

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT			1. CONTRACT ID CODE	PAGE OF PAGES
2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. <i>(If applicable)</i>	
6. ISSUED BY	CODE	7. ADMINISTERED BY <i>(If other than Item 6)</i>	CODE	
8. NAME AND ADDRESS OF CONTRACTOR <i>(No., street, county, State and ZIP Code)</i>			(✓)	9A. AMENDMENT OF SOLICITATION NO.
				9B. DATED <i>(SEE ITEM 11)</i>
				10A. MODIFICATION OF CONTRACT/ORDER NO.
				10B. DATED <i>(SEE ITEM 13)</i>
CODE	FACILITY CODE			

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers is extended, is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA *(If required)*

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(✓)	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: <i>(Specify authority)</i> THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES <i>(such as changes in paying office, appropriation date, etc.)</i> SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER <i>(Specify type of modification and authority)</i>

E. IMPORTANT: Contractor is not, is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION *(Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER <i>(Type or print)</i>		16A. NAME AND TITLE OF CONTRACTING OFFICER <i>(Type or print)</i>	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY _____	16C. DATE SIGNED
<i>(Signature of person authorized to sign)</i>		<i>(Signature of Contracting Officer)</i>	

PREVIOUS EDITION UNUSABLE

Pay Item 15401-0000, Contractor Testing

Bidders must provide prices on two alternative Contractor Testing pay items in two different places in each schedule's bid tab.

On Page A-6 in Schedule A (and subsequently in Option X) bidders must provide a price for Contractor Testing *using a Contractor-furnished field laboratory*. As part of Schedule A and Option X, the price for this alternative item will be included in the "Schedule A/X Total" lines on Pages A-16 and A-23 of the Bid Schedule and, therefore, included in the evaluation for award.

Bidders must also provide a stand-alone price on the bottom of Page A-16 (and subsequently in Option X) for the alternative item, Contractor Testing *using a Government-furnished field laboratory*. This price will not be factored into the evaluation for award. The Government retains the discretion to award a contract which includes either of the alternative Contractor Testing items at the respective bid price.

**Pay Item 30801-2000, Roadway Aggregate, Method 2
(Chert Aggregate Surfacing, Imported vs. Onsite)**

Bidders must provide prices on two alternative Roadway Aggregate pay items in two different places for the Schedule A bid tab.

On Page A-8 of Schedule A, bidders must provide a price for providing the required Roadway Aggregate expecting to import material once the provided stockpile has been exhausted (see 30801 of the SCR's). This alternative item will be included in the "Schedule A Total" line on Page A-16 of the Bid Schedule and, therefore, included in the evaluation for award. This item will be awarded if only Schedule A is awarded.

Bidders must also provide a stand-alone price on the bottom of Page A-16 for the alternative item, 30801-2000, Roadway Aggregate, Method 2 (Chert Aggregate Surfacing, Onsite). This item will be used if Option X is awarded. This price will not be factored into the evaluation for award. The Government retains the discretion to award a contract which includes either of the alternative Roadway Aggregate items at the respective bid price.

A-5b

PARTNERING

A Partnership recognizes the Government and the Contractor are both responsible and can affect the successful completion of this project. Partnering is a vehicle to ensure the partnership has structure and quality. It recognizes the strengths of each party and uses those strengths to identify and achieve shared goals. One of the primary objectives of Partnering is to facilitate the resolution of disputes in a timely, professional, and non-adversarial manner with the outcome focused on achieving those shared goals.

CFLHD supports the concepts and tenets of Partnering and as such is encouraging the Contractors and it's subcontractors to establish a Partnering relationship on this project.

A formal Partnering meeting can help facilitate this relationship by helping do document the parties' common purpose and goals, and ensuring alignment. The goals are mutually agreed upon and address effective and efficient performance within the scope of the contract.

Participation in a formal Partnering meeting is voluntary. Costs of implementing and maintaining the partnership would be agreed to by both parties as described in *Subsection 103.05 Partnering* of the FP-03. Costs of partnering would be in addition to the contract award amount.

Please indicate your desire to participate in a formal partnering meeting on this project.

We would like to participate in a formal partnering meeting.

We do not want to participate in a formal partnering meeting.

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Amendment	Item No.	Pay Item No.	Description	Quantity	Unit	Unit Price	Amount
	A0100	15101-0000	MOBILIZATION	ALL	LPSM	\$ __LPSM__	\$ _____
	A0150	15206-0000	SLOPE, REFERENCE, AND CLEARING AND GRUBBING STAKE	68.00	STA	\$ _____	\$ _____
	A0200	15210-3000	CENTERLINE, VERIFICATION AND STAKING	122.00	STA	\$ _____	\$ _____
	A0250	15214-2000	SURVEY AND STAKING, RETAINING WALL	ALL	LPSM	\$ __LPSM__	\$ _____
	A0300	15215-1000	SURVEY AND STAKING, APPROACH ROAD	4	EACH	\$ _____	\$ _____
	A0350	15215-3000	SURVEY AND STAKING, DRAINAGE STRUCTURE	9	EACH	\$ _____	\$ _____
	A0400	15215-7000	SURVEY AND STAKING, PARKING AREA	4	EACH	\$ _____	\$ _____
	A0450	15216-2000	SURVEY AND STAKING, GRADE FINISHING STAKES	114.00	STA	\$ _____	\$ _____
	A0500	15301-0000	CONTRACTOR QUALITY CONTROL	ALL	LPSM	\$ __LPSM__	\$ _____
	A0550	15401-0000	CONTRACTOR TESTING	ALL	LPSM	\$ __LPSM__	\$ _____
	A0600	15501-0000	CONSTRUCTION SCHEDULE	ALL	LPSM	\$ __LPSM__	\$ _____
	A0650	15705-0100	SOIL EROSION CONTROL, SILT FENCE	950	LNFT	\$ _____	\$ _____
	A0700	15705-0300	SOIL EROSION CONTROL, SLOPE DRAINS	950	LNFT	\$ _____	\$ _____
	A0750	15705-1400	SOIL EROSION CONTROL, SEDIMENT LOG	1,450	LNFT	\$ _____	\$ _____

Bid Schedule

Schedule:A

Schedule Type:Base

Project No:CA PRA GOGA 104(1) 105(2)

Project Name:Rehab Bunker and Mitchell Roads

A0800	15705-1500	SOIL EROSION CONTROL, SEDIMENT WATTLE	24,000	LNFT	\$ _____	\$ _____
A0850	15706-0200	SOIL EROSION CONTROL, CHECK DAM (SEDIMENT LOG)	290	EACH	\$ _____	\$ _____
A0900	15706-1000	SOIL EROSION CONTROL, INLET PROTECTION	33	EACH	\$ _____	\$ _____
A0950	15706-1600	SOIL EROSION CONTROL, STABILIZED CONSTRUCTION ENTRANCE	4	EACH	\$ _____	\$ _____
A1000	15802-0000	WATERING FOR DUST CONTROL	ALL	LPSM	\$ __LPSM__	\$ _____
A1050	20101-0000	CLEARING AND GRUBBING	12.0	ACRE	\$ _____	\$ _____
A1100	20304-1000	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	ALL	LPSM	\$ __LPSM__	\$ _____
A1150	20401-0000	ROADWAY EXCAVATION	20,000	CUYD	\$ _____	\$ _____
A1200	20402-0000	SUBEXCAVATION	500	CUYD	\$ _____	\$ _____
A1250	20430-1000	SHOULDER, EXCAVATION	17,000	LNFT	\$ _____	\$ _____
A1300	20441-0000	WASTE (SPECIAL)	12	CUYD	\$ _____	\$ _____
A1350	20441-0000	WASTE	17,000	CUYD	\$ _____	\$ _____
A1400	21101-2000	ROADWAY OBLITERATION, METHOD 2	2,750	SQYD	\$ _____	\$ _____
A1450	25101-2000	PLACED RIPRAP, CLASS 2	80	CUYD	\$ _____	\$ _____

Bid Schedule

Schedule:A

Schedule Type:Base

Project No:CA PRA GOGA 104(1) 105(2)

Project Name:Rehab Bunker and Mitchell Roads

	A1500	25101-3000	PLACED RIPRAP, CLASS 3	145	CUYD	\$ _____	\$ _____
	A1550	25101-4000	PLACED RIPRAP, CLASS 4	30	CUYD	\$ _____	\$ _____
	A1600	25302-1000	GABIONS, GALVANIZED OR ALUMINIZED COATED	500	CUYD	\$ _____	\$ _____
	A1650	30302-1000	DITCH RECONDITIONING	4,500	LNFT	\$ _____	\$ _____
	A1700	30306-3500	PULVERIZING, 7-INCH DEPTH	45,500	SQYD	\$ _____	\$ _____
	A1750	30801-2000	ROADWAY AGGREGATE, METHOD 2 (CHERT AGGREGATE SURFACING)	2,100	CUYD	\$ _____	\$ _____
	A1800	30801-2000	ROADWAY AGGREGATE, METHOD 2 (RECYCLED ASPHALT PAVEMENT)	950	CUYD	\$ _____	\$ _____
A001	A1850	30802-2000	ROADWAY AGGREGATE, METHOD 2 (IMPORT)	10,600	TON	\$ _____	\$ _____
A004	A1900	40201-2900	HOT ASPHALT CONCRETE PAVEMENT, HVEEM TEST, CLASS B, GRADING B	2,000	TON	\$ _____	\$ _____
A004	A2000	40201-4700	HOT ASPHALT CONCRETE PAVEMENT, HVEEM TEST, CLASS B, GRADING C OR E	16,500	TON	\$ _____	\$ _____
	A2100	40205-3000	ANTISTRIP ADDITIVE, TYPE 3	175	TON	\$ _____	\$ _____
	A2200	40401-0000	MINOR HOT ASPHALT CONCRETE	180	TON	\$ _____	\$ _____
	A2250	40920-1000	FOG SEAL, EMULSIFIED ASPHALT GRADE CSS-1 OR CSS-1H, SS-1 OR SS-1H	30	TON	\$ _____	\$ _____

Bid Schedule

Schedule:A

Schedule Type:Base

Project No:CA PRA GOGA 104(1) 105(2)

Project Name:Rehab Bunker and Mitchell Roads

	A2300	41103-0000	PRIME COAT	68,000	SQYD	\$ _____	\$ _____
	A2350	41105-0000	BLOTTER	575	TON	\$ _____	\$ _____
	A2400	41201-1000	TACK COAT GRADE CSS-1, CSS-1H, SS-1, OR SS-1H	30	TON	\$ _____	\$ _____
A002	A2450	56302-1000	PAINTING, CONCRETE STRUCTURE	4,750	SQFT	\$ _____	\$ _____
	A2500	60101-0000	CONCRETE	13	CUYD	\$ _____	\$ _____
	A2550	60103-0100	CONCRETE, HEADWALL FOR 18-INCH PIPE CULVERT	1	EACH	\$ _____	\$ _____
	A2600	60103-0140	CONCRETE, HEADWALL FOR 24-INCH PIPE CULVERT	1	EACH	\$ _____	\$ _____
	A2650	60103-0180	CONCRETE, HEADWALL FOR 36-INCH PIPE CULVERT	1	EACH	\$ _____	\$ _____
	A2700	60201-0600	18-INCH PIPE CULVERT	80	LNFT	\$ _____	\$ _____
	A2750	60201-0800	24-INCH PIPE CULVERT	330	LNFT	\$ _____	\$ _____
	A2800	60201-0900	30-INCH PIPE CULVERT	120	LNFT	\$ _____	\$ _____
	A2850	60201-1000	36-INCH PIPE CULVERT	70	LNFT	\$ _____	\$ _____
	A2900	60201-1100	42-INCH PIPE CULVERT	55	LNFT	\$ _____	\$ _____
	A2950	60210-0600	END SECTION FOR 18-INCH PIPE CULVERT	4	EACH	\$ _____	\$ _____

Bid Schedule

Schedule:A

Schedule Type:Base

Project No:CA PRA GOGA 104(1) 105(2)

Project Name:Rehab Bunker and Mitchell Roads

A3000	60210-0800	END SECTION FOR 24-INCH PIPE CULVERT	4	EACH	\$ _____	\$ _____
A3050	60210-0900	END SECTION FOR 30-INCH PIPE CULVERT	4	EACH	\$ _____	\$ _____
A3100	60231-0000	DISSIPATOR, PIPE	5	EACH	\$ _____	\$ _____
A3150	60403-0000	INLET (SPECIAL)	9	EACH	\$ _____	\$ _____
A3200	60404-1000	CATCH BASIN, TYPE 1	2	EACH	\$ _____	\$ _____
A3250	60405-0000	MANHOLE ADJUSTMENT	26	EACH	\$ _____	\$ _____
A3300	60406-0000	INLET ADJUSTMENT	2	EACH	\$ _____	\$ _____
A3350	60409-0000	INLET TOP, METAL GRATE	19	EACH	\$ _____	\$ _____
A3400	60501-0000	STANDARD UNDERDRAIN SYSTEM	2,050	LNFT	\$ _____	\$ _____
A3450	60704-0000	CLEANING CULVERT IN PLACE	12	EACH	\$ _____	\$ _____
A3500	60705-0000	RECONDITIONING DRAINAGE STRUCTURE	17	EACH	\$ _____	\$ _____
A3550	60706-0000	CLEANING DRAINAGE STRUCTURE	12	EACH	\$ _____	\$ _____
A3600	60707-0500	LINING 24-INCH PIPE CULVERT	295	LNFT	\$ _____	\$ _____
A3650	60901-1200	CURB, CONCRETE, 14-INCH DEPTH	275	LNFT	\$ _____	\$ _____

Bid Schedule

Schedule:A

Schedule Type:Base

Project No:CA PRA GOGA 104(1) 105(2)

Project Name:Rehab Bunker and Mitchell Roads

	A3700	60901-2300	CURB, ASPHALT, 6-INCH DEPTH	1,650	LNFT	\$ _____	\$ _____
	A3750	60902-1000	CURB AND GUTTER, CONCRETE, 12-INCH DEPTH	300	LNFT	\$ _____	\$ _____
	A3800	60906-1000	GUTTER, CONCRETE	225	SQYD	\$ _____	\$ _____
	A3850	60908-1000	PAVED DITCH, ASPHALT	1,400	SQYD	\$ _____	\$ _____
	A3900	60915-1000	WHEELSTOP, CONCRETE	17	EACH	\$ _____	\$ _____
	A3950	60915-2000	WHEELSTOP, TIMBER	421	EACH	\$ _____	\$ _____
A002	A4000	61108-1000	ADJUST WATER VALVE	20	EACH	\$ _____	\$ _____
	A4050	61501-0100	SIDEWALK, CONCRETE	1,000	SQYD	\$ _____	\$ _____
	A4100	61502-1000	DRIVE PAD, CONCRETE	555	SQYD	\$ _____	\$ _____
	A4150	61505-1000	ACCESSIBILITY RAMP, CONCRETE	1	EACH	\$ _____	\$ _____
	A4200	61701-1250	GUARDRAIL SYSTEM G4, TYPE 2, CLASS A WOOD POSTS	3,800	LNFT	\$ _____	\$ _____
	A4250	61702-0400	TERMINAL SECTION, TYPE G4-CRT	2	EACH	\$ _____	\$ _____
	A4300	61702-0600	TERMINAL SECTION, TYPE FLARED	6	EACH	\$ _____	\$ _____
	A4350	61702-0800	TERMINAL SECTION TYPE TANGENT	5	EACH	\$ _____	\$ _____

Bid Schedule

Schedule:A

Schedule Type:Base

Project No:CA PRA GOGA 104(1) 105(2)

Project Name:Rehab Bunker and Mitchell Roads

	A4400	61707-0000	STRUCTURE TRANSITION RAILING	110	LNFT	\$ _____	\$ _____
	A4450	61901-0000	FENCE (POST/CABLE)	2,200	LNFT	\$ _____	\$ _____
	A4500	61901-0550	FENCE, BARB-LESS WIRE (BRIDGE)	450	LNFT	\$ _____	\$ _____
A004	A4550	61901-2000	FENCE, CHAIN LINK, 72-INCH HEIGHT	555	LNFT	\$ _____	\$ _____
A004	A4575	61901-2100	FENCE, CHAIN LINK, 96-INCH HEIGHT	200	LNFT	\$ _____	\$ _____
	A4600	61902-0000	GATE (VEHICLE)	3	EACH	\$ _____	\$ _____
	A4650	61902-0000	GATE (PEDESTRIAN)	3	EACH	\$ _____	\$ _____
	A4700	61902-0000	GATE (AUTOMATED)	1	EACH	\$ _____	\$ _____
	A4750	61920-2000	REMOVE AND RESET GATE	1	EACH	\$ _____	\$ _____
	A4800	62201-0150	DUMP TRUCK, 7 CUBIC YARD MINIMUM CAPACITY	40	HOUR	\$ _____	\$ _____
	A4850	62201-0400	BACKHOE LOADER, 2 CUBIC FOOT MINIMUM RATED CAPACITY BUCKET, 12-INCH WIDTH	40	HOUR	\$ _____	\$ _____
	A4900	62201-0900	WHEEL LOADER, 2 CUBIC YARD MINIMUM RATED CAPACITY	40	HOUR	\$ _____	\$ _____
	A4950	62201-1400	BULLDOZER, 250HP MINIMUM FLYWHEEL POWER	40	HOUR	\$ _____	\$ _____

Bid Schedule

Schedule:A

Schedule Type:Base

Project No:CA PRA GOGA 104(1) 105(2)

Project Name:Rehab Bunker and Mitchell Roads

A5000	62201-2050	ROLLER	20	HOUR	\$ _____	\$ _____
A5050	62201-2850	MOTOR GRADER, 12 FOOT MINIMUM BLADE	40	HOUR	\$ _____	\$ _____
A5100	62201-3350	HYDRAULIC EXCAVATOR, 1 CUBIC YARD MINIMUM CAPACITY	40	HOUR	\$ _____	\$ _____
A5150	62201-3500	LOADER, WHEEL, SKID STEER, 40HP MINIMUM	40	HOUR	\$ _____	\$ _____
A5200	62301-0000	GENERAL LABOR	80	HOUR	\$ _____	\$ _____
A5250	62302-1000	SPECIAL LABOR, HIRED TECHNICAL SERVICES	40	HOUR	\$ _____	\$ _____
A5300	62302-1100	SPECIAL LABOR, HIRED SURVEY SERVICES	40	HOUR	\$ _____	\$ _____
A5350	62510-2000	SEEDING, HYDRAULIC METHOD	4.0	ACRE	\$ _____	\$ _____
A5400	62515-3000	MULCHING, HYDRAULIC METHOD, BONDED FIBER MATRIX	4.0	ACRE	\$ _____	\$ _____
A5450	62701-0000	SOD	420	SQYD	\$ _____	\$ _____
A5500	62901-0700	ROLLED EROSION CONTROL PRODUCT, TYPE 2.C	3,700	SQYD	\$ _____	\$ _____
A5550	62901-1000	ROLLED EROSION CONTROL PRODUCT, TYPE 3.B	13,500	SQYD	\$ _____	\$ _____
A5600	63301-0000	SIGN SYSTEM	66	EACH	\$ _____	\$ _____
A5650	63301-0000	SIGN SYSTEM (WINDMASTER)	20	EACH	\$ _____	\$ _____

Bid Schedule

Schedule:A

Schedule Type:Base

Project No:CA PRA GOGA 104(1) 105(2)

Project Name:Rehab Bunker and Mitchell Roads

A5700	63308-0000	OBJECT MARKER	60	EACH	\$ _____	\$ _____
A5750	63316-1000	REMOVE AND RESET SIGN	27	EACH	\$ _____	\$ _____
A5800	63316-1000	REMOVE AND RESET SIGN (SPECIAL)	1	EACH	\$ _____	\$ _____
A5850	63320-0000	SPEED CUSHION (REMOVE AND RESET)	4	EACH	\$ _____	\$ _____
A5900	63401-0500	PAVEMENT MARKINGS, TYPE C, SOLID	1,800	LNFT	\$ _____	\$ _____
A5950	63401-1700	PAVEMENT MARKINGS, TYPE I, SOLID	71,500	LNFT	\$ _____	\$ _____
A6000	63401-1800	PAVEMENT MARKINGS, TYPE I, BROKEN	550	LNFT	\$ _____	\$ _____
A6050	63401-2100	PAVEMENT MARKINGS, TYPE K, SOLID	5,300	LNFT	\$ _____	\$ _____
A6100	63403-1000	PAVEMENT MARKINGS, TYPE J	1,600	SQFT	\$ _____	\$ _____
A6150	63405-0050	PAVEMENT MARKINGS, SYMBOLS , TYPE J	8	EACH	\$ _____	\$ _____
A6200	63405-1250	PAVEMENT MARKINGS, TYPE C, ACCESSIBILITY SYMBOL	17	EACH	\$ _____	\$ _____
A6250	63405-3900	PAVEMENT MARKINGS, TYPE J, "STOP" WORD MESSAGE	6	EACH	\$ _____	\$ _____
A6300	63406-0100	RAISED PAVEMENT MARKER TYPE A	108	EACH	\$ _____	\$ _____
A6350	63406-0200	RAISED PAVEMENT MARKER TYPE B	925	EACH	\$ _____	\$ _____

Bid Schedule

Schedule:A

Schedule Type:Base

Project No:CA PRA GOGA 104(1) 105(2)

Project Name:Rehab Bunker and Mitchell Roads

A6400	63501-2000	TEMPORARY TRAFFIC CONTROL, TRAFFIC SIGNAL SYSTEM	ALL	LPSM	\$ LPSM	\$
A6450	63502-0500	TEMPORARY TRAFFIC CONTROL, BARRICADE TYPE 2	6	EACH	\$	\$
A6500	63502-0600	TEMPORARY TRAFFIC CONTROL, BARRICADE TYPE 3	6	EACH	\$	\$
A6550	63502-1050	TEMPORARY TRAFFIC CONTROL, TUBULAR MARKER	300	EACH	\$	\$
A6600	63502-1300	TEMPORARY TRAFFIC CONTROL, DRUM	100	EACH	\$	\$
A6650	63502-1600	TEMPORARY TRAFFIC CONTROL, WARNING LIGHT TYPE B	6	EACH	\$	\$
A6700	63503-0400	TEMPORARY TRAFFIC CONTROL, CONCRETE BARRIER	1,000	LNFT	\$	\$
A6750	63503-1000	TEMPORARY TRAFFIC CONTROL, PLASTIC FENCE	2,650	LNFT	\$	\$
A6800	63504-1000	TEMPORARY TRAFFIC CONTROL, CONSTRUCTION SIGN	600	SQFT	\$	\$
A6850	63505-1000	TEMPORARY TRAFFIC CONTROL, PAVEMENT MARKINGS	6.0	MILE	\$	\$
A6900	63506-0500	TEMPORARY TRAFFIC CONTROL, FLAGGER	4,500	HOUR	\$	\$
A6950	63506-0600	TEMPORARY TRAFFIC CONTROL, PILOT CAR	400	HOUR	\$	\$
A7000	63510-0100	TEMPORARY TRAFFIC CONTROL, TRAFFIC AND SAFETY SUPERVISOR	30	WEEK	\$	\$
A7050	63601-3100	SYSTEM INSTALLATION, TELEPHONE	ALL	LPSM	\$ LPSM	\$

Bid Schedule

Schedule:A

Schedule Type:Base

Project No:CA PRA GOGA 104(1) 105(2)

Project Name:Rehab Bunker and Mitchell Roads

A7100	63602-6000	SYSTEM INSTALLATION, TRAFFIC DETECTOR SYSTEM	2	EACH	\$ _____	\$ _____
A7150	63610-2800	CONDUIT, 4-INCH, PVC	3,300	LNFT	\$ _____	\$ _____
A7200	63621-2000	UTILITY BOX, TELEPHONE PULLBOX	6	EACH	\$ _____	\$ _____
A7250	63621-3000	UTILITY BOX, JUNCTION BOX	6	EACH	\$ _____	\$ _____
A7300	63640-0700	RELOCATE ELECTRICAL LINE	ALL	LPSM	\$ __LPSM__	\$ _____
A7350	64620-0300	REMOVE AND RESET BENCH	1	EACH	\$ _____	\$ _____
A7400	64620-0600	REMOVE AND RESET TRASH RECEPTACLE	2	EACH	\$ _____	\$ _____
Submitted by: _____			Schedule Total: _____			

Schedule A Alternate Bid Item 15401-0000, Contractor Testing (Government furnished lab trailer)* \$ _____

*See Page A-5 of this Solicitation for an explanation of how to bid this item.

Schedule A Alternate Bid Item 30801-2000, Roadway Aggregate, Method 2 (Chert Aggregate Surfacing, Onsite from Option X)** \$ _____

**See Page A-5 of this Solicitation for an explanation of how to bid this item.

Contract Quantity Pay Items

20801-0000 STRUCTURE EXCAVATION

20803-0000 STRUCTURAL BACKFILL

55201-0200 STRUCTURAL CONCRETE, CLASS A (AE)

55401-1000 REINFORCING STEEL

Amendment	Item No.	Pay Item No.	Description	Quantity	Unit	Unit Price	Amount
	X0100	15101-0000	MOBILIZATION	ALL	LPSM	\$ __ LPSM__	\$ _____
	X0150	15206-0000	SLOPE, REFERENCE, AND CLEARING AND GRUBBING STAKE	17.00	STA	\$ _____	\$ _____
	X0200	15214-2000	SURVEY AND STAKING, RETAINING WALL	ALL	LPSM	\$ __ LPSM__	\$ _____
	X0250	15215-1000	SURVEY AND STAKING, APPROACH ROAD	1	EACH	\$ _____	\$ _____
	X0300	15215-7000	SURVEY AND STAKING, PARKING AREA	1	EACH	\$ _____	\$ _____
	X0350	15216-2000	SURVEY AND STAKING, GRADE FINISHING STAKES	33.00	STA	\$ _____	\$ _____
	X0400	15301-0000	CONTRACTOR QUALITY CONTROL	ALL	LPSM	\$ __ LPSM__	\$ _____
	X0450	15401-0000	CONTRACTOR TESTING	ALL	LPSM	\$ __ LPSM__	\$ _____
	X0500	15501-0000	CONSTRUCTION SCHEDULE	ALL	LPSM	\$ __ LPSM__	\$ _____
	X0550	15705-1500	SOIL EROSION CONTROL, SEDIMENT WATTLE	4,300	LNFT	\$ _____	\$ _____
	X0600	15706-0200	SOIL EROSION CONTROL, CHECK DAM (SEDIMENT LOG)	20	EACH	\$ _____	\$ _____
	X0650	15706-1000	SOIL EROSION CONTROL, INLET PROTECTION	4	EACH	\$ _____	\$ _____

Bid Schedule

Schedule:X

Schedule Type:Options

Project No:CA PRA GOGA 104(1) 105(2)

Project Name:Rehab Bunker and Mitchell Roads

X0700	15802-0000	WATERING FOR DUST CONTROL	ALL	LPSM	\$ LPSM	\$
X0750	20101-0000	CLEARING AND GRUBBING	1.5	ACRE	\$	\$
X0800	20304-1000	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	ALL	LPSM	\$ LPSM	\$
X0850	20401-0000	ROADWAY EXCAVATION	17,000	CUYD	\$	\$
X0900	20441-0000	WASTE	8,000	CUYD	\$	\$
X0950	20466-0000	CONSERVE AND STOCKPILE TOPSOIL	660	CUYD	\$	\$
X1000	20801-0000	STRUCTURE EXCAVATION	235	CUYD	\$	\$
X1050	20802-0000	FOUNDATION FILL	145	CUYD	\$	\$
X1100	20803-0000	STRUCTURAL BACKFILL	8	CUYD	\$	\$
X1150	25101-2000	PLACED RIPRAP, CLASS 2	15	CUYD	\$	\$
X1200	25302-1000	GABIONS, GALVANIZED OR ALUMINIZED COATED	230	CUYD	\$	\$
X1250	25501-1000	MECHANICALLY STABILIZED EARTH WALL, WELDED WIRE FACE	1,665	SQFT	\$	\$
X1300	30802-2000	ROADWAY AGGREGATE, METHOD 2 (IMPORT)	1,600	TON	\$	\$
X1350	40201-4700	HOT ASPHALT CONCRETE PAVEMENT, HVEEM TEST, CLASS B, GRADING C OR E	1,500	TON	\$	\$

Bid Schedule

Schedule:X

Schedule Type:Options

Project No:CA PRA GOGA 104(1) 105(2)

Project Name:Rehab Bunker and Mitchell Roads

	X1450	40205-3000	ANTISTRIP ADDITIVE, TYPE 3	15.0	TON	\$ _____	\$ _____
	X1500	40920-1000	FOG SEAL, EMULSIFIED ASPHALT GRADE CSS-1 OR CSS-1H, SS-1 OR SS-1H	3	TON	\$ _____	\$ _____
	X1550	41103-0000	PRIME COAT	5,540	SQYD	\$ _____	\$ _____
	X1600	41105-0000	BLOTTER	40	TON	\$ _____	\$ _____
	X1650	41201-1000	TACK COAT GRADE CSS-1, CSS-1H, SS-1, OR SS-1H	3.0	TON	\$ _____	\$ _____
	X1700	55201-0200	STRUCTURAL CONCRETE, CLASS A (AE)	81	CUYD	\$ _____	\$ _____
	X1750	55401-1000	REINFORCING STEEL	24,899	LB	\$ _____	\$ _____
A002	X1800	56302-1000	PAINTING, CONCRETE STRUCTURE	2,850	SQFT	\$ _____	\$ _____
	X1850	56901-0000	MICROPILES	485	LNFT	\$ _____	\$ _____
	X1900	56905-0000	MICROPILE LOAD VERIFICATION TEST	1	EACH	\$ _____	\$ _____
	X1950	56906-0000	MICROPILE PROOF LOAD TEST	2	EACH	\$ _____	\$ _____
	X2000	60201-0800	24-INCH PIPE CULVERT	80	LNFT	\$ _____	\$ _____
	X2050	60210-0800	END SECTION FOR 24-INCH PIPE CULVERT	1	EACH	\$ _____	\$ _____
	X2100	60231-0000	DISSIPATOR, PIPE	4	EACH	\$ _____	\$ _____

Bid Schedule

Schedule:X

Schedule Type:Options

Project No:CA PRA GOGA 104(1) 105(2)

Project Name:Rehab Bunker and Mitchell Roads

X2150	60405-0000	MANHOLE ADJUSTMENT	2	EACH	\$ _____	\$ _____
X2200	60901-2100	CURB, ASPHALT, 4-INCH DEPTH	850	LNFT	\$ _____	\$ _____
X2250	60901-2300	CURB, ASPHALT, 6-INCH DEPTH	580	LNFT	\$ _____	\$ _____
X2300	60902-1000	CURB AND GUTTER, CONCRETE, 12-INCH DEPTH	380	LNFT	\$ _____	\$ _____
X2350	60908-1000	PAVED DITCH, ASPHALT	165	SQYD	\$ _____	\$ _____
X2400	61501-0100	SIDEWALK, CONCRETE	170	SQYD	\$ _____	\$ _____
X2450	61701-4000	GUARDRAIL SYSTEM SBTB	1,625	LNFT	\$ _____	\$ _____
X2500	61702-0100	TERMINAL SECTION, TYPE SBT-BAT	3	EACH	\$ _____	\$ _____
X2550	61702-1400	TERMINAL SECTION, TYPE SBT TANGENT	1	EACH	\$ _____	\$ _____
X2600	61709-1000	REMOVE AND RESET, POST (UTILITY POLE)	3	EACH	\$ _____	\$ _____
X2650	61805-0000	RESET BARRIER	125	LNFT	\$ _____	\$ _____
X2700	61901-1400	FENCE, CHAIN LINK, 36-INCH HEIGHT	210	LNFT	\$ _____	\$ _____
X2750	61901-2000	FENCE, CHAIN LINK, 72-INCH HEIGHT	1,750	LNFT	\$ _____	\$ _____
X2800	62201-0150	DUMP TRUCK, 7 CUBIC YARD MINIMUM CAPACITY	20	HOUR	\$ _____	\$ _____

Bid Schedule

Schedule:X

Schedule Type:Options

Project No:CA PRA GOGA 104(1) 105(2)

Project Name:Rehab Bunker and Mitchell Roads

X2850	62201-0400	BACKHOE LOADER, 2 CUBIC FOOT MINIMUM RATED CAPACITY BUCKET, 12-INCH WIDTH	20	HOUR	\$ _____	\$ _____
X2900	62201-0900	WHEEL LOADER, 2 CUBIC YARD MINIMUM RATED CAPACITY	20	HOUR	\$ _____	\$ _____
X2950	62201-1400	BULLDOZER, 250HP MINIMUM FLYWHEEL POWER	20	HOUR	\$ _____	\$ _____
X3000	62201-2050	ROLLER	20	HOUR	\$ _____	\$ _____
X3050	62201-2850	MOTOR GRADER, 12 FOOT MINIMUM BLADE	20	HOUR	\$ _____	\$ _____
X3100	62201-3350	HYDRAULIC EXCAVATOR, 1 CUBIC YARD MINIMUM CAPACITY	20	HOUR	\$ _____	\$ _____
X3150	62201-3500	LOADER, WHEEL, SKID STEER, 40HP MINIMUM	20	HOUR	\$ _____	\$ _____
X3200	62301-0000	GENERAL LABOR	40	HOUR	\$ _____	\$ _____
X3250	62302-1000	SPECIAL LABOR, HIRED TECHNICAL SERVICES	20	HOUR	\$ _____	\$ _____
X3300	62302-1100	SPECIAL LABOR, HIRED SURVEY SERVICES	20	HOUR	\$ _____	\$ _____
X3350	62510-2000	SEEDING, HYDRAULIC METHOD	1.2	ACRE	\$ _____	\$ _____
X3400	62515-3000	MULCHING, HYDRAULIC METHOD, BONDED FIBER MATRIX	1.2	ACRE	\$ _____	\$ _____
X3450	62901-1000	ROLLED EROSION CONTROL PRODUCT, TYPE 3.B	2,800	SQYD	\$ _____	\$ _____

Bid Schedule

Schedule:X

Schedule Type:Options

Project No:CA PRA GOGA 104(1) 105(2)

Project Name:Rehab Bunker and Mitchell Roads

X3500	63301-0000	SIGN SYSTEM	10	EACH	\$ _____	\$ _____
X3550	63301-0000	SIGN SYSTEM (WINDMASTER)	20	EACH	\$ _____	\$ _____
X3600	63308-0000	OBJECT MARKER	5	EACH	\$ _____	\$ _____
X3650	63316-1000	REMOVE AND RESET SIGN	5	EACH	\$ _____	\$ _____
X3700	63401-1700	PAVEMENT MARKINGS, TYPE I, SOLID	6,500	LNFT	\$ _____	\$ _____
X3750	63401-1800	PAVEMENT MARKINGS, TYPE I, BROKEN	170	LNFT	\$ _____	\$ _____
X3800	63405-0050	PAVEMENT MARKINGS, SYMBOLS	8	EACH	\$ _____	\$ _____
X3850	63405-3700	PAVEMENT MARKINGS, TYPE J, TURN ARROW	6	EACH	\$ _____	\$ _____
X3900	63405-3750	PAVEMENT MARKINGS, TYPE J, STRAIGHT ARROW	2	EACH	\$ _____	\$ _____
X3950	63405-3850	PAVEMENT MARKINGS, TYPE J, "ONLY" WORD MESSAGE	2	EACH	\$ _____	\$ _____
X4000	63405-3900	PAVEMENT MARKINGS, TYPE J, "STOP" WORD MESSAGE	1	EACH	\$ _____	\$ _____
X4050	63502-0500	TEMPORARY TRAFFIC CONTROL, BARRICADE TYPE 2	3	EACH	\$ _____	\$ _____
X4100	63502-0600	TEMPORARY TRAFFIC CONTROL, BARRICADE TYPE 3	3	EACH	\$ _____	\$ _____
X4150	63502-1300	TEMPORARY TRAFFIC CONTROL, DRUM	65	EACH	\$ _____	\$ _____

Bid Schedule

Schedule:X

Schedule Type:Options

Project No:CA PRA GOGA 104(1) 105(2)

Project Name:Rehab Bunker and Mitchell Roads

X4200	63502-1600	TEMPORARY TRAFFIC CONTROL, WARNING LIGHT TYPE B	3	EACH	\$ _____	\$ _____
X4250	63502-2000	TEMPORARY TRAFFIC CONTROL, PORTABLE CHANGEABLE MESSAGE SIGN	3	EACH	\$ _____	\$ _____
X4300	63503-0400	TEMPORARY TRAFFIC CONTROL, CONCRETE BARRIER	1,100	LNFT	\$ _____	\$ _____
X4350	63503-1000	TEMPORARY TRAFFIC CONTROL, PLASTIC FENCE	660	LNFT	\$ _____	\$ _____
X4400	63504-1000	TEMPORARY TRAFFIC CONTROL, CONSTRUCTION SIGN	230	SQFT	\$ _____	\$ _____
X4450	63505-1000	TEMPORARY TRAFFIC CONTROL, PAVEMENT MARKINGS	0.3	MILE	\$ _____	\$ _____
X4500	63506-0500	TEMPORARY TRAFFIC CONTROL, FLAGGER	880	HOUR	\$ _____	\$ _____
X4550	63510-0100	TEMPORARY TRAFFIC CONTROL, TRAFFIC AND SAFETY SUPERVISOR	25	WEEK	\$ _____	\$ _____
X4600	63610-2800	CONDUIT, 4-INCH, PVC	1,160	LNFT	\$ _____	\$ _____
X4650	63621-1000	UTILITY BOX, PULLBOX	2	EACH	\$ _____	\$ _____
X4700	64603-0300	FIXTURE, BENCH	1	EACH	\$ _____	\$ _____
Submitted by: _____			Schedule Total: _____			

Schedule A Alternate Bid Item 15401-0000, Contractor Testing (Government furnished lab trailer)* \$ _____

*See Page A-5 of this Solicitation for an explanation of how to bid this item.

Bid Schedule

Schedule:X

Schedule Type:Options

Project No:CA PRA GOGA 104(1) 105(2)

Project Name:Rehab Bunker and Mitchell Roads

Bid Schedule Summary

Schedule	Bid Total
Schedule A - Base(Page A - 6)	
Schedule X - Option(Page A - 17)	
Total - Schedules	

Submitted By: _____

Bid Schedule

Project No:CA PRA GOGA 104(1) 105(2)

Project Name:Rehab Bunker and Mitchell Roads

SPECIAL CONTRACT REQUIREMENTS

The following Special Contract Requirements amend and supplement the *Standard Specifications for Construction of Roads and Bridges, on Federal Highway Projects (FP-03) U.S. Customary Version*, U.S. Department of Transportation, Federal Highway Administration.

Section 101. – TERMS, FORMAT, AND DEFINITIONS

101.03 Abbreviations. Add the following:

US Customary symbols.

A	— ampere	electric current
ac.	— acre	Area
BTU	— British Thermal Unit	Energy
cu. in. or in³	— cubic inches	Volume
cu. ft., cf, ft³ or CUFT	— cubic feet	Volume
cu. yd., cy, yd³ or CUYD	— cubic yards	Volume
D	— day	Time
deg. or °	— degree	plane angle
Fc	— foot-candles	luminous intensity
fl. oz.	— fluid ounces	Volume
ft. or '	— foot or feet	Length
gal. or GAL	— gallon	Volume
H	— Henry	Inductance
hr. or HR	— hour	Time
Hz	— hertz (s ⁻¹)	Frequency
in. or "	— inch or inches	Length
K	— kelvin	Temperature
lb or LB, lbs	— pound, pounds	Mass
Lbf	— pound-force	Force
lnft or LNFT	— linear foot	Length
mi.	— miles	Length
min. or m	— minute	Time
min. or '	— minute	plane angle
°F	— degrees Fahrenheit	Temperature
oz.	— ounces	Mass
Psi	— pounds/square inch	Pressure
Q	— cubic feet/second	flow rate
sec. or s	— second	Time
sec. or "	— second	plane angle
sq. in. or in²	— square inches	Area
sq. ft., sf, ft² or SQFT	— square feet	Area

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sq. yd., sy, yd² or SQYD	— square yards	Area
Sta.	— station	Length
T	— short ton (2000 lbs)	Mass
V	— volt (W/A)	electric potential
W	— watt (J/s)	Power
YD	— yard or yards	Length
Ω	— ohm V/A	electric resistance

101.03(a) Acronyms. Add the following:

EEBACS — Engineer’s Estimating, Bidding, Award, and Construction System.

101.04 Definitions.

EEBACS — Engineer’s Estimating, Bidding, Award, and Construction System. A web-based system used by the Government, Construction Contractors, and Subcontractors on this Government contract to prepare “*Inspector’s Daily Record of Construction Operations*” (*Contractors Daily Reports*) and measurement notes (pay notes).

101.04 Definitions.**Roadway Prism** Delete the text and substitute the following:

Roadway Prism – The volume defined by the area between the original terrain cross-section and the final design cross-section multiplied by the horizontal distance between the centroids (geometric center) of the area.

Section 103. – SCOPE OF WORK**103.02 Disputes.** Delete the Subsection and substitute the following:

103.02 Disputes. Follow the requirements of FAR Clause 52.233-1 Disputes (Alternate I).

When requesting a CO's decision on an interpretation of contract terms for the recovery of increased costs, quantify the amount and, if required by FAR Clause 52.233-1 Alternate I, certify the amount. Include an explanation of the interpretation of contract terms, the contract clause under which the claim is made, all supporting documentation, and adequate cost data to support the amount claimed.

103.03 Value Engineering. Delete the Subsection and substitute the following:

103.03 Value Engineering. Follow the requirements of FAR Clause 52.248-3 Value Engineering-Construction (Alternate I).

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Before undertaking significant expenditures, provide the CO with a written description of the value engineering change proposal (VECP) concept. Within 14 days, the CO will inform the Contractor as to whether the concept appears to be viable or if the concept is unacceptable. If the CO indicates that the concept appears to be viable, prepare and submit the formal VECP proposal.

Section 104. – CONTROL OF WORK

104.03 Specifications and Drawings.

Delete Subsection 104.03(a) and (b) and substitute the following:

(a) Construction drawings. Prepare drawings as necessary to construct the work. Drawings include, but are not limited to, layouts that show the relative position (vertical and horizontal as appropriate) of work to be performed, fabrication details for manufactured items and assemblies, installation and erection procedures, details of post-tensioning and other systems, detailed trench and excavation procedures that conform to OSHA requirements, traffic control implementation drawings, and methods for performing work near existing structures or other areas to be protected. Show all the drawing dimensions in United States customary units.

Limit drawings to a maximum size of 24 by 36 inches. Include on each drawing and calculation sheet, the project number, name, and other identification as shown in the contract.

Furnish the CO with 5 sets of drawings, an electronic copy of the drawings, and supporting calculations. Drawings will be reviewed in the order they are received. Allow 40 days for CO acceptance of railroad structure drawings and 30 days for acceptance of other structure drawings. If drawings are returned for revision, the time for acceptance starts over when the drawings are corrected and resubmitted. The CO may request additional specific drawings for unique situations in order to clarify layout, construction details, or methodology. Do not perform work covered by the drawings before the drawings are accepted. Obtain written approval before changing or deviating from the accepted drawings.

(b) Specific requirements for construction drawings.

(1) Furnish drawings for the following:

- (a) Site-specific layouts for all wall types and gabion installations;
- (b) Gabion and revet mattress details and installation procedures;
- (c) Forms and falsework for non-bridge concrete structures less than or equal to 6 feet in height;
- (d) Fabrication drawings for bridge railings and parapets;
- (e) Fabrication drawings for prestressed members;
- (f) Fabrication and installation drawings for expansion joint assemblies;

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- (g) Fabrication drawings for bearing assemblies;
 - (h) Construction joint location and concrete deck placement sequences not shown on the plans;
 - (i) Erection diagrams for Soil-Corrugated Metal Structure interaction systems (multi-plate structures);
 - (j) Structural steel fabrication drawings;
 - (k) Utility hangar details;
 - (l) Fabrication and installation drawings for precast items; and
 - (m) Site-specific layouts for rockeries.
- (2)** Furnish drawings that bear the seal and signature of a professional engineer proficient in the pertinent design field for the following:
- (a) Erection plans;
 - (b) Reinforced soil slopes details;
 - (c) MSE wall and crib wall details;
 - (d) Details and installation procedures for proprietary wall systems;
 - (e) Temporary bridge structures for public use;
 - (f) Forms, shoring, and falsework for bridges less than or equal to 6 feet in height;
 - (g) Shoring systems and cofferdams greater than 6 feet in height;
 - (h) All shoring systems that support traffic loadings;
 - (i) Forms, shoring, and falsework for all structures greater than 6 feet in height;
 - (j) Post-tensioning systems;
 - (k) Ground anchors, soil nail, and rock bolt assembly details, layout, and installation and testing procedures;
 - (l) Tie back wall details;
 - (m) Alternate retaining wall details; *and*
 - (n) Bridge demolition plans.
- (3)** Furnish drawings that bear the seal and signature of a professional engineer who is proficient in forms and falsework design and licensed in the state where the project will be constructed for the following:

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- (a) Falsework for any structure with a span exceeding 16 feet;
- (b) Falsework for any structure with a height exceeding 14 feet; and
- (c) Falsework for structures where traffic, other than workers involved in constructing the structure, will travel under the structure.

Add the following:

(c) As-built working drawings. Prepare and furnish as-built working drawings prior to final acceptance. The Government will provide one set of 11 x 17 inch contract drawings to be used exclusively for recording the as-built details of the project. Mark plans on title sheet "As-Built Plans". Use red ink to record the information described below.

Note all additions or revisions to the location, character and dimensions of the prescribed work shown on the contract drawings. Location changes are to be shown in the same coordinate system used for the staking notes. Strikeout all details shown that are not applicable to the completed work. Check and initial all plan sheets that were incorporated into the completed work without change.

Retain the drawings at the project site and, as work progresses, continuously update them to reflect the as-built details. Submit a copy of the updated as-built drawings at least every 30 days to the CO for review for compliance with these specifications.

As a minimum, show the following information on the as-built drawings:

(1) Title sheet.

- (a) Name of contractor.
- (b) Name of Project Engineer.
- (c) Project completion date.
- (d) Revisions to project length.
- (e) Revisions to begin and end stations of project.
- (f) Revisions to index to sheets.
- (g) Strikeout any schedules or options not awarded.
- (h) A note stating "All work was constructed as designed unless otherwise noted."

(2) Typical section(s).

- (a) Revisions in dimensions.
- (b) Revisions in materials.

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- (c) Revisions in station ranges.
- (d) Revisions to begin and end stations of project, and length of project.
- (e) Revisions to station equations.
- (f) Revisions to slope ratio and curve widening tables.
- (g) Revisions to any notes.

(3) Summary of quantities and tabulation sheets.

- (a) Revisions to all quantities, locations, notes/remarks, including totals.
- (b) Strikeout unused pay items.
- (c) Revisions to application rates.
- (d) Revisions to location, type, end treatments, riprap, skew, on drainage summary.

(4) Control sheets.

- (a) Show any control that was removed, destroyed, established, according to subsections 107.02, paragraph 2; 152.02, paragraph 2; and 152.03.
- (b) Use a unique naming convention for newly established control points. Do not reuse CFL control point numbers.

(5) Plan and profile and layout sheets.

- (a) Revisions to the alignment; grades, elevations and stationing of intersection PIs; station equations and superelevation.
- (b) Major changes in the construction limits; particularly changes requiring additional design, additional right of way, or contract modifications. (Show information on plan and profile, layout sheets, and right of way plans if applicable.)
- (c) Changes in permanent rights of way caused by acquisition during construction. (Show information on plan and profile, layout sheets, and right of way plans if applicable). In addition, annotate any construction completed according to agreements made with landowners during construction.
- (d) Revisions in location, type and grade of road approaches.
- (e) Revisions in locations of sub-excavation and roadway obliteration.
- (f) Location, type and elevation of all constructed or relocated utilities, aerial and underground. Location, type and elevation of utilities not previously or inaccurately mapped, but encountered during construction, indicated as “approximate” or “as mapped”. (Show information on plan and profile and layout sheets and utilities plans if applicable).
- (g) Location, size and type of underdrains.

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- (h) Location, number and type of horizontal, lateral, trench and blanket drains.
- (i) Revisions to culvert diameter, length, type, stationing, skew, riprap and end treatments.
- (j) Length of culvert extension, skew, and offset from centerline to the ends of extended culverts.
- (k) Channel changes.
- (l) Location of monuments and permanent references replaced according to subsection 107.02.
- (m) Location, length and type of fencing.
- (n) Location, length, stationing and type of walls.
- (o) Location, length, stationing and end treatment of roadside design features, including, but not limited to, guardrail, guardwall, signs, fences, gates, etc.
- (p) Revisions in location of pavement markings.
- (q) Revisions to parking areas or turnouts location.
- (r) Revisions in location, type and length of curbs, sidewalks, and accessible ramps.
- (s) Revisions to any notes.
- (t) Revisions to permanent erosion control measures.

(6) Structural Sheets.

- (a) Stationing of bridge ends.
- (b) Revisions to footing and seal elevations.
- (c) Pile length, size, type and tip elevation.
- (d) Modifications and repairs to drilled shafts.
- (e) Any changes in plan or dimensions including any major changes in reinforcing.

(7) Standards, Details, and Specials.

Revisions to notes, dimensions, locations, and materials.

No direct payment will be made for preparing and furnishing as-built working drawings. A retention of 1/10th of 1% of payment due will be withheld from project pay estimates if the Contractor has not kept current the designated set of as-built plans. In addition, a retention of 1/10th of 1% of the contract amount paid to date will be withheld at the end of the project until the set of as-built plans has been submitted to and accepted by the Project Engineer. The final completed as-built working drawings must be submitted to and accepted by the Contracting Officer before final acceptance will be granted on the project.

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104.05 Load Restrictions. Delete the Subsection and substitute the following:

104.05 Load Restrictions. Follow the requirements of FAR Clause 52.236-10 Operations and Storage Areas.

Comply with all legal load restrictions when hauling material and equipment on public roads to and from the project. A special permit does not relieve the Contractor of liability for damage resulting from the moving of material or equipment.

Unless otherwise permitted, do not operate equipment or vehicles that exceed the legal load limits over new or existing structures, or pavements within the project except those pavements intended to be removed during the same construction season.

Section 105. – CONTROL OF MATERIAL

105.01 Source of Supply and Quality Requirements. Add the following:

Transport import material directly from the source to Golden Gate National Recreation Area without intermediary storage or staging. Materials must also be transported and stored such that they will not acquire invasive non-native plant seeds from adjacent vegetation.

Non-native invasive plants, or noxious weeds, are species of plants that do not naturally occur in a particular area and have the potential to spread from their point of introduction into surrounding areas.

Obtain clearance or eradicate non-native plants by;

- (1) Provide certification by a county extension agent, agronomist, or other qualified invasive species expert that the source is free from exotic plants as determined by NPS; or
- (2) Notify the CO at least 2 weeks before beginning operations at the source or starting crushing to allow for investigation by the NPS for exotic plants. If exotics are found, the CO will determine if the upper portion of the source will need to be stripped or sprayed with a herbicide approved by the CO. If spraying is required, provide a licensed operator to spray according to applicable state regulations. Do not spray any herbicides until approved in writing by the CO. Spraying or stripping of material does not necessarily constitute approval.
- (3) If exotic plant clearance is not obtained, heat all material to 300 degrees Fahrenheit to ensure sterilization of any exotic plants before delivery of uncertified material. Do not stockpile the heated material outside the park boundaries prior to delivery. These requirements are waived if the contractor uses a source that meets the requirements stated in items (1) and (2) above.

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Submit samples of materials for quality verification testing for materials required to conform to Sections 703, 704, and 705.

Materials containing petroleum-based solvents such as cutback asphalts and traffic paints may be restricted from use by local laws or ordinances in certain geographic areas. Upon presenting proof of such restrictions, alternate materials considered acceptable to the CO may be substituted for the materials specified in the contract.

105.02 Material Sources

(b) Contractor-located sources. Add the following to the end of the first paragraph:

For Contractor-located, non-commercial sources, secure environmental clearances according to Subsection 107.10.

The following sources have been tested and are approved for earthen material import to the GGNRA:

1. Mark West Quarry, 4611 Porter Creek Road, Santa Rosa, CA
2. Stony Point Rock Quarry, 7171 Stony Point Road, Cotati, CA
3. San Rafael Quarry, 1000 Point San Pedro Road, San Rafael, CA. Only ¾-inch diameter or larger material is approved from the San Rafael Quarry.

105.04 Storing and Handling Material. Add the following after the third sentence of the second paragraph:

For Contractor-located, non-commercial staging, storing, and material handling areas, secure environmental clearances according to Subsection 107.10.

Add the following:

Equipment and material staging areas will be located in existing disturbed areas within construction limits or previously approved areas. The Contractor may use the following for staging equipment and/or storage of materials:

- Smith Road (Maintain a 100-foot buffer from the riparian area near Smith Road or protect with silt fence (Park will flag the boundaries of the riparian area). Install silt fence at the edge of the staging area to delineate and protect.
- Fort Cronkhite Dirt Overflow Lot. Use of lot is only permitted after all work is complete at both the Fort Cronkhite Parking Lot and the Fort Cronkhite Annex Parking Lot.
- Large parking area/ disturbed area off of Bunker Road west of the Baker-Barry tunnel. This location also is being used by USGS. All USGS equipment will be required to be protected by Contractor.

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Allow 14 days for approval prior to using any other areas for staging or storing materials and/ or equipment. An asphalt batch plant will not be permitted in the park.

Cover all material stockpiles with a tarp that are left inactive during the rainy season, between November 1 and March 31.

Section 106. – ACCEPTANCE OF WORK

106.01 Conformity with Contract Requirements. Delete the text and substitute the following:

Follow the requirements of FAR Clause 52.246-12 Inspection of Construction.

References to standard test methods of AASHTO, ASTM, GSA, and other recognized standard authorities refer to the methods in effect on the date of solicitation for bids.

Perform all work to the lines, grades, cross-sections, dimensions, and processes or material requirements shown on the plans or specified in the contract.

Incorporate manufactured materials into the work according to the manufacturer's recommendations or to these specifications, whichever is more strict.

Plan dimensions and contract specification values are the values to be strived for and complied with as the design values from which any deviations are allowed. Perform work and provide material that is uniform in character and reasonably close to the prescribed value or within the specified tolerance range. The purpose of a tolerance range is to accommodate occasional minor variations from the median zone that are unavoidable for practical reasons.

When standard manufactured items are specified (such as fence, wire, plates, rolled shapes, pipe conduits, etc., that are identified by gauge, unit mass, section dimensions, etc.), the identification will be considered to be nominal masses or dimensions. Unless specific contract tolerances are noted, established manufacturing tolerances will be accepted.

The Government may inspect, sample, or test all work at any time before final acceptance of the project. When the Government tests work, copies of test reports are furnished to the Contractor upon request. Government tests may or may not be performed at the work site. If Contractor testing and inspection is verified by the Government, the Contractor's results may be used by the Government to evaluate work for acceptance. Do not rely on the availability of Government test results for process control.

The number of significant figures used in the calculations will be according to ASTM E 29, absolute method.

Acceptable work conforming to the contract will be paid for at the contract unit bid price. Four methods of determining conformity and accepting work are described in Subsections 106.02 to

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106.05 inclusive. The primary method of acceptance is specified in each Section of work.

However, work may be rejected at any time it is found by any of the methods not to comply with the contract.

Remove and replace work that does not conform to the contract, or to prevailing industry standards where no specific contract requirements are noted, at no cost to the Government.

(a) Disputing Government test results. If the accuracy of Government test results is disputed, promptly inform the CO. If the dispute is unresolved after reasonable steps are taken to resolve the dispute, further evaluation may be obtained by written request. Include a narrative describing the dispute and a proposed resolution protocol that addresses the following:

- (1) Sampling method
- (2) Number of samples
- (3) Sample transport
- (4) Test procedures
- (5) Testing laboratories
- (6) Reporting
- (7) Estimated time and costs
- (8) Validation process

If the evaluation requires additional sampling or testing be performed, mutually agree with the Government on witnessing procedures and on sampling and testing by a third party laboratory. Use a third party laboratory accredited by the AASHTO accreditation program. Provide proof of the laboratory's accreditation for the test procedures to be used. Do not use the same laboratory that produced the disputed Government test results or that produced the test results used as a basis for the dispute.

The CO will review the proposed resolution protocol and may modify it before final approval and execution.

The Government will use the approved resolution protocol test results to determine the validity of the disputed testing. If the Government test results are validated, the Contractor will be responsible for all costs associated with developing and performing the resolution protocol. If the Government test results are not validated, the Government will be responsible for all costs associated with developing and performing the resolution protocol. If the validity of the Government test results cannot be determined, the Contractor and Government will equally share all costs associated with developing and carrying out the resolution protocol.

(b) Alternatives to removing and replacing non-conforming work. As an alternative to removal and replacement, the Contractor may submit a written request to:

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- (1) Have the work accepted at a reduced price; or
- (2) Be given permission to perform corrective measures to bring the work into conformity.

The request must contain supporting rationale and documentation. Include references or data justifying the proposal based on an evaluation of test results, effect on service life, value of material or work, quality, aesthetics, and other tangible engineering basis. The CO will determine disposition of the nonconforming work.

Where sample/testing procedures make reference to AASHTO, ASTM, or other standards (designated as FLH T), the procedure as modified in the Materials Manual shall govern. Where the specifications make reference to AASHTO Test T11, "Procedure B - Washing Using a Wetting Agent" shall be the procedure followed.

Where the specifications make reference to AASHTO Test T310, "Direct Transmission Method of In-Place Nuclear Density and Moisture Content" shall be the procedure followed.

Reference to the Materials Manual means the Federal Lands Highway "Field Materials Manual, U.S. Department of Transportation, Federal Highway Administration," dated October 2008, and all amendments and supplements thereto. Copies are available upon request by e-mail to cflcontracts@dot.gov, or fax to (720) 963-3360 and located on our website at <http://www.cflhd.gov/materials>.

106.03 Certification. Add the following after the second paragraph:

See Table 106-3 for schedule for full or partial acceptance by material certification. Submit certification and sample of material for testing as required.

106.05 Statistical Evaluation of Work and Determination of Pay Factor (Value of Work).

(b) Acceptance. Delete the last sentence of the second paragraph and substitute the following:

If a lot is concluded or terminated with fewer than three samples, the samples will be combined with those of an adjacent lot. In the event there is no adjacent lot, the material will be accepted according to Subsection 106.04.

(c) Statistical evaluation. Delete the second paragraph and substitute the following:

The number of significant figures used in the calculations will be according to ASTM E 29, absolute method.

Table 106-2 Pay Factor.

The Pay Factor 1.03, category I row: Delete the value 84 in the n=9 column and substitute the value 94.

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The Pay Factor 0.75, category II row: Delete the value 35 in the n=3 column and substitute the value 25.

~~August 21, 2012~~ December 7, 2012**Table 106-3 Schedule for Full or Partial Acceptance by Materials Certification.** Add Table 106-3 following Table 106-2.**Table 106-3
Schedule for Full or Partial Acceptance by Materials Certification**

Section	Description	Material	Material Property Or Specification	Frequency	
				Certification	Sample
306	Dust Palliative	Magnesium Chloride, Emulsified Asphalt, Lignin Sulfonate, Calcium Chloride	As specified	1 per shipment	First shipment
308	Minor Crushed Aggregate	Crushed Aggregate	Source, Quality and Gradation	1 per source	1 per source
404 and 417	Minor Hot Asphalt Concrete, Minor Cold Asphalt Mix	Aggregate Asphalt Mix	Source quality, Gradation, Stability, and Grade	1 per mix	1 per source
634 and 635	Permanent Pavement Markings, Temporary Traffic Control	634.02 as applicable, 635 as applicable	As specified	1 per source	-----
701	Hydraulic Cement	Portland Cement, Blended Hydraulic Cement and Masonry Cement	AASHTO M 85, M 240, and ASTM C 91	1 per shipment	1 per 100 tons
702.01	Asphalt Material	Asphalt Cement	AASHTO M 20, M 226, MP 1 or as applicable	1 per shipment	1 per shipment
702.02	Asphalt Material	Cut-back Asphalt	AASHTO M 81 or M 82 as applicable	1 per shipment	1 per shipment
702.03	Asphalt Material	Emulsified Asphalt	AASHTO M 140 or M 208 as applicable	1 per shipment	1 per shipment
702.05	Asphalt Material	Asphalt Materials used for Damproofing and Waterproofing Concrete Surfaces	As specified for each type of asphalt material	1 per shipment	-----
702.06	Recycling Agent	As specified	As applicable	1 per shipment	1 per shipment
702.08	Antistrip	As specified	As applicable	1 per shipment	-----
706	Concrete and Plastic Pipe	As specified	As applicable	1 per shipment	-----
707	Metal Pipe	Metal Pipe as specified	As applicable	1 per shipment	-----
708	Paint	As specified	As applicable	1 per batch\lot	1 sample for quantities > (25 gallons)

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Section	Description	Material	Material Property Or Specification	Frequency	
				Certification	Sample
709	Reinforcing Steel and Wire Rope	As specified	As applicable	1 per shipment	For 709.01 & 709.03 submit 3, 1-yard bars of each size and grade of bar furnished. 709.02 submit 1 6-foot length for each size furnished
710	Fence and Guardrail	As specified	As applicable	1 per shipment	-----
711	Concrete Curing Material and Admixtures	As specified	As applicable	1 per material source per material type	-----
712	Joint Material (all)	As specified	As applicable	1 per shipment	-----
713	Roadside Improvement Materials (all)	As specified	As applicable	1 per shipment	-----
714	Geotextile and Geocomposite Drain	As specified	As applicable	1 per shipment	1 per project per type
715	Piling	As specified	As applicable	1 per shipment	-----
716	Material for Timber Structures	Timber and Hardware	As applicable	1 per shipment	-----
717	Structural Metal	As specified	As applicable	1 per shipment	717.01(e) minimum 6 per shipment for each size used. 717.10 1 per project
718	Traffic Signing and Marking (all)	As specified	As applicable	1 per shipment	-----
720	Structural Wall and Stabilized Materials (all)	As specified	As applicable	1 per shipment per material type	-----
721	Electrical and Illumination Material (all)	As specified	As applicable	1 per shipment per material type	-----
722	Anchor Material	As specified	As applicable	1 per shipment per material type	-----
725	Miscellaneous materials	As specified	As applicable	1 per shipment per material type	-----

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Section 107. – LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

107.01 Laws to be Observed. Add the following:

“Good Housekeeping” Practices and Requirements.

Locate machinery servicing and refueling areas 100 feet away from streambeds and washes to reduce the possibility and minimize the impacts of accidental spills or discharges.

Where the Contractor’s working area encroaches on a running or intermittent stream, construct and maintain adequate barriers to prevent the discharge of any contaminants into the stream.

Fording of running streams with construction equipment will not be permitted. Obtain approval from the CO to use temporary bridges or other structures whenever crossings are necessary.

Immediately clear ephemeral drainages, intermittent and perennial streams, lakes and reservoirs of all work items, debris or other obstructions inadvertently placed thereby or resulting from construction operations.

Staging and work areas shall be kept free of trash and food waste. Trash and food waste shall be placed into appropriate, covered trash receptacles.

Do not feed wildlife.

Ensure portable sanitary facilities are securely anchored to prevent tipping due to high winds or vandalism.

Section 401 and 404 of the Clean Water Act.

Comply with the terms and conditions of the 404 permit and with the terms and conditions, if any, specified in the 401 certification. Comply with the terms and conditions of any permits that are issued for the performance of work within the jurisdictional waters of the U.S.

National Pollutant Discharge Elimination System (NPDES) in California

Comply with the requirements of the California Construction General Permit (CGP) CAR000002 for California. A copy of the permit is located at:

http://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/constpermits/wqo_2009_0009_complete.pdf

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(a) General. Designate the Erosion Control Supervisor according to Subsection 157.03 who will be responsible for implementing the Storm Water Pollution Prevention Plan (SWPPP). The Erosion Control Supervisor must be a Qualified SWPPP Practitioner (QSP) familiar with the CGP and the SWPPP procedures and practices.

Obtain a separate NPDES permit associated with industrial activity for any mobile asphalt and concrete plants that provide material for the project. Provide a copy of the permit and acknowledgement letter to the CO for their records.

(b) Preparation of SWPPP. The Government has prepared a draft SWPPP for the project and determined the project is Risk Level 2. Designate a Qualified SWPPP Developer (QSD) certified by the State of California to update the draft SWPPP for the project or develop a new SWPPP and provide to the CO for review. When the SWPPP is approved and signed by the CO, QSD, and Contractor, it will be the document in force on the project. Provide an electronic copy of the approved SWPPP to the CO for inclusion in permit registration documents. Implement the SWPPP as required throughout the construction period.

Provide the QSD SMARTS username information to the CO for designation as a data submitter for the project in the system. Additional data submitters, such as laboratories, may also be provided to the CO, if necessary.

Retain the QSD for the duration of the project to write and approve amendments to the SWPPP. The QSD may modify the erosion and sediment control details and layout sheets included in the plans, as necessary, to address project site conditions and proposed construction operations. Submit changes to CO for contractual approval and include them in the SWPPP.

(c) Permit Registration Documents. The Government will file these documents upon receipt of the approved SWPPP. Allow 21 calendar days for submittal and approval by the State Water Board. Post a copy of the NOI acknowledgement at the construction site bulletin board throughout the duration of the project. Do not perform any ground disturbing activities including clearing and grubbing or earthwork until the SWPPP has been approved and implemented and an acknowledgement letter is received from the State Water Board.

(d) Inspections and Revisions to the SWPPP. Conduct inspections according to the CGP. Document the inspections on forms provided in the SWPPP. Retain inspection forms onsite in the SWPPP notebook throughout the construction period.

Revisions to the SWPPP by a QSD may be necessary during construction to make improvements or to respond to unforeseen conditions noted during construction or site inspections. For that purpose, specify in the SWPPP the mechanism whereby revisions may be proposed by the Contractor or the CO and incorporated into the plan, including review and approval of minor

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changes. Jointly approve and sign each revision to the SWPPP before implementation. Begin implementation of approved modifications within 72 hours following the inspection when deficiencies or necessary corrections were first noted.

Place the SWPPP and all updates in a three-ring binder so that completed inspection forms and other records may be inserted. Maintain a current copy of the SWPPP, including a copy of the permit, NOI, Waste Discharge Identification (WDID), and all associated records and forms at the job site throughout the duration of the project. Make the SWPPP available for public inspection and for the inspection and use of the CO.

At the completion of the project, provide the CO and NPS with the complete SWPPP, including inspection forms, logs, monitoring reports, and any other information added during the project.

Caltrans Encroachment Double Permit

For all work on Alexander Avenue (Option X) within Caltrans right of way comply with the conditions of the Caltrans Encroachment permit number 0412 NMC 0254 located in the Appendix.

Contractor is required to apply for and obtain an encroachment permit prior to performing work within Caltrans right of way on Alexander Avenue (Option X). The Contractor's encroachment permit application must state that it is a "Double Permit for permit number 0412 NMC 0254". The submittal for the double permit may be mailed or delivered to:

Caltrans District 04 Permit Office
Attention: Julie Hsu
111 Grand Ave, 6th Floor
P.O. Box 23660
Oakland, CA 94623-0660

Golden Gate Bridge, Highway and Transportation District Right of Entry Permit (Option X)

For all work on Alexander Avenue (Option X) within Golden Gate Bridge, Highway and Transportation District (GGBHTD) right of way comply with the conditions of the government's Right of Entry Permit (to be obtained prior to notice to proceed).

Contractor is required to apply for and obtain a separate Right of Entry Permit prior to performing within Golden Gate Bridge, Highway and Transportation District right of way. A permit fee of \$500 will be assessed.

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107.02 Protection and Restoration of Property and Landscape.

Add the following:

Protect historic batteries, bunkers, tunnels, and related features, and existing concrete curbs, gutters, and sidewalks, from damage including asphalt and emulsion overspray. Use protective covers to protect the adjacent features.

At historic curb, gutters and paved waterways to be preserved, saw cut the seam between the concrete and the pavement prior to the pavement removal.

Notify the CO if historic curb, gutter, or other historic features are damaged. Repair damage at no cost to the Government.

Notify the Park Archeologist, Peter Gavette (415) 289-1893, two weeks prior to the beginning of ground disturbing activities for the project. After the initial ground disturbing activities, all future ground disturbing activities are required to be scheduled on the construction schedule. See Section 108 for Weekly Planning/Reporting Meeting requirements. NPS will advise the Contractor and CO if construction activities will occur or are occurring within Archeologically Sensitive Areas.

All drainage construction work is also required to be scheduled on the construction schedule. A NPS Biologist Monitor will survey and clear the area prior to commencement of work in the area.

Delete the sixth paragraph and substitute the following:

The Contractor shall contact Underground Service Alert (USA) (1-800-642-2444) seven (7) calendar days prior to start of each area of work and will be responsible for maintaining a valid USA location tag through renewal during the construction. The Utility Locator Service may also be accessed by dialing 811. See www.call811.com for additional information. The Contractor will schedule a utility field meeting prior to any excavation. This will be so stated in the USA notification. The Contractor will be responsible to coordinate the utility field meeting at which time he will explain the limits and impacts to USA member utilities. Protect utilities from construction operations. Cooperate with utility owners to expedite the relocation or adjustment of their utilities to minimize interruption of service, duplication of work, and delays.

The sanitary sewer and water lines within Marin Headlands are owned by NPS. These utilities will not be marked out by USA. It is the Contractor's responsibility to field locate and mark all utilities within the project work area a minimum of 3 days prior to ground disturbance. Notify the CO upon completion of field location and marking for review. No trenching may be performed prior to field location, marking, and CO review. Utility plans will be made available to the Contractor upon request.

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Add the following:

The locations of the utilities shown in the plans have been certified to a Quality Level B, with spot locations certified to a Quality Level A according to the CLFHD Utility Data Quality Certification requirements:

<http://www.cflhd.gov/resources/surveymaprow/documents/RoW-UtilityCertification.doc>

Conduct a utility specific pre-construction meeting to coordinate utility work with affected utility owners.

Construct concrete collars for utility accesses (manholes, valves, boxes, etc.) in concrete drive pads. Collars shall be formed to the same shape as the access, provide 12-inches clear on all sides, and the access shall be centered within the collar. Finishing work shall be smooth, uniform and match the proposed concrete grade in all locations. If sawcutting is required, saw cut for a clean look using these same requirements. Concrete shall be per Section 601.

For utility accesses within existing asphalt with existing concrete collars, concrete collars shall be formed to the same shape as the access, provide 12-inches clear on all sides, and the access shall be centered within the collar. Finishing work shall be smooth, uniform and match the proposed asphalt grade in all locations. If sawcutting is required, saw cut for a clean look using these same requirements. Concrete shall be per Section 601. Payment for concrete collars shall be subsidiary to the work.

~~August 21, 2012~~ December 7, 2012**Summary of Status of Utilities:**

Utility Type	Status	Contact Name	Contact Number	Contact Info
T	1	Bob Edgar (field) Anita Gabrielson	(707) 575-2089 (707) 575-2077	AT&T Engineering 2125 Occidental Road Santa Rosa, CA 95401
G (NPS)	2	Sondi Matovich (cell)	(415) 289-3101 (415) 559-9533	Golden Gate National Recreation Area Building 201, Fort Mason San Francisco, CA 94123
P (NPS)	2	Sondi Matovich (cell)	(415) 289-3101 (415) 559-9533	Golden Gate National Recreation Area Building 201, Fort Mason San Francisco, CA 94123
P	1, 3	Tosin Ladeinde (cell) (fax)	(415) 257-3174 (415) 302-4820 (415) 257-3429	PG&E Service Planning 1220 Anderson Drive San Rafael, CA 94901
P (GGBHTD)	1, 3	Paul Wong (office)	(415) 923-2322	Golden Gate Bridge, Highway, and Transportation District Box 9000, Presidio Station San Francisco, CA 94124 pwong@goldengate.org
W (NPS)	2	Sondi Matovich (cell)	(415) 289-3101 (415) 559-9533	Golden Gate National Recreation Area Building 201, Fort Mason San Francisco, CA 94123
SS (NPS)	1, 2 and 4	Sondi Matovich (cell)	(415) 289-3101 (415) 559-9533	Golden Gate National Recreation Area Building 201, Fort Mason San Francisco, CA 94123
Unknown (NPS)		David Dusterhoff (cell)	(415) 561-4977 (415) 317-2152	Golden Gate National Recreation Area Building 201, Fort Mason San Francisco, CA 94123
UTILITY TYPE KEY	FO	Fiberoptic		P Power
	T	Telephone		W Water
	G	Gas		SS Sanitary Sewer

Status 1: The utilities are in conflict with the project and REQUIRE relocation by OTHERS DURING construction.

Status 2: The utilities are in conflict with the project and REQUIRE relocation by the Contractor DURING construction.

Status 3: The utilities are in conflict with the project and REQUIRE relocation BEFORE construction.

Status 4: The utilities are located within the project rights of way but require NO relocation.

AT&T Engineering – Underground Telephone

The Contractor is required to install new automated gate at the Fort Cronkhite Annex Parking Lot. The Contractor shall locate existing telephone service to the existing gate and extend telephone service to the new gate location. Extension of the telephone service shall be coordinated with AT&T. Payment for this work shall be under Item 63601-3100, System Installation, Telephone, LPSM.

The Contractor is required to remove six existing junction boxes along Bunker Road 60+00 to 91+00 LT. The junction boxes shall be replaced with new junction boxes per subsection 636.02. Install approximately 10-feet of 4-inch conduit on each side of the new vaults in coordination with AT&T to allow cable installation. Removal, replacement, conduit, and backfilling shall be coordinated with AT&T. Payment for this work shall be made under Item 20304-1000, Removal of Structures and Obstructions, LPSM; Item 63621-3000, Utility Box, Junction Box, EACH; and Item 63610-2800, Conduit, 4-inch, PVC, LNFT.

Underground telephone and above ground appurtenance relocations will be completed by AT&T Engineering before or during construction as coordinated with the Contractor. The relocations are noted in the table below. The Contractor is responsible for potholing of the existing telephone lines to ensure the work will not impact existing facilities. Assume 15 potholes will be required. Payment for potholing is included in the price bid for Removal of Structures and Obstruction, Lump Sum.

Status 2 Utilities: Utilities are in conflict with the project and require relocation by the Contractor during construction.

Utility Type	Location	Station	Offset (ft)	Utility Conflict or Exception to Minimum Clearance	Adjustment Notes
T	Mitchell Road	30+16	15' L and 15' R	Telephone line relocation	Telephone line relocation at culvert crossing.
T	Fort Cronkhite Annex Parking Lot			Potential telephone line relocation. Verify depth.	Telephone lines in the vicinity of the parking lot

Status 2 Utilities: Utilities are in conflict with the project and require relocation by the Contractor during construction.

Utility Type	Location	Station	Offset (ft)	Utility Conflict or Exception to Minimum Clearance	Adjustment Notes
T	Mitchell Road	37+12	9' R	Telephone utility box removal and replacement	Removal and replacement
T	Bunker Road	60+95	17' L	Telephone utility box removal and replacement	Removal and replacement
T	Bunker Road	61+84	15' L	Telephone utility box removal and replacement	Removal and replacement
T	Bunker Road	66+65	16' L	Telephone utility box removal and replacement	Removal and replacement
T	Bunker Road	79+87	16' L	Telephone utility box removal and replacement	Removal and replacement
T	Bunker Road	90+17	14' L	Telephone utility box removal and replacement	Removal and replacement

PG&E Service Planning / Golden Gate National Recreation Area (GGNRA) – Electric / Power

Fort Cronkhite Annex Parking Lot – Along the north edge of the parking lot, behind the sidewalk, along the east side of Access Road #2, and behind the sidewalk along the south side of Access Road #1. The Contractor is to install new 4-inch conduit and utility pull boxes for new electrical lines that will be used for future pedestrian lighting (pedestrian lighting is not included in this contract). Payment for this work shall be under Item 63610-2800, Conduit, 4-inch, PVC, LNFT. Payment for utility pull box work shall be under Item 63621-1000, Utility Box, Pullbox, EACH.

Fort Cronkhite Annex Parking Lot – Contractor to locate existing electrical service to the existing gate and extend the service to the new gate location. Extension of electrical service shall be coordinated with PG&E. Payment for this work shall be under Item 63640-0700, Relocate Electrical Line, LPSM.

Electric line facility relocation will be completed by PG&E and GGNRA before or during construction as coordinated with the Contractor. The relocations are noted in the table below. Contractor is responsible for potholing existing electric lines to ensure operations will not impact existing facilities. Assume a minimum of 8 potholes will be required. Payment for potholing is included in the price bid for Removal of Structures and Obstructions, Lump Sum.

Status 1 Utilities: Utilities are in conflict with the project and require relocation by others during construction.

Utility Type	Location	Station	Offset (ft)	Utility Conflict or Exception to Minimum Clearance	Notes
P	Bunker Road	62+59	20' L	Power pole relocation or adjustment by others	Existing power pole adjacent to new pavement.

Golden Gate Bridge, Highway, and Transportation District – Electric / Power

Alexander Avenue – 202+00± to 206+50±. The Contractor is to install new 4-inch conduit and utility pull boxes for new electrical lines. Payment for 4-inch conduit work shall be under Item 63610-2800, Conduit, 4-inch, PVC, LNFT. Payment for utility pull box work shall be under Item 63621-1000, Utility Box, Pullbox, EACH.

Status 2 Utilities: Utilities are in conflict with the project and require relocation by the Contractor during construction.

Utility Type	Location	Station	Offset (ft)	Utility Conflict or Exception to Minimum Clearance	Notes
P	Alexander Avenue	202+00 to 206+50	RT	Electrical for lighting requires line relocation and relocation of two light poles.	Utility box adjustment
P	Alexander Avenue	206+85	10' RT	Electrical manhole adjustment	Adjust manhole rim elevation in limits of new pavement.
P	Alexander Avenue	208+35	14' RT	Electrical manhole adjustment	Adjust manhole rim elevation in limits of new pavement.

Payment for relocation of light poles shall be under Item 61709-1000, Remove and Reset Utility Pole, EACH. Payment for manhole adjustment work shall be under Item 60405-0000, Manhole Adjustment, EACH.

Golden Gate National Recreation Area – Communications

Bunker Road – Station 63+00± RT to 87+50± RT. The Contractor is to install new 4-inch conduit and utility pull boxes for new communications lines. Payment for this work shall be under Item 63610-2800, Conduit, 4-inch, PVC, LNFT and Item 63621-2000, Utility Box, Telephone Pullbox, EACH. See Section 636.

~~August 21, 2012~~ December 7, 2012**Golden Gate National Recreation Area – Gas**

Abandoned gas line removal shall be completed by the Contractor during construction. The removal is noted in the table below. Contractor is responsible for potholing of the existing gas lines to ensure the work will not impact existing facilities. Assume 8 potholes will be required. Payment for potholing is included in the price bid for Removal of Structures and Obstruction, Lump Sum.

Status 2 Utilities: Utilities are in conflict with the project and require relocation by the Contractor during construction.

Utility Type	Location	Station	Offset (ft)	Utility Conflict or Exception to Minimum Clearance	Notes
G	Mitchell and Bunker Road	36+80 to 43+00	Varies	Abandoned gas line removal	Shallow gas line in intersection of Mitchell Road and Old Bunker Road and along gabion wall

Payment for gas line removal is included in Item 20304-1000, Removal of Structures and Obstructions, LPSM

Golden Gate National Recreation Area – Sanitary Sewer

The existing sanitary sewer infrastructure within the project limits requires adjustments during construction by others and by the Contractor as follows:

Status 2 Utilities: Utilities are in conflict with the project and require relocation by the Contractor during construction.

Utility Type	Location	Station	Offset (ft)	Utility Conflict or Exception to Minimum Clearance	Notes
SS	Bunker Road	136+90	17' R	Utility box adjustment	Utility box adjustment in Menges Street adjacent to new Bunker Road pavement
SS	Bunker Road	136+95	17' R	Utility box adjustment	Utility box adjustment in Menges Street adjacent to new Bunker Road pavement
SS	Bunker Road	146+50	14' R	Utility box adjustment	Utility box adjustment in Lamoraux Drive adjacent to new Bunker Road pavement
SS	Bunker Road	146+55	14' R	Utility box adjustment	Utility box adjustment in Lamoraux Drive adjacent to new Bunker Road pavement

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Utility Type	Location	Station	Offset (ft)	Utility Conflict or Exception to Minimum Clearance	Notes
SS	Bunker Road	156+74	10' R	Utility box adjustment	Utility box adjustment adjacent to new Bunker Road pavement
SS	Bunker Road	156+79	10' R	Utility box adjustment	Utility box adjustment adjacent to new Bunker Road pavement
SS	Mitchell Road	12+28	25' L	Sanitary manhole adjustment	Adjust manhole in limits of Ft. Cronkhite Parking Lot improvements.
SS	Mitchell Road	16+18	13' L	Sanitary manhole adjustment	Manhole adjustment north of Bunker Road improvements
SS	Mitchell Road	21+57	21' L	Sanitary manhole adjustment	Manhole adjustment north of Bunker Road improvements
SS / Verify	Mitchell Road	22+51	8' R	Utility manhole adjustment	Manhole adjustment in Bunker Road pavement. Verify what utility manhole is.
SS	Mitchell Road	24+27	16' L	Sanitary manhole adjustment	Manhole adjustment adjacent to new Bunker Road pavement
SS	Mitchell Road	30+28	23' L	Sanitary manhole adjustment	Manhole adjustment north of Bunker Road improvements
SS	Mitchell Road	32+84	23' L	Sanitary manhole adjustment	Manhole adjustment north of Bunker Road improvements
SS	Mitchell Road	34+28	16' L	Sanitary manhole adjustment	Manhole adjustment north of Bunker Road improvements
SS	Mitchell Road	37+12	9' R	Sanitary manhole adjustment	Manhole adjustment adjacent to Bunker Road pavement
SS	Bunker Road	60+48	16' R	Sanitary manhole adjustment	Manhole adjustment adjacent to Bunker Road pavement
SS	Bunker Road	109+66	16' L	Sanitary manhole adjustment	Manhole adjustment adjacent to Bunker Road pavement
SS	Fort. Cronkhite Annex	North of Parking Lot		Verify depth of sanitary sewer manhole and that pipe will maintain 4 feet of cover during grading operations.	Contractor to verify sewer depth prior to earthwork activities for the parking lot.
SS	Field Road	2+195 to 2+450		Five sanitary manhole adjustments	Adjust to top lift of paving

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Payment for manhole adjustment work shall be under Item 60405-0000, Manhole Adjustment, EACH.

Status 2 Utilities: Utilities are in conflict with the project and may require relocation by the Contactor during construction.

Utility Type	Location	Station	Offset (ft)	Utility Conflict	Utility Note
SS	Bunker Road	138+70±	12' L±	Steel valve adjustment or abandonment.	Existing sewer line is abandoned. However, Contractor needs to be aware of existing valves. Valves may need to be adjusted to finished grade if the valve will be a safety hazard or does not match existing grade. Valve riser may be removed and valve buried per the direction of the CO.
SS	Bunker Road	142+20±	14' L±	Steel valve adjustment or abandonment.	Existing sewer line is abandoned. However, Contractor needs to be aware of existing valves. Valves may need to be adjusted to finished grade if the valve will be a safety hazard or does not match existing grade. Valve riser may be removed and valve buried per the direction of the CO.
SS	Bunker Road	146+25±	14' L±	Steel valve adjustment or abandonment.	Existing sewer line is abandoned. However, Contractor needs to be aware of existing valves. Valves may need to be adjusted to finished grade if the valve will be a safety hazard or does not match existing grade. Valve riser may be removed and valve buried per the direction of the CO.
SS	Bunker Road	150+55±	17' L±	Steel valve adjustment or abandonment.	Existing sewer line is abandoned. However, Contractor needs to be aware of existing valves. Valves may need to be adjusted to finished grade if the valve will be a safety hazard or does not match existing grade. Valve riser may be removed and valve buried per the direction of the CO.

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Utility Type	Location	Station	Offset (ft)	Utility Conflict	Utility Note
SS	Bunker Road	154+25±	16' L±	Steel valve adjustment or abandonment.	Existing sewer line is abandoned. However, Contractor needs to be aware of existing valves. Valves may need to be adjusted to finished grade if the valve will be a safety hazard or does not match existing grade. Valve riser may be removed and valve buried per the direction of the CO.
SS	Bunker Road	157+50±	16' L±	Steel valve adjustment or abandonment.	Existing sewer line is abandoned. However, Contractor needs to be aware of existing valves. Valves may need to be adjusted to finished grade if the valve will be a safety hazard or does not match existing
SS	Bunker Road	161+20±	17' L±	Steel valve adjustment or abandonment.	Existing sewer line is abandoned. However, Contractor needs to be aware of existing valves. Valves may need to be adjusted to finished grade if the valve will be a safety hazard or does not match existing grade. Valve riser may be removed and valve buried per the direction of the CO.

Payment for valve adjustment work shall be under Item 61108-1000, Adjust Water Valve, EACH. Payment for manhole adjustment work shall be under Item 60405-0000, Manhole Adjustment, EACH.

Golden Gate National Recreation Area – Water

Water line facility relocation will be completed by Contractor during construction. The relocations are noted in the table below. Contractor is responsible for potholing of the existing water lines to ensure the work will not impact existing facilities. Assume a minimum of 20 potholes will be required. Payment for potholing is included in the price bid for Removal of Structures and Obstruction, Lump Sum.

Status 2 Utilities: Utilities are in conflict with the project and relocation by the Contractor during construction.

Utility Type	Location	Station	Offset (ft)	Utility Conflict or Exception to Minimum Clearance	Adjustment Notes
W	Mitchell Road	37+06	14' L	Water valve box adjustment	Utility box adjustment in intersection of Mitchell Road and Old Bunker Road.
W	Bunker Road	60+42	15' L	Water manhole adjustment	Utility box adjustment adjacent to new Bunker Road pavement.
W	Bunker Road	80+15	5' L	Water valve box adjustment	Utility valve adjustment in new Bunker Road pavement
W	Bunker Road	135+00	Verify	Water valve box adjustment	Utility valve adjustment adjacent to new Bunker Road pavement
W	Bunker Road	162+00	16' L	Water valve adjustment	Utility valve adjustment adjacent to new Bunker Road pavement
W	FT. Cronkhite Annex	Access Road #1 307+00	24' R	Water valve adjustment	Water valve grade adjustment in intersection of Access Road #1 and Access Road #2
W	FT. Cronkhite Annex	Access Road #1 307+00	24' R	Water valve adjustment	Water valve grade adjustment in intersection of Access Road #1 and Access Road #2
W	FT. Cronkhite Annex	Access Road #1 307+58	24' R	Adjust water meter vault to proposed grade (manhole adjustment)	Water meter grade adjustment just east of intersection of Access Road #1 and Access Road #2

Payment of valve adjustment work shall be under Item 61108-1000, Adjust Water Valve, EACH. Payment for water meter vault adjustment work shall be under Item 60405-0000, Manhole Adjustment, EACH.

107.03 Bulletin Board. Delete the text and substitute the following:

107.03 Bulletin Board. Furnish a weatherproof bulletin board of suitable size and construction for continuous display of posters and other information required by the contract. Erect and

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maintain the bulletin board at a conspicuously accessible location on the project and remove and dispose of it after final acceptance.

Display each of the following documents on the bulletin board:

- (a) "Equal Opportunity" poster, according to FAR Clause 52.222-26 Equal Opportunity;
- (b) "Notice" that the project is subject to Title 18, U.S. Criminal Code, Section 1020, FHWA Form 1022;
- (c) "Notice to Employees" poster, WH-1321, regarding proper pay;
- (d) "Right to Safe and Healthy Workplace" poster, according to Title 29, Code of Federal Regulations, Part 1903;
- (e) "General Wage Decision" contained in the contract;
- (f) Company equal employment opportunity policy, according to Title 41, Code of Federal Regulation, Part 60-741.44;
- (g) Emergency phone numbers (In areas where 911 is not available), according to Title 29, Code of Federal Regulation, Part 1926.50(f);
- (h) "Family and Medical Leave Act" poster, WH-1420, according to Title 29, Code of Federal Regulation, Part 825.300(a);
- (i) "Employee Polygraph Protection Act" poster, WH 1462; and
- (j) Employee Rights Under The National Labor Relations Act, according to Executive Order 13496.

107.05 Responsibility for Damage Claims. Delete the first paragraph and insert the following:

Indemnify and hold harmless the Government, the California Department of Transportation, and the Golden Gate Bridge, Highway, and Transportation District, their directors, officers, employees, agents, and consultants from suits; actions; or claims brought for injuries or damage received or sustained by any person, persons, or property resulting from the construction operations or arising out of the negligent performance of the contract.

107.08 Sanitation, Health, and Safety. Add the following:

If hazardous materials are encountered, stop work and notify the CO immediately.

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There will be considerable contact with poison oak during construction. Implement appropriate protection measures when working in or around poison oak.

- (a) Soil Sampling.** Areas at the Fort Cronkhite Annex Parking Lot and Smith Road Parking Lot will require soil sampling analyzed for petroleum as gasoline, diesel, motor oil, and BTEX (benzene, toluene, ethylbenzene, and xylenes), with silica gel clean up on a dry weight basis. Initial evaluation for contaminated soils was conducted and reported in the *After Action Report for Bunker and Mitchell Roads and Alexander Avenue Soil Investigation, Marin County, California*, dated August 2012 by ERGG, Inc. This report shall be used as a guide for soil sampling for the project.

Sampling shall be done by an approved environmental contractor and laboratory. Submit qualifications of environmental contractor and laboratory for approval to the CO a minimum of 30 days prior to sampling. Ten soil samples shall be collected at locations as directed by the CO and in coordination with NPS and the environmental contractor. Sampling shall be in accordance with the Department of Toxic Substances Control's "Information Advisor, Clean Imported Fill Material". Sampling shall include digging each location to a depth of at least two and a half (2.5) feet.

Sampling shall include the following:

- Confirmation sampling
- Stain identification
- Analysis to determine contamination levels
- Testing conclusions and recommendations for soil reuse or removal.

Sample results shall confirm that the soil left in place contain levels of contaminants below The Presidio Trust's preliminary remediation goals for residential levels and if existing material is suitable for reuse. Provide sample results to the CO.

Backfill operations for areas with visible stains or visually apparent contaminated soils cannot begin until soil has been tested and confirmed to contain contaminant levels below residential levels.

See subsection 204.14 and 204.16.

Soil sampling will not be measured and paid for separately and shall be subsidiary to the work.

107.10 Environmental Protection. Delete the text and substitute the following:

107.10 Environmental Protection. Submit a Spill Prevention, Control, and Countermeasure (SPCC) plan for sites that meet the requirements of 40 CFR Part 112. Refer to EPA checklist at the following web address:

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http://www.epa.gov/emergencies/docs/oil/spcc/guidance/G_Bulk_Storage_Checklist.pdf

Submit and follow the Hazardous Spill Plan when an SPCC plan is not required. Develop a plan describing what actions will be taken in case of a spill and incorporate preventative measures to be implemented (such as the placement of refueling facilities and the storage and handling of materials).

Submission of either plan must be made at least 2 days before beginning work.

(a) Spills of petroleum products or hazardous materials. Properly clean up, mitigate, and remedy, if necessary, all spills of petroleum products, hazardous materials, or other chemical or biological products released from construction, fleet, or other support vehicles, or stationary sources. Respond in accordance with federal, state, and local regulations.

Immediately report to the CO any spill of petroleum products or a hazardous material. Report the spill to the appropriate federal, state, and local authorities, if the spill is a reportable quantity.

(b) Water pollution. Do not operate mechanized equipment or discharge or otherwise place any material within the wetted perimeter of any waters of the U.S. within the scope of the Clean Water Act (33 USC § 1251 et seq.). This includes wetlands unless authorized by a permit issued by the U.S. Army Corps of Engineers according to 33 USC § 1344, and, if required, by any State agency having jurisdiction over the discharge of material into the waters of the U.S. In the event of an unauthorized discharge:

- (1) Immediately prevent further contamination;
- (2) Immediately notify appropriate authorities; and
- (3) Mitigate damages as required.

Comply with the terms and conditions of any permits that are issued for the performance of work within the wetted perimeter of the waters of the U.S.

Separate work areas, including material sources, by the use of a dike or other suitable barrier that prevents sediment, petroleum products, chemicals, or other liquid or solid material from entering the waters of the U.S. Use care in constructing and removing the barriers to avoid any discharge of material into, or the siltation of, the water. Remove and properly dispose of the sediment or other material collected by the barrier.

(c) Vehicles and equipment. All vehicles and equipment entering the project area must be clean of noxious weeds and free from oil leaks and are subject to inspection. Wash all construction equipment to thoroughly remove all dirt, plant, and other foreign material prior to entering the project. Particular attention must be shown to the under carriage and any surface where soil containing exotic seeds may exist. These efforts are critical to prevent the introduction and establishment of non-native plant species into the project area. Make

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arrangements for the CO to inspect each piece of equipment before entering the project. The CO will maintain records of inspections. Equipment found operating on the project that has not been inspected, or has oil leaks will be shut down and subject to citation.

In general, when gasoline, diesel fuel, antifreeze, hydraulic fluid or any other chemical contained within the vehicle is released to the pavement or ground, proper corrective, clean-up, and safety actions specified in the SWPPP must be immediately implemented. All vehicles with load rating of 2 tons or greater should carry, at minimum, enough absorbent materials to effectively immobilize the total volume of fluids contained within the vehicle.

Repair oil leaks immediately on discovery. Do not use equipment that is leaking. Have oil pans and absorbent material in place prior to beginning repair work. Have the "on scene" capability of catching and absorbing leaks or spillages of petroleum products including antifreeze from breakdowns or repair actions with approved absorbent materials. Keep a supply of acceptable absorbent materials at the job site in the event of spills. Sand or soil are not approved absorbent materials.

Use oil pans and absorbent materials to prevent leaks, spills and draining petroleum fluids from falling onto bare ground and paved surfaces during servicing of equipment. Dig up soils contaminated with such fluids, place in appropriate safety containers, and dispose of according to state and/or federal regulations.

(d) Environmental clearances.

(1) Contractor-selected, non-commercial areas. Contractor-selected, non-commercial areas include, but are not limited to, material sources, disposal sites, waste areas, haul roads, and staging areas. (A commercial source is a current operating concern, which has in the recent past provided same-type materials or services). These requirements do not apply for areas identified by the Government as having previously received clearance.

Prior to construction activities in contractor-selected, non-commercial areas, provide the following to the CO and the FHWA Environmental section (12300 West Dakota Avenue, Lakewood, CO 80228/Fax 720-963-3610):

(a) A report with documentation, according to the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation, to determine if prehistoric or historic buildings, structures, sites, objects, or districts listed or eligible for listing in the National Register of Historic Places (NRHP) are present and if they will be affected by the proposed activity. Include information identifying the location, total land area, and type of activity proposed. The FHWA will review this documentation. The FHWA will coordinate with the State Historic Preservation Officer (SHPO) and other parties, which will require the following time frames:

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- (1) Coordination on a “no effect” determination may require 30 days or longer.
 - (2) Coordination on eligibility and affects may require 45 days or longer.
 - (3) Coordination on mitigation of adverse effects may require 60 days or longer.
- (b) Written documentation that such activities will not affect any “Waters of the U.S.” as defined by the U.S. Army Corps of Engineers. Provide documentation by an individual capable of performing wetland delineations according to the 1987 Corps of Engineers’ manual. Documentation of effects to wetlands or other Waters of the U.S. will be submitted to the CO and to the FHWA Environmental section. If wetlands are affected, coordination with the Corps of Engineers may require 45 days or longer.
- (c) Written documentation that such activities will not affect any species protected under the Endangered Species Act (ESA). Provide documentation prepared by a biological specialist. The written documentation will include a “no effect,” a “may affect-is not likely to adversely affect,” or a “may affect-is likely to adversely affect,” determination according to Section 7 of the Endangered Species Act. Submit the documentation to the CO and the FHWA Environmental section. If the determination is “may affect-is not likely to adversely affect” or “may affect-is likely to adversely affect,” the FHWA will coordinate with the U.S. Fish and Wildlife Service (FWS), which will require the following time frames:
- (1) “May affect-is not likely to adversely affect” may require 45 days or longer.
 - (2) “May affect-is likely to adversely affect” may require 150 days or longer.

Contract time will not be increased due to the submittal and approval process for the above three items.

(e) Air pollution. The following basic control measures for construction emissions of PM10 (Bay Area Air Quality Management District 1999) shall be implemented at all construction sites:

- All active construction areas shall be watered to control dust;
- All trucks hauling soil, sand, and other loose materials shall be covered, or all trucks will be required to maintain at least 2 feet of freeboard;
- All paved access roads, parking areas, and staging areas at construction sites shall be swept (where required and necessary);
- Streets shall be swept as required (with water sweepers) if visible soil material is carried onto adjacent public roads and project roads at no cost to the government; and
- Engines for all construction vehicles/equipment which are waiting at the Baker-Barry Tunnel must be turned off for noise and air quality reasons;

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(f) Noise. The following basic control measures to control noise shall be implemented at all construction sites:

- Equipment and trucks used for construction shall utilize noise control techniques, including original mufflers, intake silencers, ducts, engine enclosures and acoustically attenuating shields or shrouds;
- All equipment and construction vehicles must meet federal standards for the year they were built and must be properly maintained and equipped with exhaust mufflers that meet state standards;
- Construction equipment shall not idle for long periods of time;
- Impact tools used for construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air or exhaust from pneumatically powered tools;
- When a pneumatically powered tool must be used, an exhaust muffler on the compressed air exhaust shall be used; and
- External jackets on the tools shall be used where feasible.

(g) Alexander Avenue EA compliance. The following environmental protections shall be applied to Alexander Avenue (Option X) work.

(1) Limitations on excavated material and debris removal. The contractor shall not exceed the thresholds of significance for criteria air pollutants established by BAAQMD. See Table 2-4, page 2-6 from the BAAQMD document below:

http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/Draft_BAAQMD_CEQA_Guidelines_May_2010_Final.ashx?la=en

The contractor shall submit an excavation and haul plan of proposed excavation activities that includes the results of a model of the air pollutant emissions (using the Roadway Construction Emissions Model) to ensure proposed excavation activities do not exceed the thresholds of significance for criteria air pollutants established by BAAQMD. The plan shall be submitted 14 days prior to starting work on Alexander Avenue and also include anticipated haul distances, capacity of haul vehicles, excavation equipment, and production rates per day.

(2) Avoid dust accumulation on mission blue butterfly habitat. The contractor shall ensure that dust is controlled during construction by periodically watering down construction areas within 100 feet of mission blue butterfly habitat as necessary. Habitat will be flagged by NPS. Provide the CO a 14 day notice prior to beginning construction activities on Alexander Avenue to allow for NPS flagging.

(3) Control construction dust. The contractor shall perform the following dust control measures:

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- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day;
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited;
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph); and
- Post a publicly visible sign with the telephone number and person to contact at NPS regarding dust complaints. This person shall respond and take corrective action within 48 hours. BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations. Sign shall meet the requirements of Section 635.

(4) Fence/flag and monitor mission blue butterfly habitat. The contractor shall place Temporary Traffic Control, Plastic Fence directly adjacent to habitat flagged by NPS for mission blue butterfly habitat. No construction activities shall be permitted within the fenced/flagged area. Contractor provided warning signs indicating the sensitivity of the area shall be attached to the fencing. Warning signs shall meet the requirements of Section 635.

(5) Minimize light pollution. If night work is approved by the CO, night construction lighting shall include downward cast/shielded lighting and the use of minimal lighting techniques to reduce light pollution and potential impacts to biological resources.

(6) Noise restrictions. Due to proximity of Cavallo Point Lodge, if loud noise generating construction activities are anticipated, the timeframes of these activities shall be coordinated with the CO at least four weeks prior to beginning these activities to allow notice to Lodge employees and guests. Examples of loud noise generating activities are activities that create decibel levels at or over 90 dBA 50 feet from the source, such as blasting, pile driving, or a mounted impact hammer.

107.11 Protection of Forests, Parks, and Public Lands. Add the following:

The Golden Gate National Recreation Area fire prevention plan involving emergency curtailment of operations is included in the Appendix and is in effect on this project. The CO will order the suspension of burning and other operations when directed to do so by the National Park Service, Golden Gate National Recreation Area. No adjustment in the contract completion date will be made for partial or total suspensions of burning operations.

Section 108. – PROSECUTION AND PROGRESS

108.01 Commencement, Prosecution, and Completion of Work. Add the following:

Complete all work by June 30, 2014.

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Prior to beginning work, the Contractor must attend a project orientation conducted by Golden Gate National Recreation Area to learn about the sensitivity of the Park, Park regulations, and best management practices while working in the Park.

A PowerPoint presentation handout will be provided to the Contractor by the Golden Gate National Recreation Area at the orientation. The Contractor will be required to review the PowerPoint handout with all employees and subcontractor employees who did not attend the original orientation prior to beginning work. A NPS representative shall be present at initial review of handout by Contractor. The Contractor is required to maintain a log of employees who attended the orientation and employees who reviewed the PowerPoint presentation handout. It is the Contractor's responsibility to ensure that all employees and subcontractor employees have either attended the orientation or reviewed the handout prior to beginning work on the project.

There is a potential for the presence of Unexploded Ordinance (UXO) within Golden Gate National Recreation Area from former Army bases and routine training. In the event the Contractor uncovers UXO the Contractor shall cease work in the affected area, remove personnel from the affected area, and notify the CO immediately. The Contractor may resume work only upon authorization by the CO.

Limit operations as follows:

- See Section 156 for allowed road closures.
- No major ground disturbing activities, including pavement removal, are permitted between November 1 and March 31, except clearing, potholing, conduit installation, and utility relocations. These activities are permitted provided that sediment from the disturbed area is controlled at all times.
- Construction activities are only permitted between the hours of 8:00 a.m. and 6:00 p.m. Monday through Friday for Schedule A work.
- Construction activities are only permitted between the hours of 8:00 a.m. and 6:00 p.m. Monday through Friday for Option X work with the exception of nighttime operations as defined in subsection 156.07.
- Construction activities may be permitted on roads open to traffic by prior approval between the hours of 9 a.m. and 5 p.m. on Saturday. Provide a written request stating intended construction activities and proposed traffic control and delays to the CO and allow at least 7 days for approval.
- Provide 14 day notice prior to the start of one-lane closures that will delay traffic.

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- An acceptable surface must be in place for the winter by November 1 of each year. An acceptable surface for the winter is the existing pavement prior to pulverization, the lower lift of new pavement (2 inch minimum thickness), completed both lifts of mainline paving operations, or a 1 ½ inch lift (minimum) of temporary hot asphalt pavement constructed at no cost to the Government. An acceptable surface includes functioning drainage that will not result in erosion or saturation of the subgrade beneath the driving surface or newly-constructed structures. Patch existing surfacing within the project limits as directed by the CO prior to November 1 of each year. Patch or repair according to Section 404.
- NPS shall be notified at least 3 weeks prior to vegetation removals during any time of the year. This will allow time for park surveys for animals if deemed necessary.

All vegetation clearing within the current construction limits of the project must occur between August 1 and February 28. Contractor shall be responsible for maintaining cut vegetation at a height of less than 8 inches. If vegetation is maintained below 8 inches in height, no nesting surveys would be required prior to working in these areas during the nesting season, March 1 to July 31. Planned tree removal shall occur from August 1 – December 31 to avoid the raptor nesting season from January 1 – July 31.

For selective clearing of trees from January 1 – July 31 or clearing of vegetation over 8 inches in stature inside the landbird nesting season (March 1 – July 31) that is necessary due to change in project limits, a nesting survey by NPS Biologist would be required prior to clearing vegetation. Upon approval that the area is appropriate for vegetation removal, the NPS Biologist will complete nest surveys within 5 days. If nesting activity is observed, a suitable buffer area determined by NPS Biologist would be established around the area of nesting activity to allow nesting to go until completion. No vegetation clearing work would be allowed within this buffer area. Buffer areas protected for nesting activity would need to be resurveyed for bird nests after completion of nesting activity. Areas without nesting activity would be approved for vegetation removal. The Contractor will have 7 days to remove this vegetation, otherwise another nest survey will be required.

Nesting activity outside the bird nesting seasons identified above, although unlikely, would still be protected through protective buffers as described above. Notify the CO in writing at least 3 weeks prior to beginning clearing. Minimize soil disturbance during any clearing operations.

- Excavation activities are not permitted (including riprap placement) between October 15 and August 1 in the vicinity of the Rodeo Lagoon and Lake (when water levels are the lowest and during the breeding season for the red-legged frog and migration season for the Central Coast California Steelhead). Work in the vicinity of Rodeo Lagoon and Lake is defined as work required on sheet S1. See Section 204.06 for further information on restrictions of excavation at Rodeo Creek.

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- The work shall be completed as described below.
 - Year 1: April 2013 – October 2013
 - Field Road asphalt work.
 - East Road, McCullough Road, and Field Road work
 - Year 1: January 2013 – June 2013
 - Alexander Avenue/Danes Drive (Option X)
 - Fort Cronkhite Parade Ground Quarry (Option X)
 - Year 2: April 2014 – June 2014
 - Fort Cronkhite Dirt Overflow Lot
 - Optional – Year 1 or Year 2
 - Fort Cronkhite Annex Parking Lot
 - East Bunker Road
 - Smith Road Parking Lot
 - Fort Cronkhite Parking Lot
 - Bunker Road
 - Mitchell Road
 - Old Bunker Road

Roadway work is required to be completed in segments in order to reduce the length of construction work zone impacts and to limit the length of gravel surface. Segments are not required to be completed in a particular order, but a segment must be completed prior to commencing another segment. Roadway work segments are as follows:

- Old Bunker Road, Mitchell Road, and Bunker Road (Sta 37+51.53 to 47+00)
- Bunker Road – Sta 47+00 to 135+00 (McCullough Road)
- Bunker Road – Sta 135+00 (McCullough Road) to 168+95

Completion of a segment shall be defined as completing the HACP, ditches, and chert surfacing.

- Parking Lots may be constructed during the individual roadway segments, but the following restrictions are required:

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- (a) The Fort Cronkhite Parking Lot cannot be closed for more than 21 calendar days to complete all improvements.
 - (b) The Fort Cronkhite Dirt Overflow Lot is required to be available for public use during the entire duration of closures at the Fort Cronkhite Parking Lot and Fort Cronkhite Annex Parking Lot.
 - (c) Fort Cronkhite Parking Lot improvements will not begin until the Fort Cronkhite Annex Parking Lot improvements are completed and open for public use.
 - (d) The Fort Cronkhite Parking Lot is required to be open for public use during any closure of the existing on-street parking along the roads accessing the Marine Mammal Center.
 - (e) Access to the NPS maintenance yard adjacent to the Fort Cronkhite Annex Parking Lot is required at all times.
- The existing on-street parking within the project is required to be open for public use throughout the project duration as described below:
 - (a) Existing and proposed on-street parking along Mitchell Road between Sta. 15+25 and Sta. 28+25 is required to be open for public use between the hours of 4:00 pm Friday through 6:00 am Monday unless otherwise approved.
 - (b) Existing and proposed on-street parking along Mitchell Road between Sta. 15+25 and Sta. 28+25 is required to be open for public use during any closure of the existing on-street parking along the roads accessing the Marine Mammal Center.
 - (c) Existing and proposed on-street parking along the roads accessing the Marine Mammal Center is required to be open for public use between the hours of 4:00 pm Friday through 6:00 am Monday unless otherwise approved.
 - Traffic control restrictions are as follows:
 - (a) The use of access/side roads for traffic diversion during construction is not permitted.
 - (b) Access to the Marine Mammal Center is required at all times.
 - (c) Maintain access to all properties and driveways at all times.
 - (d) Traffic Control plans shall include traffic control for vehicles, pedestrians, cyclists, bus transit, and equestrians.
 - (e) Work occurring within 650 feet of the Baker-Barry Tunnel requires the use of advanced signing on the east side of the tunnel and flagging operations which will be coordinated with the tunnel signal so that queues do not obstruct the tunnel traffic.

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- (f) Perform work that affects traffic (causes queuing) at Baker-Barry Tunnel only between 10:30 am and 5:00 pm Monday through Thursday.
- (g) See Subsections 107.02, 154.03A, 201.03, and 204.06 (a) for additional required notifications.
- (h) Coordination for park events shall be established before construction begins. A key event will be America's Cup (July 4, 2013 to September 22 2013).
- Contractor logos on all non-motorized construction equipment that are visible to the public (standing water tanks, construction trailers, storage containers, etc.) will be required to be removed or covered for the duration of the project.
 - Do not start work until the NPDES permit is approved.
 - Do not perform riprap work at the Rodeo Lagoon Bridge until the updated Section 404 permit is obtained by NPS.
 - Do not perform work on Alexander Avenue (Option X) within Caltrans right of way until an encroachment permit has been obtained.
 - Do not perform work on Alexander Avenue (Option X) within Golden Gate Bridge, Highway, and Transportation District (GGBHTD) right of way until the government Right of Entry Permit is issued and the contractor has obtained a separate Right of Entry Permit.

Perform no work except to maintain traffic control devices, erosion control devices, the roadway driving surface, and to control dust, on Sundays, listed Federal holidays and surrounding days:

- Memorial Day Weekend: 12:00 Noon Friday to 6:00 am Tuesday.
- Independence Day: 12:00 Noon July 3 to 6:00 am July 5.
If July 4 falls on a weekend, Friday, or Monday, do not work the weekend.
- Labor Day Weekend: 12:00 Noon Friday to 6:00 am Tuesday.
- Thanksgiving: 12:00 Noon Wednesday to 6:00 am Monday.
- Christmas/New Year's Holiday: 12:00 Noon December 23 to 6:00 am January 2.
If December 23 or January 1 falls on a Monday, do not work the adjacent weekend and do not work on December 23. If January 1 falls on a Friday, do not work the weekend.

Schedule at least 2 non-work days out of every 14 calendar days. The selected non-work days do not need to be consecutive, but they must be scheduled. Provide a minimum 2-week notice before changing the scheduled days off.

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Exemptions to scheduled days off may be granted by written approval from the CO for specific project operations and/or for periods of limited duration.

Coordinate all operations with other Contractors working in the area to avoid interfering with or hindering the progress of the other contractors, including coordinating work within the project limits in an acceptable manner, coordinating traffic control devices, and coordinating sequences of work. The following projects will be concurrent with this project:

- Satterlee Road (NPS) (2012-2013)
- Rodeo Valley Trail Improvements (NPS)
- Fort Barry Rifle Range Remediation (NPS) (2013-2014)

Add the following:

A Notice to Proceed must be issued before commencement of any work.

Add the following:

Use the Government's web-based system, *Engineer's Estimating, Bidding, Award, and Construction System (EEBACS)*, to prepare all "*Inspector's Daily Record of Construction Operations*" (*Contractors Daily Reports*) and measurement notes (pay notes).

Attend a training session on the use of EEBACS. The training session will require up to 4 hours. No more than 3 Contractor staff may attend the training unless approved by the CO. The Contractor shall be responsible for training additional staff.

Complete and electronically submit "*EEBACS User Account Form*" (Form EEBACS-001) for each individual requiring EEBACS access. Submit forms to the CO at the preconstruction conference or at least 10 days prior to the start of any contract work or EEBACS training. As needed, request additional system access using Form EEBACS-001 and allow 7 days for system access.

Maintain active EEBACS accounts for all contractor staff who use EEBACS and ensure that the CO is notified within 24 hours after an account holder is reassigned or no longer employed by the Contractor. Within 24 hours after an account holder is reassigned or no longer employed by the Contractor, submit an EEBACS-001 form requesting that the account be disabled.

The electronic version of EEBACS-001 is available at:

<http://flh.fhwa.dot.gov/resources/pse/estimate/accounts.htm>

(a) Public relations coordinator. Due to the high visibility of this project and high visitor usage, the project will have a formal public information program. Provide a public information

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program coordinator who will be responsible for coordinating project construction information such as operation changes, road closures, trail closures, and impacts to businesses, park partners, and residents within the Marin Headlands, etc with the public information project team. The coordinator may not be the project superintendent, construction foreman(s), or traffic safety supervisor. The coordinator must be knowledgeable of construction operations and possess good written and verbal communication skills. The coordinator shall have a minimum of three years providing public relations coordination for transportation related construction projects. The coordinator shall be approved by the CO. The coordinator will be responsible for providing the following:

- (1) Organize, schedule, and conduct weekly coordination, planning, and reporting meetings (see Subsection 108.01(b));
- (2) Provide information for news releases on construction activities prior to and during construction, to inform the public of construction activities, schedules, street closures, trail closures, impacts to businesses and residents within the Marin Headlands, width or height restrictions to traffic, and traffic detour routes. The news release information on construction activities shall be updated on a timely basis (minimum three-week notification for road closures and detours);
- (3) Develop WindMaster signage, print, and install signage in WindMasters. Anticipate each WindMaster sign will be replaced every week with updated project information.
- (4) Provide news media interviews as required; and
- (5) Include the cost of the Public Relations Coordinator in the price bid for other items.

(b) Weekly planning/reporting meeting.

- (1) Purpose of Weekly Meeting -- Organize the weekly meeting to coordinate the efforts between the subcontractors, utilities, local authorities, and others.
- (2) Contractor's Project Manager / Superintendent: Planning and Reporting.
 - (a) Conduct a weekly Reporting/Planning meeting. Prepare minutes for each meeting and make the appropriate distribution of the minutes. The meeting minutes are required to be distributed within 24 hours of the meeting.
 - (b) Provide a written schedule of the next week's work and a tentative schedule of the following two weeks in conformance with Section 155. The written schedule is required to be distributed within 24 hours of the meeting.
 - (c) Discuss problems encountered during the current week, information of interest to local authorities, subcontractors, utilities, and next week's prospective schedule.
 - (d) Organize the weekly meeting with the CO and the Park PM. They will be responsible for coordinating with and inviting appropriate persons from their agencies to the meeting.

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(e) Provide a suitable meeting facility in cooperation with the CO.

(f) Include all costs for the Weekly Planning/Reporting Meeting including, but not limited to, providing minutes, schedules and meeting facility room in the price bid for other items.

(g) The Public Relations Coordinator, Contractor Superintendent, Traffic and Safety Supervisor, and Quality Control Supervisor are required to attend the meeting.

108.04 Failure to Complete Work on Time. Add the following:

Incentives and disincentives for completing the work are described below:

(a) Completion Incentives and Disincentives.

June 28, 2013, – Interim Completion Date for Option X: An incentive payment will be made in the amount of \$6,000 (daily user cost) for each calendar day the work is substantially complete prior to the interim completion date, up to a maximum incentive payment amount of \$84,000. A \$6,000 (daily user charge) disincentive will be applied for each calendar day the work is substantially completed after June 28, 2013, and before July 4, 2013. No daily user charge (disincentive) will be applied from July 4, 2013, to September 22, 2013, during the closure of Alexander Avenue. A \$6,000 daily user charge (disincentive) will be applied for each calendar day the work is not substantially completed after September 22, 2013, up to a total maximum disincentive of \$84,000. The incentive date is a firm date and will not be adjusted for any reason, including Government-caused delays or delays beyond the control and without the fault or negligence of the contractor. The disincentive will not be adjusted for delays beyond the control and without the fault or negligence of the contractor. The disincentive will be adjusted for Government-caused delays.

Section 109. – MEASUREMENT AND PAYMENT

109.01 Measurement of Work. Delete the second paragraph and substitute the following:

Unless otherwise specified, measure when the work is in place and complete according to the contract requirements. Measure the actual work performed, except do not measure work outside the design limits or other adjusted or specified limits (staked limits). Measure structures to the lines shown on the plans or to approved lines adjusted to fit field conditions.

Delete the third paragraph and substitute the following:

Take measurements as described in Subsection 109.02, unless otherwise modified by the Measurement Subsection of the Section controlling the work being performed. Measurement of

quantities for payment for the individual pay items will be based on the awarded unit price for each pay item according to Table 109-1.

Table 109-1
Decimal Accuracy of Quantities for Payment

Awarded unit price	Decimal Accuracy of Quantities for Payment
< \$1.00	0 decimals
≥ \$1.00 to < \$100.00	1 decimals
≥ \$100.00 to < \$1000.00	2 decimals
≥ \$1000.00	3 decimals

Decimal precision for measurement is one decimal beyond accuracy of quantities for payment.

Delete the fifth paragraph and substitute the following:

Submit measurement notes to the CO within 24 hours of completing the work that is in place and complete according to contract requirements. For on-going work, submit measurement notes daily. When work is not complete, identify the measurement as being an interim measurement. Submit the final measurement when the installation is completed. Measurement notes form the basis of the Government's receiving report (see Subsection 109.08(d)). For lump sum items, submit documentation to support invoiced progress payment on a monthly basis.

Add the following after the fifth paragraph:

Prepare, sign, and submit electronic measurement notes (pay notes) using EEBACS. Measurement notes will be reviewed by the CO. Unacceptable measurement notes will be electronically rejected and returned. Correct rejected measurement notes and resubmit electronically.

109.02 Measurement Terms and Definitions.

(b) Cubic yard. Delete the line and substitute the following:

(c) Cubic yard.

(1) Cubic yard in place. Delete paragraph (a) and substitute the following:

(a) Take cross-sections of the original ground and use design or staked templates to determine end areas. Do not measure work outside of the lines or slopes established by the CO.

(l) Square foot. Delete the text and substitute the following:

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(l) Square foot. Longitudinal and transverse measurements for area computations will be made on a plane parallel to the surface being measured. No deductions from the area computation will be made for individual fixtures having an area of 1 square foot or less. Do not measure overlaps.

(m) Square yard. Delete the text and substitute the following:

(m) Square yard. 9 square feet. Longitudinal and transverse measurements for area computations will be made on a plane parallel to the surface being measured. No deductions from the area computation will be made for individual fixtures having an area of 9 square feet or less. Do not measure overlaps.

109.06 Pricing of Adjustments. Delete the second paragraph and substitute the following:

If agreement on price and time cannot be reached, the CO may make a unilaterally determination.

(a) Proposal. Delete the subsection and substitute the following:

(1) General. Submit a written proposal for each line item of the work or a lump sum for the total work. Identify the major elements of the work, the quantity of the element, and its contribution to the proposed price. Provide further breakdowns if requested by the CO. Except when precluded by the FAR, include a reasonable profit reflecting the efficiency and economy of the Contractor and subcontractors in performing the work, the contract risk type, the work difficulty, and management effectiveness and diversity.

When price is based on actual costs, profit is based on the estimated cost of the work and may not exceed the statutory limit of 10 percent of the total cost. Due to the limited risk in this type of pricing arrangement, a lower profit percentage may be indicated.

(b) Post-work pricing. Delete the paragraph and substitute the following:

(b) Post-work pricing. When a contract modification is not forward priced, it requires a change order and supplemental agreement reflecting the resulting equitable adjustment. When negotiating the price of a contract modification after all or most of the work has been performed, furnish the following:

(1) Direct costs. Delete paragraph (c)(3) and substitute the following:

(3) Compute standby costs from acceptable ownership records or when actual costs cannot be determined, according to CEOOES.

Delete paragraph (e) and substitute the following:

(e) Production rates. Provide actual hours of performance, on a daily basis, for each labor classification and for each piece of equipment. Provide production rate

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information reflecting the actual work occurring on an approved contractor daily record document.

(2) Overhead. Delete the second paragraph and substitute the following:

Limit Contractor overhead applied to subcontractor payments to 5 percent unless a higher percentage is justified.

(3) Profit. Delete the second paragraph and substitute the following:

For work priced after all or most of the work is performed, profit is limited by statute to 10 percent of the total cost. Post-work pricing is considered a cost plus fee contract. Due to the limited risk in post-work pricing, a lower profit percentage may be indicated by a profit analysis according to FAR Part 15.404-4 Profit.

109.08 Progress Payments.

(b) Closing date and invoice submittal date. Delete the text and substitute the following:

Submit invoices to the designated billing office by the 7th day after the closing date. Invoices received by the designated billing office after the 16th day following the closing date will not be accepted for payment processing that month. Include late, unprocessed invoice submittals in the following months invoice.

(d) Government's receiving report. Delete the first sentence and substitute the following:

The Government's receiving report will be developed using the measurements and quantities from Pay Notes received by the CO in EEBACS and determined acceptable.

(e) Processing progress payment requests.

(1) Proper invoices. Delete the title and text and substitute the following:

(1) Invoices received by the 7th day following the closing date.

(a) Proper invoices. If the invoice meets the requirements of Subsection 109.08(c), and the quantities and unit prices shown on the Contractor's invoice agree with the corresponding quantities and unit prices shown on the Government's receiving report, the invoice will be paid.

(b) Defective invoices. If the invoice does not meet the requirements of Subsection 109.08(c), or if any of the quantities or unit prices shown on the Contractor's invoice exceed the corresponding quantities and unit prices shown on the Government's receiving report, the invoice will be deemed defective and the Contractor so notified according to FAR Clause 52.232-27(a)(2). Defective invoices will not be corrected

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by the Government and will be returned to the Contractor within 7 days after the Government's designated billing office receives the invoice.

Revise and resubmit returned invoices by the 18th day following the closing date. The CO will evaluate the revised invoice. If the invoice still does not meet the requirements of Subsection 109.08(c), the Contractor will be so notified according to FAR Clause 52.232-27(a)(2), and no progress payment will be made that month. Correct the deficiencies and resubmit the invoice the following month.

If the revised invoice meets the requirements of Subsection 109.08(c), but still had quantities or unit prices exceeding the corresponding quantities and unit prices shown on the Government's receiving report, the Government's data for that item or work will be used. The Contractor's invoice, as revised by the Government's receiving report, will be forwarded for processing by the 23rd day following the closing date. The Contractor will be notified by the 23rd day following the closing date of the reasons for any changes to the invoice.

(2) Defective invoices. Delete the title and text and substitute the following:

(2) Invoices received between the 8th and 16th day following the closing date.

(a) Proper invoices. If the invoice meets the requirements of Subsection 109.08(c), and the quantities and unit prices shown on the Contractor's invoice agree with the corresponding quantities and unit prices shown on the CO's receiving report, the invoice will be deemed proper and forwarded for processing within 7 days of receipt.

(b) Defective invoices. If the invoice does not meet the requirements of Subsection 109.08(c), the invoice will be deemed defective, the Contractor so notified according to FAR Clause 52.232-27(a)(2), and no progress payment will be made that month. Correct the deficiencies and resubmit the invoice the following month.

If the invoice meets the requirements of Subsection 109.08(c), but has quantities or unit prices exceeding the corresponding quantities and unit prices shown on the Government's receiving report, the Government's data for that item of work will be used. The Contractor's invoice, as revised by the Government's receiving report, will be forwarded for processing within 7 days of the Government's receipt of the invoice. The Contractor will be notified of the reasons for any changes to the invoice.

(f) Partial payments. Delete the subsection and substitute the following:

(f) Partial payments. Progress payments may include partial payment for material to be incorporated in the work according to FAR Clause 52.232-5(b)(2), provided the material meets the requirements of the contract and is delivered on, or in the vicinity of, the project site or stored in acceptable storage places.

Partial payments for stockpiled manufactured material (aggregates) will be based on Contractor process control test results. If test results show the material to be out-of-specification, or in

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“reject” where statistical evaluation procedures are used, no payment for stockpiled materials will be made.

Partial payment for material does not constitute acceptance of such material for use in completing items of work. Partial payments will not be made for living or perishable material until incorporated into the project.

Individual and cumulative partial payments for preparatory work and material will not exceed the lesser of:

- (1) 80 percent of the contract bid price for the item; or
- (2) 100 percent of amount supported by copies of invoices submitted.

The quantity paid will not exceed the corresponding quantity estimated in the contract. The CO may adjust partial payments as necessary to protect the Government.

Add the following:

(g) Retainage. Follow the requirements of FAR Clause 52.232-5 Payments under Fixed Price Construction Contracts.

(1) Satisfactory progress includes performance of all work under the contract including submittals, schedules, certifications, reports, and drawings. When satisfactory progress has not been made, the CO may retain a maximum of 10 percent of the amount of the progress payment until satisfactory progress has been made.

(2) After substantial completion of the contract, the CO may retain an amount adequate for protection of the Government.

Section 151. – MOBILIZATION

Payment

151.03 Delete subsections (b) and (c) and substitute the following:

(b) When 5 percent of the original contract amount is earned from bid items (not including mobilization), 50 percent of the mobilization item, or 5 percent of the original contract amount, whichever is less, will be paid.

(c) When 10 percent of the original contract amount is earned from bid items (not including mobilization), 100 percent of the mobilization item, or 10 percent of the original contract amount, whichever is less, will be paid.

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Section 152. – CONSTRUCTION SURVEY AND STAKING

Construction Requirements

152.02 General. Delete the first paragraph and substitute the following:

No survey information will be provided for the following:

- Bunker Road Sta. 47+00 to Sta. 168+77.54

The centerline for these rehabilitation areas will be staked using centerline verification and staking as described in 152.03(m). For all other areas, the Government will furnish to the Contractor one copy of each of the following information:

- 3D coordinates and offset distance from centerline for subgrade and surface course finishing stakes at 50-foot intervals and miscellaneous intermediate stations.
- Slope stake books containing centerline grade and slope staking information at 50-foot station intervals and miscellaneous intermediate stations.
- Computer listings containing: horizontal alignment, vertical alignment, earthwork quantities, and staking details showing superelevation template data and slope information.

The Government will provide files for downloading 3D data. Following is the information that will be provided electronically:

- 3D coordinates of control points.
- 3D coordinates of grade finishing stakes.
- 3D coordinates of slope stakes

The Government will perform the following:

- Establish basic survey control points for vertical and horizontal control of the project.

Delete the second sentence of the second paragraph and substitute the following:

Reestablish missing control points and stakes before slope staking begins.

Add the following:

Furnish a practicable schedule of staking activities with the construction schedule submitted according to Section 155. Include the dates and sequence of staking requirements.

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152.03 Survey and Staking Requirements.

(e) Centerline reestablishment. Delete the text and substitute the following:

Reestablish centerline from instrument control points as necessary to construct the work. The CO may require the reestablishment of centerline, at no cost to the government, when construction survey and staking work does not meet the tolerances stated in Table 152-1.

Reestablishment of centerline may be ordered by the CO and paid for under Section 623 for purposes other than to control the work.

(f) Grade finishing stakes. Delete the second sentence of the second paragraph and substitute the following:

In parking area, set hubs at point locations shown on the plans.

Delete the third paragraph and substitute the following:

The maximum longitudinal spacing between stakes is 25 feet when the centerline curve radius is less than or equal to 250 feet. When the centerline curve radius is greater than 250 feet, the maximum longitudinal spacing between stakes is 50 feet. The maximum transverse spacing between stakes is 25 feet. Reset grade finishing stakes as many times as necessary to construct the subgrade and each aggregate course. Use brushes or guard stakes at each stake.

(g) Culverts. Delete the first paragraph and substitute the following:

Verify, in the field, the approximate location of each individual culvert with the CO prior to surveying, designing, and staking culverts. Use the "Guide for Designing and Staking Culvert in the Field", dated January 9, 1996, issued by the U.S. Department of Transportation, Central Federal Lands Highway Division, Lakewood, CO, as a guide to the work in this section.

Perform the following:

(4) Add the following:

(a) For single skewed culverts, also submit a plotted field design cross-section, normal to roadway centerline, at each end section. Plot the offset and elevation of natural ground at the end section and at all proposed template break points between centerline and the end section. Ensure the template design embankment slope is not exceeded.

(b) For multiple skewed culverts, also submit a plotted field design cross-section, normal to roadway centerline, at the end sections (left and right) nearest to the shoulder. Plot the offset and elevation of natural ground at the end section and at all

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proposed template break points between centerline and the end section. Ensure the template design embankment slope is not exceeded.

(5) Add the following:

Plot at a scale identical to the plan view of the culvert.

Add the following:

(8) When the field design has been approved, set culvert survey stakes, reference stakes, and stake inlet and outlet ditches to make the culvert, including end treatments (e.g., drop inlets) functional.

(9) Adjust slope stakes to provide for catch basins (and transitions into and out of catch basins) which correspond to the final culvert location and design. If the culvert was moved from location shown in the plans, review the slope stakes in the vicinity of the plan location and adjust the slope stakes to remove the planned catch basin.

(l) Miscellaneous survey and staking. Delete the text and substitute the following:

Perform all surveying, staking, recording of data, and calculations necessary for establishing the layout, control, and measurement required to construct the project. Perform the work in such a manner as to ensure the contract work is constructed in the proper location and to the required tolerances. Where staking increments are not identified, propose appropriate staking increments to the CO for acceptance.

Add the following:

(m) Centerline verification and staking. Verify the line diagram stationing, the GPS stationing, or the as-constructed stationing shown in the plans by measuring along the existing centerline with a measuring wheel, cloth tape, or other method approved by the CO. Calibrate all measuring devices and furnish calibration data to CO before use. Use transit points (e.g., PC's, PT's) and landmarks (e.g., culverts, turnouts, approach roads) to verify that the ground stationing matches the stationing shown on the plans. Use white spray paint to mark each centerline station. If the stationing in the plans is as-constructed stationing, add station equations to adjust field stationing to match the plans. Allow the CO to comment on any required changes to the stationing and/or readjust or establish additional centerline points. Minor adjustments in grade and/or alignment may need to be made during construction to produce a smooth, uniform project. The final alignment need not be a geometrically computed centerline and may be field adjusted up to 12 inches at the direction of the CO to provide a smooth flowing, best-fit alignment.

Prior to disturbing the existing road surface, measure the existing surface width and cross-slopes at existing roadway centerline control points (PC & PT), at changes in the roadway template, at the beginning and ending of superelevation transitions and runoff, in the middle of the superelevated section, at 100 foot stationing intervals on tangent, at 50 foot intervals on curves.

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Use white spray paint to mark each location. At each location, each side of the roadway and outside the construction limits, place an offset stake of adequate dimensions to place all required information. Label each stake with the following information corresponding to each respective lane:

- (1) Station
- (2) Offset from existing striped centerline or proposed centerline or other location as directed by the CO. See Bunker Road typical section sheet for additional information related to centerline location.
- (3) Offset from the proposed edge of pavement
- (4) Existing pavement cross-slope. If cross-slope is to be changed, provide proposed change
- (5) Offset to existing/proposed paved ditch, including ditch cross-slope, if different from mainline, and ditch width
- (6) Offset to face of existing/proposed guardrail

Provide a list to the CO of any stations or locations where the proposed pavement edge is within 2 feet of a break in the topography of the shoulder. The CO will determine if corrective action is required.

If requested by the CO, cross-section each location requiring corrective action at the beginning, end, and at 50 foot intervals between. Cross-sections shall extend a minimum of 25 feet left and right of the centerline, but no less than 10 feet past the flowline of ditches or 6 feet past existing fillslope intersection with natural ground. Plot all cross-sections at a scale of 1:100. Compute quantities for excavation, embankment, and aggregate base to be used for corrective action at each location. Submit all cross-sections to the CO a minimum of 14 days prior to beginning the work.

Provide stations to the nearest foot, offsets to the nearest 2 inches, and cross-slopes to the nearest 0.2 percent.

Record the above information books and provide one hard copy to the CO.

Use this recorded information to reestablish the existing roadway template and striping.

Add the following:

(n) Parking area. Perform all survey and staking necessary to construct the Fort Cronkhite Dirt Overflow Lot restoration, Fort Cronkhite Parking Lot, Fort Cronkhite Annex Parking Lot, Smith Road Parking Lot, and the Fort Cronkhite Parade Ground Quarry, including, but not limited to slope reference, clearing and grubbing stakes, and grade finishing stakes.

Measurement

152.05 Delete the fourth paragraph and substitute the following:

Do not measure miscellaneous survey and staking.

152.05 Add the following:

Reestablishing control points and stakes will be measured under Special Labor, Hired Survey Services when it is paid by the hour. No payment will be made for re-establishing missing control points or stakes after construction operations have begun.

Measure centerline verification and staking only one time per project.

Section 153. – CONTRACTOR QUALITY CONTROL

Section 153 Delete the entire Section and substitute the following:

Description

153.01 This work consists of obtaining samples for process control testing, performing process control tests, providing quality control inspection, exercising management control to plan and implement construction processes that are systematic, consistent, and effective; ensuring that work conforms to the contract requirements; and documenting quality control activities and results. See FAR Clause 52.246-12 Inspection of Construction.

This work also consists of using EEBACS to prepare electronic “*Inspector’s Daily Record of Construction Operations*” (*Contractors Daily Reports*) and measurement notes (pay notes), including entering labor, equipment, subcontractors, and inspection records into the system.

Construction Requirements

153.02 Contractor Quality Control Plan. At least 14 days before the start of on-site work, submit a written quality control plan (QCP) for acceptance. Do not perform any on-site work without an approved quality control plan.

Submit the following with the quality control plan:

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(a) Process control sampling and testing. List the material to be tested by pay item, tests to be conducted, the location of sampling, the frequency of testing, the person(s) responsible for performing the sampling and testing, laboratory testing facilities to be used for process control and project testing, and the proposed reporting formats. Furnish the names, to the CO, of personnel who will be responsible for on-site inspection and testing duties, provide a description of the work that each tester and inspector will be assigned, and experience with the work assigned. Perform process control testing in accordance with Table 153-1, schedule of minimum sampling and testing for process control. Where no minimums are specified, submit proposed tests to be performed and the proposed sampling and testing frequencies.

(b) Inspection/control procedures. Address each of the subjects shown for each phase of construction:

(1) Preparatory phase.

(a) In a preparatory phase meeting, review the contract requirements for the work; the process for constructing the work; and the plan for inspecting, testing, measuring, and reporting the work. Include the project superintendent, the quality control supervisor (QCS), the foreman for the work to be performed, and the CO in the meeting. Schedule and conduct a preparatory meeting for each type of work to be performed at least one week prior to beginning the work.

(b) Ensure compliance of component material to the contract requirements.

(c) Coordinate all submittals including certifications.

(d) Ensure capability of equipment and personnel to comply with the contract requirements. Provide training as necessary.

(e) Ensure preliminary testing and inspection is accomplished.

(f) Coordinate surveying and staking of the work.

(2) Start-up phase.

(a) In a start-up phase meeting, review the contract requirements and the processes for constructing the work with the personnel who will be performing the work. Invite the CO, project superintendent, QCS, testers, and inspectors of the work being performed, and the personnel directly supervising and performing the work. Review the planned testing, inspection, and reporting requirements with the quality control personnel responsible for the testing and inspection. Explain the reporting procedures to be used when defective work is identified. Conduct a start-up meeting for each type of work to be performed upon beginning the work.

(b) Inspect and test start-up of work at a frequency sufficient to establish confidence in the work process.

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(c) Establish a detailed testing schedule based on the production schedule.

(3) Production phase.

(a) Conduct intermittent or continuous inspection during construction to identify and correct deficiencies.

(b) Conduct inspections to ensure that planned construction processes are consistently followed and the processes are effective in producing work that complies with the contract requirements.

(c) Inspect, test, and report completed work before requesting Government inspection. Compare the work to the contract requirements and evaluate acceptability of the work produced.

(d) Inspect the work, materials or assemblies accepted under Subsection 106.03 to ensure that all the work and materials comply with contract requirements. Furnish the results of inspections, along with product or commercial certification as applicable, to the CO prior to incorporating the materials into the work.

(e) Sample and test aggregates and/or aggregate/asphalt mixtures accepted under Subsection 106.03, for conformity with the product certification a minimum of one time per pay item.

(f) Provide feedback on processes and deficiencies, identify root causes of deficiencies, and make timely and effective changes to work processes to prevent repeated deficiencies.

(c) Description of records. List the records to be maintained. Identify the format for reporting results, materials certifications and the procedures to be used to maintain inspection records.

(d) Personnel qualifications. Furnish competent and effective quality control personnel to perform the activities required by the QCP and this Section.

Document in the QCP the name, authority, relevant experience, and qualifications of the QCS with overall responsibility for managing the inspection and testing requirements of this section.

Document in the QCP the names, authority, and relevant experience of all personnel directly responsible for inspection and testing.

(1) Quality control supervisor. The QCS is responsible for supervising quality control personnel; monitoring inspection, sampling, and testing for all phases of the work; identifying deficiencies; and taking appropriate corrective action. Designate a full-time, on-site QCS who will be immediately available during all phases of the work and has the authority to act for the Contractor on quality-related matters. The QCS will not be the

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Contractor's Superintendent. The QCS may not perform primary testing and inspection except when approved in writing by the CO for infrequent and limited activities and as long as all of the work on the project is well-managed, in control, and is receiving the level of testing and inspection required by the contract. Designate a QCS who possesses one of the following credentials:

(a) 2 years direct experience supervising or managing highway construction quality control or quality assurance programs for state or federal projects, or

(b) 3 years of experience as: (a) a construction project manager on highway construction projects, or (b) a construction superintendent on highway construction projects, or (c) a federal or state highway construction project engineer, resident engineer, or equivalent, or

(c) NICET Level III certification in highway construction or highway materials or equivalent, or

(d) A degree from a 4-year construction management, construction engineering, or similar program, and having at least 3 years experience as (a) a highway construction contractor foreman, project engineer, or equivalent, or (b) a federal or state highway construction lead inspector or equivalent.

(2) Inspectors. Furnish inspectors having training commensurate with the scope, complexity, and type of work being inspected, and having at least 2 years of experience inspecting the type of work being inspected and performing the types of inspections to be performed.

(3) Testers. Furnish testers having 1 year or more of recent job experience in the type of sampling and testing required by the contract, and one of the following:

(a) NICET Level II certification in highway materials, or State (SHA) or industry certification-related sampling and testing equivalent to the sampling and testing to be performed for this contract,

(b) WAQTC or other nationally accepted certification program for intended sampling and testing responsibilities,

(c) At least 1 year of current or previous employment by an AASHTO accredited laboratory performing sampling and testing equivalent to the sampling and testing to be performed for this contract.

The CO may require a demonstration of proficiency in sampling and testing capabilities. One or more proficiency samples may be provided by the Government to verify basic qualifications. Provide the results of the proficiency samples to the CO within 48 hours of receipt of the material.

(e) Subcontractors and suppliers. Include the work of all subcontractors. If a subcontractor is to perform work under this Section, explain how the subcontractor's inspection plan will interface with the Prime Contractor first tier subcontractors and lower tier subcontractors and organizations,

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and the CO. Include the work of major suppliers and suppliers of structural and geotechnical services and materials.

Modifications or additions may be required to any part of the plan that is not adequately covered. Acceptance of the quality control plan will be based on the inclusion of the required information. Acceptance does not imply any warranty by the Government that the plan will result in consistent contract compliance. It remains the responsibility of the Contractor to demonstrate such compliance.

Supplement the plan for changes in the contract as work progresses and whenever quality control or quality control personnel changes are made.

153.03 Sampling and Testing. Perform sampling and testing required by Table 153-1 and by the accepted QCP.

(a) Sample splitting. Schedules and times or locations for obtaining on-site split samples for Government use will be provided by the CO using a procedure for random sampling. In addition, sample any material that appears defective or inconsistent with similar material being produced, unless such material is voluntarily removed and replaced or otherwise corrected according to Subsection 106.01

(b) Testing. Furnish a laboratory equipped with all test equipment necessary to satisfy the requirements of the contract. Ensure test equipment has been checked, calibrated, standardized and/or otherwise verified in accordance with AASHTO and ASTM standards by an individual qualified to do this work. Ensure mobile laboratories receive an equipment inspection after the laboratory has been moved to its permanent location on the project site and anytime it is moved thereafter. Inspect equipment within 45 days of actual use in project testing and at least once a year thereafter. Do not use equipment that has not been inspected or is found to be deficient. Mark deficient equipment and take it out-of-service until it is repaired or replaced and shown by subsequent inspection to perform as required. Maintain records documenting these inspections in the laboratory. Provide certification(s) stating the equipment conforms to testing requirements and provide evidence of current inspection.

The CO may require the Contractor to perform testing to demonstrate acceptable equipment and an acceptable level of technician competence. The CO may also check equipment and inspection records to verify condition. Repair or replace equipment not meeting applicable requirements. Keep laboratory facilities clean and maintain equipment in proper working condition. Provide the CO unrestricted access to the laboratory for inspection and review.

(c) Certifications. For materials or work accepted by certification in accordance with 106.03, review all certifications to insure compliance with the requirements of the contract prior to incorporating materials into the work and provide a signed copy of the reviewed certification(s) to the CO. According to FAR Subpart 46.407, materials or work without proper certification

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will be rejected in writing, and payment for such material or work will be withheld until proper certification has been provided to the CO.

153.04 Records. Maintain complete testing and inspection records by pay item number and make them accessible to the CO.

For each day of the contract, prepare an “*Inspector’s Daily Record of Construction Operations*” (*Contractors Daily Reports (CDR)*) using EEBACS. Enter initial data for Labor/Equipment and Subcontractors prior beginning any work. Maintain and update the Labor/Equipment and Subcontractors data to reflect ongoing changes as they occur. Report operations or items of work separately, with manpower and equipment assigned to each operation separately. Detail inspection results, including deficiencies observed and corrective actions taken. Complete a CDR for each contractor and subcontractor working that day.

When submitting test results on material being incorporated into the work, report test results within the reporting times indicated in the sampling and testing requirements at the end of each section or as specified in the contract.

Enter the following data into EEBACS:

(a) Subcontractors data.

(b) Labor/Equipment.

- (1)** All manpower and equipment, including contractor and subcontractors. Complete all data fields.
- (2)** Labor: Type/classification, move-in date, move-out date, hourly rate, the contractor or subcontractor, and name.
- (3)** Equipment: Type/classification, move-in date, move-out date, make, model, and year of equipment manufacture.

Certify all CDR’s using the following statement:

“It is hereby certified that the information contained in this record is accurate and that all work documented herein complies with the requirements of the contract. Any exceptions to this certification are documented as part of this record.”

Submit certified CDR’s that have been signed by a person who has both responsibility for the inspection system and signature authority.

Submit the record and certification within 24 hours of the work being performed. If the CDR is incomplete, in error, or otherwise misleading, the CDR will be rejected and returned within EEBACS with corrections noted. Correct rejected CDRs and resubmit the revised CDR within

24 hours. When chronic errors or omissions occur, correct the procedures by which the records are produced.

Maintain linear control charts that identify the project number, pay item number, test number, each test parameter, the upper and lower specification limit applicable to each test parameter, and the test results. Use the control charts as part of the quality control system to document the variability of the process, to identify production and equipment problems, and to identify actions to improve processes or quality.

Post control charts in an accessible location and keep them up-to-date. Cease production and make corrections to the process when problems are evident.

153.05 Acceptance. The Contractor's quality control system will be evaluated under Subsection 106.02 based on the demonstrated effectiveness of the quality control system to result in the use of systematic, consistent, and effective work processes; accurate, adequate, and timely documentation of quality control activities; the construction of work that conforms to the contract requirements; the identification of root causes of problems; the timely implementation of planned changes to work processes to prevent repeated deficiencies; the reliable identification and documentation of defective work; and the consistent tracking of defective work through correction.

Performance of the work may be stopped in accordance with Subsection 108.05, either in whole or in part, for failure to comply with the requirements of the Section. The Government may charge to the Contractor the cost of any additional inspections required when the work being inspected is found not to comply with contract requirements during the initial inspection. Work stop orders, due to recurring deficiencies of work required by this Section, will be rescinded after the Contractor demonstrates to the CO that changes were made to the quality control plan and system which resulted in the correction of those deficiencies. There will be no adjustment in the contract time, or payments to the Contractor for any impacts, delays or other costs due to any periods of work stoppage resulting from failure to comply with the requirements of this Section.

EEBACS electronic documentation will be evaluated under Subsection 106.02.

Measurement

153.06 Measure contractor quality control according to Subsection 109.02.

Do not measure EEBACS electronic documentation for payment.

Payment

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153.07 The accepted quantities will be paid at the contract price per unit of measurement for the Section 153 pay item listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

Progress payments for Contractor quality control will be paid as follows:

- (1)** 25 percent of the item amount, not to exceed 0.5 percent of the original contract amount, will be paid after the contractor quality control plan is accepted; all testing facilities are in place; qualified quality control supervisor, inspection, and sampling and testing personnel are in position to provide quality control activities; and the work being inspected or tested has started.
- (2)** 65 percent of the total lump sum will be prorated for payment based on the completed portion of the total work not including the original 25 percent completed under **(1)** above.
- (3)** Payment of the remaining 10 percent of the lump sum will be paid when all inspections, test results, submittals, and reports are complete and accepted.

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Table 153-1
Schedule of Minimum Sampling and Testing For Process Control
(to be performed by the Contractor)

Section(s): 204, 208, 209.

Material	Property or Characteristic	Test Method or Specification	Frequency	Sampling Point
Embankment Construction Composition of Roadbed in Cuts	Classification and Moisture/Density	AASTHO M 145 AASHTO T 99 or AASHTO T 180 (minimum of 5 proctor points).	1 per material/type.	Source of material.
	In-place density and moisture content	AASHTO T 310	2 per lift, but not less than 2 every 1000 cubic yards.	Compacted embankment, subgrade as applicable.
	R-value	AASHTO T 190 (Tested by FHWA Central Lab).	1 per 2500 feet, or change in material type.	Sample depth: 0-12 inches.
Bedding/Backfill for Structures and Culvert Pipe	Classification and Moisture/Density	AASTHO M 145 AASHTO T 99 or AASHTO T 180 (minimum of 5 proctor points).	1 per material/type.	Source of material.
	In-place density and moisture content	AASHTO T 310	1 per 50 feet/lift. Minimum 2 per lift.	Compacted bedding or backfill as applicable.

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Table 153-1
Schedule of Minimum Sampling and Testing For Process Control
(to be performed by the Contractor)

Section(s): 255.

Material	Property or Characteristic	Test Method or Specification	Frequency	Sampling Point
Select wall backfill 704.13(a) and Wall backfill 704.13(b)	Gradation and liquid limit	AASHTO T 11 AASHTO T 27 AASHTO T 89 AASHTO T 90	1 per material/type	Source of material
	Moisture Density	AASHTO T99, Method C ⁽¹⁾	1 per material/type	Source of material
	In-place density and moisture content	AASHTO T 310	For MSE walls: 1 per 1-foot lift per 250-feet of wall length (minimum of 2 per lift)	Compacted backfill

⁽¹⁾ A minimum of 5 points are required for moisture density test.

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Table 153-1
Schedule of Minimum Sampling and Testing For Process Control
(to be performed by the Contractor)

Section(s): 301, 303, 304, 305, 306, 308.

Material	Property or Characteristic	Test Method or Specification	Frequency	Sampling Point
Subbase, Base Course Aggregate Stabilization and Aggregate Topsoil Courses	Gradation (301)	AASTHO T 11 AASTHO T 27	2 per day	Crusher belt
	Moisture/Density	AASHTO T 99 or AASTHO T 180 (minimum of 5 proctor points)	1 per source of material	Source of material
	In-place density and moisture content	AASHTO T 310 or ASTM D2950	2 per lift at 1000-foot intervals, alternating lanes	Compacted aggregate
	Plasticity index (aggregate surfacing only)	AASHTO T 90	2 per day	Crusher belt
	Gradation (304 materials processed in place)	AASHTO T 11 AASHTO T 27	1 per 1000 feet	Processed material
Magnesium Chloride and Calcium Chloride	Specific Gravity	Hydrometer	1 per shipment	Transport vehicle

Note: Density and Moisture calculations AASHTO T 310...Density corrections based on moisture for recycled materials containing asphalts, or aggregates containing MgCl or CaCl will be made based on samples taken from each test site and oven-dried in the laboratory.

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Table 153-1
Schedule of Minimum Sampling and Testing For Process Control
(to be performed by the Contractor)

Section: 401.

Material	Property or Characteristic	Test Method or Specification	Frequency	Sampling Point
Superpave Hot Asphalt Concrete Pavement	Gradation	AASTHO T 11 AASHTO T 27	2 per day per stockpile	Crusher belt (during production) and Cold Feed or Hot Bins (as applicable during production of hot mix)
	Moisture content of aggregates	AASHTO T 255	1 per day	Cold Feed (during production of hot mix)
	Compaction	ASTM D2950	Test strip, first day of production to establish roller pattern: 12 per 1500 feet, then 3 per 1500 feet	In place, after compaction
	Placement temperature	Thermometer	As directed	Behind laydown machine
	Surface tolerance	Straight edge and FLH T 504	During and after compaction	See Subsection 401.16
Aggregate	Fine aggregate angularity	AASHTO T 304, Method A	1 per day	Cold Feed

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Table 153-1
Schedule of Minimum Sampling and Testing For Process Control
(to be performed by the Contractor)

Section(s): 402, 403, 404, 405, 408.

Material	Property or Characteristic	Test Method or Specification	Frequency	Sampling Point
Asphalt Concrete Pavement	Gradation	AASHTO T 11 AASHTO T 27	2 per day per stockpile	Crusher belt (during production) and Cold Feed or Hot Bins (as applicable during production of hot mix)
Open-Graded Asphalt Friction Course				
	Moisture content of aggregates	AASHTO T 255	1 per day	Cold Feed (during production of hot mix)
Asphalt Base Course	Compaction	ASTM D2950	Test strip, first day of production to establish roller pattern: 12 per 1500 feet, then 3 per 1500 feet	In place, after compaction
	Placement temperature	Thermometer	As directed	Behind laydown machine
	Surface tolerance	Straight edge and FLH T 504	During and after compaction	See Subsection 401.16

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Table 153-1
Schedule of Minimum Sampling and Testing For Process Control
(to be performed by the Contractor)

Section(s): 409, 410.

Material	Property or Characteristic	Test Method or Specification	Frequency	Sampling Point
Chip seal aggregate	Gradation	AASHTO T 11 AASHTO T 27	2 per day	Production belt or spreader discharge
	Moisture content of aggregates	AASHTO T 255	1 per day	Stockpile or spreader discharge
Slurry seal aggregate				
Asphalt binder	Placement temperature	Thermometer	Prior to each days production, followed by 2 each day	Distributor truck
Emulsified asphalt				

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Table 153-1
Schedule of Minimum Sampling and Testing For Process Control
(to be performed by the Contractor)

Section(s): 416, 418.

Material	Property or Characteristic	Test Method or Specification	Frequency	Sampling Point
Continuous Cold Recycled Asphalt Base Course Foamed Asphalt Stabilized Base Course	Gradation	AASHTO T 27 (maximum size only)	1 per 1500 feet	Recycled material prior to compaction
	Moisture content	FLH T 515	Minimum 1 per 1500 feet alternating lanes (as necessary to comply with contract requirements)	In place after compaction and prior to compaction to determine total moisture.
	In-place density	ASTM D2950	1 per 1500 feet, alternating lanes (1 value will be equal to the mean of 3 in-place tests, and as necessary to comply with contract requirements)	In place after compaction

Note: Density and Moisture calculations ASTM D 2950...Density corrections based on moisture for recycled materials containing asphalts, or aggregates containing MgCl or CaCl will be made based on samples taken from each test site and oven-dried in the laboratory.

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Table 153-1
Schedule of Minimum Sampling and Testing For Process Control
(to be performed by the Contractor)

Section(s): 501, 552, 601.

Material	Property or Characteristic	Test Method or Specification	Frequency	Sampling Point
Concrete	Gradation and fineness modulus	AASHTO T 11 AASHTO T 27	1 per day	Aggregate, before batching
	Moisture	AASHTO T 255	1 per day/stockpile	Aggregate, before batching
	Slump	AASHTO T 119	1 per 30 cubic yards, minimum 1 per day	See note
	Air content	AASHTO T 152	1 per 30 cubic yards, minimum 1 per day	See note
	Unit weight	AASHTO T 121	1 per 30 cubic yards, minimum 1 per day	See note
	Temperature	Thermometer	1 per 30 cubic yards, minimum 1 per day	See note
	Making test specimens for compressive strength	AASHTO T 23	1 set per 30 cubic yards, minimum 1 set per day	At point of discharge

Note: If an extended set admixture is used for the sole purpose of extending discharge times, sampling and testing shall be performed by the Contractor at point of batching and discharge location to ensure compliance with Subsection 552.08.

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Section 154. – CONTRACTOR SAMPLING AND TESTING

Construction Requirements

154.02 Sampling. Add the following:

Perform the initial curing of all concrete test cylinders. Provide for transporting the government verification cylinders to the FHWA-Central Federal Lands Highway's Laboratory unless other testing facilities are authorized by the CO.

Label each concrete mold with the name and number of the Project, the cylinder number, date molded, location of the sample, and the test age (i.e. – 7, 14, or 28 days). Label the mold after casting and the cylinder after stripping to ensure the sample can be identified throughout the entire curing process.

Provide the required cylinder molds.

154.03 Testing. Add the following:

Where Process Control Sampling and Testing frequencies in Table 153-1 are identical to the Sampling and Testing Tables for all applicable work the Process Control Samples may be used for acceptance.

Add the following subsections:

154.03A Field Laboratory (Government-Furnished). Refer to the "Notice To Bidders" in the bid proposal for information regarding the option to use a Government-Furnished field laboratory.

If the bid option "Item 15401-0000, Contractor Testing, Using Government Furnished Field Laboratory" is **exercised**, the government will provide for the Contractor's use a mobile field laboratory, including testing equipment as follows:

- NCAT Thermolyne Ignition Oven
- AASHTO T 166 Bulk Specific Gravity of Compacted Mix Equipment
- Convection Oven
- Liquid Limit Machine and Grooving Tool
- 30,000 Gram Balance
- 12,000 Gram Balance
- 4,600 Gram Balance (readable to 0.01)
- Platform Scale

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- Mechanical Compactor (Moisture Density) and Accessories
- 8-inch Sieve Shaker and Sieve Stack
- 12-inch Sieve Shaker and Sieve Stack
- Drill Press with Muller
- Large Sample Splitter
- Small Sample Splitter

Provide any additional equipment or facilities necessary to fulfill the requirements of the Contract.

Transport the laboratory from 12300 West Dakota Avenue, Lakewood, CO to the point of use and return the laboratory to the same Lakewood address upon completion of the work. The trailer will be available upon issuance of Notice to Proceed and must be returned no later than 14 days following final acceptance of the contract. Contact the CFLHD Equipment Depot at **(720) 963-3459 or (720) 963-3384** for specific directions to the laboratory storage location.

Assume responsibility for the replacement of any and all missing or damaged equipment and for the repair of any damage to the laboratory. **Replacement cost for missing or damaged equipment or facilities will be deducted from any remaining monies owed the Contractor. If sufficient funds are not available under the Contract for such retention, the Contractor agrees to make payment directly to the Government for any damaged or missing equipment or facilities.**

Specifics:

Furnished equipment will be inspected by the Government by checking, standardizing, calibrating and/or verifying, as appropriate, in accordance with applicable AASHTO and ASTM standards. The Government equipment inspection will be completed after the laboratory has been moved to its permanent location on the project site prior to actual use in project testing and at least once a year thereafter. Notify the CO at least 30 days in advance of intent to use the testing equipment on the project so that Government equipment inspection can be scheduled and performed. Assume responsibility for additional equipment inspections prior to the Government's yearly inspection if the mobile laboratory is moved. Maintain records documenting these inspections in the laboratory.

Maintain equipment in proper operating condition. Do not use equipment that is found to be deficient or defective. Mark deficient or defective equipment and take it out-of-service and immediately notify the CO. If Government-furnished testing components fail through no fault or negligence of the Contractor, the Government will replace or repair the equipment in the most expeditious manner practicable. Requests for time extension and/or delay damages will not be granted for delays of less than 48 hours for any one occurrence, or for cumulative

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delays amounting to less than 5 (five) days in any one 365-day period. Requests for time extensions or damages due to equipment-related delays caused by equipment misuse or other Contractor fault will not be granted.

- Furnish water to the Government-provided field laboratory which is clear and free of oil, acid, rust, alkali, sugar, and vegetable substances. Furnish 120/240-volt, 60-cycle, single-phase current adequate to operate all of the Government field laboratory facilities at all times as required by the CO. Supply enough power to support a 200 amp service panel. Equip the power supply with a regulator that limits the voltage of the power furnished to the laboratory to not less than 220 volts and not more than 240 volts.
- All equipment provided by the Government and replaced by the Contractor will remain with the laboratory and will become the property of the Government.
- Use of the laboratory is limited to testing materials in connection with this contract.

154.03B Field Laboratory (Contractor-Furnished). If the Government-furnished field laboratory bid option is not exercised, furnish a laboratory equipped with all test equipment necessary to satisfy the requirements of the contract.

The sampling and testing services of a commercial laboratory meeting or exceeding the requirements described herein may be used if all contract sampling and testing requirements are satisfied by the use of the commercial facility.

Ensure test equipment has been checked, calibrated, standardized and/or otherwise verified in accordance with AASHTO and ASTM standards by an individual qualified to do this work. Ensure mobile laboratories receive an equipment inspection after the laboratory has been moved to its permanent location on the project site and anytime it is moved thereafter. Inspect equipment within 45 days of actual use in project testing and at least once a year thereafter. Do not use equipment that has not been inspected or is found to be deficient. Mark deficient equipment and it take out-of-service until it is repaired or replaced and shown by subsequent inspection to perform as required. Maintain records documenting these inspections in the laboratory. Provide certification(s) stating the equipment conforms to testing requirements and provide evidence of current inspection.

The CO may require the Contractor to perform testing to demonstrate acceptable equipment and an acceptable level of technician competence. The CO may also check equipment and inspection records to verify condition. Repair or replace equipment not meeting applicable requirements. Keep laboratory facilities clean and maintain equipment in proper working condition. Provide the CO unrestricted access to the laboratory for inspection and review.

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Section 155. – SCHEDULES FOR CONSTRUCTION CONTRACTS

Construction Requirements

155.02 General. Add the following:

The preliminary construction schedule shall show Year 1 and Year 2 phasing of the work.

The preliminary construction schedule shall be submitted prior to January 16, 2013 to allow NPS time for native plant ordering.

155.05 Written Narrative. Add the following:

(j) List anticipated monthly and cumulative contract earnings (including, for schedule updates, any contract modifications) for each month from the beginning of construction operations through the completion of the work. Calculate and list each month's anticipated earnings through the close of business on the date provided by the CO as the cut-off date for monthly project pay estimates.

Section 156. – PUBLIC TRAFFIC

Construction Requirements

156.03 Accommodating Traffic During Work. Delete the first paragraph and substitute the following:

Accommodate traffic according to the contract traffic control plan, MUTCD, Section 635, and this Section. An alternate traffic control plan may be submitted for acceptance according to Subsection 104.03. Submit alternate traffic control plans at least 30 days before intended use. Traffic control includes vehicles, pedestrians, cyclists, bus transit, and equestrians. All trail closures and trail impacts are required to be reviewed and approved by NPS through the CO.

Add the following:

Submit traffic control implementation drawings for Alexander Avenue work at least 30 days before intended use.

Allow emergency vehicles passage through the project without delay at all times. Coordinate with the CO and NPS to coordinate emergency communications.

For work that requires closures of both traffic lanes or temporary closures with delays, provide steel plates on site adjacent to work to accommodate emergency vehicle passage over a utility trench if an emergency arises.

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Road closures and limitations using approximate stations:

Work causing traffic delays for all Schedule A work shall only occur between 9:00 am and 5:00 pm except during paving operations. Work causing traffic delays during paving operations will be allowed between 8:00 am and 6:00 pm with 14 day advance notice to the CO.

Work causing traffic delays for Option X work on Alexander Avenue and Danes Drive shall only occur between 8:00 am and 5:00 pm, except during paving operations, and during allowable nighttime operations (see subsection 156.07).. Work causing traffic delays during paving operations will be allowed between 8:00 am and 6:00 pm with 14 day advance notice to the CO.

At all times when bicycles and motorcycles are required to travel on gravel surfaces to pass through or around the work area, construction signs shall be used to warn bicycles and motorcycles of gravel conditions.

(a) Old Bunker Road: 302+42.00 to 313+96.61

- (1)** Maintain one lane alternating traffic Monday through Friday 9:00 am to 5:00 pm. One lane closures will be allowed with maximum 15 minute delays and traffic may be delayed up to twice until passage through the work area.
- (2)** Maintain two-way traffic on nights, weekends and federal holidays.
- (3)** Maintain a separated pedestrian width at all times.
- (4)** Cyclists will be required to travel with one-way alternating traffic unless the cyclist dismounts and uses pedestrian width.

(b) Mitchell Road: 12+85.00 to 37+51.53

- (1)** Maintain one lane alternating traffic Monday through Friday 9:00 am to 5:00 pm. One lane closures will be allowed with maximum 15 minute delays and traffic may be delayed up to twice until passage through the work area.

(a) Flaggers must be used during daytime operations.

- (2)** Maintain two-way traffic on nights, weekends and federal holidays. Two-way traffic must include the following:

(a) Maintain a minimum travel way of 22-ft for two-way traffic/cyclists and a minimum 3-ft separated pedestrian width (construction device used for separation) during gabion wall construction on nights, weekends, and federal holidays.

(b) Temporary concrete barrier is required adjacent to the gabion wall construction at all times.

- (3)** Maintain on-street parking between 4:00 pm Friday and 6:00 am Monday.
- (4)** Maintain on-street parking during any closure of the Fort Cronkhite Parking Lot.

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(5) Maintain on-street parking during any closure of the existing on-street parking along the roads accessing the Marine Mammal Center.

(6) Maintain a separated pedestrian width at all times

(7) Cyclists will be required to travel with one-way alternating traffic unless the cyclist dismounts and uses pedestrian width.

(c) Bunker Road: 37+51.53 to 168+77.54

(1) Maintain one lane alternating traffic Monday through Friday 9:00 am to 5:00 pm. Delays shall be 15-minute maximum and traffic shall be delayed only once until passage through the work area during construction of the gabion wall and culverts. For other construction areas along Bunker Road, one lane closures will be allowed with maximum 15 minute delays and traffic may be delayed up to twice until passage through the work area.

(a) Flaggers must be used during daytime operations.

(2) Maintain two-way traffic on nights, weekends and federal holidays. Two-way traffic must include the following:

(a) Maintain a minimum travel way of 22-ft for two-way traffic/cyclists and a minimum 3-ft separated pedestrian width (construction device used for separation) during gabion wall construction on nights, weekends, and federal holidays.

(b) Temporary concrete barrier is required adjacent to the gabion wall construction at all times.

(3) Maintain a separated pedestrian width at all times.

(4) Cyclists will be required to travel with one-way alternating traffic unless the cyclist dismounts and uses pedestrian width.

(d) Alexander Avenue: 200+00 to 216+48

(1) One lane closures will be allowed with maximum 15 minute delays and traffic shall be delayed only once until passage through the work area. No northbound queue may be allowed to encroach onto the US 101 northbound off-ramp.

(2) Maintain two-way traffic at all times during non-work hours. Two-way traffic must include the following:

(a) Maintain a minimum travel way of 22-ft for two-way traffic/cyclists and a minimum 3-ft separated pedestrian width (construction device used for separation) during construction on nights, weekends, and federal holidays, and

(b) Temporary concrete barrier is required adjacent to the MSE wall construction at all times.

(3) Maintain a separated pedestrian width at all times.

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(4) Cyclists will be required to travel with two-way traffic unless the cyclist dismounts and uses pedestrian width.

(5) If blasting is required and approved by the CO, traffic shall be detoured to alternate routes. Blasting is allowed between 9:00 p.m. to 6:00 a.m. Sunday through Friday. Submit a traffic control plan for detour routes. Obtain a Caltrans encroachment permit for all work (including sign placement) on Caltrans right-of-way associated with detours.

(6) Expedite bus transit service through the work area.

(7) No traffic control shall be allowed on Alexander Avenue from July 3 –September 22, 2013, due to America's Cup. Alexander Avenue shall have an asphalt surface during this time period.

(e) Danes Drive: 278+75 to 280+00

(1) Maintain two-way traffic at all times. Two-way traffic must include the following:

(a) Maintain a minimum travel way of 22-ft for two-way traffic/cyclists and a minimum 3-ft separated pedestrian width (construction device used for separation).

(2) Maintain a separated pedestrian width at all times.

(3) Cyclists will be required to travel with two-way traffic unless the cyclist dismounts and uses pedestrian width.

(f) East Bunker Road:

(1) One lane closures will be allowed with maximum 15 minute delays and traffic may be delayed up to twice until passage through the work area.

(2) Place temporary traffic control signing at East Bunker Road terminus in Fort Baker to facilitate the use of East Road as an alternate route.

(3) Temporary closures of East Bunker Road will be allowed during critical work elements of MSE wall construction on Alexander Avenue. Place flagger at East Bunker Road terminus in Fort Baker to facilitate the use of East Road as an alternate route. Temporary closures shall be limited to 15 minutes.

(4) Protect East Bunker Road from construction debris from above. Submit the protection plan to the CO for approval 14 days in advance of planned installation.

(g) Fort Cronkhite Annex Parking Lot: 305+00 LT (Old Bunker Road stationing)

(1) Improvements will not begin until the Fort Cronkhite Parking Lot improvements are complete and open for public use.

(2) Access to the Marine Mammal Center is required at all times.

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(3) Access to the maintenance yard adjacent to the Fort Cronkhite Annex Parking Lot is required at all times.

(4) Permanent gate is required to be installed as specified in plans once the parking lot is closed indefinitely.

(h) Fort Cronkhite Dirt Overflow Lot: 11+00 LT (Mitchell Road stationing)

(1) The parking lot may be closed indefinitely after completion of the Fort Cronkhite Parking Lot and Fort Cronkhite Annex Parking Lot, and used for construction staging and stockpiling.

(2) Permanent gate is required to be installed as specified in plans once the parking lot is closed indefinitely.

(i) Fort Cronkhite Parking Lot: 14+00 LT (Mitchell Road stationing)

(1) Parking lot may be closed for up to 21 calendar days.

(2) Maintain the Fort Cronkhite access roads through the parking lot at all times during construction activities. The access roads are located along the east side of the parking lot.

(3) Parking lot is required to be open for public use during any closure of the existing on-street parking along the roads accessing the Marine Mammal Center.

156.04 Maintaining Roadways During Work.

(a) Add the following:

Do not construct diversions outside of the clearing limits or use alternate route detours without the approval of the CO.

156.06 Limitations on Construction Operations.

(b) Delete the text and substitute the following:

For shoulder drop-offs 3 inches or less, provide "*Low Shoulder*" warning signs. For shoulder drop-offs in excess of 3 inches, provide a 1V:3H fillet with "*Shoulder Drop-Off*" warning signs. Complete the construction of shoulders adjacent to traffic lanes to the same elevation within 14 days.

(c) Delete the first sentence and substitute the following:

For alternate one-way traffic control, provide a minimum lane width of 10 feet. For two-way traffic, provide a minimum roadway width of 22 feet.

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(i) Delete the text and substitute the following:

Limit construction-caused delays to public traffic to a maximum of 15 minutes per passage through the project.

(j) Add the following:

Limit the length of area affected as approved by the CO. See Subsection 108.01 for limitations on work.

156.07 Nighttime Operations. Add the following:

No nighttime work is permitted for Schedule A. Nighttime work will be permitted from 9:00 p.m. to 6:00 a.m. Sunday through Friday for Option X work items identified below:

- Blasting operations (if required)
- Roadway excavation

No other nighttime work is allowed for Option X. Submit requests for nighttime work to the CO for approval 14 days in advance of the scheduled work. See subsection 107.10(g)(5) for additional nighttime work requirements.

156.08 Traffic and Safety Supervisor.

Add the following:

The traffic and safety supervisor must also have a minimum of (3) years experience as a traffic and safety supervisor.

The Traffic and Safety Supervisor will also provide support to the public information program. This includes preparing and distributing a flier to the CO and the Park prior to beginning construction and once every other week thereafter. The flier shall discuss the project's ongoing work, anticipated roadway delays and/or closures, the anticipated completion dates and the schedule for the forthcoming two weeks. The flier shall provide the name of the Contractor's Traffic and Safety Supervisor and the telephone number. Updated fliers shall be provided on the off weeks if the work areas, traffic patterns or schedules have changed.

Section 157. – SOIL EROSION CONTROL

Description

157.01 Add the following:

This work shall include concrete waste management as defined in the SWPPP.

Material

157.02 Add the following:

Slope drainage pipe	706.08(d)
Gravel bags	713.14A
Prefabricated filter insert	713.16B
Concrete masonry unit	725.09(c)

Construction Requirements

157.03 **General.** Delete the Subsection and substitute the following:

157.03 General. Provide permanent and temporary erosion control measures to minimize erosion and sedimentation during and after construction according to the contract erosion control plan, contract permits, Section 107, and this Section. Project permits amend the requirements of this Section. Do not modify the type, size, or location of any control or practice without approval.

Standard erosion and sediment control devices are provided in the contract. Detail site-specific measures for controlling erosion and sediment as part of the Storm Water Pollution Prevention Plan (SWPPP). Submit the SWPPP to the CO for acceptance prior to implementation. Provide working drawings and associated data. Allow 7 days for acceptance of the drawings or a return for corrections. Do not begin any ground disturbing work until the plan has been accepted. Include all data and plan updates pertaining to erosion and sediment control in the SWPPP for the project. Include the following in the detailed design:

(a) Address contractual requirements for storm water runoff permits, environmental commitments and other permit requirements here or in Subsection 107.01 and 107.10.

(b) Location of each proposed erosion or sediment control measure.

(c) Type of each erosion or sediment control measure. If standard measures provided in the contract do not fit the field conditions, propose alternatives at least 30 days prior to installation.

(d) Quantities of proposed temporary erosion and sediment control devices to be implemented during construction.

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(e) A schedule detailing coordination of erosion and sediment control measures with the various construction operations or stages. Include the furnishing, installation, maintaining, and removing of temporary devices and the installation of permanent erosion control features.

(f) A schedule outlining the proposed schedule of clearing and grubbing, excavation, embankment, and culvert operations such that the area of disturbed or erodible material is minimized. Schedule the work such that temporary and permanent erosion measures can be incorporated at the earliest practical time.

(g) Construction methods used in various items of work to minimize erosion.

When temporary erosion or sediment control measures are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as part of the work in a timely manner, provide temporary measures at no cost to the Government.

When erosion control measures are not functioning as intended, immediately take corrective action.

At the preconstruction conference, designate in writing an Erosion Control Supervisor (ECS) who is qualified and responsible for implementing the requirements of this Section. Include a resume with previous erosion and sediment control experience and education. Do not designate the project superintendent as the Erosion Control Supervisor.

157.06 Sediment Retention Structures. Add the following:

157.06A Stabilized Construction Entrance. Before placing the geotextile fabric, clear the area of all trash and debris, grading and compacting the ground to a uniform plane. Overlap adjacent ends of geotextile fabric a minimum of 12 inches.

Maintain stabilized construction entrances to minimize tracking of soil and sediment onto existing public roads. Replenish or replace aggregate material as the aggregate becomes clogged with sediment.

157.12 Inspection and Reporting. Add the following:

Inspect all disturbed and temporarily stabilized areas of the project as required by the Construction General Permit (CGP). Provide copies of reports of all inspections and monitoring performed to the CO within 24 hours of the inspection. Refer to the CGP for current monitoring and inspection requirements.

Monitor the turbidity of waters adjacent to the project daily during the work shift. Take turbidity measurements immediately upstream of the work area and 500 feet downstream of the area of the highest turbidity. Additional measurements may be required by the NPDES permit

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or as directed by the CO. If the measurements show an increase of 10 NTU or more, immediately suspend operations in the vicinity of the problem area and modify the erosion and sediment control measures to eliminate the cause of the high turbidity. Include turbidity readings, locations, time, date, and actions taken, if any, in inspection reports. Also provide documentation of meter calibration.

157.14 Acceptance. Add the following:

Soil erosion control will be evaluated under Subsection 106.02 based on the demonstrated ability of the erosion and sediment control measures to result in minimal soil erosion, sedimentation and siltation, and turbidity increases within or adjacent to the project limits. Failure to maintain devices properly and in a timely manner may result in non-compliance and devices will be rejected until they are brought into compliance.

Measurement

157.15 Add the following:

Do not measure concrete waste management.

Payment

157.16 Delete the text and substitute the following:

The accepted quantities will be paid at the contract price per unit of measurement for the Section 157 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

Progress payments for erosion and sediment control measures will be made as follows:

- (a) 25 percent of the unit bid price will be paid upon installation.
- (b) An additional 50 percent of the unit bid price will be prorated based on total work complete.
- (c) Payment of the remaining 25 percent of the unit bid price will be paid when the temporary erosion control and sediment measures are removed from the project.

Payment for concrete waste management shall be subsidiary to the work.

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Section 158. – WATERING FOR DUST CONTROL

Description

158.01 General. Add the following:

Water can be obtained from fire hydrants located at the following locations in order of use preference:

- (1) Fort Cronkhite Parking Lot
- (2) Building T1111 Parking Lot
- (3) West access of Smith Road
- (4) East portal of Baker-Barry Tunnel
- (5) Mitchell Road/Haggett Street (across from fire station)

NPS will provide a single pressure reducing metered backflow prevention device for contractor use. Contractor will be responsible for providing and installing any additional devices for use on the project.

Installation of a pressure reducing backflow preventer and water meter is required. Contractor is required to submit a meter reading schedule to CO for approval prior to using hydrants. An average charge of approximately \$1.12/100 gallons will be assessed for water use in the Park. Cost may vary based on current water rates.

Section 201. – CLEARING AND GRUBBING

Construction Requirements

201.03 General. Add the following:

NPS shall be notified at least 3 weeks prior to vegetation removals during any time of the year. This will allow time for park surveys for animals if deemed necessary.

All vegetation clearing within the current construction limits of the project must occur between August 1 and February 28. Contractor shall be responsible for maintaining cut vegetation at a height of less than 8 inches. If vegetation is maintained below 8 inches in height, no nesting surveys would be required prior to working in these areas during the nesting season, March 1 to July 31. Planned tree removal shall occur from August 1 – December 31 to avoid the raptor nesting season from January 1 – July 31.

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For selective clearing of trees from January 1 – July 31 or clearing of vegetation over 8 inches in stature inside the landbird nesting season (March 1 – July 31) that is necessary due to change in project limits, a nesting survey by NPS Biologist would be required prior to clearing vegetation. Upon approval that the area is appropriate for vegetation removal, NPS Biologist will complete nest surveys within 5 days. If nesting activity is observed, a suitable buffer area determined by NPS Biologist would be established around the area of nesting activity to allow nesting to go until completion. No vegetation clearing work would be allowed within this buffer area. Buffer areas protected for nesting activity would need to be resurveyed for bird nests after completion of nesting activity. Areas without nesting activity would be approved for vegetation removal. The Contractor will have 7 days to remove this vegetation; otherwise another nest survey will be required.

Nesting activity outside the bird nesting seasons identified above, although unlikely, would still be protected through protective buffers as described above. Notify the CO in writing at least 3 weeks prior to beginning clearing. Minimize soil disturbance during any clearing operations.

This work includes clearing and grubbing work at the Fort Cronkhite Dirt Overflow Lot, culvert work at 30+00 and 45+00 to 47+00, Bunker Road work near Rodeo Lake and Lagoon from 50+00 to 57+00, and Rodeo Lagoon Bridge abutment work. Work includes clearing trees and shrubs by hand. Work includes finely chopping willows for reuse on site only at the Fort Cronkhite Dirt Overflow Lot.

NPS Natural Resource staff will identify trees and shrubs within the project boundaries that require herbicide treatment in addition to clearing and grubbing. All herbicide use will be administered through the Park's Integrated Pest Management (IPM) coordinator and must meet the Park's standards. Application of herbicide will require prior written approval by the CO and written Pest Control Recommendation from the IPM coordinator. Only licensed personnel will be allowed to apply pesticides, under the oversight of NPS staff or biological monitor. All herbicide use for project actions will be reported monthly to the IPM coordinator.

201.05 Grubbing. Delete subsection (b) and substitute the following:

(d) Grub all embankment areas. Undisturbed stumps less than 24 inches in diameter may be left in place if they protrude less than 6 inches above the original ground and will be covered with more than 4 feet of embankment. Remove all other stumps.

Measurement

201.08 Add the following:

Do not measure herbicide for payment. It is estimated that approximately 200 gallons of herbicide will be required for the project by NPS.

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Payment

201.09 Add the following:

Payment for clearing by hand, finely chopping willows for reuse on site, and mixing willows with soils shall be included in Item 20101-0000, Clearing and Grubbing.

Payment for herbicide shall be included in Item 20101-0000, Clearing and Grubbing.

Section 203. – REMOVAL OF STRUCTURES AND OBSTRUCTIONS

Description

203.01 Add the following:

- Saw cutting
- Portion of concrete structure at Bunker Road 60+00 LT
- Removal of inlet
- Removal of pipe culvert
- Removal of headwall
- Removal of pavement, asphalt
- Removal of guardrail
- Removal of curb and gutter, concrete
- Removal of curb, asphalt
- Removal of fence, chain link
- Removal of individual tree
- Removal of gate
- Removal of wheelstop
- Removal of concrete
- Removal of sidewalk, asphalt
- Removal of sign
- Removal of bench
- Removal of delineator post

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All items to be removed to complete the project, regardless if tabulated or listed, are included in the work.

This work includes removal of the existing gate accessing the Marine Mammal Center. The existing gate is an automated gate with key card readers. Removal items include but are not limited to, concrete foundations, key card readers, lighting, and all associated wiring. Maintain gated access to the Marine Mammal Center at all times. Provide 14 days notification to CO prior to removal of gate.

Construction Requirements

203.03 Salvaging Material. Add the following:

Salvage all signs, signposts, picnic tables, trash cans, and recycle bins and place them in the maintenance yard adjacent to the Fort Cronkhite Annex Parking Lot. Remove and stockpile items in a manner that does not damage them. All other site furnishings designated for removal are required to be removed and disposed off-site outside Golden Gate National Recreation Area.

Salvage existing guardrail W-beam for re-use on new guardrail system.

203.04 Removing Material. Add the following:

When removing a portion of pipe culvert, seal the drop inlet or remainder of culvert with concrete to ensure that water cannot get through.

Timber logs used as wheel stops and barriers contain creosote and should be considered hazardous material.

203.04 Removing Material. Add the following:

(a) Concrete Removal by Mechanical Impact Methods. Saw cut approximately $\frac{3}{4}$ inch deep along all boundaries of repair areas.

Use power-driven hand tools to remove existing concrete with the following restrictions:

- (1) Do not use jack hammers heavier than 30 pounds.
- (2) Do not operate jack hammers and mechanical chipping tools at an angle in excess of 45° from the surface of the slab.
- (3) Do not use chipping hammers heavier than nominal 15-pound class to remove concrete from beneath reinforcing bar.

Where the bond between existing concrete and reinforcing steel is destroyed, remove all concrete adjacent to the steel to provide at least $\frac{3}{4}$ inch clearance for the new concrete to bond to the steel.

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Use hand tools (hammers and chisels) to remove final particles of concrete or to achieve the required depth.

After removal of deteriorated and unsound concrete, sandblast all exposed structural steel, reinforcing steel, and concrete surfaces that will be in contact with repair material. Remove all rust and foreign material. Clean the sound concrete surface by flushing with a high-pressure water jet or oil-free compressed air.

(b) Reinforcing Steel. Do not cut or damage reinforcing steel designated to remain in place. Repair or replace all damaged or severely deteriorated bars.

Clean all exposed reinforcing steel that is to remain in place. Remove all rust and corrosive products, including oil, dirt, concrete fragments, laitance, loose scale, and other coatings that may destroy or inhibit the bond with new concrete.

If cleaned reinforcing steel will be exposed for more than 7 days, protect the steel from corrosion and contamination. If the steel becomes corroded or contaminated, clean the steel immediately before the concrete pour.

203.05 Disposing of Material.

(a) Remove from Project. Add the following:

Secure environmental clearances according to Subsection 107.10.

(b) Burn. Delete the text.

(c) Bury. Delete the text.

Measurement

When removal of signs is measured by the each, measure each sign system as one sign regardless of the number of sign panels or posts.

Section 204. – EXCAVATION AND EMBANKMENT

204.02 Definitions.

(c) Conserved topsoil. Delete the text and substitute the following:

Excavated material conserved from the roadway excavation and embankment foundation areas that is free from toxic substances, hard soil, clay, litter or other deleterious material, and is suitable for growth of grass or native vegetation. Topsoil refers to the uppermost soil horizon,

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approximately 4 inches deep, but may vary between 2 inches and 6 inches. It may include decayed organic and other materials capable of supporting vegetation.

Construction Requirements

204.05 Conserved Topsoil. Delete the first sentence and substitute the following:

Conserve topsoil from the roadway excavation and from embankment foundation areas to the extent and depth determined by the CO.

Add the following:

Unless determined by the CO to conserve topsoil, all topsoil, due to weeds, shall be buried below the finished surface in the erosion gullies at the Fort Cronkhite Dirt Overflow Lot as described in Subsection 204.14.

Use equipment capable of excavating small isolated pockets of topsoil. Manually remove topsoil in areas where topsoil cannot be removed mechanically. Do not mix topsoil with subsoil.

Stockpile topsoil in windrows less than three feet high. Do not compact or drive upon topsoil during removal. Cover topsoil stockpiles with a tarp to prevent contamination.

If it is impractical to windrow topsoil adjacent to the disturbed area, remove the topsoil and stockpile at locations described in Subsection 105.04. Haul excess topsoil to the nearest area requiring topsoil, but lacking in quantity as directed by the CO.

204.06 Roadway Excavation.

(a) General. Add the following:

Use caution when excavating adjacent to existing walls, wall foundations, historic curb and gutter and historic building foundations.

Excavation activities are not permitted (including riprap placement) between October 15 and August 1 in the vicinity of the Rodeo Lagoon and Lake (when water levels are the lowest and during the breeding season for the red-legged frog and migration season for the Central Coast California Steelhead).

Avoid ditch work when water is present.

For the Alexander Avenue excavation:

- (1)** Separate chert material from other excavated material for use as Roadway Aggregate, Method 2, (Chert Aggregate Surfacing). See Section 308.

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(2) Dispose of remaining material per subsection 204.14.

(b) Rock cuts. Add the following:

When blasting rock, use controlled blasting methods according to Subsection 205.08(c).

204.14 Disposal of Unsuitable or Excess Material. Add the following:

Bury weed infested soil in approved erosion gullies north of the Fort Cronkhite Dirt Overflow Lot with a minimum 3 feet cover.

Secure environmental clearances according to Subsection 107.10.

Soil sample testing at the Fort Cronkhite Annex Parking Lot of stained soil indicate that approximately four cubic yards of contaminated soil will require removal due to the total petroleum hydrocarbon concentrations exceed The Presidio Trust's preliminary remediation goals for residential use. Dispose of contaminated soil at an off-site disposal facility. See subsection 107.08.

All waste generated from the clean out of the drainage systems shall be disposed of offsite in accordance with all applicable Federal and State laws and regulations. Waste characterization results indicate drainage waste may be disposed of as nonhazardous waste.

Measurement

204.16

(a) Roadway Excavation.

(1) Include the following volumes in roadway excavation:

(e) Delete the text and substitute the following:

Conserved topsoil stripped from cuts.

(h) Delete the text and substitute the following:

Conserved material taken from stockpiles and used in Section 204 work except topsoil measured under Section 624. Only materials required to be conserved by the CO are eligible for measurement under this item.

(2) Do not include the following in roadway excavation: Add the following:

(m) Conserved topsoil stripped from fills.

(n) Pavement removal paid for under section 203.

Add the following:

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(g) Subexcavation. Measure subexcavation by the cubic yard in its original position. Do not measure minor aggregate backfill material and geotextile separately for payment.

(h) Shoulder excavation. Measure shoulder excavation by the linear foot, regardless of width.

(i) Waste (Special). Measure waste (special) by the cubic yard as excavated using length, width, and depth dimensions.

Payment

204.17 Add the following:

Payment for Item 20401-0000, Roadway Excavation is limited to ten percent of the plan quantity of excavation in the cut until the slope rounding in that cut is completed.

Section 205. – ROCK BLASTING

Construction Requirements

205.03 Regulations

(b) Storage, security, and accountability. Delete the subsection and substitute the following:

Bureau of Alcohol, Tobacco, and Firearms (BATF), 27 CFR Part 555, Commerce in Explosives.

205.05 Blasting Plans. Add the following:

The blasting plan shall include a traffic control plan for detour routes.

Section 211. – ROADWAY OBLITERATION

Description

211.01 Add the following:

Adjust slopes in the horizontal and vertical planes to blend into existing, adjacent natural ground.

Apply conserved topsoil on finished slopes according to Section 624.

211.02 Delete the text of this subsection and substitute the following:

Install erosion control devices according to Section 157.

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Conserve topsoil according to Subsection 204.05.

Conform to the following when obliterating or closing roadways:

(a) Rigid material.

(1) Non-asphalt material. Break concrete pavements, curbs, gutters, sidewalks, and other nonasphalt rigid material into pieces and dispose of it according to Subsection 203.05(a).

(2) Asphalt material. Use asphalt material according to Section 308, Roadway Aggregate (Recycled asphalt pavement).

(b) Non-rigid Material.

(1) Non-asphalt material. Scarify or rip the gravel, crushed stone, or other nonrigid surface, base, and subbase material and dispose of according to Subsection 203.05(a)]. Do not mix with underlying soils. Scarify soils to a depth of 8 inches.

(2) Asphalt contaminated material. Dispose of asphalt contaminated material according to Subsection 211.02(a)(2).

Measurement

211.05 Add the following:

Do not measure areas within slope stake limits under roadway obliteration.

Measure material excavated from an obliterated roadway and used for new construction or in separate obliteration locations under Section 204.

Section 251. – RIPRAP

Description

251.01 Add the following:

This work includes applying stain to riprap.

Materials

251.02 Add the following:

Stain

563

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Construction Requirements

251.03 General. Add the following:

Apply stain according to Section 563.

Payment

251.09 Add the following:

Payment for application of stain shall be included in applicable 251 items for Place Riprap.

Section 253. – GABIONS AND REVET MATTRESSES

Materials

253.02 Add the following:

Wall Stain

563

Construction Requirements

253.03 General. Delete the first sentence and substitute the following:

Survey according to Section 152 and verify the limits of the structure.

Temporary excavation support shall be in accordance with Section 562, Temporary Works.

253.05 Structure Erection. Add the following to the first paragraph:

For gabion structures, grade the foundation for a width equal to the width of the gabion plus 0.5 feet. Where gabions are set on rocky foundations, place 6 inches of select granular backfill under the baskets.

253.07 Backfilling. Add the following paragraph:

After completion of the gabion structure, treat the exposed surfaces of the wire facing with an approved penetrating desert varnish stain. The treated surfaces' finished color, tint, and density will be as directed by the CO. Furnish materials and use application methods in accordance with Section 563.

Measurement

253.10 Add the following:

This work also includes treating exposed surfaces of the wire facing with an approved penetrating desert varnish stains. Do not measure stain.

This work also includes structure excavation and structure backfill for the construction of the gabion wall. Do not measure structure excavation or structure backfill.

Payment

253.11 Add the following:

Temporary excavation support, structure excavation, structure backfill, and stain will not be paid for separately but shall be included in the cost of the work.

Section 255. – MECHANICALLY STABILIZED EARTH WALLS

Delete the text of this section and substitute the following:

Description

255.01 This work consists of designing, furnishing, constructing, and staining mechanically stabilized earth (MSE) walls with steel (mesh or strip) or geogrid reinforcement according to the details shown on the plans.

Materials

255.02 Conform to the following Section and Subsections:

Foundation fill	704.01
Select wall backfill	704.13(a)
Wall backfill	704.13(b)
Wall facing fill	704.13(c)
Plastic pipe	706.08(d)
Geotextile	714.01
Geocomposite sheet drain	714.02(b)
Mechanically stabilized earth wall material	720.01

Construction Requirements

255.03 General. Survey MSE wall locations according to Section 152 to acquire existing terrain data. Prepare and submit preliminary installation drawings for MSE walls according to

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Subsection 104.03. Drawings will include existing terrain cross-sections and elevations of MSE walls. Do not prepare design drawings for MSE walls or disturb the existing ground at wall locations until existing terrain data has been acquired, incorporated into the preliminary drawings, and the CO has approved the drawings. Once the CO has approved preliminary drawings, submit design drawings according to Subsection 255.03(a).

Perform the work under Section 209. Grade the foundation to a width equal to the length of reinforcing mesh or strips plus 20 inches. Bedrock and boulder excavation to obtain the necessary base width may be required. Excavate using equipment capable of removing the material while preventing material escape outside the construction limits. Excavate any loose, soft, or otherwise unsuitable material present at foundation grade and replace with foundation fill in horizontal layers that when compacted do not exceed 6 inches in depth. Compact the MSE wall foundation according to Subsection 204.11.

See Section 563 for staining requirements.

(a) Design of MSE Walls. Using the approved preliminary drawings, design all MSE wall components for a 75-year design service life according to the requirements of AASHTO Standard Specifications for Highway Bridges current at time of contract award and FHWA publication No. FHWA-NHI-00-043, "Mechanically Stabilized Earth Walls and Reinforced Soil Slopes Design and Construction Guidelines" (2001). Other design methods will not be allowed. Design the MSE walls for:

- (1) External stability including: sliding, overturning, bearing capacity, and eccentricity.
- (2) Internal stability including: tensile stresses, pullout, facing connection, and sliding along reinforcement.
- (3) Local stability including: bulging and maximum unreinforced height.
- (4) Design the MSE wall to account for dead and live loads, seismic loads, horizontal loads from guardrails or barriers, hydrostatic loads, and other loads as appropriate.
- (5) Design the MSE wall such that the toe is at a depth that no scouring or undermining will occur.

Use Table 255-1 for required factors of safety per AASHTO for MSE wall stability design:

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**Table 255-1
Required Factors of Safety**

External Stability	Static	Seismic (A > 0.09g)
Base Sliding	1.5	1.1
Overturning	2.0	1.5
Bearing Capacity	2.5	1.5
Eccentricity	$e < L/6$	$e < L/3$
Internal Stability	Static	Seismic (A > 0.09g)
Tensile Stress:		
Steel Mesh (wire-faced walls)	0.55Fy	0.73Fy
Steel Mesh (concrete-faced walls)	0.48Fy	0.64Fy
Steel Strips	0.55Fy	0.73Fy
Geogrids	1.5	1.1
Pullout	1.5	1.1
Facing Connection (for concrete-faced walls)	1.5	1.1
Internal Sliding	1.5	1.1
A: Acceleration coefficient, e: Eccentricity, L: Reinforcement length, Fy: Yield strength of steel		

Table 255-2 lists available geotechnical report(s). General soil, rock strata descriptions, and indicated boundaries are based on engineering judgment and interpretation of available subsurface information, and may not reflect actual variation in subsurface conditions between borings and samples. The information has been prepared and is intended for Government design purposes. It is listed here for the purpose of providing intended users with access to the same information available to the Government.

**Table 255-2
Available Geotechnical Reports**

Title	Author	Date
FINAL Geotechnical Report Bunker & Mitchell Roads and Alexander Avenue Improvements	Yeh and Associates	February 17, 2012

Use soil parameters shown in Table 255-3 for the internal, external, and local stability of the MSE retaining walls:

**Table 255-3
Soil Design Parameters**

Material	Friction Angle (degrees)	Cohesion (psf)	Unit Weight (pcf)
Select Backfill	34	0	125
Wall Backfill	30	0	120
Foundation Soil	30	0	120

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Use permanent retaining wall systems that have previously been successfully designed and constructed for a public highway agency in the United States, and that have performed in an acceptable manner. The following wire-faced retaining wall systems have been previously constructed on CFLHD projects. For all wire-faced wall systems, submit the required information listed in Subsection 255.03(b). For wire-faced systems not listed below, submit the required information listed in Subsections 255.03(b) and 255.03(c).

Hilfiker Retaining Wall

3900 Broadway
P.O. Box 2012, #E
Eureka, CA 95503
(800) 762-8962

SSL Retaining Walls

4740 Scotts Valley Dr.
Scotts Valley, CA 95066
(831) 430-9300

The Reinforced Earth Company

8614 Westwood Center Drive
Suite 1100
Vienna, VA 22182-2233
(703) 821-1175

Tensar Earth Technologies, Inc.

5883 Glenridge Dr., Suite 200
Atlanta, GA 30328
(800) 292-4459

T & B Structural Systems, Inc.

637 West Hurst Blvd.
Hurst, TX 76053
817-280-9858

(b) Design Submittal. Submit four (4) sets of drawings and supporting calculations according to Subsection 104.03. One set will be returned with any comments and requests for revisions or additional information. Allow 28 calendar days after received by the CO for review and acceptance of the submittal. If revisions are required, make corrections and resubmit four (4) revised sets. If the drawings and calculations must be resubmitted, the time for review and acceptance starts over. Upon acceptance, furnish five (5) complete sets of the submittal to the CO. Do not order materials for MSE retaining walls before the CO approves the submittal.

To avoid having submittals returned with a request for more information, submittals should be organized in such a way to facilitate review for conformance with design standards and

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evaluation of design cases and loads. Include the following minimum information with the MSE wall submittals:

(1) Design calculations and information:

(a) Design calculations including an index page to the calculations. Submit design calculations on sheets approximately 8.5 by 11 inches in size with the project number, wall location, date of preparation, initials of designer and checker, and page number at the top of the page.

(b) Highway Innovative Technology Evaluation Center evaluation report (not required for wire-faced wall systems). Contact the following for copies of HITEC evaluation reports.

Highway Innovative Technology
Evaluation Center (HITEC)
1015 15th Street NW, Suite 600
Washington, DC 20005-2605
Phone: 202-842-0555
Fax: 202-789-5345
E-mail: hitec@cerf.org

(c) Design notes including an explanation of any symbols and computer programs used in the wall design.

(d) Summary of soil parameters, loading conditions considered, and factors of safety, including all partial reduction factors, if any.

(e) Summary of wall reinforcing elements used and their design properties.

(f) Demonstrate the compatibility of the effective aperture (the average opening created between the facing mat and backing mat) with the specified MSE wall facing fill.

(g) Provide a design analysis for each possible design situation.

(h) Specify the applied bearing pressure at wall foundation.

(i) Include one set of hand calculations for each unique design analysis if computer analysis other than MSEW per FHWA publication No. FHWA-NHI-00-043 is used.

(j) Special details, cross-sections, and quantities.

(k) A well-documented field construction manual describing in detail and with illustrations where necessary, the step-by-step construction process.

(2) Drawings.

(a) Submit design drawings on sheets approximately 11 by 17 inches in size with the project number, wall location, date of preparation, initials of designer, checker, and page number.

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(b) A plan view of the wall identifying:

- (1) Offset from the construction centerline to the face of the wall at its top and base at all changes in horizontal alignment.
- (2) Limit of widest reinforcement.
- (3) Centerline of any drainage structure or drainage pipes behind, passing through, or passing under the wall.
- (4) Horizontal and vertical curve data affecting the wall. Match lines or other details to relate wall stationing to centerline stationing.

(c) An elevation view of the wall identifying:

- (1) Elevation at the top of the wall, at all horizontal and vertical breaks, and at least every 15.0 feet along the wall.
- (2) Elevations at the wall base or top of leveling pads.
- (3) Distance along the face of the wall to all steps in the wall base or leveling pads.
- (4) Length and type of reinforcement elements.
- (5) Distance along the face of the wall to changes in the length of the reinforcement.
- (6) Existing and final ground line along wall layout line.
- (7) Existing ground line at a horizontal distance equal to the bench width away from the bottom of the wall. Refer to the MSE wall detail sheet.
- (8) Listing of the summary of quantities.

(d) General notes for construction of wall.

(e) Wall Details:

- (1) Typical section of wall.
- (2) Wall batter.
- (3) Details for constructing walls around drainage facilities entering, exiting, and within MSE wall envelope.
- (4) Details for guardrail posts and chain link fence posts punching through the upper reinforcement layers.
- (5) Details for terminating walls and adjacent slope construction.

(c) Supplemental Design Submittal. Submit the following additional information for wire-faced systems not listed at the end of Subsection 255.03(a).

- (1) Examples of successful projects (design, construction, and in-service performance

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with a public agency).

- (2) Name, address, and telephone number of agency contact.
- (3) Narrative descriptions and photos of example projects.
- (4) Limitations and constraints of the system.
- (5) Details of wall elements (procedures for field and laboratory evaluation including instrumentation and special requirements, if any).
- (6) Material samples of reinforcing elements and connection devices.
- (7) Construction control specifications showing material type, certifications, field-testing, acceptance/rejection criteria, and placement procedures.
- (8) Typical unit costs, supported by data from actual projects.
- (9) Laboratory and field-test results which support the system design criteria.
- (10) Information substantiating all partial factors of safety used in establishing the reinforcement elements long-term design strength.
- (11) Additional information requested by the CO.

(d) Temporary shoring. When required, design temporary shoring using one of the methods described in the California Trenching and Shoring Manual current at time of contract award. The manual is available from the California Department of Transportation or online at:

www.dot.ca.gov.

255.04 Wall Erection. Erect the wall according to the specifications, the design drawings approved by the CO, and manufacturer's recommendations. When requested, have an experienced field representative from the wall system manufacturer available during the first three days of wall erection and as otherwise requested by the CO.

Place reinforcement elements horizontally on compacted fill at elevations and dimensions shown on the approved design drawings. Orient reinforcement elements with the highest strength axis perpendicular to the wall alignment. Spliced reinforcement connections between shorter pieces of reinforcement will not be allowed unless approved by the CO. Prior to placing fill over reinforcement, place the next course of wall units, pull the reinforcement taut, and anchor the reinforcement.

(a) Wire-faced walls. Connect, tighten, and anchor soil reinforcement elements to the wall facing units before placing backfill. Design and construct the wire-faced wall and components to have the ability to compress up to 2 inches at each layer of reinforcement without creating outward bulging of the facing elements. Design and construct the wall and components to meet Table 255-5:

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**Table 255-5
Wire Faced Wall Construction Tolerances**

Description	Requirement
Wall batter	Within 2.0 inches per 10.0 feet of wall height and 1% for the overall wall height
Wall height	Within 1.0 inch per 10.0 feet of wall height and a maximum of 4.0 inches
Horizontal and vertical alignment	Within 2.0 inches at any point in the wall when measured with a 10 foot straightedge
Separation of facing mat	Outside of facing mat within 1.5 inches from wall facing fill at all locations
Reinforcement elevation	Within 2.0 inches of the design elevation and within 2.0 inches above the corresponding connection elevation at the wall face. Do not place reinforcement below corresponding connection elevation.
Reinforcement inclination	Within 2% from horizontal

Include hardware cloth behind the wire face unless the D_{15} of the wall facing fill gradation is larger than the effective wire face opening. Place a Type II-B geotextile between the wall facing fill and select wall backfill. Terminate wire-face wall at the beginning and end of each lift with a return of the wall facing a minimum of 4 feet into the backfill.

255.05 Backfilling. Backfill the reinforced volume with select wall backfill in compacted lifts not to exceed 6 inches where hand compaction is used or in compacted lifts not to exceed 9 inches where heavy compaction equipment is used. Place, spread, and compact select wall backfill over the reinforcement in a manner that prevents development of slack in the reinforcement. Compact select wall backfill according to Subsection 204.11. Ensure that no voids exist below the reinforcing elements. Where the stabilized volume supports spread footings for bridges or other structural loads, compact the top 5 feet to at least 100 percent of the maximum density according to AASHTO T-99 method C.

Use wall facing fill within 3.0 feet of the wall face. Place wall facing fill in compacted lifts not exceeding 12 inches and densify using hand operated equipment. Place wall facing fill in sequence with select wall backfill such that the top of the adjacent materials are within 18 inches of one another. Do not damage or disturb the facing or reinforcing elements. Do not operate equipment directly on top of the reinforcing elements. Remove and replace all damaged, misaligned, or distorted wall components.

Backfill and compact behind the reinforced volume with wall backfill according to Subsections 204.10 and 204.11. At the end of the day's operation, slope the last lift of fill away from the wall face to direct surface runoff away from the wall face. Do not allow surface runoff from adjacent areas to enter the wall construction area.

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255.06 Drainage. Subsurface drainage is required. Install the drainage system as shown in drawing "Special M605-A". The CO may require supplemental drainage when seepage is identified in the excavation.

255.07 Acceptance. Structure excavation will be evaluated under Section 209.

Select wall backfill, wall backfill, and wall facing fill will be evaluated under Subsection 704.13. Foundation fill will be evaluated under Subsection 704.01.

Material for mechanically stabilized earth walls, plastic pipe, geotextiles, and geocomposite sheet drains listed under Subsections 706.08, 714.01, 714.02 and 720.01 will be evaluated under Subsections 106.02 and 106.03.

Construction of mechanically stabilized earth wall will be evaluated under Subsections 106.02 and 106.04.

Survey work will be evaluated under Section 152.

Measurement

255.08 Measure mechanically stabilized earth walls by the square foot of front wall face. Structure excavation, select wall backfill, wall backfill, wall facing fill, temporary shoring, drainage system, and returns at the ends of each lift will not be measured for payment and are considered incidental to the MSE walls.

Measure foundation fill under Section 208.

Payment

255.09 The accepted quantities, measured as provided above, will be paid at the contract price per unit of measurement for the pay item listed below that is shown in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

Payment at the unit bid price for the Section 255 pay items included in the bid schedule is full compensation for wall construction to a depth not exceeding 5 feet below the lowest elevation shown on the plans for each MSE wall structure. MSE wall construction includes structure excavation, structural backfill, wall elements, and all other costs associated with the wall installation. When the depth of the footing below the lowest elevation shown on the plans for each MSE wall exceeds 5 feet, either the Contractor or the CO may request an equitable price adjustment for the depth in excess of 5 feet. There will be no equitable adjustment when the depth of the footing does not exceed 5 feet below the elevation shown in the plans; however, all work constructed will be measured for payment.

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**Table 255-7
Sampling and Testing Requirements**

Material or Product	Type of Acceptance (Subsection)	Property or Characteristic	Test Methods or Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Backfill	Measure and tested for conformance (106.04)	Classification	AASHTO M145	1 per soil type	Source of material	Yes	Before using in work
		Gradation	AASHTO T27 & T11	1 per soil type	Source of material	Yes	Before using in work
		Moisture density	AASHTO T 180 Method D ⁽¹⁾ , or AASHTO T99, Method C ⁽¹⁾	1 per soil type	Source of material	Yes	Before using in work
		Compaction	AASHTO T 310 or other approved procedures	2 per lift	In place	---	Before using in work

⁽¹⁾ A minimum of five points per proctor.

Section 303. – ROAD RECONDITIONING**Material****303.02** Add the following:

Crushed aggregate

703.06

Construction Requirements**303.08 Pulverizing.** Delete the text and substitute the following:

Pulverize the existing asphalt pavement and/or base to the width and depth shown in the plans with an approved rotary milling machine to meet the following size requirements according to AASHTO T27:

Sieve Designation	Percent Passing
1 ½ inch	100
1 inch	85 – 100

Place and compact the pulverized material according to Subsection 301.05. Compact each layer to at least 95 percent of maximum density. Determine the in-place density and moisture content according to AASHTO T 310 or ASTM D2950.

Remove and dispose of unsuitable material prior to pulverizing as directed by the CO. Replace unsuitable material with minor crushed aggregate. Perform work according to Section 308.

Clean the compacted surface of all loose material, dirt, or other deleterious substances by approved methods. Correct surface irregularities by scarifying the defective area and reworking the pulverized material. Finish the pulverized surface according to Subsection 301.06.

Section 308. – MINOR CRUSHED AGGREGATE**Description****308.01** Add the following:

Roadway aggregate, method 2 (Chert aggregate surfacing) consists of native reddish chert and similar dark rock materials lacking reflectivity. [Obtain this material from the stockpiles at the Smith Road parking area and the Alexander Avenue east side roadway excavation. If Schedule A is awarded, and Option X is not awarded, then bid item 30801-2000, Roadway Aggregate, Method 2 \(Chert Aggregate Surfacing\) will be awarded which requires import of chert material](#)

after the Smith Road stockpiles are used. If Option X is awarded then bid item alternate 30801-2000, Roadway Aggregate, Method 2 (Chert Aggregate Surfacing, Onsite from Option X) will be awarded which requires reuse of chert material from the Alexander Avenue roadway excavation and Smith Road stockpiles.

Roadway aggregate, method 2 (recycled asphalt pavement) consists of processed existing asphalt pavement on Mitchell Road, Old Bunker Road, and Bunker Road to Sta. 47+00. Recycled asphalt pavement must meet the requirements of the table in subsection 303.08 to be used as roadway aggregate, method 2 (recycled asphalt pavement).

This work includes constructing metal edging along the trail as indicated in the project typical sections.

Material

308.02 Add the following:

Metal edging shall be steel or aluminum, minimum 3/16-inch thickness, minimum 6-inch depth, and colored black.

Construction Requirements

308.04 **Placing Crushed Aggregate.**

(a) Roadway aggregate. Add the following:

Use all of item 30801-3000 Roadway aggregate, Method 2 (recycled asphalt pavement) generated within each roadway section before importing any item 30802-3000 Roadway aggregate, Method 2 (import) within a section. Roadway sections are Old Bunker Road, Mitchell Road, and Bunker Road to 47+00.00

Install metal edging per manufacturer's recommendations. Metal edging shall be placed such that top of edging is flush with finished grade to facilitate drainage.

308.06 **Acceptance.** Add the following:

Table 308-01 applies only to import material.

Measurement

308.07 Delete the second paragraph and substitute the following:

Measure chert aggregate surfacing and recycled asphalt pavement by the cubic yard in place.

Measure imported aggregate by the ton. Do not measure imported aggregate by the cubic yard.

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Do not measure metal edging.

Payment

308.08 Add the following:

Payment for metal edging shall be included in Item 30801-2000, Roadway Aggregate, Method 2 (Chert Aggregate Surfacing).

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Delete Table 308-1 and substitute the following:

**Table 308-1
Sampling and Testing Requirements**

Material or Product	Type of Acceptance (Subsection)	Property or Characteristic	Test Methods or Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Crushed aggregate ⁽¹⁾	Measured and tested for conformance (106.04)	Moisture-Density	AASHTO T180 Method D ⁽³⁾	1 for each aggregate supplied.	Production output or stockpile.	---	Before using in work
		Gradation ⁽²⁾	AASHTO T11 and T27	1 for each 1000 t.	From the windrow or roadbed after processing.	---	Before placing next layer
		In-place density and moisture content	AASHTO T310 or other approved procedures	1 for each 1000 t.	In-place completed compaction layer.	---	Before placing next layer

⁽¹⁾ Sampling and testing required for roadway aggregate.⁽²⁾ Use only sieves indicated for the specified gradation.⁽³⁾ Minimum of 5 points per proctor.

Delete Section 402 and substitute the following:

**Section 402. - ASPHALT CONCRETE PAVEMENT BY
HVEEM OR MARSHALL MIX DESIGN METHOD**

402.01 This work consists of constructing one or more courses of asphalt concrete pavement using hot or warm mix asphalt (HMA or WMA).

The mix design method is designated as Hveem or Marshall. Hveem or Marshall HMA and WMA asphalt concrete pavement class is designated as shown in Table 402-1.

Aggregate grading is designated as shown in Table 703-4.

A minimum of one percent lime is required in the asphalt concrete mixture.

Pavement roughness is type III for Bunker Road, and Mitchell Road. Alexander Avenue and Old Bunker Road will be straightedge measurement.

Asphalt binder grade is PG 64-28PM.

402.02 Conform to the following Subsections:

Material

Aggregate	703.07
Antistrip additive	702.08
Asphalt binder	702.01
Mineral filler	725.05
Recycled asphalt pavement	703.19

Construction Requirements

402.03 Composition of Mix (Job-Mix Formula). Furnish mixes of aggregate, asphalt binder, recycled asphalt pavement (RAP), and additives that meet the applicable aggregate gradation in Table 703-4 and design parameters (a), (c), and (d) or (b), (c), and (d) in Table 402-1 for the mix class shown in the bid schedule.

If more than 1.0 percent hydrated lime is proposed in the JMF provide AASHTO T 283 tests results showing the additional lime is necessary to meet the minimum tensile strength ratio requirements in Table 402-1.

Apply all mix design requirements for HMA to the development of the WMA mix design. Submit modifications to the WMA technology according to the WMA Appendix of AASHTO R 35 for approval by the CO.

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**Table 402-1
Asphalt Concrete Mix Requirements**

Design Parameters	Class of Mix		
	A	B	C
(a) Hveem (AASHTO T 246 and AASHTO T 247)			
(1) Percent air voids ⁽¹⁾	3.0 - 5.0	3.0 - 5.0	3.0 - 5.0
(2) Stabilometer, minimum	37	35	30
(3) Voids in mineral aggregate, min. %	See Table 402-2		
(b) Marshall (AASHTO T 245)			
(1) Percent air voids ⁽¹⁾	3.0 - 5.0	3.0 - 5.0	3.0 - 5.0
(2) Compaction, number of blows each end of test specimen	75	50	50
(3) Stability, pounds min.	2,000	1,500	1,000
(4) Flow, 0.01 inches	8 - 14	8 - 16	8 - 20
(5) Voids in mineral aggregate, min. %	See Table 402-2		
(c) Moisture Susceptibility (AASHTO T 283) ⁽²⁾			
(1) Tensile strength ratio, min.	0.80	0.80	0.80
(d) Dust to binder ratio ⁽³⁾	0.8 - 1.6	0.8 - 1.6	0.8 - 1.6

⁽¹⁾ The percent of air voids are based on AASHTO T 166, T 209, and T 269. Maximum specific gravity (density) is based on AASHTO T 209 Use AASHTO T 166 regardless of the volume of water absorbed.

⁽²⁾ Use 4 inch diameter specimens. Note that AASHTO T 283 requires a freeze-thaw cycle.

⁽³⁾ Dust to binder ratio is defined as the percent of material including lime, baghouse fines, and other mineral matter added to the mixture. Calculate the ratio using the effective asphalt content calculated by mass of mix.

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Table 402-2
Voids in Mineral Aggregate (VMA)
Hveem or Marshall Mix Design

Sieve Size ⁽¹⁾	Voids in Mineral Aggregate, min. ⁽²⁾⁽³⁾	
	Hveem	Marshall
No. 4	16.0	18.0
3/8 inch	14.0	16.0
1/2 inch	13.0	15.0
3/4 inch	12.0	14.0
1 inch	11.0	13.0

⁽¹⁾ The largest sieve size listed in the applicable specification upon which any material is permitted to be retained.

⁽²⁾ VMA to be determined according to AASHTO R 35.

⁽³⁾ When mineral filler or hydrated lime is used, include in the calculation for compliance with the VMA.

(a) Recycled asphalt pavement use. Up to 20 percent RAP material by mass may be used in the job-mix formula (JMF).

(b) Baghouse fines. If used, document how baghouse fines are reintroduced and measured. Submit target values for the percent of baghouse fines reintroduced to the JMF if they are a separate stockpile.

(c) Submission. Submit written JMF and all associated material with Form FHWA 1607 (Hveem) or Form 1622 (Marshall) for verification at least 30 days before control strip and production. Include the location of all commercial mixing plants to be used and a separate JMF for each plant. Include a signed statement prepared by the testing laboratory that certifies the proposed JMF meets the requirements of the contract and can be compacted in the field during production to meet contract requirements. For each JMF, submit the following:

(1) Aggregate and mineral filler.

(a) Target values:

(1) Target value for percent passing each specified sieve size for the aggregate blend.

(2) Designate target values within the gradation band specified for the nominal maximum size aggregate grading shown in Table 703-4.

(b) Source and percentage of each stockpile to be used.

(c) Average gradation of each stockpile from process control tests.

(d) Representative samples from each stockpile. Use split samples of material taken at the same time samples are taken for testing by the Contractor's laboratory.

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- (1) 600 pounds of aggregates proportioned by each stockpile according to the JMF.
- (2) 10 pounds of mineral filler if proposed for JMF.
- (e) Results of aggregate quality tests performed within one year of the submittal date. For aggregate quality tests, see Subsection 703.07.

(2) Asphalt binder.

- (a) Target asphalt binder content by total weight of mixture.
- (b) Five 1-gallon cans of the asphalt binder to be used in the mix.
- (c) Test results from the manufacturer meeting AASHTO M 320 for the asphalt binder including a temperature-viscosity curve. Provide the laboratory mixing and compaction temperatures and maximum plant mixing temperature.
- (d) Material safety data sheets.

(3) Antistrip additives. If part of the JMF:

- (a) Two pounds of lime anti-strip additive.
- (b) Name of product.
- (c) Manufacturer.
- (d) Dosage rate.
- (e) Material safety data sheet.

(4) Recycled asphalt pavement material. If part of the JMF, submit:

- (a) Optional sheet for RAP on Form FHWA 1641.
- (b) Source and percentage of RAP material.
- (c) 100-pound representative sample of each RAP stockpile.

(5) Warm mix technology and additive information.

- (a) One-gallon sample of WMA additive and methodology for incorporating into mix design process.
- (b) WMA manufacturer's recommendations for usage and established target rate for the additive.
- (c) Documentation of at least three successful past WMA technology field applications including project type, project owner, tonnage placed, mix design, mixture volumetrics, performance, and locations of the asphalt plants.
- (d) Temperature range for laboratory mixing and compacting.

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(e) Asphalt binder performance grade test data for WMA additive percentage proposed for use, if applicable.

(f) Compatibility of WMA additive with asphalt binder and anti-stripping agent.

(g) Temperature range for field mix production, delivery, lay-down and compaction.

(d) Verification. The verification process will start when all required documentation and materials have been received. The CO will review and may perform design verification testing. If verification testing is performed, the information supplied in the Contractor's design must agree with the verification test results within the tolerances shown below. Once the JMF is verified for use, mix production for the control strip can begin.

(1) Aggregate gradations. Representative aggregate and RAP samples from each stockpile are combined according to the Contractor's recommendation for stockpile percentages. The Contractor's combined gradation results are verified if the CO's results for each sieve are within the Contractor's target values plus or minus the following tolerances:

Sieve Size	Tolerance, % (\pm)
1 inch	3.0
$\frac{3}{4}$ inch	3.0
$\frac{1}{2}$ inch	3.0
$\frac{3}{8}$ inch	3.0
No. 4	3.0
No. 8	3.0
No. 30	2.0
No. 50	2.0
No. 200	1.0

(2) RAP asphalt binder content and gradation. The Contractor's RAP asphalt binder content results are verified if the CO's result for each stockpile is within ± 0.75 percent by total mass using AASHTO T 308. Submit the RAP dry gradation, burned gradation, asphalt content, and specific gravity information as shown on the RAP data sheet of FHWA Form 1641.

(3) Bulk specific gravity of aggregate (G_{sb}). The Contractor's coarse and fine G_{sb} is verified if the CO's results are within 0.038 for AASHTO T 85 and 0.066 for AASHTO T 84.

(4) Voids in the mineral aggregate (VMA). The Contractor's VMA result is verified if the CO's result is above the minimum specification limit in Table 402-2.

(5) Marshall stability and flow value. The Contractor's Marshall stability and flow values are verified if the CO's result meet the contract specifications in Table 402-1.

(6) Hveem stabilometer value. The Contractor's Hveem stabilometer value is verified if the CO's result is above the minimum specification limit in Table 402-1.

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(7) Air voids (V_a). The Contractor's V_a result is verified if the CO's result at the same design asphalt binder content is between 3.0 and 5.0 percent.

(8) Tensile strength ratio (TSR). The Contractor's TSR result is verified if the CO's result is above 0.80.

(e) Changes and resubmissions. If a JMF is rejected or any source of material is changed, submit a new JMF for verification. Up to 30 days may be required to evaluate a change after receipt of all required documentation and material. Approved changes in target values will not be applied retroactively for payment.

The CO will deduct all JMF evaluation costs resulting from the following:

- (1) Contractor-requested changes to the approved JMF.
- (2) Contractor requests for more than one JMF evaluation.
- (3) Additional testing necessary due to the failure of a submitted JMF.

402.04 Mixing Plant. Use mixing plants conforming to AASHTO M 156.

(a) Drum dryer-mixer plants.

(1) Bins. Provide a separate bin in the cold aggregate feeder for each individual aggregate stockpile in the mix. Use bins of sufficient size to keep the plant in continuous operation and of proper design to prevent overflow of material from one bin to another.

(2) Stockpiling procedures. Separate aggregate into at least 3 stockpiles with different gradations.

(b) Batch plants.

(1) Aggregate bin. Provide a bin with 3 or more separate compartments for storage of the screened aggregate fractions to be combined for the mix. Make the partitions between the compartments tight and of sufficient height to prevent spillage of aggregate from one compartment into another.

(2) Load cells. Calibrated load cells may be used in batch plants instead of scales.

(3) RAP. Modify batch plants so the RAP is introduced into the mix after bypassing the dryer. Design the cold feed bin, conveyor system, and special bin adjacent to the weigh hopper, if used, to avoid segregation and sticking of the RAP material. Heat aggregate to a temperature that will transfer sufficient heat to the RAP pavement material to produce a mix of uniform temperature within the range specified in the approved JMF.

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(c) WMA plant modifications.

- (1) Modify the mixing plant as required by the manufacturer to introduce the WMA technology. Interlock the WMA additive delivery system with the automated proportioning system.
- (2) Comply with manufacturer's recommendations for incorporating additives and WMA technologies into the mix. Comply with manufacturer's recommendations regarding delivery and storage of additives.
- (3) Modify the plant burner and drum flights to operate at lower production temperatures.

402.05 Equipment.

(a) Pavers. Furnish pavers that are:

- (1) Self-contained, power-propelled units with adjustable vibratory screeds with full-width screw augers.
- (2) Heated for the full width of the screed.
- (3) Capable of spreading and finishing courses of asphalt concrete mix in widths at least 12 inches more than the width of one lane.
- (4) Equipped with a receiving hopper having sufficient capacity to ensure a uniform spreading operation.
- (5) Equipped with automatic feed controls, which are properly adjusted to maintain a uniform depth of material ahead of the screed.
- (6) Operable at forward speeds consistent with satisfactory mix lay down.
- (7) Capable of producing a smooth finished surface without segregating, tearing, shoving, or gouging the mat.
- (8) Equipped with automatic screed controls with sensors capable of sensing grade from an outside reference line, sensing the transverse slope of the screed, and providing the automatic signals that operate the screed to maintain grade and transverse slope.
- (9) Equipped with a screed mounted safety edge device. Do not use a conventional single plate strike off. Use a safety edge device capable of the following:
 - (a) Maintaining contact with the road shoulder surface.
 - (b) Allowing for automatic transition to cross roads, driveways, and obstructions.
 - (c) Constraining the asphalt concrete material head by reducing the volume to increase the density of the extruded profile.

Submit data at least seven days before performing the work indicating the safety edge device's capabilities. Acceptable safety edge devices are:

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- (d) TransTech Systems, Inc. Shoulder Wedge Maker.
- (e) Advant-Edge Paving Equipment, LLC Advent-Edger.
- (f) Troxler SafeTSlope Edge Smoother.

402.06 Surface Preparation. Clean the existing surface of all loose material, dirt, or other deleterious substances by approved methods, as applicable. Apply an asphalt tack coat to contact surfaces of pavements, curbs, gutters, manholes, and other structures according to Section 412.

402.07 Weather Limitations. Place asphalt mix on a dry, unfrozen surface when the air temperature in the shade is above 35 °F and rising. For HMA placement temperature, conform to Table 402-3.

Table 402-3
Minimum Asphalt Concrete Mix Placement Temperatures

Compacted Lift Thickness	< 2 Inches	2 – 3 Inches	> 3 Inches
Road Surface Temperature °F	Minimum Lay Down Temperature ⁽¹⁾		
< 35.0	(2)	(2)	(2)
35.0 – 39.9	(2)	(2)	280
40.0 – 49.9	(2)	285	275
50.0 – 59.9	295	280	270
60.0 – 69.9	285	275	265
70.0 – 79.9	280	270	265
80.0 – 89.9	270	265	260
≥ 90.0	265	260	255

⁽¹⁾ Never heat the asphalt concrete mix above the temperature specified in the approved mix design.

⁽²⁾ Paving not allowed.

402.08 Asphalt Preparation. Uniformly heat the asphalt binder to provide a continuous supply of the heated asphalt binder from storage to the mixer. Do not heat asphalt binder above 365° F.

402.09 Aggregate Preparation. When lime is used as an anti-strip, adjust the aggregate moisture to at least 4 percent by mass of aggregate. Mix the lime uniformly with the aggregate before introducing the aggregate into the dryer or dryer drum. Use calibrated weighing or metering devices to measure the amount of lime added to the aggregate.

For batch plants, heat, dry, and deliver aggregate for pugmill mixing at a temperature sufficient to produce a mix temperature within the approved range. Adjust flames used for drying and

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heating to prevent damage to and contamination of the aggregate. Additional plant adjustments may be required to provide dry aggregate at the reduced mixing temperatures of WMA.

Control plant operations so the moisture content of the mix behind the paver is 0.5 percent or less according to AASHTO T 329.

Before starting mix production, obtain approval of synchronized metering and weighing devices used to introduce a constant rate of lime and water.

Add lime to the aggregate by one of the following methods:

(a) Method A. Add lime to the combined cold feed aggregate using an enclosed in-line cold feed mechanical pugmill mixer. Use a twin-shaft, continuous mixing pugmill with adjustable mixing paddles. Adjust the retention time of the mixture in the pugmill so no unmixed lime is visible after the lime and aggregate exit the pugmill.

(b) Method B. Add lime to the produced aggregates during stockpiling using a pugmill. Distribute the lime per the stockpile ratios stated in the mix design.

A minimum moisture content of two percent by dry weight for coarse aggregate and four percent by dry weight for fine aggregate is required at the time the aggregates and lime are mixed. Marinate treated aggregate in stockpiles from 24 hours to 60 days before using in asphalt concrete mix. Do not use aggregate marinated longer than 60 days.

(c) Method C. Add lime to the combined cold feed aggregate by introducing the lime between aggregate layers as the aggregate flows from the cold feed bins. Mix the lime and aggregate on the conveyor belt by placing a minimum of six paddles over the conveyor belt. Make the paddles protrude into the aggregate flow and direct the aggregate to fold over itself causing the material to migrate from one side of the conveyor belt to the other. Space the paddles to provide complete mixing. Provide a water spray over the conveyor belt as necessary to control dust and to maintain minimum moisture content.

402.10 Mixing. Measure the aggregate and asphalt into the mixer according to the JMF. Mix until all the particles are completely and uniformly coated with asphalt according to AASHTO M 156. Maintain the discharge temperature according to the JMF.

402.11 Hauling. Use vehicles with tight, clean, and smooth metal beds for hauling asphalt concrete mixes.

Coat the beds with an approved material to prevent the mix from adhering to the beds. Do not use petroleum derivatives or other coating material that contaminates or alters the characteristics of the mix. Drain the bed before loading.

Equip each truck with a canvas cover or other suitable material of sufficient size to protect the mix from the weather. When necessary to maintain temperature, use insulated truck beds and securely

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fastened covers. Provide access ports or holes for checking temperature of asphalt concrete mix in the truck.

402.12 Production Start-Up Procedures.

(a) Pre-paving conference. At least three days before the start of paving operations, arrange for a pre-paving conference. Coordinate attendance with CO and all applicable subcontractors. Submit and prepare to discuss the following:

- (1) Proposed schedule of paving operations.
- (2) List of all equipment (excavation, compaction, laydown, haul, pugmill, etc.), and personnel used in the production and construction of the work.
- (3) Proposed traffic control plan for paving operations including provisions for pavement drop-offs and moving operations.
- (4) Contractor quality control plan for paving and sampling and testing according to Sections 153 and 154.
- (5) Procedures for constructing the control strip including placing, finishing, compacting, and smoothness procedures.
- (6) Acceptance procedures according to Subsections 106.05 and 402.17.
- (7) Asphalt binder and aggregate correction factors according to AASHTO T 308 and AASHTO T 30 on FHWA Form 1640 for each JMF. If RAP is used, provide the asphalt binder and aggregate correction factors according to FLH T 308 Addendum and AASHTO T 30 on FHWA Form 1648 for each JMF.
- (8) Calibration certification for the gyratory compactor.

(b) Control strip. Provide seven days notice before beginning production of an asphalt concrete mix.

On the first day of production, produce sufficient mix to construct a 1000-foot long control strip, one-lane wide, and at the designated lift thickness. Construct the control strip on the project at an approved location.

Construct the control strip using mix production, construction equipment, and compaction procedures intended for the entire mix. Cease production after construction of the control strip until the asphalt concrete mix and the control strip are evaluated and accepted.

- (1) **Mixture.** Take and test at least three control strip asphalt concrete mix samples and evaluate according to Subsection 402.17.
- (2) **Compaction.** Take nuclear density readings behind each roller pass to determine the roller pattern necessary to achieve required density.

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At a minimum of five locations within the control strip, take nuclear gauge readings, and cut and test core samples according to Subsection 402.17. Furnish the CO with the nuclear gauge readings, core densities, and nuclear gauge correlation using FHWA Form 1646 at completion of control strip.

The control strip mix is acceptable if the Contractor's test results for asphalt content, gradation and core density produce a calculated pay factor of 0.90 or greater and the Contractor's testing is verified by the Government.

Repeat the control strip process until an acceptable control strip is produced. See Subsection 106.01 for the disposition of material in unacceptable control strips. Accepted control strips may remain in place and will be accepted and measured as a part of the completed pavement. Tests used for the control strip will not be included in the evaluation for payment according to Subsection 106.05. When a control strip is verified and accepted, full production may begin.

Use these start-up procedures when producing material from a different plant or when resuming production after a termination of production due to unsatisfactory quality according to Subsection 106.05.

402.13 Placing and Finishing. Do not use mixes produced from different plants unless the mixes are produced according to the same JMF, use material from the same sources, and are approved. Construct control strips according to Subsection 402.12 for each plant from which production is intended.

Place mix at a temperature conforming to Table 402-3. Measure temperature of the mix in the hauling vehicle just before dumping into spreader or measure it in the windrow immediately before pickup.

Place the asphalt concrete mix with a paver conforming to Subsection 402.05. Control horizontal alignment using a reference line. Automatically control the grade and slope from reference lines, a ski and slope control device, or dual skis. Use skis having a minimum length of 20 feet.

In areas where mechanical spreading and finishing is impractical, place and finish the mix with alternate equipment to produce a uniform surface closely matching the surface obtained when using a mechanical paver.

Offset the longitudinal joint of one layer at least six inches from the joint in the layer immediately below. Make the longitudinal joint in the top layer along the striped centerline of two-lane roadways or at the lane lines of roadways with more than two lanes.

The CO will designate the JMF to be used for wedge and leveling courses at each location. Place wedge and leveling courses in maximum 3-inch lifts. Complete the wedge and leveling before starting normal paving operations.

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For simple curve widening locations (widening only on one side) shift the centerline joint location such that the final layer is midway between the normal edge of shoulders. The shift from the staked centerline will be towards the widened lane one-half the total curve widening specified for the given station as shown in the plans.

Make the longitudinal joint in the top layer midway between the edge of shoulders, as recorded under Subsection 152.03(m), or at the lane lines of roadways with more than two lanes.

402.14 Compacting. Furnish at least three rollers. Furnish one roller each for breakdown, intermediate, and finish rolling. At least one roller will be pneumatic-tired. Size the rollers to achieve the required results. Operate rollers according to the recommendation of the manufacturer. Diesel fuel will not be used as a release agent with any roller used to compact the asphalt mix. Do not cause cracking, shoving, or undue displacement. Continue rolling until all roller marks are eliminated, all cracks are sealed, and the required density is obtained. For HMA, do not roll the mix after the surface cools below 175 °F.

Monitor the compaction process with nuclear density gauges calibrated to the control strip core density test results. Cut six-inch diameter core samples from the compacted pavement. Fill and compact the core holes with asphalt concrete mixture. Label the cores and protect them from damage due to handling or temperature during storage.

Along forms, curbs, headers, walls, and other places not accessible to the rollers, compact the mix with alternate equipment to obtain the required compaction.

402.15 Joints, Trimming Edges, and Cleanup. Complete pavement construction of adjacent traffic lanes to the same elevation within 24 hours. If elevation differences exceeding 2 inches between adjacent lanes are left overnight, sign with "*Uneven Lanes*" warning signs and provide a 1V:3H fillet.

At connections to existing pavements and previously placed lifts, make the transverse joints vertical to the depth of the new pavement. Form transverse joints by cutting back the previous run to expose the full-depth course.

To both transverse and longitudinal joints, apply an asphalt tack coat to the joint edge according to Section 412.

Place the asphalt concrete mix as continuously as possible. Do not pass rollers over any unprotected edge of a freshly laid mix.

Dispose of material trimmed from the edges and any other discarded asphalt concrete mix according to Subsection 211.02(a)(2).

402.16 Pavement Roughness. Measure the profile of the pavement surface according to the designated pavement roughness type. In addition, construct all pavement surfaces to meet the requirements of (e) below.

(a) Profile measurement.

Equipment. Provide an ASTM E 950, class 1, inertial profiling system meeting all the requirements and specifications found in AASHTO M 328 and certified in accordance with AASHTO R 56. At least 21 days before profiling begins, provide copies of the system certification(s). Display a current decal on the equipment indicating the expiration date of the certification(s).

Personnel. Provide an operator certified in accordance with AASHTO R56. At least 21 days before profiling begins provide copies of the operator's certification(s).

Measuring. The CO will identify the beginning and ending points and any excluded areas. Measure the pavement profile in both wheel paths using a sensor path spacing of 65-71 inches and centered in the traveled way of the lane. Operate the inertial profiler in accordance with manufacturer's recommendations and AASHTO R 57. Use a long wave cutoff filter distance of 200 feet and report the profile data (elevation and distance) at a maximum interval of 2 inches. Provide a lead-in distance, after reaching the testing speed, of at least 150 feet. Furnish personnel to provide flagging operations as may be required. Use profiler's automatic start/stop activation when collecting data. Use event markers to identify the beginning and ending location of areas to be excluded from profile measurement.

Cattle guards, bridges not being overlaid and turning lanes, passing lanes, side roads and ramps less than 1,000 feet in length will be excluded from profile measurement.

Measure excluded areas with a straightedge according to paragraph (e).

The CO will coordinate and observe profiling operations. Immediately after profiling export each profile (elevation, distance data, header and marker info) in pvp (project and embedded data file format) to a disk (CD or DVD) and provide the disk to the CO. Non-continuous data files will not be accepted. Use the following naming convention for all electronic files provided to the CO for Type I and Type II pavement roughness:

[Project Name (may be abbreviated)] _ [beginning station_to_ending station] _ [Initial or Final],
(e.g. - Beaver_Cr_Rd_25+50_to_387+35_Initial.pvp).

Use the following naming convention for Type III pavement roughness:

[Project Name (may be abbreviated)] _ [beginning station_to_ending station],
e.g. - [Beaver Cr Rd_25+50_to_387+35.pvp].

Evaluation. The CO will review and analyze all profile measurements. The CO may perform verification testing, equipment validation or both.

(1) Verification testing. Verification testing will consist of the CO profiling a section of road and comparing the results against the contractor's results for the same section.

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Comparison runs will be made within 21 days of each other. The contractor's results will be considered verified if the CO's IRI for each wheel path differs from the contractor's IRI for the same wheel path by no more than 10 percent of their mean. Contractor's equipment failing to match the CO's IRI value for either wheel path shall not be used.

(2) Equipment validation. Equipment validation will consist of determining a cross correlation value on at least one section having a minimum length of 528 ft. The contractor's profiler and the CO's profiler will be cross correlated on the same day. Coordinate the equipment validation date through the CO. When requested provide the CO with a list of three or more possible dates in three or more different weeks that the profiler and operator will be available for cross correlation verification. The CO will determine the location of the cross correlation segment(s). The minimum acceptable cross correlation value is 0.90. Contractor's equipment failing to obtain a cross correlation value of at least 0.90 shall not be used.

The CO will use the profile measurements to determine the Mean Roughness Index (MRI) value for the traveled way using the current version of Profile Viewer and Analysis (ProVAL) software. The MRI is determined by averaging the International Ride Index (IRI) value from each wheel path. The CO will also determine areas of localized roughness. The MRI and areas of localized roughness will be used to determine payment for the designated pavement roughness type.

Areas of localized roughness will be identified using a report of continuous MRI with a base length of 25 feet. This will yield the MRI of every possible 25-foot segment. Any area for which the continuous report exceeds the threshold MRI value for the specified roughness type will be considered a defective area requiring correction. When corrections are not allowed an additional payment deduction in accordance with paragraph (f) will apply. No deduction will be made for areas of localized roughness identified within 12.5 feet of the beginning or end of a profile section or within 12.5 feet of any excluded areas. Measure these areas with a straightedge according paragraph (e).

Cattle guards, bridges not being overlaid and turning lanes, passing lanes, side roads and ramps less than 1,000 feet in length will be excluded from the calculation of MRI and determination of localized roughness.

A report of continuous IRI is defined as the roughness profile from "Profiles from Roughness", TRR 1260, by M.W. Sayers. Its use for detection of localized roughness, as required here, is demonstrated in "Using a Ride Quality Index for Construction Smoothness Specifications", TRR 1861, by M. Swan and S. Karamihas.

Correct areas of localized roughness in accordance with paragraph (g).

(b) Type I pavement roughness. Measure the profile of the initial pavement surface within 14 days after receiving the Notice to Proceed and before construction activities disturb the existing pavement surface. The initial pavement surface is defined as the original insitu pavement

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surface immediately before construction activities begin. The localized roughness threshold computed to the nearest whole number for Type I pavement roughness is equal to the following:

$$\text{Localized Roughness (LR)} = \text{Initial MRI} + 1.881(S_{25})$$

Where the Initial MRI is the MRI obtained before construction activities begin and (S_{25}) is the sample standard deviation of the 25-foot MRI.

No work that will disturb the initial pavement surface shall proceed until the CO's analysis is complete.

Measure the profile of the final pavement surface before placing a surface treatment and within 21 days of completing roadway paving. The original surface MRI will be used in conjunction with the final MRI to determine the percent improvement for the traveled way.

The percent improvement in MRI will be determined to one decimal place for the traveled way according to the following formula:

$$\% \text{ Improvement} = [(\text{Initial MRI} - \text{Final MRI}) / \text{Initial MRI}] \times 100$$

Table 402-4 will be used to determine the final pay factor (PF_{rough}) for the traveled way to two decimal places. When the % Improvement is less than 25.0 percent and the final MRI value is less than or equal to 70.0 inches per mile the final MRI, Table 402-6 and Table 402-7 Type III will be used to determine the final pay factor (PF_{rough}). Correct areas of localized roughness in accordance with paragraph (g). Any pavement with a negative percent improvement shall have a minimum 1 inch overlay placed over the entire paved surface.

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Table 402-4
Type I Pavement Roughness Pay Factors

Percent Improvement (%)	Pay Factor (PF _{rough})
Greater than 50.0	PF = 1.05
47.6 to 50.0	PF = 1.04
45.1 to 47.5	PF = 1.03
43.6 to 45.0	PF = 1.02
42.1 to 43.5	PF = 1.01
25.0 to 42.0	PF = 1.00
24.0 to 24.9	PF = 0.99
23.0 to 23.9	PF = 0.98
22.0 to 22.9	PF = 0.97
21.0 to 21.9	PF = 0.96
20.0 to 20.9	PF = 0.95
19.0 to 19.9	PF = 0.94
18.0 to 18.9	PF = 0.93
17.0 to 17.9	PF = 0.92
16.0 to 16.9	PF = 0.91
15.0 to 15.9	PF = 0.90
14.0 to 14.9	PF = 0.89
13.0 to 13.9	PF = 0.88
12.0 to 12.9	PF = 0.87
11.0 to 11.9	PF = 0.86
10.0 to 10.9	PF = 0.85
5.0 to 9.9	PF = 0.80
0.0 to 4.9	PF = 0.70
Negative % Improvement	Correct and Overlay

(c) Type II pavement roughness. Measure the profile of the initial pavement surface within 14 days after receiving the Notice to Proceed and before construction activities disturb the pavement surface. The initial pavement surface is defined as the original insitu pavement surface immediately before construction activities begin. The localized roughness threshold computed to the nearest whole number for Type II pavement roughness is equal to the following:

$$\text{Localized Roughness (LR)} = \text{Initial MRI} + 1.282(S_{25})$$

Where the Initial MRI is the MRI obtained before construction activities begin and (S_{25}) is the sample standard deviation of the 25-foot MRI.

No work that will disturb the initial pavement surface shall proceed until the CO's analysis is complete.

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Measure the profile of the final pavement surface before placing a surface treatment and within 21 days of completing roadway paving. The original surface MRI will be used in conjunction with the final MRI to determine the percent improvement for the entire traveled way.

The percent improvement in MRI will be determined to one decimal place for the traveled way according to the following formula:

$$\% \text{ Improvement} = [(\text{Initial MRI} - \text{Final MRI}) / \text{Initial MRI}] \times 100$$

Table 402-5 will be used to determine the final pay factor (PF_{rough}) for the traveled way to two decimal places. When the % Improvement is less than 49.0 percent and the final MRI value is less than or equal to 70.0 inches per mile the final MRI, Table 402-6 and Table 402-7 Type III will be used to determine the final pay factor (PF_{rough}). Correct areas of localized roughness in accordance with paragraph (g). Any pavement with a percent improvement less than 10.0 percent shall have a minimum 1 inch overlay placed over the entire paved surface.

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**Table 402-5
Type II Pavement Roughness Pay Factors**

Percent Improvement (%)	Pay Factor (PF _{rough})
Greater than 60.0	PF = 1.05
58.6 to 60.0	PF = 1.04
57.6 to 58.5	PF = 1.03
56.6 to 57.5	PF = 1.02
55.1 to 56.5	PF = 1.01
49.0 to 55.0	PF = 1.00
48.0 to 48.9	PF = 0.99
47.0 to 47.9	PF = 0.98
46.0 to 46.9	PF = 0.97
45.0 to 45.9	PF = 0.96
44.0 to 44.9	PF = 0.95
43.0 to 43.9	PF = 0.94
42.0 to 42.9	PF = 0.93
41.0 to 41.9	PF = 0.92
40.0 to 40.9	PF = 0.91
38.0 to 39.9	PF = 0.90
36.0 to 37.9	PF = 0.89
35.0 to 35.9	PF = 0.88
34.0 to 34.9	PF = 0.87
33.0 to 33.9	PF = 0.86
31.0 to 32.9	PF = 0.85
25.0 to 30.9	PF = 0.80
10.0 to 24.9	PF = 0.70
Less than 10.0	Correct & Overlay

(d) Type III pavement roughness. Measure the profile of the final pavement surface before placing a surface treatment and within 21 days of completing roadway paving. The localized roughness threshold for Type III pavement roughness is 140 inches per mile. Pay factors from Table ~~401-5~~ [402-6](#) will be used in conjunction with the histogram printout from ProVAL's Smoothness Assurance Analysis. The final pay factor (PF_{rough}) is equal to the sum of the products of the individual pay factors indicated in Table ~~401-5~~ [402-6](#) multiplied by ProVAL's corresponding histogram percentages, divided by 100. The final pay factor (PF_(rough)) will be determined to three decimal places. Correct areas of localized roughness in accordance with paragraph (g). Any pavement with an MRI greater than 125 inches per mile is in reject and shall be corrected in accordance with paragraph (g).

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**Table 402-6
Type III Pavement Roughness Pay Factors**

MRI (in/mile)	PF _(rough)
Greater than 95.0	0.700
95.0 to 90.0	0.800
90.0 to 85.0	0.850
85.0 to 80.0	0.900
80.0 to 75.0	0.960
75.0 to 70.0	0.980
70.0 to 65.0	1.000
65.0 to 60.0	1.010
60.0 to 55.0	1.020
55.0 to 50.0	1.025
50.0 to 45.0	1.030
45.0 to 40.0	1.035
40.0 to 35.0	1.040
35.0 to 30.0	1.045
Less than 30.0	1.050

(e) Straightedge measurement. Use a 10-foot metal straight edge to measure at right angles and parallel to the centerline. Defective areas are deviations between the surface and the bottom of the straightedge in excess of 0.25 inches measured between any two contacts of the straightedge, or deviations in excess of 0.25 inches measured at the end of the straightedge. Use a 10-foot metal straight edge to measure areas within 12.5 feet of the beginning or end of a profile section or within 12.5 feet of any excluded areas. Correct defective areas in accordance with paragraph (g).

(f) Localized roughness pay reduction. Each area of localized roughness exceeding the threshold MRI specified for the designated pavement roughness type will receive a further reduction in accordance with Table 402-7.

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**Table 402-7
Localized Roughness Pay Reductions**

Type I	Type II	Localized Roughness Limit (MRI)	Type III	
Deduct per Occurrence	Deduct per Occurrence		Localized Roughness Limit MRI (in/mile)	Deduct per Occurrence
\$200	\$300	Computed MRI value per paragraph (b) for Type I and per paragraph (c) for Type II	140.0 to 169.9	\$300
			170.0 to 179.9	\$450
			180.0 to 189.9	\$600
			190.0 to 199.9	\$750
			200.0 to 209.9	\$900
			210.0 to 219.9	\$1,200
			220.0 to 229.9	\$1,500
			230.0 to 239.9	\$2,000
			Greater than or equal to 240.0	\$4,000

(g) Defective area correction. Correct defective areas by milling a minimum of one half the pavement depth and filling with approved HMA or WMA mix or by cutting and removing the defective area and repaving with approved HMA or WMA mix. All other proposed methods of correction require approval from the CO before starting any corrective work.

When correction by any method other than milling and filling or cutting, removing and repaving is proposed submit a proposal to the CO for approval. If grinding is proposed, use a diamond blade machine and specify the manufacturer and model of the equipment to be used. Identify the beginning and ending station of each grind location, the grinding depth and lateral extent of grinding. The endpoints of the areas where a grinder is to be applied must be optimized using ProVAL. Specify the type of seal to be placed after grinding is completed. All seals shall be placed in accordance with Section 409 or 410. Grinding depth is limited to 12.5% of the design pavement thickness. Grinding in excess of these depths is not an acceptable unless it is accompanied by a minimum 1 inch overlay. The CO may take up to 7 days to approve, modify or reject the proposal.

Defective area corrections and surface treatments shall be provided at no cost to the Government.

After corrections are made, re-measure the pavement profile in accordance with Subsection 402.16 (a). Data from the re-measurement will be analyzed to determine the MRI or Percent Improvement, areas of localized roughness and to determine the final payment in accordance with Subsection 402.19. The maximum pay factor obtainable when correction and re-measurement of the surface are required is 1.00.

If for any reason corrections are not allowed, no adjustment will be made to the final pay factor (PF_{rough}) or localized roughness pay deductions

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402.17 Acceptance. See Table 402-9 for sampling and testing requirements and the acceptance quality characteristic category.

Mineral filler, antistripping additives, and WMA additives will be evaluated under Subsections 106.02 and 106.03.

Aggregate quality properties will be evaluated under Subsections 106.02 and 106.04.

Asphalt binder will be evaluated under Subsection 106.03, 106.04, 702.09, and Table 402-8.

Construction of the HMA or WMA (Hveem or Marshall designed) pavement course will be evaluated under Subsections 106.02 and 106.04.

Asphalt content, aggregate gradations, core density will be evaluated under Section 106.05.

Pavement roughness will be evaluated under Subsection 106.04 and Subsection 402.16.

(a) Asphalt content. The upper and lower specification limits are the approved JMF target value plus or minus 0.4 percent.

(b) Aggregate gradations. The upper and lower specification limits are the approved JMF target values plus or minus the allowable deviations shown in Table 703-4. See Table 402-9 for the acceptance quality characteristics category.

(c) Core density. The lower specification limit is 91.0 percent of the maximum specific gravity (density) determined according to AASHTO T 166 and T 209. Use 62.245 pcf to convert specific gravity to density.

(d) Asphalt binder. The pay factor is determined from Table 402-8.

(e) Pavement roughness. The evaluation for payment will be made after all defective areas are addressed. See Subsection 402.16 (g).

Measurement

402.18 Measure the Section 402 items listed in the bid schedule according to Subsection 109.02.

Payment

402.19 The accepted quantities will be paid at the contract price per unit of measurement for the Section 402 pay items listed in the bid schedule except for the asphalt concrete pavement contract unit bid price will be adjusted according to Subsections 106.05, 402.16, and Table 402-8. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

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Payment for asphalt concrete pavement will be made at a price determined by multiplying the contract unit bid price by the material pay factor. The material pay factor is calculated as follows:

$$PF_{\text{Material}} = 1 + [(PF_{\text{Mix}} - 1) + (PF_{\text{PG}} - 1)]$$

where:

PF_{Material} = Material pay factor.

PF_{Mix} = Pay factor for asphalt concrete pavement. PF_{Mix} is the lowest single pay factor determined for asphalt binder content, gradation, and core density.

PF_{PG} = Pay factor for asphalt binder. The PF_{PG} formula is as follows:

$$PF_{\text{PG}} = (PF_1 + PF_2 + PF_3 + \dots + PF_n) / n$$

where:

$PF_{\#}$ = For each sample, the lowest pay factor determined from any test in Table 402-8. If the lowest pay factor for a sample is in reject, the sample's pay factor is zero.

n = Number of samples tested.

If either the pay factor for the asphalt binder (PF_{PG}) or the pay factor for asphalt concrete pavement (PF_{Mix}) is below 0.75, the lot for asphalt concrete pavement is in reject.

When the bid schedule contains a pay item for asphalt concrete pavement, Type I, II or III pavement roughness, a separate pay adjustment will be made for pavement roughness calculated as follows:

$$\text{Type I, II and III Pay Adjustment} = 40,000 (PF_{\text{Rough}} - 1.00)(L) - (\text{LRPR})$$

where:

PF_{Rough} = Pay factor from Table 402-4, Table 402-5, or Table 402-6.

L = Total project length in lane miles of traveled way as specified in the contract. Measure the project length to two decimals.

LRPR = Localized Roughness Pay Reduction from Table 402-7.

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**Table 402-8
Asphalt Binder Pay Factor Table**

Tests on Original	Specifications (See 702.01)	Pay Factor =					
		1.01	1.00	0.95	0.90	0.75	Reject
Dynamic Shear Rheometer, kPa	≥ 1.00	≥ 1.17	1.16 to 1.00	0.99 to 0.89	0.88 to 0.77	0.76 to 0.50	< 0.50
Tests after Rolling Thin Film Oven (RTFO)							
Dynamic Shear Rheometer, kPa	≥ 2.20	≥ 2.69	2.68 to 2.20	2.19 to 1.96	1.95 to 1.43	1.42 to 1.10	< 1.10
Tests on Pressure Aging Vessel (PAV)							
Dynamic Shear Rheometer, kPa	≤ 5,000	≤ 4,711	4,712 to 5,000	5,001 to 5,289	5,290 to 5,578	5,579 to 5,867	> 5,867
Bending Beam Rheometer, s, MPa	≤ 300	≤ 247	248 to 300	301 to 338	339 to 388	389 to 449	≥ 450
Bending Beam Rheometer, m-value	≥ 0.300	≥ 0.320	0.319 to 0.300	0.299 to 0.294	0.293 to 0.278	0.277 to 0.261	< 0.261

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**Table 402-9
Sampling and Testing Requirements**

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Method Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Aggregate source quality (703.07)	Measured and tested for conformance (106.04 and 105)	LA abrasion	---	AASHTO T 96	1 per type & source of material	Source of materials	Yes	Before producing“
		Sodium sulfate soundness loss (coarse & fine)	---	AASHTO T 104				
		Fractured faces	---	ASTM D 5821				
		Fine aggregate angularity	---	AASHTO T 304				
		Flat and elongated particles	---	ASTM D 4791				
		Sand equivalent	---	AASHTO T 176				
Asphalt concrete pavement (mix design)	Measured and tested for conformance (106.04)	Gradation	---	AASHTO T 11 AASHTO T 27	1 per each submitted mix design	Stockpiles	Yes“	30 days before paving
		RAP asphalt binder content	---	AASHTO T 308				
		Bulk specific gravity of aggregate (coarse & fine)	---	AASHTO T 84 AASHTO T 85				
		Hveem S-value	---	AASHTO T 246 AASHTO T 247				
		Marshall stability and flow		AASHTO T 245				
		VMA	---	AASHTO R 35				
		Air Voids (V _a)	---	AASHTO T 269				
		Retained strength (TSR)	---	AASHTO T 283				
Asphalt binder (mix design)		Quality	---	AASHTO M 320		Mixing plant or Asphalt Supplier	Tested by the Government	

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Table 402-9 (continued)
Sampling and Testing Requirements

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Method Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Asphalt concrete pavement (control strip)	Statistical (106.05)	Gradation:		AASHTO T 30	3 minimum	Behind the paver before compaction	Yes	Prior to beginning of next day's production
		3/8 inch	I					
		No. 4	I					
		No. 8	I					
		No. 50	I					
		No. 200	I					
		Other specified sieves (See Table 703-4)	II					
		Asphalt content ⁽¹⁾	I	AASHTO T 308				
	Core density ⁽²⁾⁽³⁾	I	AASHTO T 166	5 minimum	In-place after compacting	Yes	24 hours after placement	
Measured and tested for conformance (106.04)	Maximum specific gravity	---	AASHTO T 209 ⁽⁵⁾	3 minimum	Behind the paver before compaction	Yes	Prior to beginning of next day's production	
	Mix temperature	---	---	First load & as determined by the CO	Hauling vehicle before dumping or windrow before pickup	---	As directed by the CO	

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Table 402-9 (continued)
Sampling and Testing Requirements

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Method Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Asphalt concrete pavement (production)	Statistical (106.05)	Gradation:		AASHTO T 30	1 per 700 tons	Behind the paver before compaction	Yes	Prior to beginning of next day's production
		3/8 inch	I					
		No. 4	I					
		No. 8	I					
		No. 50	I					
		No. 200	I					
		Other specified sieves (See Table 703-4)	II					
	Asphalt content ⁽¹⁾	I	AASHTO T 308					
Core density ⁽²⁾⁽⁴⁾	I	AASHTO T 166	In-place after compacting	Yes	24 hours after placement			
Measured and tested for conformance (106.04)	Maximum specific gravity	---	AASHTO T 209 ⁽⁵⁾	Behind the paver before compaction	Yes	Prior to beginning of next day's production		
Asphalt binder (production)	Measured and tested for conformance (106.04 & Table 402-8)	Quality	Table 402-8	AASHTO M 320	1 per 2000 ton of mix, but not less than 5 samples	In line between tank & mixing plant (702.09(c))	Two 1-quart samples	Tested by the Government

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Sampling and Testing Requirements

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Method Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Asphalt concrete pavement (final surface)	Measured and tested for conformance (106.04)	Type I Pavement Roughness, before construction (Initial MRI)	---	AASHTO R 56 & R 57	See Subsection 402.16	Left and Right Wheel Paths	---	Original surface before overlaying, recycling, or milling and within 14 days of Notice to Proceed
		Type I Pavement Roughness, after construction (Final MRI)	---	AASHTO R 56 & R 57	See Subsection 402.16	Left and Right Wheel Paths	---	21 days after final paving
		Type II Pavement Roughness, before construction (Initial MRI)	---	AASHTO R56 & R 57	See Subsection 402.16	Left and Right Wheel Paths	---	Original surface before overlaying, recycling, or milling and within 14 days of Notice to Proceed.
		Type II Pavement Roughness, after construction (Final MRI)	---	AASHTO R 56 & R 57	See Subsection 402.16	Left and Right Wheel Paths	---	21 days after final paving
		Type III Pavement Roughness (Final MRI)	---	AASHTO R 56 & R 57	See Subsection 402.16	Left and Right Wheel Paths	---	21 days after final paving

- ⁽¹⁾ Use AASHTO T 308, Method A. Calculate the asphalt binder content by weighing the sample before and after the burn using a calibrated external balance. Modify AASHTO T 308, parts 8.2 and 10.2 to allow the use of AASHTO T 255, Total Evaporable Moisture Content of Aggregate by Drying.
- ⁽²⁾ Side-by-side cores for each lift will be obtained for core density testing. Submit each companion core to the CO. Fill and compact the sample holes with asphalt concrete mixture. Cores shall be 6 inches in diameter. Label cores and protect from damage due to handling or alteration due to temperature during storage or transfer. Use AASHTO T 166 regardless of the volume of water absorbed. Care should be taken to dry cores to constant mass at $125 \pm 5^\circ\text{F}$, before testing.
- ⁽³⁾ Use the average maximum specific gravity value (AASHTO T 209) of the control strip samples to determine the percent compaction of each control strip.
- ⁽⁴⁾ For production, use the average maximum specific gravity value (AASHTO T 209) of the first three samples to determine the percent compaction of each lot.
- ⁽⁵⁾ Do not use the dry back method (Section 11 of AASHTO T 209).

Section 404. – MINOR HOT ASPHALT CONCRETE**Table 404-1 Sampling and Testing Requirements.**

Add footnote (1) after Compaction in the “Property or Characteristic” column:

- (1) When directed, verify density by taking core samples from the compacted pavement according to AASHTO T230 Method B. Fill and compact the sample holes with asphalt concrete mixture.

Section 409. – ASPHALT SURFACE TREATMENT**Construction Requirements**

409.10 Fog Seal. Add the following after the first sentence:

Unless otherwise noted on the plans, dilute the specified emulsion one part water to one part emulsified asphalt.

Measurement

409.14 Add the following:

Measure fog seal including water added for dilution.

Indicate a breakdown of total emulsion and water added on the load invoices supplied to the CO for payment.

Section 411. – ASPHALT PRIME COAT

Delete the Section and substitute the following:

Description

411.01 This work consists of applying a cut-back or emulsified asphalt prime coat.

Prime coat asphalt grade is designated as shown in AASHTO M 140 or AASHTO M 208 for emulsified asphalt; AASHTO M 81 or AASHTO M 82 for cut-back asphalt; or Subsection 702.03(f) for penetrating emulsified asphalts.

Material

411.02 Conform to the following Subsections:

Asphalt surface treatment aggregate	703.10
Blotter	703.13

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Cut-back asphalt	702.02
Emulsified asphalt	702.03
Penetrating emulsified asphalt	702.03(f)
Water	725.01(c)

Construction Requirements

411.03 Equipment. Use equipment conforming to Subsection 409.04.

411.04 Surface Preparation. Prepare the surface to be primed according to Subsection 301.05 and 301.06. When required, use sweeping or other approved method to remove loose dust and fine material and lightly spray the surface with water prior to application of the prime coat.

411.05 Weather Limitations. Apply prime coat on a dry or slightly damp surface when the air temperature in the shade and the surface temperature are at least 50 and rising and when the weather is not foggy or rainy.

411.06 Asphalt Application. Apply cut-back or emulsified asphalt according to Subsection 409.08 using method (1), (2), or (3) as described below.

(a) Method 1 (topical). Apply cut-back asphalt or undiluted emulsified asphalt formulated as a penetrating prime coat at a rate of 0.10 to 0.30 gallons per square yard. The CO will approve the exact application rate.

(b) Method 2 (inverted prime). Apply undiluted emulsified asphalt at a rate of 0.20 to 0.30 gallons per square yard. Immediately apply crushed aggregate meeting the requirements of Table 703-7, Grading D, at a uniform rate of 20 to 25 pounds per square yard using an aggregate spreader. The CO will approve the exact application rate. Operate the aggregate spreader so the asphalt is covered with aggregate before wheels pass over it. Immediately seat the aggregate using a roller. Operate rollers at a maximum speed of 5 miles per hour.

During part-width construction, leave a 6-inch wide uncovered strip of asphalt to permit an overlap of asphalt material.

(c) Method 3 (processed). Scarify the surface to a depth of 2 to 3 inches before applying the asphalt as a prime coat. Apply emulsified asphalt at an undiluted rate of 0.25 gallons per square yard per inch of scarification depth. Immediately, process, respread, and compact the material. When required, dilute a slow-setting emulsified asphalt by adding water. Use of other methods to incorporate asphalt into aggregate may be used with approval of the CO.

411.07 Curing. Cure surfaces primed with emulsified asphalt for at least 24 hours and surfaces primed with cut-back asphalt at least 3 days before covering with the next course.

411.08 Maintenance. Until the next course is placed, maintain the primed surface by keeping it free of corrugations, potholing, and loose material. Remove all dirt or other deleterious material and repair all damaged areas.

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To protect traffic or to minimize rain damage spread blotter to cover unabsorbed asphalt. Remove excess blotter after the asphalt is absorbed.

411.09 Acceptance. Emulsified asphalt and cut-back asphalt will be evaluated under Subsections 106.02 and 106.03.

Aggregate and blotter will be evaluated under Subsection 106.03.

Construction of the prime coat will be evaluated under Subsections 106.02.

Measurement

411.10 Measure the Section 411 items listed in the bid schedule according to Subsection 109.02 and the following as applicable.

Measure prime coat width including treated widenings. Measure the square yard length along the centerline of the roadway.

Do not measure water added for dilution. Indicate a breakdown of total emulsion and water added on the load invoices supplied to the CO.

Payment

411.11 The accepted quantities will be paid at the contract price per unit of measurement for the Section 411 pay items listed in the bid schedule. Payments will be full compensation for the work prescribed in this Section. See Subsection 109.05.

Section 412. – ASPHALT TACK COAT

Description

412.01 Delete the text and substitute the following:

This work consists of applying an emulsified asphalt or hot asphalt cement tack coat.

Tack coat emulsified asphalt grade will meet AASHTO M 140 or AASHTO M 208.

Tack coat asphalt cement grade will meet AASHTO M 20, M 226, or M 320

Measurement

412.08 Add the following after the second paragraph:

Indicate a breakdown of total emulsion and water added on the load invoices supplied to the CO for payment.

Section 552. – STRUCTURAL CONCRETE**Material****552.02** Add the following:

Concrete coloring agent	711.05
Polychloroprene elastomeric joint seals	717.16
Precast reinforced concrete box sections	706.07
Precast concrete units	725.11
Reinforcing fibers	725.29

Delete the following:

Elastomeric compression joint seals	717.16
-------------------------------------	--------

Construction Requirements**552.03 Composition (Concrete Mix Design).** Delete Tables 552-1, 2, and 3 and substitute the following:

**Table 552-1
Composition of Concrete**

Class of Concrete	Minimum Cement Content (pound per cubic yard)	Maximum W/C Ratio	Slump ⁽¹⁾ (inches)	Maximum Nominal Coarse Aggregate Size ⁽⁵⁾ (inches)
A	611	0.49	2 to 4	1½
A(AE)	611	0.44	1 to 4	1½
B	517	0.58	2 to 4	2½
B(AE)	517	0.58	2 to 4	2½
C	658	0.49	2 to 4	¾
C(AE)	658	0.44	1 to 3	¾
D(AE) ⁽²⁾	611	0.40	1 to 3	1½
E(AE) ⁽³⁾	611	0.40	4 to 6 ⁽⁴⁾	¾
P (Prestressed)	658	0.44	0 to 4	1
P(AE)	658	0.44	0 to 4	1
Seal	658	0.54	4 to 8	1½

⁽¹⁾ Maximum slump is 8 inches if approved mix design includes a high-range water reducer.

⁽²⁾ Concrete with a water reducing and retarding admixture conforming to AASHTO M 194, type D.

⁽³⁾ A latex modified concrete with 0.037 gallons of modifier per pound of cement.

⁽⁴⁾ Measure the slump 4 to 5 minutes after the concrete is discharged from the mixer.

⁽⁵⁾ Meeting the processing requirements of AASHTO M43, Table 1 – Standard Sizes of Processed Aggregate.

Table 552-2**Minimum Air Content for Air Entrained Concrete**

Nominal Maximum Aggregate Size ⁽¹⁾	As Delivered Minimum Air Content ⁽²⁾⁽³⁾ (%)
2½ inch	3.5
2 inch	3.5
1½ inch	4.0
1 inch	4.5
¾ inch	4.5
½ inch	5.5

⁽¹⁾ Meeting the processing requirements of AASHTO M 43, Table 1 – Standard Sizes of Processed Aggregate.

⁽²⁾ These air contents apply to the total mix. When testing these concretes, aggregates larger than 1½ inches is removed by handpicking or sieving, and air content is determined on the minus 1½-inch fraction of the mix. Air content of the total mix is computed from the value determined on the minus 1½-inch fraction.

⁽³⁾ For P(AE) concrete, the as delivered minimum air contents may be reduced 1.0 % and the maximum air content is 6.0 %

Table 552-3**Required Average Compressive Strength ⁽¹⁾**

Specified Compressive Strength (f'c) (psi)	Required Average Compressive Strength (f'cr) (psi)
Less than 3000	f'c + 1000
3000 to 5000	f'c + 1200
Over 5000	1.10f'c + 700

⁽¹⁾ Use this table when there is not enough data available to establish a standard deviation

552.09 Quality Control of Mix. Add the following after the first paragraph:

At least 2 weeks prior to the start of concrete placement operations, arrange a pre-concrete placing conference. Coordinate attendance with the CO and any applicable subcontractors. Be prepared to discuss and/or submit the following:

- (1) Proposed concrete placement schedule.
- (2) Review approved concrete mix design and determination of batch weights.
- (3) Discuss Section 153, Contractor Quality Control, minimum frequency schedule for process control sampling and testing (to be performed by the Contractor).
- (4) Discuss batching, mixing, placing, and curing requirements.

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(5) Discuss Subsections 106.03, Certification, and 106.05, Statistical Evaluation of Material for Acceptance.

552.12 Construction Joints. Delete the third paragraph and substitute the following:

When the joint is between two fresh concrete placements, rough float the first placement to thoroughly consolidate the surface and leave the surface in a roughened condition. Clean the joint surface of laitance, curing compound, and other foreign material. Use an abrasive blast or another approved method to expose the aggregate on the joint surface. Re-tighten forms where the joint overlaps the first placement. Immediately before placing new concrete, flush the joint surface with water and allow to dry to a surface dry condition.

Measurement

552.20

Add the following:

Do not measure for payment the volume of concrete required outside the neat lines of the footing to pour against undisturbed rock as shown on the plans. When the CO directs the removal of material below the established elevation of the bottom of the footing, the volume of concrete required to fill the void will be measured for payment.

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Table 552-9 Sampling and Testing Requirements Delete Table 552-9 and substitute the following:**Table 552-9
Sampling and Testing Requirements**

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Method Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Aggregate (source quality)	Measured and tested for conformance (106.04 & 105)	Quality	---	Subsection 703.01 & 703.02	1 per material type	Source of materials	Yes	Before producing
Concrete composition (mix design)	Measured and tested for conformance (106.04 & 105)	All	---	Subsection 552.03	1 per mix design	Source of materials	Yes	Before producing
Concrete (production)	Measured and tested for conformance (106.04)	Slump	---	AASHTO T 119	1 per load	Point of discharge ⁽¹⁾	---	Upon completing tests
		Air Content		AASHTO T 152 or AASHTO T 196				
		Unit Mass		AASHTO T 121				
		Temperature		AASHTO T 309				
	Statistical (106.05)	Compressive Strength ⁽²⁾	II	AASHTO T 23 and AASHTO T 22	1 set per 30 yd ³ , but not less than 1 set per day and not less than 5 sets total	Discharge stream at point of placing ⁽¹⁾	Note 3	See Subsection 552.09(b)(4)

⁽¹⁾ Sample according to AASHTO T 141 except composite samples are not required.⁽²⁾ A single compressive strength test result is the average result from 2 cylinders cast from the same load and tested at 28 days.⁽³⁾ Deliver cylinders to designated laboratory for testing.

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Section 554. – REINFORCING STEEL

Construction Requirements

554.07 Epoxy Coated Reinforcing Steel. Delete the fifth paragraph and substitute the following:

Field repairs will not be allowed on bars that have severely-damaged coatings. Replace bars with severely-damaged coatings. A severely-damaged coating is defined as a bar where the sum of all areas covered with patching material, including overlaps, exceeds five percent of the total surface area of the bar. This limit on repaired damage coating does not include sheared or cut ends that are coated with patching material. Coat mechanical splices after splice installation according to AASHTO M 284 for patching damaged epoxy coatings.

554.08 Placing and Fastening. Delete the first sentence of the first paragraph and substitute the following:

Place, fasten, and support the bars according to the *CRSI Manual of Standard Practice*. Use precast concrete blocks or metal supports.

554.09 Splices. Delete the fifth paragraph and substitute the following:

Mechanical couplers may be used in lieu of welding if approved. Use couplers with a strength that is at least 125 percent of the required yield strength of the reinforcing steel. The total slip of the reinforcing bar within the splice sleeve after loading in tension to 30.0 kips per square inch and relaxing to 3.0 kips per square inch shall not exceed 0.01 inches for bar sizes up to No. 14 as measured between gauge points clear of the splice sleeve.

Section 563. – PAINTING

Description

563.01 Add the following:

This work includes furnishing all materials, equipment and labor necessary for the application of penetrating desert varnish stain to all exposed surfaces of the gabion walls, MSE retaining wall, and riprap.

Material

563.02 Add the following:

Furnish a desert varnish material that is an aqueous solution containing salts of iron and manganese, built in oxidizers and other trace elements including copper and zinc. Furnish a

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desert varnish stain that involves a stable, one-step component solution applied directly to the galvanized surfaces.

Provide a stain that has a projected life expectancy range from 50 to 100 years. Furnish a stain that develops full coloration within two weeks of application. Supply a stain where the final color of the stain is controlled or modified by custom blending of the basic ingredients, application techniques, dilution rate of the color concentrate with water or a combination of these methods.

Furnish a stain that contains chemical components that have no adverse reactions or effects on soils, plants, or animals. Furnish a stain that contains no corrosive by-products that are present once the stain has been applied; only nitrate fertilizer products are permitted to be present as soluble residues.

For information, the following stain systems have been previously used on projects by CFLHD and other client agencies:

EONITE manufactured by:
Arizona Rain Sprinkling Co.
129 W. Elwood St.
Phoenix, Arizona 85041
Telephone, (602) 268-8100

NATINA manufactured by Natina Products, LLC
1577 First Street
Coachella, CA 92236
Telephone: (877) 762-8462
www.natinaproducts.com

PERMEON manufactured by Soil-Tech, Co.
6420 S. Cameron Dr., Suite 207
Las Vegas, Nevada 89118
Telephone: (702) 873-2023
www.soil-tech.com

Alternate stain systems from various manufacturers may be proposed provided they meet the minimum material requirements specified herein.

Construction Requirements

563.03 Protection of Public, Property, and Workers. Add the following:

Comply with all applicable federal, state, and local regulations. Furnish material safety data sheets for all cleaning and staining products.

563.04 Protection of the Work. Add the following:

Cover and/or protect all adjacent surfaces outside the work, including vegetation, from receiving application of the stain.

563.08 Painting Galvanized Surfaces. Add the following:

Clean the welded wire face retaining wall surfaced to be stained, prior to the stain being applied, in accordance with the manufacturer's recommendations for the removal of all dirt, dust, efflorescence, scale or other foreign substances which could be detrimental to the stain penetration or color. At the time of application of stain, provide surfaces that are clean, completely dry, and free of frost or other foreign substances.

Apply the desert varnish stain in the presence of a manufacturer's representative in accordance with the manufacturer's recommendations.

Submit the name of the manufacturer of the desert varnish stain proposed for use, along with the manufacturer's specifications for mixing and application, to the CO for approval. The CO will select the desired color intensity of the stain. Furnish three, 1.0 foot square, preliminary samples of the galvanized materials equivalent to that used in the retaining wall. Vary the color intensity of the stain selected on each sample in increments normally used in actual field applications. Apply the stain using the same methods that will be used during actual field application. Allow four weeks for evaluation and approval of the stain. Do not acquire the materials to stain the surfaces until written approval of the final color selection has been given.

Adjustments to the final shade and tone will be made with aesthetic considerations, and final approval may require such adjustments. Approximate application rate per coat will be determined after evaluation and approval of the preliminary samples. Approximately two coats will be required.

563.10 Painting Concrete Structures. Add the following:**563.10 (a) Desert Varnish Stain.**

Apply stain to all placed boulders, riprap, and as directed by the CO. Apply using the manufacturer's recommendation and the following:

- (1) Boulder Application.** Apply stain at the rate necessary to achieve the desired color. Remove all litter before the stain is applied. Use the approved application rates to apply the stain over the CO designated areas. Exercise care to avoid any splashing or spray drift onto plants or other surfaces that might be damaged or stained by the stain.

Measurement

563.12 Add the following:

Do not measure MSE wall stain, gabion retaining wall stain, or riprap stain for payment.

Payment

563.13 Add the following:

MSE wall stain is subsidiary to Item 25501-1000, Mechanically Stabilized Earth Wall, Welded Wire Face. Stain will not be paid separately.

Gabion retaining wall stain is subsidiary to Item 25302-1000, Gabions, Galvanized or Aluminized Coated. Stain will not be paid separately.

Riprap stain is subsidiary to applicable Section 251 items. Stain will not be paid separately.

Section 569. – MICROPILES

Description

569.01 This work consists of furnishing all necessary materials, services, supervision, labor, and equipment to install and test micropiles (piles).

Material

569.02 Conform to the following Subsections:

Hydraulic cement	701.01(a)
Admixtures	711.03
Grout	725.22(e or f)
Welding	551.09(a)
Lean Concrete	614
Water	725.01(a)

Construction Requirements

569.03 Qualifications. The Contractor or subcontractor must demonstrate satisfactory completion of at least 5 permanent micropile projects of similar size and scope during the past 5 years, and demonstrate experience with micropile testing. Submit a brief description of each project including the owning agency's name, contact person, current telephone number, and load test reports.

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Provide an engineer, on-site supervisors, and drill operators with experience installing permanent micropiles on at least 5 projects over the past 5 years. At least 30 days before starting micropile work, identify the engineer, on-site supervisors, and drill operators assigned to the project and submit a summary of their individual experiences.

569.04 Submittals. At least 20 days prior to construction, submit the following to the CO for review and allow 10 days for response:

(a) Proposed micropile construction schedule and sequence. Schedule pile installation to avoid interconnection or damage to piles in which grout has not achieved final set.

(b) Drawings for micropile installation showing:

- (1) Plan and elevation views
- (2) Micropile number, location and pattern
- (3) Micropile design load
- (4) Type and size of permanent casing
- (5) Type and size of reinforcing steel
- (6) Type and dimensions of structural steel plates
- (7) Minimum total bond length
- (8) Total micropile length
- (9) Micropile top attachment
- (10) Micropile cut-off elevation
- (11) Quantities summary

(c) Description of the proposed equipment suitable for drilling, hole cleaning/prep, and grouting procedures in the ground conditions expected to be encountered. Review geotechnical and environmental site conditions prior to selecting the appropriate equipment. Demonstrate an understanding of the subsurface conditions at the site by referencing subsurface data provided in the contract test hole boring logs prepared for this project. Indicate how minimal disturbance to the construction site or any overlying or adjacent structure or service will be achieved.

(d) Details of methods used to ensure borehole stability during excavation and grout placement. Include a review of the drilling and installation method's suitability to the anticipated site and subsurface conditions. In case of borehole failure, provide methods of stabilizing the borehole that do not affect the required micropile capacity.

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(e) Proposed method(s) for constructing and load testing the micropiles. Provide the micropile verification load testing proposal in conformance with ASTM D-1143 and/or ASTM D-3689, and indicate the minimum following information:

(1) Drawings and details describing the load test method(s) and equipment.

(2) Calibration reports for hydraulic jacks, pressure gauges and master pressure gauges. An independent testing laboratory must have conducted the tests within 6 months of the date submitted.

(a) Type and accuracy of apparatus for load measurement

(b) Type and accuracy of apparatus for applying load

(c) Type and apparatus for measuring pile deformation and displacement

(3) Type and capacity of reaction load system, including sealed design drawings, supporting calculations for all structural components of the micropile load test apparatus.

(f) Grout mix designs, including details of all materials to be incorporated and the procedure for mixing and placing the grout. Include certified test results verifying the acceptability of the proposed mix designs whereby 4-inch diameter by 8-inch long cylinders are made and standard cured in accordance with AASHTO T23 and tested at 7 and 28 days in accordance with AASHTO T22.

569.05 Micropile Installation. A pre-construction meeting will be held by the CO prior to the start of micropile installation to clarify construction requirements, coordinate the construction schedule and activities, and identify contractual relationships and delineation of responsibilities amongst the Contractor and the Subcontractors.

Before drilling holes for constructing production micropiles, demonstrate the proposed methods and equipment are adequate and the grout-to-ground bond value used is accurate by installing pre-production micropile(s) for verification load test(s). Verification and production micropiles shall be installed according to the following:

(a) Drilling. Drill holes according to submitted and reviewed installation plan. Upon drilling completion remove drill cuttings and/or other loose debris from the bottom of the hole. The borehole must be open to the defined nominal diameter, full length, prior to placing reinforcement elements and grout. Develop methods of stabilizing borehole that do not have a deleterious effect on the geotechnical bond development of the grout.

If, during installation of a pile, an obstruction is encountered that prevents the practical advancement of the pile, abandon the hole and fill with lean concrete. Drill a new hole at a location to be determined by the CO; however, it must be acknowledged that in certain structures, relocation options may be severely limited, and further attempts at the original location with different methods may be required.

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(b) Pipe casing and reinforcing bar placement and splicing. Provide permanent steel casing and reinforcing steel bars meeting material requirements as shown on the plans. Install the central reinforcement steel with centralizers into the stabilized drill holes to meet the minimum clearance as shown on the plans and according to Section 554. Provide centralizers fabricated from any material, except wood, that is not deleterious to the reinforcement steel or casing.

Secure lengths of casing and reinforcing bars to be spliced in proper alignment and in a manner to avoid eccentricity or angle between the axes of the two lengths to be spliced. Locate threaded pipe casing joints at least two casing diameters (OD) from a splice in any reinforcing bar. When multiple bars are used, stagger bar splices at least one foot. Construct all pipe casing splices to develop the required design strength of the pipe casing section. Welding, except as shown on plans, is not permitted unless approved by the CO.

(c) Grouting. Fully grout micropiles the same day the load transfer bond length is drilled. Provide a grout that does not contain lumps or any other evidence of poor or incomplete mixing. Keep the grout in constant agitation prior to pumping. Mix admixtures, if used, in accordance with manufacturer's recommendations. Equip the pump with a pressure gauge to monitor grout pressures. Provide a pressure gauge capable of measuring minimum pressures of 150 psi or twice the actual grout pressures used by the Contractor, whichever is greater. Size the grouting equipment to enable the grout to be pumped in one continuous operation to eliminate cold joints along the pile.

Tremie grout from the lowest point of the drill hole until clean, pure grout flows from the top of the micropile. Grout may be pumped through tremie tubes, hollow stem augers, or drill rods. All grouting operations, including tremie grout pumping, casing extraction and subsequent pressure grouting operations, must ensure complete continuity of the grout column. The use of compressed air to directly pressurize the fluid grout is not permissible. Control the grout pressures and grout takes to prevent excessive heave in cohesive soils or fracturing of soil or rock formations. Grout the entire pile to the design cut-off level.

Upon completion of pile grouting, the grout tube may remain in the hole, but must be filled with grout. If the Contractor uses a post-grouting system, submit all relevant details including grouting pressure, volume, location and mix design, as part of Section 569.04. Grout within the micropiles shall be allowed to attain the minimum design strength prior to being loaded.

(d) Bearing plates. Construct bearing plates, if required, as shown on plans.

569.06 Installation Records. Provide a report with the following information to the CO within 24 hours after each pile installation is completed:

(a) Pile location

(b) Pile drilling duration and observations (e.g., flush return)

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- (c) Soil/rock/water encountered, included in drilling log format
- (d) Pile inclination
- (e) Approximate final tip elevation
- (f) Cut-off elevation
- (g) Description of problems encountered
- (h) Grout pressures attained
- (i) Grout quantities pumped
- (j) Pile materials employed and dimensions
- (k) Installation methods/equipment employed
- (l) Micropile test records, analyses, and details, as applicable

569.08 Allowable Tolerances. Check micropile shafts and adjust to within the allowable tolerances shown in Table 569-1.

Table 569-1
Micropile Construction Tolerances

Micropile Attribute	Allowable Variance
Center of Micropile	< 3.0 inches from indicated plan location or pile spacing
Pile-hole alignment	±2% of design alignment
Top Elevation	Zero to 1.0 inch above the design vertical elevation
Center of Reinforcing Steel	< 0.75 inch from pile center

Observe site conditions in the vicinity of the micropile construction on a daily basis for signs of ground heave or subsidence. Immediately suspend operations and notify the CO if signs of movement are observed, if the micropile structure is adversely affected, or if adjacent structures are damaged from drilling or grouting. Take corrective actions necessary to stop the movement or perform repairs at no cost to the government as directed by the CO.

569.08 Pile Load Tests. Perform pre-production verification load tests on sacrificial test piles, constructed along each structure or as specified on the plans, to verify the design of the pile system and construction methods proposed prior to installing production piles.

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Size the verification test micropile structural steel sections to safely resist the maximum test load. Do not exceed 80 percent of the structural capacity of the micropile structural elements, including steel yield in tension, steel yield or buckling in compression, or grout crushing in compression when the maximum verification test loads are applied.

Apply test loads with a hydraulic jack and measure with a pressure gauge. Use a hydraulic jack and pressure gauge with a pressure range not exceeding twice the anticipated maximum test pressure, and a jack with a ram travel sufficient to allow the test to be done without resetting.

Measure the pile top movement with a dial gauge capable of measuring to 0.001 inches. Use a dial gauge with a travel sufficient to allow the test to be done without resetting. Align the gauge to be parallel to the axis of the micropile and support the gauge independently from the hydraulic jack, pile, or reaction frame. Use a minimum of two dial gauges when the test setup requires reaction against the ground or reaction piles on each side of the test pile.

Load test piles to 200 percent of the compression and/or tension design load (DL) as indicated on the plans (i.e., 2.00 DL). Position the jack at the beginning of the test such that the unloading and repositioning of the jack during the test will not be required. Test piles under compression loads prior to testing under tension loads, as applicable. An Alignment Load (AL), if required, may be applied to the pile prior to setting the movement recording devices. Provide an Alignment Load no greater than 10 percent of the Design Load (i.e., 0.10 DL). Zero dial gauges after the first setting of AL.

Conduct verification load tests by loading the micropile and recording the pile head movement in the cyclic load increments in Table 569-2.

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**Table 569-2
Verification Test Load Schedule**

Load	Hold Time (minutes)
AL	2.5
0.15 DL	2.5
0.30 DL	2.5
0.45 DL	2.5
AL	1.0
0.15 DL	1.0
0.45 DL	1.0
0.60 DL	2.5
0.75 DL	2.5
0.90 DL	2.5
1.00 DL	2.5
AL	1.0
0.15 DL	1.0
1.00 DL	1.0
1.15 DL	2.5
1.30 DL	60 minute creep test ⁽¹⁾
1.45 DL	2.5
AL	1.0
0.15 DL	1.0
1.45 DL	1.0
1.60 DL	1.0
1.75 DL	2.5
1.90 DL	2.5
2.00 DL Maximum Test Load	10.0
1.50 DL	5.0
1.00 DL	5.0
0.50 DL	5.0
AL	5.0

⁽¹⁾ Hold until pile meets acceptance criteria (2) in Section 569.10.

* AL=Alignment load
DL=Design load

Record pile movement with respect to a fixed reference at each loading increment, starting the hold period immediately after the load is applied. Also record pile movement during creep testing at 1, 2, 3, 4, 5, 6, 10, 20, 30, 50, and 60 minutes.

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Provide the CO a written report confirming micropile geometry, construction, testing details, and verification test results within 7 working days following completion of the pre-production verification load tests. The test results will be reviewed and approved by the CO prior to installing production micropiles.

Upon completion of verification testing, remove test piles to an elevation 1 foot below the bottom of cap/footing.

Any change in construction method or encounter with a markedly different foundation material should be accompanied by additional verification tests.

569.09 Proof Load Tests. Perform proof load tests on 5 percent of production micropiles or as directed by the CO. Conduct proof load testing to a maximum test load of 1.60 DL. Incrementally load the micropiles during the proof test according to the loading schedule in Table 569-3.

**Table 569-3
Proof Test Load Schedule**

Load	Hold Time (minutes)
AL	2.5
0.15 DL	2.5
0.30 DL	2.5
0.45 DL	2.5
0.60 DL	2.5
0.75 DL	2.5
0.90 DL	2.5
1.00 DL	2.5
1.15 DL	2.5
1.30 DL	10 to 60 minute creep test ⁽¹⁾
1.45 DL	2.5
1.60 DL Maximum Test Load	2.5
1.30 DL	4.0
1.00 DL	4.0
0.75 DL	4.0
0.50 DL	4.0
0.25 DL	4.0
AL	5.0

⁽¹⁾ Hold until pile meets acceptance criteria (2) in Section 569.10.

* AL=Alignment load
DL=Design load

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Record pile movement at each loading increment with respect to a fixed reference, starting the load hold period immediately after the test load is applied. Depending on pile performance, perform either a 10-minute or 60-minute creep test at the 1.30 DL load. If the pile top movement measured between 1 and 10 minutes exceeds 0.04 inches, maintain the test load for an additional 50 minutes, recording movements at 1, 2, 3, 5, 6, 10, 20, 30, 50, and 60 minutes, as applicable.

569.10 Acceptance. Micropile materials and construction will be evaluated under Subsections 106.02, 106.03 and 106.04.

Reinforcing steel for micropiles will be evaluated under Section 554.

Submit production certifications for each shipment of structural steel and with each shipment of permanent steel casing. Coupon tests (2 per shipment) may be submitted in lieu of production certification for permanent steel casing.

For Grout, see Table 569-4 for sampling and testing requirements.

(a) The acceptance criteria for micropile verification load tests are:

- (1) Provide test piles to sustain the design load (1.0 DL) with no more than 0.375 inches of total vertical movement at the top of the pile as measured relative to the top of the pile prior to the start of testing. If an Alignment Load (AL) is used, then the allowable movement will be reduced by multiplying by a factor of $(DL-AL)/DL$.
- (2) Provide test piles that have a creep rate at the end of the 1.30 DL increment that is not greater than 0.040 inch/log cycle time from 1 to 10 minutes or 0.080 inch/log cycle time from 6 to 60 minutes and has a linear or decreasing creep rate.
- (3) Failure does not occur at the 2.0 DL maximum loads. Failure is defined as a slope of the load versus deflection (at end of increment) curve exceeding 0.025 inch/kip.

If the micropile verification test fails to meet the acceptance criteria, establish the cause(s) and provide modifications to the design, the construction procedures, or both. Retest the new system, as directed by the CO. These modifications include, but are not limited to, installing replacement test micropiles, modifying the installation methods, increasing the bond length, regrouting via pre-placed re-grout tubes, or changing the micropile type. Any modification which requires changes to the structure must have prior review and acceptance of the CO through submittals. Determine the cause for any modifications of design or construction procedures to appropriately determine any additional cost implications.

(b) The acceptance criteria for micropile proof load tests are:

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(1) Compression and tension design loads (1.0 DL) with no more than 0.50 inches total vertical movement at the top of the pile as measured relative to the pile prior to the start of testing. If an Alignment Load (AL) is used, then the allowable movement will be reduced by multiplying by a factor of $(DL-AL)/DL$.

(2) A creep rate at the end of the 1.30 DL increment that is not greater than 0.040 inch/log cycle time from 1 to 10 minutes or 0.080 inch/log cycle time from 6 to 60 minutes and has a linear or decreasing creep rate.

(3) Failure does not occur at the maximum load increment. Failure is defined as a slope of the load versus deflection (at end of increment) curve exceeding 0.025 inch/kip.

If a proof-tested micropile fails to meet the acceptance criteria, proof test another micropile in the immediate vicinity. For failed piles and further construction of other piles, modify the design, the construction procedure, or both. These modifications include, but are not limited to, installing replacement micropiles, incorporating piles of reduced load capacities, modifying the installation methods, increasing the bond length, or changing the micropile type. Provide submittals for review to the CO of any modification which requires changes to the structure. Decide the cause for any modifications of design or construction procedures to appropriately determine any additional cost implications.

Measurement

569.11 Measure Section 569 items listed in the bid schedule according to Subsection 109.02 and the following, as applicable.

Measure micropile verification load tests by each. Do not measure failed verification test micropiles or additional verification test micropiles installed to verify alternative micropile installation methods proposed by the Contractor.

Measure production micropiles by linear foot. Measure from the plan top elevation to the approved tip elevation. No payment will be allowed for grout.

Measure micropile proof load tests by each. Do not measure failed proof test micropiles.

Payment

569.12 The accepted quantities will be paid at the contract price per unit of measurement for Section 569 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

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**Table 569-4
Sampling and Testing Requirements**

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Method Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Grout composition (725.22 (e) or (f))	Measured and tested for conformance (106.04 and 105)	All	---	Subsection 569.04	1 per mix design	Source of materials	Yes	Before producing
Grout (production)	Measured and tested for conformance (106.04)	Compressive strength ⁽¹⁾	---	AASHTO T 23 & AASHTO T 22	1 set of three per day, or per every 20 micropiles (whichever is greater)	Point of discharge	---	Upon completing tests
		Flow	---	ASTM C 939	1 per every 5 micropiles	“	---	“

⁽¹⁾ A single compressive strength result is the average result from three 4-inch by 8-inch cylinders from the same load and tested at 28 days.

Section 601. – MINOR CONCRETE STRUCTURES

Description

601.01 Add the following:

This work includes construction of concrete steps, stairs, and walkways.

Material

601.02 Add the following:

Reinforcing fibers	725.29
Corrugated metal pipe	707.03

Construction Requirements

601.03 Add the following:

Concrete for accessibility ramps, sidewalks, curb and gutter, drive pads, and stairs shall be colored using Davis Palomino or approved equal as noted on the plans.

Use reinforcing fibers in concrete for steps, stairs, walkways, curbs, curb and gutters, drive pads, and sidewalks.

Install corrugated metal pipe as noted on the plans.

601.04 Add the following:

Construct a two-foot by two-foot test panel of colored concrete with exposed aggregate finish for approval by the CO prior to beginning concrete work.

601.06 Add the following:

Finish concrete for accessibility ramps, concrete for sidewalks, curb and gutter, drive pads, and stairs using exposed aggregate finish according to 552.14 (c)(4) as noted on the plans.

Payment

601.09 Add the following:

Payment for 12-inch corrugated metal pipe shall be included in Item 60101-0000, Concrete.

Section 602. – CULVERTS AND DRAINS**Construction Requirements****602.03 General.** Add the following:

Use smooth wall HDPE for HDPE pipe culverts.

602.06 Laying Plastic Pipe. Add the following to the second paragraph:

Provide watertight joints for plastic pipe culverts.

Do not remove brush and expose soil when installing culvert rundowns, except as needed under the rundown pipe to allow the pipe to lay flush with the ground. Mow brush to 8-inch height as needed to gain access to the slope. Do not disturb plant roots.

Section 604. – MANHOLES, INLETS, AND CATCH BASINS**Description****604.01** Add the following:

This work also consists of removing sealed inlet covers at locations designated on the plans and replacing with metal grates.

Construction RequirementsAdd the following:

604.03A Drop Inlet Filters. Install drop inlet filters at all inlets and catch basins within the project limits.

604.03B Metal Grates. Install metal grates per Caltrans Standard Detail D77B as modified per plans. Remove existing sealed covers and dispose. See plans for locations. Verify grate dimensions.

Provide drop inlet filters with non-hazardous, non-biodegradable and non-leaching filter bodies that remove petroleum hydrocarbons (oil and grease) from parking lot run-off. Ensure filters are locally available for the Park's convenience. Provide drop inlet filters with a minimum solids storage of 6 cubic yards, a minimum filtered flow of 1.5 cubic feet per second and a minimum total bypass capacity of 6 cubic feet per second. Provide filters capable of being cleaned by hand or with an industrial vacuum. Filter system, other than mounting brackets (if applicable) must be capable of being removed without specialized equipment. All metal components must be stainless steel. Install drop inlet filters according to the manufacturer's recommendations.

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604.08 Acceptance. Add the following:

Drop inlet filters will be evaluated under Subsections 106.02 and 106.03.

Metal grates will be evaluated under Subsections 106.02 and 106.03.

Measurement

Add the following:

604.09 Drop inlet filters are subsidiary to Section 604 inlet items. Do not measure filter for payment.

Removal and disposal of existing grates are subsidiary to Section 604 inlet items. Do not measure removal of existing grates for payment.

**Section 607. – CLEANING, RECONDITIONING, AND
REPAIRING EXISTING DRAINAGE STRUCTURES**

Add the following Materials subsection:

Materials

607.01A Conform to the following Section and Subsection:

Masonry and Mortar Cement

701.02

Construction Requirements

607.04 Cleaning Culverts in Place. Add the following:

Foreign material shall not be permitted to be washed downstream.

607.06 Reconditioning Drainage Structures. Add the following:

Modify existing drainage structures to allow installation of Item 60409-0000, Inlet Top, Metal Grate.

Add the following Subsection:

607.06A Lining Pipe Culverts.

Line pipe culverts after all other culvert work (extending pipe, constructing headwalls, etc.) has been completed. Clean the culvert of all debris and allow the culvert to dry completely. Use a

remote- or winch-powered lining machine and supply cement-mortar to the lining machine through high-pressure hoses. Use a cement mixture that provides a 28-day compressive strength of at least 3000 pounds per square inch. Apply the cement-mortar with a uniform thickness no less than 1 inch and no greater than 2 inches by ensuring the lining machine travels through the culvert at a constant rate of speed. At the culvert inlet, finish the edge of the mortar lining to provide a 45 degree beveled transition into the culvert. Dewater and divert stream flow as necessary to prevent washout of the grout lining during placement and the subsequent curing time. Inspect the cured cement-mortar lining using closed-circuit television.

Prior to beginning any work on the site or ordering any materials, for the crossing requiring repair, provide to the CO a plan documenting how this culvert will be repaired. Describe in detail elements of the plan such as material placement, headworks and tailworks site disturbance/requirements, address how the integrity of the existing pipe will be maintained, and how the inlets/outlets are finished.

Payment

607.09 Add the following:

Payment for modification of existing drainage structures to accommodate Item 60409-0000, Inlet Top, Metal Grate, shall be included in Item 60705-0000, Reconditioning Drainage Structure.

Section 609. – CURB AND GUTTER

Description

609.01 Add the following:

This work consists of constructing paved ditches contiguous to the traveled way.

This work consists of constructing concrete gutters. Construction of concrete gutters shall follow specifications for Section 609.05.

This work consists of constructing exposed aggregate finishes on concrete gutters and concrete curb and gutter at locations specified on the plans.

Material

609.02 Add the following:

Reinforcing fibers

725.29

Construction Requirements

609.03 **General.** Add the following:

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For asphalt paved ditches, form the bed parallel to the finished surface of the ditch.

609.05 Concrete Curb or Curb and Gutter.

(a) Cast-in-place.

(2) Expansion joints. Delete the text and substitute the following:

Form expansion at intervals of 60 feet using ½ inch thick preformed expansion joint filler.

Where the curb is constructed adjacent to or on rigid pavement, match the expansion joints in the pavement.

609.05 Concrete Curb or Curb and Gutter. Add the following:

Use reinforcing fibers in concrete curb and gutter.

Exposed aggregate finishes shall closely match exposure of adjacent concrete gutters and curbs.

609.08A Asphalt Paved Ditch. Perform the work according to Section 404. Before overlaying existing asphalt paved ditches, clean and seal the cracks according to Section 414. Compact according to Subsection 404.07(a). Compact according to Subsection 404.07(b), only if paved ditch cannot be rolled safely.

Measurement

609.10 Delete the subsection and substitute the following:

609.10 Measure the Section 609 items listed in the bid schedule according to Subsection 109.02 and the following as applicable.

Make no deduction in length for drainage structures installed in the curb section or for driveway and handicap access ramp openings where the gutter is continuous across the opening.

Measure curb by the linear foot.

Coloring agent used for accessibility ramps, sidewalks, curb and gutter, and drive pads shall not be paid for separately, but shall be included in the work.

Measure paved ditches by the square yard width horizontally to include total width.

No separate measurement will be made for the asphalt mixture included in asphalt curb or paved ditch.

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Section 611. – WATER SYSTEMS**Construction Requirements**Add the following Subsection:

611.04A Adjust Water Valve. Adjusting water valves shall consist of raising, lowering, moving, or removing masonry or concrete; adding brick-work, masonry, or concrete; and resetting frames, rings, and covers to fit the new construction. Structures in the traveled roadway shall be adjusted to a tolerance of ¼ to ½ inch below the roadway surface. Work on water services shall be subject to inspection and testing by the owner. Damage to any part of the water system by the Contractor shall be repaired at the Contractor's expense.

Section 615. – SIDEWALKS, DRIVE PADS, AND PAVED MEDIANS**Material****615.02** Add the following:

Reinforcing fibers

725.29

Construction Requirements**615.04 Concrete Sidewalks, Drive Pads, and Medians.** Add the following:

Use reinforcing fibers in concrete sidewalk and concrete drive pads.

Provide the CO a concrete jointing plan for concrete drive pads a minimum of two weeks prior to work commencing.

615.04 Concrete Sidewalks, Drive Pads, and Medians.**(a) Joints.**

(2) Contraction Joints. Delete paragraph and substitute the following: Construct at intervals not exceeding 10 feet. Saw the joints to a depth of 1/4 to 1/3 of the thickness of the concrete and about 1/8 inch wide.

Section 617. – GUARDRAIL**Material****617.02** Delete the precast concrete anchor reference and substitute the following:

Precast concrete anchors

601

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617.02 Add the following:

Paint

563

Timber rail, blockout elements, and posts shall be painted white.

617.04 Rail Elements.**(a) Steel rail.** Add the following to the second paragraph:

Ensure the bolts do not stick out beyond the nut in trail locations by saw-cutting the bolts or another method approved by the CO. Do not use torching methods. Remove all burrs and apply by painting on cold galvanization after removing bolt ends adjacent to trails. See typical sections for trail locations.

(b) Steel backed timber rail. Add the following to the second paragraph:

Paint field cuts with 2 coats of white paint.

617.05 Terminal Sections. Delete the third paragraph and substitute the following:

Use flared or tangent terminal, as designated on the plans, meeting Test Level 3. Submit drawings from the manufacturer for the terminal according to Subsection 104.03.

Measurement**617.10** Add the following:

Do not measure paint.

Payment**617.11** Add the following:

Payment for painting guardrail elements shall be included in Item 61701-4000, Guardrail System, SBTB.

Section 619. – FENCES, GATES, AND CATTLE GUARDS**Description****619.01** Add the following:

This work includes installing post and cable fence.

This work includes installing fence, barb-less wire (bridge).

This work includes removing and resetting gates in accordance with 619.05.

This work includes painting fence.

This work includes installing an automated gate.

This work includes drilling holes in existing posts, providing and installing barb-less wire and all other fittings necessary for installation as shown in plans. Any damage made to the existing rail during installation shall be fixed by the contractor without any additional cost.

Material

619.02 Delete the precast concrete unit reference and substitute the following:

Precast concrete units	601
------------------------	-----

Add the following:

Cable	709.02
Paint	563

Fence barb-less wire (bridge) and fittings shall be commercial, dry grade type 316 stainless steel.

Construction Requirements

619.03 Fences and Gates.

(b) Chain link fence and gates. Add the following:

Chain link fence installed along Alexander Avenue shall be painted International Orange. All elements of fence shall be painted. Paint per Section 563.

Chain link fence installed at the Fort Cronkhite Annex Parking Lot around the maintenance yard shall have slats placed within the fence fabric from the bottom to the top brace. Slats shall be 60-inch height, colored NPS brown (Federal Color 20122 from the January 2008 Federal Standard 595C Color Deck).

(c) Wire fences and gates. Add the following:

(6) Fence barb-less wire (bridge). Apply tension according to manufacturer's recommendations using a mechanical stretcher or other device designed for such use. Evenly

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distribute the pull over the longitudinal wires in the woven wire so not more than 50 percent of the original depth of the tension curves is removed. Do not use a motor vehicle to stretch the wire. Splicing of wire is not permitted.

Add the following:

(d) Post and cable fence. Material, aesthetics, and color of post and cable fencing shall match post and cable fencing previously installed within the Golden Gate National Recreation Area Marin Headlands. An example of post and cable fencing is along East Road.

Install per manufacturer's recommendations.

(e) Automated gate. Provide and install one 19-foot wide by 8-foot tall single swing chain link gate with magnetic locks and commercial hinges. Gate should swing level. All material shall be vinyl coated black.

Provide and install commercial grade gate operator per manufacturer's instructions. Operator should have sufficient horsepower for the weight and length of the gate installed and have the following options:

- Compliant with UL 325 and 991 with necessary secondary entrapment prevention devices are required to be installed per industry safety standards.
- Adjustable magnetic limits.
- Overlap feature for bi-parting swing gate operation.
- Simple connection for secondary operator in bi-parting applications.
- Magnetic lock power provided.
- Ports for plug-in loop detectors.
- Built-in power and reset switches.
- Contacts/switches for momentary and hold open functions
- Swings gate 90 degrees in approximately 12-14 seconds.
- 1/2 or 1 HP continuous-duty motor.
- 115 VAC

Provide and install one gooseneck with key switch and card reader housing (customer supplied phone entry and card reader).

Provide approximately 15 feet of trenching and conduit between gooseneck and gate operator.

Provide and install four vehicle detection loops.

Provide and install one 4-foot wide by 8-foot tall chain link swing gate. All material shall be vinyl coated black.

Provide and install one card reader housing at pedestrian gate (customer supplied card reader).

Provide and install 200 feet of 8-foot tall chain link fencing to tie new gate system into existing fencing. All material shall be vinyl coated black.

Prepare and submit for approval prior to ordering materials, specifications and drawings according to subsection 104.03 for all items associated with the automated gate, including but not limited to, gate, gate operator, key switch, card reader housing, conduit, and vehicle detection loop.

Install per manufacturer's recommendation.

Measurement

619.10 Add the following:

Measure Fence, Barb-less Wire (Bridge) along its length from end-to-end, including fittings.

Payment

619.11 Add the following:

Payment for Item 61901-0000, Fence, Barb-less Wire (Bridge), shall include all labor and materials to retrofit the existing railing with proposed cables.

Payment for painting chain link fence along Alexander Avenue and for installation of brown slats at the Fort Cronkhite Annex Parking Lot maintenance yard shall be included in Item 61901-2000, Fence, Chain Link, 72-Inch Height.

Payment for providing and installing the automated gate at the Fort Cronkhite Annex Parking Lot shall be included in Item 61902-0000, Gate, ~~Vehicle~~ (Automated). Payment shall include removing existing gate infrastructure, coordination of utility relocations by others, relocation of utilities, gate foundations, swing gate, vehicle detection loops, and all other labor, materials, and equipment to provide a functional gate system.

Section 623. – GENERAL LABOR

Delete the text of this Section and substitute the following:

Description

623.01 This work consists of furnishing workers and hand tools for construction work, survey crews, and/or furnishing qualified personnel to perform technical work ordered by the CO and not otherwise provided for under the contract.

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623.02 Workers and Equipment. Furnish competent workers and appropriate hand tools for the work.

Obtain approval of the length of a workday and workweek before beginning the work. Keep daily records of the number of hours worked. Submit the records along with certified copies of the payroll.

623.03 Surveying Services. Furnish personnel, equipment, and material that conform to the requirements of Subsection 152.01. Survey according to Section 152.

Survey and establish controls within the tolerances shown in Table 152-1, or within other tolerances as established by the CO.

Prepare field notes in an approved format. Furnish calculations. All field notes, supporting documentation, and calculations become the property of the Government upon completion of the work.

623.04 Office Technical Services. Furnish qualified engineering personnel experienced in highway construction and design, capable of performing in a timely and accurate manner. Provide personnel with a minimum of NICET Level II certification in highway design and construction, or State (SHA) or industry certification-related design and construction equivalent to their intended responsibilities. Personnel with 2 years or more of recent job experience in the type of highway design and construction provided for under the contract may be used in lieu of

certifications. Provide the names and relevant experience of all personnel. Furnish supporting tools and equipment (e.g., calculator, computer, and software, and appropriate and commonly-used drafting tools for the assigned task).

All calculations, notes, and supporting documentation become the property of the government upon completion of the work.

623.05 Acceptance. Additional surveying services will be evaluated under Section 152.

Hired technical services will be evaluated under Subsections 106.02 and 106.04

Measurement

623.06 Measure the Section 623 items listed in the bid schedule according to Subsection 109.02 and the following as applicable.

Round portions of an hour up to the nearest half hour. Measure time in excess of 40 hours per week at the same rate as the first 40 hours.

For surveying services, the minimum field survey crew is two persons. Measure surveying service by the crew hour. Do not measure time spent in making preparations, performing

calculations, plotting cross-sections and other data, and processing computer data, and other efforts necessary to successfully accomplish the ordered survey services.

Do not measure time for worker's transportation time to and from the project site.

Measure office technical services by the hour as ordered by the CO for performing calculations, plotting cross-sections and other data, and processing computer data.

Payment

623.07 The accepted quantities will be paid at the contract price per unit of measurement for the Section 623 pay item listed in the bid schedule. Payment will be full compensation for the work prescribed in this section. See Subsection 109.05.

Section 624. – TOPSOIL

Construction Requirements

624.03 Preparing Areas. Add the following:

On slopes steeper than 1:3, roughen the surface to form depressions parallel with the slope contours.

624.04 Placing Topsoil. Add the following:

Remove and dispose of all roots, stumps and branches larger than 3 inches and rock larger than 12 inches upon completion of spreading. Remove stones or rocks under 12 inches that are not firmly embedded and those that protrude more than 4 inches.

Prior to placing topsoil, scarify soil surfaces.

Once topsoil has been placed on slopes, do not drive any equipment over it.

Measurement

624.06 Delete the subsection and substitute the following:

Do not measure topsoil for payment

Payment

624.07 Delete the subsection and substitute the following:

Payment for preparing and placing topsoil will be made under Item 20401-0000, Roadway Excavation.

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Section 625. – TURF ESTABLISHMENT**Materials****625.02** Add the following:

Seed shall be provided by the NPS. Allow two weeks notice to the CO before seeding operations begin.

Construction Requirements**625.03 Turf Establishment Seasons.** Delete the first sentence and substitute the following:

Perform ~~all~~ season one seeding between November 15, 2013th and January 15, 2014th. Perform season two seeding after June 1, 2014.

625.09 Protecting and Caring for Seeded Areas. Delete the subsection and substitute the following:

625.09 Protecting and Caring for Seeded Areas. Protect and care for seeded areas including watering when needed. Repair or apply supplemental applications of seed, mulch, fertilizer, and water as many times as needed until turf is established or final acceptance.

Section 627. – SOD

Delete the Section and substitute the following:

Description

627.01 This work includes salvaging and replanting, hereinafter referred to as “transplanting”, sedge sod and other native plants, hereinafter referred to as “plants”, at and near the Fort Cronkhite Dirt Overflow Parking Lot. Work shall be performed in accordance with accepted standard horticultural practice at the designated location.

Materials

627.02 Plants to be transplanted shall be those which are flagged on the project site by NPS, or as directed by the CO.

Conform to the following sections:

Construction sign panels	633
Temporary plastic fence	710.11

Construction Requirements

627.03 General. After plants have been flagged by NPS, prepare and submit a transplanting plan within seven days to the CO. Meet with the CO and NPS after the plan has been reviewed to ensure NPS expectations are met during the transplanting process.

Plants shall be dug, properly pruned, and prepared for transplanting in accordance with standard practice. The root system shall be kept moist and plants shall be protected from adverse conditions due to climate and transporting from the time they are dug to the actual planting. See plans for additional work requirements.

627.04 Maintaining Transplanted Areas. Water plants when placing and keep moist until directed to stop by the CO, but not longer than 60 days. Avoid erosion when watering.

Erect warning signs and temporary plastic fence to protect newly transplanted areas. Do not allow wheeled vehicles on newly transplanted areas.

627.05 Acceptance. Transplanting will be evaluated under Subsection 106.02.

Measurement

627.06 Measure the Section 627 items listed in the bid schedule according to Subsection 109.02.

Measure signs and temporary plastic fence according to Section 635.

Payment

627.07 The accepted quantities will be paid at the contract price per unit of measurement for the Section 627 pay item listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

Payment for signs and temporary plastic fence shall be per Section 635.

Section 629. – ROLLED EROSION CONTROL PRODUCTS AND CELLULAR CONFINEMENT SYSTEMS

Construction Requirements

629.03 General. Delete the first sentence and substitute the following:

Make the soil surface stable, free of rocks, and other obstructions. Rip soil to a depth of 8 inches unless otherwise directed by the CO.

Add the following:

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Do not drive, stage equipment, or store materials on decompacted soil after ripping. Place temporary traffic control devices adjacent to ripped areas until RECP installed.

629.05 (a) Slope Installations. Delete the text and substitute the following:

(a) Slope installations. At the top of the slope, anchor the RECP by using an anchor trench.

(1) Anchor trench. Construct a 6-inch by 6-inch trench. Extend the upslope terminal end of the RECP 36 inches past the trench. Use staples on 12-inch centers to fasten the RECP into the trench. Backfill the trench and compact the soil. Secure the terminal end with a single row of staples on 12-inch centers and cover the end with soil. Apply turf establishment to trench.

Securely fasten all RECP to the soil by installing staples according to the manufacturer's recommendations.

Payment

629.09 Add the following:

Payment for Item 62901-1000, Rolled Erosion Control Product, Type 3.B shall include placing 6-inches of straw mulch beneath the product in areas shown on the plans for the Fort Cronkhite Dirt Overflow Lot.

Section 633. – PERMANENT TRAFFIC CONTROL

Description

633.01 Delete the fourth paragraph and add the following:

Use redwood posts or pressure treated wood.

Add the following after the fourth paragraph:

This work includes resetting speed cushions. Work will include, but is not limited to removal and storage of speed cushions and any associated mounting hardware.

This work includes furnishing twenty (20) new WindMaster sign systems which will become property of the NPS after construction is complete.

This work includes removal and resetting of the existing Fort Cronkrite sign structure at approximate Mitchell Road Sta. 34+00 LT. This work includes removing the sign from the existing location and resetting the sign at the proposed location. Reset items include, but are not

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limited to, the sign structure and foundations. Coordinate proposed location within Fort Cronkhite with the CO.

Construction Requirements

633.05 Panels. Delete the first paragraph and substitute the following:

Use type III, IV, VIII, IX, or XI retroreflective sheeting. For permanent sign panels, use type L-1 or L-3 letters, numerals, arrows, symbols, and borders. Cut panels to size and shape and drill or punch all holes. Make panels flat and free of buckles, warp, dents, cockles, burrs, and other defects.

Add the following to the end of the Subsection:

For all permanent sign panels uniformly apply an anti-graffiti film on the front face of the sign panel. Apply the film using methods recommended by the manufacturer. Use a clear and colorless protective film that is manufactured expressly for use as an anti-graffiti film. Apply the film during manufacture of the sign panel. Field installation of anti-graffiti film is not permitted.

For all permanent sign panels, uniformly apply a protective overlay film to the front and back of the perimeter of the sign panel. Apply film using methods recommended by the manufacturer and provide a minimum of a 2-inch border of protective film along the front and back face and edge of the sign panel. Provide clear and colorless protective film. Film must be manufactured expressly for use as a protective overlay film for outdoor signs.

Film must be applied during manufacture of signs; field installation is not permitted. Prepare and submit for approval prior to ordering materials, specifications and drawings for special sign panel layouts according to subsection 104.03 for all items associated with special permanent sign panels.

633.07 Removing and Resetting Permanent Traffic Control Devices. Add the following:

633.07A Speed Cushions. Speed cushions will be marked with yellow reflective tape. Follow manufacturer's instructions to bolt down speed cushions to paved roadway.

633.07B WindMasters. WindMaster sign systems include the furnishment, installation, relocation, maintenance, and printing/posting of required project updates. WindMaster sign system shall be WindMaster Classic Curb Sign 28"x44" (Model 4205) or approved equal. Sign system will become property of NPS once project is complete. Contractor is required to transport and deliver all WindMaster system systems to NPS, Building T1111 (Bunker Road Sta. 50+00) once construction is complete.

For WindMaster signage, use durable scrim media designed for indoor/outdoor signage such as HP Q8675A or approved equal.

Measurement

633.09 Add the following:

Measure removing and resetting speed cushions after they are reset. Measure based on the number of cushions reset in their final position.

Payment

633.10 Add the following:

Payment for Item 63320-0000, Speed Cushion (Reset), shall include removal, storage, resetting, and associated mounting hardware to reset the speed cushions per manufacturer's recommendations.

Payment for Item 63316-1000, Remove and Reset Sign (Special), shall include removal of sign and foundations, storage, foundations at new location, resetting sign, and all associated mounting hardware necessary to construct the sign at the proposed location.

Section 634. – PERMANENT PAVEMENT MARKINGS

Construction Requirements

634.03 General. Delete the last sentence of the first paragraph and substitute the following:

For simple curve widening locations (widening only on one side) shift the centerline striping location such that the centerline stripe is midway between the normal edge of shoulders. The shift from the staked centerline will be towards the widened lane one-half the total curve widening specified for the given station as shown in the plans. Maintain a uniform shoulder width. See the typical sections for the shoulder widths.

Add the following:

The Contractor may use, upon approval, permanent pavement marking materials and layouts meeting current state approved standards that are practiced in the region of the project in lieu of contract requirements, if the state standards meet the requirements of the MUTCD. The material substituted must be equivalent to that required in the specifications. Obtain the CO's approval before incorporating into the work. When requesting approval, furnish to the CO the applicable state standards (specifications and drawings), manufacturer's name and address, supplier's certification indicating material is produced to state approved specifications, pricing data showing cost difference for labor and materials, and any other available information

describing application and performance. When directed, submit samples for approval at the Contractor's expense. Within 14 days, the CO will inform the Contractor as to the acceptance of the request. The unit price for the contract item(s) will be reduced to reflect any cost savings.

634.09 Preformed Plastic Markings (Type J). Add the following:

A sand/bead mixture shall be applied to all preformed plastic pavement markings. The design intent is to increase the friction on the marking surface. Contractor shall coordinate with the CO for sand/bead mixture and application methodology.

Payment

634.14 Add the following:

Payment for Item 63403-1000, Pavement Markings, Type J, shall include the application of sand/bead mixture.

Section 635. – TEMPORARY TRAFFIC CONTROL

635.07 Construction Signs. Delete the Subsection and substitute the following:

Use type III, IV, VIII, IX, or XI retroreflective sheeting. For roll-up signs, use type VI retroreflective sheeting. Remove or completely cover all unnecessary signs with an acceptable material. Acceptable materials include plywood, hardboard, sheet metal, aluminum, corrugated polypropylene board, or rigid plastic, durable enough to resist deterioration due to weathering and atmospheric conditions for the duration of the project. Do not use adhesives glues, tapes, or mechanical fasteners that mar the face of the panel to be masked.

Provide the same type of sheeting on all post-mounted construction signs that pertain to the project. Anchor large signs as necessary due to high winds.

Use crashworthy posts within the traversable area adjacent to traffic. Install posts according to Section 633.

Prepare and submit for approval prior to ordering materials, specifications and drawings for special sign panel layouts according to subsection 104.03 for all items associated with special temporary sign panels.

635.09 Flaggers. Delete the Subsection and substitute the following:

Use flaggers certified by the American Traffic Safety Services Association, the National Safety Council, the International Municipal Signal Association, a state agency, or other acceptable organization. Perform the work described under MUTCD Part 6. Use type III, IV, VIII, IX, or

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XI retroreflective sheeting on the “STOP” side of the flagger paddle. Use fluorescent retroreflective sheeting on the “SLOW” side of the flagger paddle.

635.11 Temporary Barriers. Add the following:

Paint temporary barrier to remain in place after project completion on Alexander Avenue International Orange. Obtain CO approval prior to painting. Paint according to Section 563.

635.13 Temporary Pavement Markings and Delineation. Delete the text and substitute the following:

Before opening a pavement surface to traffic, remove all conflicting pavement markings by sandblasting or other methods that do not damage the surface or texture of the pavement. Make removal pattern uneven so it does not perpetuate the outline of the removed pavement markings. Lightly coat sandblasted or removal areas on asphalt surfaces with emulsified asphalt.

Provide pavement markings or delineation and signing according to Section 156, the MUTCD, and project plans. Install and maintain temporary pavement markings that are neat, crack free, true, straight, and unbroken.

For seasonal suspensions, apply permanent pavement marking pattern with temporary traffic paint.

Install permanent pavement markings within 14 days. If permanent pavement markings are not placed within 14 days, provide, at no cost to the contract, additional temporary delineation equivalent to the permanent pavement marking pattern required by the contract. Temporary delineation must be removed within 14 days and permanent pavement marking must be installed. Do not apply temporary traffic paint to the final surface.

For temporary pavement markings, use preformed retroreflective tape, traffic paint, or temporary raised pavement markers as follows:

(a) Temporary markings. For temporary pavement markings, use preformed retroreflective tape, traffic paint, or temporary raised pavement markers as indicated in the plans and as follows:

(1) Preformed retroreflective tape. Apply according to the manufacturer's instructions. Remove all loose temporary preformed retroreflective tape before placing additional pavement layers.

(2) Temporary traffic paint. Apply temporary traffic paint at a 15-mil minimum wet film thickness (0.9 gallons per 100 square feet). Immediately apply type 1 glass beads on the paint at a minimum rate of 6 pounds per gallon of paint.

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(3) Raised pavement markers. When chip seals, slurry seals, or tack coats are used after marker placement, protect the markers with an approved protective cover, which is removed after the asphalt material is sprayed.

Remove all temporary pavement markers before placing additional pavement layers. Remove all temporary pavement markings from the surface course before placing permanent pavement markings.

(b) Delineation for unmarked pavements with vehicle positioning guides. For ADT's greater than 1000, vehicle positioning guides may be used in lieu of temporary markings for the delineation of unmarked pavements for a period of no longer than 3 days. For ADT's of 1000 or less, vehicle positioning guides may be used in lieu of temporary markings for the delineation of unmarked pavements for the full 14 day temporary marking period.

For unmarked pavements, install signing and vehicle positioning guides as indicated on plan sheet 635-3. Use vehicle positioning guides that meet the requirements of Subsection 718.21(b), raised pavement markers.

Remove all vehicle positioning guides before placing additional pavement layers. Remove all vehicle positioning guides from the surface course before placing permanent pavement markings.

635.18 Portable Changeable Message Sign. Add the following:

NPS will provide three portable changeable message signs for use on the project. Transport and set-up of the portable changeable message signs for use on the project will not be paid for separately but included in the cost of work.

Measurement

635.26 Delete the tenth paragraph and substitute the following:

Measure temporary pavement markings by the mile along the centerline of the roadway. Measure temporary pavement markings as a single measurement, inclusive of all markings, from end to end regardless of color, material type, or number of lines. Do not deduct for standard gaps between stripes. Measure only one application of temporary pavement markings per lift.

Measure vehicle positioning guides used at the option of the Contractor in lieu of temporary markings as equivalent temporary pavement markings. When vehicle positioning guides exceed the period of use stated in the plans, provide additional temporary or permanent pavement markings at no cost to the Government. Measure vehicle positioning guides by the mile along the centerline of the roadway. Measure as a single measurement, inclusive of all markings, from end to end regardless of material type, gaps or number of lines. Measure only one application of vehicle positioning guides per lift. "DO NOT PASS", "PASS WITH CARE", and "NO CENTER STRIPE" signs required to be used with vehicle positioning guides are subsidiary to the temporary pavement marking item. Do not measure these signs as construction signs.

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Add the following:

Measure Traffic and Safety Supervisor by the week (7 consecutive days, beginning and ending at midnight on the same day of the week) for the work described in Subsection 156.08.

Section 636. – SIGNAL, LIGHTING, AND ELECTRICAL SYSTEMS

Materials

636.02 Add the following:

Conduit pipe and pipe fittings for AT&T work shall be:

2-inch Conduit Type AT&T PTS-66 Type C or Schedule 40

4-inch Conduit Type AT&T PTS-77 Type C

Splice boxes and handholes for AT&T work shall be Christy G5 or approved equal.

Junction boxes shall be Old Castle pre-cast utility vault SBC 444, 4-ft x 4-ft x 4-ft I.D. or approved equal.

Construction Requirements

636.05 Conduit. Add the following:

Install pull boxes and junction boxes meeting current code.

Prepare and submit for approval prior to ordering materials, specifications and drawings for 4-inch conduit according to subsection 104.03 for all items associated with 4-inch conduit for electrical installation along Alexander Avenue.

(a) AT&T underground telecommunications conduit system.

Reference AT&T underground telecommunication conduit system general specifications (for developers and contractors)

Prepare and submit for approval prior to ordering materials, specifications and drawings according to subsection 104.03 for all items associated with AT&T conduit installation, including but not limited to, conduit pipe, pipe fittings, splice boxes, handholes, subsurface enclosures, telephone boxes, junction boxes, and backfill and bedding materials.

(1) Conduit.

Guidelines.

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1. Conduit shall meet AT&T standards and be usable for the purpose intended, that is, it must be of adequate size and properly installed.
2. All new or replacement underground facilities will be protected by orange warning tape. Tape is to be placed twelve (12) inches below grade or eighteen (18) inches above the facilities unless concrete encasement or steel conduit is used. In addition, one or more of the following methods of protection will be used as necessary.
 - a. Stakes, flags, and warning markers
 - b. Concrete cap
 - c. Steel plates
 - d. Fiberglass conduit
 - e. Placement in deeper trench
 - f. Colored slurry
3. Only non-metallic conduit shall be used. Rigid plastic is acceptable provided it meets electrical standards such as Western Underground Committee Specifications, Underwriters Laboratory Specifications, or General Telephone Specification No. GT80.
4. Only standard manufactured factory bends shall be used.
5. Flexible and non-rigid conduits such as polyethylene pipe are not acceptable.
6. Steel conduit four (4) inch, three (3) inch, or two (2) inch can be used within buildings only. The gauge of the conduit shall meet or exceed the maximum local ordinances.
7. All conduit placed for commercial use must be proved and Wall-to-Wall final measurements provided. The final measurement is to be given to the CO. Place three-eighths (3/8) inch polypropylene rope and TruTape or place continuous Mule Tape in all conduits. Secure ropes in splice boxes, enclosures, and manholes.
8. Sand inside edge of all conduits entering into splice boxes, enclosures, and manholes.
9. Use approved AT&T plastic plugs on ends of conduit. DO NOT USE TAPE OR RAGS.
10. Concrete encase all eleven and one fourth (11 ¼), twenty two and one half (22 ½), forty five (45), and ninety (90) degree bends and pole locations with three (3) inches of concrete. Allow three (3) inch separation between conduit for concrete encasement when placing two (2) or more conduits in radius. Use three (3) sacks of cement per cubic yard of one fourth (¼) inch to three eighths (3/8) inch aggregate.

Bending Radius.

1. 2" Conduit – Minimum two (2) foot radius required for all below ground eleven and one fourth (11 ¼), twenty two and one half (22 ½), forty five (45), and ninety (90) degree
2. 4" Conduit – Minimum five (5) foot radius required for all below ground eleven and one fourth (11 ¼), twenty two and one half (22 ½), forty five (45), and ninety (90) degree curvature angles.

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NOTE: No more than two ninety (90) degree bends in a conduit run without a splice/pull box. Unless otherwise specified, splice boxes shall be traffic rated.

Building Risers and Pole Risers.

1. 2" Conduit – Minimum two (2) foot radius, ninety (90) degree angle (Type C Schedule 80)
2. 4" Conduit – Minimum three (3) foot radius, ninety (90) degree angle (Type AT&T PTS-77 Type "E" or Schedule 80)

(2) Splice boxes, handholes, subsurface enclosures and manholes.

General.

1. All boxes, enclosures, and manholes shall meet AT&T standards as specified in "Underground Telecommunication Conduit System General Specifications."
 - a. Except all splice boxes and handholes shall be traffic rated.
2. Handholes shall be installed a minimum of every one thousand (1000) feet at the direction of the CO.
3. Placement of structure must allow for the final grade of new sidewalk and/or parkways that are not yet constructed. Wherever possible, the structures should always be placed after final grade has been established.
4. The base or bottom of splice box handholes and subsurface enclosures should be set level and the top sloped to conform to the ground surface.
5. A minimum of six (6) inches of sand is required under all handholes and splice boxes and an additional six (6) inches of pea gravel or crushed rock is required under all FCA- 3048, 3060, and 4896 splice boxes and manholes. This is to insure uniform distribution of soil pressure on the floor of all subsurface enclosures.
6. All conduits should be cut flush with the inside of the structure and mortared when using concrete boxes. When using polymer boxes, finish conduits with appropriate conduit terminators. Conduits should never enter handhole at the center of the wall nor through the bottom. Structures shall be free of mud, debris, or dirt.
7. Mortar the joints between all the parts of any service box. Seal up all the unused port and openings in the service box. Also, seal around ducts and buried cable. Use cement mortar, water plug cement or other approved prepared mortars on concrete boxes. On polymer boxes, use approved sealing method.

Measurement

636.12 Add the following:

Do not measure initial backfill and bedding as detailed on the plans.

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Payment**636.12** Add the following:

Payment for initial backfill and bedding as detailed on the plans shall be subsidiary to the work.

Payment for Item 63601-3100, System Installation, Telephone, LPSM, shall include AT&T splice boxes and handholes required for the work at the Fort Cronkhite Annex Parking Lot.

Payment for Item 63602-6000, System Installation, Traffic Detector System, EACH, shall include all work to install loops and controller at Bunker Road 133+60.

Payment for Item 63610-2800, Conduit, 4-inch, PVC, LNFT, shall include all items subsidiary to complete the work as described in subsection 636.05, (a), (1) for AT&T work and as described in FP-03 Section 636 for electrical installation along Alexander Avenue. This shall include 4-inch conduit, excavation, initial backfill and bedding, backfill, controlled density fill, sand, crushed aggregate, and asphalt pavement as required.

Payment for Item 63621-2000 Utility Box, Telephone Pullbox, EACH, shall include AT&T splice boxes and handholes and all items to complete the work as described in subsection 636.05, (a), (2).

Payment for Item 63621-3000, Utility Box, Junction Box, EACH, shall include AT&T junction boxes and all items to complete the work as described in subsection 636.05, (a), (2).

Payment for Item 6321-1000, Utility Box, Pull Box, EACH, shall include pull boxes for electrical installation along Alexander Avenue.

Section 646. – PARK FURNISHINGS**Description**

646.01 This work consists of furnishing, installing, removing and resetting park furnishings such as trash receptacles (also recycle receptacles), footbridges, and benches.

Materials**646.02** Conform to the following subsections:

Aggregate

703.06

Fixture, bench to be installed at the bus stop at the Alexander Avenue and Danes Drive intersection will be provided by NPS.

Construction Requirements

646.03 General. Provide compacted 6-inch depth roadway aggregate, method 2 as foundation support for resetting footbridge.

Install fixture, bench at the bus stop per manufacturer's recommendations and at the location shown on the plans.

Acceptance

646.03 Work will be evaluated under Subsection 106.02.

Measurement

646.04 Measure the Section 646 items listed in the bid schedule according to Subsection 109.02 and the following as applicable.

Measure removing and resetting furnishings only once even if relocated more than once.

Payment

646.05 The accepted quantities will be paid at the contract price per unit of measurement for the Section 646 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

Payment for removing and resetting footbridge from the existing location at the Fort Cronkhite Dirt Overflow Lot to the proposed location at the Fort Cronkhite Annex Parking Lot shall be paid under Item 64620-3000, Remove and Reset Bench, Each.

Section 701. – CEMENT

701.01 Hydraulic Cement Delete the text and substitute the following:

701.01 Hydraulic Cement Do not mix cement brands or types.

(a) Portland Cement. Conform to AASHTO M 85.

(b) Blended Hydraulic Cement. Conform to AASHTO M 240

Section 702. – ASPHALT MATERIAL

702.01 Asphalt Binder. Delete the Subsection and add the following:

702.01 Asphalt Binder. Conform to M 320, Table 1. Conform to Subsection 702.04.

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In AASHTO M 320, Table 1 replace footnote *g* with the following:

^g If the creep stiffness is below 300 MPa, the direct tension test is not required. If the creep stiffness is between 301 and 600 MPa, the creep stiffness value shall be used. The *m*-value requirement must be satisfied in both cases..

Add the following:

(f) Penetrating emulsions for prime coat. When a penetrating emulsified asphalt is used for a prime coat, conform to Table 702-5. Follow AASHTO T 59 test method except where noted.

Table 702-5
Penetrating Emulsion for Prime Coat

Tests on emulsion:	Minimum	Maximum
Viscosity, Saybolt Furol at 122°F, sec	15	150
Settlement, 24-hours, %	---	1
Residue by evaporation, %	62	---
Tests on Residue		
Penetration, 77°F, 100 g, 5 sec AASHTO T 49	40	200
Solubility in trichloroethylene, % AASHTO T 44	97.5	---

Section 703. – AGGREGATE

703.01 and 703.02 Delete the Subsections and substitute the following:

703.01 Fine Aggregate for Concrete. Furnish sand conforming to AASHTO M 6, class B, except as amended or supplemented by the following:

(a) Material passing No. 200 sieve, AASHTO T 11 3.0% max.

(b) Sand equivalent value, AASHTO T 176, 75 min.
alternate method no. 2, reference method

(c) Meet alkali-silica reactivity requirements of 703.02

For lightweight fine aggregate, conform to AASHTO M 195

703.02 Coarse Aggregate for Concrete. Conform to AASHTO M 80, class A, except as amended or supplemented by the following:

(a) Los Angeles abrasion, AASHTO T 96 40% max.

(b) Adherent coating, ASTM D 5711 1.0% max.

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(c) Grading, AASHTO M 43All sizes except
numbers 8, 89, 9, or 10.

For bridge decks or surface courses, do not use aggregates known to polish or carbonate aggregates containing less than 25 percent by mass of insoluble residue as determined by ASTM D 3042.

For lightweight coarse aggregate, conform to AASHTO M 195.

(d) Alkali-silica reactivity. Test the fine and coarse aggregate for alkali silica reaction and conform to one of the following (1) through (5). Lithium compounds are not allowed as mitigation measures.

(1) Alkali-silica reactivity, ASTM C 1260

≤ 0.10% at 16 days after casting.

(2) Alkali-silica reactivity, ASTM C 1260

0.11% to 0.20% at 16 days after casting.

and provide one of the following examinations:

(a) Petrographic examination of aggregates, ASTM C 295

Favorable report for use performed within one year from the time of submittal.

or

(b) Petrographic examination of hardened concrete, ASTM C 856

Favorable report for use performed on ASTM C 1260 specimens after test.

(3) Alkali-silica reactivity with cementitious materials, ASTM C 1567

≤ 0.10% at 16 days after casting performed on approved mix design mass percent combinations.

(4) Alkali silica reaction, ASTM C 1293

< 0.04% at 12 months.

(5) Alkali-silica reaction with cementitious materials ASTM C 1293

< 0.04% at 24 months performed on approved mix design mass percent combinations.

703.06 Crushed Aggregate. Add the following:

Furnish chert aggregate surfacing with a maximum size of 1/2 inch as determined by AASHTO T 27 and T 11. Crushed aggregate for chert aggregate surfacing shall be material from the Alexander Avenue east side roadway excavation.

703.07 Hot Asphalt Concrete Aggregate. Delete the Subsection and substitute the following:

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703.07 Hot Asphalt Concrete Aggregate. Furnish hard, durable particles or fragments of crushed stone, crushed slag, or crushed gravel conforming to the following:

- | | |
|--|----------|
| (a) Los Angeles abrasion, AASHTO T 96 | 35% max. |
| (b) Sodium sulfate soundness, AASHTO T 104 (5 cycles): | |
| Coarse aggregate | 12% max. |
| Fine aggregate | 12% max. |
| (c) Fractured faces, ASTM D 5821 (one or more) | 90% min. |
| (d) Fine aggregate angularity, AASHTO T 304 (method A) | 40% min. |
| (e) Flat and elongated particles, ASTM D 4791 (1:5 ratio,
+ 3/8 inch sieve, calculated by mass, weighted average) | 10% max. |
| (f) Sand equivalent AASTHO T 176 (referee method, alt 2) | 45 min. |

(g) **Gradation.** Size, grade and combined the aggregate fractions in mix proportions that result in a composite blend meeting the specified gradation. Nominal maximum size is one sieve size greater than the first sieve to retain more than 10 percent of the combined aggregate. Test according to AASHTO T 27 and T 11.

(1) See Table 703-12 for Superpave aggregate gradation.

(2) See Table 703-4 for Hveem or Marshall aggregate gradation.

For surface course, do not use aggregates known to polish or carbonate aggregates containing less than 25 percent by mass of insoluble residue when tested according to ASTM D 3042.

703.13 Blotter.

Delete lines (a) through (c) and substitute the following:

- | | |
|--|---------|
| (a) Material passing 3/8 inch sieve, AASHTO T 27 | 100% |
| (b) Liquid limit, AASHTO T 87 and T 89 | 25 max. |
| (c) Free of organic matter and clay balls | |

Section 704. – SOIL

704.02 Bedding Material. Delete the text and substitute the following:

- | | |
|---------------------------|--|
| (a) Maximum particle size | 1/2 inch or half the corrugation depth, whichever is smaller |
|---------------------------|--|

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(b) Material passing # 200 sieve, AASHTO T 27 and T 11 10% max.

704.04 Structural Backfill. Delete line (c) substitute the following:

(c) Liquid limit, AASHTO T 87 and T89 30 max.

704.07 Select Borrow. Delete line (b) substitute the following:

(b) Liquid limit, AASHTO T 87 and T89 30 max.

704.09 Bed Course. Delete line (b) substitute the following:

(b) Liquid limit, AASHTO T 87 and T89 30 max.

704.10 Select Granular Backfill.

(a) Quality requirements. Delete lines (1) through (4) and substitute the following:

(1) Gradation Table 704-4

(2) Shear maximum angle of internal friction 34° min.
on the portion passing the No. 4 sieve,
AASHTO T 236

Note: Compact samples for AASHTO T 236 to 95 percent of the maximum density determined according to AASHTO T 99, method C or D corrected for oversized material according to AASHTO T 99, note 9.

(3) Sodium sulfate soundness loss (5 cycles) 15% max.
AASHTO T 104

(4) Liquid limit, AASHTO T 87 and T 89 30 max.

(5) Plasticity index, AASHTO T 87 and T 90 6 max.

(6) Los Angeles abrasion, AASHTO T 96 50% max.

(b) Electrochemical requirements for MSE walls with metallic reinforcements. Delete the Note and substitute the following:

Note: Tests for sulfate and chloride content are not required when the pH is between 6.0 and 8.0 and resistivity is greater than 5000 ohm centimeters.

Add the following Subsection:

704.13 Wall Fill Soils.

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(a) Select wall backfill. Furnish sound, durable, granular soil free from organic matter or other deleterious material (such as shale or other soft particles with poor durability). Native material shall not be used for select wall backfill. Conform to the following:

(1) Quality requirements.

(a) Gradation	Table 704-6
(b) Shear maximum angle of internal friction on the portion passing the No. 4 sieve, AASHTO T 236	34° min.
Note: Compact samples for AASHTO T 236 to 95 percent of the maximum density determined according to AASHTO T 99 method C.	
(c) Sodium sulfate soundness loss (5 cycles)	15% max.
(d) Los Angeles abrasion, AASHTO T 96	50% max.
(e) Liquid limit, AASHTO T 87 and T 89	30 max.
(f) Plastic index, AASHTO T 87 and T 90	6 max.

(2) Electrochemical requirements

(a) Resistivity, AASHTO T 288	3000 Ω-cm min.
(b) pH, AASHTO T 289	5.0 to 10.0
(c) Sulfate content, AASHTO T 290	200 ppm max.
(d) Chloride content, AASHTO T 291	100 ppm max.

Notes:

- (1) Tests for sulfate and chloride content are not required when pH is between 6.0 and 8.0 and the resistivity is greater than 5000 ohm centimeters.
- (2) Electrochemical requirements are not applicable to geogrid-reinforced walls. Refer to Subsection 720.01(k) for durability design requirements.

**Table 704-6
Select Wall Backfill Gradation**

Sieve Size	Percent by Mass Passing Designated Sieve (AASHTO T 27 and T 11)
4 inch	100
3 inch	75 – 100
No. 4	30 – 75
No. 200	0 – 15

(b) Wall backfill. Furnish granular soil free from organic matter or other deleterious material (such as shale or other soft particles with poor durability) conforming to AASHTO soil classifications A-1, A-3, or A-2-4. Remove all rock particles and hard earth clods larger than 12 inches in the longest dimension.

(c) Wall facing fill. Furnish sound, durable, and pervious granular soil free from organic matter or other deleterious material (such as shale or other soft particles with poor durability) conforming to the following:

(1) Quality requirements.

- | | |
|--|----------|
| (a) Sodium sulfate soundness loss (5 cycles) | 15% max. |
| (b) Los Angeles abrasion, AASHTO T 96 | 50% max. |

Determine the gradation of the wall facing fill based on the effective wire face opening of the MSE wall system being used. Provide wall facing fill with a minimum dimension greater than the effective wire face opening. Limit the maximum size of wall facing fill to 8 inches. Geosynthetics or hardware cloth will not be allowed to retain wall facing fill.

Section 705. – ROCK

705.01 Gabion and Revet Mattress Rock. Add the following:

- | | |
|---------------------------------------|----------|
| (d) Los Angeles abrasion, AASHTO T 96 | 50% max. |
|---------------------------------------|----------|

705.02 Riprap Rock. Delete lines (a), (b), (c), (d), and substitute the following:

- | | |
|--|-------------|
| (a) Apparent specific gravity, AASHTO T 85 | 2.40 min. |
| (b) Absorption, AASHTO T 85 | 4.0% max. |
| (c) Los Angeles abrasion, AASHTO T 96 | 50% max. |
| (d) Gradation for the class specified | Table 705-1 |

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**Table 705-1
Gradation Requirements for Riprap**

Class	Percent of Rock by Mass	Mass (lbs)	Approximate Cubic Dimension ^{(1) (2)} (inches)
1	20	22 to 55	6 to 8
	30	11 to 22	5 to 6
	40	1 to 11	2 to 5
	10 ⁽¹⁾	0 to 1	0 to 2
2	20	55 to 110	8 to 10
	30	22 to 55	6 to 8
	40	2 to 22	3 to 6
	10 ⁽¹⁾	0 to 2	0 to 3
3	20	220 to 330	14 to 16
	30	110 to 220	10 to 14
	40	11 to 110	5 to 10
	10 ⁽¹⁾	0 to 11	0 to 5
4	20	550 to 770	18 to 20
	30	220 to 550	14 to 18
	40	22 to 220	6 to 14
	10 ⁽¹⁾	0 to 22	0 to 6
5	20	1540 to 2200	26 to 28
	30	770 to 1540	20 to 26
	40	55 to 770	8 to 20
	10 ⁽¹⁾	0 to 55	0 to 8
6	20	1870 to 3530	28 to 34
	30	1100 to 1870	22 to 28
	40	110 to 1100	10 to 22
	10 ⁽¹⁾	0 to 110	0 to 10
7	20	8800 to 14300	45 to 55
	30	3300 to 8800	31 to 45
	40	330 to 3300	14 to 31
	10 ⁽¹⁾	0 to 330	0 to 14

⁽¹⁾ Furnish spalls and rock fragments graded to provide a stable dense mass.

⁽²⁾ The volume of the rock with these cubic dimensions will have a mass approximately equal to the specified rock mass.

⁽³⁾ Furnish rock with breadth and thickness at least one-third its length.

Section 706. – CONCRETE AND PLASTIC PIPE**706.08 Plastic Pipe.** Delete the text and substitute the following:

Furnish perforated and nonperforated plastic pipe conforming to the following for the size and types specified. For watertight joints, conform to ASTM D 3212. For pipe culvert, furnish pipe conforming to types (a), (b), or (c) for the size specified.

(d) Corrugated polyethylene drainage tubing. Delete the title and text and substitute the following:

(d) Drainage pipe. Furnish polyethylene perforated or non-perforated corrugated plastic pipe conforming to AASHTO M 252. Furnish perforated or non-perforated polyvinyl chloride pipe with smooth interior, smooth or ribbed exterior conforming to AASHTO M 278, ASTM F 758, or ASTM F 949.

Section 709. – REINFORCED STEEL AND WIRE ROPE**709.01 Reinforcing Steel.****(b) Reinforcing bars.** Delete the text and substitute the following:

Furnish deformed, grade 60 bars conforming to AASHTO M31 or M322.

(d) Tie bars. Delete the text and substitute the following:

Furnish deformed, grade 60 bars conforming to AASHTO M31.

(e) Hook bolts. Delete the text and substitute the following:

Furnish deformed, grade 60 bars conforming to AASHTO M31 with M14 rolled threads or M16 cut threads. Furnish a threaded sleeve nut capable of sustaining a minimum axial load of 15,000 pounds.

709.03 Prestressing Steel. Delete the first and second bullets and substitute the following:

- Stress-relieved steel wire, AASHTO M 204, type BA or WA
- Uncoated seven-wire steel strand, AASHTO M 203, grade 270; or

Section 710. – FENCE AND GUARDRAIL

710.06 Metal Beam Rail.

(a) Galvanized steel rail. Add the following:

All guardrails and exposed metals, including hardware, will be galvanized per ASTM B 117 and D 1654.

710.08 Steel-Backed Timber Rail. Add the following:

Paint the timber rail, blockout elements, and posts white according to Section 563.

Refractory species such as larch and Rocky Mountain Douglas fir are not acceptable.

Section 712. – JOINT MATERIAL

712.01 Sealants, Fillers, Seals, and Sleeves.

(a) Joint sealants and crack fillers. Delete the text and substitute the following:

(a) Joint sealants and crack fillers. Furnish a commercial certification identifying the batch and lot number, material, quantity of batch, date and time of manufacture, and the name and address of the manufacturer.

(1) Joint and crack sealants, hot-applied, AASHTO M 324
for concrete and asphalt pavement

(2) Crack filler, hot applied, for asphalt concrete ASTM D 5078
and portland cement concrete pavements

(3) For proprietary asphalt-rubber products, furnish the following:

- (a) Source and grade of asphalt binder;
- (b) Total granulated rubber content and mass, as percent of the asphalt-rubber mixture;
- (c) Granulated rubber type(s) and content of each type (if blend);
 - (1) Mass as a percent of combined rubber; and
 - (2) Gradation of granulated rubber.
- (d) Type of asphalt modifier, if any;
- (e) Quantity of asphalt modifier and mass as a percent of asphalt binder;
- (f) Other additives;

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(g) Heating and application temperatures; and

(h) Manufacturer's recommended application procedures.

(4) Elastomeric joint sealant

ASTM C 920, type M, grade
P, class 25, use T₁ or T₂

Provide sealant matching the color of the adjacent sidewalk. Conform to the sealant manufacturer's recommendations for use of primers.

(5) Flexible cellular joint filler

ASTM D 1056,
type 2, grade 3, 4 or 5

Add the following:

(b) Preformed expansion joint fillers. Preformed fillers for joints shall conform to the requirements of AASHTO M 213. The filler shall be furnished in 1-inch thick layers for the full depth as indicated in the plans. It shall be furnished in maximum widths and lengths possible to minimize joints. The abutting ends shall be fastened securely, and held accurately to shape, by stapling or other positive fastening satisfactory to the Engineer.

Add the following:

(h) Non-sag elastomeric sealant. Provide an elastomeric sealant which conforms to the following:

- non-sag consistency
- two-component polyurethane base
- conforming to ASTM C-920 and Federal Specification TT-S-00227-E

Provide color samples or samples of the actual colored product to the CO for approval.

Section 713. – ROADSIDE IMPROVEMENT MATERIAL

713.13 Erosion Control Bales, Wattles, Logs and Rolls.

(c) Excelsior fiber wattles, logs or rolls. Delete the first sentence and substitute the following:

Furnish wattles, logs or rolls of curled excelsior fiber rolled into a cylindrical shape and encased in a seamless biodegradable tubular netting. Materials shall be natural fibers. Plastics shall not be used. Products shall not contain materials from wheat or barley.

(d) Straw wattles, logs, or rolls. Delete the first sentence and substitute the following:

Furnish straw wattles, logs, or rolls that are manufactured from weed free straw and encased in a seamless biodegradable tubular netting. Materials shall be natural fibers. Plastics shall not be used. Products shall not contain materials from wheat or barley.

~~August 21, 2012~~ December 7, 2012

713.16 Silt fence. Delete this subsection and substitute the following:

713.16 Silt fence. Conform to the following:

- | | |
|--|--|
| (a) Silt fence fabric and fence support mesh | AASHTO M 288 |
| (b) Wood post | Commercial quality lumber,
nominal 2 inch square min. |
| (c) Steel post | Weigh 1.3 pounds
per foot min. |

713.17 Temporary Rolled Erosion Control Products.

(g) Type 2.C, short-term single-net erosion control blanket or open weave textile. Delete the text and substitute the following:

Furnish one of the following materials: (1) an erosion control blanket composed of processed biodegradable natural fibers mechanically-bound together by a single biodegradable natural fiber netting to form a continuous matrix; or (2) an open weave textile composed of processed biodegradable natural yarns or twines woven into a continuous matrix. The material must have a 12-month typical functional longevity and be designed for use on geotechnically stable slopes with gradients up to 1:3 and channels with shear stresses up to 72 pascals. Do not use materials that contain wheat or barley. Materials shall be weed free.

(j) Type 3.B, extended term erosion control blanket or open weave textile. Delete the text and substitute the following:

Furnish one of the following materials: (1) an erosion control blanket composed of processed biodegradable natural fibers mechanically-bound together between two slow degrading synthetic or natural fiber nettings to form a continuous matrix; or (2) an open weave textile composed of biodegradable natural yarns or twines woven into a continuous matrix. The material must have a 24-month typical functional longevity and be designed for use on geotechnically stable slopes with gradients up to 1V:1½H and channels with shear stresses up to 2.00 pounds per square foot. Do not use materials that contain wheat or barley. Materials shall be weed free.

Section 714. – GEOTEXTILE AND GEOCOMPOSITE DRAIN MATERIAL

714.02 Geocomposite Drains.

(b) Geocomposite sheet drains. Add the following:

For MSE wall construction, furnish prefabricated sheet drain with a core or net encapsulated in a Type I-D (Subsection 714.01) non-woven geotextile. Provide a sheet drain capable of draining from both sides of the sheet and a minimum flow rate of 5 gallons per minute per foot of width when tested according to ASTM D 4716. Perform the test under the following test conditions:

- (1) 12 inch long specimen
- (2) Pressure of 14.5 psi
- (3) Gradient of 1.0
- (4) 100-hour seating period
- (5) Closed-cell foam rubber between platens and geocomposite

Section 718. – TRAFFIC SIGNING AND MARKING MATERIAL

718.01 Retroreflective Sheeting. Add the following:

Furnish fluorescent type sheeting for all signs and all devices specifying an orange background. Furnish fluorescent type sheeting for signs with yellow background.

718.14 Waterborne Traffic Paint.

(g) Daylight reflectance. (Without glass beads) Delete the text and substitute the following:

- | | |
|-------------------------|--|
| (1) White, ASTM E 1347 | 84% relative to magnesium oxide standard |
| (2) Yellow, ASTM E 1347 | 55% relative to magnesium oxide standard |

Section 720. – STRUCTURAL WALL AND STABILIZED EMBANKMENT MATERIAL

720.01 Mechanically-Stabilized Earth Wall Material. Add the following:

(k) **Geogrid.** Furnish geogrid reinforcement with a regular grid structure with apertures of sufficient size to allow interlocking with surrounding soil, rock, or earth. Manufacture geogrid using high-density polyethylene, polypropylene, or polyester. Calculate long-term tensile strength “ T_{al} ” and pullout capacity of geogrids according to FHWA publication No. FHWA-NHI-00-043, entitled “Mechanically Stabilized Earth Walls and Reinforced Soil Slopes Design and Construction Guidelines.” The long-term tensile strength “ T_{al} ” must take into account reduction factors “RF” for creep (RF_{CR}), durability (RF_D), and installation damage (RF_{ID}) as defined in FHWA-00-043.

Section 725. – MISCELLANEOUS MATERIAL**725.04 Pozzolans.** Delete the Subsection and substitute the following:

(a) Fly ash. Conform to AASHTO M 295, class C or F.

Available equivalent alkalis (Na₂O) 1.5% max.

(b) Ground granulated blast-furnace slag. Conform to AASHTO M 302, grade 100 or 102.

Total alkalis 1.0% max.

(c) Silica fume (micro silica). Conform to AASHTO M 307.

Total equivalent alkalis (Na₂O) 1.0% max.

725.29 Reinforcing Fibers. Delete the text and substitute the following:

(b) Use with concrete. Fibers will be fully oriented, 100% virgin polypropylene, collated fibrillated, white in color, 3/4 inches long, dosed at 1.5 to 3 pounds per cubic yard of concrete, conforming to ASTM C 1116, Type III.

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
16	CA	CA GOGA 104(1),105(2),268(2) BUNKER, MITCHELL, ALEXANDER	B1	B42

THE FOLLOWING QUANTITIES ARE APPROXIMATE UNLESS NOTED AS A CONTRACT QUANTITY. PAYMENT WILL BE MADE FOR THE ACTUAL QUANTITIES OF WORK PERFORMED AND ACCEPTED OR FOR MATERIALS FURNISHED IN ACCORDANCE WITH THE CONTRACT.

SUMMARY OF QUANTITIES (SCHEDULE A)

ITEM NO.	SHEET DESCRIPTION	UNIT	B7	B15-B17	B19-B20	B22-B25	B28-B34	B36-B37	B39	B41	S1	ESTIMATED QUANTITIES		REMARKS AND/OR DETERMINATION OF ESTIMATED QUANTITIES
			GRADING SUMMARY	DRAINAGE SUMMARY	SURFACING SUMMARY	MISCELLANEOUS SUMMARIES	SIGNING SUMMARY	PAVEMENT MARKING SUMMARY	EROSION CONTROL SUMMARY	TRAFFIC CONTROL SUMMARY	STRUCTURE SUMMARY	PLAN	BID SCHEDULE	
15101-0000	MOBILIZATION	LPSM										ALL	ALL	
15206-0000	SLOPE, REFERENCE, AND CLEARING AND GRUBBING STAKE	STA				67.9						67.9	68	
15210-3000	CENTERLINE, VERIFICATION AND STAKING	STA				121.5						121.5	122	
15214-2000	SURVEY AND STAKING, RETAINING WALL	LPSM										ALL	ALL	
15215-1000	SURVEY AND STAKING, APPROACH ROAD	EACH				4						4	4	
15215-3000	SURVEY AND STAKING, DRAINAGE STRUCTURE	EACH		8								8	9	
15215-7000	SURVEY AND STAKING, PARKING AREA	EACH				4						4	4	
15216-2000	SURVEY AND STAKING, GRADE FINISHING STAKES	STA				113.2						113.2	114	
15301-0000	CONTRACTOR QUALITY CONTROL	LPSM										ALL	ALL	
15401-0000	CONTRACTOR TESTING	LPSM										ALL	ALL	
15501-0000	CONSTRUCTION SCHEDULE	LPSM										ALL	ALL	
15705-0100	SOIL EROSION CONTROL, SILT FENCE	LNFT							900			900	950	
15705-0300	SOIL EROSION CONTROL, SLOPE DRAINS	LNFT							900			900	950	
15705-1400	SOIL EROSION CONTROL, SEDIMENT LOG	LNFT							1,271			1,271	1,450	
15705-1500	SOIL EROSION CONTROL, SEDIMENT WATTLE	LNFT							21,203			21,203	24,000	
15706-0200	SOIL EROSION CONTROL, CHECK DAM (SEDIMENT LOG)	EACH							278			278	290	
15706-1000	SOIL EROSION CONTROL, INLET PROTECTION	EACH							33			33	33	
15706-1600	SOIL EROSION CONTROL, STABILIZED CONSTRUCTION ENTRANCE	EACH							4			4	4	
15802-0000	WATERING FOR DUST CONTROL	LPSM										ALL	ALL	
20101-0000	CLEARING AND GRUBBING	ACRE				12.0						12.0	12	
20304-1000	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LPSM										ALL	ALL	
20401-0000	ROADWAY EXCAVATION	CUYD	19,262									19,262	20,000	
20402-0000	SUBEXCAVATION	CUYD	500									500	500	
20430-1000	SHOULDER, EXCAVATION	LNFT			16,396							16,396	17,000	
20441-0000	WASTE	CUYD	16,244									16,244	17,000	
20441-0000	WASTE (SPECIAL)	CUYD	12									12	12	
21101-2000	ROADWAY OBLITERATION, METHOD 2	SQYD			2,587							2,587	2,750	
25101-2000	PLACED RIPRAP, CLASS 2	CUYD		23		53						76	80	
25101-3000	PLACED RIPRAP, CLASS 3	CUYD		80							57	137	145	
25101-4000	PLACED RIPRAP, CLASS 4	CUYD		25								25	30	
25302-1000	GABIONS, GALVANIZED OR ALUMINIZED COATED	CUYD				467						467	500	
30302-1000	DITCH RECONDITIONING	LNFT		4,340								4,340	4,500	
30306-3500	PULVERIZING, 7-INCH DEPTH	SQYD			43,314							43,314	45,500	
30801-2000	ROADWAY AGGREGATE, METHOD 2 (CHERT AGGREGATE SURFACING)	CUYD			1,889							1,889	2,100	
30801-2000	ROADWAY AGGREGATE, METHOD 2 (RECYCLED ASPHALT PAVEMENT)	CUYD			871							871	950	
30802-2000	ROADWAY AGGREGATE, METHOD 2 (IMPORT)	TON			10,220	1						10,220	10,600	1
40201-2900	HOT ASPHALT CONCRETE PAVEMENT, HVEEM TEST, CLASS B, GRADING B	TON			1,801	4						1,801	2,000	4
40201-4700	HOT ASPHALT CONCRETE PAVEMENT, HVEEM TEST, CLASS B, GRADING C OR E	TON			15,803	4						15,803	16,500	4
40205-3000	ANTISTRIP ADDITIVE, TYPE 3	TON			157.3							157.3	175	
40401-0000	MINOR HOT ASPHALT CONCRETE	TON										180	180	As directed by CO
40920-1000	FOG SEAL, EMULSIFIED ASPHALT GRADE CSS-1 OR CSS-1H, SS-1 OR SS-1H	TON			26.9							26.9	30	
41103-0000	PRIME COAT	SQYD			63,780							63,780	68,000	
41105-0000	BLOTTER	TON			513.7							513.7	575	
41201-1000	TACK COAT GRADE CSS-1, CSS-1H, SS-1, OR SS-1H	TON			26.9							26.9	30	
56302-1000	PAINTING, CONCRETE STRUCTURE	SQFT								4,500		4,500	4,750	2
60101-0000	CONCRETE	CUYD		5		7						12	13	



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FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

SUMMARY OF QUANTITIES (SCHEDULE A)

Sheet 1 of 3

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THE FOLLOWING QUANTITIES ARE APPROXIMATE UNLESS NOTED AS A CONTRACT QUANTITY. PAYMENT WILL BE MADE FOR THE ACTUAL QUANTITIES OF WORK PERFORMED AND ACCEPTED OR FOR MATERIALS FURNISHED IN ACCORDANCE WITH THE CONTRACT.

SUMMARY OF QUANTITIES (SCHEDULE A)

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
16	CA	CA GOGA 104(1),105(2),268(2) BUNKER, MITCHELL, ALEXANDER	B2	B42

SHEET NUMBER		B7	B15-B17	B19-B20	B22-B25	B28-B34	B36-B37	B39	B41	S1	ESTIMATED QUANTITIES		REMARKS AND/OR DETERMINATION OF ESTIMATED QUANTITIES
SHEET DESCRIPTION		GRADING SUMMARY	DRAINAGE SUMMARY	SURFACING SUMMARY	MISCELLANEOUS SUMMARIES	SIGNING SUMMARY	PAVEMENT MARKING SUMMARY	EROSION CONTROL SUMMARY	TRAFFIC CONTROL SUMMARY	STRUCTURE SUMMARY	PLAN	BID SCHEDULE	
ITEM NO.	UNIT												
60103-0100	CONCRETE, HEADWALL FOR 18-INCH PIPE CULVERT	EACH	1								1	1	
60103-0140	CONCRETE, HEADWALL FOR 24-INCH PIPE CULVERT	EACH	1								1	1	
60103-0180	CONCRETE, HEADWALL FOR 36-INCH PIPE CULVERT	EACH	1								1	1	
60201-0600	18-INCH PIPE CULVERT	LNFT	75								75	80	
60201-0800	24-INCH PIPE CULVERT	LNFT	319								319	330	
60201-0900	30-INCH PIPE CULVERT	LNFT	116								116	120	
60201-1000	36-INCH PIPE CULVERT	LNFT	65								65	70	
60201-1100	42-INCH PIPE CULVERT	LNFT	52								52	55	
60210-0600	END SECTION FOR 18-INCH PIPE CULVERT	EACH	4								4	4	
60210-0800	END SECTION FOR 24-INCH PIPE CULVERT	EACH	4								4	4	
60210-0900	END SECTION FOR 30-INCH PIPE CULVERT	EACH	4								4	4	
60231-0000	DISSIPATOR, PIPE	EACH	5								5	5	
60403-0000	INLET (SPECIAL)	EACH	9								9	9	
60404-1000	CATCH BASIN, TYPE 1	EACH	2								2	2	
60405-0000	MANHOLE ADJUSTMENT	EACH			25						25	26	
60406-0000	INLET ADJUSTMENT	EACH	2								2	2	
60409-0000	INLET TOP, METAL GRATE	EACH	19								19	19	
60501-0000	STANDARD UNDERDRAIN SYSTEM	LNFT	2,050								2,050	2,200	
60704-0000	CLEANING CULVERT IN PLACE	EACH	12								12	12	
60705-0000	RECONDITIONING DRAINAGE STRUCTURE	EACH	17								17	17	
60706-0000	CLEANING DRAINAGE STRUCTURE	EACH	12								12	12	
60707-0500	LINING 24-INCH PIPE CULVERT	LNFT	280								280	295	
60901-1200	CURB, CONCRETE, 14-INCH DEPTH	LNFT			250						250	275	
60901-2300	CURB, ASPHALT, 6-INCH DEPTH	LNFT			1,530						1,530	1,650	
60902-1000	CURB AND GUTTER, CONCRETE, 12-INCH DEPTH	LNFT			271						271	300	
60906-1000	GUTTER, CONCRETE	SQYD			208						208	225	
60908-1000	PAVED DITCH, ASPHALT	SQYD			1,306						1,306	1,400	
60915-1000	WHEELSTOP, CONCRETE	EACH			17						17	17	
60915-2000	WHEELSTOP, TIMBER	EACH			421						421	421	
61108-1000	ADJUST WATER VALVE	EACH			18						18	20	
61501-0100	SIDEWALK, CONCRETE	SQYD			943						943	1,000	
61502-1000	DRIVE PAD, CONCRETE	SQYD			537						537	555	
61505-1000	ACCESSIBILITY RAMP, CONCRETE	EACH			1						1	1	
61701-1250	GUARDRAIL SYSTEM G4, TYPE 2, CLASS A WOOD POSTS	LNFT			3,753						3,753	3,800	
61702-0400	TERMINAL SECTION, TYPE G4-CRT	EACH			2						2	2	
61702-0600	TERMINAL SECTION, TYPE FLARED	EACH			6						6	6	
61702-0800	TERMINAL SECTION, TYPE TANGENT	EACH			5						5	5	
61707-0000	STRUCTURE TRANSITION RAILING	LNFT								100	100	110	
61901-0000	FENCE (POST/CABLE)	LNFT			2,084						2,084	2,200	
61901-0550	FENCE, BARB-LESS WIRE (BRIDGE)	LNFT								431	431	450	
61901-2000	FENCE, CHAIN LINK, 72-INCH HEIGHT	LNFT			555						555	555	
61901-3100	FENCE, CHAIN LINK, 96-INCH HEIGHT	LNFT			200						200	200	
61902-0000	GATE (VEHICLE)	EACH			3						3	3	
61902-0000	GATE (PEDESTRIAN)	EACH			3						3	3	
61902-0000	GATE (AUTOMATED)	EACH			1						1	1	
61920-2000	REMOVE AND RESET GATE	EACH			1						1	1	
62201-0150	DUMP TRUCK, 7 CUBIC YARD MINIMUM CAPACITY	HOUR									40	40	
62201-0400	BACKHOE LOADER, 2 CUBIC FOOT MINIMUM RATED CAPACITY BUCKET, 12-INCH WIDTH	HOUR									40	40	
62201-0900	WHEEL LOADER, 2 CUBIC YARD MINIMUM RATED CAPACITY	HOUR									40	40	
62201-1400	BULLDOZER, 250HP MINIMUM FLYWHEEL POWER	HOUR									40	40	
62201-2050	ROLLER	HOUR									20	20	
62201-2850	MOTOR GRADER, 12 FOOT MINIMUM BLADE	HOUR									40	40	



U.S. DEPARTMENT OF TRANSPORTATION
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SUMMARY OF QUANTITIES (SCHEDULE A)

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REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
16	CA	CA GOGA 104(1),105(2),268(2) BUNKER, MITCHELL, ALEXANDER	B20	B42

SURFACING QUANTITY SUMMARY (SCHEDULE A)

Station to Station	SHOULDER, EXCAVATION (4)	ROADWAY OBLITERATION, METHOD 2	PULVERIZING, 7-INCH DEPTH	ROADWAY AGGREGATE, METHOD 2 (CHERT AGGREGATE SURFACING)	ROADWAY AGGREGATE, METHOD 2 (RECYCLED ASPHALT PAVEMENT) (2)	ROADWAY AGGREGATE, METHOD 2 (IMPORT) (1)	ROADWAY AGGREGATE, METHOD 2 (IMPORT) (1)	HOT ASPHALT CONCRETE PAVEMENT, HVEEM TEST, CLASS B, GRADING B	HOT ASPHALT CONCRETE PAVEMENT, HVEEM TEST, CLASS B, GRADING C OR E	ANTISTRIP ADDITIVE, TYPE 3	FOG SEAL, EMULSIFIED ASPHALT GRADE CSS-1 OR CSS-1H, SS-1 OR SS-1H	PRIME COAT	BLOTTER	TACK COAT GRADE CSS-1, CSS-1H, SS-1, OR SS-1H	Remarks
	LNFT	SQYD	SQYD	CUYD	CUYD	CUYD	TON	TON	TON	TON	TON	SQYD	TON	TON	
	20430-1000	21101-2000	30306-3500	30801-2000	30801-2000	FOR INFO ONLY	30802-2000	40201-2900	40201-4700	40205-3000	40920-1000	41103-0000	41105-0000	41201-1000	
Approach Roads (Schedule A)															
Kirkpatrick Street															
451+22 to 452+00					9	9	17		23	0.2	0.1	108	0.8	0.1	
Stennis Street															
441+18 to 442+00					19	20	38		49	0.5	0.1	228	1.7	0.1	
Hagget Street															
425+00 to 425+37					9	30	56		47	0.5	0.1	228	1.7	0.1	
Glassburn Street															
450+00 to 450+75					8	28	53		45	0.4	0.1	216	1.6	0.1	
Approach Roads Subtotal															
					45	87	164		164	1.6	0.4	780	5.8	0.4	
Parking Areas (Schedule A)															
Fort Cronkhite Annex (3)						1,244	2,334	1,003	621	16.2	2.8	5,414	55.0	2.8	
Fort Cronkhite Dirt Overflow															Removal of top 3" of existing chert aggregate surfacing for reuse
Fort Cronkhite			4,890			815	123	798		8.0	1.9	2,660	36.1	1.9	
Smith Road				990		613	1,150	570		5.7	1.3	1,901	25.8	1.3	
Parking Areas Subtotal															
			4,890	990		2,672	3,607	1,801	1,191	29.9	6.0	9,975	116.9	6.0	
Field, McCullough, and East Roads (Schedule A)															
Field Road, Terminus															
Field Road															
Field, McCullough, and East Roads Subtotal															
									1,700		1.5			1.5	
SCHEDULE A TOTAL															
	16,396	2,587	43,314	1,889	871	4,869	10,220	1,801	15,603	157.3	26.9	63,780	513.7	26.9	

Values Used For Estimating Purposes

Aggregate Base 139.0 lb/ft³
 Hot Asphalt Mix 145.1 lb/ft³
 Antistrip 1.0% by weight of HACP
 Fog Seal 0.10 gal/yd² (diluted), 264 gal/ton
 Prime Coat 0.30 gal/yd² (diluted), 264 gal/ton
 Blotter 14.75 lb/yd²
 Tack Coat 0.10 gal/yd² (diluted), 264 gal/ton

Notes:

(1) Roadway aggregate, method 2 (Import) provides remaining aggregate to be imported after recycled pavement is used on each roadway section.

(2) The following depths were assumed for removal of pavement and in calculations to determine the quantity of Roadway aggregate, method 2 (Recycled asphalt pavement) available. See section 308 of the SCR's for additional information on use of recycled asphalt material. Old Bunker Road = Varies 1.50 inches to 2.5 inches, Mitchell Road = Varies 1.25 inches to 2.0 inches, Bunker Road = 5 inches, Alexander Avenue = 9 inches.

(3) Fort Cronkhite Annex quantity for Roadway Aggregate, Method 2 (Import) includes 405 cubic yards for 6" thick gravel surface for the proposed fenced maintenance area.

(4) Shoulder Excavation is to be paid for by linear foot, regardless of width.

(5) Use existing chert stockpile at Smith Road parking area for Roadway Aggregate, Method 2 (Chert Aggregate Surfacing), 30801-2000. This material shall be used prior to importing material to 308.01. Approximately 175 CUYD of 1" minus material (no crushing required) and approximately 75 CUYD of larger than 1" material that will need to be crushed before use.

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U.S. DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION
 CENTRAL FEDERAL LANDS HIGHWAY DIVISION

SURFACING SUMMARY (SCHEDULE A)
 Sheet 2 of 2

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
16	CA	CA GOGA 104(1),105(2),268(2) BUNKER, MITCHELL, ALEXANDER	B25	B42

FENCING SUMMARY (SCHEDULE A)								
Station to Station	FENCE (POST/CABLE)	FENCE, CHAIN LINK, 72-INCH HEIGHT	FENCE, CHAIN LINK, 96-INCH HEIGHT	GATE (VEHICLE)	GATE (PEDESTRIAN)	GATE (AUTOMATED)	REMOVE AND RESET GATE	Remarks
	LNFT	LNFT	LNFT	EACH	EACH	EACH	EACH	
Bunker Road (Schedule A)								
52+46 to 82+00								Rodeo Lagoon Bridge
82+00 to 111+75	275							
Bunker Road Subtotal	275							
Mitchell Road (Schedule A)								
12+00 to 36+00							1	
26+00 to 37+55								
Bunker Road Subtotal							1	
Parking Areas (Schedule A)								
Fort Cronkhite Annex	734	555	200	3	3	1		
Smith Road	1,075	555	200	3	3	1		
Parking Areas Subtotal	1,809	555	200	3	3	1		
SCHEDULE A TOTAL	2,084	555	200	3	3	1	1	

GABION WALL SUMMARY (SCHEDULE A)									
Station to Station	Side	Length FT	STRUCTURE EXCAVATION	WALL BACKFILL	ROCK STAIN	PLACED RIPRAP, CLASS 2	GABIONS, GALVANIZED OR ALUMINIZED COATED	GEOTEXTILE FABRIC (FOR INFORMATION ONLY)	Remarks
			CUYD For Info Only	CUYD For Info Only	SQFT For Info Only	CUYD 25101-2000	CUYD 25302-1000	SQYD	
Mitchell Road (Schedule A)									
36+13 to 37+52	RT	140	51	8	158	7	60	296	
Mitchell Road Subtotal			51	8	158	7	60	296	
Bunker Road (Schedule A)									
37+52 to 43+10	RT	561	444	231	1,349	46	407	1,184	
Bunker Road Subtotal			444	231	1,349	46	407	1,184	
SCHEDULE A TOTAL			495	239	1,507	53	467	1,480	

PAVED DITCH SUMMARY (SCHEDULE A)				
Station to Station	Side	PAVED DITCH, ASPHALT	Remarks	
			SQYD	60908-1000
Old Bunker Road (Schedule A)				
302+40 to 313+98	RT/LT	841		
Old Bunker Road Subtotal		841		
Bunker Road (Schedule A)				
37+55 to 47+00	LT	300		
Bunker Road Subtotal		300		
Field, McCullough, and East Roads (Schedule A)				
McCullough Rod	RT/LT	165		
Field, McCullough, and East Roads Subtotal		165		
SCHEDULE A TOTAL		1,306		



U.S. DEPARTMENT OF TRANSPORTATION
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CENTRAL FEDERAL LANDS HIGHWAY DIVISION

MISCELLANEOUS SUMMARIES (SCHEDULE A)

Sheet 4 of 4

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MOVE AND SET GATE

EACH
1920-2000

1

1

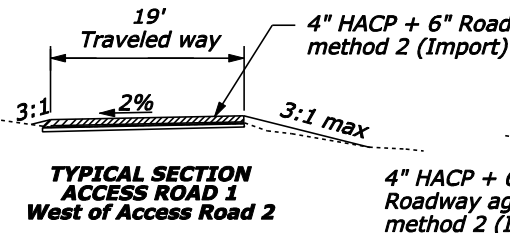
1

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
16	CA	CA GOGA 104(1),105(2),268(2) BUNKER, MITCHELL, ALEXANDER	D7	D24

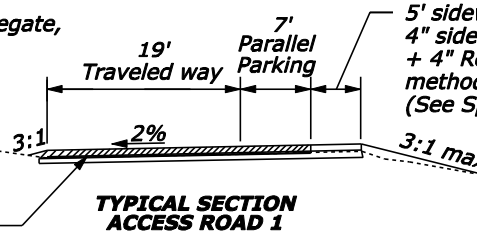
NOTES:

1. All parking stall striping shall be 4" grey lines.
2. Refer to sheet T1 for additional signing and striping for Old Bunker Road.
3. Conduit behind sidewalk on Access Road 1 to be installed as a part of this project for future bollard lights.
4. Chainlink fence around maintenance yard to have NPS brown color slats for privacy.
5. Contractor to work with CO for permanent placement of relocation items.

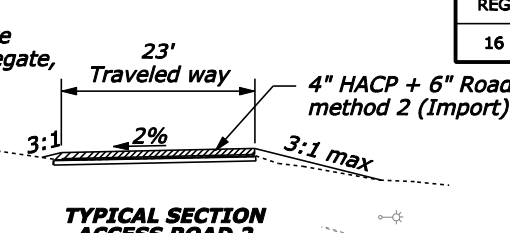
GOLDEN GATE NATIONAL RECREATION AREA



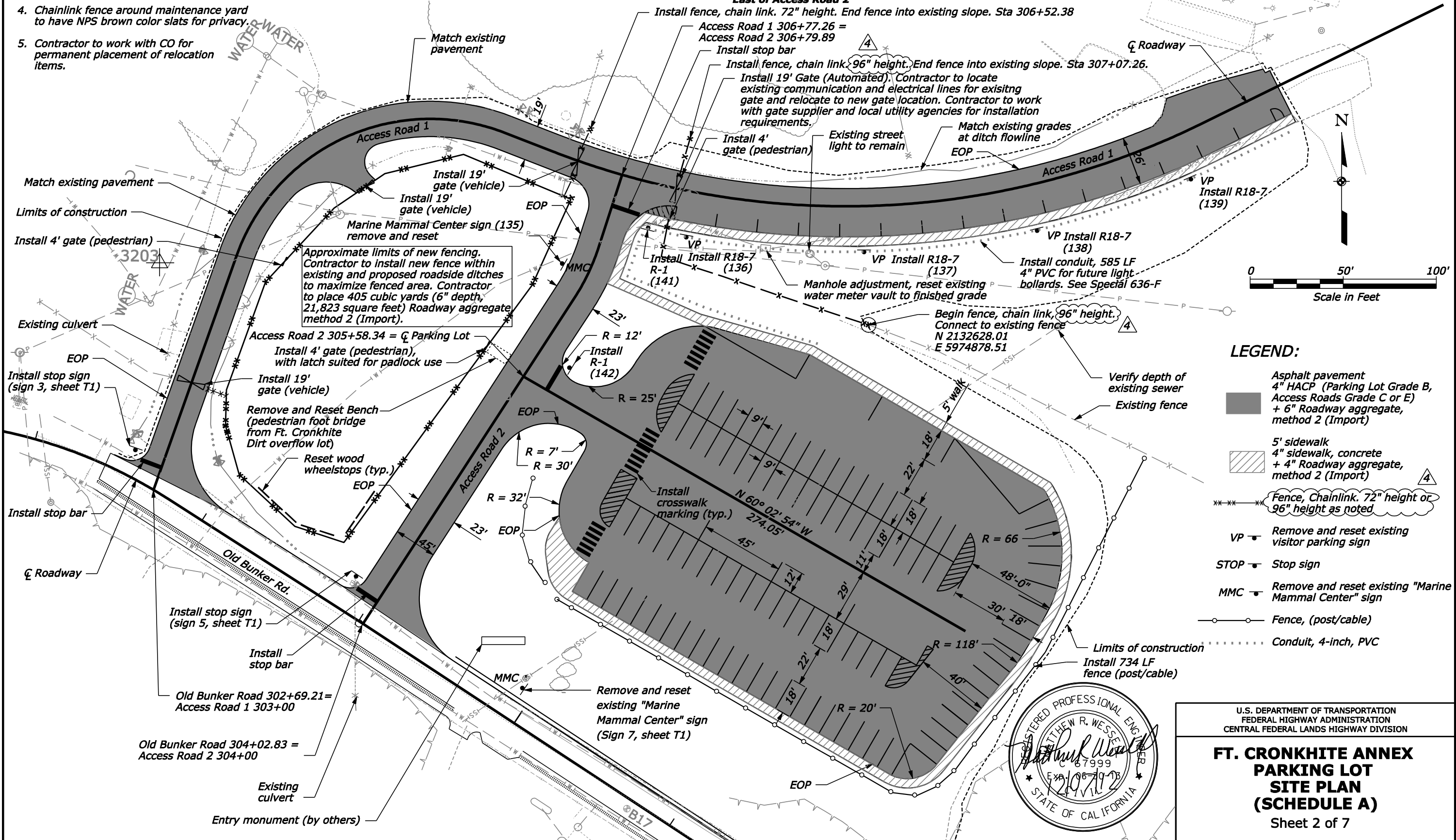
4" HACP + 6" Roadway aggregate, method 2 (Import)



TYPICAL SECTION ACCESS ROAD 1 East of Access Road 2



TYPICAL SECTION ACCESS ROAD 2



- LEGEND:**
- Asphalt pavement
 - 4" HACP (Parking Lot Grade B, Access Roads Grade C or E) + 6" Roadway aggregate, method 2 (Import)
 - 5' sidewalk
 - 4" sidewalk, concrete + 4" Roadway aggregate, method 2 (Import)
 - Fence, Chainlink, 72" height or 96" height as noted
 - VP Remove and reset existing visitor parking sign
 - STOP Stop sign
 - MMC Remove and reset existing "Marine Mammal Center" sign
 - Fence, (post/cable)
 - Conduit, 4-inch, PVC



U.S. DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION
 CENTRAL FEDERAL LANDS HIGHWAY DIVISION

**FT. CRONKHITE ANNEX
 PARKING LOT
 SITE PLAN
 (SCHEDULE A)**

Sheet 2 of 7

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