AMENDMENT OF SOLICITATION [redacted]	1. CONTRACT ID CODE	PAGE 1 OF PAGES 2

2. AMENDMENT [redacted] NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. *(If applicable)*
0002	2002 August 16		DACW09-02-B-0008

6. ISSUED BY CODE

U.S. ARMY ENGINEER DISTRICT, Los Angeles
P.O. Box 532711
Los Angeles, California 90053-2325

7. ADMINISTERED BY *(If other than Item 6)* CODE

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)*

CODE FACILITY CODE

(√) X

9A. AMENDMENT OF SOLICITATION NO.
DACW09-02-B-0008

9B. DATED *(SEE ITEM 11)*
2002 August 27 (Bid Opening)

10A. MODIFICATION OF CONTRACTS/ORDER NO.

10B. DATED *(SEE ITEM 13)*

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

[X] The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers [X] 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: *(Specify authority)* 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 *(such as changes in paying office, appropriation date, etc.)* 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 *(Specify type of modification and authority)*

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

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

F-1 AND F-2 DEBRIS BASINS AND CHANNELS, LAS VEGAS WASH AND TRIBUTARIES (TROPICANA AND FLAMINGO WASHES), CLARK COUNTY, NEVADA

The Bid Opening date is revised from 20 August 2002 to 27 August 2002.

REPLACE the SF1442 in Amendment 1 with the enclosed SF1442.
REPLACE the Table of Contents in Amendment 1 with the enclosed Table of Contents.

CONTINUED ON NEXT SHEET

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

F-1 AND F-2 DEBRIS BASINS AND CHANNELS, LAS VEGAS WASH AND TRIBUTARIES (TROPICANA AND FLAMINGO WASHES), CLARK COUNTY, NEVADA (Continued)

BLOCK 14 – Continued

REPLACE the following Specification Sections in the Original Solicitation with the enclosed Specification Sections for clarification purposes:

Section 00010
Section 01270
Section 02821
Section 03301

END OF SF-30

SOLICITATION, OFFER, AND AWARD *(Construction, Alteration, or Repair)*	1. SOLICITATION NO. DACW09-02-B-0008	2. TYPE OF SOLICITATION [X] SEALED BID *(IFB)* [ ] NEGOTIATED *(RFP)*	3. DATE ISSUED 16 AUG 2002	PAGE OF PAGES

IMPORTANT - The "offer" section on the reverse must be fully completed by offeror.

4. CONTRACT NO.	5. REQUISITION/PURCHASE REQUEST NO.	6. PROJECT NO.

7. ISSUED BY CODE	8. ADDRESS OFFER TO
CONTRACTING DIVISION P.O. BOX 532711 LOS ANGELES, CALIFORNIA 90053-2325	SEE ITEM 7

9. FOR INFORMATION CALL:	A. NAME DIANE WATKINS	B. TELEPHONE NO. *(Include area code) (NO COLLECT CALLS)* (213) 452-3251

SOLICITATION

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS *(Title, identifying no., date):*

F-1 AND F-2 DEBRIS BASINS AND CHANNELS, Las Vegas Wash and Tributaries (Tropicana and Flamingo Washes), Nevada. Work includes rectangular reinforced concrete flood control channel construction with associated reinforced concrete box road crossings, maintenance roads, confluences, inlets, railing and fencing, channel utility under crossing sleeves, debris basins with roller compacted concrete armoring and reinforced concrete outlet channels and reinforced concrete box low flow outlet structures, landscaping including plant and rock salvaging and replanting and installation of rocks and maintenance.

This is an unrestricted procurement. To be eligible, the firms must have North American Industry Classification System Code 23499 among their approved NAICS Codes.

The estimated cost range of this acquisition is over $10,000,000.00.

Bidders please note: The project may be delayed, cancelled or revised at any time during the solicitation and/or final award process.

11. The Contractor shall begin performance within 1 calendar days and complete it within 450 calendar days after receiving [ ] award, [X] notice to proceed. This performance period is [X] mandatory, [ ] negotiable. *(See* SECTION 00800 *.)*

12A. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE AND PAYMENT BONDS? *(If "YES," indicate within how may calendar days after award in Item 12B.)*	12B. CALENDAR DAYS
[X] YES [ ] NO	10

13. ADDITIONAL SOLICITATION REQUIREMENTS:

A. Sealed offers in original and 0 copies to perform the work required are due at the place specified in Item 8 by 1:00 PM *(hour)* local time 27 AUG 2002 *(date)*. If this is a sealed bid solicitation, offers will be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.

B. An offer guarantee [X] is, [ ] is not required.

C. All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by reference.

D. Offers providing less than 60 calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.

OFFER *(Must be fully completed by offeror)*

14. NAME AND ADDRESS OF OFFEROR *(Include ZIP Code)*	15. TELEPHONE NO. *(Include area code)*
	16. REMITTANCE ADDRESS *(Include only if different than Item 14)*
CODE FACILITY CODE	

17. The offeror agrees to perform the work required at the prices specified below in strict accordance with the terms of this solicitation, if this offer is accepted by the Government in writing within _____ calendar days after the date offers are due. *(Insert any number equal to or greater than the minimum requirement stated in Item 13D. Failure to insert any number means the offeror accepts the minimum in Item 13D.*

AMOUNTS ▶

18. The offeror agrees to furnish any required performance and payment bonds.

19. ACKNOWLEDGMENT OF AMENDMENTS

(The offeror acknowledges receipt of amendments to the solicitation - give number and date of each)

AMENDMENT NO.										
DATE										

20A. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER *(Type or print)*	20B. SIGNATURE	20C. OFFER DATE

AWARD *(To be completed by Government)*

21. ITEMS ACCEPTED:

22. AMOUNT	23. ACCOUNTING AND APPROPRIATION DATA
24. SUBMIT INVOICES TO ADDRESS SHOWN IN ▶ *(4 Copies unless otherwise specified)* ITEM	25. OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO ☐ 10 U.S.C 2304(c) ( ) ☐ 41 U.S.C 253(c) ( )
26. ADMINISTERED BY CODE	27. PAYMENT WILL BE MADE BY

CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE

☐ 28. NEGOTIATED AGREEMENT *Contractor is required to sign this document and return _____ copies to issuing office.)* Contractor agrees to furnish and deliver all items or perform all work requirements identified on this form and any continuation sheets for the consideration stated in this contract. The rights and obligations of the parties to this contract shall be governed by (a) this contract award, (b) the solicitation, and (c) the clauses, representations, certifications, and specifications incorporated by reference in or attached to this contract.

☐ 29. AWARD *(Contractor is not required to sign this document.)* Your offer on this solicitation is hereby accepted as to the items listed. This award consummates the contract, which consists of (a) the Government solicitation and your offer, and (b) this contract award. No further contractual document is necessary.

30A. NAME AND TITLE OF CONTRACTOR OR PERSON AUTHORIZED TO SIGN *(Type or print)*		31A. NAME OF CONTRACTING OFFICER *(Type or print)*	
30B. SIGNATURE	30C. DATE	31B. UNITED STATES OF AMERICA BY	31C. AWARD DATE

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-- End of Document Table of Contents --

SECTION 00010

BID SCHEDULE

PART 1 GENERAL

1.1 **Base Bid Items**

Item	Description	Quantity	Unit	Unit Price	Amount
0001	Traffic Control within Village 16	1	Job	LS _____.__	
0002	Diversion and Control of Water within Village 16	1	Job	LS _____.__	
0003	Construction Water within Village 16	1	Job	LS _____.__	
0004	Clear Site and Remove Obstructions within Village 16	1	Job	LS _____.__	
0005	Ladder Systems within Village 16	1	Job	LS _____.__	
0006	Channel Station Marking within Village 16	1	Job	LS _____.__	
0007	Confluence Structure #1, Town Center Drive Lateral (Sta 47+36.454 to Sta 48+15.980)	1	Job	LS _____.__	
0008	Confluence Structure #2, Greenbelt Channel (Sta 19+42.254 to Sta 19+81.527)	1	Job	LS _____.__	
0009	Access Ramp #1, F-1 Channel (Sta 46+03.420 to Sta 46+52.657)	1	Job	LS _____.__	
0010	RCB, F-1Channel at Town Center Drive (4.000 m x 3.000 m)	1	Job	LS _____.__	
0011	RCB, Town Center Drive Lateral (1.830 m x 1.830 m)	1	Job	LS _____.__	
0012	RCB, F-2 Channel at Mesa Park Drive (5.000 m x 3.000 m)	1	Job	LS _____.__	
0013	RCB, Greenbelt Channel (2.440 m x 2.440 m)	1	Job	LS _____.__	

Item	Description	Quantity	Unit	Unit Price	Amount
0014	Side Drain Connection, F-1 Channel at Sta 48+20.069	1	Job	LS _____.__	
0015	Side Drain Connection, F-2 Channel at Sta 14+76.624	1	Job	LS _____.__	
0016	Side Drain Connection, F-2 Channel at Sta 12+70.006	1	Job	LS _____.__	
0017	Reinforced Concrete Slotted Chamber 1.067 RCP	1	Job	LS _____.__	
0018	Reinforced Concrete Slotted Chamber 1.219 RCP	1	Job	LS _____.__	
0019	Reinforced Concrete Slotted Chamber 1.372 RCP	1	Job	LS _____.__	
0020	Reinforced Concrete Slotted Chamber 1.524 RCP	1	Job	LS _____.__	
0021	Excavation, Channel, F-1 Channel within Village 16	62,910	m^3	____.__	____.__
0022	Excavation, Channel, F-2 Channel within Village 16	37,750	m^3	____.__	____.__
0023	Compacted Fill, Channel, F-1 Channel within Village 16	19,200	m^3	____.__	____.__
0024	Compacted Fill, Channel, F-2 Channel within Village 16	10,340	m^3	____.__	____.__
0025	Compacted Fill, Roadway, F-1 Channel within Village 16	4,300	m^3	____.__	____.__
0026	Compacted Fill, Roadway, F-2 Channel within Village 16	2,600	m^3	____.__	____.__
0027	Miscellaneous Fill, F-1 Channel within Village 16	2,270	m^3	____.__	____.__
0028	Miscellaneous Fill, F-2 Channel within Village 16	3,220	m^3	____.__	____.__

Item	Description	Quantity	Unit	Unit Price	Amount
0029	Chain Link Fence, F-1 Channel within Village 16	3,910	m	_____.__	____.__
0030	Chain Link Fence, F-2 Channel within Village 16	2,335	m	_____.__	____.__
0031	3.8 m Double Swing Gate	4	ea	_____.__	____.__
0032	4 m Double Swing Gate	12	ea	_____.__	____.__
0033	Post and Cable Railing, F-1 Channel within Village 16	3,890	m	____.__	_____.__
0034	Post and Cable Railing, F-2 Channel within Village 16	2,274	m	____.__	____.__
0035	Reinforced Concrete Invert, F-1 Channel within Village 16	3,450	m^3	____.__	____.__
0036	Reinforced Concrete Invert, F-2 Channel within Village 16	2,250	m^3	____.__	____.__
0037	Reinforced Concrete Walls, F-1 Channel within Village 16	3,625	m^3	____.__	____.__
0038	Reinforced Concrete Walls, F-2 Channel within Village 16	2,295	m^3	____.__	____.__
0039	Aggregate Base Course, F-1 Channel within Village 16	5,606	t	_____.__	____.__
0040	Aggregate Base Course, F-2 Channel within Village 16	1,725	t	_____.__	____.__
0041	Asphalt Concrete Pavement, F-1 Channel within Village 16	890	t	_____.__	____.__
0042	Asphalt Concrete Pavement, F-2 Channel within Village 16	535	t	_____.__	____.__
0043	Reinforced Concrete Pipe 0.914 m Dia.	18.8	m	_____.__	____.__
0044	Reinforced Concrete Pipe 1.067 m Dia.	4.5	m	_____.__	____.__
0045	Reinforced Concrete Pipe 1.219 m Dia.	3.2	m	_____.__	____.__
0046	Reinforced Concrete Pipe 1.372 m Dia.	7.9	m	_____.__	____.__

Item	Description	Quantity	Unit	Unit Price	Amount
0047	Reinforced Concrete Pipe 1.524 m Dia.	8.7	m	_____.__	____.__
0048	Sanitary Sewer Manhole	14	ea	_____.__	____.__
0049	0.203 m PVC Sanitary Sewer Pipe	922	m	_____.__	____.__
0050	Adjust Manhole Frame and Cover	4	ea	_____.__	____.__
0051	0.914 m Steel Water Sleeve	51.7	m	_____.__	____.__
0052	0.610 m Steel Water Sleeve	256	m	_____.__	____.__
0053	Pre-Emergent Herbicide and Dust Palliative/Soil Stabilizer, F-1 Channel within Village 16	1.0	HA	_____.__	____.__
0054	Pre-Emergent Herbicide and Dust Palliative/Soil Stabilizer, F-2 Channel within Village 16	1.1	HA	_____.__	____.__

SUBTOTAL ESTIMATED AMOUNT OF BASE BID **$_____._____**
(Line Items 0001 through 0054)

1.2 **Option Bid Items**

Item	Description	Quantity	Unit	Unit Price	Amount
0055	Traffic Control on BLM Property	1	Job	LS _____.__	
0056	Diversion and Control of Water on BLM Property	1	Job	LS _____.__	
0057	Construction Water on BLM Property	1	Job	LS _____.__	
0058	Clear Site and Remove Obstructions on BLM Property	1	Job	LS _____.__	
0059	Basin Depth Gage, F-1 Debris Basin	1	Job	LS _____.__	
0060	Basin Depth Gage, F-2 Debris Basin	1	Job	LS _____.__	
0061	Basin Stilling Well, F-1 Debris Basin	1	Job	LS _____.__	
0062	Basin Stilling Well, F-2 Debris Basin	1	Job	LS _____.__	
0063	Outlet Tower Structure, F-1 Debris Basin	1	Job	LS _____.__	
0064	Outlet Tower Structure, F-2 Debris Basin	1	Job	LS _____.__	
0065	Provide Plant Storage Irrigation During Construction	1	Job	LS _____.__	
0066	Provide Irrigation for 1 Year after Construction	1	Job	LS _____.__	
0067	1 Year Guarantee on Landscape work at F-1 and F-2 Debris Basins	1	Job	LS _____.__	
0068	Ladder Systems on BLM Property	1	Job	LS _____.__	
0069	Channel Station Marking on BLM Property	1	Job	LS _____.__	
0070	Access Ramp #2, F-1 Channel (Sta 59+24.031 to Sta 59+71.387)	1	Job	LS _____.__	
0071	Access Ramp #3, F-2 Channel (Sta 24+41.670 to Sta 25+02.775)	1	Job	LS _____.__	
0072	RCB, F-1 Debris Basin Outlet Conduit (0.914 m x 0.914 m)	1	Job	LS _____.__	

Item	Description	Quantity	Unit	Unit Price	Amount
0073	RCB, F-2 Debris Basin Outlet Conduit (0.914 m x 0.914 m)	1	Job	LS _____.__	
0074	RCB, F-1 Maintenance Road Crossing (4.000 m x 3.000 m)	1	Job	LS _____.__	
0075	RCB, F-2 Maintenance Road Crossing (3.000 m x 3.000 m)	1	Job	LS _____.__	
0076	Side Drain Connection, F-1 Channel at Sta 57+60.000	1	Job	LS _____.__	
0077	Side Drain Connection, F-1 Channel at Sta 57+54.000	1	Job	LS _____.__	
0078	Strip and Stockpile Topsoil, F-1 Debris Basin	15,160	m^3	____.__	___.__
0079	Strip and Stockpile Topsoil, F-2 Debris Basin	7,540	m^3	____.__	____.__
0080	Excavation, Debris Basin, F-1 Debris Basin	84,200	m^3	____.__	____.__
0081	Excavation, Debris Basin, F-2 Debris Basin	37,530	m^3	____.__	____.__
0082	Excavation, Channel, F-1 Channel on BLM Property	17,340	m^3	____.__	____.__
0083	Excavation, Channel, F-2 Channel on BLM Property	15,670	m^3	____.__	____.__
0084	Compacted Fill, Dam Embankment, F-1 Debris Basin	36,700	m^3	____.__	____.__
0085	Compacted Fill, Dam Embankment, F-2 Debris Basin	40,500	m^3	____.__	____.__
0086	Compacted Fill, Channel, F-1 Channel on BLM Property	7,800	m^3	____.__	____.__
0087	Compacted Fill, Channel, F-2 Channel on BLM Property	7,650	m^3	____.__	____.__

Item	Description	Quantity	Unit	Unit Price	Amount
0088	Compacted Fill, Roadway, F-1 Channel on BLM Property	945	m^3	____.__	____.__
0089	Compacted Fill, Roadway, F-2 Channel on BLM Property	685	m^3	____.__	____.__
0090	Miscellaneous Fill, F-1 Debris Basin	27,730	m^3	____.__	____.__
0091	Miscellaneous Fill, F-1 Channel on BLM Property	2,385	m^3	____.__	____.__
0092	Miscellaneous Fill, F-2 Channel on BLM Property	190	m^3	____.__	____.__
0093	Tortoise Fence, F-1 Debris Basin	1,495	m	_____.__	____.__
0094	Tortoise Fence, F-2 Debris Basin	1,035	m	_____.__	____.__
0095	Chain Link Fence, F-1 Channel on BLM Property	680	m	_____.__	____.__
0096	Chain Link Fence, F-2 Channel on BLM Property	262	m	_____.__	____.__
0097	Chain Link Fence with Barbed Wire, F-1 Debris Basin	503	m	_____.__	____.__
0098	Chain Link Fence with Barbed Wire, F-2 Debris Basin	300	m	_____.__	____.__
0099	4.88 m Double Swing Gate w/ Barbed Wire	4	ea	_____.__	____.__
0100	4 m Double Swing Gate	4	ea	_____.__	____.__
0101	Post and Cable Railing, F-1 Channel on BLM Property	881	m	_____.__	____.__
0102	Post and Cable Railing, F-2 Channel on BLM Property	462	m	_____.__	____.__
0103	Sediment Staff Gage	7	ea	_____.__	____.__

Item	Description	Quantity	Unit	Unit Price	Amount
0104	Reinforced Concrete Invert, F-1 Channel on BLM Property	1,250	m^3	_____.__	_____.__
0105	Reinforced Concrete Invert, F-2 Channel on BLM Property	790	m^3	_____.__	_____.__
0106	Reinforced Concrete Walls, F-1 Channel on BLM Property	900	m^3	_____.__	_____.__
0107	Reinforced Concrete Walls, F-2 Channel on BLM Property	315	m^3	_____.__	_____.__
0108	Aggregate Base Course, F-1 Channel and Basin on BLM Property	840	t	_____.__	_____.__
0109	Aggregate Base Course, F-2 Channel and Basin on BLM Property	450	t	_____.__	_____.__
0110	Asphalt Concrete Pavement, F-1 Channel on BLM Property	195	t	_____.__	_____.__
0111	Asphalt Concrete Pavement, F-2 Channel on BLM Property	145	t	_____.__	_____.__
0112	Reinforced Concrete Pipe 0.610 m Dia.	7.3	m	_____.__	_____.__
0113	Reinforced Concrete Pipe 1.067 m Dia.	7.3	m	_____.__	_____.__
0114	Roller Compacted Concrete (RCC), F-1 Debris Basin	7,970	m^3	_____.__	_____.__
0115	Roller Compacted Concrete (RCC), F-2 Debris Basin	2,740	m^3	_____.__	_____.__
0116	Portland Cement for RCC, F-1 Debris Basin	1,405	t	_____.__	_____.__
0117	Portland Cement for RCC, F-2 Debris Basin	485	t	_____.__	_____.__
0118	Pozzolan for RCC, F-1 Debris Basin	355	t	_____.__	_____.__

Item	Description	Quantity	Unit	Unit Price	Amount
0119	Pozzolan for RCC, F-2 Debris Basin	120	t	_____.__	____.__
0120	Salvage, Store, and Maintain Hedgehog Cactus	95	ea	_____.__	____.__
0121	Salvage, Store, and Maintain Barrel Cactus	98	ea	_____.__	____.__
0122	Salvage, Store, and Maintain Joshua Tree	7	ea	_____.__	____.__
0123	Salvage, Store, and Maintain Mohave Yucca	1,382	ea	_____.__	____.__
0124	Salvage, Store, and Maintain Silver Cholla	150	ea	_____.__	____.__
0125	Salvage, Store, and Maintain White Bursage	958	ea	_____.__	____.__
0126	Salvage, Store, and Maintain Creosote Bush	958	ea	_____.__	____.__
0127	Transplant Hedgehog Cactus	79	ea	_____.__	____.__
0128	Transplant Barrel Cactus	83	ea	_____.__	____.__
0129	Transplant Joshua Tree	7	ea	_____.__	____.__
0130	Transplant Mohave Yucca	1,102	ea	_____.__	____.__
0131	Transplant Silver Cholla	123	ea	_____.__	____.__
0132	Transplant White Bursage	958	ea	_____.__	____.__
0133	Transplant Creosote Bush	958	ea	_____.__	____.__
0134	Provide and Place Boulder Groups (3 per Group)	477	ea	_____.__	____.__
0135	Place Topsoil to Finish Grade, F-1 Debris Basin	12,950	m^3	_____.__	_____.__
0136	Place Topsoil to Finish Grade, F-2 Debris Basin	6,570	m^3	_____.__	_____.__

Item	Description	Quantity	Unit	Unit Price	Amount
0137	Seeding and Fertilization, F-1 Debris Basin	6.3	HA	_____.__	_____.__
0138	Seeding and Fertilization, F-2 Debris Basin	3.2	HA	_____.__	_____.__
0139	Provide Browse Protection	4	ea	_____.__	_____.__
0140	Simulated Desert Varnish Rock Color Mitigation	0.1	HA	_____.__	_____.__
0141	Soil Sampling and Testing for Fertility	12	ea	_____.__	_____.__
0142	Pre-Emergent Herbicide and Dust Palliative/Soil Stabilizer on non-revegetated areas of F-1 Debris Basin and Channel	4.1	HA	_____.__	_____.__
0143	Pre-Emergent Herbicide and Dust Palliative/Soil Stabilizer on non-revegetated areas of F-2 Debris Basin and Channel	1.1	HA	_____.__	_____.__
0144	Dust Palliative/Soil Stabilizer only on Revegetated Areas, F-1 Debris Basin	6.3	HA	_____.__	_____.__
0145	Dust Palliative/Soil Stabilizer only on Revegetated Areas, F-2 Debris Basin	3.2	HA	_____.__	_____.__
0146	0.762 m Steel Water Sleeve	67.65	m	_____.__	____.__

SUBTOTAL ESTIMATED AMOUNT OF OPTION BID ITEMS $_____._____
(Line Items 0055 through 0146)

TOTAL ESTIMATED AMOUNT $_____._____
(Base Bid and Option Bid Items)

Abbreviations:

m	=	meter
m^3	=	cubic meter
t	=	metric ton (1000 kilograms)
ea	=	each
LS	=	lump sum
HA	=	hectare

NOTE:

1. All extensions of the unit prices shown will be subject to verification by the Government. In case of variation between the unit price and the extension, the unit price will be considered to be the bid.

2. If a bid or a modification to a bid based on unit prices is submitted which provides for a lump sum adjustment to the total estimated amount, the application of the lump sum adjustment to each unit price in the Price Schedule must be stated. If it is not stated, the bidder agrees that the lump sum adjustment shall be applied on a pro rata basis to every unit price in the Price Schedule.

3. Prices must be submitted on all individual items of the Price Schedule, otherwise the bid will be considered non-responsive and will be rejected.

4. Basis of Bid shall be the entire work complete in accordance with the drawings and specifications for Base Bid and Option Bid Items.

5. For the purpose of initial evaluation of bids, the following will be utilized in resolving arithmetic discrepancies found on the face of the Price Schedule as submitted by the bidder:

a. Obviously misplaced decimal points will be corrected;
b. In case of discrepancy between the unit price and the extended price, the unit price will govern;
c. Apparent errors in extensions of unit prices will be corrected;
d. Apparent errors in addition of lump sum and extended prices will be corrected.

6. For the purpose of bid evaluation, the Government will proceed on the assumption that the bidder intends the bid to be evaluated on the basis of unit prices the totals arrived at by the resolution of arithmetic discrepancies as provided above and the bid will be so reflected on the abstract of bids.

7. The lump sum "LS" line items in the Price Schedule are not "Estimated Quantity" line items and are not subject to the "Variation in Estimated Quantity" contract clause.

8. The Contract Clause 52.232-27, "Prompt Payment for Construction Contracts" requires that the name and address of the contractor official, to whom payment is to be sent, be the same as that in the contract or in a proper Notice of Assignment.

9. Principal Contracting Officer. The Contracting Officer who signs this contract will be the Principal Contracting Officer for this contract. However, any Contracting Officer assigned to the Los Angeles District, contracting within his authority, may take formal action on this contract when the Principal Contracting Officer is unavailable and the action needs to be taken.

10. Amounts and prices shall be indicated in either words or figures, NOT BOTH.

11. Payment of Electronic Funds Transfer (EFT) is the mandatory method of payment. The Contractors attention is directed to Contract Clause NO. 52.232-33 "Payment By Electronic Funds Transfer-Central Contractor Registration" located in Section 00800.

10. The bidder shall distribute his indirect costs (overhead, profit, bond, etc.,) over all items in the Price Schedule. The Government will review all submitted Price Schedules for any unbalancing of the items. Any submitted Price Schedule determined to be unbalanced may be considered non-responsive and cause the bidder to be ineligible for contract award.

11. The bidder shall furnish all plant, labor, material, equipment, etc., necessary to perform all work in strict accordance with the terms and conditions set forth in the contract in include all attachments thereto.

12. Some quantities are ESTIMATED, the bidders prices MUST BE FIRM.

13. Bidder is cautioned to check his Price Schedule carefully prior to submission. If the Price Schedule contains unit prices, they should be round off to the second decimal point only NOT EXTENDED FUTHER.

14. Contractor is required to fill in Cage code (Reference Section 00600, entitled "Required Central Contractor Registration" Mar 1998) and DUNS Number (Reference Section 00600, entitled, "Data Universal Numbering System (DUNS) Number" Jun1999) in Block No. 15 on Standard Form 1442, Name and Address Block (Cage Code under Code and DUNS No. under Facility Code respectively).

15. EXERCISE OF OPTION. The Government reserves the right to exercise the option by written notice to the Contractor either singularly or in any combination at the time of or after award of the Base Bid but prior to the end of construction without any increase in the offeror's bid price. This option may be exercised any time up to (180) calendar days after receipt of Notice to Proceed. The price for exercise of the option includes all work and effort associated with the scope of that item. For determination of lowest bid, see paragraph: EVALUATION OF OPTIONS in Section 00100. No additional time for contract completion will be allowed when an option is exercised. The given contract completion time was formulated to include time necessary to perform all option work.

CERTIFICATE OF CORPORATE PRINCIPAL

1) IF THE OFFEROR IS A JOINT VENTURE, COMPLETE THE FOLLOWING:

_____	_____	_____
(Company Name)	(Signature)	(Title)
_____	_____	_____
(Company Name)	(Signature)	(Title)
_____	_____	_____
(Company Name)	(Signature)	(Title)

2) IF THE OFFEROR IS PARTNERSHIP, LIST FULL NAME OF ALL PARTNERS:

_____	_____	_____
(Company Name)	(Signature)	(Title)
_____	_____	_____
(Company Name)	(Signature)	(Title)
_____	_____	_____
(Company Name)	(Signature)	(Title)

3) IF THE OFFEROR IS A CORPORATION, THE FOLLOWING CERTIFICATION SHOULD BE COMPLETED:

CERTIFICATION AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the Secretary of the corporation named as principal in the within

contract; that _____ , who signed the said contract on behalf of the principal, was the

_____ of the corporation; that I know his signature and that his signature is genuine; and that said contract was duly signed, sealed and attested for in behalf of said corporation by authority of its governing body.

_____

CORPORATE PRINCIPAL

CORPORATE SEAL

_____

SECRETARY

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

-- End of Section --

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SECTION 00850

General Decision Number **NV020005**
Superseded General Decision No. NV010005
State: Nevada
Construction Type:
HEAVY
HIGHWAY
County(ies):

CARSON CITY	EUREKA	NYE
CHURCHILL	HUMBOLDT	PERSHING
CLARK	LANDER	STOREY
DOUGLAS	LINCOLN	WASHOE
ELKO	LYON	WHITE PINE
ESMERALDA	MINERAL	

HEAVY AND HIGHWAY CONSTRUCTION PROJECTS (Except construction projects at the NEVADA TEST SITE and TONOPAH TEST RANGE) (and Excluding Water Well Drilling)

Modification Number	Publication Date
0	03/01/2002
1	03/22/2002
2	03/29/2002
3	06/07/2002
4	07/12/2002
5	08/09/2002

COUNTY(ies):

CARSON CITY	EUREKA	NYE
CHURCHILL	HUMBOLDT	PERSHING
CLARK	LANDER	STOREY
DOUGLAS	LINCOLN	WASHOE
ELKO	LYON	WHITE PINE
ESMERALDA	MINERAL	

CARP0034L 07/01/1998

	Rates	Fringes
CARSON CITY, CHURCHILL, DOUGLAS, ELKO, EUREKA, HUMBOLDT, LANDER, LYON, MINERAL, PERSHING, STOREY, WASHOE AND WHITE PINE COUNTIES		
DIVER STANDBY	27.65	12.425
DIVER WET	38.90	12.425
DIVER TENDER	27.65	12.425
PILE DRIVERS: (Bridge, Warf & Dock Builders)	25.65	12.425

CARP0971E 07/01/2001

	Rates	Fringes
CHURCHILL, DOUGLAS, ELKO, EUREKA, HUMBOLDT, LANDER, LYON, MINERAL, PERSHING, STOREY, WASHOE, AND WHITE PINE.		
CARPENTERS	24.95	5.75

CARP1780A 07/01/1999

	Rates	Fringes
CLARK, ESMERALDA, LINCOLN AND NYE COUNTIES		
CARPENTERS:		
30 Mile radius around Las Vegas (Measured from the intersection of Maryland Parkway and Charleston Blvd.)	27.18	7.65

30 to 50 Mile radius around Las Vegas (same as above)	28.68	7.65
Over 50 mile Mile radius around Las Vegas (same as above)	30.43	7.65
Laughlin Area	29.18	7.65

ELEC0357F 12/01/2001

	Rates	Fringes
CLARK, LINCOLN, AND NYE (South of the Mt. Diablo Base Line) COUNTIES		
ELECTRICIANS	28.55	10.21+3%

ELEC0357G 07/01/1997

	Rates	Fringes
CLARK, LINCOLN, AND NYE COUNTIES		
LINE CONSTRUCTION WORKERS:		
Area bound by a 30 mile radius from the intersection of Main Street and Fremont Street in Las Vegas (Free Area)		
Groundman	17.98	5.95+3%
Line Equipment Operators	21.86	5.95+3%
Lineman	24.45	5.95+3%
Area between a 30 mile radius and 60 mile radius from Main and Fremont Streets		
Groundman	18.98	5.95+3%
Line Equipment Operators	22.86	5.95+3%
Lineman	25.45	5.95+3%
Area Over 60 mile radius from Main and Fremont Streets		
Groundman	20.98	5.95+3%
Line Equipment Operators	24.86	5.95+3%
Lineman	27.45	5.95+3%

ELEC0401F 06/01/2002

	Rates	Fringes
CHURCHILL, DOUGLAS, ELKO, ESMERALDA, EUREKA, HUMBOLDT, LANDER, LYON, MINERAL, PERSHING, STOREY, WASHOE, AND WHITE PINE COUNTYS.		
ELECTRICIANS:		
ELECTRICAINS	27.17	7.20+3%
CABLE SPLICER	29.89	7.20+3%

ELEC0401G 02/01/1993

	Rates	Fringes
CHURCHILL, DOUGLAS, ELKO, ESMERALDA, EUREKA, LANDER, LYON, MINERAL, PERSHING, STOREY, WASHOE, AND WHITE PINES COUNTYS.		
LINE CONSTRUCTION:		
Lineman	21.74	5.34+3-3/4%
Cable Splicer	23.91	5.34+3-3/4%
Equipment Operator	19.57	5.34+3-3/4%
Groundman	14.13	5.34+3-3/4%

ENGI0012H 08/01/1999

	Rates	Fringes
HYDRAULIC SUCTION AND CLAMSHELL DREDGES		

Leverman	34.20	8.00
Deck Captain	31.30	8.00
Dozer	30.73	8.00
Watch Engineer, Welder and Deckmate	30.62	8.00
Winchman (Stern Winch) (on dredge)	30.07	8.00
Deckhand (can operate anchor scow under direction of mate), Bargeman	29.53	8.00
Barge mate	30.14	8.00

ENGI0012J 07/01/2002

	Rates	Fringes
CLARK, ESMERALDA LINCOLN AND NYE COUNTIES		
POWER EQUIPMENT OPERATORS:		
Group 1	27.64	9.05
Group 2	28.59	9.05
Group 3	28.88	9.05
Group 4	30.17	9.05
Group 5	30.79	9.05
Group 6	30.39	9.05
Group 7	30.92	9.05
Group 8	30.50	9.05
Group 9	31.42	9.05
Group 10	30.62	9.05
Group 11	32.22	9.05
Group 12	30.79	9.05
Group 13	30.89	9.05
Group 14	30.92	9.05
Group 15	31.00	9.05
Group 16	31.12	9.05
Group 17	31.29	9.05
Group 18	31.39	9.05
Group 19	31.50	9.05
Group 20	31.62	9.05
Group 21	31.79	9.05
Group 22	31.89	9.05
Group 23	32.00	9.05
Group 24	32.12	9.05
CRANES, PILEDRIVING & HOISTING EQUIPMENT		
Group 1	28.79	9.05
Group 2	29.74	9.05
Group 3	30.03	9.05
Group 4	30.17	9.05
Group 5	30.39	9.05
Group 6	30.50	9.05
Group 7	30.62	9.05
Group 8	30.79	9.05
Group 9	30.96	9.05
Group 10	31.96	9.05
Group 11	32.96	9.05
Group 12	33.96	9.05
Group 13	34.96	9.05
TUNNEL GROUP:		
Group 1	29.36	9.05
Group 2	30.17	9.05

Group 3	30.39	9.05
Group 4	30.67	9.05
Group 5	30.79	9.05
Group 6	30.89	9.05
Group 7	31.79	9.05

From the City Hall of Las Vegas
20 Miles to 40 Miles - add $1.50 per hour to wage rates
40 Miles to 60 Miles - add $2.50 per hour to wage rates
Over 60 Miles - add $3.00 per hour to wage rates

POWER EQUIPMENT OPERATOR CLASSIFICATIONS:

GROUP 1: Bargeman, brakeman, compressor operator (when more than five (5) 900 CFM or larger units, additional operator required), ditch witch, with seat or similar type equipment, elevator operator - inside, engineer oiler, generator operator, generator, pump or compressor plant operator, pump operator, signalman, switchman

GROUP 2: Asphalt - rubber plant operator, concrete mixer operator - skip type, conveyor operator, fireman, hydrostatic pump operator, oiler crusher (asphalt or concrete plant), skiploader (when wheel type up to 3/4 yd. without attachment), soils field technician, tar pot fireman, temporary heating plant operator, trenching machine oiler, nurse tank operator.

GROUP 3: Asphalt - rubber blend operator, equipment greaser (rack), ford ferguson (with dragtype attachments), helicopter radioman (ground), power concrete curing machine operator, power concrete saw operator, power - driven jumbo form setter operator, stationary pipe wrapping and cleaning machine operator

GROUP 4: Asphalt plant fireman, backhoe operator (mini-max or similar type), boring machine operator, boxman or mixerman (asphalt or concrete), chip spreading machine operator, concrete pump operator (small portable), drilling machine operator, small auger types (Texoma super economatic or similar types - Hughes 100 or 200 or similar types - drilling depth of 30' maximum), equipment greaser (grease truck), guard rail post driver operator, highline cableway signalman, hydra-hammer-aero stomper, power sweeper operator, roller operator (compacting), screed operator (asphalt or concrete), trenching machine operator (up to 6ft.), concrete cleaning decontamination machine operator, power concrete curing machine operator,

GROUP 5: Equipment Greaser (Grease Truck)

GROUP 6: Asphalt plant engineer, batch plant operator, bit sharpener, concrete joint machine operator (canal and similar type), concrete planer operator, deck engine operator, derrickman (oilfield type), drilling machine operator, bucket or auger types (Caldwell 100 bucket or similar types - Watson 1000 auger or similar types - Texoma 330, 500 or 600 auger or similar types - drilling depth of 45' maximum), drilling machine operator, hydrographic seeder machine operator (straw, pump or seed), Jackson track maintainer, or similar type, Kalamazoo switch tamper, or similar type, machine tool operator, Maginnis internal full slab vibrator, mechanical berm, curb or gutter (concrete or asphalt), mechanical finisher operator (concrete, Clary-Johnson-Bidwell or similar type), pavement breaker operator (truck mounted), road oil mixing machine operator, roller operator (asphalt or finish), rubber - tired earth moving equipment (single engine, up to and including 25 yds. struck), self-propelled tar pipelining machine operator, skiploader

operator (crawler and wheel type, over 3/4 yd. and up to and including 1-1/2 yds.), slip form pump operator (power driven hydraulic lifting device for concrete forms), tractor operator - bulldozer, tamper-scraper (single engine, up to 100 h.p. flywheel and similar types, up to and including D-5 and similar types), tugger hoist operator

GROUP 7: Asphalt or concrete spreading operator (tamping or finishing), asphalt paving machine operator (Barber Greene or similar type - 1 screedman required), Asphalt -rubber distributor operator, backhoe operator (up to and including 3/4 yd.), small Ford, Case or similar, cast-in-place pipe laying machine operator, combination mixer and compressor operator (gunite work), compactor operator (self-propelled), concrete mixer operator (paving), crushing plant operator, drill doctor, drilling machine operator, bucket or auger types (Caldwell 150 bucket or similar types - Watson 1500, 2000 2500 auger or similar types - Texoma 700, 800 auger or similar types - drilling depth of 60' maximum), elevating grader operator, grade checker, gradall operator, grouting machine operator, heavy-duty repairman, kalamazoo ballast regulator or similar type, Kolman belt loader and similar type, Le Tourneau blob compactor or similar type, loader operator (Athey, Euclid, Sierra and similar types), pneumatic concrete placing machine operator (Hackley-Presswell or similar type), pumpcrete operator, rotary drill operator (excluding caisson type), rubber-tired earth-moving equipment operator (single engine, Caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. up to and including 50 cu. yds. struck), rubber-tired earth-moving equipment operator (multiple engine up to and including 25 yds. struck), rubber-tired scraper operator (self-loading paddle wheel type - John Deere, 1040 and similar single unit), self- propelled curb and gutter machine operator, skipload operator (crawler and wheel type over 1-1/2 yds. up to and including 6-1/2 yds.), surface heaters and planer operator, tractor compressor drill combination operator, tractor operator (any type larger than D-5 - 100 flywheel h.p. and over, or similar - bulldozer, tamper, scraper and push tractor single engine), tractor operator (boom attachments), traveling pipe wrapping, cleaning and bending machine operator, trenching machine operator (over 6 ft. depth capacity, oiler required)

GROUP 8: Heavy duty repairman

GROUP 9: Drilling machine operator, bucket or auger types (Caldwell 200 B bucket or similar types - Watson 3000 or 5000 auger or similar types - Texoma 900 auger or similar types - drilling depth of 105' maximum), dual drum mixer, monorail locomotive operator (diesel, gas or electric), motor patrol - blade operator (single engine), multiple engine tractor operator (Euclid and similar type - except Quad 9 cat.), rubber-tired earth-moving equipment operator (single engine, over 50 yds. struck), rubber-tired earth-moving equipment operator (multiple engine, Euclid, Caterpillar and similar over 25 yds. and up to 50 yds.), tower crane repair person, tractor loader operator (crawler and wheel type over 6-1/2 yds.), Woods mixer operator (and similar pugmill equipment)

GROUP 10: Dynamic compactor LDC350 (or similar types

GROUP 11: Auto grader operator, automatic slip form operator, drilling machine operator, bucket or auger types (Caldwell,

auger 20 CA or similar types - Watson auger 6000 or similar types - drilling depth of 175' maximum), hoe ram or similar with compressor, mass excavator operator, mechanical finishing machine operator, mobile form traveler operator, motor patrol operator (multi-engine), pipe mobile machine operator, rubber-tired earth-moving equipment operator (multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck), rubber-tired self-loading scraper operator (paddle-wheel-auger type self-loading - two (2) or more units)

GROUP 12: Rubber-tired earth-moving equipment operator operating equipment with push-pull system (single engine, up to and including 25 yds. struck)

GROUP 13: Canal liner operator, canal trimmer operator, remote-control earth-moving equipment operator, wheel excavator operator

GROUP 14: Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (single engine, Caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. and up to and including 50 yds. struck), rubber-tired earth-moving equipment operator, operating equipment with push-pull system (multiple engine - up to and including 25 yds. struck)

GROUP 15: Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (single engine, over 50 yds. struck), rubber-tired earth-moving equipment operator, operating equipment with push-pull system (multiple engine, Euclid, Caterpillar and similar, over 25 yds. and up to 50 yds. struck)

GROUP 16: Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (multiple engine, Euclid, Caterpillar and similar, over 50 cu. yds. struck), tandem tractor operator (operating crawler type tractors in tandem - Quad 9 and similar type)

GROUP 17: Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - single engine, up to and including 25 yds. struck)

GROUP 18: Rotex concrete belt operator (or similar types), rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, including compaction units - single engine, Caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. and up to and including 50 cu. yds. struck), rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - multiple engine, up to and including 25 yds. struck),

GROUP 19: Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - single engine, over 50 yds. struck), rubber-tired earth moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - multiple engine, euclid, caterpillar and similar over 25 yds. and up to 50 yds. struck)

GROUP 20: Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in

any combination, excluding compaction units - multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck)

GROUP 21: Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (single engine, up to and including 25 yds. struck)

GROUP 22: Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (single engine, Caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. and up to and including 50 yds. struck), rubber-tired earth-moving equipment operator, operating with the tandem push-pull system (multiple engine, up to and including 25 yds. struck)

GROUP 23: Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (single engine, over 50 yds. struck), rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (multiple engine, Euclid, Caterpillar and similar, over 25 yds. and up to 50 yds. struck)

GROUP 24: Concrete pump operator - truck mounted (oiler required when boom over 105' or 36 meters), rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck)

CRANES, PILEDRIVING AND HOISTING EQUIPMENT CLASSIFICATIONS:

GROUP 1: Engineer oiler; Fork lift operator (under 5 tons capacity)

GROUP 2: Truck crane oiler

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

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

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

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

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

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

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

GROUP 10: Crane operator (over 50 tons and up to and including 100 tons mrc); Derrick barge operator (over 50 tons up to and including 100 tons mrc); Hoist operator, stiff legs, Guy

derrick or similar type (over 50 tons up to and including 100 tons mrc)

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

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

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

TUNNEL CLASSIFICATIONS

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

GROUP 2: Power-driven jumbo form setter operator

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

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

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

GROUP 6: Heavy duty repairman - welder combination

GROUP 7: Tunnel mole boring machine operator

ENGI9993D 07/01/2000

	Rates	Fringes
CHURCHILL, DOUGLAS, ELKO, EUREKA, HUMBOLDT, LANDER, LYON, MINERAL, PERSHING, STOREY, WASHOE, WHITE PINE AND CARSON CITY		
POWER EQUIPMENT OPERATORS (Except Piledriving and Steel Erection)		
AREA 1:		
Group 1a	25.33	8.21
Group 2	25.86	8.21
Group 3	26.13	8.21
Group 4	26.87	8.21
Group 5	27.17	8.21
Group 6	27.34	8.21
Group 7	27.59	8.21

Group 8	28.18	8.21
Group 9	28.50	8.21
Group 10	28.85	8.21
Group 10a	29.04	8.21
Group 11	29.28	8.21
Group 11a	30.92	8.21
Group 11b	31.73	8.21
PILEDRIVING		
AREA 1:		
Group 1	37.32	8.21
Group 1a	31.38	8.21
Group 1b	29.46	8.21
Group 2	35.80	8.21
Group 2a	31.17	8.21
Group 2b	29.26	8.21
Group 3	34.35	8.21
Group 3a	30.95	8.21
GROUP 3b	29.03	8.21
Group 4	32.84	8.21
Group 5	31.73	8.21
Group 6	30.62	8.21
Group 7	29.66	8.21
Group 8	27.80	8.21
STEEL ERECTION		
AREA 1:		
Group 1	37.87	8.21
Group 1a	31.70	8.21
Group 1b	29.74	8.21
Group 2	36.36	8.21
Group 2a	31.45	8.21
Group 2b	29.53	8.21
Group 3	35.12	8.21
Group 3a	31.23	8.21
Group 3b	29.31	8.21
Group 3c	34.76	8.21
Group 4	33.39	8.21
Group 5	32.29	8.21

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

CHURCHILL, DOUGLAS, ELKO, EUREKA, HUMBOLDT, LANDER, LYON, MINERAL, PERSHING, STOREY, WASHOE, WHITE PINE, CARSON CITY (EXCLUDING PILEDRIVING AND STEEL ERECTION)

GROUP 1a: Oiler; Partsman (heavy duty repair shop partsroom when needed).

GROUP 2: Compressor; Material Loader and/or Conveyor (handling building materials); Pump Operator

GROUP 3: Bobcat or similar loader (1/4 cu. yd. or less); Concrete Curing Machines (streets, highways, airports, canals); Conveyor belt operator(tunnel); Forklift (under 20 ft.); Engineer Generating plant (500 K.W.); Mixer box operator (concrete plant); Motorman; Rotomist Operator; Screedman (except asphaltic or concrete paving); Oiler (truck crane)

GROUP 4: Concrete mixer, skip type; Dinky; Forklift (20' and over) or Lumber stacker; Ross Carrier; Skip Loader (under 1 cu. yd); Tie Spacer.

GROUP 5: Concrete mixer (over 1 cu. yd); concrete pumps or pumpcrete guns; Elevator and material Hoist (1 drum); Groundman for Asphalt Milling and similar.

GROUP 6: Auger type drilling equipment up to and including 30 ft. depth digging capacity m.r.c.; Boom Truck or Dual Purpose "A" Frame Truck; B.L.H. Lima road pactor or similar; Chip box spreader (flaherty type or similar); Concrete batch plant (wet or dry); Concrete saws (highways, streets, airports, canals); Locomotive (over 30 tons); Lubrication and service engineer (mobile & grease rack); Maginnis international full slab vibrator (airports, highways, canals, warehouses); Mechanical finishers (concrete)(clary, Johnson, Bidwell Bridge Deck or similar types); Mechanical Burn, Curb and/or Curb and Gutter Machine (concrete or asphalt); Pavement breaker, truck mounted, with compressor combination; Pavement breaker or tamper (with or without compressor (combination); Power Jumbo (setting slip-forms, etc. in tunnels); Roller (except asphalt); Self-propelled tape machine; Self-propelled compactor (single engine); Self-propelled power sweeper; slip form pump (power-driven by hydraulic, electric, air, gas, etc. lifting device for concrete forms); Small Rubber-tired Tractors; Snooper Crane, Paxton-Mitchell or similar; Stationary Pipe Wrapping, Cleaning and Bending Machine Operator

GROUP 7: Auger type drilling equipment over 30 ft. depth digging capacity m.r.c.; Compressor (over 2); Concrete conveyor or concrete pump, truck equipment mounted (boom length to apply); Concrete conveyor, building site; Drilling and boring Machinery, vertical and horizontal (not to apply to waterliners, wagon drills or jackhammers); Crusher Plant Engineer; Generators; Kolman Loader; Material Hoist (2 or more drums); Mechanical finishers or spreader machine (asphalt, Barber-Greene and similar); (Screedman required); Mine or shaft hoist; Pipe bending machines (pipelines only); Pipe cleaning machines (tractor propelled and supported); Pipe wrapping machines (tractor propelled and supported); Portable crushing and screening plants; Post driller and/or driver; Pumps (over 2); Roller operator (asphalt); Screedman (except asphaltic or concrete paving; Screedman (Barber-Green and similar)(Aspaltic or concrete paving); Self-propelled boom-type lifting device (center amount) (on 10 ton capacity or less); Slusher; Soil tester (certified); Soils and material tester; Surface heater and planer; Trenching machine (maxiumum digging capacity 3 feet depth); Truck type loader; Welding machines (gasoline or diesel.

GROUP 8: Asphalt plant Engineer; Asphalt milling machine; Cast-in-place pipe laying machine; Combination slusher and motor op.; Concrete batch plant (multiple units); Dozer Operator; Drill doctor; Elevating grader; Gradesetter, Grade checker; Grooving and grinding machine (highway); Heavy duty repairman and/or welder; Ken-seal; Loader (up to and including 2 1/2 cu. yds.); Mechanical trench shield; Mixermobile; Push cats; Road oil mixing machine (wood-mixer and other similar pugmill equipment); Rubber-tired earth-moving equipment (up to and including 35 cu. yds."struck" M.R.C. Euclid, T-pulls, DW's 10, 20, 21, and similar); Self-propelled compactor with dozer; Hyster 450 or cat 825 or similar; Sheepfoot; Small tractor (with boom); Soil stabilizer (P & H or equal); Timber skidder (rubber-tired and/or similar equipment); Tractor-drawn scraper; Tractor; Tractor-mounted compressor drill combination; Trenching machine (over 3 feet depth); Tri-batch paver; Tunnel badger or tunnel boring

machine; Tunnel mole boring machine; Vermeer T-600b rock cutter.
GROUP 9: Chicago boom; Combination backhoe and loader (up to and including 3/8 yard); Combination mixer and compressor (gunite); Lull hi-lift (20 feet or over); Mucking machine; Sub-grader (gurries or other types); Tractor (with boom) (D6 or larger); Track-laying-type earthmoving machine (single engine with tandem scrapers).
GROUP 10: Boom-type backfillng machine; Bridge crane; Carylift or similar; Chemical grouting machine; Derricks (two (2) Group 10 operators required when swing engine remote from hoist); Derrick barges (except excavation work); Euclid loader and similar types; Heavy-Duty rotary drill rigs; Lift-slab (vagtborg and similar types); Loader (over 2 1/2 cu yds. up to and including 4 cu. yds); Locomotive (over 100 tons) (single or multiple units); Multiple-Engine earth-moving machines (euclid, dozers, etc.); Pre-stress wire-wrapping machine; Rubber-tried scraper, self-loading; Single-engine scraper (over 35 cu. yds); Shuttle car (reclaim station); Train loading station; Trenching machine multi-engine with sloping attachment (jefco or similar); Vacuum cooling plant; Whirley crane (up to and including 25 tons).
GROUP 10a: Backhoe (up to and including 1 cu. yd hydraulic); Backhoe (up to and including 1 cu. yd. cable); CMI dual lane auto -grader SP30 or similar; Cranes (not over twenty five (25) tons (hammerhead and gantry); Finish Blade; Gradalls (up to and in-cluding 1 cu. yd); Motor patrol; Power shovels, Clamshells, Draglines, Cranes (up to and including 1 cu. yd.); Rubber-tried scraper, self-loading (twin-engine); Self-propelled boom-type lifting device (center mount) (over 10 tons up to and including 25 tons).
GROUP 11: Automatic asphalt or concrete slip-form paver; Automatic railroad car dumper; Canal trimmer; Cary lift, campbell or similar; Cranes (over 25 tons); Euclid loader when controled from the pullcat; Highline cableway operator; Loader (over 4 cu yds. up to and including 12 cu. yds.); Multi-Engine earthmoving equipment (up to and including 75 cu. yds. "struck M.R.C); Multi ple Engine Scrapers (when used to push pull); Power shovels, Clam-shells, Draglines, Backhoes, Gradealls (over 1 cu. yd. and up to and including 7 cu. yds. M.R.C.); Self-propelled Boom type lifting device (over 25 tons M.R.C.); Self-propelled Compactor (with multiplepropulsion power units); Single-engine rubber-tried earthmoving machine (with tandem scraper); Slip-form paver (concrete or asphalt)(one (1) Operator and two (2) screedman); Tandem cats and scrapers; Tower crane mobile (including rail-mounted); Truck-mounted hydraulic crane when remote-control equipped (over 10 tons up to and including 25 tons); Universal Liebher and tower cranes (and similar types)(in the erection, dismantling and moving of equipment there shall be an additional operating engineer at group 8 rates); Wheel excavator (up to and including 750 cu. yds. per hour); Whirley cranes (over 25 tons).
GROUP 11a: Band wagons (in conjuction with wheel excavators); Operator of helicopter (when used in construction work); Loaders (over 12 cu. yds.); Multi-engine earthmoving equimpent (over 75 cu. yds. "struck" M.R.C.); Power shovels, Clamshells, Draglines, Backhoes and Gradalls (over 7 cu. yds. M.R.C.); Remote-controlled Earthmoving equipment; Wheel excavator (over 750 cu. yds. per hour)(two (2) Group 11A operators required).
GROUP 11b: Holland loader or similar or loader (over 18 cu. yds)

PILEDRIVING CLASSIFICATIONS

GROUP 1: Derrick barge pedestal mounted over 100 tons; Clamshells over 7 cu. yds.; Self propelled boom type lifting device over 100 tons; Truck crane or crawler, land or barge mounted over 100 tons;
GROUP 1a: Truck crane oiler.
GROUP 1b: Oiler
GROUP 2: Derrick barge pedestal mounted 45 tons up to and including 100 tons; Clamshells up to and including 7 cu. yds; Self propelled boom type lifting device over 45 tons; Truck crane or crawler, land or barge mounted over 45 tons up to and including 100 tons.
GROUP 2a: Truck crane oiler.
GROUP 2b: Oiler
GROUP 3: Derrick barge pedestal mounted under 45 tons; self propelled boom type lifting device 45 tons and under; Skid/Scow Piledriver, any tonnage; (any assistance required shall be by an employee covered by this agreement); Truck crane or crawler, land or barge mounted 45 tons and under.
GROUP 3a: Truck Crane oiler
GROUP 3b: Oiler
GROUP 4: Forklift, 10 tons and over
GROUP 5: No current classification.
GROUP 6: Deck engineer
GROUP 7: No current classification
GROUP 8: Deckhand, Fireman

STEEL ERECTORS AND FABRICATORS

GROUP 1: Cranes, over 100 tons; Derrick over 100 tons, Self-propelled boom type lifting devices over 100 tons.
GROUP 1a: Truck crane oiler.
GROUP 1b: Oiler
GROUP 2: Cranes, over 45 tons up to and including 100 tons; Derrick 100 tons and under, Self-propelled boom type lifting device, over 45 tons; Tower Crane.
GROUP 2a: Truck crane oiler.
GROUP 2b: Oiler
GROUP 3: Cranes, 45 tons and under; Self propelled boom type lifting device, 45 tons and under
GROUP 3a: Truck crane oiler
GROUP 3b: Hydraulic
GROUP 3c: Oiler
GROUP 4: Chicago boom; Forklift, 10 tons and over; Heavy Duty Repairman/Welder.
GROUP 5: Boom cat

AREA DEFININITIONS AND PAY RATES

AREA 1:
ALL AREA FALLING WITHIN 50 ROAD MILES OF EITHER THE CARSON CITY COURTHOUSE OR THE WASHOE COUNTY COURHOUSE SHALL BE CONSIDERED FREE AREA.

AREA 2:
ALL WORK FALLING BETWEEN 50 AND 150 ROAD MILES OF THE WASHOE COUNTY COURTHOUSE SHALL BE COMPUTED AT AN ADDITIONAL $1.50 PER HOUR ABOVE THE BASE RATE.

AREA 3:
ALL WORK FALLING BETWEEN 150 AND 300 ROAD MILES OF THE WASHOE COUNTY COURTHOUSE SHALL BE COMPUTED AT AN ADDITIONAL $2.00 PER HOUR ABOVE THE BASE RATE.

AREA 4:
ANY WORK PERFORMED IN EXCESS OF 300 ROAD MILES OF THE WASHOE COURTHOUSE SHALL BE COMPUTED AT AN ADDITIONAL $3.00 PER HOUR ABOVE THE BASE RATE.

ENGI9993K 07/01/1997

	Rates	Fringes
CHURCHILL, DOUGLAS, ELKO, EUREKA, HUMBOLDT, LANDER, LYON, MINERAL, PERSHING, STOREY, WASHOE, WHITE PINE AND CARSON CITY		
HYDRAULIC SUCTION & CLAMSHELL & DIPPER DREDGE		
GROUP 1:		
Area 1	31.04	11.89
Area 2	33.04	11.89
GROUP 2:		
Area 1	26.08	11.89
Area 2	28.08	11.89
GROUP 3:		
Area 1	24.96	11.89
Area 2	26.96	11.89

DREDGING CLASSIFICATIONS

GROUP 1:
Day Mate (Captain); Leverman/Operator

GROUP 2:
Booster Pump Operator, Deck Engineer, Deck Mate, Dredge Dozer; Dredge Tender; Heavy Duty Repairman; Watch Engineer; Winchman

GROUP 3:
Bargeman; Deckhand; Fireman; Leveehand; Oiler

AREA DEFININITIONS

AREA 1:
ALL AREA FALLING WITHIN 50 ROAD MILES OF EITHER THE CARSON CITY COURTHOUSE OR THE WASHOE COUNTY COURHOUSE SHALL BE CONSIDERED FREE AREA.

AREA 2:
ALL WORK FALLING BETWEEN 50 AND 150 ROAD MILES OF THE WASHOE COUNTY COURTHOUSE.

AREA 3:
ALL WORK FALLING BETWEEN 150 AND 300 ROAD MILES OF THE WASHOE COUNTY COURTHOUSE.

AREA 4:
ANY WORK PERFORMED IN EXCESS OF 300 ROAD MILES OF THE WASHOE COURTHOUSE.

IRON0027J 07/01/2001

	Rates	Fringes
ELKO, EUREKA, AND WHITE PINE COUNTIES		
IRON WORKERS:		
Fence Erectors: Machinery Movers		
Ornamental: Reinforcing. Rigger		
Structural	25.19	14.575

IRON0155B 07/01/2001

	Rates	Fringes
CHURCHILL, CLARK, DOUGLAS, ESMERALDA, HUMBOLDT, LANDER, LINCOLN, LYON, MINERAL, NYE, PERSHING, STOREY, WASHOE, AND WHITE PINE COUNTIES		
IRONWORKERS:		

STRUCTURAL, ORNAMENTAL AND REINFORCING	26.08	14.575
FENCE ERECTORS (Excluding Clark County)	25.19	14.575

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* LABO0169F 10/01/2001

	Rates	Fringes
CHURCHILL, DOUGLAS, ELKO, EUREKA, HUMBOLDT, LANDER, LYON, MINERAL, PERSHING, STOREY, WASHOE, WHITE PINE, CARSON CITY		
Group 1	19.45	5.42
Group 1-A	16.58	5.42
Group 2	19.55	5.42
Group 3	19.70	5.42
Group 4	19.95	5.42
Group 5	20.25	5.42
Group 6	20.25	5.42
Group 7	19.95	5.42
Group 8	19.60	5.42
Group 9	14.29	5.42

From the Washoe County Courthouse
50 Miles to 150 Miles - add $1.50 per hour to wage rates
150 Miles to 300 Miles - $2.00 per hour to wage rates
Over 300 Miles - add $3.00 per hour to wage rates

CLASSIFICATIONS

GROUP 1: All cleanup work of debris, grounds and building including windows and tile; dump or spotter (other than asphalt); general laborers; limber, brushloader and piler

GROUP 1-A: Flagmen

GROUP 2: Choker setter or rigger (clearing work only); Pittsburgh chipper and similar type brush shredders; concrete worker (wet or dry) all concrete work not listed in Group 3; crusher or grizzle tender; Guinea chaser (stake); panel forms (wood or metal) handling, cleaning and stripping of; loading and unloading of all rods and materials for reinforcing concrete; railroad track (builders); sloper; semi-skilled wrecker (salvaging of building materials other than those listed in Group 3).

GROUP 3: Asphalt workers (ironers, shoveler, cutting machine); buggymobile; chainsaw, faller, logloader and bucker; compactor (all types); concrete mixer, under 1/2 yd.; concrete pan work (breadpan type) (handling, cleaning, stripping); concrete saw, chipping, grinding, sanding, vibrator; cribbing, shoring, lagging, trench jacking, hand-guided lagging hammer; curbing or divider machine; curb setter (precast or cut); Ditching machine (hand-guided); driller's tender, chuck tender; form raiser, slip forms; grouting of concrete walls, windows and door jams; headerboard; jackhammer, pavement breaker, air spade; mastic worker (wet or dry); pipe wrapper, kettle, pot, and workers applying asphalt, Creosote and similar type materials; all power tools (air, gas or electric); post driver; riprap stonepaver and rock slinger, including placing of sack concrete, wet or dry; roto tiller; rigging and signaling in connection with laborers work, sandblaster, pot men; vibrascreed; skilled wrecker (removing and salvaging of sash windows, doors, plumbing and electrical; fixtures)

GROUP 4: Burning and welding in connection with laborers' work; joy drill model TWM-2A, gardener denver model DN 143 and similar

type drills; track drillers, diamond core drillers, wagon drillers, mechanical drillers on multiple units; high scalers; concrete pump; heavy duty vibrator with stinger 5" diameter or over; pipelayer, caulker and bander; pipelayer - waterline, sewerline, gasline, conduit; asphalt rakers
GROUP 5: Blaster and powder, all work of loading, placing and blasting of all powder and explosive of any type, regardless of method used used for such loading and placing; asbestos removal; lead abatement, hazardous waste and material removal.
GROUP 6: Nozzlemen, Rodman
GROUP 7: Gunmen, Materialmen
GROUP 8: Reboundmen
GROUP 9: Landscaper

LABO0872D 07/01/2001

	Rates	Fringes
CLARK, ESMERALDA, AND LINCOLN COUNTIES; NYE COUNTY (South half, including Highway #6)		
LABORERS:		
Group 1	21.58	7.46
Group 2	21.74	7.46
Group 3	21.84	7.46
Group 4	21.93	7.46
Group 5	22.02	7.46
Group 6	21.84	7.46
Group 7	18.53	7.46

30 - 50 Miles From City Hall, Las Vegas $1.50 above the base rate.

50 - 70 Miles From City Hall, Las Vegas $2.50 above the base rate.

Over 70 Miles From City Hall, Las Vegas $3.00 above the base rate.

Laughlin Area $2.25 above the base rate.

LABORER CLASSIFICATIONS

Group 1: Dry Packing of concrete and filling of form-bolt holes; fine grader, highway and street paving, airport runaways and similar type heavy construction; gas and oil pipeline laborer; guinea chaser; laborer, general; construction or demolition laborer; packing rod steel and pans; laborers; temporary water lines (portable type); landscape gardener and nursery worker (must have knowledge of plant materials and how to plant them lay out plant arrangements to-follow the landscape plan); tarman and mortarman; kettleman; potman and worker applying asphalt lay-kold creosote, lime and similar type materials ("applying" means applying, dipping, brushing or handling of such materials

for pipe wrapping and waterproofing); underground laborer, including caisson bellowers; window cleaner; scafford erector - (excludes tenders); fence erector - chain link; mortarless, barrier wall and/or retaining walls; mechanical stabilized earth wall; landscape decorative rock installer - ponds, water

fall etc.; material handler - (incidental to trade).

Group 2: Asphalt raker, ironer, spreader, Luteman, buggymobile man; cement dumper (on 1 yard or larger mixers and handling bulk cement); cesspool digger and installer; chucktender (except tunnels); concrete core cutter; concrete curer, impervious membrane and oiler of all materials; concrete saw, excluding tractor type, cutting, scoring old or new concrete; gas and oil pipeline wrapper, pot tender and form; making and caulking of all non metallic pipe joints; operators and tenders of pneumatic and electric tools, vibrating machines, hand-propelled trenching machines, impact wrench, multiplate and similar mechanical tools not separately classified herein; operator of cement grinding machine; riprap stonepaver; roto-scraper; sandblaster (pot tender); scaler; septic tank digger and installer; tank scaler and cleaner; tree climber, faller, chain saw operator, pittsburgh chipper and similar type brush shredders

Group 3: Cutting torch operator; gas and oil pipeline wrapper; gas and oil pipeline laborer, certified; jackhammer and/or pavement breaker, laying of all non-metallic pipe, including landscape sprinklers, sewerpipe, drain pipe, and underground tile; mudcutter; concrete vibrator, all sizes; rock slinger; scaler (using Bos'n chair or safety belt or power tools); forklift (incidental to trade) a journeyman shall hold OSHA certification at time of referral.

Group 4: Cribber or shorer, lagging, sheeting, trenching bracing hand guided lagging hammer; head rock slinger; powder - blaster, all work of loading holes, placing and blasting of all powder and explosives of whatever type, regardless of method used for such loading and placing; sandblaster (nozzle operator); steel headerboard

Group 5: Driller (core, diamond or wagon); joy driller model TW-M-2a, Gardener-Denver Model DH 143 and similar type drills (in accordance with memorandum of understanding between laborers and operating engineers dated Miami, Florida, February 3, 1954); Gas and oil pipeline fusion; gas and oil pipeline wrappers, 6" pipe and over-

Group 6: Environmental specialist (asbestos abatement, lead abatement, Hazardous waste abatement, petro-chemical abate ment, radiation remediation.

Group 7: Flag and Signal Person

LABO0872I 07/01/2001

	Rates	Fringes
CLARK, ESMERALDA, AND LINCOLN COUNTIES; NYE COUNTY (South half, including Highway #6)		
LABORERS:		
MINER AND BULLGANG		
Group 1	24.04	9.18

Group 2	23.54	9.18
Group 3	23.29	9.18
Group 4	23.90	9.18
Group 5	23.54	9.18

30 - 50 Miles From City Hall, Las Vegas $1.50 above the base rate.

50 - 70 Miles From City Hall, Las Vegas $2.50 above the base rate.

Over 70 Miles From City Hall, Las Vegas $3.00 above the base rate.

Laughlin Area $2.25 above the base rate.

CLASSIFICATIONS

Group 1: Shaft, Raise, Stope Miner

Group 2: Miner - Tunnel (Hardrock)

Group 3: BullGang, Mucker, Trackman

Group 4: Miner - Welder

Group 5: Pipe Jacking, Micro-Tunneling, Tunnel Boring Machine

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PAIN0159F 07/01/2002

CLARK, ESMERALDA, LINCOLN AND NYE COUNTIES

	Rates	Fringes
PAINTERS:		
Brush, Roller, Paperhangers, Spray, Sandblasters, Pot Tender, Nozzleman, Tapers, Marbleizing, Metal Leafing Sign Painters, Acid Staining, Graining and Buffing	27.52	6.26
Structural Steel Paint and Sandblasting, Buffing Steel	27.92	6.26
Special Coating	27.52	6.26
Steeplejack	29.32	6.26

PAIN0567E 10/01/2001

CARSON CITY, CHURCHILL, DOUGLAS, ELKO, EUREKA, HUMBOLDT, LANDER, LYON, MINERAL, PERSHING, STOREY, WASHOE AND WHITE PINE COUNTIES

	Rates	Fringes
PAINTERS:		
Brush and Roller	20.53	5.06
Spray; Paperhangers; and Sandblaster; Special Coatings		

Application - Brush	21.03	5.06
Structural Steel (not to include stairways, tube steel, Q-decks & trust joints worked off powered lift in enclosed building); Steeplejack Brush/ Spray over 40 feet with open space below; Special Coatings Application - Spray	21.53	5.06
Special Coatings Application - Spray Steel	21.78	5.06
Drywall Taper	22.08	5.06
Steeplejack - Taper, over 40 ft. with open space	23.58	5.06

PLAS0241G 10/01/2001

	Rates	Fringes
CHURCHILL, DOUGLAS, ELKO, ESMERALDA, EUREKA, HUMBOLDT, LANDER, LYON, MINERAL, PERSHING, STOREY, WASHOE, AND WHITE PINE COUNTIES		
CEMENT MASONS		
Cement Masons	17.52	6.23
Mastic. magesite and all composition masons	17.77	6.23

PLAS0797G 07/01/2001

	Rates	Fringes
CLARK, ESMERALDA, LINCOLN AND NYE COUNTIES		
CEMENT MASONS:		
0 to 30 Miles from City Hall in Las Vegas	25.88	6.95
30 to 50 Miles from City Hall in Las Vegas	27.38	6.95
50 to 70 Miles from City Hall in Las Vegas	28.38	6.95
Over 70 Miles from City Hall in Las Vegas	29.38	6.95

PLUM0350G 08/01/2001

	Rates	Fringes
CHURCHILL, DOUGLAS, ELKO, EUREKA, HUMBOLDT, LANDER, LYON, MINERAL, PERSHING, STOREY, WASHOE, WHITE PINE, CARSON CITY COUNTIES, and NYE COUNTY (North of Hwy. #6 including the City of Tonopah)		
PLUMBERS & PIPEFITTERS	28.15	6.25

PLUM0525G 06/01/2001

	Rates	Fringes
CLARK, ESMERALDA AND LINCOLN, COUNTIES; NYE COUNTY (South of Hwy. #6 including the City of Tonopah)		
PLUMBERS & PIPEFITTERS	30.01	10.61

ROOF0162D 03/01/1999

	Rates	Fringes
ROOFERS	17.78	3.17

SHEE0026C 07/01/2001

	Rates	Fringes
CHURCHILL, DOUGLAS, ELKO, EUREKA, HUMBOLDT, LANDER, LYON, MINERAL, PERSHING, STOREY, WASHOE, CARSON CITY AND NYE COUNTY (North of the First Standard Parallel Line north of the 38th Parallel)		
SHEET METAL WORKERS	25.83	8.77

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* SHEE0088H 07/01/2002

	Rates	Fringes
CLARK, ESMERALDA, AND LINCOLN COUNTIES; NYE COUNTY (South of the First Standard Parallel Line north of the 38th Parallel); WHITE PINE COUNTY		
SHEET METAL WORKERS	32.57	9.68

TEAM0533A 07/01/2002

	Rates	Fringes
REMAINING COUNTIES AND NYE COUNTY (North of and including Highway #6)		
TRUCK DRIVERS		
All dump trucks (Single or multiple dump units including Semi's and Double and Transfer units:		
Under 4 yards (water level)	20.32	7.90
4 yards and under 8 yards (water level)	20.54	7.90
yards & under 18 yards (water level)	20.75	7.90
3 yards & under 25 yards (water level)	20.57	7.90
25 yards & under 60 yards (water level)	21.34	7.90

60 yards & under 75 yards (water level)	22.78	7.90
75 yards & under 100 yards (water level)	23.52	7.90
100 yards & over (water level)	24.20	7.90
150 yards & under 250 yards	26.20	7.90
250 yards & under 350 yards	29.20	7.90
Over 350 yards	30.70	7.90

(Men regularly employed underground on tunnel work shall be paid forty-five ($.60) cents per hour for such work, provided that such employment underground on tunnel work continues for one (1) or more hours)

Bulk cement spreader (with or with or without Auger) Use dump truck scales.

Bootman (a bootman when employed on such equipment shall receive the rate specified for the classification of road oil trucks or bootman).

Transit Mix, Manufactures Rating:

Under 8 yards	20.75	7.90
8 yards & including 12 yards	20.86	7.90
Over 12 yards	21.08	7.90

Transit Mix with boom shall receive $.16 cents per hour above the appropriate yardage classification rate of pay when such boom is used.

Water Trucks:

Up to 2,500 gallons	20.54	7.90
2,500 gallons & over	20.75	7.90

Jetting truck (use appropriate water truck rate.

DW20's and 21's and other similar cat type, Terra cobra, Le Tourneau pulls, Tournerocker,

Euclid and similar type equipment when pulling Aqua/pak, Water tank trailers and fuel and/or Grease Tank trailer or other miscellaneous trailers (except as definded under dump trucks.	21.03	7.90
Heavy Duty Transport (High bed)	20.92	7.90
Heavy Duty Transport (Gooseneck Low Bed)	20.92	7.90
Tiltbed or Flatbed Pull Trailers	20.92	7.90
Bootman, combination bootman and road oiler	20.81	7.90
Flat Rack (2 or 3 axle unit)	18.64	7.90
Bus and Manhaul drivers:		
Up to 18,000 lbs. (single unit)	20.37	7.90
18,000 lbs & over (single unit)	20.48	7.90
Helicopter Pilot (when transporting men or materials)	34.94	7.90
Industrial Lift truck (use appropriate flat rack rate (mechanical tailgate)		
Lift Jitneys & Fork Lift	20.59	7.90
Winch Truck & "A" Frame Drivers:		
Under 18,000 lbs.	20.48	7.90
18,000 lbs. & over	20.59	7.90
Warehouse Spotters	20.43	7.90
Teamsters Warehouse Clerk	20.54	7.90
Tire Repairman	20.75	7.90
Truck Repairman	21.08	7.90
Pick-up Truck & Pilot Cars (Job Site)	18.44	7.90
Pick-up Truck & Pilot Car (over the road)	20.43	7.90
Truck Oil and Greaser	20.48	7.90
Fuel Truck Driver	20.48	7.90
Fuel Man & Fuel Island Man	20.48	7.90
Oil Tanker	20.92	7.90

Oil Tanker With Pup 21.34 7.90
When on grease and fuel truck,
an Engineer Oil and Teamster
Oil, work interchangeable
servicing trucks and other
equipment, The wage rate shall
be identical.

AREA 1: All that area falling within fifty (50) road miles of either the Carson City or Washoe County Courthouse shall be considerer a free area.

AREA 2: All work falling between fifty (50) and (150) road miles of the Washoe County Courthouse shall be computed at and additional $1.50 per hour.

AREA 3: All work falling between one hundred and fifty (150) and three hundred (300) road miles of the Washoe County Courthouse shall be computed at additional $2.00 per hour.

AREA 4: Any work performed in excess of three hundred (300) road miles of the Washoe County Courthouse shall be computed at $3.00 per hour.

TEAM0631A 07/01/1999

	Rates	Fringes
CLARK, ESMERALDA, LINCOLN COUNTIES AND NYE COUNTY (South of and excluding Highway #6)		
TRUCK DRIVERS:		
GROUP 1:	21.35	7.12
GROUP 2:	21.46	7.12
GROUP 3:	21.67	7.12
GROUP 4:	21.85	7.12
GROUP 5:	22.00	7.12
GROUP 6:	22.35	7.12

30 - 50 Miles from City Hall, Las Vegas $1.00 above the base rate.
50 - 70 Miles from City Hall, Las Vegas $2.00 above the base rate.
70 - 80 Miles from City Hall, Las Vegas $3.00 above the base rate.
Over 80 Miles from City Hall, Las Vegas $3.50 above the base rate.
Laughlin and Mesquite Areas, $3.00 above the base rate.

Group 1: Dump trucks (less than 12 yards water level); trucks (legal payload capacity less than 15 tons); water and fuel trucks (under 2500 gallons); pickups; service; drivers of busses

(on jobsite used for transportation of up to 25 passengers); teamster equipment (highest rate for dual craft operation); working flat rack driver.

Group 2: Dump trucks (12 yards but less than 16 yards water level); trucks (legal payload capacity between 15 and 20 tons); transit mix trucks (under 3 yds.; dumpcrete trucks (less than 6-1/2 yds. water level); gas and oil pipeline working truck drivers; including winch truck and all sizes of trucks; water and fuel truck drivers (2,500 gallon to 4,000 gallon); truck greaser; drivers of busses (on jobsite used for transportation of more than twenty-five (25) passengers); warehouse clerk.

Group 3: Dump trucks (16 yds. up to and including 22 yds. water level); driver of trucks (legal payload cap. 20 tons but less than 30 tons); dumpster trucks; drivers of transit-mix trucks (3 yds. but less than 6 yds.); dumpcrete trucks (6-1/2 yds. water level and over); fork lift driver; ross carrier driver; highway water and fuel drivers (4,000 gallons but less than 6,000 gallons); stock room clerk; tireman.

Group 4: Transit-mix trucks (6 yds. or more); dump trucks (over 22 yds. water level); trucks (legal payload capacity 30 tons and over); fuel and water trucks (6,000 gallons and over).

Group 5: Drivers of trucks and trailers in combination (seven axles or more).

Group 6: All offroad equipment; truck repairmen and drivers of road oil spreader trucks; D.W. 10 and D.W. 20 euclid-type equipment, letourneau pulls, terra cobras and similar types of equipment; also PB and similar-type trucks when performing work within Teamsters' jurisidiction, regardless of types of attachment inlcuding power unit pulling off highway belly dumps in tandem.

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

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

In the listing above, the "SU" designation means that rates listed under that identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

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

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

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

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

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

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

Wage and Hour Administrator

U.S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

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

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

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

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

END OF GENERAL DECISION

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SECTION 01270

MEASUREMENT AND PAYMENT

PART 1 GENERAL

The contract price and payment shall constitute full compensation as stated in the Contract Clause, CONTRACT PRICES - BIDDING SCHEDULES, for completion of the work. No separate payment will be made for any material or work necessary to complete the work that is not specifically mentioned, such materials and work shall be considered incidental to all bid items. As stated in Contract Clause, SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION, the word "provided" shall be understood to mean "furnished and installed" when used in this section or elsewhere in the technical sections.

1.1 REFERENCES (NOT USED)

1.2 BASE BID LUMP SUM PAYMENT ITEMS

Payment items for the work of this contract for which contract lump sum payments will be made are listed in the BIDDING SCHEDULE and described below. All costs for items of work, which are not specifically mentioned to be included in a particular lump sum or unit price payment item, shall be included in the listed lump sum item most closely associated with the work involved. The lump sum price and payment made for each item listed shall constitute full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for which separate payment is not otherwise provided. Base bid items are limited to channel facilities within the area of Village 16 at Summerlin where right-of-way has been acquired.

1.2.1 Traffic Control (Bid Item 0001)

Payment for traffic control will be made at the applicable contract price, which payment shall constitute full compensation for traffic control including but not limited to earthwork and grading for construction and removal of temporary roadways; providing safety barriers; providing traffic warning and control signs and flagmen as required.

1.2.2 Diversion and Control of Water (Bid Item 0002)

Payment for diversion and control of water will be made at the applicable contract price, which payment shall constitute full compensation for control of storm water runoff to prevent adverse impacts to the project or downstream properties.

1.2.3 Construction Water (Bid Item 0003)

Payment for construction water will be made at the applicable contract price, which payment shall constitute full compensation for furnishing water for construction and dust control including cost of permits, cost of water taps or hydrants, applicable earthwork, design and installation of temporary water pipeline and storage tanks, maintaining and repairing the water supply system and all incidentals, complete.

1.2.4 Clear Site and Remove Obstructions (Bid Item 0004)

Payment for clear site and remove obstructions will be made at the applicable contract price, which payment shall constitute full compensation for clearing debris and grubbing areas of excavation, fill, or other approved areas necessary for the Contractor's operations within the limits of the designated temporary construction easement, the protection of existing facilities to remain in place, and scheduling and coordination of the work to comply with Section 01200 GENERAL REQUIREMENTS, paragraph ENVIRONMENTAL ASSESSMENT REQUIREMENT. This work shall include removal of existing plywood plugs at the beginning of the F-1 and F-2 Channels if present. Unnecessary clearing will not be permitted. This work shall include disposal off-site of all existing debris such as old pavement, tree trimmings, trash, car bodies and car parts, ammunition casings, etc. This work shall also include the protection in place, or restoration, of existing facilities that are to remain in place.

1.2.5 Ladder Systems (Bid Item 0005)

Payment for ladder systems will be made at the applicable contract lump sum price for installation of all channel access ladders. The contract price for ladder system shall be considered full payment for fabrication, assembly fittings, finishing, paint and marking, installation of ladder steps, and all equipment, labor and fittings.

1.2.6 Channel Station Marking (Bid Item 0006)

Payment for channel station marking will be made at the applicable contract lump sum price, which shall be considered full payment for preparation, paint and marking, equipment and labor.

1.2.7 Confluence Structures (Bid Items 0007 - 0008)

Payment for Confluence Structure #1 and Confluence Structure #2, including the confluence and transition structures, will be made at the applicable contract lump sum price, which payment shall constitute full compensation for each confluence and transition structure, for the reach of the channel and confluence structure specified, including furnishing and placing reinforcing steel; furnishing, placing, finishing and curing concrete; excluding excavation and compacted fill that is included in separate bid items for excavation, channel, and compacted fill, channel; complete as shown on the drawings. Confluence Structure #1 shall be from F-1 Channel Station 47+36.454 to Station 48+15.980 and will include the portion of the Town Center Drive Lateral from Town Center Drive Lateral Station 10+00.000 to Station 10+17.714. Confluence Structure #2 shall be from F-2 Channel Station 19+42.254 to Station 19+81.527 and will include the portion of the Greenbelt Channel from Greenbelt Channel Station 10+00.000 to Station

10+05.796.

1.2.8 Access Ramp (Bid Item 0009)

Payment for Access Ramp #1 will be made at the applicable contract lump sum price, which payment shall constitute full compensation, including main channel at ramp, furnishing and placing reinforcing steel; furnishing, placing, finishing and curing concrete; excluding excavation and compacted fill that is included in separate bid items for excavation, channel, and compacted fill, channel; including pipe access gate installed at top of access ramp to restrict vehicle access into channel invert and all appurtenances; complete as shown on the drawings. Access Ramp #1 shall be from F-1 Channel Station 46+03.420 to Station 46+52.657.

1.2.9 Reinforced Concrete Boxes (RCB) (Bid Items 0010 - 0013)

Payment for RCB will be made at the applicable contract lump sum price for the size and reach of box specified, which payment shall constitute full compensation for RCB and headwalls including earthwork, complete, including: furnishing and placing reinforcing steel; furnishing and placing, finishing and curing concrete, headwalls; furnishing and placing plywood plugs; and all incidentals, complete as shown on the drawings except for post and cable railing, chain link fencing, and gates. RCB, F-1 Channel at Town Center Drive shall be 4.000 m x 3.000 m from Station 48+15.980 to Station 48+58.193. RCB, Town Center Drive Lateral shall be 1.830 m x 1.830 m from Station 10+17.714 to Station 10+37.052. RCB, F-2 Channel at Mesa Park Drive shall be 5.000 m x 3.000 m from Station 16+86.000 to Station 17+34.000. RCB, Greenbelt Channel shall be 2.440 m x 2.440 m from Station 10+05.796 to Station 10+53.480.

1.2.10 Side Drain Connections (Bid Items 0014 - 0016)

Payment for side drain connections will be made at the applicable contract lump sum price for each structure and connection at the station specified and shown on the plans, which payment shall constitute full compensation for structure and RCP connection to the channel wall, complete, including: excavation and compacted fill and backfill; furnishing and placing reinforcing steel; furnishing and placing, finishing and curing concrete, and all incidentals, complete as shown on the drawings, inclusive within the construction joints shown on the plans and drawings.

1.2.11 Slotted Chamber (Bid Items 0017 - 0020)

Payment for the slotted chamber will be made at the applicable contract lump sum price for each slotted chamber, which payment shall constitute full compensation for the slotted chamber, complete, including excavation and compacted fill; furnishing and placing reinforcing steel; furnishing, placing, finishing, and curing concrete for walls and slabs; joints, weepholes, pipe connections to each slotted chamber, manhole frame and cover, and all incidentals as shown on the drawings.

1.3 BASE BID UNIT PRICE PAYMENT ITEMS

Payment items for the work of this contract on which the contract unit

price payments will be made are listed in the BIDDING SCHEDULE and described below. The unit price and payment made for each item listed shall constitute full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for each of the unit price items. Base bid items are limited to channel facilities within the area of Village 16 at Summerlin where right-of-way has been acquired.

1.3.1 EXCAVATION, CHANNEL (Bid Items 0021 - 0022)

1.3.1.1 Measurement

A survey of the site shall be made by the Contractor prior to commencement of work, and all measurements will be based on this survey without regard to any changes in the site that may be made between the excavation lines and grades indicated on the drawings or staked in the field and the ground surfaces as indicated by the above mentioned survey. Measurement shall be based on the difference between surveyed original grade and the grade and slope of the theoretical cross sections indicated on the drawings. The actual slopes as excavated may be greater or less than those indicated or staked, depending on the materials excavated and methods used in performing the work, but such alterations shall not change the measurement for payment from the original lines as specified herein. The quantity of directed excavation necessary for the removal of unsatisfactory foundation material as specified shall be included in the measurement of the excavation where the unsatisfactory soils are encountered. Quantities will be computed in cubic meters by the average end area method and the planimeter will be considered a precise instrument for measurement of plotted cross sections. The Contractor has the option of using computer methods for quantity estimations, but all computer methods of quantity estimations shall be approved by the Contracting Officer. All excavation outside of excavation lines shown on the drawings will be considered as being for convenience of the Contractor.

1.3.1.2 Payment

Payment for excavation will be made at the applicable contract price, which payment shall constitute full compensation for excavation for the channel, roads and other areas as indicated on the drawings including shoring, blasting, rock excavation, and cemented alluvium excavation; shaping and trimming of areas to receive concrete, loading, stockpiling, crushing, processing, hauling, and disposal of excess material to off site or to optional designated disposal sites, and processing, stockpiling, compacting to grade at the optional designated disposal sites if utilized.

The Contractor at his discretion may dispose of satisfactory excess excavated material originating from the construction of the F-1 Channel from Station 57+50.000 through Station 37+47.674 and satisfactory excess excavated material originating from the construction of the F-2 Channel from Station 23+80.000 through Station 12+24.774 in the optional designated disposal site - Lot "P", and/or the optional designated disposal site - A Portion of Lot "A" & "B", and/or to dispose the satisfactory excess excavated material off site. The optional designated disposal site - Lot

"P" has capacity for a maximum of 17,610 cubic meters of satisfactory excess excavated material. The optional designated disposal site - A Portion of Lot "A" & "B" has capacity for 58,730 cubic meters of satisfactory excess excavated material.

Excess material which is satisfactory material having a size no larger than that specified in Section 02300 EARTHWORK, paragraph OPTIONAL DESIGNATED DISPOSAL SITE - LOT "P" may be loaded, stockpiled, hauled, placed, compacted and graded at optional designated disposal site - Lot "P" as shown on the drawings and in accordance with Section 02300 EARTHWORK, paragraph OPTIONAL DESIGNATED DISPOSAL SITE - LOT "P", or shall be hauled and disposed off site and will be considered Contractor owned material. Excess material which is satisfactory material having a size specified in Section 02300 EARTHWORK, paragraph OPTIONAL DESIGNATED DISPOSAL SITE - A PORTION OF LOT "A" & "B", may be loaded, stockpiled, hauled, placed and graded at the optional designated disposal site - A Portion of Lot "A" & "B" as shown on the drawings and in accordance with Section 02300 EARTHWORK, paragraph OPTIONAL DESIGNATED DISPOSAL SITE - A PORTION OF LOT "A" & "B", or shall be hauled and disposed off site and will be considered Contractor owned material. Payment will not be included for excavation (including shoring) outside the excavation limits indicated on the drawings or staked in the field, and other earthwork requirements for which separate payments are provided.

1.3.1.3 Satisfactory Soils

No separate payment will be made for the excavation, processing (if done) and disposal of satisfactory soils. When such excavation is directed, payment will be made based on the contract unit prices for excavation, channel.

1.3.1.4 Unsatisfactory Soils

No separate payment will be made for the excavation and disposal of unsatisfactory soils. When such excavation is directed, payment will be made based on the contract unit prices for excavation, channel.

1.3.1.5 Excavation for Structures

No separate payment will be made for excavation for structures such as manholes and headwalls. All costs therefore shall be included in the applicable contract item to which the work applies.

1.3.1.6 Trenches

No separate payment will be made for the excavation and disposal of pipe trenches. All costs therefore shall be included in the applicable contract prices for the items to which the work applies.

1.3.1.7 Shoring

No separate payment will be made for shoring. The Contractor shall be responsible for method of construction and the use of shoring, stable slope cuts, or other trench safety requirements.

1.3.2 FILLS (Bid Items 0023 - 0028)

1.3.2.1 Measurement

Measurement for fills will be made between the excavation and structure lines and the fill limit lines, or between the ground lines and fill lines, as indicated or staked in the field. Quantities will be computed in cubic meters by the average end area method and the planimeter will be considered a precise instrument for measuring plotted cross sections. The Contractor has the option of using computer methods of quantity estimation, but all computer methods of quantity estimation shall be approved by the Contracting Officer.

1.3.2.2 Payment

Payment for fills will be made at the applicable contract price, which payment shall include full compensation for compacted fill, channel, and roadways, miscellaneous fill, and backfill about structures, subgrade preparation, and other areas as indicated on the drawings including placing, shaping, grading, and compacting the fill, complete. Payment will not be included for fills outside the fill limits indicated on the drawings or staked in the field, and other fill requirements for which separate payments are provided.

1.3.2.3 Compacted Fill, Channel

Payment for compacted fill, channel will be made at the applicable contract unit price per cubic meter, which payment shall constitute full compensation for placing, shaping, grading, and compacting the fill, complete.

1.3.2.4 Compacted Fill, Roadways

Payment for compacted fill, roadways will be made at the applicable contract unit price per cubic meter, which payment shall constitute full compensation for placing, shaping, grading, and compacting the fill, complete.

1.3.2.5 Trenches

No separate payment will be made for backfilling pipe including bedding material, selected granular material, or initial backfill material. All costs in connection therewith shall be included in the contract prices for items to which the work applies.

1.3.2.6 Miscellaneous Fill, Channel

Payment for miscellaneous fill, channel will be made at the applicable contract unit price per cubic meter, which payment shall constitute full compensation for placing, shaping, and grading the fill, complete.

1.3.2.7 Backfill About Structures

No separate payment will be made for backfill about structures. All such costs shall be included in the applicable contract prices for items to which the work applies.

1.3.2.8 Subgrade Preparation

No separate payment will be made for subgrade preparation for areas of fill, and all costs in connection therewith shall be included in the contract prices.

1.3.3 CHAIN LINK FENCING AND SWING GATE (Bid Items 0029 - 0032)

1.3.3.1 Measurement

Measurement of chain link fencing that is provided will be by the linear meter of chain link fencing constructed as shown on the drawings. Gates shall be measured for each type and size acceptably installed.

1.3.3.2 Payment for Chain Link Fencing

Payment for chain link fencing will be made at the applicable contract unit price per linear meter of fabric specified, which payment shall constitute full compensation for chain link fencing, including posts with caps, rail, chain link fabric, stretcher bars, tension bands, wire ties, truss wire, sleeves, grout, and all incidentals, complete as shown on the drawings.

1.3.3.3 Payment for Swing Gate

Payment for swing gates will be made at the applicable contract price, per each, for chain link double swing gates, which payment shall constitute full compensation for obtaining and installing gates complete, including keepers, stops and padlocks and all appurtenances, as shown on the drawings and described in the specifications.

1.3.4 POST AND CABLE RAILING (Bid Items 0033 - 0034)

1.3.4.1 Measurement

Measurement of post and cable railing will be by the linear meter, measured from end to end, of railing installed as shown on the drawings.

1.3.4.2 Payment

Payment for post and cable railing will be made at the applicable contract unit price per linear meter, which payment shall constitute full compensation for railing, including posts, cable, safety chain gates, anchor plate, bolts, and other galvanized appurtenances, fabrication, grout or dry pack, and all incidentals, complete.

1.3.5 REINFORCED CONCRETE (Bid Items 0035 - 0038)

1.3.5.1 Measurement

Measurement of concrete will be made on the basis of the actual volume, in

cubic meters, of concrete within the pay lines of the channel slab, and channel walls, as shown on the drawings. Measurement of concrete placed against the sides of any excavation without the use of intervening forms will be made only within the pay lines of the structures. No deductions will be made for rounded or beveled edges or space occupied by metalwork, nor voids or embedded items which are either less than 0.15 cubic meter in volume or one-tenth of square meter in cross section. Concrete wasted or used for the convenience of the Contractor will not be included in measurement for payment.

1.3.5.2 Payment

Payment for the concrete items will be made at the applicable contract prices for the various items of the schedule, which payments shall constitute full compensation for labor, reinforcing steel, forming, finishing, curing, all cutoff walls that are shown on the drawings and that are apart of channel construction, joint sealant complete, and for all equipment and tools to complete the concrete work. Embedded items (such as weepholes) shall be included in the cost of the concrete except when other payment is specifically provided. No payment will be made for concrete, as such, which is placed in structures for which payment is made on a lump sum basis.

1.3.5.3 Channel, Invert

Payment for the channel, invert will be made at the applicable contract unit price per cubic meter, which payment shall constitute full compensation for all concrete (including all necessary items described in Paragraph 1.3.5.2 above) placed for the channel invert slab, keys, and starter walls, complete.

1.3.5.4 Channel, Walls

Payment for the channel, walls will be made at the applicable contract unit price per cubic meter, which payment shall constitute full compensation for all concrete (including all necessary items described in Paragraph 1.3.5.2 above) placed above the starter walls in the vertical walls of the channel, complete.

1.3.6 AGGREGATE BASE COURSE (Bid Items 0039 - 0040)

1.3.6.1 Measurement

Measurement of aggregate base course will be by the metric tonne (1,000 kilograms) of aggregate base course placed within the lines and grades indicated on the drawings for road base and subgrade preparation of channel in area of pre-blasting by others.

1.3.6.2 Payment

Payment for aggregate base course will be made at the applicable contract unit price per metric tonne, which payment shall constitute full compensation for work required for installation of aggregate base course, furnishing, placing, and compacting the aggregate base course, complete,

including subgrade preparation.

1.3.7 ASPHALT CONCRETE PAVEMENT (Bid Items 0041 - 0042)

1.3.7.1 Measurement

Measurement for asphalt concrete pavement will be by the metric tonne (1,000 kilograms) of asphalt concrete pavement placed within the lines and grades as indicated on the drawings.

1.3.7.2 Payment

Payment for asphalt concrete pavement will be made at the applicable contract price which payment shall constitute full compensation for asphalt concrete pavement in place, complete including tack coat, prime coat and appurtenant work except for aggregate base course. No payment will be made for excessive thickness.

1.3.8 REINFORCED CONCRETE PIPE (Bid Items 0043 - 0047)

1.3.8.1 Measurement

Provide reinforced concrete piping as shown on the drawings. The Work shall consist of a complete installation. All excavation, bedding material, backfill, compaction of bedding and backfill, caps and marker posts, and all other trenching related work shall be included. Any trench excavation greater than 1.524 meters deep (vertical wall) shall be braced in accordance with Section 02316. The pipe shall be measured along the flow line. Laying the pipe to line and grade, grouting in the joints and all other piping installation work shall also be included except side drain connection paid under a separate bid item. All labor, equipment, and material costs shall be included in the price per meter for each size and class of RCP.

1.3.8.2 Payment

Payment for reinforced concrete pipe will be made at the applicable contract unit price per linear meter, which payment shall constitute full compensation for the installation, including excavation, bedding and backfill materials and placement, laying the pipe, mortaring the joints, compaction of bedding and backfill materials under, around, and over the pipe, caps and marker posts, complete and in place. Side drain connection is paid under a separate bid item. Pipe connections to slotted chambers is paid for under the slotted chamber bid item.

1.3.9 SANITARY SEWER MANHOLE (Bid Item 0048)

Manholes will be paid for according to the applicable contract price including, excavation, backfill and appurtenances complete and in place. No extra payment will be made for pipe fittings required to make connections to manholes.

1.3.10 SANITARY SEWER PIPE (Bid Item 0049)

1.3.10.1 Measurement

The length of sanitary sewer pipe installed will be measured from center to center of manholes and from the center of sewer to the end of the service connections without deduction for fittings or diameters of manholes and will be paid for according to the applicable contract unit price per meter for the size of pipe shown on the drawings. The Work shall consist of a complete installation. All excavation, material, backfill, compaction of bedding and backfill, and all other trenching related work shall be included. Any trench excavation greater than 1.524 meters deep (vertical wall) shall be braced in accordance with Section 02316. All labor, equipment, and material costs shall be included.

1.3.10.2 Payment

Payment for sanitary sewer pipe will be made at the applicable contract unit price per linear meter, which payment shall constitute full compensation for the installation, including excavation, bedding and backfill materials and placement, laying the pipe, compaction of bedding and backfill materials under, around, and over the pipe, complete and in place. No extra payment will be made for bends. The cost for concrete encasement shall be included when specified in the bid item. No additional payment will be made for Wye branches. The cost will be included in the price per meter of straight pipe.

1.3.11 ADJUST MANHOLE FRAME AND COVER (Bid Item 0050)

Measurement and payment shall be made according to the contract unit price for each manhole acceptably adjusted to finished grade elevation. Existing covers, including frames, grates, or lids shall be adjusted to the required elevation by removing such existing covers and adjusting the top of the existing structures by removing or adding concrete, riser, cone, grade rings, or by using cast iron adaptor rings, as the case may be, reinstalling the fixtures by supporting them on a satisfactory collar of Class A concrete constructed as to hold them firmly in place.

1.3.12 STEEL SLEEVE (Bid Items 0051 - 0052)

The Contractor shall provide steel sleeve as shown on the drawings and in accordance with Section 02317. The work shall consist of a complete installation including caps and marker posts. All excavation, bedding material, backfill, compaction of bedding and backfill, and all other trenching related work shall be included. Any trench excavation greater than 1.524 meters deep (vertical wall) shall be braced in accordance with Section 02316. The pipe sleeve shall be measured along the flow line. Laying the pipe sleeve to line and grade and all other installation work shall also be included. All labor, equipment, and material costs shall be included in the price per linear meter of steel pipe sleeve.

1.3.12.1 Measurement

The Contractor shall provide steel sleeve as shown on the drawings and in accordance with Section 02317. The work shall consist of a complete installation including caps and marker posts. All excavation, bedding

material, backfill, compaction of bedding and backfill, and all other trenching related work shall be included. Any trench excavation greater than 1.524 meters deep (vertical wall) shall be braced in accordance with Section 02316. The pipe sleeve shall be measured along the flow line. Laying the pipe sleeve to line and grade and all other installation work shall also be included. All labor, equipment, and material costs shall be included in the price per linear meter of steel pipe sleeve.

1.3.12.2 Payment

Payment for steel sleeve will be made at the applicable contract unit price per linear meter, which payment shall constitute full compensation for the installation of sleeve, caps, and marker posts, involving excavation, bedding and backfill materials and placement, laying the sleeve, compaction of bedding and backfill materials under, around, and over the sleeve, complete and in place.

1.3.13 PIGMENTED DUST PALLIATIVE/SOIL STABILIZER (Bid Items 053 - 054)

1.3.13.1 Measurement

Measurement of pigmented dust palliative/soil stabilizer will be made on the basis of the actual area in hectares of areas treated with pigmented dust palliative/soil stabilizer used for disturbed areas that will not be revegetated as indicated or directed.

1.3.13.2 Payment

Payment for pigmented dust palliative/soil stabilizer will be at the applicable contract price, which payment shall constitute full compensation including grading, scarifying furnishing materials, processing, and application, complete in place.

1.4 OPTIONAL BID LUMP SUM PAYMENT ITEMS

Optional bid items include debris basin and channel facilities on BLM property that may or may not be awarded depending on acquisition of right-of-way grants.

Payment items for the work of this contract for which contract lump sum payments will be made are listed in the BIDDING SCHEDULE and described below. All costs for items of work, which are not specifically mentioned to be included in a particular lump sum or unit price payment item, shall be included in the listed lump sum item most closely associated with the work involved. The lump sum price and payment made for each item listed shall constitute full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for which separate payment is not otherwise provided.

1.4.1 Traffic Control (Bid Item 0055)

Payment for traffic control will be made at the applicable contract price,

which payment shall constitute full compensation for traffic control including but not limited to earthwork and grading for construction and removal of temporary roadways; providing safety barriers; providing traffic warning and control signs and flagmen as required.

1.4.2 Diversion and Control of Water (Bid Item 0056)

Payment for diversion and control of water will be made at the applicable contract price, which payment shall constitute full compensation for control of storm water runoff to prevent adverse impacts to the project or downstream properties.

1.4.3 Construction Water (Bid Item 0057)

Payment for construction water will be made at the applicable contract price, which payment shall constitute full compensation for furnishing water for construction and dust control including cost of permits, cost of water taps or hydrants, applicable earthwork, design and installation of temporary water pipeline and storage tanks, maintaining and repairing the water supply system and all incidentals, complete.

1.4.4 Clear Site and Remove Obstructions (Bid Item 0058)

Payment for clear site and remove obstructions will be made at the applicable contract price, which payment shall constitute full compensation for clearing debris and grubbing areas of excavation, fill, or other approved areas necessary for the Contractor's operations within the limits of the designated temporary construction easement, the protection of existing facilities to remain in place, and scheduling and coordination of the work to comply with Section 01200 GENERAL REQUIREMENTS, paragraph ENVIRONMENTAL ASSESSMENT REQUIREMENT. Unnecessary clearing will not be permitted. This work shall include disposal off-site of all existing debris such as old pavement, tree trimmings, trash, car bodies and car parts, spent ammunition casings, etc. This work shall also include the protection in place, or restoration, of existing facilities that are to remain in place.

1.4.5 Basin Depth Gages (Bid Items 0059 - 0060)

Payment for detention basin depth gages will be made at the applicable contract price which payment shall constitute full compensation for installing the depth gages, complete, including applicable earthwork, reinforced concrete, and placing numerical markings as shown on the drawings.

1.4.6 Basin Stilling Wells (Bid Items 0061 - 0062)

Payment for basin stilling wells will be made at the applicable contract price, which payment shall constitute full compensation for the basin stilling well, complete, including excavation and compacted fill; furnishing and placing reinforcing steel; staff gauge; manhole, access door, shelf, beehive inlets, rigid steel inlet pipes with slurry backfill; connections, furnishing, placing, finishing, and curing concrete for, cutoff, walls, slabs, and sills as shown on the drawings; and all

incidentals.

1.4.7 Basin Outlet Tower Structures (Bid Items 0063 - 0064)

Payment for the basin outlet tower structures will be made at the applicable contract price, which payment shall constitute full compensation for the outlet tower structure, complete, including excavation and compacted fill; furnishing and placing reinforcing steel; furnishing, placing, finishing and curing concrete; furnishing and placing galvanized steel grating; furnishing and placing 76 diameter PVC pipe; and all incidentals.

1.4.8 Provide Plant Storage Irrigation During Construction (Bid Item 0065)

Payment for providing plant storage area irrigation during construction will be made at the applicable contract price, which payment shall constitute full compensation for furnishing water, labor and equipment to maintain plants as specified.

1.4.9 Provide Irrigation for One Year After Construction (Bid Item 0066)

Payment for providing irrigation for one year after construction will be made at the applicable contract price, which payment shall constitute full compensation for furnishing water, labor and necessary equipment to maintain plants placed for revegetation as specified.

1.4.10 One Year Guarantee on Landscape Work (Bid Item 0067)

Payment for providing a one year guarantee on landscape work will be made at the applicable contract price, which payment shall constitute full compensation for furnishing personnel to complete landscape work as specified, and providing required reports.

1.4.11 Ladder Systems (Bid Item 0068)

Payment for ladder systems will be made at the applicable contract lump sum price for installation of channel access ladders on BLM property, including ladder systems on the spillway/transition sections. The contract price for ladder system shall be considered full payment for fabrication, assembly fittings, finishing, paint and marking, installation of ladder steps, and all equipment, labor and fittings.

1.4.12 Channel Station Marking (Bid Item 0069)

Payment for channel station marking will be made at the applicable contract lump sum price, which shall be considered full payment for preparation, paint and marking, equipment and labor, and will include station markings on the spillway/transition sections.

1.4.13 Access Ramps (Bid Items 0070 - 0071)

Payment for each Access Ramp #2 and Access Ramp #3 will be made at the applicable contract lump sum price for the reach of channel and ramp specified, which payment shall constitute full compensation for each access

ramp, including main channel at ramp, furnishing and placing reinforcing steel; furnishing, placing, finishing and curing concrete; excluding excavation and compacted fill that is included in separate bid items for excavation, channel, and compacted fill, channel; including pipe access gate installed at top of access ramp to restrict vehicle access into channel invert and all appurtenances; complete as shown on the drawings. Access Ramp #2 shall be from F-1 Channel Station 59+24.031 to Station 59+71.387. Access Ramp #3 shall be from F-2 Channel Station 24+41.670 to Station 25+02.775.

1.4.14 Reinforced Concrete Boxes (RCB) (Bid Items 0072 - 0075)

Payment for RCB will be made at the applicable contract lump sum price for the size and reach of box specified, which payment shall constitute full compensation for RCB and headwalls including earthwork, complete, including: furnishing and placing reinforcing steel; furnishing and placing, finishing and curing concrete, headwalls and manholes on outlet conduits; furnishing and placing plywood plugs; and all incidentals, complete as shown on the drawings except for post and cable railing, chain link fencing, and gates. RCB, F-1 Debris Basin Outlet Conduit shall be 0.914 m x 0.914 m from Station 10+00.000 to Station 12+52.037 with two manholes. RCB, F-2 Debris Basin Outlet Conduit shall be 0.914 m x 0.914 m from Station 10+00.000 to Station 11+90.214 with two manholes. RCB, F-1 Maintenance Road Crossing shall be 4.000 m x 3.000 m from Station 60+64.610 to Station 60+74.610. RCB, F-2 Maintenance Road Crossing shall be 3.000 m x 3.000 m from Station 25+12.775 to Station 25+22.775.

1.4.15 Side Drain Connections (Bid Items 0076 - 077)

Payment for side drain connections will be made at the applicable contract lump sum price for each structure and connection at the station specified and shown on the plans, which payment shall constitute full compensation for structure and RCP connection to the channel wall, complete, including: excavation and compacted fill and backfill; furnishing and placing reinforcing steel; furnishing and placing, finishing and curing concrete, and all incidentals, complete as shown on the drawings, inclusive within the construction joints shown on the plans and drawings.

1.5 OPTIONAL BID UNIT PRICE PAYMENT ITEMS

Optional bid items include debris basin and channel facilities on BLM property that may or may not be awarded depending on acquisition of right-of-way grants.

Payment items for the work of this contract on which the contract unit price payments will be made are listed in the BIDDING SCHEDULE and described below. The unit price and payment made for each item listed shall constitute full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for each of the unit price items.

The F-1 and F-2 spillway/transition quantities are included with the F-1

and F-2 Channel quantities on BLM property.

1.5.1 STRIP AND STOCKPILE TOPSOIL (Bid Items 0078 - 0079)

Payment for strip and stockpile topsoil will be made at the applicable contract price per cubic meter for each basin site, which payment shall constitute full compensation for stripping and stockpiling specified surface soils, including clearing of grasses and weeds, debris and roots, after plant salvaging operations, as indicated in the specifications.

1.5.2 EXCAVATION (Bid Items 0080 - 0083)

1.5.2.1 Measurement

A survey of the site shall be made by the Contractor prior to commencement of work, and all measurements will be based on this survey without regard to any changes in the site that may be made between the excavation lines and grades indicated on the drawings or staked in the field and the ground surfaces as indicated by the above mentioned survey. Measurement shall be based on the difference between surveyed original grade and the grade and slope of the theoretical cross sections indicated on the drawings. The actual slopes as excavated may be greater or less than those indicated or staked, depending on the materials excavated and methods used in performing the work, but such alterations shall not change the measurement for payment from the original lines as specified herein. The quantity of directed excavation necessary for the removal of unsatisfactory foundation material as specified shall be included in the measurement of the excavation where the unsatisfactory soils are encountered. Quantities will be computed in cubic meters by the average end area method and the planimeter will be considered a precise instrument for measurement of plotted cross sections. The Contractor has the option of using computer methods for quantity estimations, but all computer methods of quantity estimations shall be approved by the Contracting Officer. All excavation outside of excavation lines shown on the drawings will be considered as being for convenience of the Contractor.

1.5.2.2 Payment

Payment for excavation will be made at the applicable contract price, which payment shall constitute full compensation for excavation for the dam and spillway/transition foundations, inspection trenches, debris basins, channels, roads and other areas as indicated on the drawings including shoring, blasting, rock excavation, and cemented alluvium excavation; shaping and trimming of areas to receive concrete or embankment material, roller compacted concrete, loading, stockpiling, crushing, processing, hauling, and dumping suitable materials for fills for the dam embankments, channels, spillway/transition, and backfill for structures and pipes; and loading, stockpiling, hauling, placing and grading excavated materials in the graded basin areas. Excess material shall be placed and graded at areas to be revegetated downstream of the basin on BLM property as directed by the Contracting Officer. Payment will not be included for excavation (including shoring) outside the excavation limits indicated on the drawings or staked in the field, and other earthwork requirements for which separate payments are provided.

1.5.2.3 Excavation, Debris Basin

Payment for excavation, debris basin will be made at the applicable contract unit price per cubic meter, which payment shall constitute full compensation for excavation as indicated on the drawings including foundation preparation for any overexcavation for the dam embankment. Payment for excavation, debris basin shall not include the quantity included with stripping and clearing and grubbing and other earthwork requirements for which separate payments are provided.

1.5.2.4 Excavation, Channel

Payment for excavation, channel will include excavations for spillway/transition and spillway/transition cutoff walls, and will be made at the applicable contract unit price per cubic meter, which payment shall constitute full compensation for excavation and haul and disposal of excess material.

1.5.2.5 Subgrade or Foundation Preparation

No separate payment will be made for subgrade or foundation preparation, including required shaping and cleaning of bedrock abutments and placement of mortar or concrete as necessary, and all costs in connection therewith shall be included in the contract prices for excavation or the items to which the work applies.

1.5.2.6 Unsatisfactory Soils

No separate payment will be made for the excavation and disposal of unsatisfactory soils. When such excavation is directed, payment will be made based on the contract unit prices for excavation.

1.5.2.7 Excavation for Structures

No separate payment will be made for excavation for structures such as manholes, outlet structures, stilling wells, and headwalls. All costs therefore shall be included in the applicable contract item to which the work applies.

1.5.2.8 Trenches

No separate payment will be made for the excavation and disposal of pipe trenches. All costs therefore shall be included in the applicable contract prices for the items to which the work applies.

1.5.2.9 Shoring

No separate payment will be made for shoring. The Contractor shall be responsible for method of construction and the use of shoring, stable slope cuts, or other trench safety requirements.

1.5.3 FILLS (Bid Items 0084 - 0092)

1.5.3.1 Measurement

Measurement for fills will be made between the excavation and structure lines and the fill limit lines, or between the ground lines and fill lines, as indicated or staked in the field. Quantities will be computed in cubic meters by the average end area method and the planimeter will be considered a precise instrument for measuring plotted cross sections. The Contractor has the option of using computer methods of quantity estimation, but all computer methods of quantity estimation shall be approved by the Contracting Officer.

1.5.3.2 Payment

Payment for fills will be made at the applicable contract price, which payment shall include full compensation for compacted fill, dam embankment, spillway/transition, channel, and roadways, trenches, miscellaneous fill, debris basin and channel, backfill about structures, subgrade preparation, and other areas as indicated on the drawings including placing, shaping, grading, foundation preparation backfill, and compacting the fill, complete. Payment will not be included for fills outside the fill limits indicated on the drawings or staked in the field, and other fill requirements for which separate payments are provided.

1.5.3.3 Compacted Fill, Dam Embankment

Payment for compacted fill, dam embankment will be made at the applicable contract unit price per cubic meter, which payment shall constitute full compensation for placing, shaping, grading, foundation preparation backfill, and compacting the fill, including settlement monuments and related work, complete.

1.5.3.4 Compacted Fill, Channel

Payment for compacted fill, channel will include compacted fill for spillway/transition, and will be made at the applicable contract unit price per cubic meter, which payment shall constitute full compensation for placing, shaping, grading, and compacting the fill, complete.

1.5.3.5 Compacted Fill, Roadways

Payment for compacted fill, roadways will be made at the applicable contract unit price per cubic meter, which payment shall constitute full compensation for placing, shaping, grading, and compacting the fill, complete.

1.5.3.6 Trenches

No separate payment will be made for backfilling pipe including bedding material, selected granular material, or initial backfill material. All costs in connection therewith shall be included in the contract prices for items to which the work applies.

1.5.3.7 Miscellaneous Fill, Debris Basin

Payment for miscellaneous fill, debris basin will be made at the applicable contract unit price per cubic meter, which payment shall constitute full compensation for placing, shaping, and grading the fill, complete.

1.5.3.8 Miscellaneous Fill, Channel

Payment for miscellaneous fill channel will be made at the applicable contract unit price per cubic meter, which payment shall constitute full compensation for placing, shaping, and grading the fill, complete.

1.5.3.9 Backfill About Structures

No separate payment will be made for backfill about structures. All such costs shall be included in the applicable contract prices for items to which the work applies.

1.5.3.10 Subgrade Preparation

No separate payment will be made for subgrade preparation for areas of fill, and all costs in connection therewith shall be included in the contract prices.

1.5.4 TORTOISE FENCE (Bid Items 0093 - 0094)

1.5.4.1 Measurement

Measurement of tortoise fence that is provided will be by the linear meter of tortoise fence constructed as shown on the drawings.

1.5.4.2 Payment

Payment for tortoise fence will be made at the applicable contract unit price per linear meter, which payment shall constitute full compensation for tortoise fence, including steel tee posts and all incidentals complete as shown on the drawings, and scheduling and coordination of the work to comply with Section 01200 GENERAL REQUIREMENTS, paragraph ENVIRONMENTAL ASSESSMENT REQUIREMENT. Payment shall also include complete removal of tortoise fence at the completion of this project.

1.5.5 CHAIN LINK FENCING AND SWING GATE (Bid Items 0095 - 0100)

1.5.5.1 Measurement

Measurement of chain link fencing that is provided will be by the linear meter of chain link fencing constructed as shown on the drawings. Gates shall be measured for each type and size acceptably installed.

1.5.5.2 Payment for Chain Link Fencing

Payment for chain link fencing will be made at the applicable contract unit price per linear meter of fabric specified, which payment shall constitute full compensation for chain link fencing, including posts with caps, rail, chain link fabric, stretcher bars, tension bands, wire ties, truss wire, 2 strand barbed wire, extension arms, sleeves, grout, and all incidentals,

complete as shown on the drawings.

1.5.5.3 Payment for Swing Gate

Payment for swing gates will be made at the applicable contract price, per each, for chain link double swing gates, which payment shall constitute full compensation for obtaining and installing gates complete, including keepers, stops and padlocks and all appurtenances, as shown in the drawings and described in the specifications.

1.5.6 POST AND CABLE RAILING (Bid Items 0101 - 0102)

1.5.6.1 Measurement

Measurement of post and cable railing will be by the linear meter, measured from end to end, of railing installed as shown on the drawings.

1.5.6.2 Payment

Payment for post and cable railing will be made at the applicable contract unit price per linear meter, which payment shall constitute full compensation for railing, including posts, cable, safety chain gates, anchor plates, bolts and other galvanized appurtenances, fabrication, grout or dry pack, and all incidentals, complete.

1.5.7 SEDIMENT STAFF GAGE (Bid Item 0103)

Payment for sediment staff gages will be made at the applicable contract price for each gage, which payment shall constitute full compensation for fabricating and installing the sediment staff gages, including applicable earthwork, pipes, concrete, and painting, complete.

1.5.8 REINFORCED CONCRETE (Bid Items 0104 - 0107)

1.5.8.1 Measurement

Measurement of concrete will be made on the basis of the actual volume, in cubic meters, of concrete within the pay lines of the channel slab, and channel walls, and spillway/transition slabs, and spillway/transition walls, and channel slab and spillway/transition slab cutoff walls as shown on the drawings. Measurement of concrete placed against the sides of any excavation without the use of intervening forms will be made only within the pay lines of the structures. No deductions will be made for rounded or beveled edges or space occupied by metalwork, nor voids or embedded items which are either less than 0.15 cubic meter in volume or one-tenth of square meter in cross section. Concrete wasted or used for the convenience of the Contractor will not be included in measurement for payment.

1.5.8.2 Payment

Payment for the concrete items will be made at the applicable contract prices for the various items of the schedule, which payments shall constitute full compensation for labor, reinforcing steel, forming, finishing, curing, all cutoff walls that are shown on the drawings and that

are apart of channel and spillway/transition construction, joint sealant complete, and for all equipment and tools to complete the concrete work. Embedded items (such as weepholes) shall be included in the cost of the concrete except when other payment is specifically provided. No payment will be made for concrete, as such, which is placed in structures for which payment is made on a lump sum basis.

1.5.8.3 Channel, Invert

Payment for the channel, invert will include the spillway/transition invert and spillway/transition invert cutoff walls, and will be made at the applicable contract unit price per cubic meter, which payment shall constitute full compensation for all concrete (including all necessary items described in Paragraph 1.5.8.2 above) placed for the channel and spillway/transition invert slab, keys, and starter walls, complete.

1.5.8.4 Channel, Walls

Payment for the channel, walls will include the spillway/transition walls, and will be made at the applicable contract unit price per cubic meter, which payment shall constitute full compensation for all concrete (including all necessary items described in Paragraph 1.5.8.2 above) placed above the starter walls in the vertical walls of the channel and spillway/transition, complete.

1.5.9 AGGREGATE BASE COURSE (Bid Items 0108 - 0109)

1.5.9.1 Measurement

Measurement of aggregate base course will be by the metric tonne (1,000 kilograms) of aggregate base course placed within the lines and grades indicated on the drawings.

1.5.9.2 Payment

Payment for aggregate base course will be made at the applicable contract unit price per metric tonne, which payment shall constitute full compensation for work required for installation of aggregate base course, furnishing, placing, and compacting the aggregate base course, complete, including subgrade preparation.

1.5.10 ASPHALT CONCRETE PAVEMENT (Bid Items 0110 - 0111)

1.5.10.1 Measurement

Measurement for asphalt concrete pavement will be by the metric tonne (1,000 kilograms) of asphalt concrete pavement placed within the lines and grades as indicated on the drawings.

1.5.10.2 Payment

Payment for asphalt concrete pavement will be made at the applicable contract price which payment shall constitute full compensation for asphalt concrete pavement in place, complete including tack coat, prime coat and

appurtenant work except for aggregate base course. No payment will be made for excessive thickness.

1.5.11 REINFORCED CONCRETE PIPE (Bid Items 0112 - 0113)

1.5.11.1 Measurement

Provide reinforced concrete piping as shown on the drawings. The Work shall consist of a complete installation. All excavation, bedding material, backfill, compaction of bedding and backfill, caps and marker posts, and all other trenching related work shall be included. Any trench excavation greater than 1.524 meters deep (vertical wall) shall be braced in accordance with Section 02316. The pipe shall be measured along the flow line. Laying the pipe to line and grade, grouting in the joints and all other piping installation work shall also be included except side drain connection paid under a separate bid item. All labor, equipment, and material costs shall be included in the price per meter for each size and class of RCP.

1.5.11.2 Payment

Payment for reinforced concrete pipe will be made at the applicable contract unit price per linear meter, which payment shall constitute full compensation for the installation, including excavation, bedding and backfill materials and placement, laying the pipe, mortaring the joints, compaction of bedding and backfill materials under, around, and over the pipe, caps and marker posts, complete and in place. Side drain connection is paid under a separate bid item.

1.5.12 ROLLER-COMPACTED CONCRETE (RCC) (Bid Items 0114 - 0115)

1.5.12.1 Measurement

Measurement of roller-compacted concrete will be made on the basis of actual cubic meters of roller-compacted concrete placed within the lines and grades indicated on the drawings and specifications.

1.5.12.2 Payment

Payment for roller-compacted concrete will be made at the applicable contract price, which payment shall constitute full compensation for the roller-compacted concrete including all materials (except portland cement and pozzolan for which separate payments are provided), formwork, batching, hauling, placing, compacting, finishing, curing and all equipment and tools to complete the roller compacted concrete in place. Embedded items shall be included in the cost of the roller-compacted concrete except when other payment is specifically provided.

1.5.13 PORTLAND CEMENT FOR RCC (Bid Items 0116 - 0117)

1.5.13.1 Measurement

Quantity of portland cement for RCC to be paid for will be the number of metric tonnes (1,000 kilograms) of portland cement used for

roller-compacted concrete unless specifically excepted, wasted or used for the convenience of the contractor. The quantity to be paid for will be determined by multiplying the approved weight of portland cement in kilograms per cubic meter of roller compacted concrete by the number of accepted cubic meters or roller compacted concrete placed within the lines and grades indicated on the drawings and dividing by 1,000.

1.5.13.2 Payment

Payments for portland cement for RCC will be made at the applicable contract price, which payment shall constitute full compensation for furnishing the portland cement ready for use in the work, complete. No payment will be made for portland cement used for structures for which separate payment is provided.

1.5.14 POZZOLAN FOR RCC (Bid Items 0118 - 0119)

1.5.14.1 Measurement

Quantity of pozzolan for RCC to be paid for will be the number of metric tonnes (1,000 kilograms) of pozzolan used for roller compacted concrete. The quantity to be paid for will be determined by multiplying the approved weight of pozzolan in kilograms per cubic meters of roller compacted concrete by the number of accepted cubic meters of roller compacted concrete placed within the lines and grades indicated on the drawings and dividing by 1,000.

1.5.14.2 Payment

Payments for pozzolan for RCC will be made at the applicable contract price, which payment shall constitute full compensation for furnishing the pozzolan, complete. No payment will be made for pozzolan used for structures for which separate payment is provided.

1.5.15 SALVAGE, STORE, AND MAINTAIN PLANTS (Bid Items 0120 - 0126)

1.5.15.1 Measurement

Measurement for salvaging, storing, and maintaining plants will be the number of plants of each type specified, actually salvaged, stored and maintained in a healthy condition.

1.5.15.2 Payment

The accepted quantities of plants measured for salvaging, storing, and maintaining plants, will be paid at the applicable contract unit price per the type of plant, for plants actually salvaged, stored and maintained in a healthy condition. Such payment shall be full compensation for all the labor, materials, and incidentals necessary to complete the work, except transplanting plants and irrigation water to maintain the plants will be paid separately.

1.5.16 TRANSPLANT PLANT MATERIALS (Bid Items 0127 - 0133)

1.5.16.1 Measurement

Measurement for transplanting plant materials will be the number of plants of each type specified, actually planted on the project.

1.5.16.2 Payment

The accepted quantities of plants measured for transplanting plant materials will be paid at the applicable contract unit price per the type of plant, identified in each bid item and actually planted on the project. Such payment shall be full compensation for all the labor, materials, and incidentals necessary to complete the work, except irrigation water to maintain the plants will be paid separately.

1.5.17 PROVIDE AND PLACE BOULDER GROUPS (3 per Group) (Bid Item 0134)

1.5.17.1 Measurement

Measurement for providing and placing boulder groups will be the number of groups placed, with three boulders per group.

1.5.17.2 Payment

The accepted quantities of boulder groups placed will be paid at the contract unit price for each boulder group placed. Such payment shall be full compensation for all the labor, materials and incidentals necessary to complete the work.

1.5.18 PLACE TOPSOIL TO FINISH GRADE (Bid Items 0135 - 0136)

1.5.18.1 Measurement

Measurement for placing topsoil to finished grade will be made on the basis of the cubic meters of material placed and graded to a depth of 203 millimeters over surfaces designated for revegetation treatment. Excess material from strip and stockpile for topsoil that is wasted or placed as miscellaneous fill will not be included for measurement under this item.

1.5.18.2 Payment

Payment for placing topsoil to finished grade will be at the applicable contract price per cubic meter, which payment shall constitute full compensation for materials, equipment, and labor.

1.5.19 SEEDING AND FERTILIZATION (Bid Items 0137 - 0138)

1.5.19.1 Measurement

Measurement for seeding and fertilization will be the number of hectares completed, applied at the specified seed and fertilizer rates in the designated areas, measured along the ground slope.

1.5.19.2 Payment

Payment for seeding and fertilization will be at the applicable contract price per hectares, which payment shall constitute full compensation for materials, equipment, and labor including tillage, amendments, and plant establishment.

1.5.20 PROVIDE BROWSE PROTECTION (Bid Item 0139)

Payment for providing browse protection will be made at the applicable contract price for each browse control device including equipment, supplies and labor.

1.5.21 SIMULATED DESERT VARNISH ROCK COLOR MITIGATION (Bid Item 0140)

1.5.21.1 Measurement

Measurement of simulated desert varnish rock color mitigation will be made on the basis of the actual area in hectares of exposed excavation, fill, and rock surfaces in the construction areas that are treated.

1.5.21.2 Payment

Payment for simulated desert varnish rock color mitigation will be at the applicable contract price per hectares, which payment shall constitute full compensation for the simulated desert varnish rock color mitigation including furnishing materials, processing, hauling, and placing, complete in place.

1.5.22 SOIL SAMPLING AND TESTING FOR FERTILITY (Bid Item 0141)

1.5.22.1 Measurement

Measurement of soil sampling and testing for fertility will be made at the applicable contract unit price per each soil sample taken as shown on the drawings and tested for fertility.

1.5.22.2 Payment

Payment for soil sampling and testing for fertility will be made at the applicable contract price for each soil sample taken and tested, which payment shall constitute full compensation for materials, equipment, and labor.

1.5.23 PRE-EMERGENT HERBICIDE AND PIGMENTED DUST PALLIATIVE/SOIL STABILIZER (Bid Items 0142 - 0143)

1.5.23.1 Measurement

Measurement of pre-emergent herbicide and pigmented dust palliative/soil stabilizer will be made on the basis of the actual area in hectares of areas treated with pre-emergent herbicide and pigmented dust palliative/soil stabilizer used for disturbed areas that will not be revegetated as indicated or directed.

1.5.23.2 Payment

Payment for pre-emergent herbicide and pigmented dust palliative/soil stabilizer will be at the applicable contract unit price per hectare, which payment shall constitute full compensation including furnishing materials, processing, and application, complete in place.

1.5.24 PIGMENTED DUST PALLIATIVE/SOIL STABILIZER (Bid Items 0144 - 0145)

1.5.24.1 Measurement

Measurement of pigmented dust palliative/soil stabilizer will be made on the basis of the actual area in hectares used for revegetation as indicated or directed.

1.5.24.2 Payment

Payment for pigmented dust palliative/soil stabilizer will be at the applicable contract price per hectare, which payment shall constitute full compensation including grading, scarifying, furnishing materials, processing, hauling and applying, complete in place.

1.5.25 0.762 M STEEL WATER SLEEVE (Bid Item 0146)

The Contractor shall provide steel sleeve pipe for the Blue Diamond Hydroelectric Power Project within the Right Of Way as shown on the F-1 Debris Basin Right-Of-Way drawing sheet B1-R-1 and in accordance with Section 02317, along with the following information. The wall thickness of this 0.762 m diameter steel sleeve pipe shall be not less than 8 mm thick. The location of this steel sleeve shall be located by the Contractor such that the longitudinal centerline of the steel sleeve pipe is on the centerline of the Blue Diamond Hydroelectric Power Project Right Of Way shown on drawing sheet B1-R-1, with one end of the length of pipe located at Northing 8,149,517.955/Easting 222,191.892 extending beyond the edge of the F-1 Channel, while the other end of the length of pipe located at Northing 8,149,502.578/Easting 222,126.017 extending beyond the edge of the F-1 Debris Basin Outlet Conduit. The steel sleeve pipe shall not have any bends or angles. The top of this steel sleeve pipe shall be located not less than 305 mm from the bottoms of the F-1 Channel invert slab and the F-1 Debris Basin Outlet Conduit invert slab, however the end located at Northing 8,149,502.578/Easting 222,126.017 shall have a higher invert elevation than the end located at Northing 8,149,517.955/Easting 222,191.892 so as not to create an undrainable low point. The work shall consist of a complete installation including caps and marker posts. All excavation, bedding material, backfill, compaction of bedding and backfill, and all other trenching related work shall be included. Any trench excavation greater than 1.524 meters deep (vertical wall) shall be braced in accordance with Section 02316. The pipe sleeve shall be measured along the flow line. Laying the pipe sleeve to line and grade and all other installation work shall also be included. All labor, equipment, and material costs shall be included in the price per linear meter of steel pipe sleeve.

1.5.25.1 Measurement

The Contractor shall provide steel sleeve as identified in these specifications and bid item and in accordance with Section 02317. The work shall consist of a complete installation including caps and marker posts. All excavation, bedding material, backfill, compaction of bedding and backfill, and all other trenching related work shall be included. Any trench excavation greater than 1.524 meters deep (vertical wall) shall be braced in accordance with Section 02316. The pipe sleeve shall be measured along the flow line. Laying the pipe sleeve to line and grade and all other installation work shall also be included. All labor, equipment, and material costs shall be included in the price per linear meter of steel pipe sleeve.

1.5.25.2 Payment

Payment for steel sleeve will be made at the applicable contract unit price per linear meter, which payment shall constitute full compensation for the installation of sleeve, caps, and marker posts, involving excavation, bedding and backfill materials and placement, laying the sleeve, compaction of bedding and backfill materials under, around, and over the sleeve, complete and in place.

PART 2 PRODUCTS (NOT USED)

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SECTION 02821

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SECTION 02821

FENCING AND RAILING

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 123/A 123M	(2000) Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A 153/A 153M	(2000) Zinc Coating (Hot Dip) on Iron and Steel Hardware
ASTM A 392	(1996) Zinc-Coated Steel Chain-Link Fence Fabric
ASTM A 475	(1998) Zinc-Coated Steel Wire Strand
ASTM A 491	(1996) Aluminum-Coated Steel Chain-Link Fence Fabric
ASTM A 501	(1999) Hot-Formed Welded and Seamless Carbon Steel Structural Tubing
ASTM A 780	(2000) Repair of Damaged and Uncoated Areas of Hot-Dipped Galvanized Coatings
ASTM A 824	(1995) Metallic-Coated Steel Marcelled Tension Wire for Use With Chain Link Fence
ASTM B 32	(1996) Solder Metal
ASTM C 94/C 94M	(2000) Ready-Mixed Concrete
ASTM C 270	(2000) Mortar for Unit Masonry
ASTM C 476	(1999) Grout for Masonry
ASTM F 626	(1996a) Fence Fittings
ASTM F 883	(1997) Padlocks
ASTM F 900	(1994) Industrial and Commercial Swing Gates

ASTM F 1043	(2000) Strength and Protective Coatings on Metal Industrial Chain-Link Fence Framework
ASTM F 1083	(1997) Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The "RE" designates that the Resident Office will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-07 Certificates

Chain Link Fence; G, RE.

Statement, signed by an official authorized to certify on behalf of the manufacturer, attesting that the chain link fence and component materials meet the specified requirements.

PART 2 PRODUCTS

2.1 FENCE FABRIC

Fence fabric shall conform to the following:

2.1.1 Chain Link Fence Fabric

ASTM A 392, Class 1, zinc-coated steel wire with minimum coating weight of 610 grams of zinc per square meter of coated surface, or ASTM A 491, Type I, aluminum-coated steel wire. Fabric shall be fabricated of 9 gauge wire woven in 50 mm mesh. In the event the plans or drawings indicate 11 gauge wire, the Contractor shall use 9 gauge wire as specified herein. Fabric height shall be 1.83 meters. Fabric shall be twisted and barbed on the top selvage and knuckled on the bottom selvage.

2.1.2 TORTOISE FENCING

Tortoise fencing shall be temporary, shall be orange in color, shall consist of a 1.219 meter high, high-density polyethylene fencing, or equivalent, with steel tee posts driven into the ground, or with steel tee posts set in excavated holes with mortar and grout as necessary, installed where shown on the drawings or required by the Contracting Officer. Mortar and grout to set steel tee posts in holes as necessary shall conform to ASTM C 270 Type M and ASTM C 476. Steel tee posts shall be similar to those found commercially available, adjusted to the height of the tortoise fence fabric.

2.2 GATES

ASTM F 900 gate shall be the type and swing shown. Gate frames shall conform to strength and coating requirements of ASTM F 1083 for Group IA, steel pipe, with external coating Type A, nominal pipe size (NPS) 1-1/2. Gate frames shall conform to strength and coating requirements of ASTM F 1043, for Group IC, steel pipe with external coating Type A or Type B, nominal pipe size (NPS) 1-1/2. Gate fabric shall be as specified for chain link fabric. Gate leaves more than 2.44 m wide shall have either intermediate members and diagonal truss rods or shall have tubular members as necessary to provide rigid construction, free from sag or twist. Gate leaves less than 2.44 m wide shall have truss rods or intermediate braces. Gate fabric shall be attached to the gate frame by method standard with the manufacturer except that welding will not be permitted. Latches, hinges, stops, keepers, rollers, and other hardware items shall be furnished as required for the operation of the gate. Latches shall be arranged for padlocking so that the padlock will be accessible from both sides of the gate. Stops shall be provided for holding the gates in the open position.

2.3 METAL POSTS FOR CHAIN LINK FENCE AND POST AND CABLE RAILING

2.3.1 METAL POSTS FOR CHAIN LINK FENCE

ASTM F 1083, zinc-coated. Group IA, with external coating Type A steel pipe. Group IC steel pipe, zinc-coated with external coating Type A or Type B and Group II , formed steel sections, shall meet the strength and coating requirements of ASTM F 1043. Group III, ASTM F 1043 steel H-section may be used for line posts in lieu of line post shapes specified for the other classes. Sizes shall be as shown on the drawings. Line posts and terminal (corner, gate, and pull) posts selected shall be of the same designation throughout the fence. Gate post shall be for the gate type specified subject to the limitation specified in ASTM F 900.

2.3.2 Metal Posts for Post and Cable Railing

Posts for Post and Cable Railing shall be per ASTM A 501 and shall be hot-dip galvanized after drilling holes, welding, and other fabrication as shown on the drawings. Galvanizing shall be in accordance with ASTM A 123/A 123M, as applicable. Welded, cut, damaged, and deformed areas of galvanizing metal shall be neatly coated with Grade 50B solder conforming to ASTM B 32.

2.4 BRACES AND RAILS

ASTM F 1083, zinc-coated, Group IA, steel pipe, size NPS 1-1/4. Group IC steel pipe, zinc-coated, shall meet the strength and coating requirements of ASTM F 1043. Group II, formed steel sections, size 42 mm, conforming to ASTM F 1043, may be used as braces and rails if Group II line posts are furnished.

2.5 WIRE

2.5.1 Tension Wire

Tension wire shall be Type I or Type II, Class 2 coating, in accordance with ASTM A 824.

2.6 CABLES FOR POST AND CABLE RAILING

Cables shall be prestretched, galvanized wire rope of the size indicated, ungreased. Wire rope shall conform to ASTM A 475, high strength grade with Class A coating. Fittings and accessories shall be hot-dip galvanized.

2.7 ACCESSORIES

Fence fittings and accessories shall be per ASTM F 626 and as shown on the drawings. Ferrous accessories shall be zinc or aluminum coated. Truss rods shall be furnished for each terminal post. Truss rods shall be provided with turnbuckles or other equivalent provisions for adjustment. Tie wire for attaching fabric to rails, braces, and posts shall be 9 gauge steel wire and match the coating of the fence fabric. Miscellaneous hardware coatings shall conform to ASTM A 153/A 153M unless modified. For the Post and Cable Railing system the turnbuckles, eyebolts, anchors, u-bolt clips, nuts and washers shall be galvanized or zinc plated.

2.8 CONCRETE

ASTM C 94/C 94M, using 19 mm maximum size aggregate, and having minimum compressive strength of 21 MPa at 28 days. Grout shall consist of one part portland cement to three parts clean, well-graded sand and the minimum amount of water to produce a workable mix.

2.9 PADLOCKS

Padlocks shall conform to ASTM F 883, Type PO1 Grade 2. Padlocks shall be a combination commercial type Padlock Master #175 or equivalent.

PART 3 EXECUTION

3.1 INSTALLATION

Fence shall be installed to the lines and grades indicated. The area on either side of the fence line shall be cleared to the extent indicated. Line posts shall be spaced equidistant at intervals not exceeding 3 m. Terminal (corner, gate, and pull) posts shall be set at abrupt changes in vertical and horizontal alignment. Fabric shall be continuous between terminal posts; however, runs between terminal posts shall not exceed 152.4 m. Any damage to galvanized surfaces, including welding, shall be repaired with paint containing zinc dust in accordance with ASTM A 780.

3.2 EXCAVATION

Post holes shall be cleared of loose material. Waste material shall be spread where directed. The ground surface irregularities along the fence line shall be eliminated to the extent necessary to maintain a 50 mm clearance between the bottom of the fabric and finish grade.

3.3 POST INSTALLATION, CHAIN LINK FENCE

3.3.1 Posts for Chain Link Fence

Posts shall be set plumb and in alignment. Except where solid rock is encountered, posts shall be set in concrete to the depth indicated on the drawings. Where solid rock is encountered with no overburden, posts shall be set to a minimum depth of 457 mm in rock. Where solid rock is covered with an overburden of soil or loose rock, posts shall be set to the minimum depth indicated on the drawing unless a penetration of 457 mm in solid rock is achieved before reaching the indicated depth, in which case depth of penetration shall terminate. All portions of posts set in rock shall be grouted. Portions of posts not set in rock shall be set in concrete from the rock to ground level. Posts set in concrete shall be set in holes not less than the diameter shown on the drawings. Diameters of holes in solid rock shall be at least 25 mm greater than the largest cross section of the post. Concrete and grout shall be thoroughly consolidated around each post, shall be free of voids and finished to form a dome. Concrete and grout shall be allowed to cure for 72 hours prior to attachment of any item to the posts. Group II line posts may be mechanically driven, for temporary fence construction only, if rock is not encountered. Driven posts shall be set to a minimum depth of 914 mm and shall be protected with drive caps when being set.

3.4 RAILS

3.4.1 Top Rail

Top rail shall be supported at each post to form a continuous brace between terminal posts. Where required, sections of top rail shall be joined using sleeves or couplings that will allow expansion or contraction of the rail.

3.4.2 Bottom Rail

The bottom rail shall be bolted to double rail ends and double rail ends shall be securely fastened to the posts. Bolts shall be peened to prevent easy removal. Bottom rail shall be installed before chain link fabric.

3.5 BRACES AND TRUSS RODS

Braces and truss rods shall be installed as indicated and in conformance with the standard practice for the fence furnished. Horizontal (compression) braces and diagonal truss (tension) rods shall be installed on fences over 1.83 m in height. A center brace or 2 diagonal truss rods shall be installed on 3.66 m fences. Braces and truss rods shall extend from terminal posts to line posts. Diagonal braces shall form an angle of approximately 40 to 50 degrees with the horizontal. No bracing is required on fences 1.83 m high or less if a top rail is installed.

3.6 TENSION WIRES

Tension wires shall be installed along the top and bottom of the fence line and attached to the terminal posts of each stretch of the fence. Top tension wires shall be installed within the top 102 mm of the installed fabric. Bottom tension wire shall be installed within the bottom 152 mm of

the installed fabric. Tension wire shall be pulled taut and shall be free of sag.

3.7 CHAIN LINK FABRIC

Chain link fabric shall be installed on the side of the post indicated. Fabric shall be attached to terminal posts with stretcher bars and tension bands. Bands shall be spaced at approximately 381 mm intervals. The fabric shall be installed and pulled taut to provide a smooth and uniform appearance free from sag, without permanently distorting the fabric diamond or reducing the fabric height. Fabric shall be fastened to line posts at approximately 381 mm intervals and fastened to all rails and tension wires at approximately 610 mm intervals. Fabric shall be cut by untwisting and removing pickets. Splicing shall be accomplished by weaving a single picket into the ends of the rolls to be joined. The bottom of the installed fabric shall be 50 mm plus or minus 13 mm above the ground.

3.8 GATE INSTALLATION

Gates shall be installed at the locations shown. Hinged gates shall be mounted to swing as indicated. Latches, stops, and keepers shall be installed as required. Contractor shall provide a padlock for each of the chain link fence gate assemblies.

3.9 GROUNDING

Fences crossed by power lines of 600 volts or more shall be grounded at or near the point of crossing and at distances not exceeding 45 m on each side of crossing. Ground conductor shall consist of No. 8 AWG solid copper wire. Grounding electrodes shall be 19 mm by 3.05 m long copper-clad steel rod. Electrodes shall be driven into the earth so that the top of the electrode is at least 152 mm below the grade. Where driving is impracticable, electrodes shall be buried a minimum of 305 mm deep and radially from the fence. The top of the electrode shall be not less than 0.6 m or more than 2.4 m from the fence. Ground conductor shall be clamped to the fence and electrodes with bronze grounding clamps to create electrical continuity between fence posts, fence fabric, and ground rods. After installation the total resistance of fence to ground shall not be greater than 25 ohms.

3.10 POST AND CABLE RAILING INSTALLATION

3.10.1 Posts for Post and Cable Railing

Posts for Post and Cable Railing shall be installed as shown on the drawings. All posts for the post and cable railing installation shall be true vertical or plumb and not normal to the top of the channel walls.

3.10.2 Cables for Post and Cable Railing

Cables for the post and cable railing shall be installed as shown in the drawings. Cables shall be pulled taut and shall be free of sag. Cables shall be parallel to the top of the channel wall.

3.10.3 After Installation

The Contractor shall examine and certify the operation of all post and cable railing not sooner than 30 days after installation.

3.11 TORTOISE FENCING INSTALLATION

Installation of the tortoise fence, temporary, shall be in accordance with the manufacturer recommendations. Shop drawings submittal (including steel tee post selection) of the tortoise fence is required and shall be approved by the Contracting Officer prior to installation. Steel tee posts for the tortoise fencing shall be driven plumb in the ground or as necessary shall be set plumb in holes formed in the ground and grouted into place. The grout shall be thoroughly consolidated around each steel tee post so as to be free of voids and finished to form a dome. The Contractor shall maintain the tortoise fence throughout the life of the project. The tortoise fencing shall be removed in its entirely at the end of the contract, and the post holes backfilled to surrounding ground height. The Contractor may bury the bottom portion of the tortoise fence fabric into the ground as shown on the drawings or as an option may bend the fabric laying it on the ground and covering same with earth.

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SECTION 03301

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SECTION 03301

CAST-IN-PLACE STRUCTURAL CONCRETE FOR CIVIL WORKS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ACI INTERNATIONAL (ACI)

ACI 117/117R	(1990; Errata) Standard Tolerances for Concrete Construction and Materials
ACI 211.1	(1991) Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete
ACI 214	(1977; R 1997) Recommended Practice for Evaluation of Strength Test Results of Concrete
ACI 305R	(1999) Hot Weather Concreting
ACI 318M	(1995) Metric Building Code Requirements for Structural Concrete and Commentary

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 31/C 31M	(2000) Making and Curing Concrete Test Specimens in the Field
ASTM C 33	(1999ae1) Concrete Aggregates
ASTM C 39/C 39M	(1999) Compressive Strength of Cylindrical Concrete Specimens
ASTM C 40	(1999) Organic Impurities in Fine Aggregates for Concrete
ASTM C 42/C 42M	(1999) Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
ASTM C 87	(1983; R 1995el) Effect of Organic Impurities in Fine Aggregate on Strength of Mortar
ASTM C 94/C 94M	(2000) Ready-Mixed Concrete

ASTM C 127	(1988; R 1993el) Specific Gravity and Absorption of Coarse Aggregate
ASTM C 128	(1997) Specific Gravity and Absorption of Fine Aggregate
ASTM C 131	(1996) Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C 136	(1996a) Sieve Analysis of Fine and Coarse Aggregates
ASTM C 142	(1978; R 1997) Clay Lumps and Friable Particles in Aggregates
ASTM C 143/C 143M	(2000) Slump of Hydraulic Cement Concrete
ASTM C 150	(1999a) Portland Cement
ASTM C 172	(1999) Sampling Freshly Mixed Concrete
ASTM C 192/C 192M	(2000) Making and Curing Concrete Test Specimens in the Laboratory
ASTM C 231	(1997e1) Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C 260	(2000) Air-Entraining Admixtures for Concrete
ASTM C 295	(1998) Petrographic Examination of Aggregates for Concrete
ASTM C 309	(1998a) Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C 494/C 494M	(1999a) Chemical Admixtures for Concrete
ASTM C 535	(1996el) Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C 566	(1997) Total Evaporable Moisture Content of Aggregate by Drying
ASTM C 597	(1983; R 1997) Pulse Velocity Through Concrete
ASTM C 618	(2000) Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete

ASTM C 803/C 803M	(1997el) Penetration Resistance of Hardened Concrete
ASTM C 805	(1997) Rebound Number of Hardened Concrete
ASTM C 881	(1999) Epoxy-Resin-Base Bonding Systems for Concrete
ASTM C 1059	(1999) Latex Agents for Bonding Fresh to Hardened Concrete
ASTM C 1064/C 1064M	(1999) Temperature of Freshly Mixed Portland Cement Concrete
ASTM C 1077	(1998) Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation
ASTM C 1107	(1999) Packaged Dry, Hydraulic-Cement Grout(Nonshrink)
ASTM C 1260	(2001) Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
ASTM D 75	(1987; R 1997) Sampling Aggregates

U.S. ARMY CORPS OF ENGINEERS (USACE)

COE CRD-C 94	(1995) Surface Retarders
COE CRD-C 100	(1975) Method of Sampling Concrete Aggregate and Aggregate Sources, and Selection of Material for Testing
COE CRD-C 104	(1980) Method of Calculation of the Fineness Modulus of Aggregate
COE CRD-C 130	(1989) Scratch Hardness of Coarse Aggregate Particles
COE CRD-C 143	(1962) Specifications for Meters for Automatic Indication of Moisture in Fine Aggregate
COE CRD-C 318	(1979) Cloth, Burlap, Jute (or Kenaf)
COE CRD-C 400	(1963) Requirements for Water for Use in Mixing or Curing Concrete
COE CRD-C 521	(1981) Standard Test Method for Frequency and Amplitude of Vibrators for Concrete

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST)

NIST HB 44	(1997) NIST Handbook 44: Specifications, Tolerances, and other Technical Requirements for Weighing and Measuring Devices

NATIONAL READY-MIXED CONCRETE ASSOCIATION (NRMCA)

NRMCA CPMB 100	(1996) Concrete Plant Standards

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The "RE" designates that the Resident Office will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Concrete Mixture Proportioning.

Concrete mixture proportions shall be determined by the Contractor and submitted for review. The concrete mixture quantities of all ingredients per cubic meter and nominal maximum coarse aggregate size that will be used in the manufacture of each quality of concrete shall be stated. Proportions shall indicate the mass of cement, pozzolan when used, and water; the mass of aggregates in a saturated surface-dry condition; and the quantities of admixtures. The submission shall be accompanied by test reports from a laboratory complying with ASTM C 1077 which show that proportions thus selected will produce concrete of the qualities indicated. No substitution shall be made in the source or type of materials used in the work without additional tests to show that the quality of the new materials and concrete are satisfactory.

Batch Plant.

Capacity.

The Contractor shall submit batch plant data to the Contracting Officer for review for conformance with applicable specifications.

Concrete Mixers.

Conveying Equipment.

Placing Equipment.

All concrete mixers, conveying equipment, and placing equipment and methods shall be submitted for review by the Contracting Officer for conformance with paragraph CAPACITY.

Tests and Inspections.

Testing Technicians.

Concrete Transportation Construction Inspector (CTCI).

The Contractor shall submit statements that the concrete testing technicians and the concrete inspectors meet the specified requirements. The individuals who perform the inspection of concrete construction shall have demonstrated a knowledge and ability equivalent to the ACI minimum guidelines for certification of Concrete Transportation Construction Inspector (CTCI).

Construction Joint Treatment; G, RE.

The method and equipment proposed for joint cleanup and waste disposal shall be submitted for review and approval.

Curing and Protection; G, RE.

The curing medium and methods to be used shall be submitted for review and approval.

Cold-Weather Placing; G, RE.

If concrete is to be placed under cold-weather conditions, the proposed materials, methods, and protection shall be submitted for approval.

Hot-Weather Placing; G, RE.

If concrete is to be placed under hot-weather conditions, the proposed materials and methods shall be submitted for review and approval.

Finishing; G, RE.

The proposed materials and methods to be used for finishing concrete shall be submitted for review and approval.

SD-04 Samples

Aggregates; G, RE.

Cementitious Materials, Admixtures, and Curing Compound; G, RE.

Samples of materials for government testing and approval shall be submitted as required in paragraph PRECONSTRUCTION SAMPLING AND TESTING.

SD-06 Test Reports

Quality of Aggregates; G, RE.

Aggregate quality tests shall be submitted at least 30 days prior to start of concrete placement.

Mixer Uniformity.

The results of the initial mixer uniformity tests shall be submitted at least 5 days prior to the initiation of placing.

Test Results and Inspection Reports.

Test results and inspection reports shall be submitted daily and weekly as required in paragraph REPORTS.

SD-07 Certificates

Cementitious Materials.

Cementitious Materials, including Cement and Pozzolan, will be accepted on the basis of the manufacturer's certification of compliance, accompanied by mill test reports that materials meet the requirements of the specification under which they are furnished. Certification and mill test reports shall be from samples taken from the particular lot furnished. No cementitious materials shall be used until notice of acceptance has been given by the Contracting Officer. Cementitious materials will be subject to check testing from samples obtained at the source, at transfer points, or at the project site, as scheduled by the Contracting Officer, and such sampling will be by or under the supervision of the Government at its expense. Material not meeting specifications shall be promptly removed from the site of work.

Chemical Admixtures.

Chemical Admixtures (air-entraining, accelerating, water reducing or retarding admixtures) shall be certified for compliance with all specification requirements.

Membrane-Forming Curing Compound.

Membrane-Forming Curing Compound shall be certified for compliance with all specification requirements.

Epoxy Resin.

Latex Bonding Compound.

Epoxy Resin and Latex Bonding Compound shall be certified for compliance with all specification requirements.

Nonshrink Grout.

Descriptive literature of the Nonshrink Grout proposed for use shall be furnished together with a certificate from the manufacturer stating that it is suitable for the application or exposure for which it is being considered.

1.3 GOVERNMENT TESTING AND SAMPLING

The Government will sample and test aggregates and concrete to determine compliance with the specifications. The Contractor shall provide facilities and labor as may be necessary for procurement of representative test samples. Samples of aggregates will be obtained at the point of batching in accordance with ASTM D 75. Concrete will be sampled in accordance with ASTM C 172.

1.3.1 Preconstruction Sampling and Testing

1.3.1.1 Aggregates

The aggregate sources listed in Section 2.1.2 for aggregates have been tested and at the time testing was performed were capable of producing materials of a quality required for this project provided suitable processing is performed. The Contractor may furnish materials from a listed source or from a source not listed. Samples from any source of coarse aggregate and any source of fine aggregate selected by the Contractor, consisting of not less than 70 kg of each size coarse aggregate and 35 kg of fine aggregate taken under the supervision of the Contracting Officer in accordance with COE CRD-C 100 shall be delivered to a local materials testing laboratory within 15 days after notice to proceed. Sampling and shipment of samples shall be at the Contractor's expense. Sixty days will be required to complete evaluation of the aggregates. Testing will be performed by and at the expense of the Government in accordance with the applicable COE CRD-C or ASTM test methods. The cost of testing one source for each size of aggregate will be borne by the Government. If the Contractor selects more than one source for each aggregate size or selects a substitute source for any size aggregate after the original source was tested, the cost of that additional testing will be borne by the Contractor. Tests to which aggregate may be subjected are listed in paragraph QUALITY OF AGGREGATES. The material from the proposed source shall meet the quality requirements of this paragraph. The Government's test data and quality of those sources listed hereinafter are available for review in the district office. Testing of aggregates by the Government does not relieve the Contractor of the requirements outlined in paragraph TESTS AND INSPECTIONS.

1.3.1.2 Cementitious Materials, Admixtures, and Curing Compound

At least 60 days in advance of concrete placement, the Contractor shall notify the Contracting Officer of the sources for cementitious materials, admixtures, and curing compound, along with sampling location, brand name, type, and quantity to be used in the manufacture and/or curing of the concrete.

1.3.2 Construction Testing by the Government

Sampling and testing will be performed by and at the expense of the Government except as otherwise specified. No material shall be used until notice has been given by the Contracting Officer that test results are satisfactory.

1.3.2.1 Chemical Admixtures Storage

Chemical admixtures that have been in storage at the project site for longer than 6 months or that have been subjected to freezing shall be retested at the expense of the Contractor when directed by the Contracting Officer and shall be rejected if test results are not satisfactory. Chemical admixtures will be accepted based on compliance with the requirements of paragraph CHEMICAL ADMIXTURES.

1.3.2.2 Cement and Pozzolan

If cement or pozzolan is to be obtained from more than one source, the initial notification shall state the estimated amount to be obtained from each source and the proposed schedule of shipments.

a. Cement Sources - Cement shall be delivered and used directly from a mill of a producer designated as an acceptable source. Samples of cement for check testing will be taken at the project site or concrete-producing plant by a representative of the Contracting Officer for testing at the expense of the Government.

b. Pozzolan Sources - Pozzolan shall be delivered and used directly from a producer designated as an acceptable source. Samples of pozzolan for check testing will be taken at the project site by a representative of the Contracting Officer for testing at the expense of the Government.

1.3.2.3 Concrete Strength

Compressive strength test specimens will be made by the Government and cured in accordance with ASTM C 31/C 31M and tested in accordance with ASTM C 39/C 39M. The strength of the concrete will be considered satisfactory so long as the average of all sets of three consecutive test results equals or exceeds the specified compressive strength f'c and no individual test result falls below the specified strength f'c by more than 3.5 MPa. A "test" is defined as the average of two companion cylinders, or if only one cylinder is tested, the results of the single cylinder test. Additional analysis or testing, including nondestructive testing, taking cores and/or load tests may be required at the Contractor's expense when the strength of the concrete in the structure is considered potentially deficient.

a. Investigation of Low-Strength Test Results - When any strength test of standard-cured test cylinders falls below the specified strength requirement by more than 3.5 MPa or if tests of field-cured cylinders indicate deficiencies in protection and curing, steps shall be taken to assure that the load-carrying capacity of the structure is not jeopardized. Nondestructive testing in accordance with ASTM C 597, ASTM C 803/C 803M, or ASTM C 805 may be permitted by the Contracting Officer to estimate the relative strengths at various locations in the structure as an aid in evaluating concrete strength in place or for selecting areas to be cored. Such tests shall not be used as a basis for acceptance or rejection.

b. Testing of Cores - When the strength of concrete in place is considered potentially deficient, cores shall be obtained and tested in

accordance with ASTM C 42/C 42M. At least three representative cores shall be taken from each member or area of concrete in place that is considered potentially deficient. The location of cores will be determined by the Contracting Officer to least impair the performance of the structure. Concrete in the area represented by the core testing will be considered adequate if the average strength of the cores is equal to at least 85 percent of the specified strength requirement and if no single core is less than 75 percent of the specified strength requirement.

c. Load Tests - If the core tests are inconclusive or impractical to obtain or if structural analysis does not confirm the safety of the structure, load tests may be directed by the Contracting Officer in accordance with the requirements of ACI 318M. Concrete work evaluated by structural analysis or by results of a load test shall be corrected in a manner satisfactory to the Contacting Officer. All investigations, testing, load tests, and correction of deficiencies will be performed and approved by the Contracting Officer at the expense of the Contractor, except that if all concrete is in compliance with the plans and specifications, the cost of investigations, testing, and load tests will be at the expense of the Government.

1.4 DESIGN REQUIREMENTS

1.4.1 Concrete Strength

Specified compressive strength f'c shall be 30 MPa at 28 days for all concrete structures.

1.4.2 Maximum Water-Cement (W/C) Ratio

Maximum W/C shall be 0.45 for all concrete structures.

1.5 CONSTRUCTION TOLERANCES

1.5.1 General

The definitions of the terms used in the following tables shall be as defined in ACI 117/117R. Level and grade tolerance measurements of slabs shall be made as soon as possible after finishing. When forms or shoring are used, the measurements shall be made prior to removal. Tolerances are not cumulative. The most restrictive tolerance controls. Tolerances shall not extend the structure beyond legal boundaries. Except as specified otherwise, plus tolerance increases the amount or dimension to which it applies, or raises a level alignment, and minus tolerance decreases the amount or dimension to which it applied, or lowers a level alignment. A tolerance without sign means plus or minus. Where only one signed tolerance is specified, there is no limit in the other direction.

TOLERANCE FOR FINISHED FORMED CONCRETE SURFACES

(1) Vertical alignment

Formed surfaces slope with

TOLERANCE FOR FINISHED FORMED CONCRETE SURFACES

respect to the specified plane

All conditions ..... 10 mm in 3000 mm

(2) Abrupt variation
The offset between concrete surfaces for the following classes of surface:

Class A ..... 3 mm
Class B ..... 6 mm
Class C ..... 6 mm
Class D ..... 25 mm

(3) Gradual variation

Surface finish tolerances as measured by placing a freestanding (unleveled), 1.5 m straightedge for plane surface or curved template for curved surface anywhere on the surface and allowing it to rest upon two high spots within 72 hr after concrete placement. The gap at any point between the straightedge or template and the surface shall not exceed:

Class A ..... 3 mm
Class B ..... 6 mm
Class C ..... 13 mm
Class D ..... 25 mm

TOLERANCES FOR CHANNEL LINING

(1) Lateral alignment

Alignment of tangents ..... 50 mm
Alignment of curves ..... 100 mm
Width of section at any height ..... 0.0025W + 25 mm

(2) Level alignment

Profile grade ..... 25 mm
Surface of invert ..... 6 mm
Height of lining ..... 0.005H + 25 mm

(3) Cross-sectional dimensions

Thickness of lining cross section: 10 percent specified thickness provided average thickness is maintained as determined by daily

TOLERANCES FOR CHANNEL LINING

batch volumes.

TOLERANCES FOR CONDUITS AND CULVERTS

(1) Lateral alignment

Centerline alignment

Water conveying conduits,
and culverts ..... 13 mm

Inside dimensions ..... 0.005 times inside dimension

(2) Level alignment

Profile grade

Water conveying conduits,
and culverts ..... 13 mm

Surface of invert ..... 6 mm

Surface of side slope ..... 13 mm

(3) Cross-sectional dimension

Thickness at any point

Conduits and Culverts..... +5 percent thickness but not less than 13 mm
..... -2.5 percent thickness but not less than 6 mm

1.5.2 Appearance

Permanently exposed surfaces shall be cleaned, if stained or otherwise discolored, by a method that does not harm the concrete and that is approved by the Contracting Officer.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Cementitious Materials

Cementitious materials shall be portland cement, or portland-pozzolan cement, and shall conform to appropriate specifications listed below.

2.1.1.1 Portland Cement

ASTM C 150, Type V low alkali.

2.1.1.2 High-Early-Strength Portland Cement

ASTM C 150, Type III, with C_3A limited to 8 percent low alkali, used only when specifically approved in writing.

2.1.1.3 Pozzolan

Pozzolan shall conform to ASTM C 618, Class F, with the optional requirements for multiple factor, drying shrinkage, and uniformity of Table 2A.

2.1.2 Aggregates

2.1.2.1 General

Concrete aggregates may be furnished from any source capable of meeting the quality requirements of ASTM C 33. No guarantee is given or implied that any of the listed sources are currently capable of producing aggregates that meet the requirements of ASTM C 33. Fine and coarse aggregates shall conform to the grading requirements of ASTM C 33. The nominal maximum size shall be as listed in paragraph NOMINAL MAXIMUM-SIZE COARSE AGGREGATE. Where the use of highway department gradations are permitted, proposed gradations shall be submitted for approval.

2.1.2.2 Concrete Aggregate Sources

a. List of Sources - The concrete aggregates sources may be selected from the following list:

Nevada Ready Mix	Lone Mountain Pit
CSR Materials	Buffalo Road Pit
Hanson Aggregates	Henderson

b. Selection of Source - After the award of the contract, the Contractor shall designate in writing only one source or combination of sources from which he proposes to furnish aggregates. If the Contractor proposes to furnish aggregates from a source or from sources not listed above, he may designate only a single source or single combination of sources for aggregates. Regardless of the source, selected samples for acceptance testing shall be provided as required by paragraph GOVERNMENT TESTING AND SAMPLING. If a source for coarse or fine aggregates so designated by the Contractor does not meet the quality requirements stated in paragraph QUALITY OF AGGREGATES, the Contractor may not submit for approval other non-listed sources but shall furnish the coarse or fine aggregate, as the case may be, from sources listed above at no additional cost to the Government.

2.1.3 Chemical Admixtures

Chemical admixtures to be used, when required or permitted, shall conform to the appropriate specification listed.

2.1.3.1 Air-Entraining Admixture

The air-entraining admixture shall conform to ASTM C 260 and shall consistently cause the concrete to have an air content in the specified ranges under field conditions.

2.1.3.2 Accelerating Admixture

Accelerators shall meet the requirements of ASTM C 494/C 494M, Type C or E, except that calcium chloride or admixtures containing calcium chloride shall not be used.

2.1.3.3 Water-Reducing or Retarding Admixture

a. Water-Reducing or Retarding Admixtures: ASTM C 494/C 494M, Type A, B, or D, except that the 6-month and 1-year compressive strength tests are waived.

b. High-Range Water Reducing Admixture: ASTM C 494/C 494M, Type F or G except that the 6-month and 1-year strength requirements shall be waived. The admixture may be used only when approved by the Contracting Officer, such approval being contingent upon particular mixture control as described in the Contractor's Quality Control Plan.

2.1.4 Curing Materials

2.1.4.1 Membrane-Forming Curing Compound

The membrane-forming curing compound shall conform to ASTM C 309, Type 2.

2.1.4.2 Burlap

Burlap used for curing shall conform to COE CRD-C 318.

2.1.5 Water

Water for mixing and curing shall be fresh, clean, potable, and free of injurious amounts of oil, acid, salt, or alkali, except that nonpotable water may be used if it meets the requirements of COE CRD-C 400.

2.1.6 Nonshrink Grout

Nonshrink grout shall conform to ASTM C 1107 and shall be a commercial formulation suitable for the application proposed.

2.1.7 Latex Bonding Compound

Latex bonding compound agents for bonding fresh to hardened concrete shall conform to ASTM C 1059.

2.1.8 Epoxy Resin

Epoxy resin for use in repairs shall conform to ASTM C 881, Type III, Grade I or II.

2.2 CONCRETE MIXTURE PROPORTIONING

2.2.1 Quality of Mixture

For each portion of the structure, mixture proportions shall be selected so that the strength and W/C requirements listed in paragraph DESIGN REQUIREMENTS are met.

2.2.2 Nominal Maximum-Size Coarse Aggregate

Nominal maximum-size coarse aggregate shall be 37.5 mm except 19.0 mm nominal maximum-size coarse aggregate shall be used when any of the following conditions exist: the narrowest dimension between sides of forms is less than 190 mm, the depth of the slab is less than 100 mm, or the minimum clear spacing between reinforcing is less than 55 mm.

2.2.3 Air Content

Air content as delivered to the forms and as determined by ASTM C 231 shall be between 4 and 7 percent except that when the nominal maximum-size coarse aggregate is 19.0 mm, it shall be between 4-1/2 and 7-1/2 percent.

2.2.4 Slump

The slump shall be determined in accordance with ASTM C 143/C 143M and shall be within the range of 25 mm to 100 mm. Where placement by pump is approved, the slump shall not exceed 150 mm.

2.2.5 Concrete Proportioning

Trial batches and testing requirements for various qualities of concrete specified shall be the responsibility of the Contractor. Samples of aggregates shall be obtained in accordance with the requirements of ASTM D 75. Samples of materials other than aggregate shall be representative of those proposed for the project and shall be accompanied by the manufacturer's test reports indicating compliance with applicable specified requirements. Trial mixtures having proportions, consistencies, and air content suitable for the work shall be made based on methodology described in ACI 211.1, using at least three different water-cement ratios, which will produce a range of strength encompassing those required for the work. The maximum water-cement ratios required in paragraph MAXIMUM WATER-CEMENT RATIO will be converted to a weight ratio of water to cement plus pozzolan by mass, as described in ACI 211.1. If pozzolan is used in the concrete mixture, the minimum pozzolan content shall be 15 percent of the total cementitious material. Trial mixtures shall be proportioned for maximum permitted slump and air content with due consideration to the approved conveying and placement method. The temperature of concrete in each trial batch shall be reported. For each water-cement ratio, at least three test cylinders for each test age shall be made and cured in accordance with ASTM C 192/C 192M. They shall be tested at 7 days and at the design age specified in paragraph DESIGN REQUIREMENTS in accordance with ASTM C 39/C 39M. From these test results, a curve will be plotted showing the relationship between water-cement ratio and strength.

2.2.6 Required Average Compressive Strength

In meeting the strength requirements specified in paragraph CONCRETE STRENGTH, the selected mixture proportion shall produce a required average compressive strength f'cr exceeding the specified strength f'c by the amount indicated below.

2.2.6.1 Average Compressive Strength from Test Records

Where a concrete production facility has test records, a standard deviation shall be established in accordance with the applicable provisions of ACI 214. Test records from which a standard deviation is calculated shall represent materials, quality control procedures, and conditions similar to those expected, shall represent concrete produced to meet a specified strength or strengths (f'c) within 6.89 MPa of that specified for proposed work, and shall consist of at least 30 consecutive tests. A strength test shall be the average of the strengths of two cylinders made from the same sample of concrete and tested at 28 days or at another test age designated for determination of f'c.

Required average compressive strength f'cr used as the basis for selection of concrete proportions shall be the larger of the equations that follow using the standard deviation as determined above:

$$f'cr = f'c + 1.34S$$
$$f'cr = f'c + 2.33S - 3.45 \text{ MPa}$$

Where S = standard deviation

Where a concrete production facility does not have test records meeting the requirements above but does have a record based on 15 to 29 consecutive tests, a standard deviation shall be established as the product of the calculated standard deviation and a modification factor from the following table:

NUMBER OF TESTS*	MODIFICATION FACTOR FOR STANDARD DEVIATION Use tabulation in paragraph DETERMINING REQUIRED AVERAGE STRENGTH
less than 15	
15	1.16
20	1.08
25	1.03
30 or more	1.00

*Interpolate for intermediate numbers of tests.

2.2.6.2 Average Compressive Strength without Previous Test Records

When a concrete production facility does not have sufficient field strength test records for calculation of the standard deviation, the required average strength f'cr shall be determined as follows:

If the specified compressive strength f'c is less than 20.7 MPa,

$$f'cr = f'c + 6.89 \text{ MPa}$$

If the specified compressive strength f'c is 20.7 to 34.5 MPa,

$$f'cr = f'c + 8.27 \text{ MPa}$$

If the specified compressive strength f'c is over 34.5 MPa,

$$f'cr = f'c + 9.65 \text{ MPa}$$

PART 3 EXECUTION

3.1 EQUIPMENT

3.1.1 Capacity

The batching, mixing, conveying, and placing equipment shall have a capacity of at least 100 cubic meters per hour.

3.1.2 Batch Plant

Batch plant shall conform to the requirements of NRMCA CPMB 100 and as specified; however, rating plates attached to batch plant equipment are not required.

3.1.2.1 Batching Equipment

The batching controls shall be, semiautomatic. The semiautomatic batching system shall be provided with interlocks such that the discharge device cannot be actuated until the indicated material is within the applicable tolerance. The batching system shall be equipped with an accurate recorder or recorders that meet the requirements of NRMCA CPMB 100. Separate bins or compartments shall be provided for each size group of aggregate and cement, and pozzolan. Aggregates shall be weighed either in separate weigh batchers with individual scales or cumulatively in one weigh batcher on one scale. Aggregate shall not be weighed in the same batcher with cement or pozzolan. If both cement and pozzolan are used, they may be batched cumulatively provided that the portland cement is batched first. If measured by mass, the mass of the water shall not be weighed cumulatively with another ingredient. Water batcher filling and discharging valves shall be so interlocked that the discharge valve cannot be opened before the filling valve is fully closed. An accurate mechanical device for measuring and dispensing each admixture shall be provided. Each dispenser shall be interlocked with the batching and discharging operation of the water so that each admixture is separately batched and discharged automatically in a manner to obtain uniform distribution throughout the batch in the specified mixing period. Admixtures shall not be combined prior to introduction in water. The plant shall be arranged so as to facilitate the inspection of all operations at all times. Suitable facilities shall be provided for obtaining representative samples of aggregates from each bin or compartment. All filling ports for cementitious materials bins or silos shall be clearly marked with a permanent sign stating the contents.

3.1.2.2 Scales

The equipment for batching by mass shall conform to the applicable requirements of NIST HB 44, except that the accuracy shall be plus or minus 0.2 percent of scale capacity. The Contractor shall provide standard test weights and any other auxiliary equipment required for checking the operating performance of each scale or other measuring devices. Tests shall be made at the frequency required in paragraph TESTS AND INSPECTIONS, and in the presence of a government inspector.

3.1.2.3 Batching Tolerances

a. Weighing Tolerances

MATERIAL	PERCENT OF REQUIRED MASS
Cementitious materials	0 to plus 2
Aggregate	plus or minus 2
Water	plus or minus 1
Chemical admixture	0 to plus 6

b. Volumetric Tolerances - For volumetric batching equipment, the following tolerances shall apply to the required volume of material being batched:

Water: ..... Plus or minus 1 percent.
Chemical admixtures: ..... Zero to plus 6 percent.

3.1.2.4 Moisture Control

The plant shall be capable of ready adjustment to compensate for the varying moisture content of the aggregates and to change the masses of the materials being batched. An electric moisture meter complying with the provisions of COE CRD-C 143 shall be provided for measuring moisture in the fine aggregate. The sensing element shall be arranged so that the measurement is made near the batcher charging gate of the sand bin or in the sand batcher.

3.1.3 Concrete Mixers

The concrete mixers shall not be charged in excess of the capacity recommended by the manufacturer. The mixers shall be operated at the drum or mixing blade speed designated by the manufacturer. The mixers shall be maintained in satisfactory operating condition, and the mixer drums shall be kept free of hardened concrete. Should any mixer at any time produce unsatisfactory results, its use shall be promptly discontinued until it is repaired.

3.1.3.1 Stationary Mixers

Concrete plant mixers shall be tilting, nontilting, horizontal-shaft, vertical-shaft, or pugmill and shall be provided with an acceptable device to lock the discharge mechanism until the required mixing time has elapsed. The mixing time and uniformity shall conform to all the requirements in ASTM C 94/C 94M applicable to central-mixed concrete.

3.1.3.2 Truck Mixers

Truck mixers, the mixing of concrete therein, and concrete uniformity shall conform to the requirements of ASTM C 94/C 94M. A truck mixer may be used either for complete mixing (transit-mixed) or to finish the partial mixing done in a stationary mixer (shrink-mixed). Each truck shall be equipped with two counters from which it will be possible to determine the number of revolutions at mixing speed and the number of revolutions at agitating speed.

3.1.4 Conveying Equipment

The conveying equipment shall conform to the following requirements.

3.1.4.1 Buckets

The interior hopper slope shall be not less than 58 degrees from the horizontal, the minimum dimension of the clear gate opening shall be at least five times the nominal maximum-size aggregate, and the area of the gate opening shall not be less than 0.2 square meter. The maximum dimension of the gate opening shall not be greater than twice the minimum dimension. The bucket gates shall be essentially grout tight when closed and may be manually, pneumatically, or hydraulically operated except that buckets larger than 1.5 cubic meters shall not be manually operated. The design of the bucket shall provide means for positive regulation of the amount and rate of deposit of concrete in each dumping position.

3.1.4.2 Transfer Hoppers

Concrete may be charged into nonagitating hoppers for transfer to other conveying devices. Transfer hoppers shall be capable of receiving concrete directly from delivery vehicles and have conical-shaped discharge features. The transfer hopper shall be equipped with a hydraulically operated gate and with a means of external vibration to effect complete discharge. Concrete shall not be held in nonagitating transfer hoppers more than 30 minutes.

3.1.4.3 Trucks

Truck mixers operating at agitating speed or truck agitators used for transporting plant-mixed concrete shall conform to the requirements of ASTM C 94/C 94M. Nonagitating equipment may be used for transporting plant-mixed concrete over a smooth road when the hauling time is less than 15 minutes. Bodies of nonagitating equipment shall be smooth, watertight, metal containers specifically designed to transport concrete, shaped with rounded corners to minimize segregation, and equipped with gates that will permit positive control of the discharge of the concrete.

3.1.4.4 Chutes

When concrete can be placed directly from a truck mixer, agitator, or nonagitating equipment, the chutes attached to this equipment by the manufacturer may be used. A discharge deflector shall be used when

required by the Contracting Officer. Separate chutes and other similar equipment will not be permitted for conveying concrete.

3.1.4.5 Belt Conveyors

Belt conveyors shall be designed and operated to assure a uniform flow of concrete from mixer to final place of deposit without segregation of ingredients or loss of mortar and shall be provided with positive means for preventing segregation of the concrete at the transfer points and the point of placing. Belt conveyors shall be constructed such that the idler spacing shall not exceed 900 mm. The belt speed shall be a minimum of 90 m per minute and a maximum of 230 m per minute. If concrete is to be placed through installed horizontal or sloping reinforcing bars, the conveyor shall discharge concrete into a pipe or elephant trunk that is long enough to extend through the reinforcing bars.

3.1.4.6 Concrete Pumps

Concrete may be conveyed by positive displacement pump when approved. The pumping equipment shall be piston or squeeze pressure. The pipeline shall be rigid steel pipe or heavy-duty flexible hose. The inside diameter of the pipe shall be at least three times the nominal maximum-size coarse aggregate in the concrete mixture to be pumped but not less than 100 mm. Aluminum pipe shall not be used.

3.1.5 Vibrators

Vibrators of the proper size, frequency, and amplitude shall be used for the type of work being performed in conformance with the following requirements:

APPLICATION	HEAD DIAMETER mm	FREQUENCY VPM	AMPLITUDE mm
Thin walls, beams, etc.	32 to 64	9,000 to 13,500	0.5 to 1.0
General construction	50 to 88	8,000 to 12,000	0.6 to 1.2

The frequency and amplitude shall be determined in accordance with COE CRD-C 521.

3.2 PREPARATION FOR PLACING

3.2.1 Embedded Items

Before placement of concrete, care shall be taken to determine that all embedded items are firmly and securely fastened in place as indicated on the drawings, or required. Embedded items shall be free of oil and other foreign matter such as loose coatings or rust, paint, and scale. The embedding of wood in concrete will be permitted only when specifically authorized or directed. Voids in sleeves, inserts, and anchor slots shall be filled temporarily with readily removable materials to prevent the entry of concrete into voids. Welding, including tack welding, will not be permitted on embedded metals within 600 mm of the surface of the concrete.

3.2.2 Concrete on Earth Foundations

Earth surfaces upon which concrete is to be placed shall be clean, damp, and free from debris, frost, ice, and standing or running water. Prior to placement of concrete, the earth foundation shall have been satisfactorily compacted in accordance with Section 02300 EARTHWORK.

3.2.3 Concrete on Rock Foundations

Rock surfaces upon which concrete is to be placed shall be clean, free from oil, standing or running water, ice, mud, drummy rock, coating, debris, and loose, semidetached, or unsound fragments. Joints in rock shall be cleaned to a satisfactory depth, as determined by the Contracting Officer, and to firm rock on the sides. Immediately before the concrete is placed, all rock surfaces shall be cleaned thoroughly by the use of air-water jets or sandblasting as described in paragraph CONSTRUCTION JOINT TREATMENT. All rock surfaces shall be kept continuously wet for at least 24 hours immediately prior to placing concrete thereon. All approximately horizontal surfaces shall be covered, immediately before the concrete is placed, with a layer of mortar proportioned similar to that in the concrete mixture. The mortar shall be covered with concrete before the time of initial setting of the mortar.

3.2.4 Construction Joint Treatment

Construction joint treatment shall conform to the following requirements.

3.2.4.1 Joint Preparation

Concrete surfaces to which additional concrete is to be bonded shall be prepared for receiving the next lift or adjacent concrete by cleaning with either air-water cutting, sandblasting, high-pressure water jet, or other approved method. Air-water cutting will not be permitted on formed surfaces or surfaces congested with reinforcing steel. Regardless of the method used, the resulting surfaces shall be free from all laitance and inferior concrete so that clean, well bonded coarse aggregate is exposed uniformly throughout the lift surface. The edges of the coarse aggregate shall not be undercut. The surface shall be washed clean again as the last operation prior to placing the next lift. There shall be no standing water on the surface upon which concrete is placed.

3.2.4.2 Air-Water Cutting

Air-water cutting of a construction joint shall be performed at the proper time and only on horizontal construction joints. The air pressure used in the jet shall be 620 to 760 kPa, and the water pressure shall be just sufficient to bring the water into effective influence of the air pressure. When approved by the Contracting Officer, a retarder complying with the requirements of COE CRD-C 94 may be applied to the surface of the lift to prolong the period of time during which air-water cutting is effective. Prior to receiving approval, the Contractor shall furnish samples of the material to be used and shall demonstrate the method to be used in applications. After cutting, the surface shall be washed and rinsed as

long as there is any trace of cloudiness of the wash water. Where necessary to remove accumulated laitance, coatings, stains, debris, and other foreign material, high-pressure water jet or sandblasting will be required as the last operation before placing the next lift.

3.2.4.3 High-Pressure Water Jet

A stream of water under a pressure of not less than 20.7 MPa may be used for cleaning. Its use shall be delayed until the concrete is sufficiently hard so that only the surface skin or mortar is removed and there is no undercutting of coarse-aggregate particles. If the water jet is incapable of a satisfactory cleaning, the surface shall be cleaned by sandblasting.

3.2.4.4 Wet Sandblasting

This method may be used when the concrete has reached sufficient strength to prevent undercutting of the coarse aggregate particles. The surface of the concrete shall then be washed thoroughly to remove all loose materials.

3.2.4.5 Waste Disposal

The method used in disposing of waste water employed in cutting, washing, and rinsing of concrete surfaces shall be such that the waste water does not stain, discolor, or affect exposed surfaces of the structures, or damage the environment of the project area. The method of disposal shall be subject to approval.

3.3 PLACING

3.3.1 Placing Procedures

The surfaces of horizontal construction joints shall be kept continuously wet for the first 12 hours during the 24-hour period prior to placing concrete. Surfaces may be dampened immediately before placement if necessary. Concrete placement will not be permitted when, in the opinion of the Contracting Officer, weather conditions prevent proper placement and consolidation. Concrete shall be deposited as close as possible to its final position in the forms and, in so depositing, there shall be no vertical drop greater than 1.5 m except where suitable equipment is provided to prevent segregation and where specifically authorized. Depositing of the concrete shall be so regulated that it may be effectively consolidated in horizontal layers 600 mm or less in thickness with a minimum of lateral movement. The amount deposited in each location shall be that which can be readily and thoroughly consolidated. Sufficient placing capacity shall be provided so that concrete placement can be kept plastic and free of cold joints while concrete is being placed. Concrete shall be placed by methods that will prevent segregation or loss of ingredients. Any concrete transferred from one conveying device to another shall be passed through a hopper that is conical in shape. The concrete shall not be dropped vertically more than 1.5 m, except where a properly designed and sized elephant truck with rigid drop chute bottom section is provided to prevent segregation and where specifically authorized. In no case will concrete be discharged to free-fall through reinforcing bars.

3.3.2 Placement by Pump

When concrete is to be placed by pump, the nominal maximum-size coarse aggregate shall not be reduced to accommodate the pumps. The distance to be pumped shall not exceed limits recommended by the pump manufacturer. The concrete shall be supplied to the concrete pump continuously. When pumping is completed, concrete remaining in the pipeline shall be ejected without contamination of concrete in place. After each operation, equipment shall be thoroughly cleaned, and flushing water shall be wasted outside of the forms. Grout used to lubricate the pumping equipment at the beginning of the placement will not be incorporated into the placement.

3.3.3 Time Interval Between Mixing and Placing

Concrete shall be placed within 30 minutes after discharge into nonagitating equipment. When concrete is truck-mixed or when a truck mixer or agitator is used for transporting concrete mixed by a concrete plant mixer, the concrete shall be delivered to the site of the work, and discharge shall be completed within 1-1/2 hours or before the drum has revolved 300 revolutions, whichever comes first after the introduction of the mixing water to the cement and aggregates or the introduction of the cement to the aggregates. When the length of haul makes it impossible to deliver truck-mixed concrete within these time limits, batching of cement and a portion of the mixing water shall be delayed until the truck mixer is at or near the construction site.

3.3.4 Cold-Weather Placing

When cold-weather placing of concrete is likely to be subjected to freezing temperatures before the expiration of the curing period, it shall be placed in accordance with procedures previously submitted in accordance with paragraph SUBMITTALS. The ambient temperature of the space adjacent to the concrete placement and surfaces to receive concrete shall be above 0 degrees C. The placing temperature of the concrete having a minimum dimension less than 300 mm shall be between 12 and 24 degrees C when measured in accordance with ASTM C 1064/C 1064M. The placing temperature of the concrete having a minimum dimension greater than 300 mm shall be between 10 and 20 degrees C. Heating of the mixing water or aggregates will be required to regulate the concrete-placing temperatures. Materials entering the mixer shall be free from ice, snow, or frozen lumps. Salt, chemicals, or other materials shall not be mixed with the concrete to prevent freezing.

3.3.5 Hot-Weather Placing

Concrete shall be properly placed and finished with procedures previously submitted in accordance with paragraph SUBMITTALS. The concrete-placing temperature shall not exceed 30 degrees C when measured in accordance with ASTM C 1064/C 1064M. Cooling of the mixing water and aggregates, or both, may be required to obtain an adequate placing temperature. A retarder meeting the requirements of paragraph WATER-REDUCING OR RETARDING ADMIXTURE may be used to facilitate placing and finishing. Steel forms and reinforcement shall be cooled prior to concrete placement when steel temperatures are greater than 50 degrees C. Conveying and placing

equipment shall be cooled if necessary to maintain proper concrete-placing temperature.

3.3.6 Consolidation

Immediately after placement, each layer of concrete, including flowing concrete, shall be consolidated by internal vibrating equipment. Vibrators shall not be used to transport concrete within the forms. Hand spading may be required, if necessary, with internal vibrating along formed surfaces permanently exposed to view. Form or surface vibrators shall not be used unless specifically approved. The vibrator shall be inserted vertically at uniform spacing over the entire area of placement. The distance between insertions shall be approximately 1-1/2 times the radius of action of the vibrator. The vibrator shall penetrate rapidly to the bottom of the layer and at least 150 mm into the preceding unhardened layer if such exists. It shall be held stationary until the concrete is consolidated and then withdrawn slowly.

3.4 FINISHING

The ambient temperature of spaces adjacent to surfaces being finished shall be not less than 5 degrees C. In hot weather when the rate of evaporation of surface moisture, as determined by use of Figure 2.1.5 of ACI 305R, may reasonably be expected to exceed 1.0 kilogram per square meter per hour. Provisions for windbreaks, shading, fog spraying, or wet covering with a light-colored material shall be made in advance of placement, and such protective measures shall be taken as quickly as finishing operations will allow. All unformed surfaces that are not to be covered by additional concrete or backfill shall have a float finish. Additional finishing shall be as specified below and shall be true to the elevation shown in the drawings. Surfaces to receive additional concrete or backfill shall be brought to the elevation shown on the drawings and left true and regular. Exterior surfaces shall be sloped for drainage unless otherwise shown in the drawing or as directed. Joints shall be carefully made with a jointing or edging tool. The finished surfaces shall be protected from stains or abrasions. Grate tampers or jitterbugs shall not be used.

3.4.1 Unformed Surfaces

3.4.1.1 Float Finish

Surfaces shall be screeded and darbied or bullfloated to bring the surface to the required finish level with no coarse aggregate visible. No water, cement, or mortar shall be added to the surface during the finishing operation. The concrete, while still green but sufficiently hardened to bear a man's weight without deep imprint, shall be floated to a true and even plane. Floating may be performed by use of suitable hand floats or power-driven equipment. Hand floats shall be made of magnesium or aluminum.

3.4.1.2 Trowel Finish

A trowel finish shall be applied to the top of channel walls. Concrete surfaces shall be finished with a float finish, and after surface moisture has disappeared, the surface shall be troweled to a smooth, even, dense

finish free from blemishes including trowel marks.

3.4.1.3 Broom Finish

A broom finish shall be applied to the face and surfaces of concrete channel inverts, and sidewalls. The concrete surface shall be screeded and floated finish plane with no coarse aggregate visible. After surface moisture disappears, the surface shall be broomed or brushed screeded and fine hair-broom or fiber bristle brushed in a direction transverse to that of the channel centerline for all invert side slope areas, or as directed.

3.4.2 Formed Surfaces

Unless another finish is specified, surfaces shall be left with the texture imparted by the forms except that defective surfaces shall be repaired as described in paragraph FORMED SURFACE REPAIR.

Uniform color of the concrete shall be maintained by use of only one mixture without changes in materials or proportions for any structure or portion of structure that is exposed to view or on which a special finish is required. The form panels used to produce the finish shall be orderly in arrangement. Forms shall not be reused if there is any evidence of surface wear or defects that would impair the quality of the surface.

3.4.3 Formed Surface Repair

After removal of forms, all ridges, lips, and bulges on surfaces permanently exposed shall be removed. All repairs shall be completed within 48 hours after form removal.

3.4.3.1 Class A Finishes

Surfaces listed in Section 03101 FORMWORK FOR CONCRETE and as shown to have class A finishes shall have surface defects repaired as follows: defective areas, voids, and honeycombs smaller than 10,000 square millimeters in area and less than 13 mm deep and bug holes exceeding 13 mm in diameter shall be chipped and filled with dry-packed mortar. Holes left by removal of tie rods shall be reamed and filled with dry-packed mortar as specified in paragraph MATERIAL AND PROCEDURE FOR REPAIRS. Defective and unsound concrete areas larger than described shall be defined by 13 mm deep dovetailed saw cuts in a rectangular pattern with lines parallel to the formwork, the defective concrete removed by chipping, and the void repaired with replacement concrete. The prepared area shall be brush-coated with an epoxy resin meeting the requirements of paragraph EPOXY RESIN, a latex bonding agent meeting the requirements of paragraph LATEX BONDING COMPOUND, or a neat cement grout after dampening the area with water. The void shall be filled with replacement concrete in accordance with paragraph MATERIAL AND PROCEDURE FOR REPAIRS.

3.4.3.2 Class D Finish

Surfaces listed in Section 03101 FORMWORK FOR CONCRETE and as shown to have class D finish shall have surface defects repaired as follows: defective areas, voids, and honeycombs greater than 30,000 square millimeters in area

or more than 50 mm deep shall be defined by 13 mm deep dovetailed saw cuts in a rectangular pattern, the defective concrete removed by chipping and the void repaired with replacement concrete. The prepared area shall be brush-coated with an epoxy resin meeting the requirements of paragraph EPOXY RESIN, a latex bonding agent meeting the requirements of paragraph LATEX BONDING COMPOUND, or a neat cement grout after dampening the area with water. The void shall be filled with replacement concrete in accordance with paragraph MATERIAL AND PROCEDURE FOR REPAIRS.

3.4.3.3 Material and Procedure for Repairs

The cement used in the dry-packed mortar or replacement concrete shall be a blend of the cement used for production of project concrete and white portland cement properly proportioned so that the final color of the mortar or concrete will match adjacent concrete. Trial batches shall be used to determine the proportions required to match colors. Dry-packed mortar shall consist of one part cement to two and one-half parts fine aggregate. The fine aggregate shall be that used for production of project concrete. The mortar shall be remixed over a period of at least 30 minutes without addition of water until it obtains the stiffest consistency that will permit placing. Mortar shall be thoroughly compacted into the prepared void by tamping, rodding, ramming, etc. and struck off to match adjacent concrete. Replacement concrete shall be produced using project materials and shall be proportioned by the Contracting Officer. It shall be thoroughly compacted into the prepared void by internal vibration, tamping, rodding, ramming, etc. and shall be struck off and finished to match adjacent concrete. Forms shall be used to confine the concrete. If an expanding agent is used in the repair concrete, the repair shall be thoroughly confined on all sides including the top surface. Metal tools shall not be used to finish permanently exposed surfaces. The repaired areas shall be cured for 7 days. The temperature of the in situ concrete, adjacent air, and replacement mortar or concrete shall be above 5 degrees C during placement, finishing, and curing. Other methods and materials for repair may be used only when approved in writing by the Contracting Officer. Repairs of the so called "plaster-type" will not be permitted.

3.5 CURING AND PROTECTION

3.5.1 Duration

Concrete shall be cured by an approved method for a period of 7 days.

Immediately after placement, concrete shall be protected from premature drying, extremes in temperatures, rapid temperature change, and mechanical damage. All materials and equipment needed for adequate curing and protection shall be available and at the placement site prior to the start of concrete placement. Concrete shall be protected from the damaging effects of rain for 12 hours and from flowing water for 14 days. No fire or excessive heat including welding shall be permitted near or in direct contact with concrete or concrete embedments at any time.

3.5.2 Moist Curing

Moist-cured concrete shall be maintained continuously, not periodically,

wet for the entire curing period. If water or curing materials stain or discolor concrete surfaces that are to be permanently exposed, they shall be cleaned as required in paragraph APPEARANCE. Where wooden form sheathing is left in place during curing, the sheathing shall be kept wet at all times. Where steel forms are left in place during curing, the forms shall be carefully broken loose from the hardened concrete and curing water continuously applied into the void so as to continuously saturate the entire concrete surface. Horizontal surfaces may be moist cured by ponding, by covering with a minimum uniform thickness of 50 mm of continuously saturated sand, or by covering with saturated nonstaining burlap or cotton mats. Horizontal construction joints may be allowed to dry for 12 hours immediately prior to the placing of the following lift.

3.5.3 Membrane-Forming Curing Compound

Concrete may be cured with an approved membrane-forming curing compound in lieu of moist curing except that membrane curing will not be permitted on any surface containing protruding steel reinforcement.

3.5.3.1 Application

The curing compound shall be applied to formed surfaces immediately after the forms are removed and prior to any patching or other surface treatment except the cleaning of loose sand, mortar, and debris from the surface. The surfaces shall be thoroughly moistened with water, and the curing compound applied as soon as free water disappears. The curing compound shall be applied to unformed surfaces as soon as free water has disappeared and bleeding has stopped. The curing compound shall be applied in a two-coat continuous operation by approved motorized power-spraying equipment operating at a minimum pressure of 500 kPa, at a uniform coverage of not more than 10 square meters per liter for each coat, and the second coat shall be applied perpendicular to the first coat. Concrete surfaces that have been subjected to rainfall within 3 hours after curing compound has been applied shall be resprayed by the method and at the coverage specified. All concrete surfaces on which the curing compound has been applied shall be adequately protected for the duration of the entire curing period from pedestrian and vehicular traffic and from any other cause that will disrupt the continuity of the curing membrane.

3.5.4 Evaporation Retardant

Sheet curing shall not be used on vertical or near-vertical surfaces. All surfaces shall be thoroughly wetted and be completely covered with waterproof paper or polyethylene-coated burlap having the burlap thoroughly water-saturated before placing. Covering shall be laid with light-colored side up. Covering shall be lapped not less than 300 mm and securely weighted down or shall be lapped not less than 100 mm and taped to form a continuous cover with completely closed joints. The sheet shall be weighted to prevent displacement so that it remains in contact with the concrete during the specified length of curing. Coverings shall be folded down over exposed edges of slabs and secured by approved means. Sheets shall be immediately repaired or replaced if tears or holes appear during the curing period.

3.5.5 Cold-Weather Curing and Protection

When the daily outdoor low temperature is less than 0 degrees C, the temperature of the concrete shall be maintained above 5 degrees C for the first 7 days after placing. In addition, during the period of protection removal, the air temperature adjacent to the concrete surfaces shall be controlled so that concrete near the surface will not be subjected to a temperature differential of more than 15 degrees C as determined by observation of ambient and concrete temperatures indicated by suitable temperatures measuring devices furnished by the Government as required and installed adjacent to the concrete surface and 50 mm inside the surface of the concrete. The installation of the thermometers shall be made by the Contractor at such locations as may be directed.

3.6 SETTING OF POSTS, BASE PLATES, AND BEARING PLATES

3.6.1 Setting of Posts and Plates

After being plumbed and properly positioned, posts, column base plates, bearing plates for beams and similar structural members, and machinery and equipment base plates shall be provided with full bearing with nonshrink grout. The space between the top of concrete or masonry-bearing surface and the bottom of the plate shall be approximately 1/24 of the width of the plate, but not less than 13 mm for plates less than 300 mm wide. Concrete surfaces shall be rough, clean, and free of oil, grease, and laitance, and they shall be damp. Metal surfaces shall be clean and free of oil, grease, and rust.

3.6.2 Nonshrink Grout Application

Nonshrink grout shall conform to the requirements of paragraph NONSHRINK GROUT. Water content shall be the minimum that will provide a flowable mixture and fill the space to be grouted without segregation, bleeding, or reduction of strength.

3.6.2.1 Mixing and Placing of Nonshrink Grout

Mixing and placing shall be in conformance with the material manufacturer's instructions and as specified. Ingredients shall be thoroughly dry-mixed before adding water. After adding water, the batch shall be mixed for 3 minutes. Batches shall be of size to allow continuous placement of freshly mixed grout. Grout not used within 30 minutes after mixing shall be discarded. The space between the top of the concrete or masonry-bearing surface and the plate shall be filled solid with the grout. Forms shall be of wood or other equally suitable material for retaining the grout and shall be removed after the grout has set. If grade "A" grout as specified in ASTM C 1107 is used, all surfaces shall be formed to provide restraint. The placed grout shall be worked to eliminate voids; however, overworking and breakdown of the initial set shall be avoided. Grout shall not be retempered or subjected to vibration from any source. Where clearances are unusually small, placement shall be under pressure with a grout pump. Temperature of the grout, and of surfaces receiving the grout, shall be maintained at 20 to 30 degrees C until after setting.

3.6.2.2 Treatment of Exposed Surfaces

After the grout has set, those types containing metallic aggregate shall have the exposed surfaces cut back 25 mm and immediately covered with a parge coat of mortar proportioned by mass of one part portland cement, two parts sand, and sufficient water to make the mixture placeable. The parge coat shall have a smooth, dense finish. The exposed surface of other types of nonshrink grout shall have a smooth, dense finish.

3.6.2.3 Curing

Grout and parge coats shall be cured in conformance with paragraph CURING AND PROTECTION.

3.7 TESTS AND INSPECTIONS

Tests and inspections shall conform to the following requirements. Test Results and Inspection Reports are to be submitted to the Government as required.

3.7.1 General

The Contractor shall perform the inspections and tests described below, and, based upon the results of these inspections and tests, he shall take the action required and submit reports as required. When, in the opinion of the Contracting Officer, the concreting operation is out of control, concrete placement shall cease. The laboratory performing the tests shall be on site and shall conform with ASTM C 1077. The individuals who sample and test concrete or the constituents of concrete as required in this specification shall have demonstrated a knowledge and ability to perform the necessary test procedures equivalent to the ACI minimum guidelines for certification of Concrete Field Testing Technicians, Grade I. The individuals who perform the inspection of concrete construction shall have demonstrated a knowledge and ability equivalent to the ACI minimum guidelines for certification of Concrete Transportation Construction Inspector (CTCI). The Government will inspect the laboratory, equipment, and test procedures prior to start of concreting operations and at least once per year thereafter for conformance with ASTM C 1077.

3.7.2 Testing and Inspection Requirements

3.7.2.1 Fine Aggregate

a. Grading - At least once during each shift when the concrete plant is operating, there shall be one sieve analysis and fineness modulus determination in accordance with ASTM C 136 and COE CRD-C 104 for the fine aggregate or for each size range of fine aggregate if it is batched in more than one size or classification. The location at which samples are taken may be selected by the Contractor as the most advantageous for control. However, the Contractor is responsible for delivering fine aggregate to the mixer within specification limits.

b. Corrective Action for Fine Aggregate Grading - When the amount passing on any sieve is outside the specification limits, the fine

aggregate shall be immediately resampled and retested. If there is another failure on any sieve, the fact shall immediately be reported to the Contracting Officer.

c. Moisture Content Testing - When in the opinion of the Contracting Officer the electric moisture meter is not operating satisfactorily, there shall be at least four tests for moisture content in accordance with ASTM C 566 during each 8-hour period of mixing plant operation. The times for the tests shall be selected randomly within the 8-hour period. An additional test shall be made whenever the slump is shown to be out of control or excessive variation in workability is reported by the placing foreman. When the electric moisture meter is operating satisfactorily, at least two direct measurements of moisture content shall be made per week to check the calibration of the meter. The results of tests for moisture content shall be used to adjust the added water in the control of the batch plant.

d. Moisture Content Corrective Action - Whenever the moisture content of the fine aggregate changes by 0.5 percent or more, the scale settings for the fine-aggregate batcher and water batcher shall be adjusted (directly or by means of a moisture compensation device) if necessary to maintain the specified slump.

3.7.2.2 Coarse Aggregate

a. Grading - At least once during each shift in which the concrete plant is operating, there shall be a sieve analysis in accordance with ASTM C 136 for each size of coarse aggregate. The location at which samples are taken may be selected by the Contractor as the most advantageous for production control. However, the Contractor shall be responsible for delivering the aggregate to the mixer within specification limits. A test record of samples of aggregate taken at the same locations shall show the results of the current test as well as the average results of the five most recent tests including the current test. The Contractor may adopt limits for control which are coarser than the specification limits for samples taken at locations other than as delivered to the mixer to allow for degradation during handling.

b. Corrective Action for Grading - When the amount passing any sieve is outside the specification limits, the coarse aggregate shall be immediately resampled and retested. If the second sample fails on any sieve, that fact shall be reported to the Contracting Officer. Where two consecutive averages of five tests are outside specification limits, the operation shall be considered out of control and shall be reported to the Contracting Officer. Concreting shall be stopped and immediate steps shall be taken to correct the grading.

c. Coarse Aggregate Moisture Content - A test for moisture content of each size group of coarse aggregate shall be made at least twice per week. When two consecutive readings for smallest size coarse aggregate differ by more than 1.0 percent, frequency of testing shall be increased to that specified above for fine aggregate, until the difference falls below 1.0 percent.

d. Coarse Aggregate Moisture Corrective Action - Whenever the moisture content of any size of coarse aggregate changes by 0.5 percent or more, the scale setting for the coarse aggregate batcher and the water batcher shall be adjusted if necessary to maintain the specified slump.

3.7.2.3 QUALITY OF AGGREGATES

a. Frequency of Quality Tests - Thirty days prior to the start of concrete placement the Contractor shall perform all tests for aggregate quality listed below. In addition, after the start of concrete placement, the Contractor shall perform tests for aggregate quality in accordance with the frequency schedule shown below. Samples tested after the start of concrete placement shall be taken immediately prior to entering the concrete mixer.

PROPERTY	FREQUENCY FINE AGGREGATE	FREQUENCY COARSE AGGREGATE	TEST
Specific Gravity	Every 3 months	Every 3 months	ASTM C 127 ASTM C 128
Absorption	Every 3 months	Every 3 months	ASTM C 127 ASTM C 128
Clay Lumps and Friable Particles	Every 3 months	Every 3 months	ASTM C 142
Impurities	Every 3 months	Not applicable	ASTM C 40 ASTM C 87
LA Abrasion	Not applicable	Every 6 months	ASTM C 131 ASTM C 535
Soft and Friable (Scratch) Hardness)on	Not applicable	Every 6 months	COE CRD-C 130
Alkali Reactivity of Aggregates	Every 6 months	Every 6 months	ASTM C 1260
Petrographic Examination	Every 12 months	Every 12 months	ASTM C 295

b. Corrective Action for Aggregate Quality - If the result of a quality test fails to meet the requirements for quality immediately prior to start of concrete placement, production procedures or materials shall be changed and additional tests shall be performed until the material meets the quality requirements prior to proceeding with either mixture proportioning studies or starting concrete

placement. After concrete placement commences, whenever the result of a test for quality fails the requirements, the test shall be rerun immediately. If the second test fails the quality requirement, the fact shall be reported to the Contracting Officer and immediate steps taken to rectify the situation.

3.7.2.4 Scales

a. Weighing Accuracy - The accuracy of the scales shall be checked by test weights prior to start of concrete operations and at least once every 3 months for conformance with the applicable requirements of paragraph BATCHING EQUIPMENT. Such tests shall also be made as directed whenever there are variations in properties of the fresh concrete that could result from batching errors.

b. Batching and Recording Accuracy - Once a week the accuracy of each batching and recording device shall be checked during a weighing operation by noting and recording the required weight, recorded weight, and the actual weight batched. The Contractor shall confirm that the calibration devices described in paragraph BATCH PLANT for checking the accuracy of dispensed admixtures are operating properly.

c. Scales Corrective Action - When either the weighing accuracy or batching accuracy does not comply with specification requirements, the plant shall not be operated until necessary adjustments or repairs have been made. Discrepancies in recording accuracies shall be corrected immediately.

3.7.2.5 Batch-Plant Control

The measurement of all constituent materials including cementitious materials, each size of aggregate, water, and admixtures shall be continuously controlled. The aggregate weights and amount of added water shall be adjusted as necessary to compensate for free moisture in the aggregates. The amount of air-entraining agent shall be adjusted to control air content within specified limits. A report shall be prepared indicating type and source of cement used, type and source of pozzolan or slag used, amount and source of admixtures used, aggregate source, the required aggregate and water weights per cubic meter, amount of water as free moisture in each size of aggregate, and the batch aggregate and water weights per cubic meter for each class of concrete batched during plant operation.

3.7.2.6 Concrete Mixture

a. Air Content Testing - At least two tests for air content shall be made on randomly selected batches of each separate concrete mixture produced during each 8-hour period of concrete production. Additional tests shall be made when excessive variation in workability is reported by the placing foreman or Government quality assurance representative. Tests shall be made in accordance with ASTM C 231. For concrete having a nominal maximum aggregate size of 25 or 37 mm, the average of each set of two tests shall be plotted on a control chart on which the average is set at 5.5 percent and the upper and lower control limits at

7 and 4 percent respectively. For concrete having a nominal maximum aggregate size of 19 mm, the average shall be set at 6.0 percent and the upper and lower control limits at 7.0 and 5.0 percent, respectively. The control charts shall be submitted to the Contracting Officer.

b. Air Content Corrective Action - Whenever points on the control chart for percent air reach either warning limit, an adjustment shall immediately be made in the amount of air-entraining admixture batched. As soon as is practical after each adjustment, another test shall be made to verify the result of the adjustment. Whenever a point on the control chart range reaches the warning limit, the admixture dispenser shall be recalibrated to ensure that it is operating accurately and with good reproducibility. Whenever a point on either control chart reaches an action limit line, the air content shall be considered out of control and the concreting operation shall immediately be halted until the air content is under control. Additional air content tests shall be made when concreting is restarted. All this shall be at no extra cost to the Government.

c. Slump Testing - In addition to slump tests which shall be made when test specimens are fabricated, at least four slump tests shall be made on randomly selected batches in accordance with ASTM C 143/C 143M for each separate concrete mixture produced during each 8-hour or less period of concrete production each day. Also, additional tests shall be made when excessive variation in workability is reported by the placing foreman or Government's quality assurance representative. Test results shall be plotted on control charts which shall at all times be readily available to the Government. Copies of the current control charts shall be kept in the field by the Contractor's quality control representatives and results plotted as tests are made. When a single slump test reaches or goes beyond either the upper or lower action limit, a second test shall immediately be made on the same batch of concrete. The results of the two tests shall be averaged and this average used as the slump of the batch to plot on both the control chart for percent air and the chart for range, and for determining the need for any remedial action. An upper warning limit shall be set at 13 mm below the maximum allowable slump on separate control charts for percent air used for each type of mixture as specified in paragraph SLUMP, and an upper action limit line and lower action limit line shall be set at the maximum and minimum allowable slumps, respectively, as specified in the same paragraph. The range between each consecutive slump test for each type of mixture shall be plotted on a single control chart for range on which an upper action limit is set at 75 mm. Samples for slump shall be taken at the mixer, however, the Contractor is responsible for delivering the concrete to the placement site at the stipulated slump. If the Contractor's materials or transportation methods cause slump loss between mixer and the placement, correlation samples shall be taken at the placement site as required by the Contracting Officer and the slump at the mixer controlled as directed.

d. Slump Corrective Action - Whenever points on the control chart for slump reach the upper warning limit, an adjustment shall be immediately made in the batch weights of water and fine aggregate. The adjustments

are to be made so that the total water content does not exceed that amount allowed by the maximum W/C specified, based upon aggregates which are in a saturated surface-dry condition. When a single slump reaches the upper or lower action limit, no further concrete shall be delivered to the placing site until proper adjustments have been made. Immediately after each adjustment, another test shall be made to verify the correctness of the adjustment. Whenever two consecutive slump tests, made during a period when there was no adjustment of batch weights, produce a point on the control chart for range at or above the upper action limit, the concreting operation shall immediately be halted and the Contractor shall take appropriate steps to bring the slump under control. Also, additional slump tests shall be made as directed. All this shall be at no additional cost to the Government.

e. Temperature - The temperature of the concrete shall be measured when compressive strength specimens are fabricated. Measurement shall be in accordance with ASTM C 1064/C 1064M. The temperature shall be reported along with the compressive strength data.

f. Compressive-Strength Specimens - At least one set of test specimens shall be made each day on each different concrete mixture placed during the day. Additional sets of test cylinders shall be made, as directed by the Contracting Officer, when the mixture proportions are changed or when low strengths have been detected. A random sampling plan shall be developed by the Contractor and approved by the Contracting Officer prior to the start of construction. The plan shall assure that sampling is done in a completely random and unbiased manner. A set of test specimens for concrete with a 28-day specified strength per paragraph DESIGN REQUIREMENTS shall consist of four cylinders, two to be tested at 7 days and two at 28 days. Test specimens shall be molded and cured in accordance with ASTM C 31/C 31M and tested in accordance with ASTM C 39/C 39M. All compressive-strength tests shall be reported immediately to the Contracting Officer. Quality control charts shall be kept for individual strength tests, moving average for strength, and moving average for range for each mixture. The charts shall be similar to those found in ACI 214.

g. Batch Tickets - The manufacturer of the concrete shall furnish to the Government's quality assurance representative with each batch of concrete, before unloading at the site, a delivery ticket prepared in accordance with the requirements of ASTM C 94/C 94M.

3.7.2.7 Inspection Before Placing

Foundation or construction joints, forms, and embedded items shall be inspected for quality by the Contractor in sufficient time prior to each concrete placement to certify to the Contracting Officer that they are ready to receive concrete. The results of each inspection shall be reported in writing.

3.7.2.8 Placing

a. Placing Inspection - The placing foreman shall supervise all placing operations, shall determine that the correct quality of

concrete or grout is placed in each location as directed and shall be responsible for measuring and recording concrete temperatures and ambient temperature hourly during placing operations, weather conditions, time of placement, yardage placed, and method of placement.

b. Placing Corrective Action - The placing foreman shall not permit batching and placing to begin until he has verified that an adequate number of vibrators in working order and with competent operators are available. Placing shall not be continued if any pile of concrete is inadequately consolidated. If any batch of concrete fails to meet the temperature requirements, immediate steps shall be taken to improve temperature controls.

3.7.2.9 Vibrators

a. Vibrator Testing and Use - The frequency and amplitude of each vibrator shall be determined in accordance with COE CRD-C 521 prior to initial use and at least once a month when concrete is being placed. Additional tests shall be made as directed when a vibrator does not appear to be adequately consolidating the concrete. The frequency shall be determined at the same time the vibrator is operating in concrete with the tachometer held against the upper end of the vibrator head while almost submerged and just before the vibrator is withdrawn from the concrete. The amplitude shall be determined with the head vibrating in air. Two measurements shall be taken, one near the tip and another near the upper end of the vibrator head and these results averaged. The make, model, type, and size of the vibrator and frequency and amplitude results shall be reported in writing.

b. Vibrator Corrective Action - Any vibrator not meeting the requirements of paragraph VIBRATORS shall be immediately removed from service and repaired or replaced.

3.7.2.10 Curing

a. Moist-Curing Inspections - At least once each shift, and once per day on nonwork days an inspection shall be made of all areas subject to moist curing. The surface moisture condition shall be noted and recorded.

b. Moist-Curing Corrective Action - When a daily inspection report lists an area of inadequate curing, immediate corrective action shall be taken, and the required curing period for such areas shall be extended by one (1) day.

c. Membrane-Curing Inspection - No curing compound shall be applied until the Contractor's authorized representative has verified that the compound is properly mixed and ready for spraying. At the end of each operation, he shall estimate the quantity of compound used by measurement of the container and the area of concrete surface covered and compute the rate of coverage in square meters per liter. He shall note whether or not coverage is uniform.

d. Membrane-Curing Corrective Action - When the coverage rate of the

curing compound is less than that specified or when the coverage is not uniform, the entire surface shall be sprayed again.

e. Sheet-Curing Inspection - At least once each shift and once per day on nonwork days, an inspection shall be made of all areas being cured using material sheets. The condition of the covering and the tightness of the laps and tapes shall be noted and recorded.

f. Sheet-Curing Corrective Action - When a daily inspection report lists any tears, holes, or laps or joints that are not completely closed, the tears and holes shall promptly be repaired or the sheets replaced, the joints closed, and the required curing period for those areas shall be extended by one (1) day.

3.7.2.11 Cold-Weather Protection and Sealed Insulation Curing

At least once each shift and once per day on nonwork days, an inspection shall be made of all areas subject to cold-weather protection. The protection system shall be inspected for holes, tears, unsealed joints, or other deficiencies that could result in damage to the concrete. Special attention shall be taken at edges, corners, and thin sections. Any deficiencies shall be noted, corrected, and reported.

3.7.2.12 Cold-Weather Protection Corrective Action

When a daily inspection report lists any holes, tears, unsealed joints, or other deficiencies, the deficiency shall be corrected immediately and the period of protection extended 1 day.

3.7.2.13 Mixer Uniformity

a. Stationary Mixers - Prior to the start of concrete placing and once every 6 months when concrete is being placed, or once for every 57,000 cubic meters of concrete placed, whichever results in the longest time interval, uniformity of concrete mixing shall be determined in accordance with ASTM C 94/C 94M.

b. Truck Mixers - Prior to the start of concrete placing and at least once every 6 months when concrete is being placed, uniformity of concrete shall be determined in accordance with ASTM C 94/C 94M. The truck mixers shall be selected randomly for testing. When satisfactory performance is found in one truck mixer, the performance of mixers of substantially the same design and condition of the blades may be regarded as satisfactory.

3.7.2.14 Mixer Uniformity Corrective Action

When a mixer fails to meet mixer uniformity requirements, either the mixer shall be removed from service on the work, the mixing time shall be increased, batching sequence changed, batch size reduced, or adjustments shall be made to the mixer until compliance is achieved.

3.7.3 Reports

All results of tests or inspections conducted shall be reported informally as they are completed and in writing daily. A weekly report shall be prepared for the updating of control charts covering the entire period from the start of the construction season through the current week. During periods of cold-weather protection, reports of pertinent temperatures shall be made daily. These requirements do not relieve the Contractor of the obligation to report certain failures immediately as required in preceding paragraphs. Such reports of failures and the action taken shall be confirmed in writing in the routine reports. The Contracting Officer has the right to examine all test and inspection records.

-- End of Section --

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