging hammer; Head rock slinger; Laborer, asphalt- rubber distributor boot person; Laser beam in connection with laborers' work; Oversize concrete vibrator operator, 70 lbs. and over; Pipelayer performing all services in the laying and installation of pipe from the point of receiving pipe in the ditch until completion of operation, including any and all forms of tubular material, whether pipe, metallic or non-metallic, conduit and any other stationary type of tubular device used for the conveying of any substance or element, whether water, sewage, solid gas, air, or other product whatsoever and without regard to the nature of material from which the tubular material is fabricated; No-joint pipe and stripping of same; Prefabricated manhole installer; Sandblaster (nozzle person), water blasting, Porta Shot-Blast

GROUP 5: Blaster powder, all work of loading holes, placing and blasting of all powder and explosives of whatever type, regardless of method used for such loading and placing; Driller: All power drills, excluding jackhammer, whether core, diamond, wagon, track, multiple unit, and any and all other types of mechanical drills without regard to the form of motive power; Toxic waste removal

TUNNEL LABORER CLASSIFICATIONS

GROUP 1: Batch plant laborer; Changehouse person; Dump person; Dump person (outside); Swamper (brake person and switch person on tunnel work); Tunnel materials handling person; Nipper; Pot tender, using mastic or other materials (for example, but not by way of limitation, shotcrete, etc.);

GROUP 2: Bull gang mucker, track person; Chucktender, Cabletender; Concrete crew, including rodder and spreader; Loading and unloading agitator cars; Vibrator person, jack hammer, pneumatic tools (except driller)

GROUP 3: Blaster, driller, powder person; Chemical grout jet person; Cherry picker person; Grout gun person; Grout mixer person; Grout pump person; Jackleg miner; Jumbo person; Kemper and other pneumatic concrete placer operator; Miner, tunnel (hand or machine); Nozzle person; Operating of troweling and/or grouting machines; Powder person (primer house); Primer person; Sandblaster; Shotcrete person; Steel form raiser and setter; Timber person, retimber person, wood or steel; Tunnel Concrete finisher

GROUP 4: Diamond driller; Sandblaster; Shaft and raise work

LABO0220-004 07/01/2017

	Rates	Fringes
Brick Tender	$ 31.36	17.82

LABO0300-005 01/01/2017

	Rates	Fringes
Asbestos Removal Laborer	$ 31.88	16.82

SCOPE OF WORK: Includes site mobilization, initial site cleanup, site preparation, removal of asbestos-containing material and toxic waste, encapsulation, enclosure and disposal of asbestos- containing materials and toxic waste by hand or with equipment or machinery; scaffolding, fabrication of temporary wooden barriers and assembly of decontamination stations.

LABO0345-001 07/02/2017

	Rates	Fringes
LABORER (GUNITE)		
GROUP 1	$ 41.08	17.39
GROUP 2	$ 40.13	17.39
GROUP 3	$ 36.59	17.39

FOOTNOTE: GUNITE PREMIUM PAY: Workers working from a Bosn'n's Chair or suspended from a rope or cable shall receive 40 cents per hour above the foregoing applicable classification rates. Workers doing gunite and/or shotcrete work in a tunnel shall receive 35 cents per hour above the foregoing applicable classification rates, paid on a portal-to-portal basis. Any work performed on, in or above any smoke stack, silo, storage elevator or similar type of structure, when such structure is in excess of 75'-0" above base level and which work must be performed in whole or in part more than 75'-0" above base level, that work performed above the 75'-0" level shall be compensated for at 35 cents per hour above the applicable classification wage rate.

GUNITE LABORER CLASSIFICATIONS

GROUP 1: Rodmen, Nozzlemen

GROUP 2: Gunmen

GROUP 3: Reboundmen

LABO1184-001 07/01/2017

	Rates	Fringes
Laborers: (HORIZONTAL DIRECTIONAL DRILLING)		
(1) Drilling Crew Laborer	$ 34.65	13.20
(2) Vehicle Operator/Hauler	$ 34.82	13.20
(3) Horizontal Directional Drill Operator	$ 36.67	13.20
(4) Electronic Tracking Locator	$ 38.67	13.20
Laborers: (STRIPING/SLURRY SEAL)		
GROUP 1	$ 35.86	16.21
GROUP 2	$ 37.16	16.21
GROUP 3	$ 39.17	16.21
GROUP 4	$ 40.91	16.21

LABORERS - STRIPING CLASSIFICATIONS

GROUP 1: Protective coating, pavement sealing, including repair and filling of cracks by any method on any surface in parking lots, game courts and playgrounds; carstops; operation of all related machinery and equipment; equipment repair technician

GROUP 2: Traffic surface abrasive blaster; pot tender - removal of all traffic lines and markings by any method (sandblasting, waterblasting, grinding, etc.) and preparation of surface for coatings. Traffic control person: controlling and directing traffic through both conventional and moving lane closures; operation of all related machinery and equipment

GROUP 3: Traffic delineating device applicator: Layout and application of pavement markers, delineating signs, rumble and traffic bars, adhesives, guide markers, other traffic delineating devices including traffic control. This category includes all traffic related surface preparation (sandblasting, waterblasting, grinding) as part of the application process. Traffic protective delineating system installer: removes, relocates, installs, permanently affixed roadside and parking delineation barricades, fencing, cable anchor, guard rail, reference signs, monument markers; operation of all related machinery and equipment; power broom sweeper

GROUP 4: Striper: layout and application of traffic stripes and markings; hot thermo plastic; tape traffic stripes and markings, including traffic control; operation of all related machinery and equipment

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* LABO1414-001 08/02/2017

	Rates	Fringes
LABORER		
PLASTER CLEAN-UP LABORER	$ 32.50	18.29
PLASTER TENDER	$ 35.05	18.29

Work on a swing stage scaffold: $1.00 per hour additional.
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* PAIN0036-007 07/01/2017

	Rates	Fringes
Painters:		
(1) Repaint Including Lead Abatement	$ 24.40	13.91
(2) High Iron & Steel	$ 30.70	12.83
(3) Journeyman Painter including Lead Abatement	$ 29.04	13.91
(4) Industrial	$ 32.52	14.19
(5) All other work	$ 29.04	13.91

REPAINT of any previously painted structure. Exceptions: work involving the aerospace industry, breweries, commercial recreational facilities, hotels which operate commercial establishments as part of hotel service, and sports facilities.

HIGH IRON & STEEL:
Aerial towers, towers, radio towers, smoke stacks, flag poles (any flag poles that can be finished from the ground with a ladder excluded), elevated water towers, steeples and domes in their entirety and any other extremely high and hazardous work, cooning steel, bos'n chair, or other similar devices, painting in other high hazardous work shall be classified as high iron & steel

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PAIN0036-008 10/01/2016

	Rates	Fringes
DRYWALL FINISHER/TAPER	$ 37.18	17.99

PAIN0169-002 01/01/2017

	Rates	Fringes
GLAZIER	$ 34.93	24.03

PAIN1247-002 05/01/2017

	Rates	Fringes
SOFT FLOOR LAYER	$ 32.35	14.56

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* PLAS0200-001 08/02/2017

	Rates	Fringes
PLASTERER	$ 41.26	14.46

PLAS0500-002 07/01/2016

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 33.30	23.33

PLUM0016-001 07/01/2017

	Rates	Fringes
PLUMBER/PIPEFITTER		

Plumber and Pipefitter
All other work except work on new additions and remodeling of bars, restaurant, stores and commercial buildings not to exceed 5,000 sq. ft. of floor space and work on strip malls, light commercial, tenant improvement and remodel work.....$ 49.28 21.61
Work ONLY on new additions and remodeling of bars, restaurant, stores and commercial buildings not to exceed 5,000 sq. ft. of floor space.....$ 47.76 20.63
Work ONLY on strip malls, light commercial, tenant improvement and remodel work.....$ 36.91 18.96

PLUM0345-001 07/01/2014

	Rates	Fringes
PLUMBER		
Landscape/Irrigation Fitter	$ 29.27	19.75
Sewer & Storm Drain Work	$ 33.24	17.13

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* ROOF0036-002 08/01/2017

	Rates	Fringes
ROOFER	$ 37.07	16.17

FOOTNOTE: Pitch premium: Work on which employees are exposed to pitch fumes or required to handle pitch, pitch base or pitch impregnated products, or any material containing coal tar pitch, the entire roofing crew shall receive $1.75 per hour "pitch premium" pay.

SFCA0669-014 04/01/2017

	Rates	Fringes
SPRINKLER FITTER	$ 37.20	15.84

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* SHEE0273-002 08/01/2017

	Rates	Fringes
SHEET METAL WORKER	$ 42.28	28.33

HOLIDAYS: New Year's Day, Martin Luther King Day, President's Day, Good Friday, Memorial Day, Indepdendence Day, Labor Day, Veterans Day,Thankisgiving Day & Friday after, Christmas Day

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TEAM0011-002 07/01/2017

	Rates	Fringes
TRUCK DRIVER		
GROUP 1	$ 29.59	27.74
GROUP 2	$ 29.74	27.74
GROUP 3	$ 29.87	27.74
GROUP 4	$ 30.06	27.74
GROUP 5	$ 30.09	27.74
GROUP 6	$ 30.12	27.74
GROUP 7	$ 30.37	27.74
GROUP 8	$ 30.62	27.74
GROUP 9	$ 30.82	27.74
GROUP 10	$ 31.12	27.74
GROUP 11	$ 31.62	27.74

GROUP 12.....$ 32.05 27.74

WORK ON ALL MILITARY BASES:
PREMIUM PAY: $3.00 per hour additional. [29 palms Marine Base, Camp Roberts, China Lake, Edwards AFB, El Centro Naval Facility, Fort Irwin, Marine Corps Logistics Base at Nebo & Yermo, Mountain Warfare Training Center, Bridgeport, Point Arguello, Point Conception, Vandenberg AFB]

TRUCK DRIVERS CLASSIFICATIONS

GROUP 1: Truck driver

GROUP 2: Driver of vehicle or combination of vehicles - 2 axles; Traffic control pilot car excluding moving heavy equipment permit load; Truck mounted broom

GROUP 3: Driver of vehicle or combination of vehicles - 3 axles; Boot person; Cement mason distribution truck; Fuel truck driver; Water truck - 2 axle; Dump truck, less than 16 yds. water level; Erosion control driver

GROUP 4: Driver of transit mix truck, under 3 yds.; Dumpcrete truck, less than 6-1/2 yds. water level

GROUP 5: Water truck, 3 or more axles; Truck greaser and tire person ($0.50 additional for tire person); Pipeline and utility working truck driver, including winch truck and plastic fusion, limited to pipeline and utility work; Slurry truck driver

GROUP 6: Transit mix truck, 3 yds. or more; Dumpcrete truck, 6-1/2 yds. water level and over; Vehicle or combination of vehicles - 4 or more axles; Oil spreader truck; Dump truck, 16 yds. to 25 yds. water level

GROUP 7: A Frame, Swedish crane or similar; Forklift driver; Ross carrier driver

GROUP 8: Dump truck, 25 yds. to 49 yds. water level; Truck repair person; Water pull - single engine; Welder

GROUP 9: Truck repair person/welder; Low bed driver, 9 axles or over

GROUP 10: Dump truck - 50 yds. or more water level; Water pull - single engine with attachment

GROUP 11: Water pull - twin engine; Water pull - twin engine with attachments; Winch truck driver - $1.25 additional when operating winch or similar special attachments

GROUP 12: Boom Truck 17K and above

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year.

Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

SECTION 9. DESCRIPTION OF WORK

This work will be completed at an existing County of San Luis Obispo Corporation Yard in Paso Robles, California. The purpose of the Project is to provide storage for fourteen full-size fixed route coaches, five 25-foot cutaway vans, and 25 employee parking spaces, as well as placement of a 12-foot by 50-foot modular office building. This work consists of grinding and overlaying existing asphalt concrete pavement, site grading, installing new asphalt paving, trenching for and connecting utilities, lighting, planting, and installing fencing. Street, Site and such other items or detail work not mentioned herein are required by the Plans, the Standard Specifications, Standard Plans, or these Special Provisions.

From "Project Overview" included in the IS/MND document

The project would involve the construction of an approximately 45,000 square-foot, ~~two~~one-story combined administration headquarters and bus maintenance building on the eastern portion of the approximately 6.5 acre project site. The bus operations and maintenance functions would be ~~located on the first floor of the proposed development~~located on the west and south portions of the building, and would also include large and small-parts storage, and clean-room workspace (for high-tech components servicing). The administration headquarters would be located on the ~~second floor of the proposed development~~northeastern corner of the building and would be used for offices, a conference room, and employee restrooms, showers, and lockers. The remainder of the project site would be developed for outdoor circulation, storage, servicing, and inspection. A 0.2 acre drainage basin is also planned for inclusion in the north-west parking lot. The proposed on-site parking would accommodate approximately 67 public transit buses and vans as well as 120 employee and visitor vehicles, respectively, for a total of 187 on-site parking spaces. In total the developed area proposed for the project is approximately 4.2 acres. The remaining acreage (approximately 2.3 acres) is anticipated to be used for the future Prado Road overpass and Elks Lane re-alignment. Construction of the project would require development of the proposed buildings to withstand a 100-year flood level event. ~~Figure 3 provides the site plan for the proposed project.~~

Commented [GS1]: This is a sample of the description for the Paso Bus Parking Yard project.

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SECTION 11. AMENDMENTS TO STANDARD SPECIFICATIONS

AMENDMENTS ISSUE DATE: 10-19-12

SECTION 5 CONTROL OF WORK

(Issued 06-01-11)

Add:

5-1.055 SUBCONTRACTING

5-1.055A General

No subcontract releases you from the contract or relieves you of your responsibility for a subcontractor's work.

If you violate Pub Cont Code § 4100 et seq., the Department may exercise the remedies provided under Pub Cont Code § 4110. The Department may refer the violation to the Contractors State License Board as provided under Pub Cont Code § 4111.

Except for a building-construction non-federal-aid contract, perform work equaling at least 30 percent of the value of the original total bid with your employees and with equipment owned or rented by you, with or without operators.

Each subcontract must comply with the contract.

The Department encourages you to include a dispute resolution process in each subcontract.

Each subcontractor must have an active and valid State contractor's license with a classification appropriate for the work to be performed (Bus & Prof Code, § 7000 et seq.).

Submit copies of subcontracts upon request.

Before subcontracted work starts, submit a Subcontracting Request form.

Do not use a debarred contractor; a current list of debarred contractors is available at the Department of Industrial Relations' Web site.

Upon request, immediately remove and not again use a subcontractor who fails to prosecute the work satisfactorily.

Replace Section 5-1.116 with:

5-1.116 DIFFERING SITE CONDITIONS (23 CFR 635.109)

5-1.116A Contractor's Notification

Promptly notify the Engineer if you find either of the following:

1. Physical conditions differing materially from either of the following:

    1.1. Contract documents
    1.2. Job site examination

2. Physical conditions of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the contract

Include details explaining the information you relied on and the material differences you discovered.

If you fail to notify the Engineer promptly, you waive the differing site condition claim for the period between your discovery of the differing site condition and your notification to the Engineer.

If you disturb the site after discovery and before the Engineer's investigation, you waive the differing site condition claim.

5-1.116B Engineer's Investigation and Decision

Upon your notification, the Engineer investigates job site conditions and:

1. Notifies you whether to resume affected work
2. Decides whether the condition differs materially and is cause for an adjustment of time, payment, or both

You may protest the Engineer's decision.

^^

SECTION 6 CONTROL OF MATERIALS
(Issued 05-01-09)

Replace Section 6-1.05 with:

6-1.05 SPECIFIC BRAND OR TRADE NAME AND SUBSTITUTION

A reference to a specific brand or trade name establishes a quality standard and is not intended to limit competition. You may use a product that is equal to or better than the specified brand or trade name if approved.

Submit a substitution request within a time period that:

1. Follows Contract award
2. Allows 30 days for review
3. Causes no delay

Include substantiating data with the substitution request that proves the substitution:

1. Is of equal or better quality and suitability
2. Causes no delay in product delivery and installation

Add:

6-1.075 GUARANTEE

Guarantee the work remains free from substantial defects for 1 year after contract acceptance except for work parts for which you were relieved of maintenance and protection. Guarantee each of these relieved work parts for 1 year after the relief date.

The guarantee excludes damage or displacement caused by an event outside your control including:

1. Normal wear and tear
2. Improper operation
3. Insufficient maintenance
4. Abuse
5. Unauthorized change
6. Act of God

During the guarantee period, repair or replace each work portion having a substantial defect.

The Department does not pay for corrective work.

During corrective work activities, provide insurance coverage specified for coverage before contract acceptance.

The contract bonds must be in full force and effect until the later of:

1. Expiration of guarantee period
2. Completion of corrective work

If a warranty specification conflicts with Section 6-1.075, "Guarantee," comply with the warranty specification.

During the guarantee period, the Engineer monitors the completed work. If the Engineer finds work having a substantial defect, the Engineer lists work parts and furnishes you the list.

Within 10 days of receipt of the list, submit for authorization a detailed plan for correcting the work. Include a schedule that includes:

1. Start and completion dates
2. List of labor, equipment, materials, and any special services you plan to use
3. Work related to the corrective work, including traffic control and temporary and permanent pavement markings

The Engineer notifies you when the plan is authorized. Start corrective work and related work within 15 days of notice.

If the Engineer determines corrective work is urgently required to prevent injury or property damage:

1. The Engineer furnishes you a request to start emergency repair work and a list of parts requiring corrective work
2. Mobilize within 24 hours and start work
3. Submit a corrective work plan within 5 days of starting emergency repair work

If you fail to perform work as specified, the Department may perform the work and bill you.

^^

SECTION 9 MEASUREMENT AND PAYMENT
(Issued 03-11-10)

Replace Section 9-1.03 with:

9-1.03 FORCE ACCOUNT PAYMENT

9-1.03A General

For work paid by force account, the Engineer compares the Department's records to your daily force account work report. When you and the Engineer agree on the contents of the daily force account work reports, the Engineer accepts the report and the Department pays for the work. If the records differ, the Department pays for the work based only on the information shown on the Department's records.

If a subcontractor performs work at force account, accept an additional 10 percent markup to the total cost of that work paid at force account, including markups specified in Section 9-1.03, as reimbursement for additional administrative costs.

The markups specified in labor, materials, and equipment include compensation for all delay costs, overhead costs, and profit.

If an item's payment is adjusted for work-character changes, the Department excludes your cost of determining the adjustment.

Payment for owner-operated labor and equipment is made at the market-priced invoice submitted.

9-1.03B Labor

Labor payment is full compensation for the cost of labor used in the direct performance of the work plus a 35 percent markup. Force account labor payment consists of:

1. Employer payment to the worker for:

    1.1. Basic hourly wage
    1.2. Health and welfare
    1.3. Pension
    1.4. Vacation
    1.5. Training
    1.6. Other State and federal recognized fringe benefit payments

2. Labor surcharge percentage in Labor Surcharge and Equipment Rental Rates current during the work paid at force account for:

    2.1. Workers' compensation insurance
    2.2. Social security
    2.3. Medicare
    2.4. Federal unemployment insurance
    2.5. State unemployment insurance
    2.6. State training taxes

3. Subsistence and travel allowances paid to the workers
4. Employer payment to supervisors, if authorized

The 35 percent markup consists of payment for all overhead costs related to labor but not designated as costs of labor used in the direct performance of the work including:

1. Home office overhead
2. Field office overhead
3. Bond costs
4. Profit
5. Labor liability insurance
6. Other fixed or administrative costs that are not costs of labor used in the direct performance of the work

9-1.03C Materials

Material payment is full compensation for materials you furnish and use in the work. The Engineer determines the cost based on the material purchase price, including delivery charges, except:

1. A 15 percent markup is added.
2. Supplier discounts are subtracted whether you took them or not.
3. If the Engineer believes the material purchase prices are excessive, the Department pays the lowest current wholesale price for a similar material quantity.
4. If you procured the materials from a source you wholly or partially own, the determined cost is based on the lower of the:

    4.1. Price paid by the purchaser for similar materials from that source on Contract items
    4.2. Current wholesale price for those materials

5. If you do not submit a material cost record within 30 days of billing, the determined cost is based on the lowest wholesale price:

    5.1. During that period
    5.2. In the quantities used

9-1.03D Equipment Rental

9-1.03D(1) General

Equipment rental payment is full compensation for:

1. Rental equipment costs, including moving rental equipment to and from the site of work performed by change order using its own power.
2. Transport equipment costs for rental equipment that cannot be transported economically using its own power. No payment is made during transport for the transported equipment.
3. 15 percent markup.

If you want to return the equipment to a location other than its original location, the payment to move the equipment must not exceed the cost of returning the equipment to its original location. If you use the equipment for work other than work paid by force account, the transportation cost is included in the other work.

Before moving or loading the equipment, obtain authorization for the equipment rental's original location.

The Engineer determines rental costs:

1. Using rates in Labor Surcharge and Equipment Rental Rates:

    1.1. By classifying equipment using manufacturer's ratings and manufacturer-approved changes.
    1.2. Current during the work paid by force account.
    1.3. Regardless of equipment ownership; but the Department uses the rental document rates or minimum rental cost terms if:

        1.3.1. Rented from equipment business you do not own.
        1.3.2. The Labor Surcharge and Equipment Rental Rates hourly rate is $10.00 per hour or less.

2. Using rates established by the Engineer for equipment not listed in Labor Surcharge and Equipment Rental Rates. You may submit cost information that helps the Engineer establish the rental rate; but the Department uses the rental document rates or minimum rental cost terms if:

    2.1. Rented from equipment business you do not own.

2.2. The Engineer establishes a rate of $10.00 per hour or less.

3. Using rates for transport equipment not exceeding the hourly rates charged by established haulers.

Equipment rental rates include the cost of:

1. Fuel
2. Oil
3. Lubrication
4. Supplies
5. Small tools that are not consumed by use
6. Necessary attachments
7. Repairs and maintenance
8. Depreciation
9. Storage
10. Insurance
11. Incidentals

The Department pays for small tools consumed by use. The Engineer determines payment for small tools consumed by use based on Contractor-submitted invoices.

9-1.03D(2) Equipment On the Job Site

For equipment on the job site at the time required to perform work paid by force account, the time paid is the time:

1. To move the equipment to the location of work paid by force account plus an equal amount of time to move the equipment to another location on the job site when the work paid by force account is completed
2. To load and unload equipment
3. Equipment is operated to perform work paid by force account and:

    3.1. Hourly rates are paid in 1/2-hour increments
    3.2 Daily rates are paid in 1/2-day increments

When rented equipment on the job site is used to perform work at force account not required by the original contract work, the Engineer may authorize rates in excess of those in Labor Surcharge and Equipment Rental Rates if:

1. You submit a request to use rented equipment
2. Equipment is not available from your owned equipment fleet or from your subcontractors
3. Rented equipment is from an independent rental company
4. Proposed equipment rental rate is reasonable
5. Engineer authorizes the equipment source and the rental rate before you use the equipment

The Department pays for fuel consumed during operation of rented equipment not included in the invoiced rental rate.

9-1.03D(3) Equipment Not On the Job Site Required for Original Contract Work

For equipment not on the job site at the time required to perform work paid by force account and required for original Contract work, the time paid is the time the equipment is operated to perform work paid by force account and the time to move the equipment to a location on the job site when the work paid by force account is completed.

The minimum total time paid is:

1. 1 day if daily rates are paid
2. 8 hours if hourly rates are paid

If daily rates are recorded, equipment:

1. Idled is paid as 1/2 day

2. Operated 4 hours or less is paid as 1/2 day
3. Operated 4 hours or more is paid as 1 day

If the minimum total time exceeds 8 hours and if hourly rates are listed, the Department rounds up hours operated to the nearest 1/2-hour increment and pays based on the following table. The table does not apply when equipment is not operated due to breakdowns; in which case rental hours are the hours the equipment was operated.

Equipment Rental Hours

Hours operated	Hours paid
0.0	4.00
0.5	4.25
1.0	4.50
1.5	4.75
2.0	5.00
2.5	5.25
3.0	5.50
3.5	5.75
4.0	6.00
4.5	6.25
5.0	6.50
5.5	6.75
6.0	7.00
6.5	7.25
7.0	7.5
7.5	7.75
≥8.0	hours used

9-1.03D(4) Equipment Not On the Job Site Not Required for Original Contract Work

For equipment not on the job site at the time required to perform work paid by force account and not required for original Contract work, the time paid is the time:

1. To move the equipment to the location of work paid by force account plus an equal amount of time to return the equipment to its source when the work paid by force account is completed
2. To load and unload equipment
3. Equipment is operated to perform work paid by force account

For this equipment, the Engineer may authorize rates in excess of those in Labor Surcharge and Equipment Rental Rates subject to the following:

1. Equipment is not available from your normal sources or from one of your subcontractors
2. Proposed equipment rental rate is reasonable
3. Engineer authorizes the equipment source and the rental rate before you use the equipment

9-1.03D(5) Non-Owner-Operated Dump Truck Rental

Submit the rental rate for non-owner-operated dump truck rental. The Engineer determines the payment rate. Payment for non-owner-operated dump truck rental is for the cost of renting a dump truck, including its driver. For the purpose of markup payment only, the non-owner-operated dump truck is rental equipment and the owner is a subcontractor.

^^

SECTION 12 CONSTRUCTION AREA TRAFFIC CONTROL DEVICES
(Issued 11-07-08)

In Section 12-1.01 in the 2nd paragraph, replace the 1st sentence with:

Attention is directed to Part 6 of the California MUTCD.

Replace Section 12-2.01 with:

12-2.01 FLAGGERS

Flaggers while on duty and assigned to traffic control or to give warning to the public that the highway is under construction and of any dangerous conditions to be encountered as a result thereof, shall perform their duties and shall be provided with the necessary equipment in conformance with Part 6 of the California MUTCD. The equipment shall be furnished and kept clean and in good repair by the Contractor at the Contractor's expense.

All flaggers shall wear safety apparel meeting the requirements of ANSI/ISEA 107-2004 for Class 2 or 3 garment and complying with 71 Fed Reg 67792.

In Section 12-3.01 replace the 1st paragraph with:

In addition to the requirements in Part 6 of the California MUTCD, all devices used by the Contractor in the performance of the work shall conform to the provisions in this Section 12-3.

In Section 12-3.06 in the 1st paragraph, replace the 2nd sentence with:

Construction area signs are shown in or referred to in Part 6 of the California MUTCD.

In Section 12-3.06 in the 4th paragraph, replace the 1st sentence with:

All construction area signs shall conform to the dimensions, color and legend requirements of the plans, Part 6 of the California MUTCD and these specifications.

In Section 12-3.06 in the 8th paragraph, replace the 1st sentence with:

Used signs with the specified sheeting material will be considered satisfactory if they conform to the requirements for visibility and legibility and the colors conform to the requirements in Part 6 of the California MUTCD.

^^

SECTION 14 (BLANK)

(Issued 06-01-11)

Replace Section 14 with:

SECTION 14 ENVIRONMENTAL STEWARDSHIP

14-1 GENERAL

14-1.01 GENERAL

Environmental stewardship includes both environmental compliance and environmental resource management. If an ESA is shown on the plans:

1. The boundaries shown are approximate; the Department marks the exact boundaries on the ground
2. Do not enter the ESA unless authorized
3. If the ESA is breached, immediately:
   3.1. Secure the area and stop all operations within 60 feet of the ESA boundary
   3.2. Notify the Engineer
4. If the ESA is damaged, the Department determines what efforts are necessary to remedy the damage and who performs the remedy; you are responsible for remedies and charges.

14-2 CULTURAL RESOURCES

14-2.01 GENERAL

Reserved

14-2.02 ARCHAEOLOGICAL RESOURCES

If archaeological resources are discovered at the job site, do not disturb the resources and immediately:

1. Stop all work within a 60-foot radius of the discovery
2. Protect the discovery area
3. Notify the Engineer

The Department investigates. Do not move archaeological resources or take them from the job site. Do not resume work within the discovery area until authorized.

If, in the opinion of the Engineer, completion of the work is delayed or interfered with by reason of an archaeological find, or investigation or recovery of archeological materials, you will be compensated for resulting losses, and an extension of time will be granted, in the same manner as provided for in Section 8-1.09, "Right of Way Delays."

If ordered, furnish resources to assist in the investigation or recovery of archaeological resources. This work will be paid for as extra work as specified in Section 4-1.03D, "Extra Work."

14-2.03 ARCHAEOLOGICAL MONITORING AREA

Section 14-2.03 applies if an AMA is described in the Contract.

The Department assigns an archaeological monitor to monitor job site activities within the AMA. Do not work within the AMA unless the archeological monitor is present.

The Engineer and the Department archaeological monitor conduct an AMA location field review with you at least 5 business days before start of work. The Department marks the exact boundaries of the AMA on the ground.

If temporary fence (Type ESA) or other exclosure for an AMA is described in the Contract, install temporary fence (Type ESA) or other exclosure to define the boundaries of the AMA during the AMA location field review.

At least 5 business days before starting work within an AMA, submit a schedule of days and hours to be worked for the Engineer's approval. If you require changes in the schedule, submit an update for the Engineer's approval at least 5 business days before any changed work day.

If archaeological resources are discovered within an AMA, comply with Section 14-2.02, "Archaeological Resources."

14-2.04 HISTORIC STRUCTURES

Reserved

14-3 COMMUNITY IMPACTS AND ENVIRONMENTAL JUSTICE

Reserved

14-4 NATIVE AMERICAN CONCERNS

Reserved

14-5 AESTHETICS

Reserved

14-6 BIOLOGICAL RESOURCES

14-6.01 GENERAL

Reserved

14-6.02 BIRD PROTECTION

Protect migratory and nongame birds, their occupied nests, and their eggs.

The Department anticipates nesting or attempted nesting from February 15 to September 1.

The federal Migratory Bird Treaty Act, 16 USC § 703–711, and 50 CFR Pt 10 and Fish & Game Code §§ 3503, 3513, and 3800 protect migratory and nongame birds, their occupied nests, and their eggs.

The federal Endangered Species Act of 1973, 16 USC §§ 1531 and 1543, and the California Endangered Species Act, Fish & Game Code §§ 2050–2115.5, prohibit the take of listed species and protect occupied and unoccupied nests of threatened and endangered bird species.

The Bald and Golden Eagle Protection Act, 16 USC § 668, prohibits the destruction of bald and golden eagles and their occupied and unoccupied nests.

If migratory or nongame bird nests are discovered that may be adversely affected by construction activities or an injured or killed bird is found, immediately:

1. Stop all work within a 100-foot radius of the discovery.
2. Notify the Engineer.

The Department investigates. Do not resume work within the specified radius of the discovery until authorized.

When ordered, use exclusion devices, take nesting prevention measures, remove and dispose of partially constructed and unoccupied nests of migratory or nongame birds on a regular basis to prevent their occupation, or perform any combination of these. This work will be paid for as extra work as specified in Section 4-1.03D, "Extra Work."

Prevent nest materials from falling into waterways.

Bird protection that causes a delay to the controlling activity is a condition unfavorable to the suitable prosecution of work as specified in Section 8-1.05, "Temporary Suspension of Work."

14-7 PALEONTOLOGICAL RESOURCES

If paleontological resources are discovered at the job site, do not disturb the material and immediately:

1. Stop all work within a 60-foot radius of the discovery
2. Protect the area
3. Notify the Engineer

The Department investigates and modifies the dimensions of the protected area if necessary. Do not move paleontological resources or take them from the job site. Do not resume work within the specified radius of the discovery until authorized.

14-8 NOISE AND VIBRATION

14-8.01 GENERAL

Reserved

14-8.02 NOISE CONTROL

Do not exceed 86 dBA LMax at 50 feet from the job site activities from 9 p.m. to 6 a.m.

Equip an internal combustion engine with the manufacturer-recommended muffler. Do not operate an internal combustion engine on the job site without the appropriate muffler.

14-9 AIR QUALITY

14-9.01 AIR POLLUTION CONTROL

Comply with air pollution control rules, regulations, ordinances, and statutes that apply to work performed under the Contract, including air pollution control rules, regulations, ordinances, and statutes provided in Govt Code § 11017 (Pub Cont Code § 10231).

Do not burn material to be disposed of.

14-9.02 DUST CONTROL

Prevent and alleviate dust by applying water, dust palliative, or both under Section 14-9.01.

Apply water under Section 17, "Watering."

Apply dust palliative under Section 18,"Dust Palliative."

If ordered, apply water, dust palliative, or both to control dust caused by public traffic. This work will be paid for as extra work as specified in Section 4-1.03D, "Extra Work."

14-10 SOLID WASTE DISPOSAL AND RECYCLING

14-10.01 SOLID WASTE DISPOSAL AND RECYCLING

Submit an annual Solid Waste Disposal and Recycling Report between January 1 and 15 for each year work is performed under the Contract at any time during the previous calendar year. Show the types and amounts of project-generated solid waste taken to or diverted from landfills or reused on the project from January 1 through December 31 of the previous calendar year.

Submit a final annual Solid Waste Disposal and Recycling Report within 5 business days after Contract acceptance. Show the types and amounts of project-generated solid waste taken to or diverted from landfills or reused on the project from January 1 to Contract acceptance.

For each failure to submit a completed form, the Department withholds $10,000.

14-11 HAZARDOUS WASTE AND CONTAMINATION

14-11.01 GENERAL

Reserved

14-11.02 ASBESTOS AND HAZARDOUS SUBSTANCES

Upon discovery, immediately stop working in and notify the Engineer of areas where asbestos or a hazardous substance is present if the:

1. Contractor reasonably believes the substance is asbestos as defined in Labor Code § 6501.7 or a hazardous substance as defined in Health & Safety Code §§ 25316 and 25317
2. Presence is not described in the Contract
3. Substance has not been made harmless

14-12 OTHER INTERAGENCY RELATIONS

Reserved

14-13 PAYMENT

Payment for work specified in Section 14 is included in the payment for the bid items involved unless:

1. Bid item for the work is shown in the verified Bid Item List
2. Work is specified as paid for as extra work

SECTION 15 EXISTING HIGHWAY FACILITIES

(Issued 05-01-09)

In Section 15-1.02 replace the 1st paragraph with:

Existing facilities which are to remain in place shall be protected in conformance with the provisions in Sections 5-1.18, "Property and Facility Preservation," and 7-1.12, "Indemnification and Insurance."

^^

SECTION 19 EARTHWORK

(Issued 09-16-11)

Replace Section 19-1.02 with:

19-1.02 (BLANK)

Replace Section 19-1.03 with:

19-1.03 Grade Tolerance

Immediately prior to placing subsequent layers of material thereon, the grading plane shall conform to one of the following:

A. When hot mix asphalt is to be placed on the grading plane, the grading plane at any point shall not vary more than 0.05 foot above or below the grade established by the Engineer.

B. When subbase or base material to be placed on the grading plane is to be paid for by the ton, the grading plane at any point shall not vary more than 0.10 foot above or below the grade established by the Engineer.

C. When the material to be placed on the grading plane is to be paid for by the cubic yard, the grading plane at any point shall be not more than 0.05 foot above the grade established by the Engineer.

In Section 19-3.025C replace the 1st paragraph with:

Cementitious material used in soil cement bedding shall conform to the provisions in Section 90-2.01, "Cementitious Materials." Supplementary cementitious material will not be required.

In Section 19-3.025C replace the 4th paragraph with:

The aggregate, cementitious material, and water shall be proportioned either by weight or by volume. Soil cement bedding shall contain not less than 282 pounds of cementitious material per cubic yard. The water content shall be sufficient to produce a fluid, workable mix that will flow and can be pumped without segregation of the aggregate while being placed.

In Section 19-3.06 replace the 9th paragraph with:

Unless otherwise shown on the plans or specified in these specifications or the special provisions, material for structure backfill to be compacted to a relative compaction of not less than 90 percent, except material to be placed behind retaining walls, shall consist of material free of rocks, broken concrete, other solid material exceeding 3 inches in greatest dimension, or organic or other unsatisfactory material.

In Section 19-3.062 replace the 1st paragraph with:

Slurry cement backfill shall consist of a fluid, workable mixture of aggregate, cementitious material, and water.

In Section 19-3.062 replace the 5th paragraph with:

Cementitious material shall conform to the provisions in Section 90-2.01, "Cementitious Materials." Supplementary cementitious material will not be required.

In Section 19-3.062 replace the 8th paragraph with:

The aggregate, cementitious material, and water shall be proportioned either by weight or by volume. Slurry cement backfill shall contain not less than 188 pounds of cementitious material per cubic yard. The water content shall be sufficient to produce a fluid, workable mix that will flow and can be pumped without segregation of the aggregate while being placed.

^^

SECTION 20 EROSION CONTROL AND HIGHWAY PLANTING
(Issued 04-20-12)

Replace Section 20-2.03 with:
20-2.03 SOIL AMENDMENT
Soil amendment must comply with the Food & Agri Code.

In Section 20-2.10 delete the 8th, 9th, and 10th paragraphs.

In Section 20-3.04A delete the last paragraph.

In Section 20-4.026 replace the 3rd paragraph with:
Oil or pelleted forms of pesticides for weed control shall not be used.

Replace Section 20-4.055 with:
20-4.055 PRUNING
Prune plants under ANSI A300 (Part 1) published by the Tree Care Industry Association.

^^

SECTION 26 AGGREGATE BASES
(Issued 02-16-07)

In Section 26-1.02A replace the 1st paragraph with:

Aggregate must be clean and free from organic matter and other deleterious substances. Aggregate must consist of any combination of:

1. Broken stone
2. Crushed gravel

3. Natural rough surfaced gravel
4. Sand
5. Up to 100 percent of any combination of processed:

    5.1. Asphalt concrete
    5.2. Portland cement concrete
    5.3. Lean concrete base
    5.4. Cement treated base

In Section 26-1.02B replace the 1st paragraph with:

Aggregate must be clean and free from organic matter and other deleterious substances. Aggregate must consist of any combination of:

1. Broken stone
2. Crushed gravel
3. Natural rough surfaced gravel
4. Sand
5. Up to 100 percent of any combination of processed:

    5.1. Asphalt concrete
    5.2. Portland cement concrete
    5.3. Lean concrete base
    5.4. Cement treated base

^^

^^

SECTION 39 ASPHALT CONCRETE
(Issued 10-19-12)

Replace Section 39 with:

SECTION 39 HOT MIX ASPHALT

39-1 GENERAL

39-1.01 DESCRIPTION

Section 39 includes specifications for producing and placing hot mix asphalt (HMA) by mixing aggregate and asphalt binder at a mixing plant and spreading and compacting the HMA mixture.

The special provisions specify one or more types of HMA, including:

1. Type A
2. Type B
3. Open graded friction course (OGFC). OGFC includes hot mix asphalt (open graded)[HMA-O], rubberized hot mix asphalt (open graded) [RHMA-O] and rubberized hot mix asphalt (open graded high binder) [RHMA-O-HB]
4. Rubberized hot mix asphalt (gap graded) [RHMA-G]

The special provisions specify the HMA construction process, including:

1. Standard
2. Method
3. Quality Control / Quality Assurance (QC / QA)

39-1.02 MATERIALS

39-1.02A Geosynthetic Pavement Interlayer

Geosynthetic pavement interlayer must comply with the specifications in Section 88-1.07, "Pavement Interlayer," for the type of interlayer shown on the plans.

39-1.02B Tack Coat

Tack coat must comply with the specifications for asphaltic emulsion in Section 94, "Asphaltic Emulsion," or asphalt binder in Section 92, "Asphalts." Choose the type and grade.

Notify the Engineer if you dilute asphaltic emulsion with water. The weight ratio of added water to asphaltic emulsion must not exceed 1 to 1.

Measure added water either by weight or volume in compliance with the specifications for weighing, measuring, and metering devices under Section 9-1.01, "Measurement of Quantities," or you may use water meters from water districts, cities, or counties. If you measure water by volume, apply a conversion factor to determine the correct weight.

With each dilution, submit in writing:

1. The weight ratio of water to bituminous material in the original asphaltic emulsion
2. The weight of asphaltic emulsion before diluting
3. The weight of added water
4. The final dilution weight ratio of water to asphaltic emulsion

39-1.02C Asphalt Binder

Asphalt binder in HMA must comply with Section 92, "Asphalts," or Section 39-1.02D, "Asphalt Rubber Binder." The special provisions specify the grade.

Asphalt binder for geosynthetic pavement interlayer must comply with Section 92, "Asphalts." Choose from Grades PG 64-10, PG 64-16, or PG 70-10.

39-1.02D Asphalt Rubber Binder

General

Use asphalt rubber binder in RHMA-G, RHMA-O, and RHMA-O-HB. Asphalt rubber binder must be a combination of:

1. Asphalt binder
2. Asphalt modifier
3. Crumb rubber modifier (CRM)

The combined asphalt binder and asphalt modifier must be 80.0 ± 2.0 percent by weight of the asphalt rubber binder.

Asphalt Modifier

Asphalt modifier must be a resinous, high flash point, and aromatic hydrocarbon, and comply with:

Asphalt Modifier for Asphalt Rubber Binder

Quality Characteristic	ASTM	Specification
Viscosity, m^2/s (x 10^{-6}) at 100 °C	D 445	X ± 3 [a]
Flash Point, CL.O.C., °C	D 92	207 minimum
Molecular Analysis		
Asphaltenes, percent by mass	D 2007	0.1 maximum
Aromatics, percent by mass	D 2007	55 minimum

Note:
[a] The symbol "X" is the proposed asphalt modifier viscosity. "X" must be between 19 and 36. A change in "X" requires a new asphalt rubber binder design.

Asphalt modifier must be from 2.0 percent to 6.0 percent by weight of the asphalt binder in the asphalt rubber binder.

Crumb Rubber Modifier

CRM consists of a ground or granulated combination of scrap tire CRM and high natural CRM. CRM must be 75.0 ± 2.0 percent scrap tire CRM and 25.0 ± 2.0 percent high natural CRM by total weight of CRM. Scrap tire CRM must be from any combination of automobile tires, truck tires, or tire buffings.

Sample and test scrap tire CRM and high natural CRM separately. CRM must comply with:

Crumb Rubber Modifier for Asphalt Rubber Binder

Quality Characteristic	Test Method	Specification
Scrap tire CRM gradation (% passing No. 8 sieve)	LP-10	100
High natural CRM gradation (% passing No. 10 sieve)	LP-10	100
Wire in CRM (% max.)	LP-10	0.01
Fabric in CRM (% max.)	LP-10	0.05
CRM particle length (inch max.) [a]	--	3/16
CRM specific gravity [a]	CT 208	1.1 – 1.2
Natural rubber content in high natural CRM (%) [a]	ASTM D 297	40.0 – 48.0

Note:

[a] Test at mix design and for Certificate of Compliance.

Only use CRM ground and granulated at ambient temperature. If steel and fiber are cryogenically separated, it must occur before grinding and granulating. Only use cryogenically produced CRM particles that can be ground or granulated and not pass through the grinder or granulator.

CRM must be dry, free-flowing particles that do not stick together. CRM must not cause foaming when combined with the asphalt binder and asphalt modifier. You may add calcium carbonate or talc up to 3 percent by weight of CRM.

Asphalt Rubber Binder Design and Profile

Submit in writing an asphalt rubber binder design and profile that complies with the asphalt rubber binder specifications. In the design, designate the asphalt, asphalt modifier, and CRM and their proportions. The profile is not a performance specification and only serves to indicate expected trends in asphalt rubber binder properties during binder production. The profile must include the same component sources for the asphalt rubber binder used.

Design the asphalt rubber binder from testing you perform for each quality characteristic and for the reaction temperatures expected during production. The 24-hour (1,440-minute) interaction period determines the design profile. At a minimum, mix asphalt rubber binder components, take samples, and perform and record the following tests:

Asphalt Rubber Binder Reaction Design Profile

Test	Minutes of Reaction [a]							Limits
	45	60	90	120	240	360	1440	
Cone penetration @ 77 °F, 0.10-mm (ASTM D 217)	X [b]				X		X	25 - 70
Resilience @ 77 °F, percent rebound (ASTM D 5329)	X				X		X	18 min.
Field softening point, °F (ASTM D 36)	X				X		X	125 - 165
Viscosity, centipoises (LP-11)	X	X	X	X	X	X	X	1,500 - 4,000

Notes:

[a] Six hours (360 minutes) after CRM addition, reduce the oven temperature to 275 °F for a period of 16 hours. After the 16-hour (1320 minutes) cool-down after CRM addition, reheat the binder to the reaction temperature expected during production for sampling and testing at 24 hours (1440 minutes).

[b] "X" denotes required testing

Asphalt Rubber Binder

After interacting for a minimum of 45 minutes, asphalt rubber binder must comply with:

Asphalt Rubber Binder

Quality Characteristic	Test for Quality Control or Acceptance	Test Method	Specification	
			Minimum	Maximum
Cone penetration @ 77 °F, 0.10-mm	Acceptance	ASTM D 217	25	70
Resilience @ 77 °F, percent rebound	Acceptance	ASTM D 5329	18	--
Field softening point, °F	Acceptance	ASTM D 36	125	165
Viscosity @ 375 °F, centipoises	Quality Control	LP-11	1,500	4,000

39-1.02E Aggregate

Aggregate must be clean and free from deleterious substances. Aggregate:

1. Retained on the No. 4 sieve is coarse
2. Passing the No. 4 sieve is fine
3. Added and passing the No. 30 sieve is supplemental fine, including:

    3.1. Hydrated lime
    3.2. Portland cement
    3.3. Fines from dust collectors

The special provisions specify the aggregate gradation for each HMA type.

The specified aggregate gradation is before the addition of asphalt binder and includes supplemental fines. The Engineer tests for aggregate grading under California Test 202, modified by California Test 105 if there is a difference in specific gravity of 0.2 or more between the coarse and fine parts of different aggregate blends.

Choose a sieve size target value (TV) within each target value limit presented in the aggregate gradation tables.

Aggregate Gradation
(Percentage Passing)
HMA Types A and B

3/4–inch HMA Types A and B

Sieve Sizes	Target Value Limits	Allowable Tolerance
1"	100	—
3/4"	90 - 100	TV ±5
1/2"	70 - 90	TV ±6
No. 4	45 - 55	TV ±7
No. 8	32 - 40	TV ±5
No. 30	12 - 21	TV ±4
No. 200	2 - 7	TV ±2

1/2–inch HMA Types A and B

Sieve Sizes	Target Value Limits	Allowable Tolerance
3/4"	100	—
1/2"	95 - 99	TV ±6
3/8"	75 - 95	TV ±6
No. 4	55 - 66	TV ±7
No. 8	38 - 49	TV ±5
No. 30	15 - 27	TV ±4
No. 200	2 - 8	TV ±2

3/8–inch HMA Types A and B

Sieve Sizes	Target Value Limits	Allowable Tolerance
1/2"	100	—
3/8"	95 - 100	TV ±6
No. 4	58 - 72	TV ±7
No. 8	34 - 48	TV ±6
No. 30	18 - 32	TV ±5
No. 200	2 - 9	TV ±2

No. 4 HMA Types A and B

Sieve Sizes	Target Value Limits	Allowable Tolerance
3/8"	100	—
No. 4	95 - 100	TV ±7
No. 8	72 - 77	TV ±7
No. 30	37 - 43	TV ±7
No. 200	2 - 12	TV ±4

Rubberized Hot Mix Asphalt - Gap Graded (RHMA-G)

3/4–inch RHMA-G

Sieve Sizes	Target Value Limits	Allowable Tolerance
1"	100	—
3/4"	95 - 100	TV ±5
1/2"	83 - 87	TV ±6
3/8"	65 - 70	TV ±6
No. 4	28 - 42	TV ±7
No. 8	14 - 22	TV ±5
No. 200	0 - 6	TV ±2

1/2–inch RHMA-G

Sieve Sizes	Target Value Limits	Allowable Tolerance
3/4"	100	—
1/2"	90 - 100	TV ±6
3/8"	83 - 87	TV ±6
No. 4	28 - 42	TV ±7
No. 8	14 - 22	TV ±5
No. 200	0 - 6	TV ±2

Open Graded Friction Course (OGFC)

1–inch OGFC

Sieve Sizes	Target Value Limits	Allowable Tolerance
1 1/2"	100	—
1"	99 - 100	TV ±5
3/4"	85 - 96	TV ±5
1/2"	55 - 71	TV ±6
No. 4	10 - 25	TV ±7
No. 8	6 - 16	TV ±5
No. 200	1 - 6	TV ±2

1/2–inch OGFC

Sieve Sizes	Target Value Limits	Allowable Tolerance
3/4"	100	—
1/2"	95 - 100	TV ±6
3/8"	78 - 89	TV ±6
No. 4	28 - 37	TV ±7
No. 8	7 - 18	TV ±5
No. 30	0 - 10	TV ±4
No. 200	0 - 3	TV ±2

3/8–inch OGFC

Sieve Sizes	Target Value Limits	Allowable Tolerance
1/2"	100	—
3/8"	90 - 100	TV ±6
No. 4	29 - 36	TV ±7
No. 8	7 - 18	TV ±6
No. 30	0 - 10	TV ±5
No. 200	0 - 3	TV ±2

Before the addition of asphalt binder and lime treatment, aggregate must comply with:

Aggregate Quality

Quality Characteristic	Test Method	HMA Type			
		A	B	RHMA-G	OGFC
Percent of crushed particles	CT 205				
Coarse aggregate (% min.)					
One fractured face		90	25	--	90
Two fractured faces		75	--	90	75
Fine aggregate (% min)					
(Passing No. 4 sieve and retained on No. 8 sieve.)					
One fractured face		70	20	70	90
Los Angeles Rattler (% max.)	CT 211				
Loss at 100 Rev.		12	--	12	12
Loss at 500 Rev.		45	50	40	40
Sand equivalent (min.) [a]	CT 217	47	42	47	--
Fine aggregate angularity (% min.) [b]	CT 234	45	45	45	--
Flat and elongated particles (% max. by weight @ 5:1)	CT 235	10	10	10	10

Notes:

[a] Reported value must be the average of 3 tests from a single sample.

[b] The Engineer waives this specification if HMA contains 10 percent or less of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.

39-1.02F Reclaimed Asphalt Pavement

You may produce HMA using reclaimed asphalt pavement (RAP). HMA produced using RAP must comply with the specifications for HMA except aggregate quality specifications do not apply to RAP. You may substitute RAP aggregate for a part of the virgin aggregate in HMA in a quantity not exceeding 15.0 percent of the aggregate blend. Do not use RAP in OGFC and RHMA-G.

Assign the substitution rate of RAP aggregate for virgin aggregate with the job mix formula (JMF) submittal. The JMF must include the percent of RAP used. If you change your assigned RAP aggregate substitution rate by more than 5 percent (within the 15.0 percent limit), submit a new JMF.

Process RAP from asphalt concrete. You may process and stockpile RAP throughout the project's life. Prevent material contamination and segregation. Store RAP in stockpiles on smooth surfaces free of debris and organic material. Processed RAP stockpiles must consist only of homogeneous RAP.

39-1.03 HOT MIX ASPHALT MIX DESIGN REQUIREMENTS

39-1.03A General

A mix design consists of performing California Test 367 and laboratory procedures on combinations of aggregate gradations and asphalt binder contents to determine the optimum binder content (OBC) and HMA mixture qualities. If RAP is used, use Laboratory Procedure LP-9. The result of the mix design becomes the proposed JMF.

Use Form CEM-3512 to document aggregate quality and mix design data. Use Form CEM-3511 to present the JMF.

Laboratories testing aggregate qualities and preparing the mix design and JMF must be qualified under the Department's Independent Assurance Program. Take samples under California Test 125.

The Engineer reviews the aggregate qualities, mix design, and JMF and verifies and accepts the JMF.

You may change the JMF during production. Do not use the changed JMF until the Engineer accepts it. Except when adjusting the JMF in compliance with Section 39-1.03E, "Job Mix Formula Verification," perform a new mix design and submit in writing a new JMF submittal for changing any of the following:

1. Target asphalt binder percentage
2. Asphalt binder supplier
3. Asphalt rubber binder supplier
4. Component materials used in asphalt rubber binder or percentage of any component materials
5. Combined aggregate gradation
6. Aggregate sources
7. Substitution rate for RAP aggregate of more than 5 percent
8. Any material in the JMF

For OGFC, submit in writing a complete JMF submittal except asphalt binder content. The Engineer determines the asphalt binder content under California Test 368 within 20 days of your complete JMF submittal and provides you a Form CEM-3513.

39-1.03B Hot Mix Asphalt Mix Design

Perform a mix design that produces HMA in compliance with:

Hot Mix Asphalt Mix Design Requirements

Quality Characteristic	Test Method	HMA Type		
		A	B	RHMA-G
Air voids content (%)	CT 367[a]	4.0	4.0	Special Provisions
Voids in mineral aggregate (% min.)	LP-2			
No. 4 grading		17.0	17.0	--
3/8" grading		15.0	15.0	--
1/2" grading		14.0	14.0	18.0 – 23.0[b]
3/4" grading		13.0	13.0	18.0 – 23.0[b]
Voids filled with asphalt (%)	LP-3			
No. 4 grading		76.0 – 80.0	76.0 – 80.0	Note d
3/8" grading		73.0 – 76.0	73.0 – 76.0	
1/2" grading		65.0 – 75.0	65.0 – 75.0	
3/4" grading		65.0 – 75.0	65.0 – 75.0	
Dust proportion	LP-4			
No. 4 and 3/8" gradings		0.9 – 2.0	0.9 – 2.0	Note d
1/2" and 3/4" gradings		0.6 – 1.3	0.6 – 1.3	
Stabilometer value (min.) [c]	CT 366			
No. 4 and 3/8" gradings		30	30	--
1/2" and 3/4" gradings		37	35	23

Notes:

[a] Calculate the air voids content of each specimen using California Test 309 and Lab Procedure LP-1. Modify California Test 367, Paragraph C5, to use the exact air voids content specified in the selection of OBC.

[b] Voids in mineral aggregate for RHMA-G must be within this range.

[c] Modify California Test 304, Part 2.B.2.c: "After compaction in the compactor, cool to 140 °± 5 °F by allowing the briquettes to cool at room temperature for 0.5-hour, then place the briquettes in the oven at 140 °F for a minimum of 2 hours and not more than 3 hours."

[d] Report this value in the JMF submittal.

For stability and air voids content, prepare 3 briquettes at the OBC and test for compliance. Report the average of 3 tests. Prepare new briquettes and test if the range of stability for the 3 briquettes is more than 8 points. The average air void content may vary from the specified air void content by ±0.5 percent.

You may use the briquettes used for stability testing to determine bulk specific gravity under CT 308. If you use the same briquettes and tests using bulk specific gravity fail, you may prepare 3 new briquettes and determine a new bulk specific gravity.

39-1.03C Job Mix Formula Submittal

Each JMF submittal must consist of:

1. Proposed JMF on Form CEM-3511
2. Mix design documentation on Form CEM-3512 dated within 12 months of submittal
3. JMF verification on Form CEM-3513, if applicable
4. JMF renewal on Form CEM-3514, if applicable
5. Materials Safety Data Sheets (MSDS) for:

    5.1. Asphalt binder
    5.2. Base asphalt binder used in asphalt rubber binder
    5.3. CRM and asphalt modifier used in asphalt rubber binder
    5.4. Blended asphalt rubber binder mixture

5.5. Supplemental fine aggregate except fines from dust collectors
5.6. Antistrip additives

If the Engineer requests in writing, sample the following materials in the presence of the Engineer and place in labeled containers weighing no more than 50 pounds each:

1. Coarse, fine, and supplemental fine aggregate from stockpiles, cold feed belts, or hot bins. Samples must include at least 120 pounds for each coarse aggregate, 80 pounds for each fine aggregate, and 10 pounds for each type of supplemental fines. The Department combines these aggregate samples to comply with the JMF target values submitted on Form CEM-3511.
2. RAP from stockpiles or RAP system. Samples must be at least 60 pounds.
3. Asphalt binder from the binder supplier. Samples must be in two 1-quart cylindrical shaped cans with open top and friction lids.
4. Asphalt rubber binder with the components blended in the proportions to be used. Samples must be in four 1-quart cylindrical shaped cans with open top and friction lids.

Notify the Engineer in writing at least 2 business days before sampling materials. For aggregate and RAP, split the samples into at least 4 parts. Submit 3 parts to the Engineer and use 1 part for your testing.

39-1.03D Job Mix Formula Review

The Engineer reviews each mix design and proposed JMF within 5 business days from the complete JMF submittal. The review consists of reviewing the mix design procedures and comparing the proposed JMF with the specifications.

The Engineer may verify aggregate qualities during this review period.

39-1.03E Job Mix Formula Verification

If you cannot submit a Department-verified JMF on Form CEM-3513 dated within 12 months before HMA production, the Engineer verifies the JMF.

Based on your testing and production experience, you may submit on Form CEM-3511 an adjusted JMF before the Engineer's verification testing. JMF adjustments may include a change in the:

1. Asphalt binder content target value up to ±0.6 percent from the optimum binder content value submitted on Form CEM-3512 except do not adjust the target value for asphalt rubber binder for RHMA-G below 7.0 percent
2. Aggregate gradation target values within the target value limits specified in the aggregate gradation tables

For HMA Type A, Type B, and RHMA-G, the Engineer verifies the JMF from samples taken from HMA produced by the plant to be used. Notify the Engineer in writing at least 2 business days before sampling materials.

In the Engineer's presence and from the same production run, take samples of:

1. Aggregate
2. Asphalt binder
3. RAP
4. HMA

Sample aggregate from cold feed belts or hot bins. Sample RAP from the RAP system. Sample HMA under California Test 125 except if you request in writing and the Engineer approves, you may sample from any of the following locations:

1. The plant
2. A truck
3. A windrow
4. The paver hopper
5. The mat behind the paver

You may sample from a different project including a non-Department project if you make arrangements for the Engineer to be present during sampling.

For aggregate, RAP, and HMA, split the samples into at least 4 parts and label their containers. Submit 3 split parts to the Engineer and use 1 part for your testing.

The Engineer verifies each proposed JMF within 20 days of receiving all verification samples and the JMF submittal has been accepted. If you request in writing, the Engineer verifies RHMA-G quality requirements within 3 business days of sampling. Verification is testing for compliance with the specifications for:

1. Aggregate quality
2. Aggregate gradation (JMF TV ± tolerance)
3. Asphalt binder content (JMF TV ± tolerance)
4. HMA quality specified in the table Hot Mix Asphalt Mix Design Requirements except:

    4.1. Air voids content (design value ± 2.0 percent)
    4.2. Voids filled with asphalt (report only if an adjustment for asphalt binder content target value is less than or equal to ± 0.3 percent from OBC)
    4.3. Dust proportion (report only if an adjustment for asphalt binder content target value is less than or equal to ± 0.3 percent from OBC)

The Engineer prepares 3 briquettes from a single split sample. To verify the JMF for stability and air voids content, the Engineer tests the 3 briquettes and reports the average of 3 tests. The Engineer prepares new briquettes if the range of stability for the 3 briquettes is more than 8 points.

The Engineer may use the briquettes used for stability testing to determine bulk specific gravity under CT 308. If the Engineer uses the same briquettes and the tests using bulk specific gravity fail, the Engineer prepares 3 new briquettes and determines a new bulk specific gravity.

If the Engineer verifies the JMF, the Engineer provides you a Form CEM-3513.

If the Engineer's tests on plant-produced samples do not verify the JMF, the Engineer notifies you in writing and you must submit a new JMF submittal or submit an adjusted JMF based on your testing. JMF adjustments may include a change in the:

1. Asphalt binder content target value up to ±0.6 percent from the optimum binder content value submitted on Form CEM-3512 except do not adjust the target value for asphalt rubber binder for RHMA-G below 7.0 percent
2. Aggregate gradation target values within the target value limits specified in the aggregate gradation tables

You may adjust the JMF only once due to a failed verification test. An adjusted JMF requires a new Form CEM-3511 and verification of a plant-produced sample.

A verified JMF is valid for 12 months.

For each HMA type and aggregate size specified, the Engineer verifies at the State's expense up to 2 proposed JMF including a JMF adjusted after verification failure. The Engineer deducts $3,000 from payments for each verification exceeding this limit. This deduction does not apply to verifications initiated by the Engineer or JMF renewal.

39-1.03F Job Mix Formula Renewal

You may request a JMF renewal by submitting the following:

1. Proposed JMF on Form CEM-3511
2. A previously verified JMF documented on Form CEM-3513 dated within 12 months
3. Mix design documentation on Form CEM-3512 used for the previously verified JMF

If the Engineer requests in writing, sample the following materials in the presence of the Engineer and place in labeled containers weighing no more than 50 pounds each:

1. Coarse, fine, and supplemental fine aggregate from stockpiles, cold feed belts, or hot bins. Samples must include at least 120 pounds for each coarse aggregate, 80 pounds for each fine aggregate, and 10 pounds for each type of supplemental fines. The Department combines these aggregate samples to comply with the JMF target values submitted on Form CEM-3511.
2. RAP from stockpiles or RAP system. Samples must be at least 60 pounds.
3. Asphalt binder from the binder supplier. Samples must be in two 1-quart cylindrical shaped cans with open top and friction lids.

4. Asphalt rubber binder with the components blended in the proportions to be used. Samples must be in four 1-quart cylindrical shaped cans with open top and friction lids.

Notify the Engineer in writing at least 2 business days before sampling materials. For aggregate and RAP, split samples into at least 4 parts. Submit 3 parts to the Engineer and use 1 part for your testing.

The Engineer may verify aggregate qualities during this review period.

Notify the Engineer in writing at least 2 business days before sampling materials. For aggregate, RAP, and HMA, split the samples into at least 4 parts. Submit 3 parts to the Engineer and use 1 part for your testing.

The Engineer verifies the JMF renewal submittal under Section 39-1.03E, "Job Mix Formula Verification," except:

1. The Engineer retains samples until you provide test results for your part on Form CEM-3514.
2. The Engineer tests samples of materials obtained from the HMA production unit after you submit test results that comply with the specifications for the quality characteristics under Section 39-1.03E, "Job Mix Formula Verification."
3. The Engineer verifies each proposed JMF renewal within 20 days of receiving verification samples.
4. You may not adjust the JMF due to a failed verification.
5. For each HMA type and aggregate gradation specified, the Engineer verifies at the State's expense 1 proposed JMF renewal within a 12-month period.

The most recent aggregate quality test results within the past 12 months may be used for verification of JMF renewal or the Engineer may perform aggregate quality tests for verification of JMF renewal.

If the Engineer verifies the JMF renewal, the Engineer provides you a Form CEM-3513.

39-1.03G Job Mix Formula Modification

For an accepted JMF, you may change binder source one time during production.

Submit your modified JMF request a minimum of 3 business days before production. Each modified JMF submittal must consist of:

1. Proposed modified JMF on Form CEM-3511.
2. Mix design records on Form CEM-3512 for the accepted JMF to be modified.
3. JMF verification on Form CEM-3513 for the accepted JMF to be modified.
4. Quality characteristics test results for the modified JMF as specified in section 39-1.03B. Perform tests at the mix design OBC as shown on Form CEM-3512.
5. If required, California Test 371 test results for the modified JMF.

With an accepted modified JMF submittal, the Engineer verifies each modified JMF within 5 business days of receiving all verification samples. If California Test 371 is required, the Engineer tests for California Test 371 within 10 days of receiving verification samples.

The Engineer verifies the modified JMF after the modified JMF HMA is placed on the project and verification samples are taken within the first 750 tons following sampling requirements in Section 39-1.03E, "Job Mix Formula Verification." The Engineer tests verification samples for compliance with:

1. Stability as shown in the table titled "Hot Mix Asphalt Mix Design Requirements"
2. Air void content at design value ±2.0 percent
3. Voids in mineral aggregate as shown in the table titled "Hot Mix Asphalt Mix Design Requirements"
4. Voids filled with asphalt if an adjustment for asphalt binder content TV is more than ±0.3 percent from the original OBC shown on Form CEM-3512.
5. Dust proportion if an adjustment for asphalt binder content TV is more than ±0.3 percent from OBC shown on Form CEM-3512.

If the modified JMF is verified, the Engineer revises your Form CEM-3513 to include the new binder source. Your revised Form CEM-3513 will have the same expiration date as the original Form CEM-3513 for the accepted JMF that is modified.

If a modified JMF is not verified, stop production and any HMA placed using the modified JMF is rejected.

The Engineer deducts $2,000 from payments for each modified JMF verification. The Engineer deducts an additional $2,000 from payments for each modified JMF verification that requires California Test 371.

39-1.03H Job Mix Formula Acceptance

You may start HMA production if:

1. The Engineer's review of the JMF shows compliance with the specifications.
2. The Department has verified the JMF within 12 months before HMA production.
3. The Engineer accepts the verified JMF.

39-1.04 CONTRACTOR QUALITY CONTROL

39-1.04A General

Establish, maintain, and change a quality control system to ensure materials and work comply with the specifications. Submit quality control test results to the Engineer within 3 business days of a request except when QC / QA is specified.

You must identify the HMA sampling location in your Quality Control Plan. During production, take samples under California Test 125. You may sample HMA from:

1. The plant
2. The truck
3. A windrow
4. The paver hopper
5. The mat behind the paver

39-1.04B Prepaving Conference

Meet with the Engineer at a prepaving conference at a mutually agreed time and place. Discuss methods of performing the production and paving work.

39-1.04C Asphalt Rubber Binder

Take asphalt rubber binder samples from the feed line connecting the asphalt rubber binder tank to the HMA plant. Sample and test asphalt rubber binder under Laboratory Procedure LP-11.

Test asphalt rubber binder for compliance with the viscosity specifications in Section 39-1.02, "Materials." During asphalt rubber binder production and HMA production using asphalt rubber binder, measure viscosity every hour with not less than 1 reading for each asphalt rubber binder batch. Log measurements with corresponding time and asphalt rubber binder temperature. Submit the log daily in writing.

Submit a Certificate of Compliance under Section 6-1.07, "Certificates of Compliance." With the Certificate of Compliance, submit test results in writing for CRM and asphalt modifier with each truckload delivered to the HMA plant. A Certificate of Compliance for asphalt modifier must not represent more than 5,000 pounds. Use an AASHTO-certified laboratory for testing.

Sample and test gradation and wire and fabric content of CRM once per 10,000 pounds of scrap tire CRM and once per 3,400 pounds of high natural CRM. Sample and test scrap tire CRM and high natural CRM separately.

Submit certified weight slips in writing for the CRM and asphalt modifier furnished.

39-1.04D Aggregate

Determine the aggregate moisture content and RAP moisture content in continuous mixing plants at least twice a day during production and adjust the plant controller. Determine the RAP moisture content in batch mixing plants at least twice a day during production and adjust the plant controller.

39-1.04E Reclaimed Asphalt Pavement

Perform RAP quality control testing each day.

Sample RAP once daily and determine the RAP aggregate gradation under Laboratory Procedure LP-9 and submit the results to the Engineer in writing with the combined aggregate gradation.

39-1.04F Density Cores

To determine density for Standard and QC / QA projects, take 4-inch or 6-inch diameter density cores at least once every 5 business days. Take 1 density core for every 250 tons of HMA from random locations the Engineer designates. Take density cores in the Engineer's presence and backfill and compact holes with material authorized by the Engineer. Before submitting a density core to the Engineer, mark it with the density core's location and place it in a protective container.

If a density core is damaged, replace it with a density core taken within 1 foot longitudinally from the original density core. Relocate any density core located within 1 foot of a rumble strip to 1 foot transversely away from the rumble strip.

39-1.04G Briquettes

Prepare 3 briquettes for each stability and air voids content determination. Report the average of 3 tests. Prepare new briquettes and test if the range of stability for the 3 briquettes is more than 12 points.

You may use the briquettes used for stability testing to determine bulk specific gravity under CT 308. If you use these briquettes and tests using bulk specific gravity fail, you may prepare 3 new briquettes and determine a new bulk specific gravity.

39-1.05 ENGINEER'S ACCEPTANCE

The Engineer's acceptance of HMA is specified in the sections for each HMA construction process.

The Engineer samples materials for testing under California Test 125 and the applicable test method except samples may be taken from:

1. The plant from:
    1.1. A truck
    1.2. An automatic sampling device
2. The mat behind the paver

Sampling must be independent of Contractor quality control, statistically-based, and random.

If you request, the Engineer splits samples and provides you with a part.

The Engineer accepts HMA based on:

1. Accepted JMF
2. Accepted QCP for Standard and QC / QA
3. Compliance with the HMA Acceptance tables
4. Acceptance of a lot for QC / QA
5. Visual inspection

The Engineer prepares 3 briquettes for each stability and air voids content determination. The Engineer reports the average of 3 tests. The Engineer prepares new briquettes and test if the range of stability for the 3 briquettes is more than 8 points.

The Engineer may use the briquettes used for stability testing to determine bulk specific gravity under CT 308. If the Engineer uses the same briquettes and the tests using bulk specific gravity fail, the Engineer prepares 3 new briquettes and determines a new bulk specific gravity.

39-1.06 DISPUTE RESOLUTION

You and the Engineer must work together to avoid potential conflicts and to resolve disputes regarding test result discrepancies. Notify the Engineer in writing within 5 business days of receiving a test result if you dispute the test result.

If you or the Engineer dispute each other's test results, submit written quality control test results and copies of paperwork including worksheets used to determine the disputed test results to the Engineer. An Independent Third Party (ITP) performs referee testing. Before the ITP participates in a dispute resolution, the ITP must be accredited under the Department's Independent Assurance Program. The ITP must be independent of the project. By mutual agreement, the ITP is chosen from:

1. A Department laboratory
2. A Department laboratory in a district or region not in the district or region the project is located
3. The Transportation Laboratory
4. A laboratory not currently employed by you or your HMA producer

If split quality control or acceptance samples are not available, the ITP uses any available material representing the disputed HMA for evaluation.

39-1.07 PRODUCTION START-UP EVALUATION

The Engineer evaluates HMA production and placement at production start-up.

Within the first 750 tons produced on the first day of HMA production, in the Engineer's presence and from the same production run, take samples of:

1. Aggregate
2. Asphalt binder
3. RAP
4. HMA

Sample aggregate from cold feed belts or hot bins. Take RAP samples from the RAP system. Sample HMA under California Test 125 except if you request in writing and the Engineer approves, you may sample HMA from:

1. The plant
2. The truck
3. A windrow
4. The paver hopper
5. The mat behind the paver

For aggregate, RAP, and HMA, split the samples into at least 4 parts and label their containers. Submit 3 split parts to the Engineer and keep 1 part.

For Standard and QC / QA projects, you and the Engineer must test the split samples and report test results in writing within 3 business days of sampling. If you proceed before receipt of the test results, the Engineer may consider the HMA placed to be represented by these test results.

For Standard and QC / QA projects, take 4-inch or 6-inch diameter density cores within the first 750 tons on the first day of HMA production. For each density core, the Engineer reports the bulk specific gravity determined under California Test 308, Method A in addition to the percent of maximum theoretical density. You may test for in-place density at the density core locations and include them in your production tests for percent of maximum theoretical density.

39-1.08 PRODUCTION

39-1.08A General

Produce HMA in a batch mixing plant or a continuous mixing plant. Proportion aggregate by hot or cold feed control.

HMA plants must be Department-qualified. Before production, the HMA plant must have a current qualification under the Department's Materials Plant Quality Program.

During production, you may adjust:

1. Hot or cold feed proportion controls for virgin aggregate and RAP
2. The set point for asphalt binder content

39-1.08B Mixing

Mix HMA ingredients into a homogeneous mixture of coated aggregates.

Asphalt binder must be between 275 °F and 375 °F when mixed with aggregate.

Asphalt rubber binder must be between 375 °F and 425 °F when mixed with aggregate.

When mixed with asphalt binder, aggregate must not be more than 325 °F except aggregate for OGFC with unmodified asphalt binder must be not more than 275 °F. Aggregate temperature specifications do not apply when you use RAP.

HMA with or without RAP must not be more than 325 °F.

39-1.08C Asphalt Rubber Binder

Deliver scrap tire CRM and high natural CRM in separate bags.

Either proportion and mix asphalt binder, asphalt modifier, and CRM simultaneously or premix the asphalt binder and asphalt modifier before adding CRM. If you premix asphalt binder and asphalt modifier, asphalt binder must be from 375 to 425 degrees F when you add the asphalt modifier. Mix them for at least 20 minutes. When you add CRM, the asphalt binder and asphalt modifier must be between 375 °F and 425 °F.

Do not use asphalt rubber binder during the first 45 minutes of the reaction period. During this period, the asphalt rubber binder mixture must be between 375 °F and the lower of 425 °F or 25 °F below the asphalt binder's flash point indicated in the MSDS.

If any asphalt rubber binder is not used within 4 hours after the reaction period, discontinue heating. If the asphalt rubber binder drops below 375 °F, reheat before use. If you add more scrap tire CRM to the reheated asphalt rubber binder, the binder must undergo a 45-minute reaction period. The added scrap tire CRM must not exceed 10 percent of the total asphalt rubber binder weight. Reheated and reacted asphalt rubber binder must comply with the viscosity specifications for asphalt rubber binder in Section 39-1.02, "Materials." Do not reheat asphalt rubber binder more than twice.

39-1.09 SUBGRADE, TACK COAT, AND GEOSYNTHETIC PAVEMENT INTERLAYER

39-1.09A General

Prepare subgrade or apply tack coat to surfaces receiving HMA. If specified, place geosynthetic pavement interlayer over a coat of asphalt binder.

39-1.09B Subgrade

Subgrade to receive HMA must comply with the compaction and elevation tolerance specifications in the sections for the material involved. Subgrade must be free of loose and extraneous material. If HMA is paved on existing base or pavement, remove loose paving particles, dirt, and other extraneous material by any means including flushing and sweeping.

39-1.09C Tack Coat

Apply tack coat:

1. To existing pavement including planed surfaces
2. Between HMA layers
3. To vertical surfaces of:

    3.1. Curbs
    3.2. Gutters
    3.3. Construction joints

Before placing HMA, apply tack coat in 1 application at the minimum residual rate specified for the condition of the underlying surface:

Tack Coat Application Rates for HMA Type A, Type B, and RHMA-G

HMA over:	Minimum Residual Rates (gallons per square yard)		
	CSS1/CSS1h, SS1/SS1h and QS1h/CQS1h Asphaltic Emulsion	CRS1/CRS2, RS1/RS2 and QS1/CQS1 Asphaltic Emulsion	Asphalt Binder and PMRS2/PMCRS2 and PMRS2h/PMCRS2h Asphaltic Emulsion
New HMA (between layers)	0.02	0.03	0.02
PCC and existing HMA (AC) surfaces	0.03	0.04	0.03
Planed PCC and HMA (AC) surfaces	0.05	0.06	0.04

Tack Coat Application Rates for OGFC

OGFC over:	Minimum Residual Rates (gallons per square yard)		
	CSS1/CSS1h, SS1/SS1h and QS1h/CQS1h Asphaltic Emulsion	CRS1/CRS2, RS1/RS2 and QS1/CQS1 Asphaltic Emulsion	Asphalt Binder and PMRS2/PMCRS2 and PMRS2h/PMCRS2h Asphaltic Emulsion
New HMA	0.03	0.04	0.03
PCC and existing HMA (AC) surfaces	0.05	0.06	0.04
Planed PCC and HMA (AC) surfaces	0.06	0.07	0.05

If you dilute asphaltic emulsion, mix until homogeneous before application.

Apply to vertical surfaces with a residual tack coat rate that will thoroughly coat the vertical face without running off.

If you request in writing and the Engineer authorizes, you may:

1. Change tack coat rates
2. Omit tack coat between layers of new HMA during the same work shift if:

    2.1. No dust, dirt, or extraneous material is present
    2.2. The surface is at least 140 °F

Immediately in advance of placing HMA, apply additional tack coat to damaged areas or where loose or extraneous material is removed.

Close areas receiving tack coat to traffic. Do not track tack coat onto pavement surfaces beyond the job site.

Asphalt binder tack coat must be between 285 °F and 350 °F when applied.

39-1.09D Geosynthetic Pavement Interlayer

Place geosynthetic pavement interlayer in compliance with the manufacturer's recommendations.

Before placing the geosynthetic pavement interlayer and asphalt binder:

1. Repair cracks 1/4 inch and wider, spalls, and holes in the pavement. The State pays for this repair work under Section 4-1.03D, "Extra Work."
2. Clean the pavement of loose and extraneous material.

Immediately before placing the interlayer, apply 0.25 gallon ± 0.03 gallon of asphalt binder per square yard of interlayer or until the fabric is saturated. Apply asphalt binder the width of the geosynthetic pavement interlayer plus 3 inches on each side. At interlayer overlaps, apply asphalt binder on the lower interlayer the same overlap distance as the upper interlayer.

Asphalt binder must be from 285 °F to 350 °F and below the minimum melting point of the geosynthetic pavement interlayer when applied.

Align and place the interlayer with no overlapping wrinkles, except a wrinkle that overlaps may remain if it is less than 1/2 inch thick. If the overlapping wrinkle is more than 1/2 inch thick, cut the wrinkle out and overlap the interlayer no more than 2 inches.

The minimum HMA thickness over the interlayer must be 0.12 foot thick including conform tapers. Do not place the interlayer on a wet or frozen surface.

Overlap the interlayer borders between 2 inches and 4 inches. In the direction of paving, overlap the following roll with the preceding roll at any break.

You may use rolling equipment to correct distortions or wrinkles in the interlayer.

If asphalt binder tracked onto the interlayer or brought to the surface by construction equipment causes interlayer displacement, cover it with a small quantity of HMA.

Before placing HMA on the interlayer, do not expose the interlayer to:

1. Traffic except for crossings under traffic control and only after you place a small HMA quantity
2. Sharp turns from construction equipment
3. Damaging elements

Pave HMA on the interlayer during the same work shift.

39-1.10 SPREADING AND COMPACTING EQUIPMENT

Paving equipment for spreading must be:

1. Self-propelled
2. Mechanical
3. Equipped with a screed or strike-off assembly that can distribute HMA the full width of a traffic lane
4. Equipped with a full-width compacting device
5. Equipped with automatic screed controls and sensing devices that control the thickness, longitudinal grade, and transverse screed slope

Install and maintain grade and slope references.

The screed must produce a uniform HMA surface texture without tearing, shoving, or gouging.

The paver must not leave marks such as ridges and indentations unless you can eliminate them by rolling.

Rollers must be equipped with a system that prevents HMA from sticking to the wheels. You may use a parting agent that does not damage the HMA or impede the bonding of layers.

In areas inaccessible to spreading and compacting equipment:

1. Spread the HMA by any means to obtain the specified lines, grades and cross sections.
2. Use a pneumatic tamper, plate compactor, or equivalent to achieve thorough compaction.

39-1.11 TRANSPORTING, SPREADING, AND COMPACTING

Do not pave HMA on a wet pavement or frozen surface.

You may deposit HMA in a windrow and load it in the paver if:

1. Paver is equipped with a hopper that automatically feeds the screed
2. Loading equipment can pick up the windrowed material and deposit it in the paver hopper without damaging base material
3. Activities for deposit, pick-up, loading, and paving are continuous
4. HMA temperature in the windrow does not fall below 260 °F

You may pave HMA in 1 or more layers on areas less than 5 feet wide and outside the traveled way including shoulders. You may use mechanical equipment other than a paver for these areas. The equipment must produce a uniform smoothness and texture.

HMA handled, spread, or windrowed must not stain the finished surface of any improvement including pavement.

Do not use petroleum products such as kerosene or diesel fuel to release HMA from trucks, spreaders, or compactors.

HMA must be free of:

1. Segregation
2. Coarse or fine aggregate pockets
3. Hardened lumps

Longitudinal joints in the top layer must match specified lane edges. Alternate longitudinal joint offsets in lower layers at least 0.5 foot from each side of the specified lane edges. You may request in writing other longitudinal joint placement patterns.

Until the adjoining through lane's top layer has been paved, do not pave the top layer of:

1. Shoulders
2. Tapers
3. Transitions
4. Road connections
5. Driveways
6. Curve widenings
7. Chain control lanes
8. Turnouts

9. Turn pockets

If the number of lanes change, pave each through lane's top layer before paving a tapering lane's top layer. Simultaneous to paving a through lane's top layer, you may pave an adjoining area's top layer including shoulders. Do not operate spreading equipment on any area's top layer until completing final compaction.

If HMA (leveling) is specified, fill and level irregularities and ruts with HMA before spreading HMA over base, existing surfaces, or bridge decks. You may use mechanical equipment other than a paver for these areas. The equipment must produce a uniform smoothness and texture. HMA used to change an existing surface's cross slope or profile is not HMA (leveling).

If placing HMA against the edge of existing pavement, sawcut or grind the pavement straight and vertical along the joint and remove extraneous material without damaging the surface remaining in place. If placing HMA against the edge of a longitudinal or transverse construction joint and the joint is damaged or not placed to a neat line, sawcut or grind the pavement straight and vertical along the joint and remove extraneous material without damaging the surface remaining in place. Repair or remove and replace damaged pavement at your expense.

Rolling must leave the completed surface compacted and smooth without tearing, cracking, or shoving. Complete finish rolling activities before the pavement surface temperature is:

1. Below 150 °F for HMA with unmodified binder
2. Below 140 °F for HMA with modified binder
3. Below 200 °F for RHMA-G

If a vibratory roller is used as a finish roller, turn the vibrator off.

Do not use a pneumatic tired roller to compact RHMA-G.

For Standard and QC/QA, if a 3/4-inch aggregate grading is specified, you may use a 1/2-inch aggregate grading if the specified total paved thickness is at least 0.15 foot and less than 0.20 foot thick.

Spread and compact HMA under Section 39-3.03, "Spreading and Compacting Equipment," and Section 39-3.04, "Transporting, Spreading, and Compacting," for any of the following:

1. Specified paved thickness is less than 0.15 foot.
2. Specified paved thickness is less than 0.20 foot and a 3/4-inch aggregate grading is specified and used.
3. You spread and compact at:

    3.1. Asphalt concrete surfacing replacement areas
    3.2. Leveling courses
    3.3. Areas the Engineer determines conventional compaction and compaction measurement methods are impeded

Do not open new HMA pavement to public traffic until its mid-depth temperature is below 160 °F.

If you request in writing and the Engineer authorizes, you may cool HMA Type A and Type B with water when rolling activities are complete. Apply water under Section 17, "Watering."

Spread sand at a rate between 1 pound and 2 pounds per square yard on new RHMA-G, RHMA-O, and RHMA-O-HB pavement when finish rolling is complete. Sand must be free of clay or organic matter. Sand must comply with Section 90-3.03, "Fine Aggregate Grading." Keep traffic off the pavement until spreading sand is complete.

39-1.12 SMOOTHNESS

39-1.12A General

Determine HMA smoothness with a profilograph and a straightedge.

Smoothness specifications do not apply to OGFC placed on existing pavement not constructed under the same project.

If portland cement concrete is placed on HMA:

1. Cold plane the HMA finished surface to within specified tolerances if it is higher than the grade specified by the Engineer.
2. Remove and replace HMA if the finished surface is lower than 0.05 foot below the grade specified by the Engineer.

39-1.12B Straightedge

The HMA pavement top layer must not vary from the lower edge of a 12-foot long straightedge:

1. More than 0.01 foot when the straight edge is laid parallel with the centerline
2. More than 0.02 foot when the straightedge is laid perpendicular to the centerline and extends from edge to edge of a traffic lane
3. More than 0.02 foot when the straightedge is laid within 24 feet of a pavement conform

39-1.12C Profilograph

Under California Test 526, determine the zero (null) blanking band Profile Index (PI_0) and must-grinds on the top layer of HMA Type A, Type B, and RHMA-G pavement. Take 2 profiles within each traffic lane, 3 feet from and parallel with the edge of each lane.

A must-grind is a deviation of 0.3 inch or more in a length of 25 feet. You must correct must-grinds.

For OGFC, only determine must-grinds when placed over HMA constructed under the same project. The top layer of the underlying HMA must comply with the smoothness specifications before placing OGFC.

Profile pavement in the Engineer's presence. Choose the time of profiling.

On tangents and horizontal curves with a centerline radius of curvature 2,000 feet or more, the PI_0 must be at most 2.5 inches per 0.1-mile section.

On horizontal curves with a centerline radius of curvature between 1,000 feet and 2,000 feet including pavement within the superelevation transitions, the PI_0 must be at most 5 inches per 0.1-mile section.

Before the Engineer accepts HMA pavement for smoothness, submit written final profilograms.

Submit 1 electronic copy of profile information in Microsoft Excel and 1 electronic copy of longitudinal pavement profiles in ".erd" format or other ProVAL compatible format to the Engineer and to:

Smoothness@dot.ca.gov

The following HMA pavement areas do not require a PI_0. You must measure these areas with a 12-foot straightedge and determine must-grinds with a profilograph:

1. New HMA with a total thickness less than 0.25 foot
2. HMA sections of city or county streets and roads, turn lanes and collector lanes that are less than 1,500 feet in length

The following HMA pavement areas do not require a PI_0. You must measure these areas with a 12-foot straightedge:

1. Horizontal curves with a centerline radius of curvature less than 1,000 feet including pavement within the superelevation transitions of those curves
2. Within 12 feet of a transverse joint separating the pavement from:

    2.1. Existing pavement not constructed under the same project
    2.2. A bridge deck or approach slab

3. Exit ramp termini, truck weigh stations, and weigh-in-motion areas
4. If steep grades and superelevation rates greater than 6 percent are present on:

    4.1. Ramps
    4.2. Connectors

5. Turn lanes
6. Areas within 15 feet of manholes or drainage transitions
7. Acceleration and deceleration lanes for at-grade intersections
8. Shoulders and miscellaneous areas
9. HMA pavement within 3 feet from and parallel to the construction joints formed between curbs, gutters, or existing pavement

39-1.12D Smoothness Correction

If the top layer of HMA Type A, Type B, or RHMA-G pavement does not comply with the smoothness specifications, grind the pavement to within tolerances, remove and replace it, or place a layer of HMA. The Engineer must authorize your choice of correction before the work begins.

Remove and replace the areas of OGFC not in compliance with the must-grind and straightedge specifications, except you may grind OGFC for correcting smoothness:

1. At a transverse joint separating the pavement from pavement not constructed under the same project
2. Within 12 feet of a transverse joint separating the pavement from a bridge deck or approach slab

Corrected HMA pavement areas must be uniform rectangles with edges:

1. Parallel to the nearest HMA pavement edge or lane line
2. Perpendicular to the pavement centerline

Measure the corrected HMA pavement surface with a profilograph and a 12-foot straightedge and correct the pavement to within specified tolerances. If a must-grind area or straightedged pavement cannot be corrected to within specified tolerances, remove and replace the pavement.

On ground areas not overlaid with OGFC, apply fog seal coat under Section 37-1, "Seal Coats."

39-1.13 MISCELLANEOUS AREAS AND DIKES

Miscellaneous areas are outside the traveled way and include:

1. Median areas not including inside shoulders
2. Island areas
3. Sidewalks
4. Gutters
5. Gutter flares
6. Ditches
7. Overside drains
8. Aprons at the ends of drainage structures

Spread miscellaneous areas in 1 layer and compact to the specified lines and grades.

For miscellaneous areas and dikes:

1. Do not submit a JMF.
2. Choose the 3/8-inch or 1/2-inch HMA Type A and Type B aggregate gradations.
3. Minimum asphalt binder content must be 6.8 percent for 3/8-inch aggregate and 6.0 percent for 1/2-inch aggregate. If you request in writing and the Engineer authorizes, you may reduce the minimum asphalt binder content.
4. Choose asphalt binder Grade PG 70-10 or the same grade specified for HMA.

39-2 STANDARD

39-2.01 DESCRIPTION

If HMA is specified as Standard, construct it under Section 39-1, "General," this Section 39-2, "Standard," and Section 39-5, "Measurement and Payment."

39-2.02 CONTRACTOR QUALITY CONTROL

39-2.02A Quality Control Plan

Establish, implement, and maintain a Quality Control Plan (QCP) for HMA. The QCP must describe the organization and procedures you will use to:

1. Control the quality characteristics
2. Determine when corrective actions are needed (action limits)
3. Implement corrective actions

When you submit the proposed JMF, submit the written QCP. You and the Engineer must discuss the QCP during the prepaving conference.

The QCP must address the elements affecting HMA quality including:

1. Aggregate
2. Asphalt binder

3. Additives
4. Production
5. Paving

The Engineer reviews each QCP within 5 business days from the submittal. Hold HMA production until the Engineer accepts the QCP in writing. The Engineer's QCP acceptance does not mean your compliance with the QCP will result in acceptable HMA. Section 39-1.05, "Engineer's Acceptance," specifies HMA acceptance.

39-2.02B Quality Control Testing

Perform sampling and testing at the specified frequency for the following quality characteristics:

Minimum Quality Control – Standard

Quality Characteristic	Test Method	Minimum Sampling and Testing Frequency	HMA Type			
			A	B	RHMA-G	OGFC
Aggregate gradation[a]	CT 202	1 per 750 tons and any remaining part at the end of the project	JMF ± Tolerance [b]	JMF ± Tolerance [b]	JMF ± Tolerance [b]	JMF ± Tolerance [b]
Sand equivalent (min.) [c]	CT 217		47	42	47	--
Asphalt binder content (%)	CT 379 or 382		JMF ± 0.45	JMF ± 0.45	JMF ± 0.50	JMF ± 0.50
HMA moisture content (%, max.)	CT 226 or CT 370	1 per 2,500 tons but not less than 1 per paving day	1.0	1.0	1.0	1.0
Field compaction, (%, max. theoretical density) [d,e]	Quality control plan	2 per business day (min.)	91 - 97	91 - 97	91 - 97	--
Stabilometer value (min.) [c, f]	CT 366	One per 4,000 tons or 2 per 5 business days, which-ever is more				
No. 4 and 3/8" gradings			30	30	--	--
1/2" and 3/4" gradings			37	35	23	--
Air voids content (%) [c, g]	CT 367		4 ± 2	4 ± 2	Specification ± 2	--
Aggregate moisture content at continuous mixing plants and RAP moisture content at continuous mixing plants and batch mixing plants [h]	CT 226 or CT 370	2 per day during production	--	--	--	--
Percent of crushed particles coarse aggregate (%, min.)	CT 205	As necessary and designat-ed in the QCP. At least once per project				
One fractured face			90	25	--	90
Two fractured faces			75	--	90	75
Fine aggregate (%, min)						
(Passing No. 4 sieve and retained on No. 8 sieve.) One fractured face			70	20	70	90
Los Angeles Rattler (%, max.)	CT 211					
Loss at 100 rev.			12	--	12	12
Loss at 500 rev.			45	50	40	40

Flat and elongated particles (%, max. by weight @ 5:1)	CT 235		Report only	Report only	Report only	Report only
Fine aggregate angularity (%, min.)[i]	CT 234		45	45	45	--
Voids filled with asphalt (%)[j] No. 4 grading 3/8" grading 1/2" grading 3/4" grading	LP-3		 76.0 – 80.0 73.0 – 76.0 65.0 – 75.0 65.0 – 75.0	 76.0 – 80.0 73.0 – 76.0 65.0 – 75.0 65.0 – 75.0	Report only	--
Voids in mineral aggregate (% min.)[j] No. 4 grading 3/8" grading 1/2" grading 3/4" grading	LP-2		 17.0 15.0 14.0 13.0	 17.0 15.0 14.0 13.0	 -- -- 18.0 – 23.0 [k] 18.0 – 23.0 [k]	--
Dust proportion[j] No. 4 and 3/8" gradings 1/2" and 3/4" gradings	LP-4		 0.9 – 2.0 0.6 – 1.3	 0.9 – 2.0 0.6 – 1.3	Report only	--
Smoothness	Section 39-1.12	--	12-foot straightedge, must-grind, and PI_0	12-foot straightedge, must-grind, and PI_0	12-foot straightedge, must-grind, and PI_0	12-foot straightedge and must-grind
Asphalt rubber binder viscosity @ 375 °F, centipoises	Section 39-1.02D	Section 39-1.04C	--	--	1,500 – 4,000	1,500 – 4,000
Asphalt modifier	Section 39-1.02D	Section 39-1.04C	--	--	Section 39-1.02D	Section 39-1.02D
Crumb rubber modifier	Section 39-1.02D	Section 39-1.04C	--	--	Section 39-1.02D	Section 39-1.02D

Notes:

[a] Determine combined aggregate gradation containing RAP under Laboratory Procedure LP-9.

[b] The tolerances must comply with the allowable tolerances in Section 39-1.02E, "Aggregate."

[c] Report the average of 3 tests from a single split sample.

[d] Determine field compaction for any of the following conditions:

1. 1/2-inch, 3/8-inch, No. 4 aggregate grading is used and the specified total paved thickness is at least 0.15 foot.
2. 3/4-inch aggregate grading is used and the specified total paved thickness is at least 0.20 foot.

[e] To determine field compaction use:

1. In-place density measurements using the method specified in your QC.
2. California Test 309 to determine maximum theoretical density at the frequency specified in California Test 375, Part 5C.

[f] Modify California Test 304, Part 2.B.2.c: "After compaction in the mechanical compactor, cool to 140 °F ± 5 °F by allowing the briquettes to cool at room temperature for 0.5 hour, then place the briquettes in the oven at 140 °F for a minimum of 2 hours and not more than 3 hours."

[g] Determine the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.

[h] For adjusting the plant controller at the HMA plant.

[i] The Engineer waives this specification if HMA contains 10 percent or less of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.

[j] Report only if the adjustment for asphalt binder content target value is less than or equal to ± 0.3 percent from OBC.

[k] Voids in mineral aggregate for RHMA-G must be within this range.

For any single quality characteristic except smoothness, if 2 consecutive quality control test results do not comply with the action limits or specifications:

1. Stop production.
2. Notify the Engineer in writing.
3. Take corrective action.
4. Demonstrate compliance with the specifications before resuming production and placement on the State highway.

39-2.03 ENGINEER'S ACCEPTANCE

39-2.03A Testing

The Engineer samples for acceptance testing and tests for:

HMA Acceptance - Standard

Quality Characteristic	Test Method	HMA Type			
		A	B	RHMA-G	OGFC
Aggregate gradation [a]	CT 202	JMF ± Tolerance [c]	JMF ± Tolerance [c]	JMF ± Tolerance [c]	JMF ± Tolerance [c]
Sieve: 3/4" / 1/2" / 3/8"					
1/2": X [b] / /					
3/8": / X /					
No. 4: / / X					
No. 8: X / X / X					
No. 200: X / X / X					
Sand equivalent (min.) [d]	CT 217	47	42	47	--
Asphalt binder content (%)	CT 379 or 382	JMF ± 0.45	JMF ± 0.45	JMF ± 0.50	JMF ± 0.50
HMA moisture content (%, max.)	CT 226 or CT 370	1.0	1.0	1.0	1.0
Field compaction (% max. theoretical density) [e,f]	CT 375	91 – 97	91 – 97	91 – 97	--
Stabilometer value (min.) [d,g]	CT 366				
No. 4 and 3/8" gradings		30	30	--	--
1/2" and 3/4" gradings		37	35	23	--
Air voids content (%) [d, h]	CT 367	4 ± 2	4 ± 2	Specification ± 2	--
Percent of crushed particles	CT 205				
Coarse aggregate (%, min.)					
One fractured face		90	25	--	90
Two fractured faces		75	--	90	75
Fine aggregate (%, min) (Passing No. 4 sieve and retained on No. 8 sieve.)					
One fractured face		70	20	70	90
Los Angeles Rattler (%, max.)	CT 211				
Loss at 100 rev.		12	--	12	12
Loss at 500 rev.		45	50	40	40
Fine aggregate angularity (%, min.) [i]	CT 234	45	45	45	--
Flat and elongated particles (%, max. by weight @ 5:1)	CT 235	Report only	Report only	Report only	Report only
Voids filled with asphalt (%) [j]	LP-3				
No. 4 grading		76.0 – 80.0	76.0 – 80.0	Report only	
3/8" grading		73.0 – 76.0	73.0 – 76.0		--
1/2" grading		65.0 – 75.0	65.0 – 75.0		
3/4" grading		65.0 – 75.0	65.0 – 75.0		
Voids in mineral aggregate (% min.) [j]	LP-2				
No. 4 grading		17.0	17.0	--	
3/8" grading		15.0	15.0	--	--
1/2" grading		14.0	14.0	18.0 – 23.0 [k]	
3/4" grading		13.0	13.0	18.0 – 23.0 [k]	
Dust proportion [j]	LP-4				
No. 4 and 3/8" gradings		0.9 – 2.0	0.9 – 2.0	Report only	--
1/2" and 3/4" gradings		0.6 – 1.3	0.6 – 1.3		
Smoothness	Section 39-1.12	12-foot straightedge, must-grind, and PI_0	12-foot straightedge, must-grind, and PI_0	12-foot straightedge, must-grind, and PI_0	12-foot straightedge and must-grind
Asphalt binder	Various	Section 92	Section 92	Section 92	Section 92

Asphalt rubber binder	Various	--	--	Section 92-1.02(C) and Section 39-1.02D	Section 92-1.02(C) and Section 39-1.02D
Asphalt modifier	Various	--	--	Section 39-1.02D	Section 39-1.02D
Crumb rubber modifier	Various	--	--	Section 39-1.02D	Section 39-1.02D

[a] The Engineer determines combined aggregate gradations containing RAP under Laboratory Procedure LP-9.
[b] "X" denotes the sieves the Engineer considers for the specified aggregate gradation.
[c] The tolerances must comply with the allowable tolerances in Section 39-1.02E, "Aggregate."
[d] The Engineer reports the average of 3 tests from a single split sample.
[e] The Engineer determines field compaction for any of the following conditions:

1. 1/2-inch, 3/8-inch, or No.4 aggregate grading is used and the specified total paved thickness is at least 0.15 foot.
2. 3/4-inch aggregate grading is used and the specified total paved thickness is at least 0.20 foot.

[f] To determined field compaction, the Engineer uses:

1. California Test 308, Method A, to determine in-place density of each density core.
2. California Test 309 to determine maximum theoretical density at the frequency specified in California Test 375, Part 5C.

[g] Modify California Test 304, Part 2.B.2.c: "After compaction in the mechanical compactor, cool to 140 °F ±5 °F by allowing the briquettes to cool at room temperature for 0.5 hour, then place the briquettes in the oven at 140 °F for a minimum of 2 hours and not more than 3 hours."
[h] The Engineer determines the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.
[i] The Engineer waives this specification if HMA contains 10 percent or less of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.
[j] Report only if the adjustment for asphalt binder content target value is less than or equal to ± 0.3 percent from OBC.
[k] Voids in mineral aggregate for RHMA-G must be within this range.

No single test result may represent more than the smaller of 750 tons or 1 day's production.

For any single quality characteristic except smoothness, if 2 consecutive acceptance test results do not comply with the specifications:

1. Stop production.
2. Take corrective action.
3. In the Engineer's presence, take samples and split each sample into 4 parts. Test 1 part for compliance with the specifications and submit 3 parts to the Engineer. The Engineer tests 1 part for compliance with the specifications and reserves and stores 2 parts.
4. Demonstrate compliance with the specifications before resuming production and placement on the State highway.

The Engineer tests the density core you take from each 250 tons of HMA production. The Engineer determines the percent of maximum theoretical density for each density core by determining the density core's density and dividing by the maximum theoretical density.

The Engineer determines the percent of maximum theoretical density from density cores taken from the final layer measured the full depth of the total paved HMA thickness if any of the following applies:

1. 1/2-inch, 3/8-inch, or No. 4 aggregate grading is used and the specified total paved thickness is at least 0.15 foot and any layer is less than 0.15 foot.
2. 3/4-inch aggregate grading is used and the specified total paved thickness is at least 0.20 foot and any layer is less than 0.20 foot.

For percent of maximum theoretical density, the Engineer determines a deduction for each test result outside the specifications in compliance with:

Reduced Payment Factors for Percent of Maximum Theoretical Density

HMA Type A and B and RHMA-G Percent of Maximum Theoretical Density	Reduced Payment Factor	HMA Type A and B and RHMA-G Percent of Maximum Theoretical Density	Reduced Payment Factor
91.0	0.0000	97.0	0.0000
90.9	0.0125	97.1	0.0125
90.8	0.0250	97.2	0.0250
90.7	0.0375	97.3	0.0375
90.6	0.0500	97.4	0.0500
90.5	0.0625	97.5	0.0625
90.4	0.0750	97.6	0.0750
90.3	0.0875	97.7	0.0875
90.2	0.1000	97.8	0.1000
90.1	0.1125	97.9	0.1125
90.0	0.1250	98.0	0.1250
89.9	0.1375	98.1	0.1375
89.8	0.1500	98.2	0.1500
89.7	0.1625	98.3	0.1625
89.6	0.1750	98.4	0.1750
89.5	0.1875	98.5	0.1875
89.4	0.2000	98.6	0.2000
89.3	0.2125	98.7	0.2125
89.2	0.2250	98.8	0.2250
89.1	0.2375	98.9	0.2375
89.0	0.2500	99.0	0.2500
< 89.0	Remove and Replace	> 99.0	Remove and Replace

39-2.04 TRANSPORTING, SPREADING, AND COMPACTING

Determine the number of rollers needed to obtain the specified density and surface finish.

39-3 METHOD

39-3.01 DESCRIPTION

If HMA is specified as Method, construct it under Section 39-1, "General," this Section 39-3, "Method," and Section 39-5, "Measurement and Payment."

39-3.02 ENGINEER'S ACCEPTANCE

39-3.02A Testing

The Engineer samples for acceptance testing and tests for:

HMA Acceptance - Method

Quality Characteristic	Test Method	HMA Type			
		A	B	RHMA-G	OGFC
Aggregate gradation [a]	CT 202	JMF ± Tolerance [b]	JMF ± Tolerance [b]	JMF ± Tolerance [b]	JMF ± Tolerance [b]
Sand equivalent (min.) [c]	CT 217	47	42	47	--
Asphalt binder content (%)	CT 379 or 382	JMF ± 0.45	JMF ± 0.45	JMF ± 0.50	JMF ± 0.50
HMA moisture content (%, max.)	CT 226 or CT 370	1.0	1.0	1.0	1.0
Stabilometer value (min.) [c,d]	CT 366				
No. 4 and 3/8" gradings		30	30	--	--
1/2" and 3/4" gradings		37	35	23	--
Percent of crushed particles	CT 205				
Coarse aggregate (% min.)					
One fractured face		90	25	--	90
Two fractured faces		75	--	90	75
Fine aggregate (% min) (Passing No. 4 sieve and retained on No. 8 sieve.)					
One fractured face		70	20	70	90
Los Angeles Rattler (% max.)	CT 211				
Loss at 100 rev.		12	--	12	12
Loss at 500 rev.		45	50	40	40
Air voids content (%) [c, e]	CT 367	4 ± 2	4 ± 2	Specification ± 2	--
Fine aggregate angularity (% min.)[f]	CT 234	45	45	45	--
Flat and elongated particles (% max. by weight @ 5:1)	CT 235	Report only	Report only	Report only	Report only
Voids filled with asphalt (%) [g]	LP-3			Report only	
No. 4 grading		76.0 – 80.0	76.0 – 80.0		--
3/8" grading		73.0 – 76.0	73.0 – 76.0		
1/2" grading		65.0 – 75.0	65.0 – 75.0		
3/4" grading		65.0 – 75.0	65.0 – 75.0		
Voids in mineral aggregate (% min.) [g]	LP-2				
No. 4 grading		17.0	17.0	--	--
3/8" grading		15.0	15.0	--	
1/2" grading		14.0	14.0	18.0 – 23.0 [h]	
3/4" grading		13.0	13.0	18.0 – 23.0 [h]	
Dust proportion [g]	LP-4				
No. 4 and 3/8" gradings		0.9 – 2.0	0.9 – 2.0	Report only	--
1/2" and 3/4" gradings		0.6 – 1.3	0.6 – 1.3		
Smoothness	Section 39-1.12	12-foot straightedge and must-grind	12-foot straightedge and must-grind	12-foot straightedge and must-grind	12-foot straightedge and must-grind
Asphalt binder	Various	Section 92	Section 92	Section 92	Section 92

Asphalt rubber binder	Various	--	--	Section 92-1.02(C) and Section 39-1.02D	Section 92-1.02(C) and Section 39-1.02D
Asphalt modifier	Various	--	--	Section 39-1.02D	Section 39-1.02D
Crumb rubber modifier	Various	--	--	Section 39-1.02D	Section 39-1.02D

[a] The Engineer determines combined aggregate gradations containing RAP under Laboratory Procedure LP-9.
[b] The tolerances must comply with the allowable tolerances in Section 39-1.02E, "Aggregate."
[c] The Engineer reports the average of 3 tests from a single split sample.
[d] Modify California Test 304, Part 2.B.2.c: "After compaction in the mechanical compactor, cool to 140 °F ±5 °F by allowing the briquettes to cool at room temperature for 0.5 hour, then place the briquettes in the oven at 140 °F for a minimum of 2 hours and not more than 3 hours."
[e] The Engineer determines the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.
[f] The Engineer waives this specification if HMA contains 10 percent or less of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.
[g] Report only if the adjustment for asphalt binder content target value is less than or equal to ± 0.3 percent from OBC.
[h] Voids in mineral aggregate for RHMA-G must be within this range.

No single test result may represent more than the smaller of 750 tons or 1 day's production.

For any single quality characteristic except smoothness, if 2 consecutive acceptance test results do not comply with the specifications:

1. Stop production.
2. Take corrective action.
3. In the Engineer's presence, take samples and split each sample into 4 parts. Test 1 part for compliance with the specifications and submit 3 parts to the Engineer. The Engineer tests 1 part for compliance with the specifications and reserves and stores 2 parts.
4. Demonstrate compliance with the specifications before resuming production and placement on the State highway.

39-3.03 SPREADING AND COMPACTING EQUIPMENT

Each paver spreading HMA Type A and Type B must be followed by 3 rollers:

1. One vibratory roller specifically designed to compact HMA. The roller must be capable of at least 2,500 vibrations per minute and must be equipped with amplitude and frequency controls. The roller's gross static weight must be at least 7.5 tons.
2. One oscillating type pneumatic-tired roller at least 4 feet wide. Pneumatic tires must be of equal size, diameter, type, and ply. The tires must be inflated to 60 psi minimum and maintained so that the air pressure does not vary more than 5 psi.
3. One steel-tired, 2-axle tandem roller. The roller's gross static weight must be at least 7.5 tons.

Each roller must have a separate operator. Rollers must be self-propelled and reversible.

Compact RHMA-G under the specifications for compacting HMA Type A and Type B except do not use pneumatic-tired rollers.

Compact OGFC with steel-tired, 2-axle tandem rollers. If placing over 300 tons of OGFC per hour, use at least 3 rollers for each paver. If placing less than 300 tons of OGFC per hour, use at least 2 rollers for each paver. Each roller must weigh between 126 pounds to 172 pounds per linear inch of drum width. Turn the vibrator off.

39-3.04 TRANSPORTING, SPREADING, AND COMPACTING

Pave HMA in maximum 0.25-foot thick compacted layers.

If the surface to be paved is both in sunlight and shade, pavement surface temperatures are taken in the shade.

Spread HMA Type A and Type B only if atmospheric and surface temperatures are:

Minimum Atmospheric and Surface Temperatures

Compacted Layer Thickness, feet	Atmospheric,° F		Surface,° F	
	Unmodified Asphalt Binder	Modified Asphalt Binder[a]	Unmodified Asphalt Binder	Modified Asphalt Binder[a]
< 0.15	55	50	60	55
0.15 – 0.25	45	45	50	50

Note:
[a] Except asphalt rubber binder.

If the asphalt binder for HMA Type A and Type B is:

1. Unmodified asphalt binder, complete:

   1.1. First coverage of breakdown compaction before the surface temperature drops below 250 °F
   1.2. Breakdown and intermediate compaction before the surface temperature drops below 200 °F
   1.3. Finish compaction before the surface temperature drops below 150 °F

2. Modified asphalt binder, complete:

   2.1. First coverage of breakdown compaction before the surface temperature drops below 240 °F
   2.2. Breakdown and intermediate compaction before the surface temperature drops below 180 °F
   2.3. Finish compaction before the surface temperature drops below 140 °F

For RHMA-G:

1. Only spread and compact if the atmospheric temperature is at least 55 °F and the surface temperature is at least 60 °F.
2. Complete the first coverage of breakdown compaction before the surface temperature drops below 285 °F.
3. Complete breakdown and intermediate compaction before the surface temperature drops below 250 °F.
4. Complete finish compaction before the surface temperature drops below 200 °F.
5. If the atmospheric temperature is below 70 °F, cover loads in trucks with tarpaulins. The tarpaulins must completely cover the exposed load until you transfer the mixture to the paver's hopper or to the pavement surface.

For OGFC with unmodified asphalt binder:

1. Only spread and compact if the atmospheric temperature is at least 55 °F and the surface temperature is at least 60 °F.
2. Complete first coverage using 2 rollers before the surface temperature drops below 240 °F.
3. Complete all compaction before the surface temperature drops below 200 °F.
4. If the atmospheric temperature is below 70 °F, cover loads in trucks with tarpaulins. The tarpaulins must completely cover the exposed load until you transfer the mixture to the paver's hopper or to the pavement surface.

For OGFC with modified asphalt binder except asphalt rubber binder:

1. Only spread and compact if the atmospheric temperature is at least 50 °F and the surface temperature is at least 50 °F.
2. Complete first coverage using 2 rollers before the surface temperature drops below 240 °F.
3. Complete all compaction before the surface temperature drops below 180 °F.
4. If the atmospheric temperature is below 70 °F, cover loads in trucks with tarpaulins. The tarpaulins must completely cover the exposed load until you transfer the mixture to the paver's hopper or to the pavement surface.

For RHMA-O and RHMA-O-HB:

1. Only spread and compact if the atmospheric temperature is at least 55 °F and surface temperature is at least 60 °F.

2 Complete the 1st coverage using 2 rollers before the surface temperature drops below 280 °F.
3. Complete compaction before the surface temperature drops below 250 °F.
4. If the atmospheric temperature is below 70 °F, cover loads in trucks with tarpaulins. The tarpaulins must completely cover the exposed load until the mixture is transferred to the paver's hopper or to the pavement surface.

For RHMA-G and OGFC, tarpaulins are not required if the time from discharge to truck until transfer to the paver's hopper or the pavement surface is less than 30 minutes.

HMA compaction coverage is the number of passes needed to cover the paving width. A pass is 1 roller's movement parallel to the paving in either direction. Overlapping passes are part of the coverage being made and are not a subsequent coverage. Do not start a coverage until completing the prior coverage.

Start rolling at the lower edge and progress toward the highest part.

Perform breakdown compaction of each layer of HMA Type A, Type B, and RHMA-G with 3 coverages using a vibratory roller. The speed of the vibratory roller in miles per hour must not exceed the vibrations per minute divided by 1,000. If the HMA layer thickness is less than 0.08 foot, turn the vibrator off. The Engineer may order fewer coverages if the HMA layer thickness is less than 0.15 foot.

Perform intermediate compaction of each layer of HMA Type A and Type B with 3 coverages using a pneumatic-tired roller at a speed not to exceed 5 mph.

Perform finish compaction of HMA Type A, Type B, and RHMA-G with 1 coverage using a steel-tired roller.

Compact OGFC with 2 coverages using steel-tired rollers.

39-4 QUALITY CONTROL / QUALITY ASSURANCE

39-4.01 DESCRIPTION

If HMA is specified as Quality Control / Quality Assurance, construct it under Section 39-1, "General," this Section 39-4, "Quality Control / Quality Assurance," and Section 39-5, "Measurement and Payment."

39-4.02 GENERAL

The QC / QA construction process consists of:

1. Establishing, maintaining, and changing if needed a quality control system providing assurance the HMA complies with the specifications
2. Sampling and testing at specified intervals, or sublots, to demonstrate compliance and to control process
3. The Engineer sampling and testing at specified intervals to verify testing process and HMA quality
4. The Engineer using test results, statistical evaluation of verified quality control tests, and inspection to accept HMA for payment

A lot is a quantity of HMA. The Engineer designates a new lot when:

1. 20 sublots are complete
2. The JMF changes
3. Production stops for more than 30 days

Each lot consists of no more than 20 sublots. A sublot is 750 tons except HMA paved at day's end greater than 250 tons is a sublot. If HMA paved at day's end is less than 250 tons, you may either make this quantity a sublot or include it in the previous sublot's test results for statistical evaluation.

39-4.03 CONTRACTOR QUALITY CONTROL

39-4.03A General

Use a composite quality factor, QF_C, and individual quality factors, QF_{QCi}, to control your process and evaluate your quality control program. For quality characteristics without quality factors, use your quality control plan's action limits to control process.

Control HMA quality including:

1. Materials
2. Proportioning
3. Spreading and compacting
4. Finished roadway surface

Develop, implement, and maintain a quality control program that includes:

1. Inspection
2. Sampling
3. Testing

39-4.03B Quality Control Plan

With the JMF submittal, submit a written Quality Control Plan (QCP). The QCP must comply with the Department's Quality Control Manual for Hot Mix Asphalt Production and Placement. Discuss the QCP with the Engineer during the prepaving conference.

The Engineer reviews each QCP within 5 business days from the submittal. Hold HMA production until the Engineer accepts the QCP in writing. The Engineer's QCP acceptance does not mean your compliance with the QCP will result in acceptable HMA. Section 39-1.05, "Engineer's Acceptance," specifies HMA acceptance.

The QCP must include the name and qualifications of a Quality Control Manager. The Quality Control Manager administers the QCP and during paving must be at the job site within 3 hours of receiving notice. The Quality Control Manager must not be any of the following on the project:

1. Foreman
2. Production or paving crewmember
3. Inspector
4. Tester

The QCP must include action limits and details of corrective action you will take if a test result for any quality characteristic falls outside an action limit.

As work progresses, you must submit a written QCP supplement to change quality control procedures, personnel, tester qualification status, or laboratory accreditation status.

39-4.03C Quality Control Inspection, Sampling, And Testing

Sample, test, inspect, and manage HMA quality control.

Provide a roadway inspector while HMA paving activities are in progress. Provide a plant inspector during HMA production.

Inspectors must comply with the Department's Quality Control Manual for Hot Mix Asphalt Production and Placement.

Provide a testing laboratory and personnel for quality control testing. Provide the Engineer unrestricted access to the quality control activities. Before providing services for the project, the Engineer reviews, accredits, and qualifies the testing laboratory and personnel under the Department's Independent Assurance Program.

The minimum random sampling and testing for quality control is:

Minimum Quality Control – QC / QA

Quality Characteristic	Test Method	Min-imum Sampl-ing and Testing Frequen-cy	HMA Type			Location of Sampling	Max. Report-ing Time Allow-ance
			A	B	RHMA-G		
Aggregate gradation [a]	CT 202	1 per 750 tons	JMF ± Tolerance [b]	JMF ± Tolerance [b]	JMF ± Tolerance [b]	CT 125	24 hours
Asphalt binder content (%)	CT 379 or 382		JMF ±0.45	JMF ±0.45	JMF ±0.5	Loose Mix Behind Paver See CT 125	
Field compaction (% max. theoretical density) [c,d]	QC Plan		92 - 96	92 - 96	91 - 96	QC Plan	
Aggregate moisture content at continuous mixing plants and RAP moisture content at continuous mixing plants and batch mixing plants [e]	CT 226 or CT 370	2 per day during produc-tion	--	--	--	Stock-piles or cold feed belts	--
Sand equivalent (min.) [f]	CT 217	1 per 750 tons	47	42	47	CT 125	24 hours
HMA moisture content (%,max.)	CT 226 or CT 370	1 per 2,500 tons but not less than 1 per paving day	1.0	1.0	1.0	Loose Mix Behind Paver See CT 125	24 hours
Stabilometer Value (min.) [f, g] No. 4 and 3/8" gradings 1/2" and 3/4" gradings	CT 366	1 per 4,000 tons or 2 per 5 busi-ness days, which-ever is more	30 37	30 35	-- 23		48 hours
Air voids content (%)[f, h]	CT 367		4 ± 2	4 ± 2	Specifica-tion ± 2		

Percent of crushed particles coarse aggregate (% min.) One fractured face Two fractured faces Fine aggregate (% min) (Passing No. 4 sieve and retained on No. 8 sieve.) One fractured face	CT 205	As necessary and designated in QCP. At least once per project.	 90 75 70	 25 -- 20	 -- 90 70	CT 125	48 hours
Los Angeles Rattler (% max.) Loss at 100 rev. Loss at 500 rev.	CT 211		 12 45	 -- 50	 12 40	CT 125	
Fine aggregate angularity (% min.) [i]	CT 234		45	45	45	CT 125	
Flat and elongated particle (% max. by weight @ 5:1)	CT 235		Report only	Report only	Report only	CT 125	
Voids filled with asphalt (%) [j] No. 4 grading 3/8" grading 1/2" grading 3/4" grading	LP-3		 76.0 – 80.0 73.0 – 76.0 65.0 – 75.0 65.0 – 75.0	 76.0 – 80.0 73.0 – 76.0 65.0 – 75.0 65.0 – 75.0	Report only	LP-3	
Voids in mineral aggregate (% min.) [j] No. 4 grading 3/8" grading 1/2" grading 3/4" grading	LP-2		 17.0 15.0 14.0 13.0	 17.0 15.0 14.0 13.0	 -- -- 18.0 – 23.0 [k] 18.0 – 23.0 [k]	LP-2	
Dust proportion [j] No. 4 and 3/8" gradings 1/2" and 3/4" gradings	LP-4		 0.9 – 2.0 0.6 – 1.3	 0.9 – 2.0 0.6 – 1.3	Report only	LP-4	
Smoothness	Section 39-1.12	--	12-foot straight-edge, must-grind, and PI_0	12-foot straight-edge, must-grind, and PI_0	12-foot straight-edge, must-grind, and PI_0	--	
Asphalt rubber binder viscosity @ 375 °F, centipoises	Section 39-1.02D	--	--	--	1,500 – 4,000	Section 39-1.02D	24 hours
Crumb rubber modifier	Section 39-1.02D	--	--	--	Section 39-1.02D	Section 39-1.02D	48 hours

Notes:

[a] Determine combined aggregate gradation containing RAP under Laboratory Procedure LP-9.

[b] The tolerances must comply with the allowable tolerances in Section 39-1.02E, "Aggregate."

[c] Determine field compaction for any of the following conditions:

1. 1/2-inch, 3/8-inch, No. 4 aggregate grading is used and the specified total paved thickness is at least 0.15 foot.
2. 3/4-inch aggregate grading is used and the specified total paved thickness is at least 0.20 foot.

[d] To determine field compaction use:

1. In-place density measurements using the method specified in your QC.
2. California Test 309 to determine maximum theoretical density at the frequency specified in California Test 375, Part 5C.

[e] For adjusting the plant controller at the HMA plant.
[f] Report the average of 3 tests from a single split sample.
[g] Modify California Test 304, Part 2.B.2.c: "After compaction in the mechanical compactor, cool to 140 °F ± 5 °F by allowing the briquettes to cool at room temperature for 0.5 hour, then place the briquettes in the oven at 140 °F for a minimum of 2 hours and not more than 3 hours."
[h] Determine the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.
[i] The Engineer waives this specification if HMA contains 10 percent or less of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.
[j] Report only if the adjustment for asphalt binder content target value is less than or equal to ± 0.3 percent from OBC.
[k] Voids in mineral aggregate for RHMA-G must be within this range.

Within the specified reporting time, submit written test results including:

1. Sampling location, quantity, and time
2. Testing results
3. Supporting data and calculations

If test results for any quality characteristic are beyond the action limits in the QCP, take corrective actions. Document the corrective actions taken in the inspection records under Section 39-4.03E, "Records of Inspection and Testing."

Stop production, notify the Engineer in writing, take corrective action, and demonstrate compliance with the specifications before resuming production and placement on the State highway if:

1. A lot's composite quality factor, QF_C, or an individual quality factor, QF_{QCi} for i = 3, 4, or 5, is below 0.90 determined under Section 39-4.03F, "Statistical Evaluation," using quality control data
2. An individual quality factor, QF_{QCi} for i = 1 or 2, is below 0.75 using quality control data
3. Quality characteristics for which a quality factor, QF_{QCi}, is not determined has 2 consecutive quality control tests not in compliance with the specifications

39-4.03D Charts And Records

Record sampling and testing results for quality control on forms provided in the "Quality Control Manual for Hot Mix Asphalt," or on forms you submit with the QCP. The QCP must also include form posting locations and submittal times.

Submit quality control test results using the Department's statistical evaluation program, HMAPay, available at

www.dot.ca.gov/hq/construc/hma/index.htm

39-4.03E Records Of Inspection And Testing

During HMA production, submit in writing a daily:

1. HMA Construction Daily Record of Inspection. Also make this record available at the HMA plant and job site each day.
2. HMA Inspection and Testing Summary. Include in the summary:

    2.1. QC worksheet with updated test results from the HMAPay program
    2.2. Test forms with the testers' signatures and Quality Control Manager's initials.
    2.3. Inspection forms with the inspectors' signatures and Quality Control Manager's initials.
    2.4. A list and explanation of deviations from the specifications or regular practices.
    2.5. A signed statement by the Quality Control Manager that says:

    "It is hereby certified that the information contained in this record is accurate, and that information, tests, or calculations documented herein comply with the specifications of the contract and the

standards set forth in the testing procedures. Exceptions to this certification are documented as part of this record."

Retain for inspection the records generated as part of quality control including inspection, sampling, and testing for at least 3 years after final acceptance.

39-4.03F Statistical Evaluation

General

Determine a lot's composite quality factor, QF_C, and the individual quality factors, QF_{QCi}. Perform statistical evaluation calculations to determine these quality factors based on quality control test results for:

1. Aggregate gradation
2. Asphalt binder content
3. Percent of maximum theoretical density

The Engineer grants a waiver and you must use 1.0 as the individual quality factor for percent of maximum theoretical density, QF_{QC5}, for HMA paved in:

1. Areas where the total paved thickness is less than 0.15 foot
2. Areas where the total paved thickness is less than 0.20 foot and a 3/4-inch grading is specified and used
3. Dig outs
4. Leveling courses
5. Areas where, in the opinion of the Engineer, compaction or compaction measurement by conventional methods is impeded

Statistical Evaluation Calculations

Use the Variability-Unknown / Standard Deviation Method to determine the percentage of a lot not in compliance with the specifications.

Determine the percentage of work not in compliance with the specification limits for each quality characteristic as follows:

1. Calculate the arithmetic mean ($\overline{X}$) of the test values

$$\overline{X} = \frac{\Sigma x}{n}$$

where:

x = individual test values
n = number of test values

2. Calculate the standard deviation

$$s = \sqrt{\frac{n\,(\Sigma x^2)-(\Sigma x)^2}{n(n-1)}}$$

where:

$\sum(x^2)$ = sum of the squares of individual test values
$(\sum x)^2$ = sum of the individual test values squared
n = number of test values

3. Calculate the upper quality index (Qu)

$$Q_u = \frac{USL - \overline{X}}{s}$$

where:

USL = target value plus the production tolerance or upper specification limit

s = standard deviation
$\overline{X}$ = arithmetic mean

4. Calculate the lower quality index (QL);

$$Q_L = \frac{\overline{X} - LSL}{s}$$

where:

LSL = target value minus production tolerance or lower specification limit
s = standard deviation
$\overline{X}$ = arithmetic mean

5. From the table, Upper Quality Index Q_U or Lower Quality Index Q_L, of this Section 39-4.03F, "Statistical Evaluation", determine P_U ;

where:

P_U = the estimated percentage of work outside the USL.
$P_U = 0$, when USL is not specified.

6. From the table, Upper Quality Index Q_U or Lower Quality Index Q_L, of this Section 39-4.03F, "Statistical Evaluation," determine P_L;

where:

P_L = the estimated percentage of work outside the LSL.
$P_L = 0$, when LSL is not specified.

7. Calculate the total estimated percentage of work outside the USL and LSL, percent defective

Percent defective = $P_U + P_L$

P_U and P_L are determined from:

P_U or P_L	**Upper Quality Index Q_U or Lower Quality Index Q_L**												
	Sample Size (n)												
	5	6	7	8	9	10-11	12-14	15-17	18-22	23-29	30-42	43-66	>66
0	1.72	1.88	1.99	2.07	2.13	2.20	2.28	2.34	2.39	2.44	2.48	2.51	2.56
1	1.64	1.75	1.82	1.88	1.91	1.96	2.01	2.04	2.07	2.09	2.12	2.14	2.16
2	1.58	1.66	1.72	1.75	1.78	1.81	1.84	1.87	1.89	1.91	1.93	1.94	1.95
3	1.52	1.59	1.63	1.66	1.68	1.71	1.73	1.75	1.76	1.78	1.79	1.80	1.81
4	1.47	1.52	1.56	1.58	1.60	1.62	1.64	1.65	1.66	1.67	1.68	1.69	1.70
5	1.42	1.47	1.49	1.51	1.52	1.54	1.55	1.56	1.57	1.58	1.59	1.59	1.60
6	1.38	1.41	1.43	1.45	1.46	1.47	1.48	1.49	1.50	1.50	1.51	1.51	1.52
7	1.33	1.36	1.38	1.39	1.40	1.41	1.41	1.42	1.43	1.43	1.44	1.44	1.44
8	1.29	1.31	1.33	1.33	1.34	1.35	1.35	1.36	1.36	1.37	1.37	1.37	1.38
9	1.25	1.27	1.28	1.28	1.29	1.29	1.30	1.30	1.30	1.31	1.31	1.31	1.31
10	1.21	1.23	1.23	1.24	1.24	1.24	1.25	1.25	1.25	1.25	1.25	1.26	1.26
11	1.18	1.18	1.19	1.19	1.19	1.19	1.20	1.20	1.20	1.20	1.20	1.20	1.20
12	1.14	1.14	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15
13	1.10	1.10	1.10	1.10	1.10	1.10	1.11	1.11	1.11	1.11	1.11	1.11	1.11
14	1.07	1.07	1.07	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
15	1.03	1.03	1.03	1.03	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
16	1.00	0.99	0.99	0.99	0.99	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
17	0.97	0.96	0.95	0.95	0.95	0.95	0.94	0.94	0.94	0.94	0.94	0.94	0.94
18	0.93	0.92	0.92	0.92	0.91	0.91	0.91	0.91	0.90	0.90	0.90	0.90	0.90
19	0.90	0.89	0.88	0.88	0.88	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
20	0.87	0.86	0.85	0.85	0.84	0.84	0.84	0.83	0.83	0.83	0.83	0.83	0.83
21	0.84	0.82	0.82	0.81	0.81	0.81	0.80	0.80	0.80	0.80	0.80	0.80	0.79
22	0.81	0.79	0.79	0.78	0.78	0.77	0.77	0.77	0.76	0.76	0.76	0.76	0.76
23	0.77	0.76	0.75	0.75	0.74	0.74	0.74	0.73	0.73	0.73	0.73	0.73	0.73
24	0.74	0.73	0.72	0.72	0.71	0.71	0.70	0.70	0.70	0.70	0.70	0.70	0.70
25	0.71	0.70	0.69	0.69	0.68	0.68	0.67	0.67	0.67	0.67	0.67	0.67	0.66
26	0.68	0.67	0.67	0.65	0.65	0.65	0.64	0.64	0.64	0.64	0.64	0.64	0.63
27	0.65	0.64	0.63	0.62	0.62	0.62	0.61	0.61	0.61	0.61	0.61	0.61	0.60
28	0.62	0.61	0.60	0.59	0.59	0.59	0.58	0.58	0.58	0.58	0.58	0.58	0.57
29	0.59	0.58	0.57	0.57	0.56	0.56	0.55	0.55	0.55	0.55	0.55	0.55	0.54
30	0.56	0.55	0.54	0.54	0.53	0.53	0.52	0.52	0.52	0.52	0.52	0.52	0.52
31	0.53	0.52	0.51	0.51	0.50	0.50	0.50	0.49	0.49	0.49	0.49	0.49	0.49
32	0.50	0.49	0.48	0.48	0.48	0.47	0.47	0.47	0.46	0.46	0.46	0.46	0.46
33	0.47	0.48	0.45	0.45	0.45	0.44	0.44	0.44	0.44	0.43	0.43	0.43	0.43
34	0.45	0.43	0.43	0.42	0.42	0.42	0.41	0.41	0.41	0.41	0.41	0.41	0.40
35	0.42	0.40	0.40	0.39	0.39	0.39	0.38	0.38	0.38	0.38	0.38	0.38	0.38
36	0.39	0.38	0.37	0.37	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
37	0.36	0.35	0.34	0.34	0.34	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.32
38	0.33	0.32	0.32	0.31	0.31	0.31	0.30	0.30	0.30	0.30	0.30	0.30	0.30
39	0.30	0.30	0.29	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
40	0.28	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
41	0.25	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
42	0.23	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
43	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
44	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
45	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
46	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
47	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
48	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
49	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

1. If the value of Q_U or Q_L does not correspond to a value in the table, use the next lower value.
2. If Q_U or Q_L are negative values, P_U or P_L is equal to 100 minus the table value for P_U or P_L.

Quality Factor Determination

Determine individual quality factors, QF_{QCi}, using percent defective = $P_U + P_L$ and:

Quality Factors

Quality Factor	Maximum Allowable Percent Defective ($P_U + P_L$) Sample Size (n)												
	5	6	7	8	9	10-11	12-14	15-17	18-22	23-29	30-42	43-66	>66
1.05				0	0	0	0	0	0	0	0	0	0
1.04			0	1	3	5	4	4	4	3	3	3	3
1.03		0	2	4	6	8	7	7	6	5	5	4	4
1.02		1	3	6	9	11	10	9	8	7	7	6	6
1.01	0	2	5	8	11	13	12	11	10	9	8	8	7
1.00	22	20	18	17	16	15	14	13	12	11	10	9	8
0.99	24	22	20	19	18	17	16	15	14	13	11	10	9
0.98	26	24	22	21	20	19	18	16	15	14	13	12	10
0.97	28	26	24	23	22	21	19	18	17	16	14	13	12
0.96	30	28	26	25	24	22	21	19	18	17	16	14	13
0.95	32	29	28	26	25	24	22	21	20	18	17	16	14
0.94	33	31	29	28	27	25	24	22	21	20	18	17	15
0.93	35	33	31	29	28	27	25	24	22	21	20	18	16
0.92	37	34	32	31	30	28	27	25	24	22	21	19	18
0.91	38	36	34	32	31	30	28	26	25	24	22	21	19
0.90	39	37	35	34	33	31	29	28	26	25	23	22	20
0.89	41	38	37	35	34	32	31	29	28	26	25	23	21
0.88	42	40	38	36	35	34	32	30	29	27	26	24	22
0.87	43	41	39	38	37	35	33	32	30	29	27	25	23
0.86	45	42	41	39	38	36	34	33	31	30	28	26	24
0.85	46	44	42	40	39	38	36	34	33	31	29	28	25
0.84	47	45	43	42	40	39	37	35	34	32	30	29	27
0.83	49	46	44	43	42	40	38	36	35	33	31	30	28
0.82	50	47	46	44	43	41	39	38	36	34	33	31	29
0.81	51	49	47	45	44	42	41	39	37	36	34	32	30
0.80	52	50	48	46	45	44	42	40	38	37	35	33	31
0.79	54	51	49	48	46	45	43	41	39	38	36	34	32
0.78	55	52	50	49	48	46	44	42	41	39	37	35	33
0.77	56	54	52	50	49	47	45	43	42	40	38	36	34
0.76	57	55	53	51	50	48	46	44	43	41	39	37	35
0.75	58	56	54	52	51	49	47	46	44	42	40	38	36
	60	57	55	53	52	51	48	47	45	43	41	40	37
	61	58	56	55	53	52	50	48	46	44	43	41	38
Reject	62	59	57	56	54	53	51	49	47	45	44	42	39
	63	61	58	57	55	54	52	50	48	47	45	43	40
	64	62	60	58	57	55	53	51	49	48	46	44	41
Reject Values Greater Than Those Shown Above													

Notes:

1. To obtain a quality factor when the estimated percent outside specification limits from table, "Upper Quality Index Q_U or Lower Quality Index Q_L," does not correspond to a value in the table, use the next larger value.

Compute the composite of single quality factors, QF_C, for a lot using:

$$QF_C = \sum_{i=1}^{5} w_i \, QF_{QC_i}$$

where:

QF_C = the composite quality factor for the lot rounded to 2 decimal places.
QF_{QCi} = the quality factor for the individual quality characteristic.
w = the weighting factor listed in the table HMA Acceptance – QC / QA.

i = the quality characteristic index number in the table HMA Acceptance – QC / QA.

39-4.04 ENGINEER'S QUALITY ASSURANCE

39-4.04A General

The Engineer assures quality by:

1. Reviewing mix designs and proposed JMF
2. Inspecting procedures
3. Conducting oversight of quality control inspection and records
4. Verification sampling and testing during production and paving

39-4.04B Verification Sampling And Testing

General

The Engineer samples:

1. Aggregate to verify gradation
2. HMA to verify asphalt binder content

Verification

For aggregate gradation and asphalt binder content, the minimum ratio of verification testing frequency to quality control testing frequency is 1:5. The Engineer performs at least 3 verification tests per lot.

Using the t-test, the Engineer compares quality control tests results for aggregate gradation and asphalt binder content with corresponding verification test results. The Engineer uses the average and standard deviation of up to 20 sequential sublots for the comparison. The Engineer uses production start-up evaluation tests to represent the first sublot. When there are less than 20 sequential sublots, the Engineer uses the maximum number of sequential sublots available. The 21st sublot becomes the 1st sublot (n = 1) in the next lot.

The t-value for a group of test data is computed as follows:

$$t = \frac{|\overline{X}_c - \overline{X}_v|}{S_p\sqrt{\frac{1}{n_c} + \frac{1}{n_v}}} \qquad \text{and} \qquad S_p^2 = \frac{S_c^2(n_c - 1) + S_v^2(n_v - 1)}{n_c + n_v - 2}$$

where:

n_c = Number of quality control tests (2 minimum, 20 maximum).
n_v = Number of verification tests (minimum of 1 required).
$\overline{X}_c$ = Mean of quality control tests.
$\overline{X}_v$ = Mean of verification tests.
S_p = Pooled standard deviation (When $n_v = 1$, $S_p = S_c$).
S_c = Standard deviation of quality control tests.
S_v = Standard deviation of verification tests (when $n_v > 1$).

The comparison of quality control test results and the verification test results is at a level of significance of $\alpha = 0.025$. The Engineer computes t and compares it to the critical t-value, t_{crit}, from:

Critical T-Value

Degrees of freedom (n_c+n_v-2)	t_{crit} (for $\alpha = 0.025$)	Degrees of freedom (n_c+n_v-2)	t_{crit} (for $\alpha = 0.025$)
1	24.452	18	2.445
2	6.205	19	2.433
3	4.177	20	2.423
4	3.495	21	2.414
5	3.163	22	2.405
6	2.969	23	2.398
7	2.841	24	2.391
8	2.752	25	2.385
9	2.685	26	2.379
10	2.634	27	2.373
11	2.593	28	2.368
12	2.560	29	2.364
13	2.533	30	2.360
14	2.510	40	2.329
15	2.490	60	2.299
16	2.473	120	2.270
17	2.458	∞	2.241

If the t-value computed is less than or equal to t_{crit}, quality control test results are verified.

If the t-value computed is greater than t_{crit} and both $\overline{X}_v$ and $\overline{X}_c$ comply with acceptance specifications, the quality control tests are verified. You may continue to produce and place HMA with the following allowable differences:

1. $\left|\overline{X}_v - \overline{X}_c\right| \leq 1.0$ percent for any grading
2. $\left|\overline{X}_v - \overline{X}_c\right| \leq 0.1$ percent for asphalt binder content

If the t-value computed is greater than t_{crit} and the $\left|\overline{X}_v - \overline{X}_c\right|$ for grading or asphalt binder content are greater than the allowable differences, quality control test results are not verified and:

1. The Engineer notifies you in writing.
2. You and the Engineer must investigate why the difference exist.
3. If the reason for the difference cannot be found and corrected, the Engineer's test results are used for acceptance and pay.

39-4.05 ENGINEER'S ACCEPTANCE

39-4.05A Testing

The Engineer samples for acceptance testing and tests for:

HMA Acceptance – QC / QA

Index (i)	Quality Characteristic				Weight-ing Factor (w)	Test Method	HMA Type		
							A	B	RHMA-G
		Aggregate gradation [a]							
	Sieve	3/4"	1/2"	3/8"					
1	1/2"	X [b]	--	--	0.05	CT 202	JMF ± Tolerance [c]		
1	3/8"	--	X	--	0.05				
1	No. 4	--	--	X	0.05				
2	No. 8	X	X	X	0.10				
3	No. 200	X	X	X	0.15				
4	Asphalt binder content (%)				0.30	CT 379 or 382	JMF ± 0.45	JMF ± 0.45	JMF ± 0.5
5	Field compaction (% max. theoretical density) [d,e]				0.40	CT 375	92 – 96	92 – 96	91 – 96
	Sand equivalent (min.) [f]					CT 217	47	42	47
	Stabilometer value (min.) [f,, g]					CT 366			
	No. 4 and 3/8" gradings						30	30	--
	1/2" and 3/4" gradings						37	35	23
	Air voids content (%)[f, h]					CT 367	4 ± 2	4 ± 2	Specifica-tion ± 2
	Percent of crushed particles coarse aggregate (% min.)					CT 205			
	One fractured face						90	25	--
	Two fractured faces						75	--	90
	Fine aggregate (% min) (Passing No. 4 sieve and retained on No. 8 sieve.) One fractured face						70	20	70
	HMA moisture content (%, max.)					CT 226 or CT 370	1.0	1.0	1.0
	Los Angeles Rattler (% max.)					CT 211			
	Loss at 100 rev.						12	--	12
	Loss at 500 rev.						45	50	40
	Fine aggregate angularity (% min.) [i]					CT 234	45	45	45
	Flat and elongated particle (% max. by weight @ 5:1)					CT 235	Report only	Report only	Report only
	Voids in mineral aggregate (% min.) [j]								(Note k)
	No. 4 grading						17.0	17.0	--
	3/8" grading					LP-2	15.0	15.0	--
	1/2" grading						14.0	14.0	18.0 - 23.0
	3/4" grading						13.0	13.0	18.0 - 23.0
	Voids filled with asphalt (%) [j]								
	No. 4 grading					LP-3	76.0 - 80.0	76.0 - 80.0	Report only
	3/8" grading						73.0 - 76.0	73.0 - 76.0	
	1/2" grading						65.0 - 75.0	65.0 - 75.0	
	3/4" grading						65.0 - 75.0	65.0 - 75.0	
	Dust proportion [j]					LP-4			
	No. 4 and 3/8" gradings						0.9 - 2.0	0.9 – 2.0	Report only
	1/2" and 3/4" gradings						0.6 - 1.3	0.6 – 1.3	

	Smoothness		Section 39-1.12	12-foot straight-edge, must-grind, and PI_0	12-foot straight-edge, must-grind, and PI_0	12-foot straight-edge, must-grind, and PI_0
	Asphalt binder		Various	Section 92	Section 92	Section 92
	Asphalt rubber binder		Various	--	--	Section 92-1.02(C) and Section 39-1.02D
	Asphalt modifier		Various	--	--	Section 39-1.02D
	Crumb rubber modifier		Various	--	--	Section 39-1.02D

Notes:

[a] The Engineer determines combined aggregate gradations containing RAP under Laboratory Procedure LP-9.

[b] "X" denotes the sieves the Engineer considers for the specified aggregate gradation.

[c] The tolerances must comply with the allowable tolerances in Section 39-1.02E, "Aggregate."

[d] The Engineer determines field compaction for any of the following conditions:

1. 1/2-inch, 3/8-inch, or No.4 aggregate grading is used and the specified total paved thickness is at least 0.15 foot.
2. 3/4-inch aggregate grading is used and the specified total paved thickness is at least 0.20 foot.

[e] To determined field compaction, the Engineer uses:

1. California Test 308, Method A, to determine in-place density of each density core.
2. California Test 309 to determine maximum theoretical density at the frequency specified in California Test 375, Part 5C.

[f] The Engineer reports the average of 3 tests from a single split sample.

[g] Modify California Test 304, Part 2.B.2.c: "After compaction in the mechanical compactor, cool to 140 °F ± 5 °F by allowing the briquettes to cool at room temperature for 0.5 hour, then place the briquettes in the oven at 140 °F for a minimum of 2 hours and not more than 3 hours."

[h] The Engineer determines the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.

[i] The Engineer waives this specification if HMA contains 10 percent or less of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.

[j] Report only if the adjustment for asphalt binder content target value is less than or equal to ± 0.3 percent from OBC.

[k] Voids in mineral aggregate for RHMA-G must be within this range.

The Engineer determines the percent of maximum theoretical density from the average density of 3 density cores you take from every 750 tons of production or part thereof divided by the maximum theoretical density.

The Engineer determines the percent of maximum theoretical density from density cores taken from the final layer measured the full depth of the total paved HMA thickness if any of the following applies:

1. If 1/2-inch, 3/8-inch, or No. 4 aggregate grading is used and the specified total paved thickness is at least 0.15 foot and any layer is less than 0.15 foot.
2. If 3/4-inch aggregate grading is used and the specified total paved thickness is at least 0.20 foot and any layer is less than 0.20 foot.

The Engineer calculates QF_{QCi} for i = 1, 2, 3, and 4 using quality control data and QF_{QCi} for i = 5 using quality assurance data.

The Engineer stops production and terminates a lot if:

1. The lot's composite quality factor, QF_C, or an individual quality factor, QF_{QCi} for i = 3, 4, or 5, is below 0.90 determined under Section 39-4.03F, "Statistical Evaluation"
2. An individual quality factor, QF_{QCi} for i = 1 or 2, is below 0.75

3. Quality characteristics for which a quality factor, QF_{QCi}, is not determined has 2 consecutive acceptance or quality control tests not in compliance with the specifications

For any single quality characteristic for which a quality factor, QF_{QCi}, is not determined, except smoothness, if 2 consecutive acceptance test results do not comply with specifications:

1. Stop production.
2. Take corrective action.
3. In the Engineer's presence, take samples and split each sample into 4 parts. Test 1 part for compliance with the specifications and submit 3 parts to the Engineer. The Engineer tests 1 part for compliance with the specifications and reserves and stores 2 parts.
4. Demonstrate compliance with the specifications before resuming production and placement on the State highway.

39-4.05B Statistical Evaluation, Determination Of Quality Factors And Acceptance

Statistical Evaluation and Determination of Quality Factors

To determine the individual quality factor, $QF_{QCi,}$ for any quality factor i = 1 through 5 or a lot's composite quality factor, QF_C, for acceptance and payment adjustment, the Engineer uses the evaluation specifications under Section 39-4.03F, "Statistical Evaluation," and:

1. Verified quality control test results for aggregate gradation
2. Verified quality control test results for asphalt binder content
3. The Engineer's test results for percent of maximum theoretical density

Lot Acceptance Based on Quality Factors

The Engineer accepts a lot based on the quality factors determined for aggregate gradation and asphalt binder content, QF_{QCi} for i = 1 through 4, using the total number of verified quality control test result values and the total percent defective ($P_U + P_L$).

The Engineer accepts a lot based on the quality factor determined for maximum theoretical density, QF_{QC5}, using the total number of test result values from density cores and the total percent defective ($P_U + P_L$).

The Engineer calculates the quality factor for the lot, QF_C, which is a composite of weighted individual quality factors, QF_{QCi}, determined for each quality characteristic in the HMA Acceptance – QC / QA table in Section 39-4.05A, "Testing."

The Engineer accepts a lot based on quality factors if:

1. The current composite quality factor, QF_C, is 0.90 or greater
2. Each individual quality factor, QF_{QCi} for i = 3, 4, and 5, is 0.90 or greater
3. Each individual quality factor, QF_{QCi} for i = 1 and 2, is 0.75 or greater

No single quality characteristic test may represent more than the smaller of 750 tons or 1 day's production.

Payment Adjustment

If a lot is accepted, the Engineer adjusts payment with the following formula:

$$PA = \sum_{i=1}^{n} HMACP * wi * \left[QFQCi * (HMATT - WHMATTi) + WHMATTi\right] - \left(HMACP * HMATT\right)$$

where:

PA =	Payment adjustment rounded to 2 decimal places.
HMACP =	HMA contract price.
HMATT =	HMA total tons represented in the lot.
$WHMATT_i$ =	Total tons of waived quality characteristic HMA.
QF_{QCi} =	Running quality factor for the individual quality characteristic. QF_{QCi} for i = 1 through 4 must be from verified Contractor's QC results. QF_{QC5} must be determined from the Engineer's results on density cores taken for percent of maximum theoretical density determination.
w =	Weighting factor listed in the HMA acceptance table.

i = Quality characteristic index number in the HMA acceptance table.

If the payment adjustment is a negative value, the Engineer deducts this amount from payment. If the payment adjustment is a positive value, the Engineer adds this amount to payment.

The 21st sublot becomes the 1st sublot (n = 1) in the next lot. When the 21st sequential sublot becomes the 1st sublot, the previous 20 sequential sublots become a lot for which the Engineer determines a quality factor. The Engineer uses this quality factor to pay for the HMA in the lot. If the next lot consists of less than 8 sublots, these sublots must be added to the previous lot for quality factor determination using 21 to 27 sublots.

39-4.05C Dispute Resolution

For a lot, if you or the Engineer dispute any quality factor, QF_{QCi}, or verification test result, every sublot in that lot must be retested.

Referee tests must be performed under the specifications for acceptance testing.

Any quality factor, QF_{QCi}, must be determined using the referee tests.

For any quality factor, QF_{QCi}, for i = 1 through 5, dispute resolution:

1. If the difference between the quality factors for QF_{QCi} using the referee test result and the disputed test result is less than or equal to 0.01, the original test result is correct.
2. If the difference between the quality factor for QF_{QCi} using the referee test result and the disputed test result is more than 0.01, the quality factor determined from the referee tests supersedes the previously determined quality factor.

39-5 MEASUREMENT AND PAYMENT

39-5.01 MEASUREMENT

The contract item for HMA is measured by weight. The weight of each HMA mixture designated in the Engineer's Estimate must be the combined mixture weight.

If tack coat, asphalt binder, and asphaltic emulsion are paid with separate contract items, their contract items are measured under Section 92, "Asphalts," or Section 94, "Asphaltic Emulsions," as the case may be.

If recorded batch weights are printed automatically, the contract item for HMA is measured by using the printed batch weights, provided:

1. Total aggregate and supplemental fine aggregate weight per batch is printed. If supplemental fine aggregate is weighed cumulatively with the aggregate, the total aggregate batch weight must include the supplemental fine aggregate weight.
2. Total asphalt binder weight per batch is printed.
3. Each truckload's zero tolerance weight is printed before weighing the first batch and after weighing the last batch.
4. Time, date, mix number, load number and truck identification is correlated with a load slip.
5. A copy of the recorded batch weights is certified by a licensed weighmaster and submitted to the Engineer.

The contract item for placing HMA dike is measured by the linear foot along the completed length. The contract item for placing HMA in miscellaneous areas is measured as the in-place compacted area in square yards. In addition to the quantities measured on a linear foot or square yard basis, the HMA for dike and miscellaneous areas are measured by weight.

The contract item for geosynthetic pavement interlayer is measured by the square yard for the actual pavement area covered.

39-5.02 PAYMENT

The contract prices paid per ton for hot mix asphalt as designated in the Engineer's Estimate include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved in constructing hot mix asphalt, complete in place, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

If HMA is specified to comply with Section 39-4, "Quality Control / Quality Assurance," the Engineer adjusts payment under that section.

Full compensation for the Quality Control Plan and prepaving conference is included in the contract prices paid per ton for hot mix asphalt as designated in the Engineer's Estimate and no additional compensation will be allowed therefor.

Full compensation for performing and submitting mix designs and for Contractor sampling, testing, inspection, testing facilities, and preparation and submittal of results is included in the contract prices paid per ton for HMA as designated in the Engineer's Estimate and no additional compensation will be allowed therefor.

Full compensation for reclaimed asphalt pavement is included in the contract prices paid per ton for HMA as designated in the Engineer's Estimate and no additional compensation will be allowed therefor.

The contract price paid per ton for hot mix asphalt (leveling) includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved in hot mix asphalt (leveling), complete in place, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

The State pays for HMA dike at the contract price per linear foot for place HMA dike and by the ton for HMA. The contract prices paid per linear foot for place hot mix asphalt dike as designated in the Engineer's Estimate include full compensation for furnishing all labor, tools, equipment, and incidentals, and for doing all the work involved in placing HMA dike, complete in place, including excavation, backfill, and preparation of the area to receive the dike, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

The State pays for HMA specified to be a miscellaneous area at the contract price per square yard for place hot mix asphalt (miscellaneous area) and per ton for hot mix asphalt. The contract price paid per square yard for place hot mix asphalt (miscellaneous area) includes full compensation for furnishing all labor, tools, equipment, and incidentals, and for doing all the work involved in placing HMA (miscellaneous area) complete in place, including excavation, backfill, and preparation of the area to receive HMA (miscellaneous area), as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

If the Quality Control / Quality Assurance construction process is specified, HMA placed in dikes and miscellaneous areas is paid for at the contract price per ton for hot mix asphalt under Section 39-4, "Quality Control / Quality Assurance." Section 39-4.05B, "Statistical Evaluation, Determination of Quality Factors and Acceptance," does not apply to HMA placed in dikes and miscellaneous areas.

If there are no contract items for place hot mix asphalt dike and place hot mix asphalt (miscellaneous area) and the work is specified, full compensation for constructing HMA dikes and HMA (miscellaneous areas) including excavation, backfill, and preparation of the area to receive HMA dike or HMA (miscellaneous area) is included in the contract price paid per ton for the hot mix asphalt designated in the Engineer's Estimate and no separate payment will be made therefor.

The contract price paid per square yard for geosynthetic pavement interlayer of the type shown on the verified Bid Item List includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in placing geosynthetic pavement interlayer, complete in place, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

The contract price paid per ton for paving asphalt (binder, geosynthetic pavement interlayer) includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in applying paving asphalt (binder, geosynthetic pavement interlayer), complete in place, including spreading sand to cover exposed binder material, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

Full compensation for small quantities of HMA placed on geosynthetic pavement interlayer to prevent displacement during construction is included in the contract price paid per ton for the HMA being paved over the interlayer and no separate payment will be made therefor.

The contract price paid per ton for tack coat includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in applying tack coat, complete in place, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

The Engineer does not adjust payment for increases or decreases in the quantities for tack coat, regardless of the reason for the increase or decrease. Section 4-1.03B, "Increased or Decreased Quantities," does not apply to the items for tack coat.

Full compensation for performing smoothness testing, submitting written and electronic copies of tests, and performing corrective work including applying fog seal coat is included in the contract price paid per ton for the HMA designated in the Engineer's Estimate and no separate payment will be made therefor.

Full compensation for spreading sand on RHMA-G, RHMA-O, and RHMA-O-HB surfaces and for sweeping and removing excess sand is included in the contract price paid per ton for rubberized hot mix asphalt as designated in the Engineer's Estimate and no separate payment will be made therefor.

If the dispute resolution ITP determines the Engineer's test results are correct, the Engineer deducts the ITP's testing costs from payments. If the ITP determines your test results are correct, the State pays the ITP's testing costs. If, in the Engineer's opinion, work completion is delayed because of incorrect Engineer test results, the Department makes payment and time adjustments under Section 8-1.09, "Delays."

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SECTION 42 GROOVE AND GRIND PAVEMENT
(Issued 05-15-09)

In Section 42-2.02 replace the 3rd paragraph with:

Existing portland cement concrete pavement not constructed as part of the project shall be ground as follows:

Grinding shall be performed so that the pavement surface on both sides of all transverse joints and cracks has essentially the same depth of texture and does not vary from a true plane enough to permit a 0.006-foot thick shim 0.25-foot wide to pass under a 3-foot straightedge adjacent to either side of the joint or crack when the straightedge is laid on the pavement parallel to centerline with its midpoint at the joint or crack. After grinding has been completed, the pavement shall conform to the straightedge and profile requirements specified in Section 40-1.03, "Quality Control and Assurance."

Abnormally depressed areas due to subsidence or other localized causes will be excluded from testing with the profilograph and 12-foot straightedge specified in Section 40-1.03. The accumulated total of the excluded areas shall not exceed 5 percent of the total area to be ground. Profilograph testing shall end 25 feet prior to excluded areas and shall resume 25 feet following the excluded areas.

In Section 42-2.03 replace the 2nd paragraph with:

Replacement concrete paving shall conform to the provisions in Section 40, "Concrete Pavement." Replacement pavement may be spread and shaped by any suitable powered finishing machines, supplemented by handwork as necessary. Consolidation of the concrete shall be by means of high-frequency internal vibrators within 15 minutes after the concrete is deposited on the subgrade. Vibrating shall be done with care and in such manner to assure adequate consolidation adjacent to forms and uniformly across the full paving width. Use of vibrators for extensive shifting of the mass of concrete will not be permitted. Methods of spreading, shaping and compacting that result in segregation, voids or rock pockets shall be discontinued, and the Contractor shall adopt methods which will produce dense homogeneous pavement conforming to the required cross section. Finishing may be performed by hand method, as specified in Section 40-3.11B, "Stationary Side Form Finishing."

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SECTION 51 CONCRETE STRUCTURES
(Issued 08-05-11)

In Section 51-1.05 in the 11th paragraph, replace the 1st sentence with:

Form panels for exposed surfaces shall be furnished and placed in uniform widths of not less than 3 feet and in uniform lengths of not less than 6 feet, except at the end of continuously formed surfaces where the final panel length required is less than 6 feet.

In Section 51-1.06A(3) in the 1st paragraph, replace items E and F with:

E. When timber members are used to brace falsework bents which are located adjacent to roadways or railroads, all connections for the timber bracing shall be of the bolted type using 5/8-inch diameter or larger bolts or coil rod with a root diameter equal to that of the shank of a 5/8-inch diameter bolt.

F. Falsework member clearances must be at least those shown in the following table:

Falsework member	Clearances	
	To railing members, barriers, and anchored temporary railings	To unanchored temporary railings
Footings	0'-3"	2'-0"
Piles	1'-0"	2'-9"
Other members	2'-0"	2'-9"

In Section 51-1.06C in the 11th paragraph, replace the 1st sentence with:

Falsework for box culverts and other structures with decks lower than the roadway pavement and with span lengths of 14 feet or less shall not be released until the last placed concrete has attained a compressive strength of 1,600 psi, provided that curing of the concrete is not interrupted.

In Section 51-1.11 replace the 6th paragraph with:

Construction methods and equipment employed by the Contractor shall conform to the provisions in Section 7-1.02, "Load Limitations."

In Section 51-1.12D replace the 4th paragraph with:

Expanded polystyrene shall be a commercially available polystyrene board. Expanded polystyrene shall have a minimum flexural strength of 35 psi determined in conformance with the requirements in ASTM Designation: C 203 and a compressive yield strength of between 16 and 40 psi at 5 percent compression. Surfaces of expanded polystyrene against which concrete is placed shall be faced with hardboard. Hardboard shall be 1/8 inch minimum thickness, conforming to ANSI A135.4, any class. Other facing materials may be used provided they furnish equivalent protection. Boards shall be held in place by nails, waterproof adhesive, or other means approved by the Engineer.

In Section 51-1.12F replace the 3rd paragraph with:

Type A and AL joint seals shall consist of a groove in the concrete that is filled with field-mixed silicone sealant.

In Section 51-1.12F in the 6th paragraph, replace the table with:

Movement Rating (MR)	Seal Type
MR ≤ 1 inch	Type A or Type B
1 inch < MR ≤ 2 inches	Type B
2 inches < MR ≤ 4 inches	Joint Seal Assembly (Strip Seal)
MR > 4 inches	Joint Seal Assembly (Modular Unit) or Seismic Joint

In Section 51-1.12F(3)(a) replace the 1st and 2nd paragraphs with:

The sealant must consist of a 2-component silicone sealant that will withstand up to ±50 percent movement. Silicone sealants must be tested under California Test 435 and must comply with the following:

Specification	Requirement
Modulus at 150 percent elongation	8-75 psi
Recovery	21/32 inch max.
Notch Test	Notched or loss of bond 1/4 inch, max.
Water Resistance	Notched or loss of bond 1/4 inch, max.
Ultraviolet Exposure ASTM Designation: G 154, Table X2.1,Cycle 2.	No more than slight checking or cracking.
Cone Penetration	4.5-12.0 mm

In Section 51-1.12F(3)(a) delete the 3rd and 8th paragraphs.

In Section 51-1.12F(3)(a) replace the 10th paragraph with:

A Certificate of Compliance accompanied by a certified test report must be furnished for each batch of silicone sealant in conformance with the provisions in Section 6-1.07, "Certificates of Compliance."

In Section 51-1.12F(3)(b) replace the 2nd paragraph with:

The preformed elastomeric joint seal must conform to the requirements in ASTM D 2628 and the following:

1. The seal must consist of a multichannel, nonporous, homogeneous material furnished in a finished extruded form.
2. The minimum depth of the seal measured at the contact surface must be at least 95 percent of the minimum uncompressed width of the seal as designated by the manufacturer.
3. When tested in conformance with the requirements in California Test 673 for Type B seals, joint seals must provide a movement rating (MR) of not less than that shown on the plans.
4. The top and bottom edges of the joint seal must maintain continuous contact with the sides of the groove over the entire range of joint movement.
5. The seal must be furnished full length for each joint with no more than 1 shop splice in any 60-foot length of seal.
6. The Contractor must demonstrate the adequacy of the procedures to be used in the work before installing seals in the joints.
7. One field splice per joint may be made at locations and by methods approved by the Engineer. The seals are to be manufactured full length for the intended joint, then cut at the approved splice section and rematched before splicing. The Contractor must submit splicing details prepared by the joint seal manufacturer for approval before beginning splicing work.
8. Shop splices and field splices must have no visible offset of exterior surfaces and must show no evidence of bond failure.
9. At all open ends of the seal that would admit water or debris, each cell must be filled to a depth of 3 inches with commercial quality open cell polyurethane foam or closed by other means subject to approval by the Engineer.

In Section 51-1.12F(3)(b) replace the 7th paragraph with:

The joint seal must be installed full length for each joint with equipment that does not twist or distort the seal, elongate the seal longitudinally, or otherwise cause damage to the seal or to the concrete forming the groove.

In Section 51-1.12F(3)(b) in the 11th paragraph, replace the 1st sentence with:

Samples of the prefabricated joint seals, not less than 3 feet in length, will be taken by the Engineer from each lot of material.

In Section 51-1.12H(1) in the 6th paragraph, replace the 4th and 5th sentences with:

Each ply of fabric shall have a breaking strength of not less than 800 pounds per inch of width in each thread direction when 3" x 36" samples are tested on split drum grips. The bond between double plies shall have a minimum peel strength of 20 pounds per inch.

In Section 51-1.12H(1) in the 8th paragraph in the table, replace the hardness (Type A) requirements with:

Hardness (Type A)	D 2240 with 2kg mass.	55 ±5

In Section 51-1.12H(2) in the 1st paragraph in item A, replace the 1st and 2nd sentences with:

The bearings shall consist of alternating steel laminates and internal elastomer laminates with top and bottom elastomer covers. Steel laminates shall have a nominal thickness of 0.075 inch (14 gage).

In Section 51-1.13 replace the 2nd, 3rd, and 4th paragraphs with:

Surfaces of fresh concrete at horizontal construction joints shall be thoroughly consolidated without completely removing surface irregularities. Additionally, surfaces of fresh concrete at horizontal construction joints between girder stems and decks shall be roughened to at least a 1/4-inch amplitude.

Construction joint surfaces shall be cleaned of surface laitance, curing compound, and other foreign materials using abrasive blast methods before fresh concrete is placed against the joint surface.

Construction joint surfaces shall be flushed with water and allowed to dry to a surface dry condition immediately before placing concrete.

In Section 51-1.135 replace the 1st paragraph with:

Mortar shall be composed of cementitious material, sand, and water proportioned and mixed as specified in this Section 51-1.135.

In Section 51-1.135 replace the 3rd paragraph with:

The proportion of cementitious material to sand, measured by volume, shall be 1 to 2 unless otherwise specified.

In Section 51-1.17 in 4th paragraph, replace the 3rd sentence with:

The surfaces shall have a profile trace showing no high points in excess of 0.25 inch, and the portions of the surfaces within the traveled way shall have a profile count of 5 or less in any 100 foot section.

Add:

51-1.17A Deck Crack Treatment

The Contractor shall use all means necessary to minimize the development of shrinkage cracks.

The Contractor shall remove all equipment and materials from the deck and clean the surface as necessary for the Engineer to measure the surface crack intensity. Surface crack intensity will be determined by the Engineer after completion of concrete cure, before prestressing, and before the release of falsework. In any 500 square foot portion of deck within the limits of the new concrete deck, should the intensity of cracking be such that there are more than 50 feet of cracks whose width at any location exceeds 0.02 inch, the deck shall be treated with a high molecular weight methacrylate (HMWM) resin system. The area of deck to be treated shall have a width that extends for the entire width of new deck inside the concrete barriers and a length that extends at least 5 feet beyond the furthest single continuous crack outside the 500 square foot portion, measured from where that crack exceeds 0.02 inch in width, as determined by the Engineer.

Deck crack treatment shall include furnishing, testing, and applying the HMWM resin system, with sand and absorbent material. If grinding is required, deck crack treatment shall take place before grinding.

51-1.17A(1) Submittals

Submit a HMWM resin system placement plan. When HMWM resin is to be applied within 100 feet of a residence, business, or public space including sidewalks under a structure, also submit a public safety plan. Submit plans under Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications. The review time is 15 days.

The HMWM resin system placement plan must include:

1. Schedule of work and testing for each bridge
2. Description of equipment for applying HMWM resin
3. Range of gel time and final cure time for HMWM resin
4. Absorbent material to be used
5. Description of equipment for applying and removing excess sand and absorbent material
6. Procedure for removing HMWM resin from the deck, including equipment
7. Storage and handling of HMWM resin components and absorbent material
8. Disposal of excess HMWM resin and containers

The public safety plan must include:

1. A public notification letter with a list of delivery and posting addresses. The letter must state HMWM resin work locations, dates, times, and what to expect. Deliver the letter to residences and businesses within 100 feet of HMWM resin work locations and to local fire and police officials at least 7 days before starting work. Post the letter at the job site.
2. An airborne emissions monitoring plan prepared and executed by a certified industrial hygienist (CIH) certified in comprehensive practice by the American Board of Industrial Hygiene. The plan must have at least 4 monitoring points including the mixing point, application point, and point of nearest public contact. Monitor airborne emissions during HMWM resin work and submit emissions monitoring results after completing the work.

3. An action plan for protection of the public when airborne emissions levels exceed permissible levels.
4. A copy of the CIH's certification.

If the measures proposed in the safety plan are inadequate to provide for public safety associated with the use of HMWM resin, the Engineer will reject the plan and direct the Contractor to revise the plan. Directions for revisions will be in writing and include detailed comments. The Engineer will notify the Contractor of the approval or rejection of a submitted or revised plan within 15 days of receipt of that plan.

51-1.17A(2) Quality Control and Assurance

Submit samples of HMWM resin components 15 days before use under Section 6-3, "Testing," of the Standard Specifications. Notify the Engineer 15 days before delivery of HMWM resin components in containers over 55 gallons to the job site.

Complete a test area before starting work. Results from airborne emissions monitoring of the test area must be submitted to the Engineer before starting production work.

The test area must:

1. Be approximately 500 square feet
2. Be placed within the project limits outside the traveled way at an approved location
3. Be constructed using the same equipment as the production work
4. Replicate field conditions for the production work
5. Demonstrate proposed means and methods meet the acceptance criteria
6. Demonstrate production work will be completed within the time allowed
7. Demonstrate suitability of the airborne emissions monitoring plan

The test area will be acceptable if:

1. The treated deck surface is tack free and non-oily
2. The sand cover adheres and resists brushing by hand
3. Excess sand and absorbent material has been removed
4. The coefficient of friction is at least 0.35 when tested under California Test 342

51-1.17A(3) Materials

HMWM resin system consists of a resin, promoter, and initiator. HMWM resin must be low odor and comply with the following:

HMWM Resin

Property	Requirement	Test Method
Volatile Content*	30 percent, maximum	ASTM D 2369
Viscosity *	25 cP, maximum, (Brookfield RVT with UL adaptor, 50 RPM at 77°F)	ASTM D 2196
Specific Gravity *	0.90 minimum, at 77°F	ASTM D 1475
Flash Point *	180°F, minimum	ASTM D 3278
Vapor Pressure *	1.0 mm Hg, maximum, at 77°F	ASTM D 323
Tack-free Time	400 minutes, maximum, at 25°C	Specimens prepared per California Test 551
PCC Saturated Surface-Dry Bond Strength	3.5 MPa, minimum at 24 hours and 21 ± 1°C	California Test 551

* Test must be performed before adding initiator.

Sand for abrasive sand finish must:

1. Be commercial quality dry blast sand

2. Have at least 95 percent pass the No. 8 sieve and at least 95 percent retained on the No. 20 sieve when tested under California Test 205

Absorbent material must be diatomaceous earth, abrasive blast dust, or substitute recommended by the HMWM resin supplier and approved by the Engineer.

51-1.17A(4) Construction

HMWM resin system applied by machine must be:

1. Combined in volumetric streams of promoted resin to initiated resin by static in-line mixers
2. Applied without atomization

HMWM resin system may be applied manually. Limit the quantity of resin mixed for manual application to 5 gallons at a time.

Prepare the area to be treated by abrasive blasting. Curing compound, surface contaminants, and foreign material must be removed from the bridge deck surface. Sweep the deck surface clean after abrasive blasting and blow loose material from cracks using high-pressure air.

The deck surface must be dry when abrasive blast cleaning is performed. When abrasive blast cleaning within 10 feet of public traffic, remove dust and residue from abrasive blast cleaning using a vacuum attachment operating concurrently with blasting equipment . If the deck surface becomes contaminated before placing HMWM, abrasive blast clean the contaminated area and sweep the deck clean.

The deck must be dry before applying HMWM resin. The concrete surface must be at least 50 degrees F and at most 100 degrees F. Relative humidity must be expected to be at most 85 percent during the work shift.

Thoroughly mix all components of the HMWM resin system. Apply HMWM resin to the deck surface within 5 minutes of mixing at approximately 90 sq ft per gallon. The Engineer determines the exact application rate. The resin gel time must be between 40 and 90 minutes. HMWM resin that thickens during application is rejected.

Spread the HMWM resin system uniformly. Completely cover surfaces to be treated and fill all cracks. Redistribute excess resin using squeegees or brooms within 10 minutes of application. For textured or grooved deck surfaces, excess resin must be removed from the texture indentations.

Apply the abrasive sand finish of at least 2 pounds per square yard or until saturation as determined by the Engineer no sooner than 20 minutes after applying resin. Apply absorbent material before opening lane to traffic. Remove excess sand and absorbent material by vacuuming or power sweeping.

Traffic or equipment will be allowed on the overlay after the Engineer has determined:

1. The treated deck surface is tack free and non-oily
2. The sand cover adheres and resists brushing by hand
3. Excess sand and absorbent material has been removed
4. No material will be tracked beyond limits of treatment by traffic

In Section 51-1.18C replace the 2nd paragraph with:

When Class 2 surface finish (gun finish) is specified, ordinary surface finish shall first be completed. The concrete surfaces shall then be abrasive blasted to a rough texture and thoroughly washed down with water. While the washed surfaces are damp, but not wet, a finish coating of machine applied mortar, approximately 1/4 inch thick, shall be applied in not less than 2 passes. The coating shall be pneumatically applied and shall consist of either (1) sand, cementitious material, and water mechanically mixed prior to its introduction to the nozzle, or (2) premixed sand and cementitious material to which water is added prior to its expulsion from the nozzle. The use of admixtures shall be subject to the approval of the Engineer as provided in Section 90, "Portland Cement Concrete." Unless otherwise specified, supplementary cementitious materials will not be required. The proportion of cementitious material to sand shall be not less than one to 4, unless otherwise directed by the Engineer. Sand shall be of a grading suitable for the purpose intended. The machines shall be operated and the coating shall be applied in conformance with standard practice. The coating shall be firmly bonded to the concrete surfaces on which it is applied.

In Section 51-1.18C replace the 5th paragraph with:

When surfaces to be finished are in pedestrian undercrossings, the sand shall be silica sand and the cementitious material shall be standard white portland cement.

In Section 51-1.23 add:

Full compensation for deck crack treatment, including the public safety plan, shall be considered as included in the contract price paid per cubic yard for structural concrete, bridge, and no additional compensation will be allowed therefor.

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SECTION 52 REINFORCEMENT
(Issued 06-05-09)

In Section 52-1.02(B) between the 3rd and 4th paragraphs, add:

The epoxy powder coating shall be selected from the Department's Pre-Qualified Products List.

In Section 52-1.02(B) replace the 14th paragraph with:

Except for lap splices, splices for epoxy-coated reinforcement shall be coated with a corrosion protection covering that is selected from the Department's Pre-Qualified Products List. The covering shall be installed in accordance with the manufacturer's recommendations.

In Section 52-1.07 in the 11th paragraph, replace the table with:

Height Zone (H) (Feet above ground)	Wind Pressure Value (psf)
$H \leq 30$	20
$30 < H \leq 50$	25
$50 < H \leq 100$	30
$H > 100$	35

In Section 52-1.08B(1) replace the 1st paragraph with:

Mechanical splices to be used in the work shall be selected from the Department's Pre-Qualified Products List.

In Section 52-1.08B(1) in the 2nd paragraph, replace the table with:

Reinforcing Bar Number	Total Slip
4	0.020-inch
5	0.020-inch
6	0.020-inch
7	0.028-inch
8	0.028-inch
9	0.028-inch
10	0.036-inch
11	0.036-inch
14	0.048-inch
18	0.060-inch

In Section 52-1.08B(1), in the 6th paragraph, delete item C.

In Section 52-1.08B(2) in the 6th paragraph, replace the subparagraph with:

The minimum preheat and interpass temperatures shall be 400º F for Grade 40 bars and 600º F for Grade 60 bars. Immediately after completing the welding, at least 6 inches of the bar on each side of the splice shall be covered by an insulated wrapping to control the rate of cooling. The insulated wrapping shall remain in place until the bar has cooled below 200º F.

Replace Section 52-1.08B(3) with:

52-1.08B(3) Resistance Butt Welds

Shop produced resistance butt welds shall be produced by a fabricator who is selected from the Department's Pre-Qualified Products List.

A Certificate of Compliance conforming to the provisions in Section 6-1.07, "Certificates of Compliance," shall be furnished for each shipment of splice material. The Certificate of Compliance shall include heat number, lot number and mill certificates.

In Section 52-1.08C replace the 3rd paragraph with:

Testing on prequalification and production sample splices shall be performed at an approved independent testing laboratory. The laboratory shall not be employed or compensated by any subcontractor, or by other persons or entities hired by subcontractors who will provide other services or materials for the project.

The independent testing laboratory shall be selected from the Department's Pre-Qualified Products List.

In Section 52-1.08C replace the 5th paragraph with:

Prequalification and production sample splices and testing shall conform to California Test 670 and these specifications.

In Section 52-1.08C delete the 6th paragraph.

In Section 52-1.08C replace the 8th paragraph with:

Each sample splice, as defined herein, shall be identified as representing either a prequalification or production test sample splice.

In Section 52-1.08C in the 10th paragraph, delete the last sentence.

Replace Section 52-1.08C(1) with:

52-1.08C(1) Splice Prequalification Report

Before using any service splices or ultimate butt splices in the work, the Contractor shall submit a Splice Prequalification Report. The report shall include the following:

A. A copy of the manufacturer's product literature giving complete data on the splice material and installation procedures.
B. Names of the operators who will be performing the splicing.
C. Descriptions of the positions, locations, equipment, and procedures that will be used in the work.
D. Certifications from the fabricator for prequalification of operators and procedures based on sample tests performed no more than 2 years before submitting the report. Each operator shall be certified by performing 2 sample splices for each bar size of each splice type that the operator will be performing in the work. For deformation-dependent types of splice devices, each operator shall be certified by performing 2 additional samples for each bar size and deformation pattern that will be used in the work.

Prequalification sample splices shall be tested by an approved independent testing laboratory and shall conform to the appropriate production test criteria and slip requirements specified herein. When epoxy-coated reinforcement is required, resistance butt welded sample splices shall have the weld flash removed by the same procedure as will be used in the work, before coating and testing. The Splice Prequalification Report shall include the certified test results for all prequalification sample splices.

The QCM shall review and approve the Splice Prequalification Report before submitting it to the Engineer for approval. The Contractor shall allow 2 weeks for the review and approval of a complete report before performing any service splicing or ultimate butt splicing in the work.

In Section 52-1.08C(2)(a) replace the 1st, 2nd, 3rd, 4th, and 5th paragraphs with:

Production tests shall be performed by an approved independent testing laboratory for all service splices used in the work. A production test shall consist of testing 4 sample splices prepared for each lot of completed splices. The samples shall be prepared by the Contractor using the same splice material, position, operators, location, and equipment, and following the same procedure as used in the work.

At least one week before testing, the Contractor shall notify the Engineer in writing of the date and location where the testing of the samples will be performed.

The 4 samples from each production test shall be securely bundled together and identified with a completed sample identification card before shipment to the approved independent testing laboratory. The card will be furnished by the Engineer. Bundles of samples containing fewer than 4 samples of splices shall not be tested.

Before performing any tensile tests on production test sample splices, one of the 4 samples shall be tested for, and shall conform to, the requirements for total slip in Section 52-1.08B(1), "Mechanical Splices." Should this sample not meet the total slip requirements, one retest, in which the 3 remaining samples are tested for total slip, will be allowed. Should any of the 3 remaining samples not conform to the total slip requirements, all splices in the lot represented by this production test will be rejected.

If 3 or more sample splices from a production test conform to the provisions in this Section 52-1.08C(2), "Service Splice Test Criteria," all splices in the lot represented by this production test will be considered acceptable.

Replace Section 52-1.08C(2)(b) with:

52-1.08C(2)(b) Quality Assurance Test Requirements for Service Splices

In addition to the required production tests, the Contractor shall concurrently prepare 4 service quality assurance sample splices for:

A. The first production test performed.
B. One of every 5 subsequent production tests, or fraction thereof, randomly selected by the Engineer.

These service quality assurance sample splices shall be prepared in the same manner as specified herein for service production sample splices.

The service quality assurance sample splices shall be shipped to the Transportation Laboratory for quality assurance testing. Each set of 4 sample splices shall be securely bundled together and identified by location and contract number with weatherproof markings before shipment. Bundles containing fewer than 4 samples of splices will not be tested. Sample splices not accompanied by the supporting documentation required in Section 52-1.08B(1), "Mechanical Splices," for mechanical splices, or in Section 52-1.08B(3), "Resistance Butt Welds," for resistance butt welds, will not be tested.

Quality assurance testing will be performed in conformance with the requirements for service production sample splices in Section 52-1.08C(2)(a), "Production Test Requirements for Service Splices."

Replace Section 52-1.08C(3) with:

52-1.08C(3) Ultimate Butt Splice Test Criteria

Ultimate production and quality assurance sample splices shall be tensile tested in conformance with the requirements described in ASTM Designation: A 370 and California Test 670.

Each sample splice shall be identified as representing a prequalification, production, or quality assurance sample splice.

The portion of hoop reinforcing bar, removed to obtain a sample splice, shall be replaced using a prequalified ultimate mechanical butt splice, or the hoop shall be replaced in kind.

Reinforcing bars, other than hoops, from which sample splices are removed, shall be repaired using ultimate mechanical butt splices conforming to the provisions in Section 52-1.08C(1), "Splice Prequalification Report," or the bars shall be replaced in kind. These bars shall be repaired or replaced such that no splices are located in any "No Splice Zone" shown on the plans.

Ultimate production and quality assurance sample splices shall rupture either: 1) in the reinforcing bar but outside of the affected zone, provided that the sample splice has visible necking or 2) anywhere, provided that the sample splice has achieved the strain requirement for necking.

When tested in conformance with the requirements in California Test 670, "Necking (Option I)," the visible necking shall be such that there is a visible decrease in the sample's cross-sectional area at the point of rupture.

When tested in conformance with the requirements in California Test 670, "Necking (Option II)," the strain requirement for necking shall be such that the largest measured strain is not less than 6 percent for No. 11 and larger bars, or not less than 9 percent for No. 10 and smaller bars.

The affected zone is the portion of the reinforcing bar where any properties of the bar, including the physical, metallurgical, or material characteristics, have been altered by fabrication or installation of the splice. The weld and one inch adjacent to the weld will be considered part of the affected zone.

In Section 52-1.08C(3)(a) replace the 1st paragraph with:

Production tests shall be performed for all ultimate butt splices used in the work. A production test shall consist of testing 4 sample splices removed from each lot of completed splices.

In Section 52-1.08C(3)(a) replace the 3rd paragraph with:

After notification has been received, the Engineer will randomly select the 4 sample splices to be removed from the lot and place tamper-proof markings or seals on them. These ultimate production sample splices shall be removed by the Contractor, and tested by an approved independent testing laboratory.

In Section 52-1.08(C)(3)(a) replace the 5th, 6th, and 7th paragraphs with:

A sample splice will be rejected if a tamper-proof marking or seal is disturbed before testing.

The 4 sample splices from each production test shall be securely bundled together and identified with a completed sample identification card before shipment to the approved independent testing laboratory. The card will be furnished by the Engineer. Bundles of samples containing fewer than 4 sample splices shall not be tested.

Before performing any tensile tests on production test sample splices, one of the 4 sample splices shall be tested for, and shall conform to, the requirements for total slip in Section 52-1.08B(1), "Mechanical Splices." Should this sample splice not meet these requirements, one retest, in which the 3 remaining sample splices are tested for total slip, will be allowed. Should any of the 3 remaining sample splices not conform to these requirements, all splices in the lot represented by this production test will be rejected.

Replace Section 52-1.08C(3)(b) with:

52-1.08C(3)(b) Quality Assurance Test Requirements for Ultimate Butt Splices

In addition to the required production tests, the Contractor shall concurrently prepare 4 ultimate quality assurance sample splices for:

A. The first production test performed.
B. One of every 5 subsequent production tests, or fraction thereof, randomly selected by the Engineer.

These ultimate quality assurance sample splices shall be prepared in the same manner as specified herein for ultimate production sample splices.

The ultimate quality assurance sample splices shall be shipped to the Transportation Laboratory for quality assurance testing. Each set of 4 sample splices shall be securely bundled together and identified by location and contract number with weatherproof markings before shipment. Bundles containing fewer than 4 samples of splices will not be tested. Sample splices not accompanied by the supporting documentation required in Section 52-1.08B(1), "Mechanical Splices," for mechanical splices, or in Section 52-1.08B(3), "Resistance Butt Welds," for resistance butt welds, will not be tested.

Quality assurance testing will be performed in conformance with the requirements for ultimate production sample splices in Section 52-1.08C(3)(a), "Production Test Requirements for Ultimate Butt Splices."

Replace Section 52-1.08D with:

A Production Test Report for all testing performed on each lot shall be prepared by the approved independent testing laboratory performing the testing and submitted to the QCM for review and approval. The report shall be signed by an engineer who represents the laboratory and is registered as a Civil Engineer in the State of California. The report shall include, as a minimum, the following information for each test: contract number, bridge number, lot number and location, bar size, type of splice, length of mechanical splice, length of test specimen, physical condition of test sample splice, any notable defects, total measured slip, and ultimate tensile strength of each splice. In addition, the report shall include location of visible necking area and largest measured strain for ultimate butt splices.

The QCM must review, approve, and forward each Production Test Report to the Engineer for review before the splices represented by the report are encased in concrete. The Engineer will have 3 working days to review each Production Test Report and respond in writing after a complete report has been received. Should the Contractor elect to encase any splices before receiving notification from the Engineer, it is expressly understood that the Contractor will not be relieved of the responsibility for incorporating material in the work that conforms to the requirements of the plans and specifications. Material not conforming to these requirements will be subject to rejection.

Quality assurance test results for each bundle of 4 samples of splices will be reported in writing to the Contractor within 3 working days after receipt of the bundle by the Transportation Laboratory. In the event that more than one bundle is received on the same day, 2 additional working days shall be allowed for providing test results for each additional bundle received. A test report will be made for each bundle received. Should the Contractor elect to encase splices before receiving notification from the Engineer, it is expressly understood that the Contractor will not be relieved of the responsibility for incorporating material in the work that conforms to the requirements of the plans and specifications. Material not conforming to these requirements will be subject to rejection.

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SECTION 52 REINFORCEMENT
(Issued 06-05-09)

In Section 52-1.02(B) between the 3rd and 4th paragraphs, add:

The epoxy powder coating shall be selected from the Department's Pre-Qualified Products List.

In Section 52-1.02(B) replace the 14th paragraph with:

Except for lap splices, splices for epoxy-coated reinforcement shall be coated with a corrosion protection covering that is selected from the Department's Pre-Qualified Products List. The covering shall be installed in accordance with the manufacturer's recommendations.

In Section 52-1.07 in the 11th paragraph, replace the table with:

Height Zone (H) (Feet above ground)	Wind Pressure Value (psf)
$H \leq 30$	20
$30 < H \leq 50$	25
$50 < H \leq 100$	30
$H > 100$	35

In Section 52-1.08B(1) replace the 1st paragraph with:

Mechanical splices to be used in the work shall be selected from the Department's Pre-Qualified Products List.

In Section 52-1.08B(1) in the 2nd paragraph, replace the table with:

Reinforcing Bar Number	Total Slip
4	0.020-inch
5	0.020-inch
6	0.020-inch
7	0.028-inch
8	0.028-inch
9	0.028-inch
10	0.036-inch
11	0.036-inch
14	0.048-inch
18	0.060-inch

In Section 52-1.08B(1), in the 6th paragraph, delete item C.

In Section 52-1.08B(2) in the 6th paragraph, replace the subparagraph with:

The minimum preheat and interpass temperatures shall be 400º F for Grade 40 bars and 600º F for Grade 60 bars. Immediately after completing the welding, at least 6 inches of the bar on each side of the splice shall be covered by an insulated wrapping to control the rate of cooling. The insulated wrapping shall remain in place until the bar has cooled below 200º F.

Replace Section 52-1.08B(3) with:

52-1.08B(3) Resistance Butt Welds

Shop produced resistance butt welds shall be produced by a fabricator who is selected from the Department's Pre-Qualified Products List.

A Certificate of Compliance conforming to the provisions in Section 6-1.07, "Certificates of Compliance," shall be furnished for each shipment of splice material. The Certificate of Compliance shall include heat number, lot number and mill certificates.

In Section 52-1.08C replace the 3rd paragraph with:

Testing on prequalification and production sample splices shall be performed at an approved independent testing laboratory. The laboratory shall not be employed or compensated by any subcontractor, or by other persons or entities hired by subcontractors who will provide other services or materials for the project.

The independent testing laboratory shall be selected from the Department's Pre-Qualified Products List.

In Section 52-1.08C replace the 5th paragraph with:

Prequalification and production sample splices and testing shall conform to California Test 670 and these specifications.

In Section 52-1.08C delete the 6th paragraph.

In Section 52-1.08C replace the 8th paragraph with:

Each sample splice, as defined herein, shall be identified as representing either a prequalification or production test sample splice.

In Section 52-1.08C in the 10th paragraph, delete the last sentence.

Replace Section 52-1.08C(1) with:

52-1.08C(1) Splice Prequalification Report

Before using any service splices or ultimate butt splices in the work, the Contractor shall submit a Splice Prequalification Report. The report shall include the following:

A. A copy of the manufacturer's product literature giving complete data on the splice material and installation procedures.
B. Names of the operators who will be performing the splicing.
C. Descriptions of the positions, locations, equipment, and procedures that will be used in the work.
D. Certifications from the fabricator for prequalification of operators and procedures based on sample tests performed no more than 2 years before submitting the report. Each operator shall be certified by performing 2 sample splices for each bar size of each splice type that the operator will be performing in the work. For deformation-dependent types of splice devices, each operator shall be certified by performing 2 additional samples for each bar size and deformation pattern that will be used in the work.

Prequalification sample splices shall be tested by an approved independent testing laboratory and shall conform to the appropriate production test criteria and slip requirements specified herein. When epoxy-coated reinforcement is required, resistance butt welded sample splices shall have the weld flash removed by the same procedure as will be

used in the work, before coating and testing. The Splice Prequalification Report shall include the certified test results for all prequalification sample splices.

The QCM shall review and approve the Splice Prequalification Report before submitting it to the Engineer for approval. The Contractor shall allow 2 weeks for the review and approval of a complete report before performing any service splicing or ultimate butt splicing in the work.

In Section 52-1.08C(2)(a) replace the 1st, 2nd, 3rd, 4th, and 5th paragraphs with:

Production tests shall be performed by an approved independent testing laboratory for all service splices used in the work. A production test shall consist of testing 4 sample splices prepared for each lot of completed splices. The samples shall be prepared by the Contractor using the same splice material, position, operators, location, and equipment, and following the same procedure as used in the work.

At least one week before testing, the Contractor shall notify the Engineer in writing of the date and location where the testing of the samples will be performed.

The 4 samples from each production test shall be securely bundled together and identified with a completed sample identification card before shipment to the approved independent testing laboratory. The card will be furnished by the Engineer. Bundles of samples containing fewer than 4 samples of splices shall not be tested.

Before performing any tensile tests on production test sample splices, one of the 4 samples shall be tested for, and shall conform to, the requirements for total slip in Section 52-1.08B(1), "Mechanical Splices." Should this sample not meet the total slip requirements, one retest, in which the 3 remaining samples are tested for total slip, will be allowed. Should any of the 3 remaining samples not conform to the total slip requirements, all splices in the lot represented by this production test will be rejected.

If 3 or more sample splices from a production test conform to the provisions in this Section 52-1.08C(2), "Service Splice Test Criteria," all splices in the lot represented by this production test will be considered acceptable.

Replace Section 52-1.08C(2)(b) with:

52-1.08C(2)(b) Quality Assurance Test Requirements for Service Splices

In addition to the required production tests, the Contractor shall concurrently prepare 4 service quality assurance sample splices for:

A. The first production test performed.
B. One of every 5 subsequent production tests, or fraction thereof, randomly selected by the Engineer.

These service quality assurance sample splices shall be prepared in the same manner as specified herein for service production sample splices.

The service quality assurance sample splices shall be shipped to the Transportation Laboratory for quality assurance testing. Each set of 4 sample splices shall be securely bundled together and identified by location and contract number with weatherproof markings before shipment. Bundles containing fewer than 4 samples of splices will not be tested. Sample splices not accompanied by the supporting documentation required in Section 52-1.08B(1), "Mechanical Splices," for mechanical splices, or in Section 52-1.08B(3), "Resistance Butt Welds," for resistance butt welds, will not be tested.

Quality assurance testing will be performed in conformance with the requirements for service production sample splices in Section 52-1.08C(2)(a), "Production Test Requirements for Service Splices."

Replace Section 52-1.08C(3) with:

52-1.08C(3) Ultimate Butt Splice Test Criteria

Ultimate production and quality assurance sample splices shall be tensile tested in conformance with the requirements described in ASTM Designation: A 370 and California Test 670.

Each sample splice shall be identified as representing a prequalification, production, or quality assurance sample splice.

The portion of hoop reinforcing bar, removed to obtain a sample splice, shall be replaced using a prequalified ultimate mechanical butt splice, or the hoop shall be replaced in kind.

Reinforcing bars, other than hoops, from which sample splices are removed, shall be repaired using ultimate mechanical butt splices conforming to the provisions in Section 52-1.08C(1), "Splice Prequalification Report," or the bars shall be replaced in kind. These bars shall be repaired or replaced such that no splices are located in any "No Splice Zone" shown on the plans.

Ultimate production and quality assurance sample splices shall rupture either: 1) in the reinforcing bar but outside of the affected zone, provided that the sample splice has visible necking or 2) anywhere, provided that the sample splice has achieved the strain requirement for necking.

When tested in conformance with the requirements in California Test 670, "Necking (Option I)," the visible necking shall be such that there is a visible decrease in the sample's cross-sectional area at the point of rupture.

When tested in conformance with the requirements in California Test 670, "Necking (Option II)," the strain requirement for necking shall be such that the largest measured strain is not less than 6 percent for No. 11 and larger bars, or not less than 9 percent for No. 10 and smaller bars.

The affected zone is the portion of the reinforcing bar where any properties of the bar, including the physical, metallurgical, or material characteristics, have been altered by fabrication or installation of the splice. The weld and one inch adjacent to the weld will be considered part of the affected zone.

In Section 52-1.08C(3)(a) replace the 1st paragraph with:

Production tests shall be performed for all ultimate butt splices used in the work. A production test shall consist of testing 4 sample splices removed from each lot of completed splices.

In Section 52-1.08C(3)(a) replace the 3rd paragraph with:

After notification has been received, the Engineer will randomly select the 4 sample splices to be removed from the lot and place tamper-proof markings or seals on them. These ultimate production sample splices shall be removed by the Contractor, and tested by an approved independent testing laboratory.

In Section 52-1.08(C)(3)(a) replace the 5th, 6th, and 7th paragraphs with:

A sample splice will be rejected if a tamper-proof marking or seal is disturbed before testing.

The 4 sample splices from each production test shall be securely bundled together and identified with a completed sample identification card before shipment to the approved independent testing laboratory. The card will be furnished by the Engineer. Bundles of samples containing fewer than 4 sample splices shall not be tested.

Before performing any tensile tests on production test sample splices, one of the 4 sample splices shall be tested for, and shall conform to, the requirements for total slip in Section 52-1.08B(1), "Mechanical Splices." Should this sample splice not meet these requirements, one retest, in which the 3 remaining sample splices are tested for total slip, will be allowed. Should any of the 3 remaining sample splices not conform to these requirements, all splices in the lot represented by this production test will be rejected.

Replace Section 52-1.08C(3)(b) with:

52-1.08C(3)(b) Quality Assurance Test Requirements for Ultimate Butt Splices

In addition to the required production tests, the Contractor shall concurrently prepare 4 ultimate quality assurance sample splices for:

A. The first production test performed.
B. One of every 5 subsequent production tests, or fraction thereof, randomly selected by the Engineer.

These ultimate quality assurance sample splices shall be prepared in the same manner as specified herein for ultimate production sample splices.

The ultimate quality assurance sample splices shall be shipped to the Transportation Laboratory for quality assurance testing. Each set of 4 sample splices shall be securely bundled together and identified by location and contract number with weatherproof markings before shipment. Bundles containing fewer than 4 samples of splices will not be tested. Sample splices not accompanied by the supporting documentation required in Section 52-1.08B(1), "Mechanical Splices," for mechanical splices, or in Section 52-1.08B(3), "Resistance Butt Welds," for resistance butt welds, will not be tested.

Quality assurance testing will be performed in conformance with the requirements for ultimate production sample splices in Section 52-1.08C(3)(a), "Production Test Requirements for Ultimate Butt Splices."

Replace Section 52-1.08D with:

A Production Test Report for all testing performed on each lot shall be prepared by the approved independent testing laboratory performing the testing and submitted to the QCM for review and approval. The report shall be

signed by an engineer who represents the laboratory and is registered as a Civil Engineer in the State of California. The report shall include, as a minimum, the following information for each test: contract number, bridge number, lot number and location, bar size, type of splice, length of mechanical splice, length of test specimen, physical condition of test sample splice, any notable defects, total measured slip, and ultimate tensile strength of each splice. In addition, the report shall include location of visible necking area and largest measured strain for ultimate butt splices.

The QCM must review, approve, and forward each Production Test Report to the Engineer for review before the splices represented by the report are encased in concrete. The Engineer will have 3 working days to review each Production Test Report and respond in writing after a complete report has been received. Should the Contractor elect to encase any splices before receiving notification from the Engineer, it is expressly understood that the Contractor will not be relieved of the responsibility for incorporating material in the work that conforms to the requirements of the plans and specifications. Material not conforming to these requirements will be subject to rejection.

Quality assurance test results for each bundle of 4 samples of splices will be reported in writing to the Contractor within 3 working days after receipt of the bundle by the Transportation Laboratory. In the event that more than one bundle is received on the same day, 2 additional working days shall be allowed for providing test results for each additional bundle received. A test report will be made for each bundle received. Should the Contractor elect to encase splices before receiving notification from the Engineer, it is expressly understood that the Contractor will not be relieved of the responsibility for incorporating material in the work that conforms to the requirements of the plans and specifications. Material not conforming to these requirements will be subject to rejection.

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SECTION 56 SIGNS
(Issued 07-20-12)

In Section 56-1.01 in the 2nd paragraph, replace the 1st sentence with:

Sign structures shall be of the following types: truss, tubular, lightweight and bridge mounted.

In Section 56-1.02A replace the 1st paragraph with:

Bars and plates shall be structural steel complying with one or more of the following:

1. ASTM Designation: A36/A36M
2. ASTM Designation: A709/A709M, Grade 36 or 50
3. ASTM Designation: A572/A572M, Grade 50

Other open shapes shall be structural steel complying with one or more of the following:

1. ASTM Designation: A36/A36M
2. ASTM Designation: A709/A709M, Grade 36 or 50
3. ASTM Designation: A992/A992M

Light fixture mounting channel shall be a continuous slot channel made from one of the following:

1. Steel complying with ASTM Designation: A1011/A1011M, Designation SS, Grade 33
2. Extruded aluminum of alloy 6063-T6 complying with ASTM Designation: B221 or B221M

In Section 56-1.02B delete the 2nd paragraph.

In Section 56-1.02E replace the 1st paragraph with:

Pipe posts shall be welded or seamless steel pipe conforming to the requirements in ASTM Designation: A 53/A 53M, Grade B; ASTM Designation: A 106/A 106M, Grade B; or API Specification 5L PSL2 Grade B or

Grade X42R or Grade X42M. At the option of the Contractor, posts may be fabricated from structural steel conforming to the requirements in ASTM Designation: A 36/A 36M.

Pipe posts shall not be spiral seam welded.

In Section 56-1.02F replace item B of the 1st paragraph with:

B. Material for gratings shall be structural steel conforming to the requirements in ASTM Designation: A 1011/A 1011M, Designation CS, Type B or Designation SS, Grade 36, Type 1.

In Section 56-1.03 replace the 5th paragraph with:

Clips, eyes, or removable brackets shall be affixed to all signs and all posts and shall be used to secure the sign during shipping and for lifting and moving during erection as necessary to prevent damage to the finished galvanized or painted surfaces. Brackets on tubular sign structures shall be removed after erection. Details of the devices shall be shown on the working drawings.

In Section 56-1.03 delete the 12th paragraph.

In Section 56-1.05 replace the 1st paragraph with:

Excepting tubular type, all ferrous metal parts of sign structures shall be galvanized and not painted, unless otherwise specified in the special provisions.

In Section 56-1.05 replace the 2nd paragraph with:

Except as herein provided, all exterior surfaces including those areas to be covered by sign panels of tubular type of sign structures shall be cleaned and painted as provided in Section 59-5, "Painting Sign Structures," and as provided in the special provisions. There shall be no chemical treatment of galvanized surfaces prior to cleaning and painting. Walkway gratings, walkway brackets, gutters, safety railings, steel mountings for light fixtures, and all nuts, bolts, and washers for sign structures shall be galvanized after fabrication and shall not be painted.

In Section 56-1.05 replace the 3rd paragraph with:

Galvanizing shall conform to the provisions in Section 75-1.05, "Galvanizing," except that when permission is granted by the Engineer, surfaces may be coated with zinc by the metalizing process. Metalizing shall be performed in conformance with the AWS requirements. The thickness of the sprayed zinc coat shall be 10 ± 2 mils. The thickness of the sprayed zinc coat on faying surfaces shall not be more than 10 mils.

In Section 56-1.05, add:

Zinc solders or zinc alloys that contain tin shall not be used to repair a damaged galvanized surface.

In Section 56-1.07, add:

Bridge-mounted signs shall not be fastened to concrete elements of bridges or railings before the concrete attains a compressive strength of 2,500 psi.

In Section 56-1.10 replace the 4th paragraph with:

The contract price paid per pound for install sign structure of the type or types designated in the Engineer's Estimate shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in installing sign structures, complete in place, including installing anchor bolt assemblies, removable sign panel frames, and sign panels and performing any welding, painting or galvanizing required during installation, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

In Section 56-2.03 replace the 4th paragraph with:

Backfill material for metal posts shall consist of minor concrete conforming to the provisions in Section 90-10, "Minor Concrete," and shall contain not less than 463 pounds of cementitious material per cubic yard.

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SECTION 59 PAINTING

(Issued 10-19-12)

In Section 59-1.01 add:

Coatings selected for use shall conform to the volatile organic compound limits specified for the air quality district where the project is located.

In Section 59-1.03 replace the 3rd paragraph with:

Painting shall be done in a neat and workmanlike manner. Unless otherwise specified, paint shall be applied by brush, or spray, or roller, or any combination of these methods. Gun extensions shall not be used.

In Section 59-1.03 replace the 5th paragraph with:

Unless otherwise specified, should 7 days elapse between paint applications, the painted surface shall be pressure rinsed prior to the next paint application. Pressure rinsing is defined as a pressurized water rinse with a minimum nozzle pressure of 1,160 psi. During rinsing, the tip of the pressure nozzle shall be placed between 12 inches and 18 inches from the surface to be rinsed. The nozzle shall have a maximum fan tip angle of 30°.

In Section 59-2.01 replace the 2nd paragraph with:

Unless otherwise specified, no painting Contractors or subcontractors will be permitted to perform work without having the following current "SSPC: The Society for Protective Coatings" (formerly the Steel Structures Painting Council) certifications in good standing throughout the duration of the contract:

A. For cleaning and painting structural steel in the field, certification in conformance with the requirements in Qualification Procedure No. 1, "Standard Procedure For Evaluating Painting Contractors (Field Application to Complex Industrial Structures)" (SSPC-QP 1).
B. For removing paint from structural steel, certification in conformance with the requirements in Qualification Procedure No. 2, "Standard Procedure for the Qualification of Painting Contractors (Field Removal of Hazardous Coatings from Complex Structures)" (SSPC-QP 2, Category A).
C. For cleaning and painting structural steel in a permanent painting facility, certification in conformance with the requirements in AISC-420-10/SSPC-QP 3, "Certification Standard for Shop Application of Complex Protective Coating Systems." All cleaning and painting of structural steel shall be performed in an Enclosed Shop.

In Section 59-2.03 replace the 3rd paragraph with:

Exposed steel or other metal surfaces to be blast cleaned shall be cleaned in conformance with the requirements in SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning," of the "SSPC: The Society for Protective Coatings." Blast cleaning shall leave all surfaces with a dense, uniform, angular anchor pattern of not less than 1.5 mil as measured in conformance with the requirements in ASTM Designation: D 4417.

Replace Section 59-2.05 with:

59-2.05 CLEANING PAINTED SURFACES

All previously painted surfaces shall be cleaned by pressure washing or steam cleaning before other cleaning or painting activities are performed. Gloss on the existing paint shall be removed without removing sound paint. Areas of gloss remaining after cleaning shall be roughened using 100 to 200-grit sandpaper. Any paint that becomes loose, curled, lifted, or that loses its bond after cleaning shall be removed to sound paint or metal.

Pressure washing includes cleaning surfaces using a pressure wash system with a nozzle pressure from 2,500 to 5,000 psi and a maximum fan tip angle of 45 degrees.

Steam cleaning includes cleaning dirt, grease, loose chalky paint, and other foreign material from surfaces using steam. The steam temperature at the nozzle shall be from 265 to 375 degrees F. A biodegradable detergent shall be used during steam cleaning. After steam cleaning, cleaned surfaces shall be rinsed clean with fresh water. Steam cleaning shall not be performed more than 2 weeks before painting or other phases of cleaning. Steam-cleaned surfaces shall not be painted until they are thoroughly dry and 24 hours have elapsed after steam cleaning.

In Section 59-2.12 replace the 3rd and 4th paragraphs with:

Contact surfaces of stiffeners, railings, built up members or open seam exceeding 6 mils in width that would retain moisture, shall be caulked with polysulfide or polyurethane sealing compound conforming to the requirements in ASTM Designation: C 920, Type S, Grade NS, Class 25, Use O, or other approved material.

The dry film thickness of the paint will be measured in place with a calibrated Type 2 magnetic film thickness gage in conformance with the requirements in SSPC-PA 2, "Measurement of Dry Coating Thickness with Magnetic Gages," of the "SSPC: The Society for Protective Coatings," except that there shall be no limit to the number or location of spot measurements to verify compliance with specified thickness requirements.

In Section 59-5.01 replace the 1st paragraph with:

Tubular sign structures shall be cleaned and painted in conformance with the provisions in Section 59-1, "General," and this Section 59-5. Sign structures, other than tubular sign structures, shall not be painted unless otherwise specified in the special provisions.

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SECTION 64 PLASTIC PIPE
(Issued 06-05-09)

In Section 64-1.02 replace the 5th paragraph with:

HDPE compounds used in the manufacture of corrugated polyethylene pipe and fittings shall comply with AASHTO M 294 except that the mix shall contain not less than 2 nor greater than 4 percent well dispersed carbon black. HDPE compounds used in the manufacture of ribbed profile wall polyethylene pipe shall comply with ASTM F 894 except that Type E ultraviolet stabilizers shall not be allowed and carbon black shall be well dispersed in an amount not less than 2 percent nor greater than 4 percent.

Manufacturers of corrugated polyethylene pipe shall:

1. Participate in the National Transportation Product Evaluation Control Program (NTPEP) for each plant supplying corrugated polyethylene pipe and fittings for the project.
2. Conduct and maintain a quality control program under NTPEP.
3. Submit a copy to the Engineer of manufacturing plant audits and NTPEP test results from the current cycle of NTPEP testing for all pipe diameters supplied.

Type D corrugated polyethylene pipe is not allowed. Corrugated polyethylene pipe greater than 60 inches in nominal diameter is not allowed.

In Section 64-1.05 replace the 1st paragraph with:

Excavation, backfill, and shaped bedding shall comply with Section 19-3, "Structure Excavation and Backfill," except the following:

1. At locations where pipe is to be backfilled with concrete, the backfill shall comply with Section 64-1.06, "Concrete Backfill."
2. Corrugated polyethylene pipe that is greater than 48 inches in nominal diameter but not exceeding 60 inches in nominal diameter shall be backfilled with either controlled low strength material under the special provisions or slurry cement backfill under Section 19-3.062, "Slurry Cement Backfill."

3. Where cementitious or flowable backfill is used for structure backfill, the backfill shall be placed to a level not less than 12 inches above the crown of the pipe.

In Section 64-1.06 replace the 1st paragraph with:

At locations where pipe is to be backfilled with concrete as shown on the plans, the concrete backfill shall be constructed of minor concrete or Class 4 concrete conforming to the provisions in Section 90, "Portland Cement Concrete." Minor concrete shall contain not less than 380 pounds of cementitious material per cubic yard. The concrete to be used will be designated in the contract item or shown on the plans.

In Section 64-1.06 replace the 3rd paragraph with:

The surface of the concrete backfill shall be broomed with a heavy broom to produce a uniform rough surface if hot mix asphalt is to be placed directly thereon.

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SECTION 66 CORRUGATED METAL PIPE
(Issued 07-20-12)

In Section 66-1.045 replace the 1st paragraph with:

At locations where pipe is to be backfilled with concrete as shown on the plans, the concrete backfill shall be constructed of minor concrete or Class 4 concrete conforming to the provisions in Section 90, "Portland Cement Concrete." Minor concrete shall contain not less than 380 pounds of cementitious material per cubic yard. The concrete to be used will be designated in the contract item or shown on the plans.

In Section 66-1.045 replace the 3rd paragraph with:

The surface of the concrete backfill shall be broomed with a heavy broom to produce a uniform rough surface if hot mix asphalt is to be placed directly thereon.

Replace Section 66-3.10 with:

66-3.10 (BLANK)

In Section 66-4.02 delete the 2nd paragraph.

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SECTION 70 MISCELLANEOUS FACILITIES
(Issued 01-20-12)

In Section 70-1.02C replace the 2nd paragraph with:

Precast concrete flared end sections shall conform to the requirements for Class III Reinforced Concrete Pipe in AASHTO Designation: M 170M. Cementitious materials and aggregate shall conform to the provisions in Section 90-2, "Materials," except that grading requirements shall not apply to the aggregate. Use of supplementary cementitious material shall conform to the requirements in AASHTO Designation: M 170. The area of steel reinforcement per linear foot of flared end section shall be at least equal to the minimum steel requirements for circular reinforcement in circular pipe for the internal diameter of the circular portion of the flared end section. The basis of acceptance of the precast concrete flared end section shall conform to the requirements of Section 5.1.2 of AASHTO Designation: M 170.

In Section 70-1.02C replace the 3rd paragraph with:

Plastic flared end sections shall conform to the requirements in ASTM Designation: D 3350.

In Section 70-1.02H replace the 1st paragraph with:

Precast concrete pipe risers and pipe reducers, and precast concrete pipe sections, adjustment rings and tapered sections for pipe energy dissipators, pipe inlets and pipe manholes shall conform to the requirements in AASHTO Designation: M 199M/M 199, except that the cementitious material and aggregate shall conform to the provisions in Section 90-2, "Materials," except that grading requirements shall not apply to the aggregate. Use of supplementary cementitious material shall conform to the requirements in AASHTO Designation: M 170.

In Section 70-1.03 replace the 2nd paragraph with:

Cutoff walls for precast concrete flared end sections shall be constructed of minor concrete conforming to the provisions in Section 90-10, "Minor Concrete." Minor concrete shall contain not less than 470 pounds of cementitious material per cubic yard.

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SECTION 72 SLOPE PROTECTION
(Issued 07-20-12)

In Section 72-4.04 replace the 6th paragraph with:

Pervious backfill material, if required by the plans, shall be placed as shown. A securely tied sack containing one cubic foot of pervious backfill material shall be placed at each weep hole and drain hole. The sack material shall conform to the requirements for filter fabric in Section 88-1.02, "Filtration."

Replace Section 72-5.05 with:

72-5.05 Measurement

Concreted-rock slope protection is measured by the ton or cubic yard.

Quantities of concreted-rock slope protection to be paid for by the cubic yard will be determined from the dimensions shown on the plans or the dimensions directed by the Engineer, and concreted-rock slope protection placed in excess of these dimensions will not be paid for.

Quantities of concreted-rock slope protection to be paid for by the ton will be determined from the weight of the rock in conformance with the provisions in Section 9-1.01, "Measurement of Quantities."

In Section 72-5.06 replace the 1st sentence with:

The contract price paid per cubic yard or per ton for concreted-rock slope protection designated in the Engineer's Estimate includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all work involved in constructing the concreted-rock slope protection, complete in place, including excavating and backfilling footing trenches and furnishing and placing concrete, as shown on the plans, and as specified in these specifications and the special provisions, and as directed by the Engineer.

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SECTION 73 CONCRETE CURBS AND SIDEWALKS
(Issued 06-05-09)

In Section 73-1.01 in the 2nd paragraph, replace item 2 with:

2. Minor concrete shall contain not less than 463 pounds of cementitious material per cubic yard except that when extruded or slip-formed curbs are constructed using 3/8-inch maximum size aggregate, minor concrete shall contain not less than 505 pounds of cementitious material per cubic yard.

In Section 73-1.06 replace the 15th paragraph with:

Where hot mix asphalt or portland cement concrete pavements are to be placed around or adjacent to manholes, pipe inlets or other miscellaneous structures in sidewalk, gutter depression, island paving, curb ramps or driveway areas, the structures shall not be constructed to final grade until after the pavements have been constructed for a reasonable distance on each side of the structures.

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SECTION 75 MISCELLANEOUS METAL
(Issued 07-01-11)

In Section 75-1.02 replace the 6th paragraph with:

Manhole frames and covers shall conform to AASHTO M 306.

SECTION 83 RAILINGS AND BARRIERS
(Issued 07-01-11)

In Section 83-1.02 replace the 7th paragraph with:

Mortar shall conform to the provisions in Section 51-1.135, "Mortar," and shall consist of one part by volume of cementitious material and 3 parts of clean sand.

In Section 83-1.02B in the 24th paragraph in the 8th subparagraph, replace the 1st sentence with:

Anchor cable shall be 3/4 inch preformed, 6 x 19, wire strand core or independent wire rope core (IWRC), galvanized in conformance with the requirements in Federal Specification RR-W-410, right regular lay, manufactured of improved plow steel with a minimum breaking strength of 23 tons.

In Section 83-1.02E in the 6th paragraph, replace the 2nd sentence with:

Cable shall be galvanized in conformance with the requirements in Federal Specification RR-W-410.

In Section 83-1.02I replace the 5th paragraph with:

Where shown on the plans, cables used in the frame shall be 5/16 inch in diameter, wire rope, with a minimum breaking strength of 5,000 pounds and shall be galvanized in conformance with the requirements in Federal Specification RR-W-410.

In Section 83-1.02I replace the 14th paragraph with:

Chain link fabric shall be 11-gage conforming to one of the following:

1. AASHTO Designation: M181, Type I, Class C
2. AASHTO Designation: M181, Type IV, Class A
3. ASTM F 1345, Class 2

In Section 83-2.02D(1) replace the 5th paragraph with:

When concrete barriers are to be constructed on existing structures, the dowels shall be bonded in holes drilled in the existing concrete. Drilling of holes and bonding of dowels shall conform to the following:

1. The bonding materials shall be either magnesium phosphate concrete, modified high alumina based concrete or portland cement based concrete. Magnesium phosphate concrete shall be either single component (water activated) or dual component (with a prepackaged liquid activator). Modified high alumina based concrete and portland cement based concrete shall be water activated. Bonding materials shall conform to the following requirements:

Property	Test Method	Requirements
Compressive Strength		
at 3 hours, MPa	California Test 551	21 min.
at 24 hours, MPa	California Test 551	35 min.
Flexure Strength		
at 24 hours, MPa	California Test 551	3.5 min.
Bond Strength: at 24 hours		
SSD Concrete, MPa	California Test 551	2.1 min.
Dry Concrete, MPa	California Test 551	2.8 min.
Water Absorption, %	California Test 551	10 max.
Abrasion Resistance		
at 24 hours, grams	California Test 550	25 max.
Drying Shrinkage at 4 days, %	ASTM Designation: C 596	0.13 max.
Soluble Chlorides by weight, %	California Test 422	0.05 max.
Water Soluble Sulfates by weight, %	California Test 417	0.25 max.

2. Magnesium phosphate concrete shall be formulated for minimum initial set time of 15 minutes and minimum final set time of 25 minutes at 70° F. The materials, prior to use, shall be stored in a cool, dry environment.
3. Mix water used with water activated material shall conform to the provisions in Section 90-2.03, "Water."
4. The quantity of water for single component type or liquid activator (for dual component type) to be blended with the dry component, shall be within the limits recommended by the manufacturer and shall be the least amount required to produce a pourable batter.
5. Addition of retarders, when required and approved by the Engineer, shall be in conformance with the manufacturer's recommendations.
6. Before using concrete material that has not been previously approved, a minimum of 45 pounds shall be submitted to the Engineer for testing. The Contractor shall allow 45 days for the testing. Each shipment of concrete material that has been previously approved shall be accompanied by a Certificate of Compliance as provided in Section 6-1.07, "Certificates of Compliance."
7. Magnesium phosphate concrete shall not be mixed in containers or worked with tools containing zinc, cadmium, aluminum or copper metals. Modified high alumina based concrete shall not be mixed in containers or worked with tools containing aluminum.
8. The surface of any dowel coated with zinc or cadmium shall be coated with a colored lacquer before installation of the dowel. The lacquer shall be allowed to dry thoroughly before embedment of the dowels.
9. The holes shall be drilled by methods that will not shatter or damage the concrete adjacent to the hole. The diameter of the drilled hole shall be $1/2$ inch larger than the nominal diameter of the dowels.
10. The drilled holes shall be clean and dry at the time of placing the bonding material and the steel dowels. Bonding material and dowel shall completely fill the drilled hole. The surface temperature shall be 40° F or above when the bonding material is placed.
11. After bonding, dowels shall remain undisturbed for a minimum of 3 hours or until the bonding material has reached a strength sufficient to support the dowels. Dowels that are improperly bonded, as determined by the Engineer, shall be removed. The holes shall be cleaned or new holes shall be drilled and the dowels replaced and securely bonded to the concrete. Removing, redrilling and replacing improperly bonded dowels shall be performed at the Contractor's expense. Modified high alumina based concrete and portland cement based concrete shall be cured in conformance with the provisions in Section 90-7.01B, "Curing Compound Method," of the Standard Specifications. Magnesium phosphate concrete shall not be cured.

In Section 83-2.02D(1) replace the 8th paragraph with:

Granular material for backfill between the 2 walls of concrete barrier (Types 50E, 60F, 60GE and 60SF), as shown on the plans, shall be placed without compaction.

In Section 83-2.02D(2) in the 1st paragraph, replace item b with:

b. If the 3/8-inch maximum size aggregate grading is used to construct extruded or slip-formed concrete barriers, the cementitious material content of the minor concrete shall be not less than 675 pounds per cubic yard.

In Section 83-2.02D(2) replace the 3rd paragraph with:

The concrete paving between the tops of the 2 walls of concrete barrier (Types 50E, 60F, 60GE, and 60SF) and the optional concrete slab at the base between the 2 walls of concrete barrier (Types 50E, 60F, 60GE, and 60SF) shall be constructed of minor concrete conforming to the provisions of Section 90-10, "Minor Concrete," except that the minor concrete shall contain not less than 505 pounds of cementitious material per cubic yard.

In Section 83-2.02D(2) replace the 8th paragraph with:

Granular material for backfill between the 2 walls of concrete barrier (Types 50E, 60F, 60GE and 60SF) shall be earthy material suitable for the purpose intended, having no rocks, lumps or clods exceeding1-1/2 inches in greatest dimension.

In Section 83-2.03 replace the 8th and 9th paragraphs with:

Concrete barriers, except Type 50E, Type 60F, Type 60GE, and Type 60SF will be measured along the top of the barrier.

Concrete barriers Type 50E, Type 60F, Type 60GE, and Type 60SF will be measured once along the centerline between the 2 walls of the barrier.

In Section 83-2.04 replace the 3rd paragraph with:

The contract prices paid per linear foot for concrete barrier of the type or types listed in the Engineer's Estimate shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in constructing the concrete barriers, complete in place, including bar reinforcing steel, steel dowels and drilling and bonding dowels in structures, hardware for steel plate barrier, miscellaneous metal, excavation, backfill (including concrete paving for, and granular material or concrete slab used as backfill in Type 50E, Type 60F, Type 60GE, and Type 60SF concrete barrier), and disposing of surplus material and for furnishing, placing, removing and disposing of the temporary railing for closing the gap between existing barrier and the concrete barrier being constructed, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

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SECTION 80 FENCES
(Issued 01-05-07)

In Section 80-3.01F replace the 4th paragraph with:

Portland cement concrete for metal post and brace footings and for deadmen shall be minor concrete conforming to the provisions in Section 90-10, "Minor Concrete." Minor concrete shall contain not less than 470 pounds of cementitious material per cubic yard.

In Section 80-4.01C replace the 4th paragraph with:

Portland cement concrete for metal post and for deadmen shall be produced from minor concrete conforming to the provisions in Section 90-10, "Minor Concrete." Minor concrete shall contain not less than 470 pounds of cementitious material per cubic yard.

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SECTION 85 PAVEMENT MARKERS
(Issued 07-31-07)

In Section 85-1.06 replace the 6th paragraph with:

Pavement markers shall not be placed on new hot mix asphalt surfacing or seal coat until the surfacing or seal coat has been opened to public traffic for a period of not less than 7 days when hot melt bituminous adhesive is used, and not less than 14 days when epoxy adhesive is used.

In Section 85-1.06 in the 14th paragraph, replace the 2nd sentence with:

Cleaning shall be done by blast cleaning on all surfaces regardless of age or type, except that blast cleaning of clean, new hot mix asphalt and clean, new seal coat surfaces will not be required when hot melt bituminous adhesive is used.

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SECTION 88 ENGINEERING FABRICS
(Issued 01-20-12)

Replace Section 88 with:

SECTION 88 GEOSYNTHETICS

88-1.05 WATER POLLUTION CONTROL

Geosynthetics used for water pollution control must comply with:

Water Pollution Control Geosynthetics

Property	ASTM	Application						
		Silt Fence		Sediment Filter Bag		Gravel-Filled Bags	Temporary Cover	
		Woven	Non-woven	Woven	Non-woven		Woven	Non-woven
Grab breaking load, 1-inch grip, lb minimum in each direction	D 4632	120	120	200	250	205	200	200
Apparent elongation, percent minimum, in each direction	D 4632	15	50	10	50	--	15	50
Water flow rate, gallons per minute/square foot minimum and maximum average roll value	D 4491	10 - 100	100 - 150	100 - 200	75 - 200	80 - 150	4 - 10	80 - 120
Permittivity, sec^{-1} minimum	D 4491	0.05	1.1	1.0	1.0	0.2	0.05	1.0
Apparent opening size, inches maximum average roll value	D 4751	0.023	0.012	0.023	0.012	0.016	0.023	0.012

Ultraviolet resistance, percent minimum retained grab breaking load, 500 hr.	D 4355	70	70	70	70	70	70	70

88-1.06 CHANNEL AND SHORE PROTECTION

88-1.06A Rock Slope Protection

Rock slope protection (RSP) fabric must be a permeable, nonwoven, needle-punched geotextile. RSP fabric consists of 1 of the following:

1. Polyester
2. Polypropylene
3. Combined polyester and polypropylene

Polymers must be either virgin compounds or clean reworked material. Do not subject virgin compounds to use or processing other than required for initial manufacture. Clean reworked material must be previously processed material from the processor's own production that has been reground, pelletized, or solvated. RSP fabric must not consist of more than 20 percent by weight of clean reworked material. Do not use recycled materials from either post-consumer or post-industrial sources.

Class 8 or Class 10 RSP fabric must comply with:

Rock Slope Protection Fabric

Property	ASTM	Specification	
		Class 8	Class 10
Weight, oz/yd^2 minimum	D 5261	7.5	9.5
Grab breaking load, lb 1-inch grip, min. in each direction	D 4632	200	250
Apparent elongation, percent min., in each direction	D 4632	50	50
Permittivity, sec^{-1}, minimum	D 4491	1.0	0.70
Apparent opening size, U.S. Standard sieve size minimum and maximum	D 4751	70 - 100	70 - 100
Ultraviolet resistance, percent minimum retained grab breaking load, 500 hr.	D4355	70	70

SECTION 90 PORTLAND CEMENT CONCRETE
(Issued 08-05-11)

Replace Section 90 with:

SECTION 90 PORTLAND CEMENT CONCRETE

90-1 GENERAL

90-1.01 DESCRIPTION

Portland cement concrete shall be composed of cementitious material, fine aggregate, coarse aggregate, admixtures if used, and water, proportioned and mixed as specified in these specifications.

The Contractor shall determine the mix proportions for concrete in conformance with these specifications.

Minor concrete shall contain not less than 505 pounds of cementitious material per cubic yard unless otherwise specified in these specifications or the special provisions.

Unless otherwise designated on the plans or specified in these specifications or the special provisions, the amount of cementitious material used per cubic yard of concrete in structures or portions of structures shall conform to the following:

Use	Cementitious Material Content (Pounds/CY)
Concrete designated by compressive strength:	
Deck slabs and slab spans of bridges	675 min., 800 max.
Roof sections of exposed top box culverts	675 min., 800 max.
Other portions of structures	590 min., 800 max.
Concrete not designated by compressive strength:	
Deck slabs and slab spans of bridges	675 min.
Roof sections of exposed top box culverts	675 min.
Prestressed members	675 min.
Seal courses	675 min.
Other portions of structures	590 min.
Concrete for precast members	590 min., 925 max.

Except for minor structures, the minimum required compressive strength for concrete in structures or portions of structures shall be the strength specified, or 3600 pounds per square inch at 28 days, whichever is greater.

Except for when a modulus of rupture is specified, the minimum required compressive strength for concrete shall be the strength specified, or 2,500 pounds per square inch, whichever is greater. Concrete shall be proportioned such that the concrete will attain the minimum required compressive strength.

If the specified 28-day compressive strength is 3,600 pounds per square inch or greater, the concrete is designated by compressive strength. For concrete with a 28-day compressive strength greater than 3,600 pounds per square inch, 42 days will be allowed to obtain the specified strength.

For concrete not designated by compressive strength, the Engineer may test the concrete for compressive strength. The concrete will be accepted if the compressive strength at 28 days attains 85 percent or more of the minimum required compressive strength.

Concrete shall be proportioned to conform to the following shrinkage limitations when tested in conformance with the requirements of AASHTO Designation: T 160, modified as follows:

Condition	Maximum Shrinkage of Laboratory Cast Specimens at 28 days Drying (average of 3, %)
Paving and approach slab concrete	0.050
Bridge deck concrete	0.045

Note: Shrinkage requirement is waived for concrete that is used for precast elements.

Shrinkage tests shall be either:

A. Performed by a laboratory accredited to perform AASHTO Designation: T 160, or
B. Performed by a laboratory that maintains a current rating of 3 or better for the Cement and Concrete Reference Laboratory (CCRL) concrete proficiency sample program.

Laboratory cast specimens shall have a 4" x 4" cross section. Specimens shall be removed from the molds 23 ± 1 hours after mixing the concrete and placed in lime water at 73 ± 3 °F to 7 days age. A comparator reading shall be taken at 7 days age and recorded as the initial reading. Specimens then shall be stored in a humidity controlled room maintained at 73 ± 3 °F and 50 ± 4 percent relative humidity for the remainder of the test. Subsequent readings shall be taken at 7, 14, 21, and 28 days drying.

Test data verifying conformance to the shrinkage limitations shall be submitted with the mix design. Shrinkage testing data accepted by the Engineer no more than 3 years prior to the first working day of this contract will be acceptable for this entire contract, provided the data was for concrete with similar proportions and the same materials and material sources to be used on this contract. Concrete shall be considered to have similar proportions if, when compared to concrete to be used on this project, no more than 2 mix design elements are varied. Varied mix design elements shall fall within the tolerances in the following table:

Mix Design Element	Tolerance (±)
Water to cementitious material ratio	0.03
Total water content	5 %
Coarse aggregate (weight per cubic yard)	10 %
Fine aggregate (weight per cubic yard)	10 %
Supplementary cementitious material content	5 %
Admixture (as originally dosed)	25 %

Note: Admixtures must be of the same brand.

Before using concrete or in advance of revising the mix proportions, the Contractor shall submit in writing to the Engineer a copy of the mix design.

Compliance with cementitious material content requirements will be verified in conformance with procedures described in California Test 518 for cement content. For testing purposes, supplementary cementitious material (SCM) shall be considered to be cement. Batch proportions shall be adjusted as necessary to produce concrete having the specified cementitious material content.

If any concrete has a cementitious material, portland cement, or SCM content that is less than the minimum required, the concrete shall be removed. However, if the Engineer determines that the concrete is structurally adequate, the concrete may remain in place and the Contractor shall pay to the State $0.25 for each pound of cementitious material, portland cement, or SCM that is less than the minimum required. The Department may deduct the amount from any moneys due, or that may become due, the Contractor under the contract. The deductions will not be made unless the difference between the contents required and those actually provided exceeds the batching tolerances permitted by Section 90-5, "Proportioning." No deductions will be made based on the results of California Test 518.

The requirements of the preceding paragraph shall not apply to minor concrete.

90-2 MATERIALS

90-2.01 CEMENTITIOUS MATERIALS

Unless otherwise specified, cementitious material shall be either a combination of Type II or Type V portland cement and SCM, or a blended cement. No cementitious material shall be used in the work unless it is on the Department's Pre-Qualified Products List at the time of mix design submittal. Information regarding cementitious material qualification and placement on the Department's approved list can be obtained at the Transportation Laboratory.

Cementitious materials used in cast-in-place concrete for exposed surfaces of like elements of a structure shall be from the same sources and of the same proportions.

Cementitious materials shall be protected from moisture until used. Sacked cementitious materials shall be piled to permit access for tallying, inspecting, and identifying each shipment.

Facilities shall be provided to ensure that the various cementitious materials meeting this Section 90-2.01 are kept separate from each other and from other cementitious materials. A storage silo containing a cementitous material shall be emptied before using that silo for a different cementitious material. Blended cements with a percentage of SCM differing by more than 2 percentage points are considered different cementitious materials. Sampling cementitious materials shall be in conformance with California Test 125.

The Contractor shall furnish a Certificate of Compliance for cementitious materials in conformance with the provisions in Section 6-1.07, "Certificates of Compliance." The Certificate of Compliance shall indicate the source by name and location (including country, state, and city). If cementitious material is delivered directly to the job site, the Certificate of Compliance shall be signed by the cementitious material supplier. If the cementitious material is used in ready-mixed concrete or in precast concrete products purchased as such by the Contractor, the Certificate of Compliance shall be signed by the manufacturer of the concrete or product. If blended cement is used, the Certificate of Compliance shall include a statement signed by the blended cement supplier that indicates the actual percentage, by weight, of SCM in the blend. Weight of SCM shall be by weighing device conforming to Section 9-1.01, "Measurement of Quantities," or as determined by chemical analysis.

90-2.01A Cement

Portland cement shall conform to the requirements in ASTM Designation: C 150 except the C_3S content of Type II cement shall not exceed 65 percent.

Blended cement shall conform to the requirements for Portland Blast-Furnace Slag Cement, Type IS (MS) or Portland-Pozzolan Cement, Type IP (MS) in AASHTO Designation: M 240, except that the maximum limits on the pozzolan content shall not apply. Blended cement shall be comprised of Type II or Type V cement and SCM produced by intergrinding portland cement clinker and granulated blast furnace slag, ground granulated blast furnace slag

(GGBFS), or pozzolan; by blending portland cement and either GGBFS or finely divided pozzolan; or by a combination of intergrinding and blending.

In addition, Type II portland cement and Type V portland cement shall conform to the following requirements:

A. The cement shall not contain more than 0.60-percent by mass of alkalies, calculated as the percentage of Na_2O plus 0.658 times the percentage of K_2O, when determined by methods as required in AASHTO Designation: T 105; and
B. The autoclave expansion shall not exceed 0.50-percent

Type III portland cement shall be used only as specified or with the approval of the Engineer. Type III portland cement shall conform to the additional requirements listed above for Type II portland cement. The Contractor may use Type III portland cement in the manufacturing of precast concrete.

90-2.01B Supplementary Cementitious Materials

Each supplementary cementitious material shall conform to one of the following:

A. Fly ash conforming to the requirements in AASHTO Designation: M 295, Class F, and these specifications. The available alkali, as sodium oxide equivalent, shall not exceed 1.5 percent when determined in conformance with the requirements in ASTM Designation: C 311 or the total alkali, as sodium oxide equivalent, shall not exceed 5.0 percent when determined in conformance with the requirements in AASHTO Designation: T 105.
B. Ultra fine fly ash (UFFA) conforming to the requirements in AASHTO Designation: M 295, Class F, and the following chemical and physical requirements:

Chemical Requirements	Percent
Sulfur Trioxide (SO_3)	1.5 max.
Loss on ignition	1.2 max.
Available Alkalies (as Na_2O) equivalent	1.5 max.

Physical Requirements	Percent
Particle size distribution	
Less than 3.5 microns	50
Less than 9.0 microns	90
Strength Activity Index with portland cement	
7 days	95 (minimum % of control)
28 days	110 (minimum % of control)
Expansion at 16 days when testing job materials in conformance with ASTM C 1567*	0.10 max.

* In the test mix, Type II or Type V portland cement shall be replaced with at least 12% UFFA by weight.

C. Raw or calcined natural pozzolans conforming to the requirements in AASHTO Designation: M 295, Class N. and the following requirements and these specifications. The available alkali, as sodium oxide equivalent, shall not exceed 1.5 percent when determined in conformance with the requirements in ASTM Designation: C 311 or the total alkali, as sodium oxide equivalent, shall not exceed 5.0 percent when determined in conformance with the requirements in AASHTO Designation: T 105.
D. Metakaolin conforming to the requirements in AASHTO Designation: M 295, Class N, and the following chemical and physical requirements:

Chemical Requirements	Percent
Silicon Dioxide (SiO_2) + Aluminum Oxide (Al_2O_3)	92.0 min.
Calcium Oxide (CaO)	1.0 max
Sulfur Trioxide (SO_3)	1.0 max.
Loss on ignition	1.2 max.
Available Alkalies (as Na_2O) equivalent	1.0 max.

Physical Requirements	Percent
Particle size distribution Less than 45 microns	95
Strength Activity Index with portland cement 7 days 28 days	 100 (minimum % of control) 100 (minimum % of control)

E. Ground Granulated Blast Furnace Slag (GGBFS) conforming to the requirements in AASHTO Designation: M 302, Grade 100 or Grade 120.
F. Silica Fume conforming to the requirements of AASHTO Designation: M 307, with reduction in mortar expansion of 80 percent, minimum, using the cement from the proposed mix design.

Commingling of fly ash from different sources at uncontrolled ratios is permissible only if the following criteria are satisfied:

A. Sources of fly ash to be commingled shall each produce fly ash that conforms to the requirements in AASHTO Designation: M 295, Class F.
B. Testing of the commingled product is the responsibility of the fly ash supplier.
C. Each fly ash's running average of relative density shall not differ from any other by more than 0.25 at the time of commingling.
D. Each fly ash's running average of loss on ignition shall not differ from any other by more than one percent at the time of commingling.
E. The final product of commingled fly ash shall conform to the requirements in AASHTO Designation: M 295, Class F.

90-2.01C Required Use Of Supplementary Cementitious Materials

General

The amount of portland cement and SCM used in portland cement concrete shall conform to the minimum cementitious material content provisions in Section 90-1.01, "Description," or Section 90-4.05, "Optional Use of Chemical Admixtures," and these specifications.

The SCM content in portland cement concrete shall conform to one of the following:

A. Any combination of portland cement and at least one SCM, satisfying Equations (1) and (2):

Equation (1)

$$\frac{(25 \times UF) + (12 \times FA) + (10 \times FB) + (6 \times SL)}{MC} \geq X$$

Where:

UF = Silica fume, metakaolin, or UFFA, including the amount in blended cement, pounds per cubic yard.
FA = Fly ash or natural pozzolan conforming to the requirements in AASHTO Designation: M 295, Class F or N with a CaO content up to 10 percent, including the amount in blended cement, pounds per cubic yard.
FB = Fly ash or natural pozzolan conforming to the requirements in AASHTO Designation: M 295, Class F or N with a CaO content greater than 10 percent and up to 15 percent, including the amount in blended cement, pounds per cubic yard.
SL = GGBFS, including the amount in blended cement, pounds per cubic yard.
MC = Minimum amount of cementitious material specified, pounds per cubic yard.
X = 1.8 for innocuous aggregate, 3.0 for all other aggregate.

Equation (2)

$$MC - MSCM - PC \geq 0$$

Where:

MC = Minimum amount of cementitious material specified, pounds per cubic yard.
MSCM = The minimum sum of SCMs that satisfies Equation (1) above, pounds per cubic yard.
PC = The amount of portland cement, including the amount in blended cement, pounds per cubic yard.

B. 15 percent of Class F fly ash with at least 48 ounces of $LiNO_3$ solution added per 100 pounds of portland cement. CaO content of the fly ash shall not exceed 15 percent.

Precast Concrete

The SCM content in precast portland cement concrete shall conform to one of the following:

A. Any combination of portland cement and SCM, satisfying the following equation:

Equation (3)

$$\frac{(25 \times UF) + (12 \times FA) + (10 \times FB) + (6 \times SL)}{TC} \geq X$$

Where:

UF = Silica fume, metakaolin, or UFFA, including the amount in blended cement, pounds per cubic yard.
FA = Fly ash or natural pozzolan conforming to the requirements in AASHTO Designation: M 295, Class F or N with a CaO content up to 10 percent, including the amount in blended cement, pounds per cubic yard.
FB = Fly ash or natural pozzolan conforming to the requirements in AASHTO Designation: M 295, Class F or N with a CaO content greater than 10 percent and up to 15 percent, including the amount in blended cement, pounds per cubic yard.
SL = GGBFS, including the amount in blended cement, pounds per cubic yard.
TC = Total amount of cementitious material used in the mix, pounds per cubic yard.
X = 0.0 if precast members are constructed with portland cement concrete using aggregate that is "innocuous" in conformance with the provisions in Section 90-2.02, "Aggregates."
X = 3.0 for all other aggregate.

B. 15 percent of Class F fly ash with at least 48 ounces of $LiNO_3$ solution added per 100 pounds of portland cement. CaO content of the fly ash shall not exceed 15 percent.
C. Any combination of supplementary cementitious material and portland cement may be used if the expansion of cementitious material and aggregate does not exceed 0.10 percent when tested in conformance with the requirements in ASTM C 1567. Test data shall be submitted with each mix design. Test data accepted by the Engineer no more than 3 years prior to the first working day of this contract will be acceptable for this entire contract, provided the data was for the same concrete mix and the same materials and material sources to be used on this contract.

90-2.02 AGGREGATES

To be considered innocuous, aggregate must be on the Department's approved list, "Innocuous Aggregates for use in Concrete." Information regarding aggregate qualification and placement on the Department's approved list can be obtained at the Transportation Laboratory.

Both coarse and fine aggregate must be on the approved list for the aggregate used in concrete to be considered innocuous.

Aggregates shall be free from deleterious coatings, clay balls, roots, bark, sticks, rags, and other extraneous material.

The Contractor shall provide safe and suitable facilities, including necessary splitting devices for obtaining samples of aggregates, in conformance with California Test 125.

Aggregates shall be of such character that it will be possible to produce workable concrete within the limits of water content provided in Section 90-6.06, "Amount of Water and Penetration."

Aggregates shall have not more than 10 percent loss when tested for soundness in conformance with the requirements in California Test 214. The soundness requirement for fine aggregate will be waived, provided that the

durability index, D_f, of the fine aggregate is 60 or greater when tested for durability in conformance with California Test 229.

If the results of any one or more of the Cleanness Value, Sand Equivalent, or aggregate grading tests do not meet the requirements specified for "Operating Range" but all meet the "Contract Compliance" requirements, the placement of concrete shall be suspended at the completion of the current pour until tests or other information indicate that the next material to be used in the work will comply with the requirements specified for "Operating Range."

If the results of either or both the Cleanness Value and coarse aggregate grading tests do not meet the requirements specified for "Contract Compliance," the concrete that is represented by the tests shall be removed. However, if the Engineer determines that the concrete is structurally adequate, the concrete may remain in place, and the Contractor shall pay to the State $3.50 per cubic yard for paving concrete and $5.50 per cubic yard for all other concrete for the concrete represented by these tests and left in place. The Department may deduct the amount from any moneys due, or that may become due, the Contractor under the contract.

If the results of either or both the Sand Equivalent and fine aggregate grading tests do not meet the requirements specified for "Contract Compliance," the concrete which is represented by the tests shall be removed. However, if the Engineer determines that the concrete is structurally adequate, the concrete may remain in place, and the Contractor shall pay to the State $3.50 per cubic yard for paving concrete and $5.50 per cubic yard for all other concrete for the concrete represented by these tests and left in place. The Department may deduct the amount from any moneys due, or that may become due, the Contractor under the contract.

The 2 preceding paragraphs apply individually to the "Contract Compliance" requirements for coarse aggregate and fine aggregate. When both coarse aggregate and fine aggregate do not conform to the "Contract Compliance" requirements, both paragraphs shall apply. The payments specified in those paragraphs are in addition to any payments made in conformance with the provisions in Section 90-1.01, "Description."

No single Cleanness Value, Sand Equivalent, or aggregate grading test shall represent more than 300 cubic yards of concrete or one day's pour, whichever is smaller.

When the source of an aggregate is changed, the Contractor shall adjust the mix proportions and submit in writing to the Engineer a copy of the mix design before using the aggregates.

90-2.02A Coarse Aggregate

Coarse aggregate shall consist of gravel, crushed gravel, crushed rock, reclaimed aggregate, crushed air-cooled iron blast furnace slag or combinations thereof. Crushed air-cooled blast furnace slag shall not be used in reinforced or prestressed concrete.

Reclaimed aggregate is aggregate that has been recovered from plastic concrete by washing away the cementitious material. Reclaimed aggregate shall conform to all aggregate requirements.

Coarse aggregate shall conform to the following quality requirements:

Tests	California Test	Requirements
Loss in Los Angeles Rattler (after 500 revolutions)	211	45% max.
Cleanness Value		
Operating Range	227	75 min.
Contract Compliance	227	71 min.

In lieu of the above Cleanness Value requirements, a Cleanness Value "Operating Range" limit of 71, minimum, and a Cleanness Value "Contract Compliance" limit of 68, minimum, will be used to determine the acceptability of the coarse aggregate if the Contractor furnishes a Certificate of Compliance, as provided in Section 6-1.07, "Certificates of Compliance," certifying that:

A. Coarse aggregate sampled at the completion of processing at the aggregate production plant had a Cleanness Value of not less than 82 when tested in conformance with the requirements in California Test 227; and
B. Prequalification tests performed in conformance with the requirements in California Test 549 indicated that the aggregate would develop a relative strength of not less than 95 percent and would have a relative shrinkage not greater than 105 percent, based on concrete.

90-2.02B Fine Aggregate

Fine aggregate shall consist of natural sand, manufactured sand produced from larger aggregate or a combination thereof. Manufactured sand shall be well graded.

Fine aggregate shall conform to the following quality requirements:

Test	California Test	Requirements
Organic Impurities	213	Satisfactory[a]
Sand Equivalent:		
Operating Range	217	75, min.
Contract Compliance	217	71, min.

[a] Fine aggregate developing a color darker than the reference standard color may be accepted if 95% relative mortar strength is achieved when tested in conformance with ASTM C87.

In lieu of the above Sand Equivalent requirements, a Sand Equivalent "Operating Range" limit of 71, minimum, and a Sand Equivalent "Contract Compliance" limit of 68, minimum, will be used to determine the acceptability of the fine aggregate if the Contractor furnishes a Certificate of Compliance, as provided in Section 6-1.07, "Certificates of Compliance," certifying that:

A. Fine aggregate sampled at the completion of processing at the aggregate production plant had a Sand Equivalent value of not less than 82 when tested by California Test 217; and
B. Prequalification tests performed in conformance with California Test 549 indicated that the aggregate would develop a relative strength of not less than 95 percent and would have a relative shrinkage not greater than 105 percent, based on concrete.

90-2.03 WATER

In conventionally reinforced concrete work, the water for curing, for washing aggregates, and for mixing shall be free from oil and shall not contain more than 1,000 parts per million of chlorides as Cl, when tested in conformance with California Test 422, nor more than 1,300 parts per million of sulfates as SO_4, when tested in conformance with California Test 417. In prestressed concrete work, the water for curing, for washing aggregates, and for mixing shall be free from oil and shall not contain more than 650 parts per million of chlorides as Cl, when tested in conformance with California Test 422, nor more than 1,300 parts per million of sulfates as SO_4, when tested in conformance with California Test 417. In no case shall the water contain an amount of impurities that will cause either of the following results when compared to the same test using distilled or deionized water: 1) a change in the setting time of cement of more than 25 percent when tested in conformance with the requirements in ASTM Designation: C 191 or ASTM Designation: C 266 or 2) a reduction in the compressive strength of mortar at 14 days of more than 5 percent, when tested in conformance with the requirements in ASTM Designation: C 109.

In nonreinforced concrete work, the water for curing, for washing aggregates and for mixing shall be free from oil and shall not contain more than 2,000 parts per million of chlorides as Cl, when tested in conformance with California Test 422, or more than 1,500 parts per million of sulfates as SO_4, when tested in conformance with California Test 417.

In addition to the above provisions, water for curing concrete shall not contain impurities in a sufficient amount to cause discoloration of the concrete or produce etching of the surface.

Water reclaimed from mixer wash-out operations may be used in mixing concrete. The water shall not contain coloring agents or more than 300 parts per million of alkalis ($Na_2O + 0.658\ K_2O$) as determined on the filtrate. The specific gravity of the water shall not exceed 1.03 and shall not vary more than ±0.010 during a day's operations.

90-2.04 Admixture Materials

Admixture materials shall be stored and dispensed in liquid form and conform to the following requirements:

A. Chemical Admixtures—ASTM Designation: C 494.
B. Air-entraining Admixtures—ASTM Designation: C 260.
C. Lithium Nitrate shall be in an aqueous solution conforming to the following:

1. Lithium Nitrate ($LiNO_3$) must be 30 percent +/- 0.5 percent by weight
2. Sulfate (SO_4) must be less than 1000 ppm
3. Chloride (Cl) must be less than 1000 ppm
4. Alkalis ($Na_2O + 0.658\ K_2O$) must be less than 1000 ppm

90-3 AGGREGATE GRADINGS

90-3.01 GENERAL

Before beginning concrete work, the Contractor shall submit in writing to the Engineer the gradation of the primary aggregate nominal sizes that the Contractor proposes to furnish. If a primary coarse aggregate or the fine aggregate is separated into 2 or more sizes, the proposed gradation shall consist of the gradation for each individual size, and the proposed proportions of each individual size, combined mathematically to indicate one proposed gradation. The proposed gradation shall meet the grading requirements shown in the table in this section, and shall show the percentage passing each of the sieve sizes used in determining the end result.

The Engineer may waive, in writing, the gradation requirements in this Section 90-3.01 and in Sections 90-3.02, "Coarse Aggregate Grading," 90-3.03, "Fine Aggregate Grading," and 90-3.04, "Combined Aggregate Gradings," if, in the Engineer's opinion, furnishing the gradation is not necessary for the type or amount of concrete work to be constructed.

Gradations proposed by the Contractor shall be within the following percentage passing limits:

Primary Aggregate Nominal Size	Sieve Size	Limits of Proposed Gradation
1-1/2" x 3/4"	1"	19 - 41
1" x No. 4	3/4"	52 - 85
1" x No. 4	3/8"	15 - 38
1/2" x No. 4	3/8"	40 - 78
3/8" x No. 8	3/8"	50 - 85
Fine Aggregate	No. 16	55 - 75
Fine Aggregate	No. 30	34 - 46
Fine Aggregate	No. 50	16 - 29

Should the Contractor change the source of supply, the Contractor shall submit in writing to the Engineer the new gradations before their intended use.

90-3.02 COARSE AGGREGATE GRADING

The grading requirements for coarse aggregates are shown in the following table for each size of coarse aggregate:

	Percentage Passing Primary Aggregate Nominal Sizes							
	1-1/2" x 3/4"		1" x No. 4		1/2" x No. 4		3/8" x No. 8	
Sieve Sizes	Operating Range	Contract Compliance	Operating Range	Contract Compliance	Operating Range	Contract Compliance	Operating Range	Contract Compliance
2"	100	100	—	—	—	—	—	—
1-1/2"	88 - 100	85 - 100	100	100	—	—	—	—
1"	X ±18	X ±25	88 - 100	86 - 100	—	—	—	—
3/4"	0 - 17	0 - 20	X ±15	X ±22	100	100	—	—
1/2"	—	—	—	—	82 - 100	80 - 100	100	100
3/8"	0 - 7	0 - 9	X ±15	X ±22	X ±15	X ±22	X ±15	X ±20
No. 4	—	—	0 - 16	0 - 18	0 - 15	0 - 18	0 - 25	0 - 28
No. 8	—	—	0 - 6	0 - 7	0 - 6	0 - 7	0 - 6	0 - 7

In the above table, the symbol X is the gradation that the Contractor proposes to furnish for the specific sieve size as provided in Section 90-3.01, "General."

Coarse aggregate for the 1-1/2 inch, maximum, combined aggregate grading as provided in Section 90-3.04, "Combined Aggregate Gradings," shall be furnished in 2 or more primary aggregate nominal sizes. Each primary aggregate nominal size may be separated into 2 sizes and stored separately, provided that the combined material conforms to the grading requirements for that particular primary aggregate nominal size.

When the one inch, maximum, combined aggregate grading as provided in Section 90-3.04, "Combined Aggregate Gradings," is to be used, the coarse aggregate may be separated into 2 sizes and stored separately, provided that the combined material shall conform to the grading requirements for the 1" x No. 4 primary aggregate nominal size.

90-3.03 FINE AGGREGATE GRADING

Fine aggregate shall be graded within the following limits:

Sieve Sizes	Percentage Passing	
	Operating Range	Contract Compliance
3/8"	100	100
No. 4	95 - 100	93 - 100
No. 8	65 - 95	61 - 99
No. 16	X ±10	X ±13
No. 30	X ±9	X ±12
No. 50	X ±6	X ±9
No. 100	2 - 12	1 - 15
No. 200	0 - 8	0 - 10

In the above table, the symbol X is the gradation that the Contractor proposes to furnish for the specific sieve size as provided in Section 90-3.01, "General."

In addition to the above required grading analysis, the distribution of the fine aggregate sizes shall be such that the difference between the total percentage passing the No. 16 sieve and the total percentage passing the No. 30 sieve shall be between 10 and 40, and the difference between the percentage passing the No. 30 and No. 50 sieves shall be between 10 and 40.

Fine aggregate may be separated into 2 or more sizes and stored separately, provided that the combined material conforms to the grading requirements specified in this Section 90-3.03.

90-3.04 COMBINED AGGREGATE GRADINGS

Combined aggregate grading limits shall be used only for the design of concrete mixes. Concrete mixes shall be designed so that aggregates are combined in proportions that shall produce a mixture within the grading limits for combined aggregates as specified herein.

The combined aggregate grading, except when otherwise specified in these specifications or the special provisions, shall be either the 1-1/2 inch, maximum grading, or the 1 inch, maximum grading, at the option of the Contractor.

Grading Limits of Combined Aggregates

Sieve Sizes	Percentage Passing			
	1-1/2" Max.	1" Max.	1/2" Max.	3/8" Max.
2"	100	—	—	—
1-1/2"	90 - 100	100	—	—
1"	50 - 86	90 - 100	—	—
3/4"	45 - 75	55 - 100	100	—
1/2"	—	—	90 - 100	100
3/8"	38 - 55	45 - 75	55 - 86	50 - 100
No. 4	30 - 45	35 - 60	45 - 63	45 - 63
No. 8	23 - 38	27 - 45	35 - 49	35 - 49
No. 16	17 - 33	20 - 35	25 - 37	25 - 37
No. 30	10 - 22	12 - 25	15 - 25	15 - 25
No. 50	4 - 10	5 - 15	5 - 15	5 - 15
No. 100	1 - 6	1 - 8	1 - 8	1 - 8
No. 200	0 - 3	0 - 4	0 - 4	0 - 4

Changes from one grading to another shall not be made during the progress of the work unless permitted by the Engineer.

90-4 ADMIXTURES

90-4.01 GENERAL

Admixtures used in portland cement concrete shall conform to and be used in conformance with the provisions in this Section 90-4 and the special provisions. Admixtures shall be used when specified or ordered by the Engineer and may be used at the Contractor's option as provided herein.

Chemical admixtures and air-entraining admixtures containing chlorides as Cl in excess of one percent by weight of admixture, as determined by California Test 415, shall not be used.

Admixtures shall be uniform in properties throughout their use in the work. Should it be found that an admixture as furnished is not uniform in properties, its use shall be discontinued.

If more than one admixture is used, the admixtures shall be compatible with each other so that the desirable effects of all admixtures used will be realized.

Chemical admixtures shall be used in conformance with the manufacturer's written recommendations. The manufacturer's written recommendations shall include a statement that the admixtures are compatible with the types and amounts of SCMs used.

90-4.02 MATERIALS

Admixture materials shall conform to the provisions in Section 90-2.04, "Admixture Materials."

90-4.03 ADMIXTURE APPROVAL

No admixture brand shall be used in the work unless it is on the Department's current list of approved brands for the type of admixture involved. Information regarding admixture qualification and placement on the Department's list can be obtained at the Transportation Laboratory.

If the Contractor proposes to use an admixture of a brand and type on the current list of approved admixture brands, the Contractor shall furnish a Certificate of Compliance from the manufacturer, as provided in Section 6-1.07, "Certificates of Compliance," certifying that the admixture furnished is the same as that previously approved. If a previously approved admixture is not accompanied by a Certificate of Compliance, the admixture shall not be used in the work until the Engineer has had sufficient time to make the appropriate tests and has approved the admixture for use. The Engineer may take samples for testing at any time, whether or not the admixture has been accompanied by a Certificate of Compliance.

90-4.04 REQUIRED USE OF CHEMICAL ADMIXTURES

If the use of a chemical admixture is specified, the admixture shall be used at the dosage specified, except that if no dosage is specified, the admixture shall be used at the dosage normally recommended by the manufacturer of the admixture.

90-4.05 OPTIONAL USE OF CHEMICAL ADMIXTURES

The Contractor may use Type A or F, water-reducing; Type B, retarding; or Type D or G, water-reducing and retarding admixtures as described in ASTM Designation: C 494 to conserve cementitious material or to facilitate any concrete construction application subject to the following conditions:

A. If a water-reducing admixture or a water-reducing and retarding admixture is used, the cementitious material content specified or ordered may be reduced by a maximum of 5 percent by weight, except that the resultant cementitious material content shall be not less than 505 pounds per cubic yard; and
B. When a reduction in cementitious material content is made, the dosage of admixture used shall be no less than the dosage used in determining approval of the admixture.

The Contractor may use Type S admixtures conforming to the requirements in ASTM Designation: C 494.

Unless otherwise specified, a Type C accelerating chemical admixture conforming to the requirements in ASTM Designation: C 494, may be used in portland cement concrete. Inclusion in the mix design submitted for approval will not be required provided that the admixture is added to counteract changing conditions that contribute to delayed setting of the portland cement concrete, and the use or change in dosage of the admixture is approved in writing by the Engineer.

90-4.06 REQUIRED USE OF AIR-ENTRAINING ADMIXTURES

When air-entrainment is specified or ordered by the Engineer, the air-entraining admixture shall be used in amounts to produce a concrete having the specified air content as determined by California Test 504.

90-4.07 OPTIONAL USE OF AIR-ENTRAINING ADMIXTURES

When air-entrainment has not been specified or ordered by the Engineer, the Contractor will be permitted to use an air-entraining admixture to facilitate the use of any construction procedure or equipment provided that the average air content, as determined by California Test 504, of 3 successive tests does not exceed 4 percent, and no single test value exceeds 5.5 percent. If the Contractor elects to use an air-entraining admixture in concrete for pavement, the Contractor shall so indicate at the time the Contractor designates the source of aggregate.

90-4.08 BLANK

90-4.09 BLANK

90-4.10 PROPORTIONING AND DISPENSING LIQUID ADMIXTURES

Chemical admixtures and air-entraining admixtures shall be dispensed in liquid form. Dispensers for liquid admixtures shall have sufficient capacity to measure at one time the prescribed quantity required for each batch of concrete. Each dispenser shall include a graduated measuring unit into which liquid admixtures are measured to within ±5 percent of the prescribed quantity for each batch. Dispensers shall be located and maintained so that the graduations can be accurately read from the point at which proportioning operations are controlled to permit a visual check of batching accuracy prior to discharge. Each measuring unit shall be clearly marked for the type and quantity of admixture.

Each liquid admixture dispensing system shall be equipped with a sampling device consisting of a valve located in a safe and readily accessible position such that a sample of the admixture may be withdrawn slowly by the Engineer.

If more than one liquid admixture is used in the concrete mix, each liquid admixture shall have a separate measuring unit and shall be dispensed by injecting equipment located in such a manner that the admixtures are not mixed at high concentrations and do not interfere with the effectiveness of each other. When air-entraining admixtures are used in conjunction with other liquid admixtures, the air-entraining admixture shall be the first to be incorporated into the mix, unless it is demonstrated that a different sequence improves performance.

When automatic proportioning devices are used, dispensers for liquid admixtures shall operate automatically with the batching control equipment. The dispensers shall be equipped with an automatic warning system in good operating condition that will provide a visible or audible signal at the point at which proportioning operations are controlled when the quantity of admixture measured for each batch of concrete varies from the preselected dosage by more than 5 percent, or when the entire contents of the measuring unit are not emptied from the dispenser into each batch of concrete.

Unless liquid admixtures are added to premeasured water for the batch, their discharge into the batch shall be arranged to flow into the stream of water so that the admixtures are well dispersed throughout the batch, except that air-entraining admixtures may be dispensed directly into moist sand in the batching bins provided that adequate control of the air content of the concrete can be maintained.

Liquid admixtures requiring dosages greater than one-half gallon per cubic yard shall be considered to be water when determining the total amount of free water as specified in Section 90-6.06, "Amount of Water and Penetration."

90-4.11 BLANK

90-5 PROPORTIONING

90-5.01 STORAGE OF AGGREGATES

Aggregates shall be stored or stockpiled in such a manner that separation of coarse and fine particles of each size shall be avoided and the various sizes shall not become intermixed before proportioning.

Aggregates shall be stored or stockpiled and handled in a manner that prevent contamination by foreign materials. In addition, storage of aggregates at batching or mixing facilities that are erected subsequent to the award of the contract and that furnish concrete to the project shall conform to the following:

A. Intermingling of the different sizes of aggregates shall be positively prevented. The Contractor shall take the necessary measures to prevent intermingling. The preventive measures may include, but are not necessarily limited to, physical separation of stockpiles or construction of bulkheads of adequate length and height; and
B. Contamination of aggregates by contact with the ground shall be positively prevented. The Contractor shall take the necessary measures to prevent contamination. The preventive measures shall include, but are not necessarily limited to, placing aggregates on wooden platforms or on hardened surfaces consisting of portland cement concrete, asphalt concrete, or cement treated material.

In placing aggregates in storage or in moving the aggregates from storage to the weigh hopper of the batching plant, any method that may cause segregation, degradation, or the combining of materials of different gradings that will result in any size of aggregate at the weigh hopper failing to meet the grading requirements, shall be discontinued. Any method of handling aggregates that results in excessive breakage of particles shall be discontinued. The use of suitable devices to reduce impact of falling aggregates may be required by the Engineer.

90-5.02 PROPORTIONING DEVICES

Weighing, measuring, or metering devices used for proportioning materials shall conform to the requirements in Section 9-1.01, "Measurement of Quantities," and this Section 90-5.02. In addition, automatic weighing systems shall

comply with the requirements for automatic proportioning devices in Section 90-5.03A, "Automatic Proportioning." Automatic devices shall be automatic to the extent that the only manual operation required for proportioning the aggregates, cement, and SCM for one batch of concrete is a single operation of a switch or starter.

For concrete pavement, aggregate and bulk cementitious material must be proportioned by weight by means of automatic proportioning devices.

Proportioning devices shall be tested as frequently as the Engineer may deem necessary to ensure their accuracy.

Weighing equipment shall be insulated against vibration or movement of other operating equipment in the plant. When the plant is in operation, the weight of each batch of material shall not vary from the weight designated by the Engineer by more than the tolerances specified herein.

Equipment for cumulative weighing of aggregate shall have a zero tolerance of ±0.5 percent of the designated total batch weight of the aggregate. For systems with individual weigh hoppers for the various sizes of aggregate, the zero tolerance shall be ±0.5 percent of the individual batch weight designated for each size of aggregate. Equipment for cumulative weighing of cement and SCM shall have a zero tolerance of ±0.5 percent of the designated total batch weight of the cement and SCM. Equipment for weighing cement or SCM separately shall have a zero tolerance of ±0.5 percent of their designated individual batch weights. Equipment for measuring water shall have a zero tolerance of ±0.5 percent of its designated weight or volume.

The weight indicated for any batch of material shall not vary from the preselected scale setting by more than the following:

A. Aggregate weighed cumulatively shall be within 1.0 percent of the designated total batch weight of the aggregate. Aggregates weighed individually shall be within 1.5 percent of their respective designated batch weights; and
B. Cement shall be 99 to 102 percent of its designated batch weight. When weighed individually, SCM shall be 99 to 102 percent of its designated batch weight. When SCM and cement are permitted to be weighed cumulatively, cement shall be weighed first to 99 to 102 percent of its designated batch weight, and the total for cement and SCM shall be 99 to 102 percent of the sum of their designated batch weights When a blended cement is used, the percentages of cement and SCM used for calculating batch weights shall be based on the percentage of SCM indicated in the Certificate of Compliance from the blended cement supplier; and
C. Water shall be within 1.5 percent of its designated weight or volume.

Each scale graduation shall be approximately 0.001 of the total capacity of the scale. The capacity of scales for weighing cement, SCM, or cement plus SCM and aggregates shall not exceed that of commercially available scales having single graduations indicating a weight not exceeding the maximum permissible weight variation above, except that no scale shall be required having a capacity of less than 1,000 pounds, with one pound graduations.

90-5.03 PROPORTIONING

Proportioning shall consist of dividing the aggregates into the specified sizes, each stored in a separate bin, and combining them with cementitious material and water as provided in these specifications. Aggregates shall be proportioned by weight.

At the time of batching, aggregates shall have been dried or drained sufficiently to result in a stable moisture content such that no visible separation of water from aggregate will take place during transportation from the proportioning plant to the point of mixing. In no event shall the free moisture content of the fine aggregate at the time of batching exceed 8 percent of its saturated, surface-dry weight.

Should separate supplies of aggregate material of the same size group, but of different moisture content or specific gravity or surface characteristics affecting workability, be available at the proportioning plant, withdrawals shall be made from one supply exclusively and the materials therein completely exhausted before starting upon another.

Bulk Type IP (MS) or Type IS (MS) cement shall be weighed in an individual hopper and shall be kept separate from the aggregates until the ingredients are released for discharge into the mixer.

Bulk cement and SCM may be weighed in separate, individual weigh hoppers or may be weighed in the same weigh hopper and shall be kept separate from the aggregates until the ingredients are released for discharge into the mixer. If the cement and SCM are weighed cumulatively, the cement shall be weighed first.

If cement and SCM are weighed in separate weigh hoppers, the weigh systems for the proportioning of the aggregate, the cement, and the SCM shall be individual and distinct from all other weigh systems. Each weigh system shall be equipped with a hopper, a lever system, and an indicator to constitute an individual and independent material-weighing device. The cement and the SCM shall be discharged into the mixer simultaneously with the aggregate.

The scales and weigh hoppers for bulk weighing cement, SCM, or cement plus SCM shall be separate and distinct from the aggregate weighing equipment.

For batches of one cubic yard or more, the batching equipment shall conform to one of the following combinations:

A. Separate boxes and separate scale and indicator for weighing each size of aggregate.
B. Single box and scale indicator for all aggregates.
C. Single box or separate boxes and automatic weighing mechanism for all aggregates.

In order to check the accuracy of batch weights, the gross weight and tare weight of batch trucks, truck mixers, truck agitators, and non-agitating hauling equipment shall be determined when ordered by the Engineer. The equipment shall be weighed on scales designated by the Engineer.

90-5.03A Automatic Proportioning

Automatic proportioning devices shall be authorized by the Department.

For concrete pavement, the Contractor shall install and maintain in operating condition an electronically actuated moisture meter that will indicate, on a readily visible scale, changes in the moisture content of the fine aggregate as it is batched within a sensitivity of 0.5 percent by weight of the fine aggregate.

The batching of cement, SCM, or cement plus SCM and aggregate shall be interlocked so that a new batch cannot be started until all weigh hoppers are empty, the proportioning devices are within zero tolerance, and the discharge gates are closed. The interlock shall permit no part of the batch to be discharged until all aggregate hoppers and the cement and SCM hoppers or the cement plus SCM hopper are charged with weights that are within the tolerances specified in Section 90-5.02, "Proportioning Devices."

If interlocks are required for cement and SCM charging mechanisms and cement and SCM are weighed cumulatively, their charging mechanisms shall be interlocked to prevent the introduction of SCM until the weight of cement in the cement weigh hopper is within the tolerances specified in Section 90-5.02, "Proportioning Devices."

If concrete is completely mixed in stationary mixers, the SCMs shall be weighed in a separate weigh hopper and the SCM and cement shall be introduced simultaneously into the mixer proportionately with the aggregate. If the Contractor provides certification that the stationary mixer is capable of mixing the cement, SCM, aggregates, and water uniformly before discharge, weighing the SCM cumulatively with the cement is permitted. Certification shall contain the following:

A. Test results for 2 compressive strength test cylinders of concrete taken within the first one-third and 2 compressive strength test cylinders of concrete taken within the last one-third of the concrete discharged from a single batch from the stationary mixer. Strength tests and cylinder preparation will be in conformance with the provisions of Section 90-9, "Compressive Strength";
B. Calculations demonstrating that the difference in the averages of 2 compressive strengths taken in the first one-third is no greater than 7.5 percent different than the averages of 2 compressive strengths taken in the last one-third of the concrete discharged from a single batch from the stationary mixer. Strength tests and cylinder preparation will be in conformance with the provisions of Section 90-9, "Compressive Strength;" and
C. The mixer rotation speed and time of mixing before discharge that are required to produce a mix that meets the requirements above.

The discharge gate on the cement and SCM hoppers or the cement plus SCM hopper shall be designed to permit regulating the flow of cement, SCM, or cement plus SCM into the aggregate as directed by the Engineer.

If separate weigh boxes are used for each size of aggregate, the discharge gates shall permit regulating the flow of each size of aggregate as directed by the Engineer.

Material discharged from the several bins shall be controlled by gates or by mechanical conveyors. The means of withdrawal from the several bins, and of discharge from the weigh box, shall be interlocked so that not more than one bin can discharge at a time, and so that the weigh box cannot be tripped until the required quantity from each of the several bins has been deposited therein. Should a separate weigh box be used for each size of aggregate, all may be operated and discharged simultaneously.

If the discharge from the several bins is controlled by gates, each gate shall be actuated automatically so that the required weight is discharged into the weigh box, after which the gate shall automatically close and lock.

The automatic weighing system shall be designed so that all proportions required may be set on the weighing controller at the same time.

90-6 MIXING AND TRANSPORTING

90-6.01 GENERAL

Concrete shall be mixed in mechanically operated mixers, except that when permitted by the Engineer, batches not exceeding 1/3 cubic yard may be mixed by hand methods in conformance with the provisions in Section 90-6.05, "Hand-Mixing."

Equipment having components made of aluminum or magnesium alloys that would have contact with plastic concrete during mixing, transporting, or pumping of portland cement concrete shall not be used.

Concrete shall be homogeneous and thoroughly mixed, and there shall be no lumps or evidence of undispersed cementitious material.

Uniformity of concrete mixtures will be determined by differences in penetration as determined by California Test 533, or slump as determined by ASTM Designation: C 143, and by variations in the proportion of coarse aggregate as determined by California Test 529.

When the mix design specifies a penetration value, the difference in penetration, determined by comparing penetration tests on 2 samples of mixed concrete from the same batch or truck mixer load, shall not exceed 1/2 inch. When the mix design specifies a slump value, the difference in slump, determined by comparing slump tests on 2 samples of mixed concrete from the same batch or truck mixer load, shall not exceed the values given in the table below. Variation in the proportion of coarse aggregate will be determined by comparing the results of tests of 2 samples of mixed concrete from the same batch or truck mixer load and the difference between the 2 results shall not exceed 170 pounds per cubic yard of concrete.

Average Slump	Maximum Permissible Difference
Less than 4"	1"
4" to 6"	1-1/2"
Greater than 6" to 9"	2"

The Contractor shall furnish samples of the freshly mixed concrete and provide satisfactory facilities for obtaining the samples.

90-6.02 MACHINE MIXING

Concrete mixers may be of the revolving drum or the revolving blade type, and the mixing drum or blades shall be operated uniformly at the mixing speed recommended by the manufacturer. Mixers and agitators that have an accumulation of hard concrete or mortar shall not be used.

The temperature of mixed concrete, immediately before placing, shall be not less than 50 °F or more than 90 °F. Aggregates and water shall be heated or cooled as necessary to produce concrete within these temperature limits. Neither aggregates nor mixing water shall be heated to exceed 150 °F. If ice is used to cool the concrete, discharge of the mixer will not be permitted until all ice is melted.

The batch shall be so charged into the mixer that some water will enter in advance of cementitious materials and aggregates. All water shall be in the drum by the end of the first one-fourth of the specified mixing time. When concrete is delivered in a truck mixer, a portion of the mixing water may be withheld and, if allowed by the Engineer, may be added at the point of delivery as specified under Section 90-6.03, "Transporting Mixed Concrete."

Cementitious materials shall be batched and charged into the mixer by means that will not result either in loss of cementitious materials due to the effect of wind, in accumulation of cementitious materials on surfaces of conveyors or hoppers, or in other conditions that reduce or vary the required quantity of cementitious material in the concrete mixture.

Stationary mixers shall be operated with an automatic timing device. The timing device and discharge mechanism shall be interlocked so that during normal operation no part of the batch will be discharged until the specified mixing time has elapsed.

The total elapsed time between the intermingling of damp aggregates and all cementitious materials and the start of mixing shall not exceed 30 minutes.

The size of batch shall not exceed the manufacturer's guaranteed capacity.

When producing concrete for pavement or base, suitable batch counters shall be installed and maintained in good operating condition at job site batching plants and stationary mixers. The batch counters shall indicate the exact number of batches proportioned and mixed.

Concrete shall be mixed and delivered to the job site by means of one of the following combinations of operations:

A. Mixed completely in a stationary mixer and the mixed concrete transported to the point of delivery in truck agitators or in nonagitating hauling equipment (central-mixed concrete).
B. Mixed partially in a stationary mixer, and the mixing completed in a truck mixer (shrink-mixed concrete).

C. Mixed completely in a truck mixer (transit-mixed concrete).

Agitators may be truck mixers operating at agitating speed or truck agitators. Each mixer and agitator shall have attached thereto in a prominent place a metal plate or plates on which is plainly marked the various uses for which the equipment is designed, the manufacturer's guaranteed capacity of the drum or container in terms of the volume of mixed concrete and the speed of rotation of the mixing drum or blades.

Truck mixers shall be equipped with electrically or mechanically actuated revolution counters by which the number of revolutions of the drum or blades may readily be verified.

When shrink-mixed concrete is furnished, concrete that has been partially mixed at a central plant shall be transferred to a truck mixer and all requirements for transit-mixed concrete shall apply. No credit in the number of revolutions at mixing speed will be allowed for partial mixing in a central plant.

90-6.03 TRANSPORTING MIXED CONCRETE

Mixed concrete may be transported to the delivery point in truck agitators or truck mixers operating at the speed designated by the manufacturer of the equipment as agitating speed, or in non-agitating hauling equipment, provided the consistency and workability of the mixed concrete upon discharge at the delivery point is suitable for adequate placement and consolidation in place, and provided the mixed concrete after hauling to the delivery point conforms to the provisions in Section 90-6.01, "General."

Truck agitators shall be loaded not to exceed the manufacturer's guaranteed capacity and shall maintain the mixed concrete in a thoroughly mixed and uniform mass during hauling.

Bodies of nonagitating hauling equipment shall be constructed so that leakage of the concrete mix, or any part thereof, will not occur at any time.

Concrete hauled in open-top vehicles shall be protected during hauling against rain or against exposure to the sun for more than 20 minutes when the ambient temperature exceeds 75 °F.

No water in excess of that in the approved mix design shall be incorporated into the concrete. If approved by the Engineer, water withheld during batching may be added to the concrete at the delivery point in one operation before the discharge of more than 1/4 cubic yard. Equipment for supplying the water shall conform to Section 90-6.06, "Amount of Water and Penetration." When water is added at the point of delivery, the drum shall be revolved not less than 30 revolutions at mixing speed after the water is added and before discharged is commenced.

The rate of discharge of mixed concrete from a truck mixer or agitator shall be controlled by the speed of rotation of the drum in the discharge direction with the discharge gate fully open.

If a truck mixer or agitator is used for transporting concrete to the delivery point, discharge shall be completed within 1.5 hours or before 250 revolutions of the drum or blades, whichever occurs first, after the introduction of the cementitious materials to the aggregates. Under conditions contributing to quick stiffening of the concrete, or if the temperature of the concrete is 85 °F or above, the time allowed may be less than 1.5 hours. If an admixture is used to retard the set time, the temperature of the concrete shall not exceed 85 °F, the time limit shall be 2 hours, and the revolution limitation shall be 300.

If nonagitating hauling equipment is used for transporting concrete to the delivery point, discharge shall be completed within one hour after the addition of the cementitious materials to the aggregates. Under conditions contributing to quick stiffening of the concrete, or when the temperature of the concrete is 85 °F or above, the time between the introduction of cementitious materials to the aggregates and discharge shall not exceed 45 minutes.

Each load of concrete delivered at the job site shall be accompanied by a weighmaster certificate showing the mix identification number, nonrepeating load number, date and time at which the materials were batched, the total amount of water added to the load, and for transit-mixed concrete, the reading of the revolution counter at the time the truck mixer is charged with cement. This weighmaster certificate shall also show the actual scale weights (pounds) for the ingredients batched. Theoretical or target batch weights shall not be used as a substitute for actual scale weights.

Weighmaster certificates shall be provided in printed form, or if approved by the Engineer, the data may be submitted in electronic media. Electronic media shall be presented in a tab-delimited format on a CD or DVD. Captured data, for the ingredients represented by each batch shall be "line feed, carriage return" (LFCR) and "one line, separate record" with allowances for sufficient fields to satisfy the amount of data required by these specifications.

The Contractor may furnish a weighmaster certificate accompanied by a separate certificate that lists the actual batch weights or measurements for a load of concrete provided that both certificates are imprinted with the same nonrepeating load number that is unique to the contract and delivered to the jobsite with the load.

Weighmaster certificates furnished by the Contractor shall conform to the provisions in Section 9-1.01, "Measurement of Quantities."

90-6.04 TIME OR AMOUNT OF MIXING

Mixing of concrete in stationary mixers shall continue for the required mixing time after all ingredients, except water and admixture, if added with the water, are in the mixing compartment of the mixer before any part of the batch is released. Transfer time in multiple drum mixers shall not be counted as part of the required mixing time.

The required mixing time, in stationary mixers, of concrete used for concrete structures, except minor structures, shall be not less than 90 seconds or more than 5 minutes, except that when directed by the Engineer in writing, the requirements of the following paragraph shall apply.

The required mixing time in stationary mixers, except as provided in the preceding paragraph, shall be not less than 50 seconds or more than 5 minutes.

The minimum required revolutions at the mixing speed for transit-mixed concrete shall not be less than that recommended by the mixer manufacturer, but in no case shall the number of revolutions be less than that required to consistently produce concrete conforming to the provisions for uniformity in Section 90-6.01, "General."

When a high range water-reducing admixture is added to the concrete at the job site, the total number of revolutions shall not exceed 300.

90-6.05 HAND-MIXING

Hand-mixed concrete shall be made in batches of not more than 1/3 cubic yard and shall be mixed on a watertight, level platform. The proper amount of coarse aggregate shall be measured in measuring boxes and spread on the platform and the fine aggregate shall be spread on this layer, the 2 layers being not more than one foot in total depth. On this mixture shall be spread the dry cementitious materials and the whole mass turned no fewer than 2 times dry; then sufficient clean water shall be added, evenly distributed, and the whole mass again turned no fewer than 3 times, not including placing in the carriers or forms.

90-6.06 AMOUNT OF WATER AND PENETRATION

The amount of water used in concrete mixes shall be regulated so that the penetration of the concrete as determined by California Test 533 or the slump of the concrete as determined by ASTM Designation: C 143 is within the nominal values shown in the following table. When the penetration or slump of the concrete is found to exceed the nominal values listed, the mixture of subsequent batches shall be adjusted to reduce the penetration or slump to a value within the nominal range shown. Batches of concrete with a penetration or slump exceeding the maximum values listed shall not be used in the work. If Type F or Type G chemical admixtures are added to the mix, the penetration requirements shall not apply and the slump shall not exceed 9 inches after the chemical admixtures are added.

Type of Work	Nominal		Maximum	
	Penetration (inches)	Slump (inches)	Penetration (inches)	Slump (inches)
Concrete Pavement	0 - 1	—	1-1/2	—
Non-reinforced concrete facilities	0 – 1-1/2	—	2	—
Reinforced concrete structures				
Sections over 12 inches thick	0 – 1-1/2	—	2-1/2	—
Sections 12 inches thick or less	0 - 2	—	3	—
Concrete placed under water	—	6 - 8	—	9
Cast-in-place concrete piles	2-1/2 – 3-1/2	5 - 7	4	8

The amount of free water used in concrete shall not exceed 310 pounds per cubic yard, plus 20 pounds for each required 100 pounds of cementitious material in excess of 550 pounds per cubic yard.

The term free water is defined as the total water in the mixture minus the water absorbed by the aggregates in reaching a saturated surface-dry condition.

If there are adverse or difficult conditions that affect the placing of concrete, the above specified penetration and free water content limitations may be exceeded providing the Contractor is granted permission by the Engineer in writing to increase the cementitious material content per cubic yard of concrete. The increase in water and cementitious material shall be at a ratio not to exceed 30 pounds of water per added 100 pounds of cementitious material per cubic yard. Full compensation for additional cementitious material and water added under these conditions shall be considered as included in the contract price paid for the concrete work involved and no additional compensation will be allowed therefor.

The equipment for supplying water to the mixer shall be constructed and arranged so that the amount of water added can be measured accurately. Any method of discharging water into the mixer for a batch shall be accurate within 1.5 percent of the quantity of water required to be added to the mix for any position of the mixer. Tanks used to measure water shall be designed so that water cannot enter while water is being discharged into the mixer and

discharge into the mixer shall be made rapidly in one operation without dribbling. All equipment shall be arranged so as to permit checking the amount of water delivered by discharging into measured containers.

90-7 CURING CONCRETE

90-7.01 METHODS OF CURING

Newly placed concrete shall be cured by the methods specified in this Section 90-7.01 and the special provisions.

90-7.01A Water Method

The concrete shall be kept continuously wet by the application of water for a minimum curing period of 7 days after the concrete has been placed.

Cotton mats, rugs, carpets, or earth or sand blankets may be used as a curing medium to retain the moisture during the curing period.

If a curing medium consisting of cotton mats, rugs, carpets, polyethylene sheeting, polyethylene sheeting on burlap, or earth or sand blankets is to be used to retain the moisture, the entire surface of the concrete shall be kept damp by applying water with a nozzle that so atomizes the flow that a mist and not a spray is formed, until the surface of the concrete is covered with the curing medium. The moisture from the nozzle shall not be applied under pressure directly upon the concrete and shall not be allowed to accumulate on the concrete in a quantity sufficient to cause a flow or wash the surface. At the expiration of the curing period, the concrete surfaces shall be cleared of all curing media.

At the option of the Contractor, a curing medium consisting of white opaque polyethylene sheeting extruded onto burlap may be used to cure concrete structures. The polyethylene sheeting shall have a minimum thickness of 4-mil, and shall be extruded onto 10-ounce burlap.

At the option of the Contractor, a curing medium consisting of polyethylene sheeting may be used to cure concrete columns. The polyethylene sheeting shall have a minimum thickness of 10-mil achieved in a single layer of material.

If the Contractor chooses to use polyethylene sheeting or polyethylene sheeting on burlap as a curing medium, these media and any joints therein shall be secured as necessary to provide moisture retention and shall be within 3 inches of the concrete at all points along the surface being cured. When these media are used, the temperature of the concrete shall be monitored during curing. If the temperature of the concrete cannot be maintained below 140° F, use of these curing media shall be disallowed.

When concrete bridge decks and flat slabs are to be cured without the use of a curing medium, the entire surface of the bridge deck or slab shall be kept damp by the application of water with an atomizing nozzle as specified above, until the concrete has set, after which the entire surface of the concrete shall be sprinkled continuously with water for a period of not less than 7 days.

90-7.01B Curing Compound Method

Surfaces of the concrete that are exposed to the air shall be sprayed uniformly with a curing compound.

Curing compounds to be used shall be as follows:

1. Pigmented curing compound conforming to the requirements in ASTM Designation: C 309, Type 2, Class B, except the resin type shall be poly-alpha-methylstyrene.
2. Pigmented curing compound conforming to the requirements in ASTM Designation: C 309, Type 2, Class B.
3. Pigmented curing compound conforming to the requirements in ASTM Designation: C 309, Type 2, Class A.
4. Nonpigmented curing compound conforming to the requirements in ASTM Designation: C 309, Type 1, Class B.
5. Nonpigmented curing compound conforming to the requirements in ASTM Designation: C 309, Type 1, Class A.
6. Nonpigmented curing compound with fugitive dye conforming to the requirements in ASTM Designation: C 309, Type 1-D, Class A.

The infrared scan for the dried vehicle from curing compound (1) shall match the infrared scan on file at the Transportation Laboratory.

The loss of water for each type of curing compound, when tested in conformance with the requirements in California Test 534, shall not be more than 0.28 pounds per square yard in 24 hours.

The curing compound to be used will be specified elsewhere in these specifications or in the special provisions.

If the use of curing compound is required or permitted elsewhere in these specifications or in the special provisions and no specific kind is specified, any of the curing compounds listed above may be used.

Curing compound shall be applied at a nominal rate of one gallon per 150 square feet, unless otherwise specified.

At any point, the application rate shall be within ±50 square feet per gallon of the nominal rate specified, and the average application rate shall be within ±25 square feet per gallon of the nominal rate specified when tested in conformance with the requirements in California Test 535. Runs, sags, thin areas, skips, or holidays in the applied curing compound shall be evidence that the application is not satisfactory.

Curing compounds shall be applied using power operated spray equipment. The power operated spraying equipment shall be equipped with an operational pressure gage and a means of controlling the pressure. Hand spraying of small and irregular areas that are not reasonably accessible to mechanical spraying equipment, in the opinion of the Engineer, may be permitted.

The curing compound shall be applied to the concrete following the surface finishing operation, immediately before the moisture sheen disappears from the surface, but before any drying shrinkage or craze cracks begin to appear. In the event of any drying or cracking of the surface, application of water with an atomizing nozzle as specified in Section 90-7.01A, "Water Method," shall be started immediately and shall be continued until application of the compound is resumed or started; however, the compound shall not be applied over any resulting freestanding water. Should the film of compound be damaged from any cause before the expiration of 7 days after the concrete is placed in the case of structures and 72 hours in the case of pavement, the damaged portion shall be repaired immediately with additional compound.

At the time of use, compounds containing pigments shall be in a thoroughly mixed condition with the pigment uniformly dispersed throughout the vehicle. A paddle shall be used to loosen all settled pigment from the bottom of the container, and a power driven agitator shall be used to disperse the pigment uniformly throughout the vehicle.

Agitation shall not introduce air or other foreign substance into the curing compound.

The manufacturer shall include in the curing compound the necessary additives for control of sagging, pigment settling, leveling, de-emulsification, or other requisite qualities of a satisfactory working material. Pigmented curing compounds shall be manufactured so that the pigment does not settle badly, does not cake or thicken in the container, and does not become granular or curdled. Settlement of pigment shall be a thoroughly wetted, soft, mushy mass permitting the complete and easy vertical penetration of a paddle. Settled pigment shall be easily redispersed, with minimum resistance to the sideways manual motion of the paddle across the bottom of the container, to form a smooth uniform product of the proper consistency.

Curing compounds shall remain sprayable at temperatures above 40 °F and shall not be diluted or altered after manufacture.

The curing compound shall be packaged in clean 274-gallon totes, 55-gallon barrels or 5-gallon pails shall be supplied from a suitable storage tank located at the jobsite. The containers shall comply with "Title 49, Code of Federal Regulations, Hazardous Materials Regulations." The 274-gallon totes and the 55-gallon barrels shall have removable lids and airtight fasteners. The 5-gallon pails shall be round and have standard full open head and bail. Lids with bungholes will not be permitted. Settling or separation of solids in containers, except tanks, must be completely redispersed with low speed mixing prior to use, in conformance with these specifications and the manufacturer's recommendations. Mixing shall be accomplished either manually by use of a paddle or by use of a mixing blade driven by a drill motor, at low speed. Mixing blades shall be the type used for mixing paint. On-site storage tanks shall be kept clean and free of contaminants. Each tank shall have a permanent system designed to completely redisperse settled material without introducing air or other foreign substances.

Steel containers and lids shall be lined with a coating that will prevent destructive action by the compound or chemical agents in the air space above the compound. The coating shall not come off the container or lid as skins. Containers shall be filled in a manner that will prevent skinning. Plastic containers shall not react with the compound.

Each container shall be labeled with the manufacturer's name, kind of curing compound, batch number, volume, date of manufacture, and volatile organic compound (VOC) content. The label shall also warn that the curing compound containing pigment shall be well stirred before use. Precautions concerning the handling and the application of curing compound shall be shown on the label of the curing compound containers in conformance with the Construction Safety Orders and General Industry Safety Orders of the State.

Containers of curing compound shall be labeled to indicate that the contents fully comply with the rules and regulations concerning air pollution control in the State.

When the curing compound is shipped in tanks or tank trucks, a shipping invoice shall accompany each load. The invoice shall contain the same information as that required herein for container labels.

Curing compound will be sampled by the Engineer at the source of supply, at the job site, or at both locations.

Curing compound shall be formulated so as to maintain the specified properties for a minimum of one year. The Engineer may require additional testing before use to determine compliance with these specifications if the compound has not been used within one year or whenever the Engineer has reason to believe the compound is no longer satisfactory.

Tests will be conducted in conformance with the latest ASTM test methods and methods in use by the Transportation Laboratory.

90-7.01C Waterproof Membrane Method

The exposed finished surfaces of concrete shall be sprayed with water, using a nozzle that so atomizes the flow that a mist and not a spray is formed, until the concrete has set, after which the curing membrane, shall be placed. The curing membrane shall remain in place for a period of not less than 72 hours.

Sheeting material for curing concrete shall conform to the requirements in AASHTO Designation: M 171 for white reflective materials.

The sheeting material shall be fabricated into sheets of such width as to provide a complete cover for the entire concrete surface. Joints in the sheets shall be securely cemented together in such a manner as to provide a waterproof joint. The joint seams shall have a minimum lap of 0.33 foot.

The sheets shall be securely weighted down by placing a bank of earth on the edges of the sheets or by other means satisfactory to the Engineer.

Should any portion of the sheets be broken or damaged before the expiration of 72 hours after being placed, the broken or damaged portions shall be immediately repaired with new sheets properly cemented into place.

Sections of membrane that have lost their waterproof qualities or have been damaged to such an extent as to render them unfit for curing the concrete shall not be used.

90-7.01D Forms-In-Place Method

Formed surfaces of concrete may be cured by retaining the forms in place. The forms shall remain in place for a minimum period of 7 days after the concrete has been placed, except that for members over 20 inches in least dimension the forms shall remain in place for a minimum period of 5 days.

Joints in the forms and the joints between the end of forms and concrete shall be kept moisture tight during the curing period. Cracks in the forms and cracks between the forms and the concrete shall be resealed by methods subject to the approval of the Engineer.

90-7.02 BLANK

90-7.03 CURING STRUCTURES

Newly placed concrete for cast-in-place structures, other than highway bridge decks, shall be cured by the water method, the forms-in-place method, or, as permitted herein, by the curing compound method, in conformance with the provisions in Section 90-7.01, "Methods of Curing."

The curing compound method using a pigmented curing compound may be used on concrete surfaces of construction joints, surfaces that are to be buried underground, and surfaces where only ordinary surface finish is to be applied and on which a uniform color is not required and that will not be visible from a public traveled way. If the Contractor elects to use the curing compound method on the bottom slab of box girder spans, the curing compound shall be curing compound (1).

The top surface of highway bridge decks shall be cured by both the curing compound method and the water method. The curing compound shall be curing compound (1).

Concrete surfaces of minor structures, as defined in Section 51-1.02, "Minor Structures," shall be cured by the water method, the forms-in-place method or the curing compound method.

When deemed necessary by the Engineer during periods of hot weather, water shall be applied to concrete surfaces being cured by the curing compound method or by the forms-in-place method, until the Engineer determines that a cooling effect is no longer required. Application of water for this purpose will be paid for as extra work as provided in Section 4-1.03D, "Extra Work."

90-7.04 CURING PRECAST CONCRETE MEMBERS

Precast concrete members shall be cured in conformance with any of the methods specified in Section 90-7.01, "Methods of Curing." Curing shall be provided for the minimum time specified for each method or until the concrete reaches its design strength, whichever is less. Steam curing may also be used for precast members and shall conform to the following provisions:

A. After placement of the concrete, members shall be held for a minimum 4-hour presteaming period. If the ambient air temperature is below 50 °F, steam shall be applied during the presteaming period to hold the air surrounding the member at a temperature between 50 °F and 90 °F.
B. To prevent moisture loss on exposed surfaces during the presteaming period, members shall be covered as soon as possible after casting or the exposed surfaces shall be kept wet by fog spray or wet blankets.

C. Enclosures for steam curing shall allow free circulation of steam about the member and shall be constructed to contain the live steam with a minimum moisture loss. The use of tarpaulins or similar flexible covers will be permitted, provided they are kept in good repair and secured in such a manner as to prevent the loss of steam and moisture.
D. Steam at the jets shall be at low pressure and in a saturated condition. Steam jets shall not impinge directly on the concrete, test cylinders, or forms. During application of the steam, the temperature rise within the enclosure shall not exceed 40 °F per hour. The curing temperature throughout the enclosure shall not exceed 150 °F and shall be maintained at a constant level for a sufficient time necessary to develop the required transfer strength. Control cylinders shall be covered to prevent moisture loss and shall be placed in a location where temperature is representative of the average temperature of the enclosure.
E. Temperature recording devices that will provide an accurate, continuous, permanent record of the curing temperature shall be provided. A minimum of one temperature recording device per 200 feet of continuous bed length will be required for checking temperature.
F. Members in pretension beds shall be detensioned immediately after the termination of steam curing while the concrete and forms are still warm, or the temperature under the enclosure shall be maintained above 60 °F until the stress is transferred to the concrete.
G. Curing of precast concrete will be considered completed after termination of the steam curing cycle.

90-7.05 CURING PRECAST PRESTRESSED CONCRETE PILES

Newly placed concrete for precast prestressed concrete piles shall be cured in conformance with the provisions in Section 90-7.04, "Curing Precast Concrete Members," except that piles in a corrosive environment shall be cured as follows:

A. Piles shall be either steam cured or water cured. If water curing is used, the piles shall be kept continuously wet by the application of water in conformance with the provisions in Section 90-7.01A, "Water Method."
B. If steam curing is used, the steam curing provisions in Section 90-7.04, "Curing Precast Concrete Members," shall apply except that the piles shall be kept continuously wet for their entire length for a period of not less than 3 days, including the holding and steam curing periods.

90-7.06 CURING SLOPE PROTECTION

Concrete slope protection shall be cured in conformance with any of the methods specified in Section 90-7.01, "Methods of Curing."

Concreted-rock slope protection shall be cured in conformance with any of the methods specified in Section 90-7.01, "Methods of Curing," with a blanket of earth kept wet for 72 hours, or by sprinkling with a fine spray of water every 2 hours during the daytime for a period of 3 days.

90-7.07 CURING MISCELLANEOUS CONCRETE WORK

Exposed surfaces of curbs shall be cured by pigmented curing compounds as specified in Section 90-7.01B, "Curing Compound Method."

Concrete sidewalks, gutter depressions, island paving, curb ramps, driveways, and other miscellaneous concrete areas shall be cured in conformance with any of the methods specified in Section 90-7.01, "Methods of Curing."

Shotcrete shall be cured for at least 72 hours by spraying with water, by a moist earth blanket, or by any of the methods provided in Section 90-7.01, "Methods of Curing."

Mortar and grout shall be cured by keeping the surface damp for 3 days.

After placing, the exposed surfaces of sign structure foundations, including pedestal portions, if constructed, shall be cured for at least 72 hours by spraying with water, by a moist earth blanket, or by any of the methods provided in Section 90-7.01, "Methods of Curing."

90-8 PROTECTING CONCRETE

90-8.01 GENERAL

In addition to the provisions in Section 7-1.16, "Contractor's Responsibility for the Work and Materials," the Contractor shall protect concrete as provided in this Section 90-8. If required by the Engineer, the Contractor shall submit a written outline of the proposed methods for protecting the concrete.

The Contractor shall protect concrete from damage from any cause, which shall include, but not be limited to: rain, heat, cold, wind, Contractor's actions, and actions of others.

Concrete shall not be placed on frozen or ice-coated ground or subgrade nor on ice-coated forms, reinforcing steel, structural steel, conduits, precast members, or construction joints.

Under rainy conditions, placing of concrete shall be stopped before the quantity of surface water is sufficient to damage surface mortar or cause a flow or wash of the concrete surface, unless the Contractor provides adequate protection against damage.

Concrete that has been frozen or damaged by other causes, as determined by the Engineer, shall be removed and replaced by the Contractor at the Contractor's expense.

90-8.02 PROTECTING CONCRETE STRUCTURES

Structure concrete and shotcrete used as structure concrete shall be maintained at a temperature of not less than 45 °F for 72 hours after placing and at not less than 40 °F for an additional 4 days.

90-9 COMPRESSIVE STRENGTH

90-9.01 GENERAL

Concrete compressive strength requirements consist of a minimum strength that shall be attained before various loads or stresses are applied to the concrete and, for concrete designated by compressive strength, a minimum strength at the age of 28 days or at the age otherwise allowed in Section 90-1.01, "Description." The various strengths required are specified in these specifications or the special provisions or are shown on the plans.

The compressive strength of concrete will be determined from test cylinders that have been fabricated from concrete sampled in conformance with the requirements of California Test 539. Test cylinders will be molded and initially field cured in conformance with California Test 540. Test cylinders will be cured and tested after receipt at the testing laboratory in conformance with the requirements of California Test 521. A strength test shall consist of the average strength of 2 cylinders fabricated from material taken from a single load of concrete, except that, if any cylinder should show evidence of improper sampling, molding, or testing, that cylinder shall be discarded and the strength test shall consist of the strength of the remaining cylinder.

When concrete compressive strength is specified as a prerequisite to applying loads or stresses to a concrete structure or member, test cylinders for other than steam cured concrete will be cured in conformance with Method 1 of California Test 540. The compressive strength of concrete determined for these purposes will be evaluated on the basis of individual tests.

When concrete is designated by compressive strength rather than by cementitious material content, the concrete strength to be used as a basis for acceptance of other than steam cured concrete will be determined from cylinders cured in conformance with Method 1 of California Test 540. If the result of a single compressive strength test at the maximum age specified or allowed is below the specified strength but is 95 percent or more of the specified strength, the Contractor shall make corrective changes, subject to approval of the Engineer, in the mix proportions or in the concrete fabrication procedures, before placing additional concrete, and shall pay to the State $10 for each in-place cubic yard of concrete represented by the deficient test. If the result of a single compressive strength test at the maximum age specified or allowed is below 95 percent of the specified strength, but is 85 percent or more of the specified strength, the Contractor shall make the corrective changes specified above, and shall pay to the State $15 for each in-place cubic yard of concrete represented by the deficient test. In addition, such corrective changes shall be made when the compressive strength of concrete tested at 7 days indicates, in the judgment of the Engineer, that the concrete will not attain the required compressive strength at the maximum age specified or allowed. Concrete represented by a single test that indicates a compressive strength of less than 85 percent of the specified 28-day compressive strength will be rejected in conformance with the provisions in Section 6-1.04, "Defective Materials."

If the test result indicates that the compressive strength at the maximum age specified or allowed is below the specified strength, but is 85 percent or more of the specified strength, payments to the State as required above shall be made, unless the Contractor, at the Contractor's expense, obtains and submits evidence acceptable to the Engineer that the strength of the concrete placed in the work meets or exceeds the specified 28-day compressive strength. If the test result indicates a compressive strength at the maximum age specified or allowed below 85 percent, the concrete represented by that test will be rejected, unless the Contractor, at the Contractor's expense, obtains and submits evidence acceptable to the Engineer that the strength of the concrete placed in the work is at least 85 percent of the specified strength. If the evidence consists of tests made on cores taken from the work, the cores shall be obtained and tested in conformance with the requirements in ASTM Designation: C 42.

No single compressive strength test shall represent more than 320 cubic yards.

If a precast concrete member is steam cured, the compressive strength of the concrete will be determined from test cylinders that have been handled and stored in conformance with Method 3 of California Test 540. The compressive strength of steam cured concrete will be evaluated on the basis of individual tests representing specific portions of production. If the concrete is designated by 28-day compressive strength rather than by cementitious material content, the concrete shall be considered to be acceptable whenever its compressive strength reaches the specified 28-day compressive strength provided that strength is reached in not more than the maximum number of days specified or allowed after the member is cast.

When concrete has a specified 28-day compressive strength greater than 3,600 pounds per square inch or when prequalification is specified, prequalification of materials, mix proportions, mixing equipment, and procedures proposed for use will be required prior to placement of the concrete. Prequalification shall be accomplished by the submission of acceptable certified test data or trial batch reports by the Contractor. Prequalification data shall be based on the use of materials, mix proportions, mixing equipment, procedures, and size of batch proposed for use in the work.

Certified test data, in order to be acceptable, shall indicate that not less than 90 percent of at least 20 consecutive tests exceed the specified strength at the maximum number of days specified or allowed, and none of those tests are less than 95 percent of specified strength. Strength tests included in the data shall be the most recent tests made on concrete of the proposed mix design and all shall have been made within one year of the proposed use of the concrete.

Trial batch test reports, in order to be acceptable, shall indicate that the average compressive strength of 5 consecutive concrete cylinders, taken from a single batch, at not more than 28 days (or the maximum age allowed) after molding shall be at least 600 pounds per square inch greater than the specified 28-day compressive strength, and no individual cylinder shall have a strength less than the specified strength at the maximum age specified or allowed. Data contained in the report shall be from trial batches that were produced within one year of the proposed use of specified strength concrete in the project. Whenever air-entrainment is required, the air content of trial batches shall be equal to or greater than the air content specified for the concrete without reduction due to tolerances.

Tests shall be performed in conformance with either the appropriate California Test methods or the comparable ASTM test methods. Equipment employed in testing shall be in good condition and shall be properly calibrated. If the tests are performed during the life of the contract, the Engineer shall be notified sufficiently in advance of performing the tests in order to witness the test procedures.

The certified test data and trial batch test reports shall include the following information:

A. Date of mixing.
B. Mixing equipment and procedures used.
C. The size of batch in cubic yards and the weight, type, and source of all ingredients used.
D. Penetration or slump (if the concrete will be placed under water or placed in cast-in-place concrete piles) of the concrete.
E. The air content of the concrete if an air-entraining admixture is used.
F. The age at time of testing and strength of all concrete cylinders tested.

Certified test data and trial batch test reports shall be signed by an official of the firm that performed the tests.

When approved by the Engineer, concrete from trial batches may be used in the work at locations where concrete of a lower quality is required and the concrete will be paid for as the type of concrete required at that location.

After materials, mix proportions, mixing equipment, and procedures for concrete have been prequalified for use, additional prequalification by testing of trial batches will be required prior to making changes that, in the judgment of the Engineer, could result in a strength of concrete below that specified.

The Contractor's attention is directed to the time required to test trial batches and the Contractor shall be responsible for production of trial batches at a sufficiently early date so that the progress of the work is not delayed.

When precast concrete members are manufactured at the plant of an established manufacturer of precast concrete members, the mix proportions of the concrete shall be determined by the Contractor, and a trial batch and prequalification of the materials, mix proportions, mixing equipment, and procedures will not be required.

90-10 MINOR CONCRETE

90-10.01 GENERAL

Concrete for minor structures, slope paving, curbs, sidewalks and other concrete work, when designated as minor concrete on the plans, in the specifications, or in the contract item, shall conform to the provisions specified herein.

The Engineer, at the Engineer's discretion, will inspect and test the facilities, materials and methods for producing the concrete to ensure that minor concrete of the quality suitable for use in the work is obtained.

Before using minor concrete or in advance of revising the mix proportions, the Contractor shall submit in writing to the Engineer a copy of the mix design. When required by the following table, the Contractor shall include compressive strength test results verifying the minimum specified compressive strength:

SCM	Test Submittal Required
Fly Ash used alone	When portland cement content<350 lbs/cy
GGBFS used alone	When portland cement content <250 lbs/cy
Natural Pozzolan used alone	When portland cement content <350 lbs/cy
More than 1 SCM	Always

Tests shall be performed by an ACI certified technician.

90-10.02 MATERIALS

Minor concrete shall conform to the following requirements:

90-10.02A Cementitious Material

Cementitious material shall conform to the provisions in Section 90-1.01, "Description," and 90-2, "Materials."

90-10.02B Aggregate

Aggregate shall be clean and free from deleterious coatings, clay balls, roots, and other extraneous materials.

Use of crushed concrete or reclaimed aggregate is acceptable only if the aggregate satisfies all aggregate requirements.

The Contractor shall submit to the Engineer for approval, a grading of the combined aggregate proposed for use in the minor concrete. After acceptance of the grading, aggregate furnished for minor concrete shall conform to that grading, unless a change is authorized in writing by the Engineer.

The Engineer may require the Contractor to furnish periodic test reports of the aggregate grading furnished. The maximum size of aggregate used shall be at the option of the Contractor, but in no case shall the maximum size be larger than 1-1/2-inch or smaller than 3/4 inch.

The Engineer may waive, in writing, the gradation requirements in this Section 90-10.02B, if, in the Engineer's opinion, the furnishing of the gradation is not necessary for the type or amount of concrete work to be constructed.

90-10.02C Water

Water used for washing, mixing, and curing shall be free from oil, salts, and other impurities that would discolor or etch the surface or have an adverse affect on the quality of the concrete.

90-10.02D Admixtures

The use of admixtures shall conform to the provisions in Section 90-4, "Admixtures."

90-10.03 PRODUCTION

Cementitious material, water, aggregate, and admixtures shall be stored, proportioned, mixed, transported, and discharged in conformance with recognized standards of good practice that will result in concrete that is thoroughly and uniformly mixed, that is suitable for the use intended, and that conforms to requirements specified herein. Recognized standards of good practice are outlined in various industry publications such as are issued by American Concrete Institute, AASHTO, or the Department.

The cementitious material content of minor concrete shall conform to the provisions in Section 90-1.01, "Description."

The amount of water used shall result in a consistency of concrete conforming to the provisions in Section 90-6.06, "Amount of Water and Penetration." Additional mixing water shall not be incorporated into the concrete during hauling or after arrival at the delivery point, unless allowed by the Engineer.

Discharge of ready-mixed concrete from the transporting vehicle shall be made while the concrete is still plastic and before stiffening occurs. An elapsed time of 1.5 hours (one hour in non-agitating hauling equipment), or more than 250 revolutions of the drum or blades, after the introduction of the cementitious material to the aggregates, or a temperature of concrete of more than 90 °F will be considered conditions contributing to the quick stiffening of concrete. The Contractor shall take whatever action is necessary to eliminate quick stiffening, except that the addition of water will not be permitted.

The required mixing time in stationary mixers shall be not less than 50 seconds or more than 5 minutes.

The minimum required revolutions at mixing speed for transit-mixed concrete shall be not less than that recommended by the mixer manufacturer, and shall be increased, if necessary, to produce thoroughly and uniformly mixed concrete.

When a high range water-reducing admixture is added to the concrete at the job site, the total number of revolutions shall not exceed 300.

Each load of ready-mixed concrete shall be accompanied by a weighmaster certificate that shall be delivered to the Engineer at the discharge location of the concrete, unless otherwise directed by the Engineer. The weighmaster certificate shall be clearly marked with the date and time of day when the load left the batching plant and, if hauled in truck mixers or agitators, the time the mixing cycle started.

A Certificate of Compliance conforming to the provisions in Section 6-1.07, "Certificates of Compliance," shall be furnished to the Engineer, prior to placing minor concrete from a source not previously used on the contract, stating that minor concrete to be furnished meets contract requirements, including minimum cementitious material content specified.

90-10.04 CURING MINOR CONCRETE

Curing minor concrete shall conform to the provisions in Section 90-7, "Curing Concrete."

90-10.05 PROTECTING MINOR CONCRETE

Protecting minor concrete shall conform to the provisions in Section 90-8, "Protecting Concrete," except the concrete shall be maintained at a temperature of not less than 40 °F for 72 hours after placing.

90-10.06 MEASUREMENT AND PAYMENT

Minor concrete will be measured and paid for in conformance with the provisions specified in the various sections of these specifications covering concrete construction when minor concrete is specified in the specifications, shown on the plans, or indicated by contract item in the Engineer's Estimate.

90-11 MEASUREMENT AND PAYMENT

90-11.01 MEASUREMENT

Portland cement concrete will be measured in conformance with the provisions specified in the various sections of these specifications covering construction requiring concrete.

For concrete measured at the mixer, the volume in cubic feet shall be computed as the total weight of the batch in pounds divided by the density of the concrete in pounds per cubic foot. The total weight of the batch shall be calculated as the sum of all materials, including water, entering the batch. The density of the concrete will be determined in conformance with the requirements in California Test 518.

90-11.02 PAYMENT

Portland cement concrete will be paid for in conformance with the provisions specified in the various sections of these specifications covering construction requiring concrete.

Full compensation for furnishing and incorporating admixtures required by these specifications or the special provisions will be considered as included in the contract prices paid for the concrete involved and no additional compensation will be allowed therefor.

Should the Engineer order the Contractor to incorporate any admixtures in the concrete when their use is not required by these specifications or the special provisions, furnishing the admixtures and adding them to the concrete will be paid for as extra work as provided in Section 4-1.03D, "Extra Work."

Should the Contractor use admixtures in conformance with the provisions in Section 90-4.05, "Optional Use of Chemical Admixtures," or Section 90-4.07, "Optional Use of Air-entraining Admixtures," or should the Contractor request and obtain permission to use other admixtures for the Contractor's benefit, the Contractor shall furnish those admixtures and incorporate them into the concrete at the Contractor's expense and no additional compensation will be allowed therefor.

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SECTION 12. ENVIRONMENTAL PERMIT SUMMARY

The environmental review and regulatory permit processes for the RTA Bus Maintenance Facility project are complete. The following is a summary of the environmental requirements for the project:

Permit	Status	Attachments
CEQA Review	Mitigated Negative Declaration	**In file, conditions listed below**
NEPA Review	Categorical Exclusion granted by Federal Transit Administration	**In file, no conditions**
Coastal Permit	Not applicable, not within Coastal Zone	
CZMA	Not applicable, not within Coastal Zone	
CDFW	Not applicable, no impacts to jurisdictional areas	
USACOE 404	Not applicable, no impacts to jurisdictional areas	
NMFS ESA	Not applicable, no listed species or sensitive habitats present	
USFWS ESA	Not applicable, no listed species or sensitive habitats present	
RWQCB	Currently seeking construction SWPPP waiver due to small size of the project (<5 acres) and proposed construction timeframe (outside of heavy rain season)	

Commented [GS1]: Need to verify this with Will Todd & Water Control Board

Mitigation Measures

Measure #	Special Environmental Conditions	Responsibility: Contractor, RTA or Both
	PRECONSTRUCTION	
CUL-1	**Archeological Testing Program.** Prior to project related ground disturbance, an Extended Phase I (XPI) archaeological testing program shall be performed within the project area of potential effect (APE). This study should be conducted by a qualified archaeologist under the direction of a qualified principal investigator and in accordance with CEQA and Section 106. The qualified archaeologist should prepare a testing plan designed to establish the presence or absence and extent of archaeological deposits within the direct APE. An XPI conducted prior to project construction could reduce potential delays caused by unanticipated finds during construction by informing the applicant of what types of resources may exist on the property and where. In the event that a subsurface resource is found during the XPI, additional studies such as a Phase II investigation may be required to determine if the resource is eligible for the CRHR and/or the NRHP. The results of the XPI will also determine whether additional mitigation such as monitoring will be necessary. XPI testing should be observed by a Native American monitor.	Both
GEO-1	**Conduct Geotechnical Investigation and Soil Remediation**. Prior to construction activities, a preliminary geotechnical investigation shall be conducted to determine the presence or absence of unstable soils or soils that would become unstable during a seismic event, including the potential for liquefaction at the project site. The geotechnical investigation shall be conducted by trained engineers and shall comply with ASTM approved methodologies. Based on the results of the preliminary geotechnical investigation, unstable soils or soil that would become unstable during a seismic event shall be remediated to ensure that on-site soils would provide adequate structural support for proposed structures. All on-site structures, transportation infrastructure and subgrades shall comply with applicable methods of the California Building Code and all transportation infrastructures shall comply with the most current California Department of Transportation design standards. Soil remediation may be achieved through, for example, structural piers, excavation of unstable soils, importation of clean, engineered fill, compaction of existing on-site soils, improvement of sub-surface drainage, or a combination of methodologies.	RTA
NOI-1	**Construction Vehicle Travel Route.** Construction vehicles and haul trucks shall utilize roadways which avoid residential neighborhoods and sensitive receptors, where possible. The applicant shall submit a proposed construction vehicle and hauling route for City review and approval prior to grading/building permit issuance. The approved	Contractor

	construction vehicle and hauling route shall be used for soil hauling trips prior to construction as well as for the duration of construction.	
NOI-4	**Neighboring Property Owner Notification and Construction Noise Complaints.** The contractor shall inform residents and business operators at properties within 300 feet of the project site of proposed construction timelines and noise complaint procedures to minimize potential annoyance related to construction noise. Proof of mailing the notices shall be provided to the Community Development Department before the City issues a zoning clearance. Signs shall be in place before beginning of and throughout grading and construction activities. Noise-related complaints shall be directed to the City's Community Development Department. **Plan Requirements and Timing.** Construction plans shall note construction hours, truck routes, and construction Best Management Practices (BMPs) and shall be submitted to the City for approval prior to grading and building permit issuance for each project phase. BMPs shall be identified and described for submittal to the City for review and approval prior to building or grading permit issuance. BMPs shall be adhered to for the duration of the project. The applicant shall provide and post signs stating these restrictions at construction site entries. Signs shall be posted prior to commencement of construction and maintained throughout construction. Schedule and neighboring property owner notification mailing list shall be submitted 10 days prior to initiation of any earth movement. The Community Development department shall confirm that construction noise reduction measures are incorporated in plans prior to approval of grading/building permit issuance. All construction workers shall be briefed at a pre-construction meeting on construction hour limitations and how, why, and where BMP measures are to be implemented. A workday schedule will be adhered to for the duration of construction for all phases. **Monitoring.** City staff shall ensure compliance throughout all construction phases. Building inspectors and permit compliance staff shall periodically inspect the site for compliance with activity schedules and respond to complaints.	Contractor
DURING CONSTRUCTION		
AQ-1	**Measures to Reduce Fugitive Dust During Construction** Implementation of the following mitigation measures, as recommended by the San Luis Obispo County APCD, would be required to minimize construction fugitive dust emissions and help ensure that construction emissions remain at a less than significant level. • Reduce the amount of the disturbed area where possible; • Water trucks or sprinkler systems shall be used during construction in sufficient quantities to prevent airborne dust	Contractor

	from leaving the site. Increased watering frequency shall be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water shall be used whenever possible; • All dirt stock pile areas shall be sprayed daily as needed; • Permanent dust control measures identified in the approved project revegetation and landscape plans shall be implemented as soon as possible following completion of any soil disturbing activities; • Exposed ground areas that are planned to be reworked at dates greater than one month after initial grading shall be sown with a fast germinating, non-invasive grass seed and watered until vegetation is established; • All disturbed soil areas not subject to revegetation shall be stabilized using approved chemical soil binders, jute netting, or other methods approved in advance by the SLOAPCD; • All roadways, driveways, sidewalks, etc. to be paved shall be completed as soon as possible after grading unless seeding or soil binders are used; • Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site; • All trucks hauling dirt, sand, soil, or other loose materials are to be covered or shall maintain at least two feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with California Vehicle Code Section 23114; • Install wheel washers where vehicles enter and exit unpaved roads onto streets, or wash off trucks and equipment leaving the site; • Sweep streets at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water shall be used where feasible; • All of these fugitive dust mitigation measures shall be shown on grading and building plans; and • The contractor or builder shall designate a person or persons to monitor the fugitive dust emissions and enhance the implementation of the measures as necessary to minimize dust complaints, reduce visible emissions below 20 percent opacity, and to prevent transport of dust offsite. Their duties shall include holidays and weekend periods when work may not be in progress. The name and telephone number of such persons shall be provided to the SLOAPCD Compliance Division prior to the start of any grading, earthwork or demolition.	
AQ-2	**Measures to Reduce Construction Equipment Emissions** • Maintain all construction equipment in proper tune according to the manufacturer's specifications;	Contractor

	• Fuel all off-road and portable diesel powered equipment with ARB certified motor vehicle diesel fuel (non-taxed version suitable for use off-road); • Use diesel construction equipment meeting ARB's Tier 2 certified engines or cleaner off-road heavy-duty diesel engines, and comply with State Off-road Regulation; • Use on-road heavy-duty trucks that meet the ARB's 2007 or cleaner certification standard for on-road heavy-duty diesel engines, and comply with State On-Road Regulation; • Construction or trucking companies with fleets that do not have engines in their fleet that meet the engine standards identified in the above two measures (e.g., captive of NOX exempt area fleet) may be eligible by proving alternative compliance; • All on- and off-road diesel equipment shall not idle for more than five minutes. Signs shall be posted in the designated queuing areas and on job sites to remind drivers and operators of the five-minute idling limit; • Diesel idling within 1,000 feet of sensitive receptors is not permitted; • Staging and queuing areas shall not be located within 1,000 feet of sensitive receptors; • Electrify equipment when possible; • Substitute gasoline-powered in place of diesel-powered equipment, where feasible; and • Use alternatively fueled construction equipment on-site where feasible, such as compressed natural gas (CNG, liquefied natural gas (LNG), propane, or biodiesel.	
BIO-1	**Nesting Birds.** To avoid disturbance of nesting and special-status birds, including raptorial species protected by the MBTA and CFGC, activities related to the project, including, but not limited to, vegetation removal, ground disturbance, and construction and demolition shall occur outside of the bird breeding season (February 15 through September 1), when possible. If construction must begin during the breeding season, then a pre-construction nesting bird survey shall be conducted by a Qualified Biologist no more than one week prior to initiation of ground disturbance and vegetation removal activities to determine the presence/absence of nesting birds within the project site. The California Department of Fish and Wildlife generally considers an appropriate buffer of 100 feet for passerines and 300 feet for raptors. The Qualified Biologist shall perform at least two hours of pre-construction monitoring of the nest to characterize "typical" bird behavior. The Qualified Biologist shall monitor the nesting birds and shall increase the buffer if the Qualified Biologist determines the birds are showing signs of unusual or distressed behavior due to project activities. Atypical nesting behaviors that may cause reproductive harm include but are not limited to, defensive flights/vocalizations directed	Contractor

	towards project personnel, standing up from a brooding position, and flying away from the nest. The Qualified Biologist shall have authority, through the Resident Engineer, to order the cessation of all project activities if the nesting birds' exhibit atypical behavior which may cause reproductive failure (nest abandonment and loss of eggs and/or young) until an appropriate buffer is established. To prevent encroachment, the established buffer(s) shall be clearly marked by high visibility material. The established buffer(s) shall remain in effect until the young have fledged or the nest has been abandoned as confirmed by the Qualified Biologist. Any sign of nest abandonment shall be reported to California Department of Fish and Wildlife within 48 hours.	
BIO-2	**Invasive Plant Species.** To minimize the spread of invasive plant species during project work, prior to construction all staff and contractors shall receive from a qualified botanist/biologist, invasive plant prevention training. The training shall provide an appropriate identification/instruction guide, a list of target species for the area, and a list of measures for early detection and eradication. Prior to construction, specific areas shall be designated for cleaning of tools, vehicles, equipment, clothing, footwear, and any other gear to be used on site. During construction, before entering and exiting the work site, all tools, equipment, vehicles, clothing, footwear, and other gear shall be thoroughly cleaned to remove soil, seeds, and plant parts. The reproductive parts (seeds, mature flowers, roots and shoots, as well as other parts of species that reproduce in a vegetative manner) shall be removed, stored in sealed containers, transported sealed, and appropriately disposed of at a certified landfill. All disturbed areas that are not converted to hardscape shall be hydroseeded with a mix of locally native species upon completion of work in the area. In areas where construction is ongoing, hydro-seeding shall occur in those areas where no construction activities have occurred within six weeks of ground disturbance. If exotic species invade the area prior to hydro-seeding, weed removal shall occur in consultation with a qualified botanist/biologist.	Contractor
CUL-2	**Monitoring by Qualified Archaeologist.** A qualified principal investigator, defined as an archaeologist who meets the Secretary of the Interior's Standards for professional archaeology (36 CFR 61), shall be retained to carry out all mitigation measures related to archaeological and historical resources (hereafter principal investigator). Monitoring shall involve inspection of subsurface construction disturbance at or in the immediate vicinity of known sites, or at locations that may harbor buried resources that were not identified on the site surface.	Contractor
CUL-3	**Unanticipated Discovery of Human Remains.** The discovery of human remains is always a possibility during ground disturbing activities. If human remains are found, the State of California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the county coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. In the event of an	Contractor

	unanticipated discovery of human remains, the San Luis Obispo County coroner must be notified immediately. If the human remains are determined to be prehistoric, the coroner will notify the Native American Heritage Commission (NAHC), which will determine and notify a most likely descendant (MLD). The MLD shall complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.	
NOI-2	**Construction Activity Timing.** Except for emergency repair of public service utilities, or where an exception is issued by the Community Development Department, no operation of tools or equipment used in construction, drilling, repair, alteration, or demolition work shall occur daily between the hours of 7:00 PM and 7:00 AM, or any time on Sundays, holidays, or after sunset, such that the sound creates a noise disturbance that exceeds 75 dBA for single family residential, 80 dBA for multi-family residential, and 85 dBA for mixed residential/commercial land uses across a residential or commercial property line.	Contractor
NOI-3	**Construction Equipment Best Management Practices (BMPs).** For all construction activity at the project site, noise attenuation techniques shall be employed to ensure that noise levels are maintained within levels allowed by the City of San Luis Obispo Municipal Code, Title 9, Chapter 9.12 (Noise Control). Such techniques shall include: • Sound blankets on noise-generating equipment. • Stationary construction equipment that generates noise levels above 65 dBA at the project boundaries shall be shielded with barriers that meet a sound transmission class (a rating of how well noise barriers attenuate sound) of 25. • All diesel equipment shall be operated with closed engine doors and shall be equipped with factory-recommended mufflers. • For stationary equipment, the applicant shall designate equipment areas with appropriate acoustic shielding on building and grading plans. Equipment and shielding shall be installed prior to construction and remain in the designated location throughout construction activities. • Electrical power shall be used to power air compressors and similar power tools. • The movement of construction-related vehicles, with the exception of passenger vehicles, along roadways adjacent to sensitive receptors shall be limited to the hours between 7:00 AM and 7:00 PM, Monday through Saturday. No movement of heavy equipment shall occur on Sundays or official holidays (e.g., Thanksgiving, Labor Day). • Temporary sound barriers shall be constructed between construction sites and affected uses.	Contractor

TCR-1	**Native American Monitor.** A Native American monitor shall be present during ground disturbing activities due to the area being identified as a culturally sensitive location. The monitor(s) shall be on-site on a full-time basis during earthmoving activities, including grading, trenching, vegetation removal, or other excavation activities.	Contractor
TCR-2	**Unanticipated Discovery of Tribal Cultural Resources.** In the event that archaeological resources of Native American origin are identified during project construction, a qualified archaeologist will consult with the City to begin Native American consultation procedures.	Contractor
Post-Construction / Operations		
AQ-3	**AQ-3 Measures to Reduce Operational Idling Emissions** To help reduce the emissions impact from diesel buses and equipment at the proposed facility, RTA will implement the following idling control techniques: 1. California Diesel Idling Regulations a. On-road diesel vehicles shall comply with Section 2485 of Title 13 of the California Code of Regulations. This regulation limits idling from diesel-fueled commercial motor vehicles with gross vehicular weight ratings of more than 10,000 pounds and licensed for operation on highways. It applies to California and non-California based vehicles. In general, the regulation specifies that drivers of said vehicles: 1) Shall not idle the vehicle's primary diesel engine for greater than 5-minutes at any location, except as noted in Subsection (d) of the regulation; and 2) Shall not operate a diesel-fueled auxiliary power system (APS) to power a heater, air conditioner, or any ancillary equipment on that vehicle during sleeping or resting in a sleeper berth for greater than 5.0 minutes at any location when within 1,000 feet of a restricted area, except as noted in Subsection (d) of the regulation. b. Signs must be posted in the designated queuing areas and job sites to remind drivers and operators of the state's 5-minute idling limit. c. The specific requirements and exceptions in the regulations can be reviewed at the following web sites: arb.ca.gov/msprog/truck-idling/2485.pdf and arb.ca.gov/regact/2007/ordiesl07/frooal.pdf. 1. Diesel Idling Restrictions Near Sensitive Receptors. In addition to the state required diesel idling requirements, the RTA shall comply with these more restrictive requirements to minimize impacts to nearby sensitive receptors: a. Diesel idling within 1,000 feet of sensitive receptors shall not be permitted;	RTA

	b. Use of alternative fueled or electric equipment is recommended as feasible; and Signs that specify the no idling areas must be posted and enforced at the site.	

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SECTION 13 – RULES GOVERNING BID PROTESTS AND OTHER CHALLENGES TO AWARDS OF CONSTRUCTION CONTRACTS

The requirements set forth in these "Rules Governing Bid Protests and Other Challenges to Awards of Construction Contracts" ("Rules") are mandatory and are a Bidder's sole and exclusive remedy in the event a Bidder desires to challenge, protest or contest the award of any Construction Contract. A Bidder's failure to comply with these requirements shall constitute a waiver of any right to challenge, protest or contest the award of a Construction Contract in any subsequent proceeding, including but not limited to, the filing of a court action.

A Bidder may not rely upon another Bidder's compliance with the requirements of these Rules. Any Bidder that does not independently comply with the requirements set forth herein shall be deemed to have waived any right to challenge, protest or contest the award of a Construction Contract.

Nothing in these Rules affects the right of the San Luis Obispo Regional Transit Authority to reject all bids at any time prior to the award of a Construction Contract.

1.1 Definitions

1.1.1 Bidder – The contractor submitting a bid in response to a solicitation for bids on a Construction Contract.

1.1.2 Protestor – A Bidder who files a Protest in accordance with the provisions of these Rules.

1.1.3 Board – Board of Directors of the San Luis Obispo Regional Transit Authority (hereinafter, also "RTA")

1.1.4 Construction Contract – Any Construction Contract that is formally or informally advertised for bids in which the RTA is, or will be, a party.

1.1.5 Protest – Any challenge, objection, or protest to the award of a Construction Contract to any Bidder.

1.1.6 Response – Any response to a Protest that is filed by an Interested Party in accordance with the provisions of these Rules.

1.1.7 Executive Director – The person designated by the RTA Board to be the head of the agency, or that person designated by the Executive Director to assume the powers, duties, and responsibilities conferred upon the Executive Director under these Rules. The Executive Director is ultimately responsible for the preparation of the bid documents for the Construction Contract and the administration of the Construction Contract.

1.1.8 Initial Determination – A written notice by the Executive Director that notifies a Bidder of the reasons why the Executive Director believes that a bid is nonresponsive, or that a Bidder is not a responsible Bidder.

1.1.9 Interested Parties – For the purpose of these Rules, Interested Parties are defined as:

1.1.10.1 The Executive Director.

1.1.10.2 Any Bidder that filed a Protest or whose bid is the subject of an Initial Determination.

1.1.10.3 Any Bidder whose eligibility for having the Construction Contract awarded to it as a responsible Bidder with the lowest responsive bid would be affected by the outcome of a Protest or Initial Determination.

1.2 Executive Director's Independent Authority to Determine Bid Responsiveness and Bidder Responsibility

1.2.1 Regardless of whether a Protest is submitted under these Rules, the Executive Director is authorized to determine whether any bid is a responsive bid and whether any Bidder is a responsible Bidder. In the event the Executive Director issues an Initial Determination, the Executive Director shall provide the Interested Parties with written notice of the Initial Determination at least five (5) business days before the Executive Director renders a final decision addressing the grounds stated in the Initial Determination A final decision of the Executive Director under this section 1.2 shall be the final decision of the RTA with no provision for reconsideration or appeal to the Board.

1.2.2 The Executive Director need not issue an Initial Determination in order to make a final decision on whether a bid is a responsive bid or a Bidder is a responsible Bidder. A final decision can also be issued by the Executive Director through the processing of a Protest pursuant to the procedures set forth in these Rules.

1.2.3 The Executive Director reserves the right to amend or withdraw an Initial Determination at any time before the Executive Director renders a final decision addressing the grounds stated in the Initial Determination. When an Initial Determination is withdrawn, it shall have the same effect as if the Initial Determination had never been made.

1.3 Basis for Protest

1.3.1 Grounds for Protest – The grounds for a Protest may include any grounds a Protestor may have for contesting or challenging the award of a Construction Contract to any Bidder, including but not limited to the following grounds:

1.3.1.1 A Protestor objects to a Construction Contract being awarded to another Bidder on the grounds that the other Bidder's bid is nonresponsive.

1.3.1.2 A Protestor objects to a Construction Contract being awarded to another Bidder on the grounds that the other Bidder is not a responsible Bidder.

1.3.1.3 A Protestor objects to a Construction Contract being awarded to the Protestor on the grounds that the Protestor made a mistake in its bid

that entitles the Protestor to be relieved of its bid under Public Contract Code Sections 5100 et seq.

1.3.1.4 A Protestor objects to the Executive Director's Initial Determination issued under section 1.2.1 above.

1.3.2 Required Form of Protest - All Protests shall be made in writing, containing the information listed below, and shall be filed with the Executive Director. Protests shall contain the following information:

1.3.2.1 The name, address, telephone, facsimile numbers, and email address of the Protestor.

1.3.2.2 The signature of the Protestor or its representative.

1.3.2.3 The bid, solicitation and/or contract number.

1.3.2.4 The Protest must contain a complete statement of all grounds for the Protest, and must refer to the specific portion of the bid documents that are the basis of the Protest. The Protest must set forth all supporting facts and documentation. If Protester believes there are some facts relevant to its Protest that Protester cannot adequately present in writing, Protester must describe such facts in its Protest under the heading "Facts Requiring Oral Presentation", and state therein the reasons why the Bid Protester believes it cannot adequately present those facts through documentation.

1.3.2.5 All information establishing that the Protestor is a Bidder for the purpose of filing a Protest.

1.3.2.6 The form of relief requested.

1.4 <u>Protest Requirements and Procedure</u>

1.4.1 Standing to Protest – Protests shall be filed only by a Bidder.

1.4.2 Time for Filing a Protest

1.4.2.1 Except as provided in sections 1.4.2.2 and 1.4.2.3 below, all Protests must be submitted in writing to the Executive Director before 5 p.m. PST of the sixth (6) business day following the date upon which the bids on the Construction Contract were opened.

1.4.2.2 When a Protestor objects to a Construction Contract being awarded to the Protester on the grounds that the Protestor made a mistake in its bid that entitles the Protestor to be relieved of its bid under Public Contract Code Sections 5100 et seq, the Protest must be submitted in writing to the Executive Director before 5 p.m. PST of the fifth (5) business day following the date upon which the bids on the Construction Contract were opened pursuant to Public Contract Code Section 5103.

1.4.2.3 When the Protestor objects to an Initial Determination made by the Executive Director under section 1.2.1 above, the Protest must be submitted in writing to the Executive Director before 5 p.m. PST of the fifth (5) business day following the date upon which the Initial

Determination was first delivered to Protestor (either electronically or otherwise).

1.4.3 Written Responses of Interested Parties - If any Interested Party desires to respond to the Protest, the Response must be submitted in writing to the Executive Director within five (5) business days of the date the Protest was first delivered to the Interested Party (either electronically or otherwise). If an Interested Party believes there are some facts relevant to its Response that the Interested Party cannot adequately present in writing, the Interested Party must describe such facts in its Response under the heading “Facts Requiring Oral Presentation”, and state therein the reasons why the Interested Party believes it cannot adequately present those facts through documentation.

1.4.4 Proof of Transmittal - All Protests, Responses, and Replies shall include documentation evidencing that all Interested Parties were concurrently sent a complete copy of the respective Protest, Response or Reply in a manner that would provide all Interested Parties with a complete copy of the respective Protest, Response or Reply no later than one (1) business day after it was sent to the Executive Director. The means of transmission chosen must also provide the sending party a means of verifying the date and time the copy was received by each Interested Party. Transmission by email may be an acceptable means of transmittal.

1.4.5 No Ex Parte or Unilateral Communications on the Merits of a Protest – No Bidder shall have any written communications regarding the merits of a Protest with the Executive Director that are not concurrently sent to all of the other Interested Parties. No Bidder shall have any oral communications regarding the merits of a Protest with the Executive Director other than during an oral presentation properly noticed by the Executive Director under these Rules.

1.4.6 Suspension of Process for Proposed Rejection of all Bids - At any time during the processing of a Protest, the Executive Director may elect to indefinitely suspend any further processing of the Protest by providing written notice to all Interested Parties that the Executive Director intends to recommend to the Board that all bids be rejected. All time deadlines provided in these Rules shall be tolled during any such suspension period. If the Board decides to not reject all bids, or if the Executive Director otherwise decides to lift the suspension, the requirements of these Rules shall be reactivated upon the Executive Director providing all Interested Parties with written notice thereof.

1.5 Summary Dismissal of Protest

The Executive Director may summarily dismiss a protest, or specific protest allegations, at any time that the Executive Director determines that the Protest is untimely, frivolous, or without merit; is not submitted in the required form of Protest, as set forth above in section 1.3.2., "Required Form of Protest;" or is submitted by a non-Bidder. In such cases, a notice of summary dismissal will be furnished to the Interested Parties. Such a summary dismissal shall be the final decision of the RTA with no provision for reconsideration or appeal to the Board.

1.6 Decision by the Executive Director Based on Written Submissions Only

In reaching a decision on the merits of a Protest, the Executive Director may consider relevant documentation submitted by the Protestor and any other Interested Party. If the Executive Director wishes to have additional information submitted that was not included in the Protest or in any documentation from other Interested Parties, the Executive Director may make a request specifying the information sought and time for submittal. Submissions of additional information that have not been specifically requested by the Executive Director may not be considered at the Executive Director's sole discretion. If the Executive Director does not provide an opportunity for an oral presentation under section 1.7 below, the Executive Director will issue a written decision without any oral presentation. The Executive Director's decision shall be the final decision of the RTA with no provision for reconsideration or appeal to the Board.

1.7 Decision by the Executive Director Following Oral Presentation

1.7.1 The Executive Director may, at his or her discretion, elect to provide an opportunity for the Protestor and other Interested Parties to make an oral presentation to the Executive Director regarding the Protest. In such event. Oral presentations shall be conducted in accordance with the following procedure:

1.7.1.1 Notice of Oral Presentation - The Executive Director will set a date, time, and place for an oral presentation. Written notice will be sent to Interested Parties not less than five (5) business days in advance of the oral presentation unless it is agreeable to all parties that an earlier date be established. Continuances may be granted by the Executive Director for good cause.

1.7.1.2 Guidelines for Oral Presentation - Oral presentations are informal in nature and shall be made by the Protestor or its authorized representative. Technical rules of evidence shall not apply. The Executive Director will determine how the oral presentations will be conducted and may set time limits for the presentation. The Executive Director may question Interested Parties or provide an opportunity for Interested Parties to make an oral presentation. The Executive Director may request additional documentation or information prior to, during or after the oral presentation. Unless requested by the Executive Director, additional documentation or information may not be accepted.

1.7.1.3 Recording of Oral Presentation - Any Interested Party may request, and in the Executive Director's sole discretion, the Executive Director may allow recording of the presentation. If the Executive Director allows the presentation to be recorded, the Interested Party requesting that the presentation be recorded must pay the cost of recording, including the costs to make and distribute copies of the recording to the Executive Director and other Interested Parties. There shall be no cost to the RTA.

1.7.1.4 Decisions – The Executive Director will issue a written decision within 30 calendar days of the oral presentation; however, the time for issuing the written decision may be extended by the Executive Director. A copy of the decision will be furnished to the Interested Parties. The decision shall be the final decision of the RTA with no provision for reconsideration or appeal to the Board.

1.8 Effect on Contracts

The failure of an RTA employee to comply with the provisions stated in these Rules shall in no way affect the validity of any Construction Contract entered into by the RTA.

1.9 Executive Director Decisions on Protests Seeking Relief from a Bidder's Mistake under Public Contract Code Section 5103

When a Protestor objects to a Construction Contract being awarded to the Bid Protester on the grounds that the Protestor made a mistake in its bid that entitles the Protestor to be relieved of its bid under Public Contract Code Sections 5100 et seq, a final decision of the Executive Director that relieves the Protestor of its bid on the grounds of mistake must be approved by the Board before it can become a final decision of the RTA. Any other final decision of the Executive Director regarding a Protestor's request to be relieved of its bid on the grounds of mistake under Public Contract Code Sections 5100 et seq, shall be the final decision of the RTA with no provision for reconsideration or appeal to the Board.

SECTION 14 – RECYCLING REQUIREMENTS

PART 1 GENERAL

Since this project will be constructed in San Luis Obispo city limits, the Contractor will be required to comply with all City requirements regarding construction waste reduction, disposal and recycling. More specifically, Title 24 Chapter 11 of the 2016 Green Building Code requires that all permitted construction projects must recycle and/or salvage at least 65% of the waste generated from the project.

Title 24 Chapter 11 of the 2016 Green Building Code also requires that all construction and demolition projects have a waste plan that identifies all of the material that will be diverted from disposal by efficient usage, recycling, reuse on the project or salvage for future use or sale.

This waste plan:

- Determines if the construction and demolition waste materials will be sorted on-site (source separated) of bulk mixed (single stream).
- Identifies diversion facilities where the construction and demolition waste will be taken.
- Specifies that the amount of construction and demolition waste materials shall be calculated by weight or volume, but not both.

The Contractor will be responsible for complying with all sections of the City of San Luis Obispo's construction and demolition recycling requirements, including submittal and payment of all fees related to the CONSTRUCTION & DEMOLITION RECYCLING PLAN and DISPOSAL REPORT. This form can be found at https://www.slocity.org/home/showdocument?id=4390

1.1 SECTION INCLUDES

A. Requirements to comply with all Sections of Title 24 Chapter 11 of the 2016 Green Building Code.

1.2 RELATED SECTIONS

A. Section 01 00 00 - Summary of Work
B. Section 01 30 00 - Submittal Procedures
C. Section 01 74 00 - Cleaning
D. Section 01 70 00 - Closeout Procedures

1.3 GENERAL

A. The Contractor shall make every effort to provide opportunities for the reuse, recycling or diversion of any construction waste or by-products, including but not limited to:
   1. Demolition proceeds.

2. Recyclable glass, metal, paper, or plastic containers and wrappers.
3. Lumber end cuts, scrap, dunnage or rejects.
4. Packing crates, boxes, or skids.
5. Miscellaneous clean discards, over-orders, and scrap products.
6. The Contractor shall register the construction site in the local curbside recycling program and use provided containers for all acceptable glass, metal, paper, or plastic products.

B. The Contractor shall complete and submit a CONSTRUCTION & DEMOLITION RECYCLING PLAN (CDRC) within 30 days of the issuance of a Notice to Proceed.
C. The Contractor shall submit periodic Waste Disposal Reports with each application for payment. All landfill disposal, recycling, salvage and reuse must be reported regardless of to whom the cost or savings accrues. Use the same units of measure on all reports.
D. The Contractor shall submit documentation that the Diversion Requirements have been met prior to issuance of a Notice of Completion.
E. Civil Penalties will be assessed to the Contractor if documentation is not submitted or if Diversion Requirements are not met.
F. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, State and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.4 SUBMITTALS AND PROCEDURES

A. CONSTRUCTION & DEMOLITION RECYCLING PLAN: A CDRC shall be completed and submitted on a City-approved Recycling Plan form and shall indicate the following:
   1. Project Location, Project Number and Project Contractor
   2. Identification of the designated on-site person or persons responsible for instructing workers and overseeing and documenting results of the CDRC.
   3. Analysis of the trash and waste projected to be generated during the entire project construction cycle, including types and quantities.
   4. Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all project trash/waste in the landfill(s).
   5. Landfill Alternatives: List all waste materials that will be diverted from landfills by reuse, salvage, or recycling. The maximum volume or weight of such materials that can feasibly be diverted to reuse or recycling
   6. Meetings: Describe regular meetings to be held to address waste prevention, reduction, recycling, salvage, reuse, and disposal.
   7. Materials Handling Procedures: Describe the means by which materials to be diverted from landfills will be protected from contamination and prepared for acceptance by designated facilities; including separation procedures for recyclables, storage, and packaging.
   8. Transportation: Identify the destination and means of transportation of materials to be recycled; i.e. whether materials will be site-separated and self-

hauled to designated centers, or whether mixed materials will be collected by a waste hauler. The vendor or facility that the Contractor proposes to use to collect or receive that material.

B. Calculating Volume and Weight of Debris: In estimating the volume or weight of materials identified in the CDRC, the Contractor shall use the standardized Conversion Rates established by the City for this purpose and revised from time to time.

C. Deconstruction: Projects involving the removal of all or part of an existing structure shall be deconstructed to the maximum extent feasible. The materials generated thereby shall be available for salvage.

D. Documentation:
   1. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.
      a. Submit updated Report with each Application for Progress Payment; failure to submit Report will delay payment.
      b. Submit Report on a form acceptable to the RTA Project Manager.
      c. Landfill Disposal: Include the following information:
         1. Identification of material.
         2. Amount, in tons or cubic yards, of trash/waste material from the project disposed in landfills.
         3. Identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.
         4. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
      d. Recycled and Salvaged Materials: Include the following information for each:
         1. Identification of material, including those retrieved by installer for use on other projects.
         2. Amount, in tons or cubic yards, date removed from the project site, and receiving party.
         3. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.
         4. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
         5. Certification by receiving party that materials will not be disposed of in landfills or by incineration.
      e. Material Reused on Project: Include the following information for each:
         1. Identification of material and how it was used in the project.
         2. Amount, in tons or cubic yards.
         3. Include weight tickets as evidence of quantity.

E. Other Disposal Methods: Include information similar to that described above, as appropriate to disposal method.
   1. As part of Closeout procedures and prior to receiving Notice of Completion for the project, the Contractor shall submit to the RTA Project Manager the CDRC

Disposal Report and documentation that the Diversion Requirement for the project has been met. The Diversion Requirement is satisfied if the contractor has diverted at least 65% of the total Construction and Demolition debris generated by the project *via* reuse or recycling. The Disposal Report documentation shall include all of the following:

a. All receipts from the vendor or facility that collected or received each material showing the actual weight or volume of that material.
b. A copy of the previously approved CDRC for the project with a completed Disposal Report section showing the actual volume or weight of each material diverted and landfilled.
c. Any additional information the Contractor believes is relevant to determining its efforts to comply in good faith with Title 24 Chapter 11 of the 2016 Green Building Code.

F. Weighing of Wastes: The Contractor shall make reasonable efforts to ensure that all Construction and Demolition debris diverted or landfilled is measured and recorded using the most accurate method of measurement available. To the extent practical, all construction and Demolition debris shall be measured by weight on scales. Such scales shall be in compliance with all regulatory requirements for accuracy and maintenance. For Construction and Demolition debris for which weighing is not practical due to small size or other considerations, a volumetric measurement shall be used.

G. Determination of Compliance: The RTA Project Manager shall review the documentation and determine whether the Contractor has complied with the Diversion Requirement as follows:

1. Full Compliance: If the RTA Project Manager determines that the Contractor has fully complied with the documentation and Diversion Requirements applicable to the project, the Disposal Report shall be approved and the Contractor shall be informed.
2. Substantial Compliance: If the RTA Project Manager determines that the Diversion Requirement has not been achieved, the RTA Project Manager shall determine whether the Contractor has made a good faith effort and is in substantial compliance with Title 24 Chapter 11 of the Green Building Code. In making this determination, the RTA Project Manager shall consider the availability of markets for the Construction and Demolition debris landfilled, the size of the project, and the documented efforts of the Contractor to divert Construction and Demolition debris. If the RTA Project Manager determines that the Contractor has made a good faith effort to comply with the Ordinance, the Disposal Report shall be approved.
3. Non-Compliance: If the RTA Project Manager determines that the Contractor is not in Substantial Compliance with Title 24 Chapter 11 of the Green Building Code or if the Contractor failed to submit proper documentation, the Contractor shall be assessed and be responsible for any civil penalty arising from the project's failure to comply with the Code. The penalty shall be calculated as 2% of the total Project Valuation or Contract Award Amount and shall be paid within

30 days of the finding on non- compliance by the RTA Project Manager. The civil penalty shall be payable to the San Luis Obispo Regional Transit Authority and sent to the RTA Project Manager. Interest shall accrue on any penalty at the legal rate of interest from the date of imposition by the RTA Project Manager.

PART 2 EXECUTION

2.1 SUBMITTAL OF WASTE MANAGEMENT PLAN FORM

A. Contractor shall complete and submit CDRC per instructions in Part 1 – General.

2.2 RECYCLING/DIVERSION EFFORTS DURING DEMOLITION/CONSTRUCTION ACTIVITIES

A. Contractor shall make a good faith effort to achieve to comply with Title 24 Chapter 11 of the Green Building Code and shall accurately weigh materials and provide proper documentation per the Ordinance as outlined above in Part 1 - General.
B. Communication: Distribute copies of the CDRC to jobsite foremen, each subcontractor, the RTA's Construction Manager, and the Architect.
C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project and in compliance with the CDRC.
D. Waste management and diversion goals may be achieved by the following methods:
    1. Roll off waste containers: Contractor may hire a company which provides a roll off waste containers which is then sorted off site.
    2. On site sorting: Contractor may sort waste on site prior to off-haul.

2.3 SUBMITTAL OF CDRC DISPOSAL REPORT

A. Contractor shall complete and Submit CDRC Disposal Report per instructions in Part 1 - General prior to receiving a Notice of Completion.

2.4 PAYMENT OF PENALTIES, IF REQUIRED

A. If the project is found to be non-compliant with Title 24 Chapter 11 of the Green Building Code, Contractor shall promptly pay penalties as described in Part 1 - General per the Ordinance.

SECTION 15. PUBLIC CONTRACT CODE SECTIONS9204 AND 20104-20104.6

PUBLIC CONTRACT CODESECTION 9204.

(a) The Legislature finds and declares that it is in the best interests of the state and its citizens to ensure that all construction business performed on a public works project in the state that is complete and not in dispute is paid in full and in a timely manner.

(b) Notwithstanding any other law, including, but not limited to, Article 7.1 (commencing with Section 10240) of Chapter 1 of Part 2, Chapter 10 (commencing with Section 19100) of Part 2, and Article 1.5 (commencing with Section 20104) of Chapter 1 of Part 3, this section shall apply to any claim by a contractor in connection with a public works project.

(c) For purposes of this section:

(1) "Claim" means a separate demand by a contractor sent by registered mail or certified mail with return receipt requested, for one or more of the following:

(A) A time extension, including, without limitation, for relief from damages or penalties for delay assessed by a public entity under a contract for a public works project.

(B) Payment by the public entity of money or damages arising from work done by, or on behalf of, the contractor pursuant to the contract for a public works project and payment for which is not otherwise expressly provided or to which the claimant is not otherwise entitled.

(C) Payment of an amount that is disputed by the public entity.

(2) "Contractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who has entered into a direct contract with a public entity for a public works project.

(3) (A) "Public entity" means, without limitation, except as provided in subparagraph (B), a state agency, department, office, division, bureau, board, or commission, the California State University, the University of California, a city, including a charter city, county, including a charter county, city and county, including a charter city and county, district, special district, public authority, political subdivision, public corporation, or nonprofit transit corporation wholly owned by a public agency and formed to carry out the purposes of the public agency.

(B) "Public entity" shall not include the following:

(i) The Department of Water Resources as to any project under the jurisdiction of that department.

(ii) The Department of Transportation as to any project under the jurisdiction of that department.

(iii) The Department of Parks and Recreation as to any project under the jurisdiction of that department.

(iv) The Department of Corrections and Rehabilitation with respect to any project under its jurisdiction pursuant to Chapter 11 (commencing with Section 7000) of Title 7 of Part 3 of the Penal Code.

(v) The Military Department as to any project under the jurisdiction of that department.

(vi) The Department of General Services as to all other projects.

(vii) The High-Speed Rail Authority.

(4) "Public works project" means the erection, construction, alteration, repair, or improvement of any public structure, building, road, or other public improvement of any kind.

(5) "Subcontractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who either is in direct contract with a contractor or is a lower tier subcontractor.

(d) (1) (A) Upon receipt of a claim pursuant to this section, the public entity to which the claim applies shall conduct a reasonable review of the claim and, within a period not to exceed 45 days, shall provide the claimant a written statement identifying what portion of the claim is disputed and what portion is undisputed. Upon receipt of a claim, a public entity and a contractor may, by mutual agreement, extend the time period provided in this subdivision.

(B) The claimant shall furnish reasonable documentation to support the claim.

(C) If the public entity needs approval from its governing body to provide the claimant a written statement identifying the disputed portion and the undisputed portion of the claim, and the governing body does not meet within the 45 days or within the mutually agreed to extension of time following receipt of a claim sent by registered mail or certified mail, return receipt requested, the public entity shall have up to three days following the next duly publicly noticed meeting of the governing body after the 45-day period, or extension, expires to provide the claimant a written statement identifying the disputed portion and the undisputed portion.

(D) Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. If the public entity fails to issue a written statement, paragraph (3) shall apply.

(2) (A) If the claimant disputes the public entity's written response, or if the public entity fails to respond to a claim issued pursuant to this section within the time prescribed, the claimant may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the public entity shall schedule a meet and confer conference within 30 days for settlement of the dispute.

(B) Within 10 business days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, the public entity shall provide the claimant a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. Any disputed portion of the claim, as identified by the contractor in writing, shall be submitted to nonbinding mediation, with the public entity and the claimant sharing the associated costs equally. The public entity and claimant shall mutually agree to a mediator within 10 business days after the disputed portion of the claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the claim remaining in dispute shall be subject to applicable procedures outside this section.

(C) For purposes of this section, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this section.

(D) Unless otherwise agreed to by the public entity and the contractor in writing, the mediation conducted pursuant to this section shall excuse any further obligation under Section 20104.4 to mediate after litigation has been commenced.

(E) This section does not preclude a public entity from requiring arbitration of disputes under private arbitration or the Public Works Contract Arbitration Program, if mediation under this section does not resolve the parties' dispute.

(3) Failure by the public entity to respond to a claim from a contractor within the time periods described in this subdivision or to otherwise meet the time requirements of this section shall result in the claim being deemed rejected in its entirety. A claim that is denied by reason of the public entity's failure to have responded to a claim, or its failure to otherwise meet the time requirements of this section, shall not constitute an adverse finding with regard to the merits of the claim or the responsibility or qualifications of the claimant.

(4) Amounts not paid in a timely manner as required by this section shall bear interest at 7 percent per annum.

(5) If a subcontractor or a lower tier subcontractor lacks legal standing to assert a claim against a public entity because privity of contract does not exist, the contractor may present to the public entity a claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on his or her own behalf or on behalf of a lower tier subcontractor, that the contractor present a claim for work which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the claim be presented to the public entity shall furnish reasonable documentation to support the claim. Within 45 days of receipt of this written request, the contractor shall notify the subcontractor in writing as to whether the contractor presented the claim to the public entity and, if the original contractor did not present the claim, provide the subcontractor with a statement of the reasons for not having done so.

(e) The text of this section or a summary of it shall be set forth in the plans or specifications for any public works project that may give rise to a claim under this section.

(f) A waiver of the rights granted by this section is void and contrary to public policy, provided, however, that (1) upon receipt of a claim, the parties may mutually agree to waive, in writing, mediation and proceed directly to the commencement of a civil action or binding arbitration, as applicable; and (2) a public entity may prescribe reasonable change order, claim, and dispute resolution procedures and requirements in addition to the provisions of this section, so long as the contractual provisions do not conflict with or otherwise impair the timeframes and procedures set forth in this section.

(g) This section applies to contracts entered into on or after January 1, 2017.

(h) Nothing in this section shall impose liability upon a public entity that makes loans or grants available through a competitive application process, for the failure of an awardee to meet its contractual obligations.

(i) This section shall remain in effect only until January 1, 2020, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2020, deletes or extends that date.

SEC. 2.

The Legislature finds and declares that it is of statewide concern to require a charter city, charter county, or charter city and county to follow a prescribed claims resolution process to ensure there are uniform and equitable procurement practices.

SEC. 3.

If the Commission on State Mandates determines that this act contains costs mandated by the state, reimbursement to local agencies and school districts for those costs shall be made pursuant to Part 7 (commencing with Section 17500) of Division 4 of Title 2 of the Government Code.

PUBLIC CONTRACT CODE SECTION 20104-20104.6 (2016)

20104. (a) (1) This article applies to all public works claims of three hundred seventy-five thousand dollars ($375,000) or less which arise between a contractor and a local agency.

(2) This article shall not apply to any claims resulting from a contract between a contractor and a public agency when the public agency has elected to resolve any disputes pursuant to Article 7.1 (commencing with Section 10240) of Chapter 1 of Part 2.

(b) (1) "Public work" means "public works contract" as defined in Section 1101 but does not include any work or improvement contracted for by the state or the Regents of the University of California.

(2) "Claim" means a separate demand by the contractor for (A) a time extension, (B) payment of money or damages arising from work done by, or on behalf of, the contractor pursuant to the contract for a public work and payment of which is not otherwise expressly provided for or the claimant is not otherwise entitled to, or (C) an amount the payment of which is disputed by the local agency.

(c) The provisions of this article or a summary thereof shall be set forth in the plans or specifications for any work which may give rise to a claim under this article.

(d) This article applies only to contracts entered into on or after January 1, 1991.

20104.2. For any claim subject to this article, the following requirements apply:

(a) The claim shall be in writing and include the documents necessary to substantiate the claim. Claims must be filed on or before the date of final payment. Nothing in this subdivision is intended to extend the time limit or supersede notice requirements otherwise provided by contract for the filing of claims.

(b) (1) For claims of less than fifty thousand dollars ($50,000), the local agency shall respond in writing to any written claim within 45 days of receipt of the claim, or may request, in writing, within 30 days of receipt of the claim, any additional documentation supporting the claim or relating to defenses to the claim the local agency may have against the claimant.

(2) If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the local agency and the claimant.

(3) The local agency's written response to the claim, as further documented, shall be submitted to the claimant within 15 days after receipt of the further documentation or within a period of time no greater than that taken by the claimant in producing the additional information, whichever is greater.

(c) (1) For claims of over fifty thousand dollars ($50,000) and less than or equal to three hundred seventy-five thousand dollars ($375,000), the local agency shall respond in writing to all written claims within 60 days of receipt of the claim, or may request, in writing, within 30 days of receipt of the claim, any additional documentation supporting the claim or relating to defenses to the claim the local agency may have against the claimant.

(2) If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the local agency and the claimant.

(3) The local agency's written response to the claim, as further documented, shall be submitted to the claimant within 30 days after receipt of the further documentation, or within a period of time no greater than that taken by the claimant in producing the additional information or requested documentation, whichever is greater.

(d) If the claimant disputes the local agency's written response, or the local agency fails to respond within the time prescribed, the claimant may so notify the local agency, in writing, either within 15 days of receipt of the local agency's response or within 15 days of the local agency's failure to respond within the time prescribed, respectively, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon a demand, the local agency shall schedule a meet and confer conference within 30 days for settlement of the dispute.

(e) Following the meet and confer conference, if the claim or any portion remains in dispute, the claimant may file a claim as provided in Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code. For purposes of those provisions, the running of the period of time within which a claim must be filed shall be tolled from the time the claimant submits his or her written claim pursuant to subdivision (a) until the time that claim is denied as a result of the meet and confer process, including any period of time utilized by the meet and confer process.

(f) This article does not apply to tort claims and nothing in this article is intended nor shall be construed to change the time periods for filing tort claims or actions specified by Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code.

20104.4. The following procedures are established for all civil actions filed to resolve claims subject to this article:

(a) Within 60 days, but no earlier than 30 days, following the filing or responsive pleadings, the court shall submit the matter to nonbinding mediation unless waived by mutual stipulation of both parties. The mediation process shall provide for the selection within 15 days by both parties of a disinterested third person as mediator, shall be commenced within 30 days of the submittal, and shall be concluded within 15 days from the commencement of the mediation unless a time requirement is extended upon a good cause showing to the court or by stipulation of both parties. If the parties fail to select a mediator within the 15-day period, any party may petition the court to appoint the mediator.