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CITY OF PHOENIX

**SQUAW PEAK WATER TREATMENT PLANT
GENERAL PLANT IMPROVEMENTS**

VOLUME 1

**BID DOCUMENTS AND SPECIFICATION
DIVISION 1**

- PART A – MODIFICATIONS AND UPGRADES**
- PART B – PRELIMINARY TREATMENT PLANT**
- PART C – SOLIDS HANDLING FACILITY**

**INDEX NO. W-886739
JANUARY 1992**

MAYOR

Paul Johnson

CITY COUNCIL

- | | | | |
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BID FORM AND BID
FORM ATTACHMENTS

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SECTION 00300 - BID FORM

1. Project Identification.

The project is for the Squaw Peak Water Treatment Plant - General Plant Improvements. The project consists of three parts which are to be bid and constructed as one project: The three parts are:

Part A - Modifications and Upgrades

Part B - Preliminary Treatment Facilities

Part C - Solids Handling Facility

Directory Drawings, which in part, present an index to the Part A, Part B, and Part C Drawings, are also part of the project.

2. Bid Submission.

- 2.1 Bid to be submitted to City of Phoenix, Arizona, Engineering and Architectural Services Department, Construction Bid Counter, 125 East Washington Street, 2nd Floor.
- 2.2 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an agreement with OWNER in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Bid Price and within the Bid Times indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.
- 2.3 Bidder accepts all of the terms and conditions of the Advertisement or Call for Bids and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for sixty (60) calendar days after the day of Bid opening. Bidder will sign and deliver the required number of counterparts of the Agreement with the bonds and other documents required by the Bidding Requirements within fifteen (15) days after the date of OWNER'S Notice of Award.
- 2.4 In submitting this bid, Bidder represents, as more fully set forth in the Agreement, that:
 - 2.4.1 Bidder has examined and carefully studied the Bidding Documents and the following Addenda receipt of which is hereby acknowledged: (List Addenda by Addendum Number)

- 2.4.2 Bidder has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance and furnishing of the Work;
- 2.4.3 Bidder is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work;
- 2.4.4 Bidder has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in Article 4 of the General Conditions. Bidder accepts the determination set forth in paragraph SC-4 of the Supplementary Conditions of the extent of the "technical data" contained in such reports and drawings upon which Bidder is entitled to rely as provided in Article 4 of the General Conditions. Bidder acknowledges that such reports and drawings are not Contract Documents and may not be complete for Bidder's purposes. Bidder acknowledges that OWNER and ENGINEER do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Bidding Documents with respect to Underground Facilities at or contiguous to the site. Bidder has obtained and carefully studied (or assumes responsibility for having done so) all such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by Bidder and safety precautions and programs incident thereto. Bidder does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the determination of this Bid for performance and furnishing of the Work in accordance with the times, price and other terms and conditions of the Contract Documents.
- 2.4.5 Bidder is aware of the general nature of Work to be performed by OWNER and others at the site that relates to Work for which this Bid is submitted as indicated in the Contract Documents.
- 2.4.6 Bidder has correlated the information known to Bidder, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.
- 2.4.7 Bidder has given ENGINEER written notice of all conflicts, errors, ambiguities or discrepancies that Bidder has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to Bidder, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Bid is submitted;

Base Bid Item No.	Bid Qty.	Description (Bidder to write price in words)	Unit Price	Bid Price (Figures)
2.5.4	1 LS	Protective Coatings on Fifty Percent of the Walls of the Flocculation and Sedimentation Basins and the Filter Influent Channel.	N/A	\$
			_____ Dollars	
			and _____ Cents.	
2.5.5	1 LS	Protective Coatings on Fifty Percent of the Floors of the Flocculation and Sedimentation Basins and the Filter Influent Channel.	N/A	\$
			_____ Dollars	
			and _____ Cents.	
2.5.6	N/A	Filter Concrete Repair	N/A	N/A
2.5.6.1	12 EA.	Protect Filter Media	\$ _____	\$
2.5.6.2	200 LF	Repair Reinforcing Steel	\$ _____	\$
2.5.6.3	24 EA.	Protective Coating, Long Wall	\$ _____	\$
2.5.6.4	24 EA.	Protective Coating, Short Wall	\$ _____	\$
2.5.6.5	50 LF	Repair Cracks	\$ _____	\$
2.5.7	1 LS	Allowance for potholing, for the lump sum of: <u>Five Thousand Dollars.</u>	N/A	\$ 5,000.00
2.5.8	1 LS	Allowance for relocation of existing utilities, for the lump sum of: <u>Fifty Thousand Dollars.</u>	N/A	\$ 50,000.00
2.5.9	1 LS	Allowance for Repair and Reroofing of Existing Building Roofs, for the lump sum of: <u>Seventy-Five Thousand Dollars.</u>	N/A	\$ 75,000.00

<u>Base Bid Item No.</u>	<u>Bid Qty.</u>	<u>Description (Bidder to write price in words)</u>	<u>Unit Price</u>	<u>Bid Price (Figures)</u>
2.5.10	1 LS	Allowance for painting Existing Buildings, for the lump sum of: <u>Seventy-Five Thousand Dollars.</u>	N/A	\$ 75,000.00
2.5.11	1000 CY	Extra Excavation, for the contingent unit price of: _____ _____ Dollars and _____ Cents per cubic yard	\$ _____	\$
2.5.12	750 CY	Extra Select Backfill, for the contingent unit price of: _____ _____ Dollars and _____ Cents per cubic yard	\$ _____	\$
2.5.13	400 SY	Extra Riprap, for the contingent unit price of: _____ _____ Dollars and _____ Cents per square yard	\$ _____	\$
2.5.14	500 CY	Extra Crushed Stone, for the contingent unit price of: _____ _____ Dollars and _____ Cents per cubic yard	\$ _____	\$
2.5.15	500 CY	Extra Sand, for the contingent unit price of: _____ _____ Dollars and _____ Cents per cubic yard	\$ _____	\$
2.5.16	750 CY	Extra Class "A" Concrete, for the contingent unit price of: _____ _____ Dollars and _____ Cents per cubic yard	\$ _____	\$

<u>Base Bid Item No.</u>	<u>Bid Qty.</u>	<u>Description (Bidder to write price in words)</u>	<u>Unit Price</u>	<u>Bid Price (Figures)</u>
2.5.17	500 CY	Extra Class "B" Concrete, for the contingent unit price of: _____ Dollars and _____ Cents per cubic yard	\$ _____	\$
2.5.18	25,000 LB	Extra Reinforcing Steel, for the contingent unit price of: _____ Dollars and _____ Cents per pound	\$ _____	\$
2.5.19	500 SY	Extra Asphaltic Pavement, for the contingent unit price of: _____ Dollars and _____ Cents per square yard	\$ _____	\$
2.5.20	5,000 SY	Extra Asphalt Seal Coat, for the contingent unit price of: _____ Dollars and _____ Cents per square yard	\$ _____	\$
2.5.21	2,000 SY	Extra Pavement Overlay, for the contingent unit price of: _____ Dollars and _____ Cents per square yard	\$ _____	\$
2.5.22	5,000 LB	Extra Structural Steel, for the contingent unit price of: _____ Dollars and _____ Cents per pound	\$ _____	\$

<u>Base Bid Item No.</u>	<u>Bid Qty.</u>	<u>Description (Bidder to write price in words)</u>	<u>Unit Price</u>	<u>Bid Price (Figures)</u>
2.5.23	3,000 LB	Extra Aluminum, for the contingent unit price of:	\$ _____	\$
		_____ Dollars and _____ Cents per pound		
2.5.24	2,500 LB	Extra Stainless Steel, for the contingent unit price of:	\$ _____	\$
		_____ Dollars and _____ Cents per pound		
2.5.25	500 EA	Extra Stainless Steel Anchor Bolts, for the contingent unit price of:	\$ _____	\$
		_____ Dollars and _____ Cents each		
2.5.26		Extra Electrical PVC Conduit, for the contingent unit prices per foot in accordance with the following schedule:		
		Price per linear foot		
4,000 LF	2 inch	_____ Dollars and ___ Cents	\$ _____	\$
1,000 LF	4 inch	_____ Dollars and ___ Cents	\$ _____	\$
2.5.27		Extra Electrical and Instrumentation RGS Conduit, for the contingent unit prices per foot in accordance with the following schedule:		
		Price per linear foot		
2,000 LF	3/4 inch	_____ Dollars and ___ Cents	\$ _____	\$
2,000 LF	1 inch	_____ Dollars and ___ Cents	\$ _____	\$

<u>Base Bid Item No.</u>	<u>Bid Qty.</u>	<u>Description (Bidder to write price in words)</u>	<u>Unit Price</u>	<u>Bid Price (Figures)</u>
2.5.28		Extra Electrical and Instrumentation PVC Coated Steel Conduit, for the contingent unit prices per foot in accordance with the following schedule:		
		Price per linear foot		
	2,000 LF	3/4 inch _____ Dollars and ___ Cents	\$ _____	\$ _____
	2,000 LF	1 inch _____ Dollars and ___ Cents	\$ _____	\$ _____
2.5.29		Extra Electrical and Instrumentation Cable, for the contingent unit prices per foot in accordance with the following schedule:		
		<u>600 Volt Cable</u>		
		Price per linear foot		
	10,000 LF	No. 14 Cable _____ Dollars and ___ Cents	\$ _____	\$ _____
	10,000 LF	No. 12 Cable _____ Dollars and ___ Cents	\$ _____	\$ _____
		<u>5,000 Volt Cable</u>		
		Price per linear foot		
	1,000 LF	No. 2 _____ Dollars and ___ Cents	\$ _____	\$ _____
		<u>Two Conductor Shielded Cable</u>		
		Price per linear Foot		
	10,000 LF	No. 16 _____ Dollars and ___ Cents	\$ _____	\$ _____
2.5.30		Extra Electrical Manholes Complete, for the contingent unit price per manhole in accordance with the following schedule:		
		Price per Manhole		
	3 EA	6'X6'X8' _____ Dollars and ___ Cents	\$ _____	\$ _____
2.5.31		Extra Electrical Handholes Complete, for the contingent unit price per handhole in accordance with the following schedule:		
		Price per Handhole		
	4 EA	4'X4'X4' _____ Dollars and ___ Cents	\$ _____	\$ _____

Base Bid (Sum of Bid Prices for all Base Bid Items 2.5.1 through 2.5.31):

(written words)

Dollars and Cents

(written words)

\$ _____

(Figures)

THE BASE BID IS BASED UPON THE LUMP SUM PRICES, ALLOWANCES AND UNIT PRICE AND ESTIMATED QUANTITIES. IF THERE IS AN ERROR IN THE BASE BID OR COMPUTED TOTALS BY THE BIDDER IT SHALL BE CHANGED AND THE UNIT PRICES AND LUMP SUM AMOUNTS SHALL GOVERN. THE WRITTEN WORD AMOUNTS TAKE PRECEDENCE OVER THE FIGURE AMOUNTS.

THE BIDDER ACKNOWLEDGES AND AGREES THAT DETERMINATION OF THE LOWEST RESPONSIVE AND RESPONSIBLE BIDDER SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF PARAGRAPH 16 OF THE INSTRUCTIONS TO BIDDERS.

THE BASE BID DOLLAR VALUE WILL BE ANNOUNCED AT THE BID OPENING.

3. Time of Completion.

3.1 Bidder agrees that the Work will be Substantially Complete within 1,000 calendar days after the date when the Contract Time commences to run as provided in Article 2 of the General Conditions, and Complete and ready for final payment in accordance with Article 14 of the General Conditions within 1,030 calendar days after the date when the Contract Time commences to run.

Bidder agrees that certain activities and Work will be Substantially Complete within the calendar days after the date when the Contract Time commences to run as provided in Article 2 of the General Conditions or on the Calendar Dates as described in Article 3 of the Agreement, as follows:

- Substantial Completion of Schedule Z, March 31, 1994.
- Substantial Completion of Schedule T, April 30, 1994.
- Substantial Completion of Schedule S, 180 days.
- Substantial Completion of Schedule W, 510 days.
- Substantial Completion of Schedule X, 790 days.
- Substantial Completion of Schedule R, 915 days.
- Substantial Completion of Schedule Y, 1,000 days.

3.2 Bidder accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the times specified in the Agreement.

4. Attachments to Bid.

4.1 The following documents are attached to and made a condition of this Bid:

- (a) Required Bid security in the form of a certified check, cashier's check or Bid Bond, provided in Section 00310, for an amount not less than five (5) percent of the Bidders Total Base Bid.
- (b) Section 00300, a tabulation of Subcontractors, Manufacturers, Suppliers and other persons and organizations required to be identified in this Bid.
- (c) Section 00340, Schedule of Manufacturers and Suppliers Major Equipment and Material Items.
- (d) Section 00360, Noncollusion Affidavit.

4.2 The following documents shall be submitted to the OWNER within forty-eight (48) hours of the Bid Opening:

- (a) Section 00320, Required Bidder's Questionnaire with supporting data.

5. Bid Terms.

Terms used in this Bid which are defined in the General Conditions or Instructions will have the meanings indicated in the General Conditions or Instruction.

(THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK)

Submitted on _____, 19____.

If Bidder is:

An Individual

By _____ (Seal)

doing business as _____

Business address: _____

Arizona License: Classification _____ Number _____

Phone Number: _____

A Partnership

By _____ (Seal)

Business Address: _____

Arizona License: Classification _____ Number _____

Phone Number: _____

A Corporation

By _____ (Seal)

By _____ (Seal)

Attest _____

Business Address: _____

Arizona License: Classification _____ Number _____

Phone Number: _____

A Joint Venture

By _____ (Seal)

By _____ (Seal)

Arizona License: Classification _____ Number _____

Phone and Address for receipt of official communications

(Each joint venture must sign. The manner of signing for each individual, partnership and corporation that is a party of the joint venture should be in the manner indicated above.)

(THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK)

SECTION 00310 BID BOND

BIDDER (Name and Address):

SURETY (Name and Address of Principal Place of Business):

OWNER (Name and Address):

City of Phoenix, Arizona
An Arizona Municipal Corporation
251 West Washington Street
Phoenix, Arizona 85003

BID

BID DUE DATE: _____
PROJECT (Brief Description Including Location):

BOND

BOND NUMBER: _____
DATE (Not later than Bid Due Date): _____
PENAL SUM: _____

IN WITNESS WHEREOF, Surety and Bidder, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Bid Bond to be duly executed on its behalf by its authorized officer, agent, or representative. The Bidding Documents are incorporated into this Bid Bond by reference.

BIDDER

SURETY

Bidder's Name and Corporate Seal (Seal)

Surety's Name and Corporate Seal (Seal)

By: _____
Signature and Title

By: _____
Signature and Title
(Attach Power of Attorney)

Attest: _____
Signature and Title

Attest: _____
Signature and Title

Note: (1) Above addresses are to be used for giving required notice.
(2) Any singular reference to Bidder, Surety, OWNER or other party shall be considered plural where applicable.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to pay to OWNER upon default of Bidder the penal sum set forth on the face of this Bond which represents **five percent (5%) of the sum of the Bidder's Total Base Bid and Bid Alternates**.
2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents the executed Agreement required by the Bidding Documents and any Performance and Payment Bonds required by the Bidding Documents and Contract Documents.
3. This obligation shall be null and void if:
 - 3.1 OWNER accepts Bidder's bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by OWNER) the executed Agreement required by the Bidding Documents and any Performance and Payment Bonds required by the Bidding Documents and Contract Documents, or
 - 3.2 All bids are rejected by OWNER, or
 - 3.3 OWNER fails to issue a notice of award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from OWNER, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of and any and all defenses based on or arising out of any time extension to issue notice of award agreed to in writing by OWNER and Bidder, provided that the time for issuing notice of award including extensions shall not in the aggregate exceed 120 days from Bid Due Date without Surety's written consent. Surety voluntarily and intentionally waives and relinquishes all of the Surety's rights specified in and each provision of ARS Title 12, Section 1641 and 1642.
6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in paragraph 4 above if received by Bidder and Surety, and in no case later than one year after Bid Due Date.
7. Any Suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notice required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent or representative who executed this Bond on behalf of Surety to execute, seal and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of the Bond conflicts with any applicable provision of any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
11. The term "bid" as used herein includes a bid, offer or proposal as applicable.

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SECTION 00330 LIST OF SUBCONTRACTORS

To enable OWNER to evaluate the Bidder's qualifications to perform the Work, as provided in the Instructions to Bidders, the Bidder shall nominate Subcontractor, Supplier and other persons and organizations (including those who are to furnish the principal items of material and equipment) to whom the Bidder intends to award a Subagreement greater than or equal to 2% of the Bid amount. If the Bidder intends to self-perform a classification of Work for which a specialty contractor's license is required, the Bidder shall nominate itself in the spaces provided for that purpose, and the Bidder shall furnish the Bidder's contractor's license number(s) for that classification. For each nominated Subcontractor, Supplier or other persons and organizations the Bidder shall enter, if available, the nominees telephone number and requiring licensing information.

	Work to be Performed	Nominee	License Number Classification	(%)
1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____
8.	_____	_____	_____	_____

CONTINUED FROM PREVIOUS PAGE...

	Work to be Performed	Nominee	License Number Classification	(%)
9.	_____	_____	_____	_____
10.	_____	_____	_____	_____
11.	_____	_____	_____	_____
12.	_____	_____	_____	_____
13.	_____	_____	_____	_____
14.	_____	_____	_____	_____
15.	_____	_____	_____	_____

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SECTION 00340 SCHEDULE OF MANUFACTURERS AND SUPPLIERS OF MAJOR EQUIPMENT AND MATERIAL ITEMS

The Bidder proposes that the items of major equipment or materials named herein will be supplied by the manufacturers or suppliers set forth below as written by the Bidder, unless changes are specifically authorized by the OWNER. Preliminary acceptance of equipment or materials listed by the manufacturer's name shall not in any way constitute a waiver of the specifications; final acceptance will be based on full conformity with the Specifications covering the equipment and/or materials. Submission of this schedule shall be made with the Bid. A Bid submitted without this fully completed schedule shall be considered non-responsive.

SPECIFICATION SECTION	TITLE/DESCRIPTION	MANUFACTURER OR SUPPLIER
PART A - MODIFICATIONS AND UPGRADES		
11176	Steel Chemical Storage Tanks	
11178	Waste Storage Tanks	
11179	Fiberglass Reinforced Polyester Tanks	
11233	Water Softening Equipment	
11250	Air Compressors	
11308	Vertical Lineshaft Pumps	
11351	Sludge Collection Equipment	
11357	Emergency Chlorine Scrubber	
11415	Steel Surge Tanks	
11501	Chlorination Equipment	
11508	Polymer Feed Equipment	
11530	Waste Storage Transfer Pump	
11531	Magnetic Drive Sealless End Suction Pumps	
11532	Metering Pumps	
11533	Gear Pumps	
11902	Metal Laboratory Furniture	
14211	Electric Elevator	
14310	Hoisting Equipment	
15502	Fire Protection and Control Systems	
15801	Central Station Air Handling Units	
15804	Air Cooled Condensing Units - Split System Air Conditioning	

SPECIFICATION SECTION	TITLE/DESCRIPTION	MANUFACTURER OR SUPPLIER
15805	Package Air to Air Heat Pump Units	
15808	Computer Room Air Conditioning Unit	
15810	Packaged Air Conditioning Unit Through Wall Type	
16920	Motor Control Centers	
PART B - PRELIMINARY TREATMENT FACILITIES		
110100	Bar Screens	
110200	Screenings Conveyor System	
110300	Premixers	
110400	Circular Sludge Collectors	
120572	Sump Pumps	
120700	Presedimentation Sludge Pumps - Vortex Type	
120830	Sample Pumps	
154000	Rectangular Butterfly Valves	
161000	Motor Control Centers	
166010	Variable Frequency / Variable Voltage Motor Control	
170013	Magnetic Flowmeters	
PART C - SOLIDS HANDLING FACILITY		
11145	Grit Separation and Dewatering Equipment	
11160	Sludge Collector Drives	
11212	Submersible Mixers	
11344	Self-Priming Nonclog Centrifugal Pumps	
11346	Submersible Sump Pumps	
11374	Sludge Cake Piston Pumps	
11390	Progressing Cavity Pumps	
11525	Circular Gravity Thickener	
11771	Polymer Preparation and Feed System	
13216	Crosslinked Polyethylene Chemical Tanks	
13281	Activated Carbon Odor Control Systems	
13580	Thickened Sludge Storage Tank Covers	
14311	Monorail Hoists	

CITY OF PHOENIX, Engineering & Architectural Services Department
Squaw Peak Water Treatment Plant - General Plant Improvements
W-886739

SCHEDULE OF MANUFACTURERS AND SUPPLIERS

SPECIFICATION SECTION	TITLE/DESCRIPTION	MANUFACTURER OR SUPPLIER
14901	Live Bottom Hopper	
16920	Motor Control Centers	

Signature of Bidder

SECTION 00360 NONCOLLUSION AFFIDAVIT

Affiant, _____, being duly sworn, deposes and says that:

- (1) Affiant is (enter title) _____ of _____, "Bidder." Affiant has personal knowledge of the matters set forth in this Affidavit and is competent to testify about them.
- (2) Bidder has submitted to the City of Phoenix, Arizona (Owner), a "Bid" to enter into the above referenced Agreement, also referred to in this Affidavit as "the Work."
- (3) This noncollusion Affidavit is executed by Affiant for inclusion with the submission to Owner of the Bid and may be relied upon by Owner in considering the Bid.
- (4) Affiant is fully informed about the preparation and contents of the Bid and of all pertinent circumstances surrounding the Bid, and has not entered into any contract, combination, conspiracy or other act prohibited by ARS Title 44, Chapter 10. The Bid is genuine and is not a collusive or sham Bid.
- (5) Neither the Bidder nor any of the Bidder's owners, officers, partners, directors, agents, representatives, employees or parties in interest, including this Affiant, have in any way entered or proposed to enter into any combination to prevent the making of any Bid, or to fix any prices (including overhead, profit or other costs) for the Bid; or have made any agreement, or given or promised any consideration to induce any other person not to Bid for the Work, or to Bid at a specified price; or have secured, proposed or intended to secure through any agreement an unlawful advantage against the Owner or any other person interested in the Work.
- (6) The Bid is not intended to secure an unfair advantage or benefit from the Owner or in favor of any person interested in the proposed Agreement.
- (7) The prices bid are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the Bidder or any other of the Bidder's owners, officers, partners, directors, agents, representatives, employees or parties in interest, including this Affiant; and neither the Bidder nor any of its owners, officers, partners, directors, agents, representatives, employees or parties in interest, including this Affiant, have divulged any information regarding the Bid or any data about the Bid to any other person.

By _____ Title: _____

VERIFICATION

STATE OF _____)
COUNTY OF _____)

Before me, a Notary Public commissioned, qualified and acting, personally appeared (enter name of the person signing this Affidavit) _____ to me well known to be the person described in and who signed this Affidavit, who being by me first duly sworn upon oath, says that he/she is the attorney-in-fact for (enter Bidder's name) _____, that he/she has been authorized by (enter name of individual, partnership name or the authorized governing body of the Bidder) _____ to execute this Affidavit on behalf of the named Bidder in favor of the CITY OF PHOENIX, ARIZONA, for the uses and purposes mentioned.

Subscribed and sworn to before me this _____ day of _____, 19____.

Notary Public _____ My Commission expires: _____, 19____.

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BID DOCUMENTS

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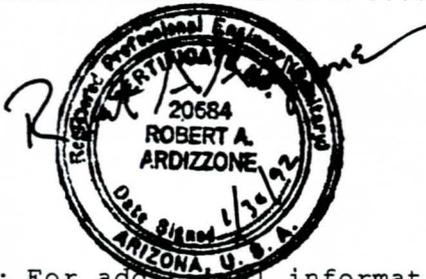
VOLUME 4

WATER AND WASTEWATER DEPARTMENT
CITY OF PHOENIX

PART B
SQUAW PEAK WATER TREATMENT PLANT
PRELIMINARY TREATMENT FACILITY

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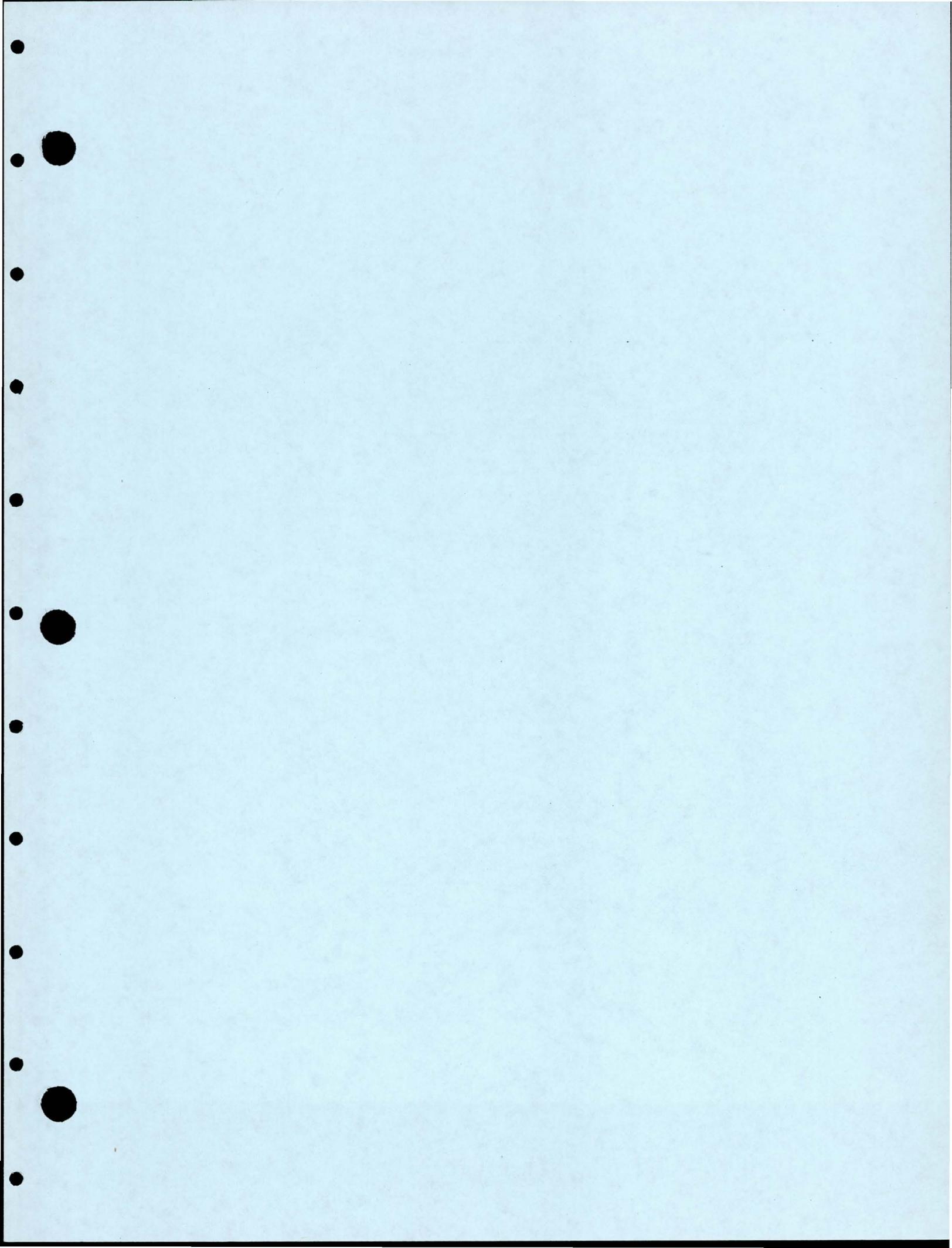
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CITY OF PHOENIX, Engineering & Architectural Services Department
Squaw Peak Water Treatment Plant - General Plant Improvements
W-886739

SECTION 00020 CALL FOR BIDS

1. **Bids.** The City of Phoenix will receive sealed Bids at the Specifications Counter, Engineering & Architectural Services Department, 125 East Washington Street, Phoenix, Arizona 85004, (602) 262-6652 for the Squaw Peak Water Treatment Plant - General Plant Improvements until 3:00 p.m. MST on April 14, 1992, when all Bids that have been duly received will be opened publicly. The project consists of three parts; which are to be bid and constructed as one project - Squaw Peak Water Treatment Plant - General Plant Improvements. The three parts of the project and work included within each part are:

- Part A: Modifications and Upgrades:**
- Raw Water Pump Station
 - Flocculation Basin Modifications
 - Sedimentation Basin Improvements
 - Plant II Filter Gallery Improvements
 - Backwash Pump Station Improvements
 - Lincoln/Sunnyslope Pump Station Improvements
 - Chemical Feed System
 - Pump Mixer
 - Chemical Building
 - Bulk Chemical Storage
 - Plant I Chemical Piping Modifications
 - Plant II Chemical Piping Modifications
 - Maintenance Building Renovations/Upgrades
 - Administration Building Renovations/Upgrades
 - Main Switchgear Building Renovations/Upgrades
 - Sitework: Demolition, Grading and Paving
 - Utilities; Piping and Electrical
 - Instrumentation and Controls
- Part B: Preliminary Treatment Facilities:**
- Inlet Structure
 - Bar Screens
 - Raw Water Meter Vault
 - Premixer
 - Presedimentation Basin
 - Presedimentation Sludge Pump Station
 - Sitework; Demolition, Grading and Paving
 - Utilities; Piping and Electrical
 - Instrumentation and Controls
- Part C: Solids Handling Facility:**
- Sludge Blending and Grit Removal
 - Metering Vault
 - Plant I Sedimentation Basin Modifications
 - Plant II Sedimentation Basin Modifications
 - Flow Splitting Structure
 - Sludge Gravity Thickeners
 - Thickened Sludge Pumping Station
 - Thickened Sludge Storage Tank
 - Sludge Dewatering Building
 - Sludge Staging Area
 - Recoverable Used Water Pumping Station
 - Flow Equalization Basin
 - Sitework; Demolition, Grading and Paving
 - Utilities; Piping and Electrical
 - Instrumentation and Controls

CITY OF PHOENIX, Engineering & Architectural Services Department
Squaw Peak Water Treatment Plant - General Plant Improvements
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Directory Drawings, which in part, present an index to the Part A, Part B, and Part C Drawings, are also part of the project.

Bidding Documents include General Conditions as developed by the Engineers Joint Contract Documents Committee.

2. Bidding Documents. Bidding Documents may be examined and/or purchased at the City of Phoenix, Engineering & Architectural Services Department, Specifications Counter, 125 East Washington Street, Phoenix, Arizona 85004. A deposit for the amount of \$ 425.00 payable to the City of Phoenix in the form of cash, a certified check, or a cashier's check will be required for each set of Bidding Documents. The Bidding Documents include the following items:

Specifications:

Volume 1	Bid Documents (Division 0) and Specification Division 1
Volume 2	Part A Specifications Divisions 2-10
Volume 3	Part A Specifications Divisions 11-17
Volume 4	Part B Specifications Divisions 2-18, and Standard Details
Volume 5	Part C Specifications Divisions 1-17

Drawings:

Volume 6	Directory Drawings and Part A Drawings
Volume 7	Part B Drawings and Part C Drawings

Bidders are advised that unless otherwise noted, Part A Specifications shall apply to Part A Drawings, Part B Specifications to Part B Drawings, and Part C Specifications to Part C Drawings. Partial sets of Bidding Documents will not be available.

After making the required deposit Bidders may pick-up the Bidding Documents at the following location:

TECHNIPRINT
2545 North 7th Street
Phoenix, Arizona 85006
Telephone: (602) 257-0686

Bidding Documents will be shipped after receipt of the deposit and only if the requestor assumes responsibility for all related shipping charges. Plan holders who submit bids under the name given at the time of purchasing Plans and Specifications, as the Prime Contractor to the City of Phoenix, will receive a refund of the required fee, upon receipt within seven (7) calendar days after the date of bid opening of those bidding document set(s) returned in good order. No refund will be given to plan holders not submitting a bid proposal as the firm identified at the time of purchasing the Plans and Specifications. Refunds will be mailed by the City of Phoenix within sixty (60) days of the bid opening.

3. Subsurface Conditions. Those reports of subsurface conditions identified in the Supplementary Conditions are available for purchase (\$ 25.00 per copy) at the address listed in Article 2.

4. Pre-Bid Conference. A pre-bid conference will be held in Room 100 of the Plaza Municipal Building, 125 East Washington Street, Phoenix, Arizona, on Wednesday, March 18, 1992 at 9:00 a.m. MST. The purpose of this conference will be to discuss questions from prospective bidders and clarify the plans and specifications. A tour of the Squaw Peak Water Treatment Plant site will be held on the same day, starting at 1:00 p.m. Addenda may be issued as the Engineer considers necessary in response to issues raised at the pre-bid conference and tour.

5. Affirmative Action Requirements. This project is subject to the Phoenix City Code, Chapter 18, Article IV, as amended pertaining to non-discrimination in employment by contractors and subcontractors. The Affirmative Action Requirements are included as a part of the bidding documents. All Contractors and Subcontractors must have an Affirmative Action Plan on file with the City of Phoenix, Equal Opportunity Department prior to bid opening. For further information contact the Equal Opportunity Department at 262-6790. The City's Affirmative Action Requirements are included in Attachment 'A' to Section 00100 - Instruction to Bidders.

6. Non-Collusion Affidavit. Each Bidder shall provide with the Bidder's Bid a fully completed Noncollusion Affidavit (using the form found in Section 00360 of the Bidding Documents).

7. Bid Security. No proposal will be read unless accompanied by a certified check, cashier's check or on the Bid Bond provided, for an amount not less than five (5) percent of the Bidder's Total Base Bid and Bid Alternates (if any).

CITY OF PHOENIX, Engineering & Architectural Services Department
Squaw Peak Water Treatment Plant - General Plant Improvements
W-886739

8. **Award.** The City of Phoenix Council reserves the right to reject any or all Bids, to waive any non-conformance, to readvertise for Bids, and to withhold the award for any reason the City of Phoenix determines.

FRANK FAIRBANKS
City Manager


KENNY W. HARRIS, P.E.
City Engineer

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March 6, 1992

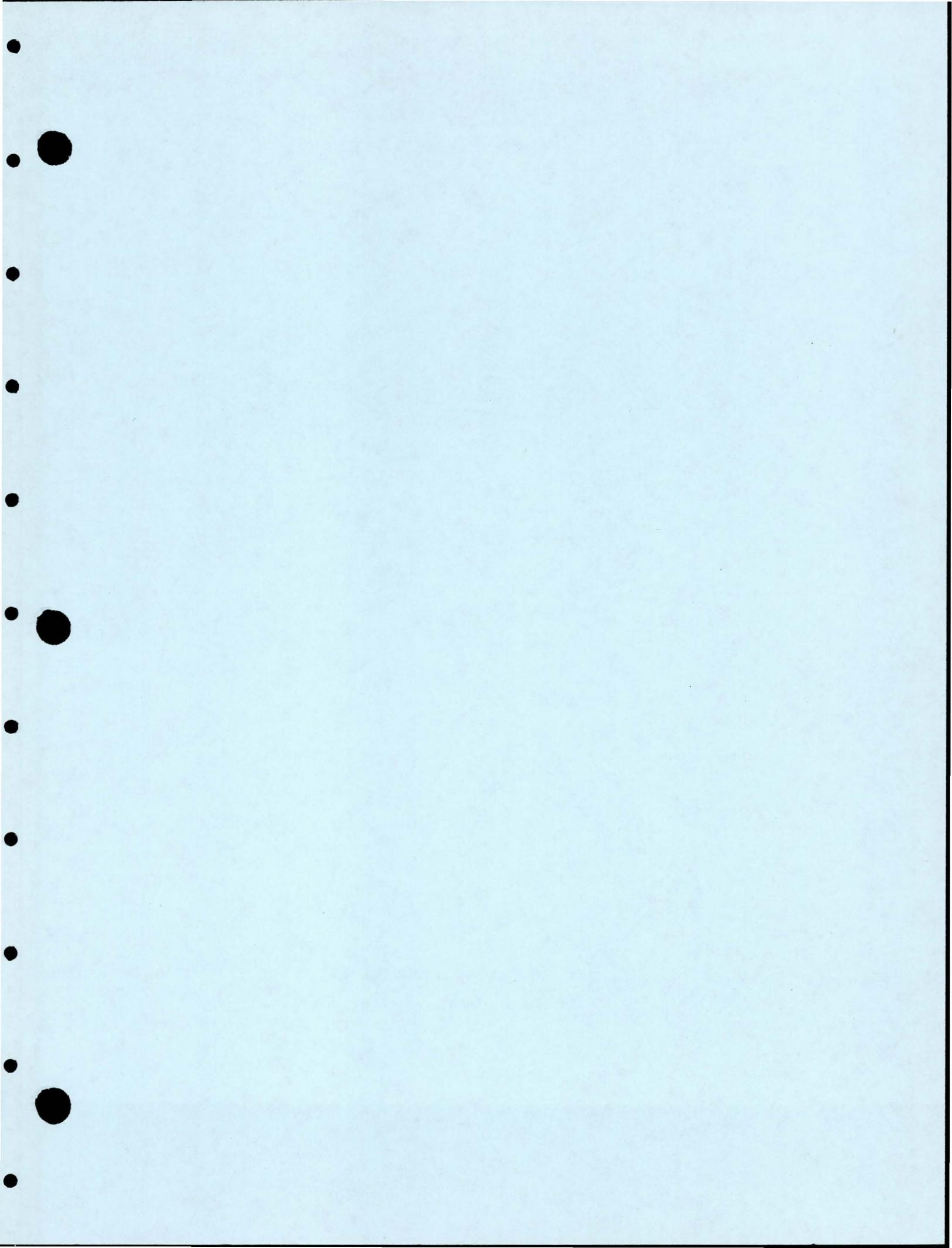


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ATTACHMENT A to Section 00100: Affirmative Action Requirements

SECTION 00100 - INSTRUCTIONS TO BIDDERS

1. Defined Terms.

Terms used in these Instructions to Bidders which are defined in the General Conditions of the Construction Contract Section 00700 have the meanings assigned to them in the General Conditions.

Certain additional terms used in these Instructions to Bidders have the meanings indicated below which are applicable to both the singular and plural thereof.

- 1.1 OWNER--the City of Phoenix, Water and Wastewater Department.
- 1.2 Bidder--one who submits a proposal directly to OWNER, as distinct from a subbidder who submits a Proposal directly to a Bidder.
- 1.3 Successful Bidder--the lowest, qualified, responsible and responsive Bidder to whom OWNER (on the basis of OWNER's evaluation as hereinafter provided) makes an award.
- 1.4 Bidding Documents--the proposed Contract Documents as advertised, and all Addenda issued before Bid opening.

2. Copies of Bidding Documents.

- 2.1 Complete sets of Bidding Documents in the number and for the deposit sum stated in the Call for Bids may be obtained from the Issuing Office. Plan holders who submit bids under the name given at the time of purchasing Plans and Specifications, as the Prime Contractor to the City of Phoenix, will receive a refund of the required fee for complete sets of Bidding Documents returned in good condition as indicated in the Call for Bids.
 - 2.1.1 Refunds will be given for only one set of documents for each bidder.
 - 2.1.2 Bidding Documents will be shipped after receipt of the deposit and only if the requestor assumes responsibility for all related shipping charges.
- 2.2 Complete sets of Bidding Documents shall be used in preparing Bids; neither OWNER nor ENGINEER assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.3 OWNER and ENGINEER in making copies of Bidding Documents available on the above terms do so only for the purpose of obtaining Bids for the Work and do not confer a license or privilege for any other use.

3. Qualifications of bidders.

- 3.1 Each Bid shall contain evidence that the Bidder has the required Arizona contractor's license(s) in good standing in the Bidder's name covering the classification(s) of the Work under the Bidding Documents, and a valid City of Phoenix Privilege License. The Bidder awarded the Contract shall comply with ARS Title 32 and all licensing requirements imposed by OWNER and any other Political Subdivision with jurisdiction.
- 3.2 Bidders shall be experienced in the kind of Work to be performed, shall have the necessary equipment therefore, and shall possess sufficient capital to properly execute the Work within the time allowed. Bids received from Bidders who have previously failed to complete work within the time required, or who have previously performed similar work in an unsatisfactory manner, may be rejected. A Bid may be rejected if Bidder cannot show the necessary ability, plant and equipment to commence the Work at the rate or within the time specified. A Bid may be rejected if Bidder is already obligated for the performance of other work which would delay the commencement, prosecution or completion of the Work.
- 3.3 Within forty-eight (48) hours after the Bid opening date, the Bidder notified by the OWNER as the Apparent Low Bidder and any other Bidder wishing to remain in contention for the award shall submit to the OWNER the completed Bidder's Questionnaire, Section 00320.
- 3.4 Unless otherwise determined by OWNER, in its sole discretion, failure, neglect or refusal by the Apparent Low Bidder to submit the required Bidder's Questionnaire within the specified period justifies OWNER's refusal to consider that Bid and the apparent low bidder's Bid Security will be forfeited to OWNER as liquidated damages.
- 3.5 Unless otherwise determined by OWNER, in its sole discretion, failure, neglect or refusal by any Bidder wishing to remain in contention for the award to submit the required Qualification Submittal within the specified period justifies the disqualification of the Bidder for consideration for the award.
- 3.6 The omission in the Contract Documents of references to applicable statutory requirements shall not be construed as a relaxation of any duties imposed by law upon a Bidder or OWNER for a contract for public Work.
- 3.7 Bids shall include the List of Subcontractors, Section 00330, and Schedule of Manufacturers and Suppliers Major Equipment and Material Items, Section 00340. A Bid submitted without these fully completed forms shall be considered nonresponsive.

4. Examination of Contract Documents and Site.

- 4.1 It is the responsibility of each Bidder before submitting a Bid:
- 4.1.1 To examine thoroughly the Contract Documents and other related data identified in the Bidding Documents (including "technical data" referred to below);

- 4.1.2 To visit the site to become familiar with and satisfy Bidder as to the general, local and site conditions that may affect cost, progress, performance or furnishings of the Work;
 - 4.1.3 To consider federal, state and local Laws and Regulations that may affect cost, progress, performance or furnishings of the Work;
 - 4.1.4 To study and carefully correlate Bidder's knowledge and observations with the Contract Documents and such other related data; and
 - 4.1.5 To promptly notify ENGINEER of all conflicts, errors, ambiguities or discrepancies which the Bidder has discovered in or between the Contract Documents and such other related documents.
- 4.2 Reference is made to the Supplementary Conditions for identification of:
- 4.2.1 Those reports of explorations and tests of subsurface conditions at or contiguous to the site which have been utilized by ENGINEER in preparation of the Contract Documents. Bidder may rely upon the general accuracy of the "technical data" contained in such reports but not upon other data, interpretations, opinions or information contained in such reports or otherwise relating to the subsurface conditions at the site, nor upon the completeness thereof for the purpose of bidding or construction.
 - 4.2.2 Those drawings of physical conditions in or relating to existing surface and subsurface structures (except Underground Facilities) which are at or contiguous to the site that have been utilized by ENGINEER in preparation of the Contract Documents. Bidder may rely upon the general accuracy of the "technical data" contained in such drawings but not upon other data, interpretations, opinions or information shown or indicated in such drawings or otherwise relating to such structures, nor upon the completeness thereof for the purposes of bidding or construction.
- Copies of such reports and drawings will be made available by OWNER to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the "technical data" contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.2 of the General Conditions has been identified and established in Paragraphs SC-4.2.1.3 and SC-4.2.1.4 of the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion drawn from any "technical data" or any such data, interpretations, opinions or information.
- 4.3 Information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based upon information and data furnished to OWNER and ENGINEER by owners of such Underground Facilities or others, and OWNER and ENGINEER do not assume responsibility for the accuracy or completeness thereof unless it is expressly provided otherwise in the Supplementary Conditions.
 - 4.4 Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions and Underground Facilities, and possible changes in the Contract Documents due to differing or unanticipated conditions appear in Paragraphs 4.2 and 4.3 of the General Conditions.

- 4.5 Before submitting a Bid each Bidder will be responsible to obtain such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise, which may affect cost, progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences or procedures of construction to be employed by Bidder and safety precautions and programs incident thereto or which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price and other terms and conditions of the Contract Documents.
- 4.6 On request, OWNER will provide each Bidder access to the site to conduct such reasonable examinations, investigations, explorations, tests and studies as necessary for submission of a Bid. Bidder must fill all holes and clean up and restore the site to its former conditions upon completion of such explorations, investigations, tests and studies. Access to the site shall be at OWNER'S convenience. Any damage to existing facilities shall be repaired immediately to like new condition, at the expense of the Bidder. All OWNER related costs shall be paid for by the Bidder directly to OWNER.
- 4.7 Reference is made to the General Requirements for the identification of the general nature of Work that is to be performed at the site by OWNER or others (such as utilities and other prime contractors) that relates to the Work for which a Bid is to be submitted. On request and subject to availability, OWNER will provide to each Bidder for examination access to or copies of Contract Documents (other than portions thereof related to price) for such Work.
- 4.8 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with each and every requirement of this Paragraph 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Contract Documents and applying the specific means, methods, techniques, sequences or procedures of construction (if any) shown or indicated or expressly required by the Contract Documents; that Bidder has given ENGINEER written notice of all conflicts, errors, ambiguities and discrepancies that Bidder has discovered in the Contract Documents and the written resolutions thereof by ENGINEER are acceptable to Bidder, and that the Contract Documents are sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.
- 4.9 The provisions of the above Paragraphs 4-1 through 4-8, inclusive, do not apply to Asbestos, Polychlorinated biphenyls (PCBs), Petroleum, Hazardous Waste or Radioactive Material covered by Paragraph 4.5 of the General Conditions.
- 5. Interpretations and Addenda.**
- 5.1 Only written questions about the meaning or intent of the Bidding Documents will be considered, and they must be directed to ENGINEER. ENGINEER'S response to such questions will be issued by Addenda and mailed or delivered to all parties recorded by ENGINEER as having received the Bidding Documents. Questions received less than ten days prior to the date for opening of Bids may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

- 5.2 Addenda may also be issued to modify the Bidding Documents as deemed advisable by OWNER or ENGINEER.
- 5.3 All technical questions relating to this Work may be directed to Mr. Paul Bassette, Malcolm Pirnie, Inc., 4636 E. University Drive, Phoenix, Arizona 85034, Telephone No. (602) 241-1770, Fax No. (602) 968-8753.
- 6. Noncollusion Affidavit.**
- 6.1 Each Bidder shall provide with the Bidder's Bid a fully completed Noncollusion Affidavit, Section 00360.
- 7. Bid Security.**
- 7.1 Each Bid must be accompanied by Bid security made payable to OWNER for an amount not less than five (5) percent of Bidder's Total Base Bid and in the form of a certified or cashier's check or a Bid Bond issued by a surety company meeting the requirements of Article 5, Paragraph 5.1 of the General Conditions, duly authorized to do business in the State of Arizona and shall be executed by such surety as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties of Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff, Bureau of Government Financial Operations, U.S. Treasury Department. Bid Bond shall conform to the requirements of Section 00310 and attorneys-in-fact who sign Bid Bonds shall attach to the Bonds a certified copy of their powers of attorney.
- 7.2 Bids which do not include adequate Bid security shall be considered as nonconforming in a material respect with the requirements of the Bidding Documents. Such non-conformance justifies OWNER'S refusal to read the Bid.
- 7.3 The Bid security of the apparent Successful Bidder and the security of the any other Bidder remaining in contention for the award of the Contract will be retained by OWNER until the end of the period specified in Paragraph 15, below, during which Bids will remain open, or seven (7) days after OWNER executes the Agreement, whichever last occurs.
- 8. Contract Time.**
- 8.1 The number of calendar days within which, or the dates by which, the Work is to be Substantially Completed and also Completed and ready for final payment are set forth in the Agreement and may be supplemented as set forth in the Agreement.
- 8.2 If a Bidder believes that any of the Contract Times specified are insufficient or excessive, that Bidder shall advise OWNER in accordance with the requirements of Paragraph 4.
- 8.3 Liquidated Damages are specified in the Agreement and may be supplemented as provided in the Agreement.

9. Substitute and "Or-Equal" Items.

- 9.1 The Contract, if awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or-equal" items. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or "or-equal" item of material or equipment may be furnished or used by Contractor if acceptable to ENGINEER, application for such acceptance will not be considered by ENGINEER until after the Effective Date of the Agreement. The procedure for submission of any such application by Contractor and consideration by ENGINEER is set forth in Paragraphs 6.7.1, 6.7.2 and 6.7.3 of the General Conditions and may be supplemented in the Supplementary Conditions or in the General Requirements.
- 9.2 Whenever a material or piece of equipment is specified with a named manufacturer, an "or equal" manufacturer shall apply whether the term "or equal" is listed or not listed within the specification.

10. Subcontractors, Manufacturer's, Suppliers and Others.

- 10.1 When the Supplementary Conditions require the identity of certain Subcontractors, Manufacturers, Suppliers and other persons and firms or corporations with whom the Bidder will enter into an Agreement (including those who are to furnish the principal items of material and equipment) to be submitted to OWNER, Bidder shall submit to OWNER the forms found in Section 00300 and 00340 listing all such Subcontractors, Manufacturers, Suppliers and other persons and firms or corporations proposed for those portions of the Work for which such identification is required with the Bid. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Manufacturers, Supplier, person or organization if requested by OWNER. If OWNER or ENGINEER, who after due investigation, has reasonable objection to any proposed Subcontractor, Manufacturer, Supplier, other person or organization, may before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, without an increase in Bid price.

If apparent Successful Bidder declines to make any such substitution, OWNER may award the contract to the next lowest responsive and responsible Bidder that proposes to use acceptable Subcontractors, Manufacturers, Suppliers and other persons and organizations. The declining to make requested substitutions will not constitute grounds for sacrificing the Bid security of any Bidder. Any Subcontractor, Manufacturer, Supplier, other person or organization listed to whom OWNER or ENGINEER does not make written objection prior to the giving of the Notice of Award will be deemed acceptable to OWNER and ENGINEER subject to revocation of such acceptance after the Effective Date of the Agreement as provided in Paragraph 6.8.2 of the General Conditions.

- 10.2 No Contractor shall be required to employ any Subcontractor, Manufacturer, Supplier, other person or organization against whom Contractor has reasonable objection.

11. Bid Form.

- 11.1 The Bid Form is included in the Bidding Documents, Section 00300; additional copies may be obtained from the Issuing Office.
- 11.2 All blanks on the Bid Form must be completed by printing in black ink or typewriter.
- 11.3 Bids by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and attested by the secretary or an assistant secretary. The corporate address and state of incorporation must be shown below the signature.
- 11.4 Bids by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature and the official address of the partnership must be shown below the signature.
- 11.5 Bids by Joint Ventures must be executed in the manner of each individual, partnership and corporation that is a party of the Joint Venture indicated herein.
- 11.6 All names must be typed or printed in black ink below the signature.
- 11.7 The Bid shall contain an acknowledgement of receipt of all Addenda (the numbers of which must be filled in the Bid Form).
- 11.8 The address and telephone number for communications regarding the Bid must be shown.
- 11.9 Evidence of authority to conduct business as an out-of-state corporation in Arizona shall be provided in accordance with Paragraph 3 above. State contractor license number must also be shown.
- 11.10 The Bid shall contain Bidder's Arizona contractor's license number(s) and classification(s) (covering the classification(s) of the Work) and related information, and Bidder's City of Phoenix Privilege License Number on the Bid Form.

12. Submission of Bids.

- 12.1 Bidders, Subcontractors, Manufacturers, Suppliers, other persons or organizations should refer to Section 00020 paragraph 4 and Attachment 'A' herein concerning the City's Affirmative Action Requirements (City of Phoenix Ordinances G-1901 and G-1372).
- 12.2 Bids shall be submitted at the time and place indicated in the Call for Bids and shall be enclosed in an opaque sealed envelope, marked with the Project title and name and address of Bidder and accompanied by the Bid security and other required documents. If the Bid is sent through the mail or other delivery system the sealed envelope shall be enclosed in a separate envelope labeled "SEALED BID ENCLOSED". Bids submitted orally or by telephone, telegraph or FAX are invalid and will be rejected without consideration.

12.3 Before submission of a Bid, a Bidder may alter or revise any price or information the Bidder has entered on the Bid Form or on any of the Bid Form Attachments by (a) crossing out the entry, (b) legibly printing in ink or typing the new price or information, and (c) placing the initials of the person who signs the Bid adjacent to each change. After Bid opening OWNER may require a Bidder to verify any alteration or revision. Ambiguities arising from any alterations or revisions will be resolved against the Bidder, in OWNER'S sole discretion.

13. Withdrawal of Bids.

13.1 Bids may be withdrawn by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.

13.2 After the time for receiving Bids has expired, no Bid may be withdrawn, unless that Bidder lodges a written claim of a mathematical or clerical error as provided in the Phoenix City Code, Chapter 2, Article XII and Phoenix Ordinance Number G-2804. The claim shall describe in detail the mathematical or clerical error, include a signed affidavit stating the facts of the alleged error and request that the Bidder be released from the Bidder's Bid. Thereafter, that Bidder will be disqualified from further bidding on the Work to be provided under the Contract Documents.

13.3 OWNER'S review of the withdrawal will be in accordance with Phoenix City Ordinance No. G-2804 and Phoenix City Code, Section 1, Chapter 2, Article XII.

14. Opening of Bids, Objection to Award.

14.1 Bids will be opened and (unless obviously non-responsive) read aloud publicly. An abstract of the amounts of the Base Bids and major alternates (if any) will be made available to Bidders after the opening of Bids. Any Bid received after the closing time will not be considered. Any uncertainties about whether a Bid was submitted in time will be resolved against that Bidder, in OWNER'S sole discretion.

14.2 If a protest is filed in accordance with the Phoenix City Ordinance Number G-2804, OWNER will conduct a hearing in accordance with Phoenix City Ordinance Number G-2804.

15. Bids to Remain Subject to Acceptance.

15.1 All bids will remain subject to acceptance for 60 calendar days after the day of the Bid opening, but OWNER may, in its sole discretion, release any bid and return the Bid security prior to that date.

15.2 Extensions of the period during which Bids shall remain open may only be made by agreement between OWNER, the apparent Successful Bidder and any other bidder wishing to remain in contention for the award. Any such agreement shall be based on no increase in any of the Base Bids or alternates of the Bidders involved or any Contract Time stated in days. If the apparent Successful Bidder or any other Bidder wishing to remain in contention for the award fails to agree to any such extension, as conditioned in this paragraph, that Bidder shall be disqualified from further

consideration for the award. However, that Bidder's failure to agree to any such extension will not constitute grounds for forfeiting that Bidder's Bid security.

16. Award of Contract.

- 16.1 OWNER reserves the right to reject any and all Bids, including without limitation the rights to reject any or all nonconforming, nonresponsive, unbalanced or conditional Bids and to reject the Bid of any Bidder if OWNER believes that it would not be in the best interest of the Project to make an award to that Bidder, whether the Bid is not responsive or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criterion established by OWNER. OWNER also reserves the right to reject any or all Bids, to waive any non-conformance, to readvertise for Bids, to withhold the award for any reason the OWNER determines. Discrepancies between Bid Price and unit price of unit price work will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words.
- 16.2 In evaluating Bids, OWNER will consider the qualification of the Bidders, whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.
- 16.3 OWNER will consider the qualifications and experience of Subcontractors, Manufacturers, Suppliers, and other persons and organizations proposed for those portions of the Work as to which the identity of Subcontractors, Manufacturers, Suppliers, and other persons and organizations must be submitted as provided herein. OWNER also may consider the operating costs, maintenance requirements, performance data, and guarantees or major items of materials and equipment proposed for incorporation in the Work when such data is required to be submitted prior to the Notice of Award.
- 16.4 OWNER may conduct such investigations as OWNER deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of Bidders, proposed Subcontractors, Manufacturers, Suppliers, and other persons and organizations to perform and furnish the Work in accordance with the Contract Documents to OWNER'S satisfaction within the prescribed time.
- 16.5 If the contract is to be awarded, it will be awarded to the lowest responsive and responsible Bidder. Determination of the lowest Bidder shall be on the basis of the sum of the Total Base Bid.
- 16.6 If the contract is to be awarded, OWNER will give the Successful Bidder a Notice of Award within 60 days after the date of the Bid opening.

17. Contract Security.

Article 5 of the General Conditions and the Supplementary Conditions set forth OWNER'S requirements as to Performance and Payment Bonds. When the Successful Bidder delivers the executed Agreement to OWNER, it must be accompanied by the required Performance and Payment Bonds issued by an Agency authorized to do business in the state of Arizona.

18. Signing Agreement.

18.1 When OWNER gives a Notice of Award to the Successful Bidder, it will be accompanied by the required number of unsigned counterparts of the Agreement with other written Contract Documents attached. Within fifteen (15) days thereafter Contractor shall sign and deliver the required number of counterparts of the Agreement and attached documents to OWNER with the required Bonds and insurance policy(ies). Within a reasonable time thereafter OWNER shall deliver one fully signed counterpart to Contractor. Each counterpart is to be accompanied by a complete set of Drawings with appropriate identification.

18.2 The Agreement is subject to cancellation by the City of Phoenix for prohibited conflicts of interest, if any exist, pursuant to the provisions of ARS Title 38, Section 511.

19. Sequence of Work.

19.1 The work under this Contract must be accomplished while the existing plant is in operation. Work must be done so that operation of the plant will not be jeopardized or reduced in efficiency.

19.2 Bidders are referred to Specifications (Division 1) and Directory Drawings (Construction Milestone Diagram) for requirements concerning sequencing of the work.

20. Centrifuge Equipment.

20.1 Certain features of the project are designed to house and accommodate centrifuge equipment. Neither procurement, nor installation, of said centrifuge equipment is part of this contract.

20.2 Bidders are advised that the OWNER intends to award a separate general contract for the procurement and installation of centrifuge equipment within the same time period as the work covered by this Contract.

20.3 The Successful Bidder will be required to provide access to the Centrifuge Contractor, as well as to provide other necessary cooperation to allow installation of the Centrifuges and accessories.

ATTACHMENT A to Section 00100: Affirmative Action Requirements

This Attachment A, consisting of nine (9) additional pages, supplements Section 00100 of the Bidding Documents as provided below. All other Bidding Requirements not so supplemented are unaffected by this Attachment and remain in full force and effect.

Pursuant to Phoenix City Code, Chapter 18, Article IV, as amended, on Equal Employment Opportunity, all contractors, subcontractors and suppliers shall be required to take affirmative action toward equal employment opportunity.

1.0 Forms and Reports Attached Include:

Important Notice, Interim Affirmative Action Requirements

Affirmative Action Requirements (2 pages)

Affirmative Action Requirements Affidavit

Guideline for Affirmative Action Program

Certificate of Less Than 15

Combination EEO Questionnaire/Employer Information Report.

Part B, Employer Information Report

2.0 Reports Required for Submission by Bidder:

2.1 Each Bidder submitting a Bid for the Work shall have the following affidavit and reports on file with the City Equal Opportunity Department, Affirmative Action Division, at or before the time of submission of the Bidder's Bid:

Affirmative Action Requirements Affidavit

Guideline for Affirmative Action Program

Combination EEO Questionnaire/Employer Information Report

IMPORTANT NOTICE

INTERIM AFFIRMATIVE ACTION REQUIREMENTS

Each business entity, entering a business relationship with the City of Phoenix, as a result of responding to either a Request For Proposal or a bid, must comply with the City of Phoenix Ordinances G-1901 or G-1372 as appropriate. Failure to comply with the affirmative action requirements outlined in the above ordinances will result in a loss of an award. **It should be expressly understood that the burden for compliance rests fully with each proposer or bidder.** The City cannot be responsible for insuring compliance. The affirmative action forms required are:

1. An affirmative action plan (attached).
2. A combination equal employment questionnaire/employer information report (attached).

If your firm employs less than 15 people, and is not a construction contracting firm, the only requirement is that you fill out the Certification of Less Than 15 form (attached).

If you employ 15 or more, or are a construction contracting firm, you are required to fill out the affirmative action plan and the combination equal employment questionnaire/employer information report.

However, either the Certification of Less Than 15 or the affirmative action plan and the combination form must be submitted to the Equal Opportunity Department, 550 W. Washington Street, Phoenix, AZ 85003-2107 prior to bid time. Forms will be date and time stamped.

Any questions regarding this policy may be directed to the Equal Opportunity Department at (602) 262-6790.

AFFIRMATIVE ACTION REQUIREMENTS

Policy

The City of Phoenix maintains a policy of non-discrimination in employment by Contractors, sub-contractors or suppliers and they adhere to a policy of equal opportunity and demonstrate an affirmative effort to recruit, hire and promote its employees regardless of race, color, religion, gender or national origin.

Bid Conditions

A prime Contractor submitting a bid for a City construction contract shall have on file with the Equal Opportunity Department at or before the time of submission of bid the following Affirmative Action reports:

1. EEO Questionnaire
2. Employer Employment Questionnaire
3. An Affirmative Action Plan

IMPORTANT: Failure to have the above-mentioned reports on file at or before the submission of the bid will cause the bid to be considered irregular and may be grounds for rejection.

All construction sub-contractors performing work on a City construction contract must have the above-described reports on file with the Equal Opportunity Department five (5) days subsequent to the award of the contract to the prime Contractor.

Suppliers who employ fifteen (15) or more employees shall have all the above-described reports on file with the Equal Opportunity Department prior to establishing a business relationship with the City or prime Contractor. In bid situations with the City, prior to bid time.

Suppliers who employ fourteen (14) or fewer employees shall submit the certificate of less than 15 to the Equal Opportunity Department prior to establishing a business relationship with the City or prime Contractor. In bid situations with the City, prior to bid time.

The City Council may, in its discretion, waive a construction Contractor's failure to comply with these reporting requirements and accept their proposal.

Contract Requirements

The City shall include the following clause in all contracts and shall require that the clause also appear in all contracts entered into between prime Contractors and sub-contractors involving work performed for the City of Phoenix.

"Any Contractor, sub-contractor in specific reference to performance under this contract and in reference to its entire workforce in the metropolitan Phoenix area, shall not discriminate against any employee or applicant for employment, any sub-contractor or employee of a sub-contractor, or any member of the public, because of race, color, religion, gender or national origin. The Contractor or sub-contractor will take affirmative action to ensure the applicants are employed and that employees are dealt with during employment without regard to their race, color, religion, gender or national origin. Such action shall include, but not be limited to the following: employment, promotion, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training including apprenticeship."

Objections to Awards

Any person who objects to the award of a contract to any bidder by the City of Phoenix upon the grounds that the aforementioned reporting requirements have not been satisfied, shall lodge that protest, in writing, with the City Clerk not later than 5:00 p.m. of the third business day following the day on which the bids/proposals were opened by the City of Phoenix. The City shall reject all protests not filed within this timeframe.

Penalties

Failure by a Contractor, sub-contractor or supplier to comply with the provisions of its affirmative action plan as submitted and incorporated into its contract, shall submit it to all sanctions allowed by law, including but not limited to, cancellation, termination, suspension of the contract, or exclusion from bid privileges or from entering into future business relationships with the City of Phoenix for a period up to two years.

Reference: City Code, Chapter 18, Articles IV; City Ordinances G1901 and G1372.

Reports and inquiries should be directed to: City of Phoenix, Equal Opportunity Department, Affirmative Action Division, 550 West Washington Street, Phoenix, AZ 85003-2107, telephone number 262-6790.

Index No.

AFFIRMATIVE ACTION REQUIREMENTS

I, _____, as an authorized representative of
_____, acknowledge that the reporting requirements of Chapter 18,
Article IV, Section 13.1 of the City Code have been or will be met prior to bid submission.

I understand the firm's compliance status may be verified by contacting:

Equal Opportunity Department
Affirmative Action Division
550 West Washington Street
Phoenix, AZ 85003

(602) 262-6790

It is expressly understood that failure to comply with the reporting requirements will be cause for a bid to be considered irregular and may be grounds for rejection.

Name

Title

Name of Business

Subscribed and sworn to before me
this _____ day of _____, 19__.

My commission expires:

Notary Public

GUIDELINE FOR AFFIRMATIVE ACTION PROGRAM

(Use Your Company Letterhead)

Instructions: If your firm has its own Affirmative Action Plan, please submit a copy of it; if **not**, please utilize this plan as a sample for generating your own document. Your firm will be reviewed by city staff to determine if you are complying with your plan. A copy of your plan must be filed with the:

CITY OF PHOENIX
EQUAL OPPORTUNITY DEPARTMENT
550 W. WASHINGTON STREET
PHOENIX, AZ 85003-2107

If you have any questions or require assistance, telephone the Equal Opportunity Dept. at:
(602) 262-6790

AFFIRMATIVE ACTION PROGRAM

In order to comply with the requirements of the City of Phoenix Ordinances G-1372 and G-1901 with their amendments and to insure equal employment opportunity, the following measures will be taken:

1. Equal and fair treatment will be provided to all employees regardless of race, color, religion, ancestry, national origin or sex.
2. A complete up-to-date record of employees classified by ethnic distribution, sex, and job classification will be maintained and annual reports will be submitted to the Equal Opportunity Department.
3. All employees will be advised at time of employment that we are an Equal Opportunity Employer and that hiring, promotion or demotion is based only on the individual's qualifications and ability to perform the work.
4. The company will cooperate with and support apprenticeship training programs based on strict non-discrimination.
5. The company has appointed _____ to serve as the Equal Employment Officer who is authorized to supply reports and represent this company in all matters regarding this affirmative action program.
6. The name, address and telephone number of the Equal Employment Officer will be posted in a conspicuous place or places. This Officer will be responsible for:
 - a. Seeking to utilize minorities and females to the same degree as all others, based on the following factors.
 - (1) Percentage of minority workforce as compared with the total workforce in the area.
 - (2) Local availability of minorities having the skills we employ.
 - (3) Availability of promotable minority employees in our company.
 - (4) Existence of training institutions capable of training minorities in the area.
 - (5) The internal skills training for which our company is capable of offering minorities for required job categories.
 - b. Supervision of periodic audits of employment practices including: (1) applicant flow (2) promotion (3) training.
 - c. Contacts with all minority recruitment sources who will be notified when this company has vacancies. Notification to all eligible employees regarding promotions or vacancies to insure equal opportunity.
 - d. Instruction of all supervisory personnel regarding their responsibility for equal opportunity and non-discrimination requirements.
 - e. Periodic reviews with all supervisory personnel to insure that the program is being implemented at all levels.
 - f. Making specific efforts to encourage present minority employees to recruit their friends and relatives.

FIRM NAME _____

SIGNATURE AND TITLE _____

EQUAL EMPLOYMENT OFFICER _____

DATE _____

CERTIFICATE OF LESS THAN 15

Instructions: If your firm employs less than fifteen (15) employees, complete this form *only* and return to:

CITY OF PHOENIX
EQUAL OPPORTUNITY DEPARTMENT
550 W. WASHINGTON STREET
PHOENIX, AZ 85003-2107

If you have any questions or require assistance, telephone the Equal Opportunity Department at:

(602) 262-6790

Please print or type.

NAME OF COMPANY: _____

STREET ADDRESS: _____

MAILING ADDRESS: _____

CITY/STATE/ZIP CODE: _____

TELEPHONE NO.: _____

TYPE OF BUSINESS: _____

In accordance with Section 18-24 of the City of Phoenix Suppliers and Vendors Affirmative Action Ordinance G-1372, I hereby certify that the above named company currently employs _____ (insert number of employees).

AUTHORIZED SIGNATURE OF COMPANY OFFICER

TITLE

DATE

COMBINATION EEO QUESTIONNAIRE/EMPLOYER INFORMATION REPORT

Instructions:

Completed forms should be returned to the City of Phoenix Equal Employment Department, 550 W. Washington Street, Phoenix, Arizona, 85003-2107. If you have any questions or require assistance, telephone the Equal Opportunity Department at Area Code (602) 262-6790.

**PART A
EQUAL EMPLOYMENT QUESTIONNAIRE**

Company Name: _____

Corporate Street Address: _____

Corporate Mailing Address: _____

Local Street Address (if different than above): _____

Local Mailing Address (if different than above): _____

Corporate phone: _____ Local Telephone Number: _____

Type of Business: _____

Name, title and telephone number of company's Equal Employment Opportunity Officer/person responsible for personnel:

Corporate: _____ Local: _____

So that your record may be properly cross referenced in our file, in the space provided below, please indicate other company names used:

* * * * *

**PART B
EMPLOYER INFORMATION REPORT**

FOR OFFICE USE ONLY

SIC CODE		COMPANY I.D.					-15	Compl.	YR.

Instructions:

If your firm is located *outside* the Phoenix metropolitan area and you have *no* employees in the Phoenix metropolitan area, please complete this report for **TOTAL** number of employees. Your latest Federal EEO-1 may be substituted for only this form.

If you have employees in the *Phoenix metropolitan area* (includes Phoenix, Tempe, Mesa, Chandler, Scottsdale, Paradise Valley, Glendale, Peoria, Tolleson, Litchfield, Avondale, Buckeye and Goodyear), complete this form to reflect *only* these employees.

JOB CATEGORIES	NUMBER OF EMPLOYEES										
	OVERALL TOTALS (SUM OF COL. B THRU K)	MALE					FEMALE				
		WHITE (NOT OF HISPANIC ORIGIN)	BLACK (NOT OF HISPANIC ORIGIN)	HISPANIC	ASIAN OR PACIFIC ISLANDER	AMERICAN INDIAN OR ALASKAN NATIVE	WHITE (NOT OF HISPANIC ORIGIN)	BLACK (NOT OF HISPANIC ORIGIN)	HISPANIC	ASIAN OR PACIFIC ISLANDER	AMERICAN INDIAN OR ALASKAN NATIVE
A	B	C	D	E	F	G	H	I	J	K	
Officials and Managers											
Professionals											
Technicians											
Sales Workers											
Office and Clerical											
Craft Workers (Skilled)											
Operatives (Semi-Skilled)											
Laborers (Unskilled)											
Service Workers											
TOTALS											
Total Employees reported in previous EEO-1 report											
NAME OF AUTHORIZED OFFICIAL				TITLE		SIGNATURE			DATE		

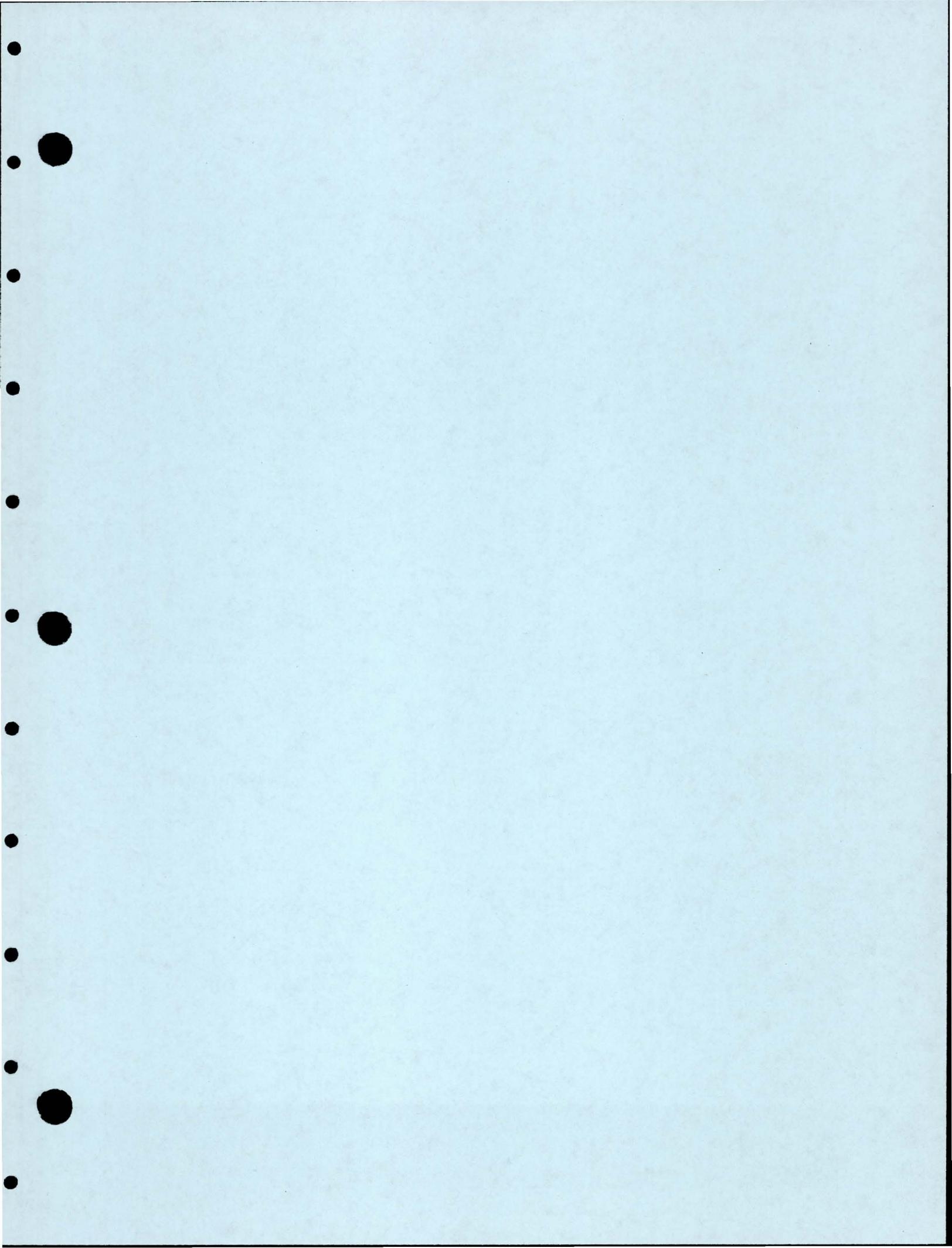


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SECTION 00300 - BID FORM

1. Project Identification.

The project is for the Squaw Peak Water Treatment Plant - General Plant Improvements. The project consists of three parts which are to be bid and constructed as one project: The three parts are:

Part A - Modifications and Upgrades

Part B - Preliminary Treatment Facilities

Part C - Solids Handling Facility

Directory Drawings, which in part, present an index to the Part A, Part B, and Part C Drawings, are also part of the project.

2. Bid Submission.

- 2.1 Bid to be submitted to City of Phoenix, Arizona, Engineering and Architectural Services Department, Construction Bid Counter, 125 East Washington Street, 2nd Floor.
- 2.2 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an agreement with OWNER in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Bid Price and within the Bid Times indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.
- 2.3 Bidder accepts all of the terms and conditions of the Advertisement or Call for Bids and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for sixty (60) calendar days after the day of Bid opening. Bidder will sign and deliver the required number of counterparts of the Agreement with the bonds and other documents required by the Bidding Requirements within fifteen (15) days after the date of OWNER'S Notice of Award.
- 2.4 In submitting this bid, Bidder represents, as more fully set forth in the Agreement, that:
 - 2.4.1 Bidder has examined and carefully studied the Bidding Documents and the following Addenda receipt of which is hereby acknowledged: (List Addenda by Addendum Number)

- 2.4.2 Bidder has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance and furnishing of the Work;
- 2.4.3 Bidder is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work;
- 2.4.4 Bidder has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in Article 4 of the General Conditions. Bidder accepts the determination set forth in paragraph SC-4 of the Supplementary Conditions of the extent of the "technical data" contained in such reports and drawings upon which Bidder is entitled to rely as provided in Article 4 of the General Conditions. Bidder acknowledges that such reports and drawings are not Contract Documents and may not be complete for Bidder's purposes. Bidder acknowledges that OWNER and ENGINEER do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Bidding Documents with respect to Underground Facilities at or contiguous to the site. Bidder has obtained and carefully studied (or assumes responsibility for having done so) all such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by Bidder and safety precautions and programs incident thereto. Bidder does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the determination of this Bid for performance and furnishing of the Work in accordance with the times, price and other terms and conditions of the Contract Documents.
- 2.4.5 Bidder is aware of the general nature of Work to be performed by OWNER and others at the site that relates to Work for which this Bid is submitted as indicated in the Contract Documents.
- 2.4.6 Bidder has correlated the information known to Bidder, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.
- 2.4.7 Bidder has given ENGINEER written notice of all conflicts, errors, ambiguities or discrepancies that Bidder has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to Bidder, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Bid is submitted;

<u>Base Bid Item No.</u>	<u>Bid Qty.</u>	<u>Description (Bidder to write price in words)</u>	<u>Unit Price</u>	<u>Bid Price (Figures)</u>
2.5.4	1 LS	Protective Coatings on Fifty Percent of the Walls of the Flocculation and Sedimentation Basins and the Filter Influent Channel.	N/A	\$
			_____ Dollars	
			and _____ Cents.	
2.5.5	1 LS	Protective Coatings on Fifty Percent of the Floors of the Flocculation and Sedimentation Basins and the Filter Influent Channel.	N/A	\$
			_____ Dollars	
			and _____ Cents.	
2.5.6	N/A	Filter Concrete Repair	N/A	N/A
2.5.6.1	12 EA.	Protect Filter Media	\$ _____	\$
2.5.6.2	200 LF	Repair Reinforcing Steel	\$ _____	\$
2.5.6.3	24 EA.	Protective Coating, Long Wall	\$ _____	\$
2.5.6.4	24 EA.	Protective Coating, Short Wall	\$ _____	\$
2.5.6.5	50 LF	Repair Cracks	\$ _____	\$
2.5.7	1 LS	Allowance for potholing, for the lump sum of: <u>Five Thousand Dollars.</u>	N/A	\$ 5,000.00
2.5.8	1 LS	Allowance for relocation of existing utilities, for the lump sum of: <u>Fifty Thousand Dollars.</u>	N/A	\$ 50,000.00
2.5.9	1 LS	Allowance for Repair and Reroofing of Existing Building Roofs, for the lump sum of: <u>Seventy-Five Thousand Dollars.</u>	N/A	\$ 75,000.00

<u>Base Bid Item No.</u>	<u>Bid Qty.</u>	<u>Description (Bidder to write price in words)</u>	<u>Unit Price</u>	<u>Bid Price (Figures)</u>
2.5.10	1 LS	Allowance for painting Existing Buildings, for the lump sum of: <u>Seventy-Five Thousand Dollars.</u>	N/A	\$ 75,000.00
2.5.11	1000 CY	Extra Excavation, for the contingent unit price of: _____ _____ Dollars and _____ Cents per cubic yard	\$ _____	\$
2.5.12	750 CY	Extra Select Backfill, for the contingent unit price of: _____ _____ Dollars and _____ Cents per cubic yard	\$ _____	\$
2.5.13	400 SY	Extra Riprap, for the contingent unit price of: _____ _____ Dollars and _____ Cents per square yard	\$ _____	\$
2.5.14	500 CY	Extra Crushed Stone, for the contingent unit price of: _____ _____ Dollars and _____ Cents per cubic yard	\$ _____	\$
2.5.15	500 CY	Extra Sand, for the contingent unit price of: _____ _____ Dollars and _____ Cents per cubic yard	\$ _____	\$
2.5.16	750 CY	Extra Class "A" Concrete, for the contingent unit price of: _____ _____ Dollars and _____ Cents per cubic yard	\$ _____	\$

<u>Base Bid Item No.</u>	<u>Bid Qty.</u>	<u>Description (Bidder to write price in words)</u>	<u>Unit Price</u>	<u>Bid Price (Figures)</u>
2.5.17	500 CY	Extra Class "B" Concrete, for the contingent unit price of: _____ Dollars and _____ Cents per cubic yard	\$ _____	\$
2.5.18	25,000 LB	Extra Reinforcing Steel, for the contingent unit price of: _____ Dollars and _____ Cents per pound	\$ _____	\$
2.5.19	500 SY	Extra Asphaltic Pavement, for the contingent unit price of: _____ Dollars and _____ Cents per square yard	\$ _____	\$
2.5.20	5,000 SY	Extra Asphalt Seal Coat, for the contingent unit price of: _____ Dollars and _____ Cents per square yard	\$ _____	\$
2.5.21	2,000 SY	Extra Pavement Overlay, for the contingent unit price of: _____ Dollars and _____ Cents per square yard	\$ _____	\$
2.5.22	5,000 LB	Extra Structural Steel, for the contingent unit price of: _____ Dollars and _____ Cents per pound	\$ _____	\$

<u>Base Bid Item No.</u>	<u>Bid Qty.</u>	<u>Description (Bidder to write price in words)</u>	<u>Unit Price</u>	<u>Bid Price (Figures)</u>
2.5.23	3,000 LB	Extra Aluminum, for the contingent unit price of: _____ Dollars and _____ Cents per pound	\$ _____	\$
2.5.24	2,500 LB	Extra Stainless Steel, for the contingent unit price of: _____ Dollars and _____ Cents per pound	\$ _____	\$
2.5.25	500 EA	Extra Stainless Steel Anchor Bolts, for the contingent unit price of: _____ Dollars and _____ Cents each	\$ _____	\$
2.5.26		Extra Electrical PVC Conduit, for the contingent unit prices per foot in accordance with the following schedule: Price per linear foot		
	4,000 LF	2 inch _____ Dollars and ___ Cents	\$ _____	\$
	1,000 LF	4 inch _____ Dollars and ___ Cents	\$ _____	\$
2.5.27		Extra Electrical and Instrumentation RGS Conduit, for the contingent unit prices per foot in accordance with the following schedule: Price per linear foot		
	2,000 LF	3/4 inch _____ Dollars and ___ Cents	\$ _____	\$
	2,000 LF	1 inch _____ Dollars and ___ Cents	\$ _____	\$

<u>Base Bid Item No.</u>	<u>Bid Qty.</u>	<u>Description (Bidder to write price in words)</u>	<u>Unit Price</u>	<u>Bid Price (Figures)</u>
2.5.28		Extra Electrical and Instrumentation PVC Coated Steel Conduit, for the contingent unit prices per foot in accordance with the following schedule:		
		Price per linear foot		
	2,000 LF	3/4 inch _____ Dollars and ___ Cents	\$ _____	\$
	2,000 LF	1 inch _____ Dollars and ___ Cents	\$ _____	\$
2.5.29		Extra Electrical and Instrumentation Cable, for the contingent unit prices per foot in accordance with the following schedule:		
		<u>600 Volt Cable</u>		
		Price per linear foot		
	10,000 LF	No. 14 Cable _____ Dollars and ___ Cents	\$ _____	\$
	10,000 LF	No. 12 Cable _____ Dollars and ___ Cents	\$ _____	\$
		<u>5,000 Volt Cable</u>		
		Price per linear foot		
	1,000 LF	No. 2 _____ Dollars and ___ Cents	\$ _____	\$
		<u>Two Conductor Shielded Cable</u>		
		Price per linear Foot		
	10,000 LF	No. 16 _____ Dollars and ___ Cents	\$ _____	\$
2.5.30		Extra Electrical Manholes Complete, for the contingent unit price per manhole in accordance with the following schedule:		
		Price per Manhole		
	3 EA	6'X6'X8' _____ Dollars and ___ Cents	\$ _____	\$
2.5.31		Extra Electrical Handholes Complete, for the contingent unit price per handhole in accordance with the following schedule:		
		Price per Handhole		
	4 EA	4'X4'X4' _____ Dollars and ___ Cents	\$ _____	\$

Base Bid (Sum of Bid Prices for all Base Bid Items 2.5.1 through 2.5.31):

_____ (written words)
_____ Dollars and _____ Cents
_____ (written words)
\$ _____
(Figures)

THE BASE BID IS BASED UPON THE LUMP SUM PRICES, ALLOWANCES AND UNIT PRICE AND ESTIMATED QUANTITIES. IF THERE IS AN ERROR IN THE BASE BID OR COMPUTED TOTALS BY THE BIDDER IT SHALL BE CHANGED AND THE UNIT PRICES AND LUMP SUM AMOUNTS SHALL GOVERN. THE WRITTEN WORD AMOUNTS TAKE PRECEDENCE OVER THE FIGURE AMOUNTS.

THE BIDDER ACKNOWLEDGES AND AGREES THAT DETERMINATION OF THE LOWEST RESPONSIVE AND RESPONSIBLE BIDDER SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF PARAGRAPH 16 OF THE INSTRUCTIONS TO BIDDERS.

THE BASE BID DOLLAR VALUE WILL BE ANNOUNCED AT THE BID OPENING.

3. Time of Completion.

3.1 Bidder agrees that the Work will be Substantially Complete within 1,000 calendar days after the date when the Contract Time commences to run as provided in Article 2 of the General Conditions, and Complete and ready for final payment in accordance with Article 14 of the General Conditions within 1,030 calendar days after the date when the Contract Time commences to run.

Bidder agrees that certain activities and Work will be Substantially Complete within the calendar days after the date when the Contract Time commences to run as provided in Article 2 of the General Conditions or on the Calendar Dates as described in Article 3 of the Agreement, as follows:

- Substantial Completion of Schedule Z, March 31, 1994.
- Substantial Completion of Schedule T, April 30, 1994.
- Substantial Completion of Schedule S, 180 days.
- Substantial Completion of Schedule W, 510 days.
- Substantial Completion of Schedule X, 790 days.
- Substantial Completion of Schedule R, 915 days.
- Substantial Completion of Schedule Y, 1,000 days.

3.2 Bidder accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the times specified in the Agreement.

4. Attachments to Bid.

4.1 The following documents are attached to and made a condition of this Bid:

- (a) Required Bid security in the form of a certified check, cashier's check or Bid Bond, provided in Section 00310, for an amount not less than five (5) percent of the Bidders Total Base Bid.
- (b) Section 00300, a tabulation of Subcontractors, Manufacturers, Suppliers and other persons and organizations required to be identified in this Bid.
- (c) Section 00340, Schedule of Manufacturers and Suppliers Major Equipment and Material Items.
- (d) Section 00360, Noncollusion Affidavit.

4.2 The following documents shall be submitted to the OWNER within forty-eight (48) hours of the Bid Opening:

- (a) Section 00320, Required Bidder's Questionnaire with supporting data.

5. Bid Terms.

Terms used in this Bid which are defined in the General Conditions or Instructions will have the meanings indicated in the General Conditions or Instruction.

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Submitted on _____, 19____.

If Bidder is:

An Individual

By _____ (Seal)

doing business as _____

Business address: _____

Arizona License: Classification _____ Number _____

Phone Number: _____

A Partnership

By _____ (Seal)

Business Address: _____

Arizona License: Classification _____ Number _____

Phone Number: _____

A Corporation

By _____ (Seal)

By _____ (Seal)

Attest _____

Business Address: _____

Arizona License: Classification _____ Number _____

Phone Number: _____

A Joint Venture

By _____ (Seal)

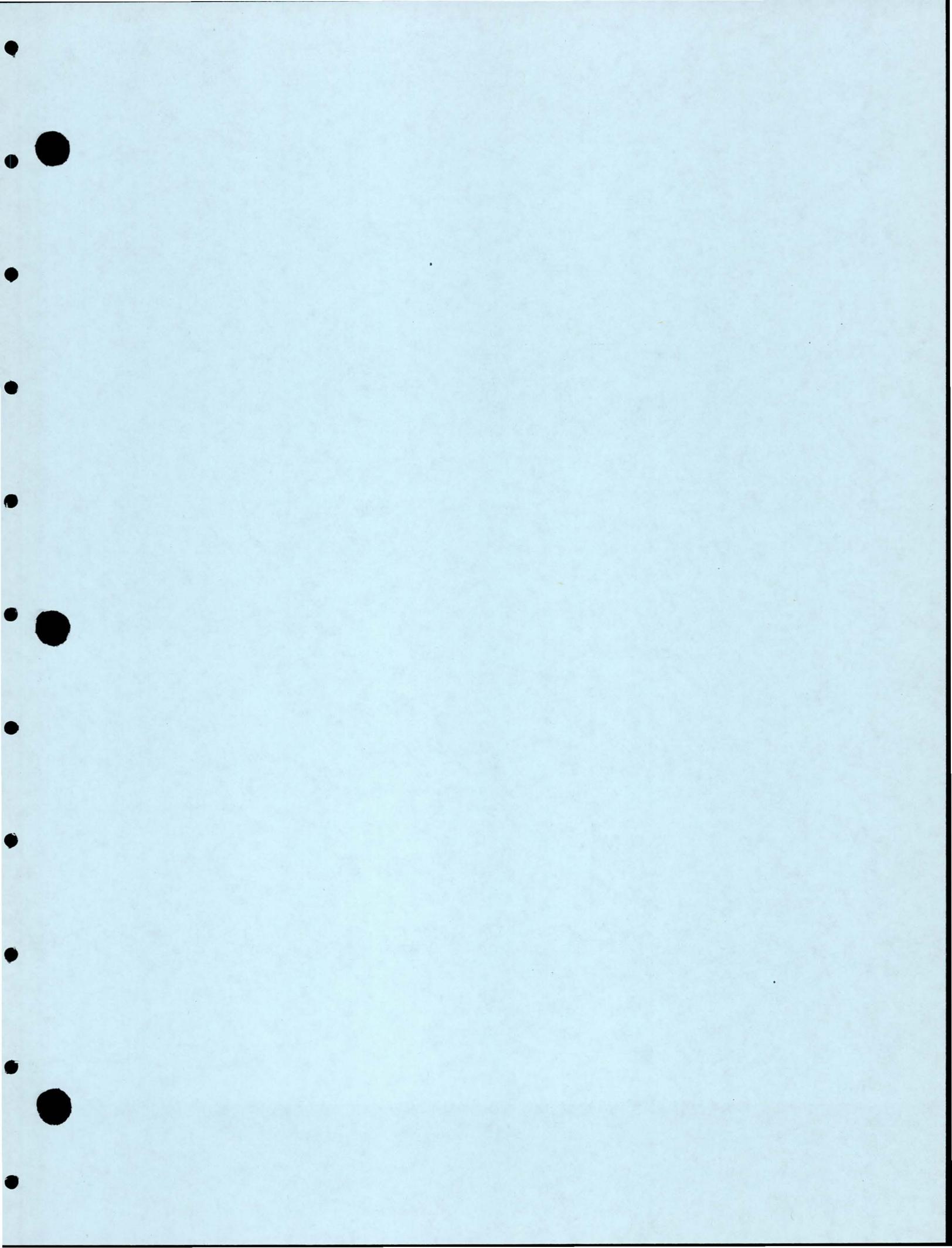
By _____ (Seal)

Arizona License: Classification _____ Number _____

Phone and Address for receipt of official communications

(Each joint venture must sign. The manner of signing for each individual, partnership and corporation that is a party of the joint venture should be in the manner indicated above.)

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SECTION 00310 BID BOND

BIDDER (Name and Address):

SURETY (Name and Address of Principal Place of Business):

OWNER (Name and Address):

City of Phoenix, Arizona
An Arizona Municipal Corporation
251 West Washington Street
Phoenix, Arizona 85003

BID

BID DUE DATE: _____

PROJECT (Brief Description Including Location):

BOND

BOND NUMBER: _____

DATE (Not later than Bid Due Date): _____

PENAL SUM: _____

IN WITNESS WHEREOF, Surety and Bidder, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Bid Bond to be duly executed on its behalf by its authorized officer, agent, or representative. The Bidding Documents are incorporated into this Bid Bond by reference.

BIDDER

SURETY

(Seal)

Bidder's Name and Corporate Seal

(Seal)

Surety's Name and Corporate Seal

By: _____

Signature and Title

By: _____

Signature and Title
(Attach Power of Attorney)

Attest: _____

Signature and Title

Attest: _____

Signature and Title

Note: (1) Above addresses are to be used for giving required notice.

(2) Any singular reference to Bidder, Surety, OWNER or other party shall be considered plural where applicable.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to pay to OWNER upon default of Bidder the penal sum set forth on the face of this Bond which represents **five percent (5%) of the sum of the Bidder's Total Base Bid and Bid Alternates**.
2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents the executed Agreement required by the Bidding Documents and any Performance and Payment Bonds required by the Bidding Documents and Contract Documents.
3. This obligation shall be null and void if:
 - 3.1 OWNER accepts Bidder's bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by OWNER) the executed Agreement required by the Bidding Documents and any Performance and Payment Bonds required by the Bidding Documents and Contract Documents, or
 - 3.2 All bids are rejected by OWNER, or
 - 3.3 OWNER fails to issue a notice of award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from OWNER, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of and any and all defenses based on or arising out of any time extension to issue notice of award agreed to in writing by OWNER and Bidder, provided that the time for issuing notice of award including extensions shall not in the aggregate exceed 120 days from Bid Due Date without Surety's written consent. Surety voluntarily and intentionally waives and relinquishes all of the Surety's rights specified in and each provision of ARS Title 12, Section 1641 and 1642.
6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in paragraph 4 above if received by Bidder and Surety, and in no case later than one year after Bid Due Date.
7. Any Suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notice required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent or representative who executed this Bond on behalf of Surety to execute, seal and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of the Bond conflicts with any applicable provision of any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
11. The term "bid" as used herein includes a bid, offer or proposal as applicable.

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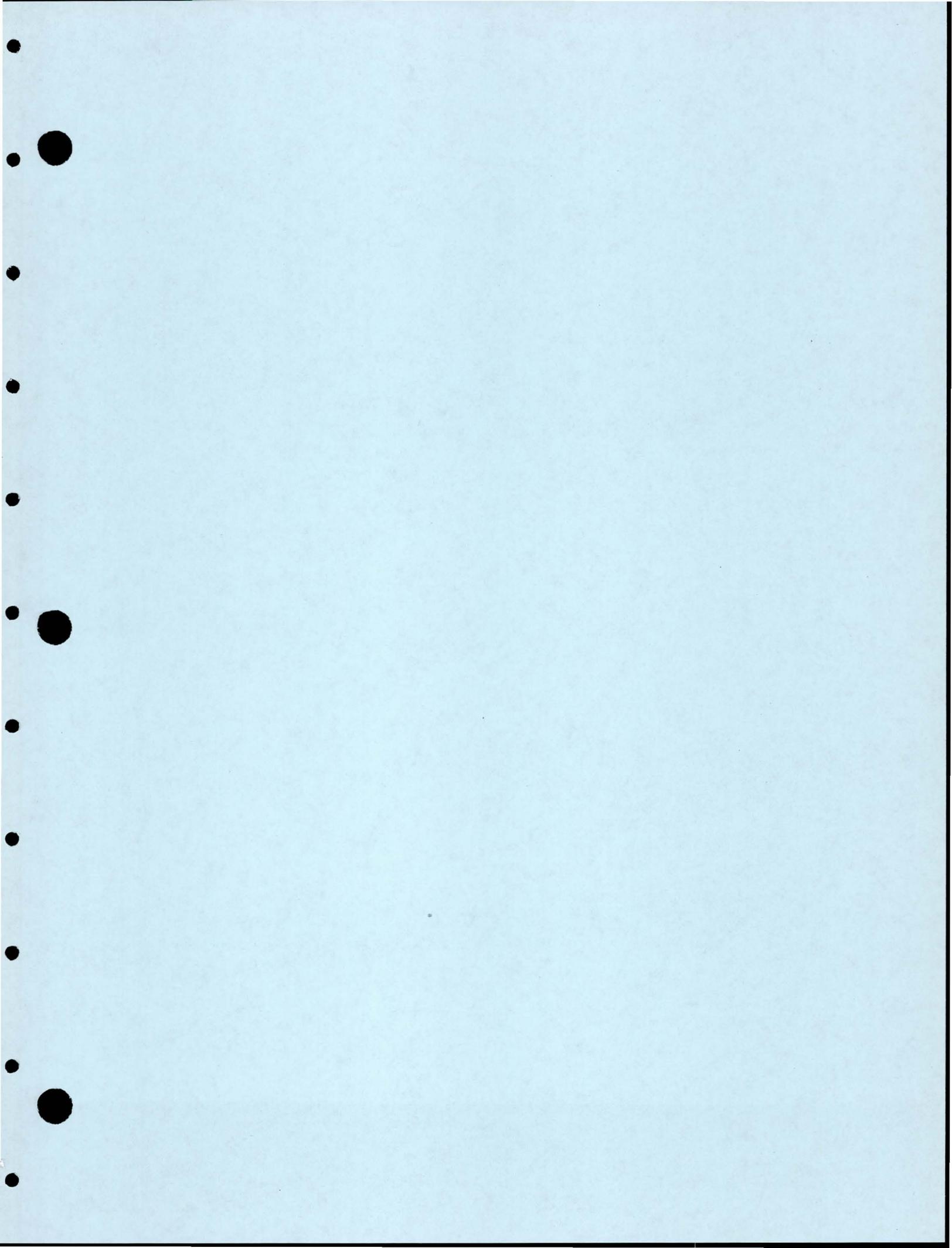


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SECTION 00320 BIDDERS QUESTIONNAIRE

The undersigned Bidder warrants that all statements and answers made to the interrogatories that follow are current, accurate and complete as of the date stated below.

1. Organization.

1.1 How many years has your organization been in business under your present name? _____

1.2 Date of organization (or incorporation) _____ State of incorporation _____ (IRS) EIN _____

1.3 Title and name of Principals (President, Vice-President, Secretary and Treasurer, if a corporation; partners, if a partnership).

1.4 If your organization, any business entity related to or affiliated with your organization, or any present or former executive employee, officer, director, shareholder (owning 20% or more of the outstanding shares), partner, or owner of your organization or of any such related or affiliated entity has ever been convicted of a felony, or has felony charges pending, in any state within the last three years from the date of Bid opening, including but not limited to a felony conviction under ARS Title 34, Section 252, furnish with this Bidder's Questionnaire all material facts relating to any such felony conviction or any such pending felony charges against (1) your organization, (2) any such business entity related to or affiliated with your organization, or (3) any such present or former executive employee, officer, director, shareholder (owning 20% or more of the outstanding shares), partner, or owner of your organization or of any such related or affiliated entity.

Attachment _____, consisting of _____ pages.

2. Licensing.

2.1 For each Arizona Contractor's license identified in Paragraph 3 of the Instructions to Bidders, Section 00100, attach a copy of the "identification card" issued by the Registrar of Contractors. Also, attach a copy of any privilege license issued to your organization by the City of Phoenix, the State and any other Political Subdivision with jurisdiction over the Work.

Attachment _____, consisting of _____ pages.

2.2 Does your organization hold contractor's licenses covering specialty classification of Work that your organization itself intends to perform and for which a specific specialty license is required under ARS Title 32 _____ by OWNER _____ or any other Political Subdivision with jurisdiction over the Work _____? If so, attach a list with all licenses by number and classification; state the name of the organization holding the license, the renewal date of each license, and whether each license is active. Also, attach a copy of the corresponding identification cards issued by the Registrar of Contractors, the OWNER or the particular Political Subdivision with jurisdiction over the Work.

Attachment _____, consisting of _____ pages.

3. Experience.

3.1 What is the general character of the work performed by your organization? _____

3.2 How many years experience in _____ construction work has your organization had: (a) as a General Contractor? _____; (b) as a Subcontractor? _____.

3.3 Attach a list of all public contracts or subcontracts under public contracts that your organization has performed within the last 5 years over \$ _____ involving _____ similar in character and scope to the Work under the Bidding Documents (using the forms in the "Reference Attachment" provided with this Questionnaire). If the contract or subcontract referenced is not substantially completed, furnish the percent complete for that contract or subcontract.

Attachment _____, consisting of _____ pages.

3.4 Within the last 5 years, has your organization failed to complete a contract or subcontract awarded to it? _____ If so, for each contract or subcontract, state when, where and why?

3.5 Within the last 5 years, has any officer or partner of your organization been an officer or partner of another organization that failed to complete a contract or subcontract awarded to it? ____ If so, for each contract or subcontract, state the name of each officer or partner, the name of the organization(s), the name of the owner(s), and the reasons why the contract(s) or subcontract(s) was/were not completed.

3.6 Within the last 5 years, has any officer or partner of your organization failed to complete a contract or subcontract awarded in that person's own name? _____ If so, for each contract or subcontract, state the name of each officer or partner, the name of the owner(s), and the reasons why the contract(s) or subcontract(s) was/were not completed?

- 3.7 Has your organization ever performed work for the Federal Government or any of its instrumentalities? _____ If so, furnish each such instrumentality (for which your organization has performed work over \$_____ within the last 5 years) the information requested in the References Attachment provided with this Questionnaire.

Attachment _____, consisting of _____ pages.

- 3.8 Within the last five years, have any claims arising from or relating to a contract or subcontract been made against your organization or any officer or partner of your organization that resulted in litigation or arbitration? _____ If so, the Bidder shall attach a description of each claim, the amount of the claim, the parties involved, and the settlement amount or award.

Attachment _____, consisting of _____ pages.

- 3.9 Within the last five years, has your organization or an officer or partner of your organization made any claims arising from or relating to a contract or subcontract that resulted in litigation or arbitration? _____ If so, the Bidder shall attach a description of each claim, the amount of the claim, the parties involved, and the settlement amount or award.

Attachment _____, consisting of _____ pages.

4. Additional Eligibility Data Under ARS Section 34-255.

- 4.1 Parts of the Work, besides those disclosed on the List of Subcontractors, Section 00330, that you intend to subcontract:

- 4.2 If any of those Subcontractors nominated in paragraph 4.1 has ever been convicted of a felony, or has felony charges pending, in any state within the last three years from the date of Bid opening, including but not limited to a felony conviction under ARS Title 34, Section 252, furnish with this Questionnaire all material facts relating to any such felony conviction or any such pending felony charges strictly in accordance with the requirements of paragraph 1.4.

Attachment _____, consisting of _____ pages.

- 4.3 If any of the Suppliers (having a direct Subagreement with the Bidder or any of the Bidder's Subcontractors) has ever been convicted of a felony charges pending, in any state within the last three years from the date of Bid opening, including but not limited to a felony conviction under ARS Title 34, Section 252, furnish with this Questionnaire all material facts relating to any such felony conviction or any such pending felony charges strictly in accordance with the requirements in paragraph 1.4.

4.4 State the name, address and telephone number of a representative of your organization who personally visited and inspected the site: _____

Also, describe subsurface and physical conditions at or contiguous to the site that your representative investigated and how they were accounted for in the preparation of your organization's Bid.

Attachment _____, consisting of ____ pages.

4.5 Attach a list of construction equipment and machinery your organization intends to use in the execution of the Work, as estimated in the preparation of your organization's Bid.

Attachment _____, consisting of ____ pages.

4.6 Does your organization rent or lease equipment or facilities from other affiliate organizations? _____. If so, state the name of the affiliate organization(s) _____
_____.

4.7 Credit available? _____, Amount: \$_____.

4.8 Will your organization, i.e., the Bidder named in the Authorized Signature Article on the Bid Form, be the only named Principal in the Performance Bond and Payment Bond? _____
If not, please identify the organization who will be named as Principal or Co-Principal on the Performance Bond and Payment Bond _____. Also, state how such organization relates to the Bidder _____

(NOTE: If another organization is identified, the Bidder shall submit to the Owner or Engineer a separate Questionnaire filled out by that organization as required under Paragraph 3, Section 00100, Instructions to Bidders.)

5. **References.** (Include Name, Address and Phone Number)

5.1 Trade references (Minimum of three):

5.2 Bank references:

5.3 Insurance:

6. Certificate of Submittal.

Signed by: _____ Name _____ Title _____
on this _____ day of _____, 19____.

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REFERENCES ATTACHMENT TO BIDDER'S QUESTIONNAIRE

REFERENCE

Public Owner _____

Project/Contract Name _____

Location of Project _____

Contract Price _____

Project Started _____ Completed _____

Owner's Representative (Name & Phone) _____

Bidder's Representative (Name & Phone) _____

Scope of Project _____

REFERENCE

Public Owner _____

Project/Contract Name _____

Location of Project _____

Contract Price _____

Project Started _____ Completed _____

Owner's Representative (Name & Phone) _____

Bidder's Representative (Name & Phone) _____

Scope of Project _____

REFERENCE

Public Owner _____

Project/Contract Name _____

Location of Project _____

Contract Price _____

Project Started _____ Completed _____

Owner's Representative (Name & Phone) _____

Bidder's Representative (Name & Phone) _____

Scope of Project _____

REFERENCE

Public Owner _____

Project/Contract Name _____

Location of Project _____

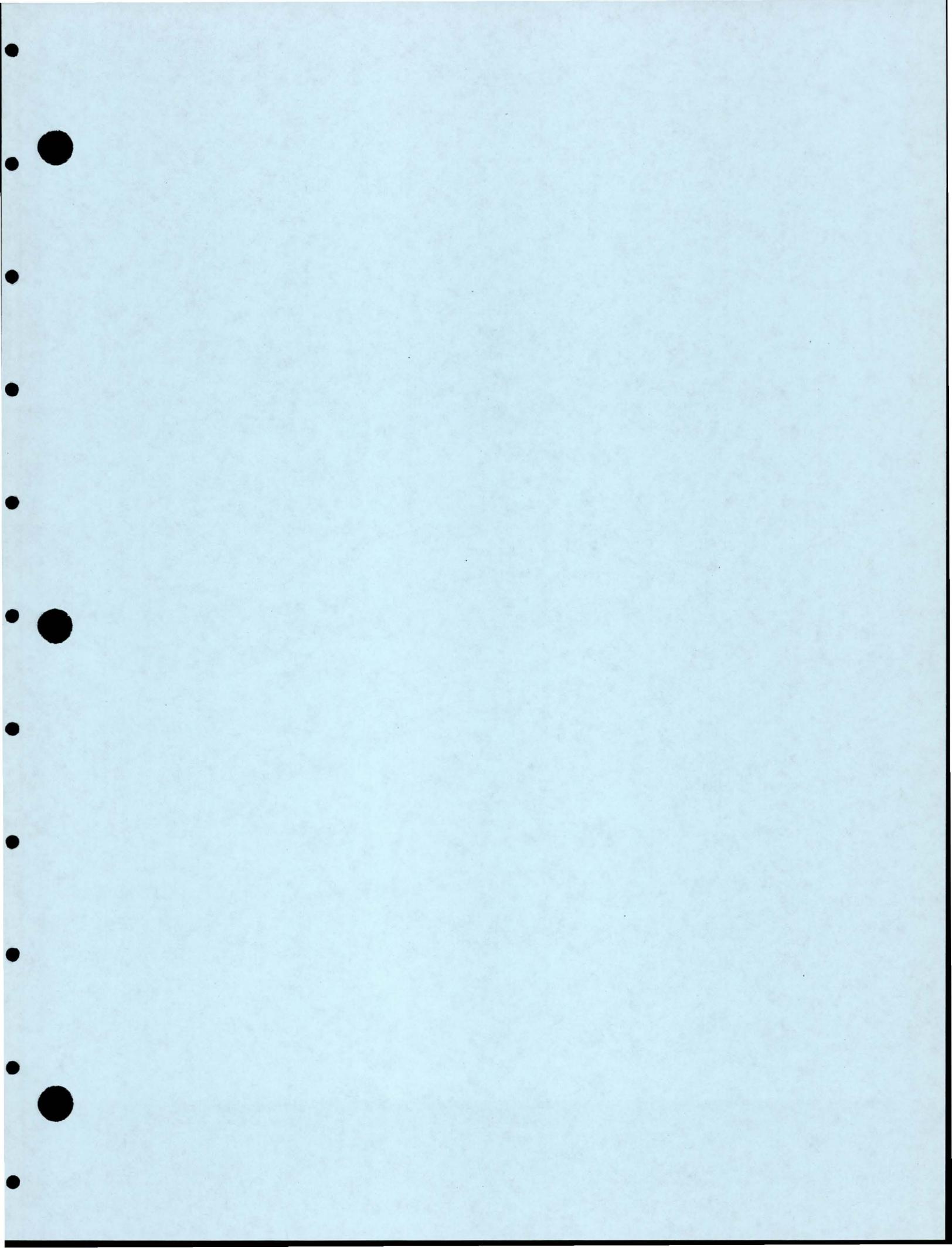
Contract Price _____

Project Started _____ Completed _____

Owner's Representative (Name & Phone) _____

Bidder's Representative (Name & Phone) _____

Scope of Project _____



SECTION 00330 LIST OF SUBCONTRACTORS

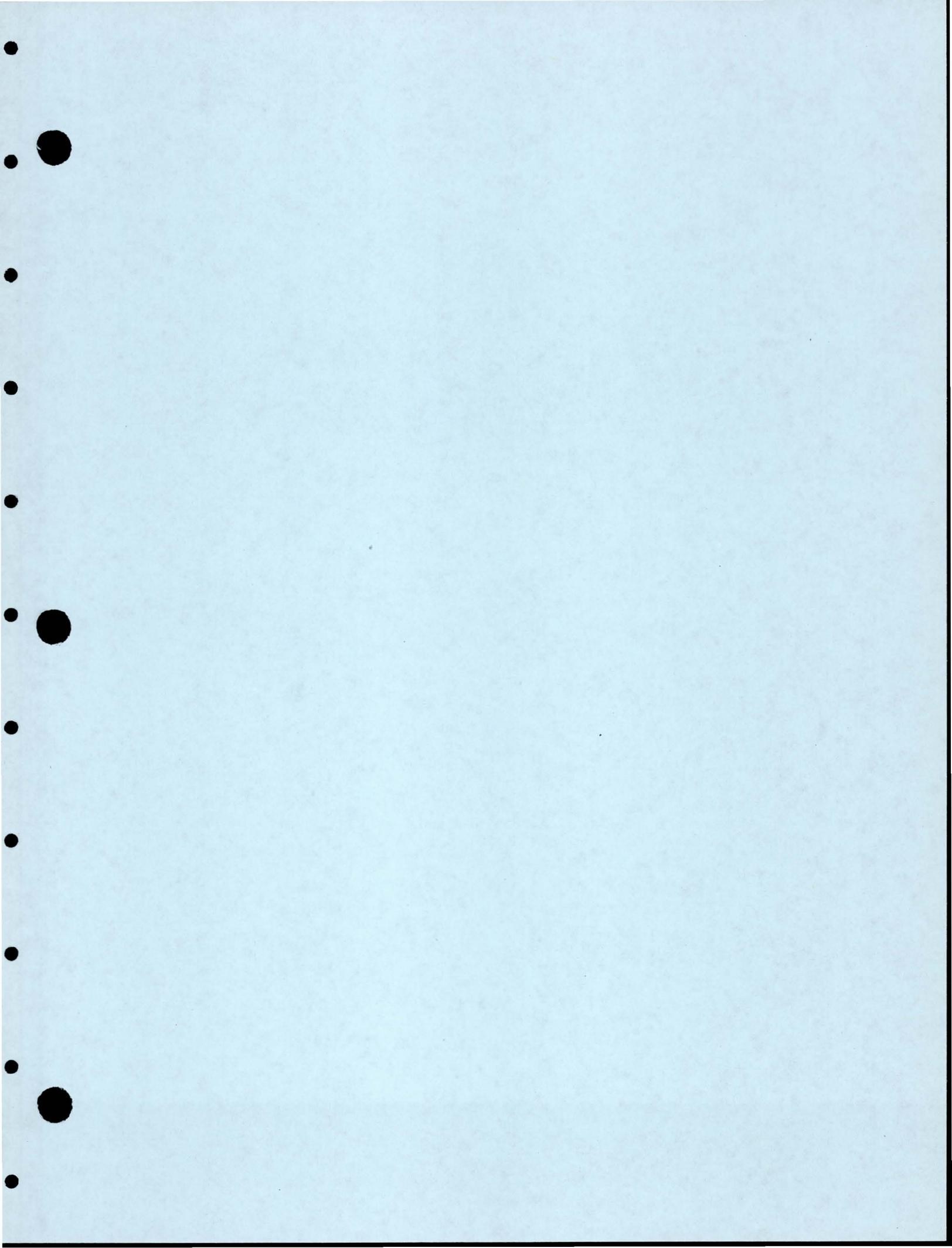
To enable OWNER to evaluate the Bidder's qualifications to perform the Work, as provided in the Instructions to Bidders, the Bidder shall nominate Subcontractor, Supplier and other persons and organizations (including those who are to furnish the principal items of material and equipment) to whom the Bidder intends to award a Subagreement greater than or equal to 2% of the Bid amount. If the Bidder intends to self-perform a classification of Work for which a specialty contractor's license is required, the Bidder shall nominate itself in the spaces provided for that purpose, and the Bidder shall furnish the Bidder's contractor's license number(s) for that classification. For each nominated Subcontractor, Supplier or other persons and organizations the Bidder shall enter, if available, the nominees telephone number and requiring licensing information.

	Work to be Performed	Nominee	License Number Classification	(%)
1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____
8.	_____	_____	_____	_____

CONTINUED FROM PREVIOUS PAGE...

	Work to be Performed	Nominee	License Number Classification	(%)
9.	_____	_____	_____	_____
10.	_____	_____	_____	_____
11.	_____	_____	_____	_____
12.	_____	_____	_____	_____
13.	_____	_____	_____	_____
14.	_____	_____	_____	_____
15.	_____	_____	_____	_____

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SECTION 00340 SCHEDULE OF MANUFACTURERS AND SUPPLIERS OF MAJOR EQUIPMENT AND MATERIAL ITEMS

The Bidder proposes that the items of major equipment or materials named herein will be supplied by the manufacturers or suppliers set forth below as written by the Bidder, unless changes are specifically authorized by the OWNER. Preliminary acceptance of equipment or materials listed by the manufacturer's name shall not in any way constitute a waiver of the specifications; final acceptance will be based on full conformity with the Specifications covering the equipment and/or materials. Submission of this schedule shall be made with the Bid. A Bid submitted without this fully completed schedule shall be considered non-responsive.

SPECIFICATION SECTION	TITLE/DESCRIPTION	MANUFACTURER OR SUPPLIER
PART A - MODIFICATIONS AND UPGRADES		
11176	Steel Chemical Storage Tanks	
11178	Waste Storage Tanks	
11179	Fiberglass Reinforced Polyester Tanks	
11233	Water Softening Equipment	
11250	Air Compressors	
11308	Vertical Lineshaft Pumps	
11351	Sludge Collection Equipment	
11357	Emergency Chlorine Scrubber	
11415	Steel Surge Tanks	
11501	Chlorination Equipment	
11508	Polymer Feed Equipment	
11530	Waste Storage Transfer Pump	
11531	Magnetic Drive Sealless End Suction Pumps	
11532	Metering Pumps	
11533	Gear Pumps	
11902	Metal Laboratory Furniture	
14211	Electric Elevator	
14310	Hoisting Equipment	
15502	Fire Protection and Control Systems	
15801	Central Station Air Handling Units	
15804	Air Cooled Condensing Units - Split System Air Conditioning	

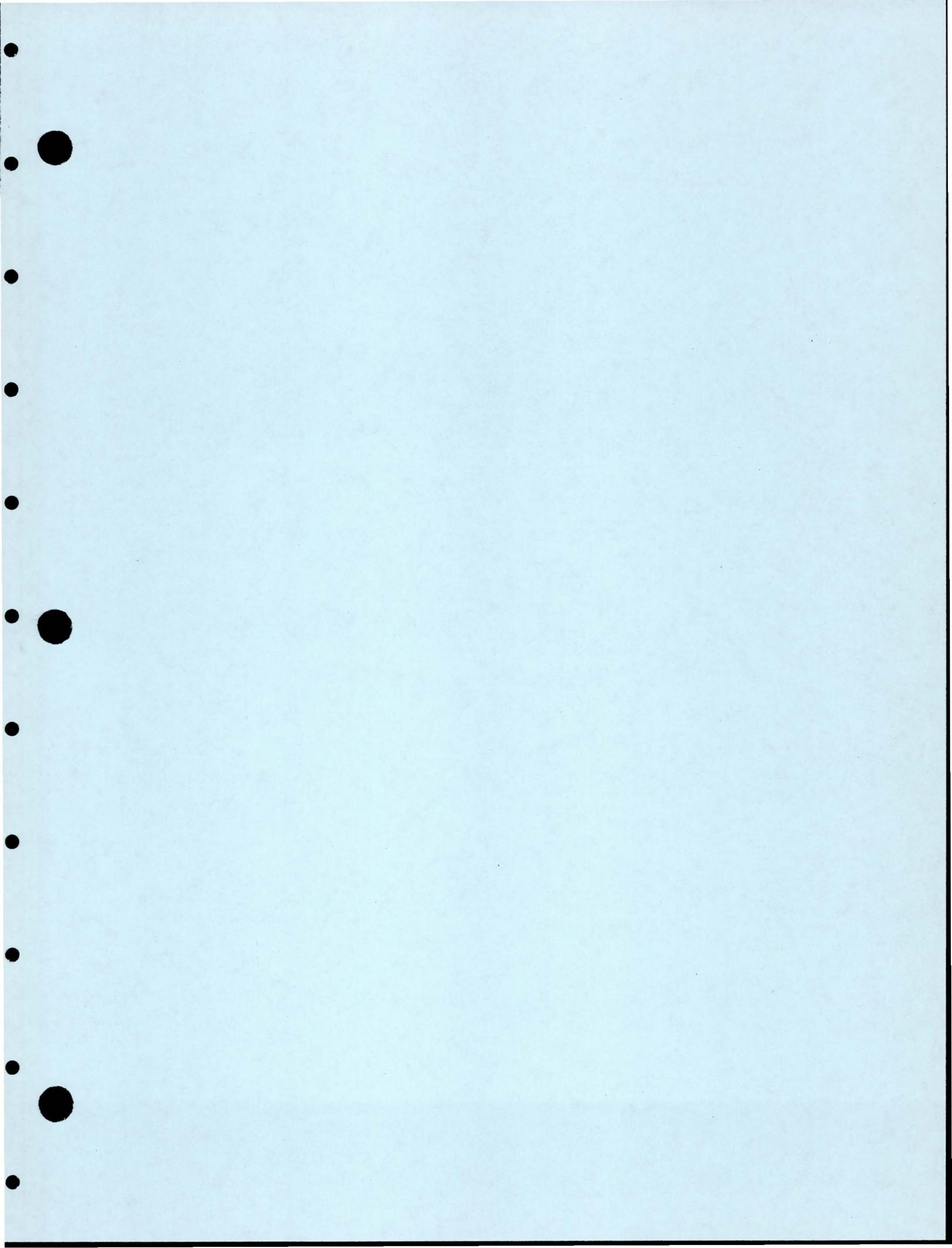
SPECIFICATION SECTION	TITLE/DESCRIPTION	MANUFACTURER OR SUPPLIER
15805	Package Air to Air Heat Pump Units	
15808	Computer Room Air Conditioning Unit	
15810	Packaged Air Conditioning Unit Through Wall Type	
16920	Motor Control Centers	
PART B - PRELIMINARY TREATMENT FACILITIES		
110100	Bar Screens	
110200	Screenings Conveyor System	
110300	Premixers	
110400	Circular Sludge Collectors	
120572	Sump Pumps	
120700	Presedimentation Sludge Pumps - Vortex Type	
120830	Sample Pumps	
154000	Rectangular Butterfly Valves	
161000	Motor Control Centers	
166010	Variable Frequency / Variable Voltage Motor Control	
170013	Magnetic Flowmeters	
PART C - SOLIDS HANDLING FACILITY		
11145	Grit Separation and Dewatering Equipment	
11160	Sludge Collector Drives	
11212	Submersible Mixers	
11344	Self-Priming Nonclog Centrifugal Pumps	
11346	Submersible Sump Pumps	
11374	Sludge Cake Piston Pumps	
11390	Progressing Cavity Pumps	
11525	Circular Gravity Thickener	
11771	Polymer Preparation and Feed System	
13216	Crosslinked Polyethylene Chemical Tanks	
13281	Activated Carbon Odor Control Systems	
13580	Thickened Sludge Storage Tank Covers	
14311	Monorail Hoists	

CITY OF PHOENIX, Engineering & Architectural Services Department
Squaw Peak Water Treatment Plant - General Plant Improvements
W-886739

SCHEDULE OF MANUFACTURERS AND SUPPLIERS

SPECIFICATION SECTION	TITLE/DESCRIPTION	MANUFACTURER OR SUPPLIER
14901	Live Bottom Hopper	
16920	Motor Control Centers	

Signature of Bidder



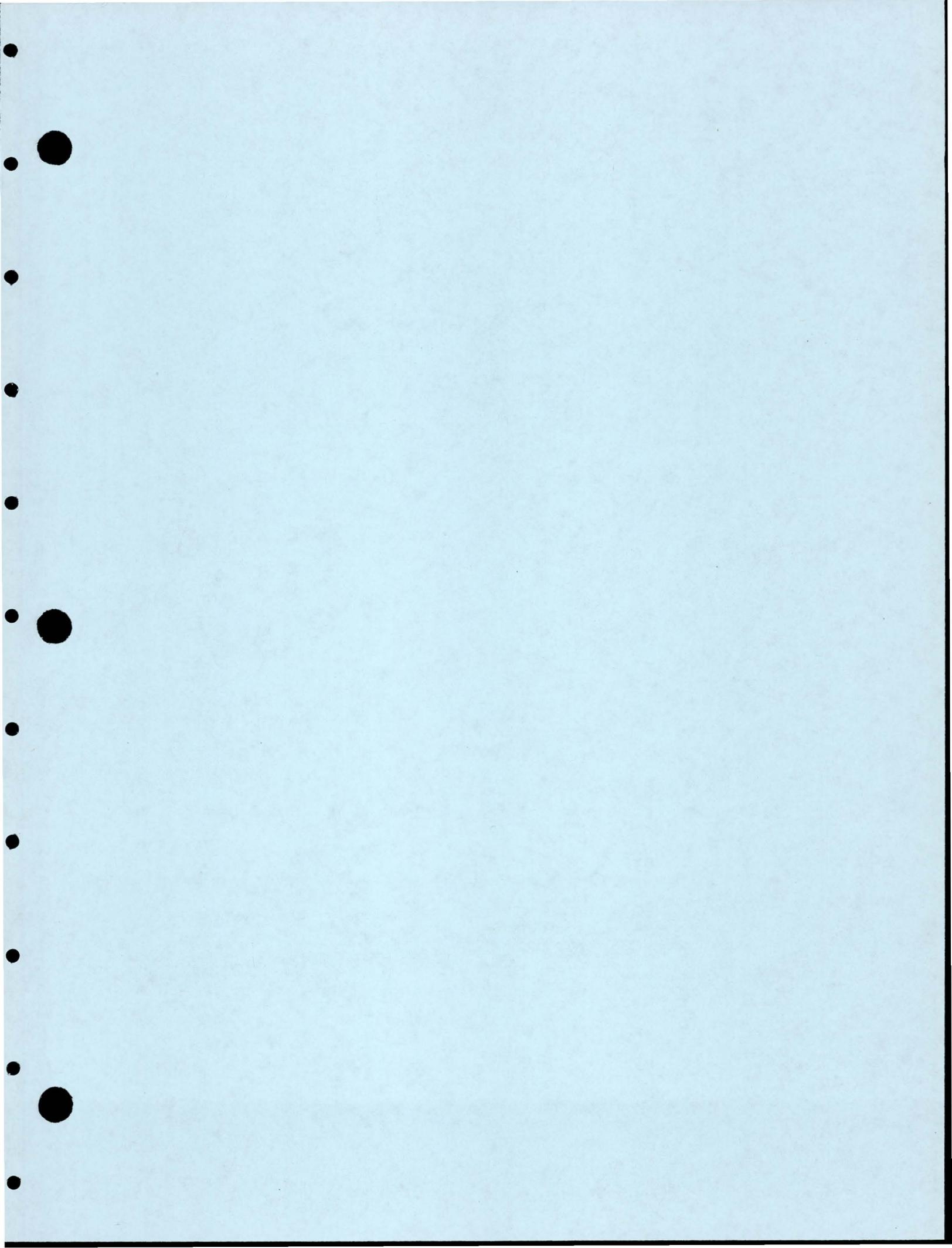


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SECTION 00500 AGREEMENT

THIS AGREEMENT is dated as of the _____ day of _____ in the year 19_____
by and between the City of Phoenix, Arizona, a Municipal Corporation organized and existing under and by
virtue of the laws of the State of Arizona (hereinafter called OWNER) and _____
_____ (hereinafter called CONTRACTOR).

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1 WORK

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

1. Directory Drawings
2. Part A - Modifications and Upgrades:
 - Raw Water Pump Station
 - Flocculation Basin Modifications
 - Sedimentation Basin Improvements
 - Plant II Filter Gallery Improvements
 - Inlet Channel Improvements
 - Filter Concrete Repair
 - Washwater Tank Improvements
 - Backwash Pump Station Improvements
 - Lincoln/Sunnyslope Pump Station Improvements
 - Chemical Feed System
 - Pump Mixer
 - Chemical Building
 - Bulk Chemical Storage
 - Plant I Chemical Piping Modifications
 - Plant II Chemical Piping Modifications
 - Maintenance Building Renovations/Upgrades
 - Administration Building Renovations/Upgrades
 - Main Switchgear Building Renovations/Upgrades
 - Sitework; Demolition, Grading and Paving
 - Utilities; Piping and Electrical
 - Instrumentation and Controls
 - All other Work Shown or Specified

3. Part B - Preliminary Treatment Facilities:

- Inlet Structure
- Bar Screens
- Raw Water Meter Vault
- Premixer
- Presedimentation Basin
- Presedimentation Sludge Pump Station
- Sitework; Demolition, Grading and Paving
- Utilities; Piping and Electrical
- Instrumentation and Controls
- All other Work Shown or Specified

4. Part C - Solids Handling Facility:

- Sludge Blending and Grit Removal
- Metering Vault
- Plant I Sedimentation Basin Modification
- Plant II Sedimentation Basin Modification
- Flow Splitting Structure
- Sludge Gravity Thickeners
- Thickened Sludge Pumping Station
- Thickened Sludge Storage Tanks
- Sludge Dewatering Building
- Sludge Staging Area
- Recoverable Used Water Pumping Station
- Flow Equalization Basin
- Sitework; Demolition, Grading and Paving
- Utilities; Piping and Electrical
- Instrumentation and Controls
- All other Work Shown or Specified

Article 2 ENGINEER

The OWNER has retained Malcolm Pirnie, Inc., who is hereinafter called ENGINEER, who is to act as OWNER'S representative, assume all duties and responsibilities and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

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Article 3 CONTRACT TIMES

3.1 The Work shall be completed in accordance with the Schedules of Completion described in Section 01015 of the General Requirements, and as shown on the Construction Milestone Diagram contained in the Directory Drawings. Completion shall be within the calendar days after the date when the Contract Time commences to run as provided in Article 2 of the General Conditions or on the Calendar Dates as described hereafter:

- Substantial Completion of Schedule R, 915 days.
- Substantial Completion of Schedule S, 180 days.
- Substantial Completion of Schedule T, April 30, 1994.
- Substantial Completion of Schedule W, 510 days.
- Substantial Completion of Schedule X, 790 days.
- Substantial Completion of Schedule Y, 1,000 days.
- Substantial Completion of Schedule Z, March 31, 1994.

All Work shall be Substantially Completed within 1,000 days after the date when the Contract Time commences to run as provided in paragraph 2.3 of the General Conditions, and Complete and ready for final payment in accordance with paragraph 14.13 of the General Conditions within 1,030 days after the date when the Contract Time commences to run.

3.2 Liquidated Damages. OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not completed within the times specified in paragraph 3.1 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER, as listed below:

<u>Schedule</u>	<u>Liquidated Damages</u>
R	Ten thousand dollars and no cents (\$10,000.00)
S	Two thousand Five hundred dollars and no cents (\$2,500.00)
T	Three thousand Five hundred dollars and no cents (\$3,500.00)
W	Five thousand dollars and no cents (\$5,000.00)
X	Two thousand Five hundred dollars and no cents (\$2,500.00)
Y	Two thousand Five hundred dollars and no cents (\$2,500.00)
Z	Twelve thousand dollars and no cents (\$12,000.00)

for each day that expires after the time specified in paragraph 3.1 for Substantial Completion until the Work is Substantially Complete. After Substantial Completion, if CONTRACTOR shall neglect, refuse or fail to complete the remaining Work within the time specified in paragraph 3.1 for completion and readiness for final payment or any proper extension thereof granted by OWNER, CONTRACTOR shall pay OWNER Two thousand Five hundred dollars and no cents (\$2,500.00) for each day that expires after the time specified in paragraph 3.1 for completion and readiness for final payment.

Article 4 CONTRACT PRICE

OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to paragraphs 4.1 below:

4.1 for all Work, in accordance with the Bid Form, the Base Bid Sum of:

(written words)		
_____ Dollars and		_____ Cents
(written words)		
\$ _____		
(Figures)		

All specific cash allowances are included in the above price and have been computed in accordance with paragraph 11.8 of the General Conditions;

Article 5 PAYMENT PROCEDURES

5.1 CONTRACTOR shall submit to ENGINEER for review Applications for Payment covering Work performed during the preceding calendar month. OWNER and CONTRACTOR mutually agree that OWNER will make a progress payment based on a duly certified (by ENGINEER) and approved (by a duly authorized representative of OWNER) estimate of the Work covered by the corresponding Application for Payment, subject to those conditions stipulated below, in the General Conditions and in other parts of the Contract Documents.

5.1.1 Until the aggregate value of the duly certified and approved Applications for Payment equals fifty percent (50%) of the Contract Price (i.e. 50% completion), OWNER will make payments in an amount equal to 90% of Work completed (i.e. OWNER will retain 10% of each estimate as additional guarantee for complete performance of the Work), less the aggregate of payments previously made and less such deductions as ENGINEER or OWNER determines are appropriate to cover claims requiring a greater sum to be retained (as provided in paragraph 5.3 and elsewhere in the Contract Documents);

5.1.2 Upon fifty percent (50%) completion, one-half of the amount retained under the 10% retainage provision shall be paid to CONTRACTOR, provided CONTRACTOR is making satisfactory progress on the Work and there is no specific cause or claim requiring a greater amount to be retained. After fifty percent (50%) completion, OWNER will retain five percent (5%) providing CONTRACTOR is making satisfactory progress, coupled with such deductions as ENGINEER or OWNER determines are appropriate to cover claims requiring a greater sum to be retained. If at any time OWNER, with the advice of ENGINEER, determines satisfactory progress is not being made, ten percent (10%) retainage shall be reinstated for all subsequent payments, in accordance with ARS 34-221.

- 5.1.3 Except as qualified in paragraph 5.1.2, upon final completion and acceptance of the Work, or designated part of the Work on which separate final completion and acceptance and Contract Price are specified and upon compliance with all other terms and conditions of the Contract Documents, payment may be made in full, including retainage withheld, less such deductions as ENGINEER may recommend or OWNER may withhold to cover claims requiring a greater sum to be retained and liquidated damages.
- 5.2 In lieu of retention, OWNER will, at the option of CONTRACTOR, accept security, as provided in ARS 34-221.
- 5.3 OWNER may deduct from each progress payment and final payment an amount equal to OWNER'S estimate of the liquidated damages then due or that would become due based on OWNER'S estimate of late completion of the Work, provided CONTRACTOR fails to submit and implement a written schedule recovery plan describing the cause of schedule slippage or delayed progress and the actions proposed and taken to recover schedule.

Article 6 INTEREST

All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest in accordance with ARS #34-221(G).

Article 7 CONTRACTOR'S REPRESENTATIONS

In order to induce OWNER to enter into this Agreement CONTRACTOR makes the following representations:

- 7.1 CONTRACTOR has examined and carefully studied the Contract Documents (including the Addenda listed in paragraph 8) and the other related data identified in the Bidding Documents including "technical data."
- 7.2 CONTRACTOR has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance or furnishing of the Work.
- 7.3 CONTRACTOR is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.
- 7.4 CONTRACTOR has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in paragraph 4.2.1 of the General Conditions. CONTRACTOR accepts the determination set forth in paragraph 4.2.1.3 of the Supplementary Conditions of the extent of the "technical data: contained in such reports and drawings upon which CONTRACTOR is entitled to rely as provided in paragraph 4.2 of the General Conditions. CONTRACTOR acknowledges that such reports and drawings are not Contract Documents and may not be complete for CONTRACTOR'S purposes. CONTRACTOR acknowledges that OWNER and ENGINEER do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Contract

Documents with respect to Underground Facilities at or contiguous to the site. CONTRACTOR has obtained and carefully studied (or assumes responsibility for having done so) all such additional supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing all the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto. CONTRACTOR does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the performance and furnishing of the Work at the Contract Price, within the Contract Times and in accordance with the other terms and conditions of the Contract Documents.

- 7.5 CONTRACTOR is aware of the general nature of work to be performed by OWNER and others at the site that relates to the Work as indicated in the Contract Documents.
- 7.6 CONTRACTOR has correlated the information known to CONTRACTOR, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.
- 7.7 CONTRACTOR has given ENGINEER written notice of all conflicts, errors, ambiguities or discrepancies that CONTRACTOR has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR, and the Contract Documents are sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

Article 8 CONTRACT DOCUMENTS

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work consist of the following:

- 8.1 This Agreement (pages 00500-1 to _____, inclusive).
- 8.2 Exhibits to this Agreement (pages _____ to _____, inclusive).
- 8.3 Performance Bonds (pages 00610-1 to _____, inclusive) and Payment Bonds (pages 00620-1 to _____).
- 8.4 Notice to Proceed.
- 8.5 Supplementary Conditions (pages _____ to _____, inclusive).
- 8.6 General Conditions (pages _____ to _____, inclusive).
- 8.7 Specifications bearing the title _____ and consisting of Division 1 through 18 of the Part A, Part B, Part C Specifications, and Appendices.

8.8 Drawings consisting of a cover sheets and sheets numbered:

Directory Drawings _____ through _____;
Part A _____ through _____;
Part B _____ through _____; and
Part C _____ through _____;

inclusive with each sheet bearing the following general title: _____,

and

Index Nos. Directory Drawings _____; Part A _____; Part B _____;
Part C _____.

8.9 Addenda numbers _____ to _____, inclusive.

8.10 CONTRACTOR'S Bid from (pages _____ to _____, inclusive) marked exhibit _____.

8.11 Documentation submitted by CONTRACTOR prior to Notice of Award (pages _____ to _____, inclusive).

8.12 The following which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto: All Written Amendments and other documents amending, modifying or supplementing the Contract Documents pursuant to paragraph 3.5 and 3.6 of the General Conditions.

The documents listed in paragraphs 8.2 et seq. above are attached to this Agreement (except as expressly noted otherwise above).

There are no Contract Documents other than those listed above in this Article 8. The Contract Documents may only be amended, modified or supplemented as provided in paragraphs 3.5 and 3.6 of the General Conditions.

Article 9 MISCELLANEOUS

9.1 Terms used in this Agreement which are defined in Article 1 of the General Conditions will have the meanings indicated in the General Conditions.

9.2 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

- 9.3 OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.
- 9.4 Any provision or part of the Contract Documents held to be void or unenforceable under any Law of Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon OWNER and CONTRACTOR, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.
- 9.5 OTHER PROVISIONS.

None.

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IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this Agreement in triplicate. One counterpart each has been delivered to OWNER, CONTRACTOR and ENGINEER. All portions of the Contract Documents have been signed, initialed or identified by OWNER and CONTRACTOR or identified by ENGINEER on their behalf.

This Agreement will be effective on _____, 19 ____ (which is the Effective Date of the Agreement).

OWNER **City of Phoenix**
A Municipal Corporation
FRANK A. FAIRBANKS, City Manager

CONTRACTOR _____

By: _____
Kenny W. Harris, P.E.
City Engineer

By: _____

Attest _____
City Clerk

[CORPORATE SEAL]

Approved as to form this ____ day of
_____, 19__.

Attest _____

City Attorney

Address for giving notices

Address for giving notices

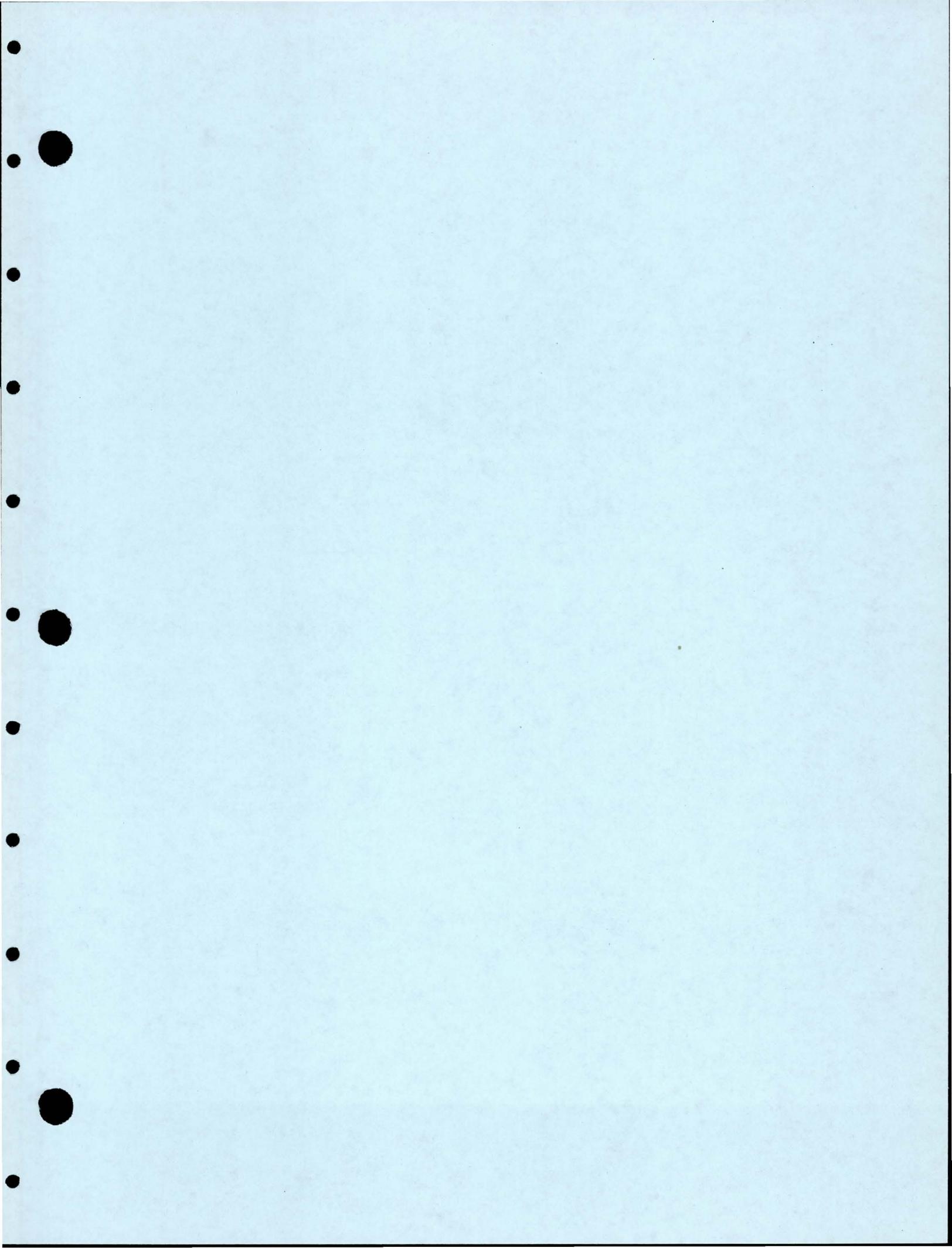
License No. _____

Authority - City Council

Agent for service of process: _____

Date

(If CONTRACTOR is a corporation, attach evidence of authority to sign.)



SECTION 00610 PERFORMANCE BOND

Any singular reference to CONTRACTOR, Surety, OWNER or other party shall be considered plural where applicable

CONTRACTOR (Name and Address):

SURETY (Name and Principal Place of Business):

OWNER (Name and Address):

AGREEMENT

Date:

Amount:

Description (Name and Location):

BOND

Date (Not earlier than Construction Contract Date):

Amount:

Modifications to this Bond Form:

CONTRACTOR AS PRINCIPAL

Company: (Corp. Seal)

SURETY

Company: (Corp. Seal)

Signature: _____

Signature: _____

Name and Title:

Name and Title:

1. Definitions.

- 1.1 **Balance of the Contract Price:** The total amount payable by OWNER to CONTRACTOR under the Agreement after all proper adjustments have been made, including allowance to CONTRACTOR of any amounts received or to be received by OWNER in settlement of insurance or other claims for damages to which CONTRACTOR is entitled, reduced by all valid and proper payments made to or on behalf of CONTRACTOR under the Agreement and OWNER's damages caused by a CONTRACTOR Default.
 - 1.2 **Agreement:** the agreement between OWNER and CONTRACTOR identified on the signature page and all Contract Documents and changes thereto. The Contract Documents are incorporated herein by reference.
 - 1.3 **CONTRACTOR Default:** Failure of CONTRACTOR, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Agreement.
2. CONTRACTOR and SURETY, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to OWNER for the performance of the Agreement.
3. If CONTRACTOR performs the Agreement, SURETY and CONTRACTOR shall have no obligation under this Bond, except to participate in conferences as provided in Subparagraph 4.1.
4. SURETY'S obligation under this Bond shall arise after:
- 4.1 OWNER has notified CONTRACTOR and SURETY at their addresses described in Paragraph 11 below, that OWNER is considering declaring a CONTRACTOR Default and has requested and attempted to arrange a conference with CONTRACTOR and SURETY to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Agreement. If OWNER, CONTRACTOR and SURETY agree, CONTRACTOR shall be allowed a reasonable time to perform the Agreement, but such agreement shall not waive OWNER'S right, if any, subsequently to declare a CONTRACTOR Default; and
 - 4.2 OWNER has declared a CONTRACTOR Default and formally terminated CONTRACTOR'S right to complete the contract. Such CONTRACTOR Default shall not be declared earlier than twenty days after CONTRACTOR and SURETY have received notice as provided in Subparagraph 4.1; and
 - 4.3 OWNER has agreed to pay the Balance of the Contract Price to SURETY in accordance with the terms of the Agreement or to a contractor selected to perform the Agreement in accordance with its terms and conditions.

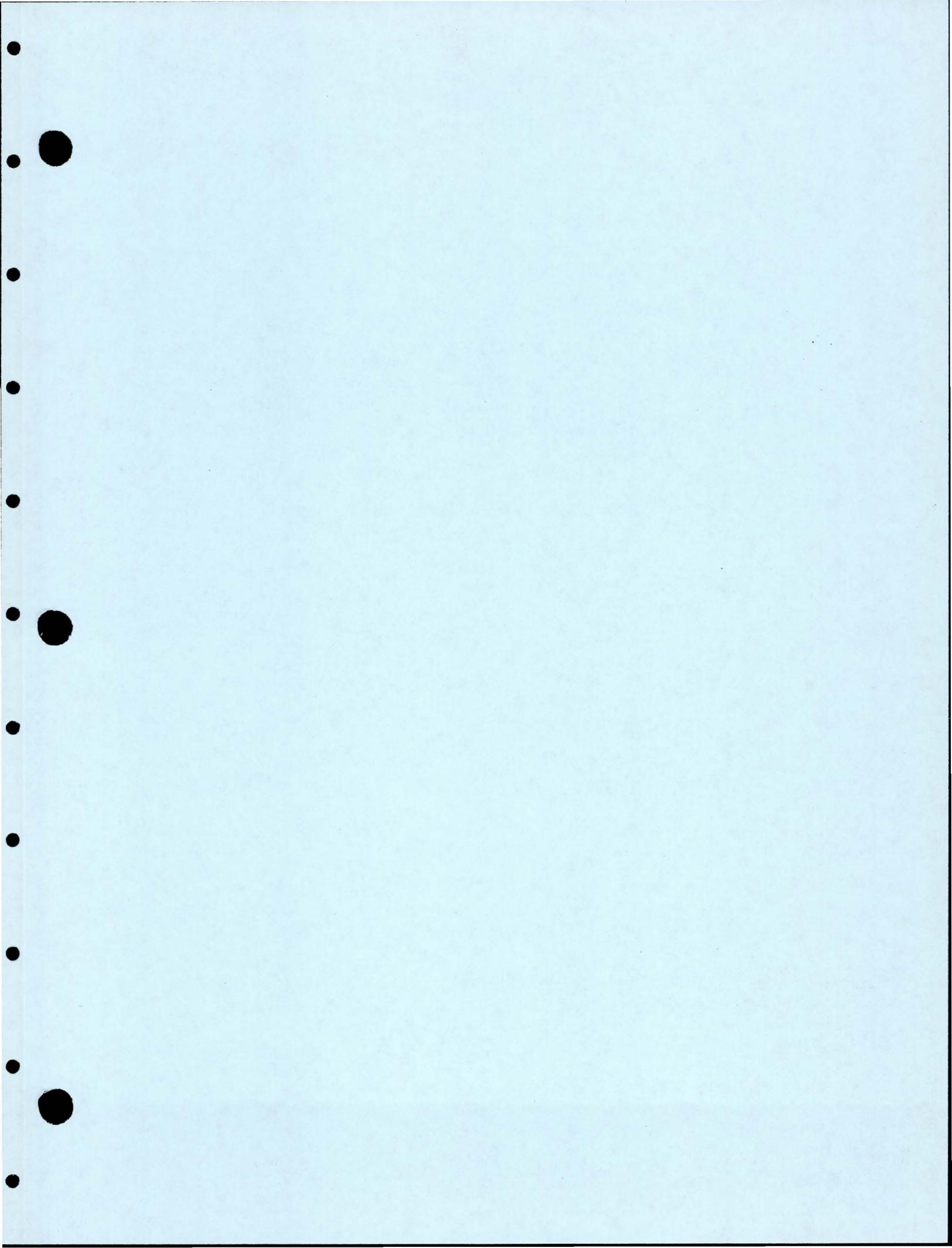
5. When OWNER has satisfied the conditions of Paragraph 4, SURETY shall promptly and at SURETY'S expense take one of the following actions:
 - 5.1 Arrange for CONTRACTOR, with consent of OWNER, to perform and complete the Agreement; or
 - 5.2 Undertake to perform and complete the Agreement itself, through its agents or through independent contractors; or
 - 5.3 Waive its right to perform and complete or arrange for completion and with reasonable promptness under the circumstances:
 1. After investigation, determine the amount for which it may be liable to OWNER and, as soon as practicable after the amount is determined, tender payment thereof to OWNER; or
 2. Deny liability in whole or in part and notify OWNER in writing, citing reasons therefore.

6. If SURETY does not proceed as provided in Paragraph 5 with reasonable promptness, SURETY shall be deemed to be in default on this Bond fifteen days after receipt of an additional written notice from OWNER to SURETY demanding that SURETY perform its obligations under this Bond, and OWNER shall be entitled to resort to all remedies available to OWNER. If SURETY proceeds as provided in Subparagraph 5.3, and OWNER refuses the payment tendered or SURETY has denied liability, in whole or in part, without further notice OWNER shall be entitled to resort to all remedies available to OWNER.

7. After OWNER has terminated CONTRACTOR'S right to complete the Agreement, and if SURETY elects to act under Subparagraph 5.1 or 5.2 above, then the responsibilities of SURETY to OWNER shall not be greater than those of CONTRACTOR under the Agreement, and the responsibilities of OWNER to SURETY shall not be greater than those of OWNER under the Agreement. To the limit of the amount of this Bond, but subject to commitment by OWNER of the Balance of the Contract Price to mitigation of costs and damages on the Agreement, SURETY is obligated without duplication for:
 - 7.1 The responsibilities of CONTRACTOR for correction of defective Work and completion of the Agreement;
 - 7.2 Additional legal, design professional and delay costs resulting from the CONTRACTOR's Default, and resulting from the actions or failure to act of SURETY under Paragraph 5; and
 - 7.3 Liquidated damages, or if no liquidated damages are specified in the Agreement, actual damages caused by delayed performance or non-performance of CONTRACTOR.
 - 7.4 All other actual damages caused by CONTRACTOR's Default.

8. SURETY shall not be liable to OWNER or others for obligations of CONTRACTOR to others that are unrelated to the Agreement, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than OWNER or its heirs, executors, administrators, or successors.
9. SURETY hereby waives notice of all changes, including changes of time, to the Agreement or to related subcontracts, purchase orders and other obligations. SURETY voluntarily and intentionally waives and relinquishes all of SURETY'S rights specified in and each provision of ARS Title 12, Sections 1641 and 1642.
10. Any suit or action under this Bond may be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
11. Notice to SURETY, OWNER or CONTRACTOR shall be mailed or delivered to the address shown on the signature page.
12. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction is performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

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SECTION 00620 PAYMENT BOND

Any singular reference to CONTRACTOR, Surety, OWNER or other party shall be considered plural where applicable

CONTRACTOR (Name and Address):

SURETY (Name and Principal Place of Business):

OWNER (Name and Address):

AGREEMENT

Date:

Amount:

Description (Name and Location):

BOND

Date (Not earlier than Construction Contract Date):

Amount:

Modifications to this Bond Form:

CONTRACTOR AS PRINCIPAL

Company: _____ (Corp. Seal)

SURETY

Company: _____ (Corp. Seal)

Signature: _____

Signature: _____

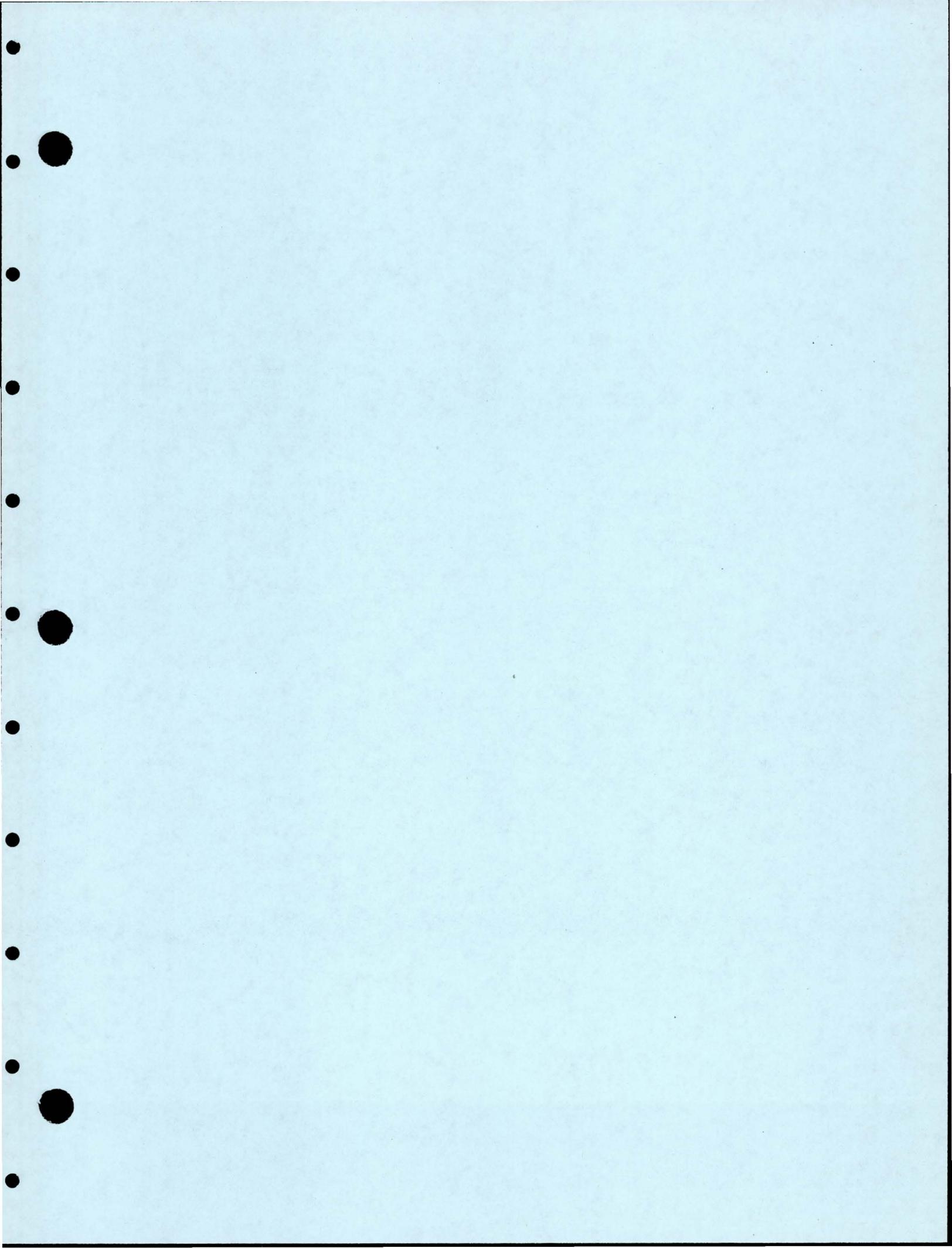
Name and Title:

Name and Title:

1. DEFINITIONS.

- 1.1 Claimant: An individual or entity having a direct contract with CONTRACTOR or with a subcontractor of CONTRACTOR to furnish labor, materials or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Agreement, architectural and engineering services required for performance of the Work of the CONTRACTOR and the CONTRACTOR'S subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.
 - 1.2 Agreement: The agreement between OWNER and CONTRACTOR identified on the signature page and all Contract Documents and changes thereto. The Contract Documents are incorporated herein by reference.
2. The CONTRACTOR and SURETY, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to pay for labor, materials and equipment furnished for use in the performance of the Agreement.
3. This obligation shall be null and void if CONTRACTOR:
- 3.1 Promptly makes payment, directly or indirectly, for all sums due Claimants, and
 - 3.2 Defends, indemnifies and holds harmless OWNER from all claims, demands, liens or suits by any person or entity who furnished labor, materials or equipment for use in the performance of the Agreement, provided OWNER has notified CONTRACTOR and SURETY (at the address described in Paragraph 13) of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to the CONTRACTOR and SURETY.
4. All rights and remedies on this Payment Bond shall be solely for the protection of claimants supplying labor and materials to CONTRACTOR or CONTRACTOR'S Subcontractors in the prosecution of the Work, and shall be determined in accordance with the provisions of ARS 34-222 et seq. as if they were copied at length herein.
5. If a notice required by law is given by OWNER to CONTRACTOR or to SURETY, no further notice is required.

6. When the Claimant has satisfied the conditions of Paragraph 5, SURETY shall promptly at SURETY'S expense take the following actions:
 - 6.1 Send an answer to the Claimant, with a copy to OWNER, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.
 - 6.2 Pay or arrange for payment of any undisputed amounts.
7. SURETY'S total obligation hereunder shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by SURETY.
8. The balance of the Contract Price shall be paid in accordance with the Contract Documents.
9. SURETY shall not be liable to OWNER, Claimants or others for obligations of CONTRACTOR that are unrelated to the Agreement. The OWNER shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.
10. SURETY hereby waives notice of any change, including changes of time, to the Agreement or to related subcontracts, purchase orders and other obligations. SURETY voluntarily and intentionally waives and relinquishes all of SURETY'S rights specified in and each provision of ARS Title 12, Section 1641 and 1642.
11. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Work is located.
12. Notice to SURETY, OWNER or CONTRACTOR shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by SURETY, OWNER or CONTRACTOR, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.
13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
14. Upon request by any, person or entity appearing to be a potential beneficiary of this Bond, CONTRACTOR shall promptly furnish a copy of the Bond or shall permit a copy to be made.



**STANDARD
GENERAL CONDITIONS
OF THE
CONSTRUCTION CONTRACT**

Prepared by
Engineers Joint Contract Documents Committee

These General Conditions are reprocessed by the City of Phoenix, Engineering and Architectural Services Department in their original unchanged form of EJDC No. 1910-8 (1990 Edition).

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principal references to	1.10, 3.5, 5.10, 5.12, 6.6.2, 6.8.2, 6.19, 10.1, 10.4, 11.2, 12.1, 13.12.2, 14.7.2
Written Clarifications and Interpretations	3.6.3, 9.4, 9.11
Written Notice Required --	
by CONTRACTOR	7.1, 9.10 - 9.11, 10.4, 11.2, 12.1
by OWNER	9.10 - 9.11, 10.4, 11.2, 13.14

SECTION 00700 -- GENERAL CONDITIONS

ARTICLE I -- DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

- 1.1. *Addenda* - Written or graphic instruments issued prior to the opening of Bids which clarify, correct or change the Bidding Requirements or the Contract Documents.
- 1.2. *Agreement* - The written contract between OWNER and CONTRACTOR covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.
- 1.3. *Application for Payment* - The form accepted by ENGINEER which is to be used by CONTRACTOR in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
- 1.4. *Asbestos* - Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
- 1.5. *BID* - The offer or proposal of the bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
- 1.6. *Bidding Documents* - The advertisement or invitation to Bid, instructions to bidders, the Bid form, and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).
- 1.7. *Bidding Requirements* - The advertisement or invitation to Bid, instructions to bidders, and the Bid form.
- 1.8. *Bonds* - Performance and Payment bonds and other instruments of security.
- 1.9. *Change Order* - A document recommended by ENGINEER, which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract times, issued on or after the Effective Date of the Agreement.
- 1.10. *Contract Documents* - The Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR's Bid (including documentation accompanying the Bid and any post Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Notice to Proceed, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all Written Amendments, Change Orders, Work Change Directives, Field Orders and ENGINEER's written interpretations and clarifications issued pursuant to paragraphs 3.5, 3.6.1, and

- 3.6.3 on or after the Effective Date of the Agreement. Shop Drawing submittals approved pursuant to paragraphs 6.26 and 6.27 and the reports and drawings referred to in paragraphs 4.2.1.1 and 4.2.2.2 are not Contract Documents.
- 1.11. *Contract Price* - The moneys payable by OWNER to CONTRACTOR for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.9.1 in the case of Unit Price Work).
- 1.12. *Contract Times* - The number of days or the dates stated in the Agreement: (i) to achieve Substantial Completion, and (ii) to complete the Work so that it is ready for final payment as evidenced by ENGINEER's written recommendation of final payment in accordance with paragraph 14.13.
- 1.13. *CONTRACTOR* - The person, firm or corporation with whom OWNER has entered into the Agreement.
- 1.14. *defective* - An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, in that it does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER's recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with paragraph 14.8 or 14.10).
- 1.15. *Drawings* - The drawings which show the scope, extent and character of the Work to be furnished and performed by CONTRACTOR and which have been prepared or approved by ENGINEER and are referred to in the Contract Documents. Shop drawings are not Drawings as so defined.
- 1.16. *Effective Date of the Agreement* - The date indicated in the Agreement on which it becomes effective, but if no such date is indicated it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
- 1.17. *ENGINEER* - The person, firm or corporation named as such in the Agreement.
- 1.18. *ENGINEER's Consultant* - A person, firm or corporation having a contract with ENGINEER to furnish services as ENGINEER's independent professional associate or consultant with respect to the Project and who is identified as such in the Supplementary Conditions.
- 1.19. *Field Order* - A written order issued by ENGINEER which orders minor changes in the Work in accordance with paragraph 9.5 but which does not involve a change in the Contract Price or the Contract Times.
- 1.20. *General Requirements* - Sections of Division 1 of the Specifications.
- 1.21. *Hazardous Waste* - The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
- 1.22. *Laws and Regulations; Laws or Regulations* - Any and all applicable laws, rules, regulations, ordinances, codes and orders of any and all governmental bodies, agencies, authorities and courts having jurisdiction.

- 1.23. *Liens* - Liens, charges, security interests or encumbrances upon real property or personal property.
- 1.24. *Milestone* - A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.
- 1.25. *Notice of Award* - The written notice by OWNER to the apparent successful bidder stating that upon compliance by the apparent successful bidder with the conditions precedent enumerated therein, within the time specified, OWNER will sign and deliver the Agreement.
- 1.26. *Notice to Proceed* - A written notice given by OWNER to CONTRACTOR (with a copy to ENGINEER) fixing the date on which the Contract Times will commence to run and on which CONTRACTOR shall start to perform CONTRACTOR's obligations under the Contract Documents.
- 1.27. *OWNER* - The public body or authority, corporation, association, firm or person with whom CONTRACTOR has entered into the Agreement and for whom the Work is to be provided.
- 1.28. *Partial Utilization* - Use by OWNER of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all the Work.
- 1.29. *PCBs* - Polychlorinated biphenyls.
- 1.30. *Petroleum* - Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Wastes and crude oils.
- 1.31. *Project* - The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.
- 1.32. *Radioactive Material* - Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
- 1.33. *Resident Project Representative* - The authorized representative of ENGINEER who may be assigned to the site or any part thereof.
- 1.34. *Samples* - Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
- 1.35. *Shop Drawings* - All drawings, diagrams, illustrations, schedules and other data or information which are specifically prepared or assembled by or for CONTRACTOR and submitted by CONTRACTOR to illustrate some portion of the Work.
- 1.36. *Specifications* - Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

- 1.37. *Subcontractor* - An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site.
- 1.38. *Substantial Completion* - The Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER as evidenced by ENGINEER's definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended; or if no such certificate is issued, when the Work is complete and ready for final payment as evidenced by ENGINEER's written recommendation of final payment in accordance with paragraph 14.13. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.
- 1.39. *Supplementary Conditions* - The part of the Contract Documents which amends or supplements these General Conditions.
- 1.40. *Supplier* - A manufacturer, fabricator, supplier, distributor, materialman or vendor having a direct contract with CONTRACTOR or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by CONTRACTOR or any Subcontractor.
- 1.41. *Underground Facilities* - All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.
- 1.42. *Unit Price Work* - Work to be paid for on the basis of unit prices.
- 1.43. *Work* - The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work includes and is the result of performing or furnishing labor and furnishing and incorporating materials and equipment into the construction, and performing or furnishing services and furnishing documents, all as required by the Contract Documents.
- 1.44. *Work Change Directive* - A written directive to CONTRACTOR, issued on or after the Effective Date of the Agreement and signed by OWNER and recommended by ENGINEER, ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed as provided in paragraph 4.2 or 4.3 or to emergencies under paragraph 6.23. A Work Change Directive will not change the Contract Price or the Contract Times, but is evidence that the parties expect that the change directed or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times as provided in paragraph 10.2.
- 1.45. *Written Amendment* - A written amendment of the Contract Documents, signed by OWNER and CONTRACTOR on or after the Effective Date of the Agreement and normally dealing with the nonengineering or nontechnical rather than strictly construction-related aspects of the Contract Documents.

ARTICLE 2 -- PRELIMINARY MATTERS

Delivery of Bonds:

- 2.1. When CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER such Bonds as CONTRACTOR may be required to furnish in accordance with paragraph 5.1.

Copies of Documents:

- 2.2. OWNER shall furnish to CONTRACTOR up to ten copies (unless otherwise specified in the Supplementary Conditions) of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

Commencement of Contract Times; Notice to Proceed:

- 2.3. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement, or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within thirty days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

Starting the Work:

- 2.4. CONTRACTOR shall start to perform the Work on the date when the Contract Times commence to run, but no Work shall be done at the site prior to the date on which the Contract Times commence to run.

Before Starting Construction:

- 2.5. Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error, ambiguity or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any Work affected thereby; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error, ambiguity or discrepancy in the Contract Documents, unless CONTRACTOR knew or reasonably should have known thereof.

- 2.6. Within ten days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), CONTRACTOR shall submit to ENGINEER for review:
- 2.6.1. a preliminary progress schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;
 - 2.6.2. a preliminary schedule of Shop Drawing and Sample submittals which will list each required submittal and the times for submitting, reviewing and processing such submittal;
 - 2.6.3. a preliminary schedule of values for all of the Work which will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.
- 2.7. Before any Work at the site is started, CONTRACTOR and OWNER shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which CONTRACTOR and OWNER respectively are required to purchase and maintain in accordance with paragraphs 5.4, 5.6 and 5.7.

Preconstruction Conference:

- 2.8. Within twenty days after the Contract Times start to run, but before any Work at the site is started, a conference attended by CONTRACTOR, ENGINEER and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in paragraph 2.6. procedures for handling Shop Drawings and other submittals, processing Applications for Payment and maintaining required records.

Initially Acceptable Schedules:

- 2.9. Unless otherwise provided in the Contract Documents, at least ten days before submission of the first Application for Payment a conference attended by CONTRACTOR, ENGINEER and others as appropriate will be held to review for acceptability to ENGINEER as provided below the schedules submitted in accordance with paragraph 2.6. CONTRACTOR shall have an additional ten days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to CONTRACTOR until the schedules are submitted to and acceptable to ENGINEER as provided below. The progress schedule will be acceptable to ENGINEER as providing an orderly progression of the Work to completion within any specified Milestones and the Contract Times, but such acceptance will neither impose on ENGINEER responsibility for the sequencing, scheduling or progress of the Work nor interfere with or relieve CONTRACTOR from CONTRACTOR's full responsibility therefor. CONTRACTOR's schedule of Shop Drawing and Sample submissions will be acceptable to ENGINEER as providing a workable arrangement for reviewing and processing the

required submittals. CONTRACTOR's schedule of values will be acceptable to ENGINEER as to form and substance.

**ARTICLE 3 – CONTRACT DOCUMENTS:
INTENT, AMENDING, REUSE**

Intent:

- 3.1. The Contract Documents comprise the entire agreement between OWNER and CONTRACTOR concerning the Work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the place of the Project.
- 3.2. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be furnished and performed whether or not specifically called for. When words or phrases which have a well-known technical or construction industry or trade meaning are used to describe Work, materials or equipment, such words or phrases shall be interpreted in accordance with that meaning. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided in paragraph 9.4.
- 3.3. *Reference to Standards and Specifications of Technical Societies; Reporting and Resolving Discrepancies:*
 - 3.3.1. Reference to standards, specifications, manuals or codes of any technical society, organization or association, or to the Laws or Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard, specification, manual, code or Laws or Regulations in effect at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 - 3.3.2. If during the performance of the Work, CONTRACTOR discovers any conflict, error, ambiguity or discrepancy within the Contract Documents or between the Contract Documents and any provision of any such Law or Regulation applicable to the performance of the Work or of any such standard, specification, manual or code or of any instruction of any Supplier referred to in paragraph 6.5, CONTRACTOR shall report it to ENGINEER in writing at once, and, CONTRACTOR shall not proceed with the Work affected thereby (except in an emergency as authorized by paragraph 6.27) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in paragraph 3.5 or 3.6; provided, however, that CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any such conflict, error, ambiguity or discrepancy unless CONTRACTOR knew or reasonably should have known thereof.

- 3.3.3. Except as otherwise specifically stated in the Contract Documents or as may be provided by amendment or supplement thereto issued by one of the methods indicated in paragraph 3.5 or 3.6, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity or discrepancy between the provisions of the Contract Documents and:
- 3.3.3.1. the provisions of any such standard, specification, manual, code or instruction (whether or not specifically incorporated by reference in the Contract Documents):
or
 - 3.3.3.2. the provisions of any such Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

No provision of any such standard, specification, manual, code or instruction shall be effective to change the duties and responsibilities of OWNER, CONTRACTOR or ENGINEER, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents, nor shall it be effective to assign to OWNER, ENGINEER or any of ENGINEER's Consultants, agents or employees any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of paragraph 9.13 or any other provision of the Contract Documents.

- 3.4. Whenever in the Contract Documents the terms "as ordered," "as directed," "as required," "as allowed," "as approved" or terms of like effect or import are used, or the adjectives "reasonable," "suitable," "acceptable," "proper," or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review or judgment of ENGINEER as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate, in general, the completed Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign to ENGINEER any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.13 or any other provision of the Contract Documents.

Amending and Supplementing Contract Documents:

- 3.5. The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways:
- 3.5.1. a formal Written Amendment,
 - 3.5.2. a Change Order (pursuant to paragraph 10.41, or
 - 3.5.3. a Work Change Directive (pursuant to paragraph 10.1).

- 3.6. In addition, the requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, in one or more of the following ways:
- 3.6.1. a Field Order (pursuant to paragraph 9.5),
 - 3.6.2. ENGINEER's approval of a Shop Drawing or Sample (pursuant to paragraphs 6.26 and 6.27), or
 - 3.6.3. ENGINEER's written interpretation or clarification (pursuant to paragraph 9.4).

Reuse of Documents:

- 3.7. CONTRACTOR, and any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with OWNER (i) shall not have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER or ENGINEER's Consultant, and (ii) shall not reuse any of such Drawings, Specifications, other documents or copies on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaption by ENGINEER.

**ARTICLE 4 – AVAILABILITY OF LANDS:
SUBSURFACE AND PHYSICAL CONDITIONS;
REFERENCE POINTS**

Availability of Lands:

- 4.1. OWNER shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and such other lands which are designated for the use of CONTRACTOR. Upon reasonable written request, OWNER shall furnish CONTRACTOR with a correct statement of record legal title and legal description of the lands upon which the Work is to be performed and OWNER's interest therein as necessary for giving notice of or filing a mechanic's lien against such lands in accordance with applicable Laws and Regulations. OWNER shall identify any encumbrances or restrictions not of general application but specifically related to use of lands so furnished with which CONTRACTOR will have to comply in performing the Work. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by OWNER, unless otherwise provided in the Contract Documents. If CONTRACTOR and OWNER are unable to agree on entitlement to or the amount or extent of any adjustments in the Contract Price or the Contract Times as a result of any delay in OWNER's furnishing these lands, rights-of-way or easements, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.2. Subsurface and Physical Conditions:

- 4.2.1. Reports and Drawings: Reference is made to the Supplementary Conditions for identification of:
- 4.2.1.1. Subsurface Conditions: Those reports of explorations and tests of subsurface conditions at or contiguous to the site that have been utilized by ENGINEER in preparing the Contract Documents: and
 - 4.2.1.2. Physical Conditions: Those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) that have been utilized by ENGINEER in preparing the Contract Documents.
- 4.2.2. Limited Reliance by CONTRACTOR Authorized; Technical Data: CONTRACTOR may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," CONTRACTOR may not rely upon or make any claim against OWNER, ENGINEER or any of ENGINEER's Consultants with respect to:
- 4.2.2.1. the completeness of such reports and drawings for CONTRACTOR's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto, or
 - 4.2.2.2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings, or
 - 4.2.2.3. any CONTRACTOR interpretation of or conclusion drawn from any "technical data" or any such data, interpretations, opinions or information.
- 4.2.3. Notice of Differing Subsurface or Physical Conditions: If CONTRACTOR believes that any subsurface or physical condition at or contiguous to the site that is uncovered or revealed either:
- 4.2.3.1. is of such a nature as to establish that any "technical data" on which CONTRACTOR is entitled to rely as provided in paragraphs 4.2.1 and 4.2.2 is materially inaccurate, or
 - 4.2.3.2. is of such a nature as to require a change in the Contract Documents, or
 - 4.2.3.3. differs materially from that shown or indicated in the Contract Documents, or
 - 4.2.3.4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents; then CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as permitted by paragraph 6.23), notify OWNER and ENGINEER in writing about such condition. CONTRACTOR shall not further disturb such conditions or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.
- 4.2.4. ENGINEER's Review: ENGINEER will promptly review the pertinent conditions, determine the necessity of OWNER's obtaining additional exploration or tests with respect thereto and advise OWNER in writing (with a copy to CONTRACTOR) of ENGINEER's findings and conclusions.

- 4.2.5. Possible Contract Documents Change: If ENGINEER concludes that a change in the Contract Documents is required as a result of a condition that meets one or more of the categories in paragraph 4.2.3., a Work Change Directive or a Change Order will be issued as provided in Article 10 to reflect and document the consequences of such change.
- 4.2.6. Possible Price and Times Adjustments: An equitable adjustment in the Contract Price or in the Contract Times, or both, will be allowed to the extent that the existence of such uncovered or revealed condition causes an increase or decrease in CONTRACTOR's cost of, or time required for performance of, the Works subject, however, to the following:
 - 4.2.6.1. such condition must meet any one or more of the categories described in paragraphs 4.2.3. 1 through 4.2.3.4, inclusive;
 - 4.2.6.2. a change in the Contract Documents pursuant to paragraph 4.2.5 will not be an automatic authorization of nor a condition precedent to entitlement to any such adjustment;
 - 4.2.6.3. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of paragraphs 9.10 and 11.9; and
 - 4.2.6.4. CONTRACTOR shall not be entitled to any adjustment in the Contract Price or Times if:
 - 4.2.6.4.1. CONTRACTOR knew of existence of such conditions at the time CONTRACTOR made a final commitment to OWNER in respect of Contract Price and Contract Times by the submission of a bid or becoming bound under a negotiated contract; or
 - 4.2.6.4.2. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test or study of the site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for CONTRACTOR prior to CONTRACTOR's making such final commitment; or
 - 4.2.6.4.3. CONTRACTOR failed to give the written notice within the time and as required by paragraph 4.2.3.

If OWNER and CONTRACTOR are unable to agree on entitlement to or as to the amount or length of any such equitable adjustment in the Contract Price or Contract Times, a claim may be made therefor as provided in Articles 11 and 12. However, OWNER, ENGINEER and ENGINEER's Consultants shall not be liable to CONTRACTOR for any claims, costs, losses or damages sustained by CONTRACTOR on or in connection with any other project or anticipated project.

4.3. Physical Conditions - Underground Facilities:

- 4.3.1. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on information and data furnished to OWNER or ENGINEER by the owners of such Underground Facilities or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:
 - 4.3.1.1. OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data; and

- 4.3.1.2. The cost of all of the following will be included in the Contract Price and CONTRACTOR shall have full responsibility for: (i) reviewing and checking all such information and data, (ii) locating all Underground Facilities shown or indicated in the Contract Documents, (iii) coordination of the Work with the owners of such Underground Facilities during construction, and (iv) the safety and protection of all such Underground Facilities as provided in paragraph 6.20 and repairing any damage thereto resulting from the Work.
- 4.3.2. Not Shown or Indicated: If an Underground Facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents, CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by paragraph 6.23), identify the owner of such Underground Facility and give written notice to that owner and to OWNER and ENGINEER. ENGINEER will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence of the Underground Facility. If ENGINEER concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued as provided in Article 10 to reflect and document such consequences. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility as provided in paragraph 6.20. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, to the extent that they are attributable to the existence of any Underground Facility that was not shown or indicated in the Contract Documents and that CONTRACTOR did not know of and could not reasonably have been expected to be aware of or to have anticipated. If OWNER and CONTRACTOR are unable to agree on entitlement to or the amount or length of any such adjustment in Contract Price or Contract Times, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12. However, OWNER, ENGINEER and ENGINEER's Consultants shall not be liable to CONTRACTOR for any claims, costs, losses or damages incurred or sustained by CONTRACTOR on or in connection with any other project or anticipated project.

Reference Points:

- 4.4. OWNER shall provide engineering surveys to establish reference points for construction which in ENGINEER's judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work, shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points by professionally qualified personnel.

4.5. *Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Material:*

- 4.5.1. OWNER shall be responsible for any Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Material uncovered or revealed at the site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work and which may present a substantial danger to persons or property exposed thereto in connection with the Work at the site. OWNER shall not be responsible for any such materials brought to the site by CONTRACTOR, Subcontractor, Suppliers or anyone else for whom CONTRACTOR is responsible.
- 4.5.2. CONTRACTOR shall immediately: (i) stop all Work in connection with such hazardous condition and in any area affected thereby (except in an emergency as required by paragraph 6.23), and (ii) notify OWNER and ENGINEER (and thereafter confirm such notice in writing). OWNER shall promptly consult with ENGINEER concerning the necessity for OWNER to retain a qualified expert to evaluate such hazardous condition or take corrective action, if any, CONTRACTOR shall not be required to resume Work in connection with such hazardous condition or in any such affected area until after OWNER has obtained any required permits related thereto and delivered to CONTRACTOR special written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (ii) specifying any special conditions under which such Work may be resumed safely. If OWNER and CONTRACTOR cannot agree as to entitlement to or the amount or extent of an adjustment, if any, in Contract Price or Contract Times as a result of such Work stoppage or such special conditions under which Work is agreed by CONTRACTOR to be resumed, either party may make a claim therefor as provided in Articles 11 and 12.
- 4.5.3. If after receipt of such special written notice CONTRACTOR does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then OWNER may order such portion of the Work that is in connection with such hazardous condition or in such affected area to be deleted from the Work. If OWNER and CONTRACTOR cannot agree as to entitlement to or the amount or extent of an adjustment, if any, in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a claim therefor as provided in Articles 11 and 12. OWNER may have such deleted portion of the Work performed by OWNER's own forces or others in accordance with Article 7.
- 4.5.4. To the fullest extent permitted by Laws and Regulations, OWNER shall indemnify and hold harmless CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and the officers, directors, employees, agents, other consultants and subcontractors of each and any of them from and against all claims, costs, losses and damages arising out of or resulting from such hazardous condition, provided that: (i) any such claim, cost, loss or damage is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, and (ii) nothing in this subparagraph 4.5.4 shall obligate OWNER to indemnify any person or entity from and against the consequences of that person's or entity's own negligence.

- 4.5.5. The provisions of paragraphs 4.2 and 4.3 are not intended to apply to Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Material uncovered or revealed at the site.

ARTICLE 5 – BONDS AND INSURANCE

Performance, Payment and Other Bonds:

- 5.1. CONTRACTOR shall furnish Performance and Payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all CONTRACTOR's obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date when final payment becomes due, except as provided otherwise by Laws or Regulations or by the Contract Documents. CONTRACTOR shall also furnish such other Bonds as are required by the Supplementary Conditions. All Bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff, Bureau of Government Financial Operations, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act.
- 5.2. If the surety on any Bond furnished by CONTRACTOR is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of paragraph 5.1, CONTRACTOR shall within ten days thereafter substitute another Bond and surety, both of which must be acceptable to OWNER.
- 5.3. ***Licensed Sureties and Insurers; Certificates of Insurance:***
- 5.3.1. All Bonds and insurance required by the Contract Documents to be purchased and maintained by OWNER or CONTRACTOR shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue Bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.
- 5.3.2. CONTRACTOR shall deliver to OWNER, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by OWNER or any other additional insured) which CONTRACTOR is required to purchase and maintain in accordance with paragraph 5.4. OWNER shall deliver to CONTRACTOR, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by CONTRACTOR or any other additional insured) which OWNER is required to purchase and maintain in accordance with paragraphs 5.6 and 5.7 hereof.

CONTRACTOR's Liability Insurance:

5.4. CONTRACTOR shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and furnished and as will provide protection from claims set forth below which may arise out of or result from CONTRACTOR's performance and furnishing of the Work and CONTRACTOR's other obligations under the Contract Documents, whether it is to be performed or furnished by CONTRACTOR, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform or furnish any of the Work, or by anyone for whose acts any of them may be liable:

- 5.4.1. claims under workers' compensation, disability benefits and other similar employee benefit acts:
- 5.4.2. claims for damages because of bodily injury, occupational sickness or disease, or death of CONTRACTOR's employees;
- 5.4.3. claims for damages because of bodily injury, sickness or disease, or death of any person other than CONTRACTOR's employees:
- 5.4.4. claims for damages insured by customary personal injury liability coverage which are sustained: (i) by any person as a result of an offense directly or indirectly related to the employment of such person by CONTRACTOR, or (ii) by any other person for any other reason:
- 5.4.5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom: and
- 5.4.6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

The policies of insurance so required by this paragraph 5.4 to be purchased and maintained shall:

- 5.4.7. with respect to insurance required by paragraphs 5.4.3 through 5.4.6 inclusive, include as additional insureds (subject to any customary exclusion in respect of professional liability) OWNER, ENGINEER, ENGINEER's Consultants and any other persons or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers and employees of all such additional insureds:
- 5.4.8. include the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater:
- 5.4.9. include completed operations insurance:
- 5.4.10. include contractual liability insurance covering CONTRACTOR's indemnity obligations under paragraphs 6.12, 6.16 and 6.31 through 6.33:

- 5.4.11. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least thirty days prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the CONTRACTOR pursuant to paragraph 5.3.2 will so provide);
- 5.4.12. remain in effect at least until final payment and at all times thereafter when CONTRACTOR may be correcting, removing or replacing defective Work in accordance with paragraph 13.12: and
- 5.4.13. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment (and CONTRACTOR shall furnish OWNER and each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued evidence satisfactory to OWNER and any such additional insured of continuation of such insurance at final payment and one year thereafter).

OWNER's Liability Insurance:

- 5.5. An addition to the insurance required to be provided by CONTRACTOR under paragraph 5.4, OWNER, at OWNER's option, may purchase and maintain at OWNER's expense OWNER's own liability insurance as will protect OWNER against claims which may arise from operations under the Contract Documents.

Property Insurance:

- 5.6. Unless otherwise provided in the Supplementary Conditions, OWNER shall purchase and maintain property insurance upon the Work at the site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
 - 5.6.1. include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and any other persons or entities identified in the Supplementary Conditions, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;
 - 5.6.2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework and Work in transit and shall insure against at least the following perils fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, and such other perils as may be specifically required by the Supplementary Conditions:

- 5.6.3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
 - 5.6.4. cover materials and equipment stored at the site or at another location that was agreed to in writing by OWNER prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by ENGINEER: and
 - 5.6.5. be maintained in effect until final payment is made unless otherwise agreed to in writing by OWNER, CONTRACTOR and ENGINEER with thirty days written notice to each other additional insured to whom a certificate of insurance has been issued.
- 5.7. OWNER shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and any other persons or entities identified in the Supplementary Conditions, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.
- 5.8. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained by OWNER in accordance with paragraphs 5.6 and 5.7 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least thirty days' prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with paragraph 5.11.
- 5.9. OWNER shall not be responsible for purchasing and maintaining any property insurance to protect the interests of CONTRACTOR. Subcontractors or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount, will be borne by CONTRACTOR. Subcontractor or others suffering any such loss and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.
- 5.10. If CONTRACTOR requests in writing that other special insurance be included in the property insurance policies provided under paragraphs 5.6 or 5.7, OWNER shall, if possible, include such insurance, and the cost thereof will be charged to CONTRACTOR by appropriate Change Order or Written Amendment. Prior to commencement of the Work at the site, OWNER shall in writing advise CONTRACTOR whether or not such other insurance has been procured by OWNER.

5.11. Waiver of Rights:

- 5.11.1. OWNER and CONTRACTOR intend that all policies purchased in accordance with paragraphs 5.6 and 5.7 will protect OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and all other persons or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds in such policies and will provide primary coverage for all losses and damages caused by the perils covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss

or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. OWNER and CONTRACTOR waive all rights against each other and their respective officers, directors, employees and agents for all losses and damages caused by, arising out of or resulting from any of the perils covered by such policies and any other property insurance applicable to the Work: and, in addition, waive all such rights against Subcontractors, ENGINEER, ENGINEER'S Consultants and all other persons or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by OWNER as trustee or otherwise payable under any policy so issued.

- 5.11.2. In addition, OWNER waives all rights against CONTRACTOR, Subcontractors, ENGINEER, ENGINEER'S Consultants and the officers, directors, employees and agents of any of them, for:
- 5.11.2.1. loss due to business interruption, loss of use or other consequential loss extending beyond direct physical loss or damage to OWNER's property or the Work caused by, arising out of or resulting from fire or other peril, whether or not insured by OWNER; and 5.11.2.2. loss or damage to the completed Project or part thereof caused by, arising out of or resulting from fire or other insured peril covered by any property insurance maintained on the completed Project or part thereof by OWNER during partial utilization pursuant to paragraph 14.10, after substantial completion pursuant to paragraph 14.8 or after final payment pursuant to paragraph 14.13. Any insurance policy maintained by OWNER covering any loss, damage or consequential loss referred to in this paragraph 5.11.2 shall contain provisions to the effect that in the event of payment of any such loss, damage or consequential loss the insurers will have no rights of recovery against any of CONTRACTOR, Subcontractors, ENGINEER, ENGINEER'S Consultants and the officers, directors, employees and agents of any of them.

Receipt and Application of Insurance Proceeds

- 5.12. Any insured loss under the policies of insurance required by paragraphs 5.6 and 5.7 will be adjusted with OWNER and made payable to OWNER as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of paragraph 5.13. OWNER shall deposit in a separate account any money so received, and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof and the Work and the cost thereof covered by an appropriate Change Order or Written Amendment.
- 5.13. OWNER as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within fifteen days after the occurrence of loss to OWNER's exercise of this power. If such objection be made, OWNER as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, OWNER as fiduciary shall adjust and

settle the loss with the insurers and, if required in writing by any party in interest, OWNER as fiduciary shall give bond for the proper performance of such duties.

Acceptance of Bonds and Insurance Option to Replace:

- 5.14. If either party (OWNER or CONTRACTOR) has any objection to the coverage afforded by or other provisions of the Bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within ten days after receipt of the certificates for other evidence requested) required by paragraph 2.7. OWNER and CONTRACTOR shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the Bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent Bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

Partial Utilization-Property Insurance:

- 5.15. If OWNER finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, such use or occupancy may be accomplished in accordance with paragraph 14.10; provided that no such use or occupancy shall commence before the insurers providing the property insurance have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

**ARTICLE 6 - CONTRACTOR'S
RESPONSIBILITIES**

Supervision and Superintendence:

- 6.1. CONTRACTOR shall supervise, inspect and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of others in the design or specification of a specific means, method, technique, sequence or procedure of construction which is shown or indicated in and expressly required by the Contract Documents. CONTRACTOR shall be responsible to see that the completed Work complies accurately with the Contract Documents.

- 6.2. CONTRACTOR shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR's representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications to the superintendent shall be as binding as if given to CONTRACTOR.

Labor, Materials and Equipment:

- 6.3. CONTRACTOR shall provide competent, suitably qualified personnel to survey, lay out and construct the Work as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the site. Except as otherwise required for the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the site shall be performed during regular working hours and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without OWNER's written consent given after prior written notice to ENGINEER.
- 6.4. Unless otherwise specified in the General Requirements, CONTRACTOR shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.
- 6.5. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Specifications shall expressly run to the benefit of OWNER. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with instructions of the applicable Supplier, except as otherwise provided in the Contract Documents.

Progress Schedule:

- 6.6. CONTRACTOR shall adhere to the progress schedule established in accordance with paragraph 2.9 as it may be adjusted from time to time as provided below:
- 6.6.1. CONTRACTOR shall submit to ENGINEER for acceptance (to the extent indicated in paragraph 2.9) proposed adjustments in the progress schedule that will not change the Contract Times for Milestones). Such adjustments will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the General Requirements applicable thereto.
- 6.6.2. Proposed adjustments in the progress schedule that will change the Contract Times (or Milestones) shall be submitted in accordance with the requirements of paragraph 12.1. Such adjustments may only be made by a Change Order or Written Amendment in accordance with Article 12.

6.7. Substitutes and "Or-Equal" Items:

- 6.7.1. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be accepted by ENGINEER under the following circumstances:
- 6.7.1.2 "Or Equal." If in ENGINEER's sole discretion an item of material or equipment proposed by CONTRACTOR is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by ENGINEER as an "or-equal" item, in which case review and approval of the proposed item may, in ENGINEER's sole discretion, be accomplished without compliance with some or all of the requirements for acceptance of proposed substitute items.
- 6.7.1.2. Substitute Items: If in ENGINEER's sole discretion an item of material or equipment proposed by CONTRACTOR does not qualify as an "or-equal" item under subparagraph 6.7.1.1, it will be considered a proposed substitute item. CONTRACTOR shall submit sufficient information as provided below to allow ENGINEER to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. The procedure for review by the ENGINEER will include the following as supplemented in the General Requirements and as ENGINEER may decide is appropriate under the circumstances. Requests for review of proposed substitute items of material or equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall first make written application to ENGINEER for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified and be suited to the same use as that specified. The application will state the extent, if any, to which the evaluation and acceptance of the proposed substitute will prejudice CONTRACTOR's achievement of Substantial Completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents for in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which will be considered by ENGINEER in evaluating the proposed substitute. ENGINEER may require CONTRACTOR to furnish additional data about the proposed substitute.
- 6.7.1.3. CONTRACTOR's Expense: All data to be provided by CONTRACTOR in support of any proposed "or-equal" or substitute item will be at CONTRACTOR's expense.

- 6.7.2. Substitute Construction Methods or Procedures: If a specific means, method, technique, sequence or procedure of construction is shown or indicated in and expressly required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, technique, sequence or procedure of construction acceptable to ENGINEER. CONTRACTOR shall submit sufficient information to allow ENGINEER, in ENGINEER's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The procedure for review by ENGINEER will be similar to that provided in subparagraph 6.7.1.2.
- 6.7.3. Engineer's Evaluation: ENGINEER will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to paragraphs 6.7.1.2 and 6.7.2. ENGINEER will be the sole judge of acceptability. No "or-equal" or substitute will be ordered, installed or utilized without ENGINEER's prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. OWNER may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety with respect to any "or-equal" or substitute. ENGINEER will record time required by ENGINEER and ENGINEER's Consultants in evaluating substitutes proposed or submitted by CONTRACTOR pursuant to paragraphs 6.7.1.2 and 6.7.2 and in making changes in the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) occasioned thereby. Whether or not ENGINEER accepts a substitute item so proposed or submitted by CONTRACTOR, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER's Consultants for evaluating each such proposed substitute item.

Concerning Subcontractors, Suppliers and Others:

- 6.8.1. CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organization (including those acceptable to OWNER and ENGINEER as indicated in paragraph 6.8.2), whether initially or as a substitute, against whom OWNER or ENGINEER may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier or other person or organization to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.
- 6.8.2. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers or other persons or organizations (including those who are to furnish the principal items of materials or equipment) to be submitted to OWNER in advance of the specified date prior to the Effective Date of the Agreement for acceptance by OWNER and ENGINEER, and if CONTRACTOR has submitted a list thereof in accordance with the Supplementary Conditions, OWNER's or ENGINEER's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the bidding documents or the Contract Documents) of any such Subcontractor, Supplier or other person or organization so identified may be revoked on the basis of reasonable objection after due investigation, in which case CONTRACTOR shall submit an acceptable substitute, the Contract Price will be adjusted by the difference in the cost occasioned by such substitution and an appropriate Change Order will be issued or Written Amendment signed. No acceptance by OWNER or ENGINEER of any such Subcontractor, Supplier or other

person or organization shall constitute a waiver of any right of OWNER or ENGINEER to reject defective Work.

- 6.9.1. CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR just as CONTRACTOR is responsible for CONTRACTOR's own acts and omissions. Nothing in the Contract Documents shall create for the benefit of any such Subcontractor, Supplier or other person or organization any contractual relationship between OWNER or ENGINEER and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Laws and Regulations.
- 6.9.2. CONTRACTOR shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR. CONTRACTOR shall require all Subcontractors, Suppliers and such other persons and organizations performing or furnishing any of the Work to communicate with the ENGINEER through CONTRACTOR.
- 6.10. The divisions and sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- 6.11. All Work performed for CONTRACTOR by a Subcontractor or Supplier will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in paragraph 5.6 or 5.7, the agreement between the CONTRACTOR and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against OWNER, CONTRACTOR, ENGINEER, ENGINEER's Consultants and all other additional insureds for all losses and damages caused by, arising out of or resulting from any of the perils covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, CONTRACTOR will obtain the same.

Patent Fees and Royalties:

- 6.12. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of OWNER or ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. To the fullest extent permitted by

Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER. ENGINEER, ENGINEER's Consultants and the officers, directors, employees, agents and other consultants of each and any of them from and against all claims, costs, losses and damages arising out of or resulting from any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product or device not specified in the Contract Documents.

Permits:

- 6.13. Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. CONTRACTOR shall pay all charges of utility owners for connections to the Work, and OWNER shall pay all charges of such utility owners for capital costs related thereto such as plant investment fees.

Laws and Regulations:

- 6.14.1. CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither OWNER nor ENGINEER shall be responsible for monitoring CONTRACTOR's compliance with any Laws or Regulations.
- 6.14.2. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, CONTRACTOR shall bear all claims, costs, losses and damages caused by, arising out of or resulting therefrom: however, it shall not be CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve CONTRACTOR of CONTRACTOR's obligations under paragraph 3.3.2.

Taxes:

- 6.15. CONTRACTOR shall pay all sales, consumer, use and other similar taxes required to be paid by CONTRACTOR in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

Use of Premises:

- 6.16. CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the site and land and areas identified in and permitted by the Contract Documents and other land and areas permitted by Laws and Regulations, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other

materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any adjacent land or areas, resulting from the performance of the Work. Should any claim be made by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law. CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultant and anyone directly or indirectly employed by any of them from and against all claims, costs, losses and damages arising out of or resulting from any claim or action, legal or equitable, brought by any such owner or occupant against OWNER, ENGINEER or any other party indemnified hereunder to the extent caused by or based upon CONTRACTOR's performance of the Work.

- 6.17. During the progress of the Work, CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work CONTRACTOR shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery and surplus materials. CONTRACTOR shall leave the site clean and ready for occupancy by OWNER at Substantial Completion of the Work. CONTRACTOR shall restore to original condition all property not designated for alteration by the Contract Documents.
- 6.18. CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

Record Documents:

- 6.19. CONTRACTOR shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Change Directives, Field Orders and written interpretations and clarifications (issued pursuant to paragraph 9.4) in good order and annotated to show all changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to ENGINEER for reference. Upon completion of the Work, these record documents, Samples and Shop Drawings will be delivered to ENGINEER for OWNER.

Safety End Protection:

- 6.20. CONTRACTOR shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:
- 6.20.1. all persons on the Work site or who may be affected by the Work;
- 6.20.2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the site; and

- 6.20.3. other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and Underground Facilities not designated for removal, relocation or replacement in the course of construction.

CONTRACTOR shall comply with all applicable Laws and Regulations of any public body having jurisdiction for safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property referred to in paragraph 6.20.2 or 6.20.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of OWNER or ENGINEER or ENGINEER's Consultant or anyone employed by any of them or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR or any Subcontractor, Supplier or other person or organization directly or indirectly employed by any of them). CONTRACTOR's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.13 that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

Safety Representative:

- 6.21. CONTRACTOR shall designate a qualified and experienced safety representative at the site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

Hazard Communication Programs:

- 6.22. CONTRACTOR shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the site in accordance with Laws or Regulations.

Emergencies:

- 6.23. In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, CONTRACTOR, without special instruction or authorization from OWNER or ENGINEER, is obligated to act to prevent threatened damage, injury or loss. CONTRACTOR shall give ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If ENGINEER determines that a change in the Contract Documents is required because of the action taken by CONTRACTOR in response to such an emergency, a Work Change Directive or Change Order will be issued to document the consequences of such action.

6.24 Shop Drawings or Samples:

- 6.24.1. CONTRACTOR shall submit Shop Drawings to ENGINEER for review and approval in accordance with the accepted schedule of Shop Drawings and Sample submittals (see paragraph 2.9). All submittals will be identified as ENGINEER may require and in the number of copies specified in the General Requirements. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to show ENGINEER the materials and equipment CONTRACTOR proposes to provide and to enable ENGINEER to review the information for the limited purposes required by paragraph 6.26.
- 6.24.2. CONTRACTOR shall also submit Samples to ENGINEER for review and approval in accordance with said accepted schedule of Shop Drawings and Sample submittals. Each Sample will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended and otherwise as ENGINEER may require to enable ENGINEER to review the submittal for the limited purposes required by paragraph 6.26. The numbers of each Sample to be submitted will be as specified in the Specifications.

6.25. Submittal Procedures:

- 6.25.1. Before submitting each Shop Drawing or Sample, CONTRACTOR shall have determined and verified:
 - 6.25.1.1. all field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar information with respect thereto,
 - 6.25.1.2. all materials with respect to intended use, fabrication, shipping, handling, storage, assembly and installation pertaining to the performance of the Work, and
 - 6.25.1.2. all information relative to CONTRACTOR's sole responsibilities in respect of means, methods, techniques, sequences and procedures of construction and safety precautions and programs incident thereto.

CONTRACTOR shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

- 6.25.2. Each submittal will bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR's obligations under the Contract Documents with respect to CONTRACTOR'S review and approval of that submittal.
- 6.25.3. At the time of each submission, CONTRACTOR shall give ENGINEER specific written notice of such variations, if any, that the Shop Drawing or Sample submitted may have from the requirements of the Contract Documents, such notice to be in a written communication separate from the submittal; and, in addition, shall cause a specific notation to be made on each Shop Drawing and Sample submitted to ENGINEER for review and approval of each such variation.

- 6.26. ENGINEER will review and approve Shop Drawings and Samples in accordance with the schedule of Shop Drawings and Sample submittals accepted by ENGINEER as required by paragraph 2.9. ENGINEER's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. ENGINEER's review and approval will not extend to means, methods, techniques, sequences or procedures of construction (except where a particular means, method, technique, sequence or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. CONTRACTOR shall make corrections required by ENGINEER, and shall return the required number of corrected copies of Shop Drawings and submit as required new Samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals.
- 6.27. ENGINEER's review and approval of Shop Drawings or Samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has in writing called ENGINEER's attention to each such variation at the time of submission as required by paragraph 6.25.3 and ENGINEER has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample approval; nor will any approval by ENGINEER relieve CONTRACTOR from responsibility for complying with the requirements of paragraph 6.25.1.
- 6.28. Where a Shop Drawing or Sample is required by the Contract Documents or the schedule of Shop Drawings and Sample submissions accepted by ENGINEER as required by paragraph 2.9, any related Work performed prior to ENGINEER's review and approval of the pertinent submittal will be at the sole expense and responsibility of CONTRACTOR.

Continuing the Work:

- 6.29. CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by paragraph 15.5 or as OWNER and CONTRACTOR may otherwise agree in writing.

6.30. CONTRACTOR's General Warranty and Guarantee:

- 6.30.1. CONTRACTOR warrants and guarantees to OWNER, ENGINEER and ENGINEER's Consultants that all Work will be in accordance with the Contract Documents and will not be defective. CONTRACTOR's warranty and guarantee hereunder excludes defects or damage caused by:
- 6.30.1.1. abuse, modification or improper maintenance or operation by persons other than CONTRACTOR, Subcontractors or Suppliers; or
 - 6.30.1.2. normal wear and tear under normal usage.

- 6.30.2. CONTRACTOR's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents:
- 6.30.2.1. observations by ENGINEER;
 - 6.30.2.3. recommendation of any progress or final payment by ENGINEER;
 - 6.30.2.3. the issuance of a certificate of Substantial Completion or any payment by OWNER to CONTRACTOR under the Contract Documents;
 - 6.30.2.4. use or occupancy of the Work or any part thereof by OWNER;
 - 6.30.2.5. any acceptance by OWNER or any failure to do so;
 - 6.30.2.6. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by ENGINEER pursuant to paragraph 14.13:
 - 6.30.2.7. any inspection, test or approval by others; or
 - 6.30.2.8. any correction of defective Work by OWNER.

Indemnification:

- 6.31. To the fullest extent permitted by laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants and the officers, directors, employees, agents and other consultants of each and any of them from and against all claims, costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) caused by, arising out of or resulting from the performance of the Work, provided that any such claim, cost, loss or damage: (i) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property other than the Work itself, including the loss of use resulting therefrom, and (ii) is caused in whole or in part by any negligent act or omission of CONTRACTOR, any Subcontractor, any Supplier, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not caused in part by any negligence or omission of a person or entity indemnified hereunder or whether liability is imposed upon such indemnified party by laws and Regulations regardless of the negligence of any such person or entity.
- 6.32. In any and all claims against OWNER or ENGINEER or any of their respective consultants, agents, officers, directors or employees by any employee for the survivor or personal representative of such employee) of CONTRACTOR, any Subcontractor, any Supplier, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.31 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for CONTRACTOR or any such Subcontractor, Supplier or other person or organization under workers' compensation acts, disability benefit acts or other employee benefit acts.
- 6.33. The indemnification obligations of CONTRACTOR under paragraph 6.31 shall not extend to the liability of ENGINEER and ENGINEER's Consultants, officers, directors, employees or agents caused by the professional negligence, errors or omissions of any of them.

Survival of Obligations:

- 6.34. All representations, indemnifications, warranties and guarantees made in, required by or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion and acceptance of the Work and termination or completion of the Agreement.

ARTICLE 7 - OTHER WORK

Related Work at Site:

- 7.1. OWNER may perform other work related to the Project at the site by OWNER's own forces, or let other direct contracts therefor which shall contain General Conditions similar to these, or have other work performed by utility owners. If the fact that such other work is to be performed was not noted in the Contract Documents, then: (i) written notice thereof will be given to CONTRACTOR prior to starting any such other work, and (ii) CONTRACTOR may make a claim therefor as provided in Articles 11 and 12 if CONTRACTOR believes that such performance will involve additional expense to CONTRACTOR or requires additional time and the parties are unable to agree as to the amount or extent thereof.
- 7.2. CONTRACTOR shall afford each other contractor who is a party to such a direct contract and each utility owner (and OWNER, if OWNER is performing the additional work with OWNER's employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work and shall properly connect and coordinate the Work with theirs. Unless otherwise provided in the Contract Documents, CONTRACTOR shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.
- 7.3. If the proper execution or results of any part of CONTRACTOR's Work depends upon work performed by others under this Article 7, CONTRACTOR shall inspect such other work and promptly report to ENGINEER in writing any delays, defects or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of CONTRACTOR's Work. CONTRACTOR's failure so to report will constitute an acceptance of such other work as fit and proper for integration with CONTRACTOR's Work except for latent or nonapparent defects and deficiencies in such other work.

Coordination:

- 7.4. If OWNER contracts with others for the performance of other work on the Project at the site, the following will be set forth in Supplementary Conditions:
- 7.4.1. the person, firm or corporation who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified;
 - 7.4.2. the specific matters to be covered by such authority and responsibility will be itemized: and
 - 7.4.3. the extent of such authority and responsibilities will be provided.

Unless otherwise provided in the Supplementary Conditions, OWNER shall have sole authority and responsibility in respect of such coordination.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

- 8.1. Except as otherwise provided in these General Conditions, OWNER shall issue all communications to CONTRACTOR through ENGINEER.
- 8.2. In case of termination of the employment of ENGINEER, OWNER shall appoint an engineer against whom CONTRACTOR makes no reasonable objection, whose status under the Contract Documents shall be that of the former ENGINEER.
- 8.3. OWNER shall furnish the data required of OWNER under the Contract Documents promptly and shall make payments to CONTRACTOR promptly when they are due as provided in paragraphs 14.4 and 14.13.
- 8.4. OWNER's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.1 and 4.4. Paragraph 4.2 refers to OWNER's identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions at the site and drawings of physical conditions in existing structures at or contiguous to the site that have been utilized by ENGINEER in preparing the Contract Documents.
- 8.5. OWNER's responsibilities in respect of purchasing and maintaining liability and property insurance are set forth in paragraphs 5.5 through 5.10.
- 8.6. OWNER is obligated to execute Change Orders as indicated in paragraph 10.4.
- 8.7. OWNER's responsibility in respect of certain inspections, tests and approvals is set forth in paragraph 13.4.

- 8.8. In connection with OWNER's right to stop Work or suspend Work, see paragraphs 13.10 and 15.1. Paragraph 15.2 deals with OWNER's right to terminate services of CONTRACTOR under certain circumstances.
- 8.9. The OWNER shall not supervise, direct or have control or authority over, nor be responsible for, CONTRACTOR's means, methods, techniques, sequences or procedures of construction or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of the Work. OWNER will not be responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with the Contract Documents.
- 8.10. OWNER'S responsibility in respect of undisclosed Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Materials uncovered or revealed at the site is set forth in paragraph 4.11.
- 8.11. If and to the extent OWNER has agreed to furnish CONTRACTOR reasonable evidence that financial arrangements have been made to satisfy OWNER's obligations under the Contract Documents, OWNER's responsibility in respect thereof will be as set forth in the Supplementary Conditions.

ARTICLE 9 - ENGINEER'S STATUS DURING, CONSTRUCTION

OWNER's Representative:

- 9.1. ENGINEER will be OWNER's representative during the construction period. The duties and responsibilities and the limitations of authority of ENGINEER as OWNER's representative during construction are set forth in the Contract Documents and shall not be extended without written consent of OWNER and ENGINEER.

Visits to Site:

- 9.2. ENGINEER will make visits to the site at intervals appropriate to the various stages of construction as ENGINEER deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of CONTRACTOR's executed Work. Based on information obtained during such visits and observations, ENGINEER will endeavor for the benefit of OWNER to determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. ENGINEER's efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and on-site observations, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defective Work. ENGINEER's visits and on-site observations are subject to all the limitations on ENGINEER's authority and responsibility set forth in paragraph 9.13, and particularly, but without limitation, during or as a result of ENGINEER's on-site visits or observations

of CONTRACTOR's Work ENGINEER will not supervise, direct, control or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of the Work.

Project Representative:

- 9.3. If OWNER and ENGINEER agree, ENGINEER will furnish a Resident Project Representative to assist ENGINEER in providing more continuous observation of the Work. The responsibilities and authority and limitations thereon of any such Resident Project Representative and assistants will be as provided in paragraph 9.13 and in the Supplementary Conditions. If OWNER designates another representative or agent to represent OWNER at the site who is not ENGINEER's Consultant, agent or employee, the responsibilities and authority and limitations thereon of such other person will be as provided in the Supplementary Conditions.

Clarifications and Interpretations:

- 9.4. ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as ENGINEER may determine necessary, which shall be consistent with the intent of and reasonably inferable from Contract Documents. Such written clarifications and interpretations will be binding on OWNER and CONTRACTOR. If OWNER or CONTRACTOR believes that a written clarification or interpretation justifies an adjustment in the Contract Price or the Contract Times and the parties are unable to agree to the amount or extent thereof, if any, OWNER or CONTRACTOR may make a written claim therefor as provided in Article 11 or Article 12.

Authorized Variations in Work:

- 9.5. ENGINEER may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on OWNER and also on CONTRACTOR who shall perform the Work involved promptly. If OWNER or CONTRACTOR believes that a Field Order justifies an adjustment in the Contract Price or the Contract Times and the parties are unable to agree as to the amount or extent thereof, OWNER or CONTRACTOR may make a written claim therefor as provided in Article 11 or Article 12.

Rejecting Defective Work:

- 9.6. ENGINEER will have authority to disapprove or reject Work which ENGINEER believes to be defective, or that ENGINEER believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project

as a functioning whole as indicated by the Contract Documents. ENGINEER will also have authority to require special inspection or testing of the Work as provided in paragraph 13.9, whether or not the Work is fabricated, installed or completed.

Shop Drawings, Change Orders and Payments:

- 9.7. In connection with ENGINEER's authority as to Shop Drawings and Samples, see paragraphs 6.24 through 6.28 inclusive.
- 9.8. In connection with ENGINEER's authority as to Change Orders, see Articles 10, 11, and 12.
- 9.9. In connection with ENGINEER's authority as to Applications for Payment, see Article 14.

Determinations for Unit Prices:

- 9.10. ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR. ENGINEER will review with CONTRACTOR the ENGINEER's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). ENGINEER's written decision thereon will be final and binding upon OWNER and CONTRACTOR, unless, within ten days after the date of any such decision, either OWNER or CONTRACTOR delivers to the other and to ENGINEER written notice of intention to appeal from ENGINEER's decision and: (i) an appeal from ENGINEER's decision is taken within the time limits and in accordance with the procedures set forth in Exhibit GC-A, "Dispute Resolution Agreement," entered into between OWNER and CONTRACTOR pursuant to Article 16, or (ii) if no such Dispute Resolution Agreement has been entered into, a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction to exercise such rights or remedies as the appealing party may have with respect to ENGINEER's decision, unless otherwise agreed in writing by OWNER and CONTRACTOR. Such appeal will not be subject to the procedures of paragraph 9.11.

Decisions on Disputes:

- 9.11. ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work and Claims under Articles 11 and 12 in respect of changes in the Contract Price or Contract Times will be referred initially to ENGINEER in writing with a request for a formal decision in accordance with this paragraph. Written notice of each such claim, dispute or other matter will be delivered by the claimant to ENGINEER and the other party to the Agreement promptly (but in no event later than thirty days) after the start of the occurrence or event giving rise thereto, and written supporting data will be submitted to ENGINEER and the other party within sixty days after the start of such occurrence or event unless ENGINEER allows an additional period of time for the submission of additional or more accurate data in support of such claim, dispute or other matter. The opposing party shall submit any response to ENGINEER

and the claimant within thirty days after receipt of the claimant's last submittal (unless ENGINEER allows additional time). ENGINEER will render a formal decision in writing within thirty days after receipt of the opposing party's submittal, if any, in accordance with this paragraph. ENGINEER's written decision on such claim, dispute or other matter will be final and binding upon OWNER and CONTRACTOR unless: (i) an appeal from ENGINEER's decision is taken within the time limits and in accordance with the procedures set forth in EXHIBIT GC-A, "Dispute Resolution Agreement," entered into between OWNER and CONTRACTOR pursuant to Article 16, or (ii) if no such Dispute Resolution Agreement has been entered into, a written notice of intention to appeal from ENGINEER's written decision is delivered by OWNER or CONTRACTOR to the other and to ENGINEER within thirty days after the date of such decision and a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction to exercise such rights or remedies as the appealing party may have with respect to such claim, dispute or other matter in accordance with applicable Laws and Regulations within sixty days of the date of such decision, unless otherwise agreed in writing by OWNER and CONTRACTOR.

- 9.12. When functioning as interpreter and judge under paragraphs 9.10 and 9.11, ENGINEER will not show partiality to OWNER or CONTRACTOR and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by ENGINEER pursuant to paragraphs 9.10 or 9.11 with respect to any such claim, dispute or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.16) will be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such claim, dispute or other matter pursuant to Article 16.

9.13. Limitations on ENGINEER's Authority and Responsibilities:

- 9.13.1. Neither ENGINEER's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise or performance of any authority or responsibility by ENGINEER shall create, impose or give rise to any duty owed by ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, any other person or organization, or to any surety for or employee or agent of any of them.
- 9.13.2. ENGINEER will not supervise, direct, control or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of the Work. ENGINEER will not be responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with the Contract Documents.
- 9.13.3. ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Sub-contractor, any Supplier, or of any other person or organization performing or furnishing any of the Work.

- 9.13.4. ENGINEER's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds and certificates of inspection, tests and approvals and Other documentation required to be delivered by paragraph 14.12 will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests and approvals that the results certified indicate compliance with, the Contract Documents.
- 9.13.5. The limitations upon authority and responsibility set forth in this paragraph 9.13 shall also apply to ENGINEER's Consultants, Resident Project Representative and assistants:

ARTICLE 10 - CHANGES IN THE WORK

- 10.1. Without invalidating the Agreement and without notice to any surety. OWNER may, at any time or from time to time, order additions, deletions or revisions in the Work. Such additions, deletions or revisions will be authorized by a Written Amendment, a Change Order, or a Work Change Directive. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- 10.2. If OWNER and CONTRACTOR are unable to agree as to the extent, if any, of an adjustment in the Contract Price or an adjustment of the Contract Times that should be allowed as a result of a Work Change Directive, a claim may be made therefor as provided in Article 11 or Article 12.
- 10.3. CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in paragraphs 3.5 and 3.6 except in the case of an emergency as provided in paragraph 6.23 or in the case of uncovering Work as provided in paragraph 13.9.
- 10.4. OWNER and CONTRACTOR shall execute appropriate Change Orders recommended by ENGINEER for Written Amendments) covering:
- 10.4.1. changes in the Work which are (i) ordered try OWNER pursuant to paragraph 10.1. (ii) required because of acceptance of defective Work under paragraph 13.13 or correcting defective Work under paragraph 13.14, or (iii) agreed to by the parties:
- 10.4.2. changes in the Contract Price or Contract Times which are agreed to by the parties; and
- 10.4.3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by ENGINEER pursuant to paragraph 9.11; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 6.29.

- 10.5. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Time) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CONTRACTOR's responsibility, and the amount of each applicable Bond will be adjusted accordingly.

ARTICLE 11 - CHANGE OF CONTRACT PRICE

- 11.1. The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by CONTRACTOR shall be at CONTRACTOR's expense without change in the Contract Price.
- 11.2. The Contract Price may only be changed by a Change Order or by a Written Amendment. Any claim for an adjustment in the Contract Price shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than thirty days) after the start of the occurrence or event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within sixty days after the start of such occurrence or event (unless ENGINEER allows additional time for claimant to submit additional or more accurate data in support of the claim) and shall be accompanied by claimant's written statement that the adjustment claimed covers all known amounts to which the claimant is entitled as a result of said occurrence or event. All claims for adjustment in the Contract Price shall be determined by ENGINEER in accordance with paragraph 9.11 if OWNER and CONTRACTOR cannot otherwise agree on the amount involved. No claim for an adjustment in the Contract Price will be valid if not submitted in accordance with this paragraph 11.2.
- 11.3. The value of any Work covered by a Change Order or of any claim for an adjustment in the Contract Price will be determined as follows:
- 11.3.1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of paragraphs 11.9.1 through 11.9.3, inclusive);
 - 11.3.2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 11.6.2);
 - 11.3.3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under paragraph 11.3.2, on the basis of the Cost of the Work (determined as provided in paragraphs 11.4 and 11.5) plus a CONTRACTOR's fee for overhead and profit (determined as provided in paragraph 11.6);

Cost of the Work:

- 11.4. The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in paragraph 11.5:
- 11.4.1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Such employees shall include without limitation superintendents, foremen and other personnel employed full-time at the site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work after regular working hours, on Saturday, Sunday or legal holidays, shall be included in the above to the extent authorized by OWNER.
 - 11.4.2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.
 - 11.4.3. Payments made by CONTRACTOR to the Subcontractors for Work performed or furnished by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from subcontractors acceptable to OWNER and CONTRACTOR and shall deliver such bids to OWNER who will then determine, with the advice of ENGINEER, which bids, if any, will be accepted. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work Plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as CONTRACTOR's Cost of the Work and fee as provided in paragraphs 11.4, 11.5, 11.6 and 11.7. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.
 - 11.4.4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys and accountants) employed for services specifically related to the Work.
 - 11.4.5. Supplemental costs including the following:
 - 11.4.5.1. The proportion of necessary transportation, travel and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the Work.

- 11.4.5.2. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost less market value of such items used but not consumed which remain the property of CONTRACTOR.
- 11.4.5.3. Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by OWNER with the advice of ENGINEER, and the costs of transportation, loading, unloading, installation, dismantling and removal thereof-all in accordance with the terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.
- 11.4.5.4. Sales, consumer, use or similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.
- 11.4.5.5. Deposits lost for causes other than negligence of CONTRACTOR, any Subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- 11.4.5.6. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by CONTRACTOR in connection with the performance and furnishing of the Work (except losses and damages within the deductible amounts of property insurance established by OWNER in accordance with paragraph 5.9), provided they have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR's fee. If, however, any such loss or damage requires reconstruction and CONTRACTOR is placed in charge thereof, CONTRACTOR shall be paid for services a fee proportionate to that stated in paragraph 11.6.2.
- 11.4.5.7. The cost of utilities, fuel and sanitary facilities at the site.
- 11.4.5.8. Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.
- 11.4.5.9. Cost of premiums for additional Bonds and insurance required because of changes in the Work.

11.5. The term Cost of the Work shall not include any of the following:

- 11.5.1. Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR's principal or a branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 11.4.1 or specifically covered by paragraph 11.4.4 - all of which are to be considered administrative costs covered by the CONTRACTOR's fee.
- 11.5.2. Expenses of CONTRACTOR's principal and branch of offices other than CONTRACTOR's office at the site.

- 11.5.3. Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.
- 11.5.4. Cost of premiums for all Bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by subparagraph 11.4.5.9 above).
- 11.5.5. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied and making good any damage to property.

Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 11.4.

- 11.6. The CONTRACTOR's fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:

- 11.6.1. a mutually acceptable fixed fee; or

- 11.6.2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

- 11.6.2.1. for costs incurred under paragraphs 11.4.1 and 11.4.2, the CONTRACTOR's fee shall be fifteen percent;
 - 11.6.2.2. for costs incurred under paragraph 11.4.3, the CONTRACTOR's fee shall be five percent;
 - 11.6.2.3. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of paragraphs 11.4.1, 11.4.2, 11.4.3 and 11.6.2 is that the Subcontractor who actually performs or furnishes the Work, at whatever tier, will be paid a fee of fifteen percent of the costs incurred by such Subcontractor under paragraphs 11.4.1 and 11.4.2 and that any higher tier Subcontractor and CONTRACTOR will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
 - 11.6.2.4. no fee shall be payable on the basis of costs itemized under paragraphs 11.4.4, 11.4.5 and 11.5;
 - 11.6.2.5. the amount of credit to be allowed by CONTRACTOR to OWNER for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in CONTRACTOR's fee by an amount equal to five percent of such net decrease; and
 - 11.6.2.6. when both additions and credits are involved in any one change, the adjustment in CONTRACTOR's fee shall be computed on the basis of the net change in accordance with paragraphs 11.6.2.1 through 11.6.2.5, inclusive.

- 11.7. Whenever the cost of any Work is to be determined pursuant to paragraphs 11.4 and 11.5, CONTRACTOR will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in form acceptable to ENGINEER an itemized cost breakdown together with supporting data.

Cash Allowances:

11.8. It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be furnished and performed for such sums as may be acceptable to OWNER and ENGINEER, CONTRACTOR agrees that:

11.8.1. the allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the site, and all applicable taxes; and

11.8.2. CONTRACTOR's costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances and no demand for additional payment on account of any of the foregoing will be valid.

Prior to final payment, an appropriate Change Order will be issued as recommended by ENGINEER to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.9. Unit Price Work:

11.9.1. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by ENGINEER in accordance with paragraph 9.10.

11.9.2. Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR's overhead and profit for each separately identified item.

11.9.3. OWNER or CONTRACTOR may make a claim for an adjustment in the Contract Price in accordance with Article 11 if:

11.9.3.1. the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

11.9.3.2. there is no corresponding adjustment with respect to any other item of Work; and

11.9.3.3. if CONTRACTOR believes that CONTRACTOR is entitled to an increase in Contract Price as a result of having incurred additional expense or OWNER believes that OWNER is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 - CHANGE OF CONTRACT TIMES

- 12.1. The Contract Times (or Milestones) may only be changed by a Change Order or a Written Amendment. Any claim for an adjustment of the Contract Times for Milestones) shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Times (or Milestones) shall be determined by ENGINEER in accordance with paragraph 9.11 if OWNER and CONTRACTOR cannot otherwise agree. No claim for an adjustment in the Contract Times (or Milestones) will be valid if not submitted in accordance with the requirements of this paragraph 12.1.
- 12.2. All time limits stated in the Contract Documents are of the essence of the Agreement.
- 12.3. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of CONTRACTOR, the Contract Times (or Milestones) will be extended in an amount equal to the time lost due to such delay if a claim is made therefor as provided in paragraph 12.1. Delays beyond the control of CONTRACTOR shall include, but not be limited to, acts or neglect by OWNER, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions or acts of God. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of CONTRACTOR.
- 12.4. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of both OWNER and CONTRACTOR, an extension of the Contract Times (or Milestones) in an amount equal to the time lost due to such delay shall be CONTRACTOR's sole and exclusive remedy for such delay. In no event shall OWNER be liable to CONTRACTOR, any Subcontractor, any Supplier, any other person or organization, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from (i) delays caused by or within the control of CONTRACTOR, or (ii) delays beyond the control of both parties including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God or acts or neglect by utility owners or other contractors performing other work as contemplated by Article 7.

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**ARTICLE 13 - TESTS AND INSPECTIONS:
CORRECTION, REMOVAL OR ACCEPTANCE
OF DEFECTIVE WORK**

13.1. Notice of Defects: Prompt notice of all defective Work of which OWNER or ENGINEER have actual knowledge will be given to CONTRACTOR. All defective Work may be rejected, corrected or accepted as provided in this Article 13.

Access to Work:

13.2. OWNER, ENGINEER, ENGINEER's Consultants, other representatives and personnel of OWNER, independent testing laboratories and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide them proper and safe conditions for such access and advise them of CONTRACTOR's site safety procedures and programs so that they may comply therewith as applicable.

Tests and inspections:

13.3. CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests or approvals, and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

13.4. OWNER shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

13.4.1. for inspections, tests or approvals covered by paragraph 13.5 below;

13.4.2. that costs incurred in connection with tests or inspections conducted pursuant to paragraph 13.9 below shall be paid as provided in said paragraph 13.9: and

13.4.3. as otherwise specifically provided in the Contract Documents.

13.5. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested or approved by an employee or other representative of such public body, CONTRACTOR shall assume full responsibility for arranging and obtaining such inspections, tests or approvals, pay all costs in connection therewith, and furnish ENGINEER the required certificates of inspection, or approval. CONTRACTOR shall also be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests or approvals required for OWNER's and ENGINEER's acceptance of materials or equipment to be incorporated in the Work, or of materials, mix designs, or equipment submitted for approval prior to CONTRACTOR's purchase thereof for incorporation in the Work.

- 13.6. If any Work (or the work of others) that is to be inspected, tested or approved is covered by CONTRACTOR without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation.
- 13.7. Uncovering Work as provided in paragraph 13.6 shall be at CONTRACTOR's expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR's intention to cover the same and ENGINEER has not acted with reasonable promptness in response to such notice.

Uncovering Work:

- 13.8. If any Work is covered contrary to the written request of ENGINEER, it must, if requested by ENGINEER, be uncovered for ENGINEER's observation and replaced at CONTRACTOR's expense.
- 13.9. If ENGINEER considers it necessary or advisable that covered Work be observed by ENGINEER or inspected or tested by others, CONTRACTOR, at ENGINEER's request, shall uncover, expose or otherwise make available for observation, inspection or testing as ENGINEER may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective, CONTRACTOR shall pay all claims, costs, losses and damages caused by, arising out of or resulting from such uncovering, exposure, observation, inspection and testing and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, may make a claim therefor as provided in Article 11. If, however, such Work is not found to be defective, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Times (or Milestones), or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement and reconstruction; and, if the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

OWNER May Stop the Work:

- 13.10 If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of OWNER to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR or any surety or other party.

Correction or Removal Defective Work:

- 13.11 If required by ENGINEER, CONTRACTOR shall promptly, as directed, either correct all defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by ENGINEER, remove it from the site and replace it with Work that is not defective. CONTRACTOR shall pay all claims, costs, losses and damages caused by or resulting from such correction or removal (including but not limited to all costs of repair or replacement of work of others).

13.12 Correction Period:

- 13.12.1. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions: (i) correct such defective Work, or, if it has been rejected by OWNER, remove it from the site and replace it with Work that is not defective, and (ii) satisfactorily correct or remove and replace any damage to other Work or the work of others resulting therefrom. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective Work corrected or the rejected Work removed and replaced, and all claims, costs, losses and damages caused by or resulting from such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by CONTRACTOR.
- 13.12.2. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Written Amendment.
- 13.12.3. Where defective Work (and damage to other Work resulting therefrom) has been corrected, removed or replaced under this paragraph 13.12, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

Acceptance of Defective Work:

- 13.13 If, instead of requiring correction or removal and replacement of defective Work, OWNER (and, prior to ENGINEER's recommendation of final payment, also ENGINEER) prefers to accept it, OWNER may do so, CONTRACTOR shall pay all claims, costs, losses and damages attributable to OWNER's evaluation of and determination to accept such defective Work (such costs to be approved by ENGINEER as to reasonableness). If any such acceptance occurs prior to ENGINEER's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work: and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. If the acceptance occurs after such recommendation, an appropriate amount will be paid by CONTRACTOR to OWNER.

OWNER May Correct Defective Work:

- 13.14 If CONTRACTOR fails within a reasonable time after written notice from ENGINEER to correct defective Work or to remove and replace rejected Work as required by ENGINEER in accordance with paragraph 13.11, or if CONTRACTOR fails to perform the Work in accordance with the Contract

Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven days' written notice to CONTRACTOR, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph OWNER shall proceed expeditiously. In connection with such corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the site, take possession of all or part of the Work, and suspend CONTRACTOR's services related thereto, take possession of CONTRACTOR's tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER's representatives, agents and employees, OWNER's other contractors and ENGINEER and ENGINEER's Consultants access to the site to enable OWNER to exercise the rights and remedies under this paragraph. All claims, costs, losses and damages incurred or sustained by OWNER in exercising such rights and remedies will be charged against CONTRACTOR and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Works and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. Such claims, costs, losses and damages will include but not be limited to all costs of repair or replacement of work of others destroyed or damaged by correction, removal or replacement of CONTRACTOR's defective Work. CONTRACTOR shall not be allowed an extension of the Contract Times for Milestones) because of any delay in the performance of the Work attributable to the exercise by OWNER of OWNER's rights and remedies hereunder.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

Schedule of Values:

- 14.1. The schedule of values established as provided in paragraph 2.9 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to ENGINEER. Progress payments on account of Unit Price Work will be based on the number of units completed.

Application for Progress Payment:

- 14.2. At least twenty days before the date established for each progress payment (but not more often than once a month), CONTRACTOR shall submit to ENGINEER for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice or other documentation warranting that OWNER has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements

to protect OWNER's interest therein, all of which will be satisfactory to OWNER. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

CONTRACTOR's Warranty of Title:

14.3. CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than the time of payment free and clear of all Liens.

Review of Application for Progress Payment:

14.4. ENGINEER will, within ten days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER, or return the Application to CONTRACTOR indicating in writing ENGINEER's reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application. Ten days after presentation of the Application for Payment to OWNER with ENGINEER's recommendation, the amount recommended will (subject to the provisions of the last sentence of paragraph 14.7) become due and when due will be paid by OWNER to CONTRACTOR.

14.5. ENGINEER's recommendation of any payment requested in an Application for Payment will constitute a representation by ENGINEER to OWNER, based on ENGINEER's on-site observations of the executed Work as an experienced and qualified design professional and on ENGINEER's review of the Application for Payment and the accompanying data and schedules, that to the best of ENGINEER's knowledge, information and belief:

14.5.1. the Work has progressed to the point indicated,

14.5.2. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under paragraph 9.10, and to any other qualifications stated in the recommendation), and

14.5.3. the conditions precedent to CONTRACTOR's being entitled to such payment appear to have been fulfilled in so far as it is ENGINEER's responsibility to observe the Work.

However, by recommending any such payment ENGINEER will not thereby be deemed to have represented that: (i) exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work beyond the responsibilities specifically assigned to ENGINEER in the Contract Documents or (ii) that there may not be other matters or issues between the parties that might entitle CONTRACTOR to be paid additionally by OWNER or entitle OWNER to withhold payment to CONTRACTOR.

- 14.6. ENGINEER's recommendation of any payment, including final payment, shall not mean that ENGINEER is responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of Work, or for any failure of CONTRACTOR to perform or furnish Work in accordance with the Contract Documents.
- 14.7. ENGINEER may refuse to recommend the whole or any part of any payment if, in ENGINEER's opinion, it would be incorrect to make the representations to OWNER referred to in paragraph 14.5. ENGINEER may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended, to such extent as may be necessary in ENGINEER's opinion to protect OWNER from loss because:
- 14.7.1. the Work is defective, or completed Work has been damaged requiring correction or replacement,
 - 14.7.2. the Contract Price has been reduced by Written Amendment or Change Order.
 - 14.7.3. OWNER has been required to correct defective Work or complete Work in accordance with paragraph 13.14, or
 - 14.7.4. ENGINEER has actual knowledge of the occurrence of any of the events enumerated in paragraphs 15.2.1 through 15.2.4 inclusive.

OWNER may refuse to make payment of the full amount recommended by ENGINEER because:

- 14.7.5. claims have been made against OWNER on account of CONTRACTORs performance or furnishing of the Work,
- 14.7.6. Liens have been filed in connection with the Work, except where CONTRACTOR has delivered a specific Bond satisfactory to OWNER to secure the satisfaction and discharge of such Liens,
- 14.7.7. there are other items entitling OWNER to a set-off against the amount recommended, or
- 14.7.8. OWNER has actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.7.1 through 14.7.3 or paragraphs 15.2.1 through 15.2.4 inclusive;

but OWNER must give CONTRACTOR immediate written notice (with a copy to ENGINEER) stating the reasons for such action and promptly pay CONTRACTOR the amount so withheld, or any adjustment thereto agreed to by OWNER and CONTRACTOR, when CONTRACTOR corrects to OWNER's satisfaction the reasons for such action.

Substantial Completion:

- 14.8. When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall notify OWNER and ENGINEER in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that ENGINEER issue a certificate of Substantial Completion. Within a reasonable time thereafter, OWNER, CONTRACTOR and ENGINEER shall make an inspection of the Work to determine the status of completion. If ENGINEER does not consider the Work substantially complete, ENGINEER will notify CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers the Work substantially complete, ENGINEER will prepare and deliver to OWNER a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. OWNER shall have seven days after receipt of the tentative certificate during which to make written objection to ENGINEER as to any provisions of the certificate or attached list. If, after considering such objections, ENGINEER concludes that the Work is not substantially complete, ENGINEER will within fourteen days after submission of the tentative certificate to OWNER notify CONTRACTOR in writing, stating the reasons therefor. If, after consideration of OWNER's objections, ENGINEER considers the Work substantially complete, ENGINEER will within said fourteen days execute and deliver to OWNER and CONTRACTOR a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as ENGINEER believes justified after consideration of any objections from OWNER. At the time of delivery of the tentative certificate of Substantial Completion ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, heat, utilities, insurance and warranties and guarantees. Unless OWNER and CONTRACTOR agree otherwise in writing and so inform ENGINEER in writing prior to ENGINEER's issuing the definitive certificate of Substantial Completion, ENGINEER's aforesaid recommendation will be binding on OWNER and CONTRACTOR until final payment.
- 14.9. OWNER shall have the right to exclude CONTRACTOR from the Work after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

Partial Utilization:

- 14.10 Use by OWNER at OWNER's option of any substantially completed part of the Work which: (i) has specifically been identified in the Contract Documents, or (ii) OWNER, ENGINEER and CONTRACTOR agree constitutes a separately functioning and usable part of the Work that can be used by OWNER for its intended purpose without significant interference with CONTRACTOR's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following:

- 14.10.1. OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees that such part of the Work is substantially complete, CONTRACTOR will certify to OWNER and ENGINEER that such part of the Work is substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. CONTRACTOR at any time may notify OWNER and ENGINEER in writing that CONTRACTOR considers any such part of the Work ready for its intended use and substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, OWNER, CONTRACTOR and ENGINEER shall make an inspection of that part of the Work to determine its status of completion. If ENGINEER does not consider that part of the Work to be substantially complete, ENGINEER will notify OWNER and CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers that part of the Work to be substantially complete, the provisions of paragraphs 14.8 and 14.9 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
- 14.10.2. No occupancy or separate operation of part of the Work will be accomplished prior to compliance with the requirements of paragraph 5.15 in respect of property insurance.

Final Inspection:

- 14.11 Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, ENGINEER will make a final inspection with OWNER and CONTRACTOR and will notify CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. CONTRACTOR shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

Final Application for Payment:

- 14.12 After CONTRACTOR has completed all such corrections to the satisfaction of ENGINEER and delivered in accordance with the Contract Documents all maintenance and operating instructions, schedules, guarantees, Bonds, certificates or other evidence of insurance required by paragraph 5.4, certificates of inspection, marked-up record documents (as provided in paragraph 6.19) and other documents, CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied (except as previously delivered) by: (i) all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by subparagraph 5.4.13, (ii) consent of the surety, if any, to final payment, and (iii) complete and legally effective releases or waivers (satisfactory to OWNER) of all Liens arising out of or filed in connection with the Work. In lieu of such releases or waivers of Liens and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full and an affidavit of CONTRACTOR that: (i) the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and (ii) all payrolls, material and equipment bills and other indebtedness connected with the Work for which OWNER or OWNER's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish

such a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

Final Payment and Acceptance:

14.13 If, on the basis of ENGINEER's observation of the Work during construction and final inspection, and ENGINEER's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR's other obligations under the Contract Documents have been fulfilled, ENGINEER will, within ten days after receipt of the final Application for Payment, indicate in writing ENGINEER's recommendation of payment and present the Application to OWNER for payment. At the same time ENGINEER will also give written notice to OWNER and CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.15. Otherwise, ENGINEER will return the Application to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application. Thirty days after the presentation to OWNER of the Application and accompanying documentation, in appropriate form and substance and with ENGINEER's recommendation and notice of acceptability, the amount recommended by ENGINEER will become due and will be paid by OWNER to CONTRACTOR.

14.14 If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed and if ENGINEER so confirms, OWNER shall, upon receipt of CONTRACTOR's final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.1, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

Waiver of Claims

14.15 The making and acceptance of final payment will constitute:

14.15.1. a waiver of all claims by OWNER against CONTRACTOR, except claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to paragraph 14.1, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from CONTRACTOR's continuing obligations under the Contract Documents; and

14.15.2. a waiver of all claims by CONTRACTOR against OWNER other than those previously made in writing art still unsettled.

**ARTICLE 15 - SUSPENSION OF WORK
AND TERMINATION**

OWNER May Suspend Work:

15.1. At any time and without cause, OWNER may suspend the Work or any portion thereof for a period of not more than ninety days by notice in writing to CONTRACTOR and ENGINEER which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if CONTRACTOR makes an approved claim therefor as provided in Articles 11 and 12.

OWNER May Terminate:

15.2. Upon the occurrence of any one or more of the following events:

- 15.2.1. if CONTRACTOR persistently fails to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.9 as adjusted from time to time pursuant to paragraph 6.6);
- 15.2.2. if CONTRACTOR disregards Laws or Regulations of any public body having jurisdiction;
- 15.2.2. if CONTRACTOR disregards the authority of ENGINEER; or
- 15.2.4. if CONTRACTOR otherwise violates in any substantial way any provisions of the Contract Documents;

OWNER may, after giving CONTRACTOR and the surety, if any,) seven days' written notice and to the extent permitted by Laws and Regulations, terminate the services of CONTRACTOR, exclude CONTRACTOR from the site and take possession of the Work and of all CONTRACTOR's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds all claims, costs, losses and damages sustained by OWNER arising out of or resulting from completing the Work such excess will be paid to CONTRACTOR. If such claims, costs, losses and damages exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such claims, costs, losses and damages incurred by OWNER will be reviewed by ENGINEER as to their reasonableness and when so approved by ENGINEER incorporated in a Change Order, provided that when exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

- 15.3. Where CONTRACTOR's services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.
- 15.4. Upon seven days' written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy of OWNER, elect to terminate the Agreement. In such case, CONTRACTOR shall be paid (without duplication of any items):
- 15.4.1. for completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 15.4.2. for expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;
 - 15.4.3. for all claims, costs, losses and damages incurred in settlement of terminated contracts with Subcontractors, Suppliers and others; and
 - 15.4.4. for reasonable expenses directly attributable to termination.

CONTRACTOR shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

CONTRACTOR May Stop Work or Terminate:

- 15.5. If, through no act or fault of CONTRACTOR, the Work is suspended for a period of more than ninety days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within thirty days after it is submitted or OWNER fails for thirty days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may upon seven days' written notice to OWNER and ENGINEER, and provided OWNER or ENGINEER do not remedy such suspension or failure within that time, terminate the Agreement and recover from OWNER payment on the same terms as provided in paragraph 15.4. In lieu of terminating the Agreement and without prejudice to any other right or remedy, if ENGINEER has failed to act on an Application for Payment within thirty days after it is submitted, or OWNER has failed for thirty days to pay CONTRACTOR any sum finally determined to be due, CONTRACTOR may upon seven day's written notice to OWNER and ENGINEER stop the Work until payment of all such amounts due CONTRACTOR, including interest thereon. The provisions of this paragraph 15.5 are not intended to preclude CONTRACTOR from making claim under Articles 11 and 12 for an increase in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to CONTRACTOR's stopping Work as permitted by this paragraph.

ARTICLE 16 - DISPUTE RESOLUTION

If and to the extent that OWNER and CONTRACTOR have agreed on the method and procedure for resolving disputes between them that may arise under this Agreement, such dispute resolution method and procedure, if any, shall be as set forth in Exhibit GC-A, "Dispute Resolution Agreement," to be attached hereto and made a part hereof. If no such agreement on the method and procedure for resolving such disputes has been reached, and subject to the provisions of paragraphs 9.10, 9.11, and 9.12, OWNER and CONTRACTOR may exercise such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any dispute.

ARTICLE 17 - MISCELLANEOUS

Giving Notice:

17.1. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

Computation of Times:

17.2.1. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.2.2. A calendar day of twenty-four hours measured from midnight to the next midnight will constitute a day.

Notice of Claim:

17.3. Should OWNER or CONTRACTOR suffer injury or damage to person or property because of any error, omission or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim will be made in writing to the other party within a reasonable time of the first observance of such injury or damage. The provisions of this paragraph 17.3 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose.

Cumulative Remedies:

- 17.4. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon CONTRACTOR by paragraphs 6.12, 6.16, 6.30, 6.31, 6.32, 13.1, 13.12, 13.14, 14.3 and 15.2 and all of the rights and remedies available to OWNER and ENGINEER thereunder, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply.

Professional Fees and Court Costs Included:

- 17.5. Whenever reference is made to "claims, costs, losses and damages," it shall include in each case, but not be limited to, all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs.

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**EXHIBIT GC-A to General Conditions of the
Agreement Between OWNER and CONTRACTOR
Dated
For use with EJCDC No.1910-8 (1990 ed.)**

DISPUTE RESOLUTION AGREEMENT

OWNER and CONTRACTOR hereby agree that Article 16 of the General Conditions to the Agreement between OWNER and CONTRACTOR is amended to include the following agreement of the parties:

- 16.1. All claims, disputes and other matters in question between OWNER and CONTRACTOR arising out of or relating to the Contract Documents or the breach thereof (except for claims which have been waived by the making or acceptance of final payment as provided by paragraph 14.15) will be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then obtaining, subject to the limitations of this Article 16. This agreement so to arbitrate and any other agreement or consent to arbitrate entered into in accordance herewith as provided in this Article 16 will be specifically enforceable under the prevailing law of any court having jurisdiction.
- 16.2. No demand for arbitration of any claim, dispute or other matter that is required to be referred to ENGINEER initially for decision in accordance with paragraph 9.11 will be made until the earlier of (a) the date on which ENGINEER has rendered a written decision or (b) the thirty-first day after the parties have presented their evidence to ENGINEER if a written decision has not been rendered by ENGINEER before that date. No demand for arbitration of any such claim, dispute or other matter will be made later than thirty days after the date on which ENGINEER has rendered a written decision in respect thereof in accordance with paragraph 9.11; and the failure to demand arbitration within said thirty days' period will result in ENGINEER's decision being final and binding upon OWNER and CONTRACTOR. If ENGINEER renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence but will not supersede the arbitration proceedings, except where the decision is acceptable to the parties concerned. No demand for arbitration of any written decision of ENGINEER rendered in accordance with paragraph 9.10 will be made later than ten days after the party making such demand has delivered written notice of intention to appeal as provided in paragraph 9.10.
- 16.3. Notice of the demand for arbitration will be filed in writing with the other party to the Agreement and with the American Arbitration Association, and a copy will be sent to ENGINEER for information. The demand for arbitration will be made within the thirty-day or ten- day period specified in paragraph 16.2 as applicable, and in all other cases within a reasonable time after the claim, dispute or other matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such claim, dispute or other matter in question would be barred by the applicable statute of limitations.
- 16.4. Except as provided in paragraph 16.5 below, no arbitration arising out of or relating to the Contract Documents shall include by consolidation, joinder or in any other manner any other person or entity (including ENGINEER, ENGINEER's Consultant and the officers, directors, agents, employees or consultants of any of them) who is not a party to this contract unless:

- 16.4.1. the inclusion of such other person or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration, and
 - 16.4.2. such other person or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings, and
 - 16.4.3. the written consent of the other person or entity sought to be included and of OWNER and CONTRACTOR has been obtained for such inclusion, which consent shall make specific reference to this paragraph: but no such consent shall constitute consent to arbitration of any dispute not specifically described in such consent or to arbitration with any party not specifically identified in such consent.
- 16.5. Notwithstanding paragraph 16.4 if a claim, dispute or other matter in question between OWNER and CONTRACTOR involves the Work of a Subcontractor, either OWNER or CONTRACTOR may join such Subcontractor as a party to the arbitration between OWNER and CONTRACTOR hereunder. CONTRACTOR shall include in all subcontracts required by paragraph 6.11 a specific provision whereby the Subcontractor consents to being joined in an arbitration between OWNER and CONTRACTOR involving the Work of such Subcontractor. Nothing in this paragraph 16.5 nor in the provision of such subcontract consenting to joinder shall create any claim, right or cause of action in favor of Subcontractor and against OWNER, ENGINEER or ENGINEER's Consultants that does not otherwise exist.
- 16.6. The award rendered by the arbitrators will be final, judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal.
- 16.7. OWNER and CONTRACTOR agree that they shall first submit any and all unsettled claims, counterclaims, disputes and other matters in question between them arising out of or relating to the Contract Documents or the breach thereof ("disputes"), to mediation by The American Arbitration Association under the Construction industry Mediation Rules of the American Arbitration Association prior to either of them initiating against the other a demand for arbitration pursuant to paragraphs 16.1 through 16.6, unless delay in initiating arbitration would irrevocably prejudice one of the parties. The respective thirty and ten day time limits within which to file a demand for arbitration as provided in paragraphs 16.2 and 16.3 above shall be suspended with respect to a dispute submitted to mediation within those same applicable time limits and shall remain suspended until ten days after the termination of the mediation. The mediator of any dispute submitted to mediation under this Agreement shall not serve as arbitrator of such dispute unless otherwise agreed.

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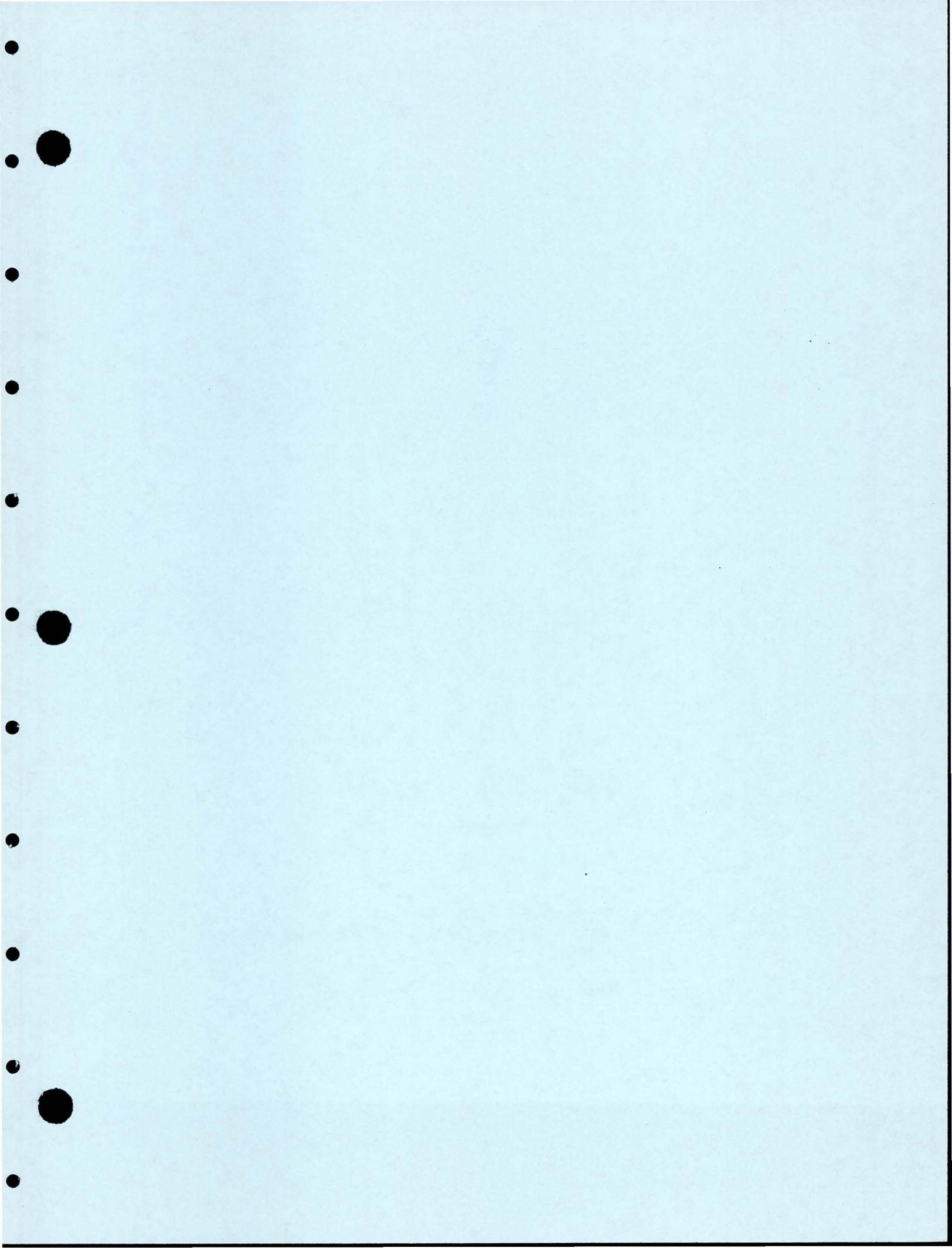


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SECTION 00800 SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the General Conditions of the Construction Contract and other provisions of the Contract Documents as indicated herein. All provisions which are not so amended or supplemented remain in full force and effect.

ARTICLE SC-1 DEFINITIONS

Add four new paragraphs immediately after paragraph 1.45 of the General Conditions which are to read as follows:

- SC-1.46 Bidder-- One who submits a Proposal directly to OWNER, as distinct from a sub-bidder who submits a Proposal directly to a Bidder.
- SC-1.47 Successful Bidder--The lowest, qualified, responsible, and responsive Bidder to whom OWNER (on the basis of OWNER'S evaluation) makes an award.
- SC-1.48 Contract Float--If the schedule anticipates early completion of all or any part of the Work, Contract Float is the number of calendar days between CONTRACTOR'S anticipated date for early completion of all or any such part of the Work and the corresponding specified Contract Time.
- SC-1.49 Total Float--Number of calendar days by which the Work or any part of the Work may be delayed without necessarily extending a pertinent Contract Time. Total Float is by definition at least equal to Contract Float.

ARTICLE SC-2 - PRELIMINARY MATTERS

Delete paragraph 2.5. of the General Conditions in its entirety and insert the following in its place:

- SC-2.5 CONTRACTOR shall carefully study and compare the Contract Documents with each other with information furnished by OWNER and with manufacturers recommendations and shall at once report to ENGINEER errors, inconsistencies or omissions discovered. CONTRACTOR shall not be liable to OWNER or ENGINEER for damage resulting from errors, inconsistencies or omissions in the Contract Documents unless CONTRACTOR recognized such error, inconsistency or omission and knowingly failed to report it to ENGINEER. If CONTRACTOR performs any construction activity knowing it involves a recognized error, inconsistency or omission in the Contract Documents without such notice to ENGINEER, CONTRACTOR shall assume appropriate responsibility for such performance and shall bear an appropriate amount of the attributable costs for correction.

Amend the first line of paragraph 2.6 of the General Conditions to read as follows:

SC-2.6 Within ten days after the Effective Date of the Agreement or at the Pre-construction Conference whichever comes first, (unless otherwise specified in the General Requirements),

and as so amended paragraph 2.6 remains in effect.

Add a new paragraph immediately after paragraph 2.6.3. of the General Conditions which is to read as follows:

SC-2.6.4 All Progress Schedules (both original and revisions) submitted shall be in accordance with paragraph SC-6.36 of the Supplementary Conditions.

Delete paragraph 2.9 of the General Conditions in its entirety and insert the following in its place:

SC-2.9 CONTRACTOR shall have ten days to make corrections and adjustments and to complete and resubmit the schedule of Shop Drawing and Sample submittals and schedule of values. No progress payment shall be made to CONTRACTOR until these schedules are submitted to and acceptable to ENGINEER. CONTRACTOR's schedule of Shop Drawing and Sample submissions will be acceptable to ENGINEER as providing a workable arrangement for reviewing and processing the required submittals. CONTRACTOR's schedule of values will be acceptable to ENGINEER as to form and substance.

ARTICLE SC-3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

Add two new paragraphs immediately after paragraph 3.3.3. of the General Conditions which are to read as follows:

SC-3.3.4 The Contract Documents are complementary, and anything mentioned or shown in a part of the Contract Documents shall be of like effect as if mentioned or shown in all parts of the Contract Documents. In resolving conflicts, the Contract Documents shall be given the priority determined by ENGINEER which results in Work consistent with and reasonably inferable from their intent. Except when in contradiction with this priority rule, the Contract Documents shall be given priority by ENGINEER in the following order, as supplemented, if appropriate, by paragraph SC-3.3.5.

The Agreement, fully executed by OWNER and CONTRACTOR (pages 00500-1 to _____, inclusive).

Exhibits to this Agreement (pages _____ to _____, inclusive).

Performance Bonds (pages 00610-1 to _____, inclusive) and Payment Bonds (pages 00620-1 to _____, inclusive).

Notice to Proceed.

General Conditions (pages _____ to _____, inclusive).

Supplementary Conditions (pages _____ to _____, inclusive).

Specifications bearing the title _____ and consisting of Divisions 1 through 18 of the Part A, Part B, Part C Specifications, and Appendices.

Drawings consisting of cover sheets and sheets numbered:

Directory Drawings _____ through _____;
Part A _____ through _____;
Part B _____ through _____; and
Part C _____ through _____;

inclusive with each sheet bearing the following general title: _____,

and

Index Nos. Directory Drawings ____; Part A _____; Part B ____;
Part C _____.

Addenda numbers _____ to _____, inclusive.

CONTRACTOR'S Bid Form (pages _____ to _____, inclusive) marked exhibit _____.

Documentation submitted by CONTRACTOR prior to Notice of Award (pages _____ to _____, inclusive).

The following which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto:

All Written Amendments and other documents amending, modifying or supplementing the Contract Documents pursuant to paragraph 3.5 and 3.6 of the General Conditions.

The following CONTRACTOR'S Qualification Submittal (delivered after the date of bid opening). _____

- SC-3.3.5 If the issue of priority involves the Specifications and Drawings, figured dimensions shall govern over scaled dimensions. Work not dimensioned shall be subject to interpretation by ENGINEER. Work not expressly shown, identified, sized or located shall be the same as similar Work shown or specified. Detail drawings shall govern over general Drawings, larger scale Drawings take precedence over smaller scale Drawings. Whenever notes, specifications, dimensions, details or schedules in the Specifications or Drawings, or between the Specifications and Drawings conflict, CONTRACTOR shall furnish the higher performance requirement.

**ARTICLE SC-4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS:
REFERENCE POINTS**

Delete paragraph 4.1 of the General Conditions in its entirety and insert the following in its place:

SC-4.1 The Contract Documents indicate the lands upon which the Work is to be performed and those rights-of-way and access easements furnished by OWNER. Easements for permanent structures or for permanent changes in existing facilities will be obtained by OWNER, unless otherwise stated.

Add a new paragraph immediately after paragraph 4.1. of the General Conditions which is to read as follows:

- SC-4.1.1 CONTRACTOR shall obtain, at no increase in Contract Price or Contract Time, any additional lands, rights-of-way and easements that CONTRACTOR, in its sole discretion, requires for temporary facilities, ingress and egress, storage, disposal of spoil or waste material or any other purpose. CONTRACTOR shall obtain (a) all required permits from the U.S. Government, the State and any Political Subdivision or public utility with jurisdiction, and (b) permission by written agreement if private property. CONTRACTOR shall submit copies of all permits and written agreements to OWNER.

Add the following paragraph immediately after paragraph 4.2.1.2 of the General Conditions:

- SC-4.2.1.3 SUBSURFACE CONDITIONS
SC-4.2.1.3.1 Those reports of explorations and tests of subsurface conditions itemized below have been used by ENGINEER in the preparation of the Bidding Documents. They may be obtained from OWNER, as provided in the Call for Bids.
SC-4.2.1.3.1.1 Geotechnical Report for Solids Handling Facility, Squaw Peak Water Treatment Plant, dated 12 April, 1991.
SC-4.2.1.3.1.2 Geotechnical Report for Chemical Storage Facility, Squaw Peak Water Treatment Plant, dated 18 February, 1991.
SC-4.2.1.3.1.3 Geotechnical Report for Pre-Sed Bypass Line, Squaw Peak Water Treatment Plant, dated 14 February, 1990.
SC-4.2.1.3.1.4 Geotechnical Report for Access Bridges on the ACDC, Squaw Peak WTP, dated 16 November, 1989.
SC-4.2.1.3.1.5 Geotechnical Report for ACDC - Squaw Peak Water Main and Treatment Facility Reconstruction, dated 28 May, 1989.

- SC-4.2.1.4 PHYSICAL CONDITIONS
- SC-4.2.1.4.1 The Drawings and Specifications and those drawings and specifications itemized below contain information or data of physical conditions contiguous to the site that have been used by ENGINEER in the preparation of the Bidding Documents.
- SC-4.2.1.4.1.1 Squaw Peak Reservoir and Appurtenances Contract Number III, 1952, Headman, Ferguson, and Carollo, Consulting Engineers.
- SC-4.2.1.4.1.2 Squaw Peak Presedimentation Basin and Raw Water Pumping Station, Contract Number IV, 1952, Headman, Ferguson, and Carollo, Consulting Engineers.
- SC-4.2.1.4.1.3 Squaw Peak Filter Plant, Contract Number V, 1952, Headman, Ferguson, and Carollo, Consulting Engineers.
- SC-4.2.1.4.1.4 Reservoir Number Two, Squaw Peak Additions, 1958, John A. Carollo, Consulting Engineers.
- SC-4.2.1.4.1.5 Squaw Peak Additions, Water Treatment Plant, 1958, John A. Carollo, Consulting Engineers.
- SC-4.2.1.4.1.6 Squaw Peak Filter Plant, Water Storage Facilities, 1962, Stephens, Walsh, Emmons and Shanks, Engineers and Architects.
- SC-4.2.1.4.1.7 Lincoln Drive System, 1958, John A. Carollo, Consulting Engineers.
- SC-4.2.1.4.1.8 Squaw Peak filter Plant, 1963 Additions, Yost and Gardner Engineers.
- SC-4.2.1.4.1.9 Squaw Peak Reservoir Three Rehabilitation, 1985, HDR Infrastructure.
- SC-4.2.1.4.1.10 Squaw Peak Water Treatment Plant Modifications, 1988, James M. Montgomery, Consulting Engineers, Inc.
- SC-4.2.1.4.1.11 Squaw Peak Water Treatment Plant, Relocations at the Arizona Canal Division Channel, 1989, John Carollo Engineers.

Amend the first sentence of paragraph 4.2.6 of the General Conditions to read as follows:

- SC-4.2.6 In accordance with Articles 11 and 12 of the General Conditions, an adjustment in the Contract Price or in the Contract Times, or both, will be allowed to the extent that the existence of such uncovered or revealed condition causes an increase or decrease in CONTRACTOR'S cost of, or time required for performance of, the Work subject, however, to the following:

and as so amended paragraph 4.2.6 remains in effect.

Add a new paragraph immediately after paragraph 4.2.6. of the General Conditions which is to read as follows:

- SC-4.2.7 ARCHEOLOGICAL DEPOSITS: Pursuant to Arizona Revised Statutes (ARS) Section 41-844 as amended, if CONTRACTOR discovers archaeological sites or objects, CONTRACTOR shall promptly report them to the Director of the Arizona State Museum and OWNER. CONTRACTOR shall conform with ARS Section 41-844 in all respects. CONTRACTOR may be allowed an adjustment of Contract Time(s) pursuant to Article 12 of the Supplementary Conditions. If OWNER, with the advice

of ENGINEER, concludes that the Contract Documents require changes due archaeological features, OWNER shall, pursuant to Article 10 of the General Conditions, order any changes in the Work and corresponding adjustments in Contract Price required solely because of the archaeological features encountered.

Add a new paragraph immediately after paragraph 4.3.2 of the General Conditions which is to read as follows:

SC-4.3.3 OWNER shall comply in all respects with A.R.S. 40-360.21 et seq. as amended.

Delete paragraphs 4.5.1, 4.5.2, 4.5.3, 4.5.4 and 4.5.5 of the General Conditions in their entirety and insert the following in their place:

SC-4.5.1 CONTRACTOR, all Subcontractors, Manufacturers and Suppliers shall use, store, process, transfer, transport, dispose of and otherwise handle hazardous substances in accordance with all Laws and Regulations. For all purposes under the Contract Documents, the term "hazardous substance" shall mean any substance the manufacture, distribution, sale, use, treatment, storage, transportation, disposal or other handling of which is regulated by Laws or Regulations.

SC-4.5.2 Except as otherwise provided in the Specifications, if CONTRACTOR encounters hazardous substances at the site (including but not limited to Asbestos, PCB, Petroleum Products, Radioactive Materials or materials used in the normal course of construction as paint thinners, solvents, gasoline, oil, etc.) which were neither shown in nor inferable from the Contract Documents (or otherwise identified as part of the Work) and which may present substantial danger, CONTRACTOR shall immediately (a) stop all affected Work, (b) give written notice to OWNER of the conditions, and (c) take appropriate health and safety precautions. Upon receipt of the notice, OWNER will investigate the conditions. If the material is a hazardous substance which may present substantial danger, OWNER shall stop the affected Work in writing. Except as otherwise provided in paragraph SC-4.5.4, OWNER shall arrange for removal or other appropriate handling of the hazardous substance by negotiating a change in the Work with CONTRACTOR, by separate contract with other contractors, or as OWNER may otherwise deem expedient; in the alternative, OWNER may terminate the Agreement or affected Work for OWNER'S convenience.

SC-4.5.3 Once the hazardous substance has been removed or rendered harmless in accordance with paragraph SC-4.5.2, the affected Work may be resumed as directed by OWNER. Pursuant to A.R.S. Section 32.1129.01 (effective October 2, 1991), and subject to CONTRACTOR'S compliance with that Section and paragraphs 11.10 and 11.10.1 of the Supplementary Conditions, CONTRACTOR may be entitled to damages and time for delay attributable to the discovery of hazardous substances which interrupt the Work.

- SC-4.5.4 If the existence of the hazardous substance results from (a) CONTRACTOR'S violation(s) of Laws or Regulations covering the use, storage, processing, transfer, transport, disposal or otherwise handling of any hazardous substance, or (b) any other cause within the control or attributable to the fault or negligence of CONTRACTOR, CONTRACTOR shall be responsible for all costs and time required to clean up the site and remove or render harmless the hazardous substance to the satisfaction of OWNER, the State and any political subdivision with jurisdiction. If CONTRACTOR fails to proceed with due diligence or act appropriately, OWNER, in its sole discretion, shall have the right to act, and if it does so CONTRACTOR shall defend, indemnify and hold OWNER harmless from and against all claims, as provided in paragraph 6.31 of the Supplementary Conditions, arising out of or in any way resulting from OWNER'S action under this provision.

ARTICLE SC-5 - BONDS AND INSURANCE

Delete paragraph 5.1 of the General Conditions in its entirety and insert the following in its place:

- SC-5.1 CONTRACTOR shall furnish Performance and Payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all CONTRACTOR'S obligations under the Contract Documents. The Payment Bond shall remain in effect at least until one year after the date when final payment becomes due, except as provided otherwise by Laws and Regulations or by the Contract Documents. The Performance Bond shall remain in effect as long as CONTRACTOR is liable for (a) defective Work appearing after final inspection, (b) failure to comply with the Contract Documents or the terms or any special guaranties specified therein, or (c) CONTRACTOR'S continuing obligations under the Contract Documents.

Delete paragraphs 5.4, 5.5 and 5.6 of the General Conditions in their entirety and insert the following in their place:

- SC-5.4 CONTRACTOR shall not start to perform or furnish the Work, in whole or in part, or continue to do so unless CONTRACTOR has in full force and effect all of the policies of insurance and coverage specified in this Article. CONTRACTOR shall purchase and maintain commercial general liability insurance (issued on an occurrence basis) and other insurance appropriate for the Work and which will provide protection from claims itemized below which may arise out of or result from CONTRACTOR'S performance and furnishing of the Work and CONTRACTOR'S other obligations under the Contract Documents, whether the Work and other obligations be performed or furnished by CONTRACTOR, by any Subcontractor, by any Supplier or by anyone for whose acts any of them may be liable, to with:

- SC-5.4.1 Claims under workers' compensation, disability benefits, and other applicable similar employee benefits acts; claims for damages because of bodily injury, occupational sickness or disease, or death of CONTRACTOR'S employees;

- SC-5.4.2 Claims for damages because of bodily injury, sickness or disease, or death of any person other than CONTRACTOR'S employee; claims for damages insured by personal injury liability coverage sustained (a) by any person as a result of an offense directly or indirectly related to the employment of such person by CONTRACTOR, or (b) by any other person for any other reason; claims for damages because of injury to or destruction of tangible property wherever located, including loss of use resulting from any such injury or destruction;
- SC-5.4.3 Claims arising out of operation of Laws for damages because of bodily injury or death of any person or for damage to property; and
- SC-5.4.4 Claims for damages because of bodily injury or death of any person, or property damage arising out of ownership, maintenance, operation, use or loading and unloading of any owned, hired or non-owned motor vehicle used in the Work, including employee non-ownership use.
- SC-5.4.5 The policy limits of CONTRACTOR'S liability insurance required under this Article shall provide coverage for not less than the following amounts (or greater if required by Law):
- SC-5.4.5.1 Workers' Compensation under paragraph SC-5.4.1 shall be not less than statutory limits under the Laws of the State of Arizona. Employer's Liability Insurance shall conform to statutory limits under the Laws of the State of Arizona, unless higher limits are required by the Supplementary Conditions.
 - SC-5.4.5.2 Commercial General Liability Insurance limits under paragraphs SC-5.4.2 and SC-5.4.3 shall be not less than \$1,000,000.00 each occurrence, \$2,000,000.00 general aggregate, \$2,000,000.00 products and completed operations aggregate, \$1,000,000.00 personal and advertising injury and \$10,000.00 medical expense. Excess liability coverage shall be provided in an Umbrella Form policy for a separate \$5,000,000.00 each occurrence and \$5,000,000.00 aggregate.
 - SC-5.4.5.3 The terms of the Commercial General Liability coverage and required endorsements (or specific hazardous coverage) shall provide bodily injury and property damage liability coverage for pile driving operations (if risk present); premises/operations; products and completed operations; independent contractors; contractual liability; and underground, explosion and collapse hazard (x, c, u) exposures (if risk present). Coverage for underground hazards shall apply to product and completed operation hazards. Commercial General Liability coverage shall provide broad form contractual liability, personal injury liability and broad form property damage liability.

- SC-5.4.5.4 Commercial Automobile Liability Insurance coverage limits under paragraph SC-5.4.1.4 shall be not less than \$1,000,000 combined single limit (primary). Excess liability Umbrella Form coverage shall provide for \$5,000,000 each occurrence, and \$5,000,000 aggregate.
- SC-5.4.6 CONTRACTOR'S liability insurance shall include contractual liability coverage sufficient to support CONTRACTOR'S indemnification obligations under the Contract Documents. CONTRACTOR agrees to provide and to pay, on behalf of OWNER, for a defense of all claims covered by CONTRACTOR'S obligations under the indemnification provisions.
- SC-5.4.7 Except for Worker's Compensation and Employer's Liability Insurance CONTRACTOR'S liability insurance shall be endorsed to add OWNER as an additional insured, and ENGINEER, OWNER'S and ENGINEER'S consultants, any of their subsidiaries or affiliates, and each of their respective directors, officers, shareholders, agents or employees as additional insured. The insurance afforded to OWNER and the other parties shall be primary insurance, and neither the coverage nor the amount of insurance provided under CONTRACTOR'S policies shall be reduced or prorated by the existence of any other insurance applicable to any loss OWNER or those parties may have sustained.
All policies purchased in accordance with Paragraph SC-5.4 shall contain provisions to the effect that in the event of payment of any loss or damage, the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. The CONTRACTOR waives all rights against the OWNER or ENGINEER and their respective officers, directors, employees and agents for all losses and damages caused by, arising out of or resulting from any of the items covered by such policies; and, in addition, waive all such rights against OWNER'S and ENGINEER'S Consultants and their respective officers, directors, employees and agents under such policies for losses and damages so caused.
- SC-5.4.8 CONTRACTOR'S liability insurance shall remain in effect until the end of the Correction Period and at all times after that when CONTRACTOR may be correcting, or removing and replacing, **defective** Work. The completed operations liability insurance shall be maintained for three (3) years after final payment, and CONTRACTOR shall furnish to the OWNER evidence of the completed operations insurance yearly.
- SC-5.4.9 These requirements shall not be construed to limit the liability of CONTRACTOR or its insurers. OWNER does not represent that the specified coverage or limits of insurance are sufficient to protect CONTRACTOR'S interests or liabilities.
- SC-5.5 The CONTRACTOR shall purchase, maintain, and deliver to OWNER OWNER'S and CONTRACTOR'S Protective (OCP) Liability Insurance, issued on an occurrence basis, naming OWNER as insured, or the CONTRACTOR shall be required to endorse CONTRACTOR'S underlying Commercial General Liability insurance to show a clean set of coverage limits for the Work, and a copy of that endorsement shall be provided to OWNER. For all CONTRACTOR furnished OCP insurance, (a) the policy limit shall be not less than \$1,000,000.00 combined single limit, (b) the policy shall not contain any exclusion relative to any functions performed by OWNER which may

arise out of or result from operations under the Contract, and (c) those other parties designated in paragraph SC-5.4.7 shall be endorsed as additional insured.

SC-5.6 The CONTRACTOR shall purchase and maintain all risk completed value, "Builder's Risk," (completed and in-progress Work) insurance, including flood and earthquake, for physical loss or damage upon the Work at the site to its full insurable value. This insurance shall include the interests of OWNER, CONTRACTOR, Subcontractors and Suppliers, ENGINEER and OWNER'S and ENGINEER'S consultants, all of whom shall be listed as additional insured, and shall be endorsed to include damages, losses and expenses arising out of or resulting from any insured loss or incurred in the repair or replacement of any insured property (including but not limited to charges of engineers, architects, attorneys and others). If not covered under the all risk insurance, CONTRACTOR shall purchase and maintain property insurance on Work stored on and off site or in transit when that Work is included in an Application for Payment. The property insurance may have a deductible, not exceeding \$25,000.00, which shall be borne by the CONTRACTOR, and shall comply with the Waiver of rights provisions in paragraph 5.11 of the General Conditions. The CONTRACTOR shall deliver to the OWNER a copy of the property insurance policy obtained to comply with these provisions on or before the Effective Date of the Agreement.

SC-5.6.1 CONTRACTOR shall purchase and maintain boiler and machinery insurance and additional property insurance, which shall include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER and OWNER'S and ENGINEER'S Consultants, all of whom shall be listed as additional insured.

SC-5.6.2 Any partial Use by OWNER shall be subject to the insurers (providing the property insurance) having acknowledged receipt of notice of Partial Use and in writing effected the necessary changes in coverage. Those insurers shall consent by endorsement, but the property insurance shall not be canceled or lapse because of any Partial Use by OWNER.

Delete paragraphs 5.7, 5.8, 5.9, and 5.10 of the General Conditions in their entirety.

ARTICLE SC-6 - CONTRACTOR'S RESPONSIBILITIES

Add a new paragraph immediately after paragraph 6.7.1.3 of the General Conditions which is to read as follows:

SC-6.7.1.4 Notwithstanding anything to the contrary in paragraphs 6.7.1.1, 6.7.1.2 and 6.7.3 of the General Conditions, ENGINEER shall not accept any substitute item unless it yields a net savings to OWNER and does not extend Contract Time(s), and seventy-five percent (75%) of the savings in Contract Price and reduction in Contract Time(s) are credited to OWNER.

Amend the first sentence of Paragraph 6.8.2 of the General Conditions to read as follows:

SC-6.8.2 If the Supplementary Conditions require the identity of certain Subcontractors, Manufacturers, Suppliers, or other persons or organizations (including those who are to furnish the principal items of materials or equipment) to be submitted to OWNER in advance of the specified date prior to the Effective Date of the Agreement for acceptance by OWNER and ENGINEER, and if CONTRACTOR has submitted a list thereof in accordance with the Supplementary Conditions, OWNER'S or ENGINEER'S acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the bidding documents or the Contract Documents) of any Subcontractors, Manufacturers, Suppliers or other persons or organizations so identified may be revoked on the basis of reasonable objection after due investigation, in which case CONTRACTOR shall submit an acceptable substitute, without an increase in Bid price.

and as so amended paragraph 6.8.2 remains in effect.

Add new paragraphs immediately after paragraph 6.13 of the General Conditions which are to read as follows:

SC-6.13.1 OWNER has secured or will secure the following permits, approvals and licenses and has paid or will pay any associated charges and fees.

SC-6.13.1.1 Maricopa County Health Department-Approval to Construct.

SC-6.13.1.2 Maricopa County Health Department-Approval to Operate.

SC-6.13.1.3 Maricopa County Health Department Bureau of Air Pollution Control-Installation Permit.

Add a new paragraph immediately after paragraph 6.14.2 of the General Conditions which is to read as follows:

SC-6.14.3 CONTRACTOR shall (a) comply with all Laws and Regulations governing the use of explosives, (b) obtain and pay for any required permits before their use, and (c) furnish a copy of the permits to Engineer before using explosives. CONTRACTOR shall, under the supervision of competent and suitably trained and qualified personnel, exercise the utmost care not to endanger life or damage property in the transportation, storage, handling, use and disposal of explosives. CONTRACTOR shall be responsible for and shall defend, indemnify and hold harmless OWNER and Engineer against all claims for injury, damage and other adverse impacts inside and outside the permit area resulting from the use of explosives, including but not limited to all costs, delay and delay costs.

Delete paragraph 6.15 of the General Conditions in its entirety and insert the following in its place:

SC-6.15 CONTRACTOR shall be responsible for and shall pay all taxes applicable or in any way relating to the Work.

Amend the first sentence of paragraph 6.20 of the General Conditions to read as follows:

SC-6.20 CONTRACTOR shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work.

and as so amended paragraph 6.20 remains in effect.

Add new paragraphs immediately after paragraph 6.24.2 of the General Conditions which are to read as follows:

SC-6.24.3 Technical submittals consisting of drawings and specifications involving architecture, professional engineering, land surveying or landscape architecture, as defined in A.R.S. Title 32, shall be prepared by or under the direct supervision of a registrant within the specific category involved.

SC-6.24.4 Submittals are not Contract Documents. Technical submittals are intended to demonstrate how CONTRACTOR intends to conform with the design concept of the Project and the information given in the Contract Documents.

SC-6.25.5 Progress schedule submittals are intended to show: (a) the priority and sequencing by which CONTRACTOR intends to execute the Work within the Contract Times, those sequences of Work imposed by the Contract Documents and any other scheduling related requirements of the Contract Documents; (b) how CONTRACTOR anticipates foreseeable events, site conditions and all other general, local and prevailing conditions which may in any manner affect cost, progress, schedule, performance and furnishing of the Work; (c) the means and methods chosen by CONTRACTOR; and (d) the actual timing and sequencing of completed Work.

Delete paragraphs 6.31, 6.32 and 6.33 of the General Conditions in their entirety and insert the following in their place;

SC-6.31 A provision (a) requiring CONTRACTOR to "defend indemnify and hold harmless OWNER and ENGINEER against all claims," or (b) covering claims against or liability of OWNER or ENGINEER, shall include not only OWNER and ENGINEER, but also their respective consultants, agents, directors, officers, shareholders and employees, and any combination of them, and OWNER'S instrumentalities issuing permits covering the Work. Use of the expression "against all claims" in any such provision, shall be construed as covering all claims, costs, losses and damages, whether direct, indirect or consequential (including, but not limited to charges of engineers, attorneys and others, and all court and any other dispute resolution costs).

SC-6.31.1 CONTRACTOR shall defend, indemnify and hold harmless OWNER and ENGINEER from and against all claims, as construed in paragraph SC-6.31, for bodily injury, sickness, disease or death, or injury to or destruction of property, including loss of use, arising out of, relating to, in any way connected with (a) the Work, (b) failure of CONTRACTOR or any Subcontractor to provide a safe workplace, (c) noncompliance with any law by CONTRACTOR, any Subcontractor or Supplier, or (d) failure of CONTRACTOR to obtain or renew the required policies of insurance and coverage. The indemnification obligation under this paragraph shall include even those claims caused in part by the negligence or other liability-creating conduct or omissions of OWNER or ENGINEER: provided, however, that CONTRACTOR shall not be required to indemnify OWNER or ENGINEER against liability for loss or damage resulting from the sole negligence of OWNER or ENGINEER. With respect to all such claims against OWNER or ENGINEER by any employee of CONTRACTOR, the indemnification obligation under this paragraph shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for CONTRACTOR, any Subcontractor or Supplier under workers' compensation, disability benefit or other employee benefit acts.

SC-6.32 CONTRACTOR'S obligations under paragraph SC-6.31.1 shall not extend to liability of ENGINEER resulting from (a) preparation or approval of designs, drawings, specifications, opinions, reports or surveys, or (b) giving or failure to give directions or instructions by ENGINEER but only if such giving or failure to give is the sole cause of the injury or damage.

SC-6.33 CONTRACTOR shall defend, indemnify and hold harmless OWNER and ENGINEER from and against all claims, as provided in paragraph SC-6.31, arising from failure, neglect or refusal of CONTRACTOR to perform faithfully the Work and other obligations under the Contract Documents.

Add a new paragraph immediately after paragraph 6.34 of the General Conditions which is to read as follows:

SC-6.35 QUALITY CONTROL

SC-6.35.1 CONTRACTOR shall establish a quality control program: (a) to insure sufficient supervision, examination, inspection and testing of all items of Work at appropriate intervals, including those of Subcontractors and Suppliers; and (b) to control conformance to the applicable Specifications and Drawings with respect to identified products, workmanship, construction, maintenance while idle, finish and functional performance. At minimum CONTRACTOR'S quality control program shall include checking, approval and coordination of submittal and oversight of all specified tests; and it shall specifically assign to responsible CONTRACTOR personnel the obligation to verify and inspect when complete all items of Work which cannot be later located or inspected without uncovering Work. CONTRACTOR shall accurately annotate data on the thus obtained record documents.

Add a new paragraph immediately after paragraph 6.34 of the General Conditions which is to read as follows:

SC-6.36 PROGRESS SCHEDULE SUBMITTAL

- SC-6.36.1 CONTRACTOR shall comply with all scheduling requirements in the General Requirements and within the times specified, shall submit to ENGINEER one reproducible mylar and four (4) copies of the original progress schedule and required revisions. Each progress schedule submittal shall bear CONTRACTOR'S stamp or written indication of approval, which shall constitute a representation to OWNER that CONTRACTOR has determined or verified all data in the submittal, and CONTRACTOR, all appropriate Subcontractors and Suppliers have reviewed and coordinated the sequences depicted with the requirements of the Work. All progress schedules shall be in accordance with Section 01310 of the General Requirements.
- SC-6.36.2 OWNER'S and ENGINEER'S review of the initial progress schedule may result in comments relating to: (a) compliance with Contract Times and sequences of Work imposed by the Contract Documents; (b) selection of Milestones and depicting of Milestone Times, as provided in the General Requirements; and (c) conformance with other provisions of the General Requirements and any other requirements of the Contract Documents which relate to the initial progress schedule and its impact on matters (or disputes) affecting Contract Price or Contract Time. OWNER'S and ENGINEER'S review of revisions 1, 2, etc. of the progress schedule shall be for the purpose of verifying whether CONTRACTOR'S planning and scheduling of remaining Work demonstrate continued compliance with Contract Times and sequences of Work imposed by the Contract Documents, and for the other purposes specified in the General Requirements.
- SC-6.36.3 Progress schedule review comments or objections may (but need not) extend to such issues as whether items of Work are omitted; activity durations are reasonable; the level of labor, materials and equipment is adequate; CONTRACTOR'S chosen means and methods are appropriate; and the sequences and timing of the Work are practical. Whether or not comments or objections made in reviews of progress schedules submittal, no review, comment or objection shall be effective or construed to create or impose on OWNER or ENGINEER any responsibility for timing, planning, scheduling or performance of the Work or for the accuracy of any progress schedule details, which shall remain the sole responsibility of CONTRACTOR (subject to paragraphs 12.5 and 12.6 of the Supplementary Conditions).
- SC-6.36.4 CONTRACTOR shall submit to ENGINEER preliminary and final schedules of values in accordance with Article 14 of the General Conditions and the General Requirements. In addition, CONTRACTOR shall submit the initial progress schedule with the first Application for Payment, in accordance with the General Requirements, and the schedule of Shop Drawing and sample submittal.

- SC-6.36.5 CONTRACTOR shall correct all schedules returned for revisions and resubmission, taking into account comments made by OWNER and ENGINEER, and shall resubmit any schedule if directed by ENGINEER. The final revision of the as-planned schedule shall be the progress schedule from which record schedules shall be developed and used by CONTRACTOR when making proposals or claims for adjustments in Contract Time or Contract Price.
- SC-6.36.6 CONTRACTOR shall prosecute the Work with the diligence necessary to ensure completion within the Contract Time. CONTRACTOR shall provide sufficient labor, materials and equipment (and shall promptly undertake all other appropriate action) to recover schedule, if necessary, to comply with all Contract Time requirements. Except as otherwise specifically permitted by the Contract Documents, all Work at the site shall be performed during normal working hours, unless CONTRACTOR has obtained OWNER'S or ENGINEER'S prior written consent. No Work shall be performed in light less than normal daylight unless adequate lighting has been provided by CONTRACTOR after securing all required approvals and permits.
- SC-6.36.7 Normal working hours, unless specifically disallowed by Laws or Regulations, shall be from 4:30 a.m. (or 5:30 a.m.) to 3:30 p.m. (or 4:30 p.m.), excluding non-business days and not exceeding fifty (50) hours per week. CONTRACTOR shall reimburse OWNER for all additional costs resulting from Work performed outside normal working hours, which shall include (a) premium time charges of ENGINEER and OWNER, and (b) added costs assessed against or incurred by OWNER which CONTRACTOR could reasonably foresee.
- SC-6.36.8 Early dates in the progress schedule shall be based proceeding with all or part of the Work exactly on the date when the corresponding Contract Time commences to run. Late dates shall be based on completing all or part of the Work exactly on the corresponding Contract Time, regardless of whether CONTRACTOR anticipates early completion. If sequences of Work are imposed by the Contract Documents, the progress schedule shall show in detail CONTRACTOR'S approach to conforming with those sequences.
- SC-6.36.9 Progress schedule revisions submitted in accordance with the General Requirements shall (a) adequately depict CONTRACTOR'S current approach to remaining Work, (b) report on progress of schedule recovery actions, and (c) facilitate evaluation of progress payments.

ARTICLE SC-7 - OTHER WORK

Add a new paragraph immediately after paragraph 7.4.3 of the General Conditions which is to read as follows:

SC-7.5 MUTUAL DUTIES AND RESPONSIBILITIES

- SC-7.5.1 If CONTRACTOR causes damage to the work or property of others, CONTRACTOR shall promptly attempt to settle with that party or otherwise resolve the claim. CONTRACTOR shall defend, indemnify and hold harmless OWNER and ENGINEER from and against all claims, as provided in paragraph 6.31 of the Supplementary Conditions, arising out of or resulting from damage by CONTRACTOR to the work or property of others or from CONTRACTOR'S performance of the Work.
- SC-7.5.2 If another party causes damage to the Work or property of CONTRACTOR, CONTRACTOR shall promptly attempt to settle with that party or otherwise resolve the claim. CONTRACTOR shall not begin any action against OWNER or ENGINEER, their consultants, agents or any of their directors, officers, shareholders, agents or employees, or permit any action against them to be maintained in CONTRACTOR'S name or for CONTRACTOR'S benefit any court or tribunal, which action seeks to impose liability or recover damages from OWNER or ENGINEER for such claim.
- SC-7.5.3 If CONTRACTOR becomes involved in settling or otherwise resolving claims with other persons performing work under the circumstances covered in paragraphs SC-7.5.1 or SC-7.5.2, or because of any other similar controversy, including damage to the Work or other work or a dispute about responsibility for clean-up or any other issue, neither OWNER, ENGINEER, nor any of their respective consultants, directors, officers, stockholders, employees or agents will be involved in any way in such actions (unless subpoenaed). If OWNER incurs costs contrary to the provisions of this Article, CONTRACTOR shall reimburse OWNER for those costs.

ARTICLE SC-8 - OWNER'S RESPONSIBILITIES

Delete paragraph 8.5 of the General Conditions in its entirety.

Delete paragraph 8.9 of the General Conditions in its entirety and insert the following in its place:

SC-8.9 LIMITATIONS ON OWNER'S RESPONSIBILITIES

- SC-8.9.1 OWNER is not responsible for CONTRACTOR'S means and methods, safety precautions and programs related to safety, or CONTRACTOR'S failure to perform the Work in accordance with the Contract Documents. OWNER is not responsible for any acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier or anyone for whose acts CONTRACTOR or any Subcontractor or Supplier may be liable.

SC-8.9.2 Neither (a) OWNER'S authority to review CONTRACTOR'S progress schedules (as set forth in Article 6), nor (b) OWNER'S decision to raise or not raise objections about progress schedule submittal, shall create or impose any duty or responsibility on OWNER to exercise any such authority or decision for the benefit of CONTRACTOR, any Subcontractor or Supplier or any other person.

SC-8.9.3 Neither (a) OWNER'S authority to review the required certificates and policies of insurance, nor (b) OWNER'S decision to object or not to object to the certificates or policies, shall create or impose any duty or responsibility on OWNER to exercise any such authority or decision for the benefit of CONTRACTOR, any Subcontractor or Supplier or any other person.

Delete paragraph 8.11 of the General Conditions in its entirety.

ARTICLE SC-9 - ENGINEER'S STATUS

Add a new paragraph immediately after paragraph 9.2 of the General Conditions which is to read as follows:

SC-9.2.1 If ENGINEER reasonably objects to any of CONTRACTOR'S personnel because they are unfit, unskilled, disorderly or counter-productive to the Work, CONTRACTOR shall promptly correct the problem and, if required, remove such personnel from the Work. CONTRACTOR shall defend, indemnify and hold OWNER and ENGINEER harmless from and against all claims, losses and expenses (including attorneys' fees and costs of defense and appeal, if any) arising from the enforcement of this clause.

Delete paragraph 9.5 of the General Conditions in its entirety and insert the following in its place:

SC-9.5 ENGINEER may cause delay which is reasonable under the circumstances or authorize minor variations in the Work consistent with the intent of the Contract Documents, if in ENGINEER'S judgment the delay or minor variations does not justify an adjustment in Contract Price or Contract Time. Minor variations may be accomplished by Field Order and shall be binding on CONTRACTOR, who shall proceed with the Work involved promptly, subject to the notice requirements in paragraph 9.4 of the General Conditions. The total accumulative delay under this provision shall be limited to ten (10) working days for every 365 days of the Contract Time.

ARTICLE SC-10 - CHANGES IN WORK

Add four new paragraphs immediately after paragraph 10.5 of the General Conditions which are to read as follows:

SC-10.6 No proposal or claim by CONTRACTOR based on changes in the Work, differing site conditions, quantity variations or any other matter shall be allowed if made after final payment.

- SC-10.7 A Change Order duly signed by OWNER and CONTRACTOR, without CONTRACTOR'S reservation of the right to claim additional adjustments in Contract Price or Contract Time, constitutes an all inclusive settlement for all related changes and for all related direct, indirect, supplemental, consequential and cumulative costs and delays; CONTRACTOR'S signature also constitutes a release and waiver of any and all rights to file a claim based on the changes covered by the Change Order.
- SC-10.8 A Change Order duly signed by OWNER and CONTRACTOR, with CONTRACTOR'S reservation of the right to claim additional adjustments, shall become final and binding on CONTRACTOR, without consideration of the reservation, unless CONTRACTOR delivers to OWNER written notice of claim within thirty (30) days after CONTRACTOR signs that Change Order.
- SC-10.9 OWNER, reserves the right to decrease adjustments made in any Change Order if, upon audit of CONTRACTOR'S records, the audit discloses CONTRACTOR provided false or inaccurate cost and pricing data in negotiating the Change Order. In enforcing this provision, the parties shall follow the procedures provided in FAR clause 52.214-17, found in 48 CFR Part 42.

ARTICLE SC-11 - CHANGE IN CONTRACT PRICE

Add a new paragraph immediately after paragraph 11.5.5 of the General Conditions which is to read as follows:

- SC-11.5.6 Acceleration costs to overcome suspension of Work or other delays which warrant extensions in Contract Time but exclude increases in Contract Price; escalation costs for any part of the Work not delayed beyond the late dates in the progress schedule; or delay costs not expressly allowed in this Article.

Delete subparagraphs 11.8.1 and 11.8.2 of the General Conditions, in their entirety and insert the following in their place:

- SC-11.8.1 The allowances include all costs to the CONTRACTOR of materials, equipment, taxes, unloading, handling on the site, labor, installation costs, overhead, profit, and other expenses required to furnish and install the Work described by the allowances.

Add a new paragraph immediately after paragraph 11.9 of the General Conditions which is to read as follows:

- SC-11.10 Notwithstanding anything to the contrary in the Contract Documents, CONTRACTOR assumes all risks of delays, disruptions and hindrances, and CONTRACTOR shall not make any claim for adjustment in Contract Price or for damages (or any other kind of compensation) for any delays, disruptions or hindrances from any cause whatsoever, including acts and omissions of OWNER or ENGINEER, except as provided in paragraphs SC-11.10.1 and SC-11.10.2

- SC-11.10.1 OWNER and CONTRACTOR shall negotiate for the recovery of damages related to expenses incurred by CONTRACTOR for delay if, but only if, (a) OWNER is responsible for the delay; and (b) the delay is unreasonable under the circumstances; and (c) the delay was not within the contemplation of OWNER and CONTRACTOR; and (d) CONTRACTOR gives OWNER notice and submits a claim in the manner and within the times specified in Article 12 of the Supplementary Conditions. CONTRACTOR shall make every effort to avoid the consequences and mitigate damages from any delay.
- SC-11.10.2 No delay resulting from the negotiations or resolution of changes in the Work, differing site conditions or variation in quantities shall be unreasonable under the circumstances unless the delay exceeds two (2) days plus the time required by CONTRACTOR to deliver a related proposal. Such delays are contemplated by CONTRACTOR and OWNER.

ARTICLE SC-12 - CHANGE OF CONTRACT TIMES

Delete paragraphs 12.1, 12.2, 12.3 and 12.4 of the General Conditions, in their entirety and insert the following in their place:

- SC-12.1 The Contract Times (or Milestones) may only be changed by a Change Order or a Written Amendment. Any claim for an adjustment of the Contract Times (or Milestones) shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than ten days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within thirty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. No claim for an adjustment in the Contract Times (or Milestones) will be valid if not submitted in accordance with the requirements of this paragraph SC-12.1.
- SC-12.2 All time limits stated in the Contract Documents are of the essence of the Agreement.
- SC-12.3 An extension in Contract Time will not be justified unless CONTRACTOR, through analysis of the Record Schedule, demonstrates delay in completing all or a specified part of the Work arising from unforeseeable causes beyond the control and without the fault or negligence of CONTRACTOR, and the delay is unreasonable under the circumstances. Examples of events which may justify an extension of Contract Time, subject to the requirements of the Contract Documents, include: acts of God, the public enemy, or OWNER in its sovereign capacity; acts of the U.S. Government, the State or another Political Subdivision; fires, floods, epidemics, quarantine restrictions; strikes, freight embargoes unusual weather, including storms, tornados, etc. (unusual in the sense of expectation, frequency or severity compared with the prior 5-year average; but ambient air temperature up to 125° F shall not be considered unusual); unusually severe shortages of

construction materials, considering all feasible sources of supply; newly discovered Underground Utilities; objection, for OWNER'S convenience, to a nominated Subcontractor; an emergency; incidents with archaeological features suspension of Work; changes in the Work, differing site conditions or variation in quantities of Unit Price Work. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of CONTRACTOR.

- SC-12.4 If CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) for unforeseeable causes beyond the control of both OWNER and CONTRACTOR, an extension of the Contract Times (or Milestones) in an amount equal to the time lost due to such delay shall be CONTRACTOR'S sole and exclusive remedy for the delay. In no event shall OWNER be liable to CONTRACTOR, any Subcontractor, any Supplier, any other person or organization, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from (a) delays caused by or within the control of CONTRACTOR, or (b) delays beyond the control of both parties as specified in paragraph SC-12.3.

Add two new paragraphs immediately after paragraph 12.4 of the General Conditions which are to read as follows:

- SC-12.5 No delay in completing the Work, or any specified part of the Work, for which the OWNER is responsible, shall be unreasonable under the circumstances or justify an increase in Contract Time or Contract Price, unless, and then only to the extent that, the delay extends completion of the Work, or specified part of the Work, beyond the corresponding Contract Time. Notwithstanding the first sentence of this paragraph SC-12.5, if the progress schedule depicts Total Float whether expressly disclosed or implied by the use of float suppression techniques, the Total Float is owned jointly by CONTRACTOR and OWNER with 25% of the Total Float belonging to OWNER and 75% belonging to CONTRACTOR.

- SC-12.6 CONTRACTOR'S use of float suppression techniques (including but not limited to preferential sequencing caused by late starts of follow-up trades, unreasonably small crews, etc., extended durations, imposed dates, or scheduling Work not required for a Contract Time as required Work) is a material breach of the Agreement and bars CONTRACTOR from obtaining changes in either Contract Price or Contract Time.

ARTICLE SC-13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

Delete paragraph 13.10 of the General Conditions in its entirety and insert the following in its place:

- SC-13.10 If Work is defective, or CONTRACTOR fails to provide sufficient, skilled workers or suitable materials or equipment, or otherwise fails to perform Work in compliance with the Contract Documents, OWNER may order CONTRACTOR to stop all or part of the Work until any problem is corrected. CONTRACTOR shall (a) remain responsible for recovering schedule, (b) not be entitled to any increase in Contract Time or Contract Price, and (c) reimburse OWNER for all direct, indirect or consequential costs incurred by OWNER resulting from

any such stop Work order. OWNER'S authority to stop all or part of the Work shall not create or impose any duty or responsibility on OWNER to exercise any such authority for the benefit of CONTRACTOR or any other person.

Add a new paragraph immediately after paragraph 13.12.3. of the General Conditions which is to read as follows:

SC-13.12.4 The specified warranties and guarantees and CONTRACTOR'S obligations for correction of Work specified in this Article are in addition to, and not in limitation of, any other specific remedies provided in the Contract Documents or by Law. Nothing contained in this paragraph or this Article shall be construed as establishing a period of limitations for, or limiting the obligations of, CONTRACTOR under the Contract Documents.

ARTICLE SC-14 - PAYMENTS TO CONTRACTOR AND COMPLETION

Delete paragraph 14.4 of the General Conditions in its entirety and insert the following in its place:

SC-14.4 ENGINEER will, within seven (7) days after receipt of each Application for Payment, either certify, approve and present the Application to OWNER, or return the Application to CONTRACTOR indicating in writing ENGINEER'S reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application. Fourteen (14) days after presentation of the Application for Payment to OWNER, the amount recommended will (subject to the provisions of the last sentence of paragraph 14.7 of the General Conditions) become due and when due will be paid OWNER to CONTRACTOR. All payments will be available to the CONTRACTOR from the Finance Department, Accounts Division, Customer Service-Accounts Payable Section, Room 502, 125 West Washington, Phoenix, Arizona, 85003 on the fourteenth (14th) day, unless CONTRACTOR arranges with the Finance Department to mail payments. Mailed payments shall be deemed paid on the date deposited in the mail as established by the U.S. Postal Service postmark. If payment is not made when due, simple interest, as provided in ARS 34-221(H) as amended, shall be paid by OWNER to CONTRACTOR (excluding any Fee to CONTRACTOR).

Delete paragraphs 14.12, 14.13, 14.14, and 14.15 of the General Conditions in their entirety and insert the following in their place:

SC-14.12 FINAL PAYMENT AND ACCEPTANCE

SC-14.12.1 Upon written notice from CONTRACTOR that CONTRACTOR considers the entire Work, or a specified part of the Work for which final acceptance is specified in the Contract Documents, complete and ready for final payment, ENGINEER will make a corresponding final inspection with OWNER and CONTRACTOR, and will notify CONTRACTOR in writing of all instances of incomplete or defective Work revealed by the final inspection. CONTRACTOR shall immediately undertake all necessary measures to correct the deficiencies.

- SC-14.12.2 CONTRACTOR may apply for final payment and acceptance (a) after completing correction of the deficiencies to satisfaction of ENGINEER and delivering all maintenance and operation instructions, warranties and guarantees, certificates of inspection, revised record documents (reflecting revisions made after Substantial Completion), required Bonds and all other required documents, and (b) after ENGINEER has consented to review the Work for final acceptance.
- SC-14.12.3 The final Application for Payment and acceptance shall enclose (a) evidence of insurance (including, but not limited to completed operations insurance) and an affidavit certifying that the insurance coverage will not be canceled, adversely changed or renewal refused except as provided under paragraph SC-5.5, (b) AIA document G707 certifying the surety agrees that final payment shall not relieve the surety of any of its obligations under the Performance and Payments Bonds, (c) a "CONTRACTOR'S Affidavit Re Settlement of Claims" (available from OWNER) and complete and legally effective releases or waivers acceptable to OWNER in the full amount of the Contract Price, or if any Subcontractor or Supplier refuses or fails to furnish such release or waiver, a Bond or other security acceptable to OWNER to indemnify OWNER against any payment claim, and (d) a list of all pending property damage and personal injury or death insurance claims arising out of or resulting from the Work, identifying the claimant and the nature of the claim.
- SC-14.13 If based on ENGINEER'S (a) observation of the Work, (b) final inspection, and (c) review of the final Application for Payment and acceptance, ENGINEER is satisfied that the Work, or a part of the Work for which separate final acceptance is specified in the Contract Documents, has been completed and CONTRACTOR'S other obligations under the Contract Documents have been fulfilled, ENGINEER will, within thirty (30) days after receipt of the final application, furnish to OWNER and CONTRACTOR the ENGINEER'S recommendation of final payment and acceptance. If ENGINEER is not satisfied, ENGINEER will return that Final Application for Payment to CONTRACTOR, indicating in writing the reasons for not recommending final acceptance, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application.
- SC-14.13.1 If OWNER concurs with ENGINEER'S recommendation of final payment and acceptance, OWNER will, within fifteen (15) days, file a written notice of completion and acceptance of the Work, or separable part of the Work for which final acceptance is specified, and notify CONTRACTOR and ENGINEER of OWNER'S acceptance. Within sixty (60) days after filing such notice, OWNER shall pay to CONTRACTOR the balance of the Contract Price, subject to any withholdings and those other provisions governing final payment specified in the Agreement.
- SC-14.13.2 If OWNER does not concur with ENGINEER'S determination, OWNER will return the application to CONTRACTOR, through ENGINEER indicating in writing the reasons for refusing final payment and acceptance. CONTRACTOR shall promptly make the necessary corrections and resubmit the Application to ENGINEER. OWNER'S written determination shall bind CONTRACTOR, unless CONTRACTOR delivers to OWNER through ENGINEER written notice of a claim within thirty (30) days after receipt of that determination.

SC-14.13.3 If recommended by ENGINEER, OWNER may, upon receipt of CONTRACTOR'S final Application for Payment and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted, if final completion of the Work is significantly delayed through no fault of CONTRACTOR. If the balance to be held by OWNER for Work not fully completed or corrected is less than the retainage on that Work, the affidavits specified in paragraph SC-14.12.3 and the release or waiver, or Bonds, shall be furnished as required and submitted by CONTRACTOR. Payment of the balance due shall be made under the provisions for final payment, but shall not constitute a waiver of claims.

SC-14.13.4 OWNER shall pay with reasonable promptness any amounts deducted from the final payment, upon resolution of the claims for which the amounts were withheld.

SC-14.15 WAIVER OF CLAIMS:

SC-14.15.1 Final payment does not constitute a waiver by OWNER of any rights relating to CONTRACTOR'S continuing obligations under the Contract Documents, nor does it constitute a waiver of any claims by OWNER against CONTRACTOR arising from unaudited payments, defective Work appearing after final inspection or failure by CONTRACTOR to comply with the Contract Documents or the terms of any special warranties or guarantees provided by the Contract Documents or by Laws or Regulations.

SC-14.15.2 Final payment constitutes a waiver of all claims by CONTRACTOR against OWNER other than those claims previously filed in writing with OWNER on a timely basis and still unsettled.

ARTICLE SC-15 - SUSPENSION OF WORK AND TERMINATION

Amend the third (last) sentence and add language at the end of paragraph 15.1 of the General Conditions to read as follows:

SC-15.1 CONTRACTOR shall be allowed an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if CONTRACTOR makes an approved claim therefor as provided in Articles 11 and 12 of the General Conditions, except that CONTRACTOR shall not be entitled to recover profit for suspensions of Work. No adjustment in Contract Price will be made for delays in Work which would have been deferred, stopped, slowed, suspended, interrupted or extended due to any other cause.

and as so amended paragraph 15.1 remains in effect.

Add a new paragraph after paragraph 15.4.4 of the General Conditions which is to read as follows:

- SC-15.4.5 If it is determined, after notice of termination of the services of CONTRACTOR for any of the causes listed in paragraph 15.2 of the General Conditions that CONTRACTOR was not in default, the termination shall be deemed to have been for the convenience of OWNER. In such event CONTRACTOR may recover payment in accordance with paragraph 15.4 of the General Conditions.

ARTICLE SC-16 - DISPUTE RESOLUTION

Delete Article 16 of the General Conditions in its entirety and insert the following in its place:

SC-16.1 CLAIMS UNDER THIS ARTICLE

- SC-16.1.1 All claims, counterclaims, disputes and other matters in question between OWNER and CONTRACTOR arising out of or relating to the Contract documents or their breach shall be handled and resolved as provided in this Article 16.
- SC-16.1.2 A claim means a written demand or assertion by OWNER or CONTRACTOR seeking an adjustment in Contract Price or Contract Time (or any other relief arising out of or relating to the Contract Documents) which may become a claim after a determination by ENGINEER or OWNER under the appropriate provision(s) of the Contract Documents.
- SC-16.1.3 Claims for which a provision of the Contract Documents specifically authorizes or excludes the relief sought by the claimant shall be handled and resolved in accordance with the applicable provision.
- SC-16.1.4 No claim shall be valid unless it is based on written notice (stating the nature of the claim) delivered by the party making it to the other party promptly, but in no event later than thirty (30) days after ENGINEER'S or OWNER'S determination giving rise to the claim. The claim submittal with all supporting data shall be delivered within sixty (60) days after determination (unless ENGINEER allows an extension). The burden of proving a claim is on the party asserting it.

Notwithstanding anything to the contrary in this Article, OWNER shall not be required to deliver notice of any claim for liquidated damages or involving retention (or securities in lieu) until sixty (60) days after final acceptance.

- SC-16.1.5 CONTRACTOR claims shall be submitted to ENGINEER for written decision by OWNER. OWNER claims shall be submitted to CONTRACTOR and ENGINEER for a written decision by ENGINEER.

SC-16.2 CERTIFICATION OF CONTRACTOR CLAIMS

SC-16.2.1 For all CONTRACTOR claims alleging an increase in Contract Price or Contract Time, CONTRACTOR shall submit an affidavit executed by an officer or partner in charge at CONTRACTOR'S plant or location involved, or by a responsible senior officer or general or managing partner of CONTRACTOR, certifying that the claim is made in good faith; the amount claimed accurately reflects the adjustments in Contract Price or Contract Time for which CONTRACTOR believes OWNER is liable; the claim covers all costs and delays to which CONTRACTOR is entitled from the Occurrence of the claimed event; and that supporting cost and pricing data are current, accurate, complete and represent CONTRACTOR'S best knowledge and believe.

SC-16.3 DETERMINATION ON A CLAIM

SC-16.3.1 For CONTRACTOR claims under \$50,000.00, OWNER will, if requested in writing by CONTRACTOR, render a decision within sixty (60) days of the request. For CONTRACTOR claims over \$50,000.00, OWNER will decide the claim or notify CONTRACTOR when the decision will be made within sixty (60) days of submission of all supporting data. OWNER'S decision on all CONTRACTOR claims shall be final and binding on CONTRACTOR unless CONTRACTOR gives notice of intent to file suit in a court of this State within thirty (30) days after receipt of OWNER'S decision. Within the same period of time and if both parties agree, in writing, to arbitration, CONTRACTOR may demand arbitration of any CONTRACTOR claim; however, if CONTRACTOR fails to demand arbitration within thirty (30) days after receipt of OWNER'S decision on a claim, the decision will be final and binding on CONTRACTOR. Neither party may compel arbitration of any claim.

SC-16.3.2 For OWNER claims under \$50,000.00, ENGINEER will, if requested in writing by OWNER, render a decision within sixty (60) days of the request. For OWNER claims over \$50,000.00, ENGINEER will decide the claim or notify OWNER when the decision will be made within sixty (60) days of submission. ENGINEER'S decision shall be final and binding on OWNER and CONTRACTOR unless either party files suit within thirty (30) days after receipt of the decision. Within the same period of time, and if both parties agree in writing to arbitration, OWNER or CONTRACTOR may demand arbitration of any OWNER claim; however, if OWNER or CONTRACTOR fails to demand arbitration within thirty (30) days after receipt of ENGINEER'S decision on a claim, the decision will be final and binding on the parties. Neither party may compel arbitration of any claim.

SC-16.3.3 Notwithstanding the assertion of any claim, and pending final resolution of all claims, CONTRACTOR shall proceed diligently with the Work and comply with any decision of OWNER or ENGINEER.

SC-16.3.4 The prevailing party in any proceeding under this Article 16 shall recover, as part of its judgment, simple interest at the rate provided in the Agreement or by Laws and Regulations starting on the sixtieth (60th) day after the claim submittal was received by the other party, and such reasonable fees and charges of attorneys, engineers and others as may be fixed by a judge of the court.

SC-16.3.5 After settlement or final adjudication of any claim under this Article 16 if payment by CONTRACTOR is not made to OWNER upon demand, OWNER may offset the appropriate amounts against (a) payments due to CONTRACTOR under any other contract between OWNER and CONTRACTOR, or (b) any amounts for which OWNER may be obligated to CONTRACTOR in any capacity. Alternatively, OWNER may demand payment of the claim from the surety, which shall pay the claims promptly.

SC-16.4 VENUE: SERVICE OF PROCESS

SC-16.4.1 CONTRACTOR consents and submits to jurisdiction and venue of, and will not commence any proceeding elsewhere than, the Superior Court of Arizona in and for Maricopa County only, regardless of residence or domicile, for any action at law or suit in equity arising out of or relating to the bidding, award, performance or completion of the Work; payment for Work performed; termination; or any other claim based on the Contract Documents. CONTRACTOR consents and submits to service of process at the address specified in the Agreement. If the parties agree in writing to arbitration, all proceedings shall be conducted in Phoenix, Arizona.

SC-16.4.2 Paragraph SC-16.4.1 shall apply to all Subagreements and all agreements between CONTRACTOR and CONTRACTOR'S sureties and insurers, altering that paragraph only to identify properly the contracting parties.

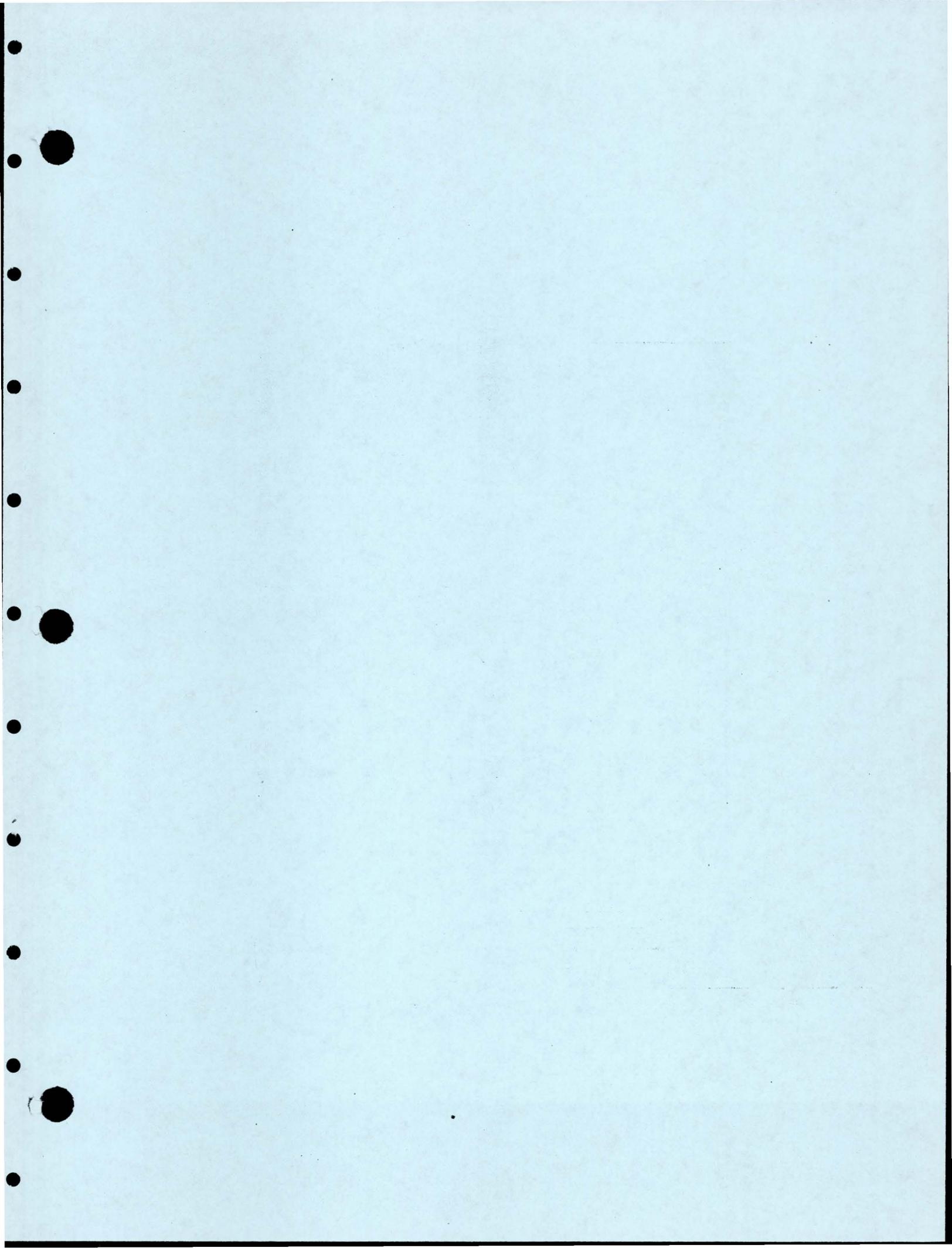
Delete Exhibit GC-A to General Conditions (Dispute Resolution Agreement) in its entirety.

ARTICLE SC-17 - MISCELLANEOUS

Add a new paragraph immediately after paragraph 17.2.2 of the General Conditions, which is to read as follows:

SC-17.2.3 When used in the Contract Documents the terms Days, calendar Days or other like terms shall mean consecutive calendar days (every day shown on the calendar including Saturdays, Sundays, and holidays).

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GENERAL REQUIREMENTS

Division 1

SECTION 01010

SUMMARY OF WORK

1.1 LOCATION AND DESCRIPTION OF WORK

- A. The Work is located on the site of the existing Squaw Peak Water Treatment Plant, located South of Lincoln Drive and West of 24th Street in the City of Phoenix, Arizona.
- B. The Work consists of three parts which are to be constructed as one project - Squaw Peak Water Treatment Plant - General Plant Improvements. The three parts are: Part A - Modifications and Upgrades; Part B - Preliminary Treatment Facilities; and Part C - Solids Handling Facility. The three parts include the following documents:

Volume 1	Bid Documents (Division 0) and Specification Division 1;
Volume 2	Part A Specification Divisions 2-10;
Volume 3	Part A Specification Divisions 11-17;
Volume 4	Part B Specification Divisions 2-18 and Standard Details;
Volume 5	Part C Specification Divisions 1-17;
Volume 6	Directory Drawings and Part A Drawings; and
Volume 7	Part B and Part C Drawings.

Unless otherwise noted, Part A Technical Specifications shall apply to the Part A Drawings; Part B Specifications to the Part B Drawings; and the Part C Specifications to the Part C Drawings.

- C. The plans and specifications for the Work include the following:
1. Directory Drawings
 2. Part A - Modifications and Upgrades:
 - a. Raw Water Pump Station
 - b. Flocculation Basin Modifications
 - c. Sedimentation Basin Improvements
 - d. Plant II Filter Gallery Improvements
 - e. Backwash Pump Station Improvements
 - f. Lincoln/Sunnyslope Pump Station Improvements
 - g. Chemical Feed System
 - h. Pump Mixer
 - i. Chemical Building
 - j. Bulk Chemical Storage
 - k. Plant I Chemical Piping Modifications
 - l. Plant II Chemical Piping Modifications
 - m. Maintenance Building Renovations/Upgrades
 - n. Administration Building Renovations/Upgrades
 - o. Main Switchgear Building Renovations/Upgrades
 - p. Sitework; Demolition, Grading and Paving
 - q. Utilities; Piping and Electrical
 - r. Instrumentation and Controls
 - s. Inlet Channel Improvements
 - t. Filter Concrete Repair
 - u. Washwater Tank Improvements

- v. All other Work Shown or Specified
- 3. Part B - Preliminary Treatment Facilities
 - a. Inlet Structure
 - b. Bar Screens
 - c. Raw Water Meter Vault
 - d. Premixer
 - e. Presedimentation Basin
 - f. Presedimentation Sludge Pump station
 - g. Sitework; Demolition, Grading and Paving
 - h. Utilities; Piping and Electrical
 - i. Instrumentation and Controls
 - j. Inlet Channel Improvements
 - k. Filter Concrete Repair
 - l. Washwater Tank Improvements
 - m. All other Work Shown or Specified
- 4. Part C - Solids Handling Facility:
 - a. Sludge Blending and Grit Removal
 - b. Metering Vault
 - c. Plant I Sedimentation Basin Modification
 - d. Plant II Sedimentation Basin Modification
 - e. Flow Splitting Structure
 - f. Sludge Gravity Thickeners
 - g. Thickened Sludge Pumping Station
 - h. Thickened Sludge Storage Tanks
 - i. Sludge Dewatering Building
 - j. Sludge Staging Area
 - k. Recoverable Used Water Pumping station
 - l. Flow Equalization Basin
 - m. Sitework; Demolition, Grading and Paving
 - n. Utilities; Piping and Electrical
 - o. Instrumentation and Controls
 - p. Inlet Channel Improvements
 - q. Filter Concrete Repair
 - r. Washwater Tank Improvements
 - s. All other Work Shown or Specified

1.2 CONTRACTS

- A. The Work shall be constructed under one prime Contract.

1.3 WORK DONE BY OTHERS

- A. Throughout Parts A, B, and C of the Contract Documents, reference is made to construction or work "By Others". Construction or work "By Others" shall be defined to mean "Work Included in this Contract, See Appropriate Portions of the Directory Drawings and Parts A, B, or C of this Contract for continuation."
- B. OWNER will perform the following work:
 - 1. Installation of all Maintenance Building Shop Equipment and tools; relocation of furniture and computers; relocation of radio communications equipment; and, relocation of laboratory equipment.
 - 2. Relocation of Customer Services Parking Area.

1.4 CENTRIFUGE EQUIPMENT

- A. The Sludge Dewatering Building included in the Part C documents is designed to house centrifuge equipment. Neither procurement, nor installation of said centrifuge equipment is part of this Contract.

1.5 SEQUENCE AND PROGRESS OF WORK

- A. The CONTRACTOR shall submit a Progress Schedule covering the entire Work in accordance with Section 01310 of the Contract Documents.
- B. The CONTRACTOR shall incorporate the "Construction Milestone Diagram" shown on the plans, and the requirements of Specification Sections 01015 Schedule of Completion, and 01020 Maintenance of Plant Operations into his Construction Schedule. The CONTRACTOR'S schedule may use a different sequence from that shown or specified if techniques and methods known to the CONTRACTOR will result in cost and time savings to the OWNER and still achieve the required objective. The ENGINEER'S determination on the acceptability of any alternative sequence from that shown or specified shall be final.

1.6 MAINTENANCE OF PLANT OPERATIONS

- A. See Section 01020, Maintenance of Plant Operations.

1.7 CONTRACTOR USE OF PREMISES

- A. CONTRACTOR shall coordinate use of the premises, for his storage and the operations of his workmen, with OWNER and utility service companies.
- B. The CONTRACTOR must operate entirely within the space allowed to him. The site plan on the Contract Drawings defines the area allocated to the CONTRACTOR.
- C. The CONTRACTOR shall be solely responsible for obtaining and paying all costs in connection with any additional work area, storage sites, access to the site or temporary right-of-way which may be required for proper completion of the Work.
- D. It shall be understood that responsibility for protection and safe-keeping of equipment and materials on or near the site will be entirely that of the CONTRACTOR and that no claim shall be made against the OWNER or his authorized representatives by reason of any act. It shall be further understood that should any occasion arise necessitating access to the sites occupied by these stored materials or equipment, the ENGINEER shall direct the CONTRACTOR owning or responsible for the stored materials and equipment to immediately move the same. No materials or equipment may be placed upon the property of the OWNER other than the designated areas on the Drawings unless the ENGINEER has agreed to the location contemplated by the CONTRACTOR to be used for storage.

1.8 ACCESS TO AND FROM THE SITE

- A. CONTRACTOR'S personnel shall ingress and egress the plant site from the main plant entrance on 24th Street. Other plant entrances, such as the west plant entrance on Maryland Avenue shall not be utilized by the CONTRACTOR.

+ + END OF SECTION + +

SECTION 01015
SCHEDULE OF COMPLETION

1.1 GENERAL

- A. The CONTRACTOR shall commence the Work promptly upon the date established in the Notice to Proceed and shall pursue it to completion in accordance with the Construction Milestone Diagram and Schedules of Completion.
- B. The Construction Milestone Diagram identifies selected project components only and is not intended to identify all project Work or constraints, interrelationships, or sequentially required Work. The elements shown are intended to outline Milestone and certain order-of-precedence relationships for key events.
- C. CONTRACTOR is advised that completion of certain activities are directly related to scheduled Treatment Plant and Arizona Canal Shutdowns. Shutdown schedule is included in Section 01020, Maintenance of Plant Operations. All Plant and Arizona Canal Shutdowns are identified in Section 01020.
- D. Contract times, as well as liquidated damages for failure to Substantially Complete the Schedules of Completion specified in this Section, are defined in Article 3 of the Agreement (00500).

1.2 SCHEDULES OF COMPLETION

- A. The Schedules of Completion for the Squaw Peak Water Treatment Plant, General Plant Improvements Project shall be as follows:
 - 1. Schedule R. The Work comprising Schedule R consists of all Work to complete the Part C - Solids Handling Facility.
 - 2. Schedule S. The Work comprising Schedule S consists of all Work included in the Part C Documents to complete the new sanitary sewer between the second manhole upstream of the proposed connection to the customer service building (MH C21-11) and the existing downstream sewers.
 - 3. Schedule T. The Work comprising Schedule T consists of all Work included in the Part A Documents to complete the 48-inch discharge header tie-in from the new Raw Water Pump Station to the existing pipeline to Plant I.
 - 4. Schedule W. The Work comprising Schedule W consists of all Work included in the Part A Documents to complete the new Chemical Handling Facilities, plus completion of the Owner's Temporary Facilities. This shall include the Utility Water Meter Vault shown in the Part C Documents, as well as the Utility Water Piping in the Part A and Part C Documents necessary to supply process and fire flow water to the Chemical Building, Administration Building and Maintenance Building.

The new Chemical Handling Facilities shall consist of all process/ mechanical, civil, structural, HVAC, plumbing, fire protection, architectural, electrical and instrumentation work associated with facilities schematically shown on the Chemical Feed System Schematics included in the Part A Drawings. This shall include all elements of the Pump Mixer, Chemical Building, Bulk Storage, Chemical Piping Modifications, all associated yard piping, Chlorine Emergency Scrubber, and new Emergency Generator Set for a complete and operable system. This shall include the final paving and grading Work referenced on Directory Drawing G-5, Note 8.

5. Schedule X. The Work comprising Schedule X consists of all Work included in the Part A Documents to complete the Administration Building, excluding Office Number 101 and Corridor 102.
 6. Schedule Y. The Work comprising Schedule Y consists of all Work not included in the other completion schedules.
 7. Schedule Z. The Work comprising Schedule Z consists of all Work to complete the Part B - Preliminary Treatment Facilities, plus the following elements of the Part A Documents:
 - a. The new Raw Water Pump Station including the discharge header tie-in to the Plant II pipeline,
 - b. The new Main Switchgear Building,
 - c. Demolition of the existing Plant Switchgear,
 - d. The Backwash Pump Station Improvements,
 - e. The Filter Gallery Improvements,
 - f. The Flocculation Basin Improvements,
 - g. The Sedimentation Basin Improvements, and
 - h. The Part A Documents paving and grading south of the Arizona Canal Diversion Channel.
- B. The order-of-precedence shown in the Construction Milestone Diagram shall be a part of the Schedules of Completion unless otherwise approved by the ENGINEER.

+ + END OF SECTION + +

SECTION 01020

MAINTENANCE OF PLANT OPERATIONS

1.1 GENERAL

- A. The Squaw Peak Water Treatment Plant is required to produce continuous and adequate treatment and disinfection of the raw water. The intent of this Section is to have the CONTRACTOR perform his Work in such a manner that continuous, uninterrupted treatment of the raw water, and all essential Plant services and facilities are maintained operational throughout the construction period.
- B. Except for the scheduled shutdowns specified in this Section, the existing plant will be maintained in continuous satisfactory operation by the OWNER during the entire construction period. Work shall be so scheduled and conducted by the CONTRACTOR such that it will not impede any treatment process, create potential hazards to operating equipment and Plant Personnel, reduce the quality of the finished water or other nuisances. In performing the Work shown and specified, the CONTRACTOR shall plan and schedule the Work to meet both constraints outlined in this Section and plant operating requirements.
- C. Work not specifically covered in Section 01010 or in the following paragraphs may, in general, be done at anytime during the Contract period, subject to the operating requirements outlined in this Section. All references to days in this Section are consecutive calendar days.
- D. The CONTRACTOR is advised that Work in multiple areas of the Plant must be performed simultaneously in order to complete the entire scope of Contract Work with a minimum of disruptions to Plant operations during the normal operating period.
- E. The CONTRACTOR has the option of providing additional temporary facilities that can eliminate a constraint, provided it is done without additional cost to the OWNER, and provided that all requirements of these Specifications are fulfilled.
- F. CONTRACTOR shall not shut off or disconnect any operating system of the Plant. All Plant equipment operations and shutdowns shall be executed by the OWNER.
- G. This Section of the Specifications contains references to equipment, piping, material and appurtenances to be removed or reinstalled. CONTRACTOR shall also refer to the Drawings, to Section 02050, and other applicable Sections, for definition of the equipment, piping, material and appurtenances to be removed and turned over to the OWNER and stored on site, or to become the property of the CONTRACTOR and removed from the site.
- H. CONTRACTOR shall refer to Section 01015 Schedule of Completion for additional requirements.

- I. In order to maintain continuous plant operation during construction, a Maintenance of Plant Operations (MOPO) Schedule shall be provided by the CONTRACTOR prior to commencing the work. The schedule shall incorporate the provisions of the Construction Milestone Diagram and shall outline the order of Work to be completed and timing in order to maintain operation of the Plant. The Progress Schedule required in Section 01310 shall be used to meet the MOPO Schedule requirement. The schedule shall comply with requirements of Section 01015, Schedule of Completion.

1.2 GENERAL CONSTRAINTS

- A. Additional articles in this Section which follow, specify the sequence and shutdown duration (where applicable) for Plants I and II, plus the Arizona Canal. The operational status of new or existing units, other than designated units specifically described in the plans and specifications, shall not be interrupted by CONTRACTOR except during the specified time periods. New units may only be used after the specified testing is completed and the units are accepted for use by the ENGINEER.
- B. The following constraints shall be applied to all equipment and appurtenant utility systems on the Plant site.
 1. Load limits on Access Roads: Existing and new underground facilities such as electrical duct banks, pipelines, etc., in, under and crossing plant roads have been designed for a maximum wheel load of AASHTO H-20. CONTRACTOR shall not exceed this weight limit.
 2. Access to Plant Site: An unobstructed traffic route through all Plant gates must be maintained at all times.
 3. Personnel Access: Treatment Plant Personnel must have access to all areas which remain in operation throughout the construction period.
 4. Potable Water System: The existing potable water system shall be kept in operation at all times.
 5. Plumbing Facilities: Sanitary facilities in the existing structures shall be operational at all times for Plant operating personnel. All other building plumbing systems, such as roof and floor drains, pumping, etc., shall be maintained for all structures.
 6. Storm drainage: Storm drainage on the site shall be operational at all times.
 7. Building Heating and Ventilating: In the CONTRACTOR'S Work areas and areas affected by the CONTRACTOR'S operations, building heating and ventilating shall be both provided and maintained in structures including pipe galleries. The temperatures to be maintained in any area occupied by Plant Personnel such as offices, lunchrooms, locker rooms, toilet rooms, etc., shall be at least 65 F. The temperatures to be maintained in all other interior Plant areas, whether new, existing or temporary, shall be maintained at a minimum of 55°F.
 8. Power, Light and Communication Systems: Electric power, lighting service and communication systems shall be maintained in uninterrupted operation in all areas.

9. Sump Pumps and Sumps: All existing sumps shall be maintained in an operable condition with either existing pumps or temporary pumps provided by the CONTRACTOR. Interim piping, power and controls shall be provided by the CONTRACTOR as required by the construction sequence and as directed by the ENGINEER in the field.
10. Seal and Service Water Piping: A supply of service and seal water and the necessary connections to existing equipment shall be maintained during construction. Interim piping shall be provided by the CONTRACTOR as required.
11. Draining Process Pipes and Conduits:
 - a. Unless otherwise specified, the contents of pipes and conduits undergoing modifications shall be transferred to the Plant drain system using hoses, piping, or pumps, if hydraulic conditions so require them.
 - b. If a drain is not available on the pipe to be drained, then a wet tap shall be made by the CONTRACTOR using a tapping saddle and valve approved by the ENGINEER. No uncontrolled spillage of a pipe's contents will be allowed.
12. Temporary Partitions and Enclosures; CONTRACTOR shall provide temporary partitions and enclosures as shown and necessary to maintain dust-free, heated and ventilated spaces in all areas which are adjacent to his Work and which must be kept operational by the Plant.
13. Dead End Valves or Pipe: CONTRACTOR shall provide blind flanges on all valves or pipes which dead-end a line on a temporary or permanent basis. Blind flanges shall be braced and blocked as required or as directed by the ENGINEER in the field.

1.3 SHUTDOWNS

A. Plant Shutdowns:

1. Total shutdown shall be defined as the cessation of water production from Plant I, or Plant II, or both. Partial shutdown shall be defined as a portion of the normal operation of a Plant unit that has to be suspended, or taken out of service, in order to perform the specified Work. Total shutdowns are required for certain work identified on the drawings, or in the specifications. The schedule for total shutdowns during the construction period is specified in Article 1.5. Partial shutdowns are required for other work wherein one unit of multiple units must be taken out-of-service. These partial shutdowns involve scheduling by CONTRACTOR.

For each shutdown, the CONTRACTOR shall compile an inventory of labor and materials required to perform tasks, an estimate of the time required and written description of steps required to complete all tasks. The inventory, the estimate and written procedures shall be submitted to the OWNER for review 60 calendar days prior to the proposed start date of the shutdown. The CONTRACTOR shall also request in writing, from OWNER, approval for each shutdown, even though it may be prescheduled, a minimum of fourteen calendar days prior to the proposed shutdown date. No partial shutdown shall be initiated until the

- inventory of materials is verified by the ENGINEER on site at least one week prior to the proposed start date.
2. The Scheduled Treatment Plant Shutdowns during the period of the CONTRACTOR'S work will be as shown in Table 01020-1. All work requiring the plant to be out-of-service shall be performed during the Scheduled Shutdowns shown. It should be noted plant staff will continue to perform administrative and maintenance functions during shutdowns. Paradise Valley and Lincoln/Sunnyslope Pump Stations, as well as the finished water reservoirs will also continue to be in-service during plant shutdown periods.

TABLE 01020-1

SCHEDULE OF TREATMENT PLANT CAPACITY AND SHUTDOWNS DURING CONSTRUCTION PERIOD		
PERIOD	PLANT I	PLANT II
Notice-To-Proceed through Oct 31, 1992	ON-LINE 30 MGD	ON-LINE 80 MGD
Nov 1, 1992 through Jan 31, 1993	SHUTDOWN	SHUTDOWN
Feb 1, 1993 through Oct 31, 1993	ON-LINE 30 MGD	ON-LINE 80 MGD
Nov 1, 1993 through Mar 31, 1994	SHUTDOWN	SHUTDOWN
Apr 1, 1994 through Apr 30, 1994	SHUTDOWN	ON-LINE 110 MGD
May 1, 1994 through Nov 30, 1994	ON-LINE 30 MGD	ON-LINE 110 MGD
Dec 1, 1994 through Dec 31, 1994	SHUTDOWN	SHUTDOWN
Jan 1, 1995 through Nov 30, 1995	ON-LINE 30 MGD	ON-LINE 110 MGD

3. The Work required herein and any other Work required by the OWNER which may interrupt the normal Plant operations shall be accomplished at such times that will be convenient to the OWNER.

4. CONTRACTOR shall also have on hand located in close proximity to the Work area, all tools, equipment and materials, both temporary and permanent, necessary to complete each Work category without interruption. Adequate numbers of personnel shall be scheduled for each shutdown, so that the Work may be accomplished within the specified time frame. Prefabrication of all piping and other assemblies shall be completed to greatest degree possible, prior to any shutdowns. The OWNER shall be satisfied that the CONTRACTOR has complied with these requirements, to the fullest extent possible, before shutdowns will be authorized.
5. If the CONTRACTOR'S procedures cause an unscheduled shutdown of the facilities, the CONTRACTOR shall perform Work as necessary to immediately re-establish satisfactory operation. The CONTRACTOR shall permit OWNER'S personnel to work with CONTRACTOR'S personnel as required to maintain the plant in continuous satisfactory operation. Unscheduled shutdown and/or interruptions of continued safe and satisfactory operation of the facilities that result in fines levied by the U.S. Environmental Protection Agency, the Arizona Department of Environmental Quality, or the Maricopa County Health Department shall be the responsibility of the CONTRACTOR, if it is demonstrated that the CONTRACTOR was negligent in his Work or did not exercise proper precautions in the conduct of his Work.

B. Arizona Canal Shutdown:

1. During the course of this project, annual shutdowns of the Arizona Canal will be done only on a case-by-case, reach-by-reach basis. This is due to the introduction of the white amur fish by the Salt River Project (SRP) starting in February 1992. Work within the Arizona Canal shall be accomplished in conjunction with the shutdown schedule of the Arizona Canal. Canal shutdowns occur at the discretion of SRP, usually for only a one month period, and sometime between November 1 and January 31 of each year. The CONTRACTOR shall keep informed of the SRP Canal shutdown schedule and shall be responsible for adjusting his work schedule to meet the actual canal shutdown window. All requirements of the SRP shall be coordinated by and be the responsibility of the CONTRACTOR, including special construction methods which may be required by the SRP to protect the white amur fish in the canal.
2. Due to the introduction of white amur fish in SRP's canal system, total canal dry-ups are no longer possible. However, maintenance periods, scheduled on a case-by-case, reach-by-reach basis, allow for construction to occur along the canal.

During the maintenance period, SRP will elect to do one of the following at their discretion:

- a. Totally dewater the canal on a case-by-case, reach-by-reach basis.
- b. Completely cease the flow of water in the canal, but leave standing water in canal for the survival of the white amur.
- c. Substantially reduce the flow of water in the canal, but still allow SRP the ability to deliver water to downstream customers.

In order to do the indicated construction along the Arizona Canal, the CONTRACTOR may be required to do as follows:

- a. For Case a, the CONTRACTOR may not be required to perform any special construction other than that would be required to complete the indicated construction and place the canal back into service.
 - b. For Case b, the CONTRACTOR may be required to construct coffer dams in the canal, upstream and downstream of the proposed work. Additional work, though not limited, is as follows: dewatering, transporting of fish, removal of coffer dams, and cleaning of the subject reach of canal.
 - c. For Case c, the CONTRACTOR may be required to do as described for Case b but in addition provide a culvert or pipeline between the two coffer dams to provide continued flow through the canal reach.
3. The CONTRACTOR shall contact the SRP to determine the actual requirements for work within the Arizona Canal, and be responsible for meeting all SRP requirements. SRP's contact person is Timothy S. Phillips, P.E., Principal Civil Engineer, Water Group - Operational Support, 236-2956.
- C. Shutdowns of Electrical Systems: CONTRACTOR shall lock out and tag circuit breakers and switches operated by the OWNER, and shall check cables and wires to be sure that they are de-energized to ground potential before Work begins. Upon completion of the Work, CONTRACTOR shall remove the locks and tags and advise the OWNER that the facilities are available for use.

1.4 OVERTIME

All overtime Work by CONTRACTOR necessary to conform to the requirements of this Section and related Sections shall be performed by CONTRACTOR at no cost to the OWNER. CONTRACTOR shall make no claims for extra compensation as a result thereof.

1.5 MILESTONE DIAGRAM SUPPLEMENT

- A. Requirements specified in this Article supplement the Construction Milestone Diagram contained in the Directory Drawings from which they are referenced.
- B. This paragraph specifies work included under the Part A Documents.
 1. Within fourteen days after substantial completion of the OWNER'S Temporary Operating Facilities (as specified in Section 01509), but not prior to commencement of the 1993-1994 Plant shutdown, the OWNER will relocate office furniture, furnishings, telephones, computers, etc. scheduled for relocation by the OWNER and occupy the Temporary Operating Facilities. The remaining items to be salvaged by the OWNER from the Administration Building will also be relocated by the OWNER within the same time period.
 2. During the first plant shutdown period after substantial completion of Schedule W, but prior to December 1, 1993, CONTRACTOR shall make final piping tie-ins from the existing chemical systems to the new chemical systems. This shall

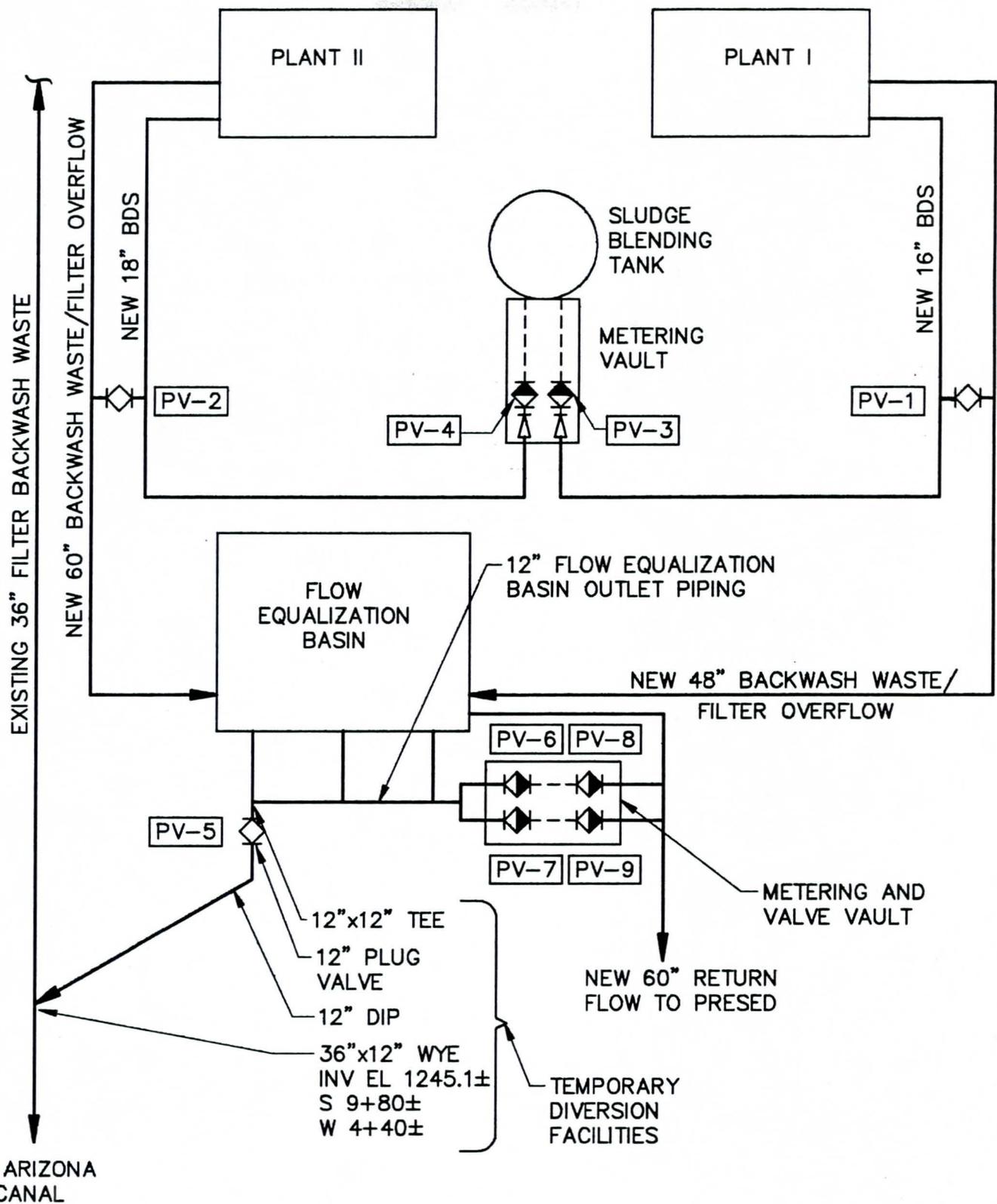
include the following diffuser and feed piping work (including any required demolition):

- a. Chlorine Diffuser in the Plant I Finished Water Channel as shown on sheet P/M-61.
- b. Chlorine Diffuser in the Plant II Finished Water Channel as shown on sheet P/M-15.
- c. Chlorine Diffuser in Finished Water Outlet Junction Box No. 2 As shown on sheet C-15.
- d. Chlorine Diffuser in Plant I Filter Backwash Header as shown on sheet P/M-61.
- e. Chlorine Diffusers to Plant II filters as shown on sheet P/M-17.
- f. Alum Diffuser to Plant I Parshall Flume as shown on sheet P/M-62 .
- g. Alum Diffuser to Plant II Feed Channel as shown on sheet P/M-64.
- h. Demolition of the existing HF Acid Feed System, which consists of HF Acid Bulk Storage Tank, metering pumps and piping as shown on sheet C-5.

At the completion of this work, all new chemical handling facilities shall be capable of full operation.

3. Within fourteen days after substantial completion of the Administration Building improvements, the OWNER will:
 - a. Relocate office furnishings, furniture, computers, telephones, etc. from the temporary operating facilities to the Administration Building.
 - b. Occupy the Administration Building and abandon the temporary operating facilities; and
 - c. Relocate existing laboratory equipment from the existing laboratory to the new laboratory (as specified in Section 02050).
4. The CONTRACTOR shall remove the OWNER'S Temporary Operating Facilities (including temporary utilities hookups and accessories) within fourteen calendar days following occupancy of Administration Building by the OWNER, and shall then perform salvage and demolition work (in the same fourteen day period) in the existing Administration Building sample room as shown on sheet P/M-69, which consists of the following:
 - a. Removal of temporary air conditioning and heating equipment.
 - b. Removal of temporary partition wall, existing windows, door and other items scheduled for demolition.
 - c. Relocation of existing sample lines to the new wet lab as shown on the plans, and demolition of existing sample lines and sample sink.
5. Following demolition of the existing sample room, the CONTRACTOR shall construct Office 101 and Corridor 102 improvements within thirty days.
6. After the laboratory equipment has been relocated by the OWNER, the CONTRACTOR shall perform salvage and demolition work in the Maintenance Building (with the exception of Shop 104) as shown on the plans.
7. Following completion of the demolition work in the Maintenance Building, the CONTRACTOR shall construct all Maintenance Building improvements (with the exception of Shop 104) as shown on the plans.

8. Within seven days following substantial completion of the Maintenance Building (excluding Shop 104), the OWNER will occupy the Maintenance Building and relocate equipment and materials from existing Shop 104.
 9. Following completion of equipment and material relocation, the CONTRACTOR shall perform salvage and demolition work in Shop 104, plus construct new Shop 104 improvements.
 10. Prior to the CONTRACTOR performing demolition work in the existing oil and paint storage area, the OWNER will complete the removal of all items scheduled to be salvaged by the OWNER (as specified in Section 02050) within seven (7) calendar days of CONTRACTOR'S official request to commence work on said facilities. Following the removal of OWNER salvaged items, the CONTRACTOR shall proceed with other salvage work as specified in Section 02050, complete the demolition work and construct the Oil and Paint Storage Area improvements as shown on the plans within ninety (90) calendar days.
- C. This paragraph specifies work included under the Part B Documents.
1. Work to be completed prior to start of 1993-1994 Plant shutdown.
 - a. Install temporary rack for existing plant equipment.
 - b. Construct bar screen structure.
 - c. Construct raw water meter vault.
 - d. Construct modifications to premixer structure.
 - e. Construct presedimentation basin.
 - f. Construct presedimentation sludge pump station.
 2. Work to be completed during Plant shutdown.
 - a. Install presedimentation basin inlet valve within existing bypass channel.
 - b. Complete modifications between premixer structure and existing bypass channel.
 - c. Connect presedimentation basin inlet channel to existing bypass channel.
 - d. Demolish and plug existing 96-inch raw water line to existing bypass channel.
 - e. Construct drains in existing bypass channel to new presedimentation basin.
 3. Work to be completed during Arizona Canal Shutdown.
 - a. Construct new inlet.
 - b. Demolish existing inlet and reline Arizona Canal.
 - c. Demolish existing sludge line discharge headwall and reline Arizona Canal.
 - d. Construct new sludge line headwall.
- D. This paragraph specifies work included under the Part C Documents.
1. Temporary Diversion Facilities: Refer to Figure 01020-1 for work required for the temporary diversion facilities:
 - a. Flow equalization basin concrete work, piping and temporary diversion facilities shall be completed to permit Plant I and Plant II operation prior to completion of the Solids Handling Facility.
 - b. To operate the Treatment Plant through the temporary diversion facilities, the following valves shall be installed and be in the position indicated:
 - 1) PV-1 (OPEN) SEE DRAWING C15, PART C.



SQUAW PEAK WATER TREATMENT PLANT
 MODIFICATIONS AND UPGRADES
**MAINTENANCE OF PLANT OPERATIONS
 TEMPORARY DIVERSION FACILITIES**

MALCOLM PIRNIE, INC.
 FIGURE 01020-1

- 2) PV-2 (OPEN) SEE DRAWING C12, PART C.
 - 3) PV-3 (CLOSED) SEE DRAWING M103, PART C.
 - 4) PV-4 (CLOSED) SEE DRAWING M103, PART C.
 - 5) PV-5 (OPEN).
- c. After completion of the Solids Handling Facility, the valves shall be placed in the following position:
- 1) PV-1 and PV-2 (CLOSED).
 - 2) PV-3 and PV-4 (OPEN).
 - 3) PV-5 (CLOSED).
 - 4) PV-6 through PV-9 (OPEN).
- d. After the Solids Handling Facility is in operation, the temporary diversion facilities shall be removed. The 12-inch by 12-inch tee shall be replaced with a 90 degree bend. CONTRACTOR shall coordinate with OWNER, to permit sufficient time between backwash events to allow installation of the 90 degree elbow.

+ + END OF SECTION + +

SECTION 01040

COORDINATION

1.1 GENERAL

- A. As more fully set forth in the General Conditions, CONTRACTOR shall be solely responsible for coordination of all of the Work. He shall supervise, direct and cooperate fully with all Subcontractors, manufacturers, fabricators, suppliers, distributors, installers, testing agencies and all others whose services, materials or equipment are required to ensure completion of the Work within the Contract Time.
- B. As more fully set forth in the General Conditions, CONTRACTOR shall cooperate with and coordinate his Work with the work of any other contractor, utility service company or OWNER'S employees performing additional work related to the Project at the site.
- C. CONTRACTOR shall not be responsible for damage done by contractors not under his jurisdiction. He will not be liable for any such loss or damage unless it is through the negligence of the CONTRACTOR.
- D. CONTRACTOR shall also coordinate his Work with the work of others to assure compliance with schedules.
- E. CONTRACTOR shall attend and participate in all project coordination or progress meetings and report on the progress of all Work and compliance with schedules.

+ + END OF SECTION + +

SECTION 01045
CUTTING AND PATCHING

1.1 GENERAL

- A. This Section includes all cutting and patching of all Work under construction, completed Work and existing facilities in order to accommodate the coordination of Work, install other Work, uncover Work for access, inspection or testing, or similar purposes. "Demolition Work" is specified elsewhere. Execute all cutting and patching, including excavation, backfill and fitting required to:
1. Remove and replace defective Work or Work not conforming to requirements of the Contract Documents.
 2. Remove samples of installed Work as required for testing.
 3. Remove all constructions required to provide for specified alteration or addition to existing Work.
 4. Uncover Work to provide for the ENGINEER'S inspection of covered Work or inspection by regulatory agencies having jurisdiction.
 5. Connect to completed Work that was not accomplished in the proper sequence.
 6. Remove or relocate existing utilities and pipes which obstruct the Work to which connections must be made.
 7. Make connections or alterations to existing or new facilities.
- B. Restore all existing Work to a state equal to that which it was in prior to cutting and restore new Work to the standards of these Specifications.
- C. Submittals:
1. Prior to cutting which may affect integrity and design function of Project, OWNER'S operations, or work of another contractor, submit written notice to ENGINEER, requesting consent to proceed with cutting, including:
 - a. Identification of Project.
 - b. Description of affected Work of CONTRACTOR and work of others.
 - c. Necessity for cutting.
 - d. Effect on other work and on structural integrity of Project.
 - e. Description of proposed Work. Designate:
 - 1) Scope of cutting and patching.
 - 2) CONTRACTOR, Subcontractor or trade to execute Work.
 - 3) Products proposed to be used.
 - 4) Extent of refinishing.
 - 5) Schedule of operations.
 - f. Alternatives to cutting and patching, if any.
 - g. Designation of party responsible for cost of cutting and patching.
 2. Should conditions of Work, or schedule, indicate change of materials or methods, submit written recommendation to ENGINEER, including:
 - a. Conditions indicating change.
 - b. Recommendations for alternative materials or methods.
 - c. Submittals as required for substitutions.

3. Submit written notice to ENGINEER, designating time Work will be uncovered, to provide for observation. Do not begin cutting or patching operations until authorized by the ENGINEER.
- D. Provide shoring, bracing and support as required to maintain structural integrity of Project and protect adjacent Work from damage during cutting and patching.
- E. Conform to all applicable Specifications for application and installation of materials used for patching.

+ + END OF SECTION + +

SECTION 01050
FIELD ENGINEERING

1.1 GENERAL

- A. OWNER will establish base lines for the Project and two bench marks for use by the CONTRACTOR.
- B. CONTRACTOR shall:
 - 1. Provide civil, structural or other professional engineering services specified, or required to execute CONTRACTOR'S construction methods.
 - 2. Develop and make all detail surveys and measurements needed for construction including slope stakes, batter boards, piling and pier layouts and all other working lines, elevations and cut sheets.
 - 3. Keep a transit and leveling instrument on the site at all times and a skilled instrument man employed or obtained whenever necessary for layout of the Work.
 - 4. Provide all material required for bench marks, control points, batter boards, grade stakes, and other items.
 - 5. Be solely responsible for all locations, dimensions and levels. No data other than written orders of the ENGINEER shall justify departure from the dimensions and levels required by the Drawings.
 - 6. Safeguard all points, stakes, grade marks, monuments and bench marks made or established on the Work, re-establish same if disturbed and rectify all Work improperly installed because of not maintaining, not protecting or removing without authorization such established points, stakes, marks and monuments.
 - 7. When requested by ENGINEER, provide such facilities as may be necessary for ENGINEER to check line and grade points placed by CONTRACTOR. CONTRACTOR shall do no excavation, backfill or embankment work until all cross-sectioning necessary for determining pay quantities has been completed and checked by ENGINEER.

1.2 CONTRACTOR'S FIELD ENGINEER

- A. CONTRACTOR shall employ and retain at the site of the Work a field engineer capable of performing all engineering tasks required of the CONTRACTOR. Tasks included are:
 - 1. Daily reports of Project activity to be submitted to the ENGINEER with all pertinent information pertaining to the Project as follows:
 - a. Numbers of employees,
 - b. Subcontractor employees,
 - c. Breakdown of employees by trade,
 - d. Major equipment and materials installed,
 - e. Major construction equipment utilized,
 - f. Location of all areas in which construction was done,
 - g. Materials and equipment received.
 - h. Work performed.

2. Provide all surveying equipment required including transit, level, stakes and required surveying accessories.
3. Furnish all required lines and grades for construction of operations. Check all formwork, reinforcing, inserts, structural steel, bolts, sleeves, piping, other materials and equipment.
4. Maintain field office files and drawings, record drawings, and coordinate engineering services with Subcontractors. Prepare layout and coordination drawings for construction operations.
5. Check and coordinate Work for conflicts and interferences and immediately advise ENGINEER of all discrepancies noted.
6. Cooperate with ENGINEER in field inspections as required.

1.3 QUALIFICATIONS OF SURVEYOR OR ENGINEER

- A. Qualified engineer or registered land surveyor, acceptable to CONTRACTOR and ENGINEER.

1.4 RECORDS

- A. Maintain a complete, accurate log of all control and survey work as it progresses.
- B. Maintain neat legible survey data and notes of all measurements and calculations made by him while surveying and laying out the work.
- C. On completion of foundation walls and major site improvements, prepare a certified survey showing all dimensions, locations, angles and elevations of construction.

1.5 SUBMITTALS

- A. Submit, to the ENGINEER, certificate signed by registered engineer or surveyor certifying that elevations and locations of Work are in conformance with Contract Documents. Explain all deviations.
- B. Submit four copies of all survey notes to the ENGINEER with other records upon final completion.

+ + END OF SECTION + +

SECTION 01060
SAFETY AND HEALTH

1.0 GENERAL

- A. Portions of the existing plant are exposed to waters of varying degrees of treatment. The CONTRACTOR shall certify that he is experienced and qualified to anticipate and meet the safety and health requirements of this project.
- B. Workmen involved in the removal, renovation, or installation of equipment within the treatment plant may be exposed to disease-producing organisms in water. The CONTRACTOR shall require his personnel to observe proper hygienic precautions.

2.0 SAFETY AND HEALTH REGULATIONS

- A. The CONTRACTOR shall comply with Safety and Health Regulations for Construction, promulgated by the Secretary of Labor under Section 107 of the Contract Work Hours and Safety Standards Act, as set forth in Title 29, C.F.R. Copies of these regulations may be obtained from Labor Building, 14th and Constitution Avenue N.W., Washington, DC 20014.
- B. The CONTRACTOR shall also comply with the provisions of the Federal Occupational Safety and Health Act, as amended.

+ + END OF SECTION + +

SECTION 01070

ABBREVIATIONS AND SYMBOLS

1.1 ABBREVIATIONS

A. Common abbreviations which may be found in the Specifications are:

alternating current	a-c*	maximum	max
ante meridiem	a.m.	mercury	Hg
ampere	A	milliampere DC	mAdc
average	avg	milligram	mg
		milligrams per liter	mg/l
		milliliter	ml
biochemical oxygen demand	BOD	millimeter	mm
brake horsepower	bhp	million gallon	MG
		million gallons per day	mgd
British thermal unit	Btu	minimum	min
Centigrade	C	net positive suction head	npsh
company	Co		
cubic inch	cu in	number	No.
cubic foot	cu ft	National Pipe	NPT
cubic yard	cu yd	Threads	
cubic feet per minute	cfm		
cubic feet per second	cfs	ounce	oz
		outside diameter	OD
decibel	db	parts per million plus or minus	ppm (±)
degree Centigrade (or Celsius)	20 C	post meridiem	p.m.
degree Fahrenheit	68 F	pound	lb
diameter	diam	pounds per square foot	psf
direct current	d-c**	pounds per square inch	psi
dollars	\$	pounds per square inch absolute	psia
each	ea	pounds per square inch gage	psig
efficiency	eff		
Fahrenheit	F	revolutions per minute	rpm
feet	ft		
feet per hour	fph		
feet per minute	fpm	second	sec
feet per second	fps	specific gravity	sp gr
figure	Fig.	square	sq
flange	flg	square foot	sq ft
foot-pound	ft-lb	square inch	sq in

gallon	gal	square yard	sq yd
gallons per minute	gpm	standard	std
		standard cubic feet	scfm
		per minute	
gallons per second	gps		
gram	g		
* Also shown as AC		** Also shown as DC	
Hertz	Hz	total dynamic head	TDH
hour	hr		
horsepower	hp	totally-enclosed-fan-cooled total head	tefc
		volt	TH
			V
inch	in.		
inch-pound	in.-lb		
inside diameter	ID		
kilovolt-ampere	kva		
kilowatt	kw		
kilowatt-hour	kwh		
linear foot	lin ft		
liter	l		

1.2 ORGANIZATION ABBREVIATIONS

A. Abbreviations of organizations which may be used in these Specifications are:

AA	Aluminum Association Incorporated
AABC	Associated Air Balance Council
AAMA	American Architectural Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ACS	American Chemical Society
AEIC	Association of Edison Illuminating Companies
AFBMA	Anti-Friction Bearing Manufacturer's Association
AGA	American Gas Association
AGMA	American Gear Manufacturer's Association
AHA	American Hardboard Association
AIChE	American Institute of Chemical Engineers
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ALSC	American Lumber Standards Committee
AMCA	Air Movement and Control Association, Inc.
ANSI	American National Standards Institute
APA	American Plywood Association
APHA	American Public Health Association
API	American Petroleum Institute

AREA	American Railway Engineering Association
ARI	Air-Conditioning and Refrigeration Institute
ASCE	American Society of Civil Engineers
ASCII	American Standard Code for Information Interchange
ASE Code	American Standard Safety Code for Elevators, Dumbwaiter and Escalators
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Association
AWPB	American Wood Preservers Bureau
AWS	American Welding Society
AWWA	American Water Works Association
BOCA	Building Officials and Code Administrators
CMAA	Crane Manufacturers Association of America, Inc.
CRSI	Concrete Reinforcing Steel Institute
DEMA	Diesel Engine Manufacturer's Association
DHI	Door Hardware Institute
DIPRA	Ductile Iron Pipe Research Association
DIS	Division of Industrial Safety
EEl	Edison Electric Institute
EIA	Electronic Industries Association
EJMA	Expansion Joint Manufacturer's Association
EPA	Environmental Protection Agency
FEDSPEC	Federal Specifications
FEDSTDS	Federal Standards
FM	Factory Mutual Research
HEI	Heat Exchange Institute
HEW	Department of Health, Education and Welfare
HI	Hydraulic Institute
HPMA	Hardwood Plywood Manufacturers Association
HUD	Department of Housing and Urban Development
IAPMO	International Association of Plumbing and Mechanical Officials
ICBO	International Conference of Building Officials
ICEA	Insulated Cable Engineers Association
IEEE	Institute of Electrical and Electronics Engineers, Inc.
IES	Illuminating Engineering Society
IRI	Industrial Risk Insurance
ISA	Instrument Society of America
ISO	Insurance Services Office
JIC	Joint Industrial Council
MILSPEC	Military Specifications
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry, Inc.
NAAMM	National Association of Architectural Metal Manufacturers
NACE	National Association of Corrosion Engineers
NARUC	National Association of Railroad and Utilities Commissioners
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
NESC	National Electric Safety Code
NFP	National Forest Products Association

NFPA	National Fire Protection Association
NHLA	National Hardwood Lumber Association
NSF	National Sanitation Foundation
OSHA	Occupational Safety and Health Act
PCI	Precast Concrete Institute
PPIC	The Plumbing & Piping Industry Council, Inc.
RIS	Redwood Inspection Service
RMA	Rubber Manufacturers Association
SAE	Society of Automotive Engineers
SAMA	Scientific Apparatus Makers Association
SBCC	Southern Building Code Congress
SCMA	Southern Cypress Manufacturers Association
SDI	Steel Door Institute
SMACNA	Sheet Metal and Air Conditioning National Association
SPI	Society of the Plastics Industry, Inc.
SPIB	Southern Pine Inspection Bureau
SSPC	Steel Structures Painting Council
SSPWC	Standard Specifications for Public Works Construction
TEMA	Tubular Exchanger Manufacturers Association
UBC	Uniform Building Code
UL	Underwriters Laboratories, Inc.
UMC	Uniform Mechanical Code
UPC	Uniform Plumbing Code
USBR	Bureau of Reclamation
USGS	United States Geological Survey
USPHS	United States Public Health Service
WCLIB	West Coast Lumber Inspection Bureau
WPCF	Water Pollution Control Federation
WWEMA	Water and Wastewater Equipment Manufacturers Association
WWPA	Western Wood Products Association

1.3 LEGEND

- A. Legends of symbols used are shown on the Drawings, and in general, use of symbols is confined to the Drawings.

+ + END OF SECTION + +

SECTION 01072
REFERENCE STANDARDS

1.1 GENERAL

- A. When a reference standard is specified, comply with requirements and recommendations stated in that standard, except when they are modified by the Contract Documents, or when applicable laws, ordinances, rules, regulations or codes establish stricter standards. The latest provisions of applicable standards shall apply to the Work, unless otherwise specified. Reference standards include, but are not necessarily limited to, the following:
1. Air Conditioning and Refrigeration Institute
 2. Air Movement and Control Association, Inc.
 3. Aluminum Association Incorporated
 4. American Architectural Manufacturers Association
 5. American Association of State Highway and Transportation Officials
 6. American Chemical Society
 7. American Concrete Institute
 8. American Gas Association
 9. American Gear Manufacturer's Association
 10. American Hardboard Association
 11. American Institute of Chemical Engineers
 12. American Institute of Steel Construction.
 13. American Institute of Timber Construction
 14. American Iron and Steel Institute.
 15. American Lumber Standards Committee
 16. American National Standards Institute
 17. American Petroleum Institute
 18. American Plywood Association
 19. American Public Health Association
 20. American Railway Engineering Association
 21. American Society for Testing and Materials
 22. American Society of Civil Engineers
 23. American Society of Heating, Refrigeration and Air Conditioning Engineers
 24. American Society of Mechanical Engineers
 25. American Standard Code for Information Interchange
 26. American Standard Safety Code for Elevators, Dumbwaiter and Escalators
 27. American Water Works Association
 28. American Welding Society
 29. American Wood Preservers Association
 30. American Wood Preservers Bureau
 31. Anti-Friction Bearing Manufacturers Association
 32. Associated Air Balance Council
 33. Association of Edison Illuminating Companies
 34. Building Officials and Code Administrators
 35. Bureau of Reclamation
 36. Concrete Reinforcing Steel Institute
 37. Crane Manufacturers Association of America, Inc.

38. Department of Health, Education and Welfare
39. Department of Housing and Urban Development
40. Diesel Engine Manufacturer's association
41. Division of Industrial Safety
42. Door Hardware Institute
43. Ductile Iron Pipe Research Association
44. Edison Electric Institute
45. Electronic Industries Association
46. Environmental Protection Agency
47. Expansion Joint Manufacturer's Association
48. Factory Mutual Association.
49. Federal Specifications
50. Federal Standards
51. Hardwood Plywood Manufacturers Association
52. Heat Exchange Institute
53. Hydraulic Institute
54. Illuminating Engineering Society
55. Industrial Risk Insurance
56. Institute of Electrical and Electronics Engineers
57. Instrument Society of America
58. Insulated Cable Engineers Association
59. Insurance Services Office
60. International Association of Plumbing
61. International Conference of Building Officials
62. Joint Industrial Council
63. Manufacturers Standardization Society of the Valve and Fittings Industry, Inc.
64. Military Specifications
65. National Association of Architectural Metal Manufacturers
66. National Association of Corrosion Engineers
67. National Association of Railroad and Utilities Commissioners
68. National Electric Code
69. National Electric Safety Code
70. National Electrical Manufacturers Association
71. National Fire Protection Association
72. National Forest Products Association
73. National Hardwood Lumber Association
74. National Sanitation Foundation
75. Occupational Safety and Health Act
76. The Plumbing & Piping Industry Council, Inc.
77. Precast Concrete Institute
78. Prestressed Concrete Institute.
79. Redwood Inspection Service
80. Rubber Manufacturers Association
81. Scientific Apparatus Makers Association
82. Sheet Metal and Air Conditioning National Association
83. Society of Automotive Engineers
84. Society of the Plastics Industry, Inc.
85. Southern Building Code Congress
86. Southern Cypress Manufacturers Association
87. Southern Pine Inspection Bureau
88. Standard Specifications for Public Works Construction

89. Steel Door Institute
90. Steel Structures Painting Council
91. Tubular Exchanger Manufacturer's Association
92. Underwriters' Laboratories, Inc.
93. Uniform Building Code
94. Uniform Mechanical Code
95. Uniform Plumbing Code
96. United States Geological Survey
97. United States Public Health Service
98. Water and Wastewater Equipment Manufacturers Association
99. Water Pollution Control Federation
100. West Coast Lumber Inspection Bureau
101. Western Wood Products Association
102. All other applicable standards listed in the Specifications, and the standards of utility service companies, where applicable.

+ + END OF SECTION + +

SECTION 01150

MEASUREMENT AND PAYMENT

1.1 DESCRIPTION

- A. The items listed below beginning with Article 1.5, refer to and are the same Bid Items listed in the Bid Schedule. They constitute all of the Bid Items for the completion of the Work. No direct or separate payment will be made for providing miscellaneous temporary or accessory works, plant, services, CONTRACTOR'S or ENGINEER'S field offices, layout surveys, job signs, sanitary requirements, testing, safety devices, shop and record drawings, water supplies, power, maintaining traffic, removal of waste, watchmen, bonds, insurance, and all other requirements of the General Conditions, Supplementary Conditions, and the General Requirements. Compensation for all such services, things and materials shall be included in the prices stipulated for the lump sum and unit pay items listed herein.

1.2 ESTIMATE OF QUANTITIES

- A. The estimated quantities for unit bid prices, as listed in the Bid Schedule, are approximate only and are included solely for the purpose of comparison of Bids. The OWNER does not expressly or by implication agree that the nature of the materials encountered below the surface of the ground or the actual quantities of material encountered or required will correspond therewith and reserves the right to increase or decrease any quantity or to eliminate any quantity as OWNER may deem necessary. CONTRACTOR will not be entitled to any adjustment in a unit bid price as a result of any change in an estimated quantity and agrees to accept the aforesaid unit bid prices as complete and total compensation for any additions or deductions caused by a variation in quantities as a result of more accurate measurement, or by any changes or alterations in the Work approved by the ENGINEER, and for use in the computation of the value of the Work performed for progress payments.

1.3 ALLOWANCES

- A. The Contract bid price includes several lump sum allowances which are provided as a means to provide reimbursement to the CONTRACTOR for Work that could not be adequately defined for inclusion in the lump sum bid price. Measurements and payment for the Work defined under these allowances shall be made to the CONTRACTOR using the change order procedures defined in the General Provisions of the Contract Documents. A change order will be processed for single or multiple activities under each allowance. Each change order will document the value of the Work completed and the amount of payment to be made from each allowance. The CONTRACTOR shall provide the necessary documentation for the Work performed under these allowances, as required by the ENGINEER.

- B. The change orders for these allowances shall be processed as an administrative change order to the Contract, as the funds for the Work are included in the Contract price. However, at which time the lump sum allowance amount is exceeded, the Work shall be performed following the procedures of a normal change order in accordance with the protocol for approval and payment as defined in Division 0.
- C. After final acceptance, the CONTRACTOR shall agree to a deductive change order to the Contract price for the full aggregate sum of all unused allowances. This deductive change order will not include compensation to the CONTRACTOR for profit or overhead costs on the unused balance of the allowances.

1.4 RELATED PROVISIONS SPECIFIED ELSEWHERE

- A. Payments to CONTRACTOR: Refer to AGREEMENT, GENERAL CONDITIONS and SUPPLEMENTAL CONDITIONS.
- B. Changes in Contract Price: Refer to GENERAL CONDITIONS.
- C. Schedule of Values: Refer to Section 01370.

1.5 GENERAL

- A. Item 2.5.1 - For all work under Part A, Part B, Part C, and the Directory Drawings of this Contract except those items listed separately below:
 - 1. Measurement and Payment: The lump sum payment for Item 2.5.1 will be full compensation for completing the Work, as shown and specified. Not included in Item 2.5.1 are: Items 2.5.2 through 2.5.31.
- B. Item 2.5.2 - Concrete Baffle Wall "A".
 - 1. Measurement and Payment: The price for Item 2.5.2 will be full payment for constructing Concrete Baffle Wall A in Plant II, Flocculation Basins No. 4 through 11. Construction and removal of temporary baffles are not included in this item, but are included in Bid Item 2.5.1. After one year of temporary baffle wall operation, OWNER will direct CONTRACTOR to implement one of the following:
 - a. Construct Concrete Baffle Wall A in Basins 4 through 11 for the price stated, or
 - b. Delete Concrete Baffle Wall A from the work and add target baffles between Zones 1 and 2. Owner will process a deductive change order for the full amount of Bid Item 2.5.2, or
 - c. Construct Concrete Baffle Wall "A" and "B" and delete target baffles between Zones 2 and 3. Owner will process an additive change order for full amount of Bid Item 2.5.2 as full compensation for Baffle Wall "B".
- C. Item 2.5.3 - Protective Coatings on Concrete Baffle Walls.
 - 1. Measurement and Payment: The price for Item 2.5.3 will be full payment for applying protective coating to Concrete Baffle Wall "A" in Plant II, Flocculation Basins No. 4 through 11. If Concrete Baffle Walls are constructed per Item 2.5.2, and after

June 30, 1993, OWNER will direct CONTRACTOR to implement one of the following:

- a. Apply protective coating to Concrete Baffle Wall A in Basins No. 4 through 11 for the price stated, or
 - b. Apply protective coating to both Concrete Baffle Walls A and B in Basins No. 4 through 11. OWNER will process an additive change order for the full amount of Item 2.5.3 as full compensation for Coating Baffle Wall "B", or
 - c. A deductive change order for the full amount of Item 2.5.3 will be processed if no baffles or protective coatings are required.
- D. Item 2.5.4 - Protective Coating on the Walls of the Flocculation and Sedimentation Basin and Filter Influent Channel.
1. Measurement and Payment: The price for Item 2.5.4 will be full payment for applying protective coatings to exactly one-half of the interior walls, columns, and effluent troughs in Plant II, Flocculation and Sedimentation Basins No. 4 through 7 and 9 through 11, plus the Filter Influent Channel. After June 30, 1993, OWNER will direct CONTRACTOR to implement one of the following:
 - a. Apply protective coatings to exactly one-half of the walls as specified for the price stated, or
 - b. Delete all wall coating work. OWNER will process a deductive change order for the full amount of Item 2.5.4, or
 - c. Apply protective coatings to 100 percent of the walls (except Floc/Sed Train No. 8). OWNER will process an additive change order for the full amount of Item 2.5.4 as full compensation for coating 100 percent of the walls.
- E. Item 2.5.5 - Protective Coatings on the Floors of the Flocculation and Sedimentation Basin and Filter Influent Channel.
1. Measurement and Payment: The price for Item 2.5.5 will be full payment for applying protective coatings to exactly one-half of the interior floor slabs in Plant II, Flocculation and Sedimentation Basins No. 4 through 7, and 9 through 11, plus the Filter Influent Channel. After June 30, 1993, OWNER will direct CONTRACTOR to implement one of the following:
 - a. Apply protective coatings to exactly one-half of the floors as specified for the price stated, or
 - b. Delete all floor coating work. OWNER will process a deductive change order for the full amount of Item 2.5.4, or
 - c. Apply protective coatings to 100 percent of the floors (except Floc/Sed Train No. 8). OWNER will process an additive change order for the full amount of Item 2.5.4 as full compensation for coating 100 percent of the floors.
- F. Item 2.5.6 - Filter Concrete Repair:
1. Scope: Filter concrete repair shall be only as directed by the ENGINEER and as described below. OWNER will disinfect filters after completion of work in each filter.
 2. Subdivisions of Item 2.5.6.
 - a. Item 2.5.6.1 - Protect Filter Media: The unit price for this Item will be full payment for protecting the media in each filter which may require work. This item shall include all

- set-up and clean-up costs associated with work in any individual filter cell.
- b. Item 2.5.6.2 - Repair Reinforcing Steel: The unit price for this Item will be full payment for the actual footage of reinforcing steel to be repaired. Included are concrete removal around the steel, coating of the steel, patching the concrete, and removal of any debris from the filters.
 - c. Item 2.5.6.3 - Apply Protective Coating, Long Wall: The unit price for this Item will be full payment for each Long Wall coated. If any coating is done on a Long Wall, the entire wall will be coated.
 - d. Item 2.5.6.4 - Apply Protective Coating, Short Wall: The unit price for this Item will be full payment for each Short Wall coated. If any coating is done on a Short Wall, the entire wall will be coated.
 - e. Item 2.5.6.5 - Repair Cracks: The unit price for this Item will be full payment for the actual footage of joints or cracks to be repaired. Included are joint preparation, fill and removal of any debris.
- G. Item 2.5.7 - Allowance for Potholing as directed by the ENGINEER:
- 1. Measurement and Payment: The lump sum payment for Item 2.5.7 will be full payment for all potholing; including excavation, backfill, surface restoration, disposal of unsuitable material off-site, sheeting and shoring; as directed by the ENGINEER. This work does not include potholing required by the CONTRACTOR. The maximum payment made under Item 2.5.7 shall not exceed \$5,000.00.
- H. Item 2.5.8 - Allowance for Relocation of Existing Utilities as directed by the ENGINEER:
- 1. Measurement and Payment: The lump sum payment of Item 2.5.8 will be full payment for relocation of existing utilities not shown or included in the Contract Documents, all as directed by the ENGINEER. The maximum payment made under Item 2.5.8 shall not exceed \$50,000.00.
- I. Item 2.5.9 - Allowance for Repair and Reroofing of Existing Building Roofs:
- 1. Measurement and Payment: The lump sum payment for Item 2.5.9 will be full payment for repair and reroofing of existing roofs on the Administration Building, Maintenance Building, and Switchgear Building, as directed by the ENGINEER. The maximum payment made under Item 2.5.9 shall not exceed \$75,000.
 - 2. Roof repair and reroofing shall be in accordance with Specifications Section 07530.
- J. Item 2.5.10 - Allowance for Painting of Existing Buildings.
- 1. Measurement and Payment: The lump sum payment for Item 2.5.10 will be full payment for painting of Existing Buildings. The Work shall include all labor, equipment, materials and incidentals required for painting of the Administration Building, Maintenance Building, and Main Switchgear Building, as directed by the ENGINEER. The maximum payment made under Item 2.5.10 shall not exceed \$75,000.

2. Painting shall be in accordance with Specification Section 09900.

K. Item 2.5.11 - Extra Excavation:

1. Definition: Excavation in excess of that required for the Work shown or specified, and ordered to be performed by the ENGINEER, will be classified as extra excavation. Excavation shall conform to Division 2.
2. Measurement: Extra excavation will be measured for payment on the basis of the lines and grades ordered by the ENGINEER, or as the volume within the limits described below, whichever, is applicable.
 - a. For excavation and backfilling for pipes, the trenches will be assumed to be of rectangular cross section having a width of 2 feet greater than the outside diameter of the pipe laid therein, exclusive of bells, branches, hubs, spurs or concrete cradles, and a depth from the surface of the ground, at the centerline of pipe, to the bottom of the pipe, or a depth authorized by the ENGINEER where necessary to facilitate the support of existing structures, or for other reasons, will be measured by payment to the limits excavated in accordance with orders.
 - b. All excavation for structures or facilities other than pipe will be measured for payment to the subgrade directed for such excavation and, unless otherwise shown, to vertical planes one foot outside the foundation limits of the structure to be built therein.
 - c. For test pits outside the structure excavation or trench, and for those within the prescribed limits, but necessarily refilled previous to the final excavation, and for all other excavation not included above but required for the Work, excavation shall be measured to the lines ordered or approved.
 - d. Measurement of the actual quantities of materials will be made by the ENGINEER. CONTRACTOR may, at his expense, verify quantities.
3. Payment: The unit price per cubic yard for Item 2.5.11 will be full compensation for providing all excavation which is not shown or specified, but ordered to be performed in writing by the ENGINEER.

L. Item 2.5.12 - Extra Select Backfill:

1. Definition: Select backfill in excess of that required for the Work shown or specified, and ordered to be furnished and placed by the ENGINEER and which is derived from off-site sources, shall be classified as extra select backfill from off-site sources. Select Backfill shall conform to Division 2.
2. Measurement: The quantity of additional select backfill which will be included for payment under Item 2.5.12, will be the computed number of cubic yards placed within the limits ordered by the ENGINEER. No payment will be made for select backfill used for refill when earth excavation is carried below the grades specified or ordered, nor for select backfill used for controlling groundwater. The total quantity of additional select backfill to be paid for under Item 2.5.12 will be the

computed amounts used to replace unsuitable material, to improve pipe bedding, and to increase the load carrying capacity of pipe as ordered or approved by the ENGINEER.

3. Payment: The unit price per cubic yard for Item 2.5.12 will be full compensation for providing and placing all extra select backfill complete from off-site sources which is not shown or specified, but ordered to be performed in writing by the ENGINEER.

M. Item 2.5.13 - Extra Riprap:

1. Definition: Riprap in excess of that required for the Work shown or specified and ordered to be furnished and placed by the ENGINEER and which is derived from the Project site, shall be classified as extra riprap from off-site sources.
2. Measurement: The quantity of additional riprap which will be included for payment under Item 2.5.13, will be the computed number of square yards placed within the limits ordered by the ENGINEER. No payment will be made for riprap used for refill when earth excavation is carried below the grades specified or ordered, nor for riprap used for controlling ground water. The total quantity of additional riprap to be paid for under Item 2.5.13 will be the computed amounts used to replace unsuitable material as ordered or approved by the ENGINEER.
3. Extra riprap shall include riprap, riprap bedding material, and filter fabric and shall conform to Division 2.
4. Payment: The unit price per square yard for Item 2.5.13 will be full compensation for providing and placing all extra riprap complete from off-site sources which is not shown or specified, but ordered to be performed in writing by the ENGINEER.

N. Item 2.5.14 - Extra Crushed Stone:

1. Definition: Crushed stone in excess of that required for the Work shown and specified and ordered to be furnished and placed by the ENGINEER and which is derived from off-site sources, shall be classified as extra crushed stone from off-site sources. Crushed stone shall conform to Division 2.
2. Measurement: The quantity of additional crushed stone which will be included for payment under Item 2.5.14, will be the computed number of cubic yards placed within the limits ordered by the ENGINEER. No payment will be made for crushed stone used for refill when earth excavation is carried below the grades specified or ordered, nor for crushed stone used for controlling ground water. The total quantity of additional crushed stone to be paid for under Item 2.5.14 will be the computed amounts used to replace unsuitable material, to improve pipe bedding, and to increase the load carrying capacity of pipe as ordered or approved by the ENGINEER.
3. Payment: The unit price per cubic yard for Item 2.5.14 will be full compensation for providing and placing all extra crushed stone complete from off-site sources which is not shown or specified, but ordered to be performed in writing by the ENGINEER.

O. Item 2.5.15 - Extra Sand:

1. Definition: In excess of that required for the Work shown or specified, and ordered to be furnished and placed by the ENGINEER, shall be classified as extra sand from off-site sources. Sand shall conform to Division 2.
2. Measurement: The quantity of additional sand, which will be included for payment under Item 2.5.15, will be the computed number of cubic yards placed within the limits ordered by the ENGINEER. No payment will be made for sand used when earth excavation is carried below the grades specified or ordered, nor for backfill and fill used for controlling ground water. The total quantity of additional sand to be paid for under Item 2.5.15 will be the computed amounts used to replace unsuitable material, to improve pipe bedding, and to increase the load carrying capacity of pipe as ordered or approved by the ENGINEER.
3. Payment: The unit price per cubic yard for Item 2.5.15 will be full compensation for providing and placing all extra sand complete from off-site sources which is not shown or specified, but ordered to be performed in writing by the ENGINEER.

P. Item 2.5.16 - Extra Class "A" Concrete:

1. Definition: Concrete in excess of that required for the Work shown or specified and ordered to be furnished and placed by the ENGINEER and, which in general, contains structural reinforcing steel and is contained in structural walls, floor slabs, beams, girders, columns, foundation slabs shall be classified as extra Class "A" concrete.
2. Measurement: The quantity of extra Class "A" concrete which will be paid for is the volume of concrete in cubic yards actually placed within the limits ordered by the ENGINEER. Class "A" concrete shall conform to Division 3.
3. Payment: The unit price per cubic yard for Item 2.5.16 will be full compensation for providing and placing all extra Class "A" concrete complete, which is not shown or specified, but ordered to be performed in writing by the ENGINEER.

Q. Item 2.5.17 - Extra Class "B" Concrete:

1. Definition: Concrete in excess of that required for the Work shown or specified and ordered to be furnished and placed by the ENGINEER and, which in general, contains little or no reinforcing steel and includes simple or no form work and is utilized for thrust blocks, pipe supports, equipment bases, fill concrete and like work, shall be classified as extra Class "B" concrete.
2. Measurement: The quantity of extra Class "B" concrete which will be paid for is the volume of concrete in cubic yards actually placed within the limits ordered by the ENGINEER. Class "B" concrete shall conform to Division 3.
3. Payment: The unit price per cubic yard for Item 2.5.17 will be full compensation for providing and placing all extra Class "B" concrete complete, which is not shown or specified, but ordered to be performed in writing by the ENGINEER.

- R. Item 2.5.18 - Extra Reinforcing Steel:
1. Definition: Reinforcing steel in excess of that required for the Work shown or specified and ordered to be furnished and placed by the ENGINEER shall be classified as extra Reinforcing Steel. Reinforcing steel shall conform to Specification Section 03200.
 2. Measurement:
 - a. Extra reinforcing steel which will be paid for is the number of pounds of reinforcing steel actually placed as ordered by the ENGINEER. The weight shall be determined by multiplying the length of each bar by the standard bar weight. Excessive laps will not be included for payment.
 - b. No direct payment will be made for wire, welding, chairs, supports nor any other required accessory for providing reinforcing steel. The cost for all such Work will be included in this item.
 3. Payment: The unit price per pound under Item 2.5.18 will be full compensation for providing and placing all additional reinforcing steel complete, which is not shown or specified, but ordered to be performed in writing by the ENGINEER.
- S. Item 2.5.19 - Extra Asphaltic Pavement:
1. Definition: Asphaltic pavement in excess of that required for the Work shown or specified and ordered to be furnished and placed by the ENGINEER shall be classified as extra asphaltic pavement.
 2. Measurement: The quantity of extra asphaltic pavement which will be paid for is the area of asphaltic pavement in square yards actually placed within the limits ordered by the ENGINEER. Pavement shall conform to Specification Section 02513.
 3. Payment: The unit price per square yard for Item 2.5.19 will be full compensation for providing and placing all extra asphaltic pavement complete, which is not shown or specified, but ordered to be performed in writing by the ENGINEER.
- T. Item 2.5.20 - Extra Asphalt Seal Coat:
1. Definition: Asphalt Seal Coat in excess of that required for the Work shown or specified and ordered to be furnished and placed by the ENGINEER shall be classified as extra Asphalt Seal Coat.
 2. Measurement: The quantity of extra Asphalt Seal Coat which will be paid for is the area of Asphalt Seal Coat in square yards actually placed within the limits ordered by the ENGINEER. Seal Coat shall conform to Specification Section 02513.
 3. Payment: The unit price per square yard for Item 2.5.20 will be full compensation for providing and placing all extra Asphalt Seal Coat complete, which is not shown or specified, but ordered to be performed in writing by the ENGINEER.
- U. Item 2.5.21 - Extra Pavement Overlay:
1. Definition: Pavement overlay in excess of that required for the Work shown or specified and ordered to be furnished and placed by the ENGINEER shall be classified as extra pavement overlay.

2. Measurement: The quantity of extra pavement overlay which will be paid for is the area of pavement overlay in square yards actually placed within the limits ordered by the ENGINEER. Pavement overlay shall conform to Specification Section 02513.
3. Payment: The unit price per square yard for Item 2.5.21 will be full compensation for providing and placing all extra pavement overlay complete, which is not shown or specified, but ordered to be performed in writing by the ENGINEER.

V. Item 2.5.22 - Extra Structural Steel:

1. Measurement:
 - a. Extra structural steel, which will be included under Item 2.5.22, will be measured for payment as the actual number of pounds of material supplied and installed in addition to the structural steel shown on the Drawings or included in the Specifications and which is ordered by the ENGINEER. No structural steel installed in structures or elsewhere which is paid for under other items, will be paid for under Item 2.5.22. Lengths, sizes and weights will be determined based on appropriate tables in the AISC Handbook. Extra structural steel shall conform to Section 05120.
 - b. This item includes structural steel work required by changes in dimensions of the Work or by the addition of minor structures not shown on the Drawings or specified.
 - c. No direct payment will be made for clamps, "I" beam splicers, bolts, nuts, washers, screws, wire mesh, or similar items. Neither will direct payment be made for cutoffs from standard lengths of shapes, rods and pipes, and standard size of plates. The cost of all such materials and accessories shall be included in the price bid.
2. Payment: The unit price per pound for Item 2.5.22 will be full compensation for providing all extra structural steel complete which is not shown and specified but ordered to be performed in writing by the ENGINEER.

W. Item 2.5.23 - Extra Aluminum:

1. Measurement:
 - a. The quantity of extra aluminum, which will be included under Item 2.5.23, will be the weight of aluminum in pounds actually supplied and installed which is not shown on the Drawings or included in the Specifications and which is ordered by the ENGINEER. No aluminum installed which is paid for under other items, will be paid for under Item 2.5.23. Measurement for payment will be on the basis of the actual weight of the material furnished. Extra aluminum shall conform to Section 05504.
 - b. This item includes aluminum required by changes in dimensions of the Work or by the addition of Work not shown on the Drawings or specified.
2. Payment: The unit price per pound for Item 2.5.23 will be full compensation for providing all extra aluminum complete which is not shown and specified, but ordered to be performed in writing by the ENGINEER.

- X. Item 2.5.24 - Extra Stainless Steel:
1. Measurement:
 - a. The quantity of extra stainless steel, which will be included under Item 2.5.24, will be the weight of stainless steel in pounds actually supplied and installed which is not shown on the Drawings or included in the Specifications and which is ordered by the ENGINEER. No stainless steel installed, which is paid for under other items, will be paid for under Item 2.5.24. Measurement for payment will be on the basis of the actual weight of the material furnished. Extra stainless steel shall consist of railings, structural stainless steel shapes, fasteners, anchors, miscellaneous fabrications and shall conform to Section 05504.
 - b. This item includes stainless steel required by changes in dimensions of the Work or by the extra of Work not shown on the Drawings or specified.
 2. Payment: The unit price per pound for Item 2.5.24 will be full compensation for providing all extra stainless steel complete which is not shown and specified, but ordered to be performed in writing by the ENGINEER.
- Y. Item 2.5.25 - Extra Stainless Steel Anchor Bolts:
1. Measurement:
 - a. The quantity of extra stainless steel anchor bolts, which will be included under Item 2.5.25, will be the number of anchor bolts to be replaced in the Plant II, Sedimentation Basins Nos. 4 through 11, (on the Sludge Collector Return Rails), as directed by the ENGINEER. Anchor bolts shall conform to Section 05503.
 - b. This item includes the removal of existing anchor bolts and replacement with 1/2-inch diameter by 4-1/2 inch long stainless steel anchor bolts; including all labor, materials, equipment, and incidentals.
 2. Payment: The unit price per each for Item 2.5.25 will be full compensation for providing extra stainless steel anchor bolts which are not shown and specified, but ordered to be performed in writing by the ENGINEER.
- Z. Item 2.5.26 - Extra Electrical and Instrumentation PVC Conduit:
1. Measurement:
 - a. The quantity of extra PVC conduit, which will be included under Item 2.5.26, will be the actual length of a particular size of PVC conduit in feet actually supplied and installed which is not shown on the Drawings or included in the Specifications and which is ordered by the ENGINEER. No conduit installed, which is paid for under other items, will be paid for under Item 2.5.26. Measurement for payment will be on the basis of the actual footage of the particular size of PVC conduit furnished, less any amount credited to the OWNER where conduit is omitted. Extra PVC conduit shall conform to Division 16. Included are fittings, adapters and connectors.
 - b. This item includes PVC conduit required by changes in dimensions of the Work or by the additions of Work not shown on the Drawings or specified.

- c. No direct payment will be made for hangers, fasteners, pull boxes, junction boxes, or similar items. The cost for all such materials and accessories shall be included in the price bid.
 - 2. Payment: The unit price per foot for Item 2.5.26 will be full compensation for providing all extra PVC conduit complete which is not shown or specified but ordered to be performed in writing by the ENGINEER.
- AA. Item 2.5.27 - Extra Electrical and Instrumentation RGS Conduit:
 - 1. Measurement:
 - a. The quantity of extra RGS conduit, which will be included under Item 2.5.27, will be the actual length of a particular size of conduit in feet actually supplied and installed which is not shown on the Drawings or included in the Specifications and which is ordered by the ENGINEER. No conduit installed, which is paid for under other items, will be paid for under Item 2.5.27. Measurement for payment will be on the basis of the actual footage of the particular size of conduit furnished, less any amount credited to the OWNER where conduit is omitted. Extra RGS conduit shall conform to Division 16. Included are fittings, adapters and connectors.
 - b. This item includes conduit required by changes in dimensions of the Work or by the additions of Work not shown on the Drawings or specified.
 - c. No direct payment will be made for hangers, fasteners, pull boxes, junction boxes, or similar items. The cost for all such materials and accessories shall be included in the price bid.
 - 2. Payment: The unit price per foot for Item 2.5.27 will be full compensation for providing all extra RGS conduit complete which is not shown or specified but ordered to be performed in writing by the ENGINEER.
- BB. Item 2.5.28 - Extra Electrical and Instrumentation PVC Coated Steel Conduit:
 - 1. Measurement:
 - a. The quantity of extra PVC coated steel conduit, which will be included under Item 2.5.28, will be the actual length of a particular size of conduit in feet actually supplied and installed which is not shown on the Drawings or included in the Specifications and which is ordered by the ENGINEER. No conduit installed, which is paid for under other items, will be paid for under Item 2.5.28. Measurement for payment will be on the basis of the actual footage of the particular size of conduit furnished, less any amount credited to the OWNER where conduit is omitted. Extra conduit shall conform to Division 16. Included are fittings, adapters and connectors.
 - b. This item includes conduit required by changes in dimensions of the Work or by the additions of Work not shown on the Drawings or specified.
 - c. No direct payment will be made for hangers, fasteners, pull boxes, junction boxes, or similar items. The cost for all such materials and accessories shall be included in the price bid.

2. Payment: The unit price per foot for Item 2.5.28 will be full compensation for providing all extra PVC coated steel conduit complete which is not shown or specified but ordered to be performed in writing by the ENGINEER.
- CC. Item 2.5.29 - Extra Electrical and Instrumentation Cable:
1. Measurement:
 - a. The quantity of extra cable, which will be included under Item 2.5.29, will be the actual length of a particular size of cable in feet actually supplied and installed which is not shown on the Drawings or included in the Specifications and which is ordered by the ENGINEER. No cable installed, which is paid for under other items, will be paid for under Item 2.5.29. Measurement for payment will be on the basis of the actual footage of the particular size of cable furnished, less any amount credited to the OWNER where cable is omitted. Extra cable shall conform to Division 16.
 - b. This item includes cable required by changes in dimensions of the Work or by the additions of Work not shown on the Drawings or specified.
 - c. No direct payment will be made for labor associated with cable terminations, for cable fasteners, splicing materials or similar accessories. The cost for all such labor and materials and accessories shall be included in the price bid.
 2. Payment: The unit price per foot for Item 2.5.29 will be full compensation for providing all extra cable complete which is not shown or specified but ordered to be performed in writing by the ENGINEER.
- DD. Item 2.5.30 - Extra Electrical Manholes:
1. Measurement and Payment: The unit price for Item 2.5.30 will be full payment for each extra manhole ordered by the ENGINEER, including excavation and backfill, sheeting and shoring, concrete and reinforcing steel, dewatering, testing, surface restoration, frames and covers, sleeves, and pulling hooks. Manholes shall conform to Division 16.
 2. Subdivisions of Item 2.5.30:
 - a. Item 2.5.30.1 - Furnishing and installing six foot by six foot by eight foot deep manholes.
- EE. Item 2.5.31 - Extra Electrical Handholes:
1. Measurement and Payment: The unit price for Item 2.5.31 will be full payment for each extra handhole ordered by the ENGINEER, including excavation and backfill, sheeting and shoring, concrete and reinforcing steel, dewatering, testing, surface restoration, frames and covers, sleeves, and pulling hooks. Handholes shall conform to Division 16.
 2. Subdivisions of Item 2.5.31:
 - a. Item 2.5.31.1 - Furnishing and installing four foot by four foot by four foot deep handholes.

+ + END OF SECTION + +

SECTION 01201
PRECONSTRUCTION CONFERENCE

1.1 GENERAL

- A. Date, Time and Location: Conference will be held after execution of the Contract and before construction is started at the site. ENGINEER will fix the date, time and location of the meeting in accordance with requirements of the General Conditions.
- B. ENGINEER shall prepare agenda, preside at meeting, and prepare and distribute a transcript of proceedings to all parties.
- C. CONTRACTOR shall provide data required, contribute appropriate items for discussion, and be prepared to discuss all items on agenda.

1.2 REQUIRED ATTENDANCE

- A. CONTRACTOR and major Subcontractors.
- B. OWNER'S representative.
- C. ENGINEER.
- D. Representatives of government agencies having any degree of control or responsibility, if available.
- E. Representatives of utility companies having any degree of control or responsibility, if available.

1.3 AGENDA

- A. Agenda will include, but will not necessarily be limited to, the following:
 - 1. Designation of responsible personnel.
 - 2. Subcontractors.
 - 3. Contract time.
 - 4. Coordination and cooperation with other contractors.
 - 5. Progress Schedule.
 - 6. Processing of Shop Drawings and distribution of Submittals.
 - 7. Processing of field decisions and Change Orders.
 - 8. Requirements for copies of Contract Documents.
 - 9. Insurance in force.
 - 10. Schedule of Values.
 - 11. Processing and Schedule of Payments.
 - 12. Use of premises.
 - 13. CONTRACTOR responsibility for safety and first aid procedures.
 - 14. Security.
 - 15. Housekeeping.
 - 16. Field Offices.
 - 17. Record Drawings.
 - 18. Letter of Notice to Proceed.
 - 19. EEO and MBE requirements.

20. Operation and Maintenance Manuals.
21. Meetings.
22. Temporary Utilities.
23. Permits.
24. Emergency telephone numbers.
25. Any other project related items.

+ + END OF SECTION + +

SECTION 01202
PROGRESS MEETINGS

1.1 GENERAL

- A. Date and Time:
 - 1. Regular Weekly Meetings: Or as designated by ENGINEER.
 - 2. Other Meetings: On call.
- B. Place: ENGINEER'S field office or mutually agreed upon location.
- C. ENGINEER shall prepare agenda, preside at meetings, and prepare and distribute a transcript of proceedings to all parties.
- D. CONTRACTOR shall provide data required and be prepared to discuss all items on agenda.

1.2 MINIMUM ATTENDANCE

- A. CONTRACTOR, (Subcontractors and suppliers, as required). Representatives present for each party shall be authorized to act on their behalf.
- B. ENGINEER.
- C. OWNER'S representative, if required.
- D. Others as appropriate.

1.3 AGENDA

- A. Agenda will include, but will not necessarily be limited to, the following:
 - 1. Transcript of previous meeting.
 - 2. Progress since last meeting.
 - a. CONTRACTOR.
 - b. Subcontractors.
 - 3. Planned progress for next period.
 - 4. Shop Drawings.
 - 5. Problems, conflicts and observations.
 - 6. Change Orders.
 - 7. Applications for payment.
 - 8. Quality standards and control.
 - 9. Schedules, including status of off-site fabrication and delivery schedules. Corrective measures required.
 - 10. Coordination between parties.
 - 11. Safety concerns.
 - 12. Other business.
 - 13. Next meeting date.

+ + END OF SECTION + +

SECTION 01300

SUBMITTALS

1.1 GENERAL

- A. Submittal of documents described in the General Conditions and hereinafter are required prior to, during and at the end of the construction period. The submittals shall conform to the requirements described in this Section and all referenced Sections or Articles.

1.2 PROCEDURE

- A. Submittals within ten (10) days after the effective date of the Agreement: (Location of information concerning each submittal is referenced and a copy of each required form is included with this Section.)
1. Preliminary Schedule of Values: Prepare and submit in accordance with Section 01370, Schedule of Values.
 2. Preliminary Progress Schedule: Prepare and submit in accordance with Section 01310, Progress Schedule.
 3. Preliminary Schedule of Shop Drawings and Sample Submittals shall be in accordance with Article 2.6 of the General Conditions.
- B. Submittals at the Preconstruction Conference: Submit the following:
1. Detailed Preliminary Progress Schedule in accordance with the requirements of Section 01310.
 2. Monthly Payment Schedule in accordance with Section 01310.
 3. CPM Software in accordance with Section 01310.
 4. See Article 2.6 of the General Conditions.
- C. Submittals with the first application for progress payment: Submit the following items with the first application of progress payment. (Location of information concerning each submittal is referenced and a copy of each required form is included with this Section.)
1. Schedule of Values: Prepare and submit in accordance with Section 01370, Schedule of Values.
 2. Shop Drawing Submittal Schedule: Submit schedule of all shop drawings.
- D. Submittals Prior to Beginning The Work: See the General Conditions and Supplementary Conditions of the Contract Documents.
- E. Submittals During Construction: During progress of the construction, make the following submittals in a timely manner to prevent any delay in the Work schedule:
1. Updates to Progress Schedule: Provide an assessment of Work progress in relation to the Progress Schedule in accordance with Section 01310.
 2. Shop Drawings, Product Data and Samples: Submit Shop Drawings, product data and samples in accordance with Section 01341 and as required in various Sections of the Technical Specifications.

3. Progress Payments: Submit applications for partial payments as specified in Article 12 of the General Conditions in the Contract Documents.
4. Request for Information: Submit a Request for Information (form included in this Section) when any of the following are required: an interpretation of the Specifications; additional details; information not shown on the plans or in the Specifications; or clarification of discrepancies is needed. The CONTRACTOR shall retain one (1) copy and submit three (3) copies to the ENGINEER for response.
5. Change Orders: Forms shown in this Section. A proposal for a change order may be submitted by the CONTRACTOR in accordance with Articles 10 and 11 of the General Conditions. The Change Order Proposal included in this Section must be in writing and must include sufficient information to assess the need for a change in the Work, the Contract time or the Contract amount. Whenever the ENGINEER determines the need for a Change Order, the CONTRACTOR will receive an Initiator Change Order Request form or Request for Proposal Form included in this Section. Upon receipt of an Initiator Change Order Request form or Request for Proposal Form or when the CONTRACTOR determines the need for a Change Order, the CONTRACTOR shall prepare and submit three (3) copies of a Change Order Proposal. The Change Order Proposal must be approved by the CONTRACTOR, ENGINEER, and OWNER. When a Change Order Proposal is acceptable to the ENGINEER, a Change Order included in this Section will be prepared and executed. The CONTRACTOR is not authorized to begin work on a Change Order until it is fully executed. Any Work done by the CONTRACTOR prior to execution of a Change Order is entirely at his own risk.
6. CONTRACTOR'S Daily Report: Shown in this Section: Submit four (4) copies of the CONTRACTOR'S Daily Report. The CONTRACTOR and each Subcontractor shall prepare and submit a daily report on forms shown in this Section. The report shall contain, as a minimum, information on the location and description of the Work being performed, size, quantity and description of materials and equipment installed or delivered, coordination or scheduling concerns, requests for clarifications, and any discrepancies noted in the Plans and Specifications, or on the as-built conditions. The report shall also contain the CONTRACTOR'S daily workforce count by craft, general weather conditions, any Work performed other than during established working hours, and any other pertinent items relative to the Work, and as required by the ENGINEER. The report is due at the ENGINEER'S office by 9:00 a.m. on the following work day and shall be signed by a responsible member of the CONTRACTOR'S staff.
7. Transmittal Schedule: Shown in this Section. Submit a Shop Drawing, Product Data and Sample Transmittal Schedule within thirty (30) days after Notice to Proceed. Three updated Transmittal Schedules shall be submitted with each month's Progress Payment Request.

- F. Submittals At Project Closeout: With a written Notice of Completion, submit the following items in the proper form as a condition of Final Acceptance of the Work:
1. Project Record Documents: Submit in accordance with Section 01720, Project Record Documents.
 2. Guarantees, Warranties and Bonds: Submit as required in the General Conditions and listed in various Sections of the Specifications.
 3. Operations and Maintenance Data: Submit product data and manuals as specified in various Sections of the Specifications.
- G. Nine (9) Attachments.
1. Preliminary Schedule of Values.
 2. Schedule of Values.
 3. Shop Drawings, Product Data and Sample Transmittal Schedule.
 4. Estimate for Progress Payment.
 5. Request for Change Order Proposal.
 6. Change Order Proposal.
 7. Request for Information.
 8. Contractors Daily Construction Report.

+ + END OF SECTION + +

PRELIMINARY SCHEDULE OF VALUES

Sheet ____ of ____

Section Number	CONTRACTOR			SUBCONTRACTS			TOTALS
	Mat'l.	Labor	Equip.	Mat'l.	Labor	Equip	

SCHEDULE OF VALUES

Sheet ____ of ____

Section No. _____

Item Description	Material	Labor	Equipment	Total

CITY OF PHOENIX
23RD AVENUE WASTEWATER TREATMENT PLANT
UPGRADE AND EXPANSION PROJECT

DATE _____

SHEET _____ OF _____

ESTIMATE FOR PROGRESS PAYMENT

INDEX NO. _____ CONTRACT NAME _____

CONTRACTOR _____

ADDRESS _____

FOR THE AMOUNT OF _____ FOR PERIOD FROM _____ TO _____

ENGINEER _____ ESTIMATE NUMBER _____

ITEM NO.	DESCRIPTION List Contract Items, Change Order Items and Deductions, Each With Subtotal	CONTRACT AMOUNT	ESTIMATED AMOUNT TO DATE	ESTIMATED AMOUNT THIS MONTH

I certify that all work and/or materials under the contract has been inspected by me and that it has been performed and/or supplied in full accordance with the requirements of the Contract.

TOTALS _____

Retain _____ % _____

Net Earnings to Date _____

Less Amount Paid On
Previous Estimates _____

FIELD ENGINEER _____ Amount Due This Estimate _____

DATE _____

CERTIFICATION OF CONTRACTOR

According to the best of knowledge and belief, I certify that all items and amounts shown on the face of this Periodic Estimate for Partial Payment are correct; that all work has been performed and/or material supplied in full accordance with the requirements of the referenced Contract, and/or duly authorized deviations, substitutions, alterations, and/or additions; that the foregoing is a true and correct statement of the contract account up to and including the last day of the period covered by this Periodic Estimate; that no part of the "Balance Due This Payment" has been received, and that the undersigned and his subcontractors have - (check applicable line).

- a. Compiled with all the labor provision of said contract.
- b. Complied with all the labor provisions of said contract except in those instances where an honest dispute exists with respect to said labor provisions. (If (b) is checked, describe briefly nature of dispute.)

_____, 19__ Title: _____
(Contractor) By _____ (Signature of Authorized Representative)

CERTIFICATION OF ARCHITECT OR ENGINEER

I certify that I have checked and verified the above and foregoing Periodic Estimate for Partial Payment; that to the best of my knowledge and belief it is a true and correct statement of work performed and/or material supplied by the contractor; that all work and/or material included in this Periodic Estimate has been inspected by me and/or by my duly authorized representative or assistants and that it has been performed and/or supplied in full accordance with requirements of the referenced contract; and that partial payment claimed and requested by the contractor is correctly computed on the basis of work performed and/or material supplied to date.

Signed: _____ Approved: _____
(Architect or Engineer)

Date: _____ Date: _____

Approved: _____ Date: _____
Director

REQUEST FOR CHANGE ORDER PROPOSAL

Date: _____

CONTRACTOR _____

Project Name _____

Project No. _____

Change Order No. _____

NOTICE TO CONTRACTOR: Please submit a Change Order Proposal for the proposed modifications to the Contract Documents as described below. If acceptable, a Change Order will be issued to authorize the work. THIS IS NOT A CHANGE ORDER FOR AUTHORIZATION TO PROCEED WITH THE WORK AS DESCRIBED!

SCOPE OF WORK:

OWNER

CHANGE ORDER PROPOSAL

Date _____

Subject: Project Name _____
Project No. _____
Change Order No. _____

Dear Sir:

Certain items of extra work have been found necessary which are not covered by the Contract for the above referenced Project. Therefore, we submit the following amounts as the basis of compensation for such extra work:

JUSTIFICATION:

The Contract completion time will be (increased)(decreased) _____ consecutive calendar days.

Total Cost of Extra Work Covered by Above: \$ _____
Previously Approved Extra Work: \$ _____
Original Contract Amount \$ _____
TOTAL: \$ _____

By: _____

Title: _____

CONTRACTOR: _____

CITY OF PHOENIX
SQUAW PEAK WATER TREATMENT PLANT
MODIFICATIONS AND UPGRADE

REQUEST FOR INFORMATION

CONTRACTOR _____ RFI# _____
Requested By _____ Directed to _____
Subject _____ Date Received _____
Spec. Sections _____ Date Transmitted _____
Drawing References _____ Date Reply Received _____
Date Reply Needed _____ Date Reply Transmitted _____

INFORMATION NEEDED:

Date Signature

REPLY:

Date Signature

SECTION 01310
PROGRESS SCHEDULE

1.1 GENERAL

- A. To assure completion of the Work within the contract times established, all activities of the CONTRACTOR shall be scheduled and monitored by use of a CPM (Critical Path Method) Schedule. See Sequence and Progress of Work included under Sections 01010, 01015, and 01020. The CONTRACTOR shall provide a CPM Schedule for Work done under this Contract in accordance with the requirements of this Section and the General Conditions.
- B. The CONTRACTOR shall employ or retain services of at least one person experienced in CPM Scheduling for the duration of the Contract. This person shall cooperate with the ENGINEER and shall update the CONTRACTOR'S schedule as required by these Specifications.
- C. A preliminary CPM Schedule for the entire project shall be submitted to the ENGINEER within ten (10) days of the Effective Date of the agreement or at the Preconstruction Conference, whichever comes first, in bar chart form. The bar chart shall be referenced to time.
- D. At the Preconstruction Conference The CONTRACTOR shall furnish to the ENGINEER a detailed preliminary CPM Schedule in bar chart form showing the CONTRACTOR'S proposed operations for the first four (4) months of the Contract period.
- E. The CONTRACTOR shall submit, at the Preconstruction Conference, a projection of estimated monthly payments through the life of the Contract. Initial projections shall be correlated with and provided at the same time as the Schedule of Values. Projections shall be updated when requested by the ENGINEER.

1.2 SUBMITTAL

- A. All CPM Schedules (both original and revisions) submitted shall be one reproducible mylar and four (4) copies. Each CPM Schedule submittal shall bear CONTRACTOR'S stamp or written indication of approval as representation to OWNER that CONTRACTOR has determined or verified all data on that CPM Schedule, and that CONTRACTOR and the Subcontractors and Suppliers have reviewed and coordinated the sequences in that CPM Schedule with the requirements of the work.
- B. At the Preconstruction Conference, the CONTRACTOR shall submit to the OWNER and ENGINEER sufficient descriptive information about the CPM software the CONTRACTOR has chosen to employ to comply with the requirements of this Section. The CONTRACTOR shall at no increase in Contract Price, (a) furnish a fully-licensed copy to the OWNER for the OWNER'S and ENGINEER'S use, and (b) provide the OWNER and ENGINEER with two days of formal classroom training in the utiliza-

tion of the CONTRACTOR'S chosen software (including qualified training personnel and all necessary instructional materials).

1. The CPM software shall run on IBM PC compatible microcomputer equipment, be commercially available for lease or purchase, and be capable of processing and plotting Progress Schedule data as specified.
 2. The CPM software shall have the capability to sort and print and plot separate Activity reports and time-scaled CPM diagrams by, at a minimum, separate structures, Subcontractors, Submittals and deliveries, Work involved in Change Orders, etc.
 3. If a CPM Schedule uses the precedence format, each Submittal of that CPM Schedule shall enclose an additional network report showing each relationship type (led/lag, lead times, etc.)
- C. Neither the OWNER'S OR ENGINEER'S review of a CPM Schedule, nor a statement of "Resubmittal Not Required", will relieve the CONTRACTOR from responsibility for complying with the Contract Times and those sequences of Work indicated in or required by the Contract Documents, or completing any Work omitted from that Progress Schedule within the Contract Times. The CONTRACTOR shall make appropriate adjustments or corrections in a CPM Schedule returned as "Revise and Resubmit" and shall submit to the ENGINEER the corresponding CPM Schedule resubmittal as required herein. CPM Schedule resubmittals shall use the same revision number followed by the letters "A", "B", etc, as applicable.
1. CONTRACTOR shall submit to ENGINEER with the first Application for Payment, the initial progress schedule, and the schedule of Shop Drawing and sample submittals. CONTRACTOR shall correct all schedules returned for revision and resubmission, taking into account comments made by OWNER and ENGINEER, and shall resubmit any schedule if directed by ENGINEER. The final revision of the schedule shall be the As-Planned Schedule from which subsequent schedules revisions shall be developed and used by CONTRACTOR when making proposals or claims for adjustments in Contract Time or Contract Price.
 2. Early dates in the progress schedule shall be based on proceeding with all or part of the Work exactly on the date when the corresponding Contract Time commences to run. Late dates shall be based on completing all or part of the Work exactly on the corresponding Contract Time, regardless of whether CONTRACTOR anticipates early completion. If sequences of Work are imposed by the Contract Documents, the progress schedule shall show in detail CONTRACTOR'S approach to conforming with those sequences.
 3. Progress schedule revisions submitted shall (a) adequately depict CONTRACTOR'S current approach to remaining Work, (b) report on progress or schedule recovery actions, and (c) facilitate evaluation of progress payments and (d) accurately depict the progress and sequence of the work to date.

1.3 MONTHLY PROGRESS REPORTS

- A. On the first working day (or as otherwise scheduled) of each month, the CONTRACTOR shall meet with the Engineer and present, in duplicate, a report of his operations during the preceding month, including actual starting and ending dates on activities shown on the network diagram. Where such starting or ending dates were delayed beyond those required by the CPM schedule, the CONTRACTOR shall describe the action he is taking to regain lost time, and state the anticipated completion dates of subsequent activities affected by the delayed items. He shall also point out known or anticipated delays on continuing activities and outline the action he is taking to regain lost time, or avoid future delay, and state the anticipated completion dates of subsequent activities affected by the delayed items. On the basis of the reports presented at the meeting, the CONTRACTOR will develop a revised mathematical analysis, bar chart and narrative report, and will furnish eight (8) copies thereof to the ENGINEER not later than the fifth (5th) working day of the month. The updated Bar Chart shall detail a one-month window in the CPM Schedule. Each activity covering Work at the site shall reflect the Work of a specific crew, span fifteen (15) Business Days or less, and indicate which CPM Schedule Activity includes the same Work. Activities covering Submittals and the procurement of items of materials or equipment shall segregate the time required for preparation of Submittals, review and return of Submittals, and fabrication and delivery, as applicable, and shall not combine items furnished by separate Suppliers (first and second tiers).
- B. Updated mathematical analyses shall include the information included in the initial submittal and the following additional information:
1. Actual start date of activities which have been started by calendar date.
 2. Actual finish date of activities which have been completed by calendar date.
 3. Actual number of days worked on activities which have been completed.
 4. Percentage completion of activities which have been started.
 5. Actual dates on which attained Milestones were achieved.
 6. Additions or deletions of activities or events since the previous report.
 7. Changes in sequence or estimated duration of activities.
 8. Where progress along any path is behind schedule such that activities lying on the path are delayed by an amount greater than their initial Total float, the Total float shall show as a negative value.
- C. The updated bar chart shall be a revision of the initial accepted bar chart based upon the updated mathematical analysis and shall show changes from the initial bar chart.
- D. The updated narrative report shall be based upon the initial narrative report and shall describe in detail any revisions, either current or forecast, to information submitted with the initial narrative report, together with a description of current and anticipated problems and delaying factors affecting progress of the

Work, their impact on progress of the Work, and an explanation of corrective actions taken or proposed. The narrative shall, at a minimum, compare current Late Dates vs. Contract Times and Milestone Times; provide sufficient detail to allow objective verification of the progress of the Work; identify the assumptions made and Activities affected in incorporating Work involved in Change Orders; describe actual or potential delays and their extent, related causes and the steps taken or anticipated to mitigate their impact; and itemize any revisions, and their bases, made in CPM schedule Activities and sequences.

1.4 REVISION OF NETWORK DIAGRAM

- A. Unless the ENGINEER directs otherwise, the network diagram shall be revised every three (3) months during the duration of the Project to reflect departures and changes from the previous network diagram. The revised network diagram shall be furnished to the ENGINEER with the corresponding Application for Payment. Each submittal shall consist of the required copies of the updated CPM diagram(s), Activity reports, rate-of-progress plots, CPM Schedule narrative, and floppy disk data.
1. Schedule Revisions shall be solely for the purpose of showing how the CONTRACTOR'S planning, scheduling and execution of Work remaining demonstrate continued compliance with the Contract Times and those sequences of Work indicated in or required by the Contract Documents, and preparing schedule recovery plans. CPM Schedule Revisions shall accurately represent all changes, adjustments or updates in the sequencing and timing of Work remaining made or required to be made by the CONTRACTOR.
 2. Schedule Revisions shall accurately portray how completed Work was performed and any delays and any other significant events experienced since the previous CPM Schedule Revision.
 3. Schedule Revisions shall incorporate changes in ACTIVITIES and sequences agreed upon in previously authorized Change Orders.
 4. The CONTRACTOR shall ensure that the CPM Schedule diagram accurately reflects for each Activity the "as-built" information shown on the pertinent documents, such as daily reports and Submittal logs (and in the later case, reflect dates for resubmissions and rereviews). As a minimum, schedule as-built data shall include actual start dates (discounting early starts not representing true as-built conditions), remaining days of Work, percent complete, and actual finish dates (when the Activities were completed so that dependent Work could proceed).
 5. The ENGINEER will return a CPM Schedule Revision Submittal with comments limited to the unprogressed portion within twenty (20) days. If a resubmittal of a CPM Schedule Revision is required, the CONTRACTOR shall, within ten (10) days, submit the required copies of a corrected and adjusted CPM Schedule Revision. Once an issue of a CPM Schedule Revision is returned to the CONTRACTOR as "Resubmittal Not Required," with or without comments or objections noted, it shall be the basis for the monitoring of the CONTRACTOR'S performance and progress against Late Dates.

6. Each CPM Schedule Revision Submittal shall include a statement signed by the CONTRACTOR certifying that the CONTRACTOR has not, as of the cut-off date of that CPM Schedule Revision, been delayed by any actions of or failure to act by the OWNER or ENGINEER, except as otherwise specifically stated.

1.5 REPORTS

- A. CPM Schedule reports shall include cost updates, written narratives, network logic diagrams, graphic bar tabular printouts, and graphic bar charts, in both detailed and summary format.
- B. Network Diagrams shall legibly show the order and interdependence of activities, and the sequence in which the work is to be accomplished as planned by the Contractor.
- C. Tabular Printouts shall show one activity per line along with appropriate data for the purpose intended included various combinations of the following:
 1. Activity ID
 2. Activity description
 3. Preceding and succeeding activity ID's and descriptions
 4. Original duration (in calendar days)
 5. Revised duration (in calendar days)
 6. Days remaining (in calendar days)
 7. Per cent complete
 8. Earliest start date (by calendar date)
 9. Earliest finish date (by calendar date)
 10. Latest start date (by calendar date)
 11. Latest finish date (by calendar date)
 12. Actual start date (by calendar date)
 13. Actual finish date (by calendar date)
 14. Total Float
 15. Free Float.
- D. Activities shall include in addition to the construction activities, the submittal, review and approval of samples, manufacturers' data, and shop drawings, the procurement of materials and equipment, installation and testing.
- E. Bar charts will be required for summary purposes to compare actual progress with baseline As-Planned Schedule.

1.6 DEFINITIONS

- A. Unless otherwise noted, terms shall be defined for this Project as follows:
 1. "Activity" means a component step or operation in the construction of the Work.
 2. "Event" means a point in time during construction of the Work.
 3. "Network" or "network diagram" means a flow diagram which is a symbolic representation of activities and events that must be performed in accordance with the Contract and which shows the

- order and interdependence of activities and the sequence in which Work is to be accomplished as planned by the CONTRACTOR.
4. "Earliest Start Date" means the earliest date on which an activity can start.
 5. "Earliest Finish Date" means the earliest date on which an activity can finish.
 6. "Latest Start Date" means the latest date on which an activity can start without changing the Contract duration.
 7. "Latest Finish Date" means the latest date on which an activity can finish without changing the Contract duration.
 8. "Latest Free Start Date" means the latest date on which an activity can start without affecting the scheduling of any other activities.
 9. "Latest Free Finish Date" means the latest date on which an activity can finish without affecting the scheduling of any other activities.
 10. "Total Float" means the number of calendar days by which an activity can be delayed without necessarily extending a pertinent Contract Time. Total Float is by definition at least equal to Contract Float.
 11. "Contract Float"--If the schedule anticipates early completion of all or any part of the Work, Contract Float is the number of calendar days between CONTRACTOR's anticipated date for early completion of all or any such part of the Work and the corresponding specified Contract Time.
 12. "Free Float" means the amount of time in calendar days by which an activity can be delayed without affecting the scheduling of any other activity.
 13. "Duration" means the amount of time in consecutive calendar days required to perform an activity from the date on which work commences on the activity to the date on which the activity is complete.
 14. "Milestone" means a significant event such as date of Notice to Proceed, Substantial Completion, Final Completion and specified mandatory completion dates when portions of the Work or site are to be turned over to the Owner or other contractors.
 15. "Critical Path" means the continuous sequence of activities and events throughout the network that comprises the longest time path through the network from start to finish.
 16. "Critical Activity" means an activity which cannot be delayed without altering the Contract Times.
 17. "Mandatory Date" means the date specified for completion of a Work activity or when other contractors must be permitted to start Work.
 18. "Sub-network" means a network relating to a particular phase, portion or subdivision of the Work.
 19. "Arrow Method" means that method of network diagram construction in which activities are represented by arrows.
 20. "Lag" means the amount of time between the commencement of an activity and the commencement of an activity which immediately follows it, expressed in the number of calendar days.
 21. "Lag Factor" means the amount of time between the commencement of an activity and the commencement of an activity which immediately follows it, expressed as a percentage of the duration of the first activity.

- B. The network diagram shall be made to a time schedule and shall show the order and interdependence of activities and sequence in which the Work is to be accomplished as planned by the CONTRACTOR. The diagram shall show how the start of a given activity is dependent upon completion of preceding activities and how its completion restricts the start of following activities. Float need not be shown on the network diagram. The diagram shall be constructed in such a manner that sub-networks relating to particular phases or portions of the Work can be readily extracted or revised as required. Each sub-network shall show time allocations for Shop Drawing review and fabrication time in addition to work time. The network diagram shall show the following information related to the activities:
1. Activity number or label if the precedence method of diagramming is being used or the preceding and following event numbers if the arrow method of diagramming is used.
 2. A brief description of the activity.
 3. Estimated duration, in consecutive calendar days, of each activity.
 4. If the precedence method of diagramming is being used, lags or lag factors may be used at the CONTRACTOR'S option.
 5. All activities relating to the furnishing and performance of the Work shall be shown. Activities which are interdependent because of restrictions of available manpower or construction equipment shall be so shown.
 6. In addition to construction activities, the diagram shall show the date of the Work authorization and Mandatory completion dates.
 7. Detail of information shall be such that duration times of activities shall span 40 calendar days or less with not over two percent (2%) of the activities exceeding these limits. The activities which comprise separate portions of the Work shall be separately identifiable by coding.
 8. The network diagram shall be drawn on twenty-four inch by thirty- six inch size sheets with flow of activities generally from left to right. Printing shall be suitable for half size and microfilm reproduction. No lettering or numbering shall be less than one-eighth of an inch (1/8 inch) in height (for capitals and numbers). The critical path shall be clearly marked. Wherever possible, activities relating to a particular sub-network shall be grouped together on a single sheet.
- C. Mathematical analysis of the network diagram shall be based on the network diagram and shall be a computer printout tabulating each activity and showing the following information for each activity:
1. Activity number or label if the precedence method of diagramming is being used or the preceding and following event numbers if the arrow method is being used.
 2. Activity description.
 3. Estimated duration, in consecutive calendar days, of each activity.
 4. Earliest start date by calendar date.
 5. Earliest finish date by calendar date.
 6. Latest start date by calendar date.
 7. Latest finish date by calendar date.
 8. Latest free start date by calendar date.

9. Latest free finish date by calendar date.
10. Total float.
11. Free float.
12. Critical activities and activities on critical path shall be marked.

Earliest start and finish dates shall be regarded as the CONTRACTOR'S scheduled start and finish dates.

- D. The bar chart shall be based on the network diagram and mathematical analysis. Related activities may be grouped together into a single item. However, the completed bar chart shall consist of not less than fifty (50) items. The length of each bar shall correspond to the net aggregate durations of activities represented by the bar. Portions of bars which represent critical activities shall be marked. Bars shall be broken during extended periods of no Work such as shutdowns for inclement weather.
 1. The bar chart shall be drawn on twenty-four inch by thirty-six inch size sheets showing the total Contract duration in months. Printing shall be suitable for half size and microfilm reproduction. No lettering or numbering shall be less than one-eighth of an inch (1/8 inch) in height (for capitals and numbers). Bars representing related activities for any given portion of the Work shall be grouped together and a descriptive title shall be shown for each bar. A list of all activities represented by each bar shall be included with the bar charts.
- E. The narrative report shall describe in detail, but not be limited to, the CONTRACTOR'S proposed methods of carrying out each phase or portion of the Work together with the number of men, number of shifts, hours per shift, work week, and the number, size and type of major pieces of construction equipment required for the Work. The report shall include a chart showing the CONTRACTOR'S estimated monthly earnings and accumulated earnings.
- F. Except where directed in writing by the OWNER, the CONTRACTOR shall promptly take appropriate action to recover schedule whenever the CONTRACTOR fails to achieve a Contract Time or Milestone Time or perform Activities within the Late Dates in the most current revision of the CPM Schedule, or the CONTRACTOR'S progress falls behind that required to comply with that Contract Time, Milestone Time or Late Dates. The CONTRACTOR shall submit with the Application for Payment following recognition of the problem a schedule recovery plan describing the cause of schedule slippage or delayed progress and the actions taken to correct them within the shortest reasonable time.
 1. Appropriate schedule recovery actions may include, but not be limited to, assignment of additional labor, Subcontractors, or construction equipment, Work during other than normal working hours (subject to the requirements of Article 8 of the General Conditions), expediting of Submittals or deliveries, or any combination of any of them. Overlapping or resequencing of Activities to increase Activity concurrence shall be appropriate only if properly substantiated in the schedule recovery plan.

2. The CONTRACTOR'S failure, refusal or neglect to (a) submit a schedule recovery plan furnishing sufficient and convincing evidence that the CONTRACTOR can recover schedule within the shortest reasonable time acceptable to the OWNER, or (b) take appropriate schedule recovery action, shall be reasonable evidence that the CONTRACTOR is not prosecuting the Work with all due diligence and shall give sufficient basis to the OWNER to demand adequate, written assurance of performance under the General Conditions, withhold from any payment an amount based on the OWNER'S estimate of the liquidated damages that would become due because of the actual or anticipated late completion, and in the OWNER'S sole discretion, order alternate schedule recovery actions.
 3. An extension in Contract Time or an increase in Contract Price arising from delays which postpone, extend or in any other manner alter the schedule or completion of all or part of the Work will not be granted unless the CONTRACTOR, through an analysis of a Schedule reflecting data as of the date prior to the origination of the delay, as designated in paragraph 1.4.F.4 demonstrates that conditions justifying extensions in Contract Time or increases in Contract Price, as provided in Articles 8 and 11 of the General Conditions, have been met, and that analysis by the CONTRACTOR is verifiable by objective evaluation.
 4. A version of the As-Planned Schedule shall accurately show (a) all Work progress (by the cut-off date) and any delays and any other significant events experienced before the cut-off date, and (b) any changes in Activities and sequences agreed upon in previously authorized Change Orders considering the proper records and all valid data provided under the requirements of paragraphs 1.3.A.2 and 1.3.A.3 respectively. Any such As-Planned Schedule shall purposely exclude all Activity and sequencing changes initiated by the CONTRACTOR that affect Work after the cut-off date (whenever incorporated into any contemporaneous CPM Schedule Revisions under the requirements of paragraph 1.3.A.1 or otherwise), until the timing and sequences suggested by those changes actually take place.
- G. The ENGINEER may refuse to recommend any part of any payment if, in the ENGINEER'S judgment, the CONTRACTOR'S failure, refusal or neglect to provide the required CPM Schedule information precludes a proper evaluation of the CONTRACTOR'S progress. The OWNER may withhold a set-off from any payment recommended by the ENGINEER, if in the OWNER'S judgment, the CONTRACTOR'S failure, refusal or neglect to provide the required CPM Schedule information precludes a proper evaluation of whether the CONTRACTOR is prosecuting the Work, or any separable part of the Work, with all due diligence or not.

+ + END OF SECTION + +

SECTION 01341

SHOP DRAWING SUBMITTAL AND CORRESPONDENCE PROCEDURE

1.1 GENERAL

- A. The submittal of Shop Drawings shall conform to requirements of the General Conditions and procedures described in this Section. A separate transmittal form shall be used for each specific item or class of material or equipment for which a submittal is required. Transmittal of shop drawings on various items using a single transmittal form shall be permitted only when the items taken together constitute a manufacturer's "package" or are so functionally related that expediency indicates review of the group or package as a whole.
- B. The term "shop drawings" as used herein shall be understood to include detailed design calculations, fabrication and installation drawings, lists, graphs, test data, operating instruction, and other items which shall include (but not necessarily be limited to):
1. Drawings and/or catalog information and cuts.
 2. Specifications, parts list, suggested spare parts lists, and equipment drawings.
 3. Wiring diagrams of systems and equipment.
 4. Complete lubrication, maintenance and operation instructions, including initial startup instructions as described in Section 01730.
 5. Applicable certifications.
 6. Anchor bolt templates, mounting instructions and mounting design calculations as required.
 7. Certifications.
 8. Required maintenance operations to allow all installed equipment to remain idle for a period of time not to exceed 24 months.
 9. Other technical, installation, and maintenance data as applicable.
 10. Unloading and handling methods, and storage requirements.
 11. Note and highlight proposed changes to the Contract Documents.
 12. Paint submittal showing type of paint and the mils thickness of coating system used. The coating system shall be the approved system as submitted under Division 9.
 13. Drawings showing CONTRACTOR field verifications illustrating all field dimensions. CONTRACTOR shall field verify all dimensions and existing materials shown on the Drawings. Any modifications required shall be at the CONTRACTOR'S expense.
- C. Submittal Schedule: The CONTRACTOR, with the first application for progress payment, shall prepare and submit to the ENGINEER a comprehensive Submittal Schedule. The CONTRACTOR shall identify on his Submittal Schedule all of the submittal items required by the Contract Documents governing his Work. The CONTRACTOR shall indicate for each submittal item on his Submittal Schedule:
1. The date by which that item will be submitted to the ENGINEER.
 2. Whether the submittal is for a substitute or "equal" item. Complete submittals for all substitute or "equal" items shall be

made to the ENGINEER within ninety (90) calendar days after the CONTRACTOR'S Submittal Schedule is approved by the ENGINEER. Identification by the CONTRACTOR of substitute or "equal" items does not relieve the CONTRACTOR of his responsibility to furnish equipment and materials that meet all the requirements of the Drawings and Specifications. Items of manufacturers' equipment listed with the CONTRACTOR'S Bid Proposal shall not be replaced with any substitute or "equal" items as part of this submittal schedule process.

3. Whether the submittal is for review or for record only.
 4. The date by which response is required.
 5. The date by which the material or equipment must be on site in order not to delay the progress of the Work.
- D. The ENGINEER will review the CONTRACTOR'S Submittal Schedule to determine its completeness and compatibility with the Progress Schedule. A Submittal Schedule which is incompatible with the Progress Schedule or a review schedule which places extraordinary manpower demands on the ENGINEER will be sufficient reason(s) to reject the Submittal Schedule. It shall be understood that certain submittals will take longer than 35 days to review and that these particular submittals will be identified during the submittal by the ENGINEER to allow for very complex submittal reviews. The CONTRACTOR shall also identify submittals for which he anticipates long review periods. There will be no extensions of Contract time granted for submittal review past 35 days if the anticipated submittal review period was identified by the ENGINEER as longer than 35 days during the Submittal Schedule review period.
- E. The CONTRACTOR'S Submittal Schedule shall be consistent with the Construction Schedule as described in Section 01310.
- F. Approval of the Submittal Schedule will be a precondition of the receipt of the first progress payment.

1.2 PROCEDURE

- A. Submittals of Shop Drawings shall be made to:

Malcolm Pirnie, Inc.
4636 E. University Dr., Suite 150
Phoenix, Arizona 85034

- B. All shop drawing submittals shall be accompanied by the ENGINEER's standard shop drawing transmittal form. This form may be obtained from the ENGINEER. Any shop drawing submittal not accompanied by such a form, or where all applicable items on the form are not completed, will be returned for resubmittal. Ultimate responsibility for the accuracy and completeness of the information contained in the submittal shall remain with the CONTRACTOR. If data for more than one Section of the Specifications is submitted, a separate transmittal letter shall accompany the data submitted for each Section. A copy of all transmittal letters shall be sent to the Resident ENGINEER.

- C. All letters of transmittal shall be submitted in duplicate.
- D. At the beginning of each letter of transmittal and each letter of inquiry, provide a reference heading indicating the following:
1. OWNER'S Name _____
 2. Project Name _____
 3. Contract No. _____
 4. Transmittal No. _____
 5. Section No. _____
- E. If Shop Drawing submittals show variation from the requirements of the Contract Documents, the CONTRACTOR shall make specific mention of such variation in his letter of transmittal.
- F. All Shop Drawings submitted for review shall have a title block with complete identifying information satisfactory to ENGINEER.
- G. All Shop Drawings submitted shall bear the stamp of approval and signature of the CONTRACTOR as evidence that they have been reviewed by the CONTRACTOR. Submittals without this stamp of approval will not be reviewed by the ENGINEER and will be returned to the CONTRACTOR. The stamp shall contain the following minimum information:

Project Name: _____

CONTRACTOR'S Name: _____

Date: _____

-----Reference-----

Item: _____

Specifications:

Section: _____

Page No.: _____

Para. No.: _____

Drawing No.: _____ of _____

Location: _____

Submittal No.: _____

Approved By: _____

- H. A number shall be assigned to each submittal by the CONTRACTOR starting with No. 1 and thence numbered consecutively. Resubmittals shall be identified by the same number followed by the suffix "A" for the first resubmittal, the suffix "B" for the second resubmittal, etc.

- I. The CONTRACTOR shall initially submit to the ENGINEER a minimum of 12 copies of all submittals that are on 8-1/2-inch by 11-inch or smaller sheets, and one unfolded sepia and 2 prints made from that sepia for all submittals on sheets larger than 8-1/2-inch by 11-inch.
- J. After the ENGINEER completes his review, the Shop Drawings will be affixed with a stamp and marked with one of the following notations:
 - 1. Approved.
 - 2. Approved as Corrected.
 - 3. Revise and Resubmit.
 - 4. Not Approved.
- K. If a submittal is acceptable, it will be marked "Approved" or "Approved as Corrected". Four points of copies and/or one unfolded sepia will be returned to the CONTRACTOR.
- L. Upon return of a submittal marked "Approved" or "Approved as Corrected", the CONTRACTOR may order, ship or fabricate the materials included on the submittal, provided it is in accordance with the corrections indicated.
- M. If a Shop Drawing marked "Approved as Corrected" has extensive corrections or corrections affecting other drawings or Work the ENGINEER may require that the CONTRACTOR make the corrections indicated thereon and resubmit the Shop Drawings for record purposes, such drawings will be marked "Approved as Corrected", "Resubmit". The corrected Shop Drawing shall be a pre-condition for payment for the Work item of the Shop Drawing.
- N. If a submittal is unacceptable, 2 copies will be returned to the CONTRACTOR with one of the following notations:
 - 1. "Revise and Resubmit"
 - 2. "Not Approved"
- O. Upon return of a submittal marked "Revise and Resubmit", the CONTRACTOR shall make the corrections indicated and repeat the initial approval procedure. The "Not Approved" notation is used to indicate material or equipment that is not acceptable. Upon return of a submittal so marked, the CONTRACTOR shall repeat the initial approval procedure utilizing acceptable material or equipment.
- P. Any related Work performed or equipment installed without an "Approved" or "Approved as Corrected" Shop Drawing will be at the sole responsibility of the CONTRACTOR.
- Q. Shop Drawings shall be submitted well in advance of the need for the material or equipment for construction and with ample allowance for time required to make delivery of material or equipment after data covering such is approved. The CONTRACTOR shall assume the risk for all materials or equipment which are fabricated or delivered prior to the approval of Shop Drawings. No materials or equipment shall be incorporated into the Work nor will such be included in periodic progress payments until approval thereof has been obtained in the specified manner.

- R. The ENGINEER will review and process all submittals promptly. It is the intent that the review and processing period be no longer than thirty-five (35) days, however, if a submittal requires more than thirty-five days, due to size or complexity, the ENGINEER will notify the CONTRACTOR in writing. The CONTRACTOR should allow reasonable time as described above for the Shop Drawings being revised and resubmitted and for time required to return the reviewed Shop Drawings to the CONTRACTOR. The review of the Shop Drawings by the ENGINEER does not relieve the CONTRACTOR'S responsibility for errors and omissions.
- S. It is CONTRACTOR'S responsibility to review submittals made by his suppliers and Subcontractors before transmitting them to ENGINEER to assure proper coordination of the Work and to determine that each submittal is in accordance with his desires and that there is sufficient information about materials and equipment for ENGINEER to determine compliance with the Contract Documents. Incomplete or inadequate submittals will be returned for revision without review.
- T. CONTRACTOR shall furnish required submittals with complete information and accuracy in order to achieve required approval of an item within two submittals. All costs to ENGINEER involved with subsequent submittals of Shop Drawings, samples, or other items requiring approval, will be backcharged to CONTRACTOR, at the rate of 3.0 times direct technical labor cost, by deducting such costs from payments due CONTRACTOR for Work completed. In the event that CONTRACTOR requests a substitution for a previously approved item, all of ENGINEER'S costs in the reviewing and approval of the substitution will be backcharged to CONTRACTOR unless the need for such substitution is beyond the control of CONTRACTOR.
- U. The OWNER reserves the right to withhold monies, up to the limit identified in the General Conditions, for Shop Drawing reviews beyond those described herein.

+ + END OF SECTION + +

SECTION 01342

SAMPLES

1.1 GENERAL

- A. The submittal of Samples shall conform to the requirements of the General Conditions and to procedures described in this Section.
- B. Samples and Shop Drawings which are related to the same unit of Work or Specification Section shall be submitted at the same time. If related Shop Drawings and Samples are submitted at different times, they will not be reviewed until both are furnished to the ENGINEER.

1.2 PROCEDURE

- A. CONTRACTOR shall review, approve, and submit all Samples promptly. Samples shall be identified with correct reference to Specification Section, page, article and paragraph number, and Drawing No. when applicable. Samples shall clearly illustrate functional characteristics of the product and all related parts and attachments, and full range of color, texture, pattern and material. Samples shall be furnished so as not to delay fabrication, allowing the Engineer reasonable time for the consideration of the Samples submitted.
- B. CONTRACTOR shall submit at least three Samples of each item required for the Engineer's approval. Submission of Samples shall conform to all applicable provisions under Shop Drawing Submittal and Correspondence Procedure. Two of the Samples shall be delivered to the Engineer's office in Phoenix, Arizona, unless otherwise authorized by the Engineer. One Sample shall also be delivered to the ENGINEER'S field office. If the CONTRACTOR requires a Sample for his use he shall notify the ENGINEER in writing.
- C. The CONTRACTOR shall make all corrections required and shall resubmit the required number of new Samples until approved.

1.3 JOB MOCK-UPS

- A. Job mock-ups (sample panels) shall be constructed on site by the CONTRACTOR and only one of each type will be required. Mock-ups shall be constructed only after the individual Samples and components used in the mock-up have been approved by the ENGINEER. If a mock-up is not approved, CONTRACTOR shall construct additional ones until approval is received.
- B. CONTRACTOR shall store and protect large Samples and mock-ups until the Project is complete or until a time approved by ENGINEER.

1.4 SAMPLES FOR TESTS

- A. CONTRACTOR shall furnish such Samples of material as may be required for examination and test. All Samples of materials for tests shall be taken according to standard methods and as required by the Contract Documents.

+ + END OF SECTION + +

SECTION 01343
INSTALLATION DATA

1.1 GENERAL

- A. Installation data are defined as written instructions; drawings; illustrative, wiring and schematic diagrams; diagrams identifying external connections, terminal block numbers and internal wiring; and all other such information pertaining to installation of materials and equipment that is not furnished with Shop Drawings. Included are all printed manufacturers installation instructions, including those that may be attached to equipment and for which approval by the ENGINEER is not required.

1.2 SUBMITTAL

- A. CONTRACTOR shall submit two copies of all such data to the ENGINEER for each piece of equipment which he furnishes and for all other construction products for which such information is available from manufacturer. Data shall be acceptably identified and accompanied with a letter of transmittal. One copy shall be transmitted in accordance with Section 01341 paragraph 1.2.A, and one copy shall be transmitted to the ENGINEER at the Engineer's Field Office. Copies shall be transmitted at least two weeks prior to the start of the equipment installation.

+ + END OF SECTION + +

SECTION 01370
SCHEDULE OF VALUES

1.1 GENERAL

- A. The Preliminary Schedule of Values is an itemized list that establishes the value or cost of each major part of the Work and the division of work between the CONTRACTOR and subcontractors.
- B. The Preliminary Schedule of Values shall include all items of Work in the Plans and Specifications.
- C. The Schedule of Values is a detailed itemized list that establishes the value or cost of each detailed part of the Work. It may be used as the basis for preparing progress payments and may be used as a basis for negotiations concerning additional work or credits which may arise during the construction. Quantities and unit prices may be included in the schedule when approved by or required by the ENGINEER.

1.2 PREPARATION

- A. The Preliminary Schedule of Values:
 - 1. Preliminary Schedule shall show the division of Work between the CONTRACTOR and subcontractors by two methods, one for each Section of the Specifications and also one for each structure.
 - 2. Preliminary Schedule shall show breakdown of labor, materials equipment and other costs used in preparation of the Bid for the CONTRACTOR and subcontractors.
 - 3. Costs shall be in sufficient detail to indicate separate amounts for each Section of the Specifications and each structure.
 - 4. CONTRACTOR may include an item for bond, insurance, and temporary facilities.
 - 5. Preliminary Schedule of Values shall be prepared on 8-1/2-inch by 11-inch white paper.
 - 6. Use Table of Contents of the Specifications and the form included with Section 01300-Submittals as basis for Preliminary Schedule format and identify each item with number and title in the Table of Contents. Also use each structure as basis for Schedule of Value format. List sub-items of major products or systems as appropriate or when requested by ENGINEER.
 - 7. When requested by ENGINEER, support values with data that will substantiate their correctness.
 - 8. The sum of the individual values shown on the Schedule of Values must equal the total Contract Price.
 - 9. Each item shall include a directly proportional amount of the CONTRACTOR'S overhead and profit.
- B. The Schedule of Values:
 - 1. Schedule shall show breakdown of labor, materials, equipment and other costs used in preparation of the Bid.

2. Costs shall be in sufficient detail to indicate separate amounts for each Section of the Specifications and subsections therein and also separate amounts for each structure. Amounts shall be included for each type of work specified, in a manner approved by the ENGINEER.
3. CONTRACTOR may include an item for bond, insurance, and temporary facilities. These items will be included for payment at a rate of 25 percent per month for the first four months.
4. Schedule of Values shall be prepared on 8-1/2-inch by 11-inch white paper.
5. Use Table of Contents of the Specifications and the form included with Section 01300, Submittals as basis for Schedule format and identify each item with number and title in the Table of Contents. Also, use each structure as basis for schedule format. List sub-items of major products or systems as appropriate or when requested by ENGINEER.
6. When requested by ENGINEER, support values with data that will substantiate their correctness.
7. The sum of the individual values shown on the Schedule of Values must equal the total Contract Price.
8. Each item shall include a directly proportional amount of the CONTRACTOR'S overhead and profit.
9. Schedule shall show the purchase and delivery costs for materials and equipment that the CONTRACTOR anticipates he shall request payment for prior to their installation.

1.3 SUBMITTAL

- A. Submit two copies of the Preliminary Schedule of Values to ENGINEER for review in accordance with Article 2.6.3 of the General Conditions.
- B. Submit two copies of the Schedule of Values to ENGINEER for review in accordance with Article 2.9 of the General Conditions.

+ + END OF SECTION + +

SECTION 01380
CONSTRUCTION PHOTOGRAPHS

1.1 GENERAL

- A. CONTRACTOR shall retain a professional photographer to perform the services specified below.
- B. Obtain ENGINEER'S approval of the photographer selected prior to taking first photographs. Submit qualifications and experience record of the photographer to ENGINEER.

1.2 PHOTOGRAPHS

- A. Take a minimum of 300 color photographs during the construction period. The maximum number of color photographs required will be 500.
- B. Take an additional 50 color photographs of the completed or substantially completed Work.
- C. Photographs shall be taken approximately twice each month.
- D. The ENGINEER will approve the views to be taken and select the time at which they will be taken.
- E. A minimum of 10 photographs shall be taken each time the photographer is at the site.

1.3 PRINTS

- A. Furnish three prints of each photograph to the ENGINEER as soon as they are available from the photographer.
- B. Furnish additional photographs or prints requested by the ENGINEER at cost.
- C. Provide high quality 5-inch and 7-inch standard weight prints with a satin finish.
- D. Place the following information on the back of each print:
 - 1. Date photograph was taken.
 - 2. Title of Project.
 - 3. Description of view shown in photograph.
 - 4. Name and address of photographer.
 - 5. Photographer's numbered identification of exposure.

1.4 PRECONSTRUCTION PHOTOGRAPHS

A. General

1. It is the CONTRACTOR'S responsibility to take a sufficient number of preconstruction photographs so as to resolve any disputes which may arise regarding the considerations prior to and subsequent to construction.
2. If a dispute arises where no preconstruction photographs were taken, the disputed area shall be restored to the extent directed by the ENGINEER and to the complete satisfaction of the ENGINEER.
3. The CONTRACTOR must furnish one set of color prints of the preconstruction photographs to the ENGINEER, and must make others available for review in settling any disputes.
4. The ENGINEER may, at his option, take additional preconstruction photographs which may be used to settle disputes, but he will not be required to make these photographs available to the CONTRACTOR.
5. Preconstruction photographs taken by the CONTRACTOR will not be considered as part of the required number of construction photographs required in Paragraph 1.2 above.

1.5 VIDEO TAPE

- A. The CONTRACTOR shall video tape the entire site of the water treatment plant before any work takes place and shall submit one (1) copy to the ENGINEER. Video taping of the plant site, facilities, structures, and buildings shall be as directed by the ENGINEER.

+ + END OF SECTION + +

SECTION 01410
TESTING LABORATORY SERVICES

1.1 GENERAL

- A. The OWNER will employ and pay for an independent testing laboratory to perform the specified services.
- B. Inspection, sampling and testing shall be as specified in the individual Sections. These include:
 - 1. Section 02200, Earthwork.
 - 2. Section 02513, Pavement.
 - 3. Section 02529, Concrete Curbs, Gutters and Sidewalks.
 - 4. Section 03300, Cast-In-Place Concrete.
 - 5. Section 04100, Mortar.
 - 6. Section 05120, Structural Steel.
- C. The OWNER will pay for the testing listed above except for repeat testing which results from the CONTRACTOR'S negligence or his repeated failure to meet Specification requirements. Repeat testing shall be paid for by the CONTRACTOR.
- D. CONTRACTOR shall pay for:
 - 1. Tests not listed above.
 - 2. Tests made for the CONTRACTOR'S convenience.
 - 3. Repeat tests required because of the CONTRACTOR'S negligence or repeated failure to meet Specification requirements.
- E. The testing laboratory is not authorized to approve or accept any portion of the Work; rescind, alter or augment the requirements of the Contract Documents; or perform any duties of the CONTRACTOR.

1.2 QUALIFICATIONS OF LABORATORY

- A. Where applicable, the testing laboratory will meet "Recommended Requirements for Independent Laboratory Qualification", latest edition, published by American Council of Independent Laboratories and the basic requirements of ASTM E 329 "Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction".
- B. Testing equipment used by the laboratory will be calibrated at maximum 12 month intervals by devices of accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.

1.3 LABORATORY DUTIES

- A. The testing laboratory will:
 - 1. Cooperate with ENGINEER and CONTRACTOR and provide qualified personnel promptly on notice.

2. Perform specified inspections, sampling and testing of materials and methods of construction; comply with applicable standards; ascertain compliance with requirements of Contract Documents.
3. Promptly notify ENGINEER and CONTRACTOR of irregularities or deficiencies of Work which are observed during performance of services.
4. Promptly submit 5 copies of reports of inspections and tests to ENGINEER, including:
 - a. Date issued.
 - b. Project title and number.
 - c. Testing laboratory name and address.
 - d. Date of inspection or sampling.
 - e. Record of temperature and weather.
 - f. Date of test.
 - g. Identification of product and Specification Section.
 - h. Location in Project.
 - i. Type of inspection or test.
 - j. Results of tests and observations regarding compliance with Contract Documents.
5. Perform additional tests and services as required by ENGINEER.

1.4 CONTRACTOR'S RESPONSIBILITIES

- A. The CONTRACTOR shall:
 1. Cooperate with laboratory personnel, provide access to Work and to manufacturer's operations.
 2. Provide to laboratory, preliminary representative samples of materials to be tested, in required quantities.
 3. Furnish copies of product test reports.
 4. Provide to the laboratory the preliminary design mix proposed for concrete, and other material mixes that require testing by the testing laboratory.
 5. Furnish labor and facilities:
 - a. To provide access to Work to be tested.
 - b. To obtain and handle samples at the site.
 - c. To facilitate inspections and tests.
 - d. For laboratory's exclusive use for storage and curing of test samples.
 - e. Forms for preparing concrete test beams and cylinders.
 6. Notify laboratory and ENGINEER sufficiently in advance of operations to allow for assignment of personnel and scheduling of tests.
 7. Arrange with laboratory and pay for, additional samples and tests required for CONTRACTOR'S convenience.

+ + END OF SECTION + +

SECTION 01411

TESTING LABORATORY SERVICES FURNISHED BY CONTRACTOR

1.1 GENERAL

- A. CONTRACTOR shall employ and pay for an independent testing laboratory to perform the specified services. Laboratory selected shall be subject to approval by the ENGINEER.
- B. Inspection, sampling and testing shall be as specified in the individual Sections. These include, but are not necessarily limited to, Sections 02513, 02233, and 03300.

1.2 QUALIFICATIONS OF LABORATORY

- A. Where applicable, meet "Recommended Requirements for Independent Laboratory Qualification", latest edition, published by American Council of Independent Laboratories and the basic requirements of ASTM E 329, "Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction". Laboratory shall be authorized to operate in the state in which Project is located.
- B. Submit copy of report of inspection of facilities made by Materials Reference Laboratory of National Bureau of Standards during most recent tour of inspection; with memorandum of remedies of any deficiencies reported by inspection.
- C. Testing Equipment:
 - 1. Calibrated at maximum 12 month intervals by devices of accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.
 - 2. Submit copy of certificate of calibration, made by accredited calibration agency.

1.3 LABORATORY DUTIES

- A. Promptly submit 5 copies of reports of tests and design mix computations to ENGINEER, including:
 - 1. Date issued.
 - 2. Project title and number.
 - 3. Testing laboratory name and address.
 - 4. Date of test.
 - 5. Identification of product and Specification Section.
 - 6. Results of tests and observations regarding compliance with Contract Documents.
- B. Perform additional tests and services as required to assure compliance with the Contract Documents.

1.4 CONTRACTOR'S COORDINATION WITH LABORATORY

- A. Provide to laboratory, representative samples of materials to be tested, in required quantities.

1.5 PRODUCT TEST REPORTS

- A. Furnish copies of product test reports where required by the Specifications or requested by ENGINEER.

+ + END OF SECTION + +

SECTION 01420
SPECIAL INSPECTIONS

1.1 GENERAL

- A. The following types of Work will be subject to Special Inspections, which may be performed by the ENGINEER or the Resident Project Representative, or by such other special inspector as the OWNER may employ:
1. High-Strength Bolting: During all bolt installations and tightening operations.
 - a. Exceptions:
 - 1) The special inspector need not be present during the entire installation and tightening operation, provided he has:
 - a) Inspected the surfaces and bolt type for conformance to plans and specifications prior to start of bolting, and "will, upon completion of all bolting, verify the minimum specified bolt tension for 10 percent of the bolts for each connection, with a minimum of two bolts per connection".
 - 2) In bearing-type connections when threads are not required by design to be excluded from the shear plane, inspection prior to or during installation will not be required.

1.2 SPECIAL INSPECTOR

- A. The special inspector shall observe the Work assigned to be certain it conforms to the Drawings and Specifications.
- B. CONTRACTOR shall provide to the inspector, representative samples of materials to be tested, in required quantities.
- C. CONTRACTOR shall coordinate and allow the inspector access to all Work to be inspected.
- D. Work and materials found to not meet specification requirements will not be accepted by the ENGINEER until all regulatory authorities are satisfied.

+ + END OF SECTION + +

SECTION 01509

OWNER'S TEMPORARY OPERATION FACILITIES

1.1 GENERAL

- A. CONTRACTOR shall furnish, install, and maintain OWNER'S Temporary Operation Facilities as shown and specified. CONTRACTOR shall provide facilities a minimum of thirty (30) days prior to commencement of any demolition work in the Administration Building (Chemical Building No. 2).
- B. Temporary utilities include:
 - 1. Water.
 - 2. Electricity and Lighting.
 - 3. Telephone.
 - 4. Heat, Ventilation, and Enclosure.
 - 5. Fire Protection.
 - 6. Sanitary and First Aid Facilities.
- C. OWNER'S Temporary Facilities include:
 - 1. Operations Office.
 - 2. Locker Room Facilities.
- D. CONTRACTOR shall abide by all rules and regulations of the utility service companies or authorities having jurisdiction. CONTRACTOR shall pay for any permits that may be required.
- E. Provide all materials, equipment and power required for temporary electricity and lighting. Continuous power shall be provided for Operations Office and Locker Room Facilities. Provide all outlets with circuit breaker protection and comply with ground fault protection requirements of NEC. Minimum lighting shall be 5 foot candles for open areas and 10 foot-candles for stairs. Provide minimum of one 300 watt lamp each 20 feet in enclosed areas.
- F. CONTRACTOR shall furnish and maintain a safe drinking water supply readily available to all the operations staff during the construction period.
- G. CONTRACTOR shall be responsible for all utility service costs until final acceptance of Work with the Administration Building (Chemical Building No. 2) has been received, or when directed by the OWNER. Included are all fuel, power, light, heat and other utility services necessary for operation of the Facilities. Telephone utility service and installation cost shall be paid by CONTRACTOR. Telephone usage charges shall be paid by the OWNER.
- H. CONTRACTOR shall:
 - 1. Comply with applicable requirements specified in Divisions 15 and 16.
 - 2. Maintain and operate systems to assure continuous service.
 - 3. Completely remove temporary materials and equipment when their use is no longer required.

4. Clean and repair damage caused by temporary installations or use of temporary facilities.
5. Restore existing facilities used for temporary services to specified or to original condition.

1.2 OPERATIONS OFFICE

- A. Facility shall be a new-fist class condition, double wide trailers with a minimum 1,600 square feet area.
- B. Location of office shall be as shown on Drawings. Layout of office shall be as shown on Figure 01509-A, included with this Section.
- C. Minimum Construction:
 1. Structurally sound foundation and superstructure.
 2. Concrete or boardwalk steps, landing, and sidewalks of four feet minimum width for complete access to office.
 3. Completely weathertight and insulated.
 4. Exterior finish, acceptable to OWNER.
 5. All new interior finishes, acceptable to OWNER.
 6. New resilient tile floor covering and new industrial grade carpet, as indicated in Figure 01509-A. Flooring shall be acceptable to the OWNER.
 7. Exterior windows: 10 percent of floor area with operable sash and screens. All windows shall be furnished with locks and venetian blinds, acceptable to the OWNER.
 8. Interior windows shall be as shown on the office plan. Approximate size of each window shall be 3 feet by 4 feet. All windows shall be furnished with venetian blinds, acceptable to the OWNER.
 9. Three (3) exterior doors shall be provided. Doors to be hollow metal doors with 1-1/2 pr hinges, lockset, closure, weather stripping, and threshold. Doors shall be keyed alike, with seven (7) duplicate keys provided by the CONTRACTOR, who shall surrender all keys for the office entry to the OWNER. Key system shall be different than that used by the CONTRACTOR.
- D. Minimum Services:
 1. Interior lighting of 50-foot candles at desk top height.
 2. Exterior lights at each entrance.
 3. Automatic heating to maintain 70° F in winter. Furnish and pay for all fuel.
 4. Automatic cooling to maintain 75° F in summer. Furnish and pay for all fuel.
 5. Electric service required and pay all charges.
 6. A minimum of twenty (20) electric duplex receptacles wall outlets that are accessible from 6 feet along any wall.
 7. Private telephone service and installation charges for three (3) telephone lines and a minimum of five (5) telephones. (OWNER to pay monthly telephone charges.) Telephone service shall include a minimum of five (5) telephones with two (2) separate numbers; one telephone in each office, reception area, and one in conference room. The third telephone line shall be dedicated to the facsimile machine. A speaker phone shall be supplied for

- the conference room. The telephone system shall be similar to the Merlin System and be equipped with speed dialing capability.
8. Water cooler with chilled and hot drinking water and cups.
 9. Private sanitary facilities with one water closet, one lavatory medicine cabinet and mirror. Provide hot and cold water.
 10. Bar sink with hot and cold water.
 11. Counter top with cabinets and doors below. See Figure 01509-A.
 12. All plumbing facilities and sewers required and in accordance with local codes. Protect from freezing.

E. Minimum Furnishings:

1. Conference table for twelve with twelve folding chairs and five side chairs.
2. Fire extinguishers (number as required by Code). CONTRACTOR to install.
3. Identifying exterior sign, professionally lettered, at least 24 inches by 36 inches with wording acceptable to OWNER. CONTRACTOR to install as directed by the OWNER.
4. First aid kit, Johnson & Johnson Model No. 8161, or equal.
5. Two (2) quartz battery wall clocks with a face of 12-inch diameter. CONTRACTOR to install as directed by the OWNER.
6. Walk-off mats at all entrances.
7. Smoke detectors (number as required by Code). CONTRACTOR to install.
8. Ten (10) white hard hats meeting ANSI Z89.1-1991, Class A & B and Fed. Spec. GGG-H-142 & OSHA guidelines.

1.3 LOCKER ROOM FACILITIES

- A. Facility shall be a new-first class condition, double wide trailers with a minimum 1,600 square feet area.
- B. Location of office shall be as shown on Drawings. Layout of office shall be as shown on Figure 01509-B, included with this Section.
- C. Minimum Construction:
 1. Structurally sound foundation and superstructure.
 2. Concrete or boardwalk steps, landing, and sidewalks of four feet minimum width for complete access to office.
 3. Completely weathertight and insulated.
 4. Exterior finish acceptable to OWNER.
 5. All new interior finishes acceptable to OWNER.
 6. New resilient tile floor covering acceptable to the OWNER.
 7. Exterior windows: 2 percent of floor area with operable sash and screens. All windows shall be furnished with locks and venetian blinds, acceptable to the OWNER.
 8. Three (3) exterior doors shall be provided. Doors to be hollow metal doors with 1-1/2 pr hinges, lockset, closure, weather stripping, and threshold. Doors shall be keyed alike, with seven (7) duplicate keys provided by the CONTRACTOR, who shall surrender all keys for the office entry to the OWNER. Key system shall be different than that used by the CONTRACTOR.

D. Minimum Services:

1. Interior lighting of 50-foot candles at desk top height.
2. Exterior lights at each entrance.
3. Automatic heating to maintain 70° F in winter. Furnish and pay for all fuel.
4. Automatic cooling to maintain 75° F in summer. Furnish and pay for all fuel.
5. Electric service required and pay all charges.
6. A minimum of four (4) electric duplex receptacles.
7. Sanitary facilities as shown on Figure 01509-B.
8. All plumbing facilities and sewers required and in accordance with local codes. Protect from freezing.

E. Minimum Furnishings:

1. Lockers as shown on plans, acceptable to the OWNER. Lockers shall be single tier, 18-inches wide with lockable handles, storage shelf, and hooks. Lockers shall be approved by the OWNER.
2. Benches as shown on plans, acceptable to the OWNER. Benches shall be 9-1/2 inches wide with length as shown on Drawings. Provide pedestals for mounting.
3. Fire extinguishers (number as required by Code). CONTRACTOR to install.
4. Identifying exterior sign, professionally lettered, at least 24 inches by 36 inches with wording acceptable to OWNER. CONTRACTOR to install as directed by the OWNER.
5. Two (2) first aid kits, Johnson & Johnson Model No. 8161, or equal.
6. Two (2) quartz battery wall clocks with a face of 12-inch diameter. CONTRACTOR to install as directed by the OWNER.
7. Walk-off mats at all entrances.
8. Smoke detectors (number as required by Code). CONTRACTOR to install.
9. Two (2) each, identification signs for "MEN'S LOCKERS" and "WOMEN'S LOCKERS".

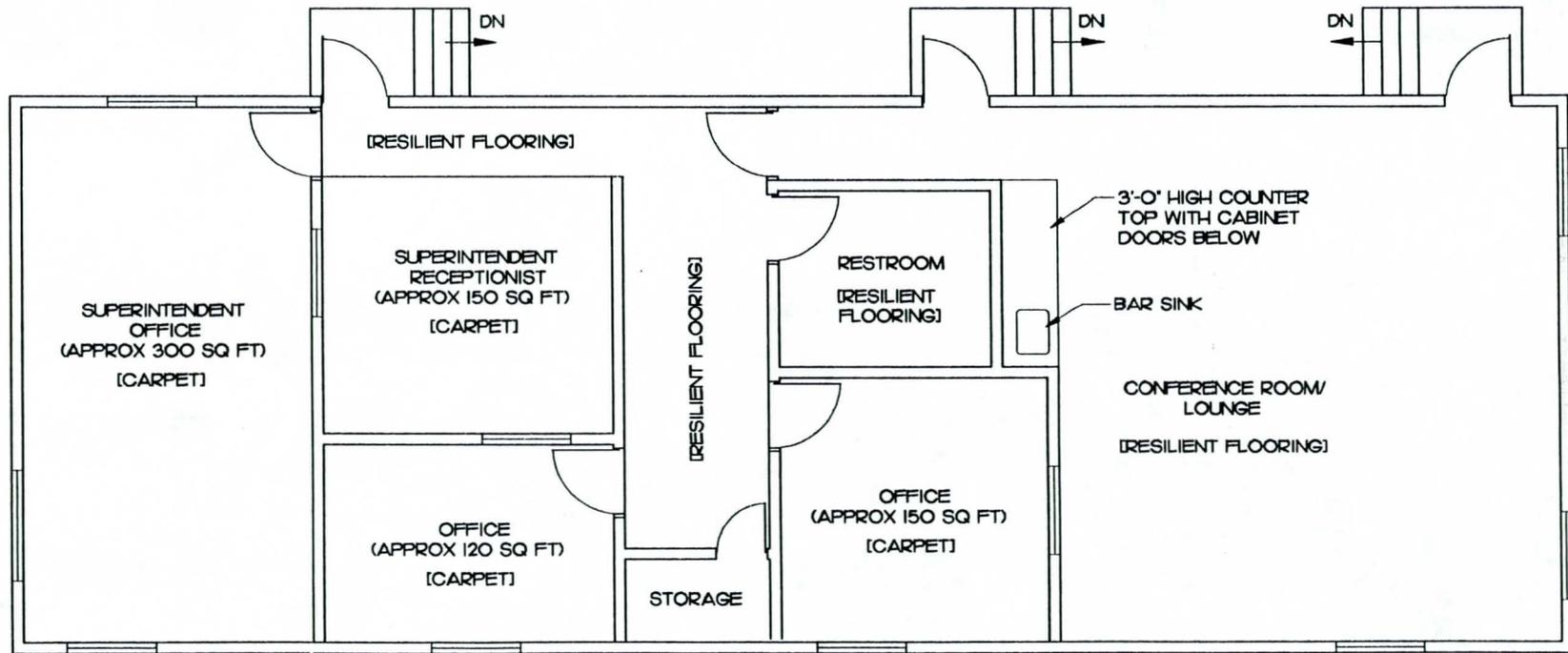
1.4 MAINTENANCE

- A. Maintenance shall be for the duration of the Contract Time.
- B. Maintain Office and Locker Room Facilities including: immediate repair of any damage, leaks, or defective service.

1.5 REMOVAL

- A. Remove Office and Locker Room Facilities upon final acceptance of Work within the Administration Building (Chemical Building No. 2) or when directed by OWNER.

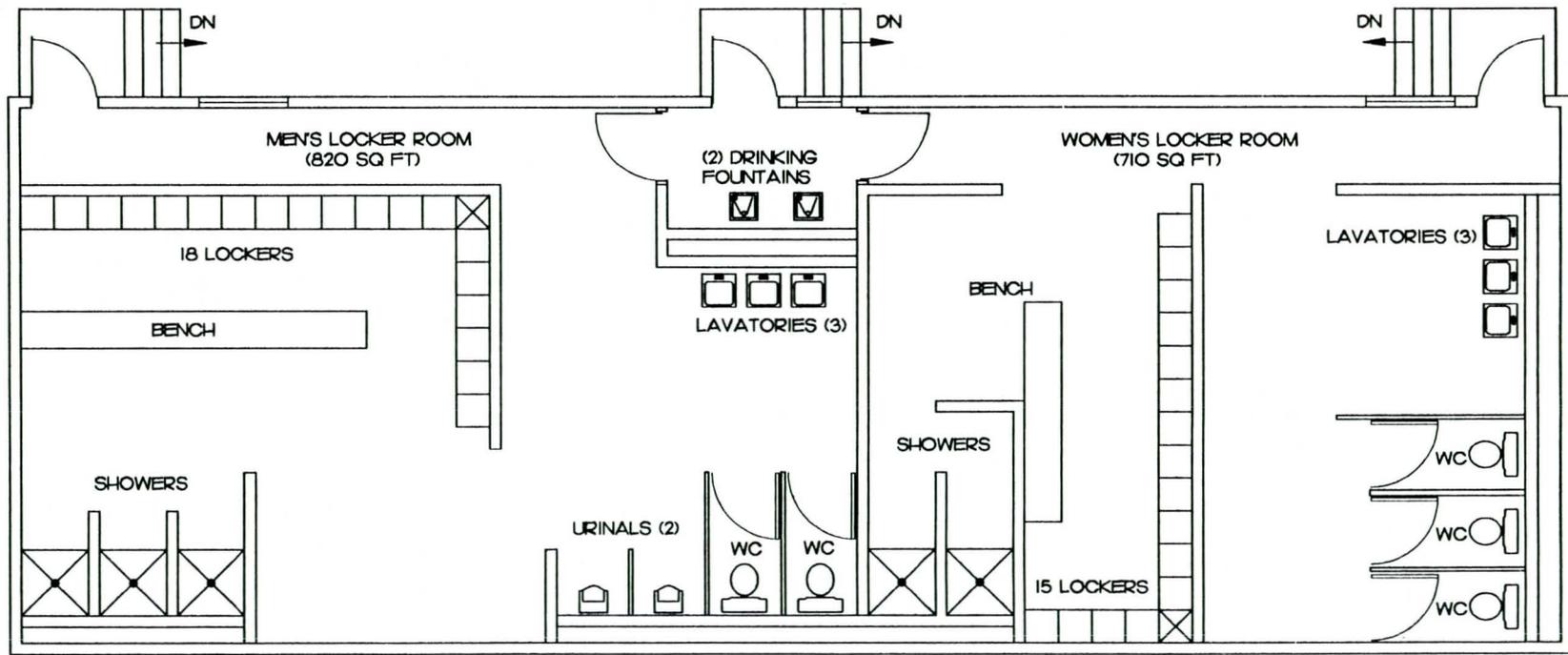
+ + END OF SECTION + +



OPERATIONS OFFICE
(APPROXIMATE SIZE: 24' X 70')

NOTES:

1. SEE SPECIFICATIONS FOR OFFICE REQUIREMENTS.
2. LOCATE OFFICE AS SHOWN ON DRAWINGS: PART A - MODIFICATIONS AND UPGRADES.



EMPLOYEE LOCKER ROOMS
(APPROXIMATE SIZE: 24' X 70')

NOTES:

- 1. SEE SPECIFICATIONS FOR OFFICE REQUIREMENTS.
- 2. LOCATE OFFICE AS SHOWN ON DRAWINGS: PART A - MODIFICATIONS AND UPGRADES.

SECTION 01510

TEMPORARY CONSTRUCTION FACILITIES

1.1 GENERAL

- A. CONTRACTOR shall be responsible for all temporary construction facilities required by the CONTRACTOR for the Work. CONTRACTOR shall make all arrangements with utility service companies for temporary services and shall pay all costs associated therewith.
- B. Temporary utilities include:
 - 1. Water.
 - 2. Electricity and Lighting.
 - 3. Telephone.
 - 4. Heat, Weather Protection and Ventilation.
 - 5. Fire Protection.
 - 6. Sanitary and First Aid Facilities.
- C. Temporary facilities include:
 - 1. CONTRACTOR'S field office.
- D. CONTRACTOR shall abide by all rules and regulations of the utility service companies or authorities having jurisdiction.
- E. Sufficient temporary heat and ventilation shall be provided to assure safe working conditions and that no damage will occur to any of the Work. In addition, all enclosed areas shall be maintained at a minimum of 50 F, unless otherwise specifically excepted in the Specifications.
- F. Provide all materials, equipment and power required for temporary electricity and lighting. Include continuous power for construction site offices. Provide all outlets with circuit breaker protection and comply with ground fault protection requirements of NEC. Minimum lighting shall be 5 foot candles for open areas, 10 foot-candles for stairs and shops. Provide minimum of one 300 watt lamp each 20 feet in enclosed work areas.
- G. Suitably enclosed chemical or self-contained toilets shall be provided for the use of the men employed on the Work. Toilets shall be located near the Work site and secluded from observation insofar as possible. Toilets shall be serviced at regular intervals, kept clean and supplied throughout the course of the Work.
- H. CONTRACTOR shall furnish and maintain a safe drinking water supply readily available to all workers.
- I. CONTRACTOR shall be responsible for all utility service costs until the Letter of Conditional Approval has been received. Included are all fuel, power, light, heat and other utility services necessary for execution, completion, testing and initial operation of the Work.

- J. CONTRACTOR shall:
 - 1. Comply with applicable requirements specified in Divisions 15 and 16.
 - 2. Maintain and operate systems to assure continuous service.
 - 3. Modify and extend systems as Work progress requires.
 - 4. Completely remove temporary materials and equipment when their use is no longer required.
 - 5. Clean and repair damage caused by temporary installations or use of temporary facilities.
 - 6. Restore existing facilities used for temporary services to specified or to original condition.

- K. Provide a CONTRACTOR'S field office with the minimum facilities specified. Provide all required storage and work sheds.
 - 1. Field Office and Furnishings:
 - a. Acceptable appearance, weather-proof building with lockable door.
 - b. As required by CONTRACTOR but with sufficient room for project meetings.
 - c. Include conference table and chairs sufficient for twelve persons.
 - d. Telephone service.
 - e. Light and temperature as specified under ENGINEER'S Field Office.
 - f. Six white protective helmets for visitor's use.
 - g. Exterior identifying sign.
 - h. Other furnishings at CONTRACTOR'S option.
 - i. Company sign no larger than 4 feet by 8 feet.
 - 2. Remove office and sheds upon final acceptance unless otherwise approved by ENGINEER.

+ + END OF SECTION + +

SECTION 01511
TEMPORARY ELECTRICITY

1.1 GENERAL

- A. Temporary electrical service shall be provided by the CONTRACTOR until Substantial Completion of the Project unless otherwise agreed by ENGINEER.
- B. All costs, including the charge for power consumed shall be assumed by the CONTRACTOR. Also provide power for testing and initial start-up of equipment.
- C. The temporary service shall conform to applicable provisions of Division 16.
- D. Materials and equipment may be new or used, however they shall be in first class, fully serviceable condition and must not create unsafe conditions or violate requirements of applicable codes.
- E. Each contractor using the service shall provide his own extension cords, drop lights, power tools, and other small devices required.
- F. Service is required only for lighting, power tools, and similar usages. Electric space heaters and large welding machines are not included herein.
- G. All temporary service required beyond the specified locations shall be the responsibility of the CONTRACTOR requiring such power, who shall furnish his own portable generator or other means.

1.2 POWER SOURCE AND SERVICE REQUIRED

- A. Temporary service shall originate from The Salt River Project (SRP). CONTRACTOR shall be responsible for all utility coordination, fees, costs, and incidentals required.
- B. System shall be 240/120 volt, single phase, 60 Hz with sufficient capacity to provide service for construction use by all trades and with the following minimum facilities:
 - 1. 255 ampere frame with 200 ampere trip main circuit breaker.
 - 2. 2 pole safety switch, and a 240/120 volt, single phase, 3 wire distribution panel.
- C. Service shall be provided and maintained so that power can be secured at any desired point with no more than a 50 foot extension.
- D. One power center minimum shall be provided on each floor.
- E. Provide each outlet with circuit breaker protection and comply with ground fault protective requirements of NEC Article 210-8.

- F. Provide continuous power for construction site offices, including the OWNER'S and ENGINEER'S facilities, 24 hours a day - 7 days per week.
- G. Provide power to maintain continuous operation of existing facilities during changeover of electrical equipment.
- H. Provide power for testing and checking equipment.
- I. If OWNER occupies part of facility before final acceptance, cost of electricity for that portion will be shared proportionately.

1.3 INSTALLATION

- A. Install temporary work in a neat orderly manner, and make structurally and electrically sound throughout.
- B. Maintain installation throughout construction period to give continuous service and to provide safe working conditions.
- C. Modify service and rearrange wiring as Work progress requires.
- D. Locate all facilities to avoid interference with hoisting, materials handling, storage, traffic areas, existing operable facilities and work under other Contracts.
- E. Assume responsibility for and return to original condition any part of the permanent electrical system which is used for construction purposes.

1.4 TEMPORARY LIGHTING

- A. Provide as specified in Section 01512, Temporary Lighting.

1.5 REMOVAL

- A. Completely remove temporary materials and equipment after permanent installation is in use.
- B. Repair damage caused by the temporary service or its removal and restore to specified or original condition.

+ + END OF SECTION + +

SECTION 01512
TEMPORARY LIGHTING

1.1 GENERAL

- A. Temporary lighting shall be provided by the CONTRACTOR.

1.2 DEFINITIONS

- A. Work Lighting: That required to provide adequate illumination for Work being performed.
- B. Safety Lighting: That required to provide:
1. Adequate illumination for safe movement of authorized persons throughout project.
 2. Adequate illumination for public safety.
 3. Special warning lighting for hazardous conditions.
- C. Security Lighting: That required in protection of Project from unauthorized entry.

1.3 DESCRIPTION OF SYSTEM

- A. Furnish and install temporary lighting which is required for:
1. Construction needs.
 2. Safe and adequate working conditions throughout Project.
 3. Public safety.
 4. Security lighting.
 5. Lighting for temporary office, storage and construction buildings.
- B. Lighting Intervals:
1. Work Lighting:
 - a. General: 5 foot candles.
 - b. Construction Plant and Shops: 10 foot candles.
 - c. For Detail and Finishing Work: 20 foot candles.
 - d. For Detailed Testing and Inspection: 30 foot candles.
 - e. For First Aid Stations and Infirmaries: 30 foot candles.
 2. Safety Lighting:
 - a. General: 5 foot candles, minimum.
 - b. For Hazardous Conditions: As required by applicable codes.
 3. Security Lighting: 1 foot candle.
- C. Periods of Service:
1. Work Lighting: Continuous from fifteen minutes prior to fifteen minutes past scheduled work hours on scheduled work days.
 2. Safety Lighting:
 - a. Within Project Site: At all times authorized personnel are present.
 - b. Public Areas: At all times.
 3. Security Lighting: All hours of darkness.

- D. Maintain strict supervision of use of temporary lighting. Enforce conformance with applicable standards and safe practices, and prevent abuse of services.

1.4 POWER

- A. As specified under Section 01511, Temporary Electricity.

1.5 COSTS OF INSTALLATION AND OPERATION

- A. Pay costs of Temporary Lighting, including costs of installation, maintenance and removal.
- B. Power Costs: As specified in Temporary Electricity.

1.6 REQUIREMENTS OF REGULATORY AGENCIES

- A. Comply with National Electric Code, federal, state and local codes, and utility service company regulations.

1.7 USE OF OWNER'S EXISTING SYSTEM

- A. Existing systems can not be used for temporary lighting.

1.8 USE OF PERMANENT SYSTEM

- A. Secure OWNER'S written permission for use of system, indicating conditions of use.
- B. Furnish and install temporary lamps for temporary lighting.

1.9 MATERIALS

- A. Comply with applicable provisions of Division 16.
- B. Materials and equipment may be new or used, but must be adequate for purposes intended, and must not create unsafe conditions or violate requirements of applicable codes.
- C. Provide all required facilities, including wiring, switches, accessories and supports.
- D. At CONTRACTOR'S option, patented specialty products may be used if UL approved.

1.10 RECEPTACLES, FIXTURES

- A. Standard products, meeting UL requirements.
- B. Provide heavy-duty guards on fixtures.
- C. Provide appropriate types of fixtures for environment in which used, in accordance with NEC and NEMA standards.

1.11 INSTALLATION

- A. Install temporary work in neat and orderly manner and make structurally and electrically sound throughout.
- B. Maintain throughout construction period to give continuous service and to provide safe working conditions.
- C. Modify and extend lighting as Work progress requires.
- D. Locate to avoid interference with or hazards to:
 - 1. Work or movement of personnel.
 - 2. Traffic areas.
 - 3. Materials handling.
 - 4. Storage areas.
 - 5. Work for other contracts.
- E. Install lighting switches at entrance to each area, or successive areas, so that progress to all areas of Project may be made through lighted areas.
- F. Install exterior security lighting.
 - 1. Illuminate entire Project site.
 - 2. Control lighting by photo-electric cell.

1.12 REMOVAL

- A. Completely remove temporary materials and equipment, after permanent lighting is in use.
- B. Repair damage caused by temporary service, and restore surfaces to specified, or original condition.
- C. Immediately prior to completion of Project, remove temporary lamps, install new lamps throughout.

+ + END OF SECTION + +

SECTION 01513

TEMPORARY HEAT, VENTILATION AND ENCLOSURE

1.1 GENERAL

- A. Temporary heat, ventilation and enclosure shall be provided by the CONTRACTOR.

1.2 DEFINITIONS

- A. Temporary Enclosure: Sufficient preliminary enclosure of a portion of a structure, or of an entire building, to prevent entrance or infiltration of rainwater, wind or other elements, and to prevent undue heat loss from within enclosed area.
- B. Permanent Enclosure: State of construction at which all moisture and weather-protection elements of construction have been installed in accord once with Contract Documents, either for a portion of structure, or for entire building.

1.3 DESCRIPTION OF SYSTEM

- A. Provide temporary heat and ventilation in enclosed areas throughout construction period required to:
1. Facilitate progress of Work.
 2. Protect Work and all products from rain, snow, dampness and cold.
 3. Prevent moisture condensation on surfaces.
 4. Thaw out and raise temperature of ground or materials for proper execution of Work.
 5. Provide suitable ambient temperatures and humidity levels for installations and curing of materials.
 6. Provide adequate ventilation to meet health regulations for safe working environment.
 7. Allow beneficial occupancy of Work, or portion of Work, prior to final completion, including air conditioning, if applicable.
- B. Temperatures Required:
1. Except where specified otherwise the limits of the temperatures which shall be maintained during the time of temporary heating are a minimum of 50 F to a maximum of the design temperature of the facility.
 2. During a normal working day, minimum temporary heat for the types of activities indicated shall be as follows:
 - a. Placing, setting and curing of concrete, and the erection of masonry units.....50 F.
 - b. Application of masonry units.....55 F.
 - c. Ten days prior to, during and until completion of the placing of interior woodwork and interior finishes such as varnishing and painting.....70 F.
 - d. After application of interior finishes and until substantial completion.....70 F.

3. Twenty-four hours per day during placing, setting and curing of cementitious materials: As required by Specification Section for each product.
 4. Storage Areas: As required by Specification Section for each product.
 5. Provide temporary enclosures as required to maintain conditions described above.
- C. Ventilation Required:
1. General: Prevent hazardous accumulations of dusts, fumes, mists, vapors or gases in areas occupied during construction.
 - a. Provide local exhaust ventilation to prevent harmful dispersal of hazardous substances into atmosphere of occupied areas.
 - b. Dispose of exhaust in a manner that will not result in harmful exposure to persons.
 - c. Ventilate storage spaces containing hazardous or volatile materials.
 2. Provide adequate ventilation for:
 - a. Curing installed materials.
 - b. Humidity dispersal as needed to provide suitable ambient conditions for Work.
- D. Maintain strict supervision of operation of temporary heating and ventilating equipment:
1. Enforce conformance with all applicable codes and standards.
 2. Enforce safe practices.
 3. Prevent abuse of services.
 4. Prevent damage to finishes.
 5. Ensure that temporary facilities and equipment do not interrupt the continuous progress of construction operations.

1.4 COSTS OF INSTALLATION AND OPERATION

- A. CONTRACTOR shall pay all costs for temporary heat, ventilation, and enclosures required during construction, including cost of installation, fuel, operation, maintenance and removal.

1.5 REQUIREMENTS OF REGULATORY AGENCIES

- A. Obtain and pay for permits as required by governing authorities.
- B. Comply with federal, state and local laws, ordinances, rules and regulations, and with utility service company regulations.

1.6 USE OF OWNER'S EXISTING SYSTEM

- A. When the new Work is an addition to an existing building, the existing systems in building may be used for temporary heat and ventilation only if OWNER'S written permission can be secured and equitable allocation of costs acceptable to the OWNER is agreed upon.

1.7 USE OF PERMANENT SYSTEM

- A. When completed, the permanent heating system may be used to provide temporary heat if the OWNER'S written permission for use of the system is obtained.
- B. The following are the conditions for using the permanent heating system:
 - 1. Building must be sufficiently complete so it can fulfill the requirements as a "Permanent Enclosure".
 - 2. The permanent system must be substantially complete including the installation and functionality of the systems' operating and safety controls. All heating equipment, piping systems, strainers, filters and associated items should be flushed, cleaned, and prepared for proper operation.
 - 3. ENGINEER shall approve the time when the permanent system may be operated.

1.8 MATERIALS AND EQUIPMENT

- A. Materials may be new or used, but must be adequate for purposes intended, and must not create unsafe conditions nor violate requirements of applicable codes.
- B. Provide all required facilities, including piping, wiring and controls.
- C. Portable units shall be: Space heaters which burn gas or oil. They shall be units which meet code requirements and have the following:
 - 1. Safety controls against explosion, overheating, and carbon monoxide buildup.
 - 2. Except where otherwise permitted by applicable codes vent direct-fired units to outside.
 - 3. Adequate combustion air.
- D. Electrical heaters for temporary heat shall not be used.
- E. Provide covers or temporary enclosures to protect Work and materials.

1.9 INSTALLATION

- A. Install all temporary work in neat, orderly manner and make structurally, mechanically and electrically sound throughout.
- B. Maintain to give safe, continuous service at required times, and to provide safe working conditions.
- C. Modify and extend system as Work progress requires.
- D. Locate units to provide uniform distribution of heat and air movement. When feasible, temporary units should be located as near as possible to permanent piping.

- E. If air conditioning or ventilating duct systems are to be used for drying purposes, provide and maintain temporary filters until permanent filters are installed.
- F. Permanently installed direct radiation units, such as convectors or finned pipes, shall be protected with temporary sheet metal enclosures.
- G. Locate to avoid interference with or hazards to:
 - 1. Work or movement of personnel.
 - 2. Traffic areas.
 - 3. Materials handling.
 - 4. Storage areas.
 - 5. Work of other prime contractors or utility service companies.
 - 6. Finishes.

1.9 REMOVAL

- A. Completely remove temporary materials and equipment upon completion of construction.
- B. Clean and repair damage caused by temporary installation, and restore all materials and equipment to specified or to original condition.
- C. Install new replaceable type filters, or clean permanent filters, if permanent HVAC facilities were used for temporary heat.

+ + END OF SECTION + +

SECTION 01515

TEMPORARY WATER

1.1 GENERAL

- A. Temporary water shall be provided by the CONTRACTOR.

1.2 DESCRIPTION OF SYSTEM

- A. Furnish and install temporary water service for entire Project for use throughout construction period.
- B. Provide service standpipes, centrally located throughout the Work area and minimum of two 3/4-inch hose bibbs on each floor within buildings.
- C. Users shall provide water hoses from hose bibbs to point of operations.
- D. Also provide water for sanitary facilities, first aid facilities, fire protection, field offices, and cleaning.
- E. Maintain adequate volume of water for all purposes.
- F. Water Source:
1. Supplier: CONTRACTOR shall provide water source by connecting to existing utility mains at locations designated by the OWNER.
 2. Provide minimum 6 inch supply service and meters satisfactory to OWNER.
 3. Permission shall be obtained from the OWNER for water from hydrants. See form on page 01515-4.
- G. Maintain strict supervision of use of temporary services:
1. Enforce conformance with applicable codes and standards.
 2. Enforce sanitary practices.
 3. Prevent abuse of services.
 4. Prevent wasteful use of water.
 5. Protect system from freezing.

1.3 COSTS OF INSTALLATION AND OPERATION

- A. CONTRACTOR shall pay all costs of temporary water service, including costs of installation, maintenance and removal of pipe and equipment.
- B. CONTRACTOR shall pay costs for water used by all trades.
- C. Should OWNER occupy part of facility during construction water costs will be shared proportionately on an agreed unit cost basis.

1.4 REQUIREMENTS OF REGULATORY AGENCIES

- A. Obtain, pay for permits, fees, deposits required by governing authorities.
- B. Comply with federal, state and local laws, ordinances, rules and regulations, and with utility service company regulations.

1.5 USE OF OWNER'S EXISTING SYSTEM

- A. Use of existing system for temporary water for construction shall only be as approved by the OWNER.
- B. Modify and extend system as necessary to meet temporary water requirements.
- C. Upon completion of Work, restore existing system to specified, or original condition.

1.6 MATERIALS

- A. Comply with applicable provisions of Division 15.
- B. Materials may be new or used, but must be adequate for purpose required, sanitary, and must not violate requirements of applicable codes.
- C. Provide all required facilities, including piping, valves, pumps, pressure regulators, tanks and other appurtenances.

1.7 INSTALLATION

- A. Install work in a neat and orderly manner and make structurally and mechanically sound throughout.
- B. Maintain to provide continuous service.
- C. Modify and extend service as Work progress requires.
- D. Locate piping and outlets to provide service convenient to work stations and to avoid interference with traffic and work areas, materials handling equipment, storage area, and work under other contracts.
- E. Do not run piping on floor or on ground.
- F. Provide drip pan under each hose bibb located within building, connect drain to sewer.
- G. Provide insulation, or other means, to prevent pipes from freezing.
- H. When necessary to maintain pressure, provide temporary pumps, tanks and compressors.

1.8 REMOVAL

- A. Completely remove temporary materials and equipment upon completion of construction.
- B. Clean, and repair damage caused by installation, and restore to specified, or original condition.

+ + END OF SECTION + +

Initial ____
QS # _____

CITY OF PHOENIX, ARIZONA
WATER & WASTEWATER DEPARTMENT
DIVISION OF PLANNING & ENGINEERING

P-22
ORD G-3341
7/1/90

PERMIT TO USE WATER FROM FIRE HYDRANT

Contractor: _____ Phone: _____

Address: _____

Name of Responsible Individual _____

Is authorized to use City water from the public fire hydrant at:

This meter permit is issued for a temporary water service for a specific job and is not intended to serve the needs of a contractor on a continuous basis. The contractor has no authority to relocate or remove the meter and shall notify the Meter Shop (262-6349) for relocation and also for removal when this job is completed.

A deposit in the amount of five hundred dollars (\$500) is hereby acknowledged, which said deposit shall be subject to the following charges if not paid when billed:

- (1) A charge of one hundred and fifteen dollars (\$115) for original installation and final removal of meter.
- (2) A charge of fifty five dollars (\$55) will be made for each relocation of meter. These charges will be billed monthly together with the water consumption charges.
- (3) A charge of one hundred dollars (\$100) for failure to return fire hydrant key.
- (4) A charge to cover any or all damages to fire hydrant meter or connections.

The contractor will be responsible for the meter and connections at all times this permit is in force, and shall take the necessary precautions for the control of dust or muddy conditions in areas of operation. In event the meter is not returned, the contractor will be charged five hundred dollars (\$500) replacement cost.

The contractor will be required to post an additional deposit should the water consumption or other charges at any item exceed the amount of the deposit.

The balance of any deposit remaining after all unpaid charges have been deducted shall be returned to the Permittee after the service is terminated.

Monthly service charges and water consumption rates (plus applicable taxes) will be as follows:

Monthly Service Charge.....\$50.00
Plus Water Consumption Charge per 100 cu.ft..... .90

It is agreed that the terms and conditions as outlined in this permit authorizing the use of water from a fire hydrant will be complied with at all times. Failure to adhere to the terms of this agreement will result in the permit being revoked and the entire deposit forfeited.

It is further agreed that the undersigned will comply with all rules and regulations of the Water and Wastewater Department and provisions of Section 37 of the Code of the City of Phoenix and subsequent amendments thereto.

The City of Phoenix reserves the right to discontinue furnishing water from any hydrant when in the opinion of the City such action is necessary or when any of the terms or conditions of this permit have been violated.

All charges are due and payable when rendered and shall be delinquent 15 days after date bill is rendered. After date of delinquency the meter is subject to removal, the service terminated and the deposit forfeited.

Print Name

Date
Authorized Signature of Contractor Shown Above

Fire Hydrant Key taken Yes ___ No ___

SECTION 01516

TEMPORARY SANITARY AND FIRST AID FACILITIES

1.1 GENERAL

- A. Temporary sanitary and first aid facilities shall be provided by the CONTRACTOR.
- B. Provide temporary sanitary and first aid facilities for use throughout the construction period including:
 - 1. Potable water and sanitary drinking cups.
 - 2. Sanitary drinking fountains where feasible.
 - 3. Enclosed toilet facilities.
 - 4. Suitable general employee washing facilities.
 - 5. First aid stations at or immediately adjacent to all major work areas and in the temporary field offices.
 - 6. Post telephone numbers of physicians, hospitals and ambulance services by each telephone at the Project site.
 - 7. At least one person thoroughly trained in first aid procedures shall be present on the site whenever work is in progress. These persons must have a certificate indicating that they have completed a first aid training course conducted by the American Red Cross or other approved agency.
- C. Provide facilities and fixtures in compliance with applicable federal, state and local laws and regulations.
- D. Maintain strict supervision of use of facilities.
- E. Maintain, service and clean facilities and keep them supplied continuously with soap, towels, paper and all other required supplies.
- F. Enforce proper use of sanitary facilities, including preventing the committing of nuisances in buildings on the site.
- G. Dispose of all wastes in conformance with applicable regulation.

1.2 COSTS OF INSTALLATION AND OPERATION

- A. Pay all cost including installation, maintenance and removal.

1.3 USE OF EXISTING FACILITIES

- A. Existing facilities shall not be used by construction personnel.

1.4 INSTALLATION AND REMOVAL

- A. Temporary flush toilets or portable toilets may be used.
- B. Comply with all applicable provisions of Division 15.

- C. Completely remove temporary materials and equipment upon completion of construction and restore all damaged facilities to original condition.

+ + END OF SECTION + +

SECTION 01518
TEMPORARY FIRE PROTECTION

1.1 GENERAL

- A. CONTRACTOR shall conform to the fire protection and prevention requirements specified herein as well as those which may be established by federal, state or local governmental agencies.
- B. CONTRACTOR shall comply with all applicable provisions of NFPA Standard No. 241, Safeguarding Building Construction and Demolition Operations.
- C. Facilities specified herein shall be provided by the CONTRACTOR, but all other prime contractors shall conform to the provisions of this Section and all applicable laws, ordinances, rules and regulations.

1.2 REQUIRED FIRE FIGHTING EQUIPMENT

- A. Provide portable fire extinguishers, rated not less than 2A or 5B in accordance with NFPA Standard No. 10, Portable Fire Extinguishers, for each temporary building and for every 3000 square feet of floor area under construction.
- B. Locate portable fire extinguishers 50 feet maximum from any point in the protection area.

1.3 FIRE PREVENTION AND SAFETY MEASURES

- A. Prohibit smoking in hazardous areas. Post suitable warning signs in areas which are continuously or intermittently hazardous.
- B. Use metal safety containers for storage and handling of flammable and combustible liquids.
- C. Do not store flammable or combustible liquids in or near stairways or exits.
- D. Maintain clear exits from all points in the Work.

1.4 COSTS OF INSTALLATION

- A. Pay all costs including installation, maintenance, and removal.

1.5 CHLORINE LEAK EVACUATION

- A. The CONTRACTOR shall familiarize himself with the OWNER's chlorine leak evacuation plan and shall have his work force prepared to evacuate should the emergency occur.

+ + END OF SECTION + +

SECTION 01540

SECURITY

1.1 GENERAL

- A. CONTRACTOR shall safely guard all Work, materials, equipment and property from loss, theft, damage and vandalism. CONTRACTOR'S duty to safely guard property shall include the OWNER'S property and other private property from injury or loss in connection with the performance of the Contract.
- B. He shall employ watchmen as needed to provide the required security and prevent unauthorized entry.
- C. CONTRACTOR may make no claim against the OWNER for damage resulting from trespass.
- D. Party responsible for security shall make good all damage to property of OWNER and others arising from failure to provide adequate security.
- E. If existing fencing or barriers are breached or removed for purposes of construction, CONTRACTOR shall provide and maintain temporary security fencing equal to the existing in a manner satisfactory to the ENGINEER and OWNER.
- F. Security measures taken by the CONTRACTOR shall be at least equal to those usually provided by OWNER to protect his existing facilities during normal operation.
- G. Maintain security program throughout construction until Final Acceptance and occupancy precludes need for CONTRACTOR'S security program.
- H. All costs for security as specified in this Section shall be borne by the CONTRACTOR.

1.2 CONTRACTOR'S ACCESS TO THE SITE

- A. Access to the site for CONTRACTOR'S employees, material, tools and equipment shall be from the plant entrance on 24th Street only.
- B. The CONTRACTOR shall provide a uniformed guard to control movement to and from the site through the Construction Gate. The guard shall be provided continuously between the hours of 7:00 a.m. and 5:00 p.m., Monday through Friday, and at all other times when the CONTRACTOR is on site for the duration of this Contract. At all other times, the gate shall remain locked. No separate payment shall be made for the services of the uniformed guard. It is the responsibility of the CONTRACTOR to insure that in no event shall the Construction Gate be left unguarded at any time during the hours specified above and locked at all other times. If access is required by the CONTRACTOR at times other than that specified above, the

CONTRACTOR shall furnish a uniformed guard as required. The cost of this extra uniformed guard service shall be borne by the CONTRACTOR.

- C. The CONTRACTOR shall provide a guard house at a location designated by the OWNER for full security control. The guard house shall be in new condition and have the following features:
1. Small table and chair.
 2. Telephone service.
 3. Light and temperature services as specified in Section 01591.
 4. Exterior identifying sign.
 5. Sanitary Facility within 50 feet.
 6. Other furnishings at the CONTRACTOR'S option.
- D. The CONTRACTOR shall insure that each of his employees, representatives, materialmen, suppliers and others acting for the CONTRACTOR, shall be subject to the following regulations:
1. No CONTRACTOR employee's personal vehicle shall be allowed to park anywhere other than the Contractor Employee's Parking Area. The Area shall be designated by the ENGINEER. The CONTRACTOR shall prepare and maintain this area as required. If additional parking is required, the CONTRACTOR shall provide off-site parking, as required, at no additional cost to the OWNER.
 2. All CONTRACTOR employees shall wear a badge bearing the CONTRACTOR'S name, employee's name and employee number at all times when the employee is on the site.
 3. All vehicles, including those belonging to CONTRACTOR, his employees and Subcontractors, his materialmen and suppliers, entering the plant site shall conform to all security and safety regulations in force at the Squaw Peak WTP site, and in addition, must display a vehicle tag in the windshield while on the plant site. The vehicle tag shall be 3"x5" and permanently mounted to the windshield (lower left hand corner). The vehicle tag shall be green and identify the CONTRACTOR, Subcontractor, etc.
 4. Personal vehicles shall not be allowed outside the employee parking area.
 5. Delivery vehicles shall access the site from the plant gate at 24th Street only.
 6. Access to the site from other plant entrances is strictly prohibited. Violators shall be removed from the site.

+ + END OF SECTION + +

SECTION 01545

PROTECTION OF THE WORK AND PROPERTY

1.1 GENERAL

- A. CONTRACTOR shall be responsible for taking all precautions, providing all programs, and taking all actions necessary to protect the Work and all public and private property and facilities from damage as specified in the General Conditions and herein.
- B. In order to prevent damage, injury or loss, CONTRACTOR'S actions shall include, but not be limited to, the following:
 - 1. Store apparatus, materials, supplies, and equipment in an orderly, safe manner that will not unduly interfere with the progress of the Work or the work of any other contractor or utility service company.
 - 2. Provide suitable storage facilities for all materials which are subject to injury by exposure to weather, theft, breakage, or otherwise.
 - 3. Place upon the Work or any part thereof only such loads as are consistent with the safety of that portion of the Work.
 - 4. Clean up frequently all refuse, rubbish, scrap materials, and debris caused by his operations, to the end that at all times the site of the Work shall present a safe, orderly and workmanlike appearance.
 - 5. Provide barricades and guard rails around openings, for scaffolding, for temporary stairs and ramps, around excavations, elevated walkways and other hazardous areas.
- C. CONTRACTOR shall not, except after written consent from proper parties, enter or occupy with men, tools, materials or equipment, privately-owned land except on easements provided herein.
- D. CONTRACTOR shall assume full responsibility for the preservation of all public and private property or facility on or adjacent to the site. If any direct or indirect damage is done by or on account of any act, omission, neglect or misconduct in the execution of the Work by the CONTRACTOR, it shall be restored by the CONTRACTOR, at his expense, to a condition equal to that existing before the damage was done.

1.2 BARRICADES AND WARNING SIGNALS

- A. Where Work is performed on or adjacent to any roadway, right-of-way, or public place, CONTRACTOR shall furnish and erect barricades, fences, lights, warning signs, and danger signals, shall provide watchmen, and shall take other precautionary measures for the protection of persons or property and of the Work. Barricades shall be painted to be visible at night. From sunset to sunrise, CONTRACTOR shall furnish and maintain at least one light at each barricade. Sufficient barricades shall be erected to keep vehicles from being driven on or into Work under construction. CONTRACTOR shall furnish watchmen in sufficient numbers to protect the Work. CONTRACTOR'S

responsibility for the maintenance of barricades, signs, lights, and for providing watchmen shall continue until the Project is accepted by OWNER.

1.3 TREE AND PLANT PROTECTION

- A. CONTRACTOR shall protect existing trees, shrubs and plants on or adjacent to the site that are shown or designated to remain in place against unnecessary cutting, breaking or skinning of branches, bark or roots.
- B. Materials or equipment shall not be stored or parked within the drip line.
- C. Temporary fences or barricades shall be installed to protect trees and plants in areas subject to traffic.
- D. Fires shall not be permitted under or adjacent to trees and plants.
- E. Within the limits of the Work, water trees and plants that are to remain, in order to maintain their health during construction operations.
- F. Cover all exposed roots with burlap that shall be kept continuously wet. Cover all exposed roots with earth as soon as possible. Protect root systems from mechanical damage and damage by erosion, flooding, run-off or noxious materials in solution.
- G. If branches or trunks are damaged, prune branches immediately and protect the cut or damaged areas with emulsified asphalt compounded specifically for horticultural use in a manner approved by the ENGINEER.
- H. All damaged trees and plants that die or suffer permanent injury shall be removed when ordered by the ENGINEER and replaced by a specimen of equal or better quality.
- I. Coordinate Work in this Section with requirements of Division 2 of the specifications.

1.4 PROTECTION OF EXISTING STRUCTURES

- A. Underground Structures:
 - 1. Underground structures are defined to include, but not be limited to, all sewer, water, gas, and other piping, and manholes, chambers, electrical and signal conduits, tunnels and other existing subsurface work located within or adjacent to the limits of the Work.
 - 2. All underground structures, water, sewer, electric, and telephone service connections, known to ENGINEER, are shown on the Drawings. This information is shown for the assistance of CONTRACTOR in accordance with the best information available, but is not guaranteed to be correct or complete.

3. CONTRACTOR shall explore ahead of his trenching and excavation Work and shall uncover all obstructing underground structures sufficiently to determine their location, to prevent damage to them and to prevent interruption to the services which such structures provide. If CONTRACTOR damages an underground structure, he shall restore it to original condition at his expense.
4. Necessary changes in the location of the Work may be made by ENGINEER, to avoid unanticipated underground structures. Hand digging is required in the vicinity of underground structures.
5. If permanent relocation of an underground structure or other subsurface facility is required and is not otherwise provided for in the Contract Documents, ENGINEER will direct CONTRACTOR in writing to perform the Work, which shall be paid for under the provisions of the General Conditions.

B. Surface Structures:

1. Surface structures are defined as all existing buildings, structures and other facilities above the ground surface. Included with such structures are their foundations or any extension below the surface. Surface structures include, but are not limited to, buildings, tanks, walls, bridges, roads, dams, channels, open drainage, piping, poles, wires, posts, signs, markers, curbs, walks and all other facilities that are visible above the ground surface.

C. Protection of Underground and Surface Structures:

1. CONTRACTOR shall sustain in their places and protect from direct or indirect injury all underground and surface structures located within or adjacent to the limits of the Work. Such sustaining and supporting shall be done carefully and as required by the party owning or controlling such structure. Before proceeding with the work of sustaining and supporting such structure, CONTRACTOR shall satisfy the ENGINEER that the methods and procedures to be used have been approved by the party owning same.
2. CONTRACTOR shall assume all risks attending the presence or proximity of all underground and surface structures within or adjacent to the limits to the Work. CONTRACTOR shall be responsible for all damage and expense for direct or indirect injury caused by his Work to any structure. CONTRACTOR shall repair immediately all damage caused by his Work, to the satisfaction of the owner of the damaged structure.

- D. All other existing surface facilities, including but not limited to, guard rails, posts, guard cables, signs, poles, markers, and curbs which are temporarily removed to facilitate installation of the Work shall be replaced and restored to their original condition at CONTRACTOR'S expense.

1.5 PROTECTION OF FLOORS AND ROOFS

- A. CONTRACTOR shall protect floors, roofs and stairs from overloads, dirt and damage during entire construction period. In areas subject to foot traffic, secure heavy paper, sheet goods, or other materials in place. For storage of products, lay tight wood sheathing in place. Cover walls and floors of elevator cars, and surfaces of elevator car doors, used by construction personnel.
- B. Proper protective covering shall be used when moving heavy equipment, handling materials or other loads, when painting, handling mortar and grout and when cleaning walls and ceilings.
- C. Use metal pans to collect all oil and cuttings from pipe, conduit, or rod threading machines and under all metal cutting machines.
- D. Concrete floors less than 28 days old shall not be loaded without written permission of the ENGINEER. No floor, roof or slab shall be loaded in excess of its design loading.
- E. Roof slabs shall not be loaded without written permission of the ENGINEER.
- F. CONTRACTOR shall restrict access to roofs and keep clear of existing roofs except as required by the new Work.
- G. If access to roofs is required, roofing, parapets, openings and all other construction on or adjacent to roof shall be protected with suitable plywood or other approved means.

1.6 PROTECTION OF INSTALLED PRODUCTS AND LANDSCAPING

- A. Provide protection of installed products to prevent damage from subsequent operations. Remove protection facilities when no longer needed, prior to completion of Work.
- B. Control traffic to prevent damage to equipment, materials and surfaces.
- C. Provide coverings to protect equipment and materials from damage.
 - 1. Cover projections, wall corners, and jambs, sills and soffits of openings, in areas used for traffic and for passage of products in subsequent work.
- D. Prohibit traffic of any kind across planted lawn and landscaped areas.

+ + END OF SECTION + +

SECTION 01550

ACCESS ROADS AND PARKING AREAS

1.1 GENERAL

- A. CONTRACTOR shall provide all temporary construction roads, walks and parking areas required during the construction to all areas of the plant as required by the OWNER and for use of emergency vehicles. Temporary roads and parking areas shall be designed and maintained by the CONTRACTOR so as to be fully usable in all weather conditions.
- B. CONTRACTOR shall prevent interference with traffic on existing roads. He shall indemnify and save harmless the OWNER from any expenses caused by CONTRACTOR'S operations over these roads.
- C. Roadways damaged by CONTRACTOR shall be restored to their original condition by the CONTRACTOR subject to approval of the OWNER or ENGINEER.
- D. Temporary roads, walks and parking areas shall be removed by the CONTRACTOR prior to final acceptance and the ground returned to its original condition, unless otherwise required by the Contract Documents.

1.2 DESIGNATED PARKING

- A. All CONTRACTOR'S employee vehicles shall park in an area specifically designated for that purpose, as more fully described in Section 01540.

1.3 MAINTENANCE OF ROADS

- A. The CONTRACTOR shall at all times maintain approved access for trucks to loading areas of the plant and parking facilities for plant personnel. All parking of construction vehicles shall be in approved lots.
- B. The CONTRACTOR shall sweep all paved roads that are utilized by the CONTRACTOR in the prosecution of his work. Specific roads include:
 - 1. All roads within the limits of this Contract.
- C. The CONTRACTOR shall keep the above roads clean and serviceable at all times. Use of mechanical sweeper at least twice per week is required.
- D. Dust resulting from construction operations shall be controlled by CONTRACTOR to prevent a nuisance on the site or in adjacent areas. Use of water will not be permitted when it results in hazardous or objectionable conditions such as ice, mud, ponds and pollution.

+ + END OF SECTION + +

SECTION 01560
ENVIRONMENTAL CONTROLS

1.1 GENERAL

- A. Provide and maintain methods, equipment, and temporary construction, as necessary to provide controls over environmental conditions at the construction site and adjacent areas. Remove physical evidence of temporary facilities at completion of Work.

1.2 NOISE CONTROL

- A. CONTRACTOR'S vehicles and equipment shall be such as to minimize noise to the greatest degree practicable. Noise levels shall conform to the latest OSHA standards and in no case will noise levels be permitted which interfere with the work of the OWNER or others.

1.3 DUST CONTROL

- A. CONTRACTOR shall be responsible for controlling objectionable dust caused by his operation of vehicles and equipment, clearing or for any reason whatever. CONTRACTOR shall apply water and calcium chloride or use other methods subject to the ENGINEER'S approval which will keep dust in the air to a minimum.

1.4 PEST AND RODENT CONTROL

- A. Provide rodent and pest control as necessary to prevent infestation of construction or storage area.
 - 1. Employ methods and use materials which will not adversely affect conditions at the site or on adjoining properties.

1.5 WATER CONTROL

- A. Provide methods to control surface water and water from excavations and structures to prevent damage to the Work, the site, or adjoining properties.
 - 1. Control fill, grading and ditching to direct water away from excavations, pits, tunnels and other construction areas; and to direct drainage to proper runoff courses so as to prevent any erosion, damage or nuisance.
- B. Provide, operate and maintain equipment and facilities of adequate size to control surface water.
- C. Dispose of drainage water in a manner to prevent flooding, erosion, or other damage to any portion of the site or to adjoining areas and in conformance with all environmental requirements.

1.6 POLLUTION CONTROL

- A. Provide methods, means and facilities required to prevent contamination of soil, water or atmosphere by the discharge of noxious substances from construction operations.
- B. Provide equipment and personnel, perform emergency measures required to contain any spillages, and to remove contaminated soils or liquids.
 - 1. Excavate and dispose of any contaminated earth offsite, and replace with suitable compacted fill and topsoil.
- C. Take special measures to prevent harmful substances from entering public waters.
 - 1. Prevent disposal of wastes, effluents, chemicals, or other such substances adjacent to streams, or in sanitary or storm sewers.
- D. Provide systems for control of atmospheric pollutants.
 - 1. Prevent toxic concentrations of chemicals.
 - 2. Prevent harmful dispersal of pollutants into the atmosphere.
- E. All CONTRACTOR'S equipment used during construction shall conform to all current federal, state and local laws and regulations.

1.7 EROSION CONTROL

- A. Plan and execute construction and earth work by methods to control surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent erosion and sedimentation.
 - 1. Hold the areas of bare soil exposed at one time to a minimum.
 - 2. Provide temporary control measures such as berms, dikes and drains.
- B. Construct fills and waste areas by selective placement to eliminate surface silts or clays which will erode.
- C. Periodically inspect earthwork to detect any evidence of the start of erosion, apply corrective measures as required to control erosion.

+ + END OF SECTION + +

SECTION 01570
TRAFFIC REGULATION

1.1 GENERAL

- A. All streets, trafficways, and sidewalks shall be kept open in a safe manner for the passage of traffic and pedestrians during the construction period unless otherwise approved by the ENGINEER or authority having jurisdiction over same. CONTRACTOR, at his expense, must submit traffic plans to the ENGINEER. Traffic plans must conform to the requirements of City of Phoenix Traffic Barricade Manual. Plan shall also include a schedule identifying all temporary roadway routings and roads proposed to be used and scheduled time of utilization. All traffic shall enter the Plant from 24th Street only.
- B. When required to cross, obstruct or temporarily close a street or trafficway or sidewalk, CONTRACTOR shall provide and maintain suitable bridges, detours or other approved temporary expedient for the accommodation of vehicular and pedestrian traffic. Closings shall be for the shortest time practical, and passage shall be restored immediately after completion of backfill and temporary paving or bridging. No two adjacent streets can be closed at the same time.
- C. CONTRACTOR shall give the ENGINEER 96 hours advance notice of his proposed operations within the public right-of-ways and temporary roadway closings.
- D. CONTRACTOR shall give 72 hours advance notice to owners or tenants of private property/business who may be affected by his operations.
 - 1. CONTRACTOR will restore access to properties/businesses as soon as possible. If primary access cannot be restored, CONTRACTOR will provide an alternative which will be predetermined with the property/business owner prior to any restrictions being done.
- E. CONTRACTOR shall provide signs, signals, barricades, flares, lights and all other equipment, service and personnel required to regulate and protect all traffic, and warn of hazards. All such work shall conform to requirements of the OWNER or authority having jurisdiction. Remove temporary equipment and facilities when no longer required, restore grounds to original, or to specified conditions.
- F. CONTRACTOR shall maintain all existing bus stop locations in a safe manner or provide alternative bus stop locations as required by the ENGINEER.
- G. All open trenches shall be covered with a traffic bearing cover during non-working hours.

1.2 TRAFFIC SIGNALS AND SIGNS

- A. Provide and operate traffic control and directional signals required to direct and maintain an orderly flow of traffic in all areas under CONTRACTOR'S control, or affected by CONTRACTOR'S operations.
- B. Provide traffic control and directional signs, mounted on barricades or standard posts:
 - 1. At each change of direction of a roadway and at each crossroad.
 - 2. At detours and hazardous areas.
 - 3. At parking areas.
- C. The CONTRACTOR shall provide, erect, and maintain any directional access signs required for hospitals, churches, businesses, etc.

1.3 FLAGMEN

- A. Provide qualified and suitably equipped flagmen when construction operations encroach on traffic lanes, as required for regulation of traffic and in accordance with the requirements of the authority having jurisdiction.

1.4 FLARES AND LIGHTS

- A. Provide flares and lights during periods of low visibility:
 - 1. To clearly delineate traffic lanes, to guide traffic and to warn of hazardous areas.
 - 2. For use by flagmen in directing traffic.
- B. Provide illumination of critical traffic and parking areas.

1.5 PARKING CONTROL

- A. Control all CONTRACTOR related vehicular parking within the limits of the Work to preclude interference with public traffic or parking, access by emergency vehicles, OWNER'S operations, or construction operations. Provide temporary parking facilities for the public as may be required because of construction or operations.
- B. Monitor parking of all construction and private vehicles:
 - 1. Maintain free vehicular access to and through parking areas.
 - 2. Prohibit parking on or adjacent to access roads, or in non-designated areas.

1.6 HAUL ROUTES

- A. Consult with governing authorities and establish thoroughfares which will be used as haul routes and site access.

+ + END OF SECTION + +

SECTION 01580

PROJECT IDENTIFICATION AND SIGNS

1.1 DESCRIPTION

- A. Furnish, install and maintain temporary project identification and informational signs.
- B. Design and size of the signs shall be as directed by the OWNER.
- C. No signs except those specified shall be displayed unless approved by OWNER.

1.2 SUBMITTALS

- A. Submit in accordance with prescribed Shop Drawing procedure.
- B. Include the following information.
 - 1. Type and grade of materials.
 - 2. Layout, size, trim, framing, supports and coatings.
 - 3. Size and style of lettering.
 - 4. Samples of colors.

1.3 CONSTRUCTION

- A. Use 3/4-inch exterior grade plywood unless shown otherwise or approved.
- B. Use, trim, mitered on all edges.
- C. Design signs and supports to withstand 75 mile per hour wind.
- D. Paint with exterior gloss-finish enamel. Sign painter shall be a professional in the type work required.

1.4 INSTALLATION AND MAINTENANCE

- A. Location as directed by ENGINEER.
- B. Maintain signs so they are clean, legible and upright. Keep grass and weeds cut away from signs.
- C. Repair and repaint damaged signs as necessary or directed by ENGINEER. Relocate signs as required by progress of the Work.
- D. Remove signs when Project is completed or when directed by ENGINEER.

+ + END OF SECTION + +

SECTION 01591

ENGINEER'S FIELD OFFICE AND VEHICLES

1.1 GENERAL

- A. The CONTRACTOR shall furnish, install, and maintain a field office for the ENGINEER. Locate office, as shown, near CONTRACTOR'S office in a place approved by ENGINEER. Provide office, complete with furnishings, within two weeks after commencement of Contract Time.
- B. Allocate ten (10) reserved parking spaces marked for use by the ENGINEER and OWNER. Reserved parking spaces shall be adjacent to ENGINEER'S field office and shall be graded and stoned.
- C. The office shall be separate from all CONTRACTOR'S offices.
- D. The CONTRACTOR shall pay for any permits that may be required.
- E. The CONTRACTOR shall furnish, install, and maintain a radio communication system for use by the ENGINEER as specified herein.
- F. The CONTRACTOR shall furnish and maintain vehicles as specified herein for use by the ENGINEER.

1.2 MINIMUM CONSTRUCTION OF ENGINEER'S FIELD OFFICE

- A. Structurally sound foundation and superstructure.
- B. Concrete or boardwalk steps, landings and sidewalks of 4 feet minimum width for complete access to field office.
- C. Completely weathertight and insulated.
- D. Exterior finish acceptable to ENGINEER.
- E. All new interior finishes acceptable to ENGINEER.
- F. Resilient floor covering in first-class condition.
- G. Area: 1,600 square feet minimum, double-wide trailers, in first class condition. Trailer shall contain a minimum of five (5) offices, meeting room, lavatories and work areas. Interior layout is to be as directed by the ENGINEER.
- H. Windows: 10 percent of floor area with operable sash and screens. Windows shall be furnished with locks approved by the ENGINEER. All windows shall be equipped with venetian blinds.
- I. A minimum of two (2) exterior doors shall be provided. Doors to be hollow metal doors with 1-1/2 pr hinges, lockset, closure, weather stripping, and threshold. Doors shall be keyed alike, with seven (7) duplicate keys provided by the CONTRACTOR. CONTRACTOR shall

surrender all keys for the office entry to the ENGINEER. Key system shall be keyed differently than that used by the CONTRACTOR.

1.3 MINIMUM OFFICE SERVICES

- A. Interior lighting of 50-foot candles at desk top height.
- B. Exterior lights at each entrance.
- C. Automatic heating to maintain 70° F in winter. Furnish and pay for all fuel.
- D. Automatic cooling to maintain 75° F in summer. Furnish and pay for all fuel.
- E. Electric service required and pay all charges.
- F. A minimum of twenty (20) electric duplex receptacles wall outlets that are accessible from 6 feet along any wall.
- G. Private telephone service and installation charges for five telephone lines and a minimum of nine telephones. In addition pay all local and long distance charges up to an average of \$400 per month over the duration of the CONTRACT. Telephone service shall include a minimum of nine telephones with three separate numbers - one telephone in each office (except for inspectors office which will have two telephones) two in reception area and one in conference room. The fourth and fifth telephone lines shall be dedicated to the facsimile machine and the computer system. A speaker phone shall be supplied for the conference room. The telephone system shall be similar to the Merlin System and be equipped with speed dialing capability.
- H. Water cooler with chilled and hot drinking water and cups.
- I. Private sanitary facilities with one water closet and one lavatory and medicine cabinet.
- J. All plumbing facilities and sewers required and in accord with local codes. Protect from freezing.
- K. Copy machine, Xerox 5018, or equal, with reduction, enlargement, auto-document feed and sorting capability. Provide service, warranty (including toner and replacement cartridges) and maintenance for the duration of the Contract Time. Provide one box (20 reams) of 8 1/2-inch by 11-inch copy paper.
- L. Facsimile machine and separate telephone service. Machine shall be equivalent to and compatible with Fujitsu DEX 2400. Utilize the dedicated incoming telephone line for the facsimile installation and pay all charges associated with the unit (including maintenance and warranty work) during the construction period. Provide one (1) box of facsimile paper. Payment for the facsimile telephone charges shall be in accordance with Paragraph 1.3G, of this Section.

- M. Potable water hose bibb with 20 ft. of hose connected to potable water supply, near main entrance to ENGINEER's trailer. Hose bibb shall be freeze protected.

1.4 MINIMUM OFFICE FURNISHINGS

- A. Seven (7) 5-drawer desks with lap drawer and 30-inch by 60-inch side reference tables.
- B. Seven (7) swivel desk chairs.
- C. Conference table for twelve (12) with twelve (12) folding chairs.
- D. Five (5) side chairs.
- E. Three (3) 3' x 5' drafting tables with built-in drawer. Drafting stools and lights for each table.
- F. Two (2) plan racks, each rack to hold twelve sets of drawings. Racks to be wheel mounted with lateral file compartments on top.
- G. Six (6) 4-drawer file cabinets with minimum fire resistance rating of one hour.
- H. Two (2) 2-door storage cabinets (36" x 60" x 18"D).
- I. Overhead book shelving in each office.
- J. Six (6) book cases with shelving, 3 feet wide by 7 feet high by 12 inches deep.
- K. Eight (8) waste baskets.
- L. Three (3) plain tack boards 30 inches by 36 inches, each. Boards to be installed by CONTRACTOR as directed by the ENGINEER.
- M. Three (3) grease boards 30 inches by 36 inches, with three (3) sets of markers (4 colors per set). Boards to be installed by CONTRACTOR as directed by the ENGINEER.
- N. Fire extinguishers (number as required by Code). CONTRACTOR to install.
- O. Identifying exterior sign, professionally lettered, at least 24 inches by 36 inches with wording acceptable to ENGINEER. CONTRACTOR to install as directed by the ENGINEER.
- P. First aid kit, Johnson & Johnson Model No. 8161, or equal.
- Q. One (1) printing-type calculating machine, 10-digit minimum.
- R. Maximum-Minimum outdoor thermometer mounted in shade, but visible for easy reading from inside office. Provide Fischer Scientific Model No. 15-091, or equal.

- S. Two (2) quartz battery wall clocks with a face of 12-inch diameter. CONTRACTOR to install as directed by the ENGINEER.
- T. Closets for storing instruments.
- U. Walk-off mats at all entrances.
- V. Smoke detectors (number as required by Code). CONTRACTOR to install.
- W. Microwave oven.
- X 4.9 cubic foot refrigerator with freezer compartment.
- Y. Furnish and install (ready for use) one (1) complete personal computer system. System shall be as follows:
 - 1. IBM compatible computer system with the following:
 - a. 80386 CPU running at 25 MHz.
 - b. 80387 math coprocessor.
 - c. 100 megabyte hard drive.
 - d. 4 megabytes RAM.
 - e. 5-1/4" high density floppy drive (1.2MB).
 - f. 3-1/2" high density floppy drive (1.44MB).
 - g. One parallel and two serial ports.
 - h. Microsoft compatible mouse and mouse pad.
 - i. VGA monitor / VGA video adapter.
 - j. 2400 baud V.42 bis Hayes compatible modem.
 - 2. HP LaserJet Series IIIP printer with the following:
 - a. One letter size (8-1/2" x 11") paper tray.
 - b. One legal size (8-1/2" x 14") paper tray.
 - c. One envelope tray.
 - d. One font cartridge (Super Cartridge 2 by IQ Engineering).
 - e. 5 toner cartridge.
 - 3. Software:
 - a. MS-DOS version 5.0.
 - b. QEMM-386 version 6.0.
 - c. Lotus 1-2-3 Release 2.3.
 - d. WordPerfect version 5.1.
 - e. PCTools version 7.02.
 - f. Direct Access Menu version 5.1.
 - g. Procomm Plus version 2.0.
 - h. PC-Anywhere III.
 - 4. Computer Accessories:
 - a. 10' parallel cable for printer.
 - b. 6' serial cable for modem.
 - c. 10 boxes of 5-1/4" high density diskettes (10 diskettes per box).
 - d. 10 boxes of 3-1/2" high density diskettes (10 diskettes per box).
 - e. 4 diskette storage cases; minimum capacity of 50 diskettes per case (2 for 5-1/4" diskettes; 2 for 3-1/2" diskettes).
 - f. Surge suppressor/EMI-RFI filter; TrippLite Isobar or equal.
 - g. Dust covers.
- Z. One (1) standard electric typewriter. Provide Xerox Memorywriter Model No. 620, or equal. Provide typewriter stand.

- AA. Ten (10) white hard hats meeting ANSI Z89.1-1991, Class A & B and Fed. Spec. GGG-H-142 & OSHA guidelines.

1.5 MAINTENANCE

- A. Maintenance shall be for the duration of the Contract Time.
- B. Continuous maintenance of office and services. Cleaned not less than twice per week.
- C. Provide soap, paper towels, toilet paper, cleansers, replacement light bulbs, janitorial service and implements.
- D. Repair immediately any damage, leaks or defective service.

1.6 REMOVAL

- A. Remove office upon Work final acceptance or when directed by ENGINEER.
- B. The office, together with the equipment and facilities thereof, except miscellaneous small supplies, shall become the property of the CONTRACTOR and shall be removed by him from the site of the Work.

1.7 RADIO COMMUNICATION SYSTEM

- A. CONTRACTOR shall provide a radio communication system for use by the ENGINEER. Radio system shall be delivered and installed by the CONTRACTOR within three (3) weeks after commencement of Contract Time.
- B. Provide five (5) units: VHF-FM 144-174 MHz, 5 watt, 4 channel capacity portable, flexible antenna, nickel cadmium battery, wall-type charger, protective sleeve and belt clip. Units shall be PAGE-COM Model CP-0510 or equal. Each unit shall be provided with privacy module, tone squelch, leather holster with slide-on metal swivel and single unit rapid rate desktop charger.
- C. CONTRACTOR shall maintain and repair units as required for the duration of the Contract Time. Provide replacement units as required.
- D. CONTRACTOR shall obtain and be responsible for all licenses required for the radio communication systems for the duration of the Contract Time.
- E. The frequency provided to the ENGINEER shall be different than that used by the CONTRACTOR.
- F. Radio communication system shall be removed by the CONTRACTOR upon final acceptance or when directed by the ENGINEER.

1.8 ENGINEER'S VEHICLES

- A. CONTRACTOR shall provide three (3) vehicles for use by the ENGINEER during the duration of this Contract. The vehicles will be in the possession of the ENGINEER on a 24-hour, 7 days per week basis.
- B. One (1) vehicle shall be a 1992 Ford Ranger 4 WD Super Cab 125-inch WB, or equal. Vehicle shall be equipped with all standard equipment; black rally bar package, offroad lights, tubular rear bumper; 2.9L EFI V-6 engine; P215 steel OWL all-terrain tires; rear jump seats; preferred equipment package; automatic overdrive transmission, aux. trans. oil cooler; 60/40 knitted vinyl split bench; air conditioning; super engine cooling; bodyside protection moldings; sliding rear window; electric am/fm stereo, clock and cassette; full size spare tire; color, white with sandalwood interior.
- C. Two (2) vehicles shall be all-terrain vehicles, 1992 FourTrax 200 type II by Honda, or equal. Vehicles shall be equipped with 199cc SOHC air-cooled four-stroke single cylinder engines; sold state CD with electronic advance ignition; five-speed with reverse and automatic clutch transmission; sealed-roller chain drive; independent suspension-front; swing arm with single shock-rear; cargo nets.
- D. The CONTRACTOR shall provide fuel, oil, proper maintenance, tires, and replacement parts as required to keep the vehicles in safe operating condition. In the event that any vehicle requires maintenance or repairs which cannot be completed the same day, a comparable replacement vehicle shall be provided while the vehicle is out of service.
- E. Within two (2) weeks after the commencement of Contract Time, the CONTRACTOR shall make the vehicles available for inspection by the ENGINEER. Upon determination that the vehicles satisfy requirements, the CONTRACTOR shall make arrangements to have vehicles available for the ENGINEER within two (2) weeks.
- F. The vehicles shall be provided for the entire duration of the Contract and shall be returned to the CONTRACTOR within thirty (30) days after Contract completion. CONTRACTOR owned vehicles provided pursuant to this Contract shall remain the property of the Contractor throughout the Contract period.

+ + END OF SECTION + +

SECTION 01610

TRANSPORTATION AND HANDLING OF MATERIALS AND EQUIPMENT

1.1 GENERAL

- A. CONTRACTOR shall make all arrangements for transportation, delivery and handling of equipment and materials required for prosecution and completion of the Work.
- B. Shipments of materials to CONTRACTOR or Subcontractors shall be delivered to the site only during regular working hours. Shipments shall be addressed and consigned to the proper party giving name of Project, street number and city. Shipments shall not be delivered to OWNER except where otherwise directed.
- C. If necessary to move stored materials and equipment during construction, CONTRACTOR shall move or cause to be moved materials and equipment without any additional compensation.

1.2 DELIVERY

- A. Arrange deliveries of products in accordance with construction schedules and in ample time to facilitate inspection prior to installation.
- B. Coordinate deliveries to avoid conflict with Work and conditions at site and to accommodate the following:
 - 1. Work of other contractors, or OWNER.
 - 2. Limitations of storage space.
 - 3. Availability of equipment and personnel for handling products.
 - 4. OWNER'S use of premises.
- C. Do not have products delivered to project site until related Shop Drawings have been approved by the ENGINEER.
- D. Do not have products delivered to site until required storage facilities have been provided.
- E. Have products delivered to site in manufacturer's original, unopened, labeled containers. Keep ENGINEER informed of delivery of all equipment to be incorporated in the Work.
- F. Partial deliveries of component parts of equipment shall be clearly marked to identify the equipment, to permit easy accumulation of parts and to facilitate assembly.
- G. Immediately on delivery, inspect shipment to assure:
 - 1. Product complies with requirements of Contract Documents and reviewed submittals.
 - 2. Quantities are correct.
 - 3. Containers and packages are intact, labels are legible.
 - 4. Products are properly protected and undamaged.

1.3 PRODUCT HANDLING

- A. Provide equipment and personnel necessary to handle products by methods to prevent soiling or damage to products or packaging.
- B. Provide additional protection during handling as necessary to prevent scraping, marring or otherwise damaging products or surrounding surfaces.
- C. Handle products by methods to prevent bending or overstressing.
- D. Lift heavy components only at designated lifting points.
- E. Materials and equipment shall at all times be handled in a safe manner and as recommended by manufacturer or supplier so that no damage will occur to them. Do not drop, roll or skid products off delivery vehicles. Hand carry or use suitable materials handling equipment.

+ + END OF SECTION + +

SECTION 01620
STORAGE OF MATERIALS

1.1 GENERAL

- A. Store and protect materials in accordance with manufacturer's recommendations and requirements of Specifications.
- B. CONTRACTOR shall make all arrangements and provisions necessary for the storage of materials and equipment. All excavated materials, construction equipment, and materials and equipment to be incorporated into the Work shall be placed so as not to injure any part of the Work or existing facilities and so that free access can be had at all times to all parts of the Work and to all public utility installations in the vicinity of the Work. Materials and equipment shall be kept neatly and compactly stored in locations that will cause a minimum of inconvenience to other contractors, public travel, adjoining owners, tenants and occupants. Arrange storage in a manner to provide easy access for inspection.
- C. Areas available on the construction site for storage of material and equipment shall be as shown or approved by the ENGINEER.
- D. The OWNER reserves the option to require the CONTRACTOR to vacate an assigned storage area within 60 days after notice by the OWNER. The ENGINEER shall designate another storage area of equivalent size for use of the CONTRACTOR. No separate or additional payment will be made for this Work.
- E. Materials and equipment which are to become the property of the OWNER shall be stored to facilitate their inspection and insure preservation of the quality and fitness of the Work, including proper protection against damage by freezing and moisture. They shall be placed in inside storage areas unless otherwise acceptable to OWNER.
- F. Lawns, grass plots or other private property shall not be used for storage purposes without written permission of the OWNER or other person in possession or control of such premises.
- G. CONTRACTOR shall be fully responsible for loss or damage to stored materials and equipment.
- H. Do not open manufacturers containers until time of installation unless recommended by the manufacturer or otherwise specified.
- I. Do not store products in the structures being constructed unless approved in writing by the ENGINEER.

1.2 UNCOVERED STORAGE

- A. The following types of materials may be stored out-of-doors without cover:
 - 1. Masonry units.

2. Reinforcing steel.
3. Structural steel.
4. Piping.
5. Castings.

- B. Store the above materials on wood blocking so there is no contact with the ground.

1.3 COVERED STORAGE

- A. Rough lumber may be stored out-of-doors if covered with material impervious to water.
- B. Tie down covers with rope and slope to prevent accumulation of water on covers.
- C. Store materials on wood blocking.

1.4 FULLY PROTECTED STORAGE

- A. Store all products not listed above in buildings or trailers which have a concrete or wooden floor, a roof, and fully closed walls on all sides.
- B. Provide heated storage space for materials that would be damaged by freezing.
- C. Protect mechanical and electrical equipment from contamination by dust, dirt and moisture.
- D. Maintain humidity at levels recommended by manufacturers for electrical and electronic equipment.

1.5 PANEL AND INSTRUMENTATION STORAGE

- A. All panels, microprocessor based equipment and all other devices subject to damage or useful life decrease because of temperatures below 40° F or above 120° F, relative humidity above 90 percent, or exposure to rain shall not be stored on site.
- B. Storage shall be in an insured climate controlled warehouse within Maricopa County. The OWNER shall have the right to inspect the equipment during normal working hours. Placed inside each panel or device shall be desiccant, volatile corrosion inhibitor blocks (VCI), a moisture indicator and maximum-minimum indicating thermometer. The panels and equipment shall be checked once per month. The desiccant, VCI and moisture indicator shall be replaced as often as required or every six months whichever occurs first. A certified record of the daily maximum and minimum temperature and humidity in the warehouse shall be available for inspection by the OWNER. A certified record of the monthly inspection noting maximum and minimum temperature for the month, condition of desiccant, VCI and moisture indicator shall also be available for inspection by the OWNER.

- C. All costs for the storage shall be included in the Contract Price. Any panel or device which has been damaged by any cause or for which the storage temperatures or humidity range has been exceeded shall be replaced at no cost to the OWNER and shall not be cause for a delay in Contract completion.
- D. The panels and equipment shall not be shipped to the plant site until field conditions are ready for installation including all slabs, walls, roofs, and environmental controls. The failure to have the plant site ready for installation shall not relieve the CONTRACTOR from meeting all Contract conditions.

1.6 MAINTENANCE OF STORAGE

- A. Maintain periodic system of inspection of stored products on scheduled basis to assure that:
 - 1. State of storage facilities is adequate to provide required conditions.
 - 2. Required environmental conditions are maintained on continuous basis.
 - 3. Products exposed to elements are not adversely affected.
- B. Mechanical and electrical equipment which requires long term storage shall have complete manufacturer's instructions for servicing accompanying each item, with notice of enclosed instructions shown on exterior of package.
 - 1. Comply with manufacturer's instructions on scheduled basis.
 - 2. Space heaters which are part of electrical equipment shall be connected and operated continuously until equipment is placed in service.

+ + END OF SECTION + +

SECTION 01630

SUBSTITUTIONS

1.1 GENERAL

- A. Refer to Article 8 of the Instructions to Bidders and Article 6.7 of the General Conditions regarding materials or equipment substitutions.

+ + END OF SECTION + +

SECTION 01640

ON-SITE FACILITIES FOR TESTING LABORATORY

1.1 GENERAL

- A. CONTRACTOR shall provide on-site facilities for the sole use of the testing laboratory.
- B. Facilities furnished include:
 - 1. One heated, weathertight room, minimum 10 feet square.
 - 2. Two (2) large, tightly constructed, firmly braced, insulated, wooden or steel boxes which will hold 40 concrete cylinders minimum under conditions as described in ASTM C 31, Making and Curing Concrete Test Specimens in the Field, to be located as directed by the ENGINEER.
- C. At the completion of the Project, CONTRACTOR shall remove the facilities provided for the testing laboratory from the site.

+ + END OF SECTION + +

SECTION 01645

INSTALLATION OF EQUIPMENT AND MATERIALS

1.1 GENERAL

- A. This Section describes the Work necessary to install equipment and materials to be incorporated into this project. This Section supplements the Specifications in Divisions 2 through 17 of the Part A, Part B, and Part C Documents.
- B. Shop Drawings, installation drawings and instructions furnished by the OWNER and the CONTRACTOR by the manufacturers shall be used by the CONTRACTOR for the installation of the equipment and materials.

1.2 MATERIALS

- A. Anchor and expansion bolts will be furnished by the CONTRACTOR, as specified and required. Expansion bolts shall only be used where permitted by the ENGINEER. Anchor and expansion bolts shall be of Type 316 stainless steel unless otherwise specified. Anchorage items shall conform to the applicable requirements of Section 05503, Anchor Bolts, Expansion Anchors and Concrete Inserts.
- B. Grouting shall be done utilizing grout materials as specified in Section 03600, Grout.

1.3 REMOVING, HAULING AND INSTALLING EQUIPMENT AND MATERIALS

- A. The CONTRACTOR shall inspect all items including all boxes, crates and packages containing equipment and materials for damage that may have occurred during shipment prior to its removal from the truck or other conveyance. Any damage shall immediately be reported to the ENGINEER. He shall then carefully remove the equipment and materials from the truck or trucks on which it is shipped. The equipment and materials shall then be transported to the place of installation at the jobsite. The CONTRACTOR shall be liable for loss or damage that the equipment and materials may receive while being unloaded, transported, stored or installed. The CONTRACTOR shall employ competent mechanics experienced in the installation of the types of equipment and materials to be furnished, and shall ensure that all equipment and materials are installed in accordance with the recommendations of the manufacturer. All bolts, nuts and other fastenings shall be furnished by the CONTRACTOR, and shall comply with the applicable requirements of Section 05503. All equipment that arrives at the job site during normal working hours shall be unloaded as soon as practicable.

1.4 EQUIPMENT ERECTION

A. Workmanship:

1. The following erection specifications are not intended to cover all instructions, but only some of the important practices. In all cases, only the best methods known to the trades are to be employed.
2. Only those mechanics skilled in the handling, setting, alignment, leveling and adjustment of the type of equipment and materials supplied shall be employed in the work.
3. An oil bath heater shall always be used to expand couplings, gears, etc. They shall not be forced or driven on equipment shafts, nor shall they be subjected to an open flame or torch.
4. Wedging will not be permitted. Only the least number of flat shims are to be used in leveling equipment (shims are to be clean and free of slag). All shims, filling pieces, keys packing, red or white lead grout, or other materials necessary to properly align, level and secure apparatus in place shall be furnished by the CONTRACTOR. All parts intended to be plumb or level must be proven exactly so. Any grinding necessary to bring parts to proper bearing after erection shall be done at the expense of the CONTRACTOR.
5. Proper tools shall be used in the assembly of equipment and materials to prevent marring the surface of shafts, nuts or other parts.
6. Connections requiring gaskets shall be tightened evenly all around to ensure uniform stress over the entire gasket area.
7. No equipment and materials shall be altered or repaired, and no burning or welding will be permitted on any parts having machined surfaces, except by written permission of the ENGINEER.
8. No rigging shall be done from any structure without the permission of the ENGINEER, and the CONTRACTOR shall be completely responsible for any damage to the structure due to his operations.
9. Only such equipment and materials as will not damage the structure or equipment and materials shall be used on the Work.

B. Setting and Erection:

1. Special care shall be taken to ensure proper alignment of all equipment with particular reference to the pumps and electric drives. The units shall be carefully aligned on their foundations by qualified millwrights after their sole plates have been shimmed to true alignment at the anchor bolts. The anchor bolts shall be set in place and the nuts tightened against the shims. After the foundation alignments have been approved by the ENGINEER, the bedplates or wing feet of the equipment shall be further checked after securing to the foundations and, after confirmation of all alignments, the sole plates shall be finally grouted in place. The CONTRACTOR shall be responsible for the exact alignment of equipment with associated piping and, under no circumstances, will "pipe springing" be allowed.
2. Whenever the manufacturer's special setting or erection instructions are furnished or called for, they shall be adhered to.
3. Misaligned holes shall be reamed, as excessive driving of bolts or keys will not be permitted.

4. The CONTRACTOR shall furnish and install all necessary plugs in lubrication holes to prevent entry of foreign material.
- C. Alignment and Leveling:
1. All couplings shall be aligned while the equipment is free from all external loads.
 2. Both angular and parallel alignment shall be checked, and the degree of misalignment shall be recorded and submitted to the ENGINEER.
 3. Dial indicators shall be used for the checking of angular and parallel alignment. During rotation of the half couplings in performance of this test, they shall be maintained in the same relative position, and the dial indicator readings shall be taken at the same place on the circumference of the coupling.
 4. Misalignment shall not exceed the manufacturer's tolerances.
- D. Piping Connections and Alignment:
1. Piping connections shall be made in accordance with the applicable requirements of Division 15, Mechanical.
 2. Piping alignment shall be such that excessive forces will not be imposed when the piping connections are tightened.
 3. Pipe supports for piping items shall be provided in accordance with the applicable requirements of Division 15, Mechanical.
- E. Threaded Connections:
1. A molybdenum disulfide anti-seize compound shall be applied to all threads in mechanical connections such as bolts, studs, cap screws, tubing, etc. unless otherwise indicated.
- F. Lubrication:
1. All lubrication shall be performed by the CONTRACTOR before start-up, in accordance with the lubricant specifications and directions furnished by the manufacturer. The CONTRACTOR shall furnish the lubricants.
- G. Electrical Connections:
1. Electrical connections shall be provided in accordance with the applicable requirements of Division 16, Electrical.
- H. Painting:
1. All equipment and materials, unless specified otherwise, shall be field painted in accordance with the requirements of Section 09900, Painting.
- I. Testing:
1. The CONTRACTOR shall carry out all checking and/or testing of installed equipment in accordance with manufacturer's specifications, and as required by the ENGINEER.
- J. Maintenance of Installed Equipment:
1. During the time period between installation and receipt of the letter of conditional approval, the CONTRACTOR shall maintain all equipment in accordance with the equipment manufacturer's instructions and with the approval of the ENGINEER.

1.5 SERVICES OF MANUFACTURERS' REPRESENTATIVE

- A. The equipment furnished under Divisions 11, 14, 15, 16 and 17 shall include the cost of a competent, qualified representative of the manufacturers of all equipment to supervise the installation, adjustment and testing of the equipment and to instruct the OWNER'S operating personnel on operation and maintenance. The training time is detailed in Section 01661 of the Specifications.
- B. Detailed Specifications Sections and Section 11100, General Equipment Provisions, contain additional requirements for furnishing the services of the manufacturers' representatives.

+ + END OF SECTION + +

SECTION 01650
STARTING OF SYSTEMS

1.1 GENERAL

- A. CONTRACTOR shall initially start-up and place all equipment installed by him into successful operation according to manufacturers written instructions and as instructed by manufacturer's field representative. Provide all material, labor, tools, equipment, and expendables required.
- B. General Activities Include:
 - 1. Cleaning.
 - 2. Removing temporary protective coatings.
 - 3. Flushing and replacing greases and lubricants, where required by manufacturer.
 - 4. Lubrication.
 - 5. Check shaft and coupling alignments and reset where needed.
 - 6. Check and set motor, pump and other equipment rotation, safety interlocks, and belt tensions.
 - 7. Check and correct if necessary levelling plates, grout, bearing plates, anchor bolts, fasteners, and alignment of piping which may put stress on pumping equipment connected to it.
 - 8. All adjustments required.
- C. Provide initial filling of lubricants and all other required operating fluids.
- D. Also provide fuel, electricity, water, filters, chemicals and other expendables required for initial start-up of equipment unless otherwise specified.
- E. Section 11100 includes additional requirements for manufacturer's and suppliers field and test data.

1.2 MINIMUM START-UP PROCEDURES

- A. Bearings and Shafting:
 - 1. Inspect for cleanliness, clean and remove foreign materials.
 - 2. Verify alignment.
 - 3. Replace defective bearings, and those which run rough or noisy.
 - 4. Grease as necessary, in accordance with manufacturer's recommendations.
- B. Drives:
 - 1. Adjust tension in V-belt drives, and adjust varipitch sheaves and drives for proper equipment speed.
 - 2. Adjust drives for alignment of sheaves and V-belts.
 - 3. Clean and remove foreign materials before starting operation.

- C. Motors:
 - 1. Check each motor for comparison to amperage nameplate value.
 - 2. Correct conditions which produce excessive current flow, and which exist due to equipment malfunction.
 - 3. Check each motor for proper rotation.
- D. Pumps:
 - 1. Check glands and seals for cleanliness and adjustment before running pump.
 - 2. Inspect shaft sleeves for scoring.
 - 3. Inspect mechanical faces, chambers, and seal rings, and replace if defective.
 - 4. Verify that piping system is free of dirt and scale before circulating liquid through the pump.
- E. Valves:
 - 1. Inspect both hand and automatic control valves, clean bonnets and stems.
 - 2. Tighten packing glands to assure no leakage, but permit valve stems to operate without galling.
 - 3. Replace packing in valves to retain maximum adjustment after system is judged complete.
 - 4. Replace packing on any valve which continues to leak.
 - 5. Remove and repair bonnets which leak.
 - 6. Coat packing gland threads and valve stems with a surface preparation of "Moly-Cote" or "Fel-Pro", after cleaning.
- F. Verify that control valve seats are free from foreign material, and are properly positioned for intended service.
- G. Tighten all pipe joints after system has been placed in operation.
 - 1. Replace gaskets which show any sign of leakage after tightening.
- H. Inspect all joints for leakage.
 - 1. Promptly remake each joint which appears to be faulty, do not wait for rust to form.
 - 2. Clean threads on both parts, apply compound and remake joints.
- I. After system has been placed in operation, clean strainers, dirt pockets, orifices, valve seats and headers in fluid system, to assure freedom from foreign materials.
- J. Open steam traps and air vents where used, remove operating elements.
 - 1. Clean thoroughly, replace internal parts and put back into operation.
- K. Remove rust, scale and foreign materials from equipment and renew defaced surfaces.
- L. Set and calibrate equipment.
- M. Inspect fan wheels for clearance and balance.
 - 1. Provide factory-authorized personnel for adjustment when needed.

- N. Check each electrical control circuit to assure that operation complies with Specifications and requirements to provide desired performance.
- O. Inspect each pressure gage and thermometer for calibration.
 - 1. Replace items which are defaced, broken, or which read incorrectly.
- P. Repair damaged insulation.
- Q. Vent gasses trapped in any part of systems.
 - 1. Verify that liquids are drained from all parts of gas or air systems.

1.3 INITIAL PLANT START-UP

- A. Prior to start-up of the plant facilities, the CONTRACTOR shall have prepared and pre-tested all equipment insofar as possible to check its ability for sustained operation, including inspections and adjustments by manufacturer's servicemen.
- B. After the facilities are sufficiently complete to permit start-up, the CONTRACTOR shall furnish competent personnel to start-up the plant facilities. The CONTRACTOR will be responsible for start-up of all facilities constructed under this Contract. During the initial start-up period the CONTRACTOR shall check and provide for satisfactory mechanical operation of the plant facilities. Insofar as possible, the manufacturer's representatives shall be present during this period to instruct the plant operators in the care, operation, and maintenance of the equipment. Process considerations will be given secondary consideration during this period, but any process information or assistance required will be furnished by the ENGINEER or the OWNER.

Prior to startup, the CONTRACTOR shall prepare a schedule detailing the proposed start-up and his plans for manpower and auxiliary facilities to be provided. The start-up schedule is subject to approval of the ENGINEER.

Start-up of the plant by the CONTRACTOR shall include all mechanical facilities such as pumps, compressors, and like equipment, and the ventilating, air conditioning (or heating), plumbing, and electrical systems. Start-up of either the heating or air conditioning systems is dependent upon the time of year that the plant start-up is initiated. The CONTRACTOR will be required to return at the beginning of the next heating or air conditioning season (whichever is applicable) to start the appropriate system.
- C. The CONTRACTOR shall pay for the cost of all fuel oil and chemicals during the start-up period. At the end of the start-up period, the OWNER will assume responsibility for operation of the facilities, including the cost of fuel, electricity and other consumables, provided the system is operating satisfactorily.

- D. After the facilities are complete and tested by the CONTRACTOR, the OWNER will provide initial fill of chemicals for the following plant chemical systems: Alum, Sulfuric Acid, Caustic Soda, Fluosilicic Acid, Polymer, and Chlorine.
- E. When the start-up period is completed, the OWNER will assume responsibility for operation of the plant, provided that all major items of the Work are operating satisfactorily. If any or all of the plant facilities are not operating satisfactorily at the end of the start-up period, the CONTRACTOR shall continue to operate those facilities that are incomplete or not operating satisfactorily until they are complete and acceptable to the OWNER.

+ + END OF SECTION + +

SECTION 01660

FIELD TESTS OF EQUIPMENT

1.1 PRELIMINARY TESTS

- A. CONTRACTOR shall make preliminary field tests of all equipment as soon as conditions permit.
- B. Purpose of tests is to determine if equipment:
 - 1. Is properly installed.
 - 2. Complies with operating cycles.
 - 3. Is operational and free from overheating, overloading, vibration or other operating problems.
- C. CONTRACTOR shall furnish all labor, materials, instruments, fuel, incidentals, and expendables required, unless otherwise provided.
- D. CONTRACTOR shall make all changes, adjustments and replacements required to place equipment in service and test it.
- E. ENGINEER and OWNER shall be given sufficient prior notice to witness tests.
- F. Section 11100 includes additional requirements for manufacturer's and suppliers field and test data.

1.2 FINAL TESTS

- A. To the maximum extent possible, CONTRACTOR shall perform final field tests of equipment prior to initial start-up and operation of the Project. Where this is not practicable, final field tests shall be performed during initial start-up and operation of the Project.
- B. Purpose of the tests is to demonstrate that equipment is:
 - 1. Properly installed.
 - 2. Completely ready for operation by OWNER.
 - 3. In compliance with design conditions, material specifications and all other requirements of the Contract Documents.
- C. CONTRACTOR shall submit the test procedure for approval by the ENGINEER. The procedure shall specify the duration and the parameters of the test.
- D. CONTRACTOR shall furnish all fuel and energy, labor, materials, instruments, lubricants and expendables required for the tests.
- E. Until final field tests are completed and approved, CONTRACTOR shall make all necessary changes, adjustments and replacements.

F. CONTRACTOR shall notify ENGINEER at least 24 hours prior to beginning of tests. CONTRACTOR shall keep notes and data on tests and submit copy to ENGINEER. ENGINEER and OWNER'S operating personnel shall witness all tests.

+ + END OF SECTION + +

SECTION 01661

INSTRUCTION OF OPERATIONS AND MAINTENANCE PERSONNEL

1.1 GENERAL

- A. Manufacturer shall provide the services of a factory trained maintenance specialist to instruct the OWNER'S operations and maintenance personnel in the recommended operation and the corrective and preventive maintenance procedures for equipment as specified in the respective equipment Section.
- B. The qualifications of the specialist shall be subject to approval by the ENGINEER.
- C. Manufacturer shall be responsible for coordinating these services at times acceptable to the ENGINEER, with a minimum of 30 days prior notice.
- D. Manufacturer shall provide a combination of classroom and field/machine shop training. All training shall be conducted at the Facility. Class sizes shall be limited to no more than seven (7) trainees.
- E. Manufacturer shall allow training session to be videotaped by the OWNER.
- F. Section 11100 includes additional requirements for manufacturer's and suppliers field and test data.

1.2 SUBMITTALS

- A. Manufacturer shall submit for approval a proposed Lesson Plan for the instruction thirty (30) days prior to commencement of scheduled training.
- B. Manufacturer shall submit for approval credentials of their designated maintenance instructor. Credentials will include a brief resume and specific details of the instructor's experience with maintenance of and training on the equipment specified.

1.3 INSTRUCTION LESSON PLAN

- A. Manufacturer's proposed Lesson Plan shall include the elements presented in the Outline of Instruction Lesson Plan in Section 1.3.D. Specific components and procedures shall be identified in the proposed Lesson Plan.
- B. Manufacturer's proposed Lesson Plan shall detail specific instruction topics. Training aids to be utilized in the instruction shall be referenced and attached where applicable to the proposed Lesson Plan. "Hands-On" demonstrations planned for the instruction shall be described in the Lesson Plan.

- C. The manufacturer shall indicate the estimated duration of each segment of the training Lesson Plan.
- D. Outline of Instruction Lesson Plan:
 - 1. Equipment Operation:
 - a. Describe equipment's operating (process) function.
 - b. Describe equipment's fundamental operating principals and dynamics.
 - c. Identify equipment's mechanical, electrical and electronic components and features.
 - d. Identify all support equipment associated with the operation of subject equipment (i.e., air intake filters, valve actuators, motors).
 - e. Provide standard operating procedures to cover start-up, routine monitoring and shut-down of the equipment.
 - 2. Detailed Component Description:
 - a. Identify and describe in detail each component's function.
 - b. Where applicable, group related components into subsystem. Describe subsystem functions and their interaction with other subsystems.
 - c. Identify and describe in detail equipment safeties and control interlocks.
 - 3. Equipment Preventive Maintenance (PM):
 - a. Describe PM inspection procedures required to:
 - 1) Perform an inspection of the equipment in operation.
 - 2) Spot potential trouble symptoms (anticipate breakdowns).
 - 3) Forecast maintenance requirements (predictive maintenance).
 - b. Define the recommended PM intervals for each component.
 - c. Provide lubricant and replacement part recommendations and limitations.
 - d. Describe appropriate cleaning practices and recommended intervals.
 - 4. Equipment Troubleshooting:
 - a. Define recommended systematic troubleshooting procedures.
 - b. Provide component specific troubleshooting checklists.
 - c. Describe applicable equipment testing and diagnostic procedures to facilitate troubleshooting.
 - 5. Equipment Corrective Maintenance:
 - a. Describe recommended equipment preparation requirements.
 - b. Identify and describe the use of any special tools required for maintenance of the equipment.
 - c. Describe component removal/installation and disassembly/assembly procedures.
 - d. Perform at least two "hand-on" demonstrations of common corrective maintenance repairs.
 - e. Describe recommended measuring instruments and procedures, and provide instruction on interpreting alignment measurements, as appropriate.
 - f. Define recommended torquing, mounting, calibration and/or alignment procedures and settings, as appropriate.
 - g. Describe recommended procedures to check/test equipment following a corrective repair.

1.4 TRAINING AIDS

- A. The manufacturer's instructor shall incorporate training aids as appropriate to assist in the instruction. At a minimum, the training aids shall include text and figure handouts. Other appropriate training aids are:
 - 1. Audio-Visual Aids (e.g., films, slides, videotapes, overhead transparencies, posters, blueprints, diagrams, catalogue sheets).
 - 2. Equipment Cutaways and Samples (e.g., spare parts, damaged equipment).
 - 3. Tools (e.g., repair tools, customized tools, measuring and calibrating instruments).

- B. The manufacturer's instructor shall utilize descriptive class handouts during the instruction. Photocopied class handouts shall be good quality reproductions. Class handouts should accompany the instruction with frequent reference made to them. Customized handouts developed especially for the instruction are encouraged. Handouts planned for the instruction shall be attached with the manufacturer's proposed Lesson Plan.

1.5 "HANDS-ON" DEMONSTRATIONS

- A. The manufacturer's instructor shall present "hands-on" demonstrations of common corrective maintenance repairs for each scheduled group. The manufacturer shall provide the tools and equipment to conduct the demonstrations. Requests for supplemental assistance and facilities should be submitted with the manufacturer's proposed Lesson Plan. The proposed "hands-on" demonstrations should be described in the manufacturer's proposed Lesson Plan.

1.6 TRAINING DURATION SCHEDULE

- A. The manufacturer's instructions shall provide a minimum on-site training duration according to the following schedule:

EQUIPMENT TRAINING SCHEDULE SQUAW PEAK WATER TREATMENT PLANT

PART A - MODIFICATIONS AND UPGRADES

<u>Spec Section</u>	<u>Equipment Name</u>	<u>Minimum Training Time (days)</u>
11233	Water Softening Equipment	1
11303	Miscellaneous Pumping Equipment	1
11305	Sump Pumps	1
11308	Vertical Lineshaft Pumps	8
11351	Sludge Collection Equipment	3
11357	Emergency Chlorine Scrubber	2
11404	Horizontal Reel Flocculators	3
11501	Chlorination Equipment	6
11508	Polymer Feed Equipment	2
11530	Waste Storage Transfer Pump	2
11531	Magnetic Drive Sealless End Suction Pumps	2
11532	Metering Pumps	5
11533	Gear Pumps	1
13620	Instrumentation and Control Equipment	2
14211	Electric Elevator	1
14310	Hoisting Equipment	1
15099	Raw Water Pump Station Butterfly- Type Check Valves	3
15407	Potable Water Piping System	1
15411	Sump Pumps Sewage Ejectors, and Submersible Pumps	1
15801	Central Station Air Handling Units	1
15804	Air Cooled Condensing Unit - Split System Air Conditioning	1
15805	Packaged Air to Air Heat Pump Units	1
15808	Computer/Control Room Air Conditioning	1
15882	Indirect/Direct Evaporative Cooling Units	1
15892	Testing, Adjusting and Balancing of HVAC Systems	5
16200	Standby Power Generators	2
16920	Motor Control Centers	3

PART B - PRELIMINARY TREATMENT FACILITIES

<u>Spec Section</u>	<u>Equipment Name</u>	<u>Minimum Training Time (days)</u>
110100	Bar Screens	1
110200	Screenings Conveyor System	0.5
110300	Premixers	1
110400	Circular Sludge Collectors	1
120572	Sump Pumps	0.5
120700	Presedimentation Sludge Pumps	1
120830	Sample Pumps	0.5
161050	Programmable Controllers	1
166010	Variable Frequency/Variable Voltage Motor Controls	2
170012	Ultrasonics	0.5
170013	Magnetic Flowmeters	1
170018	pH Analyzers	0.5
170019	Turbidity Meter	0.5

PART C - SOLIDS HANDLING FACILITY

<u>Spec Section</u>	<u>Equipment Name</u>	<u>Minimum Training Time (days)</u>
11069	Adjustable Frequency Drives	1
11145	Grit Separation and Dewatering Equipment	0.5
11160	Sludge Collector drives	0.5
11212	Submersible Mixers	0.5
11344	Self-Priming Nonclog Centrifugal Pumps	1
11346	Submersible Sump Pumps	0.5
11374	Sludge Cake Piston Pumps	2
11390	Progressing Cavity Pumps	1
11525	Circular Gravity Thickeners	2
11585	Sludge Dewatering Centrifuges	1
11771	Polymer Preparation and Feed Equipment	0.5
13281	Activated Carbon Odor Control Systems	0.5
14311	Monorail Hoists	0.5
14901	Live Bottom Hopper	1
15634	Makeup Air Units	0.5
15663	Rooftop Air Conditioning Units	0.5
15776	Air to Air Heat Pump	1
15990	Heating, Ventilating, and Air Conditioning Systems	2
16920	600 Volt Motor Control Centers	2
17320	Programmable Logic Controllers	2

+ + END OF SECTION + +

SECTION 01710

CLEANING

1.1 GENERAL

- A. Execute cleaning, during progress of the Work, at completion of the Work, and as required by General Conditions.
- B. Requirements of Regulatory Agencies:
 - 1. In addition to the requirements herein, maintain the cleanliness of the Work and surrounding premises within the Work limits so as to comply with federal, state, and local fire and safety laws, ordinances, codes and regulations.
 - 2. Comply with all federal, state and local anti-pollution laws, ordinances, codes and regulations when disposing of waste materials, debris and rubbish.
- C. Scheduling of Cleaning and Disposal Operations:
 - 1. So that dust, wash water or other contaminants generated during such operations do not damage or mar painted or finished surfaces.
 - 2. To prevent accumulation of dust, dirt, debris, rubbish and waste materials on or within the Work or on the premises surrounding the Work.
- D. Waste Disposal:
 - 1. Dispose of all waste materials, surplus materials, debris and rubbish off the plant site.
 - 2. Do not burn or bury rubbish and waste materials on the plant site.
 - 3. Do not dispose of volatile or hazardous wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
 - 4. Do not discharge wastes into streams or waterways.
- E. Cleaning Materials:
 - 1. Use only cleaning materials recommended by manufacturer of surface to be cleaned.
 - 2. Use each type of cleaning material on only those surfaces recommended by the cleaning material manufacturer.
 - 3. Use only materials which will not create hazards to health or property.
- F. During Construction:
 - 1. Keep the Work and surrounding premises within work limits free of accumulations of dirt, dust, waste materials, debris and rubbish.
 - 2. Keep dust generating areas wetted down.
 - 3. Provide suitable containers for storage of waste materials, debris and rubbish until time of disposal.
 - 4. Dispose of waste, debris and rubbish off site at legal disposal areas.

G. When Project is Completed:

1. Remove and dispose of all excess or waste materials, debris, rubbish, and temporary facilities from the site, structures and all facilities.
2. Repair pavement, roads, sod, and all other areas affected by construction operations and restore them to original condition or to minimum condition specified.
3. Remove spatter, grease, stains, fingerprints, dirt, dust, labels, tags, packing materials and other foreign items or substances from interior and exterior surfaces, equipment, signs and lettering.
4. Repair, patch and touch up chipped, scratched, dented or otherwise marred surfaces to match specified finish.
5. Remove paint, clean and restore all equipment and material nameplates, labels and other identification markings.
6. Wash and shine mirrors, glazing and polished surfaces.
7. Clean all floors, slabs, pavements, and ground surfaces.
8. Maintain cleaning until acceptance and occupation by OWNER.

+ + END OF SECTION + +

SECTION 01715

CLEANING, DISINFECTION, AND TESTING OF HYDRAULIC STRUCTURES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope: CONTRACTOR shall furnish all labor, materials, equipment, appurtenances, and services required to clean, flush, and disinfect all interior surfaces of the following:
1. Filter Backwash Pumping Station.
 2. Filter Influent Channel.
 3. Filters 9-24.
 4. Filtered Water Effluent Channel and Weir Boxes.
 5. Existing Washwater Tanks Nos. 1 and 2.
 6. Lincoln Drive and Sunnyslope Pump Station Surge Tanks.
 7. 60" Paradise Valley Pump Station Section Header.
 8. All other miscellaneous items, equipment and other surfaces in contact with potable or filtered water which are not described above or are included under other sections of these Specifications as stated in Paragraph 1.1.E.
- B. CONTRACTOR shall furnish all labor, materials, equipment, appurtenances, and services required to clean, flush, and test the following structures:
1. Bar Screen.
 2. Premixer.
 3. Influent Bypass Channel.
 4. Presedimentation Basin.
 5. Raw Water Pump Station.
 6. 6 ft x 7 ft Filtered Water Box Culvert.
 7. Sludge Blending Tank.
 8. Gravity Thickeners.
 9. Thickened Sludge Storage Tanks.
 10. Flow Equalization Basin.
 11. Recoverable Used Water Pump Station.
 12. Flow Splitting Structure.
- C. All structures, including treatment units not subject to disinfection, shall be cleaned in accordance with Article 3.2 of this Section.
- D. Water for initial testing and disinfecting will be furnished by the OWNER. CONTRACTOR shall provide all temporary piping, hose, valves, appurtenances, and services required. Cost of water for redisinfecting and retesting will be paid by CONTRACTOR to OWNER at OWNER'S standard rates.
- E. Disinfection of piping is specified under Sections 15051 and 15052.
- F. Related work specified elsewhere:
1. Section 01710, Cleaning.
 2. Section 15051, Buried Piping Installation.

3. Section 15052, Exposed Piping Installation.

1.2 QUALITY ASSURANCE

- A. Reference Standards: Comply with applicable provisions and recommendations of the following, unless otherwise shown or specified:
1. AWWA C651, Disinfecting Water Mains.
 2. AWWA C652, Disinfection of Water Storage Facilities.
 3. AWWA C653, Disinfection of Water Treatment Plants.

1.3 SUBMITTALS

- A. Shop Drawings: Submit for approval the following:
1. Disinfection procedures, methods, coordination and schedules.

PART 2 - PRODUCTS

2.1 DISINFECTANT

- A. Liquid chlorine, sodium hypochlorite or calcium hypochlorite shall be used in accordance with AWWA C652 and AWWA C653. Liquid Chlorine shall be used only where gas-flow chlorinators and injectors are installed for treatment applications. Portable or makeshift gas chlorination equipment is not acceptable.
- B. Liquid chlorine for initial disinfection will be furnished by the OWNER. Cost of chlorine for redisinfection will be paid by CONTRACTOR to OWNER at OWNER'S cost.

PART 3 - EXECUTION

3.1 GENERAL

- A. Disinfection work shall be completed and the facility satisfactorily tested for bacteria in accordance with Standard Methods for Examination of Water and Wastewater before it may be placed in service.
- B. Samples for bacteriological tests will be taken by the OWNER. These samples shall indicate microbiologically-satisfactory water before the facilities will be accepted.
- C. CONTRACTOR shall repeat the disinfection procedure until the test results indicate microbiologically-satisfactory water.

3.2 CLEANING

- A. All scaffolding, planks, tools, rags, dirt, debris, and any other material not part of the structural or operating facilities shall be removed prior to chlorination. The surfaces of the walls, floors, and operating facilities shall then be thoroughly cleaned by sweeping, a high pressure water hose, scrubbing, or another equally

effective method. All water, dirt, or foreign material accumulated in this operation shall be removed from the storage facility.

3.3 CHLORINATION PROCEDURE

- A. Facilities requiring disinfection shall be chlorinated by one of the following methods described in AWWA C652:
 - 1. Method 1: Chlorination of treatment facilities such that at the end of the appropriate retention period the water will have a free chlorine residual of not less than 10 mg/L.
 - 2. Method 2: Applying a solution of 200 mg/L available chlorine to the surfaces of all treatment facilities that will come in contact with water.
 - 3. Method 3: Chlorination of treatment facilities with water having a free chlorine residual of 2 mg/L after 24 hours.
- B. Filters shall be disinfected as specified in Section 5 of AWWA C653.
- C. CONTRACTOR shall:
 - 1. Provide all temporary taps, plugs, valves, drains, pumps, piping, and connections required to clean, flush, disinfect, and remove the disinfectant.
 - 2. Provide all temporary pumps, piping, and facilities, as required, to return all flushing water to the Flow Equalization Basin.
 - 3. Perform disinfection of each facility immediately before the facility is placed in operation, and insure that the facility is not contaminated after being acceptably disinfected.

3.4 BACTERIOLOGICAL SAMPLING AND TESTING

- A. After the chlorination procedure is completed, and before each facility is placed in service, water from the complete facility shall be sampled and tested by OWNER for coliform organisms and odor. Bacteriological tests will be in accordance with AWWA C652. If a test is negative (satisfactory bacteriological sample) the facility may be placed in service. If test is positive, OWNER will perform an additional set of tests to confirm the results of the initial tests. If repeat tests for coliform organisms indicate positive results, the CONTRACTOR shall repeat the disinfection procedure for the facility until satisfactory results are obtained.

3.5 HYDRAULIC TESTING

- A. Testing shall be performed prior to backfilling, except where otherwise permitted by the Engineer. Testing shall not be performed sooner than 14 days after all portions of structure walls have been completed. The test shall consist of filling the structure with water to the maximum operating water surface. After testing has been completed, water shall be disposed of as directed by the Engineer.
- B. The tank shall remain filled for an initial 48-hour period to allow for absorption. Following this initial period, add make up water to fill the tank to the maximum level specified above. Measure the drop in liquid level following the next 24-hour period to determine the

volume of liquid loss. An allowance for loss due to evaporation over the 24-hour test period, calculated by an approved method, shall be subtracted from the measured liquid loss. The net amount shall not exceed 0.1 percent of the tank capacity or the volume to which the tank was filled. No visible running leaks, water puddles, or damp spots which show on the exterior surface of the tank will be permitted.

- C. Any cracks, voids, honeycombs, or cold joints causing leaks or dampness shall be pressure grouted using an epoxy material approved for potable water service until cracks or voids have been completely sealed.
- D. The tank shall not be backfilled until the ENGINEER has accepted the results of the leakage tests.
- E. After all testing is complete and accepted the tank shall be emptied.

+ + END OF SECTION + +

SECTION 01720
PROJECT RECORD DOCUMENTS

1.1 GENERAL

- A. CONTRACTOR shall maintain and provide the ENGINEER with project record documents as specified below except where otherwise specified or modified in Divisions 2-18.
- B. Maintenance of Documents:
1. A set of mylar sepias of the Contract Drawings will be furnished to the CONTRACTOR by the OWNER. These sepias shall be updated with record information and a copy of the updated record drawings shall be submitted with each request for payment made by the CONTRACTOR.
 2. Maintain in CONTRACTOR'S field office in clean, dry, legible condition complete sets of the following: Contract Drawings, Specifications, Addenda, approved Shop Drawings, Samples, photographs, Change Orders, other Modifications of Contract, test records, survey data, Field Orders, and all other documents pertinent to CONTRACTOR'S Work.
 3. Provide files and racks for proper storage and easy access. File in accordance with filing format of Construction Specification Institute (CSI) unless otherwise approved by ENGINEER.
 4. Make documents available at all times for inspection by ENGINEER and OWNER.
 5. Record documents shall not be used for any other purpose and shall not be removed from the office without ENGINEER'S approval.
- C. Recording:
1. Label each document "PROJECT RECORD" in 2-inch high printed letters.
 2. Keep record documents current, and updated at least monthly.
 3. Do not permanently conceal any Work until required information has been recorded.
 4. Contract Drawings: Legibly mark to record actual construction including:
 - a. Depths of various elements of foundation in relation to datum.
 - b. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
 - c. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.
 - d. Field changes of dimensions and details.
 - e. Changes made by Change Order or Field Order.
 - f. Details not on original Contract Drawings.
 5. Specifications and Addenda: Legibly mark up each Section to record:
 - a. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
 - b. Changes made by Change Order or Field Order.

- c. Other matters not originally specified.
6. Shop Drawings: Maintain as record documents and legibly annotate drawings to record changes made after review.

C. Record Drawings:

1. At the completion of the installation of all equipment, piping, and duct work the CONTRACTOR shall furnish to the ENGINEER reproducible mylar tracings showing the actual in-place installation of these items installed under this Contract. The drawings shall show the Work in plan and sections as required for clarity with reference dimensions and elevations for complete record drawings. The tracings shall be furnished not later than 30 days after completion of the Work and prior to final payment.
2. At the completion of all electrical work under the Contract, the CONTRACTOR shall furnish to the ENGINEER, reproducible mylar tracings showing a one line diagram of the distribution system and the actual in-place grounding system, lighting arrangement, motor control centers, equipment and conduit and cable plans. The tracings shall be furnished not later than 30 days after completion of the Work and prior to final payment.
3. The Contract Drawings may be used as a starting point in developing these drawings. Subcontractor and manufacturer drawings may be included in this drawing package. The drawing package must be fully integrated and include the necessary cross references between drawings. The drawing package shall include interconnection and termination details to equipment furnished under this Contract.
4. All drawings must be submitted for approval of the ENGINEER. This shall include the following composite drawings for the system being furnished:
 - a. Schematic (Elementary) Diagrams: This shall include but not be limited to complete schematics including items furnished by others for the following:
 - 1) Motor Control Circuits for Starters furnished under this Contract.
 - 2) Substation Controls.
 - 3) HVAC Control Panels furnished under this Contract.
 - b. Wiring (Connection) Diagrams: These shall be included for all pre-wired equipment furnished under this Contract.
 - c. Interconnection Diagrams: These shall include all interconnections to be furnished under this Contract.
 - d. Conduit and Cable Schedules: These shall include all conduit and cable furnished under this Contract.
 - e. Dimension of Outline Drawings: These shall include all equipment furnished under this Contract.
 - f. Power and Lighting Layout Drawings: These shall include all conduits and wiring furnished under this Contract.

E. Submittal:

1. At completion of Project, deliver record documents to ENGINEER.
2. Accompany submittal with transmittal letter containing:
 - a. Date.
 - b. Project title and number.
 - c. CONTRACTOR'S name and address.

- d. Title and number of each record document.
- e. Certification that each document as submitted is complete and accurate.
- f. Signature of CONTRACTOR, or his authorized representative.

+ + END OF SECTION + +

SECTION 01730

OPERATION AND MAINTENANCE DATA

1.1 GENERAL

- A. Provide operation and maintenance data in the form of instructional manuals for use by the OWNER'S personnel for:
1. All equipment and systems.
 2. All valves, gates and related accessories.
 3. All instruments and control devices.
 4. All electrical gear.
- B. Definitions:
1. Operation and Maintenance Data:
 - a. The term "operation and maintenance data" includes all product related information and documents which are required for preparation of the plant operation and maintenance manual. It also includes all data which must accompany said manual as directed by current regulations of any participating government agency.
 - b. Required operation and maintenance data includes, but is not limited to, the following:
 - 1) Complete, detailed written operating instructions for each product or piece of equipment including: equipment function; operating characteristics; limiting conditions; operating instructions for startup, location of controls, special tools or other equipment required; normal and emergency conditions; regulation and control; and shutdown.
 - 2) Complete, detailed written preventive maintenance instructions as defined below.
 - 3) Recommended spare parts lists, by generic title and identification number, and local sources of supply for parts.
 - 4) Written explanations of all safety considerations and procedures relating to operation and maintenance procedures.
 - 5) Name, address and phone number of manufacturer, manufacturer's local service representative, and Subcontractor or installer.
 - 6) Copy of all approved Shop Drawings, and copy of warranty bond and service contract as applicable, including as-built circuit diagrams, schematics and functional drawings..
 - 7) Test data where applicable.
 - 8) Disassembly, reassembly, installation, alignment, adjustment and checking instructions.
 2. Preventive Maintenance Instructions:
 - a. The term "preventive maintenance instructions" includes all information and instructions required to keep a product or piece of equipment properly lubricated, adjusted and maintained so that the item functions economically throughout its full design life.

- b. Preventive maintenance instructions include, but are not limited to, the following:
 - 1) A written explanation with illustrations for each preventive maintenance task.
 - 2) Recommended schedule for execution of preventive maintenance tasks.
 - 3) Lubrication charts.
 - 4) Table of alternative lubricants.
 - 5) Trouble shooting instructions.
 - 6) List of required maintenance tools and equipment.

C. Submittals:

- 1. General: Submit operations and maintenance data to the ENGINEER within ninety (90) days after approval of Shop Drawings unless noted otherwise.
 - a. All manufacturers' instructions must be delivered and approved prior to request for payment for 50 percent of the Contract amount. Refer to Section 01300, Submittals.
- 2. Number of Copies: Six of each item unless noted otherwise.
- 3. Letter of Transmittal: Provide a letter of transmittal with each submittal and include the following in the letter:
 - a. Date of submittal.
 - b. Contract title and number.
 - c. CONTRACTOR'S name and address.
 - d. A list of the attachments and the Specification Sections to which they relate.
 - e. Reference to or explanation of related submittals already made or to be made at a future date.
- 4. Format Requirements:
 - a. Use 8-1/2 inch by 11 inch paper of high rag content and quality. Larger drawings or illustrations are acceptable if neatly folded to the specified size in a manner which will permit easy unfolding without removal from the binder. Provide reinforced punched binder tab. Or provide fly-leaf for each product.
 - b. All text must be legible typewritten or machine printed originals or high quality copies of same.
 - c. Each page shall have a binding margin of approximately 1-1/2 inches and be punched for placement in a three ring looseleaf or triple post binder. Provide binders. Identify each binder with the following:
 - 1) Title "OPERATING AND MAINTENANCE INSTRUCTIONS".
 - 2) Title of Project.
 - 3) Identity of building or structure as applicable.
 - 4) Identity of general subject matter covered.
 - d. Use dividers and indexed tabs between major categories of information such as operating instructions, preventive maintenance instructions, or other. When necessary, place each major category in a separate binder.
 - e. Provide a table of contents for each binder.
 - f. Identify products by their functional names in the table of contents and at least once in each chapter or Section. Thereafter, abbreviations and acronyms may be used if their meaning is explained in a table in the back of each binder.

Use of model or catalog numbers or letters for identification is not acceptable.

- g. Indicate all components of the equipment on catalog pages by highlighting some other clearly definable medium for ease of identification.

+ + END OF SECTION + +

SECTION 01760

SPARE PARTS AND MAINTENANCE MATERIALS

1.1 GENERAL

- A. As soon as practicable after approval of the equipment specified in the individual Sections, the CONTRACTOR shall furnish spare parts data and maintenance material for equipment. The data shall include a complete list of parts and supplies, with current unit prices and source or sources of supply.
- B. CONTRACTOR shall also furnish a list of parts, and supplies that are either normally furnished at no extra cost with the purchase of the equipment, or specified to be furnished as part of the Contract and a list of additional items recommended by the manufacturer to assure efficient operation for the particular installation for a period of one year or the guarantee period, whichever is greater.
- C. All parts shall be securely boxed and tagged, and clearly marked on the box and individually for identification as to the name of manufacturer or supplier, applicable equipment, part number, description and location in the equipment. All parts shall be protected and packaged for a shelf life of at least ten (10) years.
- D. During construction, store parts in buildings or trailers with floor, roof and closed sides and in accordance with manufacturers' recommendations. Protect from weather, condensation and humidity.
- E. Upon substantial completion of the Work or that portion of the Work that the OWNER assumes beneficial occupancy, the CONTRACTOR shall complete the spare parts receiver form (see page 01760-2) for each spare part provided. Two copies of the complete forms shall be transmitted to the ENGINEER for review. The completed form shall be reviewed for completeness and to determine compliance with the requirements of the Contract documents.
- F. Parts and materials shall be delivered to the OWNER upon completion of the Work or when the OWNER assumes beneficial occupancy. CONTRACTOR shall then place them in permanent storage rooms or areas approved by the OWNER. The turnover procedures shall be developed by the ENGINEER.
- G. Provide a letter of transmittal including the following:
 - 1. Date of letter and transfer of parts and material.
 - 2. Contract title and number.
 - 3. CONTRACTOR'S name and address.
 - 4. A complete inventory of the parts and material, listing the applicable Specification Section for each.
 - 5. A place for the OWNER to sign and signify receipt of the parts and materials.
- H. CONTRACTOR shall be fully responsible for loss or damage to parts and materials until they are transmitted to the OWNER.

SPARE PART RECEIVER
SQUAW PEAK WATER TREATMENT PLANT
SPECIFICATION SECTION _____

CONTRACTOR PLEASE FILL OUT:

MANUFACTURER: _____

ITEM
DESCRIPTION: _____

COST: _____

MANUFACTURER
PART NUMBER: _____

SUPPLIER: _____

CROSS REFERENCE
NUMBER: _____

VENDOR
INFORMATION: _____

VENDOR ORDER
PART NUMBER: _____

PART TO BE USED ON
WHAT EQUIPMENT: _____

EQUIPMENT
NUMBER: _____

CITY PERSONNEL FILL IN:

BIN NUMBER: _____

AIMS NUMBER: _____

LOCATION IN
STORES: _____

RECEIVED BY: _____

+ + END OF SECTION + +

SECTION 01780
POST FINAL INSPECTION

1.1 GENERAL

- A. Approximately one year after Final Acceptance the ENGINEER will make arrangements with the OWNER and the CONTRACTOR for a post final inspection and will send a written notice to said parties to inform them of the date and time of the inspection.
- B. After the inspection, the ENGINEER will inform the CONTRACTOR of any corrections required.
- C. When the corrections have been satisfactorily completed, the ENGINEER will forward a certificate for the release of bonds.

+ + END OF SECTION + +

SECTION 01800
ENVIRONMENTAL CONDITIONS

1.0 GENERAL

- A. This section describes the environmental conditions which have been observed at the site of the Work and which may reasonably be anticipated throughout the life of the project.
- B. The site of the Work is at an elevation of 1,250 feet above mean sea level. Climate conditions are described as follows:

<u>Description</u>	<u>Range of Conditions</u>
Winter	Mild, occasional rain showers
Summer	Hot, dry, sunny with occasional thunderstorms
Relative humidity, percent	
Indoors	30-60
Average outdoors	10-30
Air temperature, degrees F	
Outdoors	20-120
Indoors	40-100
Water temperature, degrees F	
Minimum	40
Maximum	95
Barometric pressure, inches Mercury	720

- C. Additional conditions which may be applicable are specified in other sections.

+ + END OF SECTION + +

SECTION 01999

REFERENCE FORMS

1.0 GENERAL

A. Section 01999, Reference Forms, are applicable to the Part C, Solids Handling Facility documents only.

B. The forms listed below and included in this section are referenced from other sections within the Part C, Solids Handling Facility documents:

<u>Form No.</u>	<u>Title</u>
11000-A	Manufacturer's Installation Certification Form
11000-B	Manufacturer's Instruction Certification Form
11000-C	Unit Responsibility Certiifcation Form
11060-A	Motor Data Form
16000-A	Wire and Cable Resistance Test Data Form
16000-B	Installed Motor Test Data Form
16000-C	Dry Transformer Test Data Form
16000-D	Motor Control Center Test Form
16000-E	Medium Voltage Motor Starter Test Form
16000-F	Medium Voltage Switchgear Test Form
16000-G	Protective Relay Test Form
16000-H	Low Voltage Switchgear Test Form
16000-I	Medium Voltage Load Interrupter Switch Test Form
16000-J	Liquid-Filled Transformer Test Form
16000-K	Automatic Transfer Switch Test Form
16000-L	Neutral Grounding Resistor Test
17000-A	Loop Wiring and Insulation Resistance Test Data Form
17000-B	Control Circuit Piping Leak Test Form
17000-C	Controller Calibration Test Data Form
17000-D	Panel Indicator Calibration Test Data Form
17000-E	Recorder Calibration Test Data Form
17000-F	Signal Trip Calibration Test Data Form
17000-G	Field Switch Calibration Test Data Form
17000-H	Transmitter Calibration Test Data Form
17000-I	Miscellaneous Instrument Calibration Test Data Form
17000-J	Individual Loop Test Data Form
17000-K	Loop Commissioning Test Data Form

11000-A. MANUFACTURER'S INSTALLATION CERTIFICATION FORM:

Contract No: _____ Specification Section: _____

Equipment name: _____

Contractor: _____

Manufacturer of equipment item: _____

The undersigned manufacturer of the equipment item described above hereby certifies that he has checked the installation of the equipment and that the equipment, as specified in the project manual, has been provided in accordance with the manufacturer's recommendations and that the trial operation of the equipment item has been satisfactory.

Comments: _____

Date

Manufacturer

Signature of
Authorized Representative

Date

Contractor

Signature of
Authorized Representative

11000-B. MANUFACTURER'S INSTRUCTION CERTIFICATION FORM:

Contract No.: _____ Specification Section: _____

Equipment name: _____

Contractor: _____

Manufacturer of equipment item: _____

The undersigned manufacturer certifies that a service engineer has instructed the wastewater treatment plant operating personnel in the proper maintenance and operation of the equipment designated herein.

Operations Check List (check appropriate spaces)

Start-up procedure reviewed _____
Shutdown procedure reviewed _____
Normal operation procedure reviewed _____

Others: _____

Maintenance Check List (check appropriate spaces)

Described normal oil changes (frequency) _____
Described special tools required _____
Described normal items to be reviewed for wear _____
Described preventive maintenance instructions _____
Described greasing frequency _____

Others: _____

Date

Manufacturer

Signature of
Authorized Representative

Date

Signature of
Owner's Representative

Date

Signature of
Contractor's Representative

(Job Title)

CERTIFICATE OF UNIT RESPONSIBILITY
For Specification Section _____

(Section title)

In accordance with paragraph 11000-1.02 C of the contract documents, the undersigned manufacturer accepts unit responsibility for all components of equipment furnished under specification Section _____. We hereby certify that these components are compatible and comprise a functional unit suitable for the specified performance and design requirements.

Notary Public

Name of Corporation

Commission expiration date

Address

Seal:

By: _____
Duly Authorized Official

Legal Title of Official

Date: _____

11060-A. MOTOR DATA FORM:

Equipment Name _____ Equipment Number(s) _____

Site Location _____

Nameplate Markings

Mfr _____ Mfr Model _____ Frame _____ HP _____
 Volts _____ Phase _____ RPM _____ Service factor _____
 FLA _____ LRA _____ Freq _____ Amb temp rating _____ degrees C
 Time rating _____ Design letter _____
 (NEMA MG1-10.35) (NEMA MG-1.16)
 KVA code letter _____ Insulation class _____

The following information is required for explosionproof motors only:

- A. Approved by UL for installation in Class _____, Div _____
- B. UL frame temperature code _____; Group _____ Atmosphere (NEC Tables 500-2 and 500-2(b))

The following information is required for high efficiency motors only:

- A. Guaranteed minimum efficiency at full load or NEMA efficiency index _____ (NEMA MG1-12.53b)
- B. Nameplate or nominal efficiency _____

Data Not Necessarily Marked on Nameplate

Type of enclosure _____ Enclosure material _____
 Temp rise _____ degrees C (NEMA MG1-12.41,42)
 Space heater included? ___Yes ___No; if Yes, ___watts ___volts
 Type of motor winding overtemperature protection, if specified:

Use the space below to provide additional information on other motor modifications, if specified:

16000-A. WIRE AND CABLE RESISTANCE TEST DATA FORM:

Wire or Cable No.: _____

Temperature, °F _____

Location of Test

Insulation
Resistance,
megohms

1.

2.

3.

4.

5.

6.

7.

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

16000-B. INSTALLED MOTOR TEST FORM:

Motor Equipment Number _____ Date of test _____

Equipment Driven _____

MCC Location _____

Ambient temp _____ °F

Resistance:

Insulation resistance phase-to-ground megohms:

Phase A _____, Phase B _____, Phase C _____

Current at Full Load:

Phase _____ Current, amps _____

Phase _____ Current, amps _____

Phase _____ Current, amps _____

Thermal Overload Device: Manufacturer/catalog # _____ Amperes _____

Circuit breaker (MCP) setting: _____

Motor Nameplate Markings:

Mfr _____ Mfr type _____ Frame _____ HP _____

Volts _____ Phase _____ RPM _____ **Service factor _____

Amps _____ Freq _____ Ambient temp rating _____ °C

Time rating _____ **Design letter _____
(NEMA 1-10.35) (NEMA MG-1.16)

Code letter _____ Insulation class _____

**Required for 3-phase squirrel cage induction motors only.

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

16000-C. DRY TRANSFORMER TEST DATA FORM:

Equipment No. _____ Temperature _____
 Location _____
 Winding: Primary _____ Secondary _____

A. INSULATION-RESISTANCE TEST:

The test shall be made with a megohmmeter at the test voltage for a period of 1 minute.

<u>Voltage rating</u>	<u>Test voltage</u>	<u>Test results (megohms)</u>	
		<u>Phase</u>	<u>Phase</u>
0-600	1000	A-GRD _____	A-B _____
601-5000	2500	B-GRD _____	B-C _____
5000+	5000	C-GRD _____	C-A _____

Resistance readings less than the manufacturer's recommended value or less than 10 megohms shall be brought to the attention of the Construction Manager.

B. DIELECTRIC-ABSORPTION TEST:

The test shall be made with a megohmmeter at the test voltage for a period of 10 minutes.

1. TEST RESULTS:

(Megohms)	<u>Phase</u>	<u>Phase</u>
	A-GRD _____	A-B _____
	B-GRD _____	B-C _____
	C-GRD _____	C-A _____

2. POLARIZATION INDEX:

$$\frac{\text{10 minute reading}}{\text{1 minute reading}} = \text{polorization index}$$

(from paragraph "A" above)

<u>Phase</u>	<u>Phase</u>
A-GRD _____	A-B _____
B-GRD _____	B-C _____
C-GRD _____	C-A _____

Polarization index values less than 2 shall be brought to the attention of the Construction Manager.

CERTIFIED _____ Date _____
 Contractor's Representative

WITNESSED _____ Date _____
 Owner's Representative

16000-D. MOTOR CONTROL CENTER TEST FORM:

Equipment No. _____ Ambient room temperature _____
Location _____

A. MECHANICAL CHECK:

All bolted connections either bus to bus or cable to bus shall be torqued to the manufacturer's recommendations.

B. ELECTRICAL TESTS:

1. Measure insulation resistance of each bus section phase to phase and phase to ground for 1 minute using a megohmmeter at 1000 volts.

Test results (megohms)

<u>Phase</u>	<u>Phase</u>
A-GRD _____	A-B _____
B-GRD _____	B-C _____
C-GRD _____	C-A _____

2. Set the circuit breaker in the starter unit to comply with the requirements of NEC, Article 430-52 and Table 430-152.
3. Motor overload heater elements shall be sized and installed based on the actual nameplate full load amperes of the motor connected to the starter.

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

16000-E. MEDIUM VOLTAGE MOTOR STARTER TEST FORM:

Equipment No. _____

Location _____

Room Temperature _____

The protective devices shall be set in accordance with the specification before the tests are performed.

1. Measure contact resistance (micro-ohms)

Phase: A _____ B _____ C _____

Contacts shall be replaced if resistance exceeds 50 micro-ohms.

2. Perform an insulation resistance test (1000 volts DC for 1 minute).

<u>Phase</u>	<u>A</u>	<u>B</u>	<u>C</u>	
Pole to ground	_____	_____	_____	megohms
Across open pole	_____	_____	_____	megohms
Pole to pole	AB_____	BC_____	CA_____	megohms

3. Perform minimum pickup voltage tests on trip and close coils.
4. Motor RTDs shall be tested by using a hot oil bath. The temperature at which the sensor trips shall be recorded for each RTD.
5. The contactor shall be tripped by operation of each protective device.

16000-F. MEDIUM VOLTAGE SWITCHGEAR TEST FORM:

Equipment No. _____

Location _____

Room Temperature _____

The protective devices shall be set in accordance with the specification before the tests are performed.

1. Measure contact resistance (micro-ohms)

Phase: A _____ B _____ C _____

Contacts shall be replaced if resistance exceeds 50 micro-ohms.

2. Perform an insulation resistance test (1000 volts DC for 1 minute).

<u>Phase</u>	<u>A</u>	<u>B</u>	<u>C</u>	
Pole to ground	_____	_____	_____	megohms
Across open pole	_____	_____	_____	megohms
Pole to pole	AB_____	BC_____	CA_____	megohms

3. Perform minimum pickup voltage tests on trip and close coils.
4. Verify the instrument transformer ratios. Check the transformer's polarity electrically.
5. The contactor shall be tripped by operation of each protective device.

16000-G. PROTECTIVE RELAY TEST FORM:

Location _____

Switchgear Breaker No. _____

Protective Relay Description _____

The protective relays shall be tested in the following manner:

1. Each protective relay circuit shall have its insulation resistance tested to ground.
2. Perform the following tests on the specified relay setting:
 - a. Pickup parameters on each operating element.
 - b. Timing test shall be performed at three points on the time dial curve.
 - c. Pickup target and seal-in units.

The results shall be recorded and signed. A copy shall be given to the Construction Manager in accordance with paragraph 16000-1.05 B.

16000-H. LOW VOLTAGE SWITCHGEAR TEST FORM:

Equipment No. _____

Location _____

Room Temperature _____

The protective devices shall be set in accordance with the specification before the tests are performed.

1. Measure contact resistance (micro-ohms)

Phase: A _____ B _____ C _____

Contacts shall be replaced if resistance exceeds 50 micro-ohms.

2. Perform an insulation resistance test (1000 volts DC for 1 minute).

<u>Phase</u>	<u>A</u>	<u>B</u>	<u>C</u>	
Pole to ground	_____	_____	_____	megohms
Across open pole	_____	_____	_____	megohms
Pole to pole	AB _____	BC _____	CA _____	megohms

3. Minimum pickup current shall be determined by primary current injection.
4. Long time delay shall be determined by primary injection at three hundred percent (300%) pickup current.
5. Short time pickup and time delay shall be determined by primary injection of current.
6. Instantaneous pickup current shall be determined by primary injection.
7. Trip unit reset characteristics shall be verified.
8. Auxiliary protective devices, such as ground fault or under voltage relays, shall be activated to ensure operation of shunt trip devices.

16000-I. MEDIUM VOLTAGE LOAD INTERRUPTER SWITCH TEST FORM:

Equipment Number _____

Location _____

Date _____

1. Measure switch blade resistance (micro-ohms).

Phase: A _____ B _____ C _____

Contacts shall be replaced if resistance exceeds 50 micro-ohms.

2. Perform an insulation resistance test (1000 volts DC for 1 minute).

<u>Phase</u>	<u>A</u>	<u>B</u>	<u>C</u>	
Pole to ground	_____	_____	_____	megohms
Across open pole	_____	_____	_____	megohms
Pole to pole	AB _____	BC _____	CA _____	megohms

The results shall be recorded and signed. A copy shall be given to the Construction Manager in accordance with paragraph 16000-2.06 B.

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

16000-J. LIQUID-FILLED TRANSFORMER TEST FORM:

Equipment Number _____

Location _____

Date/Weather Conditions _____

- A. Perform the "Insulation-Resistance Test" and "Dielectric Absorption Test" using Form 16000-C, Dry Transformer Test Data Form.
- B. Perform an applied voltage (low frequency dielectric) test in accordance with ANSI C57.12.90, paragraph 10.5, Applied Voltage Test. Applied voltage levels shall be 75 percent of recommended factory test levels or recommended test levels of ANSI C57.12.00 Table 5.
- C. Insulating oil shall be sampled and shall be laboratory tested for the following:
 - 1. Dielectric strength.
 - 2. Acid neutralization.
 - 3. Interfacial tension.
 - 4. Color.
 - 5. Power factor.
- D. Perform a turns ratio test between the windings for all tap positions.
- E. The temperature and pressure switches shall be tested using a hot oil bath and air pump.

The results shall be recorded and signed by the Contractor and Construction Manager. A copy shall be given to the Construction Manager in accordance with paragraph 16000-2.06 D. Any readings which are abnormal to ANSI industry standards shall be reported to the Construction Manager.

16000-K. AUTOMATIC TRANSFER SWITCH TEST FORM:

Equipment Number _____

Location _____

Date _____

1. Perform an insulation resistance test (1000 volts DC for 1 minute):

	<u>Phase</u>			
	<u>A</u>	<u>B</u>	<u>C</u>	
Pole to ground	_____	_____	_____	megohms
Pole to pole	AB_____	BC_____	CA_____	megohms

2. Perform the following operations and initial:
 - a. Manual transfer _____
 - b. Loss of normal power; _____sec delay
 - c. Return to normal power; _____sec delay

The results shall be recorded and signed. A copy shall be given to the Construction Manager in accordance with paragraph 16000-2.06 B.

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

16000-L. NEUTRAL GROUNDING RESISTOR TEST:

Equipment No. _____

Location _____

The pickup and time delay setting on the ground fault relay shall be set in accordance with Section 16431.

1. The transformer neutral insulation resistance shall be measured with and without the grounding resistor connected to insure no parallel ground paths exist.
2. The protective relay pickup current shall be determined by injecting test current into the current sensor. The pickup current should be within 10 percent of the dial setting. Record the dial setting and actual pickup tie.
3. The relay timing shall be tested by injecting 150 and 300 percent of pickup current into the current sensor. The relay timing shall be in accordance with the manufacturer's published time-current characteristic curves. Record the relay timing at 150 and 300 percent of pickup current.
4. The circuit interrupting device shall be operated by operating the relay.

The results shall be recorded and signed by the Contractor and Construction Manager. A copy shall be given to the Construction Manager in accordance with paragraph 16000-2.06 B.

17000-A. LOOP WIRING AND INSULATION RESISTANCE TEST DATA FORM:

Loop No.:

List all wiring associated with a loop in table below. Make applicable measurements as indicated after disconnecting wiring.

<u>Wire No.</u>	<u>Panel Tie</u>	<u>Field TB</u>	<u>Continuity Resistance</u> ^a		<u>Insulation Resistance</u> ^b		
			<u>Cond./ Cond.</u>	<u>Cond./ Shield</u>	<u>Shield/ Gnd.</u>	<u>Shield/ Cond.</u>	<u>Shield/ Gnd.</u>
A			--	(A/SH)			
B			(A/B)	--			
C			(A/C)	--			
D			(A/D)	--			
etc.							

- a. Continuity Test. Connect ohmmeter leads between wires A and B and jumper opposite ends together. Record resistance in table. Repeat procedure between A and C, A and D, etc. Any deviation of +2 ohms between any reading and the average of a particular run indicates a poor conductor, and corrective action shall be taken before continuing with the loop test.
- b. Insulation Test. Connect one end of a 500 volt megger to the panel ground bus and the other sequentially to each completely disconnected wire and shield. Test the insulation resistance and record each reading.

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

17000-B. CONTROL CIRCUIT PIPING LEAK TEST FORM:

Loop No.:

List tubing associated with loop in table below. Make applicable measurements after isolating any air consuming pilots from circuit.

<u>Tube No.</u>	<u>Tubing Equivalent Length of 1/4-Inch Copper^a</u>	<u>Test Period (seconds)</u>	<u>Permitted Pressure Drop (psi)^b</u>	<u>Measured Pressure Drop (psi)</u>
-----------------	--	------------------------------	--	-------------------------------------

A
B
C
D
etc.

- a. Convert actual tubing and air motor volume to equivalent 1/4-inch copper tubing.
- b. Pressure drop shall not exceed 1 psi per hundred feet 1/4-inch tubing per 5 seconds.

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

17000-C. CONTROLLER CALIBRATION TEST DATA FORM:

Tag No. and Description: _____

Make and Model No.: _____ Serial No.: _____

Input: _____ Process Variable (PV) Scale: _____

Output: _____ Output Scale: _____

PV Scale Calibration

<u>% of Range</u>	<u>Input</u>	<u>Expected Reading</u>	<u>Actual Reading</u>	<u>% Deviation</u>
0				
50				
100				

% Deviation Allowed: _____

Connect output to PV for following tests:

<u>Set Point (SP) Indicator Accuracy</u>			<u>Output Meter Accuracy</u>			<u>Controller Accuracy</u>		
<u>SP</u>	<u>PV Reading</u>	<u>Expected % Dev.</u>	<u>Actual Reading</u>	<u>Expected Reading</u>	<u>Actual % Dev.</u>	<u>Output</u>	<u>Output</u>	<u>% Dev.</u>
(0%)		0%						
(50%)		50%						
(100%)		100%						
% Dev. Allowed: _____			% Dev. Allowed: _____			% Dev. Allowed: _____		

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

17000-D. PANEL INDICATOR CALIBRATION TEST DATA FORM:

Tag No. and Description: _____

Make and Model No.: _____ Serial No.: _____

Input: _____

Scale: _____ Range: _____

PV Scale Calibration

<u>% of Range</u>	<u>Input</u>	<u>Expected Reading</u>	<u>Actual Reading</u>	<u>% Deviation</u>
0				
50				
100				

% Deviation Allowed: _____

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

17000-E. RECORDER CALIBRATION TEST DATA FORM:

Tag No. and Description: _____

Make and Model No.: _____ Serial No.: _____

Input: _____ Chart: _____

Scale: _____ Range: _____

<u>% of Range</u>	<u>Input</u>	<u>Expected Scale Reading</u>	<u>Actual Scale Reading</u>	<u>% Deviation</u>
0				
50				
100				

% Deviation Allowed: _____

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

17000-F. SIGNAL TRIP CALIBRATION TEST DATA FORM:

Tag No. and Description: _____

Make and Model No.: _____ Serial No.: _____

Input: _____

Scale: _____ Range: _____

Set Point(s): _____

After setting set point(s), run signal input through entire range and calculate deadband.

<u>Set Point</u>	<u>Incr. Input Trip Point</u>	<u>Decr. Input Trip Point</u>	<u>Calc. Deadband</u>	<u>Required Deadband</u>
------------------	-----------------------------------	-----------------------------------	---------------------------	------------------------------

CERTIFIED _____ Date _____
Contractor's Representative

WITNESSED _____ Date _____
Owner's Representative

17000-G. FIELD SWITCH CALIBRATION TEST DATA FORM:

Tag No. and Description: _____

Make and Model No.: _____ Serial No.: _____

Input: _____

Range: _____

Set Point(s): _____

Simulate process variable (flow, pressure, temperature, etc.) and set desired set point(s). Run through entire range of switch and calculate deadband.

<u>Set Point</u>	<u>Incr. Input Trip Point</u>	<u>Decr. Input Trip Point</u>	<u>Calc. Deadband</u>	<u>Required Deadband</u>
------------------	-----------------------------------	-----------------------------------	---------------------------	------------------------------

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

17000-H. TRANSMITTER CALIBRATION TEST DATA FORM:

Tag No. and Description: _____

Make and Model No.: _____ Serial No.: _____

Input: _____

Output: _____

Range: _____ Scale: _____

Simulate process variable (flow, pressure, temperature, etc.) and measure output with appropriate meter.

<u>% of Range</u>	<u>Input</u>	<u>Expected Output</u>	<u>Actual Output</u>	<u>% Deviation</u>
0				
50				
100				

% Deviation Allowed: _____

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

17000-I. MISCELLANEOUS INSTRUMENT CALIBRATION TEST DATA FORM:

(For instruments not covered by any of the preceding test forms, the Contractor shall create a form containing all necessary information and calibration procedures.)

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

17000-J. INDIVIDUAL LOOP TEST DATA FORM:

Loop No.:

Description: (Give complete description of loop's function using tag nos. where appropriate.)

P&ID No.: (Attach copy of P&ID.)

- a. Wiring tested:
(Attach test form 17000-A)
- b. Instrumentation tubing/piping tested:
(Attach test form 17000-B)
- c. Instruments calibrated:
(Attach test forms 17000-C through I)
- d. List step-by-step procedures for testing loop parameters. Test loop with instruments, including transmitters and control valves, connected and functioning. If it is not possible to produce a real process variable, then a simulated signal may be used with the Construction Manager's approval.

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

17000-K. LOOP COMMISSIONING TEST DATA FORM:

Loop No.:

- a. Loop tested:
(Attach test form 17000-J)
- b. Controlled or connected equipment tests confirmed:
- c. Give complete description of loop's interface with process.
- d. With associated equipment and process in operation, provide annotated chart trace of loop response to changes in set points for verification of performance. This chart should demonstrate 1/4-amplitude damping as output adjusts to set point change. Show set points, starting and finishing times on chart, as well as any other pertinent data.

Connect 2-pen recorder to process variable (PV) and to controller output. Use 1 inch/second chart speed.

Pen 1 - PV - Connections:

Pen 2 - Output - Connections:

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____