

(44)



# CITY OF SACRAMENTO

## DEPARTMENT OF GENERAL SERVICES

OFFICE OF THE DIRECTOR

FACILITY MAINTENANCE DIVISION  
FLEET MANAGEMENT DIVISION  
RISK MANAGEMENT & INS. DIVISION  
SUPPORT SERVICES DIVISION

September 16, 1986

APPROVED  
BY THE CITY COUNCIL

SEP 20 1986

City Council  
Sacramento, California

OFFICE OF THE  
CITY CLERK  
C086043

Honorable Members in Session:

SUBJECT: RECOMMENDATION OF BID AWARD FOR THE CROCKER ART MUSEUM PAVILION/  
CROCKER HASTINGS HOUSE RESTORATION, ORG. NO. 2211/MA26

### SUMMARY

The subject project has been advertised for bids. Bids have been received and contract award is recommended.

### BACKGROUND

On July 29, 1986, the City Council approved plans and specifications for the Crocker Art Museum Pavilion/Crocker Hastings House Restoration and bids were received on September 9, 1986.

After Council approval on August 19, 1986, Addendum #1 and #2 were issued. Addendum #1 extended the bid date (1) week to September 9, 1986 and revised contractor qualifications for bidding on this project. Addendum #2 provided technical clarifications on various items included within the plans and specifications.

The bids received are as follows:

<u>CONTRACTOR</u>	<u>BASE BID</u>	<u>ALT #1</u>	<u>ALT #2</u>	<u>ALT #3</u>	<u>TOTAL</u>
GATEWAY PACIFIC CONSTRUCTION, INC.	\$3,140,314	\$128,489	\$52,897	\$55,235	\$3,376,935
Roebbelen Eng., Inc.	3,383,800	54,000	52,500	52,500	3,542,800
J.R. Roberts Corp.	3,568,000	40,000	50,000	73,000	3,737,000
John F. Otto, Inc.	3,560,000	105,000	50,800	52,000	3,767,800
Sunseri Const., Inc.	3,242,865	-	52,000	-	-
Architect's Estimate	\$3,694,474	\$172,694	\$194,135	\$175,792	\$4,237,095

49

It is proposed that the base bid and Alternates #1 through #3 be included and that the entire project be constructed with the bid awarded to the low bidder, Gateway Pacific Construction, Inc.

FINANCIAL

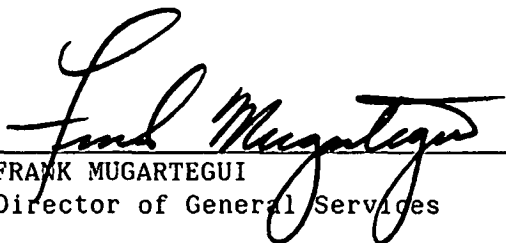
The original architect's estimate for the base bid (less alternates) was \$3,694,744. The award of this contract in the amount of \$3,376,935 including the base bid and three alternates, is \$317,539 under the original base estimate. Based on the staff report to the City Council on July 16, 1986, the award of this contract reduces the potential City liability of \$679,914 to \$362,375.

The approved CIP Budget for this project is \$5,951,909. Sufficient funds are available to award this contract.

RECOMMENDATION

It is recommended that Gateway Pacific Construction, Inc.'s base bid plus Alternates #1 through #3 of \$3,376,935 be accepted and the contract be awarded.

Respectfully submitted,

  
FRANK MUGARTEGUI  
Director of General Services

Recommendation Approved:

  
Walter J. Slipes, City Manager

September 30, 1986  
District No. 1

October 6, 1986

Gateway Pacific Construction, Inc.  
8031 Fruitridge Road  
Sacramento, CA 95820

Dear Gentlemen:

On September 30, 1986, the Sacramento City Council accepted your bid in the amount of \$3,376,935.00 for the Crocker Art Museum Pavilion/Crocker Hastings House Restoration.

The Public Works Director will contact you concerning the necessary bond and contract.

Sincerely,

Lorraine Magana  
City Clerk

LM/dah/44

TITLE OF BID

CROCKER Art Renovation of Museum

BID DATE

07-09-80  
7-02-80

ESTIMATE

\$3,694,474.00

SUCCESSFUL BIDDER

DATE OF AWARD

CONTRACT NUMBER

TOTAL PRICE OF AWARDED BID

CROCKER Art Museum Renovation

NAME OF FIRM	PHONE NUMBER	ADDRESS (INCLUDE ZIP CODE)
CONSTRUCTION DATA AND NEWS		1791 Tribute Road, Ste. D Sacramento, CA 95815
GREATER SACRAMENTO AREA PLAN		2220 Watt Avenue, Ste. B-5 Sacramento, CA 95825
SACRAMENTO BUILDERS EXCHANGE		P.O. BOX 1462 Sacramento, CA 95807
BUILDERS EXCHANGE OF ALAMEDA CO.		3055 Alvarado Street San Leandro, CA 94577
(SPECS ONLY) CALIFORNIA BUILDER AND ENGINEER CO.		P.O. Box 10070 Palo Alto, CA 94303
CONTRA COSTA BUILDERS EXCHANGE		7490 Salvio Street Concord, CA 94520
DAILY CONSTRUCTION SERVICE		P.O. BOX 8019 San Francisco, CA 94119
DAILY PACIFIC BUILDERS EXCHANGE		P.O. BOX 7878 Rincon Annex San Francisco, CA 94120
EL DORADO BUILDERS EXCHANGE		681 Main Street Placerville, CA 95667
PENINSULA BUILDERS EXCHANGE		735 Industrial Way San Carlos, CA 94070
PLACER COUNTY CONTR. ASSOC.		220 Sacramento Street Auburn, CA 95603
SAN FRANCISCO BUILDERS EXCH.		850 S. Van Ness Avenue San Francisco, CA 94110
STOCKTON BUILDERS EXCHANGE		7500 N. West Lane Stockton, CA 95210
U.S. GOVT. ADVERTISER		305 W. 42nd Street New York, NY 10036
NEVADA CO. BUILDERS EXCHANGE		150 B. South Auburn Street Auburn, CA 95945



NAME OF FIRM	PHONE NUMBER	ADDRESS (INCLUDE ZIP CODE)
DEPARTMENT OF GENERAL SERVICES SMALL & MINORITY BUSINESS PROCUREMENT ASSISTANCE DIVISION		1812 - 14th Street Room 200 Sacramento CA 95814
ATTENTION: CAROLYN TRAVIS		
MINORITY BUSINESS EXCHANGE		1255 Post Street, Suite 1625 San Francisco CA 94109
SACRAMENTO METROPOLITAN CHAMBER OF COMMERCE ATTN: Shaun Smith, Bldg Room		917 7th Street Sacramento CA 95805
J.R. Roberts (2)	916 441-1334	PO Box 1108 Folsom CA 95628
DESIGN - R. Ryndabla		File
Collins Electrical Co Inc	916 451-1355	1801 21st St Sacramento CA 95814
Gateway Pacific	916 386-2011	PO Box 102909 Sacramento 95810
John Otto	916 441-1370	PO Box 1053 Sacramento 95812
Bob Schroeder Co (2) Inc		3428 41st Ave Folsom CA 95630
Palm Iron Works	366-1010	6645 EUGENE AVE Box 2665 SACRAMENTO CA 95821
Robert A. Walker	925-4300	1200 DIXIANNING AVE SACRAMENTO
Yuca Electric		314 Pleasant Lane Pittsburg CA 94555
John Pomeroy		P.O. Box 300 Petaluma CA 94953
Ray McManis		24th St SACRAMENTO CA
<del>59 ENOISO CO</del>		<del>34</del>
Metal Iron Works	(1)	2260 PARK AVE CHICO CA 95928

①

October 1, 1986

J.R. Roberts Corporation  
P.O. Box 108  
Fair Oaks, CA 95628

Gentlemen:

On September 30, 1986, the Sacramento City Council accepted the bid of Gateway Pacific Construction, Inc. in the amount of \$3,376,935.00 for Crocker Art Museum Pavilion/Crocker Hastings House Restoration.

It is the policy of the City to hold the bid security of the three lowest bidders until a finalized contract has been received by this office.

Upon receipt of the finalized contract your bid security will be returned.

Sincerely,

Lorraine Magana  
City Clerk

LM/dbp/44

October 21, 1986

J.R. Roberts Corporation  
P.O. Box 108  
Fair Oaks, CA 95628

Gentlemen:

We are in receipt of the finalized contract for the Crocker Art Museum Pavilion/Crocker Hastings House Restoration, which was approved by the Sacramento City Council on September 30, 1986.

Returned herewith is your bid bond in the amount of ten percent of the total bid amount which was submitted for the above bid.

Sincerely,

Lorraine Magana  
City Clerk

LM/dbp/44

Enclosure: Bid bond issued by United Pacific Insurance Company

October 1, 1986

Roebbelen Engineering, Inc.  
4059 Palm Avenue  
Sacramento, CA 95842

Gentlemen:

On September 30, 1986, the Sacramento City Council accepted the bid of Gateway Pacific Construction, Inc. in the amount of \$3,376,935.00 for Crocker Art Museum Pavilion/Crocker Hastings House Restoration.

It is the policy of the City to hold the bid security of the three lowest bidders until a finalized contract has been received by this office.

Upon receipt of the finalized contract your bid security will be returned.

Sincerely,

Lorraine Magana  
City Clerk

LM/dhp/44

October 21, 1986

Roebbelen Engineering, Inc.  
4059 Palm Avenue  
Sacramento, CA 95842

Gentlemen:

We are in receipt of the finalized contract for the Crocker Art Museum Pavilion/Crocker Hastings House Restoration, which was approved by the Sacramento City Council on September 30, 1986.

Returned herewith is your bid bond in the amount of ten percent of the total bid amount which was submitted for the above bid.

Sincerely,

Lorraine Magana  
City Clerk

LM/dbp/44

Enclosure: Bid bond issued by Hartford Fire Insurance Company



October 1, 1986

Sunseri Construction, Inc.  
48 Comancho Court  
Chico, CA 95928

Gentlemen:

This is to inform you that you were not the successful bidder for Crocker Art Museum Renovation. Therefore, we are returning your bidder's bond in the amount of ten percent of the total amount bid.

The said bid having been awarded by the City Council at the regular meeting of September 30, 1986 to Gateway Pacific Construction, Inc., in the amount of \$3,376,935.00.

Sincerely,

Lorraine Magana  
City Clerk

LM/dbp/44

Enclosure: Bid Bond issued United Pacific Insurance Company

October 1, 1986

John F. Otto, Inc.  
P.O. Box 2858  
Sacramento, CA 95812

Gentlemen:

This is to inform you that you were not the successful bidder for Crocker Art Museum Renovation. Therefore, we are returning your bidder's bond in the amount of ten percent of the total amount bid.

The said bid having been awarded by the City Council at the regular meeting of September 30, 1986 to Gateway Pacific Construction, Inc., in the amount of \$3,376,935.00.

Sincerely,

Lorraine Magana  
City Clerk

LM/dbp/44

Enclosure: Bid Bond issued United Pacific Insurance Company



DEPARTMENT OF  
GENERAL SERVICES

FACILITY MANAGEMENT  
DIVISION

CITY OF SACRAMENTO  
CALIFORNIA

5730-24TH STREET  
BUILDING ONE  
SACRAMENTO, CA  
95822-3699

916-449-5445

DUANE J. WRAY  
SUPERINTENDENT

DERROLD LEE  
ASSISTANT  
SUPERINTENDENT

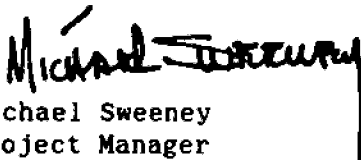
CROCKER ART MUSEUM PAVILION AND  
CROCKER/HASTINGS HOUSE RESTORATION  
ORG. NO. MA26/2211

Gentlemen:

Enclosed herewith is Addendum #1 to the Contract Documents for the above mentioned project.

Please attach this addendum to your bid and acknowledge acceptance by writing "Addendum Number 1" on the proposal form.

Very truly yours,

  
Michael Sweeney  
Project Manager

MS/ks

Attachments



DEPARTMENT OF  
GENERAL SERVICES

FACILITY MANAGEMENT  
DIVISION

CITY OF SACRAMENTO  
CALIFORNIA

ADDENDUM NO. 1  
August 7, 1986

5730-24TH STREET  
BUILDING ONE  
SACRAMENTO, CA  
95822-3699

916-449-5445

DUANE J. WRAY  
SUPERINTENDENT

DERROLD LEE  
ASSISTANT  
SUPERINTENDENT

CROCKER ART MUSEUM PAVILION AND  
CROCKER/HASTINGS HOUSE RESTORATION  
ORG. NO. MA26

This addendum is applicable to the work designated herein and shall be a part of and be included in the contract. The Contractor shall acknowledge his acceptance of this Addendum by writing "Addendum Number 1" on the proposal form.

- Item 1. Notice to Contractors, Page 1, change date for receipt of bids to September 9, 1986.
- Item 2. Instructions to Bidders, Page 4, Bidder Qualifications, add sentence; "See Proposal Bid form, Item D, for qualifications."
- Item 3. Bidders Bond, Page 1, "The Condition of this Obligation is such....." Change date to September 9, 1986.
- Item 4. Proposal-Bid Form, Page 2, revise D-1 Qualifications to read as follows:

General Contractor or his designated specialty subcontractors for shoring, bracing, underpinning, and piling shall have three (3) years experience as a firm which has successfully completed three (3) similar projects with regard to complexity and dollar value. If the firm is newly formed or with less than three (3) years of experience, the principals and supervisory personnel shall demonstrate qualifications as noted above.

- Item 5. Proposal-Bid Form, Page 2, revise D-2 Qualifications as follows:  
  
Omit entire paragraph. See item four (4) above for piling qualifications.



DEPARTMENT OF  
GENERAL SERVICES

FACILITY MANAGEMENT  
DIVISION

CITY OF SACRAMENTO  
CALIFORNIA

5730-24TH STREET  
BUILDING ONE  
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95822-3699

916-449-5445

DUANE J. WRAY  
SUPERINTENDENT

CROCKER ART MUSEUM PAVILION AND  
CROCKER/HASTINGS HOUSE RESTORATION  
ORG. NO. MA26/2211

DERROLD LEE  
ASSISTANT  
SUPERINTENDENT

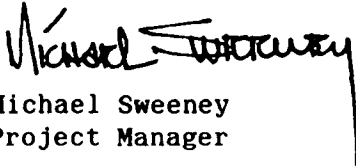
SUBJECT: ADDENDUM #2

Gentlemen:

Enclosed herewith is Addendum #2 to the Contract Documents for the above mentioned project.

Please attach this addendum to your bid and acknowledge acceptance by writing "Addendum Number 2" on the proposal form.

Very truly yours,

  
Michael Sweeney  
Project Manager

MS/ks

Attachments



DEPARTMENT OF  
GENERAL SERVICES

FACILITY MANAGEMENT  
DIVISION

CITY OF SACRAMENTO  
CALIFORNIA

5730-24TH STREET  
BUILDING ONE  
SACRAMENTO, CA  
95822-3699

916-449-5445

DUANE J. WRAY  
SUPERINTENDENT

DERROLD LEE  
ASSISTANT  
SUPERINTENDENT

ADDENDUM NO. 2  
August 7, 1986

CROCKER ART MUSEUM PAVILION AND  
CROCKER/HASTINGS HOUSE RESTORATION  
ORG. NO. MA26

This addendum is applicable to the work designated herein and shall be a part of and be included in the contract. The Contractor shall acknowledge his acceptance of this Addendum by writing "Addendum Number 2" on the proposal form.

- Item 1. Drawing Sheet A-003: Add Sheet Note No. 1 to Roof Plan re: parapets to be removed.
- Item 2. Drawing Sheet A-003: Add Sheet Note No. 47 to read - Perform demolition in orderly fashion, in sequence. Demolish one level at a time, starting from roof down. Support walls to avoid major collapse of full height masonry. Lift material down using suitable equipment. Do not permit large areas of masonry to fall free on exterior.
- Item 3. Drawing Sheet A-003: Add Sheet Note No. 48 to read - Provide temporary support at heads of new or existing openings until permanent construction is in place.
- Item 4. Drawing Sheet A-346: Room Finish Schedule - Room No. 311, elevator shaft - Add gypsum wallboard at ceiling. Provide metal suspension.
- Item 5. Drawing Sheet A-410: Change detail No. 4 to SMACNA Architectural Manual, 1985 ed., Plate No. 131, detail 19, "Open Standing Seam." Typical for all standing seam sheet metal roofing. (See attached.)



Item 6. Drawing Sheet S-303: Add Detail No. 10, Perimeter Beam, top floor Pavilion, see attached AS-1.

Item 7. Drawing Sheets E-100 through E-300: Add date 7.22.86.

Item 8. Drawing Sheet E-100: See attached 11" x 17" reduced, revised 8.19.86, for N.I.C. items to be excluded from contract.

Item 9. Specification Section 02150, Shoring and Underpinning, Paragraph 1.03 Qualifications, delete paragraph A and modify to read:

Contractor for shoring, bracing and underpinning, shall have three (3) years experience as a firm which has successfully completed three (3) similar projects with regard to complexity and dollar value. If the firm is newly formed or with less than three (3) years of experience, the principals and supervisory personnel shall demonstrate qualifications as noted above.

Item 10. Specification Section 02200, Earthworks and Removals, Paragraph 3:03 Clearing Grubbing and Preparing Sub Grades; add 3:03 B to read:

When excavating area for elevator pit, take precautions to protect existing redwood tree and root structure from damage caused by power tools or equipment. Coordinate work with Project Manager who will notify City Arborist to be present during excavation to advise on earth removal and root cutting. Contractor shall be responsible for stabilizing earth bank.

Item 11. Specification Section 02350, Piling, Including Pile Load Tests, Paragraph 1.04 Qualifications - delete paragraph and modify to read:

Contractor for piling shall have three (3) years experience as a firm which has successfully completed three (3) similar projects with regard to complexity and dollar value. If the firm is newly formed or with less than three (3) years of experience, the principals and supervisory personnel shall demonstrate qualifications as noted above.

Item 12. Specification Section 07600, Flashing and Sheet Metal, change Paragraph 2.01 H2 to read: "Sheet metal: Tern-coated stainless steel, .015" (28 gauge) weight of 71 pounds per 100 S.F. Core metal 18% chrome, 3% nickel, coating 80% lead, 20% tin.

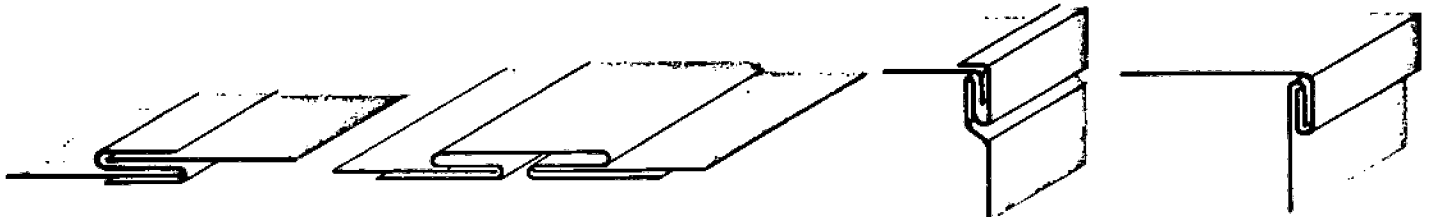
Item 13. Specification Section 07610, Sheet Metal Roofing, change Paragraph 2.01 B1 to read: Same as item 10 above.

END OF ADDENDUM NO. 2

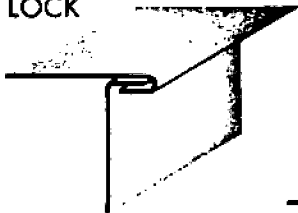
LOCKS & SEAMS



1. COMMON LOCK, HOOK SEAM OR CLINCH LOCK      2. FLAT LOCK SEAM      3. DOUBLE FLAT LOCK SEAM      4. DRIVE CLEAT OR LOCK



5. "S" CLEAT OR LOCK      6. DOUBLE "S" SEAM      7. PITTSBURGH LOCK      8. DOUBLE CORNER SEAM



9. SINGLE CORNER SEAM



10. LAP SEAM



11. SOLDERED LAP SEAM



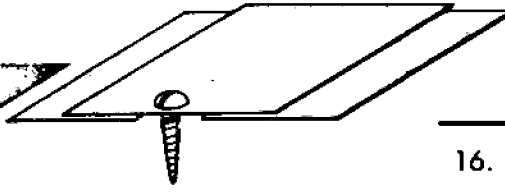
12. SOLDERED LAP SEAM FOR HEAVY GAGE METAL



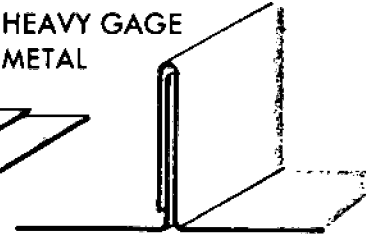
13. RIVETED LAP SEAM



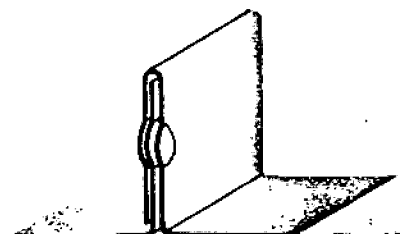
14. RIVETED LAP SEAM FOR HEAVY GAGE METAL



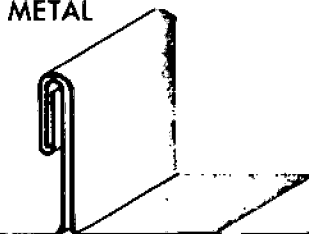
15. COVERED PLATE SEAM



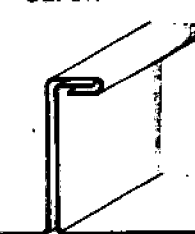
16. SINGLE LOCK STANDING SEAM



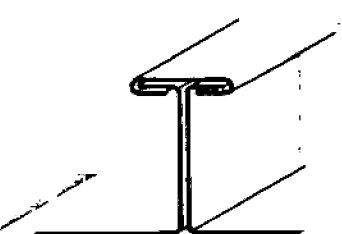
17. SINGLE LOCK STANDING SEAM, BUTTON PUNCHED



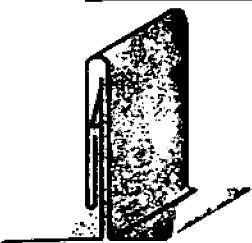
18. DOUBLE LOCK STANDING SEAM



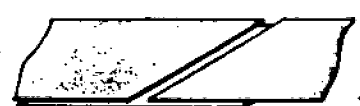
19. OPEN STANDING SEAM



20. CAPPED STANDING SEAM



21. STANDING SEAM WITH SNAP LOCK



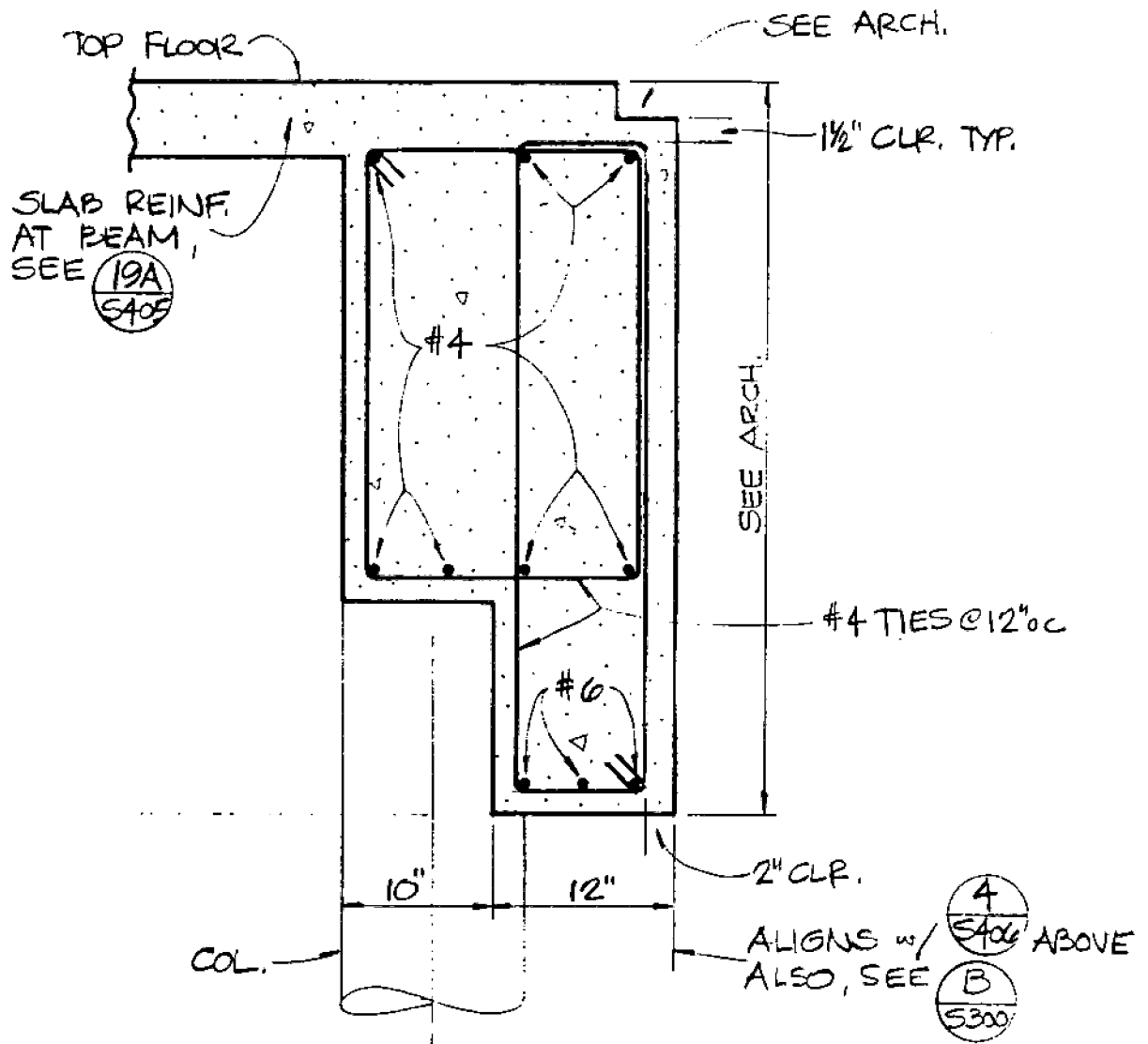
22. BUTT SEAM WITH BACK-UP PLATES, FASTENING OPTIONAL



23. TONGUE AND GROOVE



24. WELDED JOINT



PERIMETER BEAM - (10) S303  
TOP FLOOR - PAVILLION  
 1" = 1'-0"

BARRISH, ALDRICH & ASSOCIATES  
 STRUCTURAL ENGINEERS  
 SACRAMENTO (916) 444-3320

*W. S. Aldrich*

CROCKER ART MUSEUM PAVILION  
 CROCKER-HASTINGS HOUSE RESTORATION

**Rosekrans and Broder Inc. Architects**

1045 Sansome Street, San Francisco, Ca. 94111 • (415) 433-0963

AUG 19' 86  
 Date

8307  
 Job No.

AS-1  
 Sheet

Symbol      Description

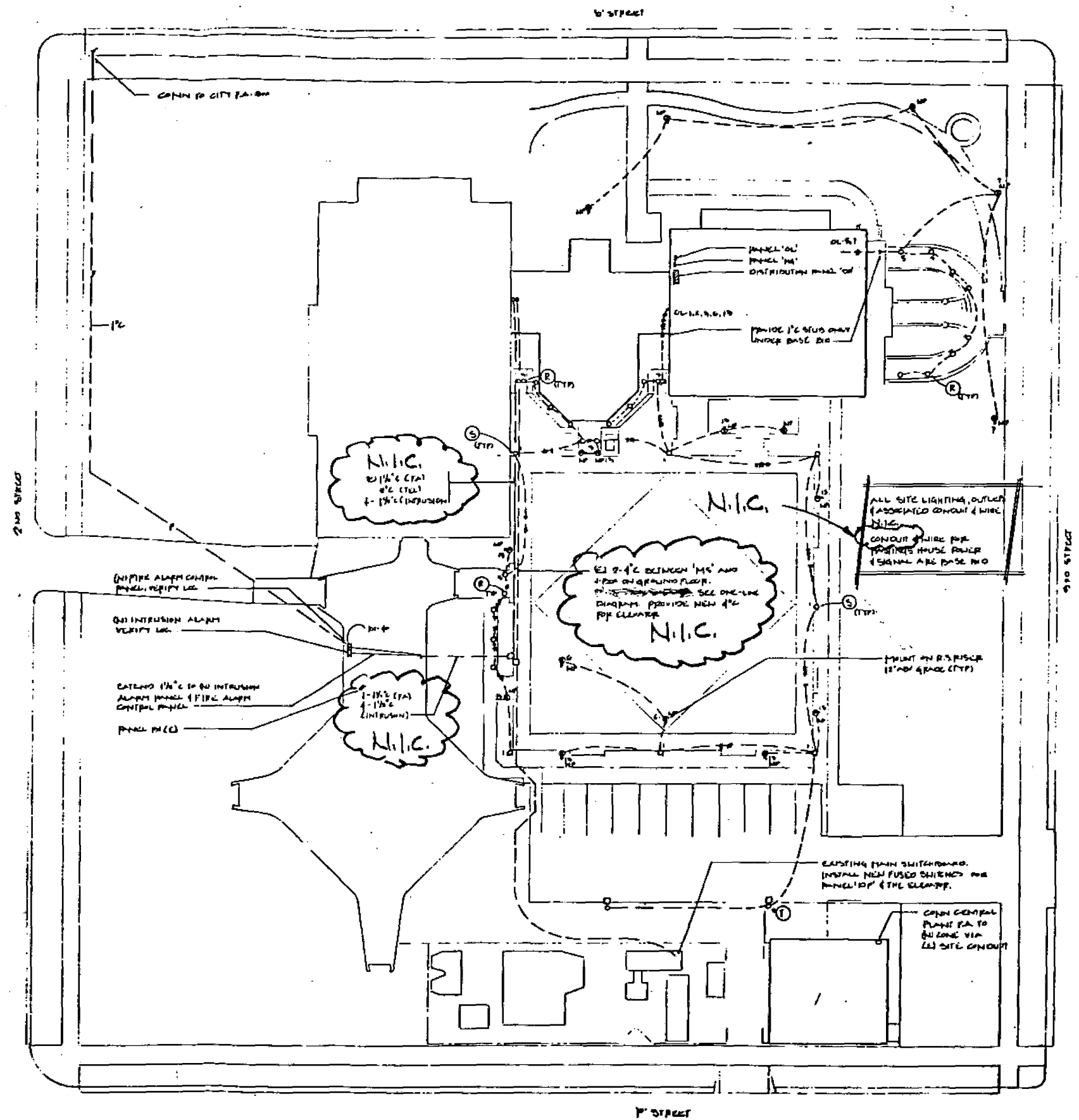
○ Light Fixture, Ceiling or Pendant  
○ Light Fixture, Wall  
□ Fluorescent Fixture, 40W, 125V @ 60Hz  
— Fluorescent Strip Light  
— Rail Light Fixture  
○ Light Fixture, Recessed  
○ Pole Mounted Light Fixture  
○ Fixture Tag - "A" Denotes Fixture Type  
□ Duplex Receptacle, 20A, 125V @ 60Hz  
○ Mount above counter or breakfast  
□ Single Receptacle, 15A, 125V @ 60Hz  
○ Single Receptacle, 15A/20V @ 60Hz, Rating Indicated  
□ Mount Receptacle  
○ Floor Telephone Outlet  
○ Telephone Outlet (P- Public)  
○ Junction Box, Size and type in accordance with Code  
○ Single Pole Switch, 20A, 277V, @ 60Hz  
○ Three-Way Switch, 20A, 277V, @ 60Hz  
○ Switchlight denotes outlet or fixture controlled  
○ Alarm Switch, 40W unless otherwise indicated, @ 60Hz  
□ Main Switchboard or Distribution Center  
□ Lighting or Distribution Panel  
□ Terminal Cabinet  
○ Safety Switch, Fused  
□ Motor Starter or Control Equipment  
□ Motor  
□ Exhaust Fan  
○ Mechanical Equipment Identification Tag

— Circuit concealed in ceiling or wall  
--- Circuit underground or concealed under floor  
--- Run Run to Panel or Terminal  
— Denotes number of 12 wires, No bars - 3-12, others three noted  
— Denotes a 60 green ground conductor  
— Wire to fixture with 3-12 and a 60 bond conductor  
— Telephone conduit, 3/4" unless otherwise noted or detailed  
— Multi-outlet strip

C Conduit  
WP Weatherproof  
EL Night Light  
ETC Empty conduit with pull rope or cord  
NIC Not in contract  
NPS See Mechanical Plans and Specifications  
EM Emergency  
TTS Telephone Terminal Board  
ETC Sound Terminal Cabinet  
MS Main Switchboard  
FEL Panel  
(E) Existing  
(R) Existing to be removed  
(N) New

○ SMOKE DETECTOR  
○ HEAT DETECTOR, 100° RATE OF RISE  
— LIGHTING TRAIL  
— DOOR PLASMA CONTACT  
○ MOTION DETECTOR  
○ CO2 CAMERA

— INTERCOM ALARM CIRCUIT, 24V  
— FIRE ALARM CIRCUIT, 24V  
— MOUNT HORIZONTAL CENTERED ON HORN BASE  
— FIRE ALARM MANUAL 24V @ 60Hz  
— FIRE ALARM AUDIO/VISUAL UNIT @ 60Hz  
— FIRE ALARM VISUAL UNIT 176





CROCKER ART MUSEUM PAVILION  
CROCKER-HASTINGS HOUSE RESTORATION  
COST CENTER NO. 2211

CROCKER ART MUSEUM ASSOCIATION  
CITY AND COUNTY OF SACRAMENTO

JULY 22, 1986

Project Architect  
ROSEKRANS AND BRODER INC. ARCHITECTS  
1045 Sansome Street, San Francisco, CA 94111  
(415) 433-0963

Structural Engineers  
BARRISH ALDRICH AND ASSOCIATES  
2131 Capitol Avenue, Sacramento, CA 95816  
(916) 444-3320

Mechanical Engineers  
GIBSON AND ASSOCIATES  
3118 Fulton Avenue, Sacramento, CA 95816  
(916) 484-6716

Electrical Engineers  
J. MICHAEL TRINDADE, P.E.  
7715 Mountain Avenue, Orangevale, CA 95662  
(916) 988-0561

Civil Engineers  
MORTON AND PITALO INC.  
1430 Alhambra Avenue, Sacramento, CA 95816  
(916) 454-9600

Foundation Engineers  
LOWRY & ASSOCIATES  
123 Commerce Circle, Sacramento, CA 95813  
(916) 929-9012

Elevator Consultant  
HESSELBERG, KEESEE AND ASSOCIATES INC.  
360 Post Street, San Francisco, CA 94108  
(415) 421-7886

Project Manager  
MICHAEL J. SWEENEY  
Dept. General Services - Facilities Management  
5730-24th Street, Bldg. 1, Sacramento, CA 95822  
(916) 449-5978



CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAAMENTO, CALIFORNIA  
C.C. 2211/MA26

PROJECT MANUAL

TABLE OF CONTENTS

BIDDING REQUIREMENTS	<u>NO. OF PAGES</u>
Notice to Contractors	1 only
Instructions to Bidders	1 thru 4
Proposal - Bid Form	1 thru 2
Bidders' Bond	1 and 2
Sub-Bidder Form	1 only
CONTRACT FORMS	
Worker's Compensation Insurance Certification	1 only
Agreement	1 thru 11
Substitution of Securities for Money Withheld	1 only
Performance Bond	1 and 2
Payment Bond	1 and 2
Certificate of Insurance	1 only
Guarantee	1 only
Schedule of Values/Pay Request	1 thru 3
CONDITIONS OF THE CONTRACT	
General Conditions	1 only
Supplementary Conditions	1 thru 23
California Labor Code: Apprentices on Public Works	1 and 2
Greater Sacramento Area Plan	1 thru 6
Monthly Manpower Utilization Report	1 and 2
Goals and Timetables	1 only
SPECIFICATIONS	
DIVISION 1 - GENERAL REQUIREMENTS	
01010 - Summary of Work	1 thru 4
01030 - Alternates	1 thru 3
01100 - Special Project Procedures	1 thru 3
01300 - Submittals	1 thru 10
01400 - Quality Control	1 thru 3
01500 - Facilities & Temporary Controls	1 thru 7
01600 - Material and Equipment	1 only
01700 - Contract Closeout	1 thru 3

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
CC 2211/MA26

TABLE OF CONTENTS  
Page 2

		<u>NO. OF PAGES</u>
DIVISION 02	SITE WORK	
02050	Demolition	1 thru 4
02100	Site Preparation	1 thru 2
02150	Shoring and Underpinning	1 thru 3
02200	Earthwork and Removals	1 thru 5
02350	Piling, Including Pile Load Tests	1 thru 5
02700	Site Drainage	1 thru 2
DIVISION 03	CONCRETE	
03100	Concrete Formwork	1 thru 8
03200	Concrete Reinforcement	1 thru 5
03300	Cast-In-Place Concrete	1 thru 17
03370	Pneumatically Placed Concrete	1 thru 6
03400	Precast Concrete	1 thru 12
DIVISION 04	MASONRY	
04220	Unit Masonry	1 thru 6
04400	Stone	1 thru 5
DIVISION 05	METALS	
05100	Structural Metal Framing	1 thru 10
05200	Miscellaneous Metal	1 thru 7
05300	Metal Decking	1 thru 5
05512	Metal Stairs	1 thru 4
05800	Expansion Control	1 thru 3
DIVISION 06	WOOD AND PLASTICS	
06100	Rough Carpentry	1 thru 5
06200	Finish Carpentry & Millwork	1 thru 5
06600	Plastic Fabrications	1 thru 2
DIVISION 07	THERMAL & MOISTURE PROTECTION	
07131	Bentonite Panel Waterproofing	1 thru 5
07200	Insulation	1 thru 2
07256	Sprayed-on Fireproofing	1 thru 6
07500	Membrane Roofing	1 thru 5
07600	Flashing & Sheet Metal	1 thru 6
07610	Sheet Metal Roofing	1 thru 5
07800	Skylights	1 thru 5
07900	Joint Sealers	1 thru 3

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
CC 2211/MA26

TABLE OF CONTENTS  
Page 3

		<u>NO. OF PAGES</u>
DIVISION 08	DOORS AND WINDOWS	
08100	Metal Doors and Frames	1 thru 5
08500	Window Wall and Glazing	1 thru 11
08700	Hardware	1 thru 8
DIVISION 09	FINISHES	
09209	Cement Plaster	1 thru 4
09250	Gypsum Wallboard	1 thru 14
09310	Ceramic Tile	1 thru 5
09550	Wood Flooring	1 thru 3
09650	Resilient Flooring	1 thru 4
09680	Carpet	1 thru 5
09900	Painting	1 thru 8
DIVISION 10	SPECIALTIES	
10162	Metal Toilet Partitions & Access.	1 thru 4
10650	Operable Partitions	1 thru 3
DIVISION 11	OMIT	
DIVISION 12	FURNISHINGS	
12511	Horizontal Louver Blinds	1 thru 3
DIVISION 13	OMIT	
DIVISION 14	CONVEYING SYSTEMS	
14212	Hydraulic Elevators	1 thru 35
DIVISION 15	MECHANICAL	
15400	Plumbing	1 thru 15
15510	Fire Protection	1 thru 10
15700	Air Conditioning	1 thru 19
15900	Building Controls	1 thru 18
DIVISION 16	ELECTRICAL	
16100	Electrical	1 thru 11
16500	Fire Alarm	1 thru 4

NOTICE TO CONTRACTORS  
Page 1

Sealed Proposals will be received by the City Clerk of the City of Sacramento at the office of the City Clerk, Room 203, City Hall, located on I Street between 9th and 10th Streets. up to the hour of 10:30 a.m. on September 2, 1986 and opened at 10:30 a.m., or as soon thereafter as business allows, in the Council Chambers, City Hall for construction of: CROCKER ART MUSEUM PAVILION

AND CROCKER-HASTINGS HOUSE RESTORATION  
216 "O" Street

Sacramento, CA 95814 cc: 2211/MA26

as set forth in the Construction Documents adopted July 29, 1986  
by the City of Sacramento.

All such proposals received and any work performed thereunder must comply with the requirements of Chapter 58 of the Sacramento City Code (Ordinance No. 3129, Fourth Series).

Bids must be submitted on printed forms supplied by the City Clerk to prospective bidders and enclosed in an envelope marked: "Sealed Proposal for the Construction of Crocker Art Museum Pavilion and Crocker-Hastings House Restoration."

Copies of the Sealed Proposal Forms and accompanying documents are available at the office of City Clerk's Office, 915 "I" Street, Room 203, Sacramento, CA 95814

(Non-refundable fee \$ 55.00 ).

All contractors, subcontractors and all concerned must comply with the rates of wages established by the Director of Industrial Relations under provisions of Sections 1770 and 1773 of the Labor Code of the State of California, a copy of which is on file in the office of the City Clerk; or such other rates of wages as may hereafter be established by the Director of the Department of Industrial Relations in compliance with Section 1770 of the Labor Code of the State of California.

Pursuant to Government Code Section 4590, any contract awarded pursuant to this invitation for bid shall contain a provision permitting the substitution of securities for any moneys withheld to ensure performance under the contract. The terms of such provisions shall be according to the requirements of Government Code Section 4590.

Each bid must be accompanied by security consisting only of California Bank Cashier's Check, certified check, California Bank Money Order, or bid bond made payable to the order of the City Director of Finance in the sum of ten percent (10 %) of the sum of the proposal.

The right to reject any or all bids or to waive any informality in any bid received is reserved by the City Council.

LORRAINE MAGANA  
CITY CLERK

## INSTRUCTIONS TO BIDDERS

To be considered, proposals must be made in accordance with these Instructions to Bidders.

### DOCUMENTS

Bidder may obtain Drawings and Project Manual from the Office of  
City Clerk's Office  
915 "I" Street, Room 203  
Sacramento, CA 95814

(Non-refundable fee \$ 55.00 )

Drawings and Project Manual may be examined at the Architect's office and at the following locations:

Construction Data & News, 1791 Tribute Rd. Ste. D, Sacramento, CA 95815  
Greater Sacramento Area Plan, 2220 Watt Av., Ste. B-5, Sacto., CA 95825  
Sacramento Builders Exchange, P.O. Box 1462, Sacramento, CA 95807  
State Dept. of Gen. Serv., Small & Minority Business Procurement Assist.  
Div., 1812 14th St., Rm. 200, Sacramento, CA 95814  
Builders Exch. of Alameda Co., 3055 Alvarado St., San Leandro, CA 94577  
California Builder & Engineer, P.O. Box 10070, Palo Alto, CA 94303  
Contra Costa Builders Exchange, 2490 Salvio St., Concord, CA 94520  
Daily Construction Service, P.O. Box 3019, San Francisco, CA 94119  
Daily Pacific Builders Exch., P.O. Box 7878 Rincon Annex, S.F., CA 94120  
El Dorado Builders Exch., 681 Main St., Placerville, CA 95667  
Minority Business Exchange, 1255 Post St., Ste. 625, S.F., CA 94109  
Nevada County Bldrs. Exch., 150B So. Auburn St., Grass Vly., CA 95945  
Peninsula Builders Exch., 735 Industrial Way, San Carlos, CA 94070  
Placer County Contractor Assn., 220 Sacramento St., Auburn, CA 95603  
San Francisco Builders Exch., 850 South Van Ness Ave., S.F., CA 94110  
Stockton Builders Exch., 7500 N. West Lane, Stockton, CA 95210  
U.S. Government Advertiser, 303 W. 42nd St., New York, NY 10036

### EXAMINATION

The Bidder is required to examine carefully the site of the proposed work and the Contract Documents, including the Drawings and Project Manual. The submission of a Proposal shall be prima facie evidence that the Bidder has made such an examination and has satisfied himself concerning the character, quality and quantity of all work to be done and materials to be furnished.

### QUESTIONS AND RESOLUTION OF DISCREPANCIES

Submit all questions about the Drawings and Project Manual to the Office of Facility Development  
5730 24th Street  
Sacramento, CA 95822

Attn: Michael Sweeney, Project Manager  
(916) 449-5977

Written replies will be issued to all prime bidders on Addenda to the Drawings and Project Manual and will become a part of the Contract. The City, City Engineer, and Architect will not be responsible for oral clarifications. Questions received less than 120 hours before the bid opening cannot be answered in writing.

## **INSTRUCTIONS TO BIDDERS**

Page 2

### **BASIS OF BID**

The Bidder must include all unit cost items and all alternatives (if required) shown on the proposal forms; failure to comply may be cause for rejection. No segregated proposals or assignments will be considered.

### **PREPARATION OF PROPOSAL**

Proposals must be submitted on the unaltered forms furnished by the City, a copy of which is bound with the Project Manual. The Proposal must be in ink which is clearly legible and must be properly executed and signed. Signatures of all persons signing must be in longhand, with name typed below signature. Proposals submitted by corporations must be signed by a duly authorized officer, and the name of the State of incorporation must be indicated. Numbers shall be stated both in writing and in figures.

### **PROPOSAL GUARANTEE**

The Proposal shall be accompanied by a corporate surety bond in the form hereinafter set forth, or by a certified check on a solvent bank of the State of California, made payable on sight to the Finance Director, the City of Sacramento, the amount of which shall be not less than 10% of the base or lump sum bid for the proposed work. No proposal will be considered unless accompanied by such bond or check.

When proposals have been received and reviewed by the City, all bonds and checks will be returned to the respective Bidders except those submitted by the two lowest responsible Bidders, which checks will be returned after the Contract has been awarded and subsequently the successful Bidder has executed the agreement and filed satisfactory bonds and proof of insurance as specified, or after all proposals have been rejected if no award is made. The proceeds of such bond or check will be retained by the City as damages should such Bidder fail to enter into said contract within the specified time, unless the City, by resolution, approves the return of said bond or check.

### **PERFORMANCE AND PAYMENT BONDS**

The successful Bidder will be required to furnish a Payment Bond in the amount equal to one hundred percent (100%) of the Contract Price, and a Faithful Performance Bond in an amount equal to one hundred percent (100%) of the Contract Price. Said bonds to be secured from a surety company satisfactory to the City of Sacramento and shall be furnished to the City of Sacramento simultaneously with delivery of the signed contract.

### **SUBCONTRACTORS**

Names of subcontractors that the Bidder proposes to use on the work must be listed in the space provided in the Sub-Bidder Form, pursuant to the provisions of Sections 4101 to 4107, inclusive, of the Government Code of the State of California.



## INSTRUCTIONS TO BIDDERS

Page 3

These sections require, among other things, that the Contractor, in submitting his bid, must show the following:

- A. The name and location of the place of business of each subcontractor who will perform work or labor or render service to the Contractor in or about the construction of the work or improvement in an amount in excess of one-half (1/2) of one percent of the prime Contractor's total bid.
- B. The portion of the work which will be done by each such subcontractor: The Contractor shall list only one subcontractor for each portion as is defined by the Contractor in his bid. If a Contractor fails to specify a subcontractor or if a Contractor specifies more than one subcontractor for the same portion of the work to be performed under the Contract in excess of one-half (1/2) of one percent of the Contractor's total bid, he agrees to perform that portion himself.

### OPENING OF BIDS

Bids will be opened and read aloud publicly at the time and place set forth in the advertised "Notice to Contractors". Bidders or their authorized representatives may be present at the opening of bids.

### AWARD OF CONTRACT

In accordance with Section 58.102 of the City Code, the Council shall at any time within sixty (60) days after the date set for the opening of bids, either award the Contract or reject all bids.

### EXECUTION OF CONTRACT

No Contract is binding upon the City until it has been executed on behalf of the City by the City Manager, attested by the City Clerk.

The individual, firm, partnership, joint venture, or corporation to whom or to which the Contract has been awarded, shall sign the necessary Agreements entering into the Contract and shall furnish the surety bonds required within ten (10) calendar days after the award of the Contract by the City Council. A sample form of Agreement is included with the Project Manual.

Failure to comply with any of the requirements of these Instructions to Bidders, to execute the Contract as prescribed, or to furnish security as set forth, might be cause for the annulment of the award. In the event of an annulment of the award because of such failure to comply by the Bidder, the Proposal Guarantee shall become the property of the City, not as a penalty, but as liquidated damages. Award may then be made to the next best qualified Bidder, or the work may be readvertised, as determined by the Council.

The successful Bidder shall not, without the written consent of the subcontractor listed and the City Engineer, substitute any person as subcontractor in place of the subcontractor listed in the Sub-Bidder Form.

## **INSTRUCTIONS TO BIDDERS**

Page 4

### **DELIVERY OF PROPOSAL**

The Proposal must be delivered to the City Clerk by the time set forth in the Notice to Contractors. The proposal must be enclosed in the envelope provided by the City Clerk for that purpose. The envelope must be marked on the outside as indicated in the Notice to Contractors. and the envelope must be sealed.

### **REJECTION OF PROPOSALS**

The City reserves the right to reject any or all bids.

Proposals containing any omissions, alterations of form, additions, or conditions not called for, conditional or alternate bids unless called for, bids or proposals, otherwise regular, which are not accompanied by a Proposal guarantee, will be considered irregular and may be rejected. The City of Sacramento reserves the right to waive technicalities as to changes, alterations, or reservations, and make the award to the best interest of the City

### **BIDDER'S QUALIFICATIONS**

Every Bidder must hold a valid Contractor's license and license must be registered to exactly the same individual, co-partnership, or corporation as that making the bid. The Contractor's license must be of a class which permits its holder to do the type of work contemplated in the project as of the date the Proposal is submitted, and such license must be maintained for the duration of the work.

The Bidder shall indicate his license number in the space provided for that purpose on the Proposal Form.

### **LAWS AND REGULATIONS**

All applicable Federal and State laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the Contract throughout, and they will be deemed to be included in the Contract the same as though herein written out in full.

\*\*\*\*\*

FM 4/14/86

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211/MA26

PROPOSAL - BID FORM  
Page 1

C.O. 86043

FILED

SEP 9 1986

THE HONORABLE CITY COUNCIL  
SACRAMENTO, CALIFORNIA:

By the  
Office of the City Clerk

In compliance with the advertised Notice to Contractors and Instructions to Bidders, the undersigned hereby proposes to furnish all required labor, materials, transportation, equipment, services, taxes and incidentals required to construct the

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION

in the City and County of Sacramento, California.

The Work is to be done in strict conformity with the Drawings and Project Manual now on file in the office of the City Clerk, for the following lump sum:

A. BASE PROPOSAL

THREE MILLION ONE HUNDRED AND FORTY THOUSAND THREE HUNDRED AND FORTY  
(\$ 3,140,314<sup>00</sup> ) DOLLARS

B. ALTERNATES

The Contractor shall bid on the following Alternates, stating the amount to be added to the Base Proposal. The City reserves the right to award the contract on the basis of the Base Proposal alone or on the sum of the Base Proposal and the Alternates in the sequence of their prioritized order. Failure on the part of any Contractor to list the Alternates shall be cause for rejection of the Base Proposal.

Each Alternate shall conform exactly to the Plans and Specifications. See Section 01030 for description of each Alternate.

1. For all additional work per Alternate No. 1, add the sum  
ONE HUNDRED AND TWENTY EIGHT THOUSAND - FOUR HUNDRED AND EIGHTY NINE  
of: ~~ONE HUNDRED AND TWENTY EIGHT THOUSAND - FOUR HUNDRED AND EIGHTY NINE~~  
~~HUNDRED AND TWENTY EIGHT THOUSAND - FOUR HUNDRED AND EIGHTY NINE~~ DOLLARS
2. For all additional work per Alternate No. 2, add the sum  
of: FIFTY TWO THOUSAND - EIGHT HUNDRED AND  
NINETY SEVEN DOLLARS
3. For all additional work per Alternate No. 3, add the sum  
of: FIFTY FIVE THOUSAND - TWO HUNDRED AND  
THIRTY FIVE DOLLARS

FILED

SEP 9 1986

C. UNIT PRICE

Unit Price per Section 02350, 1.13. Bidder shall list unit price for the following. Price shall include general Contractor's overhead and profit, and all other costs.

- |  |                              |
|--|------------------------------|
| 1. Manufacturing and furnishing -<br>Price per lineal foot of pile | \$ <u>60<sup>00</sup></u>    |
| 2. Driving - price per pile  | \$ <u>1,500<sup>00</sup></u> |
| 3. Cutting off - price per pile                                    | \$ <u>25<sup>00</sup></u>    |

D. QUALIFICATIONS

Bidder shall submit with this Bid written evidence demonstrating the qualifications. List shall include name of Project, Owner address, Architect/Engineer of record and telephone contact. See attached list.

1. GENERAL CONTRACTOR: 10 years of experience in shoring, bracing and underpinning comparable projects and has successfully completed 10 projects of comparable scope.
2. PILE CONTRACTOR: 5 years pile driving experience and evidence of satisfactory completion of 10 pile installations of comparable scope.

E. NOTICE TO PROCEED

If awarded the Contract, the undersigned agrees to sign said Contract and furnish the necessary surety bonds within ten (10) days after notice of the award of said Contract, and to begin work within fifteen (15) days after the date of the signing of the Contract by the Contractor and the City.

It is understood that this Bid is based upon completion of the Work within a period of Four Hundred and Eighty (480) calendar days, commencing on the date set forth in the written "Notice to Proceed" issued by the City to the Contractor.

The undersigned has examined the location of the proposed Work and is familiar with the Drawings and Project Manual as well as the local conditions at the place where the Work is to be done, and is familiar with the liquidated damages provision of the Supplementary Conditions.

# SUB-BIDDER FORM

FILED  
SEP 9 1986

In accordance with Sections 4101 and 4107, inclusive, of the Government Code of the State of California, as amended, the following information is submitted concerning sub-bidders:

NAME SUB-BIDDER	ADDRESS SHOP, MILL OR OFFICE	CLASS OF WORK	PORTION OF WORK TO BE DONE
US ELEVATOR	SF		ELEVATOR
AIRCO	SAC	DATE BID OPENED 9-9-86 EMPLOYEE INITIALS BP	MECHANICAL
<del>WALKER</del>		MARK ONE BOX FOR EACH ITEM ONLY	
A. BARRECA	COTATI	BID SECURITY	PILE DRIVING
AMERICAN DEMO	SAC	( ) NONE REQUIRED (X) PROPERLY SIGNED	DEMO
BAR STEEL	SAC	BID DEPOSIT TYPE	REBAR
CALZONA	LA	(X) BID BOND ( ) CALIF. BANK CASHIER'S CHECK ( ) CERTIFIED CHECK	GUNITE
CAPITAL CITY	SAC	( ) CASH ( ) CALIF. BANK MONEY ORDER	MASONRY
BURNETT	SAC	AFTER AWARD OF BID ( ) SECURITY RETURNED ( ) SECURITY ACCEPTED	MILLWORK
CORDOVA	SAC	EMPLOYEE INITIALS DATE	WINDOWALL & GLAZING
E-2	SAC		PAINTING
FINDLEY	SAC		D/W, PLASTER, FIREPROOF
VELA	SAC		STRUCT. & MISC. STEEL
G & I ERECTORS	NEWCASTLE		METAL DECKING
WALKER	SAC		ELECTRICAL
PARK	SAC		SHEET METAL

FILED

SEP 9 1986

PILE DRIVING SUBCONTRACTOR'S EXPERIENCE

By the  
Office of the City Clerk

ALLEN R. BARRECA HAS EXPERIENCE  
IN OVER 275 SIMILAR JOBS.

# SUB-BIDDER FORM

FILED

SEP 9 1986

In accordance with Sections 4101 and 4107, inclusive, of the Government Code of the State of California, as amended, the following information is submitted concerning sub-bidders:

NAME & SUB-BIDDER	ADDRESS SHOP, MILL OR OFFICE	CLASS OF WORK	PORTION OF WORK TO BE DONE
US ELEVATOR	SF		ELEVATOR
AIRCO		DATE BID OPENED 9-9-86	
<del>JANUARY</del>	SAC	EMPLOYEE INITIALS BP	MECHANICAL
		MARK ONE BOX FOR EACH ITEM ONLY	
A. BARRECA	COTATI	BID SECURITY	PILE DRIVING
AMERICAN DEMO	SAC	( ) NONE REQUIRED (X) PROPERLY SIGNED	DEMO
BAR STEEL	SAC	BID DEPOSIT TYPE	REBAR
		(X) BID BOND	
CALZONA	LA	( ) CALIF. BANK CASHIER'S CHECK ( ) CERTIFIED CHECK	GUNITE
		( ) CASH	
CAPITAL CITY	SAC	( ) CALIF. BANK MONEY ORDER	MASONRY
		AFTER AWARD OF BID	
BURNETT	SAC	( ) SECURITY RETURNED ( ) SECURITY ACCEPTED	MILLWORK
CORDOVA	SAC	EMPLOYEE INITIALS	WINDOWALL & GLAZING
		DATE	
E-2	SAC		PAINTING
FINDLEY	SAC		D/W, PLASTER, FIREPROOF
VELA	SAC		STRUCT. & MISC. STEEL
G & I ERECTORS	NEWCASTLE		METAL DECKING
WALKER	SAC		ELECTRICAL
PARK	SAC		SHEET METAL

SEP 9 1986

By the  
Office of the City Clerk

The undersigned has checked carefully all of the foregoing figures and understands that the City of Sacramento will not be responsible for any errors or omissions on the part of the undersigned in making up this Bid.

Enclosed is Bid security as required consisting of a Bidder's Bond or certified check for not less than 10% of the amount bid.

The undersigned agrees that all addenda received and acknowledged herein shall become a part of and be included in this Bid. This Bid includes the following addenda:

Add. # 1 Date 8-7-86

Add. # 2 Date 8-7-86

Add. # \_\_\_\_\_ Date \_\_\_\_\_

NOTE: State whether your concern is a corporation, a co-partnership, private individual, or individuals doing business under a firm name, or a joint venture.\*

Corporation

If the bidder is a corporation, the Bid must be executed in the name of the corporation and must be signed by a duly authorized officer of the corporation. If the bidder is a corporation, fill in the following sentence:

"This Corporation is organized and existing under and by virtue of the laws of the State of California."

If the bidder is a partnership, the Bid must be executed in the name of the partnership and one of the partners must subscribe his signature thereto as the authorized representative of the partnership.

\* If the bidder is a joint venture the bid must be executed by each member of the joint venture firm.

AMOUNT OF BID DEPOSIT ENCLOSED:

(\$ 10%) not less than 10% of amount bid.

\_\_\_\_\_  
CERTIFIED CHECK  
\_\_\_\_\_  
CASHIER'S CHECK  
\_\_\_\_\_  
Yes BID BOND

\_\_\_\_\_  
MONEY ORDER  
\_\_\_\_\_  
CASH



CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211/MA26

PROPOSAL - BID FORM  
Page 4

CONTRACTOR

GATEWAY PACIFIC CONSTRUCTION INC.

(Firm Name)

By

(Signature)

Title PRESIDENT

Address 8031 D Fruitridge Road

Sacramento CA 95820

Telephone No. 916-386-8071

Date Sept 9, 1986

Valid Contractor's License No. 453519 is held by  
the Bidder.

FILED

SEP 9 1986



By the  
Office of the City Clerk

**GATEWAY PACIFIC CONSTRUCTION, INC.**

RESUME

EVAN LUNDIN

Present      Gateway Pacific Construction, Inc.  
Project Superintendent

1982-      Olson Construction Company  
1985      Estimated on a \$13 million negotiated high-rise  
         office building in Denver

         General Superintendent for an \$8 million railroad  
         tunnel remodelling: Moffat Railroad Tunnel - demo  
         of existing portal structure over railroad tracks  
         while maintaining train traffic of 20 trains per  
         day.

         Roger Boras, Denver, Colorado

         On-Site Project Manager for a \$10 million salmon  
         fish hatchery

         Superintendent on a \$3½ million water pump station  
         construction of a 5 million gallon storage tank

         Superintendent for an \$800,000 sewage treatment plant

1978-      Martin K. Eby Construction  
1981      Field Engineer on a \$7 million coal handling water-  
         intake project

         Field layout for the Iaton Power Plant

         Assistant Superintendent for a \$3½ million waste  
         water treatment plant

         Superintendent for a \$300,000 remodelling project for  
         Boeing

         Superintendent for a \$500,000 chemical plant pond

         Superintendent for a \$3½ million railroad bridge for  
         the Sunflower Power Plant

         Superintendent for \$6 million construction of water  
         treatment process buildings for the Sunflower Power  
         Plant

         Superintendent for a \$7 million foundation contract  
         for the Power Plant

FILED

SEP 9 1986

RESUME  
EVAN LUNDIN - continued

By the  
Office of the City Clerk

- 1977      Lundin Bros. Construction  
Carpenter in all phases of multi-housing project
- 1977      Chenney Construction Company  
Superintendent in charge of a church addition.  
Remodelled and addition of 100 year old stone  
church.  
Reference: Don Connet, Manhattan, Kansas

Experience also in writing and administration of  
subcontracts, working closely with owners and  
engineers, particularly in connection with re-  
modelling and additions. Experience with sub-  
contractors in negotiating contracts and settling  
disputes and preparation of contracts.

Education:    B.S. Construction Science  
                 Kansas State University

**FILED**

SEP 9 1986

By the  
Office of the City Clerk



**GATEWAY PACIFIC CONSTRUCTION, INC.**

RESUME  
GEORGE C. CHILDS

1984-Present	President Gateway Pacific Construction, Inc. Sacramento, California
6/83-12/83	Area Manager Williams & Burrows Tustin, California
1978-6/83	Vice President & General Manager Olson Construction Company Denver, Colorado
1975-1978	Operations Manager Olson Construction Company Menlo Park, California  Responsible for construction of all projects done by this Division. Reported to the Vice President & General Manager of the Menlo Park office
1972-1975	President G.C. Childs Construction Company Olympia Washington  Self-employed building bridges in the mountains of Oregon and Washington
1969-1972	Superintendent Hoffman Construction Company Portland, Oregon  Completed buildings in Portland and Olympia, Washington. This includes the construction of the science building for Portland State Univer- sity and the entire university campus for Evergreen State College in Olympia, Washington
1964-1969	Engineer, Superintendent & Project Manager Hensel-Phelps Construction Co. Greeley, Colorado  Estimating, engineering and supervision of various building projects. Full responsibility for projects in Colorado Springs, Colorado; Boulder, Colorado; Manhattan, Kansas; and Northern California

RESUME  
GEORGE C. CHILDS - continued

FILED

SEP 9 1985

By the  
Office of the City Clerk

1961-1963

Estimator, Project Engineer  
Guy F. Atkinson Company  
South San Francisco, California

Assistant Estimator on various heavy projects,  
engineer and labor foreman on cement plant in  
Riverside, and project engineer on yacht harbor  
in Long Beach, California

1959-1961

Officer, U.S. Army

Platoon Leader and Company Commander, Combat  
Engineer Unit. Instructor, U.S. Army Engineer  
School

Education

B.S. Civil Engineering  
Oregon State University

References:

Architects

Howard Bachen	(415) 398-7270
Bob Arrigoni	(415) 398-7270
David Klages	(714) 641-0191

Engineers

Rick Chin	(415) 937-9010
Bob Lawson	(714) 494-0776

Owners

Barry Loud	(714) 476-2766
Norm Steinman	(314) 878-1660
Jim Pavishaw	(303) 468-4103

Special  
Shoring  
Project

History Corner - Stanford University  
Architect: Stone, Maracini & Patterson

WORKER'S COMPENSATION INSURANCE CERTIFICATION

TO THE CITY OF SACRAMENTO:

The undersigned does hereby certify that he is aware of the provisions of Section 3700 et seq. of the Labor Code which requires every employer to be insured against liability for worker's compensation claims or to undertake self-insurance in accordance with the provisions of said Code, and that he will comply with such provisions before commencing the performance of the work on this contract.

Gateway Pacific Construction, Inc.

Bidder

By 

George C. Childs

Title President

Address 8031 D Fruitridge Road

Sacramento, CA 95820

Date 6 OCTOBER 1986

PLEASE READ CAREFULLY BEFORE SIGNING

To be signed by authorized corporate officer or partner or individual submitting the bid. If bidder is: (example)

1. An individual using a firm name, sign: "John Doe, an individual doing business as Blank Company."
2. An individual doing business under his own name, Sign: your name only.
3. A co-partnership, sign: "John Doe and Richard Doe, co-partners doing business as Blank Company, by, John Doe, co-partner."
4. A corporation, sign: "Blank Company, by John Doe, Secretary." (or other title)

KNOW ALL MEN BY THESE PRESENTS: That WHEREAS, the City of Sacramento, State of California, has conditionally awarded to (here insert full name and address or legal title of Contractor)

Gateway Pacific Construction, Inc.

8031 D Fruitridge Road, Sacramento, CA 95820

hereinafter called Contractor, a Contract for the construction of

CROCKER ART MUSEUM PAVILION AND CROCKER-HASTINGS HOUSE RESTORATION  
216 "O" Street  
Sacramento, CA 95814 cc: 2211/MA26

In accordance with Drawings and Project Manual prepared therefor, which contract is by reference made a part hereof, and is hereinafter referred to as the Contract, and WHEREAS said Contractor is required under the terms of said contract to furnish a bond in connection with said Contract, providing that if said Contractor, or any of his subcontractors, shall fail to pay for any materials, provisions, provender or other supplies, or equipment used, upon, for or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Act with respect to such work or Division 3, of the Civil Code; or for any amounts required to be deducted, withheld, and paid over to the Franchise Tax Board from the wages of employees of the Contractor and his subcontractors pursuant to Section 18806 of the Revenue and Taxation Code with respect to such work and labor, then the Surety on this Bond will pay for the same in an amount not exceeding the sum specified in this Bond, and also, in case suit is brought upon the Bond, a reasonable attorney's fee to be fixed by the court.

NOW, THEREFORE, we the Contractor and (here insert full name and address or legal title of Surety)

Seaboard Surety Company

333 Market St., San Francisco, Ca. 94105

as Surety, hereinafter called Surety, are held and firmly bound unto the City of Sacramento, State of California, (hereinafter called the City) as obligee, in the sum of

Base Bid + Alternates #1 through #3 =

Three million three hundred seventy-six thousand nine hundred thirty five-DOLLARS

(\$ 3,376,935.00 ), lawful money of the United States for the payment of which sum, well and truly to be made, we the Contractor and Surety bind ourselves, jointly and severally, firmly by these presents.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if said Contractor, his heirs, executors, administrators, successors and assigns,

PAYMENT BOND

Page 2

or his subcontractors, shall fail to pay for any materials, provisions, supplies, or equipment used in, upon, for or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Act with respect to such work or labor, then the Surety on this Bond will pay for the same, in an amount not exceeding the sum specified in this Bond, and also, in case suit is brought upon the Bond, a reasonable attorney's fee to be fixed by the court.

This Bond shall inure to the benefit of any and all persons, companies, corporations, political subdivisions and State agencies, entitled to file claims under the provisions of Section 3181 of the Civil Code of the State of California, as now in effect and as the same may be amended or superceded from time to time, so as to give a right of action to them, or their assigns, if any suit is brought upon this Bond. And the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder or the specifications accompanying the same shall in any wise affect its obligations of this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work.

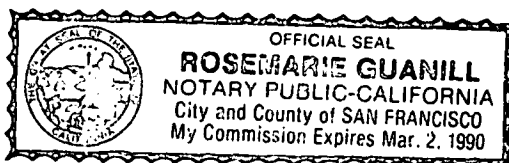
IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals this 2<sup>nd</sup> day of OCTOBER, 1986, the name and corporate seal of each corporate surety party being affixed hereto and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

SIGNED AND SEALED THIS 2<sup>nd</sup> day of OCTOBER, 1986.

Gateway Pacific Construction, Inc.  
(Principal) (Seal)

State of California, )  
County of San Francisco ) SS.

On this 2nd day of October, in the year 1986, before me, a Notary Public personally appeared Sheila O'Connor known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to this instrument as the Attorney-In-Fact of Seaboard Surety Company, and acknowledge to me that he (she) subscribed the name of Seaboard Surety Company thereto as Surety, and his (her) own name as Attorney In Fact.



*Rosemarie Guanill*  
Notary Public



PERFORMANCE BOND

Page 1

KNOW ALL MEN BY THESE PRESENTS: That, WHEREAS, the City of Sacramento, State of California, has conditionally awarded to (here insert full name and address or legal title of Contractor)

Gateway Pacific Construction, Inc.

8031 D Fruitridge Road, Sacramento, CA 95820

as Principal, hereinafter called Contractor, a Contract for Construction of CROCKER ART MUSEUM PAVILION AND CROCKER-HASTINGS HOUSE RESTORATION  
216 "O" Street  
Sacramento, CA 95814 cc: 2211/MA26

in accordance with Drawings and Project Manual prepared therefor, which contract is by reference made a part hereof, and is hereinafter referred to as the Contract, and WHEREAS, said Contractor is required under the terms of said Contract to furnish a bond for the faithful performance of said Contract.

NOW, THEREFORE, we the Contractor and (here insert full name and address or legal title of Surety)

Seaboard Surety Company

333 Market Street, San Francisco, Ca. 94105

as Surety, hereinafter called Surety, are held and firmly bound unto the City of Sacramento, State of California (hereinafter called the City) as obligee, in the penal sum of Base Bid + Alternates #1 through #3 =

Three million three hundred seventy-six thousand nine hundred thirty five DOLLARS

(\$3,376,935.00), lawful money of the United States, for the payment of which sum well and truly to be made, we the Contractor and Surety bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if the above-bounden Contractor, his heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions and agreements in the said Contract, including the provisions for liquidated damages in the said Contract, any changes, additions or alterations thereof made as therein provided, on his or their part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meanings, and shall indemnify and save harmless the City, its officers and agents, as therein stipulated, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

PERFORMANCE BOND

Page 2

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

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals this 2<sup>nd</sup> day of OCTOBER, 1986, the name and corporate seal of each corporate party being affixed hereto and these presents duly signed by its undersigned representatives, pursuant to authority of its governing body.

SIGNED AND SEALED this 2<sup>nd</sup> day of OCTOBER, 1986.

Andrew

Witness

Gateway Pacific Construction, Inc.  
(Principal) (Seal)

By [Signature]

George C. Childs

Title President

Seaboard Surety Company

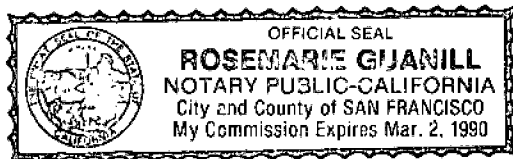
(Surety)

State of California,

County of San Francisco

SS.

On this 2nd day of October, in the year 1986, before me, a Notary Public personally appeared Sheila O'Connor known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to this instrument as the Attorney-In-Fact of Seaboard Surety Company, and acknowledge to me that he (she) subscribed the name of Seaboard Surety Company thereto as Surety, and his (her) own name as Attorney In Fact.



[Signature]

Notary Public

SUBSTITUTION OF SECURITIES FOR MONEY WITHHELD

At any time prior to final payment, Contractor may request substitution of securities for any money withheld by the City to ensure performance of the contract. At the expense of Contractor, securities equivalent to the money withheld may be deposited with the City or with a bank as escrow agent according to a separate Security Agreement. Securities eligible for substitution shall include those listed in Section 16430 of the Government Code or bank or savings and loan certificates of deposit. A fee set by the City Council shall be charged for such substitution.

expiration of said ten (10) calendar days cease and terminate. In the event of any such termination, City shall immediately serve notice thereof upon the Surety and Contractor; and the Surety shall have the right to take over and perform the Contract, provided, however, that if the Surety does not commence performance thereof within thirty (30) days from the date of the mailing to such Surety of notice of termination, City may take over the work and prosecute the same to completion by Contract, or otherwise, for the account and at the expense of Contractor, and his Surety shall be liable to City for any excess cost occasioned City thereby, as hereinafter set forth.

In the event City completes the work, or causes the work to be completed, as aforesaid, no payment of any sum shall be made to Contractor until the work is complete. The cost of completing the work, including but not limited to, extra contract costs, the costs of City forces, extra costs of administration and management incurred by City, either direct or indirect, shall be deducted from any sum then due, or which becomes due, to Contractor from City. If no sum sufficient to pay the difference between sums due to Contractor from City and the cost of completing the work, Contractor and the Surety shall pay City a sum equal to said difference on demand. In the event City completes the work, and there is a sum remaining due to Contractor after City deducts the aforementioned costs of completing the work, then City shall thereupon pay such sum to contractor and his Surety.

No act by City before the work is finally accepted including, but not limited to, exercise of other rights under the Contract, actions at law or in equity, extensions of time, payments, claims of liquidated damages, occupation or acceptance of any part of the work, waiver of any prior breach of the Contract or failure to take action pursuant to this section upon the happening of any prior default or breach by Contractor shall be construed to be a waiver by, or to estop, City from acting pursuant to this paragraph upon any subsequent event, occurrence of failure by Contractor to fulfill the terms and conditions of the Contract. The rights of City pursuant to this paragraph are cumulative and in addition to all other rights of City pursuant to this Agreement and at law or in equity.

IN WITNESS WHEREOF, the parties hereto have signed this Agreement on the date set forth opposite their names.

DATE: 6 OCTOBER, 1986

CONTRACTOR Gateway Pacific Construction, Inc.

By [Signature]  
George C. Childs  
President  
Title

DATE: \_\_\_\_\_

CITY OF SACRAMENTO,  
a municipal corporation

By [Signature]  
City Manager

ATTEST:

[Signature]  
City Clerk  
ORIGINAL APPROVED AS TO FORM  
[Signature]  
City Attorney

4677,873  
FUNDING AVAILABLE! - 8-500-MA26-4820

[Signature]  
Accounting Officer

### 30. CHANGES IN THE WORK

Changes in the work made pursuant to changes issued in accordance with the Standard Specifications and extensions of time of completion made necessary by reason thereof (beyond the Completion Date) shall not in any way release any guarantee given by Contractor pursuant to the provisions of the Contract Documents, or the Contract let hereunder, nor shall such changes in the work relieve or release the sureties on bonds executed pursuant to the said provisions. By executing such bonds, the sureties shall be deemed to have expressly agreed to any such change in the work and to any extension of time made by reason thereof.

### 31. TERMINATION AFTER COMPLETION DATE

In addition to any rights it may have, City may terminate this Contract at any time after the Completion Date as adjusted by any extensions of time for excusable delays that may have been granted. Upon such termination Contractor shall not be entitled to receive any compensation for services rendered by him before or after such termination, and he shall be liable to City for liquidated damages for all periods of time beyond such termination date until the work is completed.

### 32. CONTRACTOR BANKRUPT

If Contractor should commence any proceeding under the Bankruptcy Act, or if contractor be adjudged a bankrupt, or if Contractor should make any assignment for the benefit of creditors, or if a receiver should be appointed on account of Contractor's insolvency, then the City Council may, without prejudice to any other right or remedy, terminate the Contract and complete the work by giving notice to Contractor and his surety according to the provisions of Section 33. Contractor's Surety shall have the right to complete the work by commencing within thirty (30) days as specified in Section 33; and, in the event Contractor's Surety fails to commence work within thirty (30) days as specified in Section 33, City shall have the right to complete, or cause completion of the work, all as specified in Section 33.

### 33. TERMINATION FOR BREACH OF CONTRACT

If Contractor should abandon the work under this Contract, or if the Contract or any portion of the Contract should be sublet or assigned without the consent of the City Council, or if the City Engineer should be of the opinion that the conditions of the Contract in respect to the rate of progress of the work are not being fulfilled or any part thereof is unnecessarily delayed, or if Contractor should willfully violate or breach, or fail to execute in good faith, any of the terms or conditions of the Contract, or if Contractor should persistently refuse or fail to supply enough properly skilled labor or materials, or fail to make prompt payment to subcontractors for material or labor, or persistently disregard laws, ordinances or proper instruction or orders of the Engineer, then, notwithstanding any provision to the contrary herein, the City Council may give Contractor and his Surety written notification to immediately correct the situation or the Contract shall be terminated.

In the event that such notice is given, and, in the event such situation is not corrected, or satisfactory arrangement for correction is not made, within ten (10) calendar days from the date of such notice, the Contract shall upon the

26. CONTRACTOR TO SERVE NOTICE OF DELAYS

Whenever Contractor foresees any delay in the prosecution of the work, and in any event immediately upon the occurrence of any delay which Contractor regards as an excusable delay, he shall notify the City Engineer in writing of the probability of such delay and its cause, in order that the City Engineer may take immediate steps to prevent if possible the occurrence or continuance of the delay, or if this cannot be done, may determine whether the delay is to be considered excusable, how long it continues, and to what extent the prosecution and completion of the work are delayed thereby. Said notice shall constitute an application for an extension of time only if the notice requests such an extension and sets forth Contractor's estimate of the additional time required together with a full description of the cause of the delay relied upon.

After the completion of any part or whole of the work, the City Engineer, in estimating the amount due Contractor, will assume that any and all delays which may have occurred in its prosecution and completion have been avoidable delays, except such delays as shall have been called to the attention of the City Engineer at the time of their occurrence and found by him to have been excusable. Contractor shall make no claim that any delay not called to the attention of the City Engineer at the time of its occurrence has been an excusable delay.

27. EXTENSION OF TIME

Should any delays occur which the City Council may consider excusable, as herein defined, Contractor shall, pursuant to his application, be allowed an extension of time beyond the time herein set forth proportional to said delay or delays in which to complete this Contract; and, during an extension which may have been granted because of an excusable delay or delays, City shall not charge liquidated damages against Contractor for such delay. Only the City Council may grant an extension of time on the Contract.

28. EXTENSION OF TIME DOES NOT WAIVE CITY'S RIGHTS

The granting of any extension of time on account of delays which in the judgment of the City Council are excusable delays shall in no way operate as a waiver on the part of City of its rights under this Contract excepting only the extension of the Completion Date.

29. NO PAYMENT FOR DELAYS

No damages or compensation of any kind shall be paid to Contractor or any subcontractor because of delays in the progress of the work whether such delays qualify for extension of time under this Agreement or not.

Contractor waives all claims against City, its officials and employees, for any loss or damage sustained by reason of delays beyond the Completion Date arising out of modifications of this Agreement, including modifications deemed necessary or desirable by City for the correction of errors or omissions in this Agreement, Plans or Specifications, it being expressly understood and agreed that no damages or compensation of any kind shall be paid to Contractor because of such delays.

## 24. EXTENSIONS OF TIME

In the event City deems it necessary, in its sole discretion, to extend the time of completion of the work to be done under this Contract beyond the required Completion Date herein specified, such extensions shall in no way release any guarantee given by contractor pursuant to the provisions of the Contract Documents, nor shall such extension of time relieve or release the sureties on the bonds executed pursuant to said provisions. By executing such bonds, the sureties shall be deemed to have expressly agreed to any such extension of time. The amount of time allowed in any extension of time shall be limited to the period of excusable delay as defined herein giving rise to the same as determined by City Council of City.

## 25. EXCUSABLE DELAYS

For the purpose of these Contract Documents, the term "Excusable Delays" shall mean, and is limited to, delays caused directly by acts of God; acts of the public enemy; fires, riots, insurrections; epidemics; quarantine restrictions; strikes; lockouts; sitdowns; acts of a governmental agency; priorities or privileges established for the manufacture, assembly, or allotment of materials necessary in the work by order, decree or otherwise of the United States or by any department, bureau, commission, committee, agent, or administrator of any legally constituted public authority; changes in the work ordered by City insofar as they necessarily require additional time in which to complete the work; the prevention by City of Contractor from commencing or prosecuting the work because of the acts of others, excepting Contractor's subcontractors; or the prevention of Contractor from commencing or prosecuting the work because of a city-wide failure of public utility service.

Inclement weather shall not be a reason for granting an extension of time. City may, however, grant an extension of time for unavoidable delay as a result of extraordinary inclement weather which shall then be classified Excusable Delay.

The term "Excusable Delay" shall specifically not include: (i) any delay which could have been avoided by the exercise of care, prudence, foresight and diligence on the part of Contractor (ii) any delay in the prosecution of parts of the work, which may in itself be unavoidable but which does not necessarily prevent or delay the prosecution of other parts of the work, nor the completion of the whole work within the time specified; (iii) any reasonable delay resulting from time required by City for review of plans and submittals required of Contractor and for the making of surveys, measurements and inspections; (iv) any delay arising from an interruption in the prosecution of the work on account of the reasonable interference from other Contractors employed by City, which does not necessarily prevent the completion of the work within the time specified; and, (v) any delay resulting from ordinary inclement weather. Excusable Delays, if any, shall operate only to extend the Completion Date (not in excess of the period of such delay as determined by City) but shall not under any circumstances increase the sum City is to pay Contractor as provided in these Contract Documents.

(B) Comprehensive Auto and General Liability Insurance

Contractor must provide sufficient broad coverage to include

Comprehensive Auto and General Liability Insurance  
Products and Completed Operation Liability  
Broad Form Property Damage Liability  
Contractual Liability  
Personal Injury Liability

The amount of the policy shall be no less than \$1,000,000 Single Limit per occurrence, issued by an admitted insurer or insurers as defined by the California Insurance Code, providing that the City of Sacramento, its officers, employees and agents are to be Named Insured under the policy, and the policy shall stipulate that this insurance will operate as Primary insurance and that no other insurance effected by City or other Named Insured will be called on to contribute to a loss covered thereunder.

(C) Certificate of Insurance

Contractor shall have City's standard Certificate of Insurance completed and filed with the Division of Risk Management within fifteen (15) days of the execution of this Agreement. Said policies shall provide that no cancellation, major change in coverage, or expiration may be effected by the insurance company or the insured during the term of this Agreement, without first giving to City thirty (30) days written notice prior to the effective date of such cancellation or change in coverage.

(D) Worker's Compensation Certificate

Contractor shall sign and file with the Division of Risk Management of the City of Sacramento the following certification prior to commencing performance of the work of the Contract:

"I am aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for worker's compensation or to undertake self-insurance in accordance with the provisions of the Code, and I will comply with such provisions before commencing the performance of the work of this Contract."

23. FAILURE TO MAINTAIN INSURANCE

If, at any time during the performance of this Contract, Contractor fails to maintain any item of the required insurance in full force and effect, Contractor shall immediately discontinue all work under the Contract and City will withhold all Contract payments due or that become due until notice is received by City that such insurance has been restored in full force and effect and that the premiums therefor have been paid for a period satisfactory to the Division of Risk Management.

Any failure to maintain any item of the required insurance will be sufficient cause for termination of the Contract.



such liabilities of Contractor, Contractor and his sureties shall continue to remain liable to City until all such liabilities are satisfied in full. No failure by City to withhold any payment as hereinbefore specified shall in any manner be construed to constitute a waiver of any right to liquidated damages or any right to any such sum.

19. INDEMNITY AND HOLD HARMLESS

Contractor shall assume the defense of, and indemnify and save harmless, the City, its officers, employees, and agents, and each and every one of them, from and against all actions, damages, claims, losses or expenses of every type and description to which they may be subjected or put, by reason of, or resulting from, the performance of the work, provided that such action, damage, claim, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to, or destruction of property, whether upon or off the work, including the loss of use thereof, and is caused in whole or in part by any negligent act or omission of the Contractor, and subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, whether or not it is caused in part by a party indemnified hereunder.

20. CONTRACTOR SHALL ASSUME RISKS

Until the completion and final acceptance by City of all work under this Contract, the work shall be under Contractor's responsible care and charge. Contractor shall rebuild, repair, restore and make good all injuries, damages, reerections, and repairs occasioned or rendered necessary by accidental causes of any nature, to all or any portions of the work, except as otherwise stipulated.

21. GENERAL LIABILITY OF CONTRACTOR

Except as otherwise herein expressly stipulated, Contractor shall do all the work and furnish all the labor, materials, tools, power and light, and appliances, necessary or proper for performing and completing the work herein required in the manner within the time herein specified. The mention of any specific duty or liability of Contractor shall not be construed as limitation or restriction of any general liability or duty of Contractor and, any reference to any specific duty or liability shall be construed to be for the purpose of explanation.

22. INSURANCE

During the term of this Agreement and until final completion and acceptance of the work required by the Contract Documents, Contractor shall maintain in full force and effect at his own cost and expense the following insurance coverage:

(A) Worker's Compensation

Full Worker's Compensation Insurance and Employer's Liability policy or provide evidence of ability to undertake self-insurance. Limits of coverage shall be at least \$1,000,000 for any one person. In the event Contractor is self-insured, he shall furnish a Certificate of Permission to Self-Insure by the Department of Industrial Relations Administration of Self-Insurance, Sacramento.

In the event that Contractor shall fail to comply with the conditions of the foregoing guarantee within ten (10) days time, after being notified of the defect in writing, City shall have the right, but shall not be obligated to repair, or obtain the repair of, the defect and Contractor shall pay to City on demand all costs and expense of such repair. Notwithstanding anything herein to the contrary, in the event that any defect in workmanship or material covered by the foregoing guarantee results in a condition which constitutes an immediate hazard to the health or safety, or any property interest, or any person, City shall have the right to immediately repair, or cause to be repaired, such defect, and Contractor shall pay to City on demand all costs and expense of such repair. The foregoing statement relating to hazards to health, safety or property shall be deemed to include either temporary or permanent repairs which may be required as determined in the sole discretion and judgment of City.

16. DETERMINATION OF DAMAGES

The actual fact of the occurrence of damages and the actual amount of the damages which City would suffer if the work were not completed within the specified times set forth are dependent upon many circumstances and conditions which could prevail in various combinations, and, from the nature of the case, it is impracticable and extremely difficult to fix the actual damages. Damages which City would suffer in the event of delay include loss of the use of the project, and, in addition, expenses of prolonged employment of an architectural and engineering staff; costs of administration, inspection, and supervision; and the loss suffered by the public within the City of Sacramento by reasons of the delay in the completion of the project to serve the public at the earliest possible time. Accordingly, the parties hereto agree, and by execution of this Agreement Contractor acknowledges that he understands, has ascertained and agrees, that the amounts set forth herein as liquidated damages shall be presumed to be the amount of damages sustained by the failure of contractor to complete the entire work within the times specified.

17. LIQUIDATED DAMAGES

The amount of the liquidated damages to be paid by Contractor to City for failure to complete the entire work by the Completion Date (as extended, if applicable) will be three hundred dollars-----  
(\$ 300.00 ) for each calendar day, continuing to the time at which the work is completed. Such amount is the actual cash value agreed upon as the loss to City resulting from Contractor's default.

18. PAYMENT OF DAMAGES

In the event Contractor shall become liable for liquidated damages, City, in addition to all other remedies provided by law, shall have the right to withhold any and all payments which would otherwise be or become due Contractor until the liability of Contractor under this section is finally determined. City shall have the right to use and apply such payments, in whole or in part, to reimburse City for all liquidated damages due or to become due to City. Any remaining balance of such payments shall be paid to Contractor only after discharge in full of all liability incurred by Contractor under this section or otherwise. If the sum so retained by City is not sufficient to discharge all

Failure or neglect on the part of City or any of its authorized agents to condemn or reject bad or inferior work or materials shall not be construed to imply an acceptance of such work or materials if such becomes evident at any time prior to final acceptance of the entire work or all materials, nor shall such failure be construed as barring City at any subsequent time from recovering damages or of such a sum of money as may be required to build anew all portions of the work in which fraud was practiced or improper materials used whenever City may discover the same.

## 12. RELEASE

If requested to do so by City, at the time of final payment, as a condition precedent to final payment, Contractor and each assignee under any assignment in effect at the time of final payment shall execute and deliver a release in form and substance satisfactory to and containing such exemptions as may be found appropriate by City which shall discharge City, its officers, agents and employees of and from all liability, obligations and claims arising under this contract.

## 13. CITY'S RIGHT TO TAKE POSSESSION OF THE WORK IN WHOLE OR IN PART

The City of Sacramento shall have the right at any time to enter upon the work and perform work not covered by this Contract, or to occupy and use a portion of the work, prior to the date of the final acceptance of the work as a whole, without in any way relieving Contractor of any obligations under this Contract.

Such use or occupation of the work shall not be construed as an acceptance of any portion of the work under this Contract.

## 14. NO WAIVER OF REMEDIES

Neither the inspection by City or its agents, nor any order or certificate for the payment of money, nor any payment for, nor acceptance of the whole or any part of the work by City, nor any extensions of time, nor any position taken by City or its agents shall operate as a waiver of any provision of this Agreement or of any power herein reserved to City or any right to damages herein provided, nor shall any waiver of any breach of this Agreement be held to be a waiver of any other or subsequent breach. All remedies provided in this Agreement shall be taken and construed as cumulative; that is, in addition to each and every other remedy herein provided, and City shall have any and all equitable and legal remedies which it would in any case have.

## 15. GUARANTEE

Except as otherwise expressly provided in the Specifications, and excepting only items of routine maintenance, ordinary wear and tear and unusual abuse or neglect, Contractor guarantees all work executed by him and all supplies, materials and devices of whatsoever nature incorporated in, or attached to the work, or otherwise delivered to City as a part of the work pursuant to the Contract, to be absolutely free of all defects of workmanship and materials for a period of one year after final acceptance of the entire work by the City of Sacramento. Contractor shall repair or replace any or all such work or material, together with all or any other work or material which may be displaced or damaged in so doing, that may prove defective in workmanship or material within said one year guarantee period without expense or charge of any nature whatsoever to City.

7. RETENTION OF SUMS CHARGED AGAINST CONTRACTOR

When, under the provisions of this contract, City shall charge any sum of money against Contractor, City shall deduct and retain the amount of such charge from the amount of the next succeeding progress estimate, or from any other moneys due or that may become due Contractor from City. If, on completion or termination of the Contract, sums due Contractor are insufficient to pay City's charges against him, City shall have the right to recover the balance from Contractor or his sureties.

8. COMMENCEMENT AND PROSECUTION OF WORK

Contractor shall commence the work on or before ten (10) calendar days from and after receipt of written Notice to Proceed from City to Contractor and will diligently prosecute the work to final completion. The phrase "commence the work" means to engage in a continuous program on-site including, but not limited to, site clearance, grading, dredging, land filling and the fabrication, erection, or installation of the work. Said Notice to Proceed shall be issued following execution of the Agreement and the filing by Contractor of the required bonds and proof of insurance. The continuous prosecution of work by Contractor shall be subject only to Excusable Delays as defined in this Agreement.

9. TIME OF COMPLETION

The entire work shall be brought to completion in the manner provided for in the Contract Documents on or before four hundred eighty, (480) calendar days (hereinafter called the "Completion Date") from and after the receipt by Contractor of the Notice to Proceed unless extensions of time are granted in accordance with the Contract Documents.

Failure to complete the work by the Completion Date and in the manner provided for by the Contract Documents shall subject Contractor to liquidated damages as hereinafter provided in this Agreement. Time is and shall be of the essence in these Contract Documents.

10. PAYMENTS DO NOT IMPLY ACCEPTANCE OF WORK

The payment of any progress payment, or the acceptance thereof by Contractor shall not constitute acceptance of the work or any portion thereof and shall in no way reduce the liability of Contractor to replace unsatisfactory work or material, though the unsatisfactory character of such work or material may not have been apparent or detected at the time such payment was made.

11. ACCEPTANCE NOT RELEASE

Contractor shall correct immediately any unfaithful or imperfect work which may be discovered before final acceptance of the entire work. Any unsatisfactory materials shall be rejected, notwithstanding that they may have been overlooked by the proper inspector. The inspection of the work, or any part thereof, shall not relieve Contractor of any of his obligations to perform satisfactory work as herein prescribed.

#### 4. SCOPE OF CONTRACT

Contractor agrees to furnish all tools, equipment, apparatus, facilities, labor and material and transportation necessary to perform and complete in a good and workmanlike manner to the satisfaction of City, all the work called for, and in the manner designated in, and in strict conformity with the Contract Documents entitled:

CROCKER ART MUSEUM PAVILION AND CROCKER-HASTINGS HOUSE RESTORATION

216 "O" Street, Sacramento, CA 95814 cc: 2211/MA26

including the following alternative bid items described in the Proposal Form:

CROCKER ART MUSEUM PAVILION AND CROCKER-HASTINGS HOUSE RESTORATION

#### 5. CONTRACT AMOUNT AND PAYMENTS

City agrees to pay, and Contractor agrees to accept, in full payment for the above work, the sum of Base Bid + Alternates #1 through #3 =

Three million three hundred seventy-six thousand nine hundred thirty five-- DOLLARS

(\$ 3,376,935.00), which sum is to be paid according to the schedule and in the manner set forth herein and subject to additions, deductions and withholding as provided in the Contract Documents.

#### 6. PROGRESS AND FINAL PAYMENTS

Subject to the terms and conditions of the Contract, City shall cause payments to be made upon demand of Contractor as follows:

- (A) On the first of the month, Contractor shall present to the City Engineer a statement showing the amount of labor and materials incorporated in the work during the preceding month; the City Engineer shall inspect the statement and, if the City Engineer approves the statement, shall issue a certificate for ninety percent (90%) of the amount it shall find to be due.
- (B) No inaccuracy or error in said monthly estimates shall operate to release Contractor or Surety from damages arising from such work or from enforcement of each and every provision of the Contract Documents, and City shall have the right subsequently to correct any error made in any estimate for payment.
- (C) Contractor shall not be paid for any defective or improper work.
- (D) City shall pay the remaining ten percent (10%) of the value of the work done under this contract, if unencumbered, thirty-five (35) days after final completion and acceptance of work by City. Acceptance by Contractor of said final payment shall constitute a waiver of all claims against City arising under the Contract Document.

## AGREEMENT

THIS AGREEMENT, dated for identification as of October 2, 1986,  
between the CITY OF SACRAMENTO, a municipal corporation, (hereinafter called "City"),  
and Gateway Pacific Construction, Inc.

8031 D Fruitridge Road, Sacramento, CA 95820

(hereinafter called the "Contractor").

The parties hereto mutually agree to the terms and conditions set forth herein.

### 1. CONTRACT DOCUMENTS

Each of the items hereinafter referred to is incorporated herein by reference as if set forth in full in this contract.

Work called for in any one Contract Document and not mentioned in another is to be performed and executed as if mentioned in all Contract Documents. The table of contents, titles and headings contained herein and in said documents are solely to facilitate reference to various provisions of the Contract Documents and in no way affect or limit the interpretations of the provisions to which they refer.

The Contract Documents, sometimes also referred to as "the Contract", consist of the Notice to Contractors, the completed Proposal Form submitted by Contractor to whom the Contract is awarded, the Instructions to Bidders insofar as they relate to events which occur or actions to be taken after the submission of the Proposal, this Agreement, the Standard Specifications, the Special Provisions, Plans and Technical Specifications, the drawings and other data and all developments thereof prepared by City pursuant to the Contract, and any modifications of any of the foregoing in the form of Addenda or otherwise effected in accordance with the terms of the Contract.

The Standard Specifications shall mean and refer to the current Standard Specifications of the City of Sacramento which are incorporated herein by this reference as if set forth in full at this place.

### 2. DEFINITIONS

Unless otherwise specifically provided herein, all words and phrases defined in the Standard Specifications shall have the same meaning and intent in this Agreement.

### 3. AGREEMENT CONTROLS

In the event of a conflict between the terms and conditions as set forth in this Agreement and the terms and conditions set forth in other Contract Documents, the terms and Conditions set forth in this Agreement shall prevail.



Certified Copy

No. 1108

# SEABOARD SURETY COMPANY

ADMINISTRATIVE OFFICES, BEDMINSTER, NEW JERSEY

## POWER OF ATTORNEY

CC 9333

KNOW ALL MEN BY THESE PRESENTS: That SEABOARD SURETY COMPANY, a corporation of the State of New York, has made, constituted and appointed and by these presents does make, constitute and appoint W. R. Ames, Jr., or M. Albada or John R. Lanberson or Sheila O'Connor or Henry J. Trainor or Rich Wassall or Terry J. Mougan or Cynthia L. Lewis of San Francisco, California its true and lawful Attorney-in-Fact to make, execute and deliver on its behalf insurance policies, surety bonds, undertakings and other instruments of similar nature as follows: Without Limitations

Such insurance policies, surety bonds, undertakings and instruments for said purposes, when duly executed by the aforesaid Attorney-in-Fact, shall be binding upon the said Company as fully and to the same extent as if signed by the duly authorized officers of the Company and sealed with its corporate seal, and all the acts of said Attorney-in-Fact pursuant to the authority hereby given, are hereby ratified and confirmed.

This appointment is made pursuant to the following By-Laws which were duly adopted by the Board of Directors of the said Company on December 8th, 1927, with Amendments to and including January 15, 1982 and are still in full force and effect:

### ARTICLE VII, SECTION 1

"Policies, bonds, recognizances, stipulations, consents of surety, underwriting undertakings and instruments relating thereto, Insurance policies, bonds, recognizances, stipulations, consents of surety and underwriting undertakings of the Company, and releases, agreements and other writings relating in any way thereto or to any claim or loss thereunder, shall be signed in the name and on behalf of the Company

(a) by the Chairman of the Board, the President, a Vice-President or a Resident Vice-President and by the Secretary, an Assistant Secretary, a Resident Secretary or a Resident Assistant Secretary; or (b) by an Attorney-in-Fact for the Company appointed and authorized by the Chairman of the Board, the President or a Vice-President to make such signature; or (c) by such other officers or representatives as the Board may from time to time determine."

The seal of the Company shall if appropriate be affixed thereto by any such officer, Attorney-in-Fact or representative."

IN WITNESS WHEREOF, SEABOARD SURETY COMPANY has caused these presents to be signed by one of its Vice-Presidents, and its corporate seal to be hereunto affixed and duly attested by one of its Assistant Secretaries, this 25th day of April 1984



Attest:

(Seal)

*Patricia L. Lebbing*  
Assistant Secretary

SEABOARD SURETY COMPANY

By

*Michael B. Keen*  
Vice President

STATE OF NEW JERSEY

COUNTY OF SOMERSET

On this 25th day of

Thomas P. Corke

April 1984

1984

before me personally appeared a Vice-President of SEABOARD SURETY COMPANY, with whom I am personally acquainted, who, being by me duly sworn, said that he resides in the State of that he is a Vice-President of SEABOARD SURETY COMPANY, the corporation described in and which executed the foregoing instrument, that he knows the corporate seal of the said Company, that the seal affixed to said instrument is such corporate seal, that it was so affixed by order of the Board of Directors of said Company, and that he signed his name thereto as Vice-President of said Company by like authority.

PATRICIA L. LEBBING

A Notary Public of New Jersey

My Commission Expires May 25, 1987

(Seal)

Notary Public

### CERTIFICATE

I, the undersigned Assistant Secretary of SEABOARD SURETY COMPANY, do hereby certify that the original Power of Attorney of which the foregoing is a full, true and correct copy, is in full force and effect on the date of this Certificate and I do further certify that the Vice-President who executed the said Power of Attorney was one of the Officers authorized by the Board of Directors to appoint an attorney-in-fact as provided in Article VII, Section 1 of the By-Laws of SEABOARD SURETY COMPANY.

This Certificate may be signed and sealed by facsimile under and by authority of the following resolution of the Executive Committee of the Board of Directors of SEABOARD SURETY COMPANY at a meeting duly called and held on the 25th day of March 1970:

"RESOLVED: (2) That the use of a printed facsimile of the corporate seal of the Company and of the signature of an Assistant Secretary on any certification of the correctness of a copy of an instrument executed by the President or a Vice-President pursuant to Article VII, Section 1 of the By-Laws appointing and authorizing an attorney-in-fact to sign in the name and on behalf of the Company surety bonds, underwriting undertakings or other instruments described in said Article VII, Section 1, with like effect as if such seal and such signature had been manually affixed and made, hereby is authorized and approved."

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the corporate seal of the Company to these presents this 2nd day of October 1986



*Margaret Lee*  
Assistant Secretary

Form 957 (Rev. 7/84)





**CERTIFICATE OF INSURANCE**

This certifies to CITY OF SACRAMENTO

that the following described policies have been issued to:

Insured Gateway Pacific Construction, Inc.  
Address 8031 D Fruitridge Road, Sacramento, CA 95820

Location of operations insured Same as above

Description of work (show project name and/or number, if any)

Crocker Art Museum Pavilion/Hastings House Restoration. 2211/MA26

	POLICIES AND INSURERS	LIMITS		POLICY NUMBER	EXPIRATION DATE
		Bodily Injury	Property Damage		
#1	Western Employers (Insurer)	Employer's Liability \$ 2,000,000		WC150186 26288	1/1/87
#1	Comprehensive General Liability	Each Person	Each Occurrence	GL151285 35167	12/31/86
		Each Occurrence	Aggregate		
		500,000	Combined Single Limit		
#1	Comprehensive Auto Liability	Each Person	Each Accident	GL151285 35167	12/31/86
		Each Occurrence	Combined Single Limit		
		500,000			
#2	Progressive Casualty (Lombard Pacific)	\$500,000	\$500,000	FE 4681184	1/1/87

All policies are in effect at this time and will not be cancelled, limited, or allowed to expire without renewal until after 30 days written notice has been given to the certificate holder named on the top line.

The following coverages or conditions are in effect:

	Yes	No
Broad Form Property Damage	X	
Products and Completed Operations	X	
Contractual Liability	X	
Professional Liability		X
Errors & Omissions		X
Legal Liability (Fire)	X	
X, C, U Hazards Included	X	
Named Additional Insured <sup>(1)</sup>	X	
Insurance policy(ies) will be deemed Primary Insurance	X	

10/1/86

(Date)

San Francisco

(At)

Authorized Signature #1

Western Employers Insurance

Insurance Company

Progressive Casualty  
(Lombard Pacific Insurance Services, Inc.)  
(Insurance Company)

- (1) City of Sacramento, its officers, employees, and agents  
(2) Authorized signature may be the agent's if agent has placed insurance through an agency agreement with the insurer. If insurance is brokered, authorized signature must be that of official of insurer.

NOTE: Forward completed Certificate within 15 days of execution of this contract and prior to engaging in any activity set forth in this contract to:  
CITY OF SACRAMENTO, DEPARTMENT OF FINANCE:  
915 I STREET, ROOM 100, SACRAMENTO, CA 95814

1000-1000

# GUARANTEE

We hereby guarantee the

CROCKER ART MUSEUM PAVILION AND CROCKER-HASTINGS HOUSE RESTORATION

which we propose to install in the City of Sacramento for one (1) year in accordance with the guarantee required in the specifications. We agree to repair or replace any or all such work, together with all or any other work which may be displaced in so doing, that may be proven defective in workmanship or material within the period from the date of acceptance without expense whatsoever to the City, ordinary wear and tear and unusual abuse or neglect excepted.

In the event of our failure to comply with the above mentioned conditions within five (5) days time after being notified in writing, we collectively or separately, do hereby authorize the City to proceed to have the defects repaired and made good at our expense and will pay the costs and damages therefor immediately upon demand.

Signed:



George C. Childs, President

Gateway Pacific Construction, Inc.

8031 D Fruitridge Road, Sacramento, CA 95820

Dated:

6 OCTOBER, 1996

GENERAL CONDITIONS

Page 1

Except to the extent modified under the Supplementary Conditions, the General Conditions of these Specifications shall be Sections 1 through 8, inclusive, of the Standard Specifications of the City of Sacramento, adopted by the City Council of said City by Resolution No. 81-042, dated January 20, 1981.

The City Standard Specifications are subject to the provisions of Chapter 58 of the Sacramento City Code (ordinance No. 3129, Fourth Series), effective July 15, 1972 (enacted pursuant to Section 251 of the Sacramento City Charter). If there is any conflict between the City Standard Specifications as currently written and Chapter 58 of the Sacramento City Code, the latter shall govern.

The references contained in the City of Sacramento Standard Specifications and Supplemental Conditions to the City Engineer shall now refer to the Chief of Facility Development or designee.

FM 11/12/85

1.01 MODIFICATIONS TO GENERAL CONDITIONS

A. General

1. The General Conditions are modified as follows. Where any part of the General Conditions is modified or deleted, unaltered provisions shall remain in effect.
2. References to articles hereafter are those set forth in the Standard Specifications of the City of Sacramento, adopted by Resolution No. 81-042 dated January 20, 1981.

B. Modifications

1. Article 1-1 through 1-3, Amended:

Delete the abbreviation AASHTO and add the following abbreviations:

ACI	American Concrete Institute
AIA	American Insurance Association
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
APA	American Plywood Association
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing Materials
AWPA	American Wood Preservers Association
AWS	American Welding Society
CS	Commercial Standards (U.S. Department of Commerce)
DFPA	Douglas Fir Plywood Association
FS	Federal Specifications
NBFU	National Board of Fire Underwriters
NEC	National Electric Code
NFPA	National Fire Protection Association
RIS	Redwood Inspection Service
SPR	Simplified Practice Recommendations (Bureau of Standards, U.S. Dept. of Commerce)
UL	Underwriters Laboratories, Inc.
UBC	Uniform Building Code (1976 Edition) of the Pacific Coast Building Officials Conference
WCLIB	West Coast Lumber Inspection Bureau
WIC	Woodwork Institute of California

2. Article 1-9, "City Engineer's Estimate", Deleted:

Delete this article in its entirety.

3. Article 1-11, "Contract", Deleted:

Delete this article in its entirety and add the following:

## SUPPLEMENTARY CONDITIONS

Page 2

"Contract" shall mean the written Agreement covering the performance of the work, and the furnishing of labor, materials, tools and equipment in the construction of the work. The Contract Documents form the Contract, "Contract Documents" shall consist of the Drawings and all the items listed in the Table of Contents for the Project Manual, any Addenda to the Contract, and other modifications effected in accordance with the terms of the Contract.

4. Article 1-20, "Intention of Terms", Amended:

Delete the second paragraph of this article in its entirety.

5. Article 1-25, "Plans", Deleted:

Delete this article in its entirety and substitute the following:

"Drawings" shall mean working drawings or supplemental drawings, or reproduction thereof, approved by the Engineer which show the location, character, dimensions, and details of the work to be done, and which form part of the Contract.

6. Article 1-29, "Special Provisions", Deleted:

Delete this article in its entirety.

7. Article 1-30, "Specifications", Deleted:

Delete this article in its entirety and substitute the following:

"Specifications" shall mean the technical portion of the Project Manual consisting of the written description of the qualities of materials and/or methods of workmanship to be furnished under the Contract. The Specifications are organized into divisions, sections and articles to enable grouping of the various portions of the Work in a logical format, but this organization does not in any way restrict the Contractor in dividing the Work among Subcontractors, or in establishing the extent of Work to be performed by any trade.

8. Section 2, PROPOSAL REQUIREMENTS AND CONDITIONS; Pages 3, 4, and 5, Deleted:

Delete Pages 3 through 5 of the Standard Specifications. Refer to INSTRUCTIONS TO BIDDERS.

SUPPLEMENTARY CONDITIONS

Page 3

9. Article 3-3, COMPARISON OF BIDS, Deleted:

Delete this article in its entirety.

10. Article 3-8, FORM OF CONTRACT AND SURETY BONDS, Amended:

For the information of the bidder, enclosed in the "Contract Forms" of the Project Manual are sample forms of the contract and surety bonds to be required to be executed by the successful bidder. The terms and conditions of the contract agreement as set forth in said sample forms are incorporated into the General and Supplementary Conditions. In the event of a conflict between the terms and conditions as set forth in the sample forms and the terms and conditions set forth in the General and Supplementary Conditions or other related documents, the terms and conditions set forth in the sample forms shall prevail.

11. Pages 7, 8, 9, 10, 11, 12, 13 and 14, Deleted:

Delete Pages 7, 8, 9, 10, 11, 12, 13 and 14 of the Standard Specifications.

12. Article 4-1, INTENT OF PLANS, etc., Deleted:

Delete this article in its entirety.

13. Article 4-4, CHANGES AND INCREASED OR DECREASED QUANTITIES OF WORK, Deleted,

Delete this article in its entirety.

14. Article 4-7, PROCEDURE AND PROTEST, Deleted:

Delete this article in its entirety and substitute the following:

"A change by the Engineer may be issued to the contractor at any time. Should the contractor disagree with any terms or conditions set forth in a change, he shall submit a written protest to the Engineer within fifteen (15) days after the receipt of such change. The protest shall state the points of the disagreement, and if possible, references to the Project Manual, Drawings, Supplemental Drawings and costs involved. If a written protest is not submitted within the time specified above, payment shall be set forth in the change and such payment shall constitute full compensation for all work included therein or required thereby.

## SUPPLEMENTARY CONDITIONS

Page 4

Where a protest concerning a change relates to compensation, the compensation payable for all work specified or required by said change to which such protest relates shall be determined as provided in paragraph 4-2 to 4-8 exclusive of paragraph 4-4. The contractor shall keep full and complete record of the cost of such work and shall permit the Engineer to have access thereto as may be necessary to assist in the determination of the compensation for such work.

Where the protest concerning a change relates to adjustment of contract time for the completion of the work, the time to be allowed therefor will be determined as provided in paragraph H 5 "Extensions of time" under "Additions to General Conditions", hereinafter.

15. Article 4-8, CHANGES IN CHARACTER OF THE WORK, Deleted:

Delete this article in its entirety and substitute the following:

If an ordered change in the Drawings or supplemental drawings materially changes the character of the work of the Contract from that on which the contractor based his bid, an adjustment in compensation therefore shall be made in accordance with the following:

The basis of such an adjustment in compensation shall be the difference between the actual cost to perform the work or portion of the work involved in the change as originally planned and the actual cost of performing the work or portion of the work involved in the change, as changed. The Engineer shall determine the actual cost in the same manner as if the work were to be paid for on a cost and percentage basis as provided in paragraph H - part 4 in the "Additions to the General Conditions" below, or such adjustments shall be agreed to by the Contractor and the Engineer. Any such adjustment shall apply only to the portion of the work of said item actually changed in character. At the option of the Engineer, the work involved in said change shall be paid for by cost and percentage as provided in paragraph 8-16. Failure of the Engineer to recognize a change in character of the work at the time the change is issued shall in no way be construed as relieving the Contractor of his duty and responsibility of filing a written protest within fifteen (15) days as provided in paragraph 4-7, "Procedure and Protest".

16. Article 4-9, NOTICE OF CLAIMS FOR EXTRA WORK, Amended:

Delete the following:

Delete any and all reference to Section 4-4 (Changes and Increased or Decreased Quantities of Work") and to Paragraph 17 of the Agreement.



SUPPLEMENTARY CONDITIONS

Page 5

17. Article 4-11 DETOURS, Deleted:

Delete this article in its entirety.

18. Add the Following:

The organization of the Technical Specifications of the Project Manual into divisions, sections and articles, and the arrangement of Drawings shall not control the Contractor in dividing the work among Subcontractors, or in establishing the extent of work to be performed by any trade.

19. Article 5-3, CONFORMITY WITH PLANS AND ALLOWABLE DEVIATIONS, Deleted:

Delete this article in its entirety.

20. Article 5-4, COORDINATION OF SPECIFICATIONS, PLANS AND SPECIAL PROVISIONS, Deleted:

Delete this article in its entirety and substitute the following:

"The project Manual, Drawings, and all supplemental drawings and documents are essential parts of the Contract, and a requirement occurring in one is just as binding as though occurring in all. They are intended to be cooperative to describe and provide for a complete Work. In case of conflict between Drawings and the Technical Specifications of the Project Manual, the Drawings shall govern in matters of quantity and the Specifications shall govern in matters of quality. In case of conflict within the Drawings involving quantities or within the Specifications involving qualities, the greater quantity and the higher quality shall be furnished."

In addition to the Drawings made a part of this Contract at time of signing, by incorporation or reference, the Engineer shall furnish such additional Drawings from time to time during the progress of the work, as are necessary to make clear and to define in greater detail, as may be necessary, the intent of the Contract and the Contractor shall make his work conform to all such Drawings.

21. Article 5-5, COOPERATION OF CONTRACTOR, Deleted:

Delete this article in its entirety and substitute the following:

"The Contractor will be supplied with one complete copy of Contract after its execution by the City. The Contractor will also be supplied with at least 10 copies of the Drawings and Project

## SUPPLEMENTARY CONDITIONS

Page 6

Manual for his use in prosecuting the Work of the Contract. One each of the Drawings and Project Manual shall be kept at the site of the Work available for use by the Engineer. Additional copies of Drawings and Project Manual may be requested by the Contractor and will be supplied without cost if available, or at the actual cost if their reproduction is necessary."

22. Article 5-6, CONSTRUCTION STAKES, Deleted:

Delete this article in its entirety.

23. Article 5-7, DRAWINGS TO BE FURNISHED BY CONTRACTOR, Deleted:

Delete this article in its entirety.

24. Article 5-14, QUALITY OF MATERIALS AND WORKMANSHIP, Deleted:

Delete this article in its entirety.

25. Article 5-15, TRADE NAMES AND ALTERNATIVES, Deleted:

Delete this article in its entirety.

26. Article 6-2, CERTAIN LAWS AFFECTING THE WORK, Amended:

Delete the following paragraphs:

- b. Prevailing Wage: Delete in its entirety and substitute the following:

"The Contractor, Subcontractors and all concerned must comply with the rate of wages per hour as established by the Director of the Department of Industrial Relations under provisions of Sections 1770 and 1773 of the Labor Code of the State of California, or such other rate of wages as may hereafter be established by the Director of the Department of Industrial Relations in compliance with Section 1770 of the Labor Code of the State of California."

- d. Apprentices: Delete in its entirety.

- g. Subcontractors: Delete in its entirety.

Add the following:

"The Contractor shall give all notices and comply with all laws, ordinances, rules, regulations and orders of any public authority bearing on the performance of the work. If the Contractor observes that any of the Contract Documents are at variance therewith in

SUPPLEMENTARY CONDITIONS

Page 7

any respect, he shall promptly notify the Engineer in writing and any necessary changes shall be adjusted by appropriate modification. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the Engineer, he shall assume full responsibility therefore and shall bear all costs attributable thereto.

27. Article 6-3, PERMITS AND FEES, Deleted:

Delete this article in its entirety and substitute the following:

The Contractor shall secure and pay for all permits, government fees and licenses necessary for the proper execution and completion of the work, which are applicable at the time the bids are received.

Cost of building permit fee will be waived by City. However, Contractor will obtain such permit from Building Department (at no cost).

28. Article 6-6, PUBLIC CONVENIENCE AND SAFETY, Amended:

- a. Materials stored on the work shall be so placed that minimum hazard to the public will result. It is agreed and understood that public safety is a prime consideration and during the progress of the work the protection of the public is to be constantly preserved. The Contractor shall take all necessary precautions for the safety of employees on the work and shall comply with all applicable provisions of Federal, State and Municipal safety laws and building codes to prevent accidents or injury to persons on, about, or adjacent to the premises where the work is being performed. He shall erect and properly maintain all necessary safeguards for the protection of workmen and public, and shall post danger signs warning against the hazards created by such features of construction as protruding materials, hoists, openings and falling materials; and he shall designate a responsible member of his organization at the site of the work, whose duty shall be the prevention of accidents.
- b. The Contractor alone shall be responsible for the safety, efficiency, and adequacy of his plant, appliances, facilities, and methods and for any injury to persons or property which may result from their failure or their improper construction, use, maintenance, or operation.
- c. The duty of the Engineer, his employees, agents, architects or consultants to conduct, construct, or view the Contractor's performance is not intended to include review of the adequacies of the Contractor's safety measures in, on, or near the construction site. In an emergency affecting the safety of life, or of the work or adjoining property, the Contractor,

## SUPPLEMENTARY CONDITIONS

Page 8

without special instruction or special authorization from the Engineer, is hereby permitted to act at his discretion to prevent such threatened loss or injury, and he shall so act without discretion to prevent such threatened loss or injury, and he shall so act without appeal, if so authorized or instructed. Any compensation claimed by the Contractor on account of emergency work shall be determined by mutual agreement.

29. Article 6-9, BARRICADES AND WARNING SIGNS, Amended:

Change the third sentence of the first paragraph to read as follows:

"Warning signs, lights and devices shall be in accordance with requirements of the Motor Vehicle Code of the State of California and the City Traffic Engineer."

Delete the second paragraph in its entirety.

30. Add the following: GUARANTEE:

"Besides guarantees required elsewhere, the Contractor shall guarantee all work executed by him under this contract, or any extra orders, to be absolutely free of all defects of workmanship and materials for a period of one (1) year (or such other period as is expressly provided in the Specifications) after final completion and acceptance of the work by the City. The form of guarantee is contained in the Project Manual.

31. Article 8-2, SCOPE OF PAYMENT, Amended:

Amend this article by deleting any and all reference to Plans, Specifications and Special Provisions and replace with "Project Manual, Drawings, or Supplemental Drawings."

32. Article 8-4, FINAL ACCEPTANCE OF THE WORK, Deleted:

Delete this article in its entirety.

33. Article 8-5, FINAL PAYMENT, Deleted:

Delete this article in its entirety.

### 1.02 ADDITIONS TO GENERAL CONDITIONS

#### A. Definitions

1. Drawings: Working drawings or supplemental drawings, or exact reproductions thereof, approved by the Engineer which show location, character, dimensions, and details of the work to be done, and which are considered as part of the Contract.

SUPPLEMENTARY CONDITIONS

Page 9

2. Project Manual: The manual prepared for the Project, including the Bidding Requirements, Contract Forms, Conditions of the Contract, Technical Specifications, and other related documents.
- B. Warranty: The Contractor warrants to the City that all materials and equipment furnished under this Contract will be new unless otherwise specified, and that all Work will be of good quality, free from faults and defects and in conformance with the Contract Documents. All work not so conforming to these standards may be considered defective. If required by the Engineer, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.
- C. Architects Authority: The Architect will make periodic visits to the site to familiarize himself with the progress and quality of the work and to determine in general if the work is proceeding in accordance with the Contract Documents. On the basis of his on-site observations as an architect, he will keep the Engineer informed of the progress of the work, and will endeavor to guard the Owner against defects and deficiencies in the work of the Contractor. All instructions from the Architect to the Contractor shall be given through the Engineer, and the City will not be responsible for any instruction not so given. The Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the work. The Architect will not be responsible for construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the work, and he will not be responsible for the Contractor's failure to carry out the work in accordance with the Contract Documents.
- D. Underground Utilities: Except as otherwise provided herein, the Contractor shall send proper notices, make necessary arrangements, perform other services required in the care and maintenance of all public utilities on the project site. The Contractor shall assume all responsibilities concerning same. Contractor shall provide necessary protection to existing public utilities and utility services identified and designated on the Drawings and Project Manual and shall repair any such utilities that are damaged as a result of his operation. The City shall assume the responsibility for the removal, relocation, or protection of existing utilities located on the project site which are identified in the Drawings and Project Manual and are specified therein for removal or relocation by the City. Contractor shall physically inspect the site for utilities not identified in the drawings or Project Manual and shall exercise all due caution and shall take necessary action to avoid damage to or delays occasioned by the removal thereof.

If the Contractor while performing the contract, discovers utility facilities not designated and identified in the Drawings and Project Manual, he shall immediately notify the Engineer in writing and by telephone.

E. TRAINING OF APPRENTICES ON PUBLIC WORKS CONTRACTS

1. Attention is directed to the provisions in Section 1777.5 (Chapter 1411, Statutes of 1968) and 1777.6 of the Labor Code concerning the employment of apprentices by the contractor or any sub-contractor under him.
2. Section 1777.5, as amended, requires the contractor, or subcontractor, employing tradesmen in any apprenticeable occupation to apply to the joint apprenticeship committee nearest the site of the public works project and which administers the apprenticeship program in that trade for a certificate of approval. The certificate will also fix the ratio of apprentices to journeymen that will be used in the performance of the contract. The ratio of apprentices to journeyman in such cases shall not be less than one to five except where an exception is issued on one of the following conditions:
  - a. In the event unemployment for the previous three-month period in such area exceeds an average of 15 percent, or
  - b. In the event the number of apprentices in training in such area exceeds a ratio of 1 to 5, or
  - c. If there is a showing that the apprenticeable craft or trade is replacing at least one-thirtieth of its journeymen annually through apprenticeship training, either (1) on a statewide basis, or (2) on a local basis.
  - d. If assignment of an apprentice to any work performed under a public works contract would create a condition which would jeopardize his life or the life, safety, or property of fellow employees or the public at large, or if the specific task to which the apprentice is to be assigned is of such a nature that training cannot be provided by a journeyman.
3. The Contractor is required to make contributions to funds established for the administration of apprenticeship programs if he employs registered apprentices or journeymen in any apprenticeable trade on such contracts and if other contractors on the public works site are making such contributions.
4. The Contractor and any sub-contractor under him shall comply with the requirements of Sections 1777.5 and 1777.6 in the employment of apprentices. Noncompliance with Section 1777.5 can result in substantial penalties under Section 1777.7.

## SUPPLEMENTARY CONDITIONS

Page 11

5. Information relative to apprenticeship standards, wage schedules, and other requirements may be obtained from the Director of Industrial Relations, ex officio the Administrator of Apprenticeship, San Francisco, California, or from the Division of Apprenticeship Standards and its branch offices.

### F. Affirmative Action Requirements

1. The City of Sacramento is signatory to the "Greater Sacramento Area Plan," a joint industry-labor-minority representative agreement established for the purpose of increasing the employment of minorities in all phases and at all levels of skill in the building and construction industry within the greater Sacramento area. The City has adopted the "Plan" as its affirmative action program for City construction contracts and requires a contractor and his subcontractors be signatory to the Plan in order to be eligible for an award of a City contract.
2. A copy of the "Greater Sacramento Area Plan" is enclosed herewith for the Contractor's information. Additional information on the "Plan" is available at the headquarters office located at 4320 Stockton Boulevard, Sacramento, California 95820, Telephone: (916) 454-2774.

### G. Materials Stored At Other Locations

1. Materials suitably stored at other locations to be paid for pursuant to the Contract Documents shall specifically include, but not necessarily be limited to major items of electrical and mechanical equipment in bonded warehouses. The City may make payments based upon Contract prices of materials upon order thereof, provided that the City is satisfied, in its sole discretion, that such payments will result in substantial savings and the Contractor agrees to share such savings with the City.

### H. Schedule

1. Notice to Proceed: Written Notice to Proceed will be given by the City within 15 calendar days from the date of execution of the Contract. In the event the written Notice to Proceed has not been issued within the 15 calendar days, or the last date of any extensions of time agreed upon by the City and the Successful bidder, the contract shall be void, and no liability or obligation shall arise thereunder and Bidder shall not have any claim against the City or their officers, employees, agents or architects because of the failure of the City to issue the Notice to Proceed.

## SUPPLEMENTARY CONDITIONS

Page 12

2. Commencement and Prosecution of Work: The Contractor shall commence the work on or before 15 calendar days from and after receipt of written "Notice to Proceed" from the City to the Contractor, and will diligently prosecute the work to final completion. The phrase "Commence the work" means to engage in a continuous program on-site including, but not limited to, site clearance, grading, dredging, land filling and the fabrication, erection, or installation of the Work. Said Notice to Proceed shall be issued following execution of the Agreement and the filing by the Contractor of the required bonds and proof of insurance. The continuous prosecution of work by the Contractor shall be subject only to excusable delays as defined herein.
3. Time of Completion: The time limit for the completion of the Work shall be the number of calendar days indicated on the Agreement, counted from and after the date the Contractor is issued a "Notice to Proceed" by the City (hereinafter called the "Completion Date"), as modified by extensions of time granted in accordance with the Contract Documents. Failure to substantially complete the Work by the completion date and in the manner provided for by the Contract Documents shall subject the Contractor to liquidated damages as hereinafter stipulated. Time is and shall be of the essence in these Contract Documents.
4. Changes in the Work:
  - a. The City may at any time, without invalidating the Contract, or notice to the sureties, order extra work or make changes by altering, adding to or deducting from the Work, the Contract Price being adjusted accordingly. All such Work shall be executed under the conditions of the original Contract, except that any claim for extension of time caused thereby shall be adjusted at the time of ordering such change.
  - b. In giving instructions, the Engineer shall have authority to make minor changes in the Work, not involving extra cost nor inconsistent with the purposes of the building, but otherwise, no extra work or change shall be made unless in pursuance of a written order signed or countersigned by the Engineer and City stating that the City has authorized the extra work or change and no claim for an addition to the Contract shall be valid unless so ordered.
  - c. Charges or credits for work covered by the approved changes shall be determined by one (1) or more, or a combination of the following methods:



1. Unit bid prices previously approved.
2. An agreed lump sum.
3. The actual cost of:
  - (a) Labor, including foremen, for performing extra Work.
  - (b) Materials permanently entering into the extra Work.
  - (c) Rental costs of construction plant and equipment during the time of use on the extra Work.
  - (d) Utilities and consumable supplies used directly in performance of the extra Work.
4. To the above cost, (Items (a) through (d) inclusive) there shall be added a fixed fee to be agreed upon, which shall be compensation to cover the cost of supervision, overhead, bonds, profit and any other expenses. The fixed fee shall be a percentage of the actual cost (Items (a) through (d) inclusive) but not to exceed:
  - (a) 15% of the actual cost of that portion of the Work performed by the Contractor.
  - (b) 20% of the actual cost of that portion of the extra Work performed by a subcontractor. (15% subcontractor and 5% Contractor)
5. Extensions of Time: In the event the City deems it necessary, in its sole discretion, to extend the time of completion of the Work to be done under this Contract beyond the required Completion Date herein specified, such extensions shall in no way release any guarantee given by the Contractor pursuant to the provisions of the Contract Documents, nor shall such extension of time relieve or release the sureties on the bonds executed pursuant to said provisions. By executing such bonds, the sureties shall be deemed to have expressly agreed to any such extension of time. The amount of time allowed in any extension of time shall be limited to the period of the delay giving rise to the same as determined by the Engineer.
6. Excusable Delays
  - a. For the purpose of these Contract Documents, the term "Excusable Delays" shall mean, and is limited to, delays caused directly by acts of God; acts of the public enemy, fires, riots, insurrections; epidemics; quarantine restrictions; strikes, lockouts; sitdowns; acts of a governmental agency;

priorities or privileges established for the manufacture, assembly or allotment of materials necessary in the work by order, decree or otherwise of the United States or by any department, bureau, commission, committee, agent, or administrator of any legally constituted public authority; changes in the work ordered by City insofar as they necessarily require additional time in which to substantially complete the work; the prevention by City of Contractor from commencing or prosecuting the work because of the acts of others, excepting Contractor's subcontractors; or the prevention of Contractor from commencing or prosecuting the work because of a City-wide failure of public utility service.

- b. Inclement weather shall not be a reason for the granting of an extension of time. City may, however, grant an extension of time for unavoidable delay as a result of extraordinary inclement weather. A delay for extraordinary inclement weather shall then be classified "Excusable Delay."
- c. The term "Excusable Delay" shall specifically not include:
  - 1. Any delay which would have been avoided by the exercise of care, prudence, foresight and diligence on the part of the Contractor;
  - 2. Any delay in the prosecution of parts of the Work, which may in itself be unavoidable but which does not necessarily prevent or delay the prosecution of other parts of the Work, nor the substantial completion of the whole Work within the time specified;
  - 3. Any reasonable delay resulting from time required by City for review of plans and submittals required of Contractor and for the making of surveys, measurements and inspections;
  - 4. Any delay arising from an interruption in the prosecution of the work on account of the reasonable interference from other Contractors employed by City, which does not necessarily prevent the substantial completion of the Work within the time specified; and
  - 5. Any delay resulting from ordinary inclement weather.

Excusable Delays, if any, shall operate only to extend the completion date (not in excess of the period of such delay as determined by City) but shall not under any circumstances increase the sum City is to pay Contractor as provided in these Contract Documents.

- d. Should any delays occur which the City Council may consider excusable, as herein defined, Contractor shall, pursuant to his application, be allowed an extension of time beyond the time herein set forth proportional to said delay or delays in which to complete this Contract; and, during an extension which may have been granted because of an excusable delay or delays, City shall not charge liquidated damages against Contractor for such delay. Only the City Council may grant an extension of time on the Contract.
- e. Whenever Contractor foresees any delay in the prosecution of the work, and in any event immediately upon the occurrence of any delay which Contractor regards as an excusable delay, he shall notify the City Engineer in writing of the probability of such delay and its cause, in order that the City Engineer may take immediate steps to prevent if possible the occurrence or continuance of the delay, or if this cannot be done, may determine whether the delay is to be considered excusable, how long it continues, and to what extent the prosecution and completion of the work are delayed thereby. Said notice shall constitute an application for an extension of time only if the notice requests such an extension and sets forth Contractor's estimate of the additional time required together with a full description of the cause of the delay relied upon.
- f. After the completion of any part or whole of the work, the City Engineer, in estimating the amount due Contractor, will assume that any and all delays which may have occurred in its prosecution and completion have been avoidable delays, except such delays as shall have been called to the attention of the City Engineer at the time of their occurrence and found by him to have been excusable. Contractor shall make no claim that any delay not called to the attention of the City Engineer at the time of its occurrence has been an excusable delay.
- g. The granting of any extension of time on account of delays which in the judgment of the City Council are excusable delays shall in no way operate as a waiver on the part of City or its rights under this Contract excepting only the extension of the Completion Date.
- h. Changes in the work made pursuant to changes issued in accordance with the Standard Specifications and these supplementary conditions and extensions of time of completion made necessary by reason thereof (beyond the Completion Date) shall not in any way release any guarantee given by Contractor pursuant to the provisions of the Contract Documents, or the Contract let hereunder, nor shall such changes in the work

relieve or release the sureties on bonds executed pursuant to the said provisions. By executing such bonds, the sureties shall be deemed to have expressly agreed to any such change in the work and to any extension of time made by reason thereof.

I. Liquidated Damages

1. Determination of Damages: The actual fact of the occurrence of damages and the actual amount of the damages which the City would suffer if the work were not completed within the specified times set forth are dependent upon many circumstances and conditions which could prevail in various combinations, and, from the nature of the case, it is impracticable and extremely difficult to fix the actual damages. Damages which the City would suffer in the event of delay include expenses of prolonging employment of an architectural and engineering staff; costs of administration, inspection, and supervision; and the loss suffered by the public within the City of Sacramento by reasons of the delay in the construction of the project to serve the public at the earliest possible time. Accordingly, the parties hereto agree, and by execution of the Contract, the Contractor acknowledges that he understands, has ascertained and agrees, that the amounts herein set forth shall be presumed to be the amounts of damages sustained by the failure of the Contractor to substantially complete the entire work within the times specified.
2. Agreed Amount of Damages: The amount of the liquidated damages to be paid by the Contractor to the City for failure to substantially complete the entire work by the completion date (as extended, if applicable) will be the amount indicated on the Agreement for each calendar day continuing to the time at which the work is substantially completed. Such amount is the actual cash value agreed upon as the loss to the City resulting from the Contractor's default.
3. Payment of Damages: In the event the Contractor shall become liable for liquidated damages, the City, in addition to all other remedies provided by law, shall have the right to withhold any and all payments which would otherwise be or become due the Contractor until the liability of the Contractor under this section is finally determined.

The City shall have the right to use and apply such payment, in whole or in part, to reimburse the City for all liquidated damages due or to become due to the City. Any remaining balance of such payments shall be paid to the Contractor only after discharge in full of all liability incurred by the Contractor under this section or otherwise. If the sum so retained by the City is not sufficient to discharge all such liabilities of the Contractor, the Contractor and his sureties shall continue to remain liable to the City until all such liabilities are satisfied in full. No failure by City to withhold any payment as hereinbefore specified shall in any manner be construed to constitute a waiver of any right to liquidated damages or any right to any such sum.

4. Termination After Completion Date: In addition to any other rights it may have, the City may terminate this contract at any time after the completion date as adjusted by any extensions of time for excusable delays that may have been granted. Upon such termination the Contractor shall not be entitled to receive any compensation for services rendered by him before or after such termination, and he shall be liable to the City for liquidated damages for all periods of time beyond such date until the Work is substantially completed.

J. Indemnity and Hold Harmless

1. The Contractor shall assume all responsibility for his activity and operation, shall bear all losses and damages directly or indirectly resulting to him, to any subcontractor, to City, and to City employees that are the result of the performance or character of the operation, unforeseen difficulties, accidents, occurrences or other causes not predicated on active or passive negligence of City. Contractor shall assume the defense of and indemnify and save harmless City and its officers and employees from all claims, loss, damage, cost, injury, and liability of every kind, nature and description directly or indirectly arising from the performance of his operation under this Agreement.
2. Acceptance of the Insurance Certificates required under this Agreement shall not relieve Contractor from liability under this Indemnity and Hold Harmless clause.

K. Contractor Shall Assume Risks

1. Until the completion and final acceptance by City of all work under this Contract, the work shall be under Contractor's responsible care and charge. Contractor shall rebuild, repair, restore and make good all injuries, damages, reerections, and repairs occasioned or rendered necessary by accidental causes of any nature, to all or any portions of the work, except as otherwise stipulated.

L. General Liability of Contractor

1. Except as otherwise herein expressly stipulated, Contractor shall do all the work and furnish all the labor, materials, tools, power and light, and appliances, necessary or proper for performing and completing the work herein required in the manner within the time herein specified. The mention of any specific duty or liability of Contractor shall not be construed as limitation or restriction of any general liability or duty of Contractor and, any reference to any specific duty or liability shall be construed to be for the purpose of explanation.

## SUPPLEMENTARY CONDITIONS

Page 18

M. Insurance: During the term of this Agreement and until final completion and acceptance of the Work required by the Contract Documents, Contractor shall maintain in full force and effect at his own cost and expense (unless otherwise specified) the following insurance coverage:

1. Builder's Risk Insurance

- a. Take out, pay for, and maintain until final completion and acceptance of the Project, All Risk Builder's Risk Insurance, including but not limited to coverage for earthquake, flood and collapse to the maximum extent available at a cost considered to be reasonable by the City. Such insurance (except earthquake and flood insurance only in the event that it is not fully or reasonably available) shall be in an amount equal to the replacement cost (without deduction for depreciation) and shall be subject to stipulated value in lieu of average clause, of all structures constituting any part of the Project, including the cost of excavations, of grading and filling, and of the land, and except that such insurance (except earthquake and flood insurance) may be subject to deductible clauses not to exceed \$100,000 for any one loss. Earthquake and flood insurance may be subject to deductible clauses not to exceed 5% of such replacement cost for any one loss. Such insurance will not cover loss or damage to the Contractor's equipment, scaffolding or other materials not to be consumed in the construction of the Project.
- b. Said policy shall provide that all proceeds thereunder shall be payable to the City pursuant to a lender's loss payable endorsement substantially in accordance with the form approved by the Board of Fire Underwriters of the Pacific and the California Bankers Association if and to the extent, in the opinion of the City, such endorsement is necessary, and will name the Contractors, subcontractors, and subcontractors of all tiers of the work, as the City may, in its discretion, designate as additional insureds, as their interests may appear.
- c. The City shall collect, adjust and receive all moneys which may become due and payable under said policy, may compromise any and all claims thereunder, and shall apply the proceeds of such insurance to the repair, reconstruction or replacement of the Project as provided in the resolution authorizing the payment of expenses incidental thereto.

SUPPLEMENTARY CONDITIONS

Page 19

2. Worker's Compensation Insurance: Provide full Worker's Compensation Insurance and Employer's Liability policy or provide evidence of ability to undertake self-insurance. Limits of coverage shall be at least \$1,000,000 for any one person. In the event Contractor is self-insured, he shall furnish a Certificate of Permission to Self-Insure by the Department of Industrial Relations Administration of Self-Insurance, Sacramento.
3. Comprehensive Auto and General Liability Insurance.
  - a. Comprehensive Auto and General Liability Insurance.
  - b. Products and Completed Operation Liability.
  - c. Broad Form Property Damage Liability.
  - d. Contractual Liability.
  - e. Personal Injury Liability:

The amount of the policy shall be no less than \$1,000,000 Single Limit per occurrence, issued by an admitted insurer or insurers as defined by the California Insurance Code, providing that the City of Sacramento, its officers, employees and agents are to be Named Insured under the policy, and the policy shall stipulate that this insurance will operate as Primary insurance and that no other insurance effected by City or other Named Insured will be called on to contribute to a loss covered thereunder.

4. Certificate of Insurance: Contractor will have City's standard Certificate of Insurance completed and filed with the Finance Director within 15 days of the execution of this Agreement and prior to engaging in any work required by this Agreement. Said policies shall provide that no cancellation, major change in coverage, or expiration may be effected by the insurance company or the insured during the term of this Agreement, without first giving to the City 30 days written notice prior to the effective date of such cancellation or change in coverage.
5. Worker's Compensation Certificate: Contractor shall sign and file with the Finance Director the following certification prior to commencing performance of the work of the Contract:

"I am aware of the provisions of Section 3700 of the Labor Code which requires every employer to be insured against liability for worker's compensation or to undertake self-insurance in accordance with the provisions of the Code, and I will comply with such provisions before commencing the performance of the Work of this Contract."

## SUPPLEMENTARY CONDITIONS

Page 20

### N. Failure to Maintain Insurance

1. If, at any time during the performance of this Contract, Contractor fails to maintain any item of the required insurance in full force and effect, Contractor shall immediately discontinue all work under the Contract and City will withhold all contract payments due or that become due until notice is received by City that such insurance has been restored in full force and effect and that the premiums therefor have been paid for a period satisfactory to the Director of Finance.
2. Any failure to maintain any item of the required insurance will be sufficient cause for termination of the Contract.

### O. Responsibility For Damage

1. Approval of the insurance by the City shall not relieve or decrease the extent to which the Contractor or any subcontractor may be held responsible for payment of any and all damage resulting from his operations.
2. The Contractor shall assume the defense of and indemnify and save harmless the City of Sacramento, the Architect, and the members, directors, officers, agents and employees of any of them, from any and all loss, liability or damage, including attorney's fees and from all suits, actions, damages, or claims of every name and description to which they may be subjected or put by reason of injury to persons or property arising out of, in connection with, or incident to the execution of the work, or resulting from the active or passive negligence or carelessness on the part of the Contractor, his employees or agents, including any failure to fulfill the terms of all laws and regulations which apply to this Contract, together with any infringement or alleged infringement in consequence of the use in or about the said Work of any article or material; and the City shall have the right to estimate the amount of such damage and to cause the Contractor to pay same, and the amount so paid for such damage shall be deducted from the money due to Contractor under this Contract, as may be considered necessary by the City, shall be retained by the City until suits or claims for damages shall have been settled or otherwise disposed of and satisfactory evidence to that effect furnished by the City.

### P. Acceptance No Release

1. Contractor shall correct immediately any unfaithful or imperfect work which may be discovered before final acceptance of the entire Work. Any unsatisfactory materials shall be rejected, notwithstanding that they may have been overlooked by the proper inspector. The inspection of the Work shall not relieve the Contractor of any of his obligations to perform satisfactory work as herein prescribed.



2. Failure or neglect on the part of the City or any of its authorized agents to condemn or reject bad or inferior work or materials shall not be construed to imply an acceptance of such work or materials if it becomes evident at any time prior to final acceptance of the Work; neither shall it be construed as barring the City at any subsequent time from the recovery of damages or of such a sum of money as may be needed to build anew all portions of the Work in which fraud was practiced or improper materials used whenever found.

Q. No Waiver of Remedies: Neither the inspection by the City or its agents, or any order or certificate for the payment of money, nor any payment for, nor acceptance of the whole or any part of the work by the City, nor any extensions of time, nor any position taken by the City or its agents shall operate as a waiver of any provision of this Contract, or of any power herein reserved to the City or any right to damage herein provided, nor shall any waiver of any breach of this Contract be held to be a waiver of any other or subsequent breach. All remedies provided in this Contract shall be taken and construed as cumulative; that is, in addition to each and every other remedy herein provided; and the City shall have any and all equitable and legal remedies which it would in any case have.

R. No Payment for Delays: Contractor, or any subcontractor, waives all claims against City, its officials and employees, for any loss or damage sustained by reason of delays beyond the Completion Date arising out of modifications of this Agreement, including modifications deemed necessary or desirable by City for the correction of errors or omissions in this Agreement, Plans or specifications, it being expressly understood and agreed that no damages or compensation of any kind shall be paid to Contractor, or subcontractor, because of delays in the progress of the work, whether such delays qualify for extension of time or not.

S. Termination After Completion Date

In addition to any other rights it may have, City may terminate this Contract at any time after the Completion Date as adjusted by any extensions of time for excusable delays that may have been granted. Upon such termination Contractor shall not be entitled to receive any compensation for services rendered by him before or after such termination, and he shall be liable to City for liquidated damages for all periods of time beyond such termination date until the work is completed.

T. CONTRACTOR BANKRUPT

If Contractor should commence any proceedings under the Bankruptcy Act, or if Contractor be adjudged a bankrupt, or if Contractor should make any assignment for the benefits of creditors, or if a receiver should be appointed on account of Contractor's insolvency, then the City Council may, without prejudice to any right or remedy, terminate the Contract and complete the work by giving notice to Contractor and his surety according to the provisions of Section U., of these Supplemental Conditions, "Termination for Breach of Contract". Contractor's Surety shall have the right to complete the work by commencing within thirty (30) days as specified in Section U., and in the event Contractor's Surety fails to commence work within thirty (30) days as specified in Section U., City shall have the right to complete, or cause completion of the work, all as specified in Section U.

U. TERMINATION FOR BREACH OF CONTRACT

If Contractor should abandon the work under this Contract, or if the Contract or any portion of the Contract should be sublet or assigned without the consent of the City Council, or if the City Engineer should be of the opinion that the conditions of the Contract in respect to the rate of progress of the work are not being fulfilled or any part thereof is unnecessarily delayed, or if Contractor should willfully violate or breach, or fail to execute in good faith, any of the terms or conditions of the Contract, or if contractor should persistently refuse or fail to supply enough property skilled labor or materials, or fail to make prompt payment to subcontractors for material or labor, or persistently disregard laws, ordinances or proper instruction on orders of the Engineer, then, notwithstanding any provisions the the contrary herein, the City Council may give Contractor and his Surety written notification to immediately correct the situation or the Contract shall be terminated.

In the event that such notice is given, and, in the event such situation is not corrected, or satisfactory arrangement for correction is not made, within ten (10) calendar days from the date of such notice, the Contract shall upon the expiration of said ten (10) calendar days cease and terminate. In the event of any such termination, City shall immediately serve notice thereof upon the Surety and Contractor; and the Surety shall have the right to take over and perform the Contract, provided, however, that if the Surety does not commence performance thereof within thirty (30) days from the date of the mailing to such Surety of notice of termination, City may take over the work and prosecute the same to completion by Contract, or otherwise, for the account and at the expense of Contractor, and his Surety shall be liable to City for any excess cost occasioned City thereby, as hereinafter set forth.

SUPPLEMENTARY CONDITIONS

Page 23

In the event City completes the work, or causes the work to be completed, as aforesaid, no payment of any sum shall be made to Contractor until the work is complete. The cost of completing the work, including but not limited to, extra contract costs, the costs of City forces, extra costs of administration and management incurred by City, either direct or indirect, shall be deducted from any sum then due, or which becomes due, to Contractor from City. If no sum sufficient to pay the difference between sums due to Contractor from City and the cost of completing the work, Contractor and the Surety shall pay City a sum equal to said difference on demand. In the event City completes the work, and there is a sum remaining due to Contractor after City deducts the aforementioned costs of completing the work, then City shall thereupon pay such sum to Contractor and his Surety.

No act by City before the work is finally accepted including, but not limited to, exercise of other rights under the contract, actions at law or in equity, extensions of time, payments, claims of liquidated damages, occupation or acceptance of any part of the work, waiver of any prior breach of the Contract or failure to take action pursuant to this section upon the happening of any prior default or breach by Contractor shall be construed to be a waiver by, or to estop, City from acting pursuant to this paragraph upon any subsequent event, occurrence or failure by Contractor to fulfill the terms and conditions of the Contract. The rights of City pursuant to this paragraph are cumulative and in addition to all other rights of City pursuant to this Agreement and at law or in equity.

EXCERPTS FROM THE CALIFORNIA LABOR CODE  
RELATING TO APPRENTICES ON PUBLIC WORKS

Chapter 4 of Division 3

THE SHELLEY-MALONEY APPRENTICE LABOR STANDARDS ACT OF 1939

(Note: Boldface type denotes key points.)

3098. An awarding agency whose public works contract falls within the jurisdiction of Section 1777.5 shall, within five days of the award, send a copy of the award to the Division of Apprenticeship Standards. When specifically requested by a local joint apprenticeship committee, the division shall notify the local joint apprenticeship committee regarding all such awards applicable to the joint apprenticeship committee making the request. Within five days of a finding of any discrepancy regarding the ratio of apprentices to journeymen, pursuant to the certificated fixed number of apprentices to journeymen, the awarding agency shall notify the Division of Apprenticeship Standards.

(Amended by Stats. 1974, Ch. 1095.)

Chapter 1 of Division 2  
APPRENTICES ON PUBLIC WORKS

1776. Each contractor and subcontractor shall keep an accurate payroll record, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice or worker employed by him in connection with the public work. The contractor's and subcontractor's payroll records shall be available for inspection at all reasonable hours, and a copy shall be made available to the employee or his authorized representative, the Division of Labor Standards Enforcement, and the Division of Apprenticeship Standards. The body awarding the contract may charge a reasonable fee for copying such records. The body awarding the contract shall be required to retain the records filed pursuant to this section for 90 days after completion of the contract. After a complaint has been filed with the awarding body or the Division of Labor Standards Enforcement alleging that a contractor or subcontractor has paid less than the prevailing wage on a public works project, the contractor or subcontractor shall upon written notice from either the awarding body or the Division of Labor Standards Enforcement within 10 days file with the body awarding the contract a certified copy of the payroll records.

(Amended by Stats. 1976, Ch. 599.)

1777.5. Nothing in this chapter shall prevent the employment of properly registered apprentices upon public works.

Every such apprentice shall be paid the standard wage paid to apprentices under the regulations of the craft or trade at which he is employed, and shall be employed only at the work of the craft or trade to which he is registered.

Only apprentices, as defined in Section 3077, who are in training under apprenticeship standards and written apprentice agreements under Chapter 4 (commencing at Section 3070), Division 3, of the Labor Code, are eligible to be employed on public works. The employment and training of each apprentice shall be in accordance with the provisions of the apprenticeship standards and apprentice agreements under which he is training.

When the contractor to whom the contract is awarded by the state or any political subdivision, or any subcontractor under him, in performing any of the work under the contract or subcontract, employs workmen in any apprenticeable craft or trade, the contractor and subcontractor shall apply to the joint apprenticeship committee administering the apprenticeship standards of the craft or trade in the area of the site of the public work for a certificate approving the contractor or subcontractor under the apprenticeship standards for the employment and training of apprentices in the area or industry affected; provided, however, that the approval as established by the joint apprenticeship committee or committees shall be subject to the approval of the Administrator of Apprenticeship. The joint apprenticeship committee or committees, subsequent to approving the subject contractor or subcontractor, shall arrange for the dispatch of apprentices to the contractor or subcontractor in order to comply with this section. There shall be an affirmative duty upon the joint apprenticeship committee or committees administering the apprenticeship standards of the craft or trade in the area of the site of the public work to ensure equal employment and affirmative action in apprenticeship for women and minorities. Contractors or subcontractors shall not be required to submit individual applications for approval to local joint apprenticeship committees provided they are already covered by the local apprenticeship standards. The ratio of apprentices to journeymen who shall be employed in the craft or trade on the public work may be the ratio stipulated in the apprenticeship standards under which the joint apprenticeship committee operates but in no case shall the ratio be less than one apprentice for each five journeymen, except as otherwise provided in this section.

The contractor or subcontractor, if he is covered by this section, upon the issuance of the approval certificate, or if he has been previously approved in such craft or trade, shall employ the number of apprentices or the ratio of apprentices to journeymen stipulated in the apprenticeship standards. Upon proper showing by the contractor that he employs apprentices in such craft or trade in the state on all of his contracts on an annual average of not less

than one apprentice to each five journeymen, the Division of Apprenticeship Standards may grant a certificate exempting the contractor from the 1-to-5 ratio as set forth in this section. This section shall not apply to contracts of general contractors involving less than thirty thousand dollars (\$30,000) or 20 working days or to contracts of specialty contractors not bidding for work through a general or prime contractor, involving less than two thousand dollars (\$2,000) or fewer than five working days.

"Apprenticeable craft or trade," as used in this section, shall mean a craft or trade determined as an apprenticeable occupation in accordance with rules and regulations prescribed by the Apprenticeship Council. The joint apprenticeship committee shall have the discretion to grant a certificate, which shall be subject to the approval of the Administrator of Apprenticeship, exempting a contractor from the 1-to-5 ratio set forth in this section when it finds that any one of the following conditions is met:

(a) In the event unemployment for the previous three-month period in such area exceeds an average of 15 percent, or

(b) In the event the number of apprentices in training in such area exceeds a ratio of 1 to 5, or

(c) If there is a showing that the apprenticeable craft or trade is replacing at least one-thirtieth of its journeymen annually through apprenticeship training, either (1) on a statewide basis, or (2) on a local basis.

(d) If assignment of an apprentice to any work performed under a public works contract would create a condition which would jeopardize his life or the life, safety, or property of fellow employees or the public at large or if the specific task to which the apprentice is to be assigned is of such a nature that training cannot be provided by a journeyman.

When such exemptions are granted to an organization which represents contractors in a specific trade from the 1-to-5 ratio on a local or statewide basis the member contractors will not be required to submit individual applications for approval to local joint apprenticeship committees, provided they are already covered by the local apprenticeship standards.

A contractor to whom the contract is awarded, or any subcontractor under him, who, in performing any of the work under the contract, employs journeymen or apprentices in any apprenticeable craft or trade and who is not contributing to a fund or funds to administer and conduct the apprenticeship program in any such craft or trade in the area of the site of the public work, to which fund or funds other contractors in the area of the site of the public work are contributing, shall contribute to the fund or funds in

each craft or trade in which he employs journeymen or apprentices on the public work in the same amount or upon the same basis and in the same manner as the other contractors do, but where the trust administrators are unable to accept such funds, contractors not signatory to the trust agreement shall pay a like amount to the California Apprenticeship Council. The contractor or subcontractor may add the amount of such contributions in computing his bid for the contract. The Division of Labor Standards Enforcement is authorized to enforce the payment of such contributions to the fund or funds as set forth in Section 227.

The body awarding the contract shall cause to be inserted in the contract stipulations to effectuate this section. Such stipulations shall fix the responsibility of compliance with this section for all apprenticeable occupations with the prime contractor.

All decisions of the joint apprenticeship committee under this section are subject to the provisions of Section 3081.

(Amended by Stats. 1976, Ch. 1179.)

1777.6. It shall be unlawful for an employer or a labor union to refuse to accept otherwise qualified employees as registered apprentices on any public works, on the ground of the race, religious creed, color, national origin, ancestry, sex, or age, except as provided in Section 3077, of such employee.

(Amended by Stats. 1976, Ch. 1179.)

1777.7. In the event a licensed contractor willfully fails to comply with the provisions of Section 1777.5, such licensee shall be denied the right to bid on any public works contract for a period of one year from the date the determination of non-compliance is made by the Administrator of Apprenticeship and, notwithstanding the provisions of Section 1727, upon receipt of such a determination the awarding body shall withhold from contract progress payments then due or to become due the sum of five thousand dollars (\$5,000). Any determination shall be issued after a full investigation, a fair and impartial hearing, and reasonable notice thereof in accordance with reasonable rules and procedures prescribed by the California Apprenticeship Council. Any funds withheld by the awarding body pursuant to this section shall be released to the contractor upon issuance of an order to that effect by the administrator, or upon completion of the contract.

The interpretation and enforcement of Sections 1777.5 and 1777.7 shall be in accordance with the rules and procedures of the California Apprenticeship Council.

(Amended by Stats. 1976, Ch. 538.)

GREATER SACRAMENTO AREA PLAN (GSAP) EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION  
CONTRACT SPECIFICATIONS (Executive Order 11246).

The City of Sacramento is signatory to the "Greater Sacramento Area Plan" (hereinafter referred to as the "Plan") a joint industry-labor-minority representative agreement established for the purpose of increasing the employment of minorities in all phases and at all levels of skill in the building and construction industry within the greater Sacramento area. The City has adopted the "Plan" as its affirmative action program for City construction contracts and requires a contractor and his subcontractors be signatory to the Plan in order to be eligible for an award of a City contract. Additional information regarding the Plan is available at its headquarters office located at 4320 Stockton Boulevard, Sacramento, 95821, Telephone No. (916) 452-5832.

1. As used in these specifications:

- a. "Covered area" means the geographical area within the following counties: Amador, El Dorado, Nevada, Placer, Sacramento, Sierra, and Yolo.
- b. "Director" means Director, of GSAP, or any person to whom the Director delegates authority;
- c. "Minority" includes:
  - (1) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
  - (2) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race;
  - (3) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent or the Pacific Islands); and
  - (4) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.
3. If the Contractor is signatory under Part I of the GSAP a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables shall be in accordance with that Plan for those trades which have unions participating in the

Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of the GSAP. Each Contractor or Subcontractor participating in the GSAP is individually required to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. The Contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.
5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.
6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.
7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully and shall implement affirmative action steps at least as extensive as the following:
  - a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
  - b. Establish and maintain a current list of minority and female recruitment sources, provided written notification to minority and female recruitment

sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

- c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.
- d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.
- e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources complied under 7b above.
- f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.
- g. Review at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions, including specific review of these items with onsite supervisory personnel such as Superintendents, General Foreman, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.



- h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.
- i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.
- j. Encourage present minority and female employees to recruit other minority persons and women and where reasonable, provide after school summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.
- k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR, Part 60.3.
- l. Conduct at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.
- m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.
- n. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
- o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
- p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the Contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the Contractor actively participates in the group; makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.
9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).
10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex or national origin.
11. The Contractor shall not enter into any subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.
12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended and its implementing regulations, by the Office of Federal Contract Compliance Program. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.
13. The Contractor, in fulfilling its obligations under these specifications shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.
15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

#### GSAP REPORTING REQUIREMENTS

- (1) All contract and subcontracts (over \$10,000) are subject to the reporting requirements.
- (2) Contractors must submit a CC 257 (Monthly Employee Utilization Report) to the GSAP at 4320 Stockton Boulevard, Sacramento, California 95829.
- (3) If the Contractor is already required to submit CC 257, there is no need to submit an additional form.
- (4) This report must arrive at the GSAP no later than the 5th working day of each month.
- (5) Failure to report is automatic cause to find the Contractor in noncompliance.
- (6) Each report is monitored by GSAP and measured against the specified goals for minorities and women.

U.S. PA Employment Stat		LA Administration, OFCCP		THI UTILIZATION REPORT		1. CONSTRUCTION AREA (LOCAL OR EAST)		3. CURRENT GOALS MINORITY:		4. REPORT FROM		5. PERIOD TO:							
This report is required by Executive Order 11246, Sec. 203. Failure to report can result in contracts being cancelled, terminated or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts of federally assisted construction contracts.						2. EMPLOYER'S I.D. NO.						FEMALE:		FEDERAL FUNDING AGENCY					
5. CONSTRUCTION TRADE						6. WORK HOURS OF EMPLOYMENT (Federal & Non-Federal)						9. TOTAL NUMBER OF EMPLOYEES		10. TOTAL NUMBER OF MINORITY EMPLOYEES					
Classifications		6a. TOTAL ALL EMPLOYEES BY TRADE M F		6b. BLACK (Not of Hispanic Origin) M F		6c. HISPANIC M F		6d. ASIAN OR PACIFIC ISLANDERS M F		6e. AMERICAN INDIAN OR ALASKAN NATIVE M F		7. MINORITY PERCENTAGE		8. FEMALE PERCENTAGE		M F		M F	
Journey worker																			
APPRENTICE																			
TRAINEE																			
SUB-TOTAL																			
Journey worker																			
APPRENTICE																			
TRAINEE																			
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TRAINEE																			
SUB-TOTAL																			
Journey worker																			
APPRENTICE																			
TRAINEE																			
SUB-TOTAL																			
TOTAL JOURNEY WORKERS																			
TOTAL APPRENTICES																			
TOTAL TRAINEES																			
GRAND TOTAL																			
11. COMPANY OFFICIAL'S SIGNATURE AND TITLE						12. TELEPHONE NUMBER (include area code)						13. DATE SIGNED				PAGE			
																OF			

## INSTRUCTIONS FOR FILING MONTHLY EMPLOYMENT UTILIZATION REPORT (CC-257)

The Monthly Utilization Report is to be completed by each subject contractor (both prime and sub) and signed by a responsible official of the company. The reports are to be filed by the 5th day of each month during the term of the contract, and they shall include the total work-hours for each employee classification in each trade in the covered area for the monthly reporting period. The prime contractor shall submit a report for its aggregate work force and collect and submit reports for each subcontractor's aggregate work force to the Federal compliance agency that has Executive Order 11246 responsibility. (Additional copies of this form may be obtained from the U.S. Department of Labor, Employment Standards Administration, OFCCP's regional office for your area.)

Compliance Agency .....	U.S. Government agency assigned responsibility for equal employment opportunity. Secure this information from the contracting officer.]
Federal Funding Agency .....	U.S. Government agency funding project (in whole or in part). If more than one agency, list all.
Contractor .....	Any contractor who has a construction contract with the U.S. Government or a contract funded in whole or in part with Federal funds.
Minority .....	Includes Blacks, Hispanics, American Indians, Alaska Natives, and Asian and Pacific Islanders—both men and women.
1. Covered Area .....	Geographic area identified in Notice required under 41 CFR 80-4.2.
2. Employer's Identification Number .....	Federal Social Security Number used on Employer's Quarterly Federal Tax Return (U.S. Treasury Department Form 941).
3. Current Goals (Minority & Female) .....	See contract Notification.
4. Reporting Period .....	Monthly, or as directed by the compliance agency, beginning with the effective date of the contract.
5. Construction Trade .....	Only those construction crafts which contractor employs in the covered area.
6. Work-Hours of Employment (a-e) .....	a. The total number of male hours and the total number of female hours worked by employees in each classification.  b.-e. The total number of male hours and the total number of female hours worked by each specified group of minority employees in each classification.
Classification .....	The level of accomplishment or status of the worker in the trade (Journey Worker, Apprentice, Trainee)
7. Minority Percentage .....	The percentage of total minority work-hours of all work-hours (the sum of columns 6b, 6c, 6d, and 6e divided by column 6a; just one figure for each construction trade).
8. Female Percentage .....	For each trade the number reported in 6a, F divided by the sum of the numbers reported in 6a, M and F.
9. Total Number of Employees .....	Total number of male and total number of female employees working in each classification of each trade in the contractor's aggregate work force during reporting period.
10. Total Number of Minority Employees .....	Total number of male minority employees and total number of female minority employees working in each classification in each trade in the contractor's aggregate work force during reporting period.

GOALS AND TIMETABLES  
SACRAMENTO, CALIFORNIA

APPENDIX A

The following goals and timetables for female utilization shall be included in all construction contracts and subcontracts in excess of \$10,000. The goals are applicable to the contractor's aggregate on-site construction workforce whether or not part of that workforce is performing work on a covered construction contract or subcontract.

AREA COVERED

Goals for Women apply Nationwide

GOALS AND TIMETABLES

Timetable	Goals (percent)
Until further notice	6.9

APPENDIX B

Until further notice the following goals and timetables for minority utilization shall be included in all construction contracts and subcontracts in excess of \$10,000 to be performed in the respective covered areas. The goals are applicable to the contractor's aggregate on-site construction workforce whether or not part of that workforce is performing work on a covered construction contract or subcontract.

SACRAMENTO, CALIFORNIA

Area covered - Sacramento, Yolo, and Placer Counties, California.

GOALS AND TIMETABLES

Timetable	Trade	Goal (percent)
Until further notice	All	17.5 to 20.0

PART 1: GENERAL

1.01 DESCRIPTION

A. Work Included:

1. This contract includes the furnishing of all materials, labor and services necessary to execute the project entitled:

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION

More fully described in this Project Manual (see index for complete list), and on Drawings, all dated July 22, 1986.

2. Said Drawings are hereby made a part of these Specifications. All improvements to the property at the above stated locale, delineated upon or within Specifications and/or documents mentioned above shall conform collectively and severally to said documents.
3. Items furnished by Owner, installed by Contractor (marked F.B.O. on Drawings). Owner will deliver items so marked to job site.

B. Alternates:

The scope of work of this Contract is affected by alternates, see Section 01030 for list and description. The designation, Alternate No. \_\_\_ appears on the lower right hand corner of each drawing sheet that contains an alternate. See detail indicated on drawing.

C. Unit Prices:

The bid for pile installation requires a listing of unit prices, see Section 02350, 1.13 for description.

D. Qualifications:

There are sections that require demonstrated evidence of qualification for work in this Contract, see Bid Form and Specification Section for description.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

E. Items Not In Contract - Marked N.I.C.

The scope of work of this Contract is affected by items that are not in the Contract. The designation N.I.C. appears in the lower right hand corner of drawing sheets that contain items not in the Contract. See detail indicated on drawing sheet for description.

F. Work performed under separate contracts:

The Owner reserves the right to enter into separate contracts for work necessary to complete the project. This work may be completed at the same time and within the project areas of the General Construction Project or may include work in an adjoining project.

1.02 DRAWINGS AND SPECIFICATIONS

A. Titles and headings to sections and paragraphs in these Specifications are part of the Specifications and shall not be taken as a complete segregation of the several units of material and labor. No responsibility either direct or implied will be assumed by the Owner or Project Manager for omissions or duplications by the Contractor or his Subcontractors due to real or alleged error in arrangements of matter in the Contract Documents.

B. Mandatory Nature of Specifications and Drawings:

Mention in the Specifications or indication on Drawings of articles, materials, operations or methods requires the Contractor to furnish and install each article or material mentioned or indicated, or quality or according to qualifications noted, to perform each operation called for, according to method or conditions prescribed, and to provide therefore all necessary labor, equipment and incidentals.

C. Dimensions:

Dimensions shown on Drawings shall be followed. Where no dimensions are shown the Project Manager shall be informed before proceeding with the work. Drawings shall not be scaled. Drawings and Specifications are for the assistance and guidance of the Contractor. Exact locations, distances, and levels will be governed by the building site and actual building levels.

D. The Specifications shall apply to all work indicated on Drawings.



CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

E. Examination of Plans and Specifications:

The Contractor, before bidding on the General Construction work shall thoroughly examine and be familiar with the Plans, Specifications, and all other Contract Documents for general construction work.

F. Industry Standards:

If any construction details indicated on the Drawings or otherwise specified are in conflict with accepted industry standards for quality construction, the Contractor is obliged to bring this information to the attention of the Project Manager for appropriate action before starting the work.

1.03 MISCELLANEOUS

A. Project Layout:

The Contractor shall lay out necessary lines and levels and the various parts of the work as shown or dimensioned, and inform his workman and Subcontractors accordingly. Any discrepancies shall be called to the attention of, and interpretations shall be as directed by, the Project Manager. Suitable spaces, chases, openings, shall be allotted for pipes, ducts, conduits, etc., required in accordance with instructions or Drawings furnished and as approved by the Project Manager.

B. Access to the Work:

The Project Manager and his consultants shall have access to the work at all times for inspection, and the Contractor shall provide proper facilities for such access and inspection.

C. Coordination of Cutting and Patching:

Where new and/or existing work is removed, cut, or otherwise affected by removal of present work, by installation of new work and by alterations such as holes cut through floors, walls or ceilings, trenches in soil or in asphalt paving for installation of wiring and piping, such work shall be patched, repaired and refinished to match the adjoining surfaces by the respective trades involved, whether specifically described or not. Each trade shall coordinate to the end that each operation leaves proper provisions for subsequent installations. The responsibility for such patching shall rest solely with the Contractor and he shall insure that patching indicated on the Drawings,

specified or implied under separate headings is coordinated and accomplished to the satisfaction of the Project Manager. For example, patching of plaster required by the work of other trades shall be done by the plastering Sub-contractor.

D. Closing in of Uninspected Work:

The Contractor shall not allow or cause any of his work to be covered or enclosed until it has been inspected, tested and approved. Should any of the work be enclosed or covered before such inspection and test, he shall, at his own expense, uncover the work, and after it has been inspected, tested and approved, make all repairs with such material as may be necessary to restore all his work and that of the others to its original and proper condition.

1.04 APPLICABLE CODES AND REGULATIONS

- A. Work shall be done in accordance with the 1982 edition of the Uniform Building Code and in full accord with the latest rules and regulations of the State Fire Marshal, the Safety Orders of the Division of Industrial Relations, the National Electric Code, and all State or local laws or ordinances. Nothing in these Plans and Specifications is to be construed to permit work not conforming to these codes. A copy of these documents shall be kept on the job during the entire construction of the work.

1.05 FEES AND PERMITS

- A. Owner is exempted from payment of Building Permit fees.
- B. Building Permit with an approved set of Plans and Specifications shall be kept at the job site by the Contractor, readily available for inspection during regular working hours for the duration of the job.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

- A. Alternates described below effect the scope of the Project and are included as Additive Alternates in the Bid Form.
- B. The City reserves the right to award the contract on the basis of the Base Proposal alone or on the sum of the Base Proposal and the Alternates in the sequence of their prioritized order. Failure on the part of any Contractor to list Alternates shall be cause for rejection of the Base Bid.
- C. Related Work Described Elsewhere:
  - 1. Applicable divisions on these Specifications describe the material and methods required under the various Alternates.
  - 2. The method for stating the proposed Contract Sum will be described on the Proposal Bid Form.

1.03 PROCEDURE

If the City elects to proceed on the basis of one or more of the Alternates, make all modification to the work required in the furnishing and installation of the selected Alternates to the approval of the Project Manager and at no additional cost to the City other than as proposed in the Proposal Bid Form.

PART 2: ALTERNATES

2.01 DESCRIPTION OF ALTERNATES

The following description of alternates lists the Drawing number and Specification Section that generally describes the scope of work. In addition to the above all alternates must include all requirements of Contract conditons and Division 1, General Requirements. When reference is made to a plan drawing, the scope of work of each alternate includes all work of relevant details.

1. ALTERNATE NO. 1:

Alternate No. 1 is all work for Elevator No. 3, Pavilion, except as noted. Work described in Section 14212, Par. 2.07G thru 2.07N and Par. 2.11A thru 2.11I, is in Base Bid.

Drawing Nos.: A-200 A-201 A-202 A-710 A-711 M-200  
M-202 P-200 E-201

Spec. Sect.: 9680 14212 15400 16100  
15700

2. ALTERNATE NO. 2: INTERIOR AND EXTERIOR PAINTING

Prime coat of all millwork, doors, frames and sash is in Base Bid.

Drawing Nos.: A-200 A-201 A-202 A-203 A-220 A-221  
A-221 A-222 A-223 A-300 A-301 A-302  
A-322 A-340 A-341 A-342 A-343 A-344  
A-345 A-346 A-700 A-701

Spec. Sect.: 7900 9900

3. ALTERNATE NO. 3:

All floor finishes and subfloor construction. See Room Finish Schedule, Sheet A-346 for extent of hardwood, carpet and resilient flooring.

Drawing Nos.: A-200 A-201 A-202 A-346  
A-300 A-301 A-302 A-402 A-403 A-510  
A-511 S-200 S-201 S-202 P-202 E-100  
E-200 E-201 E-202

Spec. Sect.: 6100 9550 9650 9680

PART 3: EXECUTION

3.01 ADVANCE COORDINATION

Immediately after award of Contract, and to the maximum extent practicable, thoroughly and clearly advise all necessary personnel and suppliers as to the nature and extent of Alternates selected by the City; use all means necessary to alert those personnel and suppliers involved as to all changes in the work caused by the City's selection of Alternates.

CROCKER ART MUSEUM  
HVAC CENTRAL PLANT  
SACRAMENTO, CALIFORNIA  
cc Number 2136

### 3.02 SURFACE CONDITIONS

Prior to installation of the Alternate items, verify that all surfaces have been modified as necessary to accept the installation and that the item or items may be installed in complete accordance with their manufacturer's current recommendations; in the event of discrepancy, immediately notify the Project Manager and proceed as he directs.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Documents and Division One, General Requirements, contain information that applies to this Section.

1.02 PROJECT MEETINGS

- A. A pre-bid conference with the Project Manager will be held for the General Contractors in Forum Room at the Crocker Art Gallery at 9:00 A.M. on August 12, 1986.
- B. Contractors and Subcontractors shall contact Mr. Bruce Smith for an appointment prior to all job visits at (916) 449-5423.
- C. Contractors and Subcontractors shall visit job site during normal working days between 10:00 A.M. and 4:00 P.M. only.
- D. Upon arrival for visit Contractor and Subcontractors shall sign register provided for this purpose at Guard's desk at entrance to Crocker Art Gallery, 216 "O" Street, Sacramento
- E. Certain areas may be visited only when accompanied by a representative of the Museum, or Project Manager, telephone in advance per Item B above.

1.03 SEPARATE CONTRACTS

- A. During the period of time that this contract is in force, the City of Sacramento will be engaged with a separate Contractor who will be performing work under the job of: Crocker Art Museum, Central HVAC Plant.
- B. This later project occurs within the limits of the new Crocker Art Museum Pavilion.
- C. Both contracts will run concurrently. Each Contractor is encouraged to cooperate with the other during the course of construction.
- D. Prior to the execution of the Contract for Construction for this Contract the Project Manager will arrange a meeting with the successful bidder and the Contractor of the Crocker Art Museum, Central HVAC Plant to resolve any issues which may arise, and to coordinate job schedules.

1.04 MUSEUM ACCESS

The Crocker Art Museum, Gallery and Herold Wing will be open to the public during the course of this Contract. When required, access for the public may be curtailed. After award of Contract the Contractor shall meet with the Project Manager and Museum Director to establish a schedule mutually agreeable for determining when public access would be limited and which specific work item would restrict public access.

1.05 MONITORING MOVEMENT OF CROCKER-HASTINGS HOUSE WALLS DURING CONSTRUCTION

A. Vertical:

Provide access for Owner's surveyors to set eight vertical control points on the exterior of Crocker-Hastings House. Points will be monitored weekly, or as directed by Project Manager, to measure changes in dimensions. If the Contractor requires more frequent readings he may arrange for them by contacting the Project Manager. The Contractor shall provide copies of his readings to the Project Manager for review. The cost of the Contractor's requested readings shall be paid by the Contractor.

B. Horizontal:

Contractor shall set horizontal control lines near or at tops of all four existing exterior walls on Crocker-Hastings House to monitor straightness of wall measured at mid-length. Control lines shall be offset so as to remain clear of bracing and shoring members. Readings shall be taken weekly by Contractor at his expense and transmitted to Project manager for his review.

The walls shall be held plumb and straight within  $3/4"$  + as measured at mid-lengths. Contractor shall be required to adjust bracing and shoring to keep alignment of walls within above tolerances.

C. Schedule:

Construction sequences shall be scheduled to provide as nearly as possible uniform loading of foundations to preclude differential settlement.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Documents and Division One, General Requirements, contain information that applies to this Section.

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CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

1.06 ARCHITECTURAL CONCRETE

Contractor shall meet with Project Manager prior to commencement of concrete form work to review procedure for architectural concrete finish. Strict conformance to Contract Documents and field review will be required to insure an acceptable surface for cast-in-place exposed work.

PART 1: GENERAL

1.01 DESCRIPTION

A. Work Included:

1. To ensure that specified products are furnished and installed in accordance with design intent, procedures have been established for advance submittal of design data and for its review and approval or rejection by Project Manager.
2. Make all following submittals to Project Manager for approval, in strict accord with provisions of this Section:
  - a. Progress Schedule
  - b. Schedule of Values
  - c. Certifications
  - d. Shop Drawings
  - e. Product Data/Material Lists
  - f. Samples
  - g. Substitution Requests
  - h. Maintenance/Operations Manuals
  - i. Record Drawings
  - j. Guarantees

B. Related Work Specified Elsewhere:

1. Test reports: Pertinent Specification Sections.
2. Individual submittals required: Pertinent Specification Sections.
3. Greater Sacramento Area Plan: Conditions of the Contract.

PART 2: PRODUCTS

2.01 PROGRESS SCHEDULE

- A. Prepare and submit estimated progress schedule for work within ten (10) calendar days after issuance of Notice to Proceed. Submit updated schedules:
1. At mid-point of construction.
  2. When time extensions of more than two weeks are necessary.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

B. Relate progress schedule to entire Project. Indicate the following:

1. Dates for starting and completion of various sub-contracts.
2. Dates for submission of required submittals.

2.02 SCHEDULE OF VALUES

- A. Before first application of payment, submit for Project Manager's approval schedule of values of various portions of work, aggregating total Contract Sum, divided so as to facilitate payments to Subcontractors, prepared in such form as Project Manager and Contractor may agree upon, and supported by such data to substantiate its correctness as Project Manager may require. Include proper share of overhead and profit with each item in Schedule of Values. This schedule, when approved by Project Manager, shall be used as basis for Contractor's applications for payment.
- B. Sample Schedule of Values is included with Contract forms. Breakdown may be adjusted to Contractor's breakdown of portions of work, as approved by Project Manager.

2.03 CERTIFICATIONS

Where specifically indicated by pertinent Specification Sections, submit proper certification of recognized producer or association in lieu of testing. Certification shall attest to product's compliance with requirements of Contract Documents.

2.04 SHOP DRAWINGS

- A. Submit all shop drawings as reproducible transparencies--one transparency of each original Drawing and two ozalid prints of each transparency. Mark all Drawings with name of Project and name of Contractor, and number consecutively. Make Drawings legible and complete in every respect.
- B. If shop drawings show variations from Contract requirements because of standard shop practice or other reason, make specific mention of such variations in letter of transmittal, as well as on Drawings, in order that (if acceptable) suitable action may be taken for proper adjustment of Contract. Unless specific changes have been noted and approved, no deviations from Contract Documents will be accepted.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- C. Transparencies will be retained by Project Manager for his file. If approved, prints will be made by Project Manager and distributed as follows: One to Inspector, four to General Contractor. If not approved, two prints will be made by the Project Manager and forwarded to the General Contractor. Make corrections to original Drawings and send new set of transparencies and two sets of ozalid prints to the Project Manager for checking. Secure final approval prior to commencing the work involved.

2.05 PRODUCT DATA/MATERIAL LISTS

A. Manufacturer's Standard Schematic Drawings:

1. Modify Drawings to delete information which is not applicable to Project.
2. Supplement standard information to provide additional information applicable to Project.

B. Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive data:

1. Clearly mark each copy to identify pertinent materials, products or models.
2. Show dimensions and clearances required.
3. Show performance characteristics and capacities.
4. Show wiring diagrams and controls.

2.06 SAMPLES

A. Physical examples to illustrate materials, equipment or workmanship, and to establish standards by which completed work is judged.

B. Office samples should be sufficient size and quantity to clearly illustrate:

1. Functional characteristics of product or material, with integrally related parts and attachment devices.
2. After review, samples may be used in construction or project.

C. Field Samples and Mockups:

1. Erect at project side at location acceptable to Project Manager.
2. Construct each sample or mockup complete, including work of all trades required in finished work.

2.07 SUBSTITUTION REQUESTS

A. Project Manager's Approval Required:

1. Contract is based on materials, equipment and methods described in Contract Documents.
2. Project Manager will consider proposals for substitution of materials, equipment and methods only when such proposals are accompanied by full and complete technical data and all other information required by Project Manager to evaluate proposed substitution request.
3. Do not substitute materials, equipment or methods unless such substitution has been specifically approved for this work by Project Manager.

B. "Or Equal":

Whenever, in Contract Documents, any material or process is indicated or specified patent or proprietary name and/or by name of manufacturer, such name shall be deemed to be used for purpose of facilitating description of material and/or process desired, and shall be deemed to be followed by words "or equal" and Contractor may offer any material or process which shall be equal in every respect to that so indicated or specified; provided, however, that if material, process or article offered by Contractor is not, in opinion of Project Manager, equal in every respect to that specified then Contractor must furnish material, process or article specified or one that in opinion of Project Manager is the equal thereof in every respect.

C. Coordination:

Approval of substitution shall not relieve Contractor from responsibility for compliance with all requirements of Drawings and Project Manual, and Contractor shall be responsible at his own expense for any changes in other parts of his own work or work of others which may be caused by approved substitution.

## 2.08 MAINTENANCE/OPERATING MANUALS

A. General: Where manuals are required to be submitted covering items included in this work, prepare all such manuals in durable plastic binders approximately 8-1/2 x 11 inches in size with following minimum data:

1. Identification on, or readable through, front cover stating general nature of manual.
2. Neatly typewritten index near front of manual, furnishing immediate information as to location in manual of all emergency data regarding installation.
3. Complete instructions regarding operation and maintenance of all equipment involved.
4. Complete nomenclature of all replaceable parts, their part numbers, current cost and name and address of nearest vendor of parts.
5. Copy of all guarantees and warranties issued.
6. Copy of approved shop drawings with all data concerning changes made during construction.

### B. Extraneous Data:

Where contents of manuals include manufacturer's catalog pages, clearly indicate precise items included in this installation and delete, or otherwise clearly indicate, all manufacturer's data with which this installation is not concerned.

## 2.09 RECORD DRAWINGS

### A. General:

1. At time of installation, installed locations of all underground work, including plumbing and electrical, shall be recorded on prints by Contractor, and reviewed with Inspector.
2. Notify Project Manager when underground work has been completed. On such notice, Project Manager will furnish reproducible ozalid prints to Contractor, who will transfer installed locations to reproducible prints for approval by Inspector and Project Manager.

3. All information entered on reproducible prints shall be neat, legible and emphasized by drawing "balloons" around changed items. Format of changed items on Drawings shall be acceptable to Project Manager.
4. Locate and dimension all work, including stubs for future connections, with reference to permanent landmarks or buildings and indicate approximate depth below finish grade.
5. All symbols and designations used in preparing record drawings shall match those used in Contract Drawings.

## 2.10 GUARANTEES

### A. Standard Guarantee:

Guarantee all work executed under this Contract or any extra orders to be absolutely free of all defects of workmanship and materials for a period of one year after completion and acceptance by City of Sacramento. Repair and make good all such defects and repair any damage to other work caused thereby which may occur during same period.

### B. Additional Guarantees:

Provide additional guarantees (in excess of one year) where specifically required by pertinent Specification Sections.

## PART 3: EXECUTION

### 3.01 SUBMISSION REQUIREMENTS

- A. Schedule submissions at least three weeks before dates reviewed submittals will be needed.
- B. Make submissions within following number of days from issuance of Notice to Proceed.
  1. Items needed in initial stages of work or requiring long lead time for ordering: 30 calendar days.
  2. All electrical, mechanical and equipment items: 60 calendar days.
  3. All other items: 90 calendar days.
- C. All submittals shall be accompanied by (a) letter of transmittal addressed to Project Manager. Each submitted transmittal shall:



CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

1. Be consecutively numbered, reviewed and stamped by General Contractor prior to submitting to Project Manager.
  2. Indicate original submittal number if resubmitted.
  3. Indicate Specification Section number. (Separate submittals are required for each Specification Section involved.)
  4. Include proper number of copies. See "G" below.
  5. Contain index of items submitted, properly identified with drawing numbers, etc.
  6. Identify substitution requests and reason for request.
- D. Project Manager will check submittals for conformance with design concepts of Project and approval by Project Manager covers only such conformance. An effort will be made by Project Manager to discover any errors, but responsibility for accuracy and correctness of all submittals shall be General Contractor's
- E. Approval of submittals will be general and shall not relieve Contractor from responsibility for proper fitting and construction of work, nor from furnishing materials and work required by Contract which may not be indicated on submittals when approved.
- F. No portion of the work requiring submittals shall be commenced until submittal has been approved by Project Manager. All such portions of the work shall be in accordance with approved submittals.
- G. Number of Copies Required: Contractor shall submit quantity required for his distribution plus the following number of copies required by the City:
1. Progress Schedule: 3 copies.
  2. Schedule of Values: 2 copies.
  3. Certification: 2 copies.
  4. Shop Drawings: Reproducible transparencies - one transparency of each original Drawing, and two ozalid prints of each transparency.
  5. Product Data/Material Lists: 4 copies.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

7. Samples for Color/Pattern Selection: One set of manufacturer's complete range for initial selection; and additional samples as requested of selected color/pattern for inclusion in final color schedule.
  8. Substitution Requests: 3 copies of all required related data and information.
  9. Manuals: 2 copies.
  10. As-Built Drawings: Reproducible transparencies.
  11. Guarantees: 1 copy in City's standard format.
- H. Submittals shall include (where applicable):
1. Date and revision dates.
  2. Project title and number.
  3. The names of Contractor, Subcontractor and supplier or manufacturer.
  4. Identification of product or material.
  5. Relation to adjacent structure or material.
  6. Field dimensions, clearly identified as such.
  7. Specification Section number.
  8. A blank space for Architect's and City's stamp.
  9. Contractor's stamp on each, initialed or signed; certifying review of submittal, verification of field measurements and compliance with Contract Documents.

3.02 SCHEDULE OF SUBMITTALS

- A. This "Schedule of Submittals" is intended as an aid to Contractor in preparation and submittal of required data and should not be considered a complete listing.
- B. Where submittals are indicated, they are required even though submitted material is as specified.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

C. Schedule

	CERTIFICATIONS	SHOP DRAWINGS	DATA/LIST OF MATERIALS	MIX DESIGNS	SAMPLE/MOCK-UP	TEST RESULTS	SCHEDULE	MANUALS	AS-BUILTS	GUARANTEES (OVER 1 YEAR)*
01010 Summary of Work										
01030 Alternates										
01100 Special Project Procedures										
01300 Submittals										
01400 Quality Control										
01500 Facilities & Temp. Controls										
01600 Material & Equipment										
01700 Contract Closeout	X							X	X	*
02050 Demolition							X			
02100 Site-Preparation										
02150 Shoring & Underpinning	X	X	X				X			
02200 Earthwork & Removals										
02350 Piling, Incl. Pile Load Test	X	X	X			X	X		X	
02700 Site Drainage			X						X	
03100 Concrete Formwork		X	X		X					
03200 Concrete Reinforcement	X	X	X			X				
03300 Cast-In-Place Concrete	X	X	X	X	X	X	X			
03370 Pneumatically Placed Concrete	X		X	X	X	X				
03400 Precast Concrete	X	X	X	X	X	X				
04220 Unit Masonry	X		X	X		X				
04400 Stone		X	X		X					
05100 Structural Metal Framing	X	X	X			X				
05200 Miscellaneous Metal	X	X	X			X				
05300 Metal Decking	X	X	X			X				
05512 Metal Stairs	X	X	X			X				
05800 Expansion Control		X	X		X					*
06100 Rough Carpentry	X		X							
06200 Finish Carpentry & Millwork	X	X	X		X					*
06600 Plastic Fabrications		X	X		X					
07131 Bentonite Panel Waterproofing			X		X					
07200 Insulation			X		X					
07256 Sprayed on Fireproofing	X		X		X	X				
07500 Membrane Roofing	X		X		X					*
07600 Flashing & Sheet Metal		X	X		X					
07610 Sheet Metal Roofing		X	X		X					*
07800 Skylights		X	X							*
07900 Joint Sealants			X		X					

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

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08100 Metal Doors and Frames		X	X							
08500 Window Wall & Glazing	X	X	X		X	X				*
08700 Hardware			X				X			
09209 Cement Plaster			X	X	X					
09250 Gypsum Wallboard			X		X					
09310 Ceramic Tile			X		X					
09550 Wood Flooring			X		X					
09650 Resilient Flooring			X		X					
09680 Carpet			X		X					
09900 Painting			X		X	X				
10162 Metal Toilet Partitions & Acces.		X	X		X					
10650 Operable Partitions		X	X		X					
12511 Horizontal Louver Blinds		X	X		X					
14200 Hydraulic Elevators	X	X	X		X	X	X	X	X	
15400 Plumbing		X	X			X		X	X	
15510 Fire Protection	X	X	X			X		X	X	
15700 Air Conditioning		X	X			X		X	X	
15900 Controls		X	X			X		X	X	
16100 Electrical			X		X			X	X	

PART 1: GENERAL

1.01 DESCRIPTION

A. Inspection:

1. All work and materials shall be subject to inspection and approval or rejection by the Project Manager.
2. The Project Manager may assign such inspectors as he may deem necessary to inspect the materials to be furnished and the work to be done under this Contract.
3. Properly authorized inspectors shall be considered to be the representatives of the City limited to the duties and power entrusted to them. It will be their duty to inspect materials and workmanship of those portions of the work to which they are assigned, either individually or collectively, under instructions of the Project Manager, and to report any and all deviation from the Contract Documents which may come to their notice. Project Manager may be considered to have the right to order the work entrusted to his supervision stopped, if in his opinion such action becomes necessary, until he has determined and ordered that the work may proceed in due fulfillment of all Contract requirements.
4. The Project Manager may at any time, if he so desires, cause an inspection to be made.
5. The Contractor shall fully cooperate in and shall furnish all reasonable facilities for the inspection of all parts of the work during the progress thereof.
6. Whenever the Contractor arranges to work at night, or at any time when work is not usually in progress, or to vary the period during which work is carried on each day, he shall give the City due notice so that inspection may be provided. Such work shall be done without extra compensation to the Contractor.

B. Testing Services:

1. From time to time during progress of the work, the City may require that testing be performed to determine that materials provided for the work meet the specified requirements. Such testing includes, but is not limited to:
  - a. Soil compaction.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- b. Pile testing.
  - c. Asphalt concrete paving.
  - d. Cast-in-place concrete.
  - e. Pneumatically Placed Concrete
  - f. Mortar.
  - 9. Structural steel.
  - h. Metal decking.
  - i. Sprayed-on Fireproofing
2. Testing shall be done to such standards as may be described in various Sections of these Specifications. Where no testing requirements are described but the Project Manager decides that testing is required, the Project Manager may require testing to be performed under current pertinent standards for testing.

PART 2: PRODUCTS

2.01 PAYMENT FOR TESTING SERVICES

A. Initial Services:

The City shall furnish and pay for all initial testing services required by the Contract Documents. When initial tests indicate non-compliance with the Contract Documents, the cost of initial tests associated with that non-compliance will be deducted by the City from the Contract sum. The Contractor shall furnish samples of materials for testing as may be required by the Project Manager. Such samples shall be furnished without cost to the City.

B. Retesting:

When initial tests indicate non-compliance with the Contract Documents, all subsequent retesting occasioned by the non-compliance shall be performed by the same testing laboratory and the cost thereof will be deducted by the City from the Contract sum.

C. Contractor's Convenience Testing:

Inspection or testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor.

PART 3: EXECUTION

3.01 COOPERATION WITH TESTING LABORATORY

- A. Representatives of the Testing Laboratory shall have access to the work at all times; provide facilities for such access in order that the laboratory may properly perform its functions.
- B. Notify the Testing Laboratory in advance of operations to allow for assignment of personnel and scheduling of tests.
- C. The City has named Lowry & Associates Testing Laboratory and Foundation Engineers.

3.02 TAKING SPECIMENS

All specimens and samples for testing, unless otherwise provided in these Contract Documents, will be taken by the Testing Laboratory; all sampling equipment and personnel will be provided by the Testing Laboratory and all deliveries of specimens and samples to the testing laboratory will be performed by the Testing Laboratory.

PART 1: GENERAL

1.01 DESCRIPTION

- A. Work Included: Temporary facilities and controls required for this work include, but are not necessarily limited to:

1. Temporary utilities such as gas, water, electricity and telephone.
2. Field office(s).
3. Sanitary facilities.
4. Enclosures such as tarpaulins, barricades and canopies.
5. Project signs.
6. Fencing of construction area.
7. Parking of vehicles.
8. Protection and security.
9. Scaffolding.

- B. Related Work Specified Elsewhere:

1. Utility hookup - pertinent Specification Sections.

1.02 PRODUCT HANDLING

- A. Protection: Use all means necessary to maintain temporary facilities and controls in proper and safe condition throughout progress of work.
- B. Replacements: In event of loss or damage, immediately make all repairs and replacements necessary to approval of the Project Manager at no additional cost to City.

PART 2: PRODUCTS

2.01 TEMPORARY UTILITIES

- A. General:

The City will furnish water, gas and electricity required during construction. The Contractor shall extend temporary service lines to construction areas for use of all Subcontractors.



CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

B. Temporary Water:

1. Provide for ample supply of potable water for all purposes of construction at point convenient to Project or as shown on Drawings. Pipe water from source of supply to all points where water will be required.
2. Provide sufficient hose to carry water to every required part of construction and allow use of water facilities to Subcontractors engaged on work.

C. Temporary Electricity:

1. Electric Service: All electric facilities shall be constructed and maintained in accordance with the Division of Industrial Safety "Electrical Safety Orders" (ESO), the Public Utilities Commission "Rules for Overhead Line Construction" (GO 95), and CAL-OSHA. Materials, devices and equipment used for these facilities shall be in good and safe condition but need not be new.
2. Installation of lighting and safety lights for covered pedestrian walkways and chain link fence shall be in accordance with local, State and Federal applicable codes.
3. Conduit: EMT 2" or smaller may be used for exposed work under pedestrian walkway ceiling.
4. Conduits installed in contact with ground or in sand-fill shall be PVC Schedule 40 or galvanized steel with 40 mil thick PVC coating bonded to outer surface of conduit. Bond shall be greater than tensile strength of plastic. All steel couplings and fittings shall be bonded with PVC coating with minimum of 55 mil thickness. A PVC sleeve equal to outside diameter of uncoated conduit shall extend beyond hub or coupling approximately one diameter or 1-1/2", whichever is smaller. All coated material shall be installed and patched according to manufacturer's recommendations. All holidays and tool marks shall be completely coated using paste or spray as recommended by manufacturer. Seal PVC joints with (solvent) joint compound. Coated conduit shall be as manufactured by Occidental Coating Company, OCCAL-40, Robroy "Plasti-Bond", or approved equal.
5. Run a copper ground wire, sized in accordance with NEC, in conduit run, and bond to all steel parts, using approved clamps.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

6. Support conduit to wood structure by means of bolts or lag screws in shear. All supports shall be capable of supporting four times actual load.
7. Payment for electric energy used: General Contractor is required to make application for electric service and pay for costs for electric energy used during course of construction and until final acceptance of work by City.

D. Temporary Heating:

Provide for heat, ventilation and services as required to protect all work and materials and to keep humidity down to extent required to prevent corrosion of any metal and to prevent dampness or mildew which is potentially damaging to materials and finishes. In addition, provide heat and ventilation prior to and during the following work operations as follows:

1. At all times during placing, setting and curing of concrete, provide sufficient heat to insure heating of spaces involved to not less than 50 degrees F.
2. From beginning of application of drywall and during setting and curing period, provide sufficient heat to produce temperature in spaces involved of not less than 55 degrees F.
3. For period of 7 days previous to placing of interior finish materials and throughout application of finish painting and laying of resilient flooring materials, provide sufficient heat to produce temperature of not less than 70 degrees F.
4. After finishing trades are completed and until final acceptance of work, provide temperature of not less than 60 degrees F.

E. Telephone:

1. Maintain telephone in field office for use of Architect, Project Manager and Inspectors.
2. Provide and pay for telephone installation and service for each field office. Service shall be maintained for duration of operations under this Contract. Provide loud outside gongs or horns so that telephones may be heard throughout the construction site.

## 2.02 FIELD OFFICE

Contractor shall provide a temporary field office building for use by himself, his Subcontractors, Project Manager, Architect and Inspectors, located as directed by Project Manager. Building shall afford protection against weather, shall have a door, at least one window or shutter, plan rack, and shelf perusal of Drawings. Openings shall have suitable locks. Field office shall be maintained full time during operation of work Contract. The field office shall be suitably insulated and equipped with heating and cooling to maintain 68 degrees F. in the winter and 78 degrees F. in the summer during working hours. Upon completion of work of Contract, Contractor shall remove building from premises. In addition to drawing shelf, provide Project Manager's office one desk, four chairs, plan rack and 4-drawer file cabinet (with lock). Project Manager's office shall be not less than 10' by 10' or 8' by 12' in size.

## 2.03 SANITARY FACILITIES

Provide proper, adequate, sanitary toilet facilities for use of all workers employed on Project, in accordance with State and local health departments.

## 2.04 TEMPORARY CONSTRUCTION, EQUIPMENT AND PROTECTION

- A. Provide, maintain and remove upon completion of work, all temporary rigging, scaffolding, hoisting equipment, rubbish chutes, ladders, barricades, lights and all other protective structures or devices necessary for safety of workers and public and City property as required to complete all work of Contract.

- B. Walkways and Barricades:

Provide pedestrian walkway protection and wood barricades conforming to City of Sacramento standards and requirements.

- C. Temporary Fencing:

Provide chain link fencing enclosures as required to protect equipment and materials.

- D. Protection:

Protect all workers and equipment from power lines and maintain safe distances and protective devices as required by Industrial Safety Commission and CAL-OSHA.

E. Temporary Construction and Equipment:

All temporary construction and equipment shall conform to all regulations, ordinances, laws and other requirements of City, State and other authorities having jurisdiction, including insurance companies, with regards to safety precautions, operation and fire hazard.

F. Pumping:

Provide and maintain pumping facilities, including power for keeping site, excavations and structures free of accumulations of water at all times, whether from under-ground seepage, rainfall, drainage or broken lines. Pond discharge to get rid of sediment prior to discharge into storm drain.

G. Temporary Signs and Notices:

Contractor shall erect a painted sign approximately 4' x 8' in size containing name of Project, Contractor's name and address, City and Crocker Art Museum's name and address, and others as directed by Project Manager. Color, letter style and location of sign shall be as directed by Project Manager.

2.05 PARKING OF VEHICLES

Contractor shall assume all responsibility for vehicle parking of his and his Subcontractors' vehicles to assure that they will not be parking in either City or County prohibited areas. Job site parking shall mean areas within bounds of property or other authorized areas to be used for parking for this Project.

2.06 PROTECTION AND SECURITY

A. General:

The Contractor shall continuously maintain adequate protection of all his work from damage and shall protect the Owner's property from injury or loss arising in connection with the Contract. He shall make good any such damage, injury or loss.

B. Damage or Theft:

Protect work and materials to be used on Project from damage or loss due to elements, theft, vandalism, malicious mischief, or other causes. Contractor shall be held responsible for such damages or loss which he shall remedy at his expense.

C. Safety Precautions:

The Contractor shall take all necessary precautions for the safety of employees on the work and shall comply with all applicable provisions of Federal, State and Municipal safety laws and Building Codes and of the American Standard Safety Code for Building Construction published by the American Standards Association, whichever is the most stringent, to prevent accidents or injury to persons on, about or adjacent to the premises where the work is being performed. He shall erect and properly maintain at all times, as required by the conditions and progress of the work, all necessary safeguards for the protection of workmen and the public and shall post danger signs warning against the hazards created by such features of construction as protruding nails, hoists, well holes, hatchways, scaffolding, window openings, stairways and falling material.

D. Protection of Utilities:

The Contractor shall protect all streets, sidewalks, light poles, hydrants, and concealed or exposed utilities of every description affected by or adjacent to the work and if such items are damaged by the Contractor, Contractor shall make all necessary repairs thereto at no cost to the Owner.

E. Fire Protection:

Adequate precautions shall be taken against fire throughout all the Contractor's operations. Flammable materials shall be kept at an absolute minimum, and, if any, shall be properly handled and stored. The Contractor shall not permit open salamanders to be used in any part of the work.

F. Dust Protection:

When necessary to eliminate dust being blown about, all rubbish shall be sprinkled and kept wet by sprinkling. Adequate provision subject to the Project Manager's approval shall be made to keep dust, particles of tile, plaster, concrete, etc., from being carried, blown, or otherwise transported outside the immediate area of operation.

G. Security:

The Contractor shall properly secure all exterior openings at the end of each work day. Contractor shall properly secure interior openings between work area and other Museum areas at the end of each work day. Contractor shall coordinate other security requirements with the Project Manager.

H. Protection of Art Work:

The Museum staff shall be responsible for the protection of portable art work. If the Contractor's work will endanger any art work in adjacent areas or within the work area he shall immediately notify the Project Manager. In areas where the art work is an integral part of the building such as paneling, floors, or ceiling material, it shall be the responsibility of the Contractor to protect it.

2.07 SCAFFOLDING

The Contractor shall furnish and maintain all staging, rigging, scaffolding and runways required in the prosecution of the work under this Contract. All such temporary work shall be erected, equipped and maintained in accordance with all statutes, laws, ordinances, rules or regulations of the State or other authorities and insurance companies having jurisdiction, and shall be approved by the Project Manager.

PART 3: EXECUTION

3.01 MAINTENANCE AND REMOVAL

Maintain all temporary facilities and controls as long as needed for safe and proper completion of work; remove all such temporary facilities and controls as rapidly as progress of work will permit or as directed by Project Manager.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DELIVERY OF MATERIALS

Arrange for delivery of materials and equipment to minimize length of on-site storage prior to installation.

1.03 STORAGE

Provide necessary space for on-site storage. Furnish and maintain tarps, plastic sheeting, boards, etc., necessary to protect against damage from weather, construction operations and other hazards.

1.04 MATERIALS PROTECTION

Adequately protect all installed equipment and materials until completion and acceptance by the City.

1.05 HAZARDS CONTROL

- A. Store volatile wastes in covered metal containers and remove from premises daily.
- B. Prevent accumulations of wastes which create hazardous conditions.
- C. Provide adequate ventilation during use of volatile or noxious substances.
- D. Do not dispose of volatile wastes, such as mineral spirits, oil, or paint thinner, in storm or sanitary drains.

1.06 RUBBISH DISPOSAL

Do not burn or bury rubbish or waste materials on the City's premises.

1.07 CLEAN UP

During construction, maintain buildings, premises and public properties free from accumulations of waste materials and rubbish. Dispose of such waste, rubbish and debris at reasonable intervals off the City's property. Vacuum interior building areas when ready to receive painter's finish.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

Project closeout includes, but is not limited to:

1. Submission of guarantees and warranties.
2. Submission of maintenance manuals and instructions.
3. Submission of instructions to City's forces.
4. Submission of Record Drawings.
5. Preparation of final inspection.
6. Restoration of damaged surfaces.
7. Conduct of remedial work.

1.03 PRODUCT HANDLING

Make all submittals of guarantees, manuals, instructions, and Drawings in strict accordance with the provisions of this Section of these Specifications.

PART 2: PRODUCTS

2.01 MAINTENANCE MANUALS AND OPERATING INSTRUCTIONS

A. General:

Prepare all maintenance manuals and operating instructions in durable plastic binders approximately 8-1/2 by 11 inch in size and with at least the following:

1. Identification on, or readable through, the front cover stating general nature of manual.
2. Neatly typewritten index near the front of the manual furnishing immediate information as to locations in the manual of all emergency data regarding the installation.
3. Complete instructions regarding operation and maintenance of all equipment involved.
4. Complete nomenclature of all replaceable parts, their part numbers, current cost, and name and address of nearest vendor of parts.



5. Copy of all guarantees and warranties issued.
6. Copy of the approved shop drawings with all data concerning changes made during construction.

B. Extraneous Data:

Where contents of manuals of instructions include manufacturers' catalog pages, clearly indicate the precise items included in this installation and delete, or otherwise clearly indicate, all manufacturers' data with which this installation is not concerned.

C. Number of Copies Required:

Unless otherwise specifically directed by the Project Manager, deliver two copies to the City.

2.02 RECORD DRAWINGS

During the course of construction, actual locations to scale shall be marked for all runs of mechanical and electrical work to be buried underground, installed in walls and floors, or otherwise concealed. This shall cover all piping, electrical wiring, whether in conduit or cable, duct work, etc. Deviations from Drawings shall be shown in detail. All main runs, whether piping, conduit, duct work, etc., shall be located, in addition, by dimension. These shall be shown on Drawings kept specifically for this purpose.

1. The Contractor shall transfer this information to "As-Built" Drawings of mechanical and electrical work on reproducible prints supplied by the Project Manager at cost.

PART 3: EXECUTION

3.01 INSTRUCTION OF CITY'S FORCES

- A. Where specified in the applicable Sections of these Specifications, provide qualified personnel for on-the-job instruction.
- B. Where possible, provide instruction prior to occupancy of the buildings, including special start-ups and running time at no additional expense to the City.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

3.02 PREPARATION FOR FINAL INSPECTION

- A. Provide final cleaning and polishing of finish hardware, bright and anodized metal finishes, glass, mirrors, and plumbing fixtures, including other sweeping, dusting, etc.; thoroughly clean site and roofs free from sticks, rubbish, etc., and deliver to the City's representative.
- B. All work shall be clean and ready for use upon completion. Temporary tapes, wrapping, coatings, paper labels and other items shall be removed. Exposed and semi-exposed surfaces shall be dusted, mopped, washed, wiped and buffed as necessary to leave the work in a new, clean, immaculate condition.
- C. Cleaning methods for proprietary materials shall be in strict accordance with manufacturer's instructions. Cleaning solutions, agents, solvents, waxes, or other materials shall be only as approved by the manufacturer of the material installed in the work. Material for waxing and buffing sheet vinyl floors shall be approved in writing by the City.

3.03 DAMAGE AND RESTORATIONS

- A. Damage to material and finishes caused by movement of equipment or other operations shall be restored or replaced as specified or directed by the Project Manager at no additional cost to the City.
- B. Restoration shall be equal to the original work, and finishes shall match the appearance of existing adjacent work.

3.04 REMEDIAL WORK

Any remedial work necessary due to faulty workmanship or materials will be replaced by the Contractor at no cost to the City. Work will be done at such time and in such manner so as not to cause any interruption or inconvenience to the City's operations.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. Include labor, transportation, tools and equipment necessary for the completion of all demolition, cutting and removal work as indicated on Drawings and as specified herein.

B. The general extent of the work is shown on the Drawings and includes, but is not necessarily limited to the following:

1. Removal of all items that conflict with new work.
2. Removal of existing framing and finishes.
3. Saw cutting, chipping, removal of concrete and masonry.
4. Concrete core drilling for other than that specified in Division 15 and 16.
5. Mechanical items, demolition and removal.
6. Electrical items, demolition and removal.
7. Coordinate with Section 03300 for sandblasting work.

C. Related work specified elsewhere:

1. Section 01100: Special Project Procedures
2. Section 02150: Shoring & Underpinning
3. Section 03300: Cast-In-Place Concrete
4. Section 04220: Unit Masonry
5. Section 05100: Structural Metal Framing
6. Section 05200: Miscellaneous Metal
7. Section 06100: Rough Carpentry
8. Section 15400: Plumbing
9. Section 15700: Air Conditioning
10. Section 16100: Electrical

D. ASBESTOS REMOVAL IS NOT IN CONTRACT

IF ASBESTOS IS DISCOVERED ON JOB DURING DEMOLITION OF EXISTING ITEMS THE CONTRACTOR SHALL STOP WORK AND NOTIFY THE PROJECT MANAGER WHO WILL IN TURN NOTIFY THE CITY SAFETY COORDINATOR TO EVALUATE THE CONDITIONS AND PROVIDE PROCEDURE INSTRUCTIONS.

1.03 COORDINATION

Work in this Section may be affected by the work of the Crocker Art Museum Central HVAC Plant. Coordinate with Contractor for interface.

1.04 SUBMITTALS

A. Schedule - Demolition:

1. Submit two copies of proposed methods and operations of demolition to the Project Manager for review prior to the start of work.
2. Provide a detailed sequence of demolition and removal work, and coordination for continuation of utility service as required.

1.05 JOB CONDITIONS

A. The use of explosives will not be permitted.

B. Traffic:

Conduct demolition operations and the removal of debris to ensure minimum interference with roads, streets, walks and other adjacent occupied or used facilities.

1. Do not close or obstruct streets, walks, or other occupied or used facilities without permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

C. Protection:

Provide passageways to ensure the safe passage of persons around the area of demolition. Conduct operations to prevent damage by falling debris or other cause to adjacent buildings, structures and other facilities as well as persons.

1. Provide interior and exterior shoring, bracing, or support to prevent movement or settlement or collapse of structures to be demolished and facilities to remain.
2. Use temporary enclosures and other suitable methods as necessary to protect premises and occupants from weather and unauthorized intrusion at exterior openings.

3. Seal ducts and other openings to ensure against intrusion of dust into ventilating system.

D. Utility Services:

Maintain existing utilities indicated to remain, keep in service, and protect against damage during demolition operations.

1. Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to the Project Manager.

PART 2: PRODUCTS

2.01 SALVAGE

- A. Any item removed by the Contractor may be claimed by the City as its property. All items not claimed by the City shall become the property of the Contractor and shall be removed from the site at his expense. Storage or sale of Contractor's property on site will not be permitted.
- B. The following is a partial list of items claimed by the City. The Contractor shall remove these items carefully to minimize damage and shall deliver them to the City Corporation Yard for storage at 5730 - 24th Street, Sacramento.
  1. Cast iron fence units.
  2. Item of historic significance. See Drawing A-003.
- C. Identify all salvaged items selected to remain and remove the rest as "Demolished Material."

PART 3: EXECUTION

3.01 GENERAL

A. Protection:

Use all means necessary to protect existing items to remain and, in the event of damage, immediately make all repairs and replacements required to the approval of the Project Manager at no additional cost to the City.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

B. Removal:

Make clean cuts with proper tools and make minimum openings, for the required operations, in work to remain.

C. Dust Control:

Use all means necessary to prevent the spread of dust during performance of the work of this Section; provide dust curtains of weighted canvas where directed and, where applicable, moisten surfaces as required.

3.02 CONCRETE SAW CUTTING AND CORE DRILLING

A. Execution:

1. Cut new openings to dimensions shown on Drawings.
2. Overcutting at corners shall not be permitted.
3. Remove concrete so as not to damage adjacent surfaces.
4. Protect adjacent areas from dust, water and the like.
5. Openings for pipes and conduits shall be core drilled. Maximum size pipe diameter plus 1".

B. Chipping:

1. Chip new opening to profiles noted on Drawings.
2. Use only lightweight chipping guns and/or bush hammers for trimming.

3.03 DISPOSAL OF DEMOLISHED MATERIALS

Remove and legally dispose of off-site all debris, rubbish and other materials resulting from demolition operation.

3.04 CLEAN UP

At completion of each day all rubbish, debris, etc., connected with operations under this Section shall be removed from the site. The Contractor shall also leave the adjacent streets and sidewalks in a clean condition satisfactory to local authorities and the Project Manager.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. Do site preparation, complete as shown and specified.

B. Related Work Specified Elsewhere:

1. Section 02050: Demolition
2. Section 02200: Earthwork and Removals
3. Section 02700: Site Drainage

1.03 QUALITY ASSURANCE

A. Testing Agency:

Selected and paid for by Owner; retesting paid for by Contractor.

1.04 SUBMITTALS

A. Samples:

None required.

B. Shop Drawings:

Submit procedure for proposed method and sequence of work prior to start of work.

1.05 PROJECT CONDITIONS

A. Existing Conditions:

1. See Section 02200, 1.04 C.1.
2. Utilities: Properly protect, relocate, or remove existing active utilities as directed. Hand excavate carefully in general locations where utilities are shown to determine exact alignment and depth before starting clearing and grubbing. Replace or repair utilities broken or damaged as directed at no extra cost to Owner. If existing utilities are not indicated but encountered, make immediate request for necessary measures to protect, relocate, or remove utility as directed.

3. Facilities: Properly protect, maintain, and repair, in a satisfactory manner, existing pavements, curbs, gutters, structures, conduits, fences, walls, trees marked to be saved and other facilities above and below grade shown to remain. Restore damages caused by construction operations at Contractor's expense.

### PART 3: EXECUTION

#### 3.01 CLEARING AND GRUBBING

The Contractor shall accept the site in its present condition and shall remove from the project site all obstructions including existing trees designated for removal, grasses, shrubs, stumps, roots, rubbish, footings, slabs, septic tanks, and existing utilities such as sewers and storm drains, and any other matter determined by the Testing Laboratory to be deleterious.

Holes resulting from the removal of underground obstructions that extend below finish grades shall be cleared of all loose material and dished to provide access for compaction equipment.

#### 3.02 DISPOSAL

##### A. General:

Materials and items removed from within limits of work, except as otherwise specified, become Contractor's property. Legally dispose of following materials away from site.

1. Cleared, grubbed, and demolished material: No burning permitted on site.

##### B. Salvageable Items:

Following remain Owner's property; carefully remove and store on site as directed.

1. Site lights, fixtures and poles.
2. Items of historic significance.



PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. Work Included:

Shoring and underpinning required for this work include, but are not necessarily limited to:

1. Support of existing work in Crocker Art Gallery while access is made for temporary use during construction and until permanent posts and lintels are completed for new openings or until temporary openings are replaced with load bearing masonry.
2. Support of all four existing walls of Crocker-Hastings House during all items of demolition down to existing masonry to remain. Continually support existing brick walls until they are reinforced and tied together into a self-supporting structure by new floors, roof and foundation systems.

B. Related Work Specified Elsewhere:

1. Section 01500: Temporary Facilities & Controls
2. Section 02050: Demolition
3. Section 02200: Earthwork and Removals
4. Section 02350: Piling
5. Section 03100: Concrete Formwork
6. Section 03200: Concrete Reinforcement
7. Section 03300: Cast-In-Place Concrete
8. Section 04220: Unit Masonry
9. Section 05100: Structural Metal Framing
10. Section 05300: Metal Decking

1.03 QUALIFICATIONS

- A. General Contractor shall submit evidence with Bid Form demonstrating that he has at least ten years of experience shoring, bracing and underpinning comparable projects, and has successfully completed ten projects of comparable scope.
- B. The Project Manager will review and verify the information submitted along with other required bid material.

1.04 SUBMITTALS

A. Submit in accordance with Section 01300 for the following:

1. Schedule for procedure of work.
2. Proposed method of shoring system.
3. Procedure for interface with new work.

1.05 DESIGN REQUIREMENTS

Bracing and shoring systems shall be designed by a civil engineer registered in the State of California and employed by the Contractor. Adequacy and strength of systems shall be the complete responsibility of the Contractor. Where the nature and installation of such systems may affect the construction of the new work, including the installation of any other structural work, such systems shall be subject to the review of the Project Manager.

1.06 PROJECT REQUIREMENTS

A. Scaffolding and Hoists:

Contractor shall furnish and maintain hoists, scaffolding, staging, rigging and runways required in the prosecution of the work under this Contract. Such temporary work shall be erected, equiped and maintained in accord with statutes, laws, ordinances, rules or regulations of the State or other authorities and insurance companies having jurisdiction.

B. Protection:

1. Furnish, place and maintain supports, bracing, shoring and sheet piling which may be required for the sides of the excavations or for protection of adjacent existing improvements.

The adequacy of such systems shall be the complete responsibility of the Contractor. Shoring shall conform to Cal/OSHA requirements where applicable.

2. Supports bearing and shoring shall be so constructed that they will not interfere with the building of any structural element or with the removal of any portion of the existing work schedule to be removed.
3. Support and bracing systems shall permit proper applications of specified permanent systems.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

PART 2: PRODUCTS

2.01 MATERIALS

Shoring, bracing and underpinning materials shall be as specified in the designs required under 1.05 A above.

PART 3: EXECUTION

3.01 MANDATORY SEQUENCE OF OPERATIONS

- A. Bracing must remain in place during pile driving operation.
- B. Maintain shoring and bracing until rehabilitated work can stand without the support provided by them.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to work in this Section.

1.02 DESCRIPTION

A. Work includes, but is not limited to clearing and grubbing, preparation of land to be filled, backfilling, spreading, compaction, observation and testing of the backfill, and all subsidiary work necessary to complete the grading of the construction areas to conform with the lines, grades and slopes as shown in Contract Documents.

B. Related Work Specified Elsewhere:

1. Section 15400: Plumbing
2. Section 15700: Air Conditioning
3. Section 16100: Electrical

1.03 ALTERNATES

The scope of work in this Section is affected by alternates. See Section 01030 for description.

1.04 SITE INSPECTION

A. The Contractor is expected to visit the site to form his own conclusions as to the character of the excavating. Verify all existing grades indicated for accuracy. Any discrepancies in existing grades from said Bid Documents shall be reported to the Project Manager immediately.

B. Verify data:

Stake out all work and verify as to location and elevation. Carefully maintain all reference points; if disturbed or destroyed, replace as directed.

C. Prior to bidding, the Contractor is instructed to study the following documents for this site as prepared by:

Lowry & Associates (916) 929-9012  
123 Commerce Circle  
Sacramento, CA 95813

Available at Project Manager's office.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

1. Geotechnical Report 84:128  
Crocker Art Gallery Pavilion  
Hastings House Renovations  
Sacramento, California  
5/17/84

1.05 CERTIFICATION AND TESTING

- A. The City will provide the services of a Foundation Engineer to inspect the earth work operations and to make such tests as he may deem necessary to determine compliance with these Specifications. The Contractor shall adhere in every detail to the requirements of the plans and Specifications in the prosecution of the work. Tests will be paid for by the City, except that retests will be paid for by City and backcharged to the Contractor.
- B. The Contractor shall give 48 hour advance notice and arrange for the Foundation Engineer to observe and test the bottoms of excavations and installation of backfill.
- C. Work which has been tested and proven satisfactory shall be restored to its original condition at the Contractor's expense.

PART 2: PRODUCTS

2.01 MATERIALS

- A. Base Material inside of buildings below concrete slabs:  
3/4" clean crushed rock or gravel, no more than 1% of material shall pass 1/4" screen.
- B. Nonwoven geotextile fabric shall conform to the following criteria:
  1. Fabric pore size (E.O.S.) 70-100 sieve.
  2. Coefficient of hydraulic conductivity not less than 0.1 cm/second.
  3. Grab Tensile Strength not less than 125 pounds.
  4. Trapezoidal Tear Strength not less than 65 pounds.
  5. Mullen Burst Strength not less than 125 pounds per square inch.

- C. Perforated pipe underdrain shall be one of the following non-metallic types at the Contractor's option as approved by Project Manager:
1. Cement perforated underdrain conforming to ASTM C-508, Type II.
  2. Perforated clay pipe conforming to ASTM C-700, extra strength.
  3. Perforated concrete pipe conforming to ASTM C-444, Type I and to ASTM C-14, Class I.
  4. Terminal pipe shall be of the same material as used for the underdrain pipe, except it shall not be perforated.

### PART 3: EXECUTION

#### 3.01 PROTECTION

Protect existing trees, plant materials, walls or other construction on property from damage.

#### 3.02 REMOVALS

- A. Carefully remove existing paving, curbs, sidewalks, earth and fencing, lawn area and planting as necessary to conduct the work.
- B. Do not remove subsurface water, gas, electrical, sewer, drainage or other lines uncovered during excavation. Notify Project Manager when encountered.

#### 3.03 CLEARING, GRUBBING AND PREPARING SUBGRADES

The building area shall be excavated to the horizontal and vertical dimensions shown on the accepted Drawings. All remaining vegetation; concrete, asphalt concrete and brick rubble; rubbish; loose and/or saturated materials, stumps and root systems of removed trees shrubs within two feet (2') of the overexcavated grade shall be removed and disposed of, except that all areas within four feet (4') of existing foundations shall be left undisturbed once the adjacent overexcavated level has been attained.

#### 3.04 PLACING, SPREADING AND COMPACTING BACKFILL MATERIAL

- A. The selected backfill material shall be placed in layers which when compacted shall not exceed twelve inches (12") in thickness.

- B. After each layer of backfill has been placed and spread evenly, it shall be thoroughly compacted with not more than one pass of a flat-plate vibratory compactor. Each layer shall be compacted over its entire area until the density is satisfactory, as determined by the Foundation Engineer or his representative.
- C. The backfilling operation shall be continued until the fill has been brought to the finished slopes and grades as shown in the Contract Documents.

### 3.05 TESTING AND OBSERVATION

- A. All grading operations shall be observed by the Foundation Engineer, at the direction of the Project Manager, who is serving as the representative of the Owner.
- B. The Foundation Engineer or his representative shall observe the compaction of each layer of backfill. Additional layers of backfill shall not be spread until the Foundation Engineer or his representative approves of the density that has been obtained.
- C. Earthwork shall not be performed without the physical presence or approval of the Foundation Engineer. The Contractor shall notify the Project Manager at least two (2) working days prior to commencement of any aspect of the site earthwork requiring Foundation Engineer's review.
- D. If the Contractor should fail to meet the technical or design requirements embodied in this document and on the applicable plans, he shall make the necessary readjustments until all work is deemed satisfactory as determined by the Foundation Engineer and the Project Manager. No deviation from the Specifications shall be made except upon written approval of the Foundation Engineer or Project Manager.

### 3.06 FINISHED GRADES

- A. "Finished grades," as used herein, refers to the required final grade elevation indicated. If the finished grades indicated by spot elevations conflict with those indicated by contours, the spot elevations shall apply.
- B. Unless otherwise indicated, give project site areas outside of building uniform slopes between points for which finished grades are indicated or between such points and existing established grade, except provide vertical curves or roundings at abrupt changes in slopes.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- C. Do all grading required to bring the entire project area to the underside of the respective surfacing as determined by the finished grades.



PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

Furnish all labor, materials, tools, and equipment required to install complete and in place all piles shown on Drawings and specified herein.

1.03 RELATED WORK SPECIFIED ELSEWHERE

1. Section 03300: Cast-In-Place Concrete
2. Section 02200: Earthwork & Removals
3. Section 02150: Shoring and Underpinning

1.04 QUALIFICATIONS

All piles shall be installed by a pile contractor, hereinafter designated the Contractor, qualified to install the type of pile to be driven in accordance with the Drawings and Specifications, and under conditions existing at the site. The minimum requirements for qualification shall be five (5) years pile driving experience and evidence of the satisfactory completion of ten (10) pile installations comparable in scope to the work specified hereunder.

1.05 GEOTECHNICAL REPORT

- A. A Geotechnical Report (dated May 17, 1984 L & A No. 84-128) has been prepared by LOWRY & Associates, Geotechnical Engineers [(916) 929-9012]. This report is available for review at the Project Manager's office, at the Architect's office, or at LOWRY & Associates' office.
- B. The Owner does not guarantee that the information contained in the Geotechnical Report is correct nor that the conditions revealed at the actual boring locations will be continuous over the entire site. This report was obtained for purposes of design only. Making the report available to Contractors shall not be construed in any way as a waiver of this provision. The Contractor shall be responsible for any conclusions to be drawn from this report. Should he prefer not to assume such risk, he is under obligation to employ his own experts to analyze available information and/or to make his own tests upon which to base his conclusions and to determine the actual conditions to be encountered.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

Should any conditions not mentioned in the report be found to exist, the Contractor shall furnish any additional equipment and shall use any special methods necessary to drive the piles to the specified criteria without addition to the contract price.

1.06 PROTECTION

- A. Before any piles are driven, the Contractor shall examine all excavation faces and all adjacent structures including bracing installed under Section 02150 to assess their probable stability during pile driving. If, in his opinion, the excavation faces or structures would be unstable, he shall inform, in writing, the General Contractor of that opinion and shall not proceed until corrective action has been taken.
- B. Reaction of adjacent structures (Crocker Art Gallery, Crocker-Hastings House and Herold Wing) and streets during pile driving shall be monitored by an independent Vibration Consultant employed by the Contractor. Should adverse reaction of such structures or streets be detected, pile driving shall be suspended and the Vibration Consultant shall notify the Contractor, who shall propose to the Project Manager means of minimizing damage.
- C. Work shall comply with all Municipal, State and Federal regulations regarding safety, including the requirements of the Williams-Steiger Occupational Safety and Health Act of 1970.

1.07 PILE TYPE

Piles shall be rolled steel H-sections of HP 10x42 size or greater, and are designed for an allowable axial dead plus live load of at least thirty (30) tons per pile.

1.08 CERTIFICATION OF STEEL PILES

The manufacturer's certified mill analysis and test reports for each heat per ASTM Specification A6 shall be submitted at the direction of the Project Manager. If those documents are not available and if the steel cannot be identified, then sampling and testing of the steel shall be accomplished as ordered by the Project Manager.

1.09 PILE SPLICING

- A. Piles shall be spliced with full penetration welds in accordance with AWS Specification D1.1-84. The welding electrode shall be E 7018 or approved equivalent. A representative of the Foundation Engineer at direction of the Project Manager shall provide full-time observation of welding.
- B. Proposals for alternative splicing procedures and coupling devices may be submitted to the Project Manager only if accompanied by supporting evidence prepared by a licensed structural engineer in the State of California, that a competent connection meeting or exceeding all loading requirements can be achieved by the method proposed.

1.10 PILE LOAD TEST PROGRAM

A. General:

The first production pile shall be tested in sixty (60) tons compression to assess its load-carrying capabilities in accordance with the following criteria.

B. Reaction System:

The Contractor shall provide a dead load reaction system consisting of cantilege or other material whose weight when concentrated upon the axis of the test pile shall remain stable during the test period.

C. Testing:

The Contractor shall provide all equipment necessary to perform the testing program including an independent reference beam system acceptable to the Project Manager, calibrated dial gauges reading directly to one-thousandth inch (0.001"), a thermometer calibrated to one-tenth degree Celsius (0.1 degree C.), necessary steel plates and shims, flood lights for night testing, and a canopy to protect the equipment from excessive thermal contraction or expansion, and rainfall. A representative of the Contractor shall be available for help in moving equipment during daylight hours, and shall be on call throughout other periods of the testing program.

- 1. The Foundation Engineer at the direction of the Project Manager, shall provide all engineering personnel for performance of the testing and evaluation of the results.

#### 1.11 PILE DRIVING REQUIREMENTS

- A. See requirements of Section 02150 Par. 3.01 A.
- B. All piles shall be driven to or below elevation -45 feet, City of Sacramento datum.
- C. All piles shall be driven with a vibratory hammer that is capable of developing at least fifty-two (52) tons bearing. Vibration amplitudes shall not exceed fifteen millimeters (15 mm), and vibration frequencies shall not fall below fifteen cycles per second (15 Hz) during driving.

#### D. Driving and Inspection:

All piles shall be driven straight and true in the locations shown on the Drawings.

- 1. Driving of piles shall not be undertaken within ten feet (10') of concrete cured less than three (3) days.
- 2. Pile driving shall proceed only in the presence of the Foundation Engineer, who shall record the penetration behaviour of each pile during driving, and the elevation of cutoff of every pile.

#### E. Alignment and Tolerances:

All piles shall be driven so that the center of the pile head is not more than three inches (3") from the design locations shown and no pile shall be more than two percent (2%) of its length out of plumb. Piles exceeding these tolerances shall be corrected as directed by the Project Manager and at no increase in cost to the Owner.

#### F. Pile Damage and Replacement:

Cracking, distortion, bending, or other damage sustained by piles during driving shall be corrected as directed by the Project Manager without cost to the Owner.

- 1. Additional piles required by the Project Manager to replace damaged or misaligned piles shall be driven and all changes in pile cap design and construction, including costs of formwork steel, concrete and labor shall be accomplished without cost to the Owner.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

G. Cutting Off:

Tops of all piles projecting above cutoff elevation after driving shall be cut off at the proper elevation, following approval of the Foundation Engineer, and ends removed from the jobsite.

1.12 CLEANUP

Upon completion of pile driving, remove all equipment, excess materials, etc., and leave the site clean and free of debris.

1.13 BASIS OF PAYMENT

- A. For bidding purposes, the Contractor shall include in his bid a lump sum for all work embraced by this Section, complete, based upon the number and length of piles as shown on the Drawings.
- B. The contract sum shall be subjected to adjustment depending upon the actual lineal footage of piles manufactured, driven, and accepted.
- C. For purposes of adjusting the contract sum, the Contractor shall submit unit prices for each type of pile as follows:
  - 1. Manufacturing and furnishing - price per lineal foot.
  - 2. Driving - price per pile.
  - 3. Cutting off - price per pile.
- D. Payment for extra piles ordered by the Project Manager for purposes other than replacement of damaged or misaligned piles shall be in accordance with the above unit prices.
- E. Unit prices shall include all costs for performing the described work, including all incidental items necessary to drive the piles in the proper positions and to the elevations required.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. Work Included:

Perform all work necessary and required for the construction of the project as indicated. Such work includes but is not limited to:

1. Subsurface drain lines.
2. Catch basins and area drains.
3. Grates.
4. Coordinate with plumbing.
5. Coordinate with paving.

B. Related Work Specified Elsewhere:

1. Section 02200: Earthwork & Removals
2. Section 02500: Paving & Surfacing
3. Section 15400: Plumbing

1.03 SUBMITTALS

Submit product literature for all items in 1.02-A.

1.04 ALTERNATES

The scope of work of this Section is affected by alternates. See Section 01030 for description.

PART 2: PRODUCTS

2.01 MATERIALS

- A. See list on C-100.

PART 3: EXECUTION

3.01 INSTALLATION AND WORKMANSHIP

- A. Install per requirements of City of Sacramento.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

- B. Drain lines shall be installed to insure proper flow at all times.
- C. Connect as shown on Drawings.
- D. Install in accordance with manufacturer's instructions.
- E. Set catch basins set to elevations shown on Drawings.
- F. Provide clean-outs in all drain lines.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. Work Included:

Furnish, install and remove forms for cast-in-place concrete including shoring and form supports.

B. Related Work Specified Elsewhere:

1. Section 02200: Earthwork & Removals
2. Section 03200: Concrete Reinforcement
3. Section 03300: Cast-In-Place Concrete
4. Section 03370: Pneumatically Placed Concrete

1.03 REFERENCES, CODES AND STANDARDS

The following references, codes, and standards are hereby made a part of this Section and formwork shall conform to the applicable requirements therein except as otherwise specified herein or shown on the Drawings. Nothing contained herein shall be construed as permitting work that is contrary to code requirements.

1. Recommended Practice for Concrete Formwork, ACI 347-78.
2. Uniform Building Code, 1982 Edition, Chapter 26.

1.04 SUBMITTALS

Submit in accordance with Section 01300 the following:

1. Shop drawings, show type, design, materials, location of form joints, construction joints, ties, rustication strips, tape and other required items. Show location of all embedded items.
2. Product literature: Manufacture's specifications, data, and installation instructions for all items.
3. Mock-up: Prior to commencement of final work, construct 10' x 10' mock-up of architectural concrete wall at project site. See Drawings for configuration.



4. Submit samples for:

- a. Form tie plugs, each type.
- b. Rustication strips, 12" long each type.

1.05 ALTERNATES

The scope of work in this Section is affected by alternates. See Section 01030 for description.

1.06 ALLOWABLE TOLERANCES

Design, construct, set and maintain the formwork so as to insure completed work within the suggested tolerance limits specified in ACI 347-78, Section 3.3.1.

PART 2: PRODUCTS

2.01 MATERIALS

A. Earth Forms:

Unless otherwise indicated or required by the structural Drawings, concrete for footings and grade beams may be placed directly against vertical excavated surfaces provided the material will stand without caving and provided that minimum reinforcing steel clearances indicated on Drawings are maintained and suitable provisions are taken to prevent ravelling of top edges or sloughing of loose material from walls of excavation. Sides of excavation shall be made with a neat cut and the width made as detailed on Drawings. Concrete which is exposed to view on exterior shall be formed to a minimum depth of 6" below finished grade.

B. Wood Forms:

- 1. Exposed concrete not otherwise noted or specified: APA Plyform, Grade B-B, Class I or II (as per strength and tolerance requirements), Exterior, each piece grade marked.
- 2. Architectural concrete: APA high density overlaid plyform Class I or II, 3/4" thick, HDO-PS 183. Exterior, each piece grade-marked.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

3. Chamfer strips: Clear Douglas fir or pine, selected straight, milled on all faces -or- extruded polyvinyl-chloride specially produced for concrete work; Vinylex Corporation, Preco Industries, Vulcan Metal Products, or equivalent. Material usage shall be consistent for each application.
  4. Unexposed concrete not otherwise specified: Of sufficient design and strength to hold concrete properly in place and alignment.
  5. Framing: At Contractor option subject to meeting necessary strengths and surface tolerances.
- C. Column Forms, Round: Provide smooth finish.
1. Sonotubes, with high impact plastic form liner; or
  2. Molded fiberglass column forms.
- D. Form Release Agents:
1. Exposed concrete including surfaces to receive paint and other coatings: Noxcrete, or approved equal, chemically active type producing water insoluble soaps. Form release agents shall be delivered in manufacturer's sealed and trademarked containers and shall be guaranteed to provide clean, stain-free concrete release and not to interfere with future applied coatings and finishes. Release agents shall contain no petroleum solvents such as creosote, paraffin, waxes or diesel oil.
  2. Unexposed concrete: Contractor option except that release agents shall not interfere with bond of any applied finish.
- E. Form Ties:
1. Form tie system: Burke's Threadbar System; including threadbars, PVC sleeves, and PVC spreader cones with 1-1/4" diameter at wall face.
  2. Plugs: Burke Snaplug JPC Reveal, or approved equal; standard grey color.
- F. Cold Joints (Slabs on Grade):
- Standard 24 gauge galvanized steel, keyed profile, sized to suit slab thickness, except where shown otherwise on Drawings.

PART 3: EXECUTION

3.01 PREPARATION

A. Vertical and Horizontal Controls:

Foreman shall be experienced with quality of finish required for architectural concrete and familiar with method and procedure needed to attain an acceptable product. Establish and maintain necessary benchmarks, lines, or controls throughout construction.

- B. Secure information and provide for openings, sleeves, chases, reglets, pipes, recesses, nailers, anchors, ties, inserts, and similar embedded items. Coordinate with concrete work for requirements governing embedment and sleeving of pipes and conduit. No openings accepted on architectural concrete face.

3.02 CONSTRUCTION

A. Formwork - General:

Construct wood forms of sound lumber, straight and rigid, thoroughly braced, mortar tight, and of such strength that the pressure of concrete and the movement of men and equipment will not displace them. Visible waves in exposed concrete surfaces after stripping of forms may result in rejection of that portion of the concrete. The design and engineering of formwork shall be the complete responsibility of the Contractor. Seal joints, gaps and apertures in forms to withstand full hydraulic pressure and to remain watertight and flush.

B. Plywood Forms for Exposed Concrete:

Plywood panels shall be clean, smooth, uniform in size, and free from damaged edges or faces (including holes other than those required for form ties). Use full size (4' x 8' or larger) panels wherever possible. Make plywood panel pattern regular and symmetrical, joints plumb or level, horizontal joints continuous. Block plywood edges which do not occur at bearing points in order to eliminate joint offsets. Pattern shall match approved shop drawings and approved mock-up. Erect outside form for architectural concrete wall first. Place reinforcement 2" clear therefrom.

C. Framing and Bracing:

Framing, bracing and supporting members shall be of ample size and strength to safely carry, without excessive deflection (exceeding allowable tolerances), all dead and live loads to which formwork may be subjected, and shall be spaced sufficiently close to prevent any apparent bulging or sagging of forms.

D. Form Ties:

Form ties shall be of sufficient strength and used in sufficient quantities to prevent spreading of the forms. Ties for exposed concrete surfaces shall be arranged symmetrically and shall be aligned both vertically and horizontally; do not stagger. Seal joints, gaps, and apertures in forms to withstand gull hydraulic pressure and remain watertight and flush.

E. Camber forms for slabs and beams as required to compensate for deflection or settlement due to closure of form joints, settlement of mudsills, shrinkage of lumber, elastic shortening and/or deflection of form members. Positive means of adjustment (wedges or jacks) of shores and struts shall be provided to permit realignment or readjustment. See Article 3.03, "Falsework."

F. Construct forms no higher than 12" above the top of a pour or construction joint.

G. Construction joints shall be in accord with requirements of Cast-In-Place Concrete Section. Provide a surfaced pouring strip where construction joints intersect exposed surfaces to provide straight line at joints. Prior to subsequent pour, remove strip and tighten forms. Construction joints shall show no "overlapping" or offsetting of concrete surfaces and shall, as closely as possible, present the same appearance as butted plywood joints. Joints in a continuous line shall be straight and true.

H. Provide clean-outs along bottom of walls and columns or elsewhere as required to permit thorough cleaning of loose dirt, debris and waste material. Clean-outs shall not be apparent on exposed concrete surfaces.

I. Chamfered Corners:

In general, chamfer all corners unless otherwise noted. Obtain chamfers by placing 3/4" x 3/4" nonstaining moldings in forms. Pieces shall be in longest lengths possible, joints mitered.

- J. Arrange forms to allow proper erection sequence and to permit form removal without damage to concrete.

K. Form Release Agent:

Thoroughly clean forms and coat with release agent prior to initial use and before each reuse. Apply release agent in strict accord with manufacturer's directions and coverage recommendations avoiding starved areas or excessive applications. Apply release agents before reinforcing steel is placed.

L. Reuse of Forms:

Do not reuse any form which cannot be reconditioned to "like new" condition. Control reuse of forms for exposed surfaces to provide surface of uniform color and texture without sharp demarkation between adjacent surfaces.

M. Waterproofing Conditions:

Concrete surfaces to receive waterproofing and dampproofing materials shall be formed to provide a relatively smooth surface free of sharp corners, projections, and offsets at form joints. Depressions and voids shall permit satisfactory patching as specified under Concrete Finishes Section. Form ties shall not penetrate or damage applied waterproofing and dampproofing.

N. Bases and Foundations:

Whenever concrete bases or foundations are to be provided for equipment furnished by other trades, dimensions shall be verified for the equipment furnished before concrete is placed.

- O. Prior to placement of concrete, remove dirt, debris, and foreign material from forms. Leave no wood in concrete except nailers.

P. Inspection of Forms:

Notify the Project Manager at least 48 hours in advance of beginning of placing concrete and at completion of formwork and location of construction joints. An inspection of forms and joints will be made for approval of quality of finish work and general layout only. The foregoing inspection shall in no way relieve the Contractor of responsibility of design and safety of formwork and for locating anchor bolts and construction of forms to lines, levels, and locations shown on Drawings.

### 3.03 FALSEWORK

- A. Contractor shall be fully responsible for proper strength, safety and adequacy of falsework, supports and bearing surfaces therefor used on and in connection with the work. Falsework shall be designed to support imposed loads without deformation, deflection or settlement.
- B. Wedges in pairs or jacks shall be used where required to maintain and/or adjust forms and falsework for beams, slabs and other parts of the structure at exact elevations and to ensure uniform bearing; single wedges are not permitted. Comply with requirements of ACI 347, Section 3.5.
- C. Vertical and lateral loads shall be carried to ground by falsework system, or by the completed structure after it has attained the requisite strength. Falsework supports, when placed on ground, shall be protected against undermining or settlement.
- D. Erect shoring and vertical supports so that they cannot tilt. Securely brace inclined shores against slipping or sliding. Cut bearing ends of shores square and with a tight fit and splices. Splices, where used, shall be secure against bending and buckling.
- E. Where formwork is permitted to be removed before shoring, it shall be so constructed that its removal will not, in any way, disturb the original placement of the shores.

### 3.04 REMOVAL OF FORMS AND FALSEWORK

- A. The removal of forms and falsework shall be carried out in such manner as to ensure the complete safety of the structure. Supports shall not be removed until members have sufficient strength to safely support their own weight and any superimposed loading with proper factor of safety.
- B. After concrete is placed, the following minimum times, with air temperature above 50 degrees F., shall elapse before the removal of forms or shoring.
  - 1. Vertical forms (walls, columns, beam sides): 7 days.
  - 2. Side forms (footings, slabs on grade): 3 days.
  - 3. Slab and opening soffits: 10 days.
  - 4. Beam soffits: 21 days.

5. Shoring:

- a. Shoring required to support framing for one floor or roof shall not be removed until concrete has attained both:

Minimum 21 day age; and  
Minimum strength of  $.80 f'_c$

- b. Where shoring is used to support a floor or roof which has not yet attained age and strength stipulated above, such shoring shall extend to the ground or to at least two floors which have each attained at least a 28 day age and  $1.0 \times f'_c$ .
- c. Reshoring will be permitted if based on a system and details approved by the Project Manager.
- d. Where walls are not continuous to grade, they shall be supported, until design strength is attained, by a supporting system satisfactory to support the weight of wet concrete without undue deflection.
- C. Upon removal of forms, bolts, wires, clamps, rods, etc., not necessary to the work, shall be removed to minimum of 1" from the surface. The Contractor shall so conduct his operations as to eliminate any danger of rust stains from form tie materials or other unprotected ferrous materials embedded in or adjacent to exposed concrete surfaces.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. Work Included:

Furnish and install reinforcement for cast-in-place concrete work including dowels to grouted masonry. Furnish and install reinforcement for "Gunitite" work (Pneumatically Placed Concrete - Section 03370).

B. Related Work Specified Elsewhere:

1. Section 03100: Concrete Formwork
2. Section 03300: Cast-In-Place Concrete
3. Section 03370: Pneumatically Placed Concrete
4. Section 04220: Unit Masonry
5. Section 05200: Miscellaneous Metal

1.03 REFERENCES, CODES AND STANDARDS

The following references, codes and standards are hereby made a part of this Section and reinforcement shall conform to the applicable requirements therein, except as otherwise specified herein or shown on the Drawings. Nothing contained herein shall be construed as permitting work that is contrary to code requirements.

1. "Manual of Standard Practice for Detailing Reinforced Concrete Structures," ACI 315, latest edition.
2. "Building Code Requirements for Reinforced Concrete," ACI 318-77.
3. "Manual of Standard Practice," published by CRSI, latest edition.
4. Uniform Building Code, 1982 edition, Chapter 26.

1.04 ALTERNATES

The scope of work in this Section is affected by alternates. See Section 01030 for description.



#### 1.05 SOURCE QUALITY CONTROL

Refer to Quality Control Section for general requirements governing testing and inspection. Where certified mill test reports (required hereinafter under "Submittals") are not furnished, conform to the following:

1. Reinforcing bars shall be tested in tension and bending as per ASTM A615. Testing shall be done by the Owner's testing agency. Furnish four copies of test reports to the Project Manager.
2. Samples will be taken by the testing agency from bundles as delivered from the mill. Where bundles are identified by heat number and a mill analysis accompanies the report, one tensile and one bending test specimen will be taken from each 10 tons, or fraction thereof, of each size and kind of bar. Where positive identification of heat numbers cannot be made or where random samples are taken, one series of tests shall be made from each 2-1/2 tons, or fraction thereof, of each size and kind of bar.
3. The costs of tests and sampling of reinforcing steel will be paid by the Owner. Costs of retests due to understrength or defective material will be paid by the Owner and backcharged to the Contractor.
4. Include material required to provide samples for testing.
5. The following is subject to special inspection as per UBC, Sec. 306a. Costs therefor will be paid by Owner.
  - a. Placement of reinforcing steel as required by Sec. 306a.3.8.

#### 1.06 SUBMITTALS

Comply with requirements of shop drawings, product data and samples in accordance with Section 01300.

##### A. Shop Drawings:

1. Fully detailed shop drawings, including bending schedules and bending diagrams, shall be submitted to the Project Manager for review. Shop drawings shall show placing details and size and location of reinforcing steel and through wall anchorages for strengthening existing brick walls.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

2. Shop drawings shall be of such detail and completeness that fabrication and placement at the site can be accomplished without the use of project or contract drawings for reference.
3. Contractor shall check architectural, structural, mechanical, and electrical Project or Contract Drawings for anchor bolt schedules and locations, anchors, inserts, conduits, sleeves, and any other items which are required to be cast in concrete, and shall make necessary provisions as required so that reinforcing steel will not interfere with the placement of such embedded items.
4. Reinforcing steel shall not be fabricated or placed before the shop drawings have been reviewed by the Project Manager and returned to the Contractor. Review of shop drawings by Project Manager will not relieve the Contractor of responsibility for errors or for failure in accuracy and complete placing of the work.

B. Mill Test Reports:

Certified mill test reports (tensile and bending) for each heat or melt of steel shall be submitted to the Project Manager before delivery of any material to the job site. (See requirements above under "Source Quality Control.")

1.07 DELIVERY AND STORAGE

Deliver reinforcing to site properly bundled and tagged, and store so as to prevent excessive rusting or fouling with grease or any coating that will interfere with bond. Segregate so as to maintain identification after bundles are broken. Do not use damaged, reworked, or deteriorated material.

PART 2: PRODUCTS

2.01 MATERIALS

A. Reinforcing Bars:

1. New, free of loose rust.
2. Billet steel bars - ASTM A615-79, grade 60 unless otherwise noted.

B. Welded Wire Fabric: ASTM A185-79.

C. Tie Wire: #16 minimum, black and annealed.

D. Accessories:

Metal or plastic spacers, supports, ties, etc., as required for spacing, assembling, and supporting reinforcing in place. Legs of accessories to be of type that will rest on forms without embedding into forms. Galvanize metal items where exposed to moisture, or use approved other non-corrodible, non-staining supports.

## 2.02 FABRICATION

A. Comply with details on Drawings.

B. Where specific details are not shown or noted, do detailing and fabrication in conformance with requirements contained in the References, Codes and Standards Article.

C. Clean bars of loose rust, loose mill scale and any substance which may decrease bond. Bend bars cold and accurately to details on reviewed shop drawings.

D. Shop fabricate reinforcement.

## PART 3: EXECUTION

### 3.01 PLACING

A. General:

Reinforcing steel shall be placed in accord with the Drawings and reviewed shop drawings and the applicable requirements of the References, Codes and Standards Article. Install reinforcement accurately and secure against movement, particularly under the weight of workmen and the placement of concrete. At architectural concrete walls hold reinforcement at least 2" from inside face of form.

B. Reinforcement Supports:

1. Reinforcement shall be accurately located in the forms and held in place by means of supports adequate to prevent displacement and to maintain reinforcement at proper distance from form face. Supports and their placement shall comply with CRSI "Placing Reinforcing Bars." The use of wood supports and spacers inside the forms is not permitted.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

2. Support reinforcement for on-grade slabs by wiring to precast concrete blocks spaced 3'-0" o.c. (maximum) both ways, staggered. Size blocks so that reinforcing is maintained at the center line of the slab.

C. Obstructions:

Wherever conduits, piping, inserts, sleeves, etc., interfere with placing of reinforcing steel, obtain approval of method of procedure before any concrete is placed. Bending of bars around openings or sleeves is not permitted.

D. Tying:

Reinforcing shall be rigidly and securely tied with steel tie wire at splices and at crossing points and intersection in the position shown. Tie wires, after cutting, shall be bent in such a manner that concrete placement will not force the wire ends to surface of exposed concrete.

E. Spacing:

Where Drawings do not show the spacing of the reinforcing, the minimum clear spacing shall conform to UBC Sec. 2607(e).

F. Splicing:

Make splices only at those locations shown on the Drawings or as approved by the Project Manager. Where Drawings do not show minimum laps, comply with requirements of UBC Secs. 2607(f) and (g). Stagger splices in adjacent bars wherever possible.

G. Welded Wire Fabric:

Fabric shall be in as long lengths as practicable and shall be wired at laps. Edge laps shall be a minimum of 2" c-c of selvage wires and end laps shall be a minimum of 2" greater than transverse wire spacing. Offset end laps in adjacent widths.

- H. Dowels shall be tied securely in place before concrete is deposited. In the event there are not bars in position to which dowels may be tied, No. 3 bars (minimum) shall be added to provide proper support and anchorage. Bending of dowels after placement of concrete will not be permitted.

3.02 CLEANING

Reinforcement, at time of placing concrete, shall be free of any coating that would impair bond.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. Work Included:

Furnish and install cast-in-place concrete required for the Project as shown on the Drawings and specified herein. This Section also includes:

1. Concrete for work specified in Mechanical and Electrical Divisions unless specifically included therein.
2. Grouting of structural steel base and setting plates.
3. Grouting of bases, elevator sills, and equipment specified under other Sections.
4. Architectural concrete.
5. Patch existing concrete slabs and curbs, where damaged.
6. Coordination with other trades with regard to requirements for special bases, sleeves, chases, inserts, finishes or provisions of any nature.
7. Curing of formed concrete surfaces.
8. Installation of anchor bolts, hangers, anchors, reglets, plates, inserts and miscellaneous metal or other materials embedded in concrete and which are furnished by other trades.
9. Concrete finishes.
10. Sandblasted concrete and sealer.

B. Related work specified elsewhere:

1. Section 02200: Earthwork & Removals
2. Section 03100: Concrete Formwork
3. Section 03200: Concrete Reinforcement
4. Section 03370: Pneumatically Placed Concrete
5. Section 05100: Structural Metal Framing
6. Section 05200: Miscellaneous Metal
7. Section 05512: Metal Stairs

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

8. Section 14212: Elevators
9. Section 15400: Plumbing
10. Section 15700: Air Conditioning
11. Section 16100: Electrical

1.03 REFERENCES, CODES AND STANDARDS

The following references, codes and standards are hereby made a part of this Section and concrete work shall conform to the applicable requirements therein except as otherwise specified herein or shown on the Drawings. Nothing contained herein shall be construed as permitting work that is contrary to code requirements.

1. "Building Code Requirements for Reinforced Concrete," ACI 318-77.
2. Uniform Building Code, 1982 Edition, Chapter 26.
3. ACI 301, Specifications for Structural Concrete for Buildings.
4. ACI 302.1 R, Recommended Practice for Concrete Floor and Slab Construction.

1.04 ALTERNATES

The scope of work of this Section is affected by alternates. See Section 01030 for description.

1.05 WORK IN PUBLIC PROPERTY

Conform to rules and regulations of the City of Sacramento governing sidewalks, curbs, gutters, and other concrete work located in public property.

1.06 SOURCE QUALITY CONTROL

Refer to Quality Control Section 01400 for general requirements governing testing and inspection.

- A. Cement and Aggregates: Furnish to the Project Manager the following data:

1. Mill certificates from cement manufacturer certifying that cement meets Specifications and is suitable for purposes intended. Certificates shall show compliance with ASTM C114-80 for low alkali cement.

2. Proof of aggregate's compatibility with cement to be used and certification that aggregates meet Specifications. Owner reserves the right to have his testing agency perform any additional tests on cement and aggregates which may be deemed advisable.

#### 1.07 SUBMITTALS

- A. Submit in accordance with Section 01300 the following:

1. Mix design
2. Product Literature
3. Aggregate Samples
4. Location of planned horizontal joints at architectural concrete and placement schedule.
5. Mock-up for Architectural Concrete
6. Admixtures

- B. Mock-Up:

Prior to commencement of final work construct 10'x10' mock-up of architectural concrete wall at project site. Install, patch and finish concrete as shown and specified for permanent work. Acceptance will be based upon color, finish, texture, form, pattern, and compliance with allowable tolerances. At completion of contract demolish and remove mock-up from job site.

#### 1.08 ENVIRONMENTAL CONDITIONS

- A. Cold Weather Requirements: Comply with "Recommended Practice for Cold Weather Concreting," ACI 306R-78.
- B. Hot Weather Requirements: Comply with "Recommended Practice for Hot Weather Concreting," ACI 305R-77.

### PART 2: PRODUCTS

#### 2.01 MATERIALS

- A. Cement:

ASTM C150-80, Type II, low alkali. Cement shall be of same brand, type and source throughout Project.

B. Aggregates:

1. Typical for regular weight concrete: ASTM C33-80 and C88-76 from sources with proven history of successful use. Source shall be constant unless 10 days prior notice is given for approval after recheck of mix design.
  - a. Fine aggregate: Natural sand with sand equivalent of not less than 75 when tested as per Test Method California 217-E.
  - b. Coarse aggregate: Fine grain, sound crushed stone, natural gravel or granite with cleanness value not less than 75 when tested as per Test Method Cal 227
  - c. For architectural concrete: American, Bear, or Feather River, or approved equal; natural gravel and sand.

C. Water:

Clean and potable, free from impurities detrimental to concrete.

D. Admixtures:

1. Chemical admixtures: ASTM C494-79. Concrete shall contain a water reducing admixture (Type A) or water reducing set retarding admixture (Type D). Accelerating admixtures are not permitted except on written permission of the Project Manager. Admixtures containing chlorides, sulfides or nitrides, are not permitted.
2. Air entraining admixtures: ASTM C260-77. Concrete shall contain an air entraining admixture as required to produce an air content of 4 - 6%, except not required in non-exposed concrete.
3. Admixtures shall be supplied by one manufacturer and batched in strict accord with manufacturer's recommendations throughout Project. Admixture brands are subject to approval of the Project Manager.

E. Expansion Joint Fillers:

1. Exposed fillers (on-grade slabs, walks, curbs, gutters and similar flatwork where joints are not otherwise noted or specified): ASTM D994-71, asphaltic compound strips, 1/4" thick unless otherwise noted, precut to proper size.



2. Sealant joints: Rigid glass fiber, compressible, 6 lbs. density, thickness to suit width of joint, free of bituminous materials and binders which would contaminate joint. Cut filler to exact size so the proper depth is provided for sealant.

F. Non-Shrink Grout (Metallic):

Master Builders "Embeco 636," or approved equal, premixed metallic grout.

G. Non-Shrink Grout (Non-Metallic):

Suereisen No. F-100, Sonneborn-Contech "Fondag," "Upcon," 5-star, Master Builders "Masterflow 713," or approved equal, nonmetallic, nonstaining, premixed grout having a compressive strength at 28 days of not less than 6000 psi.

H. Waterseals:

Corps of Engineers Spec. CRD C572, polyvinyl-chloride, ribbed and center bulb type, split or unsplit as required, size as noted.

I. Curing Compounds (Formed Concrete):

See Concrete Finishes, Par. 310.

2.02 MIXES

- A. Schedule of Mixes: Verify aggregate max size for Architectural Concrete finish.

Class	Max.Ag. Size	Max. Slump	Min. Cement (sacks/cu.yd)	Min. 28 Day Comp Strength
A	1-1/2"	4"	6.0	4000 psi
B	1-1/2"	4"	5.3	3000 psi
C	1"	4"	6.8	4000 psi
D	1"	4"	5.0	2500 psi
E	3/4"	4"	6.3	3000 psi
F	1"	4"	5.8	3000 psi

B. Locations of Use:

1. Class A: All structural concrete exceeding 8" in least dimension and located below grade in Pavilion.
2. Class B: All structural concrete greater than 8" in least dimension located other than in Pavilion.

3. Class C: All structural concrete in walls, columns, beams and suspended slabs located above grade in Pavilion, regardless of least dimension.
  4. Class D: All non-structural concrete slabs on grade, such as exterior walks.
  5. Class E: Structural fill on metal deck.
  6. Class F: All structural concrete elements 8" or less in least dimension outside of Pavilion.
- C. Mix designs for concrete shall be Contractor designed at his expense. Designs shall be prepared by a qualified agency approved by the Project Manager. Four copies of mix designs shall be submitted for the Project Manager's review prior to placing any concrete and shall indicate completely, brands, types and quantities of admixtures included. If concrete is to be placed by pumping, recommendations of ACI Committee 304 shall be followed and mix designs must include strengths and slumps.
- D. Mix designs for concrete in public property shall comply with rules and regulations of City of Sacramento.

### PART 3: EXECUTION

#### 3.01 MIXING

Concrete shall be ready mixed as per ASTM C94-80. Equipment shall be adequate for the purpose and kept in good mechanical condition at all times.

1. The rate of delivery, haul time, mixing time and hopper capacity shall be such that mixed concrete delivered shall be placed in the forms within 90 minutes or 300 revolutions of the drum from the time of introduction of cement and water to the mixer. Any interruption in placing in excess of 90 minutes or 300 revolutions will be cause for shutdown of the work for the day and the wasting of any remaining mixed concrete in hoppers or mixers. In case such interruption occurs, the Contractor shall provide construction joints where and as directed and cut concrete back to such line, cleaning forms and reinforcing as herein specified. Delivery tickets shall show departure time from plants.

2. No water shall be added to the mix after the initial introduction of mixing water for the batch except when, on arrival at the job site, the slump of the concrete is less than that specified. In this case, additional water may be added from the truck system to bring the slump within required limits. The drum or blades shall then be turned an additional 30 revolutions or more until the mix is uniform.
3. Mixers shall be equipped with an automatic device for recording number of revolutions of drum or blades prior to completion of mixing operation.
4. Concrete shall be kept continuously agitated until discharged into the hopper at the job site.

### 3.02 PLACING

- A. Absorbent forms shall be thoroughly wetted before concrete is placed. Aggregate base/sand beds for slabs on grade shall be moist but not saturated when concrete is placed.
- B. Placing of concrete shall be done immediately after mixing. no concrete shall be placed or used after it has begun to set and no retempering will be allowed. The method used in placing shall be such that concrete is conveyed to place and deposited without separation of the ingredients. No concrete shall be placed with a free unconfined fall in excess of five (5) feet nor shall it be allowed to cascade through reinforcing steel in such manner as to promote segregation. Chute (elephant trunk) must be in contact with top of concrete at all times.
- C. Splash or accumulations of hardened or partially hardened concrete shall be removed. Contact faces of forms for exposed concrete shall be protected from splash during placing of adjacent concrete. Concrete containing piping shall be placed in a manner that will prevent damage to pipes.
- D. Concrete for below grade exterior walls shall be placed in such a manner that bentonite waterproofing is not damaged where such waterproofing has been previously placed against underpinning or lagging.
- E. Deposit concrete in approximate horizontal layers not exceeding 18" in depth, unless otherwise authorized. Placing of concrete shall be carried on in a continuous operation without interruption until placing of course, section, panel or monolith is completed. At least two (2) hours shall elapse after depositing concrete in walls or

columns before depositing concrete in heads over openings, supported beams or slabs.

- F. Distribution of concrete shall be even and continuous so that no pour joints shall show. Before a pour is started, make certain that adequate equipment, men, and concrete will be available to pour in cycles which will permit proper and thorough integration of each layer of concrete. Upon stopping of a pour, the top surface shall be level. Points of deposit in walls shall be so spaced that it will not be necessary for concrete to flow laterally more than 24 inches.
- G. No concrete shall be placed for any element until reinforcing for same is fastened in place nor until forms are complete. No concrete shall be placed before work that is to be embedded has been set. Notify other crafts so they may deliver anchors, inserts, etc., or other work to be embedded in ample time and also notify them when their assistance in setting is required. Reinforcing or other materials that have been set in place shall not be disturbed.
- H. No pipes except electrical conduits 1-1/4" and less in diameter shall be embedded in structural concrete. Before placing concrete, such pipes and large conduits shall be sleeved providing 1/4" clearance (min.) all around. Sleeves shall be positioned so as not to impair strength of surrounding elements. Sleeves and inserts will be provided and set under other Sections of the work.
- I. Remove debris, mud and water from places to receive concrete. Verify depths of any depressed slab conditions for suitability with type and method of surfacing to be applied over concrete.
- J. Install various inserts, anchorages, etc., required by public and private utility companies to accommodate miscellaneous metal items and equipment furnished by them.
- K. Concrete splash and/or grout shall be removed from surfaces that will receive painter's finish.
- L. Place no concrete in water unless written permission has been obtained from Project Manager.
- M. Maintain continuous and accurate log of placing of concrete in structure.
- N. Notify the Project Manager 48 hours minimum prior to placing of any concrete.

### 3.03 VIBRATION AND COMPACTION

- A. Concrete shall be thoroughly compacted by means of internal mechanical vibrators. Such compaction shall be produced as will be obtained by placing the vibrator directly in concrete at 18"-30" intervals for a period of approximately 5 to 15 seconds and withdrawing slowly or as directed, depending on the consistency of concrete. One vibrator will be required for each location where simultaneous placing takes place, to ensure thorough vibrating of all sections. Provide sufficient spare vibrators on the job so as to have them readily available in case any vibrator in use should suddenly cease to function properly. Where spare vibrators are employed, provide additional spares. Under no condition shall vibrator be placed against reinforcing steel or attached to forms. Use no vibrators to transport material. Exercise care in placing vibrator adjacent to earth to prevent contamination of concrete with earth.
- B. Do not spade concrete at finish surfaces. Do not permit vibrator heads to come within 1-1/2" of architectural concrete outside form face.
- C. Vibrator shall be of the flexible immersion type having a frequency of not less than 7,000 rpm.
- D. Voids and rock pockets shall be prevented from occurring.

### 3.04 CONSTRUCTION JOINTS

- A. Placement of construction joints and the manner in which they are provided for shall be only as approved by Project Manager or as shown on the Drawings. Construction joints shall be as few as possible and will not be permitted simply to save forms. Submit shop drawings of construction joints showing proposed locations and details. Submit to the Project Manager prior to forming or placing concrete.
- B. Under no condition will construction joints be permitted in exposed concrete surfaces other than where specifically shown and specified.
- C. Construction joints including keys shall be cleaned and roughened by removing entire surface and exposing clean aggregate solidly embedded by means of sandblasting or other approved methods. Forms and reinforcing shall be cleaned of drippings, debris, etc. Just before starting of new pour, horizontal surfaces shall be covered with 1/2" - 1" thickness of grout composed of cement and fine aggregate of the same proportion as that used in concrete work, but

omitting the 1-1/2" aggregate where 1-1/2" is the maximum size, or 1/2 of the 1" where 1" is the maximum size. Initial pour shall be thoroughly consolidated with grout so that no variation in texture will occur in exposed concrete surfaces. Proportions will be determined by the Testing Laboratory.

### 3.05 CURING (FORMED CONCRETE):

Keep formed concrete surfaces continuously wet both in forms and after removal of forms for at least seven (7) days after placing. Wood forms and any metal forms exposed to the sun shall be kept wet. If forms are permitted to be removed prior to expiration of curing period, exposed concrete surfaces shall be kept continuously wet by means of fog sprays or non-staining cotton or burlap mats kept moist or by approved curing compound. Plastic sheeting is not permitted for curing exposed concrete.

### 3.06 EQUIPMENT BASES

Verify sizes and shapes required by items specified elsewhere. Concrete bases for special equipment shall be installed in strict accord with Drawing details and the specifications and recommendations of the equipment manufacturer.

### 3.07 EXPANSION JOINT FILLERS

Asphaltic Filler Joints: Place filler material so that top of surface is level and aligned uniformly 1/4" below adjacent concrete surface. Provide where walks abut vertical surfaces, at not over 24 ft. centers horizontally in paving and at other locations so noted on Drawings. Follow Drawings for pattern where indicated; where not indicated, coordinate locations with Project Manager before proceeding.

### 3.08 GROUTING

- A. The setting of steel base plates is specified under the Structural Steel Section. The grouting of the steel base plates shall be performed as hereinafter specified and as a part of this Section.
- B. Grout used for the grouting of base plates shall be metallic non-shrink grout mixed and applied in strict accord with manufacturer's directions. Use non-metallic only where grouting is exposed in the finished work.

- C. Grouting of bases shall be carefully done so as not to leave any voids between the base plates and the concrete.
- D. Where grouting is required for other items and such grout is exposed in the finished work, use non-metallic, non-shrink grout only.

### 3.09 FIELD QUALITY CONTROL

- A. Tests and inspections shall be performed by qualified individuals or Testing Laboratory. These include those special inspections required by Section 306a of UBC, those tests and inspections specified below and such other tests and inspections as the Project Manager may require to establish the acceptability of the work.
- B. Testing and inspection services will be retained by the Owner at his expense except that when tests or inspections reveal failure of materials to meet Contract requirements, costs for subsequent tests and inspections will be deducted from the Contract price. Excessive inspection time required by Contractor's failure to provide sufficient workmen or to properly pursue the progress of the work shall likewise be deducted from the Contract price.
- C. Furnish material and handling for test cylinders and any other samples which Testing Laboratory requires for analysis of concrete work.
- D. Compression Tests:

Three compression test cylinders will be taken for each pour of 100 cu. yd., or fraction thereof each day. Make, cure and store test cylinders as per ASTM C 31-69. One cylinder will be broken at 7 days; one at 28 days; and one retained as a spare. Cylinders will be numbered in sets (1A, 1B, 1C, 2A, 2B, 2C, etc.) and a record kept of extent of pour represented by each set and type of concrete tested. Cylinders will be broken in accord with ASTM C39-72. If any test report indicates 28 day specimen below required strength (within standard of acceptability established by ACI 318-77, Paragraph 4.8), Testing Laboratory will take test cores of hardened concrete in accord with ASTM C 42-77. Concrete shown to be defective shall be removed and replaced. Cost of core tests, repairs and removal and replacement of defective concrete shall be paid by Contractor.

E. Slump Test:

Slump tests will be performed as per ASTM C143-78 (slump cone) or C360-63 (Kelly Ball) at time of taking test cylinders.

F. Air Entrainment Test:

Air content will be tested as per ASTM C 231-78.

G. Shrinkage Tests (Applicable to Class E Fill on Metal Decks)

Where source of aggregates is questionable and no previous shrinkage tests have been made and are available for review by the Project Manager, Contractor shall engage and pay for a testing laboratory approved by the Project Manager to perform shrinkage tests of aggregate in conformance to ASTM C157 modified as specified below. Aggregates proposed for use in all concrete shall result in shrinkage of concrete not to exceed .040% at 28 days.

1. After initial measurement, cure specimens at an age of seven (7) days at 73.4 degree F.  $\pm$  2 degrees F. in a fog cure room so operated that free water is maintained on surface of specimen at all times.
2. At an age of seven (7) days, the specimens are to be measured again and then stored in the drying room at a temperature of 73.4 degrees F.  $\pm$  2 degrees F. and a relative humidity of 50%  $\pm$  4%. Additional length measurements shall be made at an age of 14, 21 and 28 days.

H. Testing Laboratory will supervise preparation and selection of samples taken at job site.

I. The following is subject to Special Inspection as per UBC Section 306a. Costs therefor will be paid by the Owner.

1. Taking of compression test specimens.
2. Placement of reinforced structural concrete as required by Section 306a.1.

3.10 CONCRETE FINISHES

A. General:

1. Provide finish on all exposed cast-in-place concrete surfaces including patching and curing.



CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2136

2. References comply with applicable provisions of following:

ACI 301; Specifications for Structural Concrete for Buildings.

302.1R; Recommended Practice for Concrete Floor and Slab Construction.

B. Submittals and Quality Assurance:

1. Product literature for curing agents.
2. Product literature for abrasive particles.
3. Schedule for preparation of completion of sample mock-up of architectural concrete.

C. Products:

1. Curing agent: Contractor's option.
2. Abrasive particles: Ceramic bonded aluminum oxide or emery graded from particles retained on a No. 50 sieve to particles passing a No. 8 sieve.

D. Finishes:

1. Floor and slab finishes:
  - a. General: Do not sprinkle dry cement or mixture of dry cement and sand directly on surfaces to absorb moisture or to stiffen mix. Make floors and slabs level with maximum variation from level as specified under Concrete Formwork; wet screeds not permitted. Where floor drains occur, slope floors to drain as shown or directed.
  - b. Rough slab finish: Apply to concrete surfaces to receive cement setting beds; tamp as specified above; screed finish only.
  - c. Float finish: Tamp concrete with special tools to force aggregates away from surface; screed with straight exes to bring surfaces to required lines. Begin floating when water sheen has disappeared and surface has hardened sufficiently to permit operation. During or after first floating, check surface planeness with 10' straightedge; apply at no less than two different angles. Cut down high spots and fill low spots to produce a surface within surface

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2136

tolerance of 1/8" in 10 feet. Refloat immediately to a uniform sandy texture.

d. Steel trowel finish:

1. General: Float as specified, follow by initial steel troweling. Finish to smooth surface free from defects and blemishes. After further hardening, do additional steel troweling to produce a plane, hard, dense impervious surface; level or slope to drain as required. Final steel troweling to produce a ringing sound from trowel.
2. Application: To interior exposed surfaces and areas scheduled to receive resilient flooring. Initial steel trowel finish to areas receiving carpeting.
3. Power machine finishing: In lieu of hand finishing, an acceptable type power machine for finishing concrete floors may be used per manufacturer's directions. In general, prepare surfaces for machine finishing as specified for hand troweling.

e. Nonslip finish:

1. General: Float as specified; before final troweling, dry shake abrasive particles uniformly over surface; minimum 25 lbs. per 100 SF. Thoroughly tamp particles flush to surface with steel trowel; do not bury particles. Steel trowel surface to smooth even finish. After curing, rub surface with abrasive brick and water to slightly expose particles.
2. Application: To concrete stair treads and platforms and where otherwise shown.

f. Broom finish:

1. General: Initial steel trowel surface as specified for steel trowel finish; after surface has hardened sufficiently broom lightly with stiff fiber brushes to produce a uniform even texture; broom at right angle to traffic, unless otherwise directed.
2. Application: To ramps, walks, or where otherwise shown.

2. Formed surface finishes:

a. General:

1. Concealed surfaces: Remove rough edges; chip off or rub off fins over 1/4" in height.

b. Exposed finish: Smooth off joint marks; remove blemishes; leave finished surfaces smooth and unmarred. No fins or offsets permitted. Painted surfaces considered exposed.

c. Patching: Immediately after removing forms, patch minor defects and honeycombed areas; patch before concrete is thoroughly dry. Repair by cutting out back to a full solid surface and in manner to form a key for cement mortar fill. Thoroughly wet areas to be patched prior to placing patching mortar. Patch with cement mortar, 1 part cement, 2 parts sand, and of a dry consistency. Compact mortar into place; neatly finish exposed surface. Patch exposed concrete to match adjoining surface.

d. Tie rod and bolt holes:

1. General: Fill holes solidly with cement mortar. Fill holes passing through walls from inside face with a device that forces mortar through to outside face; hold a stop at outside wall surface to assure complete filling. Fully pack holes which do not pass through walls. Strike off flush excess mortar filled holes.
2. Exposed surfaces: Use cement mortar of proportions determined by trial to produce a color and texture to match concrete when cured and dried. After initial set, dress mortar surface to match adjacent concrete surface.
3. Architectural concrete, partially fill holes as above. Dress mortar neatly and set finish surface 1/2" behind concrete face.
4. Concrete columns at Pavilion: After forms are removed, fill voids and pockets in surface to form a smooth round cylinder full length of column.

### 3.11 SANDBLASTED CONCRETE AND SEALER

#### A. General:

1. Provide sandblasted finish at architectural concrete.
2. Provide sealer for above.
3. Provide sandblasted finish at existing masonry wall at Crocker Art Gallery and Crocker-Hastings House in preparation for stucco work. Coordinate with Cement Plaster Contractor to prove surface suitable for subsequent application of stucco.

#### B. Submittals:

1. Provide sandblasted finish complete with sealer for mock-up of architectural concrete.
2. Do not commence the final work until the mock-up has been approved by Project Manager.

#### C. Materials:

1. Abrasive grit: Of proper type and gradation as required to produce even, light sandblasted texture, with cut of approximately 1/16" to 1/8" depth.
2. Sealer: Non-silicone, clear, non-yellowing penetrating sealer; Houston #2 Concrete and Masonry Preservative, Rainguard STD, Chemstop Regular, or approved equal.

#### D. Surface Acceptance:

1. Concrete shall be cured not less than 28 days before commencing sandblasting.
2. Any corrective work to concrete shall be performed under this Section prior to sandblasting operations hereunder.

#### E. Sandblasting:

1. Protect adjacent materials and finishes from duct, dirt and other surface or physical damage during sandblasting operations. Provide all protections as may be required and remove from site and completion of work.
2. Comply with air pollution regulations of governing authorities.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2136

3. Perform sandblasting in as continuous an operation as possible, utilizing same work crew to maintain continuity of finish on each surface or area of work. Sandblast corners and edge of patterns carefully, using back-up boards in order to maintain uniform corner or edge line. Determine type of nozzle, nozzle pressure, and blasting techniques required to match approved samples.
4. Clean up and remove all expended abrasive grit, concrete dust and debris at end of each day of blasting operations.

F. Application of Sealer:

1. Apply sealer as soon as possible after sandblasting operations are completed. Surfaces shall be thoroughly dry prior to application of sealer. Follow manufacturer's printed recommendations for application to required surfaces, spraying one flood coat and covering approximately 100 sq.ft. per gallon of material used.
2. Provide adequate ventilation during application and take precautions to prevent contact with excessive heat or open flame. Comply with air-pollution regulations of governing authorities.
3. Protect adjacent materials from overspray, and clean up any spillage or excess material on floor or other materials without damage. Remove all containers, etc., from site.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. Work includes, but is not limited to, providing all pneumatically placed concrete, referred to herein as gunite, complete.

B. Purpose of Work:

The gunite is being applied to the Crocker Hastings House to provide increased vertical and lateral load resistance and must be tightly bonded to existing masonry walls and footings. Finished surfaces must be to lines and grades as shown on Drawings and with texture suitable to receive cement plaster finish.

C. Related Work Specified Elsewhere:

1. Section 02050: Demolition
2. Section 02150: Shoring & Underpinning
3. Section 02200: Earthwork & Removals
4. Section 03100: Concrete Formwork
5. Section 03200: Concrete Reinforcement
6. Section 03300: Cast-In-Place Concrete
7. Section 03400: Precast Concrete
8. Section 04220: Unit Masonry
9. Section 05100: Structural Metal Framing
10. Section 05200: Miscellaneous Metals
11. Section 09209: Cement Plaster

1.03 SUBMITTALS

- A. Submit schedule to review prior to commencing work.
- B. Submit mix design for review.

1.04 REFERENCES, CODES AND STANDARDS

The following references, codes and standards are hereby made a part of this Section and reinforcement shall conform to the applicable requirements therein, except as otherwise specified herein or shown on the Drawings. Nothing contained herein shall be construed as permitting work that is contrary to code requirements.

1. Uniform Building Code, 1982 edition, Chapter 26.
2. ACI 506, Recommended Practice for Shotcreting.

1.05 PRODUCT HANDLING

Store cement in weathertight building. Protect from dampness. Do not use lumpy or stale cement.

1.06 PLACEMENT RECORDS

Keep on job site until completion and open to inspection of Project Manager a record showing time and date of placing concrete in each portion of structure.

1.07 PROTECTION

Protect adjacent finished surfaces from this work. Replace any finish work defaced by gunite operations.

1.08 MOCK-UP

Provide 4' square panel at location approved by Project Manager for gunite finish. Mock-up shall indicate surface finish and edge detail. Do not proceed with installation of gunite work until mock-up is approved by Project Manager.

1.09 INSPECTION

During the application of gunite work the City will provide special inspection to monitor the quality of work. Work not in accordance with Contract Documents will be rejected and removed from construction. Gunite installation shall be coordinated with work of cement plaster to assure suitable finish surface.

PART 2: PRODUCTS

2.01 MATERIALS

A. Cement:

Portland cement (ASTM C-150, Type II).

B. Aggregates:

ASTM C33.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

1. Fine aggregate for gunite: Washed natural sand of hard, strong, durable particles with not more than 1% by weight of such deleterious substances as clay lumps, schist, alkali, mica, coated grains, or soft flaky particles and shall meet the following gradation:

<u>Sieve Size</u>	<u>% Passing by Weight</u>
3/8 inch	100
No. 4	97 - 100
No. 8	90 - 98
No. 16	70 - 85
No. 30	35 - 55
No. 50	15 - 25
No. 100	2 - 8

The sand shall have a fineness modulus of not less than 2.40 nor more than 2.75.

2. Fine aggregate for patching: Dry silica sand, otherwise as 1).

C. Water:

Clean and free from deleterious amounts of acids, alkalis, scale or organic materials.

D. Epoxy Bonding Agent For Patching:

Concresive

2.02 QUALITY

A. Gunite Designed Strength:

Minimum 28-day strength, 3000 psi.

B. Mix:

Maximum volume of dry sand per 94-pound sack of cement, 4.5 cubic feet, minimum 3.0 cubic feet.

2.03 EQUIPMENT

A. Handling and Mixing of Gunite:

Project Manager may order removal of any equipment which in his opinion is insufficient or in any way unsuitable.



PART 3: EXECUTION

3.01 SURFACE CONDITIONS

A. Inspection:

1. Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.

3.02 PREPARATION OF SURFACES

A. General:

All gunite and patchwork is to be applied to cement plaster or masonry surfaces thoroughly cleaned by sandblasting using clean, sharp sand uniform in size, with no particles that will pass a 50-mesh screen.

B. Patchwork and Chasing:

Cut chases for guniting, and chases and grooves for patchwork as shown on Drawings prior to sandblasting.

C. Cleaning:

After sandblasting, remove all traces of loose material by blowing off and out with air.

D. Wet surfaces immediately before guniting, but not so wet as to overcome suction.

3.03 GUNITE

A. Placement:

Whenever possible, except when enclosing reinforcing steel, the nozzle shall be held at right angles to the surface to be gunited and at a distance from 2-1/2 to 3 feet. When enclosing reinforcing steel the nozzle shall be held so as to direct the material behind the bars. Each side of each bar shall be shot separately. Any deposits of loose sand or rebound shall be carefully removed from surfaces before guniting. A second experienced nozzleman equipped with an air jet shall attend the operators whenever reinforcing steel is being enclosed and shall carefully precede the nozzle and blow out all rebound and sand which may have lodged behind the steel.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

B. Adjustment of Mix:

If, for any reason, the gunite develops less than the assumed 3,000 pounds per square inch minimum ultimate 28-day compressive strength the gunite mix proportions shall be adjusted by increasing the amount of cement, so that the resulting gunite will comply with the minimum strength requirements. Any such deficient gunite may be further tested by taking cores from the work. Should the ultimate compressive strength of these test cores be less than 3,000 pounds per square inch in any part of said deficient work, then this work shall be removed and replaced.

C. Defective Work:

Should rebound pockets, sags, sloughing, or other defects occur in the work they shall be cut out and replaced. No rebound shall be used over or in any way incorporated into the work. If a trowel, straight edge, or other implement is used to remove excessive material from the surface, care shall be exercised to prevent the gunite from being dragged or torn.

D. Laitance:

The film of laitance which forms on the surface of gunite shall be removed by careful wire brushing one hour after application. After 24 hours the film shall be removed by sand blasting.

E. Puddled Gunite:

The use of "puddled gunite" in which air pressure is reduced and water content of the mix increased to facilitate the placing in difficult locations will not be permitted. Gunite shall not be placed where the stream from the nozzle cannot directly impinge on the surface on which the gunite is to be placed. Where shooting conditions are difficult, the proper results shall be obtained by maintaining normal air pressure and water ratio and materially reducing the supply of material.

3.04 FINISHES

A. Patching:

Match adjacent surfaces.

B. Gunite:

1. In order to achieve finish, gunite shall be applied in not less than two operations. Structural operation shall cover bars by at least 1/2 inch but not more than 1-1/2 inch and shall be followed by Finish Operation extending to full thickness of wall. The surface shall be given fine texture shotcrete finish.
2. Screeds shall be provided, to finish wall-edges to straight and strong lines. The surface shall be rodded and given a fine texture shotcrete finish.
3. In order to obtain the fine texture shotcrete finish speci-fied, a quick flashcoat may be applied over the screeded area. In the event that this flashcoat cannot be applied immediately upon completion of the sponge float or sacked finish, the surface shall be broomed with a hard broom to remove surface laitance.

C. Wood float finish where gunite is to remain exposed.

D. Rubber float finish where gunite will be covered by another material.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. General:

Provide precast concrete and glass fiber reinforced concrete, complete, as shown and specified per Contract Documents.

B. Related Work Specified Elsewhere:

1. Section 03300: Cast-in-Place Concrete
2. Section 05200: Miscellaneous Metals
3. Section 07600: Flashing & Sheet Metal
4. Section 07900: Sealants
5. Section 08500: Window Wall & Glazing
6. Section 09209: Cement Plaster
7. Section 09900: Painting

1.02 SYSTEM DESCRIPTION

A. General:

Work consists of exterior precast units, connections to structural frame and embedded steel connections.

B. Design Criteria:

1. General: Design and detail precast concrete units and connections per applicable codes, reference standards, and following requirements. Include effects of building elements supported by panels.
2. Gravity:
  - a. General: Design panels as uncracked section at exposed faces.
  - b. Tension in concrete: Based on gross section; not to exceed five times square root of concrete strength.

3. Seismic:

- a. Forces: Applied in any horizontal direction, acting through center of gravity.
    - 1. Panel: 0.30 gravity.
    - 2. Connection body: 0.40 gravity.
    - 3. Inserts, welds and bolts: 1.20 gravity.
  - b. Building movement: 1/133 times interstory height of adjacent floors.
4. Erection and handling: Provide lifting devices, strong backs, and other temporary supports to ensure that units remain uncracked.
5. Other:
- a. Connections:
    - 1. Panel to panel: Not permitted.
    - 2. Above ground floor: Make directly to concrete framing or through masonry to gunite.

1.03 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer: Use one of following, or approved equal.

Basalt Rock Co., Inc.  
Tecon Pacific  
Terracon Corporation  
Western Art Stone Co.  
Lafayette Mfg. Co.  
United Technologies Inc.

B. Testing Laboratory:

Selected and paid for by Owner; retesting paid for by Contractor.

C. Special Requirements; Regulatory Agencies:

Comply with applicable provisions of following.

UBC Uniform Building Code, 1982 edition.

D. Project Mock-up:

1. General: Prior to commencement of final fabrication, erect mock-ups. Build mock-up in convenient location at fabrication site or at other acceptable location. Use same materials, details, and anchoring system to be incorporated in work. Unit used in full size mock-up may be used in construction after review.
2. Full size mock-ups:
  - a. Section of window surround as shown.
  - b. Sections of belt courses, each type.
  - c. Section of coping.
3. Visual acceptance: Mock-up will be used for visual acceptance and to set standard of quality for finished work. Visual acceptance based on construction, color, texture and compliance with allowable tolerances.
4. Modifications: After visual inspection, right reserved to vary aggregate sizes, colors, proportions and finishes.

E. Source Quality Control:

1. General: Plant testing; per PCI MNL-117; paid for by Contractor.
2. Visual acceptance: Units inspected at place of fabrication and at project site prior to erection. Replace rejected panels at no cost to Owner.

1.04 REFERENCES

Comply with applicable provisions of following and as specified.

ANCI 318; Building Code Requirements for Reinforced Concrete.

PCI MNL-117; Manual for Quality Control for Plants and Production of Architectural Precast Concrete.

MNL-121; Manual for Structural Design of Architectural Precast Concrete.

Guide Specifications for Glass Reinforced Concrete Panels.

1.05 SUBMITTALS

A. Mock-ups:

Section 03400, Par. 1.03 D.

B. Shop Drawings:

Shop and erection drawings, indicating profiles, dimensions, joints, details of inserts, reinforcing and connections to adjoining work. Drawings, stamped by licensed civil or structural engineer registered in the State of California, suitable for submittal and acceptance by governing Building Department.

C. Product Data:

Manufacturer's specifications, catalog cuts, data sheets, and installation instructions.

D. Additional Data:

Structural design calculations substantiating panels, inserts, and attachments comply with design criteria. Calculations prepared and stamped by licensed civil or structural engineer registered in the State of California suitable for submittal and acceptance by Governing Building Department.

E. Certificates:

1. Steel: 3 certified copies of mill test reports for reinforcing steel and structural steel attachments.
2. Concrete mix design: 3 certified copies.

1.06 PRODUCT HANDLING

A. Delivery:

Carefully handle and transport panels to prevent damage and discoloration.

B. Protection:

Installer responsible for damage to or disfiguration of work caused by his operation during installation.

PART 2: PRODUCTS

2.01 MATERIALS

A. Attachments:

1. Structural steel: ASTM A-36 for angles, clips, shims, and other supporting items.
2. Fastening devices and accessories: Bolts and headed studs per ASTM A-307. Steel anchors, clip angles, anchor plates, shims, washers, lifting inserts, and other fastening devices and accessories as required.
3. Inserts: Steel; types as required with enclosed threaded area and flared heavy wire loops.

B. Concrete Materials:

1. Admixtures: Air entrainment, ASTM C-260.
2. Aggregates: Prattco natural sand; washed and dried silica, to pass a No. 20 sieve.
3. Cement: ASTM C-150, Type I or II; gray.
4. Water: Potable; free of deleterious materials.

C. Reinforcement:

1. Deformed bars:
  - a. General use: ASTM A-615, Grade 40 and 60 as required.
  - b. Welded connections: ASTM A-706, Grade 60.
2. Welded wire mesh: ASTM A-185; sizes and gages required, electrically welded, unless otherwise shown.
3. Glass fiber reinforcement: Compatible with Portland cement.

2.02 MIXES

A. Concrete:

Design mix by fabricator to achieve specified results. Use homogeneous mix throughout, normal weight concrete; minimum 4000 psi when tested at 28 days.



## 2.03 FABRICATION

### A. Forms:

1. Forms for glass fiber reinforced concrete panels shall be rigid and constructed of materials that will result in finished products conforming to the profiles, dimensions and tolerances indicated by the contract documents and on the approved shop drawings.
2. Release agents shall be applied and used according to manufacturer's instructions.

### B. Proportioning and Mixing:

1. All measurements of mix constituents shall be carried out in a careful manner to achieve the desired mix proportions.
2. The glass fiber and cement slurry shall be metered to the spray head at rates to achieve the desired mix proportion and glass content. These shall be checked in accordance with standard procedures described in PCI "Recommended Practice for Glass Fiber Reinforced Concrete."
3. Cleanliness of equipment and working procedure shall be maintained at all times.

### C. Hand Spray Application:

1. Spray operators shall be trained personnel.
2. A mist coat consisting of the matrix without fiber may if necessary be sprayed onto the form. The thickness of this coating shall generally not exceed 1/32 inch in order to avoid an unreinforced surface.
3. Spray-up of the main body of material shall proceed before any mist coat has set.
4. Application shall be by spraying such that uniform thickness and distribution of glass fiber and cement matrix is achieved during the application process.
5. Consolidation shall be by rolling or such other techniques as necessary to achieve complete encapsulation of fibers and compaction.
6. Control of thickness shall be achieved by using a pin-gauge or other approved method.

7. All hand-forming of intricate details, incorporation of formers or infill material, and over-spraying shall be carried out before the material has achieved its initial set so as to insure complete bonding.

D. Insert and Embedments:

1. Inserts shall be properly embedded in built up homogeneous GFRC bosses to develop their strength.
2. Panel manufacturer shall test inserts to establish test data for use in design.
3. Rigid embedded items bonded to GFRC shall not create undesirable restraint to volume changes.

E. Allowable Tolerances:

Manufacture units so that each panel complies with the dimensional tolerances listed below. For dimensional tolerances not listed below, those listed in PCI MNL 117, "Manual for Quality Control for Plants and Production of Architectural Precast Concrete Products," shall apply.

1. Dimensional tolerances of finished units:

- a. Overall height and width of units measured at the face adjacent to the form:

10 ft or under	$+ 1/8"$
10 ft to 20 ft	$\pm 1/8", -3/16"$

- b. Thickness:

1. Skin thickness  $+ 1/4", -0"$
2. Side return thickness  $+ 1/8", - 0"$
3. Panel depth  $+ 3/8", -1/8"$

- c. Angular deviation of place of side mold:  $1/32"$  per 3" depth or  $1/16"$  total, whichever is greater.

- d. Variation from square or designated skew (difference in length of the two diagonal measurements):  $1/8"$  per 6' or  $1/4"$  total, whichever is greater.

- e. Length and width of blockouts and openings within one unit:  $\pm 1/4"$ .

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
CC NUMBER 2211

2. Position tolerances: For sprayed-in items measured from datum line locations as shown on the approved erection drawings:

- a. Inserts bolts and pipe sleeves:  $\pm 3/8"$ .
- b. Blockouts:  $\pm 1/4"$ .
- c. Flashing reglets, at edge of panel:  $\pm 1/4"$ .
- d. Reglets for glazing gaskets:  $\pm 1/8"$ .

F. Finishes:

Exposed face of panels to match approved sample on file in Project Manager's office. Exposed face of panels shall be manufactured free from joint marks, "grain" or other obvious defects.

G. Cover:

Provide embedded anchors, inserts, and other sprayed in items with sufficient anchorage and embedment for design requirements.

H. Curing:

- 1. Immediately after the completion of spraying of the panel, a curing method shall be used to ensure sufficient strength for removing the units from the form.
- 2. After initial curing, remove panel from form and place in a controlled curing environment. Panels shall be kept continuously wet for a minimum of 7 days in accordance with manufacturer's standard curing practice. The temperature shall be maintained between 60 degrees F. and 110 degrees F. during this period.

I. Panel Identification

- 1. Mark each GFRC panel to correspond to identification mark on shop drawings for panel location.
- 2. Mark each GFRC panel with date cast.

J. Acceptance:

GFRC units which do not meet the color and texture range or the dimensional tolerances may be rejected at the option of the Project Manager, if they cannot be satisfactorily corrected.

PART 3: EXECUTION

3.01 PRODUCT DELIVER, STORAGE AND HANDLING

A. Delivery and Handling:

1. Handle and transport units in a position consistent with their shape and design in order to avoid excessive stresses or damage.
2. Lift or support units only at the points shown on the erection shop drawings.
3. Place nonstaining resilient spacers of even thickness between units.
4. Support units during shipment on nonstaining shock-absorbing material.
5. Protect units from dirt and damage during handling and transport.

B. Storage at Jobsite:

1. Store units to protect them from contact with soil, staining, and from physical damage.
2. Store units, unless otherwise specified, with non-staining, resilient supports located in same positions as when transported.
3. Store units on firm, level, and smooth surface.
4. Place stored units so that identification marks are easily readable.

3.02 PRE-INSTALLATION RESPONSIBILITY

A. General Contractor's Responsibility:

1. The General Contractor shall provide building lines, center and grades in sufficient detail to allow installation of the GFRC units.

2. The General Contractor shall provide true, level bearing surfaces.
3. The General Contractor shall provide for accurate placement and alignment of anchor bolts, plates or dowels on the structure.

B. Erector Responsibility:

Prior to installation of the units, the erector shall check the jobsite dimensions affecting the work under this contract. Any discrepancies between design dimensions and field dimensions which could adversely affect installation in strict accordance with the contract documents shall be brought to the attention of the General Contractor and Project Manager. If discrepancies do exist, installation shall not proceed until they are corrected or until installation requirements are modified and reviewed by the Project Manager.

3.03 ERECTION

A. Unloading Areas and Access:

Clear, well-drained unloading areas and road access around and in the building (where appropriate) shall be provided and maintained by the General Contractor to a degree that the hauling and erection equipment for the GFRC units are able to operate under their own power.

B. Safety Aspects:

The erector shall provide adequate barricades, warning lights or signs to safeguard traffic in the immediate area of hoisting and handling operations.

C. Setting:

1. GFRC units shall be lifted with suitable lifting devices at points provided by the manufacturer.
2. GFRC units shall be set level, plumb, square and true within the allowable tolerances.

D. Supports and Bracing:

The erector shall provide temporary supports and bracing as required to maintain position, stability and alignment as units are being permanently connected.

E. Fastening:

1. Fasten GFRC units in place by bolting or welding or both as shown on approved erection drawings.
2. Field welding shall be done by qualified welders using equipment and materials compatible to the base material.

F. Tolerances of Erected Units:

Tolerances for location of GFRC units shall be non-cumulative and as listed below. For erection tolerances not listed below, those listed in PCT MNL 117, "Manual for Quality Control for Plants and Production of Architectural Precast Concrete Products," shall apply.

1. Face width of joint: Panel dimension 10ft or less,  $+ 3/16"$ ; panel dimension 10 to 20 ft.  $+ 3/16" - 1/4"$ ; panel dimension greater than 20 ft.  $+ 1/4" - 5/16"$ .
2. Warpage: Maximum permissible warpage of one corner out of the plane of the other three shall be  $1/16$  in/ft distance from the nearest adjacent corner, or  $1/8"$  total after installation.
3. Bowing: Not over  $L/360$ , where L is the panel length.

3.04 PATCHING

Mix and place patching mixture to match color and texture of surrounding concrete.

3.05 CLEANING

- A. Cleaning methods shall be approved by fabricator.
- B. After installation Contractor shall clean soiled GFRC surfaces with detergent and water, using fiber brush and sponge, and rinse thoroughly with clean water.
- C. Use extreme care to prevent damage to GFRC surfaces and to adjacent materials.
- D. Soiled surface must be thoroughly rinsed with clean water immediately after using cleaner.

3.06 PROTECTION

- A. The erector shall be responsible for any chipping, spalling, cracking or other damage to the units after delivery to the job site.
- B. After installation is completed, any further damage shall be the responsibility of the General Contractor.

3.07 INSPECTION AND ACCEPTANCE

Final inspection and acceptance of erected GFRC panels shall be made by the Project Manager to verify conformance with Plans and Specifications.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. Work Included:

1. Concrete block masonry including reinforcing, grouting and cleaning.
2. Repair and "fill-in" of original brick masonry.

B. Related Work Specified Elsewhere:

1. Section 02050: Demolition
2. Section 02150: Shoring and Underpinning
3. Section 03100: Concrete Reinforcement
4. Section 05100: Structural Metal Framing
5. Section 05200: Miscellaneous Metals
6. Section 09205: Furring & Lathing

1.03 REFERENCES, CODES AND STANDARDS

The following references, codes and standards are hereby made a part of this Section and masonry work shall conform to applicable requirements therein except as otherwise specified herein or shown on the Drawings. Nothing contained herein shall be construed as permitting work that is contrary to code requirements.

1. "Masonry Design Manual," published by Masonry Industry Advancement Committee, 1972-2nd Edition.
2. Uniform Building Code, 1982 Edition, Chapter 24.

1.04 SUBMITTALS

Certificates: Provide certificates in duplicate verifying that concrete blocks meet the Specifications.

1.05 DELIVERY, HANDLING AND STORAGE

- A. Do not bring cementitious or other material to the site if it has become lumpy, caked, hardened or air slaked from absorption of moisture.



- B. Handle blocks in manner to prevent chipping and breakage. Protect reinforcing steel from kinking and bending and from contamination with dirt, mud, oil and other foreign matter detrimental to bond.
- C. Store materials where protected from weather, contact with soil, traffic and construction operations.

## PART 2: PRODUCTS

### 2.01 MATERIALS

#### A. Concrete Block:

ASTM C90-78, Type 1, Grade N, two cell, open end and bond beam units where indicated or required, made with lightweight expanded clay or shale aggregates.

- 1. Size: 12" x 8" x 16" unless otherwise shown.
- 2. Unit Weight: 85 to 105 pcf.
- 3. Max. Linear Shrinkage: 0.55%
- 4. Min. Tensile Strength: 135 psi.
- 5. Color: Gray.
- 6. Texture: Smooth conventional.

#### B. Brick:

Conform to U.B.C. Standard 24-1, Grade MW.

#### C. Reinforcing Steel:

Conform to requirements of Drawings and Concrete Reinforcement Section. Provide positioning devices or other approved means for maintaining vertical and horizontal reinforcing in the locations indicated on the Drawings. Devices shall occur at top and bottom of vertical steel and at intermediate points not to exceed 192 bar diameters. Reinforcing must be placed in two layers, not closer than 3/4" nor more than 1-1/2" from side walls of 12" block.

#### D. Portland Cement:

ASTM C150-78a, Type II, "Low Alkali." No masonry cement permitted.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

E. Hydrated Lime: ASTM C 207-76, Type S.

F. Aggregates:

1. Setting Mortar Sand: ASTM C 144-76, with not less than three percent passing #100 sieve.
2. Grout Aggregate: ASTM C 404-76, size 1 for sand and size 8 for coarse aggregates (pea gravel).

G. Water:

Clean and potable, free of impurities detrimental to mortar or grout.

H. Grout Admixture: Suconem "GA," added to mix at job site.

## 2.02 SETTING MORTAR

A. Type: S as per ASTM C 270-73.

B. Proportioning: (Parts by volume)

Portland Cement	1
Sand	3 - 4-1/2
Hydrated Lime or Lime Putty	1/4 - 1/2

C. Minimum Strength (psi at 28 days): 1800

D. Mixing:

Measure materials accurately and machine mix in batch type mixer in which quantity of water can be accurately controlled. Use mixers of full sack (cement) capacity, split sack batches not permitted. Mix for at least 3 minutes after all materials are in drum. Empty mixer completely before loading each succeeding batch. Work mortar at frequent enough intervals to prevent separation of ingredients. Retemper only as necessary to replace water lost through evaporation. Do not use mortar after final set has begun.

## 2.03 GROUT

A. Proportioning (Parts by Volume): Composed of the following quantities for 1 cubic yard:

6.5 sacks cement  
65% sand  
35% pea gravel  
6 pounds grout admixture  
Sufficient water for 10" slump

- B. Minimum Strength (psi at 28 days): 2000
- C. Batching and Mixing: ASTM C 94-78a (transit mixed). Water shall be added as required to provide a pourable consistency without segregation. Add grout admixture to mix at job site.

### PART 3: EXECUTION

#### 3.01 PREPARATION

Clean and roughen concrete at bonding surface, sandblasting where required. Bend dowels into proper alignment, straight and unkinked.

#### 3.02 CONSTRUCTION

- A. Construct concrete block masonry in accord with Reference Standards except where otherwise qualified or modified herein. Where standards conflict, assume the more stringent condition.
- B. Bond Pattern and Joint Treatment:  
  
Common running bond with nominal 3/8" wide joints; compacted and struck flush where concealed.
- C. Masonry units shall not be wet prior to laying.
- D. Set masonry units plumb, true to line, with level courses accurately spaced. Keep bond pattern plumb and in alignment full height of wall, corners and reveals plumb and true. Do not use line pins unless absolutely necessary and, if used, fill holes immediately with mortar when pin is withdrawn. Cut units with a power driven carborundum saw. No chipped faces, corners or edges permitted.
- E. Lay block with head and bed joints solidly filled with mortar for a distance in from the face of the unit equal to the thickness of the face shell.
- F. Provide cleanouts at bottom of grouted cells. Where cleanouts are required to occur on exposed masonry surface, remove entire face shell.
- G. Build in lintels, anchors, reglets, inserts, bolts, flashings, frames, etc., furnished by others, as the work progresses.

- H. Lay blocks to preserve unobstructed vertical continuity of cells.
- I. Remove overhanging mortar or obstructions from inside of cells to be grouted using high pressure jet stream or approved mechanical means.

### 3.03 GROUTING

- A. Fill all concrete block cells with grout.
- B. Grouting shall be done by "high lift" process except that "low lift" may be used for walls with pours eight feet high and less (Contractor option). Except as otherwise specified, high lift grouting shall conform to requirements of References, Codes and Standards Article.
- C. Grout spaces shall not be wet at the time grout is placed.
- D. Spaces to be filled with grout shall be free from debris, mortar, etc., before filling.
- E. Grout shall not be placed by high lift process until mortar in joints has set for 24 hours.
- F. High-lift grout shall be poured in maximum lifts of 4 feet. At cessation of each lift, the grout in this lift shall be vibrated with a 3/4" flexible cable vibrator for the full height of the lift. Vibrator shall be placed in cells not to exceed 16" centers (in plan). When top of wall is reached, alternately "top" and vibrate to complete the pour to top of wall. Succeeding lifts of grout shall be placed following an appropriate lapse of time for grout settlement and absorption of excess moisture.
- G. Place high-lift grout using adequate grout pumps.
- H. For such time as may be required immediately following grouting, keep walls flushed down with a pressure stream of clear water to completely remove laitance from exposed faces.

### 3.04 CLEANING

Clean work as it progresses keeping exposed finished portions of the work free of soil and mortar stains. Use no acid cleaners. Where manual or chemical cleaning does not effectively result in surface acceptable to receive finish, sandblasting may be required.

3.05 FIELD QUALITY CONTROL

- A. Tests and inspections shall be performed by qualified individuals, engineering companies or testing laboratories who shall perform those special inspections required by Section 306a of the Uniform Building Code, those tests and inspections specified below and such other tests and inspections as the Project Manager or Owner may require to establish the acceptability of the Work. Testing and inspection services shall be retained by the Owner at his expense except that when tests or inspections reveal failure of materials to meet contract requirements, costs for subsequent tests and inspections will be deducted from the contract price.
- B. Materials will be tested in accord with the following:
  - 1. Setting mortar and grout: Compressive strength. At the beginning of masonry work, not less than one (1) test sample of mortar and grout shall be taken on 3 successive working days. Additional samples shall be taken whenever any changes in materials or job conditions occur or when, in the opinion of the Project Manager, such tests are necessary to determine quality of materials.
    - a. Mortar Test Method: As per UBC Sec. 2403.r.3.
    - b. Grout Test Method: As per UBC Sec. 2403.s.3.
    - c. Additional Tests: Where above tests indicate failure to meet contract requirements, perform core tests as per ASTM C 42-77 as directed by Project Manager and at no expense to Owner. Make repairs required by taking test cores. Where test cores indicate inadequate strengths, as determined by Project Manager, remove and replace deficient masonry as directed by Project Manager and at no additional expense to Owner.
- C. High lift grouting procedures shall be specially inspected by the testing agency as per UBC Sec. 2415(c).
- D. Selection and preparation of samples supervised by Owner's testing agency.
- E. Contractor shall furnish materials required for analysis of masonry work.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. Work Included:

1. Granite sills.
2. Removal of marble fireplace surrounds and hearths.

B. Work Specified Elsewhere:

1. Section 03100: Concrete Formwork
2. Section 03200: Concrete Reinforcement
3. Section 03300: Cast-In-Place Concrete
4. Section 05200: Miscellaneous Metal

1.03 QUALITY ASSURANCE

A. Qualifications of Manufacturers:

1. Granite shall be supplied from quarry approved by Project Manager.

B. Qualifications of Installers:

1. Installers shall be masonry contractor and skilled masonry mechanics.

C. Codes and Standards:

1. Latest edition of Specification for Architectural Granite, National Building Granite Quarries Assoc., Inc.; P.O. Box 444, Concord, NH 03302.

D. Source Quality Control:

1. All granite shall be obtained from quarries having adequate capacity to meet requirements specified.
  - a. Absorption, ASTM C 97-47, 10 maximum.
  - b. Compressive strength, ASTM C 170-50, 31, 930 psi minimum.
  - c. Modulus of rupture, ASTM C99-52, 2120 psi minimum.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
CC NUMBER 2211

1.04 SUBMITTALS

A. Shop Drawings:

For all granite work showing bedding, bonding, jointing and anchoring details, dimensions and setting, number of each piece of granite.

B. Samples:

Submit two 12" x 12" samples of granite to show color, texture and finish.

1.05 PRODUCT HANDLING

A. Packing and Loading:

Finished granite shall be carefully packed and loaded for shipment using all reasonable and customary precautions against damage in transit. No material which may cause staining or discoloration shall be used for blocking and packing.

B. Site Storage:

Upon receipt at the building site or storage yard, the granite shall be stacked on timber or platforms at least 4" above the ground, and extreme care shall be taken to prevent staining during storage. If storage is to be for a prolonged period, polyethylene or other suitable plastic film shall be placed between any wood and finished surfaces and shall be used also as an overall protective covering.

C. Protection:

Use all means necessary to protect the work of this Section before, during and after installation and to protect the work and materials of all other trades.

D. Defective Work:

Any piece of granite showing flaws or imperfections upon receipt at site shall be referred to Project Manager for decision as to whether it shall be rejected or redressed for use.

E. Replacements:

In the event of damage, make repairs and replacements necessary for the approval of Project Manager at no additional cost to Owner.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

1.06 JOB CONDITIONS

A. Existing Conditions:

Contractor shall inspect all surfaces prepared for granite work, identify all defects and notify Project Manager and shall not proceed with installation of granite until corrections have been made.

PART 2: PRODUCTS

2.01 GRANITE

A. General:

All granite shall be of standard grade, free of cracks, seams or starts which may impair its structural integrity or function. Inherent variations characteristic of the quarry from which it is obtained will be acceptable. Color, texture and finish shall be within the range of samples approved by the Project Manager.

B. Sills:

Color and finish shall match existing granite at job site. If matching material cannot be obtained, furnish and install Academy, Clovis California Quarry, Thermal Finish or equal approved by Project Manager. Thickness per Drawing.

2.02 OTHER MATERIALS

A. Mortar:

1 part Portland cement; 1 part lastic lime hydrate; 3 parts sand.

B. Anchors, Cramps and Dowels:

304 Stainless steel.

PART 3: EXECUTION

3.01 SURFACE CONDITIONS

A. Inspection:

1. Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.



CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

2. Verify that all work in this Section may be installed in accordance with all pertinent codes and regulations, the original design and the referenced standards.

B. Discrepancies:

1. In the event of discrepancy, immediately notify the Project Manager.
2. Do not proceed with installation until discrepancies have been fully resolved.

3.02 INSTALLATION

A. Setting:

1. All setting shall be done by competent stone setters in accordance with approved shop drawings.
2. Each piece shall be carefully bedded in a full bed of mortar and tapped home with a rawhide mallet to a full and solid bearing. Particular care shall be exercised to equalize bed and joint openings and eliminate the need for redressing of exposed surfaces. Exposed surfaces shall be kept free of mortar at all times.
3. All joints and beds shall be completely filled, then raked out to a depth of not less than 3/4" and every precaution shall be taken to prevent direct bearing contact between pieces.

B. Backing:

Spaces between the back of granite and the backing construction shall be filled, using the mortar specified. This fill shall be thoroughly rodded to eliminate all voids and care shall be exercised to avoid displacement of the granite.

C. Anchorage:

All granite shall be anchored and/or dowelled as shown on the approved shop drawings, the anchors, dowels, etc. being inserted in mortar-filled holes provided in the granite.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

D. Pointing:

1. All joints and beds, previously raked, shall be brushed clean and pointed with mortar to a flat cut joints. When thumbprint hard, the joints and beds shall be tolled with a round jointer having a diameter 1/8" larger than the width of the joint.
2. All open beds and joints under caps shall be pointed for a depth of at least one inch.

3.03 CLEANING AND PROTECTION

A. Cleaning:

1. After being pointed, the granite work shall be carefully cleaned, starting at the top, removing all dirt, excess mortar, stains and other defacements.
2. Stainless steel wire brushes or wood may be used, but the use of other wire brushes or of acid or other solutions which may cause discoloration is expressly prohibited.

B. Protection of Finished Work:

1. After the granite work is installed, it shall be the responsibility of the General Contractor to see that it is properly and adequately protected from damage. Boxing or other suitable protection shall be provide wherever required, but no lumber which may stain or deface the granite shall be used. All nails used shall be glavanized or non-rusting.
2. All granite work in progress shall be protected at all times during construction by use of a suitable strong, impervious film or fabric securely held in place.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. Work Included:

Structural steel, including connectors and accessory items related thereto, all as indicated on the Drawings and specified herein. This Section also includes:

1. Furnishing of anchor bolts (including nuts and washers) for structural steel items. Provide necessary setting drawings and templates.
2. Hoisting of metal decking.
3. Punching or drilling of holes for attachment of materials other than structural steel.
4. Installing and removing temporary guys, barricades, rails, shores, scaffolding and bracing required for steel erection.

B. Related Work Specified Elsewhere:

1. Section 03300: Cast-in-Place Concrete
2. Section 04220: Unit Masonry
3. Section 05200: Miscellaneous Metal
4. Section 05300: Metal Decking
5. Section 15400: Plumbing
6. Section 15700: Air Conditioning
7. Section 16100: Electrical

1.03 REFERENCES, CODES AND STANDARDS

The following references, codes and standards are hereby made a part of this Section and structural steel work shall conform to the applicable requirements therein except as otherwise specified herein or shown on the Drawings. Nothing contained herein shall be construed as permitting work that is contrary to code requirements.

1. "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings," of American Institute of Steel Construction, November 1978 Edition.

2. "Code for Arc and Gas Welding in Building Construction" of American Welding Society, AWS D 1.1, 1980 Edition with current supplements, revisions and addenda.
3. "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" as approved by Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation, April 26, 1978.
4. Steel Structures Painting Council (SSPC) Surface Preparation Specifications (Vol. 2, 1966 Edition of Painting Manual).
5. Uniform Building Code, 1982 Edition, Chapter 27.

#### 1.04 QUALIFICATIONS

Welding procedures, welders, welding operations and tackers shall be qualified in accord with AWS Code.

#### 1.05 SUBMITTALS

Comply with requirements of shop drawings, product data and samples, see Section 01300.

##### A. Shop Drawings:

Indicate shop and erection details including cuts, copes, connections, holes, threaded fasteners and welds. Indicate high strength bolting procedures proposed and a list of bolting equipment and tools to be used. Welds shall be indicated by AWS A 2.0 "Welding Symbols."

##### B. Proof of Compliance:

Unless otherwise noted, submit the following in four (4) copies.

1. Certified ladle analysis for steel.
2. Certified reports of tensile properties and bend tests for steel shapes, bars and plates.

#### 1.06 DELIVERY STORAGE AND HANDLING

- ##### A.
- Deliver anchor bolts and other anchorage devices which are to be embedded in the work of other trades to the project site in sufficient time to permit their timely installation. Provide proper setting drawings, templates and directions for installation of these items.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- B. Structural steel members which are stored at the site or a staging area shall be above ground on platforms, skids or other supports. Store fasteners and welding electrodes in a weathertight and dry place until ready for use. Store packaged materials in their original containers.

PART 2: PRODUCTS

2.01 MATERIALS

- A. Structural Steel Shapes, Bars and Plates: ASTM A36-77a, unless otherwise noted.
- B. Structural Tubing: ASTM A500-78 (cold formed), Grade B, welded or seamless.
- C. Structural Pipe: ASTM A53-79, Grade B.
- D. Standard Threaded Fasteners:
1. Bolts and nuts: ASTM A307-78, Grade A.
  2. Plain washers: ANSI B.27.2, Type A.
  3. Beveled washers: ANSI B.27.4
- E. High Strength Bolts, Nuts and Washers: ASTM A325-79. (Each bolt shall also be provided with a "Coronet Load Indicator" by Bethlehem.)
- F. Anchor Bolts: Anchor bolts shall be ASTM A307-78.
- G. Welded Studs (Shear Connectors Welded Directly to Steel Frame): Nelson Stud Welding Co., or approved equal, low carbon, cold drawn, headed type steel shear connectors for stud welded installation and having a minimum yield strength of 50,000 psi and a minimum tensile strength of 60,000 psi (ASTM A 108-79). Studs shall not be painted or galvanized.
- H. Welding Electrodes: AWS A5.1 or A5.5, E70xx low hydrogen.
- I. Shop Paint Primer: SSPC PS 2.03-64T, F.S. TT-P-86, Type II, or Themec #99, green color.

2.02 FABRICATION

- A. Fabricate items of structural steel in accord with applicable provisions of Section 1.23 - Reference Standard 1.02A, Uniform Building Code and with modifications and other specific requirements described herein.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- B. Fabricate and assemble structural steel in the shop to the greatest extent possible. Do shearing and flame cutting carefully and accurately using machine equipment where possible.
- C. Connections shall be welded or bolted as indicated. Shop connections not otherwise shown shall be welded. Eccentric connections are not permitted unless shown in detail on the Drawings.
- D. Straighten column base plates to provide a satisfactory contact bearing between plate and column.
- E. Provide bearing plates for members bearing on concrete and piers.
- F. Drift pins may be used for assembling parts provided metal is not distorted or holes enlarged. Holes requiring enlargement to admit bolts shall be reamed. Misaligned holes will subject members to rejection.
- G. Use of gas cutting torch will be allowed where metal being cut is not carrying stress during the operation and provided stresses will not be transmitted through a flame-cut surface. Make cuts smooth and regular in contour. Cuts exposed in the finished work shall be ground and dressed smooth without nicks or gouges. To determine effective width of members so cut, deduct 1/8-inch from least width at gas cut edge. Make radius or re-entrance of cut fillets as large as practical, but in no case less than 1/2-inch. Cuts are subject to prior review of the Project Manager. Do not use cutting torch to align bolt holes.
- H. Camber: Fabricate beams and girders with natural camber upward, unless otherwise shown or indicated on the Drawings.
- I. Welding:
  - 1. General: Quality of materials and design and fabrication of welded connections shall conform to AISC "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings," AWS "Code for welding in Building Construction," and requirements of this Section. Location and type of welds shall be as shown. Make no other welded splices, except those shown on Drawings.
  - 2. Unless otherwise noted or permitted, do welding by shielded arc method.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

3. In addition to specific requirements of Drawings, details of welded joints shall comply with requirements for joints which are accepted without qualification tests under the AWS Code.
  4. Automatic welding: Use electrode wire and flux for automatic and semiautomatic welding acceptable to Project Manager. Methods, sequences, qualifications and procedures, including preheating, and post heating if necessary, shall be detailed in writing and submitted to Project Manager for review.
  5. Preparation of surfaces: Surfaces to be welded shall be free of loose scale, slag, rust, grease, paint and any other foreign material.
  6. Welding equipment: Welding equipment to be used in each case shall be acceptable to welding inspector. Use equipment with suitable devices to regulate speed and manually adjust operating amperage and voltage. The amperage capacity shall be sufficient to overcome line drop and to give adequate welding heat.
  7. Remove run-off tabs and grind surfaces smooth where the tabs interfere with fireproofing and/or architectural treatment.
  8. Automatic End Welded Studs: Automatically end weld in accord with manufacturer's recommendations, using proper amperage and in such a manner as to provide complete fusion between the end of stud and plate. There shall be no porosity or evidence of lack of fusion between welded end of stud and plate. Stud shall increase in length during welding approximately 1/8" for 5/8" diameter and under and 3/16" for over 5/8" diameter. Welding shall be done only by qualified welders approved by welding inspector.
- J. High Strength Bolted Construction: See Part 3 - Execution.
- K. Shop Cleaning and Painting:
1. Cleaning: Thoroughly clean loose mill scale, rust, dirt, grease and other foreign matter from structural steel items. Conditions which are too severe to be removed by hand cleaning methods shall be cleaned as per Reference Standard 1.02, "Solvent Cleaning, SSPC-SP 1-63"; Power Tool Cleaning, SSPC-SP 3-63"; or "Brush-off Blast Cleaning, SSPC-SP 7-63", as required.

2. Painting: Except where encased in concrete or spray fireproofing or secured as contact surfaces in joints connected by high strength bolts, apply one shop coat of specified primer as per paint manufacturer's specifications for application and coverage. To parts inaccessible after assembly, give two (2) different color coats of shop paint prior to assembly.

### PART 3: EXECUTION

#### 3.01 CONDITION OF SURFACES

Before starting work, verify locations and elevations of bearings and anchor bolts. Immediately report inaccuracies. Work under this Section shall include responsibility for accurate bearing of steel and correct locations of anchorage.

#### 3.02 ERECTION

- A. Erect items of structural steel in accord with applicable provisions of Reference Standard 1.02A, Uniform Building Code and with modifications and other specific requirements described herein.

- B. Column Bases and Bearing Plates:

Attached column bases and bearing plates for beams and similar structural members shall be aligned with wedges or shims.

- C. Erection Tolerances:

Structural steel work erection tolerances shall be in accord with "AISC Specification for the Design, Fabrication and Erection of Structural Steel for Buildings" and "AISC Code of Standard Practice for Steel Buildings and Bridges."

- D. Cooperate with trade responsible for metal deck for hoisting deck onto structural frame of building and for use of deck as safety flooring during construction. Supply other planking required where metal deck is not used.
- E. Field connections shall be welded or bolted as indicated. Connections not otherwise shown shall be detailed on shop Drawings the same as similar conditions.



F. Bolting:

1. As erection progresses, bolt up work to take care of dead loads, construction live loads, lateral forces and erection stresses.
2. Unless otherwise noted, erection bolts used in welded construction may be either tightened securely and left in place or removed and the holes filled with plug welds.
3. High Strength Bolting:
  - a. Unless otherwise noted on Structural Drawings, make high strength bolted connections in accord with Reference Standard 1.02 C for "friction-type" connections.
  - b. Contact surfaces within "friction-type" connections shall be free of oil, paint, lacquer or other coatings.
  - c. Tighten nuts by the use of a Direct Tension Indicator. Minimum bolt tension as per Reference Standard above for each bolt type and size used. Use in accordance with manual of Cooper and Turner, Inc.
  - d. Use bevelled washers to compensate for lack of parallelism when outer face of bolted parts has a slope greater than 1:20 with respect to a plane normal to the bolt axis.
  - e. When bolts have been completely tightened, mark with identifying symbol.

G. Welding:

Comply with applicable requirements for welding specified in Part 2 of this Section.

H. Gas Cutting:

The use of a gas cutting torch in the field for correcting fabrication errors will not be permitted on any major member. The use of a gas cutting torch may be permitted for minor members when the member is not under stress, and then only after approval of Project Manager has been obtained

I. Temporary Bracing:

Introduce wherever necessary to provide for loads to which structure is subjected including erection equipment and its operation. Leave in place until no longer required for safety. Make proper provisions for construction loads, piles of materials, equipment, etc., carried by structural frame during erection.

J. Temporary/Permanent Flooring:

1. Temporary flooring, planking and scaffolding necessary in connection with erection of structural steel or support of erection machinery shall be provided as a part of erection work. Temporary floors shall be as required by municipal or state laws and governing safety regulations.
2. If steel decking is used as a working platform, it shall be permanently tack-welded to supports to extent necessary for such use in accord with applicable safety rules and regulations. The concentrated loading from welding machines or other machinery shall be distributed by planking or other approved means. Any metal decking that may become damaged as the result of being used as a working platform shall be replaced at no additional cost to the Owner.

- K. Steel beams need not be shored for placing of concrete. Intermediate beams intended to be composite with concrete shall not be loaded until concrete reaches design strength.

3.03 TOUCH-UP PAINTING

After erection, clean fixed connections (bolts and welds) and abrasions to shop coat and spot paint with same primer used in shop.

3.04 QUALITY CONTROL

Tests and inspections shall be as follows:

- A. A Testing Laboratory will be selected by the Owner. Testing and inspection shall be as required by Drawings and these Specifications. Cost of testing and inspection of structural steel shall be paid for by Owner, except as follows:

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

1. It is assumed that fabrication will take place in one shop location only. Additional inspection costs resulting from fabrication at more than one shop location will be back-charged to Contractor.
  2. Mill tests and costs of retests of materials shall be at expense of Contractor.
- B. Tests for structural steel shall be made and reports furnished by Testing Laboratory in accord with following requirements.
1. Mill tests and inspection of structural steel
    - a. Tests of Mill Order Steel: Where steel, ordered from mill, cut to lengths, is identified by heat or melt numbers and is accompanied by mill analysis test reports, material shall be used without further local tests, provided an affidavit is given that materials conform with requirements. In case of controversy, tension and bend tests of materials, either locally or at mill, as required for local stock will be required, in which case, such testing shall be back-charged to Contractor.
    - b. Test of Unidentified Steel: In event structural steel cannot be identified by heat or melt numbers or is not accompanied by mill analysis and test report, such stock may be used, provided one (1) tension and one (1) bend test is made for each 5 tons or fractional part, of stock as may be used in work.
    - c. Test specimens shall be taken under direction of testing agency and shall be machined by Testing Laboratory to dimensions as required by related applicable Standard ASTM Specification.
  2. Tests of welding and bolting: Testing Laboratory shall inspect shop and field welding. Testing Laboratory shall certify in writing, upon completion of work, that welding and high tensile bolting has been performed in accord with Drawings and Specifications and applicable local rules and Ordinances.
  3. Continuous inspection of high tensile bolts: Testing Laboratory shall check bolt tightness on not less than 10% of bolts selected at random in each high strength bolt connection with a minimum of two bolts per connection. Inspection procedure shall be as described in "Specification for Structural Joints Using ASTM A325

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

or A490 Bolts" by the Research Council on Riveted and Bolted Structural Joints and as modified by the use of Load Indicators.

4. Continuous inspection of welds: Testing Laboratory shall inspect welded connections visually or other approved non-destructive tests.

a. Ultrasonic testing shall be performed in accord with AWS D1.1 Structural Building Code and ASTM Part II-Metallography: Non-destructive Testing.

b. Ultrasonic instrumentation shall be calibrated by technician in accord with AWS D1.1, Appendix C.

c. Other methods of inspection, for example, x-ray, gamma ray, magnetic particle, or dye penetrant, may be used on welds if deemed necessary by inspection agency.

C. Contractor is to make no extra charge for any handling of steel required for complete four-sided inspections of member at Project Manager's request. It is not anticipated that complete four-sided inspection of all members will be undertaken. Such inspection will be necessary in case of dispute or uncertainty regarding adherence to Drawings and Specifications.

D. Shear Connectors:

Welded shear connectors provided under this Section will be tested by Owner's Testing Laboratory. Test 10% of studs by hitting with heavy hammer. Bend 15 degrees from vertical. If no fracture in weld, leave studs bent. If fractured, replace stud.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. General:

Provide miscellaneous metals, complete, as shown and specified per Contract Documents.

B. Work Specified Elsewhere:

1. Section 03100: Concrete Formwork
2. Section 03370: Pneumatically Placed Concrete
3. Section 03400: Precast Concrete
4. Section 05100: Structural Metal Framing
5. Section 08500: Window Wall & Glazing

1.03 QUALIFICATIONS

A. Welders need by qualified per AWS.

1.04 REFERENCES

Comply with applicable provisions of following and as specified.

AWS	D.1.1, Structure Welding Code - Steel
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NAAMM	Metal Bar Grating Manual
	Metal Stairs Manual
	Pipe Railing Manual

SSPC	Steel Structures Painting Manual; Volume 2
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1.05 SUBMITTALS

A. Samples:

If specifically requested.

B. Shop Drawings:

Fabrication and installation details of each item and assembly. Include connections, anchorage methods, and accessories.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

C. Product Data:

Manufacturer's specifications, catalog cuts, data and installation instructions.

D. Certificates:

1. Railings: Certification stating work complies with necessary structural and safety requirements. Certificate signed by a duly licensed engineer registered in State of Project.

1.06 PRODUCT HANDLING

A. Delivery:

Handle items in manner to protect surfaces, prevent distortion, and other types of damage.

B. Storage:

Store items under cover and off ground.

C. Protection:

Protect items until erected and accepted.

1.07 SCHEDULING

Deliver items requiring anchorage built into concrete and masonry with complete setting diagrams, measurements, and instructions. Furnish built-in items to applicable trades as required during progress of work.

PART 2: PRODUCTS

2.01 MATERIALS

A. Fasteners:

1. Bolts and nuts: ASTM A-307, Grade A.
2. Expansion bolts: FS FF-S-325, Group III expansion shield (self-drilling tubular expansion shield bolt anchor) Type 1 or 2, unless otherwise noted.
3. Machine screws: FS FF-S-92, Type III cross-recessed, Design I or II recess, Style 2c flat head; carbon steel.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

4. Exposed in finish surfaces: Countersunk Phillips flat-head screws, unless otherwise shown; finish to match adjacent surfaces.

B. Paint:

1. Metal primer: Tnemec's 10-99 Red Primer or FS TT-P-86, Type II red lead paint.
2. Zinc rich: FS DOD-P-21035; containing at least 95% zinc in dried film.

C. Setting Compound:

Sta-Crete Inc.'s Epoxy-Thiokol Resin, Hallemite Mfg. Co.'s Por-Rok, or approved equal.

D. Steel:

ASTM A-36.

E. Steel Pipe:

ASTM A-120 for ordinary use; ASTM A-53 for bending.

F. Steel Tubing:

ASTM A-519, hot-finished, seamless.

2.02 FABRICATION

A. General:

Shop assemble in largest practicable sections to minimize field connections. File or grind smooth parts exposed to finish view; remove weld marks; leave free of noticeable fabrication marks. Miter corners and angles of moldings, members, and similar items, unless otherwise shown or where not required by standard practice. Make members true to length so assembling may be done without fillers. Bends, twists, open joints in finished members, or projecting edges or corners at connections not permitted. Miter, cope, and block to produce tight hairline joints. Provide lugs, clips, connections, bolts, and fastenings necessary to complete fabrication.

B. Reinforcement:

Provide as required proper reinforcement for hardware and on other miscellaneous metal work.

C. Welding:

Use sequence welding to minimize distortion and heat stresses. Weld by shielded electric arc process per AWS. Use continuous welding along entire area of contact, except where spot welding is permitted. Spot welding not permitted on exposed surfaces.

2.03 FINISHES

A. Shop Coat:

1. General: Shop coat ferrous metal items unless otherwise specified; use metal primer as specified. Do not shop coat galvanized items, portions of items completely embedded in concrete, or within 2" of surfaces or edges requiring field welding.
2. Surface preparation: Clean surfaces of loose mill scale, dirt, rust, and other foreign matter by use of suitable tools. Remove oil and grease with suitable volatile solvents per SSPC SP-1.

B. Galvanize:

1. General: Hot-dip galvanize miscellaneous ferrous metal items after fabrication. Galvanize items exposed to weather and where shown or specified.
2. Iron and steel hardware: ASTM A-153.
3. Plates, bars, and shapes: ASTM A-123.
4. Fabricated assemblies: ASTM A-386.

2.05 LADDERS

A. General:

Fabricate per applicable NAAMM Standards; complete with stringers, treads, landings, railings, stiffeners, clips, angles, anchors, and fastenings.

B. Treads:

Raised pattern steel plate.

C. Railings:

As shown.



CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
CC NUMBER 2211

D. Assembly:

Weld construction, grind smooth.

E. Anchorage:

Furnish brackets for fastening to substrates.

2.06 PIPE HANDRAILS AND GUARDRAILS

A. General:

Fabricate per NAAMM Pipe Railing Manual in longest sections practicable; allow for expansion and contraction.

B. Rail Connections:

Welded type; unless otherwise shown.

C. Handrail Brackets:

1. Standard type: FS Type 1065B; cast iron.
2. Special type: As shown.
3. Backing plates: For attachment to metal studs; provide as shown.

D. Posts:

Set posts plumb and true into preset sleeves or drilled holes; calk solid with setting compound; strike off at surface flush and smooth.

2.07 FRAMES FOR METAL WINDOW WALL

A. General:

Fabricate per NAAMM Manual.

B. Steel Frames:

1. As shown: Provide for expansion and contraction.
2. Coordinate with concrete formwork to locate anchors.
3. Coordinate with steel window sash, glass and joint sealants.
4. Fabricate in one piece for each opening.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

5. Grind all visible welds smooth.

6. Shop coat finish.

2.08 MISCELLANEOUS ITEMS

A. General:

Provide items, shapes, and accessories necessary to complete miscellaneous metal work not specifically specified under this Section or included under other Sections, but shown on architectural Drawings.

B. Items:

In addition to specified items, include elevator sill supports, framing for toilet partitions, loose lintels, lavatory countertop supports.

PART 3: EXECUTION

3.01 INSPECTION

Before starting work, examine adjoining work on which installation is in any way dependent for workmanship and fit. Give written notification of any existing deficiencies detrimental to proper and timely installation of work under this Section.

3.02 PREPARATION

A. Field Measurements:

Verify in field, as required, for work fabricated to fit project conditions.

3.03 INSTALLATION

Install miscellaneous metal items per manufacturer's recommendations, as shown, and specified. Properly secure items with necessary clips, anchors, or bolts. Make installation with workmen skilled in the particular class of work involved. Set work level, plumb and true; properly align and assemble; adequately secure and erect in rigid and workmanlike manner. No cutting, punching, drilling, and tapping for attachment for other work coming into contract with miscellaneous metal work where shown or as directed. Do necessary cutting, drilling, and fitting for installation of miscellaneous metal. Execute drilling, cutting, and fitting carefully. When required, fit work before finish-

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

ing. No burning in field permitted. Replace, or repair parts damaged or injured during erection in acceptable manner. Drill holes for fasteners to exact diameter as recommended by fastener manufacturer. Oversized holes or holes mislocated producing misalignment of fastener not permitted.

3.03 FIELD TOUCH UP

Clean surfaces and apply paint as specified for shop painting; use same paint used for shop coat. Touch up marred and abraded surfaces; paint field connections and adjacent uncoated portions of steel members.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. Scope:

Metal deck work as indicated on the Drawings and specified herein including headed type welded stud (shear connectors) welded through the decking, and accessories. This Section includes miscellaneous metal items required for the proper installation of metal decking.

B. Related Work Specified Elsewhere:

1. Section 05100: Structural Metal Framing
2. Section 05200: Miscellaneous Metals
3. Section 06100: Rough carpentry
4. Section 07500: Membrane Roofing
5. Section 15400: Plumbing
6. Section 15700: Air Conditioning
7. Section 16100: Electrical

1.03 REFERENCES, CODES AND STANDARDS

The following references, codes and standards are hereby made a part of this Section and metal deck work shall conform to the applicable requirements therein except as otherwise specified herein or shown on the Drawings. Nothing contained herein shall be construed as permitting work that is contrary to code requirements.

1. "Specifications for the Design of Light Gauge Cold Formed Steel Structural Members" of the American Iron and Steel Institute (AISI), latest edition with current revisions.
2. "Code for Arc and Gas Welding in Building Construction" of American Welding Society, AWS D 1.1, 1980 Edition with current supplements, revisions and addenda.

1.04 SUBMITTALS

- A. Comply with requirements of shop drawings, product data and samples Section 01300.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

B. Shop and Erection Drawings:

Show type, shape, gauge, finish locations and dimensions. Indicate erection details including welds, mechanical fasteners, studs, clips, reinforcement, laps, flashings and closures and accessories which are to be applied or installed under this Section.

1.05 HANDLING AND STORAGE

Handle and stack materials carefully to prevent deformation or damage. If site storage is necessary, deck units shall be stacked on wood blocking clear of the ground and tilted slightly to ensure against the entrapment of water.

PART 2 PRODUCTS

2.01 MATERIALS

A. Metal Decking:

1. Base metal: Metal decking shall be formed from sheet steel conforming to ASTM A611-72 or A446-76, and having a minimum yield strength of 33,000 psi.
2. Coating: Sheets shall have received, before being formed, a hot-dipped, zinc protective coating meeting or exceeding the requirements of ASTM A525-79 for G60 Coating Designation with not less than 0.60 oz. of zinc per sq. ft. of sheet (Triple Spot Test).
3. Physical properties: Deck designations used on Drawings refer to H. H. Robertson Co. designations; other deck offered under provisions of this Specification shall conform to general configuration and dimensions and shall have physical properties equal to or exceeding those shown.
4. Manufacturer: H. H. Robertson Co., Inland-Ryerson Construction Products Co., Verco, or approved equal.

B. Miscellaneous Metal Items (As Required):

ASTM A 36-77a, shop primed if not encased in concrete or spray fire-proofing.

C. Accessories:

1. Flashings and closures: Galvanized sheet steel, material and gauge as specified for decking.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

2. Venting devices: Individual separating clip, type and style as per recommendations of deck manufacturer -or- built-in venting slots formed as an integral part of deck profile.
3. Welding electrodes and equipment: As recommended by deck manufacturer and approved for use by Building Department.
4. Welded studs: Nelson Stud Welding Co., or approved equal, low carbon, cold drawn, headed steel shear connectors for stud welded installation and having a min. yield strength of 50,000 psi and a min. tensile strength of 60,000 psi (ASTM A 108-79). Studs shall not be painted or galvanized.
5. Paint: Shop Prime

## 2.02 FABRICATION

- A. Units shall be in 3 span (or greater) lengths except where structural steel layout does not permit. Cantilevered units shall have the cantilever and at least the adjacent span in one length.
- B. Units shall have overlapping side joints.
- C. Cut deck to fit openings which are shown and dimensioned on the structural drawings.
- D. Composite Construction:

Decking designed for composite construction shall be formed with shear lugs to provide mechanical key to transfer horizontal shear and to prevent vertical separation.

## PART 3 EXECUTION

### 3.01 INSPECTION OF STRUCTURE

Verify that supports for decking are properly aligned and sufficiently level to permit proper bearing and report any discrepancies. Proceeding with final installation implies acceptance of conditions.

### 3.02 ERECTION

- A. Erect decking as per governing codes, Drawing requirements and manufacturer's specifications and recommendations.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- B. Ship deck units to job site in standard widths and cut to proper lengths such that end joints occur over supporting members. Perform column notching, bevel cuts and other field cuts as required.
- C. Place deck units on supporting framework and adjust to final position with proper bearing before permanently fastening.
- D. Place units in straight alignment for entire length of cell run with close alignment between cell ends.
- E. Provide flashings and closures where required to prevent concrete leakage. Fasten in place by welding. Edge flashing shall form edge closure to top of concrete fill.
- F. Make welds in accord with provisions of AWS Code. Use only welders certified for welding in light gauge metal.
- G. Opening reinforcement shall be as detailed on the Drawings. Cutting of holes other than those detailed on the Drawings shall be done only as specifically approved by the Project Manager. Holes not shown on structural drawings shall be cut and reinforced in accord with details on Drawings under this Section but shall be located and paid for by trade requiring openings. In general, reinforcing is not required for holes less than 6" in diameter.
- H. When studs are to be welded through metal deck, the beam's top flange shall be unpainted and free of dirt and debris prior to laying the metal deck. Any water in the deck's valley shall be released so it does not become entrapped between the deck and the beam. Studs shall be field welded to the structural members after the steel framing and forms or metal deck are in place and shored when required. The deck shall be installed so that the bottom rib is in continuous contact with the top of the beam flange. Remove welding ferrules and flux from welded studs using a wire brush.
- I. Touch up abrasions and damaged areas in painted coatings on structural steel and miscellaneous metal items.
- J. Coordinate with Electrical Division and arrange to have electrical cells inspected and taped as soon as possible following installation of decking.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

3.03 CLEAN-UP

After erection, remove metal cuttings and construction debris from cells for entire length. Remove grease, oil and other foreign material. Leave deck and cells in proper condition for obtaining bond with concrete fill where such is indicated.

3.04 QUALITY CONTROL

Owner's Testing Laboratory will furnish certification of light gauge metal welders as each starts on the Project.



PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRION

A. General:

Provide metal stairs, complete, as shown and specified per Contract Documents.

B. Work Specified Elsewhere:

1. Section 03300: Cast-in-Place Concrete
2. Section 05100: Structural Metal Framing
3. Section 05200: Miscellaneous Metal
4. Section 06200: Finish Carpentry & Millwork
5. Section 09250: Gypsum Wallboard

1.03 REFERENCES

Comply with applicable provisions of following and as specified.

NAAMM Metal Stairs Manual

1.04 SUBMITTALS

A. Shop Drawings:

Complete layout, fabrication, splices and attachments for railings, and erection drawings. Include setting and template drawings for items built into structure.

B. Product Data:

Manufacturer's specifications and installation instructions

C. Certificates:

Certification stating work complies with necessary structural and safety requirements. Design loading, 100 P.S.F. Certificate signed by a licensed engineer registered in State of Project.

1.05 PRODUCT HANDLING

A. Delivery:

Deliver items requiring anchorage built into structure with setting diagrams, templates, measurements, and instructions

B. Protection:

Protect stairs from injury at shop and during storage at project site.

PART 2: PRODUCTS

2.01 MATERIALS

A. Bolts and Nuts:

ASTM A307, Grade A.

B. Expansion Bolts:

FS FF-S-325, Group III expansion shield (self-drilling tubular expansion shield bolt anchors); Type 1 or 2, unless otherwise shown.

C. Paint:

Tnemec's 10-99 Red Primer or FS TT-P-86, Type II red lead paint.

D. Steel: ASTM A36

E. Steel Pipe:

ASTM A53, Type F, Grade A, or ASTM A501 structural tubing; standard weight, sizes as shown.

F. Steel Sheet: ASTM A570, Grade 36.

2.02 FABRICATION

A. General:

Fabricate stairs per NAAMM Metal Stairs Manual for Straight Stairs, Commercial Class, pre-assembled and arrangement shown. Provide steel channel and tube beams and stringers, intermediate platforms, cover plates, hanger rods, supports, cross bracing of intermediate platforms where shown, stiffeners, anchors, clips, angles, and fastening

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

devices. Shop assemble work in largest practicable sections to minimize field connections. Bolt with proper size bolts; draw nuts tight and upset threads. Use metal clean and free from mill scale, rust and pitting. Do cutting, punching, drilling, and tapping for attachment of other work.

B. Workmanship:

File or grind smooth parts exposed to finish view; remove weld marks and leave free of noticeable fabrication marks. Miter corners and angles of members, unless otherwise shown, or where not required by standard practice. Fabricate members true to length so assembling may be done without fillers. Bends, twists, open joints in finished members, or projecting edges at corners of connections not accepted. Miter, cope, and block carefully to produce tight hairline joints.

C. Welding:

Sequence weld to minimize distortion and heat stresses. Weld by shielded electric arc process per AWS. Continuous weld along entire contact area, except where spot welding is permitted. Spot welding not accepted on surfaces exposed to view.

D. Stairs:

1. Steel sub-tread and riser with formed nosing, concrete filled treads.

a. Treads & risers: Form from sheet steel similar to NAAMM Figure 11 and 13 with riser; thicknesses, 12 gauge.

b. Platforms: Form from sheet steel as shown. Provide 4" WF stiffeners at not over 28" centers.

E. Railings:

1. General: Fabricate per NAAMM Pipe Railing Manual from steel pipe as shown in longest lengths practicable; allow for expansion and contraction.

2. Rail connections: Welded type, unless otherwise shown.

F. Shop Painting:

1. Surface preparation: Clean surfaces of loose mill scale, dirt, rust, and other foreign matter by use of suitable tools. Remove oil and grease with suitable volatile solvents.

PART 3: EXECUTION

3.01 CONDITION OF SURFACES

Before starting work examine adjacent work on which installation is dependent for workmanship and fit. Give written notification of existing deficiencies.

3.02 PREPARATION

A. Field Measurements:

Verify measurements and conditions in field for work fabricated to fit project conditions.

3.03 INSTALLATION

A. General:

Fit work at job before finishing; no burning permitted. Set work plumb, true, and in proper relation to adjoining work; assemble and erect in a rigid and workmanlike manner. Properly secure items with necessary bracket angles, hanger rods, clips, anchors, and bolts. Satisfactorily repair or replace parts damaged or injured during erection.

B. Field Touch Up:

Clean surfaces and apply paint as specified for shop painting; use same paint used for shop coat. Touch-up marred and abraded surfaces; paint field connections and adjacent uncoated portions of steel members.

3.04 PROTECTION

After installation, protect stairs from damage by other construction operations.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. General:

Provide expansion control, complete, as shown and specified per Contract Documents.

B. Related Work Specified Elsewhere:

1. Section 03100: Concrete Formwork
2. Section 03300: Cast-In-Place Concrete
3. Section 03370: Pneumatically Placed Concrete
4. Section 05100: Structural Metal Framing
5. Section 07600: Flashing & Sheet Metal
6. Section 09550: Wood Flooring

1.03 SUBMITTALS

A. Shop Drawings:

Complete fabrication and installation drawings; show sizes and details of every member, component, joint and anchorage.

B. Product Data:

Manufacturer's specifications, data, and installation instructions.

C. Guarantee:

Provide 5 year written guarantee for waterproof installation.

1.04 PRODUCT HANDLING

A. Delivery:

Handle items in manner to protect surfaces, prevent distortion, and other types of damage.

B. Storage:

Store items under cover and off ground.

C. Protection:

Protect items until erected and accepted.

PART 2: PRODUCTS

2.01 MATERIALS

A. Fasteners:

1. General: Non-magnetic stainless steel; type best suited for intended purposes.
2. Expansion bolts: FS FF-S-325, Group III expansion shield (self-drilling tubular expansion shield bolt anchor) Type 1 or 2, unless otherwise shown.

B. Seismic Joints:

1. Wall and ceiling types:

a. Exterior: D.S. Brown's 3" Seismic Seal, or approved equal; standard extruded aluminum retainers, closed cell neoprene functional seals, and extruded silicone, special color as selected.

b. Interior:

1. General: D.S. Brown's Seismic Seal, or approved equal; special extruded aluminum retainers and special vinyl visual seal; sizes as shown.
2. Vinyl seal: B.F. Goodrich's Thermoplastic Elastometer, or approved equal; 73 plus or minus 5 Shore A durometer, UV inhibitor, special color as selected.

2. Floor type:

a. Construction Specialties, Inc., or approved equal; special bronze metal and galvanized steel sheet retainers, bronze metal cover plates, and neoprene gaskets and seals; size as shown.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

PART 3: EXECUTION

3.01 INSPECTION

Examine existing conditions. Give written notification of deficiencies. Do not proceed until conditions are satisfactory.

3.02 INSTALLATION

A. General:

Install items per manufacturer's recommendations. Set plumb, level, true, and properly aligned with adjacent work. Secure rigidly to substrates as shown.

B. Corners:

Miter seals, join with adhesive per manufacturer's recommendation, and reinforce with stainless steel angles.

C. Aluminum in Contact with Cementitious Surfaces:

Separate with butyl tape per manufacturer's recommendations.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

- A. Contract Conditions and Division I, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

- A. Provide all labor, materials, equipment, transportation and services required to complete all general carpentry and certain other work of installation as shown on the Drawings and/or specified herein.

- B. Some of the items included herein are:

1. All rough carpentry.
2. Preservative treatment of certain wood items.
3. Setting of anchor bolts, anchorage, sleeves, frames, etc., embedded in concrete.
4. Wood blocking wherever indicated or required.
5. Barricades and other protection.
6. Miscellaneous rough hardware such as nails, wood screws, and power-driven inserts for installation of materials and work specified under this Section.
7. Layout of work, including cutting and patching coordination.
8. Installation of wood-to-metal and wood-to-masonry connections.
9. Install miscellaneous items as specified in other Sections and furnished thereunder.
10. Patch and repair existing framing modified or disturbed by work under this Section.
11. Wood sleepers and plywood subfloor at main and top floors.
12. Plywood floor at attic.
13. Wood sleepers and plywood at roofs.



C. Related Work Specified Elsewhere:

1. Section 03100: Concrete Formwork
2. Section 04220: Unit Masonry
3. Section 05100: Structural Metal Framing
4. Section 05200: Miscellaneous Metals
5. Section 05300: Metal Decking
6. Section 06200: Finish Carpentry & Millwork
7. Section 08100: Metal Doors & Frames
8. Section 09250: Gypsum Wallboard
9. Section 09550: Hardwood Flooring
10. Section 09650: Resilient Flooring
11. Section 09680: Carpet

1.03 ALTERNATES

The scope of this Section is affected by alternates. See Section 01030 for description.

1.04 QUALITY ASSURANCE - REFERENCE STANDARDS

A. Rough Carpentry:

1. West Coast Lumber & Inspection Bureau, "Standard Grading and Dressing," #16.
2. Western Wood Products Assoc., "Grading Rules for Western Lumber."
3. "Guide to Plywood Grades," of the American Plywood Assoc., January 1977 edition.

B. Quality Assurance: Lumber and plywood shall be grade marked by WCLIB, WWPA, DFPA or by other grading and inspection agencies approved by the Project Manager. Grade marks shall include the designation "DRY" (or MC-15 as applies) where applicable. Grade marks shall not be apparent on surfaces.

1.05 SUBMITTALS

Submit Product literature for all items in accordance with Section 01300.

PART 2: PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Sizes: Sizes noted are nominal, unless shown otherwise on Drawings.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

B. Surfacing:

S4S, unless otherwise noted. Ease all edges exposed in the finished work.

C. Material Exposed in the Finished Work:

All materials to be sound, free of voids, wane and loose knots. All joints to be tight.

D. Preservative Treated Wood:

Use approved compound, pressure treated wood where embedded in or set against concrete, masonry, plaster or roofing or where otherwise exposed to continuous dampness or moisture or where specifically indicated on Drawings or in schedules

E. Fire Retardant Wood:

Use Class 1 fire retardant treated wood in conformance with ASTM E-84 for all lumber and plywood wall sheathing in rough carpentry.

2.02 MATERIALS

A. Lumber:

1. Sills, sleepers for subfloor and roofslope framing, studs, blocking, etc.: Douglas fir #2 or better, pressure treated to be fire retardant.

2. Plywood, all Douglas fir plies with exterior glue, no artificial plies accepted.

a. Plywood subfloor: 3/4" APA Sturd-I-Floor, PS 183, T & G.

b. Plywood wall sheathing: 5/8" APA rated sheathing, 40 - 20, PS 183, C - D. Fire retarded treated.

c. Plywood roof sheathing: 3/4" APA rated sheathing, 40 - 20, PS 183.

d. Plywood attic floor sheathing: 3/4" APA Sturd-I-Floor, PS 183, T & G.

B. Hardware:

1. Nails: Common wire, galvanized for exposed locations. Barbed, ring-shank or cement coated for plywood and underlayment.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

2. Framing clips, hangers, post bases and caps, etc.: Simpson, Universal or Silver Metal Products.
3. Bolts and nuts, lag bolts and washers: As indicated on Drawings. Galvanized for exposed locations, with malleable washers.

PART 3: EXECUTION

3.01 LAYOUT

Cooperate with all trades to assist them in installation of their work in the correct locations.

3.02 GENERAL FRAMING

A. General:

In addition to all framing operations normal to the fabrication and erection indicated on the Drawings, install all backing required for the work of other trades.

B. Glue Plywood at Subfloors:

Where plywood is installed over wood sleepers provide glue at each support prior to nailing.

3.03 FASTENING

A. Nailing:

1. Use only common wire nails or spikes, except where otherwise specifically noted on the Drawings.
2. Provide penetration into the piece receiving the point of not less than 1/2 the length of the nail or spike, provided however that 16d nails may be used to connect two pieces of 2" (nominal) thickness.
3. Do all nailing without splitting wood, preboring as required; replace all split members.

B. Bolting:

1. Drill holes 1/16" larger in diameter than the bolts being used; drill straight and true from one side only.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

2. Bolt threads must not bear on wood; use washers under head and nut where both bear on wood; use washers under all nuts.
3. Bolting: Bolt with proper size bolts; draw all nuts tight. Provide washers under all heads and nuts bearing on wood.

C. Screws:

1. For lag screws and wood screws, prebore holes same diameter as root of thread; enlarge holes to shank diameter for length of shank.
2. Screw, do not drive, all lag screws and wood screws.
3. Use "Teks" screws for attaching wood or plywood to metal deck, do not use powder driven attachments of any items to metal deck.
4. Use bugel head drywall screws for plywood wall sheathing.

3.05 NAILING SCHEDULE

A. Plywood Subfloors and Decking:

6" OC Panel edge; 10" OC intermediate.

B. Plywood Wall Sheathing:

6" OC Panel edge; 10" OC intermediate.

3.06 CLEANING UP

A. General:

Keep premises in a neat, safe and orderly condition at all times during execution of this portion of the work, free from accumulation of sawdust, cut ends and debris.

B. Sweeping:

1. At the end of each working day, or more often if necessary, thoroughly sweep all surfaces where refuse from this portion of the work has settled.
2. Remove the refuse to the area of the job site set aside for its storage.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

- A. Work includes but is not limited to furnishing and installation of the following:

1. All finish carpentry and millwork
2. Wood doors and windows
3. Wood door and window frames
4. Wood trellis, fences and gates
5. Caulking and sealants
6. Millwork for interior stair No. 2
7. Decorative millwork for exterior porches and exterior stair
8. Back priming all millwork.

- B. Work installed but furnished by others:

1. Section 08700: Hardware

- C. Related Work Specified Elsewhere:

1. Section 03400: Precast Concrete
2. Section 05100: Structural Metal Framing
3. Section 05200: Miscellaneous Metal
4. Section 05512: Metal Stairs
5. Section 06100: Rough Carpentry
6. Section 06600: Plastic Fabrications
7. Section 07600: Flashing & Sheet Metal
8. Section 08500: Window Wall & Glazing
9. Section 08700: Hardware
10. Section 09250: Gypsum Wallboard
11. Section 09900: Painting
12. Section 09250: Gypsum Wallboard
13. Section 16100: Electrical

1.03 SUBMITTALS

- A. Provide shop drawings for all millwork items listed in 1.02-A for Project Manager's review.
- B. Provide fullsize profiles for all door casings, trim, wood base, picture mold, etc. for Project Manager's review.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

- C. Provide samples of all items for Project Manager's review per Par. B. above. Minimum length 12".
- D. Provide product literature for all items.
- E. Provide certificates that doors conform to NWMA requirements.
- F. Submit warranty for solid core doors, interior, for "Life on Installation."

1.04 ALTERNATES

The scope of work of this Section is affected by alternates. See Section 01030 for description.

1.05 QUALITY ASSURANCE

- A. Standards, per the lastest edition of the following:
  - 1. "Standard Specifications for Grades of California Redwood Lumber," of the Redwood Inspection Service (RIS).
  - 2. "Guide to Plywood Grades," of the American Plywood Association.
  - 3. "Manual of Millwork," of the Woodwork Institute of California (WIC).
  - 4. "Grading Rules for Western Lumber," of the Western Wood Products Association.
  - 5. NWMA Standards for wood doors.
  - 6. All transparent finish millwork is W.I.C. premium grade, unless noted otherwise.
  - 7. All opaque finish millwork is W.I.C. custom grade.

PART 2: PRODUCTS

2.01 GENERAL

- A. All wood products in this Section shall receive opaque finish unless otherwise noted.
- B. All trim shall be from solid stock, kiln dry.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

2.02 INTERIOR TRIM

A. Typical:

Poplar, birch or alder, opaque finish.

2.03 EXTERIOR

A. Typical:

Clear redwood - A grade. Opaque finish.

B. Trellis and Lattice:

Clear all heart redwood resawn (stain finish). Transparent.

C. 2x and thicker members shall be sawkerfed on backside.

2.04 DOORS

A. 1. Flush: 1-3/4" thick, 5 ply, per NWMA IS 1 series, premium grade.

2. Flush panel: Same as A.1 plus 1/4" paint grade hardwood style and rail and panel applied to each face. Total thickness 2-1/4".

3. Style and rail: 2-1/4" style and rail construction. VGDF KD. Molding and glass stops, match existing door.

4. Applied panel: Same as A.1 plus molding applied to one face and panel applied to other face.

B. All partical or mineral core doors shall have solid wood blocking on edges, top, middle, and bottom for hardware connections.

C. Fire Rated Doors:

Fabricate as for standard, NWMA IS 1.4, UL requirements for rating shown. Provide each door with label.

D. Glass for doors and transoms provided under Section 08500.

2.05 FRAMES - EXTERIOR DOORS AND WINDOWS - OPAQUE FINISH

A. Jambs and Head: VGDF KD

B. Sill at Doors: Oak

C. Sill at Windows: Clear all heart redwood.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

2.06 DOOR FRAMES - INTERIOR - OPAQUE FINISH, 2x STOCK, TYPICAL

- A. Jambs and Head less than 8" wide: VGDF KD
- B. Cased opening, more than 8" wide: Poplar, birch or alder frame with 3/4" paint grade hardwood plywood panel.

2.07 WINDOW SASH - OPAQUE FINISH

- A. Sash: Clear all heart redwood, or clear ponderosa pine. Size to match existing rails, muntins, etc.
- B. Glazing: See Section 08500.

2.08 HARDWARE FOR DOUBLE HUNG SASH - US10B Finish

- A. Acme Sash Balances. 4 ea. opening.
- B. Sash Locks: Ives #004. 1 ea opening.
- C. Sash Lifters: Ives #026, 2 ea opening.

2.09 LOUVER PANELS

White pine, opaque finish - match existing in Crocker Art Gallery: operable blades, hardware, etc.

2.10 PRESERVATIVE

Woodlife

PART 3: EXECUTION

3.01 DELIVERY AND STORAGE

Do not deliver millwork until building space is enclosed, Store with proper ventilation and protection.

3.02 FABRICATION

Shop fabrication of all items in this Section shall be in accordance with WIC Premium Grade.

3.03 COORDINATION

Coordinate with all other trades related to this work to insure proper execution.



### 3.04 INSTALLATION

- A. All work to conform to WIC Premium grade.
- B. Back-prime, including end cuts, all millwork prior to installation.
- C. All work shall be installed plumb, true and square, securely fastened, sanded smooth (where not pre-painted) and left in condition to receive paint finish.
- D. All finish nails and screws shall be countersunk for paint finish by others.
- E. Mitre doors casings, trim and all exterior corners unless indicated otherwise on Drawings. Mitre or cope all interior corners.
- F. Set casing and base tight to gypsum wallboard metal edge so that reveal is uniform.
- G. Coordinate with electrical installation for outlet boxes in wood base board. Center outlet in base board.

### 3.05 DOORS AND HARDWARE

- A. Hang doors plumb and true; insure proper operation.
- B. Door Clearances shall be undercut; clear floor finish; side and top clearances 1/16".
- C. Make factory cutouts for all template hardware per final hardware schedule.
- D. Carefully fit hardware specified. Do not mar work. Upon completion and in presence of Project Manager demonstrate hardware to work freely. Upon acceptance, tag and deliver keys to Project Manager.
- E. When hardware is installed in job finished doors prior to final finishing, remove all hardware except butts, until completion of painting work.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

- A. Work includes but is not limited to furnishing and installation of the following:

1. Countertops and back splashes.

- B. Work Specified Elsewhere:

1. Section 06200: Finish Carpentry & Millwork
2. Section 09310: Ceramic Tile
3. Section 15400: Plumbing
4. Section 16100: Electrical

1.03 SUBMITTALS

- A. Manufacturer's specifications and installation instructions for all items in this Section.
- B. Shop drawings for all work shown on Drawings.
- C. Sample of color and edge condition.

PART 2: PRODUCTS

2.01 GENERAL

- A. All material shall be Corian as manufactured by E.I. dePont de Nemours & Co., Willmington, Delaware.
- B. Physical properties shall conform to manufacturer's standard specifications. The material shall be homogeneous; not coated, laminated, or of composite construction except where detailed.

2.02 COUNTERTOPS - TYPICAL

3/4" thick.

2.03 COUNTER TOPS WITH CUTOUT FOR LAVATORIES

See Drawings for counter length and location of lavatories.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

2.04 SPLASH

3/4" thick height as shown.

2.05 ADHESIVES AND SEALANTS

A. Joint Adhesive:

As recommended by manufacturer.

B. Other Adhesive:

As recommended by manufacturer.

C. Sealants:

As recommended by manufacturer. Color to match Corian.

PART 3: EXECUTION

3.01 REVIEW

Review all work with Project Manager prior to submitting shop drawings.

3.02 COORDINATION

Coordinate with other trades to insure proper installation.

3.03 INSTALLATION

A. Provide cut-outs and holes for lavatories and fittings.

B. Installation shall be in a workmanlike manner in accordance with manufacturer's instructions. Counters and splashes to be installed using Dow Corning 786 mildew resistant silicone sealant, or approved equal. Corian to Corian seams should be made using DuPont Joint Adhesive for Corian Countertops in the appropriate color. Countertops and splashes shall each be seamed to form one piece.

C. Mount lavatory basins under counter using manufacturer's clip kit.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

Provide bentonite panel waterproofing, complete, as shown and specified per Contract Documents.

1.03 QUALITY ASSURANCE

A. Qualifications:

1. Applicator: Manufacturer approved.

1.04 SUBMITTALS

A. Samples:

Submit two 12" x 12" samples of specified panel in accordance with Section 01300.

B. Product Data:

Manufacturer's specifications, data, installation details, and installation instructions.

C. Certificates:

1. Chemical contamination: From manufacturer that ground water has been tested for tolerability and will not be detrimental to proper functioning of waterproofing system.

D. Warranty:

Three years, against defective material and workmanship and that installation is watertight. Repair or replace defective work appearing within warranty period at no cost to City.

1.05 PRODUCT HANDLING

A. Delivery:

In original unopened containers and packages with manufacturer's labels intact and with seals unbroken.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

B. Storage:

In dry location off ground and under cover. Remove damaged, deteriorated and contaminated materials from site.

1.06 PROJECT CONDITIONS

A. Environmental Requirements:

Materials may be applied to damp surface, not in standing water nor during precipitation.

1.07 SCHEDULING

Do not cover waterproofing system until inspected and accepted by manufacturer.

PART 2: PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

American Colloid Company.

2.02 MATERIALS

A. Waterproofing System:

1. Bentonite: High swelling Wyoming granular material, minimum 90% montmorillonite and maximum 10% unaltered volcanic ash or other native sediments.

2. Panels:

a. General: Volclay Type 1, bentonite sealed between two layers of absorbent material.

b. Size: 4' x 4' x 3/16" thick.

3. Packing tubes: Types, shapes and sizes recommended by manufacturer; 2' long.

4. Gel seal: Bentonite hydrated to maximum gel; type recommended by manufacturer.

B. Plastic Sheeting:

NBS PS 17, translucent; 6 mils thick.

C. Protection Board:

W.R. Meadows Sealtight Protection Course Type PC-3, or approved equal; 1/4" thick polyethylene faced on smooth side.

PART 3: EXECUTION

3.01 INSPECTION

A. General:

Inspect surfaces to receive waterproofing system. Verify surfaces are free of standing water, debris, loose materials, voids and interruptions which might inhibit application, and reasonable smooth to obtain an even mounting surface. Do not proceed until conditions are satisfactory.

B. Unsatisfactory Conditions:

Voids, gaps, irregularities, and protrusions greater than 1/4".

3.02 APPLICATION

A. General:

Apply waterproofing system per manufacturer's recommendations and as specified.

B. Under Slabs:

1. General: Cover drainage fill substrates to receive waterproofing system with plastic sheeting; lap ends and edges at least 4".
2. Panels: Cover areas under slabs, sumps, pits, and where otherwise shown with one layer of panels. Lap ends and edges at least 1-1/2"; stagger joints of adjoining row panels. Staple or nail panels together to prevent displacement.
3. Penetrations: Place fillet of gasket seal around penetrating pipes, conduits, piles, and other penetrants through panels.

C. Below Grade Walls:

1. General: Trowel heavy coating of gel seal to walls around penetrations, at patched areas, at tie rod holes, and where otherwise recommended by manufacturer.
2. Panels:
  - a. General: Apply one layer; corrugations horizontal; lap ends and edges at least 1-1/2". Stagger joints between successive courses; 16" minimum. Start first course at wall base; each course at internal and external corners. Fasten panels to walls and other substrates per manufacturer's recommendations
  - b. Corners: Fold panels with corrugations vertical around corners.
  - c. Cutting: When possible, cut panels parallel to corrugations; when cross-cut, seal cut edges with wet cloth or sponge.
3. Penetrations: Seal with additional collar cut from panel; fit snugly around penetrant; secure into place with gel seal. Place not less than 3" fillet of gel seal around penetrant.
4. Top of panels:
  - a. At grade: Bed edge of panels in 3" wide trowel coating of gel seal.
  - b. At underside of slab: Extend panels 12" beyond top of wall; fold down under slab.
5. Protection board: Protect panels in contact with concrete block, drainage fill, and backfill; cover with one layer of board, joints tightly butted, nailed in place.

D. Sealing Construction Joints:

1. General: Place appropriate type packing tubes with ends butted; secure into position.
2. In protective slabs: Attach packing tubes on top of extended overlapped panels, against edge of each concrete pour.
3. Wall to footings: Install packing tubes at bottom of panels.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
CC NUMBER 2211

4. In walls: Apply 6" wide trowel coat of gel seal; cover with 24" wide strip of panel.

3.03 FIELD QUALITY CONTROL

A. General:

Protect waterproofing system with plastic sheeting from damage by subsequent construction and from precipitation to prevent premature hydration. Lap ends and edges at least 4"

B. Vertical Surface:

Remove protection immediately prior to installing protection board.

C. Horizontal Surfacing:

Remove protection immediately prior to pouring concrete protective slab.



PART 1: GENERAL

1.01 RELATED DOCUMENTS

The General Conditions and Division 1 apply to all work in this Section.

1.02 DESCRIPTION

- A. Work includes but is not limited to furnishing and installation of the following:

1. Insulation as listed in Par. 2.02 Schedule.

- B. Related Work Specified Elsewhere:

1. Section 05300: Metal Decking
2. Section 07500: Membrane Roofing
3. Section 09205: Furring & Lathing
4. Section 09250: Gypsum Board

1.03 SUBMITTALS

Submit in accordance with Section 01300 manufacturer's catalog and technical specifications for all items in this Section.

PART 2: PRODUCTS

2.01 MANUFACTURER

Certainteed, Owens Corning or approved equal.

2.02 SCHEDULE

- A. Thermal Type-1: 1" Rigid foam batt.
- B. Thermal Type-2: Foil faced fiberglass, R-19.
- C. Attic Insulation: Foil faced fiberglass, R-19.
- D. Acoustic Type-1: 1" Fiberglass, vinyl face, Owens Corning "Stonebrook" or equal.
- E. Acoustic Type-2: Paper faced fiberglass, R-11.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

SECTION 07200  
INSULATION

PART 3: EXECUTION

3.01 INSTALLATION

- A. All insulation shall be installed in accordance with manufacturer's instructions.
- B. Insulation shall fit properly between framing members and be secured to prevent movement, sag or slippage.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

Provide sprayed-on fireproofing, complete, as shown and specified per Contract Documents.

1.03 QUALITY ASSURANCE

A. Qualifications:

1. Applicator: Manufacturer approved.

B. Testing Laboratory:

Selected and paid for by Owner; retesting paid for by Contractor.

1.04 SUBMITTALS

A. Following listed samples:

1. Sprayed-on fireproofing: 12" x 12". Prepare samples accurately; apply 1" thick fireproofing material on 1/2" thick gypsum wallboard for preliminary review of dry density and approximate finish.

2. Pin studs: Each type.

B. Shop Drawings:

1. General: Schedule showing current hourly ratings and thicknesses together with appropriate approval numbers as required by governing agencies for locations specified.

2. Pin studs: Diagrammatic layout showing location and spacing.

C. Product Data:

Manufacturer's specifications, catalog cuts, data sheets, and installation instructions.

## 1.05 PRODUCT HANDLING

### A. Delivery:

Deliver materials in original unopened packages each bearing manufacturer's name and UL label. Remove from site packages damaged, torn, not clearly marked, or with marks not legible.

### B. Storage:

Store materials off ground, under cover, and away from damp surfaces. Keep materials dry until ready for use.

## 1.06 PROJECT CONDITIONS

### A. Environmental Requirements:

Do not apply materials when ambient temperature is below 45 degrees F.

### B. Protection:

Protect adjacent surfaces from overspray.

## 1.07 SCHEDULING

Do not apply fireproofing material until hangers, inserts, clips, and other attachments are installed. Apply fireproofing prior to installation of duct, piping, conduit, and other work preventing proper application of required thickness.

## PART 2: PRODUCTS

### 2.01 MATERIALS

#### A. Fireproofing Material:

1. General: Zonolite's Monokote, no others permitted; Type MK-5. At Contractor's option, Type MK-4 may be used for columns and beams. Cementitious gypsum mill-mixed product containing vermiculite, no asbestos fibers; following characteristics.
2. Fire hazard classification: Per ASTM E-84, UL listed.

Flame spread	10
Fuel contributed	5
Smoke developed	0

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

3. Dry density: 15.0 PCF minimum.
4. Compression: Per ASTM E-761; minimum 500 PSF with 10% maximum deformation.
5. Bond strength: Per ASTM E-736 on uncoated and galvanized steel; minimum 200 PSF when set and dry.
6. Fire resistance: Based on UL per ASTM E-119; time-temperature criteria and unrestrained conditions as defined by UL.

B. Metal Lath:

FS QQ-L-101, Type F expanded metal lath weighing not less than 3.4 lbs. per SY; rust-inhibitive painted.

C. Pin Studs:

Nelson Cup Head Insulation Pins, or approved equal; 10 gauge No. 101-123-137; 1-3/8" long.

D. Protection Sealer:

WR Grace Company's Daraweld C, or approved equal.

E. Water:

Potable; free of deleterious materials.

PART 3: EXECUTION

3.01 PREPARATION

Clean metal surfaces per manufacturer's recommendation of dirt, dust, grease, oil, rust and other foreign matter which may prevent adhesion.

3.02 MIXING

A. Protective Sealer:

1 part sealer, 1 part water. Prior to mixing with sealer, add an acceptable color dye to water; minimal amount to facilitate visual inspection. Maintain same color hue throughout.

B. Sprayed-on Fireproofing:

1. Equipment: As recommended by materials manufacturer with automatic shutoff to assure uniform consistency of materials.
2. Mixing: Mix materials per manufacturer's directions in clean machine mixers free of particles from previously mixed batch. Do not use frozen, caked or lumpy material or material that has partially set.

3.03 FIREPROOFING

A. General:

Apply by machine spray directly to structural steel and metal decking where specified and otherwise shown. Apply in one or more applications per manufacturer's recommendations in order to minimize dropout.

B. Thicknesses:

1. General: Apply to thicknesses required to attain hourly rating specified and otherwise shown. Specified thicknesses used solely to determine clearances; in case of conflict, hourly rating prevails.

Location	Thickness	UL Hr. Rating
2. Columns:		
a. Heavy; members with section equal to or greater than W14x228	7/8"	3
b. Other	1-7/8"	3
3. Structural Beams:		
a. Girders	1-1/4"	3
b. Floor beams and secondary members	7/8"	2
c. Trusses	per code requirements	

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
CC NUMBER 2211

Location	Thickness	UL Hr. Rating
4. Metal decking; protected:		
a. Non-electrified units:		
1. General	3/8"	2
b. Electrified units:		
1. General	3/8"	2
2. With preset multi-service boxes with internal modifications	1/2"	2
3. Bottomless trench headers:		
a. Top of flute	2"	2
b. Bottom of flue	1-3/4"	2
c. Cellular	1-3/4"	2

5. Other locations and conditions: Per code requirements.

C. Finish:

Under gun.

D. Work Damaged by Weather:

Remove and replace as required at no extra cost to Owner. Temporary protection from weather may be provided at Contractor's option.

E. Cutting and Patching:

Do not remove any sprayed-on fireproofing without permission. Recoat fireproofing damaged by other trades and surfaces where material has been removed by other trades for installation of their work; cost of repairs borne by respective trades.

3.04 PROTECTIVE SEALER

A. General:

Apply over exposed sprayed-on fireproofing in elevator machine rooms, elevator hoistways, and where otherwise shown.

B. Application:

Spray method; one coat. Maximum coverage 250 SF of surface per gallon.

3.05 FIELD QUALITY CONTROL

A. Testing:

1. General: Material required for testing at Contractor's expense. Measuring devices such as containers for samples and depth gauge provided by testing agency.

2. Dry density:

a. Samples: Fill sample containers from nozzle. Use containers large enough to make blocks from which nine 2" cubes can be cut. Take one sample per floor.

b. Procedure: Approximately two hours after initial set remove sample from container; allow to air dry for at least one week or until sample can be sawn into cubes without tearing. Accurately cut sample into 2" cubes; dry in a circulating oven at 120 degrees F. and 17% relative humidity until cubes reach a constant weight. Select six undamaged cubes, without voids; use to determine average weight and ultimate density of sample.

3. Thickness:

a. Number of tests: Measured during each day's application of final coat at undetermined intervals and areas.

b. Method of test: By depth gauge per ASTM E-605; recoat areas where average thickness is less than specified minimum; recoated areas will be rechecked for thickness.

3.06 CLEANING

After completion of each floor, remove equipment and thoroughly clean deposit and overspray from areas not requiring fire protection.



PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

Include all labor, materials, transportation, equipment and services necessary for and properly incidental to the furnishing and installation of built-up roofing. Complete all as indicated on the Drawings and as specified.

A. Related work specified elsewhere:

1. Section 07600: Flashing & Sheet Metal
2. Section 07610: Sheet Metal Roofing
3. Section 15400: Plumbing
4. Section 15700: Air Conditioning
5. Section 16100: Electrical

1.03 QUALITY ASSURANCE

A. Applicator-Manufacturer Overview:

Applicator shall review Drawings and Specifications with agent or primary Roofing Materials Manufacturer and obtain his agreement that selected system is proper, compatible and adequate for application shown.

B. Pre-application Job-site Conference:

Applicator shall arrange conference to be attended by Applicator and Project Manager, Inspector, his working fore-man, and agent of approved manufacturers, all of whom shall have had at least one week advance notice. Requirements of related work surface preparation, storage and handling, protection measures.

1.04 SUBMITTALS

A. Submit in accordance with Section 01030 the following items:

1. Manufacturer's Data: Submit list of all products proposed for use, including Manufacturer's Specifications.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

2. Guarantee: Provide two-year written guarantee for watertightness on letterhead of roofing subcontractor from date of filing of Notice of Completion. Guarantee shall cover damage from leaks due to defective materials or workmanship.
3. Certification: Submit letter from roofing manufacturer that installation is in conformance with specified items.

1.05 PRODUCT HANDLING

- A. Deliver materials to building site in original unbroken packages bearing manufacturer's label.
- B. Protect roofing materials stocked on job site from weather. Provide dry storage facilities at job site for insulation and roofing rolls. Keep insulation dry at all times. Stand rolls on end and off deck surface.
- C. Distribute materials placed on structure to avoid overloading.

1.06 SITE CONDITIONS

- A. Environmental Conditions: Do not apply roofing when any of the following conditions exist:
  1. Wet or freezing weather.
  2. Wet or damp roofing.
  3. Surface temperature of deck is less than 50 degrees F.
  4. Conditions exist that would jeopardize installation.

1.07 FIELD QUALITY CONTROL

- A. Provide 24 hour advance notification to Project Manager prior to initial start of work and prior to any resumption of work.
- B. City Inspector may be present at times when roofing materials are being applied.

1.08 PROTECTION

Protect adjoining materials from stains. Special attention will be required around perimeter of buildings. Prevent debris from entering and clogging roof drains and gutters.

PART 2: PRODUCTS

2.01 PRODUCT STANDARD

A. All roofing shall qualify as UL Class "A" fire retardant.

B. Quality:

Provide Conglas C-34-SS aluminum coated fiberglass roofing system, or approved equal, for nailable deck.

C. References to manufacturer's names and products are to facilitate establishing level of quality, function and method of application.

2.02 MATERIALS

A. Cant Strips:

FS-LL-I-535, 3" x 3" fiberboard.

2.03 MATERIALS, QUANTITIES (per 100 sq.ft. of roof area)

A. Conglas Conprime, 1 gal.	8 lbs.
B. Conbase W-1 IV, 1 ply	25 lbs.
C. Conply A-IV, 3 plies	33 lbs.
D. Asphalt, spot mop to deck	15 lbs.
E. Asphalt, plies	90 lbs.
F. Concoat CC-20 Emulsion, 3 gal.	24 lbs.
G. Conshield Aluminum Coating, 1 gal.	8 lbs.
H. Approximate Total	203 lbs.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

Examine surfaces to receive roofing. Commencement of work hereunder will be considered as acceptance of surface conditions and will signify applicator's responsibility for finished work. Notify Project Manager of any deck deficiencies prior to commencement of new roofing work.

### 3.02 APPLICATION

- A. Install rigid insulation board in accordance with manufacturer's written instructions.
- B. Roof deck shall be firm, clean, dry and smooth. Apply Conprime to the surface of the entire deck at the rate of one (1) gallon per sq.ft. The primer should be allowed to dry thoroughly before application of roofing.
  - 1. Conbase W-1 IV shall be spot-mopped to the deck with hot asphalt. Spot mop hot asphalt at the rate of 15 lbs. per 100 sq.ft. Conbase W-1 IV shall be lapped 2" on sides and 6" on ends. Lap so that the flow of water is over or parallel to, but never against, the laps. Turn up 2" above top of cant on all walls and vertical surfaces.
  - 2. Conply A-IV shall be lapped so the flow of water is over or parallel to, but never against, the laps. All end laps shall be at least 4"; adjacent end laps shall be at least 12" apart.
  - 3. Embed three (3) plies Conply A-IV in shingle fashion, lapping 24-3/4" with a 11-1/4" exposure.
  - 4. Embed the full width of each sheet in hot asphalt applied at a nominal rate of 30 lbs. per 100 sq.ft. of roof area. Each ply shall be lightly broomed, using a moderately soft commercial push broom, as it is applied. All plies shall be turned up 2" above the cant and shall be solid mopped to the cant and vertical wall. Buckles or fishmouths shall be cut and repaired.
  - 5. The surface to receive coating shall be clean, uniform, smooth and dry. All fishmouths, buckles or dry laps shall be repaired prior to applying coating.
  - 6. Coat the entire surface with Concoat CC-20 emulsion, applied at a nominal rate of three (3) gallons per 100 sq.ft. of roof area.
  - 7. Aluminum coating shall be applied in strict compliance with manufacturer's recommendations and applied at a minimum rate of one (1) gallon per 100 sq.ft. of roof area.
- C. Fit roofing neatly to pipes, vents, flues, roof drains, scuppers and curbs, and flash seal in accordance with manufacturer's recommendations.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

D. Metal Flashings:

1. Coordinate and inspect installation of gravel stops, roof drains and flashings installed under Section 07600 and pipe and conduit flashings installed under Divisions 15 and 16 to ensure watertight results.
2. Gravel stops and flashings shall be set in accordance with manufacturer's recommendations.

3.05 CLEANING

Completely clean stained surfaces without damage. Remove debris or other materials from leader heads and scuppers. Remove all scrap material, wrappings, or debris from roof and premises. Clean sheet metal flashings and all roof mounted items.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. General:

Provide sheet metal, complete, as shown and specified per Contract Documents.

B. Work Specified Elsewhere:

1. Section 05800: Expansion Control
2. Section 06100: Rough Carpentry
3. Section 07500: Membrane Roofing
4. Section 07610: Sheet Metal Roofing
5. Section 09250: Gypsum Board
6. Section 15400: Plumbing
7. Section 15700: Air Conditioning

1.03 REFERENCES

Comply with applicable provisions of following and as specified.

1. SMACNA - Architectural Sheet Metal Manual

1.04 SUBMITTALS

A. Samples:

Following listed samples; additional, if specifically requested.

1. Galvanized steel sheet: 12" x 12"; with specified paint finish, selected color, or tern coated finish.
2. Stainless steel: Lead coated finish; 12" x 12".

B. Shop Drawings:

Fabrication and installation details of each item and assembly; include thicknesses, sizes, fastenings, and location of wood nailers and grounds required to properly secure sheet metal.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

C. Product Data:

Manufacturer's specifications, catalog cuts, data and installation instructions.

PART 2: PRODUCTS

2.01 MATERIALS

A. Asphalt Saturated Felt:

ASTM D226, Type I; 15 lbs., unperforated type.

B. Bituminous Paint:

FS TT-C-494, Type II; alkali-resistant.

C. Cleats:

2" Wide by 3" long, unless otherwise shown. Fabricate from same material and gauge as sheet metal being installed.

D. Fasteners:

Screws, rivets, bolts, and nails; best type suited for purpose. Same material as sheet metal, or other compatible material that does not corrode nor support galvanic action.

E. Plastic Cement:

ASTM D2822, Type 1.

F. Reglets:

1. General: Design reglets so counterflashing screws into place, can be removed, and reinstalled without damage to reglet or counterflashing. Furnish reglets with prefabricated corners and end stops where applicable and other accessories required for installation.

2. Surface mounted:

a. Special: Fabricate from 22 gauge stainless steel as shown; with 3/4" wide sealant top groove.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

G. Sealant:

As manufactured by one of following; single component silicone, gun grade; 15-22 durometer, standard color as selected.

Dow's	790 Building Sealant
GE's	Silpruf Sealant

H. Sheet Metal:

1. Galvanized steel sheet: ASTM A526, galvanized per ASTM A525 G90 (1.25 commercial); 24 gauge, unless otherwise shown or specified.
2. Stainless steel: ASTM A167, lead coated finish; 22 gauge (.031"), unless otherwise shown specified.

I. Solder:

ASTM B32, Alloy Grade 50A; 50% tin, 50% lead.

J. Soldering Flux:

Muriatic acid or rosin type; killed with zinc.

2.02 FABRICATION

A. General:

Fabricate sheet metal per referenced standards. Accurately produce details and designs shown; make profiles, bends and intersections sharp, even, and true. Shop fabricate items where practicable.

B. Joints:

Lap or lock as applicable; solder, rivet and solder, or weld as recommended per referenced standard.

C. Expansion and Contraction:

Per referenced standards. Where not otherwise shown or specified, fabricate items in units not longer than 24' and splice with loose-lock slip type expansion joints filled with sealant. Provide expansion joints not more than 8' from external or internal corners of sheet metal work.



## 2.03 FLASHINGS

### A. General:

Fabricate flashings and counterflashings as shown. Fold back exposed edges 1/2" to provide stiffness.

### B. Metal Base Flashings:

Stainless steel sheet.

### C. Flashings:

Stainless steel, unless otherwise shown.

### D. Counterflashings:

Stainless steel, unless otherwise shown; fabricate end stops for exposed ends.

## 2.04 PITCH POCKET COLLARS

Fabricate from galvanized sheet metal as shown; flanges 4" wide.

## 2.05 SHEET METAL CLOSURE

Two piece assembly; fabricate of metals and in thicknesses and configurations shown.

## 2.06 SCUPPERS

Fabricate of stainless steel sheet.

## 2.07 SEISMIC JOINT COVERS

Fabricate of stainless steel sheet.

## PART 3: EXECUTION

### 3.01 INSPECTION

Install work on smooth, dry and clean substrate. Give written notification of deficiencies. Do not proceed until existing deficiencies are corrected.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

3.02 PREPARATION

A. Field Measurement:

Verify as required for work fabricated to fit project conditions.

3.03 INSTALLATION

A. General:

Install items per referenced standards and as shown; install level, plumb, straight, square, at proper elevations, locations, alignments and watertight.

B. Underlayment:

1. Asphalt saturated felt: Install over cementitious surfaces to receive sheet metal.

C. Dissimilar Metals:

Insulate from direct contact with heavy coat of bituminous paint.

D. Seams:

Applicable types; make in direction of flow.

E. Soldering and Welding:

As recommended by referenced standard; weld stainless steel.

3.04 FLASHINGS

A. General:

Install flashings and counterflashings where shown and otherwise required to provide watertight protection.

B. Counterflashings:

1. General: Turn down over base flashings at least 4"; lap joints 3"; install end stops at exposed ends. Install counterflashings in manner to cause spring action against base flashings.
2. Surface mounted reglets: Attach counterflashings to reglets with sheet metal screws as shown; space screws maximum 16" centers.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

3.05 SCUPPERS AND SEISMIC JOINT COVERS

Install as shown.

3.06 MISCELLANEOUS ITEMS

Provide items, shapes and accessories necessary to complete work not specifically specified under this section, or included under other sections, but shown on architectural drawings.

3.07 CLEANING

Clean sheet metal of smears, spots, and other markings. Remove and replace defective work at no cost to Owner.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. General:

Provide sheet metal roofing, complete, as shown and specified per Contract Documents.

B. Work Specified Elsewhere:

1. Section 05200: Miscellaneous Metal
2. Section 05800: Expansion Control
3. Section 06100: Rough Carpentry
4. Section 06200: Finish Carpentry & Millwork
5. Section 07500: Membrane Roofing
6. Section 07600: Flashing & Sheet Metal
7. Section 07800: Skylight
8. Section 07900: Sealants
9. Section 15400: Plumbing
10. Section 15700: Air Conditioning

1.03 QUALITY ASSURANCE

A. Mock-Up:

1. General: Prior to installation of work, provide mock-up, as shown, at project site. Use same materials, details, joints, fastenings, and finish to be incorporated in work.
2. Visual acceptance: Based on construction, assembly, finish, and color match of components.

1.05 REFERENCES

Comply with applicable provisions of AMACNA.

1.06 SUBMITTALS

A. Samples:

Following listed samples; additional, if specifically requested.

1. Fastener: Each type.

2. Sheet Metal: 12" x 12"; with specified finish.

B. Shop Drawings:

Fabrication and installation details of each item, joint, fastener, and assembly; include thicknesses and sizes.

C. Product Data:

1. Manufacturer's specifications, catalog cuts, data, and installation instructions.
2. Sealant: Include written statement that sealant is recommended for application shown and compatible to surfaces and finishes in contact therewith.

D. Guarantee:

See 3.04 for all requirements for roof guarantees.

1.07 PRODUCT CONDITIONS

A. Environmental Requirements:

Do not apply sealant when temperature is below 40 degrees F. nor under extreme temperature conditions when joint openings are at maximum or minimum width.

PART 2: PRODUCTS

2.01 MATERIALS

A. Asphalt Saturated Felt:

ASTM D226, Type I, 15 lbs., unperforated type.

B. Sheet Metal:

1. General: Stainless steel, 22 gauge, lead coated finish.
  - a. Roofing, cleats, gutters, flashings and coping.

C. Cornice:

Galvanized sheet metal, 24 gauge.

D. Chimneys:

Galvanized sheet metal, 24 gauge.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

E. Fasteners:

1. Stainless steel to other materials: Non-magnetic stainless steel nails, screws, and bolts of sizes and types suitable for intended uses.
2. Expansion bolts: FS FF-S-325, Group III expansion shield self-drilling tubular expansion shell bolt anchors; Type 1 or Type 2, unless otherwise shown.
3. Nails: FS FF-N-105, Type II, Style 10 common, steel wire, hot-dip galvanized.

F. Plastic Cement:

ASTM D2822, Type I.

G. Rosin Paper:

Type I, Grade A, Style 1; rosin sized, unsaturated, smooth; not less than 6 lbs. per 100 SF.

H. Sealant:

1. General: As manufactured by one of the following; single component silicone; gun grade; 15-22 durometer, standard color as selected.

Dow's	790 Building Sealant
GE's	Silpruf Sealant

2. Performance requirements: Per FS TT-S-001543, Class A.

I. Solder:

ASTM B32, Alloy Grade 50A (50% tin, 50% lead).

J. Soldering Flux:

Muratic acid or son type; killed with zinc.

2.02 FABRICATION

A. General:

Fabricate per referenced standards. Accurately produce details and designs shown; make profiles, bends, and intersections sharp, even, and true. Shop fabricate items where practicable.

B. Seams:

Lap, lock, solder, and braze seams as applicable. Preform corners with soldered and brased seams. Conceal brazed seams; visible distortion and discoloration not acceptable.

C. Expansion Joints:

Per referenced standards and as shown. Where not otherwise shown or specified, fabricate items in units not longer than 24' and splice with loose-lock slip type expansion joints filled with sealant. Provide expansion joints not more than 8' from external or internal corners of sheet metal work, unless otherwise shown.

D. Gutters:

Fabricate from stainless steel sheet with strainers of woven wire mesh and copper outlet piping.

PART 3: EXECUTION

3.01 INSPECTION

Install work on smooth, dry and clean substrates. Give written notification of deficiencies. Do not proceed until conditions are satisfactory.

3.02 PREPARATION

A. Field Measurements:

Verify as required for work fabricated to fit project conditions.

3.03 INSTALLATION

A. General:

Install sheet metal roofing and related items per referenced standards and as shown; install true to profiles and contours, level, plumb, straight, square, at proper elevations, locations, and alignments, and watertight.

B. Sheet Metal Roofing:

1. Underlayment:

- a. Asphalt saturated felts: Apply over plywood sheathing, lap ends and edges 3"; nail to sheathing on 6" centers on laps.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

- b. Rosin paper: Apply over felt; lap and edges 2"; adhere with plastic cement spotted on 12" centers.
- 2. Cleats: Not less than 2" wide; fasten to sheathing with two stainless steel fasteners, at 12" centers.
- 3. Roofing: Install brake formed pans; form 1" high double lock standing seams; fold and lock over cleats. At roof edges fold and lock pans into adjacent flashing.
- 4. Gutters: Provide supports and reinforcing required to support gutters, full of water, without distortion or loss of watertightness.
- 5. Eave edges: Install eaves, fascias and soffits as shown.
- 6. Flashing: Per referenced standards and as shown.
- 7. Sealant: Apply as specified under Sealants where shown.
- 8. Dissimilar metals: Isolate from direct contact with one heavy coat of bituminous paint.

3.04 GUARANTEE

- A. Furnish the City, through the Project Manager, following guarantees, in accordance with Section 01300.
  - 1. A two year guarantee that all materials furnished by Sheet Metal Roofing Contractor will be free from defects in material or workmanship, and that all defective materials will be repaired or replaced immediately, after proper notice, at no cost to the Owner for all work in this Section.
  - 2. A two year guarantee by Sheet Metal Roofing Contractor against improper installation workmanship, expansion and contraction noises, water leakage, or sealant failure for all work in this Section, as well as Section 07800, Skylights, Section 07256, Membrane Roofing, and Section 08500, Window Wall and Glazing.



PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. General:

Provide skylights, complete, as shown and specified per Contract Documents.

B. Provide Roof Hatches: Complete

C. Related Work Specified Elsewhere:

1. Section 05200: Miscellaneous Metal
2. Section 06100: Rough Carpentry
3. Section 07600: Flashing Sheet Metal
4. Section 07610: Sheet Metal Roofing
5. Section 08500: Window Wall & Glazing

1.03 SUBMITTALS

A. Samples:

Following listed samples; additional, if specifically requested.

1. Aluminum finish for skylight member 12" minimum length.
2. Glazing gaskets and tape.

B. Shop Drawings:

1. Show dimensions, sizes, profiles, and details at large scale of each member, joint, and anchorage.
2. Structural calculations: Submit calculations certified by a registered structural engineer in State of California that members and construction conform to requirements for life safety of State and City authorities.

C. Product Data:

Manufacturer's specifications, data and installation instructions.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
CC NUMBER 2211

D. Sealants:

Include written statement that sealant is compatible with and will bond to surfaces and finishes in contact therewith.

E. Quarantee:

1. Guarantee work watertight and free from defects in materials and workmanship for a period of 10 years.
2. Coordinate with Section 07610 for other guarantee requirements.

1.04 PRODUCT HANDLING

A. Delivery:

Deliver fabricated units and component parts to project site completely identified per installation drawings. Inspect work for damage upon delivery to project site.

B. Protection:

Protect work from damage during shipping, erection, and from weather until installed. No damaged work will be acceptable; items with minor defects or scratches will be considered as damaged.

PART 2: PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Skylights: O'Keefe Inc., or approved equal.

2.02 MATERIALS

A. Aluminum:

1. General: Use alloy and temper best suited for purpose.
2. Extrusions: AA 6061 or 6063 alloy, T5 or T6 Temper.
3. Sheets: AA 3003 alloy, H14 or H32 Temper.

B. Fasteners:

1. General: Types best suited for purpose.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
CC NUMBER 2211

2. Materials: Bolts, screws, nuts, shims, and washers of following materials for attachment of following components.
3. Interior and exterior caps: 300 series stainless steel.
4. Other aluminum extrusions: 300 series stainless steel or aluminum.
5. Skylight to curb: Cadmium plated steel.
6. Exposed fasteners: Only where permitted; use Phillips recess, oval head, countersunk type screw heads. Finish heads to match adjacent finish.

C. Neoprene:

1. General: Type resistant to deterioration by sunlight, weathering, oxidation, and permanent deformation under load; black color. Design and durometer hardness as recommended by skylight manufacturer.
2. Glazing gaskets: Visual flashing and burrs not permitted. Fabricate 1% to 2% overside for crowd-in.

D. Plastic:

1. Polyvinyl Butyrol sheet: Monsanto's Saflex, or approved equal, clear.

E. Sealant:

Dow's 790 Building Sealant or GE's Silpruf Sealant; single component, gun grade, silicone sealant, standard color as selected.

F. Weep Baffles:

Open cell sponge urethane.

G. Steel:

ASTM A-36.

H. Structural Sealant:

Dow's 999 Glazing Sealant or GE's 1200 Construction Sealant; single component, gun grade, silicone sealant, standard color as selected.

## 2.03 ROOF HATCH

O'Keefe's, or approved equal, 2'-6" x 3'-0" aluminum construction with factory finish, completely assembled with hinges, spring operators, latch, turn handle, watertight seals, fiberglass insulated covers and curbs integral cap flashing, held-open arms and provision for padlocking from inside only.

## 2.04 FABRICATION

A. Fabricate work of extruded aluminum curbs, weather bars, caps, and other members as shown or required. Shop assemble wherever practicable; ready for installation at project site. If not shop assembled, pre-fit at shop to assure proper and expeditious field assembly. All connections shall be welded.

### B. Glazing:

Install glass and plastic in continuous neoprene glazing gaskets. Apply sealant as shown. Glass in contact with metal not permitted. Open corner joints, loose, twisted, or distorted gaskets not acceptable.

### C. Sealant Glazing:

1. General: Prime surfaces if recommended by manufacturer. Apply sealant per manufacturer's recommendations.
2. Butt glazed joints: Tape adjacent surfaces and tool smooth to produce neat straight joints.
3. Cleaning: Remove excess sealant immediately after application; use solvents or cleanser recommended by sealant manufacturer.

## PART 3: EXECUTION

### 3.01 INSPECTION

Inspect conditions and surfaces of which work is installed. Give written notification of deficiencies; do not proceed until satisfactory.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
CC NUMBER 2211

3.02 PREPARATION

A. General:

Install work plumb, level, true and properly aligned with established lines and work of other trades.

B. Curbs:

Set aluminum curbs in continuous sealant bead. Install weep baffles at weeps.

C. Dissimilar Materials:

Isolate aluminum from contact with dissimilar materials per manufacturer's recommendations.

3.04 CLEAN-UP AND REPAIRS

After initial inspection, clean glass, plastic, and metal work of smears, spots, and other markings per manufacturer's recommendation; do final clean-up upon completion of work. Do not use alkaline or abrasive agents to clean work. Avoid scratching by grit particles. Remove and replace defective work at no cost to Owner.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements contain information that applies to this Section.

1.02 DESCRIPTION

Provide all labor, materials, equipment and services required to furnish and install everything necessary for execution and completion of caulking and sealant installation as specified and shown.

1.03 RELATED WORK SPECIFIED ELSEWHERE

1. Section 03400: Precast Concrete
2. Section 06200: Finish Carpentry & Millwork
3. Section 07610: Sheet Metal Roofing
4. Section 07800: Skylights
5. Section 08500: Window Wall & Glazing

1.04 QUALITY ASSURANCE

A. Federal Specifications:

00598C, Type I Caulking Compound, Resin Type; TT-S-00230C Type II Sealant.

B. Products specifications and recommendations of the manufacturers of the materials selected for use.

C. Guarantee to make, at own expense, any repairs necessary because of faulty materials or workmanship, for a period of two years following completion of the work of this Section. Exterior work that does not remain weathertight and all work which does not retain all properties inherent in the product will be considered faulty.

1.05 DEFINITIONS

A. Sealant:

A weatherproof elastomer used in filling and sealing joints, having properties of adhesion, cohesion, extensibility under tension, compressibility and recovery; designed to make joints air and water tight. Material is designed generally for application in joints at exterior of structures and in other joints subject to movement. Cyclic movement capacity 12-1/2 - 25%.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

B. Caulking Compound:

A material in filling joints and seams, having properties of adhesion and cohesion; limited extensibility and recovery properties; usually applied in joints not subject to movement or weathering. Cyclic movement capacity 5 - 10%.

C. Caulking:

The term used to denote the process of filling the joints, without regard to type of material.

D. Primer:

A compound designed to improve the adhesion of sealant provided by the sealant manufacturer and selected for compatibility with the sealant, and with substrate.

1.06 SUBMITTALS

- A. Samples of sealant colors from manufacturer's standard colors.
- B. Manufacturer's catalog data.

PART 2: PRODUCTS

2.01 SEALANTS

- A. Colors as selected by Project Manager.
- B. Sealant, Dap Flexiseal, one part polysulfide sealant, Dow-Corning 790, 6E Silpruf, or approved equal.

2.02 CAULKING COMPOUND

Resinous, gun grade, non-staining plastic compound with shrinkage factor not exceeding 15%. "Synthetic Resin" by Tremco, "AC-20" by Pecora, "Latex Caulk" by DAP, or approved equal. Colors as selected by Project Manager.

2.03 JOINT BACKING

Elastic closed cell synthetic material, non-reactive with caulking materials and non-oily, approved by sealant manufacturers. Minimum density 3.24 pounds/cubic foot. Use no asphalt or bitumen impregnated material with sealants.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

2.04 BOND BREAKER

Polyethylene bond-breaking tape, approved by sealant manufacturer.

2.05 PRIMER

Non-staining, colorless type, approved by sealant manufacturer.

PART 3: EXECUTION

3.01 CLEANING

The joints required to be caulked shall be thoroughly cleaned of dust, dirt, scale, corrosion, grease or anything that might interfere with the adhesive of the compound. When solvent is used to clean non-porous surfaces, the solvent shall be wiped off with clean cloths before it dries and redeposits the contaminants.

3.02 JOINT FILLER

If the joints are deeper than 2," they shall be packed to within 3/4" of the surface with the specified joint filler. The 3/4" shall be filled with the caulking compound. If possible, joints to be caulked shall be rectangular in section (not V-shaped).

3.03 PRIMING

The surfaces to be caulked shall be primed in accordance with the manufacturer's application instructions.

3.04 APPLICATION

Apply compound with gun having proper size nozzle or with knife as required. Use sufficient pressure to fill all voids and joints solid; superficial pointing of joints with a skin bead will not be accepted. Remove excess caulking and leave surfaces neat, smooth and clean. Upon completion, caulking shall have a smooth, even finish. All caulked joints shall be watertight.

3.05 CLEAN-UP

At completion of work clean up all items related to this Section. Clean adjacent surfaces from overrun of sealants.



PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements contain information that applies to this Section.

1.02 DESCRIPTION

A. Provide hollow metal doors and frames, complete, as shown and as specified, including glass @ vision lights.

B. Related Work Specified Elsewhere:

1. Section 04220: Unit Masonry
2. Section 08700: Hardware
3. Section 09100: Metal Support Systems
4. Section 09250: Gypsum Wallboard
5. Section 16100: Electrical

1.03 QUALITY ASSURANCE

A. Wherever a fire resistance classification is indicated, provide fire rated hollow metal frames investigated and tested as a fire door assembly; identify each frame with labels, indicating applicable fire rating of both door and frame.

B. Construct and install assemblies to comply with NFPA Standard No. 80, and as herein specified.

1.04 SUBMITTALS

A. Shop Drawings:

Submit Shop Drawings for the fabrication and erection of metal doors and frames. Include details of construction, location and installation requirements of finish hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.

B. Frame Schedule:

Provide a schedule of doors and frames using the same reference numbers for details and openings as those on the Contract Drawings.

PART 2: PRODUCTS

2.01 MATERIALS

- A. Steel Sheets: Provide commercial quality carbon steel sheets complying with ASTM A569, pickled and oiled, for hot-rolled steel and complying with ASTM A366 for cold-rolled steel.
- B. Inserts, Bolts and Fasteners: Manufacturer's standard units for the required application.
- C. Primer: Red-oxide/zinc-chromate alkyd base primer.

2.02 MANUFACTURERS

Provide all hollow metal doors and frames from the following manufacturers, or equal.

- 1. Fire Protection Products.
- 2. Forderer Cornice Works.
- 3. Overly Manufacturing Company.
- 4. Steelcraft.

2.03 FABRICATION - GENERAL

- A. Fabricate hollow metal units to be rigid, neat in appearance and free from defects, warp, buckle or surface imperfection. Accurately form metal to required sizes and profiles. Wherever practicable, fit and assemble units in the manufacturer's plant. Weld exposed joints continuously, grind, dress and make smooth, flush and invisible.
- B. Unless otherwise indicated, provide countersunk flat Phillips or Jackson heads for exposed screws and bolts.
- C. Prepare hollow metal units to receive finish hardware, including cutouts, reinforcing, drilling and tapping in accordance with final Finish Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A115 "Specifications for Door and Frame Preparation."
- D. Clean steel surfaces of mill scale, rust, oil, grease, dirt and other foreign materials before the application of the shop coat of paint.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- E. Apply a smooth coat of primer in even consistency to provide a uniform dry film thickness of not less than 2.0 mils

#### 2.04 FABRICATION OF HOLLOW METAL FRAMES

- A. Fabricate frames of full-welded unit construction, with corners mitered, reinforced, continuously welded full depth and width of frame, unless otherwise indicated. Knock-down type frames are not acceptable.
- B. Fabricate frames from cold or hot-rolled steel sheets. Provide 16 gage for openings to 4'0" wide and 14 gage for openings over 4'0" wide.
- C. Reinforce Frames for Required Finish Hardware as follows:
  - 1. Hinges: Steel plate 3/16" thick x 1-1/2" wide x 6" longer than hinge, secured by not less than 6 spot-welds.
  - 2. Strike Plate Clips: Steel plate 3/16" thick x 1-1/2" wide x 3" long.
  - 3. Surface Applied Closers: Removable steel access plate, 12 gage internal reinforcement of size and shape required, and enclosed housing to keep closer pocket free of mortar or other materials.
- D. Wall and Floor Anchors: Furnish wall and floor anchors, as required to secure frames to adjacent construction, formed of not less than 18 gage galvanized steel.
- E. Head Reinforcing: For frames over 4'0" wide provide 2 continuous steel angles not less than 2" x 2" x 12 gage and width of opening, welded to back of frame head.
- F. Rubber Door Silencers: Drill stops to receive 3 silencers on single-door frames and 4 silencers on double-door frames. Install plastic plugs to keep holes clear during construction. Omit at rated frames.

#### 2.05 FABRICATION OF HOLLOW METAL DOORS

- A. Provide 1-3/4" thick flush design doors fabricated of 2 outer cold-rolled, stretcher leveled steel sheets not less than 16 gage.
- B. Construct doors with smooth, flush surfaces without visible joints or seams on exposed faces or stile edges.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- C. Provide sound insulation filler of fiberboard or mineral-wood board, solidly packed full door height to fill the voids between inner core reinforcing members.
- D. Reinforce inside of doors with vertical 20 gage steel channel-shaped sections or interlocking Z-shaped steel sections. Space vertical reinforcing 6" o.c. and extend full door height. Spot-weld at 4" o.c. to both outer sheets.
- E. Continuous truss-form inner core of 28 gage sheet metal reinforcement may be provided as inner reinforcement in lieu of above. Spot-weld truss-form reinforcement 3" o.c. vertically and horizontally over entire surface of both sides.
- F. Reinforce doors for required finish hardware, as follows:
  - 1. Hinges: Steel plate 3/16" thick x 1-1/2" wide x 6" longer than hinge, secured by not less than 6 spot-welds.
  - 2. Locksets and Bolts: 14 gage steel sheet, secured with not less than 2 spot-welds.
  - 3. Surface Panic Devices: 14 gage sheet steel (except when through bolts are shown or specified), secured with not less than 2 spot-welds.
  - 4. Surface Applied Closers: 12 gage steel sheet, secured with not less than 6 spot welds.
- G. Fabricate and fit hollow metal doors accurately in their respective frames, within the following clearances:
  - 1. Jambs and Heads: 3/32".
  - 2. Meeting Edges, Pairs of Doors: 1/8".
  - 3. Bottom 3/8", where no threshold or carpet.
  - 4. Bottom: 1/8", at threshold or carpet.
- H. Glass vision panel moldings and glazing stops shall be #18 gauge minimum and of rectangular profiles. Provide 1/4" wire glass lites where indicated.
  - 1. Exterior doors shall be manufactured in conformance with energy conservation regulation T20-1495 (air infiltration) of Title 24, State of California Administrative Code.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

## 2.06 FIRE RATED DOORS AND FRAMES

Shall bear labels for scheduled rating by Underwriters' Laboratories, Warnock Hersey, or equal.

## PART 3: EXECUTION

### 3.01 INSTALLATION

- A. Set frames accurately in position, plumbed, aligned and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces and spreaders leaving surfaces smooth and undamaged.
- B. Place fire-rated frames in accordance with NFPA Standard No. 80 and in accordance with manufacturer's fire test report installation data.
- C. Hang doors and adjust to freely swinging operation without binding, sticking, sagging or excessive clearances.

### 3.02 ADJUST AND CLEAR

- A. Final Adjustments: Check and readjust operating finish hard-ware items in hollow metal work just prior to final in-spection. Leave work in complete and proper operating condition. Remove and replace defective work, including doors or frames which are warped, bowed or otherwise damaged.
- B. Prime Coat Touch-Up: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.

PART 1: GENERAL

1.01 DESCRIPTION

A. General:

1. Work includes, but is not limited to, coordinating metal frames, providing sash, glass, glazing, sealants, doors, and all items required for complete installation of window wall and glazing plus warranties.
2. Provide glass and glazing for skylights.

B. Related Work Specified Elsewhere:

1. Section 03300: Cast-In-Place Concrete
2. Section 05200: Miscellaneous Metal
3. Section 07800: Skylights
4. Section 07900: Sealants

1.02 SYSTEM DESCRIPTION

A. General:

Work consists of window wall system including metal sash, metal frames, and anchors, glazing, entrance doors, related framing, sealants, flashings, anchors, embedded inserts, and other miscellaneous accessories necessary to complete work.

B. Design Criteria:

1. General: Design component parts and assemblies so that completed window wall system, complies with specified criteria.
  - a. Design safety factor: Unless otherwise specified, design structural components, including metal framing members, glazing stops, anchors, fasteners, welds, gaskets, adhesives, and sealants used as adhesive for a safety factor not less than 1.5. That is, failure of any structural component shall not occur at less than 1.5 times maximum design wind load pressure. Failure defined as breakage, component disengagement, permanent deformations of framing members in excess of 0.2% of their clear span, or permanent deformation of anchorage components beyond nominal tolerance and slippage limitations.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

- b. Design modifications: Modify design only as may be necessary to meet design criteria. Submit variations in details and materials for review. Maintain general design concept without altering profiles or adversely affecting appearance, durability, or strength of materials.
- 2. a. Thermal movement: Provide for noiselss contraction and expansion of component parts and materials for ambient temperature range of 150 degrees F. without buckling, opening at joints, glass breakage, undue stress on fasteners and attachments, or other detrimental effects. Make joints watertight as required to accomodate movement.
- b. Building movement:
  - 1. General: In addition to thermal movement, provide for building movements, such as load deflections, shrinkage, creep, and lateral drift due to seismic and wind loading.
- c. Structural silicone sealant: Do not exceed 20 PSI at 1.5 times wind load pressure.
- 3. Air leakage:
  - a. Fixed window wall: Do not exceed 0.06 CFM per SF of wall area at 6.24 PSF air pressure differential.
- 4. Water penetration:
  - a. Definition: Water penetration defined as appearance of uncontrolled water other than condensation on indoor face of any part of wall.
  - b. Drainage: Drain water entering through joints and condensation occuring within wall construction.
  - c. Window wall: No water penetration when tested per AAMA TM-1 under pressure differential of 12 PSF for a period of 15 minutes. Test by static and dynamic methods.

1.03 QUALITY ASSURANCE

A. Installer:

Minimum 5 years comparable experience.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

B. Testing Laboratory:

Selected and paid for by Owner.

1.04 REFERENCES

Comply with applicable provisions of following and as specified.

AAMA FC-1; Specifications for Field Check of Metal Curtain Walls for Water Leakage.

TM-1; Specifications for Method of Test for Metal Curtain Walls for Water Penetration Using Dynamic Pressure.

701.2; Specification for Pile Weather Strip.

FGMA Glazing Manual.

1.05 SUBMITTALS

A. Shop Drawings:

1. Window wall: Prepare complete shop and erection drawings. Show details of each condition at large scale for every member, joint, anchorage, and glazing system, and as required to perform work properly. Incorporate changes required as a result of modifications. Include steel frames as well as sash.
2. Anchor Assemblies: Shop, layout, and erection drawings; coordinate with related support system details. Submit loading diagrams of resultant window wall loads transmitted to steel or concrete structure.
3. Other components: Shop and erection drawings for other component parts. Submit in same detail specified.

B. Samples:

1. Glass: Each type and thickness - 12" x 12".
2. Glazing materials: Gaskets, seals, blocks, and other items; each type, size, and shape including molded corners; 12" long or unit.

C. Product Data:

Manufacturer's specifications, product properties, and installation instructions.



CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

D. Additional Data:

1. Engineering calculations: Together with shop drawings to substantiate that work complies with specified structural properties. Calculations prepared and signed by a licensed civil or structural engineer registered in the State of California.

E. Test Reports:

As specified. In addition, include published reports of tests performed by product manufacturers.

F. Maintenance Manuals:

Detailed procedure for periodic inspection, cleaning, and maintenance of components such as glass, gaskets, sealant, finishes, and hardware.

G. Guarantee:

1. Warrant work, complete window wall assembly, frames, sash, glass, sealants, watertight and free from defects in materials and workmanship for a period of five years.
2. Coordinate with Section 07610 for other guarantee requirements for glazing at skylights.

H. Certification:

Submit certification that all glass meets the requirements of specified items.

1.06 PRODUCT HANDLING

A. Delivery:

Deliver fabricated units and component parts to project site completely identified per erection drawings. Inspect work for damage upon delivery to job site.

B. Protection:

Protect work from damage during shipping, erection, and from weather until installed. No damaged work will be acceptable; items with minor defects or scratches will be considered as damaged, unless otherwise specified.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

1.07 SCHEDULING

Coordinate with other trades affected by window wall to assure work is performed in proper sequence. Provide anchors, fastenings, and other built-in items as required to cause no delay. Furnish proper setting templates and layouts affecting work of other trades.

PART 2: PRODUCTS

2.01 FASTENINGS

A. General:

Types as shown; fabricate from 300 series non-magnetic stainless steel of types best suited for purpose. Fabricate washers from same type stainless steel.

B. Expansion Bolts:

FS FF-S-325, Group III expansion shield (self-drilling tubular expansion shell bolt anchors) Type 1 or 2, as required; stainless steel, unless otherwise shown.

C. Shims:

Fabricate from Koro Corp.'s Korolith-NS, or approved equal; multi-polymer plastic; non-slip surface, compressive strength not less than 8000 psi.

2.02 INSERTS

Type and design per design criteria; electroplate per ASTM A-164, Type RS.

2.03 NEOPRENE

A. Fillers:

ASTM D-1056, closed cell soft sponge neoprene, sizes and configurations shown.

2.04 SEPARATORS

A. Nylon:

FS L-P-410 (nylon 6/6); molded or extruded to designs shown.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

B. Polystyrene:

Rigid type; high impact grade, smooth both sides, opaque color.

C. PVC:

.010" thick tape with pressure sensitive adhesive two sides; black, expanded foam glazing tape.

2.05 STAINLESS STEEL

A. Flashings:

ASTM A-167, Type 302 or 304, 2B or 2D finish; 28 gauge, unless otherwise shown.

2.06 STEEL

A. General:

ASTM A-36.

B. Sheet:

ASTM A-526, galvanized per ASTM A-525, Coating Designation G-90 (1.25 Commercial), phosphatized; stretcher leveled for 18 gauge and lighter.

2.07 WEEP BAFFLES

Open cell sponge urethane.

2.08 STEEL SASH UNITS

A. General:

All steel windows shall be 1-1/2" Heavy Custom fabricated by Coast to Coast Manufacturing Ltd., Hope's Architectural Products Inc., or approved equal, and shall be furnished in the sizes as set forth in the contract drawings and these specifications, including all necessary and related materials as herein specified.

B. Material:

All members shall be hot rolled new billet steel. Frame sections shall have weathering baffles rolled integrally in the bar profiles.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

C. Construction:

Corners of the frames shall be coped or mitered and electrically welded; exposed surfaces dressed smooth. Muntin bars shall be attached to frame members by means of mortise and tenon joints, with intersections interlocked and welded with flush interior surfaces.

D. Sash Units Shall Meet Following Criteria:

1. Air infiltration: When tested in accordance with ASTM E-283, the air infiltration shall not exceed 0.25 cfm per foot of crack at a static pressure of 6.25#psf (equivalent to a wind velocity of 50 mph).
2. Water penetration: When tested in accordance with ASTM E-331, there shall be no water leakage at a static pressure of 20# psf (equivalent to a wind velocity of 90 mph).
3. Structural performance: When tested in accordance with ASTM E-330, there shall be no failure of locks, hinges or other parts, at a positive pressure of 60# psf (equivalent to a wind velocity of 155 mph).
4. Test reports: Test reports are required for the windows on this project and must have been made by a certified independent laboratory.
5. Finish: shop prime coated.
6. Glazing: Bead glazing. Windows shall be designed for glazing from outside with continuous screw-on glazing beads. Use 3/4" No. 8 stainless steel Philips head machine screws spaced 12" oc max. and 2" at ends.
7. Sash shall be installed into frames and fastened with 3" x No. 14 stainless steel machine screws with countersunk heads and countersunk nuts at 18" oc and 3" from ends. Cut end of screw flush.

2.09 DOOR UNITS

A. Narrow Stile - Bronze Metal Clad: Kawneer or PPG.

B. Construction:

1. General: Factory-fabricate; equip each door with mechanism to permit minor clearance adjustments after installation.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

2. Stiles and rails:

- a. Aluminum: Extruded sections; .125" thick.
- b. Widths: Stiles; manufacturer's standard. Bottom and top rails; modified as shown.
- c. Corners: Deep penetration welded and mechanically fastened.
- d. Cladding: .050 sheet bronze US 10B finish with bronze glazing stops and bronze countersunk oval head Phillips head slot screws.

C. Hardware:

- 1. General: Prepare and reinforce doors to receive template hardware per final hardware schedule; locate items as specified under Finish Hardware.
- 2. Installation: As specified under Finish Hardware.

D. Weatherstripping:

- 1. Doors with metal stiles and rails:
  - a. General: Provide on exterior doors.
  - b. Stiles and top rails: Metal-backed pile cloth.
  - c. Bottom rails: Metal-retained vinyl or neoprene sweep insert.

2.10 GLASS AND RELATED MATERIALS

A. Glass:

- 1. General: FS DD-G-451. Provide thicknesses and heat treatment required per design criteria and thermal edge stress as recommended by manufacturer.
- 2. LOP, PPG, Guardian Glass, or approved equal; float glass, glazing quality; thickness as scheduled.
- 3. Insulated glass: Insolair Industries Inc., or approved equal. Glass per schedule with 1/2" wide x .030 aluminum spacer filled with moisture absorbing desiccant. Units shall be two part, hermetically sealed with primary polysobutylene sealant and secondary one part silicone sealant with welded spacer corners.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

All units shall be certified to Class CBA or ASTM E774-81 test requirements through IGCC. IGCC Class CBA certification shall be submitted by the manufacturer. Units shall carry a ten year warrenty and be glazed in accordance with Sealed Insulating Glass Manufacturers Association (SIGMA) recommendations.

B. Glass Schedule:

Type 1: Dual glazed; insulated glass units; 1" thick units.

Outer light - 3/16" thick solar gray float glass.  
Air space - 1/2"  
Inner Light -  
Laminated - 1/8" clear float glass.  
.030" interlayer Polyvinyl butyral sheet.  
1/8" clear float glass.

Type 2: Laminated glass.

Outer Light - 3/16" solar gray - float glass tempered.  
Laminated - .030 interlayer polyvinyl butyral sheet.  
Inner Light - 3/16" clear float glass tempered.

Type 3: Laminated glass.

Outer Light - 1/8" clear float glass tempered.  
Laminated - .030" interlayer polyvinyl butyral sheet.  
Inner Light - 1/8" clear float glass.

Type 4: Laminated glass.

Outer Light - 1/4" clear float glass.  
Laminated - 0.30 interlayer polyvinyl butyral sheet.  
Inner Light - 1/4" clear float glass.

Type 5: Dual glazed insulated glass units.

Outer Light - 3/16" reflective glass silver, tempered.  
Air Space - 1/2"  
Inner Light - 1/8" clear float glass tempered.  
Laminated - .030" interlayer polyvinyl butyral sheet.  
1/8" clear float glass tempered.  
1/4" acrylic lay light white translucent  
60% transmission.

## 2.11 FABRICATION

### A. Glass:

1. General: Sizes shown are approximate; determine actual size from shop drawings. Protect cut edges until glass is installed.
2. Tolerances: Thickness and cut to size per AAMA; setting clearances and bite per FGMA Glazing Manual.
3. Workmanship: Performed by skilled workmen per best trade practice, FGMA Glazing Manual.

## PART 3: EXECUTION

### 3.01 CONDITION OF SURFACES

Give written notification of dimensions found to be different than shown, including specified tolerances.

### 3.02 ERECTION

#### A. General:

Erect work plumb, level, true, and in proper alignment in relation to established lines, grades, and work of other trades.

#### B. Lines and Grades:

Work to building lines and grades shown. Tolerances for supporting structure are specified in other applicable sections. Use Contractor's bench marks as basis of measurements.

#### C. Tolerances:

Erect component parts within following tolerances:

1. Variations from plumb or angle shown:  $1/8"$  maximum variation in story height or 12' run, non-cumulative.
2. Variations from level or slopes shown:  $1/8"$  maximum variation in any column-to-column, non-cumulative.
3. Maximum offset from true alignment:  $1/16"$  between two identical members abutting end to end in line.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

3.03 FIELD QUALITY CONTROL

A. Water Leakage Test:

1. General: Test per AAMA Standard FC-a after completion of work and curing of sealant. Testing does not relieve Contractor of warranty required for watertightness.
2. Testing: One test per each window wall section. Correct deficiencies; retest to assure no leakage.

3.04 CLEAN-UP AND REPAIRS

After initial inspection, clean glass and metal work of smears, spots, and other markings; do final cleanup upon completion of work of each building wing and dining facility at time as required. Do not use alkaline or abrasive agents to clean work. Avoid scratching by grit particles. Remove and replace defective work at no cost to Owner.

3.05 PROTECTION

Contractor responsible for protection of window wall from damage after erection until date of acceptance. Remove and replace damaged or broken glass before substantial completion at no expense to Owner.



PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements contain information that applies to this Section.

1.02 DESCRIPTION

- A. Furnish all necessary architectural hardware to complete the Project, except those items specifically mentioned to be furnished elsewhere.
- B. Wherever items of architectural finish hardware are not definitely specified and are required for proper completion and/or operation of the work, such architectural finish hardware shall be furnished in type and quality suitable for the service required and comparable to those specified for similar conditions and the Project Manager shall be so notified immediately.

1.03 RELATED WORK IN OTHER SECTIONS

- 1. Section 06200: Finish Carpentry & Millwork
- 2. Section 08100: Metal Doors & Frames
- 3. Section 08500: Window Wall & Glazing

1.04 QUALITY ASSURANCE

All requirements of the current Building Code of the City of San Francisco and the National Fire Protection Association current Standard 80, "Fire Doors and Windows," and current Standard 101, "Life Safety Code," shall be complied with. Conform to California Title 24.

1.05 SUBMITTALS

- A. Prepare complete schedule of finish hardware and submit six copies to the Project Manager for approval within 30 days after Contract award. Reference items clearly to groups specified, door type designation shown, location and other pertinent data. Verify suitability, function, thickness of members or other factors affecting appropriate selection. List manufacturers' names or suitable abbreviation to facilitate checking, opposite each item scheduled.
- B. List only readily obtainable hardware that appears in current catalogs, and furnish catalog cuts of each different type of hardware included in schedule. Do not deliver hardware until schedule has been approved. Approval is not to be construed as certifying schedule as being complete.

1.06 GUARANTEE

Guarantee all door closers against mechanical failure for a period of five (5) years.

PART 2: PRODUCTS

2.01 GENERAL

While the following hardware schedule is intended to cover all doors and other movable parts of the building, and establish a type and a standard of quality, the Contractor shall examine the Plans and Specifications and furnish proper hardware for all openings, whether listed or not. If there are any omissions in hardware groups in regard to regular doors, they shall be called to the attention of the Project Manager prior to bid opening for instructions; otherwise, the list will be considered complete. No extras will be allowed.

2.02 MATERIALS

- A. Manufacturer's Catalog Numbers: Used below to establish operation, function, quality, weight, size, pattern design, material and finish required.
- B. Templates: All hardware applied to metal doors or jambs shall be made to template and secured by machine screws. Furnish templates to the metal door and frame manufacturer for application at the factory, unless otherwise requested.
- C. Finishes:
  - 1. All hardware, unless otherwise shown, shall be: US 10B oilrubbed bronze, typical and 626 Satin stainless steel at toilet rooms.
  - 2. Closers: Sprayed to match adjacent hardware.
- D. Fastenings:
  - 1. Furnish necessary screws, bolts, nuts and others of suitable types and sizes to install hardware securely in position to withstand hard usage over long life. Supply fastenings which harmonize with hardware material and finish. Furnish required expansion shields, sex bolts, toggle bolts and other anchors as recommended by hardware manufacturer and approved by the Project Manager.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

2. Furnish hardware to be fastened to concrete with machine screws and tampins.

2.03 ITEMS

- A. Butts: All exterior outswinging doors shall have non-ferrous butts with non-removable pins. Labeled doors shall have steel butts. Where labeled doors are exterior outswinging, provide stainless steel butts.

1. Type:

- a. General: Full mortise, unless otherwise specified; non-magnetic stainless steel pins, square corners; template, bearing types, and weights as specified.

1. 3-Knuckle: Flush tips; concealed bearing.

- b. Exterior hinges: Exterior outswing doors; provide non-removable type pins with set screw concealed in barrel.

1. Fire rated opening: Stainless steel.

2. Non-rated opening: Wrought bronze.

- c. Interior hinges: Including exterior inswinging doors; wrought steel, unless otherwise specified; non-rising loose pins.

2. Hinge Sizes:

- a. General: Hinges sized in inches.

- b. Projection door trim: Where encountered, increase hinge width to clear trim with minimum barrel projection.

- c. Size: Per Manufacturer's written specifications.

3. Hinges per door:

<u>Height; Inches</u>	<u>Hinges Required</u>
To 60	2
60 to 90	3
90 to 120	4

B. Locksets, Latchsets and Cylinders:

1. Locksets and latchsets shall be full mortise type with all interior parts made of steel, zinc-dichromate plated, to resist rusting and corrosion. Provide 6 pin cylinders. Cylinders to have plugs full round (without flattened areas) of extruded brass bar material.
  - a. Design: Schlage - L Series, solid cast lever, 03 Rose B 2-1/2" diameter.
  - b. Backsets: 2-3/4", unless otherwise scheduled.
2. Strikes for locksets and latchsets shall have extended lips where required to protect adjacent trim from being marred by latchbolt, but short enough to avoid tearing clothing. Each lockset and latchset shall be provided with a box strike. Each box strike shall be provided with a cushion sponge to deaden sound. Verify whether Standard or ANSI cutouts are provided in metal frames.

C. Keys and Keying:

1. All locks must be keyed and registered at the lock factory to match existing system. Masterkey to key system as directed by Project Manager. Masterkey, key alike, or key different all locks in accordance with keying schedule furnished by Project Manager.
2. Furnish six masterkeys each MK set; three keys per lock; and two key blanks for each keyed lock. Stamp all keys "DO NOT DUPLICATE."

D. Door Closers:

Door closers shall be full rack and pinion, cast iron, with adjustable regulators for closing and latching speed, back check, and spring power. Closers shall be mounted for 180 degrees of swing whenever possible.

E. Silencers:

All doors with metal frames shall have pneumatic rubber door silencers installed in the stop of frame. Provide three (3) at single doors, four (4) at pair of doors. Omit at rated frames.

F. Door Stops:

All materials to be of solid brass or bronze. Unless otherwise specified, door stops shall be Glynn-Johnson.

CROCKER ART MUSEUM  
HVAC CENTRAL PLANT  
SACRAMENTO, CALIFORNIA  
cc Number 2136

## 2.04 HARDWARE SCHEDULE

### A. General:

It is intended that this list is complete in the coverage of required items. It is the responsibility of the Contractor, under this Section, to furnish finish hardware necessary for the complete installation. Any other hardware shall be furnished of suitable types, having similar quality and operation, as finish hardware specified. Final approval by the Project Manager is required.

### B. Manufacturer:

Established by reference to catalog numbers and designations of the following manufacturers:

<u>Item</u>	<u>Manufacturer</u>
Butts	Hager
Locksets	Schlage
Closers	Norton & LCN
Flush Bolts, Dustproof Strikes	Ives & Glynn-Johnson
Thresholds and Weatherstrips	Pemko
Kickplates and Stops	BBW
Exit Devices	Von Duprin
Pulls and Pushes	Tidex & Quality
Coordinators	Glynn-Johnson
Floor Closer	Dor.O.Matic
Electronic Release	Rixon

## 2.05 HARDWARE SCHEDULE

### A. Hardware Group No. 1:

4 Pair Butts	:	BB 1279
2 Closers Fire	:	7800
2 Exit Devices	:	9927 EO-F
1 Coord	:	GJ COR with Filler Bar
2 Hold Open (Stops)	:	9616
1 Astragil	:	by Door Manufacturer
2 Kickplates	:	8" x 2" LDW, Bevel 4 Sides
1 Smoke Seal	:	S-88D

Dr. 101 3 Pair Butts  
Dr. 122 9975-L-F x 20-001  
Omit fire closers at Door No. 122

CROCKER ART MUSEUM  
HVAC CENTRAL PLANT  
SACRAMENTO, CALIFORNIA  
cc Number 2136

B. Hardware Group No. 2:

2 Pair Butts	:	BB 1279
1 Closer	:	7500 with Stop
1 Exit Device	:	9975 L x 20-001
1 Kickplate	:	8" x 2" LDW Bevel 4 Sides
1 Smoke Seal	:	S-88D

C. Hardware Group No. 3:

1 Floor Closer	:	2500 F Dor.O.Matic Offset Pivot-Cement Box
1 Exit Device	:	33L-NL CYL DOGING 20-001 x 20-022

Threshold & Plate to match  
Weatherstrip and Seal by Door Manufacturer

D. Hardware Group No. 4:

4 Pair Butts	:	BB 1268
2 Closers	:	7500 with Stop
2 Push	:	40
2 Pull	:	78102
2 Kickplates	:	8" x 2" LDW Bevel 4 Sides

E. Hardware Group No. 5:

4 Pair Butts	:	BB 1279
1 Closer	:	8500
1 Lockset	:	L 9080P x 03-B
2 Flush Bolts	:	FB-10 Set, DP-1
2 Door Stops	:	FB-13
1 Astragal	:	By Door Manufacturer
1 Smoke Seal	:	S-88D

F. Hardware Group No. 6:

2 Pair Butts	:	BB 1279
1 Closer	:	8500 Holder-Stop
1 Lockset	:	L 9080P x 03-B
1 Smoke Seal	:	S-88D

\* Omit Closer Door #311

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

G. Hardware Group No. 7:

2 Pair Butts	:	BB 1279
1 Closer	:	7500 Holder-Stop
1 Push	:	40
1 Pull	:	78102
1 Dead Bolt	:	B463
1 Kickplate	:	8" x 2" LDW Bevel 4 Sides
1 Weatherstrip	:	S-88D

H. Hardware Group No. 8:

4 Pair Butts	:	BB 1191
2 Hook Stops	:	FB 823 x BBW
2 Surf Bolts	:	453 Ives
1 Dead Bolt	:	B 463

I. Hardware Group No. 9:

4 Pair Butts	:	BB 1199
2 Exit Devices	:	9927-9975 L x 20-001
2 Closers	:	7500 with Holder-Stop
1 Astragal	:	By Door Manufacturer
1 Smoke Seal	:	S-88D

J. Hardware Group No. 9A:

4 Pair Butts	:	BB 1279
2 Closers	:	2030 LCN
2 Flush Bolts	:	FB 6
1 Lockset	:	L 9466P x 03-B
1 Smoke Seal	:	S-88D
1 Astragal	:	By Door Manufacturer

K. Hardware Group No. 10:

4 Pair Butts	:	BB 1268
2 Closers	:	5030 Series LCN
2 Push	:	40
2 Pull	:	781602
2 Electric Releases	:	998 Rixson Firemark Wire to Smoke Detectors
1 Smoke Seal	:	S-88D

L. Hardware Group No. 11:

4 Pair Butts	:	BB 1268
1 Lock Set	:	L 9070P x 03-B
1 Hook Stop	:	F 823 x BBW

PART 3: EXECUTION

3.01 PACKING AND MARKING

Package all items of hardware and each lockset, latchset, exit device and door control in its individual container marked with the manufacturer's name, type, number and name of item. Each item shall be complete with necessary fastenings, wrenches, spanners, etc., installation instructions and templates, indelibly, legibly, and carefully marked with an item number corresponding to the door number and hardware group number as indicated on the Opening Schedule, the accepted Architectural Finish Hardware Schedule, and the Drawings.

3.02 TEMPLATING

All hardware applied to metal frames and/or doors shall be manufactured to template and secured by machine screws except as otherwise noted. Provide template and, if required, the physical hardware to the fabricators of metal frames and doors in ample time to facilitate the work and not impair the progress of the Project.

3.03 GENERAL

- A. The Contractor shall install finish hardware as required. The hardware shall be fitted prior to the painting and then removed and painting completed before final installation of the hardware.
- B. Upon delivery of the finish hardware to the job site, the Contractor shall be responsible for all material. The hardware shall be protected from damage at all times, prior to and after its installation.
- C. Finish hardware must be neatly and properly installed in accordance with the best practice as prescribed by the manufacturer and as approved by the Project Manager. All hardware must be thoroughly cleaned prior to turning the building over to the Owner.
- D. No extra cost will be allowed because of changes or corrections necessary to facilitate the proper installation of any hardware. The Contractor shall be responsible for the proper fabrication of all work or material to receive the hardware.
- E. The Contractor shall be responsible for arranging his work and securing delivery of all hardware, so that all work shall progress without delay or interruption.



PART 1: GENERAL

1.01 RELATED DOCUMENTS

General Conditions and Division 1, General Requirements, apply to all work in this Section.

1.02 DESCRIPTION

- A. Work includes but is not limited to furnishing and installation of the following:

1. Exterior cement plaster at masonry walls at Crocker Art Gallery, Crocker-Hastings House, and HVAC Central Plant
2. Metal lath where shown.

- B. Related Work Specified Elsewhere:

1. Section 03300: Cast-In-Place Concrete
2. Section 04220: Unit Masonry
3. Section 07600: Flashing and Sheet Metal
4. Section 09205: Furring and Lathing
5. Section 09250: Gypsum Wallboard
6. Section 09900: Painting

1.03 SUBMITTALS

- A. 24" X 24" samples, show float finish texture mount on suitable backing. Maximum three.
- B. 48" Length of precast plaster crown mold. Acceptable unit may be incorporated into work.
- C. Product literature for all items specified.

1.04 QUALITY ASSURANCE

References, Codes and Standards: The following references, codes and standards are hereby made a part of this Section. All plastering work shall conform to applicable requirements therein except as otherwise specified or shown.

1. "Reference Specifications for Lathing, Furring and Plastering in California," published by California Lathing and Plastering Contractors Association, Inc., latest edition.
2. Uniform Building Code, 1982 edition, with current revisions.

PART 2: PRODUCTS

2.01 MATERIALS

- A. Portland Cement: ASTM C150 Type I-II or plastic cement ASTM C-150 with plasticizing agent.
- B. Gypsum Plaster: ASTM C-842.
- C. Grounds: As detailed.
- D. Waterproofing Admixture: Acrylic Resin - Acryl 60 Thoro Systems of Northern California or equal.
- E. Sand: ASTM C-144
- F. Lime: ASTM C206-49, Type "S" Finishing Hydrate.
- G. Water: Clean and potable, free of silt and impurities.
- H. Metal Lath: ASTM C-847 expanded metal, 3.4 lbs/sq.yd., rust inhibited painted and zink coated.

2.02 PROPORTIONING

A. Scratch Coat:

By volume, 1 part Portland cement, 3 parts sand, 15 pound (maximum) lime per sack of cement.

B. Brown Coat:

By volume, 1 part Portland cement, 3 to 4 parts sand, 15 to pound (maximum) lime.

C. Finish Coat:

Per manufacturer's specifications.

2.03 APPLICATION OF BASE COATS

- A. Three-coat work shall be applied to metal lath and masonry.
- B. The scratch and brown coat for three-coat plaster shall be applied as follows:
  - 1. Scratch coat for Portland cement plaster: applied in a full 3/8" coat with sufficient pressure to force through and completely embed the metal reinforcement, or to form good key to masonry. Cross scratch and, after set, damp cure for not less than 48 hours.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

2. Brown coat for Portland cement plaster: applied over the dampened scratch coat in a full 3/8" coat with sufficient pressure to form a good bond, rodded level and left rough, using a broom if necessary. After set damp cure for at least 48 hours then let dry a minimum of five days.

#### 2.04 APPLICATION OF FINISHES

- A. The finish coat shall be applied over a partially dry base coat. The finish coat shall be applied in accordance with the best trade practice for the type of base plaster.
- B. Portland cement finish coat (on Portland cement plaster only): Apply not sooner than 7 days after preceeding coat. Dampen preceeding coat evenly to obtain uniform suction. Apply not less than 1/8" finish coat with sufficient pressure to provide good bond and float finish with wood float to bring aggregate to surface and produce a finish free from slick spots, cat faces, or other blemishes. After set, damp cure for not less than 48 hours.

### PART 3: EXECUTION

#### 3.01 SURFACE CONDITIONS

##### A. Inspection:

Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence. Verify that plaster may be installed in accordance with all pertinent codes and regulations, and the referenced standards.

##### B. Discrepancies:

In the event of discrepancy, immediately notify the Project Manager. Do not proceed with installation until all such discrepancies have been fully resolved.

#### 3.02 WEATHER CONDITIONS

Do not apply plaster when prevailing outdoor temperature is below 40 degrees F.; if freezing is expected, do not apply plaster beyond the period required for proper hydration.

3.03 DELIVERY AND STORAGE OF MATERIALS

Only unopened packages of material (except aggregates) bearing manufacturer's and brand names will be permitted. Store plaster, cement and lime under watertight cover away from seeping walls and damp surfaces until ready for use. Remove from site any damaged or deteriorated materials.

3.04 WORKMANSHIP

- A. Methods of mixing and application of plaster shall conform to requirements of the listed references, codes and standard documents and the specifications of approved manufacturers of particular products or systems.
- B. Measure all materials for plastering work in calibrated measuring boxes. Shovel measurement is not acceptable.
- C. Make overnight joining at natural breaking points such as vertical arises, angles and changes in plane. Each coat of plaster for an entire surface from top to bottom and between natural breaking points shall be applied on one day.
- D. Protect all adjacent finishes from damage or stain during plastering operations.
- E. Provide waterproof surface at all exterior cement plaster.
- F. Provide uniform finish for color and texture to match approved sample.
- G. Where work of this Section is applied to adjoining construction to patch surfaces the new work shall match existing.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. General:

Provide gypsum wallboard and metal support systems complete, as shown and specified per Contract Documents.

B. Work Specified Elsewhere:

1. Section 06100: Rough Carpentry
2. Section 06200: Finish Carpentry & Millwork
3. Section 07200: Insulation
4. Section 08100: Metal Doors & Frames
5. Section 09300: Ceramic Tile
6. Section 09900: Painting
7. Section 15700: Air Conditioning
8. Section 16100: Electrical

1.03 REFERENCES

Comply with applicable provisions of following and as specified.

ASTM C754; Installation of Steel Framing Members to Receive ScREW-Attached Gypsum Wallboard, Backing Board, or Water-Resistant Backing Board.

C840; Application and Finishing of Gypsum Board.

MLSFA Steel Framing Systems Manual.

1.04 SUBMITTALS

A. Product Data:

Manufacturer's specifications, data, and installation instructions.

B. Samples of corner trim and metal edge trim.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

1.05 PRODUCT HANDLING

A. Delivery:

Deliver materials in original unopened bundles and containers bearing manufacturer's name, brand, type, and grade. Handle in manner to avoid damage.

B. Storage:

Store materials in dry ventilated spaces off floor per manufacturer's directions. Neatly stack gypsum wallboard in flat position.

C. Protection:

Avoid exposure to weather by using protective cover. Protect from soiling and construction damage.

1.06 PROJECT CONDITIONS

A. Environmental Conditions:

Do not commence installation of gypsum wallboard until windows are glazed and exterior doors are installed, unless openings are otherwise protected.

1.07 SCHEDULING

Where gypsum wallboard partitions and sprayed fireproofing are scheduled in same area, install clips for attachment of metal framing before application of sprayed-on fireproofing

PART 2: PRODUCTS

2.01 MATERIALS

A. Acoustical Sealant:

As recommended by gypsum wallboard manufacturer.

B. Channels:

1. Furring: ASTM C645; 25 gauge electro-galvanized steel sheet, roll-formed, 2-3/4" x 7/8" deep with 1/2" wide flanges.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

2. Runners: 1-1/2" CR steel weighing not less than 475 lbs. per 1000 LF; rust-inhibitive coated.
3. Stiffeners: 3/4" CR steel weighing not less than 300 lbs. per 1000 LF; rust-inhibitive coated.

C. Edge Sealant:

As recommended by water-resistant wallboard manufacturer.

D. Fasteners:

1. Expansion bolts: FS FF-S-325, Group III, expansion shield (self-drilling tubular expansion shell anchor bolts); Type 1 or 2, unless otherwise shown.
2. Screws: ASTM C646; sized recommended by gypsum wallboard manufacturer; self-tapping thread and suited for power driving; blued-steel finish, unless otherwise specified.

E. Gypsum Wallboard:

1. Standard type:
  - a. General: ASTM C36; 5/8" thick, unless otherwise shown.
  - b. Fire rated: 5/8" thick, Type X core proprietary core rated for at least one hour; UL labeled.
2. Water-resistant:
  - a. General: ASTM C630; 1/2" thick.
  - b. Fire rated: 5/8" thick Type X core rated for at least one hour; UL labeled.
3. Edges:
  - a. Base layers: Plain.
  - b. Face layers: Tapered.

F. Insulation:

1. Acoustical: For sound controlled partitions; as recommended by gypsum wallboard manufacturer. Thicknesses as shown.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

2. Safing: USG's Thermafiber Safing Insulation, or approved equal; non-combustible semi-rigid mineral fiber, density 4 PCF; UL listed.

G. Joint Compound:

Ready-mixed non-asbestos vinyl formulation; type recommended by gypsum wallboard manufacturer.

H. Stud Types:

1. General: Provide types designed for screw application of gypsum wallboard.
2. Metal studs: ASTM C645, non-load bearing type with punched webs; roll-formed electro-galvanized steel sheet; 20 gauge, unless otherwise shown, see schedule.
3. Structural studs:
  - a. General: Roll-formed load-bearing type with wide flanges and punched webs; 16 gauge, unless otherwise shown.
  - b. Steel sheet: ASTM A570 (painted) and C446 (galvanized); Grade D modified for a 50,000 psi minimum yield point for 16 gauge and heavier; 33,000 psi for 18 gauge and lighter.
  - c. Configuration: Channel type, Cee type where shown.
  - d. Finish: Red oxide paint; galvanized where shown.

I. Metal Trim:

1. Control joints: USG's No. 093; 30 gauge galvanized steel sheet with perforated metal flanges.
2. Corner beads: ASTM C840, CB 114x114; 30 gauge galvanized steel sheet with 1-1/4" wide perforated metal flanges.
3. Edge trim: ASTM C840 "U" Bead channel type and "L": Bead angle type as applicable; 30 gauge galvanized steel sheet with perforated metal flanges; same thickness as wallboard.
4. Reveal trim: ASTM A366 steel sheet, 18 gauge; stretcher leveled, uncoated, pickled, and free from pits and defects. Provide with baked enamel shop coat on exposed surfaces.



CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

J. Shaft Walls:

As manufactured by Domtar, USG, or approved equal. USG shown to set a standard for systems.

K. Reinforced Tape:

Perforated type as recommended by gypsum wallboard manufacturer.

L. Wire Hangers:

8 Gauge galvanized soft steel wire.

M. Neoprene Tape:

ASTM D1056, Grade SCE41, soft sponge neoprene with adhesive one side; balck; 1/4" x 1/2", unless otherwise shown.

N. Water:

Potable; free of deleterious materials.

PART 3: EXECUTION

3.01 INSTALLATION

A. General:

Per referenced standards, manufacturer's recommendations, and as specified.

B. Metal Framing: ASTM C754.

C. Gypsum Wallboard:

Application and finishing; ASTM C840.

D. Fire Rated Assemblies:

Per UL and local code requirements. Use one manufacturer for each assembly, unless otherwise permitted by governing authorities.

### 3.02 METAL STUD PARTITIONS

#### A. General:

Install complete with matching runner tracks and accessories. Align runner tracks accurately to partition layouts.

#### B. Floor Runners:

Secure with 1/4" diameter expansion bolts; powder driven fasteners at least 1" long may be used, where permitted by code. Space fasteners 4" from ends of each piece; maximum 24" on centers intermediately; minimum of 2 fasteners per piece of runner.

#### C. Ceiling Runners:

1. To concrete: Fasten as specified for floor runners.

2. To metal decking:

a. General: Fasten with powder driven fasteners as specified for floor runners.

b. Areas with sprayed-on fireproofing: Provide 20 gauge galvanized steel Z-shaped clips, unless otherwise shown, or other acceptable shapes. Fabricate of depth to accommodate sprayed-on fireproofing thickness; space not over 24" centers. Secure into place by welding or powder driven fasteners as specified for floor runners. Attach runners to clips with sheet metal screws; one screw per clip.

3. To structural steel: As specified for metal decking; secure with welds or other appropriate means in lieu of powder driven fasteners.

#### D. Studs:

Gauges, depths, and spacing shown. Where not shown, provide per stud manufacturer's recommendations.

#### E. Stiffeners:

Two rows at third points for studs with finish one side only; one row at midpoint for studs with finish both sides. Snap into punched web of each stud; nest laps and wire tie.

F. Chase Wall Partitions:

Cross brace at quarter points with 5/6" thick gypsum wall-board braces 12" by width of partition. Fasten to studs with 3 fasteners per edge.

3.03 STRUCTURAL STUD PARTITIONS

A. General:

Install complete with matching runner tracks and accessories. Align runner tracks accurately to partition layouts.

B. Anchor Bolts:

1. General: Install 1/2" diameter hook anchors not more than 48" centers; minimum of 2 bolts per piece of track; locate one bolt within 12" of each end. Use 8" long bolts; embed into concrete at least 7", unless otherwise shown.
2. Contractor's option: Expansion bolts or powder driven fasteners of acceptable types and sizes may be used in lieu of anchor bolts, where permitted by code.

C. Runner Tracks:

Fasten floor track with appropriate anchors; fasten top track as shown. Butt weld track or splice with channel inserts fastened with 2 sheet metal screws, bolts, or rivets at each corner.

D. Studs:

Gauges, depths, and spacing shown. Where not shown, provide per stud manufacturer's recommendation. Install plumb, square, and straight; weld flanges to track. Provide openings with top and bottom headers and jack studs over openings; weld connections.

E. Bridging:

Per manufacturer's recommendations.

3.04 FURRED PARTITIONS

A. General:

Install furring channels at 16" centers; level and plumb with steel shims.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
CC NUMBER 2211

B. To Concrete:

Fasten with powder driven fasteners at 24" centers.

C. To Concrete Block:

As specified for concrete.

D. To Structural Steel:

As specified for metal stud partitions.

3.05 SHAFT WALLS

A. General:

Install cavity type or solid type systems as shown. Systems consists of metal studs of specified and proprietary types, framing, gypsum wallboard of applicable types, fasteners, and accessories. Apply face layers and finish as specified for other gypsum wallboard.

B. Installation:

Per manufacturer's printed instructions.

C. Fire Rating:

Per UL for hourly rating shown.

D. Sealing:

1. General: As required to assure no air leakage.
2. Perimeter: Seal with acoustical sealant around base layer in multiple layer application and around steel framing in single layer application. Where walls abut sprayed-on fireproofing, cementitious seal may be used in lieu of acoustical sealant.
3. Penetrations: Seal with acoustical sealant.

3.06 BACKING PLATES

Install for built-in and surface applied items; attach to metal studs by welds or sheet metal screws as applicable.

### 3.07 SUSPENDED CEILINGS

#### A. General:

Install for gypsum wallboard ceilings. Where ductwork or other obstructions prohibit use of specified system, provide heavier system per referenced standard.

#### B. Hanger Wires:

1. General: Space at 48" centers both ways; do not support more than 16 SF of ceiling per wire. Locate a hanger within 6" of end of main runners.
2. Concrete supports: Wrap wires around reinforcing steel with a twist or loop and embed at least 2" into concrete or attach to appropriate type inserts.
3. Metal decking: Wires may be attached by penetrating through decking, twisted, and looped; no penetrations permitted through electrified cells. If provided as integral part of metal decking, wire may be attached through hanger slots.
4. Steel supports: Wrap around or through steel, or attach by other acceptable methods.

#### C. Runner Channels:

Space not over 48" centers; wrap each hanger wire twice around runner channel.

#### D. Furring Channels:

Attach to runner channels at 16" centers with snap-on clips or other acceptable methods.

#### E. Openings:

Reinforce as required for support of mechanical and electrical fixtures.

#### F. Seismic Restraint:

Per UBC, 1982 ed., Table 23J and Paragraph 2312.

### 3.08 GYPSUM WALLBOARD

#### A. General:

Install types shown. Cut to size by score cut method or sawing. Where necessary, sandpaper cut edges and ends to retain neat jointing. At exterior and interior corners, conceal cut edges by overlapping with abutting wallboard. Do not make joints on same stud on both sides of partitions. No vertical or horizontal joints permitted at corners of openings. Apply wallboard in lengths to produce minimum number of joints.

#### B. Ceilings:

Apply with long dimension at right angles to horizontal supports. Provide solid bearing at end joints.

#### C. Partitions:

1. General: Apply with long dimensions at right angles to supports (horizontal application), unless vertical application results in fewer joints, or required by fire rating.
2. Inspect surface to receive wallboard over plywood. Notify Project Manager if discrepancies exist which would adversely affect the installation of wallboard. Do not proceed until discrepancies have been corrected.
3. Horizontal application: Use longest lengths practicable. Start application at top of wall, work out from corner of room or space; butt ends on solid backing.
4. Vertical application: Apply full lengths between floor and ceiling. Start application at corner of room or space; butt ends on solid backing.

#### D. Multiple Layers:

Stagger joints between layers. Apply base layers with tight butted joints; secure with screws. Apply face layers with screws.

#### E. Fastening:

By screws with electric screw guns. Drive screws until head results in shallow dimple-like depression; take care not to crush core nor break paper surface. Do not drive screws closer than 3/8" from edges and ends of wallboard.

### 3.09 WATER-RESISTANT WALLBOARD

#### A. General:

Install where shown to directly receive ceramic tile and where otherwise shown. Apply as specified for gypsum wallboard. Seal cut edges and fasteners with edge sealant per manufacturer's recommendations.

#### B. Joint and Fastening Depressions:

Conceal joints with reinforcing tape and joint compound. Do not conceal fastening depressions.

### 3.10 INSULATION

#### A. General:

Install where shown per manufacturer's recommendations.

#### B. Acoustical:

Friction fit between metal studs; tightly butt joints.

#### C. Safing:

Fasten with impaling clips, unless otherwise shown. Install in manner to create a fire barrier of thickness required to produce a 2-hour rating, unless otherwise shown.

### 3.11 CONCEALING JOINTS AND FASTENING DEPRESSIONS

#### A. General:

Apply as many coats as necessary to assure joints and fastening depressions will be invisible after application of finishes.

#### B. Surfaces Exposed To View:

##### 1. Joints:

- a. First step: Force joint compound into tapered edges to wallboard; evenly fill channels. Apply reinforcing tape over full length of joint; embed in compound. Remove excess compound; apply thin coat of compound over tape. When dry, sandpaper compound as necessary.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
CC NUMBER 2211

- b. Successive steps: Apply as required; feather out to obtain even surface. Lightly sand with 2/0 sandpaper to attain smooth flush surface. Do not scuff surface of wallboard when sandpapering.
- 2. Fastening depressions: Fill with joint compound; allow each coat to dry before applying succeeding coats. Sandpaper as specified for joints.

C. Surfaces Not Exposed To View:

- 1. General: Concealment of joints and fastening depressions not required.
- 2. Fire rated assemblies: Conceal joints and fastening depressions as specified for surfaces exposed to view. Concealment not required on multiple layer assemblies, when permitted by code. Successive steps may be omitted; leave surfaces reasonable smooth and flush.
- 3. Partitions with acoustical insulation: Conceal joints and fastening depressions as specified for fire rated assemblies.

3.12 CORNER AND EDGE TREATMENT

A. General:

Install metal trim in single lengths where possible. Make joints neat and tight.

B. Surfaces Exposed To View:

- 1. Control joints:
  - a. General: Break wallboard back of joint 1/2".
  - b. Ceilings: Install where areas are 40' or more in either direction unless otherwise shown. Back with continuous furring channels each side; space 2-1/4" apart centered on break.
  - c. Partitions: Install where shown; back with double studs.
- 2. Edges:
  - a. General: Apply applicable shaped edge trim at exposed edges of wallboard and where otherwise shown.



CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

- b. Wallboard abutting other materials: Install edge trim with clearance to allow for caulking.
  - c. Neoprene tape: Provide where shown to assure sealed joints at abutting surfaces; install in longest lengths practicable; adhere to edge trim prior to installation of trim.
3. External corners: Apply corner beads at external corners and where otherwise shown in single lengths.
4. Internal corners: Treat in same manner specified for concealing joints. Fold reinforcing tape lengthwise through middle; fit neatly into corner.
5. Reveals:
- a. General: Install reveal trim where shown. Secure rigidly to substrate; form level, straight, and true lines; hairline butt joints. No exposed fastenings, unless otherwise shown.
  - b. Neoprene tape: Provide where shown. Install as specified for surfaces exposed to view.

3.13 CEMENTITIOUS SEAL

A. General:

Fireproofing material as specified under Sprayed-on Fireproofing; trowelable or sprayable. Provide at following conditions and where otherwise shown.

B. Fire Rated Partitions:

In areas not exposed to view. Seal penetrations and where partitions abut sprayed-on fireproofing, metal decking, and other materials as required to maintain fire rating. Minimum 2" thickness, unless otherwise shown; 6" overlap where possible. When voids occur between partition and metal decking flutes, fill solid with cementitious seal.

3.14 ITEMS IN GYPSUM WALLBOARD

Install under this Section.

### 3.15 SEALING

#### A. General:

Seal spaces between wallboard and penetrations and at perimeter between wallboard and other materials as follows.

#### B. Non-Rated Assemblies:

Exposed to view; seal with sealant as specified under Sealants; standard color as selected.

#### C. Fire Rated Assemblies:

Exposed to view; seal as specified for non-rated assemblies. If required by code, use an acceptable sealant with fire-resistive characteristics.

#### D. Partitions with Acoustical Insulation:

Seal with acoustical sealant per partition manufacturer's recommendations. In no case, install less than one serpentine bead of acoustical sealant between perimeter framing and structure. Sealant bead diameter as required to assure positive seal; minimum 1/4" diameter.

### 3.16 HOLLOW METAL FRAMES

In partitions where metal studs provided under this Section; install as specified under Metal Doors and Frames.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. General:

Provide ceramic tile, complete, as shown and specified per Contract Documents.

B. Related Work Specified Elsewhere:

1. Section 09250: Gypsum Wallboard
2. Section 10162: Toilet Partitions & Accessories
3. Section 15400: Plumbing

1.03 REFERENCES

Comply with applicable provisions of following and as specified.

ANSI A108.1; Installation of Glazed Wall Tile.

A108.4; Installation of Ceramic Tile with Water-Resistant Organic Adhesive.

A137.1; Specifications for Ceramic Tile.

1.04 SUBMITTALS

A. Samples:

Following listed samples; additional, if specifically requested.

1. Ceramic tile: Each type, class, and color; 12" square on plywood backing; grouted joints.

B. Product Data:

Manufacturer's specifications, data, and installation instructions.

C. Certificates:

1. Ceramic tile: Master Grade Certificate per ANSI A137.1 from tile manufacturer for each type of tile.

1.05 PRODUCT HANDLING

A. Delivery:

Deliver materials in manufacturer's unopened containers fully identified.

B. Storage:

Store materials above grade; protect from weather and damage.

PART 2: PRODUCTS

A. Adhesive:

ANSI A136.1, Type 1.

B. Ceramic Tile:

1. Walls, bases and trim:

a. General: ANSI A137.1, Standard Grade; solid colored body with matt finish; cushion edges.

b. Trim units: Matching bases, stops, surface bull-noses, trimmers, and other shapes as required.

1. Color: American Olean's 97 Gardenia or Dal Tile's D-135. Antique white.

2. Shapes and sizes:

a. Walls: Flat; 4-1/4" x 4-1/4".

2. Floors:

a. General: ANSI A137.1, Standard Grade, unglazed ceramic mosaic tile, back mounted in sheets.

b. Color: American Olean, Dove gray, A-11.

c. Shapes and sizes: Flat, 2" x 2" nominal.

C. Marble Sills:

3/4" thick, white, with gray vane.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

D. Grout:

ANSI A108.1; proprietary manufacture as recommended by tile manufacturer.

E. Portland Cement:

ASTM C150, Type I; use one brand throughout.

F. Reinforcing Mesh:

Welded wire, 1-1/2" or 2" mesh; 14 gage, galvanized after weaving.

G. Sand:

ASTM C144, natural sand.

H. Water:

Potable; free of deleterious materials.

2.02 MIXES

A. Grout:

1. General: Factory mixed.

2. Colors:

a. Walls: Custom Building Product's Antique White 10, or approved equal.

b. Floors: Color to match tile, unless otherwise directed.

B. Setting Bed Mortar:

1. Floors: 1 part cement, 1/2 part hydrated lime and 5 parts sand.

PART 3: EXECUTION

3.01 MIXING

A. General:

Mix per manufacturer's directions and as specified.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

B. Grout:

ANSI A108.1; mix with water to a creamy consistency.

C. Setting Bed Mortar:

ANSI A108.1; dry mix ingredients before adding water; add as little water as will produce a workable mass.

3.02 INSTALLATION

A. General:

Apply tile to firm, level, plumb, and square surfaces. Center field work in both directions to permit laying pattern with minimum number of cut tiles. Lay floor tile from center lines outward; make adjustments at walls. Cut tiles less than one-half size in either face not accepted.

B. Corners:

1. Setting bed method: Round outside; square inside.
2. Thin set method: Bullnose outside; square inside.

C. Joints:

1. Ceramic tile: 1/16" wide.

D. Tolerances

1. Setting bed method:
  - a. Floors: Any direction, 1/8" in 10'; 1/32 offset.
2. Thin set method: Maintain allowance permitted for substrate 1/32" offset.

3.03 WALL TILE

A. Thin Set Method:

1. General: Adhesive type; install where shown per ANSI A108.A.

B. Grouting:

Grout joints full; make smooth and flush; remove excess. Eliminate exposed sharp edges by fitting joints as high as possible.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

C. Sealing:

Fill joints between wall tile and plumbing and other built-in fixtures with single component sealant as specified under Sealants; standard color similar to tile.

3.04 FLOOR TILE

A. Setting Bed Method:

1. General: 3/4" minimum, 1-1/4" maximum thickness.  
F112-85.

3.05 MARBLE SADDLES

Install by same method specified for floors.

3.06 REINFORCING MESH

Install in setting beds where shown. Lap edges and ends 2"; tie mesh together at laps with 18 gage galvanized soft steel wires at 10" centers along uncut edges; 6" along cut ends.

3.07 CURING

Per referenced standards.

3.08 CLEANING

Upon completion, thoroughly clean tile surfaces in manner not to affect finish.

3.09 PROTECTION

Protect work from damage during construction period. Remove cracked, broken, and otherwise damaged tiles; replace with new.

3.10 EXTRA STOCK

Deliver to Owner at project site one unopened carton of each type and color of flat tile installed.





PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. Work includes, but is not limited to, Hardwood Floors.

B. Related Work Specified Elsewhere:

1. Section 06100: Rough Carpentry
2. Section 06200: Finish Carpentry & Millwork
3. Section 16100: Electrical

1.03 QUALITY ASSURANCE

All work in this Section shall be in accordance with the National Oak Flooring Manufacturer's Association (NOFMA).

1.04 SUBMITTALS

1. Submit product literature for all items per Section 01300.
2. Submit sample 12" long of flooring.

1.05 ALTERNATES

The scope of work of this Section is affected by alternates. See Section 01030 for description.

PART 2: PRODUCTS

2.01 MATERIALS

A. Strip Flooring:

25/32" x 2-1/4" (verify existing width) select plain oak. Color to match adjacent flooring. Flooring to be tongue and groove unfinished, kiln dried.

B. Nails:

7d or 8d screw type or 8d cut steel cement coated or power cleats. 1" brads at parquet.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

C. Vapor Barrier:

15 lb. felt.

D. Finish:

Stain sealer - Duraseal or equal; Polyurethane satin finish.

PART 3: EXECUTION

3.01 GENERAL

- A. Review all work with Project Manager prior to commencing installation.
- B. Commencing work implies acceptance of surface to receive flooring.
- C. Upon delivery of material to site store in dry ventilated area.

3.02 LAYING

- A. Install membrane vapor barrier over subfloor Lap 4".
- B. Install oak flooring in pattern as shown on Drawings. Provide clean, neat joint where new work meets existing oak floor.
- C. Provide space at perimeter for expansion. (Wood base installed by other after floor is complete.)
- D. Stagger end joints minimum 6" at strip flooring. (New and existing.)
- E. Nail spacing 10" - 12" at tongue and groove flooring.
- F. Nail parquet at 7" maximum.

3.03 SANDING AND FINISH

- A. Machine sand floors to provide smooth surface. Remove all ridges and burrs. Materials damaged during sanding will be replaced at no additional cost. Final sanding shall provide uniform color and texture suitable for final finish.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

B. Application:

1. Apply stain sealer.
2. Machine buff with carpet disk to burnish finish.
3. Wipe with cloth moistened with solvent.
4. Apply satin polyurethane.
5. Machine buff with light steel wool.
6. Wipe with cloth moistened with solvent.
7. Apply satin polyurethane.

- C. Entire application shall be in accordance with manufacturer's recommendations. Allow seven (7) days curing time between polyurethane coats.
- D. Where existing hardwood floors are refinished, entire floor shall be sanded prior to first coat application.
- E. Protect floors during drying of finish. Refinish damaged surfaces at no additional cost to Owner.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. General:

Provide resilient flooring, complete, as shown and specified per Contract Documents.

B. Related Work Specified Elsewhere:

1. Section 06100: Rough Carpentry
2. Section 06200: Finish Carpentry & Millwork

1.03 ALTERNATES

The scope of work of this Section is affected by alternates. See Section 01030 for description.

1.04 SUBMITTALS

A. Samples:

Following listed samples; additional, if specifically requested.

1. Metal edge strips: With specified finish, 12" long.
2. Resilient flooring: Each type and color selected, 12" x 12".
3. Resilient base: Each type and color, 12" long. None required for black color.

B. Product Data:

Manufacturer's specifications and installation instructions.

1.05 PRODUCT HANDLING

A. Delivery:

Deliver materials to job site in manufacturer's unopened containers clearly marked with manufacturer's name, brand, size, thickness, grade, color, graining and design.

PART 2: PRODUCTS

2.01 MATERIALS

A. Adhesive for Resilient Flooring:

Type recommended by resilient flooring manufacturer and best suited for purpose.

B. Cement for Resilient Bases:

Waterproof type recommended or supplied by base manufacturer.

C. Metal Edge Strips:

Extruded hard aluminum alloy of standard design and finish, unless otherwise shown; approximately 1-1/4" wide with bullnosed edge of thickness to finish flush with abutting resilient flooring.

D. Primer:

Type composed of an asphaltic base and a suitable light volatile solvent as recommended by resilient flooring manufacturer.

E. Resilient Bases:

FS SS-W-40, Type I (rubber) Style A (straight) and Style B (cove) as specified; smooth finish; 1/8" thick; 4' minimum length.

F. Resilient Flooring:

1. Vinyl composition tile: Marked Resil. FS SS-T-312, Type IV, Composition 1, asbestos free; unless otherwise shown, 12" x 12" x 1/8" thick, non-directional through pattern; manufacturer's standard color as selected.

G. Underlayment:

Plywood or particle board, underlayment grade. Thickness per detail, to provide for flush installation with adjacent flooring.

PART 3: EXECUTION

3.01 INSPECTION

A. General:

Examine substrate and adjoining construction and conditions under which work will be installed. Submit written notification of deficiencies detrimental to proper or timely installation; do not proceed until corrected.

B. Moisture Test:

Test substrates to determine acceptable dryness prior to application of resilient flooring. Use Primer Test or Mat Moisture and Bonding Test as applicable for appropriate type flooring as recommended by resilient flooring manufacturer.

3.02 PREPARATION

A. Surface Preparation:

Clean substrate of deleterious materials which impair bonding of resilient flooring. Do work on smooth, even troweled finish. Remove rough areas and protrusions from concrete by grinding. Fill cracks, rough areas, and other surface defects with an acceptable plastic filler.

B. Underlayment:

Install over subfloor in accordance with manufacturer's written specifications.

3.03 INSTALLATION

A. Metal Edge Strips:

Install in continuous lengths at exposed edges of resilient flooring, unless otherwise shown. Anchor strips solidly to substrate.

B. Prime Coat:

Apply primer to concrete surfaces; work well into surfaces; use minimum quantity that will assure complete surface coverage with a non-absorptive base. Allow primer to thoroughly dry before applying adhesive. Prime coat may be omitted if recommended by resilient flooring manufacturer.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

C. Adhesive:

Apply to substrate with properly notched steel trowels; allow adhesive to become tacky before applying resilient flooring.

D. Tile Units:

1. Layout: Lay tile units symmetrically about center lines of major room or space in a square pattern, unless otherwise shown; adjust so edge units are not less than one-half of tile width.
2. Installation: Lay tile units with bottom surface securely bonded to substrate and top surface left smooth, clean, and free from imperfections.

E. Resilient Bases:

1. General: Install top-set coved type bases, except straight type bases where carpet is scheduled.
2. Coved type: Provide with premolded end stops and premolded one-piece external corners.
3. Straight type: Provide with preformed one-piece external corners.

3.04 CLEANING

Not more than four days before Substantial Completion, thoroughly clean work per resilient manufacturer's recommendation. Use solvents, wet mopping, or washing is prohibited.

3.05 PROTECTION

Protect work from damage during construction period so work will be without indication of use or damage at time of Substantial Completion.

3.06 EXTRA STOCK

A. Vinyl Composition Tile:

Deliver to Owner, at project, one unopened box for each.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

Furnish and install carpeting, pad and accessories, complete.

1.03 ALTERNATES

The scope of work in this Section is affected by alternates. See Section 01030 for description.

1.04 QUALITY ASSURANCE

A. Reference Standards:

1. Federal Specifications.
2. Manufacturer's recommendations and specifications.

B. Representative Acceptable Manufacturers or Approved Equal:

1. See 09680, Par. 2.02.

1.06 SUBMITTALS

A. Manufacturer's Data:

Submit copies of manufacturer's specifications, installation instructions and maintenance recommendations.

B. Samples:

1. Carpet: Submit samples, minimum size 12" x 18" for review of color, texture and pattern for carpet.
2. Pad: Submit 12" x 18" sample of carpet pad.

C. Installation Drawings:

Submit per Section 01300 to show direction of seams.



CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

D. Unused Material:

Deliver all unused carpet and large scraps, except unused rolls and portions of rolls longer than 15' to the City for future repair and maintenance work. Dispose of scraps less than 2 square feet in area, or less than 8" in width.

1.07 GUARANTEE

Guarantee to repair or replace all work defective because of faulty work or materials for a period of two years following completion of installation, at Contractor's expense.

PART 2: PRODUCTS

2.01 COLOR AND PATTERNS

Provide color and patterns selected by Project Manager from manufacturer's standards.

2.02 CARPET

Carpet #1: Designweave, Nassau, or equal.

Construction:	Dense Tufted Cut Pile
Fiber:	Allied Anso X Nylon
Yarn:	2 Ply Autoclave Heatset
Pile Weight:	30 Ounces Per Square Yard
Pile Height:	.218 Inches Finished
Gauge:	1/10 Inch
Stitches per Inch:	9.3
Density:	4,954
Primary Backing:	Static Controlled Woven Polypropylene
Secondary Backing:	Action Bac
Total Weight:	70.5 Ounces

Carpet #2: Bentley, Stonegate.

Type:	Textured Level Loop
Mfg. Technique:	Ultra Loop
Machine Gauge:	1/8"
Pile Height:	.218
Weight Density:	5284
Yarn Ply:	3955 Denier Uniply/1290
Yarn Weight/Tufted:	32 oz.
Total Weight:	75 oz.
Yarn Content:	DuPont Antron Precedent Nylon
Primary Backing:	Polypropylene
Secondary Backing:	Action Bac

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

Static Control:	Antron Precendent Static Control Fiber
Width:	12'
Soil & Stain Protector:	Dura Tech
Average Tuft Bind:	15 lbs.
Flame Resistance:	Passes Methenamine Pill Test DOC-FF1-70

B. Pad:

56 OZ sq.yd. Rubber-Ease, General Felt Products Inc., or approved equal.

2.03 ACCESSORIES, CARPET

A. Tackless Strip:

3 Row Type.

B. Resilient Transition & Reducer Vinyl Strips & Thresholds:

All accessories shall meet applicable handicapped requirements. Colors to be selected by Project Manager from manufacturer's standards..

C. Hold Melt Tape:

Per mManufacturer's recommendation.

D. Floor Filler:

As recommended by installer.

E. Contact Adhesive:

Weldwood, or equal.

PART 3: EXECUTION

3.01 INSPECTION

Examine the substrate and the conditions under which carpeting is to be installed. Do not install carpeting over substrate which is uneven, cracked laden with old adhesive or other detrimental conditions that will affect the performance and appearance to the carpeting. Do not proceed with the work until unsatisfactory conditions have been corrected. Notify the Project Manager, in writing, of conditions detrimental to the proper and timely completion of the work. The installation of carpeting shall be held to an acceptance of the surface working conditions.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
CC NUMBER 2211

3.02 PREPARATION

- A. Examine the existing flooring on which carpet will be installed.
- B. Fill all cracks, holes, depressions with latex underlayment such as Armstrong S-180. Remove all protrusions.
- C. Measure each space to receive carpeting, as a basis of supplying cuttings and seaming the carpet. Do not scale the Architect's Drawings or calculate sizes from dimensions shown.
- D. Vacuum substrate immediately prior to carpet installation and remove all deleterious substances which would interfere with the installation or be harmful to the work.

3.03 INSTALLATION

- A. Comply with manufacturer's instructions and recommendations. Place seams in the direction indicated by the Project Manager. Maintain direction of pattern and texture, including lay of pile. Do not seam weft to warp, except as directed.
- B. Cut and fit sections of carpet of each room of space, prior to application of adhesive.
- C. The finished installation shall be free from tacks, scraps, carpet ripples, scallops and puckers.
- D. After installation is complete, clean up all dirt and debris, and clean carpet of all spots with proper spot remover. Remove all loose threads with sharp scissors and broom or vacuum clean. The entire installation shall be left clean and ready for use.

3.04 PROTECTION

- A. After installation, traffic over carpeted areas shall be restricted unless absolutely necessary. Provide forms of protection as may be required by job conditions and the nature of subsequent work to prevent soiling or damage to installed carpets.
- B. At the time of acceptance, all carpeted areas shall be clean and without blemishes. If cleaning should be required, and such cleaning should result in damage to the carpet, or the soil or stains cannot be completely removed, the carpets shall be taken up and replaced with new material, as approved by the Project Manager. The cost of

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

such replacement shall be paid by the Contractor.

3.05 CLEANING

Prior to final inspection and acceptance, carpeted areas shall be thoroughly cleaned of all embedded dirt, dust or other foreign materials, and shall have been inspected and approved by a qualified representative of the manufacturer.



PART 1: GENERAL

1.01 RELATED DOCUMENTS

The General Conditions and Division 1, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. The extent of painting work is shown on the Drawings and finish schedules and as herein specified. The type of material and number of coats is listed in the Paint Schedule of this Section.

B. Definitions: "Paint" as used herein, means all coating systems materials, including primers, emulsions, enamels, sealers and fillers, stains, and other applied materials, whether used as a prime, intermediate, or finish coat.

C. Work Includes: The general extent of the work is shown on the Drawings and includes, but is not necessarily limited to the following:

1. Base Bid includes all prime coat to millwork, doors, frames, wood window sash and related, both interior and exterior.

2. Finish coats for all painted items are in Alternate #2.

3. Paint all new work which is normally painted unless painting is specifically excluded.

4. New metal work, including hollow metal doors and frames.

5. New work interior surfaces as indicated.

6. Touch up all surfaces which have been damaged due to work in this Contract.

7. Roof mounted items. Millwork and sheet metal hoods.

D. Work Not Included: The following categories of work are not included as part of the painted finish work:

1. Concealed surfaces: Unless otherwise indicated, painting is not required on surfaces in concealed and inaccessible areas, except where surface is visible through exposed construction.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

2. Operating parts and lables: Do not paint any moving parts of operating units, code required labels and equipment identifications.
3. Prefinished material and equipment: Unless otherwise indicated, do not include painting for manufacturer or installer finished items which are specified in the various Sections of the Specifications. The extent of prefinishing of manufacturer or installer, generally, only includes major components' minor accessories which are not finished by manufacturer or installer, shall be considered as work specified in this section.
4. Preprimed materials: Do not include in this Section prime coating for items which are shop prime coated by manufacturer or fabricator.

1.03 ALTERNATES

The scope of work in this Section is affected by Alternates. See Section 01030 for description.

1.04 RELATED WORK SPECIFIED ELSEWHERE

1. Section 05200: Miscellaneous Metal
2. Section 05512: Metal Stairs
3. Section 06200: Finish Carpentry & Millwork
4. Section 08100: Metal Doors & Frames
5. Section 08500: Window Wall & Glazing
6. Section 09209: Cement Plaster
7. Section 09250: Gypsum Wallboard

1.05 QUALITY ASSURANCE

- A. Unless otherwise noted, conform exactly to the written recommendations of the manufacturer of the products used for perparation, mixing, application and finishing as though completely included herein.
- B. Comply with paint manufacturer's recommendations as to environmental conditions under which paint materials and systems can be applied. Apply no materials in areas where dust is being generated or will be generated before

1.06 SUBMITTALS

- A. Paint Schedule: Before submitting samples, submit to Project Manager for approval a schedule indicating the manufacturer's product identification number and the specified product number, if different, for each coat in each type of surface to be painted. No general approval by the

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

Project Manager of such a schedule shall constitute a waiver of the Specifications as he may require specific guarantees from a manufacturer regarding his product.

- B. Five (5) copies of a complete list (indicating manufacturer and number) of all proposed finishes shall be submitted to the Project Manager for approval within ten (10) days after certification of the Contract.
- C. Colors: Unless the precise color and pattern is specifically described in the Contract Documents, submit accurate and complete color charts to the Project Manager for his review and selection, within 10 days after certification of contract.

1.07 SAMPLES:

- A. Contractor shall, at least thirty days in advance of performing the work, submit for review an 8-1/2" x 11" sample of every color and finish required with the specified paint system and approved selected colors applied to the actual material to be finished.
- B. Samples shall be marked with color formula. Rejected samples shall be resubmitted until approved. Such samples when approved in writing shall constitute a standard (as to color and finish only) for acceptance or rejection of the completed work.

PART 2: PRODUCTS

2.01 MANUFACTURER

The manufacturer and paint system are specified in the Schedule of Finishes. All materials shall be pure, unadulterated, first quality, fresh stock delivered to the job in the original manufacturer's unopened containers. Material left over from previous work is not acceptable and will be rejected. If required by the Project Manager, the Contractor shall furnish proof from the manufacturer that all material is of recent manufacture and has been purchased by the Painting Contractor for this specific job. All material shall conform to the paint list as approved by the Project Manager and any materials shall be the standard products of established manufacturers.

2.02 COLORS

- A. The color of all surfaces finished by this Contractor shall at the end of one year remain free from serious fading and the variation, if any, shall be uniform.



CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- B. The original adherence of all materials shall be maintained for one year and during this period there shall be no evidence of blisters, running, peeling, scaling, chalking, streaks or stains. Washing with alkali-free soap and water shall remove surface dirt without producing the above or other deteriorating effects.

2.03 JOINTS AND TEXTURE MATERIALS

- A. Compounds: ASTM C475 as made or recommended by manufacturer of wall-board used.
- B. Tape: ASTM C475, perforated, as made or recommended by manufacturer of wallboard used.

PART 3: EXECUTION

3.01 INSPECTION

- A. Job Conditions: Examine the conditions and surfaces in which the painting work is to be applied. Do not proceed with the work until unsatisfactory conditions have been corrected. The application of paint shall be held to an acceptance of the surface working conditions, and the Contractor will be held responsible for the results reasonably to be expected from the materials and processing specified.
- B. Starting of painting work will be construed as the Applicator's acceptance of the surfaces and the conditions within any particular area.
- C. For the purpose of facilitating inspection, notify the Project Manager when commencing work and also notify the Project Manager after each coat is completed.
- D. All work and materials will be thoroughly inspected during the progress of the work, and following its completion, by the Project Manager. Any work which is not in accordance with these Specifications will be at once rejected and shall be repaired and made acceptable.
- E. Paint Room: Contractor shall be assigned a room or rooms in which to store and mix materials. He shall provide metal containers in which all paints shall be mixed and no mixing of paint shall be done otherwise. Oily rags and waste shall be removed from the building at the termination of each working day. Necessary precautions shall be taken to prevent fire.

3.02 WORKMANSHIP

- A. All painting shall be by skilled mechanics working under the supervision of a capable foreman, and all workmanship shall be of highest quality, developing to their fullest the possibilities of the materials and the processes specified, and to the complete satisfaction of the Project Manager.
- B. Before painting is started in a room or unit, finish carpentry, including corrections and adjustments, shall have been completed, all glazing installed, and the room or unit of the building cleared of all debris, thoroughly broom cleaned and dusted out.
- C. Finish hardware shall have been fitted and all contact plates removed before painting.
- D. Plates for electric switches and plugs shall have been fitted and removed by electrician.
- E. Drop cloths shall be carefully placed and secured over floor and fixture areas as the paint work progresses. Provide all necessary building paper or canvas to completely cover floors and adjacent surfaces while working over the same.
- F. Adequate safeguards shall be provided against damage from the escape of materials during spray operations. All painting shall be done by brush, except where spray work is authorized by Project Manager.
- G. All woodwork to receive stain and varnish finish shall be sandpapered before finish is applied, and further sandpapered between coats. Sandpaper shall be fine and used so as to avoid showing scratches.
- H. No paint shall not be applied to either wet or damp surfaces, and in no case until the preceeding coat is dry and hard. Time allowed for drying shall be ample to secure the best possible results.
- I. All materials shall be applied as per manufacturer's directions and materials shall be thinned only for proper workability and in compliance with manufacturer's specifications. All materials shall be evenly brushed on and/or smoothly flowed without runs or sagging or material.
- J. Priming of wood frames shall be done immediately upon delivery.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

3.03 SURFACE PREPARATION

- A. General: Surfaces shall be clean, dry and free of dirt, oils, loose coatings or any other contamination that would adversely affect adhesion, protective properties or appearance of coatings.
- B. Gypsum Wallboard: Surfaces shall be free of loose dust and imperfections in taping and cementing which would "telegraph" on finished painted surfaces. Touch-up suction spots after primer-sealer coat is dry.
- C. Metals: Remove all mill scale, rust and corrosion. Clean surfaces free of oils, grease and dust using mineral spirits. Touch-up all chipped or abraded areas in shop coatings using appropriate primer. Provide vinyl wash pre-treatment for all galvanized and aluminum surfaces to be painted.
- D. Wood: Remove all dirt, dust and mortar stains by brushing, scraping or sanding. Remove oil and grease with mineral spirits. Where items are furnished preprimed, touch-up all abrasions.
- E. Concrete - Existing Surfaces: Patch and fill holes and crevices, sand smooth and level uneven spots, scrape and remove loose coating, clean and dust off surfaces.
- F. Priming of Woodwork: All surfaces of millwork, casework and interior wood finish specified to receive paint or enamel finish shall be thoroughly primed.

3.04 APPLICATION

- A. Apply paint in accordance with the manufacturer's directions. Use applicators and techniques best suited for the type of material being applied.
- B. The number of coats specified is the minimum that shall be applied. Coverage shall be complete. Finish coats shall be applied until coverage is complete and the finish is of uniform color and appearance, free from brush marks, laps, runs and skipped or missed areas.
- C. Each succeeding pigmented coat shall be distinguishable.
- D. Specified prime coat may be omitted on shop primed items and existing painted surfaces except for touch-up.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- E. Protect adjacent surfaces and protect freshly painted surfaces from stains, spatters, or other defacements, until surface has hardened sufficiently to resist damage.
- F. Provide "Wet Paint" signs as required.
- G. Carry painting work to nearest surface break or column in order to obtain the best and most uniform appearance.

3.05 PAINT SCHEDULE

A. Materials: Unless otherwise noted, the paint numbers specified herein are products of Fuller-O'Brien Paints. The specified numbers are intended to establish a measure of quality and performance required, including the coverage rate and dry film thickness. Products of Sinclair, Glidden, Sherwin-Williams, Kelly Moore or other established manufacturers will be given equal consideration.

B. Paint Schedule:

1. Exterior Surfaces

a. Concrete: Painted

- 1 Coat 220-16 Primer Sealer
- 1 Coat 262-XX Acrylic Latex

b. Woodwork: 25C

- 1 Coat 220-23 Alkyd Primer
- 2 Coats 260-XX Alkyd Gloss

c. Ferrous Metal, Exterior and Interior: 15A

- 1 Coat 621-04 Blox-rust
- 2 Coats 219-03 Alkyd Gloss

d. Galvanized Metal: 16A

- 1 Coat 320-04 Etch-N-Prime
- 2 Coats 219-03 Alkyd Gloss

e. Cement Stucco: 18D

- 1 Coat 220-66 Alkyd Primer Sealer
- 2 Coats 609-xx Ultra color acrylic latex

2. Interior Surfaces

a. Gypsum Board (New) Typical: Flat 20A

- 1 Coat 220-06 Primer Sealer
- 2 Coats 202-XX Latex Flat

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- b. Gypsum Board (New), Semi Gloss: 20C  
Toilet Rooms and Service Area  
1 Coat 220-06 Primer Sealer  
2 Coats 219-00 Semi-Gloss Stipple
- c. Gypsum Board and Plaster (Existing); patch paint to corners:  
2 Coats 202-XX Latex Flat 20A  
Match existing
- d. Woodwork: Opaque finish 24C  
1 Coat 220-02 Latex Undercoat  
2 Coats 208-XX Alkyd Eggshell
- e. Woodwork - Clear finish: 23C  
2 Coats 625-01 Penthane Satin

3.06 CLEAN-UP AND PROTECTION

Upon completion of painting work, clean all window glass and other paint spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.

3.07 EXTRA PAINT

Provide one gallon of each color for touch-up. Maximum four colors.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. General:

Provide metal toilet partitions, complete, as shown and specified per Contract Documents.

B. Work Specified Elsewhere:

1. Section 05200: Miscellaneous Metals
2. Section 09250: Gypsum Wallboard
3. Section 09310: Ceramic Tile

1.03 SUBMITTALS

A. Samples:

Following listed samples; additional, if specifically requested.

1. Color: 12" x 12" sample of each color and finish selected.
2. Brackets: Each type with specified finish.

B. Shop Drawings:

Complete shop and erection drawings. Show fabrication and installation details, including anchors and leveling devices together with detailed illustrations of hardware and fittings.

C. Product Data:

Manufacturer's specifications and installation instructions together with catalog cuts and other required data.

1.04 PRODUCT HANDLING

A. Delivery:

Deliver items properly wrapped or cartoned for protection against damage during transit and storage.

B. Storage:

Store indoors, above floor, and away from construction operations.

PART 2: PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS (One of following; or approved equal)

A. Toilet Partitions - Ceiling Hung Type; Baked Enamel Finish:

<u>Manufacturer</u>	<u>Type</u>
Global Steel Products Corp.	Imperial
Sanymetal Products Co., Inc.	Century
Knickerbocker Partition Corp.	Empire

B. Steel Sheets for Door, Panel and Pilaster:

ASTM A-591, galvanized-bonderized with minimum thickness of 22 gauge for doors, 20 gauge for panels, 16 gauge for pilasters, and 12 gauge for concealed reinforcement.

C. Panel and Door:

Not less than 1" thick unit, factory pressure laminated one-piece face sheets to core material, edges sealed with continuous lacking strip or lapping and formed edges, concealed reinforcement for attachment of grab bar. Doors shall be 36" wide, swing out for wheelchair access as shown in Drawings.

D. Pilaster:

Same construction as panel except not less than 1-1/4" thick.

E. Hardware and Accessories:

Provide manufacturer's standard units as required for a complete installation. Hardware shall include self-closing hinges set for hold open, latch and keeper equipment for emergency access, coat hook and bumper, brackets, pilaster trim and anchors. All exposed hardware and accessories shall be polished stainless steel or chrome finish. All exposed fasteners shall be theft-proof.

F. Finish:

Provide thermo-setting acrylic baked enamel finish, colors shall be selected by Project Manager from full range of manufacturer's standard colors.

2.02 TOILET ACCESSORIES

Manufacturer: Bobrick, Bradley, or approved equal

A. Toilet Tissue Dispenser and Toilet Seat Cover Dispenser:

Bobrick No. B-288 and Bobrick No. B-221. Both surface units, 22 gauge stainless steel, satin finished. Provide one each toilet compartment.

B. Paper Towel Dispenser and Waste Receptacle:

Bobrick No. B-3944. 22 gauge stainless steel satin finished, recessed type. Provide two in each room.

C. Toilet Compartment Grab Bars:

Bobrick Bo. B-6806 series. 1-1/2" diameter x 36" and 48", stainless steel satin finished, concealed mounting. Provide two bars each handicap toilet compartment.

D. Mirrors:

1/4" Thick plate glass mirror guaranteed for ten years against silver spoilage, stainless steel satin finish frame, concealed wall hangers, sizes as shown on Drawings.

E. Soap Dispenser:

Bobrick No. B-868. Lather valve, stainless steel body. Provide one at each lavatory.

F. Feminine Napkin Disposal:

Bobrick No. B-270. Recessed, 22 gauge stainless steel, satin finish. Provide one each women's toilet compartment.

PART 3: EXECUTION

3.01 INSTALLATION

A. Installation shall be in accordance with manufacturer's recommendation.



CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

- B. Provide all necessary accessories for a complete installation.
- C. Install units plumb, level and align.
- D. All exposed fasteners for toilet accessories shall be stainless steel, satin finish; all concealed fasteners and mounting devices shall be stainless steel or galvanized steel.
- E. Toilet Partitions:
  - 1. Install partitions rigid, straight, plumb and level with panels laid out as shown. Provide clearances of not more than 1/2" between pilasters and panels, and not more than 1" between panels and walls. Secure panels to walls with not less than two stirrup brackets, attached near top and bottom of the panel. Secure panels to supporting walls with manufacturer's recommended anchoring devices.
  - 2. Secure pilasters to ceiling, level, plumb and tighten the installation with the leveling device. Set pilaster units with anchorage having not less than 2" penetration into solid blocking.
  - 3. Hardware adjustments: Adjust and lubricate hardware for proper operation after installation. Set hinges on out-swing doors to return to the fully closed position.
- F. Urinal Screens:
  - 1. Wall hung; bracket supported type: 18" x 42"; same thickness and type construction specified for doors with an additional 4" wide solid internal reinforcement extending along both vertical edges. Secure with double wing brackets at 3 points minimum.
- G. Toilet Accessories:
  - 1. Install per manufacturer's written instructions.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. General:

Work includes but is not limited to providing operable partitions and all hardware items complete.

B. Related Work Specified Elsewhere:

1. Section 05100: Structural Metal Framing
2. Section 92500: Gypsum Wallboard

1.03 SUBMITTALS

- A. Shop drawings showing connection to structure and suspension system.
- B. Samples of finish fabric.
- C. Project literature.

PART 2: PRODUCTS

2.01 OPERABLE WALLS

Moduflex Series 800, as manufactured by Panelfold, Inc., Miami, Florida, U.S.A., or approved equal, and installed by an authorized representative of the manufacturer in openings prepared by others to Moduflex Series 800 requirements.

2.02 OPERATION

Operation shall consist of a series of manually operated flat panels, top supported. Top and bottom seals shall be as specified in paragraph 2.8.

2.03 PANEL CONFIGURATION

Model 820 shall be a series of panels binged in pairs and center stacking, manually operated.

2.04 PANELS SERIES 800

Panels shall be nominal 4" (102 mm) thick, all-steel construction. Steel panel faces shall be welded to minimum 14 gauge (1.90 mm) steel frames. The vertical edges of the panels shall not require trim thus minimizing the appearance of the vertical joining of the panels.

2.05 PANEL SURFACES

Factory laminated as specified.

- A. Manufacturer's standard, non-woven, Softex, soft-textured wall carpeting. Class "A". Color selected by Project Manager.

2.06 HANGING WEIGHT

Series 800 steel panels hanging weight shall be no more than 12 pounds per square foot (58.6 kg/sq.m.)

2.07 SOUND SEALS

- A. Vertical seals between panels shall consist of deep nesting, universal interlocking bronze ESP astanglas incorporating continuous, vinyl acoustical seals installed on the outboard edges of the panel skins in a double row with an acoustical labyrinth.
- B. Horizontal top seals shall be continuous-contact extruded vinyl shapes; clearance type, automatically actuated or clearance-type, track-actuated.
- C. Horizontal bottom seals shall be continuous-contact extruded vinyl shapes, clearance-type automatically actuated by the movement of one panel against the other; or clearance-type, mechanical, tool-operated exerting nominal 200 lb. pressure downward. (2-1/2" or 6").

2.08 SUSPENSION SYSTEM

Heavy duty steel supported by adjustable steel hanger rods. Panels shall be supported by trolley assemblies of nylon tired; steel ball-bearing wheels. Trolleys shall be attached to panels with adjustable steel pendant bolts.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

PART 3: EXECUTION

3.01 INSPECTION

Examine openings and adjoining surfaces; give written notice of deficiencies detrimental to proper and timely installation of work; do not proceed until deficiencies are corrected.

3.02 PREPARATION

A. Field Measurements:

Verify for work fabricated to fit project conditions.

3.03 INSTALLATION

A. Install per manufacturer's recommendation. Set work plumb, level, true and properly aligned with adjacent work. Properly assemble and install in rigid manner.

B. Insure that partitions operate smoothly in tracks.

3.04 CLEANING

After installation, clean surfaces or smears, spots, and other markings per manufacturer's recommendations. Do not use alkaline or abrasive agents to clean work. Remove and replace defective work at no cost to Owner.

PART 1: GENERAL

1.01 RELATED DOCUMENTS

Contract Conditions and Division One, General Requirements, contain information that applies to this Section.

1.02 DESCRIPTION

A. General:

Provide horizontal louver blinds, complete, as shown and specified per Contract Documents.

B. Related Work Specified Elsewhere:

1. Section 09250: Gypsum Wallboard

1.03 QUALITY ASSURANCE

A. Qualifications of Manufacturers:

Metal louver assemblies shall be manufactured by Technical Blinds Ltd., Station Approach, Bourne End, Buckinghamshire, SL8 5QH England, or equal as approved by Project Manager.

B. Information regarding louver assembly may be obtained from:

Burris Window Shades Co. [323 14th Street, Oakland, CA.  
(415) 451-4198.

1.04 SUBMITTALS

A. Samples:

Following listed samples; additional, if specifically requested.

B. Shop Drawings:

Layout drawings; show blind sizes, methods of attachment.

C. Product Data:

Manufacturer's specifications, data, and installation instructions.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

1.05 PRODUCT HANDLING

A. Delivery:

In manufacturer's original packaging clearly marked with manufacturer's name, installation location, and unit's type, size and color.

B. Protection:

Protect units from damage during shipping and installation.

PART 2: PRODUCTS

2.01 HORIZONTAL LOUVER BLINDS

A. Provide with following components:

1. Rack Arm: S5010
2. Bearing Bracket: S5030
3. Center Support: S5040
4. End Support: S5050
5. Drive Shaft: S5041
6. Slat, 50 mm: S5160 color selected by Project Mgr.
7. Gear Box: S5080
8. Rod and Hook: S5100

PART 3: EXECUTION

3.01 INSPECTION

Examine openings and adjoining surfaces; give written notice of deficiencies detrimental to proper and timely installation of work; do not proceed until deficiencies are corrected.

3.02 PREPARATION

A. Field Measurements:

Verify for work fabricated to fit project conditions.

3.03 INSTALLATION

Install per manufacturer's recommendation. Set work plumb, level, true, and properly aligned with adjacent work. Properly assemble and install in rigid manner.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc NUMBER 2211

3.04 CLEANING

After installation, clean surfaces of smears, spots, and other markings per manufacturer's recommendations. Do not use alkaline or abrasive agents to clean work. Remove and replace defective work at no cost to Owner.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

SECTION 14212  
HYDRAULIC ELEVATORS

PART 1- GENERAL:

1.01 DESCRIPTION:

- A. Work Included in this Section: Provide all labor materials, plant, appliances, tools, transportation and equipment required to install hydraulic elevators, complete, as shown and specified. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specifications Sections apply to the work of this section.

The elevators are to be located as follows:

1. Harrold Wing ALL WORK RELATED TO ELEVATORS 1 & 2 NOT IN CONTRACT.
  - a. Elevator No. 1: An existing 3000 lb. capacity hydroelectric passenger elevator serving levels ground, main floor and top floor. Extensive modifications to be provided as specified.
  - b. Elevator No. 2: Additional elevator to be located in the adjacent spare shaft to No. 1 elevator and to be of the same capacity serving the same levels and interconnected as a duplex operation. The casing hole has been drilled and waterproof sealed to a depth of 10'-0" below pit depth. The additional drilling, positioning of full depth metal casing, rewaterproofing forms part of the elevator contractor's work. It is the responsibility of the Elevator Contractor to seek all information available regarding this existing casing hole and coordinate with Project Manager.
2. Pavilion Building: ALTERNATE NO. 1.
  - a. Elevator No. 3: One passenger, 8500 lbs. capacity serving three levels--ground, main floor and top floor.

- B. Alternatives: Scope of work varies for this Section. See 01030 for description.

- C. Related Work Included in Other Sections:

1. Hoistways: Construction of hoistways, pits, machine



CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

rooms and controller areas, all properly framed, enclosed and adequately ventilated.

2. Access: Legal access with self-closing and locking access doors to machine rooms and controller areas. Providing pit access ladders.
3. Pits: Providing pit waterproofing and sump pits with flush covers. Providing screens between adjacent pits of No. 1 and 2 elevators.
4. Supports: Providing supports as shown for guide rails, buffers, and machines. Providing angles or concrete corbel for sill supports.
5. Grouting: Providing grouting under hoistway entrance sills and frames.
6. Patching: Patching of floors, walls and surfaces constituting final finishes.
7. Block-outs: Providing block-outs, pockets and chases in walls and floors as required.
8. Electrical Work:
  - a. Power Feeders: Installation and connection to terminals of controllers, including fused main-line switches or circuit breakers in controller areas. 208 VAC, 3 phase for Elevators 2 and 3.
  - b. Light Circuit: 120 VAC, 1 phase circuit connected to terminals of each controller for car lights and fan.
  - c. Communication Circuit: Connection of telephone circuit to terminals of each controller, Elevators No. 2 and 3.
  - d. Illumination: Lights, light switches and convenience outlets in pits, machine rooms and controller areas, Elevators No. 2 and 3.
  - e. Conduit: Installation of conduit, wire and junction boxes between machine rooms, hoistways and remote locations of indicator and control panels. Final connections by Elevator Contractor.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- f. Temporary Power: Electric power for starting, testing and adjusting.
- g. Sensing Devices: Installation of smoke detectors or products of combustion sensors in elevator lobbies with circuits to machine rooms for emergency fire service operation.
- 9. Barricades: Installation of barricades for protection of open hoistways during construction as required by OSHA.
- 10. Channel Frames: Installation of steel channel frames and sill angles for freight elevator entrances.

D. Related Work Not in Contract:

- 1. Life Safety Speakers: Furnished by others; space, wire, accommodations and installation by Elevator Contractor.

E. Definitions:

- 1. Provide: Means furnish and install.
- 2. As Indicated: Means as shown on drawings.
- 3. As Approved: Means as approved by Project Manager.
- 4. As Directed: Means as instructed by Project Manager.
- 5. Main Lobby: Main floor.
- 6. Fire Recall Floor: Ground floor.

1.02 QUALITY ASSURANCE

A. Qualified Bidders:

- 1. General: Quotation for elevators will be entertained from the following. The manufacturer may supply his standard equipment provided that all details of this Specification are met. The decision of the Project Manager shall be final should disputes arise regarding any details of the equipment.

a. Dover Elevator Company.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- b. Montgomery Elevator Company.
  - c. Otis Elevator Company.
  - d. United States Elevator Corporation.
  - e. Westinghouse Elevator Corporation.
  - f. Approved Equal.
2. Maintenance Qualifications: Maintenance shall be performed by manufacturer installing elevators and shall:
- a. Be able to show evidence of successful experience in complete maintenance of elevators.
  - b. Directly employ sufficient competent personnel in the local area to handle service.
  - c. Command local store of parts adequate for replacement on permanent or emergency basis.
  - d. Be able to respond to trouble calls within 1 hour.
  - e. Be able to offer the Owner agreement for continuing maintenance after expiration of maintenance period under this contract.
3. Elevator Cars and Entrances: Shall be manufactured by one of the following.
- a. Globe Van Doorn Company.
  - b. Hauenstein and Burmeister.
  - c. Tyler Company (Cleveland, Ohio).
  - d. The Elevator Manufacturer.
  - e. Approved Equal.
- B. Design Criteria:
1. Performance:
- a. Contract Speed: Speed variation under any

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

loading condition in either direction shall be no more than five percent (5%).

b. Hydraulic Pressure: Hydraulic components shall be factory tested for 400 PSI. Maximum operating pressure shall be 360 PSI.

c. Door Times Available: Provide following available door times.

1) Elevators No. 2 and 3:

Open Time 4 seconds.

Close Time 3 seconds.

d. Leveling: Within three-eighths inch under any loading condition. Car shall level into floor at all times, not overrun floor and level back.

2. Operating Qualities: Project Manager and Owner shall judge riding qualities of cars and enforce the following requirements. Elevator Contractor shall make all necessary adjustments.

a. Transition: Starting and stopping shall be smooth and comfortable. Slowdown, stopping and leveling shall be without jars or bumps.

b. Full Speed: Riding shall be free from vibration and sway.

3. Sound Control:

a. Vibration: Provide effective sound isolation materials to isolate pumping plant from building structure to prevent objectionable noise transmission to occupied building spaces.

b. Airborne Noise: Maximum acoustical output level shall not exceed 86 decibels within a frequency range of 20 to 10,000 cycles, measured in machine room.

C. Requirements of Regulatory Agencies:

1. Codes: Material and workmanship shall be in accordance with the latest applicable edition requirements of the following and as specified.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- a. ANSI: A17.1; Safety Code for Elevators and Escalators.
  - b. CAC: Titles 8 and 24; California Administrative Code.
  - c. NEC: National Electric Code.
  - d. UBC: Uniform Building Code.
  - e. All local codes which govern.
2. Permits: Upon completion of elevators, Elevator Contractor shall arrange and pay for inspections by governing authorities and obtain operating permits required.

1.03 SUBMITTALS:

- A. Shop Drawings: Submit in accordance with Section "Shop Drawings and Submittals" and as required by the Project Manager. The Project Manager reserves the right to require any details of any portion of the equipment.
  1. Layouts: Plan and section of hoistways, pits, and machinery spaces include seismic, static and dynamic loads imposed on building structure. Indicate required clearances around equipment.
  2. Details: Submit details of cabs, fixtures, entrances, equipment isolation and other details. No 1 and 2 cabs to be identical design.
  3. Data: Indicate on layouts or separate data sheets; machine spaces heat release, power requirements, conduit runs outside of hoistways and machine rooms, seismic calculations, car and guide shoes, and door operators.
- B. Samples: Provide samples of materials and finishes exposed to public view and additional if specifically requested; 6" x 6" panels, 12" lengths, or full size if smaller, as applicable.
- C. Test Reports: Submit complete reports describing results of tests conducted under "Field Quality Control" section of this specification.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- D. Operating Instructions: Submit manufacturers' literature describing system operations and special operations as specified.
- E. Maintenance Data: After completion and acceptance, submit three sets of complete and accurate maintenance data specific for each elevator. Final payment will not be made until received.
  - 1. Manuals: Describe proper use and maintenance of equipment, lubrication points, types of lubricants used and frequency of lubricant application.
  - 2. Parts Catalogs: Complete listing of all parts of equipment and components used in the installation.
  - 3. Wiring Diagrams: One set mounted on hard-board and protected within a frame under clear plastic in machine room, one reproducible mylar set and one blue line set delivered to Project Manager. Wiring diagrams shall be as built, specific for this installation, and reference identification on drawings shall match points identified on terminals of controllers.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. Protect equipment during transportation, erection and construction. Store under cover to prevent damage due to weather conditions. Replace damaged materials.

1.05 JOB CONDITIONS:

- A. Sequencing, Scheduling: Elevator Contractor shall schedule and be responsible for coordinating related work by other trades to avoid omissions and delays in job progress. The General Contractor shall notify the Project Manager prior to the Elevator Contractor drilling the casing hole.

1.06 GUARANTEE:

- A. All material and workmanship of the apparatus installed shall be guaranteed first-class in every respect and any defects not due to ordinary wear and tear or improper use or care which may develop within one year from date of completion and acceptance of the entire installation will be made good. Final payment shall not void this guarantee.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

PART 2 - PRODUCTS:

2.01 DESCRIPTION OF SYSTEMS:

A. Elevator No. 1:

EXISTING NOT IN CONTRACT

- |                           |  |
|---------------------------|--|
| 1. Type:                  | Hydraulic Passenger/Service                          |
| 2. Capacity               | 3000 pounds  |
| 3. Speed:                 | 125 feet per minute                                  |
| 4. Stops:                 | 3  |
| 5. Openings:              | 3  |
| 6. Travel:                | 29 feet 2 inches approximately                       |
| 7. Control:               | Resistance A.C.                                      |
| 8. Operation:             | Simplex Selective Collective                         |
| 9. Machine Location:      | Remote   |
| 10. Platform Size:        | 6'-7" wide 6'-6" deep outside approximately.         |
| 11. Hoistway Entrances:   | 8'-0" high by 4'-0" wide                             |
| 12. Door Operation:       | Power  |
| 13. Door Protection:      | Safety Edges and Light Beams.                        |
| 14. Signals and Fixtures: | As existing.   |
| 15. Special Operations:   | Independent Service                                  |
|                           | Fire Emergency Service to be provided.               |
|                           | Standby Emergency Power to be provided (battery).    |
|                           | Doors Hold Open                                      |
| 16. Car Enclosure:        | Passenger/Service type, as specified to match No. 1. |
| 17. Guide Rails:          | As existing.   |
| 18. Guide Shoes:          | As existing.   |
| 17. Miscellaneous Items:  | Handicap Requirements to be provided.                |
|                           | Key Operated Hoistway Access to be provided.         |
|                           | Earthquake Requirements as required by Code.         |

B. Elevator No. 2:

NOT IN CONTRACT

- |               |                                |
|---------------|--------------------------------|
| 1. Type:      | Hydraulic Passenger/Service    |
| 2. Capacity   | 3000 pounds                    |
| 3. Speed:     | 125 feet per minute            |
| 4. Stops:     | 3                              |
| 5. Openings:  | 3                              |
| 6. Travel:    | 29 feet 2 inches approximately |
| 7. Control:   | Resistance A.C.                |
| 8. Operation: | Simplex Duplex                 |

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- |                           |   |
|---------------------------|---|
| 9. Machine Location:      | Remote  |
| 10. Platform Size:        | 6'-7" wide 6'-6" deep outside   |
| 11. Hoistway Entrances:   | As existing, 8'-0" high by 4'-0" wide   |
| 12. Door Operation:       | Power   |
| 13. Door Protection:      | Safety Edges and Light Beams.   |
| 14. Signals and Fixtures: | As existing.  |
| 15. Special Operations:   | Independent Service<br>Fire Emergency Service<br>Standby Emergency Power (battery)<br>Doors Hold Open |
| 16. Car Enclosure:        | Passenger/Service type, as specified to match No. 1.  |
| 17. Guide Rails:          | As specified.   |
| 18. Guide Shoes:          | As specified.   |
| 19. Miscellaneous Items:  | Handicap Requirements<br>Key Operated Hoistway Access<br>Earthquake Requirements                      |

C. Elevator No. 3:

ALTERNATE NO. 1.

- |                           |   |
|---------------------------|---|
| 1. Type:                  | Glass Rear Walled Hydraulic Passenger/Service   |
| 2. Capacity               | 8500 pounds   |
| 3. Speed:                 | 125 feet per minute   |
| 4. Stops:                 | 3   |
| 5. Openings:              | 3   |
| 6. Travel:                | 29 feet 2 inches approximately  |
| 7. Control:               | Resistance A.C.   |
| 8. Operation:             | Simplex Selective Collective  |
| 9. Machine Location:      | Remote  |
| 10. Platform Size:        | 8'-9" wide 10'-2" deep outside  |
| 11. Hoistway Entrances:   | As scheduled, two-speed, center opening, 8'-0" high by 5'-0" wide                                     |
| 12. Door Operation:       | Power   |
| 13. Door Protection:      | Safety Edges and Light Beams.   |
| 14. Signals and Fixtures: | As specified.   |
| 15. Special Operations:   | Independent Service<br>Fire Emergency Service<br>Standby Emergency Power (battery)<br>Doors Hold Open |
| 16. Car Enclosure:        | Passenger/Observation type, as specified.   |
| 17. Guide Rails:          | As specified.   |
| 18. Guide Shoes:          | As specified.   |



CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

19. Miscellaneous Items:   Handicap Requirements  
                                  Key Operated Hoistway Access  
                                  Earthquake Requirements

2.02 MATERIALS:

- A. Aluminum: Alloy and temper best suited for anodizing finish specified.
- B. Plywood: PS-1, A-D interior Grade Douglas Fir, fire retardant treated.
- C. Sheet Steel: ASTM A366, uncoated, pickled, free from defects.
- D. Stainless Steel: A167, type 302 or 304.

2.03 FINISHES:

A. Exposed-to-View Surfaces:

- 1. Aluminum: Color anodized match sample in Project Manager's office.
- 2. Sheet Steel: Clean of foreign substances. Apply one coat primer and two coats finish paint; color as selected.
- 3. Stainless Steel: Satin directional polish, No. 4 finish unless otherwise specified.
- 4. Touch-Up; Painted Surfaces: Use same paint as factory for field touch-up.

B. Nonexposed-to-View Surfaces:

- 1. Machinery and Equipment: Degrease and shop paint manufacturer's standard rust inhibiting primer.

2.04 AUTOMATIC OPERATION; ELEVATORS NO. 1 AND NO. 2:

A. Duplex Selective Collective Operation:

- 1. Operation shall be free car Duplex Selective Collective Automatic control and shall generally operate as follows.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- a. Park one car at ground floor (home car). Park one car (free car) at last stop above ground, or at a predetermined floor. An idle free car shall answer calls above or below it, except at ground floor.
  - b. If the free car receives a ground floor car call and travels to the ground floor, it shall become the home car and the car at the ground floor shall proceed to a predetermined upper floor.
  - c. If the free car is clearing calls, the home car shall start automatically to answer hall calls if there is an up call at a floor below the free car and the free car is traveling up, or, if there is an up or down call above the down traveling free car.
  - d. Cars shall always move in response to car button calls. If both cars are idle, only one shall respond to a hall call. If both cars are in motion, only one shall respond to a hall call.
  - e. If one car is removed from service, the other shall answer all hall calls.
  - f. There shall be no double door operation. If an up traveling car has a passenger for an intermediate floor and a down call is registered at that floor, with no calls above the car, it shall travel to the floor, open the door to let the passenger out, then light the down direction arrow in the car direction indicator and accept the waiting passenger who registered the down hall call. The doors shall not close and reopen.
  - g. Operation of a hall button at the floor where a car is standing shall open the door and the car shall proceed in the direction for which the the car call is registered by the entering passenger.
  - h. It is recognized that variations exist in free car duplex as supplied by different manufacturers. If system differs from that specified, submit description of system proposed.
- B. Selective Collective Operation; Elevator No. 3: Provide simplex selective collective operation as defined in the ANSI Code A17.1 including independent service.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

2.05 SPECIAL OPERATIONS:

- A. Inspection Operation; All Elevators: Provide key-operated hoistway access device and car top operating device. Key switches shall be mounted in door frames with only ferrule exposed at terminal landings. Provide California zoning.
- B. Independent Service; Elevators 2 and 3: Independent service operation shall be provided so that, by means of a switch located in the car service cabinet, the car can be removed from automatic operation and be operated by an attendant. The attendant shall have full control of the starting, stopping and direction of car travel. The car shall respond to car buttons only. The hall signals for the car on independent service shall not operate.
- C. Protective Circuit; All Elevators: In the event the car should stall due to low oil in the system, or if for other cause the car fails to reach the top landing within a predetermined time while traveling "up", a special circuit shall be provided which shall automatically return the car to the bottom landing and open the doors, after which the elevator will be completely shut down. Service shall be restored by recycling the main-line switch.
- D. Operation Under Fire or Other Emergency Conditions; All Elevators:
  - 1. General: Provide special emergency service to comply with CAC Title 8, local codes having jurisdiction and as specified.
  - 2. Commandeering Service - Phase 1: Provide for each group of elevators located as directed by local fire authorities, a three-position key switch (on-off-bypass) with a red collar. Provide an illuminating sign that reads "Fire Service" in 1/4 inch letters adjacent to key switch. Sign shall illuminate when key switch or a smoke sensor is activated and shall be visible only when illuminated. Locate operating instructions within same panel as key switch. Provide key storage box with the proper number of keys as directed by the local authorities.
    - a. Operation of key switch to "on" position shall return all elevators on automatic operation

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

non-stop to the fire recall floor and park with doors open.

- b. Door reopening devices, car and corridor call buttons, and emergency stop button shall be rendered inoperative.
  - c. Provide audible/visual signals in car as required for attendant operated elevator.
3. In-Car Service - Phase 2: Provide in each elevator a two-position key switch with red collar means to cancel registered car calls and audible/visual signals as required to alert attendants operating elevators.
- a. Operation of switch to "on" position shall be effective only after cars have returned to fire recall floor by activation of the Phase 1 switch or a smoke sensor.
  - b. In-car service operation of the elevator shall be available only by a person in the elevator who shall have complete control of starting, stopping and door operation by continuous pressure on door open and door close buttons or a floor button.
4. Fire Sensing Device; All Elevators: Smoke and product-of combustion detectors will be provided by others in elevator lobbies and circuits provided to the elevator controller rooms.
- a. Smoke detectors will be provided at all elevator lobbies including the fire recall floor and the elevator machine room.
    - 1) Activation of any sensing device in the machine room or at a lobby other than the fire recall floor, shall place all cars on fireman's service in the same manner as if the Phase 1 switch was activated.
    - 2) Should the sensing device at the fire recall floor activate, the cars shall return to the alternate fire recall floor, unless the Phase 1 switch is in the "on" position.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- 3) To bypass sensing devices and allow normal elevator service, turn Phase 1 switch to "bypass" position.
  - 4) To restore normal service, turn Phase 1 switch to "off" and remove key. All cars must be at fire recall floor.
- E. Operation Under Emergency Power System: Provide circuitry and emergency lowering battery unit to operate each elevator independently in event of power failure. Battery unit to be located in the machine room which will indicate operation of the protective circuit during power failure. Arrange system with an exposed method of testing on each controller. Circuit also to be such that if the main-line switch is open, the battery lowering device will not operate.

2.06 DOOR OPERATION:

A. Passenger Elevators:

1. Door Operator; Elevators No. 2 and 3 : Provide heavy-duty master type operators with direct current motor mounted on structural support independent of car enclosure. As a standard of quality, equal to G.A.L. MOH, Otis 6970, Westinghouse EZ, Dover HD73 or MAC solid state.
  - a. Provide door times available as specified under "Design Criteria."
  - b. Car and hoistway doors shall open and close simultaneously, quietly and smoothly; door movement shall be cushioned at both limits of travel. Door operation shall not cause cars to move appreciably.
2. Door Protection; All Elevators:
  - a. Safety Edges: Provide safety edges, retractable with motion of doors having aluminum or aluminum with solid neoprene leading edge. If edge is contacted while doors are closing, doors shall return to open position. Doors shall not travel more than 1-1/2 inches before reversing. Locate on edge of leading doors.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- b. Light Rays: Four horizontal solid state light rays shall be projected across the elevator car entrance at approximately 5, 10, 20 and 29 inches above threshold. If rays are interrupted while doors are closing, doors shall return to open position, and, after clearing of entrance, shall reclose automatically. Doors shall not travel more than 1-1/2 inches before reversing. Furnish Otis Monitor, Westinghouse Sentinel or approved equal.
- c. Door hold open times shall be readily and independently adjustable when car stops for a car or hall call. Main floor door hold times shall be adjustable independent of other floors.
- d. Doors shall not close as long as either light ray is interrupted or safety edge is actuated except:
  - 1) If doors are prevented from closing for an adjustable period of 15 to 45 seconds, they shall proceed to close and a loud buzzer located on car shall sound.
  - 2) If one or more light ray units fail, provide a circuit which will automatically disconnect light rays and allow doors to close after an adjustable, maximum 90-second interval. During closing of doors, a buzzer shall sound
- 3. Door Hold Button: Provide an illuminated door hold button, operation of which will hold the doors open for a predetermined and adjustable period of 20 to 90 seconds. Normal operation shall be resumed upon:
  - a. Expiration of door hold time.
  - b. Operation of door close button in car.
  - c. Operation of any floor button in car.

2.07 HOISTWAY EQUIPMENT:

A. Guide Rails; Elevators No. 2 and No. 3:

- 1. Size: Standard steel tees with backs machined for splice plates. Extend rails full depth of pits. Do not bottom on pit floor. Minimum weight shall be 15

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

pounds per foot for No. 2 and 22 pounds per foot for No. 3.

2. Installation: Drawings indicate basic hoistway framing and special supports for rail brackets. All additional supports and/or rail backing required shall be provided by the Elevator Contractor.

B. Guide Shoes:

1. Roller Guides; Elevators No. 2 and No. 3: Roller type with neoprene tires, minimum 3/4 inch wide, and adjustable spring loaded to provide continuous contact with rail surfaces. Double sets of rollers for No. 3 elevator. Cars to be static balanced to maintain maximum of 30 lbs. roller pressure.
  - a. Size: Nominal roller diameters shall be 6 inches.
2. Slide Guides; Elevator No. 1: Gib type solid or swivel heavy-duty sliding guides. Non-metallic gibs requiring minimal lubrication; minimum 8 inches long. Balance car and dowel shoes.

C. Buffers: Spring type mounted on cylinder support channels with required blocking and supports.

D. Car Frames:

1. Passenger Elevators: Manufacturer's special steel members construction with reduced pit depth for No. 2 car.
2. Elevator No 3: Design for one-piece load of 4500 pounds maximum carried on a small truck.

E. Platform:

1. Elevator No. 2: Steel frame with steel; isolate from car frame by rubber pads.
  - a. Sill: Provide extruded white bronze threshold plate.
  - b. Finish Floor: Provide 1/4 inch minimum sheet of Masonite over wood floor and allow 1/2 inch recess for installation of flooring.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- F. Platen Isolation: Provide minimum 3/4 inch thick steel plates at top of plunger and bottom of car frame with one inch rubber or neoprene isolation material between.
- G. Cylinder Well and Casing:
1. Well: The elevator contractor shall familiarize himself with existing conditions and be responsible for drilling all cylinder wells. Others will provide blockouts in pit floor as required for access to drilling. No. 2 casing hole partly drilled to 10'-0".
  2. Casing: Provide minimum 10 gauge Kai-well steel casing, 12 inches greater in diameter than wrapped cylinder and of proper depth. Provide a steel ring at top of casing to be keyed into pit floor. Provide watertight seal at bottom using 2'-0" thick non-shrink concrete plug.
  3. Provide minimum 3/8 inch thick PVC casing with watertight sealed bottom. Inside diameter shall be no more than 1 inch greater than outside diameter of cylinder. Extend PVC above pit floor to fit snug against cylinder head.
  4. Installation: Set cylinder and PVC casing within steel casing and back fill with clean, dry sand, well tamped. After cylinder is set, Elevator Contractor shall provide a watertight tape seal between PVC and top of cylinder. Plunger and cylinder shall be plumb within 1/16 inch.
- H. Cylinder: Steel pipe, factory tested for 400 pounds per square inch working pressure. Sandblast or wire brush outside of cylinder to remove rust and scale. Paint with heavy coat of epoxy or mastic. Wrap with 20 mil wrapping of Trantex, Tapecoat, Glasswrap or approved equal. Work shall be done in shop and repaired in field if coating is damaged.
- I. Plunger: Use seamless steel pipe or tubing. Minimum Schedule 80. Plunger shall be no more than 0.010 inch out of round and straight within 1/16 inch. Protect during shipping and installation to avoid damage. If plunger is gouged, scarred, or shows visible tool marks, it shall be replaced. Finish shall be 12 micro inches or finer. Plunger top shall be isolated from platform supporting beams.



CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- J. Packing: Provide packing which inhibits leaking of oil with drip ring.
- K. Scavenger Pump: Provide electrically operated means to return oil to system.
- L. Oil: Provide Chevron OC turbine oil, or approved equal, 150 SSU at 100 degrees F. Temperature.
- M. Piping: Minimum Schedule 80 steel pipe 3 inch diameter, suitable for 400 pounds pressure. No hoses shall be used in any part of piping.
  - 1. Overhead and Exposed Piping; Elevator No. 2: Use victaulic method of piping throughout system with victaulic type 77 fittings or equal. Provide drip deflectors at pipe joints where pipes run above inaccessible ceiling areas to prevent damage to these areas in case of joint leakage.
  - 2. Underground Piping; No. 3: Use galvanized pipe with threaded or welded joints. Wrap pipe as specified for cylinder. Install piping on three inch bed of clean, dry sand and back-fill with additional three inches of sand.
  - 3. Testing: Before enclosing pipe system close ends, fill with fluid, establish 400 PSI pressure and allow to stand for 24 hours. Make corrective repairs to leaks or pressure drop.
- N. Pit Valves: Provide the following valves in each elevator pit.
  - 1. Gate valve to shut off oil between cylinder and pumping plant.
  - 2. Pressure type safety valve that will not void operation of lowering valve.
- O. Pumping Plant:
  - 1. General: Self contained unit with sound reducing cabinet and sound isolated base.
  - 2. Pump: IMO, Roper or approved equal for 150 SSU oil, belt driven. Maximum speed 3600 rpm. Maximum pressure 360 pounds per square inch.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

3. Tank: Capacity equal to plunger displacement plus 25%. Provide strainers, oil level gauge, and device to maintain uniform oil temperature.
4. Valves: Integral type by Elevator Equipment Company, Maxton Company or by elevator manufacturer. Provide conveniently located manual lowering valve accessible without removing pumping plant enclosure panels.
5. Motor: General Electric, Imperial, Westinghouse or approved equal; maximum speed 1800 rpm. Provide dual pump motors with sequential star/delta start operation for No. 3 elevator, horsepower ratings to be submitted with bids. Provide minimum 35 horsepower for No. 2 elevator. Motors for both elevators shall comply with 80 starts per hour, continuous rated, 50 degrees C. temperature rise, Class A insulation, or 70 degrees C. rise for Class B insulation.
6. Controller: Integral, floor or wall-mounted as applicable to space conditions. Include door operating relays combined with controller. Provide Y-Delta or reduced voltage resistance starting and horsepower rated starting switch. Provide three (3) manual reset overload relays, one in each line, and reverse phase relay.
7. Muffler: Blowout proof type between pumping plant and cylinder.

2.08 SIGNALS AND OPERATING FIXTURES:

- A. General: Provide signals and fixtures as shown and specified.
  1. Buttons: Provide mechanical, white illuminated, recessed, buttons sized for minimum 1" identification. Operation of car or hall button shall cause button to illuminate. Response of car to car or hall call shall cause corresponding button to extinguish.
  2. Switches: Toggle type typically or key operated where noted.
  3. Faceplates: Provide of material and finish as indicated and specified; 1/8" minimum thickness with beveled edges.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

4. Fastenings: Provide with concealed fasteners or flush tamper proof screws of material and finish matching faceplates.
5. Globes for Illuminated Elements: 5,000-hour, long-life type.
6. Cabinets: Provide with pulls, concealed hinges and doors mounted flush with hairline joints to adjacent surface.
7. Graphics: Manufacturer's standard letter style.
8. Arrangement: Arrangement of fixtures shall generally conform to that specified, but components may be rearranged, if desired, subject to Project Manager's approval.
9. Engraving: Manufacturer's standard of size indicated; color back fill in black.

B. Car Operating Panel; All Elevators:

1. General: Provide buttons numbered to conform to floors served with space required for Braille/Arabic symbols, and the following.
  - a. Locate top operating button at a maximum of 54 inches above floor.
  - b. Locate emergency stop and alarm button in bottom row at 35 inches above floor. Emergency stop switch, red, toggle type or approved pull to stop. Alarm button, red with shield or bezel. Wire emergency stop to ring alarm bell.
  - c. Provide door open and door close buttons located above emergency stop and alarm of same design as car buttons.
  - d. Engrave main panel with capacity, number of passengers and elevator number in 1/4 inch letters. Engrave auxiliary panel with NO SMOKING in 1 inch letters. For elevators with only one operating panel, engrave NO SMOKING above capacity and elevator number.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- e. Provide fire department cutout button with engraving located between 72 and 78 inches above floor.
- f. Provide fire emergency key switch with audible-visual signals and fire department phone jack.
- 2. Elevators No. 1 and 2: Provide one panel per car; integrate cabinets, buttons and engraving into single piece faceplates mounted to front return panel.
- 3. Elevator No. 3: Provide two panels per car; integrate cabinets, buttons and engraving into swing front return panels.
- C. Car Position Indicators: Provide car position indicators with indications corresponding to floor designations with matching direction arrows.
  - 1. Elevator No. 3: Provide digital type direct readout indicator with minimum three inch high indications mounted integral with each car operating panel.
  - 2. Elevators No. 1 and 2: Provide a multi-light type indicator with individual 1-1/2 inch high numerals engraved through faceplate mounted above car door.
- D. Service Cabinet: Provide cabinet with a lock and concealed hinge as an integral part of car operating panel. Service cabinet shall contain the following.
  - 1. Independent service switch.
  - 2. Two-speed ventilation switch.
  - 3. Light switch.
  - 4. Light ray cutout switch.
  - 5. Inspection switch, key-operated.
  - 6. Duplex convenience outlet.
  - 7. Buzzers as required.
  - 8. Two spare switches.
- E. Telephone Cabinet and Instrument: Provide cabinet with pull and concealed hinge as an integral part of car

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

operating panel. Locate below floor buttons of main operating panel. Provide telephone instrument of type compatible with the building system mounted in cabinet and wired to machine room.

- F. Hall Button Fixtures: Each fixture shall contain buttons which light to indicate hall call registration and extinguish when call is answered. Provide intermediate fixtures with two buttons and terminal fixtures with one. Buttons to comply with Title 24 for handicapped persons.
  - 1. Elevators No. 1 and 2: Provide each group of elevators with one riser of hall button stations.
    - a. All Floors: Provide manufacturer's standard design with faceplates fabricated from stainless steel No. 4 finish.
    - b. Elevator No. 3: Provide manufacturer's standard design hall button station integrating a read-out position indicator with minimum one inch indications. Finish Bronze US 10B.
- G. Hall and Car Lanterns: Provide with single gong for up and double gong for down direction. Lantern illuminates white for up and red for down, and be minimum 2-1/2 inch by 2-1/2 inch isosceles triangle.
  - 1. Elevator No. 3: Provide at all floors, manufacturer's standard hall lanterns with triangular lenses in a Bronze US 10B finish faceplate.
  - 2. Elevators No. 1 and 2: Provide in each car entrance jamb, manufacturer's standard car riding lantern mounted at a maximum height 5'-0" above floor.
- H. Machine Room Monitor Panel: Provide manufacturer's standard machine room monitor panel with the following features as a minimum. Locate in or adjacent to control panel.
  - 1. Car position indicator for each car with direction arrows.
- I. Lobby Signs: Provide engraved signs in each elevator lobby having manufacturer's standard graphics to read in 1/2 inch minimum letters, "IN CASE OF FIRE USE STAIRWAY"

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

FOR EXIT, DO NOT USE ELEVATORS." Signs shall be designed to match material and finish of hall button stations.

J. Handicap Requirements: Provide to meet local codes having jurisdiction.

1. Car Operating Panels: Provide raised Braille and 5/8 inch high Arabic symbols to the left of operating buttons and devices used by the public. Indications may be engraved directly on faceplates or separate plates mounted with flush tamper-proof screws or rivets. Plates shall be of same material and finish as car panel with contrasting background.
2. Entrances: Provide raised Braille and 2 inch high Arabic symbols similar to those for car stations. Locate on each entrance jamb indicating floor designation. Material and finish of plates shall match hall button station faceplates. Provide with contrasting background and mounting means similar to those on car panels. Braille shall be located immediately to the left of Arabic numeral.

2.09 WIRING:

- A. General: Provide all necessary wiring with 10% spares throughout; minimum of two. Furnish shielded wires in cables for telephone, life safety and intercom speakers, and for fireman's jack. Include two additional pairs of shielded spares for each car.
- B. Traveling Cables: Use minimum number of traveling cables with flame retarding and moisture resisting covers. Include shielded wires as noted above. Cord thoroughly and protect cables from rubbing against hoistways or car items.
- C. Work Light and Convenience Outlet: Provide on top of car with wire lamp guard.
- D. Stop Switch: Provide in each pit and on top of car.
- E. Alarm Gong: Six-inch size, 110 volt. Provide for each car to be activated by corresponding alarm button or emergency stop switch.
- F. Coaxial Circuit: Provide for closed circuit television camera in Elevator No. 3. Run from elevator car to T.V. monitor station as directed.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

2.10 CAR ENCLOSURES:

- A. General: Fabricate finish work smooth and free from warps, buckles, squeaks and rattles; joints lightproof. Car shall be sound isolated from car frame. Paint outside of car with 3/16 inch thick sound isolating material, Elevator No. 2.
- B. Passenger Car; Elevator No. 3, Glass Observation Type:
  - 1. Steel Shell: Fabricate side walls of 14 gauge sheet steel from floor to canopy; 10'-0" high. Canopy 12 gauge reinforced; underside painted white.
  - 2. Rear wall to be full height laminated safety glass. Two handrails and kick rail to be provided across the wall and be independently mounted to the glass wall panels. Handrails to be at 42" and 30" from cab floor and manufactured from 2" diameter bronze tube finished to US 10B.
  - 3. Solid panel suspended ceiling, incorporating down type lights or other decorative illumination; panels as per drawing.
  - 4. Exterior of cab top, upper and lower sections of new wall and underside platform to be enclosed in prime painted finish.
  - 5. Clear internal height of cab frame is 10'-0".
  - 6. Cab floor, type and finish to be as specified.
  - 7. Emergency Exit: Top of car to permit opening from outside only and provided with five-pin lock accessible from inside of car with key. Provide non-self-resetting contact.
  - 8. Ventilation: Two off, two-speed squirrel cage exhaust blower with sound isolation mounting on canopy. Provide concealed vents above base.
  - 9. Car Doors: Fabricate from 16 gauge sheet steel sufficiently reinforced with steel to insure rigidity and sound deadened. Provide two guides per panel and full length neoprene astragals. Mount on structural header, not on car enclosure. Finish car side

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

with .050 bronze sheet US10B and return finish  
1/2 inch around back of doors.

10. Pad Hooks and Protective Pads: Provide tamper-proof pad hooks of material and finish matching finished metal trim of car enclosure. Locate as directed in each elevator. Provide one heavy quilted protection pad for Elevators No. 3. Total one set of pads required. Pads shall cover all walls with cutout sections for car operating panels. Alternately, pads with hooks sewn into top of pad for mounting on top of removable panels will be acceptable.
11. Front Return Panels: Provide swing type front return panels with buttons and cabinets mounted integrally. Fabricate from 14 gauge metal as per drawing.
12. Interior Panels: Provide removable panels of 3/4 inch particle board core with balance sheet. Extend panels from base to within 1 inch of canopy and align joints with ceiling grid. Face and edge as per drawing.
13. Base and Reveal: Provide a 4 inch high base below removable panels and vertical joints between panels fabricated as per drawing.
14. A high standard of finishes is required for this elevator cab and special attention to detail is to be maintained. The basic requirements of the elevator cab are set out on the accompanying specified drawings.
15. One set of replacement glass for the cab rear wall is to be provided as part of cab supply. The glass panels shall be satisfactorily packaged and delivered to a location nominated by the Project Manager at the time of completion.

C. Passenger Car; Elevator No. 2:

1. Steel Shell: Fabricate walls of 14 gauge patterned stainless steel similar to rigidized metal No. 5 WL. Extend from floor to canopy and heavily reinforce to withstand severe service. Laminated plastic wall panels to extend from the 4'-0" height to underside of canopy, finish to match No. 1 cab.



CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

2. Ceiling and Lighting: Provide a suspended aluminum frame and tee bar ceiling grid with fluorescent light fixtures to provide uniform illumination of lay-in panels and 25 foot-candles at handrail height. Lay-in panels shall be manufacturer's standard milk white acrylic egg crate. Panels shall not sustain combustion. Lay in panels in No. 1 cab to be renewed to be identical to No. 2. Similar lighting levels to be achieved in both cabs.
  3. Handrail: Provide handrails on side wall at 32 inches to centerline above finish floor. Fabricate from 2-1/2" by 1/2" stainless steel bar, with No. 4 finish.
  4. Emergency Exit: Top of car to permit opening from outside only and provided with five-pin lock accessible from inside of car with key. Provide non-self-resetting contact.
  5. Car Doors: Fabricate from 16 gauge sheet steel sufficiently reinforced with steel to insure rigidity and sound deadened. Provide two guides per panel and full length neoprene astragals. Mount on structural header, not on car enclosure. Finish car side with SWL rigidized stainless steel and return finish 1/2 inch around back of doors.
  6. Entrance Columns and Front Return: Provide fixed front return panels with buttons and cabinets mounted integrally. Fabricate from 14 gauge stainless steel.
  7. Ventilation: Two speed squirrel cage exhaust blower with sound isolation mounting on canopy. Provide vent slots in base.
  8. Support Rails: Provide a 4 inch steel channel located at 12 inches and 30 inches above floor on outer side of rear wall.
- D. Emergency Lighting; All Elevators: Provide an emergency car lighting unit, mounted on top of car, battery driven and self-rechargeable. Upon outage of normal power the unit shall, within 5 seconds, light two 6-watt, or larger, incandescent lamps located above ceiling. The unit shall have sufficient capacity to keep the lights in continuous operation for four hours and also the

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

alarm bell for one hour. Provide a readily accessible means for testing the unit.

2.11 HOISTWAY ENTRANCES; PASSENGER TYPE:

- A. General: Fabricate finish work smooth with flush surfaces and free from warps and buckles. Entrance assemblies shall bear 1-1/2 hour U.L. rating. Provide entrances of size and type as scheduled.
- B. Hangers and Tracks: Sheave type with two-point suspension. Steel sheaves with flanged groove and resilient sound-absorbing tires. Minimum 2-1/2 inch diameter for hoistway, 3 inch for car. Manufacturer's heavy-duty tracks and ball or roller bearing with adjustable up-thrusts.
- C. Struts and Closer Angles: As required for entrance installation and door closer mechanism. Use full length struts. Hanger headers, 3/16" material extending from strut to strut.
- D. Dust and Hanger Covers: Provide as required of minimum 16 gauge sheet steel. Provide hanger cover plates extending full length of door track.
- E. Internal Hoistway Metal Fascia; Elevator No. 3 Only: The internal faces of the hoistway to be fitted with primed full height and width 16 gauge mild steel fascia. All door equipment other than pickup rollers are to be hidden from view. The exposed faces including the hoistway doors to be painted matt black.
- F. Sills: Extruded sills with non-slip surfaces and grooves suitable for guides. Extend strut to strut without exposed screws. Sill material as scheduled. Sills existing for No. 2 elevator.
- G. Frames: Fabricate from 14 gauge material with side jambs in one continuous piece from sill to head section. Weld to provide unit frames with neat appearance from corridor side. Apply effective sound deadening on inside of frames. Material and finish of frames baked enamel, color selected by Project Manager.
- H. Doors: Fabricate from 16 gauge material sufficiently reinforced with steel to insure rigidity and sound deadened. Provide two guides per panel which will remain

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

engaged in sill if guiding member is destroyed. Provide full length neoprene astragals on leading edge and nonvision wings to match door finish. There shall be no keyholes in the door. Use torsion spring mechanical closers; weight closers are not acceptable. Corridor side of door panel material to be finished as per frames.

I. Entrance Schedule:

1. Elevator No. 2:

- a. Size: 4'-0" wide x 8'-0" high (existing).
- b. Type: Two speed side opening (existing).
- c. Frames: Fabricated steel (existing).
- d. Doors:
  - 1) All Floors: Fabricated steel (existing).
- e. Sills: Existing.

2. Elevator No. 3:

- a. Size: 5'-0" wide x 8'-0" high.
- b. Type: Two speed center opening.
- c. Frames: Fabricated steel.
- d. Doors:
  - 1) All Floors: Fabricated steel.
- e. Sills: Bronze.

2.12 MODIFICATIONS TO EXISTING ELEVATOR NO. 1: (Note: All fixtures, fittings and controls to match Elevator No. 2.)

A. Provisions for Use by Handicapped:

- 1. Car Operating Panels: Provide raised Braille and 5/8 inch high Arabic symbols to the left of operating buttons and devices used by the public.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

Indications may be engraved directly on faceplates or separate plates mounted with flush tamper-proof screws or rivets. Plates shall be of same material and finish as car panel with contrasting background.

2. Entrances: Provide raised Braille and 2 inch high Arabic symbols similar to those for car stations. Locate on each entrance jamb indicating floor designation. Material and finish of plates shall match hall button station faceplates. Provide with contrasting background and mounting means similar to those on car panels. Braille shall be located immediately to the left of Arabic numeral. Locate at 5 feet above floor.
3. Hall Call Buttons: Lower to a height of 42 inches above floors to their nominal centerline. Patch the holes left by this relocation with concrete grout. Refinish patch area to match existing walls. Fire restriction notice to be engraved on faceplate and located in former button position.
4. Visual and Audible Signal: Provide and install in the door jambs of the car a vertical car direction fixture to be a minimum of 5 feet above car floor.
  - a. Each signal to be a minimum of 2-1/2 inches in size. Use equilateral triangles.
  - b. It shall contain an audible signal that shall sound once if the elevator will next travel up and twice if it will next travel down.
  - c. Fixtures to be of same material and finish as car panels.
5. Car Station: Lower car station so that the highest operating button is a minimum of 54 inches above the floor. Provide a plate that matches the car stations in thickness, material and finish to fill void from which the car station was removed.
6. Handrails: Lower present handrails to a minimum of 2'-0" from car floor and reposition it to the car operating panel side wall.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

B. Elevator Code Requirements:

1. Engrave the car operating panel with a "No Smoking" sign and a car identification number in the top section of the panel.
2. Fit an emergency lighting unit in the car ceiling.
3. Fit fire alarm button to code requirements.
4. Fit fire recall switch at the ground floor lobby.
5. Fit lock to ceiling access panel.
6. Fit access ladder to elevator pit from ground floor.
7. Fit pressure switch in oil delivery line.
8. Complete following tests:
  - a. Load and speed.
  - b. Plunges restriction stop.
  - c. Static load.
  - d. Relief valve.
  - e. Pressure test on delivery line.
9. Fit access ladder to pit.

C. Upgrade Alterations:

1. Door Hold Button: Provide an illuminated door hold button, operation of which will hold the doors open for a predetermined and adjustable period of 20 to 90 seconds. Normal operation shall be resumed upon:
  - a. Expiration of door hold time.
  - b. Operation of door close button in car.
  - c. Operation of any floor button in car.
2. Provide two additional steel channel bracings to the external face of the rear wall of the cab.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

3. Extend the operating protection range of the existing light ray devices by the addition of two extra ray devices as specified for No. 2 car.
4. Clad the existing cab walls of the elevator car with decorative stainless steel sheeting up to a height of 4'-0" from floor level. This finish to match the new No. 2 elevator cab design.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

PART 3 - EXECUTION

3.01 INSPECTION:

- A. Bidding Documents: Bidders shall examine architectural, structural, electrical, and mechanical plans and specifications. Any discrepancies which affect the elevator work or conditions adverse to the bidders' equipment shall be brought to Project Manager's attention at least seven (7) calendar days prior to the bid date. If no discrepancies are presented, changes required to plans or specifications become the responsibility of and cost to the Contractor.

3.02 PREPARATION:

- A. Field Measurements: Field verify dimensions before proceeding with the work. Coordinate related work by other trades.
- B. Examination: Verify the following to be acceptable for installation of elevators.
  - 1. Hoistway has been correctly sized and otherwise properly prepared.
  - 2. Rail bracket and sill supports are satisfactory.
  - 3. Electrical rough-ins are correct.
  - 4. Do not begin installation until unsatisfactory conditions have been corrected.
  - 5. Do not commence work until all submittals approved by Project Manager.

3.03 INSTALLATION:

- A. General: Install by manufacturer per requirements of regulatory agencies and as specified.
- B. Graphics: Provide graphics visible to public as selected by Project Manager.
- C. Manufacturer's Nameplates: Manufacturer's nameplates, trademarks or logos not permitted on surfaces visible to public.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

3.04 FIELD QUALITY CONTROL:

- A. Tests: Upon completion of elevators, Contractor shall provide instruments, weights and personnel to conduct the State and the following tests, which shall be witnessed by a representative of the Project Manager. The Contractor shall submit a complete report describing the results of the tests.
  - 1. Performance and leveling tests, empty and fully loaded car.
  - 2. Overload test with 125 percent of load in car per ANSI Code.
  - 3. Check and verify operation of all safety features, particularly:
    - a. Fire service.
    - b. Pressure safety valve and lowering valve.
    - c. Emergency power operation.
    - d. Door pressure and impact.
    - e. Scavenger pump.
- B. Inspection: Assist Project Manager in making a walk-through inspection of entire installation to assure workmanship and equipment complies with contract documents.
- C. Correction: Make corrections to defects or discrepancies at no cost to Owner.

3.05 INSTRUCTIONS: Instruct Owner's personnel in proper use of each system.

3.06 MAINTENANCE:

- A. General: Provide complete continuing maintenance on entire elevator equipment during regular working hours on regular working days for a period of 12 months after filing Notice of Completion.
- B. Examinations: Include systematic examination twice monthly, adjustment, and lubrication of elevator



CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

equipment whenever required and replacement of defective parts with parts of same manufacture as required for proper operation. Contractor not responsible for repairs to car enclosures, door panels, frames, sills or platform flooring resulting from normal usage or misuse, accidents and negligence for which Contractor is not responsible.

C. Performance Standards:

1. Maintain the performance standard set forth in this Specification and maintain correct operation of the dispatching system.
2. Maintain smooth starting and stopping, smooth riding qualities and accurate leveling at all times.

D. Call-Backs: In event of failures, provide 24 hour call-back service at no additional cost to Owner.

E. Elevator Shutdowns:

1. Should any elevator become inoperative, repair within 24 hours of notification of such failure. Breakdown of major components shall be completed and service restored within 72 hours.
2. Failure to comply with above, Owner may order the work done by other contractors at the Contractor's expense.
3. Devices repaired or replaced by other than the Contractor, he shall, nevertheless, provide maintenance and become completely responsible for correct operation of such devices for life time of this contract.

F. Follow-up Tests: Test the following safety devices at intervals indicated and submit written report on each test. Make tests at times which do not interfere with building operation.

1. Fire service, every 60 days.

G. Maintenance Materials:

1. Replacement Parts: Keep the following parts in a warehouse within 50 miles of the project premises.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- a. One door operator motor of each type used.
  - b. Hanger sheaves for car and hoistway doors.
  - c. Two complete door interlocks.
  - d. One set of packing for each size cylinder
  - e. Parts for door protective devices.
  - f. Such other parts as are needed to insure prompt replacement in event of elevator shutdown.
- H. Final Service and Inspection: Two weeks before expiration of the year's maintenance the equipment shall be lubricated, fully serviced, adjusted to the standards designated, and fire and earthquake devices shall be checked. A complete inspection will be made by a representative of the Owner.
- I. Quotation: Base bid shall include cost of maintenance as described above for Elevators No. 1, 2 and 3.

3.07 INTERIM SERVICE:

- A. When an elevator is near completion and declared ready for service before completion of other elevators, Owner agrees to accept elevator and place it into automatic service. During this period, Owner will pay an agreed amount per day per elevator for regular maintenance of elevators. The elevator contractor shall state in his bid the per diem cost for this maintenance per elevator.

END OF SECTION

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

SECTION 15400  
PLUMBING

PART 1 GENERAL

1.01 DESCRIPTION

- A. Related Documents: The requirements of the General and Special Conditions and Division 1 apply to all work hereunder as if repeated herein.
- B. Work Included: Building plumbing system complete to point of connection denoted on Sheet P200 including but not limited to the following items:
  - 1. Sanitary Sewer System
  - 2. Storm Drainage System
  - 3. Domestic Hot & Cold Water Piping
  - 4. Plumbing Fixtures and Water Heater
  - 5. Rough-in and Connect to Equipment Provided and Installed by Others.
  - 6. Core Drill Pipe Penetrations of Existing Concrete or Masonry Structure.
- C. The scope of work of this section is affected by Alternates. See Section 01030 for description.
- D. Related Work Specified in Other Sections:
  - 1. Electrical Connections. Division 16
  - 2. Finished Painting. Division 09
  - 3. Formed Concrete. Division 03
  - 4. Site Work (see Sheet C100) Division 02

1.02 QUALITY ASSURANCE

- A. Codes, Rules and Safety Orders:
  - 1. Provide all work and materials in full accordance with the latest rules and regulations of the California Administrative Codes, OSHA Requirements, the National Electrical Code, the Uniform Plumbing Code, and other applicable laws or regulations. Nothing in these Plans or Specifications is to be

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

construed to permit work not conforming to these codes.

2. Furnish without extra charge, any additional material and labor required to comply with these rules and regulations, whether shown, specified or not. In the event the Specifications required materials of greater weight, quality, etc., the Specifications shall apply.

B. Permits and Fees:

1. Take out and pay for all permits, inspection and connection fees required for this work.

- C. Qualifications of Workmen: Use sufficient journeyman plumbers and competent supervisors in the execution of this portion of the Work to ensure a proper and adequate plumbing installation throughout. A responsible superintendent or foreman shall be on the job when any work in this Section is being performed. In the acceptance or rejection of installed plumbing, no allowance will be made for lack of skill on the part of workmen.

1.03 SUBMITTALS

A. Submittals:

1. Required on all equipment, submit six (6) copies to Project Manager for approval.
2. Make all submittals at one time. Items not submitted within the allowed time will be furnished as specified, without substitution. Arrange submittal information in indexed, tabbed and bound sets, with unit designations, sizes, capacities and dimensions clearly indicated.

B. Substitutions:

1. Specific reference to manufacturer's names and products specified in this section are used as standards, but this implies no right to substitute other material or methods without written approval of the Project Manager. Refer to General Conditions for procedure governing substitutions.
2. All substitutions must be submitted to the Project Manager through the General Contractor, in writing, within twenty (20) days after award of the contract to the General Contractor. Only one substitution for each item will be considered. Denote on submittals

and notify General Contractor of all differences between specified and substituted materials and equipment.

3. Installation of any approved substituted equipment is the Contractor's responsibility and any mechanical, electrical, structural or any changes required for the installation of any approved substituted equipment, must be made to the satisfaction of the Project Manager and without additional cost to the Owner. Approval by the Project Manager of the substituted equipment and/or dimensional drawings does not waive these requirements.

#### 1.04 PRODUCT HANDLING AND STORAGE

- A. Product Handling: Use all means necessary to protect plumbing materials before, during, and after installation and to protect the installed work of other trades. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Project Manager and at no additional cost to the Owner.

#### 1.05 REQUIRED PROJECT DOCUMENTS

- A. Maintenance and Operating Instructions:

1. Furnish the Project Manager with three complete sets of operating and maintenance instructions.
2. Start compiling the data upon approval of list of materials, so as not to delay the final approval of the work installed.
3. Furnish each set with a typed index and bind in a durable hardboard binder with tabbed separators for each section. Final inspection will not be made until booklets are submitted and have been approved by Project Manager.

- B. As-Built Drawings: Maintain as-built drawings of all work above and below grade as work progresses. Obtain and pay for transparencies from the Project Manager and transfer all field notes to same at completion of project and submit two copies to the Project Manager for approval. After approval, submit transparencies to the Project Manager.

- C. Guarantee: Guarantee all materials and workmanship against defects for one year after date of filing of Notice of Completion. Includes damage to the premises by leaks or improper backfill.

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

1.06 JOB CONDITIONS

- A. Labor and materials not specifically described which is incidental to the installation, without which a satisfactory operating system cannot be reasonably completed, is a part of this work.
- B. The Contractor is presumed to have compared the drawings and specifications for this work and to have reported any discrepancies to the Project Manager. He should visit the site to verify locations of existing facilities and to report to the Project Manager any site condition which will adversely affect this work.

PART 2 PRODUCTS

2.01 MATERIALS:

- A. Pipe and Fittings Inside Buildings: Terminate five feet outside building line.
  - 1. Soil and waste pipe: Underground and to six inches above ground, and soil pipe above ground, service weight cast iron soil pipe and fittings, asphaltic coated ASTM A74, with hub and spigot, hub and plain end "Dual Tite" "Ty Seal" with neoprene gasket, or mechanical couplings, "No Hub" or equal, except that waste pipe above floor from lavatories or sinks, on horizontal runs of not more than six feet in length, or vertical runs may be schedule 40 galvanized steel pipe ASTM A120, black cast iron drainage fittings ANSI B16.12.
  - 2. Interior rain water leaders: Copper DWV, ASTM B306, or cast iron as above. See Drawings for size and location.
  - 3. Vent Pipe: Service weight cast iron soil pipe and fittings, except that sizes 2-1/2" and smaller above grade may be schedule 40 galvanized steel pipe with black cast iron drainage fittings.
  - 4. Wherever copper tubing (DWV or Type L) is allowed by Local Code, it may be used.
  - 5. Water Pipe ( Hot and Cold Water and Condensate ) : Type L copper tubing hard temper ASTM B88, with wrought copper fittings. Capped or plugged outlets and branch piping through wall shall be screwed brass.

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- a. Water pipe below slab or pavement and up to 2" maximum above slab, other than mains, shall be type K soft temper copper.

B. Cleanouts:

1. C.O.:

- a. Caulked; J. R. Smith #4405, Josam #8500-20, Wade #W-8550-R, Zurn #Z-1440-A.
- b. Threaded; J. R. Smith #4475, Josam #8540, Wade #W-8590-A, Zurn #Z-1470-A.

2. W.C.O.: J. R. Smith #4471, Josam #8890, Wade #W-8470-X with countersunk plug and #W-8480R cover.

3. C.T.G.: J. R. Smith #4223/4228, Josam #8480, Wade #W-8530-S, Zurn #Z-1450-8. Set in 14 X 14 concrete pad at finish grade.

4. F.C.O.: J. R. Smith #4023, Josam #8210, Wade #W-7030, Zurn #Z-1400-2 series with round sciorated nickel bronze top. Provide square top in ceramic tile floors. Inside caulk type acceptable.

C. Valves: As shown or approved equal.

1. General Service Valves; all line size.

<u>Type</u>	<u>Size</u>	<u>Crane</u>	<u>Milwaukee</u>	<u>Nibco/Scott</u>
Gate	2" & less	438	105	T-113
Gate	2-1/2" & over	461	F2882	F-619
Globe	all	7	590	T-235-S/W
Check	2" & less	36	518	T-453-S/W
Check	2-1/2" & over	373	F2974	F-918-B
Plug	Homestead #611, #612 over 2-1/2"			

<u>Solder Type</u>	<u>Type</u>	<u>Size</u>	<u>Crane</u>	<u>Milwaukee</u>	<u>Nibco/Scott</u>
Gate	2" & less		1320	115	S-113
Globe	"		1310	1502	S-211-SW
Check	"		1342	1509	S-413-B

Milwaukee BB1-100 threaded or BB1-350 solder valves may be used in lieu of gate, globe or balancing valves where the service permits.

Gas Cock for pressures 175# or less, use Milwaukee BB1-100.

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

Valves underground; AWWA type with square operating lug and wrench.

- D. Supply stops: Provide for all fixtures specified without integral stops, Chicago, California Brass, Speedway or approved equal, polished chrome plated interior, rough brass exterior, with loose key. Stop valves shall be 1/2" I.P.S. angle type with riser length and size to suit fixture type, similar to Speedway #SR37 where exposed, and 1/2" I.P.S. straight type similar to American Standard #1465.012 where concealed.
- E. Hangers: Grinnell, Kinline, Super Strut, Uni Strut or approved equal, similar to Grinnell #149 in sizes 1/2" through 3", #260 sizes 4" and larger.
- F. Valve Boxes: Precast concrete with cast iron cover, Brooks, Christie, or equal, size as shown or required to provide easy access. Provide extensions as required.
- G. Flashings: Stoneman, or approved equal, conical lead flashing #1100, 4 lb. lead, 8" skirt, #2 counter flashing sleeve.
- H. Backflow Preventers: Provide reduced pressure type, equal to Febco Inc., Hersey, or Clayton where shown on Drawings.
- I. Access Doors: Milcor or approved equal, with screwdriver latch; type to match wall or ceiling construction with fire rating equal to surface in which they are installed. Size 8" X 8" minimum, unless otherwise shown on Drawings.
- J. Insulation: Fiberglass having an average "k" factor of 0.23 at 75 F. mean, with U.L. listed glass fiber jacket, stapled jacket laps in concealed areas, Johns-Manville Micro-Lok 650, O-C F, Certainteed, or approved equal. Thickness of insulation shall conform to Title 24, Part 2, Chapter 2-53 of California Administrative Code (C.A.C.). Minimum thickness, 1" for hot water, 1/2" for cold water and rainwater piping.
  - 1. Fitting insulation: Premolded covers or fitting assemblies, similar to Zeston.
  - 2. Hanger protection: Rigid insulation with vapor barrier similar to adjacent piping, with 24 gage galvanized sheet metal shields, or factory assembled unit, Kin-Line "Thermal Hanger Shield" or approved equal.
- K. Water Heaters:
  - 1. General: Size, type and capacity as shown on Drawings, glass lined, 5 year guarantee, with



CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

magnesium anodes, cold water drop tubes, P&TR valve, hose bibb drain and gate valve in water supply. Provide insulated steel jacket with baked enamel finish. Water heater losses shall not exceed values set in Title 24, Part 2, Chapter 2-53 of C.A.C. and shall be listed in the State Directory.

2. Electric: National, State, A. O. Smith, or approved equal, U.L. approved.
- L. Ball Joints: Provide Barco stainless steel ball joints as manufactured by Aeroquip or approved equal. Install three joints minimum on each line at seismic building joints shown on drawings.
- M. Sewage Pump: Furnish and install Paco, Chicago, or approved equal, duplex sewage pump, as shown on Drawings. All components of the pumping system must be listed and labeled by U.L. for operation in a Class 1, Group D, Division 1 location as defined in Section 501-8 of the National Electric Code.
  1. The system shall be equal to Paco Model 470-15 QDN submersible pumps, and a disconnect system which permits installation and removal of each pump without the need for personnel to enter the wet well.
  2. Each pump shall have a capacity of 250 gpm at 20 feet total dynamic head with a 3 hp, 208v, 3ph, 60hz motor. Pump design shall pass not less than a 3 inch diameter solid.
  3. All electrical parts shall be housed in an air filled water tight enclosure. Tandem lapped face seals shall be provided on the rotating motor shaft. Inner seal shall operate in a sealed, oil filled chamber containing two moisture sensing probes, capable of detecting any influx of conductive liquid past the outer seal. The probes shall be connected to a relay and signal device in the pump control panel to indicate impending seal failure. Motor thermal protection shall limit skin temperatures to 80% of Group D gas ignition temperatures under all conditions, including single phasing or locked rotor. Pump and motor assembly shall be listed by U.L. as "Portable Utilization Equipment", permitting the use of flexible power and control cable in the wet well.
  4. Provide and install pump guide rails, sliding guide bracket, steel base plate and fittings as required by pump manufacturer for a complete installation. Provide control panel pedestal, manhole, access

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

covers and wet well complete as shown on drawings and recommended by manufacturer.

5. Provide a NEMA III control panel with fused disconnect, running lights, 120v control circuit, tamper proof front panel, high water alarm, alarm horn, 120v receptacle with ground fault circuit interrupter, level controls and Paco intrinsically safe control circuit. Pump control shall include circuit breakers, hand-off-auto switches and ambient compensated magnetic motor starter with door interlock switch. Control shall provide for lead/lag sequencing with automatic alternator actuated by three bulb type liquid level sensors. A fourth level sensor shall indicate a high water alarm condition. Provide contacts and/or connections for monitoring pump operation and alarm conditions by the Building Control System.
6. Install check and gate valves on the discharge of each pump.

N. Plumbing Fixtures: As listed or approved equal.

- |       |   |
|-------|---|
| WC-1  | Wall mounted, siphon jet action elongated water closet with white, open front seat equal to Kohler Kingston #K-4430-ET, Sloan Royal #110-3 flush valve, Olsonite #10SS/CH seat, J.R Smith #440/450 carrier.                                   |
| UR-1  | Wall mounted, vitreous china, siphon jet urinal equal to Kohler Dexter #K-5014-T, Sloan Royal #180-T flush valve with extra long chrome plated flush connection to satisfy handicap mounting height requirements and J.R. Smith #637 carrier. |
| L-1   | Undercounter mounted 19x15 vitrius china Lavatory equal to Kohler 'Caxton' #2210 with Chicago #795 E3 317 faucet, pop-up drain, tailpiece and K-1916 installation kit for attaching rimless lavatory to marble countertop.                    |
| SS-1  | Floor mounted, 24x24x10 service sink equal to Powers-Fiat #MSB 2424 with #830-AA faucet, #832-AA hose and bracket, 3" cast iron 'P' trap, #1453-BB Flat strainer and E-77-AA rim guard.   |
| EDF-1 | Wall mounted barrier free electric stainless steel cabinet drinking fountain equal to Elkay Model EHF-8S with front self closing push bar valve.  |
| FD-1  | Square top floor drain equal to J. R. Smith #2010B with nickel bronze strainer.   |

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- FD-2 Pit drain with integral backwater valve equal to J.R. Smith #7005.
- FS-1 12x12x8 floor sink equal to J.R. Smith #3150-12-C with 1/2 grate.
- RD-1 Roof drain with large plastic strainer equal to J.R. Smith #1010-C-R complete with cast iron overflow standpipe with standpipe inlet set 2" above roof drain inlet.
- HB-1 Wall mounted hose bibb equal to Acorn #8121 polished chrome finish with loose key and vacuum breaker. (Rough bronze for exterior use.)
- HB-2 Standpipe hose bibb equal to Acorn #8126.
- AD-1 Area drain equal to Christy #V24 with cast iron grate and extensions as required.
- WHA-1 Water hammer arrestor equal to J.R. Smith #5020 complete with 12x12 wall access.
- WHA-2 Water hammer arrestor equal to J.R. Smith #5010 complete with 12x12 wall access.
- WHA-3 Water hammer arrestor equal to J.R. Smith #5005 complete with 12x12 wall access.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Surface Conditions: Prior to all work of this Section, carefully inspect the installed work of other trades and verify that all such work is complete to the point where this installation may commence. Verify that the completed plumbing installation will be in accordance with all pertinent codes and regulations and with the original design. In the event of discrepancy, immediately notify the Project Manager and proceed as he directs.
- B. Plumbing System Layout: Layout the plumbing system in careful coordination with the drawings and other trades, determining proper elevations for all components of the system and using only the minimum number of bends to produce a satisfactorily functioning system. Follow the general layout shown on the drawings in all cases except where other work may interfere. Layout all pipes to fall within partition, ceiling, or roof cavities and to not require furring other than that shown on the drawings.
- C. Materials and Installation: All materials, fixtures and equipment shall be new, of the type, size, capacity and

quality specified and free from defects. Materials shall be of the same manufacturer for each class of material or equipment whenever possible. All products, materials and equipment shall be installed in accordance with the manufacturer's recommendations unless specifically detailed or specified otherwise.

- D. Framing, Cutting and Patching: Cut no structural members. If pipes cannot be properly concealed, notify Project Manager. Any patching and cutting done as a result of error or neglect on the part of the Plumbing Contractor shall be done by the General Contractor at the expense of the Plumbing Contractor.
- E. Existing Utilities: Take care to preserve all utilities existing in the work area of this project. Repair or replace all utilities damaged during excavation or other work of this Section. Show on as-built drawings all utilities found, depth, etc.
- F. Trenching:
  - 1. Where invert elevations are not shown, provide a minimum of twenty-four inches of fill above top of pipe, or below frost line, whichever is greater. Provide a minimum of twelve inches under building from bottom of slab. Unless shown otherwise, provide a 2% grade on all drain lines. Bottom of trenches shall be smooth and free from debris. Lay pipe on a 2" uniform bed of backfill material, shape as required for fittings.
  - 2. Provide and maintain warning signs, barricades, flares, trench shoring and all safety measures as necessary and required continuously around the clock as long as the hazards exist.
- G. Backfilling: To 6" above top of pipe only by dry sand, pea gravel, or engineered fill to 95% compaction. Backfill from 6" above pipe to finish grade to 95% compaction with clean non-expansive native material unless specified otherwise under Site Work. Compaction by jetting, flooding, or by wheels of equipment is specifically forbidden.
- H. Installation of Piping Systems:
  - 1. Flush and clean before connecting. Chlorinate and flush clean domestic water piping as specified prior to connection to water main.
  - 2. Use reducing fittings at changes in pipe size. Bushings prohibited. Ream ends of cut pipe.

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

3. Provide unions (2" and smaller) or flanges with gaskets (2-1/2" and larger) at connections to tanks, equipment, valves, etc. to facilitate removal. Materials compatible with system installed.
  4. Anchors: Anchor piping subject to expansion or contraction in a manner permitting strains to be evenly distributed and alleviated by swing joints or expansion loops as required.
- I. Sleeves:
1. On pipes through foundations and floor slabs on grade, installed before concrete pour, provide 1" minimum thickness wrap of fiberglass or similar material around all piping. Extend wrappings at least 3" beyond concrete.
  2. On pipes penetrating floors and walls below grade, all intermediate concrete floors and for concrete or masonry penetrations of any kind for pipes not installed before concrete pour:
    - a. Install 24 gauge minimum galvanized iron sleeves with 1/2" clearance to outside of pipe (or insulation on insulated pipe) at all masonry or concrete walls or floors. Core drill existing walls or floors.
    - b. Caulk the space between the pipe and sleeves through floors and walls below grade with oakum and mastic, and make watertight.
    - c. Pack the annular space between the pipe sleeves and the pipe through floors and walls above grade with an incombustible material, "Fiberglass" or equal.
- J. Cathodic Protection:
1. Install insulated flanges or unions at points of connection between all dissimilar metals. Where copper or brass piping is connected to steel or cast iron piping and the connection is buried in the ground, cover the connection with a poly-vinyl tape wrap ten mils thick, as specified under Pipe Protection, extending five feet each way from connections.
  2. Insulate copper tubing from ferrous materials and hangers with two thicknesses of three-inch wide strip of ten mil poly-vinyl tape wrapped around pipe.

K. Pipe Protection:

1. Wrap all bare black steel pipe buried in the ground with a corrosion protective wrap, equal to Pabco Specification #D-40 240K double wrap. Approved plastic coating is an acceptable substitute, Extru-Coat or equal.
2. All wrapping shall be done by the manufacturer's agent and not the Contractor, except field joints.
3. Make field joints in accordance with manufacturer's recommendations.
4. All pipes shall be isolated from direct contact with plaster, mortar, grout or concrete with sleeves when specified or a wrap of 3M tape.

L. Pipe Joints and Connections: Ream ends for smooth, uniform flow.

1. Copper and brass pipe and tubing: 95-5 tinantimony, ASTM B-32, Grade 5A solder, above grade; high melting point silver brazing alloy, Silfos or equal, below grade.
2. Welded piping: ANSI B-31.1, Section G, Chapter 4, and Appendix A. All welding by certified welders.
3. Threaded pipe: Make joint with Armit Seal Compound No. 250, Enterprise Commercial "Thread-Seal" or equal.

M. Removal of Existing Fixtures and/or Piping: Remove existing fixtures, drains, piping, etc., as indicated on Drawings. Cap or plug all active systems behind floor, wall or ceiling finishes. Exercise due care in removal of all material and adjacent surfaces. Relocate fixtures as indicated. All removed plumbing equipment, fixtures or material indicated to be retained by the Owner shall be delivered where directed. The remaining removed materials become the property of this Contractor and shall be removed from this project unless noted otherwise.

N. Equipment Furnished by Others: Connect all equipment or fixtures requiring plumbing system connections. Rough-in and connect (R.I. & C.) all fixtures and/or equipment furnished by others. Provide all traps, supplies, etc., required for connection and provide trim where indicated on Drawings.

O. Hangers and Support: Support all piping from the structure so that it is firmly held in place by iron

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

hangers and supports in accordance with the following schedule :

1. Horizontal:

<u>Type of Pipe</u>	<u>1" Diameter or Under</u>	<u>1-1/4" to 3" Diamet</u>
Steel Pipe	8' - 0"	10' - 0"
Copper Tubing	5' - 0"	8' - 0"
P V C	4' - 0"	4' - 0"
Cast Iron	Support at every joint minimum, 10' maximum between supports	

2. Support vertical piping per U.P.C.

3. In addition, support piping at each change of direction, at ends of branches, at base and top of risers and wherever necessary to prevent sags, bending or vibration. Provide lateral sway bracing at 30'-0" O.C. minimum.

4. Anchor pipe both sides of siesmic ball joint assembly.

P. Valve Installation:

1. Install all valves with stems running parallel or perpendicular to floor and where overhead, shall be high enough for head room clearance.

2. Provide a union downstream of each valve.

3. Provide brass tag identification for each valve stating ultimate point of service. Include a valve identification sheet with Operating and Maintenance Manual.

Q. Access Doors: Provide access doors, except in lift out ceilings, for all concealed valves, etc., installed under this section of the Specifications. Verify location with Project Manager.

R. Pipe Insulation:

1. Insulate all domestic hot water supply and return piping.

2. Provide insulation on all interior horizontal rain water leaders.

3. Provide insulation on all domestic cold water piping in concealed unheated spaces.

S. Electrical Requirements:

1. All motors 1750 RPM maximum unless specifically indicated otherwise; 1/3 HP and smaller to be 115 volt, 60 cycle, single phase; 1/2 HP and larger, 208 or 230 volt as required, 60 cycle, three phase.
2. Furnish all starters, controls and control diagrams for equipment in this section of work to the Electrical Contractor for installation. Provide overload protection on all ungrounded legs of starters.
3. All service and control wiring by Electrical Contractor.

T. Fixture Installation:

1. Verify exact locations and mounting heights of all fixtures and trim with Architectural Drawings.
2. Particularly note any requirements for handicapped and install in accordance with governing codes. Provide extensions as required and insulate exposed traps, trap arms, and hot and cold water supplies with 1/2" thick minimum Armaflex type FR, neatly applied and coated with two coats of white Fosters #30-76 finish.
3. Provide chrome plated escutcheons for all visible pipes through walls, ceiling or floor. All visible pipes or supplies connecting fixtures shall be chrome plated or have chrome plated tube covers. Provide supply stops (except at exterior hose bibbs) and 12" air chambers one pipe size larger than outlet supply at all water outlets (including hose bibbs) unless specifically noted to be deleted. Provide chrome plated 17 gauge 'P' traps with clean out plug, tail pieces and trap arms on all visible traps except where scheduled to be cast iron.
4. Provide shock absorbers where shown on Drawings.

3.02 FIELD QUALITY CONTROL

- A. Test of Piping: Test all piping before acceptance by the Project Manager. All underground piping to be tested before backfilling. Unless otherwise specified, test all piping at 1.5 x the service pressure with no loss for a period of two hours.



CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

<u>System Tested</u>	<u>Charging Medium &amp; Pressure</u>	<u>Check</u>
Dom. Water	Water, 100 psi, 4 hours	Visual, no press. loss
San. Sewer, Cond. Drains, Vents, Storm Drains, etc.	Water, fill to highest point in system.	Visual, no loss of level

- B. Closing-in uninspected work: Do not cover up or enclose work until it has been properly and completely inspected and approved. Should any of the work be covered up or enclosed prior to all required inspections and approvals, uncover the work as required and, after it has been completely inspected and approved, make all repairs and replacements with such materials as are necessary to the approval of the Project Manager or his agent and at no additional cost to the Owner.

3.03 CLEAN-UP

- A. Flushing and Rodding: All lines shall be thoroughly flushed of all debris and foreign matter with clear water. All sewer, waste and drain lines shall be balled or rodded with a device large enough to assure proper pipe alignment and that the lines are clear of obstructions and debris.
- B. Disinfection: Clean and disinfect all domestic hot and cold water lines. Dose all lines, opening all terminal valves to assure complete contact, to a chlorine residual concentration of 50 ppm. Retain in system for 24 hours and if 50 ppm is not maintained at the end of this period, repeat. After a satisfactory test has been obtained, flush system until a residual of not more than 2 ppm is achieved. Obtain approval of authority having jurisdiction and deliver Certificate of Chlorination to the Project Manager.
- C. Cleanup: Upon completion of all work of this Section, thoroughly clean all exposed portions of the plumbing installation removing all traces of soil, labels, grease, oil, and other foreign matter and using only the type cleaner recommended by the manufacturers.

END OF SECTION

SECTION 15510  
FIRE PROTECTION

PART 1 GENERAL

1.01 DESCRIPTION

- A. Related Documents: The requirements of the General and Special Conditions and Division 1 apply to all work hereunder as if repeated herein.
- B. Work Included:
  - 1. Fire sprinkler system complete from point of connection as shown on Sheet C100 and including all materials and labor necessary for a complete installation as described herein, and any incidental work which can be reasonably inferred or taken as belonging to the work and necessary to provide the system described or shown.
  - 2. It is the intention of the specifications to cover a complete fire sprinkler system, including wet standpipe system and booster pump, designed and installed by a Contractor duly licensed and regularly engaged in the installation of automatic sprinkler systems and in accordance with the latest standards of the National Fire Protection Association (NFPA) and shall be subject to the inspection and approval of the Fire Rating Organization having jurisdiction and the local public authorities. Building is not completely sprinkled, see architectural reflected ceiling plan for sprinkler head locations.
  - 3. Core Drill Pipe Penetrations of Existing Concrete or Masonry Structure.
- C. Related Work in Other Sections:
  - 1. Electrical connection. Division 16
  - 2. Fire Alarm System. Division 16
  - 3. Plumbing work. Section 15400
  - 4. Finish painting. Division 09

1.02 QUALITY ASSURANCE

- A. Codes and Ordinances: Provide all work and materials in full accordance with the latest rules and regulations of the California Administrative Code, the National Electric Code, the Uniform Plumbing Code, Uniform Mechanical Code,

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

OSHA Standards, NFPA #13 & #14 and other applicable laws or regulations.

- B. Permits & Fees: Take out and pay for all permits and fees required for this work. Make arrangements and coordinate with all other trades involved.
- C. Qualifications of Workmen: Use sufficient journeyman fitters and competent supervisors in the execution of this portion of the Work to ensure a proper and adequate installation throughout. A responsible superintendent or foreman shall be on the job when any work in this Section is being performed. In the acceptance or rejection of installed work, no allowance will be made for lack of skill on the part of workmen.
- D. All Work: Shall be done by a licensed fire sprinkler contractor.

1.03 SUBMITTALS

- A. Fire Sprinkler Contractor: Shall prepare working drawings of the system and shall secure the approval of the appropriate insurance company.
- B. Submittals: After receiving approvals required of this section, submit six (6) copies of all materials and equipment and hydraulic calculations to the Project Manager for approval.
- C. Shop Drawings: Provide Project Manager with six (6) complete sets of final approved shop drawings before starting the installation. Shop drawings shall include details of the sprinkler system showing sections, light fixtures, air conditioning ducts, soffits, decks, space heaters, canopies, etc. and a plot plan giving locations of underground supply connections, control valves, fire department connection, location of all exposing or exposed structures within 20 feet of this structure, and other equipment to be used. These drawings must bear a stamp indicating review has been made by the Fire Rating Organization having jurisdiction. Authority to commence installation will not be granted until the requirements herein noted are satisfied.
- D. Substitutions:
  - 1. Specific reference to manufacturer's names and products specified in this section are used as standards, and this implies no right to substitute other material or methods without written approval of the Project Manager. Refer to General Conditions for procedure governing substitutions. All substitutions must be submitted to the Project Manager through the

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

General Contractor, in writing, within twenty (20) days after award of the contract to the General Contractor. Only one substitution for each item will be considered.

2. Installation of any approved substituted equipment is the Contractor's responsibility and any mechanical, electrical, structural or any changes required for the installation of any approved substituted equipment, must be made to the satisfaction of the Project Manager and without additional cost to the Owner. Approval by the Project Manager of the substituted equipment and/or dimensional drawings does not waive these requirements.

1.04 PRODUCT HANDLING AND STORAGE

- A. Product Handling: Use all means necessary to protect materials before, during, and after installation and to protect the installed work of other trades. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Project Manager and at no additional cost to the Owner.

1.05 REQUIRED PROJECT DOCUMENTS

- A. Certificate of Compliance: After tests are completed, furnish the Project Manager with a Certificate of Compliance as required hereinafter.
- B. As-Built Drawings: Maintain as-built drawings of all work above and below grade as work progresses. Obtain and pay for transparencies from the Project Manager and transfer all field notes to same at completion of project and submit three (3) copies to the Project Manager for approval.
- C. Guarantee: Guarantee all design, materials and workmanship against defects for one year after date of filing of Notice of Completion. Includes damage to the premises by leaks or improper installation or trench backfill.
- D. Final Approval and Acceptance: The Project Manager and the Fire Rating Organization having jurisdiction, after having assured themselves that the installation appears to be satisfactory in all respects, will issue a Conditional Approval to the General Contractor. This approval will in no way relinquish the sprinkler contractor's responsibility for compliance with the requirements of these specifications. Should the Fire Rating Organization be unable to issue a letter of "Acceptance Without Exception" due to deficiencies in the system, the sprinkler

contractor shall make the necessary corrections at no cost to the owner.

1.06 JOB CONDITIONS

- A. Labor and materials not specifically described which is incidental to the installation, without which a satisfactory operating system cannot be reasonably completed, is a part of this work.
- B. The Contractor is presumed to have compared the drawings and specifications for this work and to have reported any discrepancies to the Project Manager. He should visit the site to verify locations of existing facilities and to report to the Project Manager any site condition which will adversely affect this work.

PART 2 PRODUCTS

2.01 MATERIALS: All materials will be new of the type and quality specified.

- A. Pipe:
  - 1. Above grade: Schedule 40 black steel pipe with sprinkler fittings.
  - 2. Below grade: Cast iron water pipe inside building perimeter and to 5' beyond. From 5' beyond the building perimeter use cast or ductile iron, P.V.C., or fiberglass wound epoxy and reinforced plastic motar pipe, or approved equal. Neither asbestos cement nor reinforced concrete pressure pipe shall be used in the installation.
- B. Sprinkler Heads: "Grinnell" or approved equal, type as required by NFPA No. 13 and as scheduled on drawings and specified herein. Areas with finished ceilings shall have recessed satin chrome finish cups.
- C. Fire Department Connections: Siamese type, mount where shown on drawings with National Standard hose thread fittings with plugs and chains. "Potter Roemer" #5715 with "Auto-Sprkr" lettering, or approved equal.
  - 1. The Contractor shall check Fire Department connections with the local Fire Department before installing to be certain of proper hose thread, size and location.
- D. Water Flow Switch: Notifier Water Flow No. WFD with Retard adjustment installed in sprinkler main.

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- E. Alarm Bell: Notifier 10" N-F wall mounted alarm bell.
- F. Supervisory Switch: Notifier No. NGV with mounting bracket and screws.
- G. Concrete Valve Box: Christy or approved equal. See detail on drawings.
- H. Hangers: Underwriters Laboratories (U.L.) approved types.
- I. Gate Valve and Indicator Post: Grinnell, Kennedy or U.L. approved equal.
- J. Check Valve: Grinnell, Kennedy or U.L. approved equal.
- K. Fire Hose Cabinet: Potter-Roemer #1004-A with #2110-A hose rack assembly or approved equal.
- L. Booster Pump: Paco Miniflo #850A 208V 3ph, 7 1/2 H.P. 100 g.p.m. at 65 p.s.i. complete with pressure tank, check valve, pressure relief valve, controls and steel base. (Pump suction pressure 35 p.s.i.)

**b** PART 3 EXECUTION

3.01 INSTALLATION:

- A. Materials and Equipment: All materials used or installed in the overhead piping system are to be new and comply with the Standards and Appendices of the latest edition of the National Fire Protection Association Pamphlet No. 13 & 14. All materials used or installed in the underground fire service piping are to be new and comply with the Standards and Appendices of the National Fire Protection Association Pamphlet No. 24 except that piping materials and fittings shall be limited to those listed by U.L. or in the Appendix of NFPA 24.
- B. Coordination: Coordinate all piping, heads, and sprinkler work to Project Managerural, Structural, Mechanical, and Electrical Work. Conceal piping except where indicated otherwise or where absolutely necessary to be exposed. Exposed piping shall be placed as approved by Project Manager prior to installation. Heads shall be fully coordinated with architectural reflected ceiling plan. Installation of heads or fabrication of piping system shall not be started until drawings have been reviewed by Project Manager. In general, heads shall be symmetrically located in center of ceiling panels and fully coordinated with ceiling or soffit light fixtures and air conditioning inlets and outlets.

C. System Design:

1. All sprinklers in concealed attic areas are to be 212 F rated and in areas without attic spaces or below ceilings are to be 165 F rated.
2. Sprinklers in all areas with finished ceilings shall be satin chrome finish pendent spray type with recessed satin chrome finish cups.
3. Sprinklers in service and stockroom areas without finished ceilings shall be upright type with exposed piping. Exposed piping shall be installed free of rust and oil.
4. Pendent sprinklers shall be symmetrical and shall be centered between light rows wherever possible. Particular attention shall be given to the depth of exposed or surface mounted light fixtures, structural members or soffits and mechanical equipment and piping, to avoid obstruction to water distribution.
5. Wire mesh on wood or metal support partitions within the building's service or storage areas are to be considered as solid partitions with regard to sprinkler spacing.
6. Sprinkler risers shall be installed as shown on the plans, with approved shut-off valves unless local code or Fire Rating Organization request post indicator valves. Butterfly valves, if permitted shall be U.L. labelled, gear operated with provision for locking.
7. Location of sprinkler risers, test valves and drains, fire hydrants, fire department connections and post indicator valves (if required) shall be as indicated by the Project Manager.
8. Post indicator valves, if installed, shall be provided with a wrench and padlock upon completion of the system.
9. Siamese fire department connection and water flow alarm shall be on side of building wall, facing a public street, if possible.
10. Automatic fire sprinklers in all areas are to be designed in accordance with the latest edition of NFPA Pamphlet No. 13. Occupancy classification/s shall be as required by NFPA Pamphlet No. 13 and the Fire Rating Organization, whichever is more stringent.

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

11. Provide an approved wet standpipe booster pump with standard trim including pressure gauges, flow switch, approved shut-off valve, drain valve, and all necessary pipe, fittings and accessories required for a complete installation.
  12. As required by the local public authorities having jurisdiction, inside wet standpipes, hose cabinets, 1-1/2 inch hose and adjustable nozzles shall be installed in accordance with the latest issue of NFPA Pamphlet No. 14.
- D. Framing, Cutting and Patching: The General Contractor shall do all framing, cutting and patching required for this work. This Contractor is responsible for the correct and timely layout for all cutting and framing required for this work. No structural members are to be cut. Any patching and cutting done as a result of error or neglect on the part of the sprinkler contractor shall be done at the expense of the sprinkler contractor.
- E. Existing Utilities: Take care to preserve all utilities existing in the work area of this project. Repair or replace all utilities damaged during excavation or other work of this Section. Show on as-built drawings all utilities found, depth, etc.
- F. Trenching:
1. Where invert elevations are not shown, provide a minimum of twenty-four inches of fill above top of pipe, or below frost line, whichever is greater. Provide a minimum of twelve inches under building from bottom of slab. Bottom of trenches shall be smooth and free from debris. Lay pipe on a 2" uniform bed of backfill material, shape as required for fittings.
  2. Provide and maintain warning signs, barricades, flares, trench shoring and all safety measures as necessary and required continuously around the clock as long as the hazards exist.
- G. Backfilling: To 6" above top of pipe only by dry sand, pea gravel, or engineered fill to 95% compaction. Backfill from 6" above pipe to finish grade to 95% compaction with clean non-expansive native material unless specified otherwise under Site Work. Compaction by jetting, flooding, or by wheels of equipment is specifically forbidden.



H. Piping Installation:

1. Install piping, promptly capping or plugging open ends.
2. No piping to be permanently covered by construction before inspection or approval and as little cutting of walls and floors to be done as possible in securing the proper installation.
3. All underground piping shall be installed as recommended by NBFA Pamphlet No. 24. All excavation and backfill shall be done by this Contractor. Provide thrust blocks at each change of direction in pipe without mechanical couplings. Blocks to be 18"x18"x18" or larger as recommended by pipe manufacturer. Restore all disturbed surfaces to their original condition.
4. Reductions in pipe size shall be made with one-piece reducing fittings only.
5. Screwed couplings shall not be used except where the length of pipe between fittings exceeds 20'.
6. Flanged fittings shall be used in the control valve and drain assembly at the base of risers. Where part of a sprinkler system is on the opposite side of a wall or partition, a flanged connection may be used.
7. Sprinkler head clearance between the deflectors and the walls or ceilings, roof decking or roof joists shall be in accordance with the requirements of the National Fire Protection Association's Pamphlet No. 13.
8. Main drains shall be installed on all main risers and auxiliary drains at all low points in the system.
9. Chrome plated escutcheon at all visible wall, floor and ceiling penetrations.
10. Inspector's test drains shall be installed on the sprinkler system as near the outer end of the system as possible where 1" branch line pipe is available. Each test port shall be fitted with a 1/2" orifice.
11. Five or fewer heads will not require a drain valve, but may be drained through a plugged fitting.
12. Drain valves shall be of the angle type or globe type.

13. Drain valves shall be piped to a safe place of discharge and the discharge shall be visible either by open-end drain pipe or sight drain fitting.
14. Fire sprinkler riser as shown on Drawings with all valves, trim and accessories indicated and required by NFPA Pamphlet No. 13.
15. Furnish and install a cabinet mounted on wall next to sprinkler riser with 4 spare heads of each type, a sprinkler head wrench, and one copy of NFPA Pamphlet No. 13A "Sprinkler Maintenance".

- I. Sprinkler Head Installation: Sprinkler heads shall be installed above and below the ceiling and spaces where required by Chapter 38 of the U.B.C. The system shall be designed and installed to meet the requirements of the National Fire Protection Association Pamphlet #13 as applicable, Uniform Building Code, U.B.C. Standard 38-1 and the local fire marshal's pre-approved plan.

### 3.02 FIELD QUALITY CONTROL

- A. Flushing and Hydrostatic Testing: Flushing and hydrostatic pressure testing of the systems shall be in accordance with NFPA Pamphlets 13 and 24 and in a method acceptable to the Fire Rating Organization having jurisdiction prior to admitting water to the systems. Instructions regarding witnessing of the flushing and tests shall be obtained from the Fire Rating Organization at least 48 hours prior to the flushing and tests.
- B. Tests: Upon completion and prior to the acceptance of the installation, the Contractor shall subject the system to the tests required by the National Fire Protection Association Pamphlet No. 13, Paragraphs 1-11.1 through 1-11.5 and NFPA #14 chapter 8, and shall furnish the Project Manager with a certificate as required by Paragraph 1-10 as applicable. Receipt of acceptable Contractors' Material and Test Certificate, parts A and B, by the Fire Rating Organization is required.

### 3.03 CLEAN-UP

- A. Cleanup: Upon completion of all work of this Section, remove all debris created by this work and thoroughly clean all exposed portions of the installation removing all traces of soil, labels, grease, oil, and other foreign matter.

3.04 COMPLETION

- A. Operation: The Automatic Sprinkler System or parts thereof shall be activated as soon as such is possible and feasible.
1. Once a system is in commission, its valves shall be locked in the fully open position.
  2. If modification to an activated system is required, said system shall be made operable by the end of the work day. If such is not possible, the General Contractor's superintendent shall arrange for adequate properly instructed watchmen service and shall notify the local responding fire station and the Fire Rating Organization of the deficiency.
  3. The General Contractor's superintendent shall inspect the valves of the activated sprinkler systems at the end of each work day to be certain they are locked in an open position.
  4. The sprinkler contractor shall establish the necessary liaison with the General Contractor's superintendent to insure compliance with these requirements and proper protection of the project on a continuing basis.
- B. Instructions: Furnish a printed sheet giving brief instructions relative to all necessary aspects of sprinkler controls, emergency procedure, etc.. The instruction sheet shall be framed and protected by a transparent plastic cover and wall mounted in a suitable space adjacent to each riser.

END OF SECTION

SECTION 15700  
AIR CONDITIONING

PART 1 GENERAL

1.01 DESCRIPTION

- A. Related Documents: The requirements of the General and Special Conditions and Division 1 apply to all work hereunder.
- B. Work Included: Air Conditioning system complete, including, but not limited to, the following items:
  - 1. Air Conditioning System Equipment and Accessories.
  - 2. Air Distribution Systems.
  - 3. Exhaust Fans and Accessories.
  - 4. Hydronic Piping System.
  - 5. Core Drill (or Saw Cut) Pipe (Duct) Penetrations of Existing Concrete or Masonry Structure.
- C. The scope of work of this section is affected by Alternates. See Section 01030 for description.
- D. Related Work Specified in Other Sections:
  - 1. Plumbing Connections. Section 15400
  - 2. Electrical Connections. Division 16
  - 3. Finish Painting. Division 09
  - 4. Building (Temperature) Control System. Section 15900

1.02 QUALITY ASSURANCE

- A. Permits and Fees: This Contractor will take out and pay for all permits and fees required for this work.
- B. Codes and Ordinances:
  - 1. Provide all work and materials in full accordance with the latest rules and regulations of the California Administrative Code, National Electrical Code, Uniform Plumbing Code, Uniform Mechanical Code, OSHA Standards and requirements and other applicable laws or regulations.

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

2. Nothing in these plans or specifications is to be construed to permit work not conforming to these codes.
  3. Furnish without extra charge, any additional material and labor required to comply with these rules and regulations, though the work be not mentioned in these specifications or shown on the drawings.
- C. Qualifications of Workmen: Use sufficient journeyman mechanics and competent supervisors in the execution of this portion of the Work to ensure a proper and adequate air conditioning installation throughout. In the acceptance or rejection of installed air conditioning work, no allowance will be made for lack of skill on the part of workmen.

1.03 SUBMITTALS

A. Submittals:

1. Required on all materials and equipment, submit six (6) copies to Project Manager for approval.
2. Make all submittals at one time. Items not submitted within the allowed time will be furnished as specified, without substitution. Arrange submittal information in indexed, tabbed and bound sets, with unit designations, sizes, capacities and dimensions clearly indicated.
3. Submitted equipment shall comply with minimum energy efficiencies outlined in Title 24, Part 2, Chapter 2-53 of the California Administrative Code (C.A.C.).

B. Substitutions:

1. Specific reference to manufacturer's names and products specified in this section are used as standards and to indicate a source of supply, but this implies no right to substitute other material or methods without written approval of the Project Manager. Refer to General Conditions for procedure governing substitutions.
2. All substitutions must be submitted to the Project Manager through the General Contractor, in writing, within twenty (20) days after award of the Contract to the General Contractor. Only one substitution for each item will be considered. Denote on submittals and notify General Contractor of all differences between specified and substituted materials and equipment.

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

3. Installation of any approved substituted equipment is the Contractor's responsibility and any mechanical, electrical, structural or any changes required for the installation of any approved substituted equipment, must be made to the satisfaction of the Project Manager and without additional cost to the Owner. Approval of the substituted equipment and/or dimensional drawings does not waive these requirements.

1.04 PRODUCT HANDLING AND STORAGE

- A. Product Handling: Use all means necessary to protect equipment and materials before, during, and after installation and to protect the installed work of other trades. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Project Manager and at no additional cost to the Owner.

1.05 REQUIRED PROJECT DOCUMENTS

- A. Maintenance and Operating Instructions:

1. Furnish the Project Manager with three complete sets of operating and maintenance instructions.
2. Start compiling the data upon approval of list of materials, so as not to delay the final approval of the work installed.
3. Furnish each set with a typed index and bind in a durable hardboard binder with tabbed separators for each section. Final inspection will not be made until booklets are submitted and have been approved by Project Manager.
4. Include in each operating and maintenance manual a copy of the balancing and adjustment report and control diagrams.
5. Post under plastic in the Mechanical Equipment Room, operating instructions for each major piece of equipment and one set of control diagrams.

- B. As-Built Drawings: Provide as-built drawings including locations of concealed piping and equipment. Obtain a set of transparencies from the Project Manager, and pay for cost, for this purpose. Submit two prints for approval and, after approval is obtained, deliver the transparencies to the Project Manager.

- C. Guarantee: Guarantee all materials and workmanship for a period of one year from date of filing of Notice of

Completion. Defective materials will be replaced at the Contractor's expense.

2.01 JOB CONDITIONS

- A. Labor and materials not specifically described which is incidental to the installation, without which a satisfactory operating system cannot be reasonably completed, is a part of this work.
- B. The Contractor is presumed to have compared the drawings and specifications for this work and to have reported any discrepancies to the Project Manager. He should visit the site to verify locations of existing facilities and to report to the Project Manager any site condition which will adversely affect this work.

PART 2 PRODUCTS

2.02 MATERIALS: See Equipment Schedule on drawings for model type, configuration and optional accessories.

- A. Air Handling Units: Vertical floor mounted or suspended as scheduled.
  - 1. Cabinet: Galvanized steel, with gasketed access panels for access to all components and filters, all joints air tight. Insulate with 1-1/2" sides and top, 1" bottom, 1-1/2 lbs. density fiberglass or equal.
  - 2. Coils: Chilled and hot water coils with copper tubes, mechanically bonded aluminum fins, galvanized steel casing and drain pan. Extend drain pan under cooling coil and any piping and controls extending beyond coil.
  - 3. Fans: Class 1, forward curved blade belt drive supply blower, statically and dynamically balanced with 1750 rpm externally mounted motors with adjustable base and drive sheave. Motors shall be energy efficient type, 90% or better. Bearings, ball type with extended lube lines to discharge end or drive side of unit.
  - 4. Provide units with filters, filter rack. Provide bottom access where shown.
  - 5. Unit: McQuay, Carrier, Trane or approved equal to the size, type and capacity of the model scheduled on the drawings.

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- B. Access Doors: Milcor or approved equal with screwdriver latch. Type to match wall or ceiling construction with fire ratings equal to surface in which they are installed, size 12x12 unless otherwise shown on drawings.
- C. Air Filters: 2", 30% efficient completely disposable type with pleated mat type media, Eco-Air E35, Farr or approved equal.
- D. Filter Gauges:
  - 1. Provide, across each filter bank, whether packaged, factory or field assembled, an inclined manometer filter gauge, Dwyer 252 AF, Marsh, or approved equal. Furnish static pressure sensing taps and tubing, gauge oil, and 3-way vent valves.
  - 2. Scale Divisions to be 0.2" to 2.0" water column, with 8" gauge length.
- E. Air Outlets: Size and type as scheduled on drawings, Krueger, Titus, Carnes, Tuttle & Bailey, Anemostat or approved equal to those scheduled. Finish, baked white enamel unless noted otherwise. Furnish with gaskets to prevent streaking. Combination Light/Air diffuser furnished and installed under Electrical Work, Division 16.
- F. Louvers: Storm-proof type with prime coat (unless noted otherwise) and 1/4" mesh G.I. bird screen in removable frame, Airolite, American Warming, Wonder Metals or approved equal to units scheduled.
- G. Dampers:
  - 1. Volume Control: Butterfly type for low velocity round duct under 18" diameter, opposed blade type for all others. Provide with operator and size as scheduled on drawings, Wonder Metals, American Warming, Air Balance or approved equal.
  - 2. Fire: State Fire Marshal listed and approved unit, Ruskin #IBD (CSFM #3225 -245: 5) for vertical use, #CFD (CSFM #3225 -245: 101) or Air Louver #CD700 (CSFM #3225 -131: 6) for horizontal use, Air Balance #119 Type A (CSFM #A3225 -206: 14 & 15) for vertical and horizontal use or approved equal. Comply with Local Codes.
- H. Air Extractors: Fully adjustable, 1" centers. Where accessible on branch duct take-off, provide locking quadrant operator and where inaccessible, provide with linkage and remote flush ceiling operator and cover



CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

plate. Where located within two feet of an outlet, provide worm gear operator with remote adjustor directly behind and adjustable through outlet.

I. Ducts:

1. Sheet Metal Ducts: Prime galvanized steel, with manufacturer and metal gauge stamped thereon.
2. Fiberglass Ducts: UL listed, with foil vapor barrier outer covering. Joints to be fiberglass and mastic (Hardcast or equal) or factory furnished heat sealing tape equal to Therm-Lock. Duct material to be heavy duty Class 800 or extra heavy duty Class 1450 as recommended by the manufacturer for the application except that all ducts 48" and over shall be extra heavy Class 1450. Duct material to be "J-M Micro-Aire Duct Board", Owens-Corning Fiberglas Type 800 FRK, Certainteed, or approved equal. Round ducts: "J-M Micro-Aire", O-C F, Certainteed or approved equal.
3. Flexible Fiberglass Ducts: Fiberglass insulation over wire helix, with aluminized vinyl outer vapor barrier jacket, vinyl mesh inside layer with installed conductance of .23, Owens-Corning Fiberglas Valuflex or approved equal, allowed on last seven feet of branch duct connections to outlets only.

- J. Duct Lining: Treated fiberglass, erosion proof with minimum velocity of 2000 fpm, 1 1/2" thick minimum, 2 pcf minimum density, Owens-Corning Fiberglas Type 150 Aeroflex or approved equal. Adjust thickness to comply with CAC Title 24, Part 2, Chapter 2-53. Adhesives, flame safe in wet or dry state per NFPA 90A & B.

K. Fans:

1. Roof Mounted Type: Centrifugal type with drive type, discharge and accessories as noted, complete with back draft damper, bird screen, electrical disconnect, Penn, Jenn Air, Greenheck or approved equal to models scheduled.
2. Inline Type: Centrifugal backward curved blades with spun cone and venturi. Housing of heavy gauge formed steel with one side hinged and supporting entire drive, wheel and motor assembly allowing easy access for service without dismantling unit. Provide direct drive motor with drive assembly and motor isolated from air stream by an enclosure, Greenheck or approved equal.

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- L. Flexible Connections: Neoprene impregnated glass cloth, Duro Dyne, Ventglas or approved equal.
- M. Relief Vents or Outside Air Intakes: Size and type as scheduled on Drawings, galvanized iron with removable 1/2" mesh G.I. screens.
- N. Sound Traps:
  - 1. Size, type and capacity as listed, aluminum casing construction. Units to be Buensod, Koppers, IAC, or approved equal.
  - 2. Acoustical ratings to be not less attenuation than that of specified item. Provide complete rating data for approval.
- O. Variable Volume Units: Single duct variable volume units with adjustable minimum air capacity. Sound power ratings not to exceed an NC of 35 when measured downstream from five feet of lined duct and the radiated sound power measured across a 10 db loss ceiling. Inlet pressure applied for sound measurements shall be 0.5" w.c. All casings 22 ga. galvanized and shall have acoustical-thermal lining. Provide attenuator and controls as shown on drawings. Units shall be pressure independent and shall reset to any air flow from zero to the maximum cataloged cfm. Actuator and controller shall be factory calibrated and factory set for the maximum and minimum flow rates scheduled on drawings and shall be arranged for field calibration and readjustment. Units Titus, Carnes, Buensod or approved equal.
- P. Piping:
  - 1. Chilled and Hot Water, Boiler Drains, Blowdowns: Schedule 40, black steel. Sizes 2-1/2" and smaller with malleable threaded fittings, sizes 3" and larger with butt welding fittings, ASA-B16.9. Welding fittings: Bonney "Weldolet" or equal. Mechanical couplings with elastomeric gaskets may be used only in, or over, unoccupied spaces or where shown on drawings. Type L copper with sweat fittings may be substituted for steel pipe.
  - 2. Air Vent Discharge Piping: Type L copper, with formed copper fittings.

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

Q. Valves:

1. 150 lb. SWP - 300 lb. WOG.

Type		Crane	Milwaukee	Nibco	Jenkins	Powe
Gate, 2" & smaller	<u>Thr'd.</u> <u>So'rd</u>	<u>437</u> -	1140	<u>T-133</u> <u>S-134</u>	<u>670</u> -	<u>512</u> <u>1842</u>
Gate, 2-1/2" & larger	Fl'gd.	465-1/2	F2885	F-617-0	651-A	1793
Globe, 2" & smaller	<u>Thr'd</u> <u>So'rd</u>	<u>14-1/2-P</u> -	591	<u>T-256-AP</u> <u>S-235-Y</u>	<u>546-P</u> -	<u>2600</u> <u>1823</u>
Globe, 2-1/2" & larger	Fl'gd.	351	F2981	F-718-B	613	241
Angle, 2" & smaller	<u>Thr'd</u> <u>So'rd</u>	<u>16-1/2-P</u> -	595	<u>T-356-AP</u> <u>S-355</u>	<u>558-P</u> -	<u>2610</u> <u>1824</u>
Check, 2" & smaller	<u>Thr'd</u> <u>So'rd</u>	<u>36</u> -	581	<u>T-453-B</u> <u>S-433-Y</u>	<u>762-A</u> -	<u>560-</u> <u>1841</u>
Check, 2-1/2" & larger	Fl'gd.	373	F2974	F-918-B	624	55
Ball, balancing	<u>Thr'd.</u> <u>So'rd.</u>	<u>2330-TF</u> <u>2192H</u>	<u>BBFS-100</u> <u>BBFS-350</u>	<u>T-595-Y</u> <u>S-595-Y</u>	= =	= =
Butterfly	<u>Wafer</u> <u>Lug</u>	<u>21F-BRZ</u> <u>23F-BRZ</u>	<u>BB1-100</u> <u>BB1-350</u>	<u>W-082</u> <u>L-082</u>	<u>220E</u> -	= =

2. Butterfly valves: 2" and smaller, Milwaukee BB1-100 threaded, BB1-350 solder, may be used for gate or globe valves where service permits. Valves to 6", wafer or lug type, with infinite position handles, indicator plates and memory stops. Valves 8" and larger lug type with gear operator and indicator plates. All valves with extended neck.
3. Flow Control Valves: 2" and smaller, all bronze with integral flow measuring taps and calibrated scale, Armstrong CB or approved equal. 2-1/2" and larger, with integral flow measuring taps, Bell & Gossett Circuit Sensor, Barco or approved equal. (Furnish meter for each type of measuring device.)
4. Air Vents: Manual type, #107-700 Price-Pfister; Automatic type, Hoffman #79, Dole #20C-RS, or approved equal.

R. Piping Accessories:

1. Strainers: "Y" type with all bronze construction 2-1/2" and smaller, iron body, 3" and larger with stainless steel 20 mesh screen to have 3-1/2 times free area of pipe, Bailey, Hoffman, Sacro or approved equal.
2. Pressure Gauges: Recalibratable type with 3-1/2" face black on white and 1/4" NPT lever or tee handle cock, Marsh quality or approved equal.
3. Thermometers: Red reading mercury type with variable angle positioning, separable well and 9" scale to suit type of service. Weksler AA5 or approved equal.
4. Flexible Connectors: As listed or approved equal. Metallic Hose Type, high pressure (200# to 800#), Flexonics Series 300 bronze (for copper lines), Flexonics Series 400 stainless steel (for steel lines), Keflex #SSH. Bellows Type, low pressure (150#), Garlock Style 8100, General Rubber Style 1010, or approved equal.
5. Hose Bibbs: Acorn #8121 with rough brass finish.
6. Pressure or Temperature Test Port: Pete's Plug with valve core suitable for service intended, neoprene for cooling duty, nordel for heating duty or as approved otherwise. Furnish with color coded caps and (8) eight gauge adapters.
7. Flexible ball joints: Barco as manufactured by Aeroquip or approved equal.

S. Pipe Hangers: Super Strut, Uni Strut, Grinnel, as detailed, or approved equal.

T. Pipe Identification: Seton 'Snap-Around', painted stencils, or approved equal.

U. Insulation:

1. All insulation materials maximum flame spread of 25 and maximum smoke development of 50.
2. Insulation and lining thickness to satisfy requirements of Title 24, Part 2, Chapter 2-53 of CAC.
3. Insulation Types:
  - a. Duct Insulation: Supply duct with glass fiber reinforced foil face fiberglass duct wrap.

Minimum .75 pcf density, 1 1/2" thickness, O-C F, J-M, Certainteed or approved equal. Return air duct with unfaced fiberglass duct wrap. Minimum .75 pcf density, 1 1/2" thickness, O-C F, J-M, Certainteed Duct Insulation, UL listed.

- b. Pipe Insulation: 1-1/2" thick premolded fiberglass with vapor barrier ASJ-SSL II jacket with self-sealing laps. Cold piping insulation vapor barrier continuous over all joints, fittings and ends. Insulation to withstand 450 F. at piping surface without degradation. O-C F, J-M, Certainteed, UL listed. Provide Kin-Line Thermal Hanger Shields, or equal, on suspended piping 2-1/2" and larger. Provide 16 gauge G.I. metal shield on 2" and smaller. Provide Zeston or approved equal fitting covers with fiberglass inserts.

V. Antivibration Bases and Hangers:

1. General: Provide antivibration units for all mechanical equipment as specified or shown, Mason, Kinetics, Vibration Eliminator Co., or equal. Provide bases and hangers supplied by a single manufacturer of vibration control equipment. Bolt bases to deck using sound-deadening grommets.
2. Springs: Minimum static deflection shown or specified, with additional travel of 25% between design height and solid height. Spring diameters: Not less than the compressed spring height. Lateral spring constant to equal vertical spring constant. For exposed outdoor installation, provide neoprene coated springs.
3. Types of Bases and Hangers:
  - a. Type D: Combination steel springs and sound-deadening pads encased in brackets, and supported by threaded rods with oversized holes to allow +/- 15 degree rod misalignment.
  - b. Type E: Individual spring mounts with leveling bolts, and bonded sound-deadening pads. Stops to be isolated to prevent short-circuiting.

- W. Electric Motors: All electric motors shall be continuous duty with a minimum service factor of 1.15. In no case shall a motor operate beyond a service factor of one unless scheduled otherwise.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Surface Conditions: Prior to all work of this Section, carefully inspect the installed work of other trades and verify that all such work is complete to the point where this installation may commence. Verify that the completed installation will be in accordance with all pertinent codes and regulations and with the original design. In the event of discrepancy, immediately notify the Project Manager and proceed as he directs.
- B. General Requirements:
  - 1. Installation: All products, materials and equipment shall be installed in accordance with the manufacturer's recommendations unless specifically detailed or specified otherwise. Carefully coordinate the installation of this work with all the other crafts on this project.
  - 2. Materials and Equipment:
    - a. All material and equipment shall be new, of the type, capacity and quality specified, free from defects and of the same brand or manufacture throughout for each class of material or equipment wherever possible. Equipment installed shall have all standard features, material weights, fan sizes, etc., of the model shown on the drawings and indicated herein, as well as the special requirements listed. Verify all equipment electrical characteristics with the electrical drawings before ordering.
    - b. Material and equipment shall not cause or substantially contribute to a noise level greater than NC of 32 in the occupied space.
    - c. Furnish to the Project Manager complete installation instructions on all material and equipment before starting installation of same.
- C. Relocation or Removal of Existing Equipment: Relocate or remove all mechanical equipment, without damaging same, as shown on drawings. All equipment and materials indicated to be removed and retained by the Owner shall be delivered to on-site storage as directed by Owner. All other removed equipment and materials shall become the property of the Contractor and shall be removed from the site.
- D. Framing, Cutting and Patching: The General Contractor shall do all framing, cutting and patching required for

this work. This Contractor is responsible for the correct and timely layout for all cutting and framing required for this work. No structural members are to be cut. Any patching and cutting done as a result of error or neglect on the part of the Mechanical Contractor shall be done at the expense of the Mechanical Contractor.

- E. Equipment Identification: Identify all equipment with engraved plastic nameplates with 1/2" letters, minimum. Secure with pop-rivets or sheet metal screws.
- F. Access Doors: Provide access doors, size and style as shown or applicable, in locations shown on drawings and where required for access to concealed valves, equipment, etc. Refer to architectural reflected ceiling plans for exact location.
- G. Filters: Install a complete set of clean filters before balancing the system/s and leave two complete sets of boxed filter changes at jobsite for owner.
- H. Grilles, Diffusers, and Registers: Provide with gaskets and standard grille frames or metal grounds. Install so that there will be no streaking of the walls or ceiling due to leakage. Connect ducts to Light/Air Track. furnished under Electrical Work, Division 16.
- I. Louvers: Where exposed to weather will be installed with flashings and sealed to render them storm proof. Furnish with prime coat and bird screen.
- J. Dampers:
  - 1. Manual Dampers: Furnish and install at locations indicated on the Drawings and where necessary to control air flow for balancing system. Provide Ventlok regulators. Damper Blades, two gauges heavier than duct for butterfly dampers, 18 gauge minimum galvanized steel with 3/8" minimum shaft for others.
  - 2. Provide and install all volume control dampers for connection by Building Control Systems, Section 15900.
  - 3. Fire Dampers: Installed according to manufacturer's recommendations for Fire Marshal approved installation.
- K. Ductwork:
  - 1. Make sheetmetal ductwork in strict conformance with the latest edition of ductwork manuals published by SMACNA, "Duct Manual and Sheetmetal Construction for

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

Ventilating and Air Conditioning Systems", Section 1 for low (2") pressure ductwork. Construct ducts with flat seams where exposed in occupied spaces or indicated. Equivalent round duct may be used where space permits.

2. Use flexible connections as specified on each ducted inlet or outlet of any fan or unit with integral fan.
3. Duct size shown is clear inside dimension.
4. All ducts shall have heavy galvanized 1-1/8" x #16 gauge strap iron hanger fastened to overhead construction in a secure manner. Place hangers on each side of ducts and spaced not exceed 5'-0" centers.
5. Apply flat black color to interior of ductwork and plenums behind grilles and registers over all visible area or for a minimum 3' from outlets.
6. Seal airtight transverse seams of all supply, return, and exhaust ducts and all longitudinal seams on duct over .75" static pressure with six ounce canvas dipped in Arabol, United Duct Sealer, or approved equal. Seal insulated ducts prior to insulating. Seal all ducts exposed to weather with six ounce canvas and Arabol or an approved duct sealant.
7. Install spin-ins with butterfly dampers or extractors for low pressure duct branch take-offs.
8. Provide access panels in ductwork for access to all dampers, fire dampers, controls, equipment, etc.. Make panels two gauges heavier than the duct where installed and seal airtight.
9. Provide flashings on all ducts penetrating roof or exterior walls. Prime all flanges of flashing embedded in asphaltic roofing with asphaltic primer Fed. Spec. SS-A-701. Provide closures for ducts penetrating interior floors, walls, draft stops, shafts, etc.
10. All fibrous glass duct work in accordance with "Duct Manual Fibrous Glass Construction" for low velocity ventilating and air conditioning systems published by SMACNA and in accordance with the manufacturer's recommendations. Provide manufacturer's certificate of conformance with all such procedures. Fibrous glass duct allowed for low pressure duct installed in concealed, unaccessable spaces only.



CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

11. Secure flexible fiberglass duct ends to metal collars with metal draw bands and tape. Support ducts with metal saddle type hangers, four foot on center, minimum. Flexible duct allowed only on last seven feet of branch duct connection to outlets.
- L. Duct Lining: On all ducts except exhaust, install acoustical lining in ducts located in fan or mechanical rooms and for a minimum of ten feet from fans. In addition, install lining in all ducts where shown and all supply and return ducts exposed to the weather. Install in accordance with manufacturer's recommendations.
- M. Sound Trap Installation: Provide mounting rack according to manufacturer's recommendations. The leading face shall be sealed against any air passage except through traps. Any adjacent traps shall have passages oriented perpendicular to each other.
- N. Humidifier Installation: Install humidifiers level and provide 24 guage galvanized iron secondary drain pan under unit with 3/4 inch drain.
- O. Installation of Piping Systems:
  1. Flush and clean before connecting.
  2. Use reducing fittings at changes in pipe size. Bushings prohibited. Ream all pipe ends.
  3. Anchors: Anchor piping subject to expansion or contraction in a manner permitting strains to be evenly distributed and alleviated by swing joints or expansion loops as required.
  4. Provide air vents in hydronic piping (manual type unless shown otherwise) at all high points and pockets and where shown on drawings.
  5. Install Pressure/Temperature Test Ports on each inlet and outlet piping connection of all pumps, coils, chillers, boilers or heat exchangers unless shown to be furnished with gauges and thermometers.
  6. Provide unions (2-1/2" and smaller) or flanges with gaskets (3" and larger) at connections to all tanks, equipment, valves, etc., to facilitate removal. Furnish materials compatible with system installed.
  7. Provide valves at inlet and outlet connections to all equipment, tanks, strainers, pumps, control valves, etc., whether shown or not, to facilitate removal and maintenance. All valves shall have extended necks or

removable insulation covers when installed in insulated Lines.

8. Provide flashings at all pipes penetrating roof or membranes. Prime flanges embedded in asphaltic roofing with asphaltic primer, Fed Spec. SS-A-701.

P. Valve Installation:

1. Install all valves with stems running parallel or perpendicular to floor and where overhead, shall be high enough for head room clearance.
2. Provide a union downstream of each valve.
3. Provide brass tag identification for each valve stating ultimate point of service. Include a valve identification sheet with Operating and Maintenance Manual.
4. Install all control valves furnished under Section 15900.

Q. Pipe Sleeves and Escutcheon Plates:

1. On pipes through foundations and floor slabs on grade, installed before concrete pour, provide 1" minimum thickness wrap of fiberglass or similar material around all piping. Extend wrappings at least 3" beyond concrete.
2. On pipes penetrating floors and walls below grade, all intermediate concrete floors and for concrete or masonry penetrations of any kind for pipes not installed before concrete pour:
  - a. Install 24 gauge minimum galvanized iron sleeves with 1/2" clearance to outside of pipe (or insulation on insulated pipe) at all masonry or concrete walls or floors. Core drill existing walls or floors.
  - b. Caulk the space between the pipe and sleeves through floors and walls below grade with oakum and mastic, and make watertight.
  - c. Pack the annular space between the pipe sleeves and the pipe through floors and walls above grade with an incombustible material, "Fiberglass" or equal.
3. Provide chrome plated escutcheon plates at all penetrations of finished floors, walls and ceilings.

R. Cathodic Protection:

1. Install insulated flanges or couplings at points of connections between all dissimilar metals.
2. Insulate copper tubing from ferrous materials and hangers with two thicknesses of three inch wide strip of ten mil poly-vinyl tape wrapped around pipe.

S. Pipe Protection:

1. All pipe shall be isolated from contact with plaster, mortar, grout or concrete with sleeve when required or a ten mil wrap of poly-vinyl tape.

T. Pipe Joints and Connections:

1. Copper and brass pipe and tubing: Unless specified otherwise 95-5 tinantimony, ASTM B-32, Grade 5A solder above grade; high melting point silver brazing alloy, Silfos or equal, below grade. Pipe burned or softened by improper heating shall be replaced.
2. Welded Piping: ANSI B-31.1, Section G, Chapter 4, and Appendix A. All welding by certified welders.
3. Threaded: Standard pipe thread with suitable joint or thread compound.
4. Mechanical Couplings: Grooved pipe and fittings with coupling and gasket suitable for service intended, Buna-N for cooling duty, Fluoro Elastomer for heating duty or as approved otherwise. Mechanical coupling system, Victaulic, Grinnell or approved equal.

U. Hangers and Supports:

1. Support all piping so that it is firmly held in place by iron hangers and supports. Provide saddles to protect pipe insulation.

Hanger Schedule:

<u>Type of Pipe</u>	<u>1" Diameter or Under</u>	<u>1-1/4" to 3" Diameter</u>
Steel Pipe	8' - 0"	10' - 0"
Copper Tubing	5' - 0"	8' - 0"

2. Provide lateral sway bracing at 30'-0" O.C. unless noted otherwise. Support piping at each change of direction, at ends of branches, at base and top of

risers and wherever necessary to prevent sags, bending or vibration.

V. Pipe Identification:

1. Identify all piping systems by means of colored stenciled legends with flow arrows or manufactured pipe makers. Stencils shall be applied after insulation and/or finish painting and shall indicate whether supply or return piping. Colors per ASME.
2. Apply legend and flow arrows at valve locations, where pipes enter and leave walls, ceilings, floors, partitions, at cluster of piping and at 20' intervals on pipe runs.

W. Insulation:

1. Duct Work: Insulate all unlined supply and return ducts. Wrap insulation entirely around duct and wire securely in place with No. 16 copper clad or galvanized wire spaced not over twelve inches on centers on each side of each standing seam and over each insulation joint. Lap all insulation joints three inches minimum.
2. Supply and Return Piping: Cover insulation on fittings with Zeston covers and seal with a coating of Fosters 30-36. Provide oversized insulation covers over all valves and fittings. Seal flap of the integral jacket with adhesive and additionally secure with metal bands, 24 inches on centers, max. Three-inch wide end laps furnished with insulation shall be adhered over end joints and further secured with bands.

X. Vibration Isolators: All equipment shall operate under continuous demand without objectionable vibration. Isolate all equipment connections including conduit, piping, etc. Provide isolators as detailed on drawings.

Y. Electrical Work: All power wiring, conduit, fuses, and disconnect switches, and connection of all starters and motors are included under Electrical Work, Division 16. All wiring and conduit required for controls shall be done by Building Control System, Section 15900. The Mechanical Contractor shall furnish magnetic motor starters for all his equipment. Provide overloads on all ungrounded legs, Hand-Off-Auto switches in starter cover and furnish enclosure types as required by Code.

### 3.02 FIELD QUALITY CONTROL

- A. Piping Tests: All piping shall be cleaned before testing.

1. Testing Schedule:

<u>Piping</u>	<u>Pressure &amp; Media</u>	<u>Detection</u>
Water	100 psig water	Loss in pressure and inspection

B. Testing Balancing and Adjustment:

1. Provide the services of an independent Contractor for this work. All testing, balancing and adjusting shall be performed by a Contractor specializing in this work and in accordance with the latest edition of "Testing, Balancing and Adjusting of Environmental Systems" published by SMACNA. All report forms shall be as recommended by SMACNA and shall be submitted for approval.
2. Balance supply, return and exhaust air as shown on drawings. Records must be kept on all air quantities measured, including runs prior to final check. Obtain first the gross air quantities at supply, return and exhaust fans and main ducts to a rough approximation. Branch ducts should be proportioned as near as possible and finally each room supply and exhaust shall be adjusted.
3. Adjust fan drives as required, including replacement of fixed drives where necessary for balancing. Measure the ampere reading of each motor input, fans, etc., after final adjustments have been made. Include in report a summary of fan CFM delivery rates, static pressure readings, RPM, motor nameplate and actual voltage and ampere input, air outlet CFM delivery rates, etc.
4. Balance flows in hydronic piping to quantities shown on drawings. Include in report readings for pump GPM, head, pressure at suction and discharge, motor nameplate and actual voltage and amps, and flow at all terminal devices.
5. Upon satisfactory completion of balance and operation test, submit five (5) sets of reports to the Project Manager on final readings.
6. Review with and instruct Owner's representative on procedure for permissible adjustments for local

variations to suit occupants. Provide for two return visits to the Project to adjust system to suit occupants.

7. Notify Project Manager at time of report submittal when system is ready for final inspection.

### 3.03 CLEAN-UP AND START-UP

#### A. System Startup and Owner Inspection:

1. Prior to final inspection, clean all air filters and clean up all debris generated by work of this Section.
2. Clean all strainers, flush all systems and bleed air from all piping systems.
3. Before completion and acceptance of this work, place all systems in full operation and operate all controls satisfactorily through complete cycles, from full heat to full cooling and demonstrate successful operation of the system.
4. Instruct Owner's designated operating personnel in the operation of the system and the maintenance of all equipment. Obtain from the Project Manager a list of personnel, designated by name, to receive instruction. The instruction on controls shall be conducted by a representative of the control manufacturer.

END OF SECTION

SECTION 15900  
BUILDING CONTROLS

PART 1 GENERAL

1.01 DESCRIPTION: This specification defines the minimum equipment and performance requirements for a direct digital control building control system. The basis of the design is the Barber-Colman Network Supervisor System, DAS 60000. The Building Control System must be compatible and operate from the existing HVAC Central Plant Barber-Colman Network Supervisor control system without modification.

- A. Related Documents: The requirements of the General and Special Conditions and Division 1 apply to all work hereunder.
- B. Scope of Work: The Control Contractor shall furnish and install all equipment, accessories, software, wiring and instrument piping required for a complete and functioning system. All materials and equipment used shall be standard components, regularly manufactured for this and/or other systems and shall not be custom designed especially for this project. All components shall have been thoroughly tested and proven in actual use. The building control system shall possess a fully modular architecture, permitting expansion through the addition of more standalone control units, sensors, actuators, and/or operator terminals.
- C. The scope of work of this section is affected by Alternates. See Section 01030 for description.
- D. Related Work Specified in Other Sections:
  - 1. Damper and Valve Installation, Section 15700.
  - 2. Electrical Power Connections, Division 16.

1.02 QUALITY ASSURANCE

- A. Permits and Fees: This Contractor will take out and pay for all permits and fees required for this work.
- B. Codes and Ordinances:
  - 1. Provide all work and materials in full accordance with the latest rules and regulations of the California Administrative Code, National Electrical Code, Uniform Plumbing Code, Uniform Mechanical Code, OSHA Standards and requirements and other applicable laws or regulations.

2. Nothing in these plans or specifications is to be construed to permit work not conforming to these codes.
  3. Furnish without extra charge, any additional material and labor required to comply with these rules and regulations, though the work be not mentioned in these specifications or shown on the drawings.
- C. Contractor Qualifications: The Control System Contractor shall provide a list of no less than five similar projects which have building control systems as specified, operating with and controlled by a Barber-Colman DAS 60000 system. These projects must be on-line and functional such that the owner's representative would observe a direct digital control system in full operation. The Control System Contractor must be a direct, wholly owned branch of a national controls manufacturer, or authorized representative or distributor.
- D. Qualifications of Workmen: Use sufficient journeyman mechanics and competent supervisors in the execution of this portion of the Work to ensure a proper and adequate control system installation throughout. In the acceptance or rejection of installed control system work, no allowance will be made for lack of skill on the part of workmen.
- 1.03 SUBMITTALS: In addition to the requirements of Section 01300, provide the following:
- A. Preconstruction Submittals: Preconstruction submittals shall be submitted at least 30 days prior to any material or equipment installation required under this section. Material or equipment installation shall not start until all preconstruction submittals have been approved by the Project Manager.
1. Installation Drawings: Installation drawings shall consist of one (1) set of reproducible ozalid prints and six (6) sets of drawings, lists of materials, complete sequence of operation, and control strategies. These drawing shall include the physical location of building control system equipment and system architecture.
  2. Equipment Instruction Manuals: Equipment instruction manuals shall consist of five (5) sets of manuals containing all information needed to operate and maintain the entire system. Manuals shall include:



CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- a. Introductory materials which include equipment specification, special ordering information, detailed charts which list the kits and models that make up the equipment and general safety information.
  - b. A description section that details equipment features.
  - c. An installation section that outlines the procedure for unpacking, checking, installing and adjusting the equipment.
  - d. An operation section that outlines operating procedures that maximize operator efficiency and ensure increased equipment life.
  - e. A theory of operation section that explains the circuit-by-circuit operation of the unit. Any appropriate block diagrams shall be included in this section.
  - f. A maintenance section that details preventive maintenance, special disassembly procedures, test procedures and trouble shooting.
  - g. Wiring diagrams to show interconnections between units of an equipment model.
  - h. Schematic diagrams shall be annotated with theory of operation and maintenance information to reduce the need for the technician to refer back to a section of text while trying to follow the schematic.
  - i. Parts lists that include part numbers for mechanical and electrical parts and reference designations for all electrical parts. Each electrical part shall be identified by a reference designation on the schematic diagram, as well as on the parts list. Mechanical parts shall be described and part numbers given to facilitate ordering.
  - j. Any notes of caution or warning that are intended to protect the operator or the equipment shall be "set out" from the rest of text for emphasis.
3. Operator Manuals: Operator manuals shall consist of five (5) sets of manuals explaining all user procedures necessary to operate the system.

4. SCU Programming Manuals: The vendor shall furnish the Project Manager with five (5) complete sets of SCU Network and Operator Terminal Application Programming manuals. The manuals shall contain all of the necessary documentation for programming the SCU's and the Operator Terminal to HVAC Control Network messages and the HVAC Control Network to Operator Terminal messages.
5. The programming manuals shall contain all of the application details that a host programmer needs to know to properly implement and support a network of SCU's, including graphics, priorities, message formats, protocol etc. Reference paragraph 3.01, D, 8 for application.
6. In order to provide complete manuals containing all schematics, level setting information and operating instructions, the Contractor shall prepare all of the above information in book form with no drawings larger than the page size of the book.
  - a. Drawings which must be larger than a single sheet for legibility shall be photographically reduced so that they are no larger than eleven (11) inches high.
  - b. The manuals shall contain an index of all schematics, charts and diagrams to insure that pages have not been removed.
  - c. Sufficient information shall be contained in the index to permit reordering lost or mutilated pages.
  - d. The Contractor must maintain a file of all manual information so that he is in a position to replace the manual in whole or part for a period consistent with the length of time that the equipment provided is in actual service.
  - e. In addition to schematics, etc., the manuals shall contain the theory of operation of all active devices in sufficient detail to facilitate servicing to the component level.
  - f. Drawings which are supplied must be reproduced by such means as to preclude fading to the point of illegibility if exposed to normal illumination for extended periods of time. A developed and fixed process, or one of the various forms of printing by actual ink transfer, are acceptable types.

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- B. Final Submittals: Final submittals shall be submitted after all installation work is complete but prior to contract completion.

- 1. Record Drawings: Record drawings shall consist of one (1) set of reproducible ozalid prints of installation drawings showing all revisions and modifications from the preconstruction submittal. Reference Section 01300, Submittals, for additional requirements.

- 2. Equipment Instruction Manuals: Equipment instruction manuals shall consist of five (5) sets of manuals containing all information needed to operate and maintain the entire system.

1.04 PRODUCT HANDLING AND STORAGE

- A. Product Handling: Use all means necessary to protect equipment and materials before, during, and after installation and to protect the installed work of other trades. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Project Manager and at no additional cost to the Owner.

1.05 REQUIRED PROJECT DOCUMENTS

- A. Maintenance and Operating Instructions:

- 1. Furnish the Project Manager with five complete sets of operating and maintenance instructions for the installed hardware and software upon completion of the installation.

- B. Record Drawings: Provide a full set of corrected record drawings as listed above under Submittals.

- C. Guarantee: Guarantee all materials, hardware, software and workmanship for a period of one year from date of filing of Notice of Completion. Defective materials will be replaced at no cost to the owner.

1.06 JOB CONDITIONS

- A. Labor and materials not specifically described which is incidental to the installation, without which a satisfactory operating system cannot be reasonably completed, is a part of this work.

- B. The Contractor is presumed to have compared the drawings and specifications for this work and to have reported any discrepancies to the Project Manager. He should visit the site to verify locations of existing facilities and to

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

report to the Project Manager any site condition which will adversely affect this work.

1.07 MANUAL REVISIONS:

- A. Updates and revisions to the equipment instruction and operating manuals shall be furnished without charge to the City, on an as needed basis, during the warranty period. Thereafter, these items shall be available for a reasonable fee.
- B. These updates and revisions shall be automatically sent out for each of the original manuals included with the submittals. They shall be sent to the City of Sacramento, Facility Maintenance Division, 5730 24th Street, Sacramento, CA. 95822.

1.08 SPARE PARTS:

- A. Spare parts shall be made available for each piece of equipment installed under work of this section for a period of 10 years minimum.

1.09 SERVICE UPDATES AND REVISIONS:

- A. Service updates and revisions shall be furnished without charge to the City as they are developed.

PART 2 PRODUCTS

2.01 MATERIALS:

- A. Building System Controls: Location and type as shown and scheduled on drawings.
  - 1. Provide and install all controls, controllers, operators, damper motors, sensors, control panels, equipment, accessories, wiring and instrument piping required for a complete functioning direct digital control system, Barber-Colman Network Supervisor System, DAS 60000 or approved equal.
  - 2. Provide all control valves for installation under Air Conditioning, Section 15700.
  - 3. Electronic Steam Humidifiers: Self contained electronically controlled steam humidifier complete with control panel, steam generator, dispersion hoses, stainless steel distribution tubes, UL listed, Herrtronic 300, Armstrong EHU 600, or approved equal to unit scheduled. Provide with all controls, automatic drain cycle and full modulating control

from 0 to 100% capacity for installation under Air  
Conditioning, Section 15700.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Surface Conditions: Prior to all work of this Section, carefully inspect the installed work of other trades and verify that all such work is complete to the point where this installation may commence. Verify that the completed installation will be in accordance with all pertinent codes and regulations and with the original design. In the event of discrepancy, immediately notify the Project Manager and proceed as he directs.
- B. General Requirements:
  - 1. Installation: All products, materials and equipment shall be installed in accordance with the manufacturer's recommendations unless specifically detailed or specified otherwise. Carefully coordinate the installation of this work with all the other crafts on this project.
  - 2. Materials and Equipment:
    - a. All material and equipment shall be new, of the type, capacity and quality specified, free from defects and of the same brand or manufacture throughout for each class of material or equipment wherever possible. Verify all equipment electrical characteristics with the electrical drawings before ordering.
- C. Relocation or Removal of Existing Equipment: Relocate or remove all mechanical control equipment, without damaging same, as may be indicated on drawings. All equipment and materials, e.g., thermostats, sensors, control panels, valve and damper motors, not indicated to be reused shall be removed and be delivered to City Corporation Yard - 5730 24th St., Sacto., CA. 95822 as directed by the Project Manager.
- D. Building Control System: The building control system specified herein shall be a direct digital control system which can, without additional equipment, perform all of the automatic temperature control and energy management functions as required in this specification. Direct Digital Control shall be defined as a control technique through which the process variable is continuously monitored by a digital computer which accomplishes loop control by calculating a control solution for output to a control device. The system, as specified, shall

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

independently control the building's HVAC equipment to maintain a comfortable environment in an energy efficient manner. The building operator shall communicate with the system and control the sequence of operation within the building.

1. System Architecture: The building control system shall consist of a network of independent, stand-alone control units. Each stand-alone control unit shall be capable of performing all specified control functions in a completely independent manner. Additionally, control units shall be capable of being networked for single point programming and for the sharing of point information and control instructions between panels. All operator communication with the system shall be via operator terminal and display. It shall be possible for each control unit to have a dedicated local display or for a collection of control units to share a single operator terminal.
2. Stand-alone Control Unit: Each control unit shall be capable of full operation either as a completely independent unit or as a part of the building-wide control system via local area Network. All units shall contain the necessary equipment for direct interface to the sensors and actuators connected to it. Control strategies shall be owner definable at each control unit, or from any of the control units in the system from any one operator terminal. Each control unit shall be able to support its own operator terminal if so desired. Each stand-alone control unit shall include its own microcomputer controller, power supply, input/output modules, termination modules, and battery. The battery shall be self-charging and be capable of supporting all memory within the control unit if the commercial power to the unit is interrupted or lost for a minimum of forty (40) hours. The stand-alone control unit shall be approved by Underwriters Laboratories (UL) against fire and shock hazard as a signal system appliance unit.
3. Sensors/Input Signals: Each stand-alone control unit shall be capable of direct interface to a variety of industry standard sensors and input devices. It shall be possible for each stand-alone control unit to monitor the following types of inputs:
  - a. analog inputs
    - 4-20 mA                      - thermistors
    - 0-10 vDC                    - 3-15 psi

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- b. digital inputs
  - dry contact closure
  - pulse accumulator
- 4. Actuators/Output Signals: The stand-alone control unit shall directly control pneumatic and electronic actuators and control devices. Each control unit shall be capable of providing the following control outputs:
  - a. digital outputs (contact closure)
    - motor starters, NEMA sizes 1 to 4
  - b. analog outputs
    - 3-15 PSI
    - 4-20 mA
    - 0-16 vDC
    - 1-11 vDC
- 5. Building Control Functions: Each Stand-alone Control Unit within the Building Control System shall perform both temperature control functions and energy management routines as defined by the operator. All temperature control functions shall be executed within the stand-alone control unit. Loop control shall be executed via direct digital control algorithms. The user shall be able to customize control strategies and sequences of control, and shall be able to define appropriate control loop algorithms and choose the optimum loop parameters for loop control. Control loops shall support any of the following control modes:
  - Two-position (on-off, slow-fast, etc.)
  - Proportional (P)
  - Proportional plus integral (PI)
  - Proportional, integral, plus derivative (PID)

It shall be possible to fully create, modify or remove control algorithms within a specific stand-alone control unit while it is operating and performing other control functions. Each control loop shall be fully user defineable in terms of:

- sensors/actuators that are part of the control strategy
- control mode
- gain
- control action
- sampling time

In order to minimize wiring and sensor costs, provide standalone control units that are able to share point information such that control sequences or control

loops executed at one control unit may receive input signals from sensors connected to other stand-alone control units within the network. If the network communication link fails or the other stand-alone control unit malfunctions, the control loop shall continue to function using the last value received from the stand-alone control units. Each stand-alone control unit shall be capable of performing the following energy management routines as a minimum:

a. Peak Demand Limiting (PDL)

Each S.C.U. shall contain a sliding window program and shall be programmed to reduce the peak demand for consumption and demand as user definable target values are approached.

The PDL program shall automatically shed non-critical deferrable loads, on the network, such as electrical heating coils, lights, battery chargers, HVAC systems, motors, etc., during high electrical usage periods. This sequence shall automatically restore the loads after a critical demand period has passed. The operator shall have the ability to select either the rolling (first off, first on) or the sequential (last off, first on) load shed tables for load assignment.

The PDL program shall be capable of changing setpoints of HVAC control systems, reducing capacity loading of centrifugal chillers, and/or resetting hot water or chilled water control loops.

Target demand limits on the network shall be user definable via Operator's Terminal.

The PDL program shall be provided with a minimum of three time of day shifts, each containing unique KWH target setpoints. These time of day target shifts will allow the target to be changed in accordance with the utility time of day metering schedule, such that during off hours PDL will allow a higher KWH demand, if required, without being penalized for additional demand changes. The time of start and finish for each of the three time of day target valves shall be user definable through the Operator's Terminal.

Trend log may be programmed to store for future recall, the peak demand value, the day of month of occurrence and the time of day of occurrence.



b. Time of Day Scheduling (TOD):

The S.C.U. system shall provide automatic start-up and/or shutdown of selected remote equipment and automatic adjustment of setpoint data according to pre-set schedules stored in the computer.

All remote fans, pumps, motors, lights, HVAC systems, boilers, chillers, etc. or any device which operates on a preset time basis can be assigned to this program.

TOD shall operate in accordance with a yearly calendar with automatic adjustment for daylight savings time and leap year.

TOD shall incorporate a holiday schedule capacity which will automatically bring up a predefined holiday schedule of operation. Holidays can be scheduled up to one year in advance and shall be capable of any number of holidays per year. The technique for scheduling holiday operation shall be to specify the date of the beginning day of the holiday and the date of the ending day of the holiday. For each of those days specified as a holiday, each timeclock will follow its unique holiday schedule.

TOD provides time dependent programmable two state control. This time program shall contain a minimum of four unique schedules which may be defined with appropriate start/stop times for each piece of controlled equipment. Assigned equipment may have up to four start or stop times per schedule.

In addition to the time dependent two state control, TOD also provides time dependent setpoint control. This control provides the capability of outputting proportional setpoint values of a pre-determined, pre-defined setting in accordance with the time of day and day of week. This program shall be used to accomplish night setback, morning warm-up, and normal daily operating setpoints of all control system loops, controlled by the S.C.U.. As with the two state control, time dependent setpoint control shall be subject to the holiday schedule. The setpoints desired shall be user definable at the Operator's Terminal.

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

The operator shall be capable of reading and/or altering all stored data pertaining to time of day, day of week, on/off times, setpoint values, and holiday designation.

c. Duty Cycle Control (DCC):

The DCC program shall provide variable "on" and "off" times throughout the day once the mechanical or electrical equipment is started by Time Program Commands, Optimum Start, or manual command.

The time of the overall cycle, as well as the length of time for each load during its cycle is user selectable. Off times for different loads can be staggered within the cycle period and temperature compensation may reduce the off portion of the cycle as required.

Each piece of equipment being duty cycled may have its own unique temperature sensor as input to the S.C.U. which will override the duty cycle off time, based on the environmental conditions of the space being served by the equipment.

Alternatively, a common analog sensor such as outdoor air may be used to automatically shorten the off cycle time of all duty cycled equipment, based upon the difference of outside temperature from design conditions.

The operator shall be able to read program data or to reprogram the unit. Any of the program parameters, such as cycle time, off time, adding or deleting loads, auto-adjust sensor assignments input for compensation, etc., may be monitored or altered by a qualified operator through the Operator's Terminal.

d. Optimum Start Program (OS):

The optimum start-up time of assigned equipment shall be determined based on a software calculation which takes into consideration outdoor air conditions, space conditions, and building R factor. Any or all zones and their associated loop control shall be capable of being optimized by the optimum start program.

The software program shall be capable of precisely determining the ideal start-up time in the heating and cooling system. Each zone being optimized may have its own unique set of variables, such as temperature and occupancy time.

The optimum start program shall control the start-up of the HVAC cooling and heating equipment to achieve the target occupancy space temperature at the precise time of building occupancy.

By use of his Terminal, the operator shall have the ability to program the occupancy time and target temperature for each zone to be optimized.

e. Enthalpy Optimization (EO):

The enthalpy optimization program shall reduce system cooling requirements when the total heat of the outdoor air is less than that of return air. The total heat, which is a combination of the latent heat and sensible heat, will be calculated for outdoor air and compared against that of the return air, and a decision made as to which source would provide the most economical operation. Dampers will be automatically adjusted in accordance with this decision. Dry bulb sensor inputs in conjunction with relative humidity input will be used to calculate the enthalpy in both air streams.

f. Direct Digital Control (DDC):

Direct control capability using a custom control program, manual command, or time program initiated commands shall be possible to input a sensor or group of sensors to the S.C.U., process the data using the features of a Custom Control program, and output an analog control signal or setpoint directly to a controlled valve or damper. It shall not be necessary to provide intermediate controllers to condition the signal for the valve or damper actuator. The output signal shall be scaled in software to be compatible with industry standard control signal variables as described elsewhere.

Integral to the Direct Digital Control capacity shall be industry standard control types, such as Hysteresis (floating control), Proportional Control direct acting, Proportional Control reverse acting, Proportional and Integral direct acting, Proportional and Integral reverse acting, PID direct acting, and PID reverse acting. The units of control will be in engineering units, such as degrees fahrenheit, kilowatt hours or percent relative humidity.

g. Trend Analysis Reporting:

Trended points may be digital inputs or outputs, analog inputs or outputs or calculated values. Time interval between samples shall be operator selectable. Trend logs shall represent a history of facility condition and shall continue uninterrupted until the program is manually stopped or altered by an authorized operator. The trend function shall:

1. monitor the same point or points according to an interval and store each value.
2. monitor a point or points when directed by an alarm condition.
3. store the time at which the data was taken for each point.
4. print point data according to an interval (length determined by user) or during an alarm condition.
5. print a column header with point designation and units for each point.
6. print the time and point data information in its respective column for all values for that point.

In addition, the owner shall be able to create customized control strategies based upon arithmetic, Boolean or time delay logic. The arithmetic functions shall permit simple relationships between variables (i.e. +, -, /, x) as well more complex relationships (ie. square root, exponential).

The system shall permit the generation of job-specific control strategies that can be activated in any of the following ways:

- continuously
- at a particular time-of-day
- on a pre-defined date
- when a specific measured or controlled variable reads a selected value or state
- when a piece of equipment has run for a certain period of time

Upon a loss of commercial power to any stand-alone control unit, the other units within the network shall not be affected, and the loss of operation of that unit shall be reported at the designated operator's

terminal. All control strategies and energy management routines defined for the stand-alone control unit shall be retained during a power failure via the battery with the unit for a minimum of forty (40) hours. Upon resumption of commercial power, the control unit shall resume full operation without operator intervention. The unit shall also automatically reset its clock such that proper operation of timed sequences is possible without the need for manual reset of the clock. Should a loss of power exceed memory back-up, the building operator shall be able to manually restore all system programs off of cassette tapes.

6. Operator Interface: The building control system shall permit full operator communication including: obtaining information about the performance of his system; allowing the operator to change the system operation; and diagnosing system malfunctions. Operator communication shall be through the use of any one of the following operator terminals:

- hand-held terminal
- printer
- black, white, amber or green CRT

It shall be possible to have one operator's terminal at each stand-alone control unit, and have a single operator's CRT and printer which can be connected into any panel in the network. The building control system shall permit complete operation of any stand-alone control unit within the network, from any operator terminal within the system.

7. User Programmability: All temperature control strategies and energy management routines shall be definable by the operator through an operator's terminal. It shall be possible for the operator to modify system functions independently after receiving the training from the control contractor as specified in paragraph 3.02. The system shall be provided complete with all equipment and documentation necessary to allow a trained operator to independently perform the functions listed below:

- read the value of a measured variable (i.e. temperature)
- start or stop equipment
- monitor the status of equipment being controlled
- read the set point of a control loop
- determine the control strategies that have been defined for a specific piece of equipment
- generate displays of control strategies
- add/delete control loops to the system
- add/delete points to the system

- create, modify or delete control strategies
- assign sensors and/or actuators to a control strategy
- tune control loops through the adjustment of control loop parameters
- enable or disable control strategies
- generate hardcopy records of control strategies on a printer
- select points to be alarmable and define the alarm state(s)

8. Expansion Capability: The building control system, as installed, shall permit an easy upgrade to greater functionality and performance through the addition of a central host computer and the necessary operator terminals. The network shall be full compatible with this additional central computer. An upgrade to a system with a central computer will allow the following functions:

- support of dynamic color graphic displays
- maintenance management
- wider range of English language reports
- sophisticated trend analysis

If a building control system is upgraded to a system with a central computer it shall not be necessary for the operator to reenter building data or redefine the control strategies already resident within the stand-alone control units.

9. Self Diagnostics and Alarm Reporting: Each stand-alone control unit shall contain self diagnostics that continuously monitor the proper operation of the unit. A malfunction of the unit will be reported, and will inform the operator of the nature of the malfunction, and the control unit affected. It shall be possible to annunciate malfunctions as well as other control unit alarms at a selected central operator's terminal. The system shall also allow on-line diagnosis via telephone modem from a remote location (vendor's headquarters or local branch office)

10. Password Penetration: The SCU Network shall support three levels of user-defined password access as follows:

- a. Level 0 - monitoring and reading of point value displays and trend information only.
- b. Level 1 - all functions of Level 0 plus the ability to command point values.

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

c. Level 2 - all functions of Level 1 plus the ability to edit point definitions, review and edit program lines, establish trending and maintenance management functions, and all high level routines.

11. Wiring: The entire building control system shall be installed by skilled electricians and mechanics working for the control contractor, all of whom are properly trained and qualified for this work. All wiring shall be installed in accordance with the Project Electrical Specifications, Division 16. Supervision and checkout of the system shall be by local branch engineers and technicians directly employed by the control contractor in the presence of the Project Manager.
12. Identify each item of control equipment with engraved laminated bakelite firmly attached to equipment with rivets or screws.
13. The system shall be compatible with the existing modem for 2-way automatic dial up communication to a remote operator's terminal. The remote operator's terminal shall be able to perform all functions performed by the local terminals.
14. In addition to the existing stationary operator's CRT the system shall be provided with Panel mounted terminals or a portable hand-held terminal for local SCU access.

3.02 START-UP AND INSTRUCTIONS

- A. System Turn-Over and Service: Upon completion of the installation, the Control System Contractor shall develop and install the programs for each of the SCU's in the network and supply three (3) copies of each program to the City. The Control System Contractor shall also start up the system and perform all necessary testing and run diagnostics to ensure proper operation. A point by point acceptance test in the presence of the Owner's representative and the Project Manager shall be performed.
- B. Training/Owner's Instruction: The Control System Contractor shall provide five copies of an operator's manual describing all operating and routine maintenance service procedures to be used with the system. The Control Contractor shall instruct the Owner's designated representatives in these procedures during the start-up and test period. The duration of the instruction period shall be no less than 24 hours. These instructions are to be conducted during normal working hours. The instructions shall consist of both hands-on and classroom training at the jobsite.

CROCKER ART MUSEUM PAVILION  
CROCKER/HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

3.03 ITEMS CONTAINING TRADE SECRETS OR PROPRIETARY RIGHTS PROHIBITED: Neither Contractor nor any subcontractor working for him shall furnish any item or combination of items to which, or in which, Contractor or any such subcontractor claims any trade secret or proprietary right such that Contractor or any such subcontractor shall fail or refuse to furnish within the scope of the contract and the contract price sufficient technical data or information in whatever form as may be required to enable City to contract with contractors other than Contractor and such subcontractor to maintain any such item or items in serviceable condition. "Contractors other than Contractor and such subcontractor" shall mean persons or business entities completely unrelated to Contractor or such subcontractor whether by ownership, business or familial relationship, contract, license arrangement or any other arrangement of any nature. The foregoing prohibition shall include, without limitation of the generality of the foregoing, any item, assembly, or combination of items, process, or processes, electrical or mechanical or electro-mechanical or microprocessor process or program, or combination or sequence thereof. Neither Contractor nor any subcontractor shall furnish any item or combination of items pursuant to the contract containing any program or programmable item without first obtaining the written consent of the Project Manager which may be withheld or conditioned in any manner determined to be in the best interest of the City by the Project Manager in his sole discretion.

END OF SECTION



PART 1: GENERAL

1.01 DESCRIPTION

- A. Related Documents: The requirements of the General and Special Conditions apply to all work hereunder as if repeated herein.
- B. Work Included: Electrical work, complete, including power, lighting and control systems and connecting items of electrical equipment. Core drill concrete or masonry for conduit installation. Bidders are required to inspect site prior to bid.
- C. Related Work Specified in Other Sections:
  - 1. Motors, fans and controls Division 15
  - 2. Low voltage temperature control wiring Division 15
  - 3. Finished painting Division 09

1.02 QUALITY ASSURANCE

- A. Workmanship:
  - 1. Use the National Electrical Contractors Association (NECA) "Standard of Installation" as a guide to the workmanship required. Replace or repair defective equipment or equipment damaged in the course of installation or test in a manner meeting with the approval of the Project Manager. The plans indicate the extent and general arrangement of the conduit and wiring systems. If any departures from the Plans are deemed necessary by the contractor, submit details and the reasons therefor as soon as practicable, and within thirty (30) days after the award of the Contract, to the Project Manager for approval. Prior written approval of the Project Manager is required for those departures.
  - 2. Examine the Plans and coordinate work to avoid conflicts, errors, and delays. Wiring shown on the Plans is diagrammatic only, and is meant to show circuiting and switching details. Locations of lighting fixtures, equipment, and electrical outlets shown on the Plans are approximately correct; however, check the locations of outlets shown with the Plans and verify the locations by taking measurements on the job.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- B. Permits and Fees: Procure permits and licenses required.
- C. Code Rules: Work and materials shall be in accordance with the latest adopted version of the National Electrical Code (N.E.C.), California Administrative Code, Part 3, Title 24 and Subchapter 5, Title 8, Title 21; Regulations of the State Fire Marshal; and any local codes and ordinances. Nothing in the Drawings or Specifications shall be construed to allow violations of these Codes, Rules or Regulations.
- D. Submittals: Material submittals shall be all-inclusive with items requiring submittals being submitted at the same time. Individual submittals will not be accepted. Individual submittal groups, (lighting fixtures, wiring devices, communications systems, etc.) shall be prefaced with a complete list of content by manufacturer and catalog number. Place orders for equipment in time to prevent delay in construction schedule or completion of project. If materials or equipment are not ordered in time, pay additional charges made by equipment manufacturers to complete their equipment in time to meet construction schedule, together with any special handling charges. Use new material listed by Underwriters Laboratories, Inc (UL). Submit six copies of a list of materials to the Project Manager for approval. Only one substitution will be considered per item. Approval of a substitution does not permit any reduction in the function or flexibility of the specified item. Assume responsibility for substitutions. Include in the list:

Lighting and Distribution Panels  
Receptacles  
Safety Switches  
Lighting Fixtures  
Light Switches  
Emergency Power Unit  
Dimmer System

- E. Record Drawings: On a reproducible print, obtained from the Project Manager, show every concealed location of all runs, conduits, boxes, and devices of any nature that are different in any way from that shown on the original Drawings. Draftsmanship shall be clear, legible and as professionally done as the original Drawings. Provide the Project Manager with three prints for approval, and after approval, deliver reproducible drawings clearly marked "Record Drawings" to the Project Manager. Final payment is subject to acceptance of Record Drawings by the Project Manager.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

PART 2: PRODUCTS

2.01 MATERIALS:

A. Conduit:

1. Rigid Steel: Hot dipped galvanized with threaded fittings of similar finish. Where exposed to weather, use malleable iron hubs with sealing ring and insulated throat.
2. EMT: Galvanized with compression or set-screw type fittings.
3. Flexible Metal Conduit: Galvanized steel. Squeeze type connectors except that screw-in type may be used for connection to recessed fixtures.
4. Liquid-Tight Flexible Metal Conduit: Galvanized steel, PVC jacket. Use insulated throat connectors.
5. Rigid Non-Metallic Conduit: PVC Schedule 40.

B. Outlet Boxes:

1. Dry locations: Galvanized one-piece pressed steel or welded gang type. Do not use sectional type.
2. Wet locations: Deep cast steel or aluminum, threaded hubs, gasketed covers.
3. Concrete: Precast with knockouts, extensions as required. Provide six inch pea gravel in bottom. Precast reinforced concrete covers with hold-down bolts and appropriate label except in traffic areas use galvanized steel checker plate cover with hold-down bolts.

- C. Conductors : Copper, No. 10 AWG and smaller solid or stranded, No. 8 AWG and larger stranded, except conductors to controls mounted on hinged or removable panel covers shall be stranded. TW, THHN or THW for branch circuits, THW for feeders, THHN for fixtures and fixture raceways. Use of aluminum conductors is not permitted.

D. Wall Switches:

1. Quiet type, 20A, 120/277 volt rated. Color selected by Project Manager.

General Electric  
Hubbell  
Leviton

GE 5950 Series  
1220 Series  
1220 Series

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

E. Receptacles:

1. 20A, 125 volt rated, parallel prong, U-ground.  
Color selected by Project Manager.

General Electric	5362	Series
Hubbell	5362	Series
Leviton	5362	Series

F. Cover Plates:

1. Anodized aluminum, finish as selected by the Project Manager.
2. Weatherproof, Sierra "WP" Series, General Electric GE9226-5.

G. Floor Outlets:

1. Flush Type:

- a. Duplex Receptacle: Walker 880 Series box, 20 amp duplex receptacle, #895 cover; Hubbell B-2500 Series box, S-3925 cover, S-6290 outlet, carpet plate if required, or approved equal.

H. Ground Fittings: Fittings shall be of approved manufactured type, installed and connected to conform to Code requirements.

I. Fractional Horsepower Manual Starters: Melting alloy overload type, Square "D" Class 2510 Type F, General Electric CR101 or approved equal. Provide engraved nameplate.

J. Photoelectric Cell: 1500 Watt tungsten or 1800 VA rated at 120 or 208/277 volts. Tork 2100 Series or approved equal.

K. Time Switch: Astronomic dial with day omitting device, single or multi-pole as required and reserve power feature. Flush mount in finished areas (i.e., adjacent to flush panels). Provide engraved nameplates. Tork 7000Z Series, Sangamo, Intermatic or approved equal.

PART 3: EXECUTION

3.01 INSTALLATION

- A. Excavation and Backfill: Perform excavation and backfill required for electrical installation. Restore any surfaces, walks, wall, etc. cut by installation.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

1. Excavation: Dig trenches straight and true to line with bottom smoothed of rock points. Support conduit crown twenty-four (24) inches below finished grade.
  2. Backfill: Backfill and tamp in six (6) inch layers to 95% compaction with suitable material approved by Project Manager. Compaction by jetting, flooding, or by wheels of vehicles is specifically prohibited.
- B. Flashing and Sealing: Flash and counterflash roof penetrations with collars manufactured for the purpose. Apply mastic to seal absolutely watertight. Provide lead roof jacks primed with asphaltic primer Fed. Spec. SS-A-701 wherever embedded in roofing.
- C. Cutting and Patching: Obtain Project Manager's approval before performing any cutting or patching of concrete, masonry, wood, or steel.
- D. Conduit and Tubing Systems:
1. Conduit and tubing system installations shall meet or exceed the requirements of the N.E.C. Minimum size of conduit is 1/2 inch. Conceal or expose as indicated. Support at intervals required by the N.E.C. Install exposed runs parallel to or perpendicular to walls, structural members, or inter-sections of vertical planes and ceilings. Avoid field-made bends and offsets where possible, but where necessary, make with an approved hickey or conduit bending machine. Heating of metal conduit to facilitate bending is prohibited. Make changes in direction of runs with symmetrical bends or cast metal fittings. Do not install crushed or deformed raceways. Avoid trapped raceways where possible. Take care to prevent the lodgment of plaster, dirt, or trash in raceways, boxes, fittings and equipment during the course of construction. Replace raceways not entirely free of obstructions. Ream, remove burrs and clean conduit for proper introduction of wires and cables.
  2. Immediately after installation, plug or cap conduit ends with water tight and dust tight conduit seals until the time for pulling wires.
  3. Install and equip conduit, boxes, and fittings installed outdoors or in other wet locations so as to prevent water from entering the conduit.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

4. Make final connection to motors or equipment disconnects where flexible connection is desired or required to minimize vibration with 18 inch minimum lengths of liquid-tight, neoprene jacketed, flexible steel conduit.
5. Secure conduit with straps or hangers manufactured for the purpose. Do not notch structural members for the passage of raceways.
6. Sleeve conduit penetrating footings with 24 gauge galvanized iron pipe, sized to allow free motion of conduit. Pack annular space between pipe and sleeve with incombustible material and seal each end with mastic to make waterproof.
7. Do not imbed conduit in slabs on grade. Install below the bottom of the rock such that the conduit rises vertically from the surface of the rock. Concrete encase the curved portions of the bends under slab where conduit emerges for conduits with less than two (2) feet of cover. Conduits shall emerge from the concrete at right angles. Provide structural support for the conduit during pouring of concrete to ensure that the conduit remains in position. Seal the exposed ends of conduits. Use the greatest practical single length of conduit between joints and make up joints with approved jointing compound.
8. PVC conduit may be used underground or under slab with extensions above grade or slab to be metallic conduit. PVC conduit may extend above slab within walls to the first box where permitted by local code. Use of direct flame to bend PVC conduit is prohibited. PVC conduit two (2) inch and larger trade size shall have PVC coated, rigid steel elbows. Where PVC conduit is used, install a copper ground wire sized in accordance with the N.E.C. Conduit sizes indicated on the drawings are for metallic conduit and PVC sizes may be larger to accommodate the ground wire.

E. Conductors:

1. Install conductors in a continuous raceway system. Wire shall be continuous from outlet to outlet. Make splices in outlet and pull boxes only with "Scotchlok" or equal insulated connectors for small conductors. Use Burndy, T & B, or equal solderless lugs and connectors for larger cables, voids filled with "Duxseal" and taped with "Scotch 33+" or equal. Soldered mechanical joints insulated with

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

tape will not be acceptable. Take care to avoid injury to wire or insulation during pull-in and use powdered soapstone or a pulling compound, "Yellow 77" or equal, lubricant if necessary. Do not pull wire until all construction is completed which might damage insulation or fill conduit with foreign material. Minimum conductor size is No. 12 AWG for lighting and power circuits, or No. 14 AWG for control circuits, unless otherwise indicated, but in no case less than those shown. Arrange wiring in cabinets and panels neatly cut to proper length, and remove surplus wire. Apply "Sta-kon" or similar terminals to control wiring for connection to terminals, and bridle with "Ty-Raps".

2. Do not pull wire into already occupied raceway. If additional conductors are required, pull out existing and pull in new quantity.
3. Color coding of conductors:
  - a. 120/208 Volt: Black, red or blue, and white (neutral).

**F. Outlets:**

1. Provide outlets in the wiring or raceway system with a box to suit the conditions encountered. Boxes shall have sufficient volume to accommodate the number of conductors entering the box in accordance with the requirements of the N.E.C. Set boxes in a rigid and satisfactory manner and support independently of conduit by bar hangers in metal studs or to solid blocking in frame construction, fastening with wood screws on solid wood framing, bolts and expansion shields on concrete or brick, toggle bolts on hollow masonry units, and machine screws or welded threaded studs on steel work. Where boxes are concealed in walls, if not embedded in concrete, the holes shall be no larger than required to receive the box.
2. Location of outlets indicated are approximate. Study the building plans in relation to the spaces and equipment surrounding each outlet so that the lighting fixtures are symmetrically located according to the room layout. When necessary, with the approval of the Project Manager, relocate outlets to avoid interference with the mechanical equipment or structural features.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

- G. Device Plates: Install plates with all four edges in continuous contact with the finished wall surfaces without the use of mats or similar devices. Plaster fillings will not be permitted. Install plates vertically and with an alignment tolerance of 1/16". Do not use sectional-type device plates. Bring conditions requiring the use of jumbo plates to the attention of the Project Manager.
- H. Grounding:
1. Except where specifically indicated otherwise, ground exposed noncurrent-carrying metallic parts of electrical equipment, raceway systems, and the neutral in strict accordance with the N.E.C., California Electrical Code, and other applicable laws and regulations.
- I. Lighting Fixtures:
1. Install lighting fixtures at the height and in the manner indicated. Provide accessories such as trim, straps, mounting plates, nipples or brackets for proper installation. Illustrations and references on the Plans are indicative of the general type of fixture desired. Fixtures of similar design and equivalent light distribution and brightness may be submitted for approval.
  2. Furnish lamps manufactured by General Electric or Westinghouse, of the proper type, wattage, and voltage rating. Deliver lamps to the project in their original cartons and install in the fixtures just prior to the completion of the project. After construction of the total project is completed, clean fixtures and lamps.
- J. Circuit Breakers: Thermal magnetic, molded case bolt-on type unless otherwise noted. Use common trip multiple breakers with single handle. "Bails" are not acceptable. The use of tandem or dual circuit breakers in a normal single pole space is not acceptable. Circuit breakers used for switching shall be approved for the purpose. Interrupting capacities as indicated on the Drawings.
- K. Panelboards:
1. Circuit breaker type as indicated, meeting the standards established by U.S., NEMA PB 1, and the N.E.C. Flush or surface mounted as shown on the Plans including a flush type combination lock and catch and a directory frame with a directory card faced with transparent plastic. Copper bus. Furnish



CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

two keys with each Panelboard. Provide an engraved nameplate showing panel name, voltage and phase.

- L. Safety Switches: Heavy duty (HD) type mounted in the enclosure indicated with external markings clearly indicating "On" and "Off" positions. Handle shall be lockable in either position. Quick make, quick break, operating mechanism independent of the handle operation. Provide interlock to prevent opening the cover while the switch is in the "On" position. Provide engraved nameplate.
- M. Motor Control, General: Provide motors with a suitable controller and devices that will perform the functions as specified for the respective motors. Controllers shall meet NEMA 1c 1, ASA C19.1, the N.E.C., and U.L. Motor horsepower ratings shown are for guidance only and do not limit the equipment size. When motors furnished differ from the expected rating or type of starting, make the necessary adjustments to wiring, conduit, disconnect devices, motor starters, branch circuit protection, and other affected material or equipment to accommodate the motors actually installed, at no additional cost to the Owner. Motor protection shall consist of thermal overload relays of the inverse time limit type in ungrounded phases sensitive to motor current and mounted within the motor controller. Controller mounted overload relays shall be the manual reset type with externally operated reset button. Select and install overload relay heaters after the actual nameplate full-load current rating of the motor has been determined. Provide motors with a disconnecting means as required by the N.E.C. Disconnecting means, separately enclosed or included in combination starters, shall meet the requirements for individual circuit breakers or switches specified herein. Enclosures, modifications, and types of controllers shall be as indicated. Provide engraved plastic nameplate for each starter. Verify that controls furnished under Division 15, Mechanical, meet the requirements of this Specification.
- N. Coordination of Work: Coordinate the location of conduit runs, fixtures, equipment, starters, and controllers with other trades prior to installation. Remove or alter work performed without regard for other crafts as required. No compensation will be allowed for extra work resulting from the lack of coordination.
- O. Nameplates: Laminated phenolic plastic, black front and back, white core with letters engraved through the outer covering. 3/16 inch high lettering at pushbutton stations, thermal overload switches, wall switches and similar devices where the nameplate is attached to the

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

device plate. 1/4 inch high letters at all other locations unless otherwise noted. Fasten securely to the equipment with plated, self-tapping screws or nickel plated brass bolts. Double sided tape or contact cement is not permitted. Engraving directly on the device plate is permitted. Describe the name of or the function or use of the particular equipment involved.

- P. Heating, Ventilating and Plumbing Equipment: Line and low voltage wiring which acts to operate a starter or control is furnished and installed, along with associated conduit and equipment, under Division 15. Furnish and install power branch circuit wiring and conduit from panel or switchboard via starter or controller to motor, heater, or other load. Install individual motor starters and contactors furnished under Division 15. Provide safety switches for mechanical equipment not otherwise furnished with disconnecting means under Division 15 and the Mechanical Plans.
- Q. Emergency Battery Unit: Unit shall be 12 volt DC output equipped with nickel cadmium batteries, with three level battery charging and six distribution circuits. Chloride # 1210B-21 or approved equal.
- R. Dimmer System:
1. Dimmer panels shall consist of packaged cabinets complete with double 2KW dimming modules, quantities as scheduled on the plans. Lutron LVM-2000/3 or approved equal modules, designed for dimming both line and low voltage fixtures. Units shall have input power of 208 volt, single phase, three wire.
  2. Dimmer controls shall be Lutron Versaplex VC series lighting scene control stations or approved equal, with quantity of zones as scheduled on the plans. Units shall be mounted within a locking cabinet at each dimmer control location, finish as specified by the Project Manager.
  3. Connect dimmer controls to dimmer panels with low voltage wiring, conductor quantity and size as recommended by the manufacturer.
  4. Furnish operating and maintenance instructions as specified in Section 16500, 1.03 C.
- S. Responsibility:
1. Mount line voltage equipment and connect electrical loads whether furnished by this Contractor or not.

CROCKER ART MUSEUM PAVILION  
CROCKER HASTINGS HOUSE RESTORATION  
SACRAMENTO, CALIFORNIA  
cc Number 2211

2. List circuits emanating from power, distribution, and lighting panelboards by function typed on the directory card.
3. Retain detachable or portable portions of the installation until completion of work (i.e., instruction books, connection diagrams, keys, test reports, etc.). Deliver them to the Owner upon acceptance of the job, listed on an itemized receipt attached to the request for final payment.
4. Clean construction debris from electrical equipment.
5. Provide barriers, guards, lights, flares, flashers, and all temporary protection. This contractor is fully responsible for all job safety of his portion of the work for both the workmen and the public 24 hours per day, 7 days per week during the progress of construction.

3.02 FIELD QUALITY CONTROL

A. Tests:

1. Test wiring and connections for continuity and grounds before fixtures or equipment are connected. Where such tests indicate faulty insulation or other defects, they shall be located, repaired, and retested at Contractor's expense.
2. Balance electrical loads at the panelboards.
3. Check motor rotation and correct, if necessary, after final service connections are made.
4. All tests under this Section shall be paid for by the contractor.

PART 1: GENERAL

1.01 DESCRIPTION

- A. Related Documents: The requirements of the General and Special Conditions apply to all work hereunder as if repeated herein.
- B. Work Included: Furnishing and installing of all signal systems called for on the drawings or as herein specified. All systems shall be complete and ready for operation to the satisfaction of the Project Manager. Furnish all labor, material, tools and services to complete the work.

1.02 QUALITY ASSURANCE

- A. Installation:
  - 1. The system shall be installed by an experienced firm regularly engaged in the installation of the particular system.
  - 2. All terminations of cable in cabinets shall be made with Sta-Kon ring-tongue terminals on terminal blocks. Label circuits for ease of maintenance.
  - 3. The contractor is responsible for reviewing the contract drawings for the purpose of determining adequacy of the conduit system. Additional conduit and related items, if required, are the responsibility of the contractor and shall be installed at no additional cost to the City.
- B. Submittals: Materials submitted in accordance with the requirements of the ELECTRICAL Section of these specifications shall include complete outline drawings of the equipment, front and rear elevations of any control panel(s), and complete wiring and interconnection diagrams.
- C. Operating and Maintenance Instructions: Upon completion of the installation the contractor shall provide the project Manager with three (3) complete sets of operating instructions, edge bound in substantial fiberboard covers, with title page, list of contents, and conspicuous label on cover. Each technical manual shall contain detailed operating instructions for all systems. These booklets shall also contain circuit diagrams and testing information, and a listing of all points to be checked in case of system failure. They shall also detail all routine maintenance and servicing which must be done by the City. Each of these booklets

shall contain an "as-built" one line diagram of the system which shall include every component except connectors. Refer to the particular system specification for any additional information required for these manuals.

PART 2 SYSTEMS

A. Fire Alarm System:

1. The Fire Alarm System shall be Simplex 2001 with resound feature. A zone in alarm, after being silenced, shall not interfere with the operation of subsequent zones. An alarm initiated from another zone shall again cause the general alarm devices to sound continuously until silenced. The resound feature shall apply to all zones in the control panel.
2. Provide 8 zones initially, with provision in the cabinet for 10 future zones minimum. Zones shall be as follows:
  1. Pavilion Ground Floor
  2. Pavilion Main Floor
  3. Pavilion Top Floor
  4. Hastings House Ground Floor
  5. Hastings House Main Floor
  6. Hastings House Top Floor
  7. Hastings House Attic
  8. Central Plant
3. The general alarm devices shall be silenced by authorized personnel only by entering a locked control cabinet and operating the proper silencing switch. Operation of this switch shall be indicated by a trouble light and audible signal at the control panel. The zone in alarm shall continue to provide a visual LED alarm indication until the system is restored to normal operation.
4. The zones shall be annunciated individually at the main control panel and at the remote annunciator.
5. Actuation of any alarm device shall automatically cause the following operations:

Lamp illuminated on main control panel annunciator.

Alarm signal transmitted to audible horns for general alarm.

6. The Fire Alarm shall operate from the line side of commercial power rectified to 24 VDC. Provide a means of disconnect and overcurrent protection.
7. Standby batteries shall be provided with sufficient capacity to power the system for a minimum of 60 hours and to power the alarm signalling devices for a minimum of 15 minutes after primary power failure.
8. Equipment:

Fire Alarm Control Panel: Simplex Type 2001-8021 containing control modules, zone modules, signal modules and other necessary components to provide a complete, functioning system. Components shall be contained in a Simplex Type 2001-4000 surface mounted cabinet. The outer door shall be equipped with a lock and transparent door panel.

Fire/Trouble Control Module: 2001-1007 with system reset, alarm lock-in, alarm resound, acknowledge switch, earth LED, system trouble LED, tonalert, and LED test functions.

Zone Modules: 2001-1019, 24 VDC, for operation of N/O two-wire detectors and devices, with alarm LED, flasher acknowledge, test/disconnect switch, trouble LED, LED test feature, printer output, supervised annunciator output and resound capability.

Signal Circuit Module: 2001-2076 to supply power to signalling devices via a 2-wire Class B circuit or a 4-wire Class A McCulloch type circuit. A trouble LED shall be visible on the enclosure front. Include a 3-position disconnect-normal-initiate switch for system testing. Provide for trouble resound, printer outputs and individual or common programmed alarm feature.

Provide a City of Sacramento approved trip module, supervised for opens and grounds. Connect to the City Fire Alarm box at the corner of 2nd and "O" Streets.

March Time Module: 2001-3043 Time limit, dual rate.

Pull Stations: 2099-9021 high impact Lexan, with red high gloss finish.

Annunciator: 4305 series with "L" auxiliary.

Audio/Visual Device: 2903-9101, 24 VDC, white lens, red "Fire" label Xenon flasher, with horn, flush trim, and back box.

Visual Device: 2904-9101, 24 VDC, white lens, red "Fire" label Xenon flasher, flush trim, and back box.

Smoke Detector: 2098 series, 24 VDC.

9. Installation:

System components shall be securely fastened to their support, independently of the wiring. Installation of wiring and fire detecting circuits shall conform to Article 2.10 of NFPA Standard 72A and 72D, except that all wiring shall be installed in raceway systems.

Keys and locks for all equipment shall be identical where possible. The contractor shall furnish not less than six keys for each type required. Keys shall be identified by an appropriate number stamped on the key or on a metal tag attached to the key. A key numbering chart will be provided in each data book furnished.

10. Spare Parts: All spare parts shall be directly interchangeable with the corresponding components as furnished in the installed system and shall be suitably packaged and identified by nameplate, stamping or tagging. Provide spare fuses for each circuit in the system and three sets of any special tools.

11. Tests: The entire Fire Alarm System shall be tested and adjusted under the supervision of a factory trained representative of the manufacturer. At the completion of the installation, the contractor shall deliver to the Project Manager any special equipment and tools required to enable maintenance personnel to completely check and maintain relays and other components of the system and a set of spare parts. The system shall be tested to show that the complete system is free from grounded or open circuits, and that the central control equipment will indicate a ground or open that would affect operation. Any defects noted shall be corrected at once and the test reconducted.