



**CITY OF BULLHEAD CITY, ARIZONA
UTILITIES DEPARTMENT**

**SPECIFICATIONS AND CONTRACT DOCUMENTS
6-1 WELL DRILLING**

PROJECT NO. 26-U-001

SEPTEMBER 22, 2025

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City of Bullhead City, Arizona

Construction Contract 6-1 WELL DRILLING Project No. 26-U-001

THIS AGREEMENT, made and entered by and between CITY OF BULLHEAD CITY an Arizona municipal corporation, hereinafter designated the "CITY" and _____, Inc., an Arizona Corporation, hereinafter designated the "CONTRACTOR."

RECITALS

- A. The City Manager of the City of Bullhead City, Arizona, is authorized and empowered by approval of the City Council to execute this contract for construction services.
- B. The Project involves the installation of one new production well for the Bullhead City public water supply system.
- C. The Contractor has represented to the City the ability to construct the Project and based on this representation the City has engaged _____ to construct the Project.

AGREEMENT

NOW THEREFORE, for and in consideration of the mutual covenants and considerations hereinafter contained, it is agreed by and between the City and the Contractor as follows:

ARTICLE 1 - INVITATION TO BID & BID DOCUMENTS

PROJECT NO. 26-U-001

1.0 INVITATION TO BID

Req./Contract #: 26-U-001
Project Name: 6-1 WELL DRILLING
Bid Due Date / Time: October 22, 2025 / 3:00 PM Arizona Time

Project Description: The Project involves the drilling of one new potable production well for the Bullhead City public water supply system, installation of a 20" casing, test pumping the well to determine capacity and pulling new source approval water samples.

Sealed bids for the project specified will be received by the Bullhead City Clerk's Office at the First Floor Receptionist Desk, 2355 Trane Road, Bullhead City, Arizona, 86442-5966 on the time and date specified. Bidders shall submit one original of their bid. Bids received by the correct time and date will be opened and read aloud shortly thereafter in the City of Bullhead City, City Clerk's office.

Bids must be in the actual possession of the City Clerk's office on or prior to the exact time and date indicated above. Late bids will not be considered under any circumstances.

Bids must be submitted in a sealed opaque envelope with the Project Name and the bidder's name and address clearly indicated on the envelope. All bids must be completed in ink or typewritten on the form contained within the specifications titled Invitation for Bid.

For information or to obtain plans, specifications and bid documents or to submit questions concerning the IFB, contact Jackie Renfroe, Administrative Analyst, 2355 Trane Road, Bullhead City, Arizona 86442-5966, at phone (928) 763-9400, ext. 8500, or at jrenfroe@bullheadcityaz.gov. Brief procedural questions may be submitted and responded to informally. Technical questions regarding the substance of this IFB must be submitted in writing or by email and received no later than 3:00 p.m. on October 8, 2025. Questions may then be responded to by written amendment to this document. Oral statements or instructions do not constitute an amendment to the IFB. Only those plan holders registered with the City of Bullhead City will receive any modifications to the plans, specifications and bid documents and any notices that are issued during bidding. The City of Bullhead City reserves the right to accept or reject any or all responses or parts thereto.

Plans may be reviewed at:

- City of Bullhead City, Utilities Department, 2355 Trane Road, Bullhead City, AZ 86442-5966, (928) 763-9400, ext. 8840 Fax (928) 763-0131
- Performance Graphics Digital Printing, 4140 S. Lynn Drive, Suite 107, Fort Mohave, AZ 86426, (928) 763-6860
- Dodge Digital Plan Room, 300 American Metro Blvd, Ste 185, Hamilton, NJ 08619 Phone (877) 784-9556
- Colorado River Building Industry Assoc., 2182 McCulloch Blvd, Suite #1, Lake Havasu City, AZ 86403, (928) 453-7755
- Yuma Southwest Contractors Assoc., 2741 S. Eighth Ave., Ste B, Yuma, AZ 85364 (928) 539-9035 Fax (928) 539-9036
- Construction Notebook, 3131 Meade Ave., Suite B, Las Vegas, NV 89102, (702) 876-8660 Fax (702) 876-5683
- A&E Reprographics Plan Room, 1030 Sandretto Drive Suite F, Prescott, AZ 86305, (928) 442-9116 Fax (928) 776-1550
- Sierra Plan Room, 3111 So. Valley View # B-120, Las Vegas, NV 89102, (702) 871-1077 Fax (702) 871-8220
- Just Blueprints, 112 N. 8th Street, Kingman, AZ 86401, (928) 753-0872 Fax (928) 753-0878
- iSqFt/Grand Minority Contracts Planroom Partnership, 3301 N. 24th St., Phoenix, AZ 85016, 800-364-2059 Fax (866) 570-8187

- Construction Market Data, 30 Technology Parkway S., Ste. 100, Norcross, GA 30052, (800) 876-4045 Fax (800) 642-2437
- IDT Plan Room, 4633 E Broadway Blvd., Tucson, AZ 85711, (520) 319-0988 Fax (520) 319-1430
- Shirley's Plan Service, 425 S. Plumer, Tucson, AZ 85719, (520) 791-7436 Fax (520) 882-9208
- The Blue Book Building & Construction Network, 800 E Main St., Jefferson Valley, NY 10535, (888) 720-1710
- <https://www.bullheadcity.com/government/bid-information>
- <https://www.publicpurchase.com>

BONDS:

Bid Bond:	<u>10%</u>
Payment Bond:	<u>100%</u>
Performance Bond:	<u>100%</u>

Project Completion Date: 180 Calendar days or less after Notice to Proceed.

A Pre-Bid Conference will be held at the City of Bullhead City Council Chambers, 1255 Marina Boulevard, Bullhead City, AZ, October 8, 2025, 10:00 AM, Arizona Time. Representatives of the Owner will be present. City of Bullhead City reserves the right to accept or reject any or all bids or any part thereof and waive informalities deemed in the best interest of the City.

Pursuant to the Americans with Disabilities Act (ADA), City of Bullhead City endeavors to ensure the accessibility of all of its programs, facilities and services to all persons with disabilities. If you need an accommodation for this meeting, please contact the Human Resources Director at (928) 763-9400, ext. 301, at least 24 hours prior to the meeting so that an accommodation may be arranged.

- 1.1 RECEIPTS AND OPENING OF BIDS The City of Bullhead City, Arizona, (hereinafter called the "Owner" or the "City") invites Bids on the form attached hereto for the 6-1 WELL DRILLING. All blanks must be appropriately filled in. The bidder shall also complete and submit a form listing proposed subcontractors as enclosed herein. Bids for this project will be received by the City Clerk's Office at the City of Bullhead City, 2355 Trane Road, Bullhead City, Arizona 86442-5966 until 3:00 PM, Arizona Time October 22, 2025, where the Bids will be publicly opened and read aloud shortly thereafter.

The Owner may, at its option, waive immaterial errors or omissions in bids not prepared and submitted in accordance with the provisions of this Invitation for Bids and/or the requirements of the City's procurement ordinance or, alternatively, may reject any and all bids not prepared and submitted in accordance with the provisions of this Invitation for Bids and/or the requirements of the City's procurement ordinance. Any Bid may be withdrawn prior to the above scheduled time for the opening of Bids or authorized postponement thereof. Any Bid received after the time and date specified shall not be considered. No bidder may withdraw a Bid within 90 calendar days after the actual date of the opening thereof.

- 1.2 PREPARATION OF BID Each Bid must be submitted on the prescribed Form. All blank spaces for Bid prices must be filled in, in ink or typewritten, in both words and figures.

Each Bid must be submitted in a sealed opaque envelope bearing on the outside the name of the bidder, the bidder's address, and the name of the project for which the Bid is submitted. If forwarded by mail, the sealed envelope containing the Bid must be enclosed in another envelope addressed as specified in the Bid form.

The following fully-executed items shall be included with the bid submittal. Failure to include any of these items may result in that bid being considered incomplete, and the Bid may be rejected.

- Bid Proposal

- Bid Schedule
- Bid Bond
- Bidder's Statement of Qualifications
- Affidavit of Non-Collusion
- Acknowledgement of Each Addendum Issued

1.3 PRE-BID MEETING The pre-bid conference will be held for this project at the time and place stipulated in Section 1.0 Invitation to Bid, or as modified by Addenda.

1.4 FACSIMILE BIDS OR MODIFICATIONS No facsimile ("FAX") Bids or bid modifications will be accepted.

Any proposed modifications to the Bid shall be made by an authorized representative of the bidder in writing.

1.5 QUALIFICATIONS OF BIDDER The Owner may make investigations as he deems necessary to determine the qualifications and the ability of the bidder to perform the Work, and the bidder shall furnish the Owner any information and data for this purpose as the Owner may request.

The Owner may request other information and data from the bidder that may include:

A list of any actions taken by the Arizona Registrar of Contractors to suspend and/or revoke the Contractor's license of the bidder for a period of two years preceding the bid.

The Owner reserves the right to reject any or all bids or withhold the award of a contract to any bidder for any reason the Owner determines in accordance with the provisions of §34-201 (A) (4), Arizona Revised Statutes.

All bidders and listed subcontractors must be valid Arizona Licensed Contractors at the time of Bidding, approved by the Arizona State Registrar of Contractors to do the type and amount of work specified in these documents.

1.6 ARITHMETIC DISCREPANCIES IN THE BID For the purpose of evaluating bids, the following criteria will be utilized by Owner in resolving arithmetic discrepancies found on the face of the Bid Schedule as submitted by bidders:

- Obviously misplaced decimal points will be corrected;
- In case of discrepancy between unit price and extended price, the unit price will govern;
- Apparent errors in extension of unit prices will be corrected;
- Apparent errors in addition of lump sums and extended prices will be corrected; and
- In case of discrepancy between words and figures in unit prices, the amount shown in words shall govern.

For the purpose of Bid evaluation, the Owner will evaluate the bids on the basis of the unit prices, extensions, and totals arrived at by resolution of arithmetic discrepancies as provided above.

1.7 INCOMPLETE BIDS Failure to submit a Bid on all items in the Bid Schedule may result in that bid being considered incomplete, and the Bid may be rejected. Unit and/or lump sum prices must be shown for each Bid Item within the Schedule.

1.8 BID SECURITY Each bid must be accompanied by a bid bond in the form of a certified or cashier's check made payable to the Owner in an amount equal to ten percent (10%) of the bid submitted, or alternatively, through a surety bond issued in the form substantially similar to the one attached to these bid documents or on another form approved by the Owner in the amount of ten percent (10%) of the amount of the bid submitted that conforms with the requirements of §34-201, Arizona Revised Statutes (A.R.S.). The bond document itself must contain the actual bid amount or higher. A statement inserted into the bond form such as "10% of the Bid Amount" is not acceptable. If the bid

security provided by the bidder is in the form of a surety bond, solely a surety company or companies holding a certificate of authority to transact surety business in the State of Arizona, issued by the director of the Department of Insurance, pursuant to Title 20, Chapter 2, Article 1, shall execute the surety bond. An individual surety or sureties shall not execute the surety bond, even if the requirements of §7-101 A.R.S. are satisfied. The certified check, cashier's check or surety bond submitted by each bidder as bid security shall be returned to the bidders whose proposals are not accepted, and to the successful contractor upon the execution of satisfactory payment and performance bonds for the construction contract, as provided for in these bid documents and under State law.

- 1.9 LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT The successful bidder, upon failure or refusal to execute and deliver the Agreement, Bonds, and certificates required within ten calendar days from the date of the Notice of Award, shall forfeit to the Owner, as liquidated damages for the failure or refusal, its bid bond and shall owe the Owner the difference between its bid and the amount of the contract actually entered into with another party.
- 1.10 SECURITY FOR FAITHFUL PERFORMANCE AND PAYMENT Simultaneously with his delivery of the executed Contract, the successful bidder shall furnish on the forms provided herein, in a sum equal to 100% of the face amount of the Contract awarded: 1) a surety bond as security for the performance of the Contract awarded; and 2) a surety bond as security for the payment of all persons performing labor or furnishing materials in connection with the project under the Contract awarded, as specified in the General Conditions included herein. In accordance with Section §34-201 of the Arizona Revised Statutes, commonly known as Arizona's Little Miller Act, payment and performance bonds shall be issued by a duly authorized surety company satisfactory to the Owner and authorized to transact business in the State of Arizona. All bonds shall be issued by a surety insurer possessing at least a "A" rating, based upon the most recent issue of Best's Insurance Guide.
- 1.11 POWER OF ATTORNEY Attorneys-in-fact who sign Bid Bonds or Contract bonds must file with each bond a certified and effectively dated copy of their power-of-attorney.
- 1.12 LAWS AND REGULATIONS The bidder's attention is directed to the fact that all applicable Federal Laws, State Laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the Contract throughout, and they will be deemed to be included in the Contract the same as though herein written out in full.
- 1.13 METHOD OF AWARD/PROTEST The Owner shall award the Contract to the lowest responsive and responsible bidder, in accordance with §34-201 and §34-221 of the Arizona Revised Statutes. Any protest of a bid selected for award shall be submitted in accordance with City Administrative Regulation 2-1, Section 1.9, within 10 days of notice of the pending award. Contact the City representative listed under Section 1.0 herein for submission details.
- 1.14 OBLIGATION OF THE BIDDER At the time of the opening of Bids, each bidder will be presumed to have inspected the site and to have read and to be thoroughly familiar with the Plans and Contract Documents (including all Addenda, if applicable). The failure or omission of the bidder to examine any form, instrument or document, or site changes due to natural causes, shall in no way relieve any bidder from any obligation in respect to his bid. Site changes due to natural causes prior to Bid opening shall not be cause for Bid alteration or withdrawal.
- 1.15 TIME OF COMPLETION AND LIQUIDATED DAMAGES The bidder must agree to commence work on or before a date to be specified in a written "Notice to Proceed" from the Owner, and to complete all of the work and achieve Final Acceptance on or before a completion date to be specified in the written "Notice to Proceed."

The bidder agrees to pay actual damages related to the cost of completion as set forth in Section 8.58 and as elsewhere assessable herein, and liquidated damages, intended to compensate the City for injury resulting from the delay. The bidder agrees to pay as liquidated damages the sum indicated in the following "Schedule of Liquidated Damages" and as provided in Section 8.62 of the General

Conditions, for each calendar day that the Contract remains incomplete. Note that these damages apply for special scheduled completion dates for miscellaneous elements as defined in the special provisions. For the purposes of determining the calendar day rate of Liquidated Damages for the Project, the Original contract amount shall be that which is included in the Agreement between the Owner and the Contractor for the Project.

<u>SCHEDULE OF LIQUIDATED DAMAGES</u>		
Original Contract Amount		Daily Charges
From	To and Including	Calendar Day Rate
\$0	\$25,000.00	\$300
\$25,000.01	\$50,000.00	\$325
\$50,000.01	\$100,000.00	\$364
\$100,000.01	\$500,000.00	\$559
\$500,000.01	\$1,000,000.00	\$741
\$1,000,000.01	\$2,000,000.00	\$923
\$2,000,000.01	\$5,000,000.00	\$1,391
\$5,000,000.01	\$10,000,000.00	\$1,846
\$10,000,000.01	\$10,000,000.01+	\$2,314

- 1.16 **CONDITIONS OF WORK** Each bidder must research the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of the obligation to furnish all material and labor necessary to carry out the provisions of the Contract. Insofar as possible, the Contractor, in performing the work, must employ methods or means as will not cause any interruption of or interference with the work of any other Contractor.

- 1.17 **ADDENDA AND INTERPRETATIONS** No interpretation of the meaning of the Plans, Specifications, or other pre-bid documents will be made to any bidder orally.

Every request for interpretation shall be in writing addressed to the Bullhead City Utilities Department at 2355 Trane Road, Bullhead City, AZ 86442-5966, and to be given consideration, must be received at least seven calendar days prior to the date fixed for the opening of Bids. Any and all interpretations and any supplemental instructions will be in the form of written Addenda to the Specifications which, if issued, will be sent to all prospective bidders (at the respective addresses furnished for such purposes), not later than five calendar days prior to the date fixed for the opening of Bids, provided that the prospective bidders are registered plan holders on the project with the City of Bullhead City. The Owner will send all addenda by FAX or e-mail, or if practical, by U.S. Mail. Failure of any bidder to incorporate any Addendum or interpretation or to be registered with the City of Bullhead City for the project shall not relieve bidder from any obligation under his/her bid as submitted. All Addenda so issued shall become part of the Contract Documents.

- 1.18 **CONFLICT OF INTEREST** Pursuant to A.R.S. Section §38-511, this Contract is subject to cancellation by Owner if any person significantly involved initiating, negotiating, securing, drafting or creating the Contract on behalf of the City of Bullhead City is, at any time while the Contract is in effect, an employee of any other party to the Contract in any capacity or a consultant to any other party of the Contract with respect to the subject matter of the Contract.

- 1.19 **NON-COLLUSION** The bidder will be required to complete, notarize and submit as part of this bid package the "Non Collusion Affidavit" form, as attached herein. Failure of the bidder to submit a properly executed affidavit may be grounds for rejection of the bid.

1.20 EXAMINATION OF THE PLANS AND SPECIFICATIONS Each Bid shall be made in accordance with the Plans and Specifications, which may be examined at the following locations:

- City of Bullhead City, Utilities Department 2355 Trane Road, Bullhead City, AZ 86442-5966, (928) 763-0128 Fax (928) 763-0131
- Performance Graphics Digital Printing, 4140 S. Lynn Drive, Suite 107, Fort Mohave, AZ 86426, (928) 763-6860
- Dodge Digital Plan Room, 300 American Metro Blvd, Ste 185, Hamilton, NJ 08619 Phone (877) 784-9556
- Colorado River Building Industry Assoc., 2182 McCulloch Blvd, Suite #1, Lake Havasu City, AZ 86403, (928) 453-7755
- Yuma Southwest Contractors Assoc., 2741 S. Eighth Ave., Ste B, Yuma, AZ 85364 (928) 539-9035 Fax (928) 539-9036
- Construction Notebook, 3131 Meade Ave., Suite B, Las Vegas, NV 89102, (702) 876-8660 Fax (702) 876-5683
- A&E Reprographics Plan Room, 1030 Sandretto Drive Suite F, Prescott, AZ 86305, (928) 442-9116 Fax (928) 776-1550
- Sierra Plan Room, 3111 So. Valley View # B-120, Las Vegas, NV 89102, (702) 871-1077 Fax (702) 871-8220
- Just Blueprints, 112 N. 8th Street, Kingman, AZ 86401, (928) 753-0872 Fax (928) 753-0878
- iSqFt/Grand Minority Contracts Planroom Partnership, 3301 N. 24th St., Phoenix, AZ 85016, 800-364-2059 Fax (866) 570-8187
- Construction Market Data, 30 Technology Parkway S., Ste. 100, Norcross, GA 30052, (800) 876-4045 Fax (800) 642-2437
- IDT Plan Room, 4633 E Broadway Blvd., Tucson, AZ 85711, (520) 319-0988 Fax (520) 319-1430
- Shirley's Plan Service, 425 S. Plumer, Tucson, AZ 85719, (520) 791-7436 Fax (520) 882-9208
- The Blue Book Building & Construction Network, 800 E Main St., Jefferson Valley, NY 10535, (888) 720-1710
- <https://www.bullheadcity.com/government/bid-information>
- <https://www.publicpurchase.com>

ARTICLE 2 – BID PROPOSAL

PROJECT NO. 26-U-001

The following Sections prescribe the proper form for bid proposal.

2.0 BID PROPOSAL

PROJECT NO: 26-U-001

PROJECT NAME: 6-1 WELL DRILLING

The undersigned, as bidder, declares that we have received and examined the Bid documents entitled “6-1 WELL DRILLING” and will contract with the OWNER, on the form of Agreement provided herewith, to do everything required for the fulfillment of the contract for the project at the prices and on the terms and conditions of the Bid documents, drawing, etc.

We agree that the following shall form a part of this proposal:

Article	Title
2.0	Bid Proposal
3.0	Bid Schedule
4.0	Arizona Statutory Bid Bond
5.0	Bidder's Statement of Qualifications

We acknowledge that addenda numbers _____ have been received and have been examined as part of the Contract Documents.

We certify that our proposal is genuine, and not sham or collusive, nor made in the interest or behalf of any undisclosed person, organization, or corporation, and that we have not directly or indirectly induced or solicited any other bidder to put in a sham bid, or directly or indirectly induced or solicited any other potential bidder to refrain from bidding, and that we have not in any manner sought by collusion to secure an advantage over any other bidder.

The bidder agrees that this Bid shall be good and may not be withdrawn for a period of 90 calendar days after the scheduled closing time for receiving Bids.

Upon receipt of written notice of the acceptance of this bid, bidder shall execute the formal Agreement attached within 10 calendar days and deliver a Performance Bond, Payment Bond, and Certificates of Insurance as required by Sections 8.69 & 8.70 of the General Conditions within the same time.

We hereby declare that we have visited the site and have carefully examined the Contract Documents relating to the work covered by the above bid or bids.

Enclosed herewith is a certified or cashier's check or bid bond, payable to the City of Bullhead City, Arizona, in the amount of ten percent (10%) of the total bid. This check or bond is submitted as a guarantee that we will enter into a Contract, and furnish the required bonds in the event a contract is awarded us. The bid security attached, without endorsement, is to become the property of the City of Bullhead City, Arizona, in the event the Contract and Bonds are not executed within the time set forth, as a portion of the liquidated damages for delay and additional work caused thereby (see Section 1.9).

We understand that the City of Bullhead City, Arizona reserves the right to reject any and/or all bids or any part thereof or to waive any informalities in any bid, deemed by them to be for the best interests of the City of Bullhead City, Arizona.

Dated this _____ day of _____, 2025.

Respectfully Submitted By: _____ Title: _____

Name of Firm: _____

Address _____

Phone: _____

Fax: _____

Seal - If bid by a Corporation:

Arizona Contractor's License No.: _____ Type _____

ARTICLE 3 – BID SCHEDULE**PROJECT NO. 26-U-001****3.0 BID SCHEDULE****CONTRACT FOR: 6-1 WELL DRILLING**

The undersigned bidder, having examined and determined the scope of the Contract Documents, hereby proposes to perform the work described therein for the following unit prices or lump sum amounts.

Note: Bids shall include sales tax and all other applicable taxes and fees. All bids shall be checked for errors. If errors are made, unit prices shall govern and corrections will be made according to the unit price and totals will be revised to reflect the corrections.

Bid Item	Spec #	Quantity	Unit	Description	Unit Cost	Total Cost
1	33 21 13.01	1	LS	Mobilization – Demobilization (no more than 3% of total bid), Bonds, and Insurance		
2	33 21 13.01 1 50 00	1	LS	Site Preparation		
3	33 21 13.03	631	FT	Drill Pilot Borehole		
4	33 21 13.03	630	FT	Ream 29-inch Borehole		
5	33 21 13.06	100	FT	Install 36-inch Conductor Casing and Cement Grout Seal		
6	33 21 13.06	372	FT	Install 20-inch Well Casing		
7	33 21 13.09	10	FT	Install Stainless 20" Steel Sump		
8	33 21 13.06	250	FT	Install Stainless 20" Well Screen		
9	33 21 13.06	1	LS	Di-Electric 20" Coupling		
10	33 21 13.07	261	FT	Install Gravel Pack		
11	33 21 13.08	360	FT	Grout Well Casing		
12	33 21 13.09	1	LS	Setup Water Discharge Equipment		
13	33 21 13.09	50	HR	Development of Well		
14	33 21 13.13	1	LS	Setup Pumping Test Equipment		
15	33 21 13.13	32	HR	Conduct Pumping Test		
16	33 21 13.04	1	LS	Conduct Geophysical Logging Pilot Borehole		

17	33 21 13.11	1	LS	Conduct Alignment Survey		
18	33 21 13.12	1	LS	Conduct Final Video Logging		
19	33 21 13.13	1	LS	Disinfect Final Well		
20	ALL	1	LS	Owner Contingency	10%	
TOTAL PROJECT						

Total Bid Amount (Items 1 through 20 above): _____(In Words). (\$_____.00) Calendar Days Vendor requires to Complete Total Project: 180 Calendar days or less after Notice to Proceed. This Proposal is submitted by _____, a corporation or limited liability company organized under the laws of the State of _____, or a partnership consisting of _____ or individual trading as _____ and is the holder of Arizona Contractor's License No.\ _____: Bullhead City License No:_____ (City License not required at time of Bid but must be obtained prior to issuance of Notice to Proceed.)

Respectfully submitted,

Company Name

Signature of Authorized Person

Address

Printed Name

City State Zip

Title

Telephone

Telephone

Email

Email

Fax

Fax

ARTICLE 4 – BID BOND

PROJECT NO. 26-U-001

4.0 ARIZONA STATUTORY BID BOND

PURSUANT TO TITLES 28, 34 AND 41, ARIZONA REVISED STATUTES
(Penalty of this bond must not be less than 10% of the bid amount)

KNOW ALL MEN BY THESE PRESENTS:

That, _____ (hereinafter "Principal"), as Principal, and _____, (hereinafter "Surety"), a corporation organized and existing under the laws of the State of _____, with its principal offices in the City of _____, holding a certificate of authority to transact surety business in Arizona issued by the Director of the Department of Insurance pursuant to Title 20, Chapter 2, Article 1, as Surety, are held and firmly bound unto the City of Bullhead City, Arizona, (hereinafter "Obligee"), as Obligee, in the amount of Ten Percent (10%) of the amount of the bid of Principal, submitted by Principal to the Obligee for the work described below, for the payment of which sum, the Principal and Surety bind themselves, and their heirs, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid of *(insert actual amount of bid or higher)* \$_____ to furnish all of the material, supplies, tools, equipment, labor and other services necessary for the construction and completion of **Project No. 26-U-001** known as the 6-1 WELL DRILLING

NOW, THEREFORE, if the Obligee shall accept the proposal of the Principal and the Principal shall enter into a contract with the Obligee in accordance with the terms of the proposal and give the bonds and certificates of insurance as specified in the standard specifications with good and sufficient surety for the faithful performance of the contract and for the prompt payment of labor and materials furnished in the prosecution of the contract, or in the event of the failure of the Principal to enter into the contract and give the bonds and certificates of insurance, if the Principal pays to the Obligee the difference not to exceed the penalty of the bond between the amount specified in the proposal and such larger amount for which the Obligee may in good faith contract with another party to perform the work covered by the proposal then this obligation is void. Otherwise it remains in full force and effect provided, however, that this bond is executed pursuant to the provisions of Section §34-201, Arizona Revised Statutes, and all liabilities on this bond shall be determined in accordance with the provisions of that section to the extent as if it were copied at length herein.

Witness our hands this _____ day of _____, 20____.

PRINCIPAL SEAL

By: _____

Its: _____
Agency of Record

SURETY SEAL

By: _____
Attorney-in-Fact

Agency Address

ARTICLE 5 – BIDDER’S STATEMENT OF QUALIFICATIONS PROJECT NO. 26-U-001

5.0 BIDDER'S STATEMENT OF QUALIFICATIONS

The Undersigned certifies the truth and correctness of all statements and of all answers to questions made hereinafter.

SUBMITTED TO: City of Bullhead City
Utilities Department
Attention Jacklyn Renfroe
Administrative Analyst
2355 Trane Road
Bullhead City, AZ 86442-5966

SUBMITTED BY: NAME: _____

☐ Corporation
☐ LLC
☐ Partnership
☐ Individual
☐ Joint Venture
☐ Other

ADDRESS: _____

PRINCIPAL OFFICE: _____

(NOTE: Attach separate sheets as required)

How many years has your organization been in business as a Contractor? _____

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

If a Corporation or LLC, answer the following:

Date of Incorporation: _____

Fed. Tax I.D. #: _____

State of Incorporation/Organization: _____

President: _____

Vice President(s): _____

Secretary: _____

Treasurer: _____

Members: _____

Managers: _____

If a Partnership, answer the following:

Date of organization: _____

Type of Partnership: _____

(General/Limited/Assoc.)

Name and Address of all partners.

If other than a Corporation, LLC or Partnership, describe Organization and name Principals:

What percent of the work do you normally perform with your own forces? _____ List trades:

Have you ever failed to complete any work awarded to you? If so, indicate when, where and why:

Have you had any OSHA violations within the last 10 years by or against your organization or its officers?

_____ if yes, please provide details _____

Has any Officer or Partner of your Organization ever been an Officer or Partner of another Organization that failed to complete a construction contract? _____ If so, state circumstances:

List major construction projects your Organization has under contract on this date:

Project Name	Name, Address & Telephone Number of Owner	Engineer	Contract Amount	Contract Date	Percent Complete	Scheduled Completion

List similar construction projects your Organization has completed in the past five years:

Project Name	Owner	Engineer	Contract Amount	Date Awarded	Date Completed	Percent with Own Forces

List the construction experience of the principal individuals in your Organization:

Individual's Name	Construction Experience – Years	Within Your Organization		
		Present Position & Years' Experience	Dollar Volume Responsibility	Previous Position & Years' Experience

List states and categories in which your Organization is legally qualified to do business:

Bank References:

Trade References:

Name of Bonding and Insurance Companies and Name and Address of Agents: _____

State maximum bonding capacity: _____

Is there any pending litigation by or against your organization, its principals or officers? _____ if yes, please provide details

Are there any judgments that have been entered by a court of competent jurisdiction against your organization, its principals or officers during the last three years? If yes, please provide details. _____

List of subcontractors. In accordance with Article 1 of the Invitation to Bid & Bid Documents, the following is a breakdown of subcontractors anticipated to be used for completing this project and their approximate percentage of work to be performed. The Contractor is not required to submit with its bid a complete list of all subcontractors contemplated to be utilized on the project, and failure to submit a complete list shall not render a bid incomplete or unresponsive. A complete list of all subcontractors proposed on the project is not considered a material part of the bid submittal. Refer to Section 8.74 of the General Conditions for additional information.

The bidder certifies that all subcontractors listed are eligible to perform Work on public works projects pursuant to A.R.S. § 34-241.

<u>Subcontractor</u>	<u>Description of Work</u>	<u>% Total Project</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Total % of all subcontractor's work on project _____

Total % for Contractor _____

Dated at _____ this _____ day of _____, 2025

Name of Organization: _____

By: _____ Title: _____

5.1 AFFIDAVIT

AFFIDAVIT OF CONTRACTOR
CERTIFYING THAT THERE WAS NO
COLLUSION IN BIDDING FOR
CONTRACT

STATE OF _____)
COUNTY OF _____) ss

(NAME OF INDIVIDUAL)

BEING DULY SWORN, DEPOSES AND SAYS:

THAT HE/SHE IS _____
(TITLE)
OF _____
(NAME OF BUSINESS)

THAT PURSUANT TO SECTION §34-253 OF THE ARIZONA REVISED STATUTES, HE/SHE CERTIFIES
AS FOLLOWS:

THAT NEITHER HE/SHE NOR ANYONE ASSOCIATED WITH SAID

(NAME OF BUSINESS)

HAS DIRECTLY, OR INDIRECTLY, ENTERED INTO ANY AGREEMENT, PARTICIPATED IN ANY
COLLUSION OR OTHERWISE TAKEN ANY ACTION IN RESTRAINT OF FREE COMPETITIVE
BIDDING IN CONNECTION WITH THIS PROJECT.

By: _____
NAME

TITLE

NAME OF BUSINESS

SUBSCRIBED AND SWORN TO BEFORE ME THIS _____ DAY OF _____, 2025

MY COMMISSION EXPIRES: _____

NOTARY PUBLIC: _____

ARTICLE 6 – AGREEMENT

PROJECT NO. 26-U-001

6.0 AGREEMENT

THIS AGREEMENT, made this ____ day of _____, 2025, by and between the CITY OF BULLHEAD CITY, an Arizona municipal corporation ("Owner"), and _____, an _____ organized under the laws of the State of _____ (herein after designated the "Contractor").

RECITALS

WHEREAS, the Owner has developed conceptual plans for and desires to construct the 6-1 WELL DRILLING project; and

WHEREAS, Contractor represents that it possesses the experience, competence, equipment and financing to properly perform such work, and has formally proposed to do so, and to furnish all necessary labor, materials, and equipment and services therefore in accordance with said plans, and subject to the terms and conditions hereof.

AGREEMENT

NOW, THEREFORE, in consideration of these premises and the mutual covenants herein set forth, it is hereby agreed as follows:

1. The Contractor will commence and complete in its entirety the construction of the 6-1 WELL DRILLING project, all as attached and outlined in the Contract Documents.
2. The Contractor will furnish all of the material, supplies, tools, equipment, labor and other services necessary for the construction and completion of the project described herein.
3. The Contractor will commence the work required by the contract documents within ten calendar days after the date of the Notice To Proceed and will complete the same as follows:

All work shall be completed within 90 Calendar days or less after Notice to Proceed.

The period for completion may be extended by a properly executed Change Order approved by the City.

4. Liquidated Damages: Owner and Contractor recognize that time is of the essence of this Agreement and that Owner will suffer financial loss if the project is not completed within the time specified in Section 3 above, plus any extensions thereof allowed in accordance with the General Conditions. This sum is fixed and agreed upon between the parties because the actual loss to the City and to the public caused by delay in completion will be impractical and extremely difficult to ascertain and determine. They also recognize the delays, expense and difficulties involved in proving in a legal or arbitration proceeding the actual losses or damages (including special, indirect, consequential, incidental and any other losses or damages) suffered by Owner if a complete acceptable Project is not delivered on time.

Accordingly, and instead of requiring proof of such losses or damages related to delay, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty) Contractor shall pay to the Owner sums as defined in the Schedule of Liquidated Damages as provided in Section 1.15 per calendar day that expires after the time specified in Section 3 for delivery of acceptable bid items, and as provided in Section 8.62 of the General Conditions.

5. The Contractor agrees to perform all of the work described in the contract documents and comply with the terms therein for the sum of \$_____ as shown in the bid schedule.
6. The term "Contract Documents" means the attached Final Contract, pages _____ and includes the following:
 - a. Advertisement for Bids

- b. Bid Schedule
- c. Bid Bond
- d. Agreement
- e. Bidder's Statement of Qualifications
- f. Non-Collusion Affidavit
- g. Payment Bond
- h. Performance Bond
- i. Notice of Award
- j. Notice to Proceed
- k. Certificate of Completion
- l. Unconditional Waiver & Lien Release
- m. General Conditions
- n. Special Provisions
- o. Construction Contract Drawings/Plans
- p. Supplemental Specifications
- q. Technical Specifications/General Provisions
- r. Change Order(s)
- s. Addenda: _____

7. The Owner will pay Contractor in the manner and at such times as set forth in the General Conditions such amounts as required by the contract documents.
8. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assignees.

PROJECT NO. 26-U-001

IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, this Agreement in three copies, each of which shall be deemed an original on the date approved by Council written below.

THE CITY OF BULLHEAD CITY

COMPANY NAME

By: _____
Toby Cotter, City Manager Date

By: _____
Name, Title Date

ATTEST

By: _____
Debie Ogden, City Clerk (SEAL)

APPROVED AS TO FORM

By: _____
Garnet Emery, City Attorney Date

APPROVAL OF DEPARTMENT DIRECTOR

By: _____
Mark Clark Date
Utilities Director

Mail or email all invoices to:
City of Bullhead City
Jacklyn Renfro
Utilities Department
2355 Trane Road
Bullhead City, AZ 86442-5966
jrenfro@bullheadcityaz.gov

APPROVED BY COUNCIL _____, 2025

6.1 ARIZONA STATUTORY PERFORMANCE BOND

PURSUANT TO TITLES 28, 34, AND 41, ARIZONA REVISED STATUTES
(Penalty of this bond must be 100% of the Contract amount)

KNOW ALL MEN BY THESE PRESENTS THAT: _____
(hereinafter "Principal"), as Principal, and _____
(hereinafter "Surety"), a corporation organized and existing under the laws of the State of _____
with its principal office in the City of _____, holding a certificate of authority to transact
surety business in Arizona issued by the Director of Insurance pursuant to Title 20, Chapter 2, Article 1, as
Surety, are held and firmly bound unto City of Bullhead City, Arizona (hereinafter "Obligee") in the amount of
_____ (Dollars) (\$ _____), for the payment whereof,
Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns,
jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Obligee, dated the ____ day of
_____, 2025, to furnish all of the material, supplies, tools, equipment, labor and other services
necessary for the construction and completion of 6-1 WELL DRILLING which contract is hereby referred to
and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THE OBLIGATION IS SUCH, that if the Principal faithfully
performs and fulfills all of the undertakings, covenants, terms, conditions and agreements of the contract
during the original term of the contract and any extension of the contract, with or without notice of the Surety,
and during the life of any guarantee required under the contract, and also performs and fulfills all of the
undertakings, covenants, terms, conditions and agreements of all duly authorized modifications of the
contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, the
above obligation is void. Otherwise it remains in full force and effect.

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Title 34, Chapter 2, Article
2, Arizona Revised Statutes, and all liabilities on this bond shall be determined in accordance with the
provisions of Title 34, Chapter 2, Article 2, Arizona Revised Statutes, to the same extent as if it were copied
at length in this agreement.

The prevailing party in a suit on this bond shall recover as part of the judgment reasonable attorney fees that
may be fixed by a judge of the court.

Witness our hands this ____ day of _____, 2025.

PRINCIPAL SEAL

AGENCY OF RECORD

AGENCY ADDRESS

BY: _____

SURETY SEAL

BY: _____

6.2 ARIZONA STATUTORY PAYMENT BOND

PURSUANT TO TITLES 28, 34, AND 41, ARIZONA REVISED STATUTES
(Penalty of this bond must be 100% of the Contract amount)

KNOW ALL MEN BY THESE PRESENTS THAT: _____
(hereinafter "Principal"), as Principal, and _____ (hereinafter
Surety), a corporation organized and existing under the laws of the State of _____ with its principal office
in the City of _____, holding a certificate of authority to transact surety business in Arizona issued by
the Director of the Department of Insurance pursuant to Title 20, Chapter 2, Article 1, as Surety, are held and
firmly bound unto the City of Bullhead City, Arizona (hereinafter "Obligee") in the amount of
(Dollars) \$ _____, for the payment whereof, Principal and Surety bind themselves, and their heirs,
administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Obligee, dated the ____ day of
_____, 20____, to furnish all of the material, supplies, tools, equipment, labor and other services
necessary for the construction and completion of the 6-1 WELL DRILLING which contract is hereby referred
to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THE OBLIGATION IS SUCH, that if the Principal promptly pays
all monies due to all persons supplying labor or materials to the Principal or the Principal's subcontractors in
the prosecution of the work provided for in the contract, this obligation is void. Otherwise it remains in full
force and effect.

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Title 34, Chapter 2, Article
2, Arizona Revised Statutes, and all liabilities on this bond shall be determined in accordance with the
provisions, conditions and limitations of Title 34, Chapter 2, Article 2, Arizona Revised Statutes, to the same
extent as if it were copied at length in this agreement.

The prevailing party in a suit on this bond shall recover as part of the judgment reasonable attorney fees that
may be fixed by a judge of the court.

Witness our hands this _____ day of _____, 2025.

PRINCIPAL SEAL

AGENCY OF RECORD

AGENCY ADDRESS

BY: _____

SURETY SEAL

BY: _____

ARTICLE 7 – NOTICES & LIEN RELEASES

PROJECT NO. 26-U-001

7.0 NOTICE OF AWARD

Date: _____
To: _____

PROJECT DESCRIPTION: 6-1 WELL DRILLING, Project No. 26-U-001

The Owner has considered the bid submitted by you, dated _____, in response to its Advertisement for bids and Invitation to Bid for the above described work.

You are hereby notified that your bid has been accepted for items in the amount of \$_____.

You are required by the Invitation to Bid to execute the Agreement and furnish the required Contractor's Performance Bond, Payment Bond, and Certificates of General Liability & Property Insurance, Automobile, and Workmen's Compensation Insurance within ten calendar days from the date of this notice. You are also required to furnish proof of a current City of Bullhead City Business License.

If you fail to execute the Agreement and to furnish the bonds, insurance certificates and executed Agreement within ten calendar days from the date of this Notice, the Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your bid as abandoned and as a forfeiture of your bid bond. The Owner will be entitled to all other rights as may be granted by law.

You are required to return all documents and an acknowledged copy of this NOTICE OF AWARD to the owner at:

City of Bullhead City
Utilities Department
Attention Jacklyn Renfroe
Administrative Analyst
2355 Trane Road
Bullhead City, AZ 86442-5966

By: _____
Project Manager

Dated this ____ day of _____, 2025

Acceptance of Notice: (The Contractor shall return a signed copy of this notice to the owner.)

Receipt of this NOTICE OF AWARD is hereby acknowledged by:

_____ Dated this ____ day of _____, 2025
CONTRACTOR

Print Name: _____

Title: _____

7.1 NOTICE TO PROCEED

Date: _____

TO: _____

RE: CITY OF BULLHEAD CITY BID for the 6-1 WELL DRILLING, Project No. **26-U-001**

You are hereby notified to commence work on the project in accordance with the Agreement dated _____, 2025, within ten calendar days of the date of this Notice to Proceed, which is the effective date of the notice for the project, and you are to complete the work within _____ calendar days or less after Notice to Proceed. The date for completion of the work is therefore _____, 2025.

OWNER: City of Bullhead City

By: _____
Project Manager

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged

This, the ____ day of _____, 2025

Contractor: _____

Signature: _____

Print Name: _____

Title: _____

Note: The Contractor shall return a signed copy of this Notice to the Owner at:

City of Bullhead City
Utilities Department
Attention Jacklyn Renfro
Administrative Analyst
2355 Trane Road
Bullhead City, AZ 86442-5966

7.2 CERTIFICATE OF COMPLETION

I hereby state that all goods and/or services required by:

**CITY OF BULLHEAD CITY
for the
6-1 WELL DRILLING**

project has been delivered in substantial conformance with the Contract, all activities required by the Contractor under the Contract have been completed and that all required unconditional lien releases have been submitted as of _____.
Date

CITY OF BULLHEAD CITY

By: _____
Project Manager Signature

Printed Name: _____

Title: _____

ACCEPTANCE OF NOTICE

(NOTE: The Contractor shall return a signed copy of this Notice to the Owner)

Receipt of the above **CERTIFICATE OF COMPLETION** is hereby acknowledged

This, the _____ day of _____, 2025

Contractor: _____

Signature: _____

Print Name: _____

Title: _____

7.3 UNCONDITIONAL WAIVER AND LIEN RELEASE

Project Name: 6-1 WELL DRILLING

Location: _____

Contractor: _____

Owner: City of Bullhead City, an Arizona municipal corporation

The undersigned has been paid in full for all labor, services and equipment or material furnished pursuant to the project above and does hereby unconditionally waive and release any right to mechanic's lien, any state, federal, municipal or private bond rights, and any claim for payment rights for persons in the undersigned's position, except for disputed claims for extra work in the amount of \$_____.

The undersigned warrants that the provider for whom the undersigned has the authority to bind, has already paid or will use the monies received from final payment to promptly pay in full all laborers, subcontractors, materialmen and suppliers for all work, materials, equipment or services provided for or to the above-referenced project.

(Company name)

Date

(Print name)

Title

(Signature)

NOTICE

This document waives rights unconditionally and states that you have been paid for giving up those rights. This document is enforceable against you if you sign it, even if you have not been paid. If you have not been paid, use a conditional release form.

- 8.0 General Conditions This section of the Contract Documents is pre-printed. Any modifications to the following articles, as may be required for this project, are made in the Special Provisions.
- 8.1 Definitions Wherever in the Contract Documents the following terms are used, the intent and meaning shall be interpreted as follows:
- 8.2 Addenda Written or graphic instruments issued prior to the opening of bids, which modify or interpret the Contract Documents, drawings and specifications, by additions, deletions, clarifications or corrections.
- 8.3 As Approved The words “as approved”, unless otherwise qualified, shall be understood to be followed by the words “by the Owner”.
- 8.4 As Shown, and as Indicated The words "as shown" and "as indicated" shall be understood to be followed by the words "on the drawings" or “in the specifications”.
- 8.5 Award The acceptance, by the Owner, of the successful bidder’s proposal.
- 8.6 Bid The offer or proposal of the bidder submitted on the prescribed form setting forth the prices for the work to be performed.
- 8.7 Bidder Any individual, firm partnership or corporation, or combination thereof submitting a proposal for the work contemplated, acting directly or through a duly authorized representative.
- 8.8 Bonds Bid, Performance, and Payment Bonds and other instruments of security, furnished by the Contractor and his surety in accordance with the Contract Documents.
- 8.9 Calendar Day Every day shown on the calendar, measured from midnight to the next midnight.
- 8.10 Change Order A written order to the Contractor, signed by the Owner, covering changes in the plans, specifications, or proposal quantities and establishing the basis of payment and contract time adjustment, if any, for the work affected by such changes.
- 8.11 Contract The "Contract" is the written agreement covering the performance of the work and the furnishing of labor, materials, incidental services, tools, and equipment in the construction of the work. It includes supplemental agreements amending or extending the work contemplated in the manner hereinafter described and which may be required to complete the work in a substantial and acceptable manner to the Owner. The Contract may include change orders.
- 8.12 Contract Documents The "Contract Documents" consist of the bidding requirements, forms, conditions of the Contract including General and/or Supplemental General Conditions, Special Provisions, the technical specifications, and the drawings, including all Addenda and modifications thereafter incorporated into the documents before their execution and including all other requirements incorporated by specific reference thereto.
- 8.13 Contract Price The total monies payable by Owner to the Contractor under the terms and conditions of the Contract Documents.
- 8.14 Contract Time The number of calendar days stated in the Contract Documents for the completion of the work or the stated completion date.
- 8.15 Contractor The “Contractor” is the individual, partnership, firm, or corporation primarily liable for the acceptable performance of the work contracted for and the payment of all legal debts pertaining to the work who acts directly or through lawful agents or employees to complete the work.

- 8.16 Days Unless otherwise specifically stated, the term "days" will be understood to mean calendar days.
- 8.17 Drawings The term "drawings", also described as "plans", refers to the official drawings, profiles, cross sections, elevations, details, and other working drawings, and supplementary drawings, or reproductions thereof, which show the locations, character, dimensions, and details of the work to be performed. Drawings may either be bound in the same book as the balance of the Contract Documents or bound in separate sets, and are a part of the Contract Documents, regardless of the method of binding.
- 8.18 Engineer The Engineer, individual partnership, firm, or corporation duly authorized by the Owner to be responsible for the engineering of the work and acting directly or through an authorized representative.
- 8.19 Field Order and Change Orders A field order is a written order issued by the Engineer to the Contractor during construction, which interprets either the technical specifications and/or drawings for the work to be performed by Contractor, including all addenda and modifications, which may be incorporated into the technical specifications and/or the drawings before the Bid Opening Date. A change order is a written order effecting a change in the work which involves: 1) any adjustment in the contract price; 2) any change in the plans, specifications and/or drawings for performance of the work by the Contractor; or 3) any extension of the contract time. Field orders, which only involve an interpretation of the plans, drawings and/or technical specifications contained within the Contract Documents, may be issued by the Engineer to the Contractor during construction. All change orders must be approved, in advance, by the Owner. Contractor agrees and acknowledges that Contractor shall not be entitled to any payment for work performed in reliance upon or as a result of a change order unless the Owner has approved the change order in advance of the work performed by the Contractor.
- 8.20 Final Acceptance Upon due notice from the Contractor of presumptive completion of the entire project, the Owner will make an inspection. If all construction provided for and contemplated by the Contract is found completed to his satisfaction, that inspection shall constitute the final inspection and the Owner will make the final acceptance. The Contractor will be notified in writing of this acceptance as of the date of the final inspection.
- If, however, the inspection discloses any work, in whole or in part, as being unsatisfactory, the Owner will give the Contractor the necessary instructions for correction of same, and the Contractor shall immediately comply with and execute such instructions. Upon correction of the work, another inspection will be made which shall constitute the final inspection provided the work has been satisfactorily completed. In such event, the Owner will make the final acceptance and notify the Contractor in writing of this acceptance as of the date of the final inspection.
- 8.21 Inspector An authorized representative of the Owner or Engineer assigned to make all necessary inspections and/or tests of the work performed or being performed, or of the materials furnished or being furnished by the contractor.
- 8.22 Immigration Reform And Control Act The Contractor shall comply with the Immigration Reform and Control Act of 1986 (IRCA). Contractor understands and acknowledges the applicability of the IRCA to Contractor. Contractor agrees to comply with the IRCA in performance of any resultant contract and to permit City inspection of its personnel records to verify such compliance. Contractor represents by signing this Contract that they are in compliance with IRCA and that they will remain in compliance throughout the performance of this Contract.

Compliance with Legal Worker and Immigration Laws. The Contractor warrants that it and any subcontractors it may use in performance of this contract are in compliance with state law (see A.R.S. § 23-214.A) and all Federal Immigration laws and regulations (see Immigration and Control Act of 1986 as amended) that relate to its employees and employees of its subcontractors. The Contractor acknowledges that pursuant to A.R.S. § 41-4401 a breach of this warranty is a material breach of this Contract subject to penalties up to and including termination of this contract, and that the City retains

the legal right to inspect the papers of any contractor or subcontractor employee who works on this Contract to ensure compliance with this warranty. The Contractor understands that it may be selected for random verification by the City as required under A.R.S. 41-4101(B) to ensure compliance with A.R.S. 41-4401(A) and will promptly respond to any requests for information from the City with regard to its verification process.

- 8.23 Israeli Boycott Contractor certifies under A.R.S. § 35-393.01 et seq., that it does not participate in, and agrees not to participate in during the term of this Agreement, a boycott of Israel.
- 8.24 Uyghurs Prohibition. During the term of the agreement offeror certifies, that pursuant to A.R.S. § 35-394, that it, nor any of its contractors, will not use the goods or services produced by the forced labor ethnic Uyghurs in the people's Republic of China.
- 8.25 Methodology and Quality of Workmanship The manner and sequence of construction, which is considered to be the acceptable standard for the trade and/or profession performing the work. The Contractor's performance and completeness of the work shall be in accordance with the Contract Documents.
- 8.26 Notice The term "notice" or the requirement to notify, as used in the Contract Documents or applicable State or Federal statutes, shall signify a written communication delivered in person or by certified or registered mail to the individual, or to a member of the firm, or to an officer of the corporation for whom it is intended. Certified or registered mail shall be addressed to the last business address known to him who gives the notice.
- 8.27 Notice of Award The written notice of the acceptance of the bid from the Owner to the successful bidder.
- 8.28 Notice to Proceed Written communication issued by the Owner to the Contractor authorizing him to proceed with the work and establishing the date of commencement of the work. Contractor acknowledges, understands and agrees that Owner shall not be liable to compensate Contractor for any work initiated by the Contractor prior to the issuance of a Notice to Proceed by the Owner.
- 8.29 Or Equal The term "or equal" shall be understood to indicate that the "equal" product is the same or better than the product names in function, performance, reliability, quality, and general configuration. Determination of equality in reference to the project design requirements will be made by the Owner.
- 8.30 Owner The "Owner" is the City of Bullhead City.
- 8.31 Payment Bond The approved form of security furnished by the Contractor and his surety as a guaranty that he will pay in full all bills and accounts for materials and labor used in the construction of work.
- 8.32 Performance Bond The approved form of security furnished by the Contractor and his surety as a guarantee that the Contractor will complete the work in accordance with the terms of the contract and guarantee the work for a period of one year after acceptance of the work by Owner.
- 8.33 Plans The word "plans" shall have the same meaning as "drawings" (see Section 8.17).
- 8.34 Project The undertaking to be performed as provided in the Contract Documents (see Section 8.12).
- 8.35 Proposal The offer of the bidder for the work when made out and submitted on the prescribed proposal form, properly signed and guaranteed.
- 8.36 Proposal Guarantee The cash, or cashier's check or certified check, or bidder's bond accompanying the proposal submitted by the bidder, as a guarantee that the bidder will enter into a contract with the Owner for the construction or performance of the work, if it is awarded to him, and will provide the contract bonds and insurance required of him.

- 8.37 Shop Drawings All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the Contractor, a subcontractor, manufacturer, supplier or distributor, which illustrate how specific portions of the work shall be fabricated or installed.
- 8.38 Specifications The directions, provisions and requirements herein contained pertaining to the method and manner of performing the work or to the quantities and qualities of the materials to be furnished under the Contract, together with all other directions, provisions and requirements herein contained, plus such amendments, deletions from or additions thereto which may be provided for by supplemental agreement or change orders.
- 8.39 Subcontractor A subcontractor is a person or entity that has a direct or indirect contract with a Contractor to perform any of the work at the site. For convenience, the term subcontractor is referred to throughout the Contract Documents as if singular in number and masculine in gender but includes the plural and feminine gender and includes a subcontractor or an authorized representative thereof. The term subcontractor does not include any separate contractor or his subcontractors.
- 8.40 Substantial Completion "Substantial Completion" shall be that degree of completion of the project or a defined portion of the project, sufficient to provide the Owner, at his discretion, the full-time use of the project or defined portion of the project for the purposes for which it was intended. "Substantial Completion" shall not be considered as final acceptance.
- 8.41 Supplemental General Conditions Modifications to General Conditions required by a Federal Agency for participation in the project and approved by the agency for participation in the project and approved by the agency in writing prior to inclusion in the Contract Documents and such requirements that may be imposed by applicable state laws. The term also includes modifications or additions to the General Conditions required by the Owner or Engineer.
- 8.42 Supplier Any person or organization that supplies materials or equipment for the work, including that fabricated to a special design, but who does not perform labor at the site.
- 8.43 Surety The corporation, partnership, or individual, other than the Contractor, executing payment, or performance bonds, which are furnished to the Owner by the Contractor.
- 8.44 Work The word "work" within these Contract Documents shall include all material, labor, tools, utilities, and all appliances, machinery, transportation, and appurtenances necessary to perform and complete the Contract, and such additional items not specifically indicated or described which can be reasonably inferred as belonging to the item described or indicated and as required by good practice to provide a complete and satisfactory system or structure. As used herein, "provide" shall be understood to mean, "provide complete in-place", that is, "furnish and install".
- 8.45 Working Day A working day shall be any day, other than a legal holiday, Saturday or Sunday, on which the normal working forces of the Contractor may proceed with regular work.
- 8.46 Written Notice Any notice to any party to the agreement relative to any part of this agreement in writing and considered delivered and the service thereof completed, when posted by certified or registered mail to the said party at his given address, or delivered in person to said party or his authorized representative for the work.
- 8.47 Notice to Proceed After the Owner has issued the Notice of Award; the Contractor shall provide the performance bond, the payment bond, the certificate of insurance, the work schedule, the monthly cash flow, and a signed agreement within ten calendar days. The Owner's attorney will review each document and, if they are found to be acceptable, the Owner will sign and execute the agreement. Within a period of 120 Calendar Days after executing the agreement, the Owner will issue the Notice to Proceed. Within ten calendar days of the effective date of the Notice To Proceed, the work shall commence. The Contractor shall not commence any work until such time that the Notice To Proceed

has been issued. Contractor shall not be entitled to any compensation for any work from Owner until such time as Owner has issued a Notice To Proceed to Contractor.

- 8.48 Additional Instructions and Detail Drawings The Engineer may furnish additional instructions to the Contractor by means of drawings or otherwise, during the progress of the work as necessary to make clear or to define in greater detail the intent of the specifications and contract drawings.

The additional drawings and instruction thus supplied will become a part of the Contract Documents. The Contractor shall carry out the work in accordance with the additional detail drawings and instructions.

- 8.49 Schedules, Reports and Records The Contractor shall submit to the Owner payrolls, reports, estimates, records and other data where applicable as are required by the Contract Documents for the work to be performed.

The Contractor, after the contract award and prior to the Pre-Construction Conference, shall prepare for submittal to the Engineer for review, a detailed progress schedule. The progress schedule shall be brought up to date and submitted to the Engineer prior to each progress payment request and at such other time intervals as the Engineer may request.

- 8.50 Progress Schedule The schedule shall be a time-scaled critical path progress schedule showing in detail the proposed sequence of activity. The critical path analysis shall consist of a graphic network diagram and shall clearly show start and completion dates and percentage of work completed.

The Contractor shall also forward to the Engineer, prior to each progress payment request, an itemized report of the delivery status of major and critical items of purchased equipment and material, including shop drawings and the status of shop and field fabricated work. These progress reports shall indicate the date of the purchase order, the current percentage of completion, estimated delivery, and cause of delay, if any.

If the completion of any part of the work or the delivery of materials is behind the approved schedule, the Contractor shall submit in writing a plan acceptable to the Engineer for bringing the work up to schedule.

The Owner shall have the right to withhold progress payments for the work if the Contractor fails to update and submit the progress schedule and reports as specified, and the withholding shall not constitute grounds for additional claims by the Contractor against the Owner.

The Contractor shall submit an estimated monthly cash flow, based upon the progress schedule with the bonds, schedules, and certificate of insurance.

- 8.51 Drawings and Specifications The intent of the drawings and specifications is that the Contractor shall furnish all labor, materials, tools, equipment, utilities, and transportation necessary for the proper execution of the work in accordance with the Contract Documents and all incidental work necessary to complete the project in an acceptable quality and manner, ready for use, occupancy or operation by the Owner.

In case of conflict between the drawings and specifications, the specifications shall govern. Figure dimensions on drawings shall govern over scale dimensions, and detailed drawings shall govern over general drawings.

Any discrepancies found between the drawings and specifications and site conditions or any inconsistencies or ambiguities in the drawings or specifications shall be immediately reported verbally and within 24 hours of a discovery, in writing to the Engineer, who shall promptly facilitate the correction of the inconsistencies or ambiguities. Work done by the Contractor after discovering discrepancies, inconsistencies or ambiguities shall be done at the Contractor's risk, and the Contractor shall assume full responsibility therefore and shall bear all costs attributable thereto, if not acceptable to the Owner.

- 8.52 Shop Drawings The Contractor shall provide seven copies of the shop drawings as specified or as may be necessary for the prosecution of the work as required by the Contract Documents. All drawings and schedules shall be submitted sufficiently in advance to allow the Engineer not less than 20 regular working calendar days for checking the submittal. The Engineer's approval of any shop drawings shall not release the Contractor from responsibility for deviations from the Contract Documents.

When submitted for the Engineer's review, shop drawings shall bear the Contractor's certification by means of a signed stamp, that he has reviewed, checked and approved the shop drawings and that they are in conformance with the requirements of the Contract Documents. Shop drawings, which, in the opinion of the Engineer, are incomplete or unchecked by the Contractor, will be returned to the Contractor for resubmission in the proper form.

If shop drawings or submittals are rejected by the Engineer, all costs incurred by the Engineer and/or the Owner for reviewing the re-submittals shall be charged to the Contractor, and the Owner has the right to deduct those costs from any monies owed the Contractor by the Owner.

When shop drawings have been reviewed by the Engineer, two sets of submittals will be returned to the Contractor, appropriately stamped. If major changes or corrections are necessary, the shop drawing may be rejected and one set will be returned to the Contractor with the changes or corrections indicated, and the Contractor shall correct and resubmit the shop drawings. No changes shall be made by the Contractor to resubmitted shop drawings other than those changes indicated by the Engineer, unless the changes are clearly described in a letter accompanying the resubmitted shop drawings.

The review of such shop drawings and catalog cuts by the Engineer shall not relieve the Contractor from responsibility for corrections of dimensions, fabrication details, and space requirements, or for deviations from the contract drawings or specifications, unless the Contractor has called attention to the deviations in writing by a letter accompanying the shop drawings and the Engineer approves the change or deviation in writing at the time of submission; nor shall review by the Engineer relieve the Contractor from the responsibility for errors in the shop drawings. When the Contractor does call deviations to the attention of the Engineer, the Contractor shall state in his letter whether or not the deviations involve any deduction or extra cost adjustment.

Portions of the work requiring a shop drawing or sample submission shall not begin until the shop drawing or submission has been approved by the Engineer. A copy of each approved shop drawing and each approved sample shall be kept in good order by the Contractor at the site and shall be available to the Engineer.

- 8.53 Record Drawings During construction, the Contractor shall keep an accurate record of the following:

- A. Deviations between the work as shown on the plans and the work as actually installed.
- B. The specific locations of piping, valves, electric conduits, ductwork, equipment, and other such work which was not located on the plans. The record drawings shall show distances to these locations from known points on the plans.
- C. Equipment schedules indicating manufacturer's names and model numbers.

When all revisions showing work as installed are made, the corrected set of plans shall be delivered to the Engineer before the final pay request is processed. These plans shall be clearly marked "Record Drawings" and shall be signed and dated by the Contractor. By submittal of these Record Drawings to the Engineer, the Contractor is certifying that the work performed was done in accordance with the drawings and is an accurate representation of the improvements completed. The Contractor shall employ the services of an Arizona

Registered Land Surveyor (RLS) to certify on the Record Drawings any approved changes to the locations of facilities that were installed.

Nothing contained in this section shall be construed as authorizing any deviation in the work as shown on the contract drawings, plans and /or specifications without a written change order approved by Owner.

- 8.54 Materials, Services and Facilities It is understood that, except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, supervision, temporary construction of any nature, and all other services and facilities of any nature whatsoever necessary to execute, complete, and deliver the work within the specified time.

The Contractor shall furnish the Owner a list of materials and the source of supply of each of the materials on the list. The source of supply of each of the materials shall be approved by the Owner before the delivery of materials is started. Only materials conforming to these specifications and approved by the Owner shall be used in the work. All materials proposed for use may be inspected or tested at any time during their preparation and use. After trial, if it is found that sources of supply, which have been approved, do not furnish a uniform product, or if the product from any source proves unacceptable at any time, the Contractor shall furnish approved material from other approved sources. No material, which, after approval, has in any way become unfit for use shall be used in the work.

The Contractor warrants to the Owner and Engineer that the materials and equipment furnished under the contract will be new and of a quality equal to that specified or approved and, that all work will be of good quality, free from faults and defects and in conformance with the Contract Documents. Mechanical and electrical equipment shall be the products of manufacturers of established good reputations and regularly engaged in the fabrication of that equipment. Unless otherwise noted, any equipment offered shall be current models, which have been in successful regular operation under comparable conditions for a period of at least two years. This time requirement, however, does not apply to minor details or to thoroughly demonstrated improvements in design or in material of construction. Work shall be done and completed in a thorough and workmanlike manner and if required by Engineer, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment used.

All materials which the Engineer or his authorized inspector has determined do not conform to the requirements of the plans and specifications will be rejected. They shall be removed immediately from the vicinity of the work by the Contractor at his own expense, unless otherwise permitted by the Engineer. No rejected material, the defects of which have been subsequently corrected, shall be used in the work, unless approval in writing has been given by the Engineer. Upon failure of the Contractor to comply promptly with any order of the Engineer made under the provisions in this section, the Engineer shall have authority to cause the removal and replacement of rejected material and to deduct the cost thereof from any monies due or to become due the Contractor.

If any part or portions of the work done or material furnished under this contract shall prove defective or nonconforming with the drawings and specifications, and if the imperfection in the same shall not be of sufficient magnitude or importance as to make the work dangerous or unsuitable, or if the removal of the work will create conditions which are dangerous or undesirable, the Engineer shall have the right and authority to retain such work but shall make deductions in the final payment therefore as may be just and reasonable. Adjustment shall be effected whether or not final payment has been made.

Materials and equipment shall be so stored (at the Contractor's expense) as to insure the preservation of their quality and fitness for the work. Stored materials and equipment to be incorporated in the work shall be located so as to facilitate prompt inspection.

Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer.

Materials, supplies or equipment, to be incorporated into the work shall not be purchased by the Contractor or the subcontractor subject to a chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller.

- 8.55 Inspections and Testing All material and equipment, used in the construction of the project, shall be subject to adequate inspection and testing in accordance with generally accepted standards, as required and defined in the Contract Documents.

Additional inspections are required for all building-related activities, and must be scheduled and coordinated through the Owner's Building Division utilizing an automated inspection request system. To schedule an inspection on an active permit please call the Owner's inspection request line at (928) 763-0172 a minimum of 24 business hours in advance. The Contractor is responsible for scheduling and coordinating all inspections with the Owner's project manager, staff and other agencies.

The Owner shall provide all inspection and testing services not required by the Contract Documents.

The Contractor shall provide at his expense the testing and inspection services required by the Contract Documents.

If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any work to specifically be inspected, tested, or approved by someone other than the Contractor, the Contractor will give the Engineer timely notice of readiness, the minimum of which shall be 48 hours. The Contractor will then furnish the Engineer the required certificates of inspection, testing or approval.

Inspections, tests or approvals by the Engineer or others shall not relieve the Contractor from his obligations to perform the work in accordance with the requirements of the Contract Documents.

The Engineer and his representative will at all times have access to the work. In addition, authorized representatives and agents of any participating Federal or State agency shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records. The Contractor will provide proper facilities for access and observation of the work and also for any inspection, or testing thereof.

If any work is covered contrary to the written instructions of the Engineer or prior to inspection, it must, if requested by the Engineer, be uncovered for his observation and replaced at the Contractor's expense.

If the Engineer considers it necessary or advisable that work that has already been approved be inspected or tested by the Engineer or others, the Contractor, at the Engineer's request, will uncover, expose or otherwise make available for observation, inspection or testing as the Engineer may require, that portion of the work in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that the work is defective, the Contractor will bear all the expenses of the uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction. If, however, the work is not found to be defective, the Contractor will be allowed an increase in the contract price or an extension of the contract time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction and an appropriate change order shall be issued.

- 8.56 Substitutions Whenever a material, article or piece of equipment is identified on the drawings or specifications by reference to brand name or catalogue number, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements and that other products of equal capacities, quality and function shall be considered. The Contractor may recommend the substitution of a material, article, or piece of equipment of equal substance and

function for those referred to in the Contract Documents by reference to brand name or catalogue number, and if, in the opinion of the Engineer, the material, article, or piece of equipment is of equal substance and function to that specified, the Engineer may approve its substitution and use by the Contractor. Any cost differential shall be deductible from the contract price and the Contract Documents shall be appropriately modified by change order. The Contractor warrants that if substitutes are approved, no major changes in the function or general design of the project will result. Incidental changes or extra component parts required to accommodate the substitute will be made by the Contractor without a change in the contract price or contract time. Any substitutions not properly approved and authorized by the Engineer may be considered defective and the Engineer may require the Contractor to remove the substituted material, article or piece of equipment. In such an event, the Contractor shall bear any and all costs associated with the removal of the substituted item(s), including, but not limited to, all engineering, inspection, testing or surveying costs incurred by the Owner.

The term "or equal" shall be understood to indicate that the "equal" product is the same or better than the product named in function, performance, reliability, quality, and general configuration. Determination of equality in reference to the project design requirements will be made by the Owner. "Equal" products shall not be purchased or installed by the Contractor without the Owner's written approval. Contractor shall have seven calendar days after award of the contract for submission of data substantiating a request for substitution of an "or equal" item.

Regarding the supplying of equipment, products or materials not specifically identified by reference to brand name or catalogue number in the Contract Documents, this section supersedes any pre-approval language that may exist in any other portion of the Contract Documents. There is no pre-approval process available prior to bid opening for this project, and the Contractor is advised to submit its bid based on the specified equipment, products and materials. As stipulated in this Section 8.55, the Contractor shall have seven calendar days after award of the contract for submission of data substantiating a request for substitution of an "or equal" item.

8.57 Patents The Contractor shall pay all applicable royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and indemnify and hold the Owner harmless from loss on account thereof, except that the Owner shall be responsible for any loss when a particular process, design, or the product of a particular manufacturer or manufacturers is specified, however if the Contractor has reason to believe that the design, process or product specified is an infringement of a patent, he shall be responsible for the loss unless he promptly gives that information to the Engineer.

8.58 Surveys, Permits, Regulations The Owner shall furnish all boundary surveys and establish all base lines for locating the principal component parts of the work together with a suitable number of benchmarks adjacent to the work as shown in the Contract Documents. The Contractor shall satisfy himself as to the accuracy of all measurements before constructing any permanent structure and shall not take advantage of any errors, which may have been made in laying out the work. From the information provided by the Owner, unless otherwise specified in the Contract Documents, the Contractor shall develop and make all detail surveys needed for construction such as slope stakes, batter boards, stakes for pipe locations and other working points, lines, elevations and cut sheets.

Stakes and markings as the Engineer may set for either his own or the Contractors guidance, shall be scrupulously preserved by the Contractor. In the event the Contractor, or his employees, destroy or otherwise remove or obliterate stakes or markings, an amount equal to the cost of replacing the same may be deducted from subsequent estimates due the Contractor at the discretion of the Owner.

Permits and licenses of a temporary nature necessary for the prosecution of the work shall be secured and paid for by the Contractor unless otherwise stated in the supplemental general conditions easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by the Owner, unless otherwise specified. The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor perceives that the Contract Documents are at variance therewith, he shall

promptly notify the Engineer in writing, and any necessary changes shall be adjusted as provided in Section 8.61, "CHANGES IN THE WORK". If the Contractor performs and works knowing it to be contrary to any laws, ordinances, rules and regulations, without notice to the Engineer, he shall assume full responsibility therefore and shall bear all costs attributable thereto.

The Contractor shall sign for and obtain Building and/or Right of Way permits issued by the Owner prior to commencing work. These permits will be no cost to the Contractor, and the Owner will assist the Contractor with completing the applications and obtaining the permit(s). The Contractor shall comply with all requirements of these permits, including the use of the Owner's automated inspection request system for building-related inspections. To schedule an inspection on an active permit please call the Owner's inspection request line at (928) 763-0172 a minimum of 24 business hours in advance. The Contractor is responsible for scheduling and coordinating all inspections with the Owner's project manager, staff and other agencies.

- 8.59 Protection of Work, Property and Persons and Damages The Contractor shall have sole responsibility for initiating, maintaining and supervising all safety precautions and programs in connection with the work. He shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to, all employees on the work and other persons who may be affected thereby, all the work and all materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and other items not designated for removal, relocation or replacement in the course of construction.

The Contractor shall comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction. He shall erect and maintain, as required by the conditions and progress of the work, all necessary safeguards for safety and protection. He shall notify owners of adjacent utilities when prosecution of the work may affect them. The Contractor shall remedy all damage, injury or loss to any property caused, directly or indirectly, in whole or in part, by the Contractor, any subcontractor or anyone directly or indirectly employed by any of them or anyone for whose acts any of them be liable, except damage or loss attributable to the fault of the Contract Documents or to the acts or omissions of the Owner or the Engineer or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of the Contractor.

In emergencies affecting the safety of persons or the work or property at the site or adjacent thereto, the Contractor, without special instruction or authorization from the Engineer or Owner, shall act to prevent threatened damage, injury or loss. He shall give the Engineer prompt written notice of any significant changes in the work or deviations from the Contract Documents caused thereby, and a change order shall thereupon be negotiated and issued covering the changes and deviations involved, as provided in Section 8.61, Changes in the Work.

The Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents and the safety of all those at the site. The person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and the Engineer. The Engineer will not be responsible for safety precautions and programs in connection with the work or for the Contractor's failure to properly perform his responsibilities with respect to initiating, maintaining and supervising all safety precautions and programs. The Contractor is required to provide a copy of its written safety programs to the Owner for review by the Risk Management Division prior to commencing work.

All costs and charges incurred by Owner, together with the cost of completing the work under the contract, will be deducted from any monies due or which may become due to the Contractor if the expense exceeds the sum which would have been payable under the contract, then the Contractor and the surety shall be liable and shall pay to the Owner the amount of the excess.

- 8.60 Public Safety Contractor shall furnish, at his own expense, and without any additional cost to the Owner, such flagmen and guards as are reasonable necessary to give adequate warning to the public

of any dangerous conditions which may be encountered by motorists and/or pedestrians, and the Contractor shall furnish, erect and maintain such fences, barricades, lights, signs and other traffic control devices as are necessary to prevent accidents and avoid damage or injury to the public which may be required by the most recent edition of the *Maricopa Association of Governments (MAG) Standards for Public Works Construction*, the text of which is incorporated herein by reference and made a part of the Contract Documents.

If the Contractor appears to be neglectful or negligent in furnishing warning and protective measures as above provided, the Engineer may direct attention to the existence of a hazard and the necessary warning and protective measures shall be furnished and installed by the Contractor at his own expense without cost to the Owner. If the Engineer points out the inadequacy of warning and protective measures, that action on the part of the Engineer shall not relieve the Contractor from responsibility for public safety or abrogate his obligation to furnish and pay for these devices.

If the Contractor is neglectful in furnishing and/or maintaining warning and protective facilities as required herein, the Owner may furnish and/or maintain those facilities and charge Contractor therefore by deducting the cost thereof from periodic progress payments due the Contractor as costs are incurred by Owner.

No material or equipment shall be stored where it will interfere with the free and safe passage of public traffic, and at the end of each day's work and at other times when construction operations are suspended for any reason, the Contractor shall remove all equipment and other obstructions from that portion of the right-of-way open for use by public traffic.

8.61 Supervision By Contractor The Contractor shall supervise and direct the work, using his best skill and attention. He shall be solely responsible for the means, methods, techniques, sequences and procedures of construction. The Contractor shall employ and maintain on the work a qualified supervisor or superintendent who shall have been designated in writing by the Contractor as the Contractor's representative at the site, and who shall have been approved by the Engineer, which approval shall not be unreasonably withheld. The supervisor shall have full authority to act on behalf of the Contractor and all communications given to and by the supervisor shall be as binding as if given to and by the Contractor. The Contractor shall be responsible to the Owner for the acts and omissions of the employees, subcontractors, and the agents and employees, and other persons performing any other work under the contract with the Contractor.

8.62 Changes in the Work The Owner may at any time, as the need arises, order changes within the scope of the work without invalidating the agreement. If changes increase or decrease the amounts due to Contractor under the Contract Documents, or results in changes in the time required for performance of the work, the adjustment shall be authorized by a written change order approved by the Owner.

The Owner may, at any time, by issuing a change order, make changes in the plans, specifications or other details of the work. Contractor shall proceed with the performance of any changes in the work so ordered by the Owner, unless the Contractor believes that the change order entitles him to a change in the contract price or time, or both, in which event he shall give the Engineer written notice thereof within seven calendar days after the receipt of the ordered change. The Contractor shall justify the basis for the change in contract price or time through written documentation submitted to Engineer within 14 calendar days after Contractor's receipt of the change order. Contractor shall not execute any changes in the work until and unless Contractor has received an executed change order approved by the Owner.

If the Contractor wishes to make a claim for an increase in the contract price, he shall give the Engineer written notice thereof within 14 calendar days after the occurrence of the event-giving rise to the claim. This notice shall be given by the Contractor before proceeding to execute the work, except in an emergency endangering life or property, in which case Contractor shall proceed in accordance with the provisions of the contract. No claim shall be valid, unless made by Contractor in

accordance with the provisions of the contract. Any change in the contract price resulting from a claim shall be authorized in a written change order approved by Owner.

The value of any work covered by a change order shall be determined by one or more of the following methods in the order of precedence listed below:

- A. Unit prices previously approved.
- B. An agreed lump sum.
- C. Cost plus percentage.

8.63 Time for Completion and Liquidated Damages The date of beginning and the time for completion of the work are essential conditions of the Contract Documents and the work embraced shall be commenced on a date specified in the Notice To Proceed.

The Contractor shall proceed with the work at a rate of progress to insure full completion within the contract time. It is expressly understood and agreed, by and between the Contractor and the Owner, that the contract time for the completion of the work described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the work.

The Contractor shall only work an eight hour day during normal regular hours, which will consist of Monday through Friday, 6:00 a.m. to 6:00 p.m., and do not include local municipal holidays. If the Contractor desires to carry on work more than eight hours each day, or work at night or outside the normal regular hours, the Contractor shall give timely notice (72 hours) to the Engineer and receive the Owner's written approval to allow satisfactory arrangements to be made for inspecting the work in progress.

If prosecution of the work is discontinued for any reason, the Contractor shall notify the Engineer at least 24 hours in advance of resuming operations. The Contractor shall be responsible for any extra compensation due or costs incurred as a result of Contractor's desire to carry out work beyond an eight hour day, or at night or outside normal regular hours, including but not limited to, any additional costs or compensation due the Engineer and Owner or its employees or agents as a result of having to be present at the site. The costs or extra compensation necessitated by the Contractor's work beyond an eight hour day, or at night or outside normal regular business hours may be deducted or withheld from progress payment or any other payments due to Contractor.

If for any reason a suspension of the work occurs, the Contractor, at its own expense, shall do all the work necessary to provide a safe, smooth and unobstructed passageway through construction for use by public traffic or to provide for the proper and efficient operation of sewer, drainage and other facilities within the site of the work, during the period of such suspension. In the event that the Contractor fails to perform the work specified in this section, the Owner will perform the work and the cost thereof will be deducted from periodic progress payments due the Contractor.

During inclement weather and other conditions, the Contractor shall pursue only those portions of the work as shall not be damaged thereby. No portions of the work whose satisfactory quality or efficiency will be affected by an unfavorable condition shall be constructed while these conditions remain, unless by special means or precautions, approved by the Engineer, the Contractor is able to overcome them.

Delays in delivery of equipment or material purchased by the Contractor or its subcontractor, including engineer-selected equipment, shall not be considered as a just cause for delay as this is not beyond the control of the Contractor. The Contractor shall be fully responsible for the timely ordering, scheduling, expediting, delivery, and installation of all equipment and materials.

In case of failure on the part of the Contractor to complete his contract within the time provided in the contract, or such written extension thereof as may be agreed upon by Owner, the contract may be terminated by written notice given by the Engineer as specified in Section 8.65.

In the event the contract is terminated, the Owner shall have the right to take over the work and to proceed until it is completed, either by performing the work itself directly or by contracting it out to some other person or persons, and in that event the Owner may take possession of and utilize, in completing the work, all materials, appliances and plant as may be on the site of the work and necessary for its completion. Nothing herein contained shall be deemed to limit the right of the Owner in the event of any breach of Contract by the Contractor; but all rights herein given to the Owner are and shall be deemed to be additional to any other rights or remedies which the Owner shall have under any provision of law, including both liquidated damages pursuant to Section 1.15 for the delay in final completion and actual damages for breach and ultimate completion separate and distinct from damages attributable to delay.

In the event the Contractor is not terminated, but fails to complete the work, or any part thereof, in the time agreed upon in the contract or within any extra time as may have been allowed for delays by extensions granted as provided in the contract, the Contractor shall reimburse the Owner for the additional expense and damage for each calendar day that the contract remains uncompleted after the contract completion date in the amounts stipulated in Section 1.15. The stipulated amounts are hereby agreed upon as liquidated damages for the loss to the Owner. It is expressly understood and agreed that this amount is not to be considered in the nature of a penalty, but as liquidated damages, which have accrued against the Contractor. The Owner shall have the right to deduct damages from any amount due, or that may become due the Contractor, or the amount of damages shall be due and collectible from the Contractor or its Surety.

The Contractor shall not be charged with liquidated damages or any excess costs when the delay in completion of the work is due to one or more of the following: acts of God; acts of the Owner; acts of another Contractor in the performance of a separate contract with the Owner; fire, flood, epidemics, or quarantine restrictions; strikes or freight embargoes; and, extraordinary weather conditions. Written Notice of a delay must be submitted to the Engineer for approval within three calendar days of the occurrence. In the event notice is not given as provided, liquidated damages may be assessed.

- 8.64 Correction of Work The Contractor shall promptly correct all work rejected by the Engineer as defective or as failing to conform to the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. Contractor shall bear all costs of correcting such rejected work, including compensation for the Engineer's additional services made necessary thereby. Contractor shall also bear the costs of making good all work of the Owner or separate Contractor destroyed or damaged by such correction or removal.

All removal and replacement work shall be done at the Contractor's expense. If the Contractor does not take action to remove rejected work within ten calendar days after receipt of Written Notice, the Owner may remove the work and store the materials at the expense of the Contractor, including compensation for the Engineer's additional services made necessary thereby.

- 8.65 Subsurface Conditions The Contractor shall promptly, and before such conditions are disturbed, except in the event of an emergency, notify the Owner by Written Notice of:

- A. Subsurface or latent physical conditions at the site differing materially from those indicated in the Contract Documents; or
- B. Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents.

Unless indicated elsewhere in the Contract Documents a geotechnical exploration was not conducted for this project, and the Contractor shall be responsible for its own investigations and research to confirm the conditions of the project. If no geotechnical exploration was conducted, however, there may be risk of perched pockets of groundwater during trench excavations. If encountered, the Contractor shall immediately formalize a dewatering plan for Owner review and approval.

The Owner shall promptly investigate any physical conditions identified by the Contractor, and if he finds that conditions do so materially differ and cause an increase or decrease in the cost of, or in the time required for, performance of the work, an equitable adjustment shall be made and the Contract Documents shall be modified by a change order. Any claim of the Contractor for adjustment hereunder shall not be allowed unless he has given the required Written Notice; provided that the Owner may, if he determines the facts so justify, consider and adjust any claims asserted before the date of final payment.

- 8.66 Suspension of Work, Termination and Delay The Owner may suspend the work or any portion thereof for a period of not more than 120 Calendar Days or for further time as agreed upon by the Contractor. Any suspension shall be initiated by the Owner. Written Notice documenting the suspension shall be delivered to the Contractor. The Contractor shall resume work upon receiving another Written Notice, from the Owner, to do so. The second notice shall have the Engineer's seal affixed. The Contractor may negotiate an increase in the total contract price or an extension of the contract time, or both, directly attributable to any suspension.

In addition to any other reasons for termination provided in the contract, the Contractor shall be considered in default of his contract and such default will be considered as cause for the Owner to terminate the contract for any of the following reasons if the Contractor:

- A. Fails to begin the work under the contract within the time specified in the "Notice To Proceed," or
- B. Fails to perform the work or fails to provide sufficient workers, equipment or materials to assure completion of work in accordance with the terms of the contract, or
- C. Performs the work unsuitably or neglects or refuses to remove materials or to perform new work as may be rejected as unacceptable and unsuitable, or
- D. Discontinues the prosecution of the work, or
- E. Fails to resume work which has been discontinued within a reasonable time after notice to do so, or
- F. Becomes insolvent or is declared bankrupt, or commits any act of bankruptcy or insolvency, or
- G. Allows any final judgment to stand against him unsatisfied for a period of ten calendar days, or
- H. Makes an assignment for the benefit of creditors, or acceptable manner, or
- I. Is otherwise in breach of the contract and has failed to remedy the breach within ten calendar days of written notice of the existence of breach, or
- J. Fails to provide safe conditions for his workers and/or the general public, or
- K. Fails to pay his subcontractors in accordance with Section 8.67 Payments to Contractor.

If the Owner considers the Contractor in default of the contract for any reason hereinbefore, he shall immediately give written notice to the Contractor and the Contractor's surety as to the reasons for considering the Contractor in default and the Owner's intentions to terminate the contract.

If the Contractor or Surety, within a period of ten calendar days after notice, does not proceed in accordance therewith, then the Owner shall have, upon written notification of the facts of the delay or neglect, the power and authority without violating the contract, to take the prosecution of the work

out of the hands of the Contractor. The Owner may appropriate or use any or all materials and equipment that have been mobilized for use in the work and are acceptable and may enter into an agreement for the completion of the contract according to the terms and provisions thereof, or use any other methods as in the opinion of the Owner will be required for the completion of the contract in an acceptable manner.

All costs and charges incurred by the Owner, together with the cost of completing the work under contract, will be deducted from any monies due or which may come due the Contractor. If expense exceeds the sum which would have been payable under the contract, then the Contractor and the Surety shall pay to the Owner the amount of the excess

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 monies due Contractor by Owner will not release Contractor from liability.

Upon seven calendar 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 that case, Contractor shall be paid (without duplication of any items):

- A. 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 the work;
- B. 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 on those expenses;
- C. for reasonable costs incurred in settlement of terminated contracts with subcontractors, Suppliers and others; and
- D. 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.

If the work is stopped under an order of any court or other public authority for a period of more than 120 Calendar Days, through no act or fault of the Contractor or of anyone employed by him, or if the Owner fails to pay the Contractor within 45 calendar days after the time specified in the Payments To Contractor under Section 8.67, then the Contractor may, upon 15 calendar days Written Notice to the Owner, stop work until payment of the amount owing has been received.

The Owner may terminate the Contract or a portion thereof if conditions encountered during the progress of the work make it impossible or impracticable to proceed with the work or a local or national emergency exists.

When contracts, or any portion thereof, are terminated before completion of all work in the Contract, adjustments in the amount bid for the pay items will be made on the actual quantity of work performed and accepted, or as mutually agreed for pay items of work partially completed or not started. No claim for loss of anticipated profits will be considered.

Termination of the Contract or any portion thereof shall not relieve the Contractor of his responsibilities for the completed work nor the surety of its obligation for and concerning any just claims arising out of the work performed.

- 8.67 Issuance of Notice of Completion and Final Acceptance By Owner Upon completion of the project, a final inspection shall be requested by the Contractor, in writing, and the Owner will make an inspection within seven calendar days. If all construction provided for and contemplated by the

contract is found completed to his satisfaction, that inspection shall constitute the final inspection and the Owner will make the final acceptance and issue a Notice Of Completion to the Contractor.

If, however, the inspection discloses any work, in whole or in part, as being unsatisfactory, the Owner will give the Contractor the necessary instructions for correction and the Contractor shall immediately comply with and execute all instructions. Upon correction of the work, another inspection will be made which shall constitute the final inspection, provided the work has been satisfactorily completed. In that event, the Owner will make the final acceptance and issue a Notice Of Completion to the Contractor.

- 8.68 Payments to Contractor In addition to any documents required by the Engineer, at the time a partial pay estimate is submitted, the Contractor shall, at least ten calendar days before each progress payment falls due (but not more often than once a month), submit to the Engineer a partial payment estimate filled out and signed by the Contractor covering the work performed during the period covered by the partial payment estimate and supported by data as the Engineer may reasonably require. All partial and final pay estimates submitted by the Contractor must be on a form that substantially conforms to the Owner's Standard Application & Certificate for Payment template, a copy of which is available from the Owner. If payment is requested on the basis of materials and equipment not incorporated in the work, title to materials and equipment shall vest in the Owner, and Contractor shall supply, at the time of submission of payment estimate, supporting documents satisfactory to the Owner, to establish and protect Owner's interest in the materials and equipment, and Contractor shall maintain appropriate insurance on the materials and equipment until actual possession by the Owner of the materials and equipment occurs. The Engineer will, within seven calendar days after receipt of each partial payment estimate, either indicate in writing his approval of payment and present the partial payment estimate to the Owner, or return the partial payment estimate to the Contractor indicating in writing his reasons for refusing to approve payment. In the latter case, the Contractor may make the necessary corrections and resubmit the partial payment estimate. The Owner will, within 14 calendar days of presentation to him of an approved partial payment estimate, pay the Contractor a progress payment on the basis of the approved partial payment estimate. All payments by the Owner must be mailed to the Contractor via standard United States Parcel Post service and postmarked within 14 calendar days of presentation to the Owner of an approved partial payment estimate. If the Contractor desires an alternative payment method it will be the sole responsibility, and expense, of the Contractor to contact the Owner's Finance Department directly and request an alternative method, provided, however, that the Finance Department is under no obligation to agree to an alternative method unless it determines, at its sole discretion, that the request is reasonable and acceptable to the Finance Department. The Owner shall retain ten percent of the amount of each payment until final completion and acceptance of all work covered by the Contract Documents. When the contract is 50 percent completed, one-half of the amount retained shall be paid to the Contractor provided the Contractor makes a written request for the payment and the Contractor is making satisfactory progress on the Contract and there is no specific cause or claim requiring a greater amount to be retained. After the Contract is 50 percent completed, no more than five per cent of the amount of any subsequent progress payments made under the contract may be retained providing the Contractor is making satisfactory progress on the project, except that if at any time the Owner determines satisfactory progress is not being made, ten percent retention shall be reinstated for all progress payments made under the Contract subsequent to the determination.

In lieu of ten percent retention provided for in this Section 8.67 of Article 8, the Owner shall, at the Contractor's option, accept as a substitute an assignment of any of the following:

- A. Time certificates of deposit of banks licensed by the State of Arizona; or
- B. Securities of or guaranteed by the United States of America; or
- C. Securities of the State of Arizona, or any county, municipality or school district thereof; or
- D. Shares of savings and loan institutions authorized to transact business in the State of Arizona.

Assigned instruments shall have a face value in an amount equal to ten percent of the progress payment for which instruments are tendered and shall be retained by the Owner as a guarantee for complete performance of the Contract.

If the Owner accepts substitute security as provided herein for the ten percent retention, the Contractor shall be entitled to all interest or income earned by the security, and all security in lieu of retention shall be returned to the Contractor within 120 Calendar Days after final completion and acceptance of all material, equipment and work covered by the Contract if the Contractor has furnished the Owner satisfactory receipts for all labor and material billed and unconditional, final waivers of liens from any and all persons holding claims against the work.

In no event shall the Owner accept a time certificate of deposit of a bank or shares of a savings and loan institution in lieu of the retention specified in this Section 8.67 of Article 8 unless accompanied by a signed and acknowledged waiver of the bank or savings and loan institution of any right or power to set off against either the Owner or the Contractor in relationship to the certificates or shares assigned.

The Contractor shall promptly pay each subcontractor, upon receipt of payment from the Owner out of the amount paid to the Contractor on account of the subcontractor's work, the amount to which the subcontractor is entitled, reflecting the percentage actually retained, if any, from payments to the Contractor on account of subcontractors' work. The Contractor shall, by an appropriate agreement with each subcontractor, require each subcontractor to make payments to his sub-subcontractors in similar manner.

Prior to Substantial Completion, the Owner, with the approval of the Engineer and with the concurrence of the Contractor, may use any completed or substantially completed portions of the work. Use shall not constitute an acceptance of the completed or substantially completed portions of the work.

The Owner shall have the right to enter the premises for the purpose of doing work not covered by the Contract Documents. This provision shall not be construed as relieving the Contractor of the sole responsibility for the care and protection of the work, or the restoration of any damaged work except as may be caused by agents or employees of the Owner.

The Contractor shall indemnify and save the Owner or the Owner's agents harmless from all claims growing out of the lawful demands of subcontractors, laborers, workmen, mechanics, material men, and furnishers of machinery and parts thereof, equipment, tools, and all supplies, incurred in the furtherance of the performance of the work. The Contractor shall, at the Owner's request, furnish satisfactory evidence that all obligations of the nature designated above have been paid, discharged, or waived. If the Contractor fails to do so the Owner may, after having notified the Contractor, either pay unpaid bills or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the Contractor shall be resumed, in accordance with the terms of the Contract Documents, but in no event shall the provisions of this sentence be construed to impose any obligations upon the Owner to either the Contractor, his Surety, or any third party. In paying any unpaid bills of the Contractor, any payment made by the Owner shall be considered as a payment made under the Contract Documents by the Owner to the Contractor and the Owner shall not be liable to the Contractor for any payments made in good faith.

If any payment to Contractor is delayed after the date due, interest shall be paid at the rate of one percent per month or fraction of a month on any unpaid balance as may be due. If the Owner fails to make payment 120 Calendar Days after final completion and acceptance, including any retained amounts (subject to the presentation of the waivers and releases as required by Section 8.68 below), in addition to other remedies available to the Contractor, interest shall be paid at the rate of one percent per month or fraction of the month on the unpaid balance as may be due, except for that amount

necessary to pay the expenses the Owner reasonably expects to incur in order to pay or discharge the expense determined by the Engineer or Owner in the finding justifying the retention or delay.

The Owner may require the Contractor to furnish partial releases or liens executed by all persons, firms and corporations who have furnished labor services or materials incorporated into the Work during the period of time for which the progress payment is due, releasing lien rights as these persons, firms or corporations may have for that period. If any of the laborers, subcontractors, or material men shall serve upon the Owner a "Notice to Owner", or shall otherwise put the Owner on notice that they are owed any unpaid money by the Contractor, the Owner shall have the right to pay these persons directly, and the Owner shall receive a credit therefore upon the Contract Sum.

- 8.69 Acceptance of Final Payment and Release Upon completion of the project, a Final Inspection shall be requested by the Contractor, in writing. Following the Owner's acceptance of the work, the Owner will issue a Notice of Completion to the Contractor and Engineer shall issue a certificate attached to the final payment request certifying that the work has been accepted under the conditions of the Contract Documents. Release of retained amounts may not be delayed without a specific written finding by the Engineer or Owner of the reasons justifying the delay in payment. No later than 120 Calendar Days after the issuing of the Notice of Completion, and subject to the Contractor's presentation of the necessary number of the Unconditional Waiver and Lien Release (see Section 7.3) from all subcontractors, the Owner will pay to the Contractor the entire sum so found to be due after deducting there from all previous payments and all amounts retained under the provisions of the Contract. All previous prior partial estimates and payments shall be subject to correction in the final estimate and payment.

The acceptance by the Contractor of final payment shall be and shall operate as an unconditional release by the Contractor of the Owner for any claims and all liabilities which may be asserted by the Contractor against the Owner for every alleged act and neglect of the Owner, as well as the Owner's agents and employees, relating to or arising out of the work. Any payment by Owner, however, final or otherwise, shall not release the Contractor or the Contractor's agents or employees, or the Contractor's sureties, from any obligations it may have under the Contract Documents or the performance and payment bonds.

- 8.70 Insurance The Contractor shall purchase and maintain insurance as will protect him from claims set forth below which may arise out of or result from the Contractor's execution of the work, whether execution be by himself or by any subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- A. Claims under workmen's compensation, disability benefit and other similar employee benefit acts;
- B. Claims for damages because of bodily injury, occupational sickness or disease, or death of his employees;
- C. Claims for damages because of bodily injury, sickness or disease, or death of any person other than his employees;
- D. Claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person as a result of an offense directly or indirectly related to the employment of such person by the Contractor, or (2) by any other person; and
- E. Claims for damages because of injury to or destruction of tangible property, including loss of use resulting there from.

Certificates of Insurance acceptable to the Owner, along with endorsements (excepting Workers Compensation) naming the Engineer, the Owner and The City of Bullhead City as additional insured parties, shall be filed with the Owner prior to commencement of the work. These documents shall contain a provision that coverages afforded under the policies will not be canceled, reduced,

discontinued, or otherwise materially altered during the period of performance without 30 calendar days prior Written Notice has been given to the Owner.

The Contractor shall procure and maintain, at his own expense, during the contract time, liability insurance with an Insurance Carrier with an A.M. Best rating of no less than "A" and as hereinafter specified:

- A. Contractor's General Commercial Liability and Property Damage Insurance including vehicle coverage issued to the Contractor and protecting him from all claims for personal injury, including death, and all claims for destruction of or damage to property, arising out of or in connection with any operations under the Contract Documents, whether the operations be by himself or by any subcontractor under him, or anyone directly or indirectly employed by the Contractor or by a Subcontractor under him. Insurance shall be written with a limit of liability to include primary and excess coverage in an amount not less than \$2,000,000 for all damages arising out of bodily injury, including death, at any time resulting there from, sustained by any one person in any one accident; and a limit of liability of not less than \$1,000,000 aggregate for any damages sustained by two or more persons in any one accident. Insurance shall be written with a limit of liability of not less than \$500,000 for all property damage sustained by any one person in any one accident; and a limit of liability of not less than \$500,000 aggregate for any such damage sustained by two or more persons in any one accident.
- B. The Contractor shall acquire and maintain, if applicable, Fire and Extended Coverage insurance upon the project to the full insurable value thereof for the benefit of the Owner, the Contractor, and Subcontractors as their interest may appear. This provision shall in no way release the Contractor or Contractor's Surety from obligations under the Contract Documents to fully complete the project.
- C. The Contractor shall procure and maintain, at his own expense, during the Contract time, in accordance with the provisions of the laws of the state in which the work is performed, Workmen's Compensation Insurance, including occupational disease provisions, for all of his employees at the site of the project and in case any work is sublet, the Contractor shall require subcontractor to similarly provide Workmen's Compensation Insurance, including occupational disease provisions for all of the latter's employees unless the employees are covered by the protection afforded by the Contractor. In case any class of employees engaged in hazardous work under this Contract at the site of the project is not protected under Workmen's Compensation statute, the Contractor shall provide, and shall cause each subcontractor to provide, adequate and suitable insurance for the protection of his employees not otherwise protected.
- D. The Contractor shall secure All Risk type Builder's Risk Insurance for work to be performed. Unless specifically authorized by the Owner, the amount of such insurance shall not be less than the contract price totaled in the bid. The policy shall cover not less than the losses due to fire, explosion, hail, lightning, vandalism, malicious mischief, wind, collapse, riot, aircraft, and smoke during the contract time, and until the work is accepted by the Owner.

8.71 Contract Security The Contractor shall within ten calendar days after the receipt of the Notice Of Award furnish the Owner with a Performance Bond and a Payment Bond in sums equal to the amount of the Contract price, conditioned upon the performance by the Contractor of all undertakings, covenants, terms, conditions and agreements of the Contract Documents, and upon the prompt payment by the Contractor to all persons supplying labor and materials in the prosecution of the work provided by the Contract Documents. Bonds shall be executed by the Contractor and a corporate bonding company licensed to transact business in the State of Arizona and the company issuing bonds shall possess, at a minimum, a "A" rating based upon the most recent issue of the *Bests Insurance Guide*. The expense of these bonds shall be borne by the Contractor. If at any time a surety on any bond is declared a bankrupt or loses its right to do business in the state in which the work is to be performed or is removed from the list of Surety Companies accepted on Federal Bonds,

Contractor shall within ten calendar days after notice from the Owner to do so, substitute an acceptable bond (or bonds) in the form and sum and signed by other surety or sureties as may be satisfactory to the Owner. The premiums on bonds shall be paid by the Contractor. No further payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished an acceptable bond to the Owner.

- 8.72 Assignments Neither the Contractor nor the Owner shall sell, transfer, assign or otherwise dispose of the Contract or any portion thereof, or of his right, title or interest therein, or his obligations there under, without written consent of the other party. Nor shall the Contractor assign any monies due or to become due to him hereunder without the previous written consent of the Owner.

The Owner and Contractor each bind himself, his partners, successors and assigns and legal representatives to the other party hereto and to the partners, successors, assigns and legal representatives of the other party in respect to all covenants, agreements and obligations contained in the Contract Documents.

- 8.73 Indemnification To the fullest extent permitted by law, The Contractor shall indemnify and hold harmless the Owner and the Engineer and their agents and employees from and against all claims, damages, losses and expenses, including but not limited to: attorney's fees arising out of or resulting from the performance of the work, provided that any claims, damage, loss or expense: (1) 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 there from; and (2) to the extent it is caused by any negligent act or omission of the Contractor, his subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable. This obligation shall not be construed to negate, abridge or otherwise reduce any other right or obligation of indemnity, which would otherwise exist as to any party or person described herein.

In any and all claims against the Owner or the Engineer, or any of their agents or employees, by any employee of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation of benefits payable by or for the Contractor or any subcontractor under workmen's compensation acts, disability benefit acts or other employee benefits acts.

The obligation of the Contractor under this section shall not extend to the liability of the Engineer, his agents or employees arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications.

- 8.74 Separate Contracts The Owner reserves the right to let other contracts in connection with this project. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate his work with their requirements. If the proper execution or results of any part of the Contractor's work depends upon the work of any other contractor, the Contractor shall inspect and promptly report to the Engineer any defects in such work that render it unsuitable for such proper execution and results.

The Owner may perform additional work related to the project by himself, or he may let other contracts containing provisions similar to these. The Contractor shall afford the other Contractors who are parties to such contracts (or the Owner, if he is performing the additional work himself), reasonable opportunity for the introduction and storage of materials and equipment and the execution of work, and shall properly connect and coordinate his work with theirs.

If the performance of additional work by other contractors or the Owner is not noted in the Contract Documents prior to the execution of the contract, written notice thereof shall be given to the Contractor prior to starting any additional work. If the Contractor believes that the performance of additional work by the Owner or others involves him in additional expense or entitles him to an extension of the contract time, he may make a claim therefore as provided in Sections 8.61 and 8.62.

- 8.75 Subcontracting The Contractor may utilize the services of specialty subcontractors on those parts of the work which come under normal contracting practices or are typically performed by specialty subcontractors, provided the Contractor, as soon as practical after the award of the contract, shall furnish to the Owner and the Engineer in writing the names of the persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each of the principal portions of the work, together with their Arizona Contractors License Numbers and other pertinent information. This information is to be submitted to Owner on a form provided by Owner. The list of subcontractors and suppliers shall be submitted prior to the effective date of the Notice to Proceed. The Engineer will promptly reply to the Contractor in writing stating whether or not the Owner or the Engineer, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the Owner or Engineer to promptly reply shall constitute notice of no reasonable objection. The Contractor shall not contract with any such proposed person or entity to whom the Owner or Engineer has made reasonable objection and the Contractor shall not be required to contract with anyone to whom he has a reasonable objection. If the Owner or Engineer has a reasonable objection to any proposed person or entity, the Contractor shall submit a substitute to whom the Owner or the Engineer has no reasonable objection. The Contractor shall make no substitution for any subcontractor, person or entity previously selected if the Owner or Engineer makes reasonable objection to the substitution

The Contractor shall not award work to subcontractors, in excess of 49 percent of the Contract Price, without prior written approval of the Owner.

The Contractor shall be fully responsible to the Owner for the acts and omissions of his Subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

The Contractor shall not employ any subcontractors that are not properly licensed with Owner and the State of Arizona. Changes of subcontractors listed with the proposal shall be made only with the approval of the Owner.

Nothing contained in these Contract Documents shall be construed as creating any contractual relationship between any subcontractor and the Owner; the Contractor shall be as fully responsible to the Owner for the acts and omissions of subcontractors, and of persons employed by them, as he is for the acts and omissions of persons directly employed by him.

The Contractor shall, without additional expense to the Owner, utilize the services of specialty Subcontractors on those parts of the work which are specified or required by State or local laws to be performed by specialty subcontractors.

The Contractor shall be responsible for the coordination of all trades, subcontractors, material and people engaged upon this work. The Owner will not undertake to settle any differences between the Contractor and his subcontractors or between subcontractors.

The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the Contract Documents insofar as applicable to the work of subcontractors and to give the Contractor the same power as regards terminating any subcontract that the Owner may exercise over the Contractor under any provision of the Contract Documents.

Nothing contained in this Contract shall create any contractual relation between any subcontractor and the Owner.

- 8.76 Engineer's Authority The Engineer shall act as the Owner's representative during the construction period. He shall decide questions, which may arise as to quality and acceptability of materials furnished and work performed. He shall interpret the intent of the Contract Documents in a fair and unbiased manner. The Engineer will make periodic visits to the site and determine if the work is proceeding in accordance with the Contract Documents.

The Contractor will be held strictly to the intent of the Contract Documents in regard to the quality of materials, workmanship and execution of the work. Inspections may be made at the factory or fabrication plant of the source of material supply.

The Engineer shall not be responsible for the construction means, controls, techniques, sequences, procedures, or construction safety precautions and programs in connection with the work and he will not be responsible for the Contractor's failure to carry out the work in accordance with the Contract Documents. The Engineer shall not be responsible or have control or charge over the acts or omissions of the subcontractors, or any of their agents or employees, or any other person performing any of the work.

The Engineer shall promptly make decisions relative to interpretation of the Contract Documents.

The Engineer will have the authority to reject work, which does not conform to the Contract Documents. Whenever, in his opinion, he considers it necessary or advisable for the implementation of the intent of the Contract Documents, he will have authority to require special inspection or testing of the work in accordance with the other terms of this Contract and whether or not the work be then fabricated, installed or completed.

- 8.77 Land and Rights-of-Way Prior to issuance of Notice To Proceed, the Owner shall obtain all land and rights-of-way necessary for carrying out and for the completion of the work to be performed pursuant to the Contract Documents, unless otherwise mutually agreed.

The Owner shall provide to the Contractor information, which delineates and describes the lands owned and rights-of-way acquired.

The Contractor shall provide at his own expense and without liability to the Owner any additional land and access thereto that the Contractor may desire for temporary construction facilities, or for storage of materials.

- 8.78 Guarantee Except as otherwise specified, all work shall be guaranteed by the Contractor, including the work performed by his subcontractors, against defects resulting from the use of inferior materials, equipment, or workmanship for a period of one year from the date the Notice of Completion is issued by the Owner, or within a longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents.

If, within any guarantee period, repairs or changes are required in connection with guaranteed work, which, in the opinion of the Owner, is rendered necessary as the result of the use of materials, equipment, or workmanship which are inferior, defective, or not in accordance with the terms of the Contract, the Contractor shall, promptly upon receipt of notice from the Owner, and without expense: (1) place in satisfactory condition in every particular all guaranteed work, correcting all defects therein; (2) make good all damage to the building, site or work, or equipment or contents thereof, which in the opinion of the Owner, is the result of the use of materials, equipment, or workmanship which are inferior, defective, or not in accordance with the terms of the contract; and (3) make good any work or material, or the equipment and contents of the building, site or work disturbed in fulfilling any guarantee. If the Contractor, after notice, fails to proceed promptly to comply with the terms of the guarantee, the Owner may have the defects corrected and the Contractor and his surety shall be liable for all expense incurred. The performance bond shall remain in full force and effect through the guarantee period.

A. **GUARANTEE**

The Contractor agrees to execute a written guarantee to the Owner, in substantially the following form:

GUARANTEE FOR _____

We hereby guarantee that the improvement which we have installed, including the work of our subcontractors, for the Owner of project, specifically described as:

**6-1 WELL DRILLING
Project No. 26-U-001**

has been done in accordance with the contract drawings and specifications.

We agree to repair and replace any or all work included in said improvement, together with any other adjacent work which may be displaced or damaged by so doing, that may prove to be defective in its workmanship or material within a period of one year from date of acceptance of the above mentioned improvement by the Engineer on behalf of the Owner, ordinary wear and tear and unusual abuse or neglect excepted.

In the event of our failure to comply with the above mentioned conditions within a reasonable period of time (as determined by the Owner) after being notified in writing by the Owner, we do hereby authorize the Owner to proceed to have the defects repaired and made good at our expense, and we will honor and pay the costs and charges therefore upon demand.

Signed _____
(Contractor)

Local Representative to be contacted for service:

Name: _____

Address: _____

Phone No. _____ Fax _____

The guarantee form(s) shall be completed and returned with the acknowledgment of the Certificate of Completion.

The failure of the Contractor to execute, the guarantee shall not affect the right of the Owner to rely on and enforce the guarantee and the obligations respectively assumed by the Contractor under Section 8.77 hereof.

8.79 Arbitration If both parties mutually agree, all claims, disputes and other matters in question arising out of, or relating to, the Contract Documents or the breach thereof, except for claims which have been waived by the making and acceptance of final payment as provided by Section 8.66, may be decided by arbitration in accordance with the American Arbitration Association or any other similar body. The foregoing agreement to arbitrate shall be specifically enforceable under the prevailing arbitration law (§12-1501 et. seq.) of the State of Arizona. The award rendered by the arbitrators shall be final, and judgment may be entered upon it in any court having jurisdiction thereof.

Notice of the demand for arbitration shall be filed in writing with the other party to the Contract Documents and with the American Arbitration Association and a copy shall be filed with the Engineer. The party filing for arbitration may select which arbitration service to use. Demand for arbitration shall in no event be made on any claim, dispute or other matter in question which would be barred by the applicable statute of limitations.

The Contractor shall carry on the work and maintain the progress schedule during any arbitration proceedings, unless otherwise mutually agreed in writing.

The provisions of the Contract pertaining to arbitration are not binding upon Engineer, and Engineer cannot be compelled to participate against his will in an arbitration arising out of a dispute over the Contract or Contract Documents unless Engineer so consents in writing to be a party to the arbitration.

In the event either Contractor or Owner refuse to consent to arbitration of a claim, dispute, or any other matter in question arising out of, or relating to the Contract Documents or the breach thereof, then either party of the Contract may initiate a lawsuit against the other to resolve any claims, disputes and/or other matters in question arising out of or in any way related to the Contract Documents or the alleged breach thereof. The parties agree that any lawsuit filed by either party to the contract against the other shall be filed in the Mohave County Superior Court, State of Arizona.

8.80 Taxes and Charges The Contractor shall pay all State and local sales and use taxes on items, and in a manner as required by the laws and statutes of the State of Arizona and its political subdivisions. The Contractor shall withhold and pay any and all withholding taxes, whether State or Federal, and pay all Social Security charges, State Unemployment Compensation charges, industrial insurance, workers compensation charges, and pay or cause to be withheld, as the case may be, any and all taxes, charges, or fees, or sums whatsoever, which are now or may hereafter, be required to be paid or withheld under any laws.

8.81 Miscellaneous Conditions In the event that either party to the Contract is required to institute arbitration or litigation to enforce its rights under the terms of the Contract, then the prevailing party in the arbitration or litigation shall be entitled to recover all costs and attorney's fees incurred.

In the event that any provision contained in the contract is found to be contrary to the applicable law, then it shall be severed and the remaining provisions of the contract shall remain in full force and effect.

The Contract shall be governed by the law of the State of Arizona.

8.82 Conflicts within the Plans or Specifications In the event that a conflict is discovered between sections of the Specifications or between the Plans and the Specifications, the following list of priority shall be used to resolve the conflict:

- A. Executed Change Orders
- B. Addenda
- C. Contract
- D. Special Provisions
- E. General Conditions
- F. Invitation to Bid & Bid Documents
- G. Supplemental Specifications
- H. Technical Specifications
- I. Plans
- J. Referenced Standard Specifications or other Documents

8.83 Nondiscrimination The Contractor, with regard to the work performed pursuant to this Contract, shall not discriminate on the grounds of race, color, sex, religion, creed, age, physical or mental disability, or national origin or ancestry in any contracts with the public and in the selection and retention of employees or subcontractors, nor in the procurement of materials and leases of equipment.

8.84 Integration This Contract represents the entire agreement between the parties hereto and supersedes any and all prior negotiations or representations, either written or oral.

Amendments or modifications to the contract shall be in writing, signed by both parties, or by Change Orders.

The Contract Documents shall not be construed to create any contractual relationship of any kind between the Engineer and the Contractor, but the Engineer shall be entitled to performance of obligations intended for his benefit, and to the enforcement thereof.

Nothing contained in the Contract Documents shall create any contractual relationship between the Owner or the Engineer and any subcontractor or sub-subcontractor.

- 8.85 Hazard Communication Program All contractors working on Owner projects shall submit a copy of their hazard communication plan to the Fire Prevention Office and the Owner's Risk Management Division prior to commencement of work on any project. This will ensure that other individuals on the job site are not unknowingly exposed to a hazardous substance or chemical.

The Fire Prevention Office shall be provided a list of the hazardous substances and the material safety data sheets that are applicable to the work areas of those contract employees.

All contract labor within Owner facilities will be treated the same as regular employees with regard to this hazard communication standard.

9.0 Special Provisions

- 9.1 Scope These Special Provisions supplement and modify the General Conditions, Special Provisions, Technical Specifications, Supplemental Specifications and Construction Drawings (Plans). All requirements and provisions of the General Conditions, Special Provisions, Technical Specifications, Supplemental Specifications and Plans apply except where modified by these Special Provisions.
- 9.2 Project Description The Project involves the installation of one new production well for the Bullhead City public water supply system.
- 9.3 Definitions Of Terms Wherever in these documents the word "Owner" appears, it shall be understood to mean the City of Bullhead City, Arizona. Wherever in these documents the word "Contractor" appears, it shall be understood to mean the party or parties contracting with the Owner to perform the work. Wherever in these documents the word "Engineer" appears, it shall be understood to mean the Engineer as defined in Section 8.18, General Conditions.
- 9.4 Preconstruction Conference Within ten calendar days after the Contract has have been awarded, but before the start of construction, the Engineer will schedule a conference to be held at the site of the project for the purpose of discussing matters as project supervision, onsite inspections, progress schedules and reports, payrolls, payments to Contractors, equal employment opportunity, contract change orders, insurance, safety, and any other items pertinent to the project. The Contractor shall arrange to have all supervisory personnel connected with the project on hand to meet with the representatives of the Owner and the Engineer.
- 9.5 Compliance With Laws And Labor Material Requirements The Contractor shall conduct the work in compliance with all existing state and national laws and county and municipal ordinance and regulations limiting or controlling the work in any manner. Particular attention is called to the following State of Arizona laws:
- A. Employment of aliens on Public Works prohibited, Arizona Revised Statute § 34-301 and Residence requirements for employees, Arizona Revised Statute § 34-302.
 - B. Workman's Compensation Insurance. All personnel working on the project shall be covered by Workmen's Compensation Insurance as provided or approved by the Arizona Industrial Commission in accordance with Arizona Revised Statute § 23-901 et. seq.
- 9.6 Copies Of Documents The Owner will furnish to the Contractor up to two copies of the Contract Documents in hard copy (paper) format as are reasonably necessary for the execution of the work. Additional copies will be furnished, upon request, for the cost of reproduction.
- 9.7 Drawings Of Record Two additional sets of Contract Documents will be provided to the Contractor at no charge for the purpose of showing the work as actually installed. These Contract Documents are to be kept at the job site, maintained in good condition, and marked daily by the Contractor as the work proceeds. The Contract Documents shall be kept available for inspection by the Owner at all times, and shall be kept up to date.
- 9.8 Contract Time The contract time for this project is 180 Calendar days or less after Notice to Proceed.
- 9.9 Surveys The Contractor shall layout the work, in accordance with the drawings, shall establish all necessary lines, etc., required to complete the work in accordance with the Contract Documents. The Contractor shall employ an experienced and competent Arizona Registered Land Surveyor (R.L.S.) satisfactory to the Owner to layout the work and to verify lines and elevations as the work progresses. Surveying shall be considered incidental to the various Contract bid items and no additional compensation will be made for this work.

- 9.10 Weather Conditions In the event of temporary suspension of work, or during inclement weather, or whenever the Owner shall direct, the Contractor will and also cause his subcontractors to protect carefully his and their work and materials against damage or injury from the weather. If, in the opinion of the Owner, any work or materials is damaged or injured by reason of failure on the part of the Contractor or any of his subcontractors to protect his work, the materials shall be removed and replaced at the expense of the Contractor.
- 9.11 Submittals Prior to construction and as soon as possible, the Contractor shall supply all submittals required by the Technical Specifications or as requested by the Owner.
- 9.12 Inspection Of The Work The Owner intends to assign an inspector for the project. The inspector will be available for a 40 hour period during the week from Monday through Friday during the period of the Contract. If the Contractor elects to work outside the 40 hour week that occurs between Monday through Friday, such as Saturday, Sunday or legal holidays, in accordance with Section 8.62 of the General Conditions, the Contractor will be responsible for all inspection, engineering, and testing costs incurred during that period. For any inspection work performed on Saturday, Sunday, or local municipal holidays, the minimum chargeable time shall be four hours. The Owner reserves the right to deduct these additional inspection, engineering, and testing costs directly from the Contractor's payments.

Additional inspections are required for all building-related activities, and must be scheduled and coordinated through Owner's Building Division utilizing an automated inspection request system. To schedule an inspection on an active permit please call the Owner's inspection request line at (928) 763-0172 a minimum of 24 business hours in advance. The Contractor is responsible for scheduling and coordinating all inspections with the Owner's project manager, staff and other agencies.

9.13 Water, Power, And Sanitation

- A. WATER Water is available from the water utility companies located in the City of Bullhead City at a cost to be determined by the appropriate company and payable by the Contractor. The Contractor shall make all arrangements to obtain a hydrant meter, from the appropriate utility company, for the purpose of metering the use of water on the project. The Contractor shall adhere to all conditions stated in the Meter Application, including payment of a deposit for the meter, return of the meter to the water utility company each month during the project for reading, and notification to the water utility company prior to any change in the location of the hydrant meter. The maximum water to be drawn off a hydrant at any time will be determined by the water utility company. Water shall only be drawn off hydrants approved by the appropriate water utility company or their authorized representative.
- B. POWER All power for lighting, operation of Contractor's plant or equipment or for any other use as may be required for proper completion of the work to be performed under the provisions of these Contract Documents, shall be provided by the Contractor at his sole cost and expense.
- C. SANITATION Contractor is responsible for acquiring and maintaining all restroom facilities in accordance with all applicable Federal, State, and Local laws.

9.14 Burning Of Vegetation No burning of vegetation will be allowed.

9.15 Materials Testing

- A. CONSTRUCTION TESTING The materials and workmanship provided during construction will be tested on a regular basis by the Engineer, provided, however that the Contractor shall provide all sampling and testing required to confirm that the products and materials to be provided meet the contract requirements, prior to start of construction. The Engineer shall not provide any sampling or testing prior to start of construction to determine the acceptability of the products and materials to be provided by the Contractor. It shall be the responsibility

of the Contractor, at no additional cost, to provide material samples for testing at the Owner's request. The Contractor shall include with its submittals copies of all test results confirming the acceptability of the products and materials to be utilized on the project.

The Contractor shall be responsible for charges resulting from failed tests; costs for retesting shall be based upon hourly and/or individual test rates. In the event any portion of the project is rejected because of substandard work, all materials testing, engineering, and inspection costs associated with corrective measures shall be chargeable to the Contractor at the current respective rates.

The Contractor shall provide all sampling and testing necessary for its performance of the work before and during construction to insure its compliance with the Contract Documents, and any testing shall be considered incidental to the various Contract bid items and no additional compensation will be made, and no testing provided by the Owner shall relieve the Contractor from its quality control/quality assurance obligations. The Owner shall not be responsible for providing any sampling and testing before or during construction to assure the quality of the Contractor's work and materials; the Owner's only responsibility is to provide the acceptance testing the Engineer deems necessary to insure that the finished work products meet the contract requirements.

- B. PRELIMINARY MATERIALS TESTING All preliminary materials testing and mix design testing required by the specifications to ensure materials and mix designs are suitable for project use will be the responsibility of the Contractor at no additional cost to the Owner.

9.16 Cleanup And Pollution Control

- A. GENERAL The Contractor shall be responsible for the removal of all debris, litter and waste from the job site(s) and/or equipment maintenance area and the restoration of any and all areas affected, directly or indirectly by the construction, transportation of equipment or materials and/or by the acts of neglect or omission by his employees. All trucks carrying debris, dirt or aggregate base course shall be covered to prevent airborne pollutant (dust).

All debris, litter, etc., shall be disposed of in accordance with prevailing ordinance or law. Open burning of trash, debris, etc., will not be permitted.

Clean-up operations shall be on a daily basis. All pavement, concrete, brush, rocks, excess materials, etc. accumulated or removed during the course of construction must be disposed of in those areas designated by the Engineer or his authorized representative, including but not limited to the Mohave County Landfill. All costs for disposal, including gate or tipping fees, etc. are the responsibility of the Contractor. This material must be disposed of within ten calendar days of time of removal. If the areas in question are not cleaned up to the satisfaction of the Engineer, progress payments will be withheld until clean-up is completed and approved by the Engineer.

- B. TEMPORARY FACILITIES The Contractor shall provide temporary mailboxes and traffic control signs where necessary until completion of backfilling and clean-up.
- C. SOLID WASTES All solid wastes shall be removed and disposed of in accordance with prevailing ordinance or law. Clean-up shall be completed on a daily basis. All costs for disposal shall be the responsibility of the Contractor, and shall be considered incidental to the costs of the various bid items.

All spilled paving and concrete material shall be removed and disposed of prior to final acceptance and payment.

- D. MAINTENANCE AREAS Maintenance areas shall be kept clean during construction and shall be free of litter at all times. All empty containers, debris, waste, etc., shall be removed

and disposed of prior to final acceptance. Upon inspection by the Engineer, the Contractor may be required to dress the surface of the ground, dependent upon the extent of spillage of petroleum products on the surface. If so directed, the dressing shall consist of scarifying the surface to a depth of six (6) inches and moving and compacting the soil in such a way as to blend the spill areas into clean soil and restore the surface by partial compaction.

- E. POLLUTION The Contractor shall be held responsible for acts leading to pollution of water, air or land by any means.

Open burning of trash, debris, etc., will not be permitted anywhere in the City limits.

The discharge of any pollutants upon the surface of the ground, or into any stream, ravine, wash or body of water which may result in pollution of the public water supply, or of groundwater contributory thereto, will not be permitted.

Violation of these conditions will be cause for the termination of work, and possible legal action.

- F. REMOVAL AND REPLACEMENT OF SIGNS, MAILBOXES, ETC It is the responsibility of the Contractor to remove all poles, etc. which are located within the construction area and replace them at the time of backfilling and clean-up in the locations determined by the Engineer. In the case of landscaping or other private items located in the construction area, the Contractor shall hand-deliver a written notice to all business, residences and public facilities in that area stating his intentions to perform work and shall do so at least five calendar days prior to work commencing. If, at the time of construction these items are still in the construction area, the Contractor is to remove and dispose of them properly. All signs and mailboxes shall be permanently installed within 48 hours of construction of sidewalk.

- G. NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL PERMIT

The Contractor shall assume all responsibility for complying with the requirements of the NPDES Phase II Construction Program and must submit an AZPDES permit to ADEQ that meets all the requirements of a General Permit for Discharge from Construction Activities to Waters of the United States and all ADEQ requirements.

At the time of the preconstruction conference, the Contractor shall submit, for the Engineer's approval, a program which includes all the measures, which the Contractor proposes to take for the construction of permanent erosion control work specified in the contract and all the temporary control measures to prevent erosion and pollution of streams, lakes and reservoirs.

Permanent erosion control work and pollution prevention measures shall be performed at the earliest practicable time consistent with good construction practices. Temporary work and measures are not meant to be performed in lieu of permanent work specified in the Contract.

Construction of drainage facilities as well as the performance of other contract work, which will contribute to the control of erosion and sedimentation, shall be carried out in conjunction with earthwork operations or as soon thereafter as possible.

Except for that approved in writing by the Engineer, the Contractor shall perform no clearing and grubbing or earthwork until the Contractor's program has been approved.

If in the opinion of the Engineer, clearing and grubbing, excavation, or other construction operations are likely to create an erosion problem because of the exposure of erodible earth material, the Engineer may limit the surface area to be disturbed until satisfactory control measures have been accomplished. Unless otherwise permitted by the Engineer, the

Contractor shall not expose an area of erodible earth material greater than 217,800 square feet at any one location.

The Engineer may order the Contractor to provide immediate measures to control erosion and prevent pollution. Measures may involve the construction of temporary berms, dikes, dams, sediment basins and slope drains; the use of temporary mulches, mats and seeds and the use of other devices, methods, items, etc., as necessary.

At any time the Contractor proposes to change its schedule of operations, the Contractor shall review and update its erosion and pollution control program and submit it to the Engineer for approval.

The Contractor shall not be entitled to additional compensation or an extension of contract time for any delays to the work because of the Contractor's failure to submit an acceptable erosion and pollution control program.

Permanent erosion control and pollution prevention work specified in the Contract, which is to be accomplished under any of the various Contract items will be paid for by the bid item and considered incidental to that work. Any additional work required by the Owner will be paid for by the Force Account set up for this work.

The cost of any erosion control and pollution prevention work which may be proposed by the Contractor in his/her program, in addition to that specified in the contract, will be considered as included in the prices bid for contract items. There is no separate payment for this item.

Temporary erosion control and pollution prevention work necessary for the Contractor to complete the various contract bid items shall be considered incidental to the bid items and the Contractor shall not be entitled to any additional compensation or an extension of contract time for any delays to the work to perform the temporary work.

- 9.17 Dust Control It shall be the Contractor's responsibility to provide adequate water for dust control. It is imperative that the air quality standards are maintained. In addition, dust could be quite hazardous in the everyday operations. It shall be the Contractor's responsibility to ensure that all regulations for air quality and safety are met.
- 9.18 Supervisory Personnel It is the intent of these specifications to provide a completed project that will in every way reflect the work of competent journeyman mechanics in the various trades represented. The Contractor shall ensure that each portion of the work is supervised by a qualified person, well versed in the operation of the various tools required for the trade, the method in which the work is to be done, and knowledge of the general requirements of the construction work. All work is to be done in accordance with the latest methods devised for such work and consistent with acceptable national industry standards to ensure the highest quality product.
- 9.19 Safety Requirements The Contractor shall comply with all pertinent provisions of the Department of Labor "Safety and Health Regulations for Construction" (29 CFR Part 1518, 36 CFR 7340), with additions or modifications thereto, in effect during construction of this project.

THE FOLLOWING MEASURES OR PROVISIONS ARE TO BE ADHERED TO AT ALL TIMES DURING THE CONSTRUCTION OF THIS PROJECT:

- A. All heavy construction machinery to include trenching machines, bulldozers, backhoes, etc., must be equipped with a roll bar meeting the requirements of the above regulation.
- B. Safety helmets will be worn by all personnel working at the site. In addition, all spectators will be required to wear safety helmets in construction zone.
- C. Steel toe safety shoes or boots will be worn by all personnel working at the site.

D. Shoring of trenches and/or excavations per the Department of Labor/OSHA requirements.

9.20 Preservation Of Bench Marks And Monuments The Contractor shall exercise caution to ensure that permanent bench marks, survey monuments, established property corners, survey lines, and points are not damaged or disturbed by this work. If any survey monuments, property corners, survey lines or points are damaged or disturbed, the Contractor's representative shall immediately notify the inspector. All survey monumentation damaged or disturbed by this work shall be replaced by an Arizona Registered Land Surveyor (R.L.S.) after completion of the pavement removal and replacement operations and installation of underground facilities. A record of all monuments that have been disturbed and replaced must be recorded with the Mohave County Recorder's office and copy submitted to the Owner's Engineering Division. All costs incurred to re-establish and record points shall be the responsibility of the Contractor.

9.21 Disposal Of Excess Material Excess soil and unsuitable materials shall be removed from the site by the Contractor at his own expense and disposed of in accordance with the Contract Documents.

9.22 Reference Standard Specifications Where standard specifications or testing methods have been referred to, such as ASTM or AASHTO, the intent is to refer to the latest applicable issue or revision of such specifications or testing methods. The following abbreviations are used in these specifications.

AWWA	American Waterworks Association
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AI	Asphalt Institute
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute (formerly the USA Standards Institute)
ASTM	American Society for Testing and Materials
NSF	National Sanitation Foundation
SPWC.	Standard Specifications for Public Works Construction. (Wherever written herein shall mean "Maricopa Association of Governments, Arizona Specification for Public Works Construction".)
APWA	American Public Works Association

The governing specifications for this project shall be the Maricopa Association of Governments (MAG) UNIFORM STANDARD SPECIFICATIONS for PUBLIC WORKS CONSTRUCTION, 1998 Arizona including revisions through 2007, MAG UNIFORM STANDARD DETAILS for PUBLIC WORKS CONSTRUCTION, 1998 Arizona including revisions through 2008, the Manual of Uniform Traffic Control Devices (MUTCD) 2003, ADOT Traffic Control Manual for Hwy Construction (Supplement) 1996, UNLESS OTHERWISE NOTED HEREIN. Reference: ARIZONA DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS for ROAD AND BRIDGE CONSTRUCTION 2008.

9.23 Codes, Ordinances And Local Specifications All work under this project shall be performed in strict accordance with these specifications and the Standard Specifications for Public Works Construction (SPWC). Where any conflict occurs between these plans and specifications and the local codes and ordinances in effect at the time, applicable codes and ordinances shall take precedence over these plans and specifications only if these plans and specifications are inferior as to materials and workmanship called for by the codes and ordinances.

9.24 Interfering Structures And Utilities The Contractor shall notify Arizona Blue Stake (1-800-782-5348) at least three working calendar days prior to any excavations.

The Contractor shall exercise all possible caution to prevent damage to existing structures and utilities, whether above ground or underground. The Contractor shall notify all utility offices concerned at least 72 hours in advance of construction operations in which a utility's facilities may be involved.

Any structure or utility damage caused by the work shall be repaired or replaced in a condition equal to or better than the condition prior to the damage. Repair or replacement shall be accomplished at the Contractor's expense without additional compensation from the Owner.

If interfering structures or installations such as, but not limited to, vaults, manholes, valves, utility poles, guy wires, or anchors are encountered, the Contractor shall notify the Engineer and contact the appropriate utility or structure owner at least seven calendar days in advance of construction to arrange for protection or relocation of the structure.

The Contractor shall remove, protect and/or replace all existing structures, utilities or other improvements and similar items within the proposed improvements at his own expense without additional compensation from the Owner unless specifically provided for as a pay item of work by the specifications or as otherwise provided for in the Plans. Replacement shall be in a manner and in a condition at least equivalent to, or better than, the original condition.

If the Contractor encounters existing facilities which will prevent the construction of any facility and which are not properly shown on the Plans, he shall notify the Owner before continuing with the construction in order that the Owner may make any field revisions as necessary to avoid conflict with the existing structure. The cost of waiting or "down" time during field revision shall be borne by the Contractor without additional cost to the Owner. If the Contractor fails to notify the Owner when an existing structure is encountered, but proceeds with the construction despite this interference, he does so at his own risk. In particular, when the location of the new construction will prohibit the restoration of existing structures to their original condition; the Contractor shall notify the Engineer and contact the utility or structure owner so a field relocation may be made if possible to avoid the conflict.

In the event of interruption to any utility service as a result of accidental breakage or as a result of being exposed or unsupported, the Contractor shall promptly notify the proper authority. He shall cooperate with the said authority in restoration of service as promptly as possible and shall bear all costs of repair. In no case shall interruption of any utility service be allowed to exist outside working hours unless prior approval of the Owner is received.

Neither the Owner nor its officers or agents shall be responsible for damages to the Contractor as a result of the locations of the water and sewer lines or utilities being other than those shown on the Plans or for the existence of water, sewer lines or utilities not shown on the Plans.

- 9.25 Air Quality – Operating Permits The Contractor may be required to obtain registration certificates and/or operating permits for sources of air pollution.

The Owner will not require an Air Quality Permit for this project. The Contractor will be responsible for obtaining any State or Federal permits associated with its construction activities on the project.

Information concerning these certificates and permits may be obtained from:

The Office of Air Quality
Arizona Department of Environmental Quality
P.O. Box 600
Phoenix, AZ 85001-0600
(602) 207-2300

- 9.26 Adjust Utilities To Finished Grade All manhole rims, valve boxes, meter boxes, utility vaults, etc., are to be set to finished grade. The Contractor shall adjust sewer and water facilities to finished grade in accordance with the specifications. Unless otherwise indicated on the drawings, the adjustment of all utilities shall be considered incidental to other items and the Contractor shall not be entitled to any additional compensation or an extension of contract time for any delays to the work to perform the

work. It shall be the responsibility of the Contractor to coordinate with the various private utility companies so that they can adjust their facilities to finished grade at an appropriate time.

- 9.27 Safety, Health And Sanitation Provisions The Contractor shall provide and maintain in a neat, sanitary condition such accommodations for the use of his employees as may be necessary to comply with the requirements and regulations of the Arizona State Department of Health.

The Contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions, on his own responsibility or as the Owner may determine, reasonably necessary to protect the life and health of employees on the job, the safety of the public and to protect property in connection with the performance of the work covered by the contract.

Precaution shall be exercised by the Contractor at all times for the protection of persons (including employees) and property. The Contractor shall comply with the provisions of all applicable laws, pertaining to such protection including all Federal and State occupational safety and health acts, and standards and regulations promulgated there under.

- 9.28 Public Safety And Traffic Control Every attempt shall be made to provide public safety during the construction of the project. Traffic control shall be performed in accordance with the latest edition of the Manual on Uniform Traffic Control Devices (M.U.T.C.D.), published by the Federal Highway Administration (FHWA).

During all construction operations, the Contractor shall construct and maintain facilities as may be required to provide access for all property owners to their property. No person shall be cut off from access to his residence or place of business for a period exceeding two hours, unless the Contractor has made a special arrangement with the affected persons. It shall be the Contractor's responsibility to notify all adjacent property owners of the construction activity and the schedule of those activities prior to any work being performed.

The Contractor shall submit for approval a traffic control and barricade plan within ten calendar days of receipt of Notification of Award of Contract. There shall be no deviations from the approved barricade plan unless a revised barricade plan is submitted and approved. The Contractor shall issue a news release once a week for duration of the project. The release will be published in Sunday's newspaper and shall indicate the area in that the Contractor will be performing work for that week.

Businesses must be notified 48 hours prior to any restrictions on normal parking areas used by their employees or patrons.

The Contractor shall contact, cooperate with, and give notice to each resident, homeowner, business or school that will be affected by any part of the construction process, particularly concerning temporary interruptions to vehicular access.

Written notice of the approximate schedule and explanation of work shall be given to each resident, homeowner, business or school at least five calendar days prior to commencement of work in the area. Verbal door-to-door communication shall be made at least 24 hours prior to construction to remind all affected parties of the construction to take place.

The Owner shall receive a copy of all notifications to residents. In the event of complaints by residents, the Owner may require the Contractor to provide documentation (i.e. check list) showing the date & time of the verbal door-to-door communication.

In addition, the Contractor is responsible to answer and resolve any conflicts that may arise between a homeowner or business owner and himself during the construction process.

The Contractor shall provide and station competent flaggers whose sole purpose shall be to direct the movement of public traffic through or around the work. Proper advanced warning signs shall be in place when flaggers are working and removed when work requiring flaggers is completed. Flaggers

must be used to assist trucks for safe ingress and egress whenever truck movements may interfere with safe passage through the work zone.

All traffic control devices that are not in use or will not be used for a period greater than 72 hours or that are determined by the Engineer to be unnecessary, confusing, or causing an unsafe condition, shall be removed by the Contractor from the public right-of-way immediately upon notification by the Engineer.

Every attempt shall be made to provide public safety during the construction of the project. Traffic control shall be performed in accordance with Section 401 of the most current version of the Maricopa Association of Governments (MAG) Uniform Standard Specifications for Public Works Construction and these Contract Documents. No person shall be cut off from access to his residence or place of business for a period exceeding six hours, unless the Contractor has made a special arrangement with the affected persons. In addition, no work will be scheduled which will interrupt regular trash pickup to either residential or commercial properties. It will be the Contractor's responsibility to coordinate his activities with the local trash haulers.

No streets, avenues, boulevards or cul-de-sacs will be closed to traffic unless prior arrangements have been made and approval has been obtained from the Engineer.

9.29 Temporary Facilities On Site

- A. General Not all of the temporary facilities on site referred to in this subsection are anticipated for this project. Contractor is responsible for identifying to the Owner the temporary facilities required on site. Except as otherwise provided, the Owner shall bear no costs of temporary facilities and their removal.
- B. Temporary Utility Services The Contractor shall provide temporary electric power as necessary for the execution of the Work, including that required by all subcontractors. He shall make the necessary arrangements with Owner, shall bear all costs for these temporary services and shall furnish and install all necessary transformers, metering facilities and distribution centers from branch circuits as he may require.

The Contractor shall provide lighting and outlets in temporary structures throughout the project as may be required for safety, proper performance and inspection of the work. If operations are performed during hours of darkness, or if natural lighting is deemed insufficient by Owner, the Contractor shall provide adequate floodlights, clusters and spot illumination. The use of permanently installed lighting fixtures, lamps and tubes for work will not be permitted except by special permission of Owner. The Contractor shall make arrangements with subcontractors for electrical services and lighting as may be necessary in the performance of their work.

Temporary water service lines, if required, shall be installed and removed by the Contractor, who shall pay all charges for use of the water, making the connections, running the temporary lines, removing the temporary lines at the completion of the work and disconnecting the services. All relocations required to clear the work of others shall be performed by the Contractor when requested by the Owner.

- C. Temporary Structures Prior to starting Work, the Contractor shall, as directed by Owner, provide and maintain suitable temporary office facilities for the duration of the project as required for the Contractor's project administration; and all necessary sheds and facilities for the proper storage of tools, materials and equipment employed in the performance of the work.
- D. Toilet Facilities The Contractor shall provide and maintain temporary toilet facilities for the duration of operations, which shall be maintained in a clean and sanitary condition acceptable to Owner and in full compliance with applicable regulations of any public authority.

- E. Telephones The Contractor shall provide, maintain and pay for telephone services for the duration of the work as required for the Contractor's operation.
- F. Fence and Barricades The Contractor shall provide protective fences and barricades as he may deem necessary for public safety and to protect his storage areas and the work in place. The location and appearance of all fences shall be subject to the approval of the Owner.
- G. Contractor Parking The Contractor shall not park his equipment, nor allow his personnel to park, in any area except those specifically designated by the Owner.
- H. Temporary Living Quarters Temporary living quarters shall not be allowed on the job site or on publicly owned properties. There will be strict adherence to Owner's Zoning Code for the area in question.
- I. Removal of Temporary Construction The Contractor shall remove temporary office facilities, toilets, storage sheds and other temporary construction from the site as soon as, in Owner's opinion, the progress of Work permits. He shall recondition and restore those portions of the site occupied by the same to a condition equal to or better than it was prior to construction.

9.30 Access To Washes

- A. The Contractor shall have access to the washes via public streets and/or private easements only. For the purposes of this subsection, "private easement" means an agreement by and between the Contractor and a property owner, in writing authorizing the Contractor to travel across the property owner's real property in order to have ingress or egress to a wash or portion thereof. Access agreements, if any, shall be filed with the Owner's Public Works Director before the Contractor may exercise the rights there under granted. Access to any wash or portion thereof by any means not in compliance with the terms of this subsection shall be deemed a trespass and a breach of the terms of the Contract.
- B. Violations of the provisions of subsection (A) hereof, shall entitle the Owner to deduct the sum of One Thousand Dollars (\$1,000.00) from the monies due to Contractor as and for liquidated damages for each violation. For the purposes of this subsection, each entry by a vehicle upon land for which Contractor has not received permission to enter shall be deemed a separate violation of subsection (A) hereof.

9.31 Coordination And Cooperation With Utility Companies And Other Trades

- A. Coordination/Interruption The Contractor is responsible to coordinate work with all utility companies and other trades, on or affecting the job, for an efficient and effective execution of the complete project. The Contractor shall carefully examine all work that may conflict, and plan removal and/or installation details in advance of the construction to avoid any conflict. Failure on the Contractor's part to coordinate with any and all utilities, public or private, shall preclude the Owner's consideration for additional time or cost.
- B. Permission Required Utility mains and utility service to buildings shall not be cut off or otherwise interrupted without the Contractor obtaining permission from the Owner in each and every instance.
- C. Scheduling of Interruptions Where utilities serve facilities or buildings in use, interruptions in service shall be scheduled during the hours when the facility is not in operation. Any overtime costs occasioned thereby shall be regarded as incidental to, and included within, the contract sum.

- D. General Requirements Prior to interrupting any utility service, the Contractor shall ascertain that he has the proper materials, together with adequate workmen and equipment, to complete the work with a minimum of delay.
- 9.32 Review Of Project Site The Contractor shall be responsible for reviewing the entire extent of the proposed project, and assuring a full understanding of the existing conditions of the sites. No allowances will be made after bidding for conditions at the site, and the Contractor shall be responsible for furnishing all labor and materials necessary to carry out the provisions of the Contract.
- 9.33 Owner Contingency

PART 1 - GENERAL

1.1 - Description of Work

The work to be performed in accordance with this article includes additional work that is outside the general scope of the proposed project. The work to be performed shall be specifically requested in writing by the Owner or the Engineer and the work shall not be performed until authorized by the Owner in writing, in accordance with subsection 3.2 of this Section 9.33. As the project is completed, it is anticipated that the Owner may request additional work to be performed that currently is not a part of this contract and it is the intent that the requested work shall be performed in accordance with this article.

PART 2 - MATERIALS

2.1 - General

Any materials utilized under this article shall conform specifically with the appropriate Materials section of these specifications unless the Owner specifically requests in writing a deviation from the specifications. If the materials are not covered by an appropriate specification of this document, then the Owner will provide a written specification for the materials requested

PART 3 - EXECUTION

3.1 - Workmanship

Furnish all materials, equipment and labor required to complete the work. All workmanship shall meet or exceed the appropriate specifications included in this document or any supplemental specifications that may be provided. Perform work in accordance with the contract plans or in accordance with any supplemental plans that may be provided by the Owner.

3.2 – Written authorization required before commencing work

No work to be paid for under this Owner Contingency article shall be performed until the Contractor has formally provided in writing to the Owner the appropriate documentation to confirm the cost, quality, quantity and any such changes in contract time as may be warranted by the additional work, and the owner has issued approval in writing to perform the work and the cost that will be paid for the work. The Owner shall have no responsibility to pay for any work performed by the Contractor under this article that has not received prior written authorization from the Owner.

PART 4 - MEASUREMENT AND PAYMENT

4.1 - Measurement

The method of measurement shall be in accordance with the appropriate specification or as included in specific written instructions from the Owner or the Engineer.

4.2 - Payment

Payment for work performed under this article shall be made for those items specifically requested in writing by the Owner. The value of any work performed in this article shall be determined by one or more of the following methods in the order of precedence listed below.

- A. Unit prices previously approved.
- B. An agreed lump sum.
- C. The actual cost for labor, materials, supplies, equipment and other services necessary to complete the work. In addition, there shall be added an amount to be agreed upon but not to exceed 15 percent of the actual cost of the work to cover the cost of general overhead and profit.

The amount specified for Owner Contingency in the Bid Documents is an estimate that is provided so each potential bidder has an equal opportunity in the bidding. The amount does not in any way represent what work may be requested or the quantity or value of the work. The Contractor shall only be compensated for the actual work requested and performed. A final Change Order will be issued to reflect the amount of work actually completed to adjust the final contract amount.

Payment for any additional work authorized by the Owner under this article shall be made under the bid item "Owner Contingency", and shall be assigned an alphabetical sub-item number, in ascending order, and indicated as such on the authorizing paperwork noted in sub-section 3.2 of this Section 9.33. All subsequent Progress Payment Applications shall include each authorized Owner Contingency sub-item, and the remaining funds in the Owner Contingency main bid item (i.e. the difference between the original Owner Contingency in the project less all Owner Contingency sub-items authorized by the Owner) shall be indicated in the Progress Payment Application under the original bid item number for Owner Contingency. At no time shall the sum of the Owner Contingency remaining funds and all authorized sub-items exceed the total cost of the original Owner Contingency main bid item indicated in the Bid Schedule (Article 3).

10.0 TECHNICAL SPECIFICATIONS

The Technical Specifications issued for this project titled “6-1 WELL DRILLING” consisting of 65 pages and dated April 24, 2023 are incorporated herein by this reference and are an integral part of the Contract Documents for this project.



BULLHEAD CITY

TECHNICAL SPECIFICATIONS

6-1 WELL DRILLING

**BULLHEAD CITY
6-1 Well Drilling**

**CONTRACT DOCUMENTS
VOLUME 1**

TABLE OF CONTENTS

TECHNICAL SPECIFICATIONS

The following specifications are contained within this Document:

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01 29 00	-	PAYMENT PROCEDURES
01 33 00	-	SUBMITTAL PROCEDURES
01 50 00	-	TEMPORARY FACILITIES AND CONTROLS
01 77 00	-	CLOSEOUT PROCEDURES
33 21 13.01	-	WATER WELL MOBILIZATION
33 21 13.03	-	WATER WELL DRILLING
33 21 13.04	-	WATER WELL GEOPHYSICAL LOGGING
33 21 13.06	-	WATER WELL CASING
33 21 13.07	-	WATER WELL SCREEN AND GRAVEL PACK
33 21 13.08	-	WATER WELL GROUTING
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33 21 13.10	-	WELL PUMPING TEST
33 21 13.11	-	WATER WELL PLUMBNESS AND ALIGNMENT TEST
33 21 13.12	-	WATER WELL VIDEO INSPECTION
33 21 13.13	-	WATER WELL DISINFECTION

**SECTION 01 11 00
SUMMARY OF WORK**

PART 1 GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

- A. The work involves installing one new production well for the Bullhead City public water supply system. Well 6-1 will provide a new well supply location. This work includes drilling, construction, development, testing and disinfection of the new well. The intent of the project is to drill and construct the new water supply wells with a design capacity of 1,500 gpm or greater.
- B. Well 6-1 is to be constructed to the following design dimensions. The actual final depths shall be finalized by the Engineer from the pilot hole drilling results and provided to the Contractor within 5 days following pilot hole completion and receipt of the sieve analysis results.

Well Component	6-1
Depth of Conductor Casing (feet)	100
Pilot Hole (feet)	630
Final Casing Size (inches)	20
Top of Final Casing (feet)	-2
Bottom of Final Casing (feet)	320
Top of Screen (feet)	320
Bottom of Screen (feet)	610
Top of Sump (feet)	610
Bottom of Sump (feet)	620

Notes: All Depths Measured from Ground Surface

- C. The Work covered by these Contract Documents generally includes, but is not limited to, the following items. As applicable, the specification section providing the direction for each item is listed.

1. Preparation of and submittal for approval of all submittals required for this work. 01 33 00.
2. Mobilization and demobilization of all necessary personnel, equipment and materials for completion of the Work. 33 21 13.01.
3. Site preparations for Work, including initial clearing of the well site within the temporary construction limits, security fencing as required, and cleaning up the site. 33 21 13.01
4. Installation of 36-inch conductor casing and cement grout seal. 33 21 13.06.
5. Pilot borehole drilling. 33 21 13.03.
6. Sieve analysis. 33 21 13.03
7. Geophysical logging, caliper, and plumbness and alignment surveying of the pilot borehole. 33 21 13.04, 33 21 13.11.
8. Borehole reaming. 33 21 13.03.
9. Installation of 20-inch stainless steel well screen and carbon steel well casing coupled with a di-electric coupling. 33 21 13.07.
10. Installation of gravel pack between reamed borehole and 20-inch well screen. 33 21 13.07.
11. Installation of a grout seal from the top of the gravel pack to ground surface. 33 21 13.08.
12. Conducting air-lift swabbing and over-pumping development of new wells. 33 21 13.09.
13. All necessary arrangements for the discharge of water from the new well to the designated point of discharge in accordance with all Federal, State, and Local requirements, including installation and removal of the temporary piping. 33 21 13.09.
14. Conducting step-rate discharge testing at the new well. 33 21 13.10.
15. Conducting constant-rate discharge testing. 33 21 13.10.
16. Conducting final baseline surveying of the well including video logging and plumbness and alignment surveying. 33 21 13.12, 33 21 13.11.
17. Conducting final disinfection and capping of the well. 33 21 13.13.
18. Optional Existing Well 17-1 abandonment. 33 21 13.14.
19. Final site cleanup and restoration. 33 21 13.01.

1.02 TEMPORARY DISCHARGE OF WATER

- A. Water must be discharged on the site area so to flow to a natural discharge channel near to the well site. The Contractor shall obtain all necessary approvals with the appropriate Regulating Body.

1.03 WORK NOT COVERED BY CONTRACT DOCUMENTS

- A. The wellhead facilities and downhole pumps at the well site will be constructed under a separate construction contract after Contractor has completed the Work, cleaned up and demobilized from the well site.

END OF SECTION

AUGUST 25, 2025

SUMMARY OF WORK
01 11 00 - 3

SECTION 01 29 00
PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SUBMITTALS

- A. Informational Submittals:
 - 1. Application for Monthly Payment.
 - 2. Final Application for Payment.

1.02 APPLICATION FOR PAYMENT

- A. Transmittal Summary Form: Attach one Summary Form with each detailed monthly Application for Payment and include Request for Payment of Materials and Equipment on Hand as applicable. Execute certification by authorized officer of Contractor.
- B. Use detailed Application for Payment Form suitable to Engineer.
- C. Include separate line item for each Change Order and Work Change Directive executed prior to date of submission. Provide further breakdown of such as requested by Engineer.
- D. Preparation:
 - 1. Round values to nearest dollar.
 - 2. Submit Application for Payment, including a Transmittal Summary Form and detailed Application for Payment Form(s) as applicable, a listing of materials on hand as applicable, and such supporting data as may be requested by Engineer.

1.03 MEASUREMENT—GENERAL

- A. Weighing, measuring, and metering devices used to measure quantity of materials for Work shall be suitable for purpose intended and conform to tolerances and specifications as specified in National Institute of Standards and Technology, Handbook 44.
- B. Whenever pay quantities of material are determined by weight, weigh material on scales furnished by Contractor and certified accurate by state agency responsible. Obtain weight or load slip from weigher and deliver to Owner's representative at point of delivery of material.
- C. Units of measure shown on Bid Form shall be as follows, unless specified otherwise.

Item	Method of Measurement
EACH	Each—Field Count by Engineer
HOURL	Hour
LUMP SUM	As specified in Section 01210 of these specifications.
FEET	Linear Foot—Field Measure by Engineer

1.04 PAYMENT

- A. Payment for unit price items covers all the labor, materials, and services necessary to furnish and install the item, complete.
- B. Payment for unit prices shall include the following work. The significant sections listed are the specification sections that describe the majority of the work for each bid item. The Contractor acknowledges that certain miscellaneous work items not listed in the significant sections are also part of that Bid item if necessary to complete the work. The intent of the total of the Bid items is to provide for all work, labor, equipment, transportation, and materials, complete, whether specifically mentioned or not, so to provide the Owner with two new tested and functioning water wells. The Contractor agrees to accept as full payment the sum of these Bid item unit prices as full compensation for all work required by these Contract Documents.

Bid Item	Significant Sections	Payment Includes
Mobilization, Demobilization, Bonds, Insurance	33 21 13.01	Full payment for all mobilization and demobilization activities, all bonds and insurance as required by these specifications.
Site Preparation	33 21 13.01, 1 50 00	Prepare the site for equipment setup and drilling. Includes, temporary fencing, Engineers site office, miscellaneous grading, and all other work required to prepare the site for the work.
Drill Pilot Borehole	33 21 13.03	Includes all work to drill the pilot borehole as specified.
Ream 26-inch Borehole	33 21 13.03	Includes all work to ream the pilot borehole as specified.
Install 30-inch Conductor Casing and Cement Grout Seal	33 21 13.06	Includes all work to provide and install the 30-inch conductor casing as specified including all materials, equipment, drilling, and cementing.

Bid Item	Significant Sections	Payment Includes
Install 20-inch Well Casing	33 21 13.06	Includes all work to provide and install the 20-inch well casing as specified including all materials, equipment, and drilling.
Install 20-inch Well Screen	33 21 13.06	Includes all work to provide and install the 20-inch well screen as specified including di-electric coupling, all materials, equipment, and required components.
Install Gravel Pack	33 21 13.07	Includes all work to provide and install the gravel pack as specified including all materials, equipment, and required components.
Grout Well Casing	33 21 13.08	Includes all work to provide and install the grout seal for the well casing as specified including all materials, equipment, and required components.
Setup Water Discharge Equipment	33 21 13.09	Includes all work to provide and install the equipment for the well development and pumping tests generated water discharge as specified including all materials, equipment, labor, and required components.
Development of Well	33 21 13.09	Includes all work to provide and operate all well development equipment as specified including all materials, equipment, labor and required components to completely development each well.
Setup Pumping Test Equipment	33 21 13.13	Includes all work to provide and install the equipment for the well pumping tests as specified including all materials, equipment, labor, and required components.
Conduct Pumping Test	33 21 13.13	Includes all work to provide and operate all well pumping test equipment as specified including all materials, equipment, labor and required components to conduct the pumping tests complete.
Conduct Geophysical	33 21 13.04	Includes all work to provide all equipment, materials, and miscellaneous components to conduct

Bid Item	Significant Sections	Payment Includes
Logging Pilot Borehole		the pilot borehole geophysical logging as specified.
Conduct Alignment Survey	33 21 13.11	Includes all work to provide all equipment, materials, and miscellaneous components to conduct the alignment geophysical logging as specified.
Conduct Final Video Logging	33 21 13.12	Includes all work to provide all equipment, materials, and miscellaneous components to conduct the final downhole video logging as specified.
Disinfect Final Well	33 21 13.13	Includes all work to provide all equipment, materials, and miscellaneous components to conduct the final disinfection and capping of the well as specified.

1.05 NONPAYMENT FOR REJECTED OR UNUSED PRODUCTS

A. Payment will not be made for following:

1. Loading, hauling, and disposing of rejected material.
2. Quantities of material wasted or disposed of in manner not called for under Contract Documents.
3. Rejected loads of material, including material rejected after it has been placed by reason of failure of Contractor to conform to provisions of Contract Documents.
4. Material not unloaded from transporting vehicle.
5. Defective Work not accepted by Owner.
6. Material remaining on hand after completion of Work.

1.06 PARTIAL PAYMENT FOR STORED MATERIALS AND EQUIPMENT

- A. Partial Payment: No partial payments will be made for materials and equipment delivered or stored unless Shop Drawings and preliminary operation and maintenance data is acceptable to Engineer.
- B. Final Payment: Will be made only for products incorporated in Work; remaining products, for which partial payments have been made, shall revert to Contractor unless otherwise agreed, and partial payments made for those items will be deducted from final payment

END OF SECTION

AUGUST 25, 2025

PAYMENT PROCEDURES
01 29 00 - 5

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 DEFINITIONS

- A. Action Submittal: Written and graphic information submitted by Contractor that requires Engineer's approval.
- B. Informational Submittal: Information submitted by Contractor that requires Engineer's review and determination that submitted information is in accordance with the Conditions of the Contract.

1.02 PROCEDURES

- A. Electronic Submittals: Submittals, unless specifically accepted, shall be made in electronic format.
 - 1. Each submittal shall be an electronic file in Adobe Acrobat Portable Document Format (PDF). Use the latest version available at time of execution of the Agreement.
 - 2. Electronic files that contain more than 10 pages in PDF format shall contain internal bookmarking from an index page to major sections of the document.
 - 3. PDF files shall be set to open "Bookmarks and Page" view.
 - 4. Add general information to each PDF file, including title, subject, author, and keywords.
 - 5. PDF files shall be set up to print legibly at 8.5-inch by 11-inch, or 11-inch by 17-inch. No other paper sizes will be accepted.
 - 6. Submit new electronic files for each resubmittal.
 - 7. Include a copy of the Transmittal of Contractor's Submittal form, located at end of section, with each electronic file.
 - 8. Engineer will reject submittal that is not electronically submitted, unless specifically accepted.
 - 9. Provide Engineer with authorization to reproduce and distribute each file as many times as necessary for Project documentation.
 - 10. Submit submittals via email to:
nbogenschild@bullheadcityaz.gov
- B. Transmittal of Submittal:
 - 1. Contractor shall:
 - a. Review each submittal and check for compliance with Contract Documents.
 - b. Stamp each submittal with uniform approval stamp before submitting to Engineer.
 - 1) Stamp to include Project name, submittal number, Specification number, Contractor's reviewer name, date of

- Contractor's approval, and statement certifying submittal has been reviewed, checked, and approved for compliance with Contract Documents.
- 2) Engineer will not review submittals that do not bear Contractor's approval stamp and will return them without action.
2. Complete, sign, and transmit with each submittal package, one Transmittal of Contractor's Submittal form attached at end of this section.
 3. Identify each submittal with the following:
 - a. Numbering and Tracking System:
 - 1) Sequentially number each submittal.
 - 2) Resubmission of submittal shall have original number with sequential alphabetic suffix.
 - b. Specification section and paragraph to which submittal applies.
 - c. Project title and Engineer's project number.
 - d. Date of transmittal.
 - e. Names of Contractor, Subcontractor or Supplier, and manufacturer as appropriate.
 4. Identify and describe each deviation or variation from Contract Documents.

C. Format:

1. Package submittal information by individual specification section. Do not combine different specification sections together in submittal package, unless otherwise directed in specification.
2. Present in a clear and thorough manner and in sufficient detail to show kind, size, arrangement, and function of components, materials, and devices, and compliance with Contract Documents.
3. Index with labeled tab dividers in orderly manner.

D. Timeliness: Schedule and submit in accordance and the requirements of individual specification sections.

E. Processing Time:

1. Time for review shall commence on Engineer's receipt of submittal.
2. Engineer will act upon Contractor's submittal and transmit response to Contractor not later than 14 days after receipt, unless otherwise specified.
3. Resubmittals will be subject to same review time.
4. No adjustment of Contract Times or Price will be allowed as a result of delays in progress of Work caused by rejection and subsequent resubmittals.

F. Resubmittals: Clearly identify each correction or change made.

G. Incomplete Submittals:

1. Engineer will return entire submittal for Contractor's revision if preliminary review deems it incomplete.
2. When any of the following are missing, submittal will be deemed incomplete:
 - a. Contractor's review stamp; completed and signed.
 - b. Transmittal of Contractor's Submittal; completed and signed.

H. Submittals not required by Contract Documents:

1. Will not be reviewed and will be returned stamped "Not Subject to Review."
2. Engineer will keep one copy and return submittal to Contractor.

1.03 ACTION SUBMITTALS

A. Prepare and submit Action Submittals required by individual specification sections.

B. Shop Drawings:

1. Identify and Indicate:
 - a. Applicable Contract Drawing and Specification Section, products, units and assemblies, and system or equipment identification or tag numbers.
 - b. Equipment and Component Title: Identical to title shown on Drawings and specifications.
 - c. Critical field dimensions and relationships to other critical features of Work. Note dimensions established by field measurement.
 - d. Project-specific information drawn accurately to scale.
2. Manufacturer's standard schematic drawings and diagrams as follows:
 - a. Modify to delete information that is not applicable to the Work.
 - b. Supplement standard information to provide information specifically applicable to the Work.
3. Product Data: Provide as specified in individual specifications.
4. Foreign Manufacturers: When proposed, include names and addresses of at least two companies that maintain technical service representatives close to Project.

C. Action Submittal Dispositions: Engineer will review, comment, stamp, and distribute as noted:

1. Approved:
 - a. Contractor may incorporate product(s) or implement Work covered by submittal.
 - b. Distribution: Electronic.
2. Approved as Noted:
 - a. Contractor may incorporate product(s) or implement Work covered by submittal, in accordance with Engineer's notations.
 - b. Distribution: Electronic.

3. Partial Approval, Resubmit as Noted:
 - a. Make corrections or obtain missing portions, and resubmit.
 - b. Except for portions indicated, Contractor may begin to incorporate product(s) or implement Work covered by submittal, in accordance with Engineer's notations.
 - c. Distribution: Electronic.
4. Revise and Resubmit:
 - a. Contractor may not incorporate product(s) or implement Work covered by submittal.
 - b. Distribution: Electronic.

1.04 INFORMATIONAL SUBMITTALS

A. General:

1. Copies: Submit one electronic copy, unless otherwise indicated in individual specification section.
2. Refer to individual specification sections for specific submittal requirements.
3. Engineer will review each submittal. If submittal meets conditions of the Contract, Engineer will forward copy to appropriate parties. If Engineer determines submittal does not meet conditions of the Contract and is therefore considered unacceptable, Engineer will retain one copy and return remaining copy with review comments to Contractor, and require that the submittal be corrected and resubmitted.

B. Certificates:

1. General:
 - a. Provide notarized statement that includes signature of entity responsible for preparing certification.
 - b. Signed by officer or other individual authorized to sign documents on behalf of that entity.
2. Welding: In accordance with individual specification sections.
3. Installer: Prepare written statements on manufacturer's letterhead certifying installer complies with requirements as specified in individual specification section.
4. Material Test: Prepared by qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.
5. Certificates of Successful Testing or Inspection: Submit when testing or inspection is required by Laws and Regulations or governing agency or specified in individual specification sections.

C. Manufacturer's Instructions: Written or published information that documents manufacturer's recommendations, guidelines, and procedures in accordance with individual specification section.

D. Statement of Qualification: Evidence of qualification, certification, or registration as required in Contract Documents to verify qualifications of

professional land surveyor, engineer, materials testing laboratory, specialty Subcontractor, trade, Specialist, consultant, installer, and other professionals.

E. Submittals Required by Laws, Regulations, and Governing Agencies:

1. Promptly submit promptly notifications, reports, certifications, payrolls, and otherwise as may be required, directly to the applicable federal, state, or local governing agency or their representative.
2. Transmit to Engineer for Owner's records one copy of correspondence and transmittals (to include enclosures and attachments) between Contractor and governing agency.

1.05 SUPPLEMENTS

A. The supplements listed below, following "End of Section", are part of this specification.

1. Forms: Transmittal of Contractor's Submittal.

END OF SECTION

TRANSMITTAL OF CONTRACTOR'S SUBMITTAL (ATTACH TO EACH SUBMITTAL)			
DATE: _____			
TO: _____ _____ _____ _____ _____ FROM: _____ <div style="text-align: center;">Contractor</div> _____ _____ _____	Submittal No.: _____ <input type="checkbox"/> New Submittal <input type="checkbox"/> Resubmittal Project: _____ Project No.: _____ Specification Section No.: _____ (Cover only one section with each transmittal) Schedule Date of Submittal: _____ _____		
SUBMITTAL TYPE:	<input type="checkbox"/> Shop Drawing	<input type="checkbox"/> Sample	<input type="checkbox"/> Informational
	<input type="checkbox"/> Deferred		

The following items are hereby submitted:

Number of Copies	Description of Item Submitted (Type, Size, Model Number, Etc.)	Spec. and Para. No.	Drawing or Brochure Number	Contains Variation to Contract	
				No	Yes

Contractor hereby certifies that (i) Contractor has complied with the requirements of Contract Documents in preparation, review, and submission of designated Submittal and (ii) the Submittal is complete and in accordance with the Contract Documents and requirements of laws and regulations and governing agencies.

By: _____
 Contractor (Authorized Signature)

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SUBMITTALS

A. Informational Submittals:

1. Copies of permits and approvals for construction as required by Laws and Regulations and governing agencies.
2. Temporary Utility Submittals:
 - a. Sanitary.

1.02 MOBILIZATION

A. Mobilization includes, but is not limited to, these principal items:

1. Obtaining required permits.
2. Posting OSHA required notices and establishing safety programs and procedures.

1.03 PROTECTION OF WORK AND PROPERTY

- A. Comply with Owner's safety rules while on Owner's property.
- B. Keep Owner informed of serious onsite accidents and related claims.

PART 2 EXECUTION

2.01 TEMPORARY UTILITIES

A. Power:

1. Contractor shall provide his own power for all work on site 6-1 and any required rig power and for test pumps. Make arrangements to obtain and pay for electrical power used until final payment and acceptance by Owner, unless otherwise recommended by Engineer at Substantial Completion.
2. Cost of electric power will be borne by Contractor.

- B. Lighting: Provide temporary lighting to meet applicable safety requirements to allow erection, application, or installation of materials and equipment, and observation or inspection of the Work.

C. Water:

1. Make arrangements for and bear costs of providing water required for construction purposes and for drinking by construction personnel during construction.
 2. Hydrant Water:
 - a. Is available from nearby hydrants. Secure written permission for connection and use from water department and meet requirements for use. Notify fire department before obtaining water from fire hydrants.
 - b. Use only special hydrant-operating wrenches to open hydrants. Make certain hydrant valve is open full, since cracking valve causes damage to hydrant. Repair damaged hydrants and notify appropriate agency as quickly as possible. Hydrants shall be completely accessible to fire department at all times.
 - c. Include costs to connect and transport water to construction areas in Contract Price.
- D. Sanitary and Personnel Facilities:
1. Provide and maintain facilities for Contractor's employees, Subcontractors, and other onsite employers' employees. Service, clean, and maintain facilities and enclosures.
- E. Fire Protection: Furnish and maintain on Site adequate firefighting equipment capable of extinguishing incipient fires. Comply with applicable parts of NFPA 241.

2.02 PROTECTION OF WORK AND PROPERTY

- A. General:
1. Perform Work within right-of-way and easements in a systematic manner that minimizes inconvenience to property owners and the public.
- B. Site Security:
1. Erect a temporary security fence at locations shown on Drawings if needed for protection of Contractors tools, equipment, and supplies. Maintain fence throughout construction period. Obtain Engineer's written permission before removal of temporary security fencing.
 2. Provide and maintain additional temporary security fences as necessary to protect the Work and Contractor-furnished products not yet installed.
- C. Trees and Plantings:
1. Protect from damage and preserve trees, shrubs, and other plants outside limits of the Work and within limits of the Work.

- a. Where practical, tunnel beneath trees when on or near line of trench.
- b. Do not stockpile materials or permit traffic within drip lines of trees.
- c. No trees shall be removed without written approval of Engineer.

D. Existing Structures:

- 1. Where Contractor contemplates removal of small structures such as mailboxes, signposts, and culverts that interfere with Contractor's operations, obtain approval of property owner and Engineer.
- 2. Move mailboxes to temporary locations accessible to postal service.
- 3. Replace items removed in their original location and a condition equal to or better than original.

E. Waterways:

- 1. Keep ditches, culverts, and natural drainages continuously free of construction materials and debris.

2.03 TEMPORARY CONTROLS

A. Air Pollution Control:

- 1. Minimize air pollution from construction operations.
- 2. Burning:
 - a. Of waste materials, rubbish, or other debris will not be permitted on or adjacent to Site.

B. Water Pollution Control:

- 1. Do not dispose of volatile wastes such as mineral spirits, oil, chemicals, or paint thinner in storm or sanitary drains. Disposal of wastes into streams or waterways is prohibited. Provide acceptable containers for collection and disposal of waste materials, debris, and rubbish.

C. Erosion, Sediment, and Flood Control: Provide, maintain, and operate temporary facilities to control erosion and sediment releases, and to protect the Work and existing facilities from flooding during construction period.

2.04 PARKING AREAS

- A. Control vehicular parking to preclude interference with public traffic or parking, access by emergency vehicles, Owner's operations, or construction operations.

2.05 VEHICULAR TRAFFIC

- A. Conduct the Work to interfere as little as possible with public travel, whether vehicular or pedestrian.

2.06 CLEANING DURING CONSTRUCTION

- A. In accordance with General Conditions, as may be specified in other Specification sections, and as required herein.
- B. Provide approved containers for collection and disposal of waste materials, debris, and rubbish. At least weekly, dispose of such waste materials, debris, and rubbish offsite.
- C. At least weekly, brush sweep entry drive, roadways, and other streets and walkways affected by the Work and where adjacent to the Work.

END OF SECTION

**SECTION 01 77 00
CLOSEOUT PROCEDURES**

PART 1 GENERAL

1.01 SUBMITTALS

A. Informational Submittals:

1. Submit prior to application for final payment.
 - a. Record Documents: As required in General Conditions.
 - b. Special bonds, Special Guarantees, and Service Agreements.
 - c. Consent of Surety to Final Payment: If required in General Conditions.
 - d. Releases or Waivers of Liens and Claims: If required in General Conditions.
 - e. Releases from Agreements.
 - f. Final Application for Payment: Submit in accordance with procedures and requirements stated in Section 01 29 00, Payment Procedures.

1.02 RECORD DOCUMENTS

A. Quality Assurance:

1. Furnish qualified and experienced person, whose duty and responsibility shall be to maintain record documents.
2. Accuracy of Records:
 - a. Coordinate changes within record documents, making legible and accurate entries on each sheet of Drawings and other documents where such entry is required to show change.
 - b. Purpose of Project record documents is to document factual information regarding aspects of the Work, both concealed and visible, to enable future modification of the Work to proceed without lengthy and expensive Site measurement, investigation, and examination.
3. Make entries within 24 hours after receipt of information that a change in the Work has occurred.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 MAINTENANCE OF RECORD DOCUMENTS

A. General:

1. Promptly following commencement of Contract Times, secure from Engineer at no cost to Contractor, one complete set of electronic Contract Documents.
 2. Label or stamp each record document with title, "RECORD DOCUMENTS," in neat large printed letters.
 3. Record information concurrently with construction progress and within 24 hours after receipt of information that change has occurred. Do not cover or conceal Work until required information is recorded.
- B. Preservation:
1. Maintain documents in a clean, dry, legible condition and in good order.
 2. Make documents and Samples available at all times for observation by Engineer.
- C. Making Entries on Drawings:
1. Clearly describe change by graphic line and note as required.
 2. Date entries.
 3. Call attention to entry by "cloud" drawn around area or areas affected.
 4. Legibly mark to record actual changes made during construction, including, but not limited to:
 - a. Depths of various elements of each well.
 - b. Horizontal and vertical locations of new wells.
 - c. Changes made by Addenda and Field Orders, Work Change Directive, Change Order, and Engineer's written interpretation and clarification using consistent symbols for each and showing appropriate document tracking number.

3.02 FINAL CLEANING

- A. At completion of the Work or of a part thereof and immediately prior to Contractor's request for certificate of Substantial Completion; or if no certificate is issued, immediately prior to Contractor's notice of completion, clean entire Site or parts thereof, as applicable.
1. Leave the Work and adjacent areas affected in a cleaned condition satisfactory to Owner and Engineer.
 2. Broom clean exterior paved driveways and parking areas.
 3. Hose clean sidewalks, loading areas, and others contiguous with principal structures.
 4. Leave water courses, gutters, and ditches open and clean.

END OF SECTION

SECTION 33 21 13.01
WATER WELL MOBILIZATION

PART 1 GENERAL

1.01 SCOPE

- A. This section includes the Work necessary to mobilize, demobilize, set up, move equipment, and clean drill site related to the and the drilling, construction, development, and testing of one new Water Supply Well.

1.02 SUBMITTALS

A. Informational Submittals:

1. Applicable permits. Well construction and abandonment permit(s).

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

A. Temporary Facilities and Controls: Provide the following temporary facilities and controls:

1. Temporary construction facilities, including storage area, temporary electricity, temporary water and sanitary services.
2. Temporary controls, including: security, fire protection, safety; includes OSHA required notices and establishment of safety programs.
3. Security Fence:
 - a. Construct for the protection of materials, tools, and equipment.
 - b. At completion of the Work, remove from site and restore area.
 - c. Provide access at all times and any necessary keys to Engineer and Owner.
4. Parking Facilities: Provide within the Work area for personnel working on the Project.

B. Equipment:

1. The minimum equipment required consists of:
 - a. Drilling rig, drilling equipment, and associated self-contained fluid circulation equipment.
 - b. Temporary test pump, pump service rig, and equipment capable of setting and operating pumps as specified in these Specifications.
 - c. Tanks and storage bins to contain drilling fluid, drill cuttings, and high solids displacement water from the well for a minimum of 30 days.

- d. A water treatment and disposal system including tanks, temporary pipelines, pumps, and associated equipment to treat and dispose of development water and aquifer test discharge water as required.
- e. High pressure washer and miscellaneous associated equipment for removing mud and trackable debris from drilling equipment.

C. Superintendent shall be at the Site full time.

D. Equipment needed for the first 30 days of Work shall be onsite at start of the Work.

3.02 WORK LAYOUT

A. Set up well drilling rigs, drilling waste solid and liquid containment, storage and treatment systems, pump service rigs, and other related equipment in area designated by Driller and shown in the submittals.

B. Set up work facilities in a neat and orderly manner within designated area.

3.03 EQUIPMENT CLEANING

- A. Downhole tools and equipment that may come in contact with tools or equipment that may be positioned directly above borehole or completed well shall arrive onsite free of surface deposits of friable solids; for example, mud, sand, grout, caked on cuttings and cleaned of grease, oils, and other petroleum products. Except that normal amounts of thread joint compound on drill pipe and tool joints, and normal amounts of lubricating grease on mechanical equipment is allowed.
- B. Clean downhole equipment, tools, and equipment that may come in contact with downhole equipment that becomes soiled with petroleum products to satisfaction of Engineer before resuming work on well.
- C. Remove trackable mud, cuttings, sand, grout and other materials from undercarriage, tires and other surfaces of equipment prior to moving equipment on or across public roads and pathways.
- D. Do not empty, spill, splash, or slosh containerized drilling mud and fluids onto ground surface while moving containers, pipes and equipment.
- E. Cleanup drilling mud, settled solids, and other semi-liquids and solids that spill from, or are emptied from, equipment as it is being moved.

3.04 DEMOBILIZATION

- A. Remove temporary above grade or buried utilities, equipment, facilities, materials.
- B. Clean and repair damage caused by installation or removal of temporary facilities and equipment.

END OF SECTION

JULY 15, 2025

WATER WELL MOBILIZATION/
DEMobilIZATION
33 21 13.01 - 3

SECTION 33 21 13.03
WATER WELL DRILLING

PART 1 GENERAL

1.01 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
1. ASTM International (ASTM): D422, Standard Test Method for Particle-Size Analysis of Soils.
 2. American Petroleum Institute (API):
 - a. 13A, Specification for Drilling-Fluid Materials.
 - b. 13B-1, Recommended Practice Standard Procedure for Field Testing Water-Based Drilling Fluids.
 3. International Association of Drilling Contractors (IADC): API-Approved Official Daily Drilling Report Form.
 4. National Pollutant Discharge Elimination System (NPDES).
 5. NSF International (NSF): 61, Drinking Water System Components—Health Effects.

1.02 SUBMITTALS

- A. Action Submittals:
1. Detailed product data for drilling fluids and additives.
 2. Drilling fluid properties.
 3. Drill cutting samples.
 4. Drilling fluid specialist qualifications.
 5. Detailed description of drilling fluid program including details on mud tanks, pits, circulation system. Drilling fluid program shall be prepared by a certified drilling fluid specialist.
 6. Description of drilling equipment and proposed methods.
 7. Diagram of all equipment positioned within the Construction area that will be used onsite.
 8. Daily Drilling Log.
- B. Submittals shall be made in accordance with Section 01 33 00, Submittal Procedures.

1.03 QUALITY ASSURANCE

- A. Qualifications:
1. Drilling Fluid Specialist: Fluid specialist shall be approved by Engineer prior to drilling.

B. Regulatory Requirements:

1. Comply with applicable permits, laws, and regulations in disposing of drilling fluids, drill cuttings, and water generated during drilling and well construction.
2. Other Federal, state, and local laws, regulations, and ordinances related to disposing of materials generated in constructing wells.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

- A. Engineer shall determine final depths drilled and reamed based on the materials encountered while performing the work.
- B. Notify Engineer at least 5 working days before drilling begins.
- C. Notify Engineer of anticipated delays whenever they become apparent.
- D. Excavation of fluid pits will not be allowed unless approved by Engineer.

3.02 DRILLING EQUIPMENT

- A. Provide reverse circulation rotary drilling equipment and accessories required to complete well as specified.

3.03 DRILLING FLUIDS

- A. Use new materials in the formulation of drilling fluid at the well site.

Properties:

1. Comprised of a polymer-based “mud” or a bentonite “gel”-based mud.
 - a. “Gel”-based mud shall be a high-yield, 200-mesh sodium bentonite. Use the lightest fluid mix that can maintain the borehole open and not permanently plug the aquifer formation.
2. NSF 61 Certified.
3. Possess characteristics that are required to:
 - a. Adequately clean drill cuttings off drill bit and bottom of hole.
 - b. Transport cuttings to the surface and remove them from the fluid.
 - c. Provide borehole stability to prevent caving of the walls as drilling progresses.
 - d. Control subsurface pressures.
 - e. Cool drill bit and lubricate drill string.
 - f. Prevent excessive fluid loss into permeable zones.
 - g. Permit recovery of representative samples of drill cuttings.

4. Maintain to deposit only a thin, maximum of 1/16 of an inch, easily removable filter cake on face of borehole. Maintain as follows:
 - a. Weight: Not to exceed 9.2 pounds per gallon.
 - b. Viscosity: Not to exceed 32 seconds per quart.
 - c. Sand Content: Not to exceed 1 percent.
 - d. Total Solids Content: Not to exceed 5 percent.
 - e. 30-Minute Water Loss: Not to exceed 15 milliliters.
 5. Manufacturers:
 - a. Baroid Industrial Drilling Products; Quik-Gel.
 - b. CETCO; Super Gel-X.
- B. Water:
1. Use potable water, with a minimum chlorine residual of 0.5 mg/L, in formulating drilling fluids whether employed alone or in combination with drilling additives.
 2. Soda ash is permitted for use to increase pH of the water used to mix drilling fluids.
- C. Additives, if required, shall be approved by Engineer. Organic drilling additives shall not be used.

3.04 CIRCULATION SYSTEM

- A. General:
1. System shall minimize recirculation of drill cuttings.
 2. Design to facilitate retrieval of representative samples from the discharge with a minimum of recirculation of material.
- B. Include settling tanks of adequate size, a sampling trough, a shaker table, and a desanding/desilting system.
1. Equip with shaker table and desander/desilter system with a minimum of four cones, capable of handling capacity of system.
 - a. Desander/desilter system shall have pump capable of supplying a minimum of 40 psi at 80 gallons per minute per cone minimum.
- C. Settling Tanks:
1. Vessels used for mixing drilling fluids shall be clean and free of contaminants and extraneous materials prior to their use in drilling operations.
 2. Use above ground tanks for mixing, circulation and inclusion of approved additives. Digging of earthen pits is not allowed.
 3. Use proper controls to prevent spillage of mud or additives onto ground.

3.05 TEST EQUIPMENT

- A. Drilling fluid test equipment and test procedures shall conform to API 13B-1.
- B. Equipment for measuring fluid properties shall be made immediately available at drill site.

3.06 BOREHOLE DRILLING

- A. Before drilling, install permanent conductor casing needed to stabilize surface material. Install the conductor casing with the annulus fully cemented in place with a minimum cement thickness of 3-inches.
- B. Drill wells by reverse circulation rotary method.
- C. Drill boreholes to dimensions and depth as shown and as determined by Engineer.
 - 1. Drill boreholes sufficiently straight and plumb to permit installation of casing and screen.
- D. If geophysical logging is to be done, condition borehole to allow free passage of logging tools to bottom.
- E. Drilling Fluids and Additives:
 - 1. Check drilling fluid properties, including fluid weight, marsh funnel viscosity, water loss, additions of water, sand content, and total solids content, at a minimum of:
 - a. Every 100 feet of depth drilled.
 - b. Every 12 hours of circulation when not drilling.
 - c. As directed by Engineer.
 - 2. Maintenance:
 - a. Maintain complete control over drilling fluid characteristics during operation of well construction.
 - b. If proper control of drilling fluid is not maintained, retain or employ an experienced, qualified mud engineer onsite to supervise and maintain drilling fluid characteristics, at Contractor's expense.
 - 3. Determine and maintain the quantities and type of commercial drilling mud necessary for the Work, to secure and store those materials at Site, and use them in accordance with accepted practice compliance with water well drilling operations.
- F. Use of additional bentonite, clay, mud, or other foreign matter that has a tendency to build a mud cake on the walls of the hole and clog or seal up water-bearing stratum will not be permitted without prior approval of Engineer.

3.07 PILOT HOLE DRILLING AND SAMPLING

- A. Drill 16-inch diameter pilot boreholes, or alternate diameter as approved by the Engineer to depths as specified and as determined by Engineer. Test hole diameters outside of this range are not authorized and no payment will be made for test hole drilling if this drill bit size range is exceeded.
- B. Engineer will have a representative onsite during drilling to determine the exact depth of the pilot hole based on cuttings.
- C. Rate of penetration of borehole shall be limited to 20 feet per hour so Contractor can obtain, and Engineer can log, geological samples.
- D. As boreholes are advanced, collect representative formation samples at 5-foot intervals.
- E. Collect samples from circulation fluid and test it as specified in 3.10 in this Section..
- F. Conduct Geophysical logging of the borehole in accordance with Section 33 21 13.04 on the completed pilot hole.

3.08 BOREHOLE REAMING

- A. Ream borehole for production casing from bottom of conductor casing, if applicable, to the total depth as specified by Engineer.
- B. In order to maintain full borehole diameter, maintain well borehole full of drilling fluid until screen, casing, and gravel pack, if applicable, are installed.
- C. Maintain circulation of drilling fluid until casing is set, unless Contractor judges circulation to be unnecessary.
- D. Maintain a free, uncollapsed, open borehole. If borehole collapses, ream borehole at Contractor's sole expense.

3.09 DAILY LOG

- A. General:
 - 1. Keep driller's log of borehole which carefully and accurately describes the materials penetrated.
 - 2. Drilling log shall be available for inspection at Site at all times.
- B. Utilize the IADC, API-approved official Daily Drilling Report Form, or equivalent, as approved by Engineer.
 - 1. Submit legible forms covering the previous day suitable for photocopying to the Engineer on a daily basis.

2. Daily log shall be signed daily by Contractor and Engineer to represent their agreement of the included data.

C. Data:

1. Include the following:
 - a. Formations encountered from surface to total depth, indicating the depth of each change in formation and including difficulties and unusual conditions met during drilling.
 - b. Drilling rate.
 - c. Depth at which water is first encountered.
 - d. Other pertinent phenomena observed.
 - e. Record of variations in the addition and amount of approved clays or chemical products or water required.
 - f. Properties of drilling fluids as described in Article Drilling Fluids and depth at which changes were required.

3.10 SAMPLE COLLECTION

- A. Every 5 feet and at each change in the strata, collect a large, representative sample of the interval or new strata in accordance with procedures approved by Engineer.
- B. Storage:
 1. Store each sample in a suitable gallon-sized, waterproof container and label each sample.
 2. Label shall include well number, date, time, and depth interval.
 3. Sample containers shall be stored in a manner to prevent breakage or loss.
 4. Furnish containers approved by Engineer.

3.11 SIEVE ANALYSIS

- A. The grain size distribution of at least 10 cutting samples per borehole shall be determined by sieve analysis. Samples selected shall be approved by Engineer.
- B. Perform sieve analysis in accordance with ASTM D422 and include a table and plot of the cumulative percent of particles retained by each sieve versus particle size.
- C. Provide a recommendation for well screen slot size, interval screened, and gravel pack gradation. Obtain Engineer's approval prior to ordering materials.
- D. Provide sieve analysis results within 48 hours of completion of borehole.

3.12 DRILL CUTTINGS AND DRILL FLUIDS DISPOSAL

- A. Separate drill cuttings and drill fluids generated during borehole drilling using appropriate equipment.
- B. Contain drill cuttings while onsite in roll-off bins, and ultimately disposed of at a Class C landfill.
- C. Separate suspended solids from drill fluids using appropriate equipment, including temporary tankage to allow sufficient settling time to meet discharge requirements for suspended solids and turbidity, if applicable.
 - 1. Solids separated from drill fluids shall be contained while onsite in roll-off bins, and ultimately disposed of at a Class C landfill.
 - 2. Discharge water remaining from drill fluids after solids separation:
 - a. In accordance with NPDES Permit.
 - b. At appropriate rates and employing appropriate engineering controls (for example, energy dissipation) to avoid excess erosion.
- D. Upon completion of drilling, remove and dispose of drilling mud and cuttings from well from Site in accordance with State and Local regulations.
- E. Restore ground surface to its original condition.

END OF SECTION

SECTION 33 21 13.04
WATER WELL GEOPHYSICAL LOGGING

PART 1 GENERAL

1.01 SUBMITTALS

A. Action Submittals:

1. Product Data: All downhole geophysical logging equipment proposed for use.
2. Geophysical logging data for the well.
 - a. Provide one field copy of each log to Engineer immediately after completion.
 - b. Logs will become property of Engineer at time logging is completed.
3. In addition to the field copies, submit the following:
 - a. One copy of each geophysical log.
 - b. Digital ASCII files of geophysical data on a CD or other approved digital media.

B. Informational Submittals: Proposed geophysical logging company and qualifications.

C. Submittals shall be made in accordance with Section 01 33 00, Submittal Procedures.

1.02 QUALITY ASSURANCE

A. Qualifications:

1. Geophysical logs shall be performed by a qualified service company acceptable to Engineer and experienced in water well logging and the performance of such logs for at least the past 5 years.
2. Operator shall be knowledgeable in the interpretation of logs, to the degree that they can make decisions regarding the accuracy and validity of the logs and the sensitivity of the instruments, while using a geophysical logging system capable of producing logs in digital format.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

- A. Geophysical Logging: firm shall be subject to acceptance by Engineer prior to drilling of pilot borehole.

3.02 EQUIPMENT

- A. Caliper Logging Features:

- 1. Minimum of three arms.
- 2. Capable of indicating borehole diameter up to 42 inches.

3.03 GEOPHYSICAL LOGS

- A. The borehole geophysical logging suite run on the pilot borehole shall include:

- 1. Caliper
- 2. Spontaneous potential.
- 3. Single-point resistivity.
- 4. 16-inch normal.
- 5. 64-inch normal.
- 6. Gamma ray.

- B. Presentation:

- 1. Provide logs at a vertical scale of 50 feet to 1 inch. Horizontal scale shall be approved by Engineer. Changes in these requirements may be made if required by the Engineer.
- 2. A guide for log presentations is as follows:
 - a. Logs shall have zero depth at ground level.
 - b. Location with latitude, longitude shall be on log header.
 - c. Run gamma ray back to land surface if mechanically possible.

3.04 GEOPHYSICAL LOGGING

- A. General:

- 1. Notify Engineer 24 hours prior to time when geophysical survey will be run.
- 2. Perform geophysical logging suite immediately after completion of borehole.
- 3. There will be no additional payment for rig time or standby time while geophysical surveys are being performed.

4. Notify Engineer of anticipated delays whenever they become apparent.
5. Instrumentation:
 - a. Resolution and precision of each instrument shall be adequate for the interpretation of the formation properties being studied.
 - b. Calibration standards independent of the logging equipment shall be used.
 - c. Present calibration and quality control information on logs.
 - d. Record each log using an accurate depth measurement.
- B. Immediately upon completion of pilot borehole and before running geophysical logs, cease drilling and circulate fluid to condition borehole for its total depth prior to logging company performing geophysical logs. Drilling mud circulation in borehole shall not stop until logging company is at drilling site. It shall be the responsibility of Contractor to maintain integrity of borehole to its total depth during logging.
- C. Record survey response curves to show adequate deflections for evaluation of the penetrated formations.
- D. If the geophysical probes fail to reach the desired depth, borehole shall be conditioned at Contractor's sole expense to allow probes to reach desired depth.
- E. Run geophysical logs in the presence of Engineer.

3.05 CALIPER LOGGING

- A. Upon completion of the pilot hole and again after reaming each borehole to its final diameter, conduct a caliper survey of borehole.
- B. If caliper survey shows reamed borehole to be less than specified diameter or less than specified depth, hole shall be re-reamed or re-drilled and resurveyed at Contractor's sole expense.

END OF SECTION

SECTION 33 21 13.06
WATER WELL CASING

PART 1 GENERAL

1.01 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
1. American Welding Society (AWS): AWS B2.1, Specification for Welding Procedure and Performance Qualification.
 2. ASTM International (ASTM):
 - a. A53/A53M, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - b. A139/A139M, Standard Specification for Electric-Fusion (Arc)-Welded Steel Pipe (NPS 4 and Over).
 - c. A312/A312M, Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes.
 3. NSF International (NSF): 61, Drinking Water System Components – Health Effects.

1.02 SUBMITTALS

- A. Action Submittals:
1. Drawings and design data for well casing materials, welding collars, and centralizers.
 2. Mill test reports, showing chemical composition of well casing, if applicable.
 3. Welding certifications of welders.
 4. Cut sheets on proposed welding rods and/or wire.
 5. Report of compliance. Report shall include an affidavit of compliance stating that materials used comply with applicable requirements of ASTM and other applicable standards.
 6. Detailed information and drawings of gravel feed tube.
- B. The submittals shall be made in accordance with Section 01 33 00, Submittal Procedures.

1.03 QUALITY ASSURANCE

- A. Qualifications:
1. Welders: Certified in accordance with AWS B2.1 for Level AR-1 or AR-3 and in the 2G and 5G positions or the 6G position.

PART 2 PRODUCTS

2.01 WELL AND CONDUCTOR CASING

A. Conductor Casing: Mild Steel:

1. ASTM A139/A139M, Grade B, as supplied by the Roscoe-Moss Company, or ASTM A53, Grade B, as approved by Engineer.
2. Material shall be new and unused.
3. Plain ends fitted for welding collars.

B. Final Well Casing: Carbon Steel:

1. ASTM A139/A139M, Grade B, as supplied by the Roscoe-Moss Company, or ASTM A53, Grade B, as approved by Engineer.
2. Material shall be new and unused.
3. Plain ends fitted for welding collars.

C. Material shall be new and unused.

2.02 Section Ends: Machined flat perpendicular to axis of casing, with a maximum variance of 0.010 inch at any point from a true plane at right angles to axis of casing.

A. Conductor Casing Dimensions:

1. Outside Diameter: 36 inches.
2. Wall Thickness: 0.500 inch.
3. Fabricated Section Lengths: Not less than 20 feet.

B. Final Casing Dimensions:

1. Outside Diameter: 20 inches.
2. Wall Thickness: 0.500 inch.
3. Fabricated Section Lengths: Not less than 20 feet.

C. Welding Collars:

1. Thickness to match casing and 5-inch minimum width.
2. Same physical and chemical properties as corresponding casing section.
3. Fabrication Requirements:
 - a. Roll collars to fit outside casing diameter. Equip collars with three equally spaced inspection ports. Weld to casing section prior to delivery to job site.
 - b. Grind or scrape inside edge of collars to remove sharp edges or burrs.

- c. Bevel end of each collar to accommodate welding such that outside diameter of weld is equal to or less than outside diameter of collar.

D. Well Casing Guides:

1. Compatible physically and chemically with well casing materials.
2. Centralizers shall be attached to steel by welding or with steel straps.
3. Manufacturer: Halliburton Company, or approved equal.

2.03 GRAVEL FEED TUBE

- A. 2 1/2-inch diameter, Schedule 40 carbon steel, ASTM A53, Grade B pipe. Provide with beveled ends for welding.

PART 3 EXECUTION

3.01 WELL CONSTRUCTION

A. General:

1. Preliminary well casing and gravel feed tube length and configuration are shown on the Drawings.
2. Final casing lengths to be determined by the Engineer, based on results of the sampling and testing of pilot borehole.
3. Install, support, and anchor well casing and gravel feed tube in such a way as to hold them in place during the placement of gravel and annular grout seal, during development, and when well is completed.

B. Welding:

1. In accordance with the AWS B2.1.
2. Weld reinforcement shall be as specified by AWS.
3. Prepare joints for stainless steel welding using stainless steel brushes. Take precautions to not allow any carbon steel particles to contaminate stainless steel welds.
4. Ensure weld joint is clean and free of extraneous material prior to welding.
5. Upon completion of welding, remove weld splatter, flux, slag, and burrs left by attachments.
6. Complete welds to produce a workmanlike appearance, with uniform weld contours and dimensions.
7. Welding rod or wire shall match the material being welded and be approved by Engineer.

C. Welding Collars:

1. Lap-weld in accordance with AWS welding code to provide a watertight joint.
 2. Outside diameter of welds within bevel shall be equal to or less than the outside diameter of collar.
- D. Final Casing:
1. Install well casing/well screen assembly at a sufficient height above the bottom of boring to ensure weight of casing will not be resting on the bottom.
 2. Top of casing shall extend a minimum of 18 inches above land surface.
- E. Gravel Feed Tube:
1. General:
 - a. Butt-weld joints in accordance with AWS welding code.
 - b. Ensure installed straight and plumb.
 - c. Orientation (compass point) of at ground surface shall be approved by Engineer before final placement.
 2. Gravel Feed Tube:
 - a. Install in such a way that tube extends from above ground surface to 20 feet below top of the gravel pack to allow for the placement of additional gravel should top of gravel level drop during development.
 - b. Provide as shown on Drawings.
- F. Centralizers:
1. Extend out a minimum of 2 inches from casing or screen to within 1/2 inch of borehole wall.
 2. Place at 60-foot intervals starting 5 feet from the bottom of the string and extending to ground surface.
 3. Place at least four equally spaced at each interval in such a manner that interference with gravel pack placement is minimized.
 4. Fit on steel casing with straps at 0 degrees, 90 degrees, 180 degrees, and 270 degrees around casing at each position.
 5. Centralizers shall be as shown on Drawings.

END OF SECTION

SECTION 33 21 13.07
WATER WELL SCREEN AND GRAVEL PACK

PART 1 GENERAL

1.01 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
1. American Petroleum Institute (API):
 - a. 5L, Specification for Line Pipe.
 2. American Water Works Association (AWWA):
 - a. A100, Water Wells.
 - b. C654, Disinfection of Wells.
 3. American Welding Society (AWS): AWS B2.1, Specification for Welding Procedures and Performance Qualification.
 - a. A312/A312M, Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes.
 4. NSF International (NSF): 61, Drinking Water System Components – Health Effects.

1.02 SUBMITTALS

- A. Action Submittals:
1. Drawings and design data for well screen materials and configuration, welding collars, and centralizers.
 2. Welding rod and materials.
- B. Informational Submittals:
1. Welding certifications of welders.
 2. Mill test reports, showing chemical composition of well screen.
 3. Gravel Samples:
 - a. Two bag samples of proposed gravel pack material for each well. Submit for approval prior to delivery of gravel pack to each Site.
 - b. Deliver samples to:
Mark Clark
2335 Trane Road,
Bullhead City, AZ 86442
- C. The submittals shall be made in accordance with Section 01 33 00, Submittal Procedures.

1.03 QUALITY ASSURANCE

A. Qualifications:

1. Welders: Certified in accordance with AWS B2.1 for level AR-1 or AR-2, and in the 2G and 5G positions or the 6G position.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Materials, equipment, and accessories specified in this section shall be products of:

1. Continuous Slot Wire Wound Screen:
 - a. Johnson Screens.
 - b. Or equal
2. Filter Pack Material:
 - a. Colorado Silica Sand, Inc. (a subsidiary of Oglebay Norton, Inc.).
 - b. Or equal

2.02 WELL SCREEN

A. General:

1. Design and manufacture to withstand tensile and collapse pressures for installation for a depth up to 600 feet deep with the uppermost screen at a potential depth of about 100 feet.
2. Equip each section of screen with a welding ring of material to match well screen; plain ends beveled for welding.

B. Type:

1. Continuous Slot Wire Wound Screen: Design with V-shaped wire to provide maximum inlet area consistent with strength requirements.

C. Material:

1. Stainless Steel:
 - a. ASTM A312/A312M, 304.
 - b. Material shall be new and unused.

D. Dimensions:

1. Outside Diameter: Match section of well casing to which it is joined.
2. Inside Diameter: 18.8 inches, minimum.
3. Section End Wall Thickness: 0.375 inch.
4. Fabricated Section Lengths: Not less than 20 feet.

5. Slot Size and Screen Length:
 - a. Determined by Contractor, subject to approval by Engineer, based on sieve analyses from cuttings collected while drilling.
 - b. Screen slot size shall be determined in conjunction with gravel pack size. Determination of size shall depend on results of sieve analyses.
 - c. More than one slot aperture size may be specified over screened interval.

E. Section Ends:

1. Machined flat perpendicular to axis of casing, with a maximum variance of 0.010 inch at any point from a true plane at right angles to axis of casing.
2. Plain ends beveled for welding, electric resistance welded or seamless pipe.

F. Welding Collar:

1. Fabrication:
 - a. Thickness to match pipe wall being welded, and 5-inch minimum width.
 - b. Same physical and chemical properties as the corresponding casing section.
 - c. Roll collar to fit outside casing diameter; weld to casing section prior to application of internal coating.
 - d. Grind or scrape the inside edge of collar to remove sharp edges or burrs.
 - e. Bevel end of each collar to accommodate weld such that outside diameter of weld is equal to or less than outside diameter of collar.
2. Submit test results as specified in Article Submittals.

G. Di-Electric Coupling

1. Designed to prevent galvanic corrosion at stainless steel screen to carbon steel casing connection.
2. Carbon steel and stainless steel pipe end connections fitted with welding collars for welding.
3. As manufactured by Roscoe-Moss Company.

2.03 CENTRALIZERS

- A. Fabricated of same chemical composition and physical properties as material to which they are attached.
- B. Weld-on type to centralize well screen and blank steel sections within screen.

C. Manufacturer: Halliburton Company, or equal.

2.04 FILTER PACK MATERIAL

A. Gravel Pack:

1. Propose size and gradation of gravel pack with high uniformity; subject to approval by Engineer, based on sieve analyses from cuttings collected while drilling.
2. In accordance with AWWA A100 Section 4.6.
3. Hard, water-worn, at least 90 percent silica, and washed clean of silt, sand, dirt, and foreign matter.
4. Crushed gravel will not be accepted.

PART 3 EXECUTION

3.01 GENERAL

- A. Notify Engineer of proposed well completion activities at least 24 hours before activities begin.
- B. Notify Engineer of anticipated delays whenever they become apparent.

3.02 WELL SCREEN INSTALLATION

- A. General: Place bottom of well casing/well screen assembly at a distance above the bottom of the hole to ensure that none of the weight of casing will be supported from the bottom of the hole.
- B. Welding:
 1. In accordance with AWS applicable codes and result in a continuous, strong, and watertight joint.
 2. Gap joints slightly prior to each weld to help facilitate full penetration welds.
 3. Weld Reinforcement: In accordance with AWS code.
 4. Join well screen by a continuous full fillet weld of thickness equal to thickness of coupling. Alignment holes shall be completely filled by welding.
 5. Upon completion of welding, remove weld splatter, flux, slag, and burrs.
 6. Allow welded joints to cure for not less than 20 minutes before weld is placed in contact with water.
 7. Repair welds to produce a workmanlike appearance, with uniform weld contours and dimensions.
- C. Centralizers:

1. Dimensions: Minimum 2 inches wide.
2. Extend out at least 2 inches from well screen wall.
3. Strap at 0 degree, 90 degrees, 180 degrees, and 270 degrees around casing.
4. Place at 40-foot intervals starting 5 feet from the bottom of the string and extend to the top of the screened interval.
5. Place at least three equally spaced at each interval in such a manner that interference with gravel pack placement is minimized.

3.03 FILTER PACK INSTALLATION

A. General:

1. Place filter pack by tremie method using a tremie pipe set to the depth required for the pack.
2. Support and anchor well casing, well screen, feed tube, and water level access tube in such a way as to hold them in place during placement of filter pack.

B. Disinfect filter pack according to AWWA C654, Section 4.3.

C. Water:

1. Before filter pack placement, make adequate preparations for continuous circulation of clear water.
2. Fluid properties shall be approved by Engineer.
3. Circulate clear water while installing pack.
4. Circulation shall be continuous until pack is fully in place.

3.04 FIELD QUALITY CONTROL

- A. Well screen that fails, collapses, separates, or does not pass the tests for plumbness or alignment as specified in Section 33 21 13.11, Water Well Plumbness and Alignment Test, shall be repaired or replaced, or a new well drilled, as determined by Engineer, at Contractor's sole expense.
- B. Filter Pack: If borehole does not take the calculated volume of filter pack with allowances for normal losses and settling, Engineer will have cause to reject the well.

END OF SECTION

SECTION 33 21 13.08
WATER WELL GROUTING

PART 1 GENERAL

1.01 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
 - 1. ASTM International (ASTM):
 - a. C150, Standard Specification for Portland Cement.
 - b. C494/C494M, Standard Specifications for Chemical Admixtures for Concrete.
 - 2. International Association of Drilling Contractors (IADC):
API-Approved Official Daily Drilling Report Form.
 - 3. National Pollutant Discharge Elimination System (NPDES).
 - 4. NSF International (NSF): 61, Drinking Water System Components—
Health Effects.

1.02 SUBMITTALS

- A. Action Submittals: Grout mix design.
- B. Informational Submittals:
 - 1. Grout composition for each grout batch for the well.
 - 2. Record of volume of grout used. Volume shall not be less than
calculated volume of the annular space between well casing and
reamed borehole.
 - 3. As-built drawing showing details of construction materials, including
dimensions and quantities of grout seal materials used.
- C. The submittals shall be made in accordance with Section 01 33 00, Submittal
Procedures.

1.03 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Comply with applicable permits, laws, and regulations in disposing of
drilling fluids, drill cuttings, and water generated during grouting. The
permits, laws and regulations shall include, but not be limited to, the
following:
 - a. Federal, state, and local laws, regulations, and ordinances
related to disposing of materials generated in constructing
wells.

PART 2 PRODUCTS

2.01 GROUT

A. Cement and Bentonite Gel:

1. Composed of cement and bentonite gel mixed with water to produce a slurry weight of 13.9 or more pounds per gallon (5% max bentonite).
2. Slurry shall be weighted with a standard mud balance and slurry weight shall be maintained as specified during cementing operation.

2.02 WATER

A. Use potable water.

PART 3 EXECUTION

3.01 GENERAL

- A. Notify Engineer 4 hours prior to placement of grout seal.
- B. Calculate volume of annular space between well casing and final borehole prior to placement. Calculated volume shall be reviewed by Engineer.
- C. Stock a reserve onsite of at least 30 percent over the calculated volume of cement required as a safety factor to fill washouts in the hole.
- D. Notify Engineer of anticipated delays whenever they become apparent.
- E. Take precautions to prevent casing from collapsing. In the event casing collapses, take steps necessary to reopen well and place seal as specified. Such remedial actions shall be at Contractor's sole expense and shall require prior approval by Engineer.

3.02 INSTALLATION

A. Make-up Water Pretreatment:

1. Buffer pH of the water to a value no less than 8 and no greater than 10.
2. Use a ratio of 1:2 pounds of soda ash per 100 gallons of water to buffer pH and remove excess calcium.

B. Grout Placement:

1. Tremie Pipe:
 - a. Place in borehole as approved by Engineer.
 - b. Extend from ground surface to the bottom of zone to be grouted.
 - c. Place grout from the bottom to top, in a continuous operation.

- d. Slowly raise grout tremie pipe as grout is placed.
 - e. Discharge end of grout tremie pipe shall remain submerged in grout until grouting is completed.
 - f. Maintain a full grout pipe until completion of grouting of the specified interval.
- C. Do not conduct work on well or operate heavy equipment onsite during the 24-hour period immediately following placement of the grout.
- D. Contain displaced fluids as required by applicable regulatory requirements.

END OF SECTION

SECTION 33 21 13.09
WATER WELL DEVELOPMENT

PART 1 GENERAL

1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. American Water Works Association (AWWA): A100, Water Wells.
2. National Pollutant Discharge Elimination System (NPDES).

1.02 SUBMITTALS

A. Action Submittals:

1. Discharge and Settling Tank: Product data and drawings, including dimensions.
2. Description of development tools including photos, diagrams, and dimensions.
3. Test Pump Details: Pump intake depth, bowls specifics including number of stages and diameter, pump column diameter, and all other applicable dimensions.

B. Informational Submittals:

1. Well development data.
2. Water quality analysis test results (if applicable).

C. The submittals shall be made in accordance with Section 01 33 00, Submittal Procedures.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Comply with applicable permits, laws, and regulations in disposing of drilling fluids, drill cuttings, and water generated during well development. Permits, laws and regulations shall include, but not be limited to, the following:
 - a. The requirements for clean water are as follows.
 - 1) Ensure all discharges meet all applicable Surface Water Quality Standards (SWQS). ADEQ can request to see any and all data to verify that the discharge meets SWQS.
 - 2) Daily sampling, monitoring, and recording of E. Coli, Flow Rate, Oil and Grease, pH, Total Residual Chlorine (Max), Turbidity, and Duration of Discharge.

- 3) Coordinate and assist the Engineer with the required water sampling.
 - 4) See Section 33 21 13.10 for other clean water discharge requirements.
- b. Other Federal, state, and local laws, regulations, and ordinances related to disposing of materials generated in constructing wells.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

- A. Notify Engineer 24 hours prior to well development activities.
- B. Notify Engineer of anticipated delays whenever they become apparent.

3.02 EQUIPMENT AND MATERIALS

- A. Surge Block Swabs:
 1. Two, separated by 10 feet of perforated drill pipe.
 2. Outside Diameter: Not more than 1 inch smaller than inside diameter of screen section of well.
- B. Drill Pipe:
 1. Fitted with air eductor pipe to allow air lift pumping.
 2. Sufficient perforations in drill pipe and air compressor capacity to air lift 300 gpm.
- C. Pump:
 1. Capable of producing up to 2,500 gpm from well.
 2. Do not equip with a foot valve which would prevent backspin and interfere with surging.
- D. Discharge Piping:
 1. Size and length to conduct 2,500 gpm of water to discharge location and be approved by Engineer.
 2. Provide in-line meter with 6-digit, straight reading totalizer, registering in units of 1,000 gallons, together with a rate of flow indicator dial, which reads in units of gallons per minute and suitable for the expected flow range.
- E. Well Development Discharge:

1. Water must be discharged on the site area with no erosion of soils, so to flow to a natural discharge channel near to the well site. The Contractor shall obtain all necessary approvals with the appropriate Regulating Body.
 2. Tank: Provide of sufficient size and construction to accommodate development discharge.
 - a. Construct with baffles to promote sediment settlement prior to pumping from tank to designated discharge point.
 3. Pump: Provide of sufficient size and horsepower to continuously pump stored discharge water as required from tank(s) to discharge point.
 4. Discharge Point: Will be designated by Engineer on the Well site and at a maximum distance of 200 feet from well.
 5. Discharge Piping: Provide of sufficient size and length to pump water to discharge point as approved by Engineer.
- F. Provide Rossum Sand Tester during development to measure amount of sand produced from well.

3.03 SURGE BLOCK AND AIR LIFT DEVELOPMENT

- A. Commence not less than 24 hours and no more than 48 hours after placing grout seal. If not commenced within 48 hours conduct, without additional cost, surge and air lift development for length of time between placing grout seal and time that surging and air lift development was initiated, in addition to normal development time.
- B. Unperforated Casing Procedure:
1. Begin by gently surging and simultaneously air lifting in unperforated casing immediately above the uppermost section of well screen.
 2. Air Lifting Rate: Between 100 and 300 gpm.
 3. Periodically, measure and bail sand, silt, and clay that has accumulated at bottom of well.
 4. Continue surging and bailing for approximately 2 hours until sand, silt, and clay have been removed from the casing to satisfaction of Engineer.
- C. Screen Procedure:
1. Following surging and air lifting of unperforated casing, lower surge block into uppermost screened section and continue surge development by gently surging and simultaneously air lifting from top of screened interval downward.
 2. Surge and air lift screen in 20-foot sections.
 3. Raise and lower surge block.
 - a. Air Lifting Rate: Between 300 and 500 gpm.

4. Work each 20-foot interval of screened section until successive surging produces little change in color and discharge is relatively clear as assessed by Engineer.
5. Run clean, potable water continuously down gravel feed tube in well during surging and air lift pumping; add gravel as needed to maintain full tube.

3.04 PUMP DEVELOPMENT

A. General:

1. Following surge block and air lift development, install test pump to perform pump development of well.
2. Commence pumping development no later than 12 hours following surge block and air lift development.
3. Do not remove pump from well until well testing, including recovery monitoring, is complete.
4. Set suction inlet at a minimum depth of approximately 400 feet below ground surface.

B. Procedure:

1. Pump well at a restricted initial pumping rate.
2. As water clears, gradually increase rate, as determined by Engineer, until maximum discharge rate is reached.
3. At regular intervals, stop pump and allow water in pump column to surge back through pump intake.
4. Develop well by pumping and surging until it produces at maximum discharge, as determined by Engineer, and specified sand production limitations are met.
5. It is estimated that development by pumping shall continue for approximately 8 hours.

C. Sounding Tube:

1. Use 2-inch-diameter tube with perforations along the bottom 10 feet adequate for insertion of water level sensing devices into well before, during, and after pumping development.
2. Allow free passage of pressure transducers that are 1-inch diameter and approximately 8 inches long.
3. Securely fastened to pump column assembly, terminate approximately at the top of the pump.

3.05 WELL DEVELOPMENT DISCHARGE

- A. Separate suspended solids from fluids generated during development using appropriate equipment, including temporary tankage to allow sufficient

settling time to meet discharge requirements for suspended solids and turbidity.

- B. Prevent Site flooding or erosion that might be caused by discharge.
- C. If discharge pipe must be located in areas that block vehicle access, construct and maintain vehicle crossings over discharge piping.

3.06 FIELD QUALITY CONTROL

A. Testing:

- 1. Monitoring frequency and instrumentation shall be approved by Engineer.
- 2. Measure sand content with:
 - a. Rossum Sand Tester during development activities.

B. Well shall be considered thoroughly developed when the following occur:

- 1. Specific capacity, gpm per foot of drawdown, is relatively constant plus or minus 5 percent, at design capacity of well.
- 2. There is no measurable settlement of gravel pack.
- 3. Well does not produce sand in excess of sand production limitations.
 - a. Sand production limitations shall be met when water produced contains less than 5 parts per million sand after 15 minutes of surging and pumping at design capacity of well.

C. Well Development Data:

- 1. Maintain for each screened interval developed (for airlift swab/surge block development), and during pump development.
- 2. Include pumping rate, water level, drawdown, specific capacity, elevation of gravel pack, sand content, color of discharge water, and other pertinent information regarding well development.

END OF SECTION

SECTION 33 21 13.10 WELL PUMPING TEST

1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. National Pollutant Discharge Elimination System (NPDES).

1.02 SUBMITTALS

A. Action Submittals:

1. Product Data:

a. Pumping Equipment:

- 1) Including engines, drive components, bowls, lines, shafts, flowmeter, throttling valve, and pump intake depth.
- 2) Operation Data: Documentation including engine rpm and horsepower, fuel use, and other information used in monitoring the pump system.

b. Discharge and settling tank; include dimensions.

B. Informational Submittals:

1. Well test data.
2. Water quality analysis test results.

C. The submittals shall be made in accordance with Section 01 33 00, Submittal Procedures.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Comply with applicable permits, laws, and regulations in disposing of drilling fluids, drill cuttings, and water generated during drilling and well construction. Permits, laws and regulations shall include, but not be limited to, the following:

a. The following requirements are specified for any discharge of clean water at the site.

- 1) Ensure all discharges meet all applicable Surface Water Quality Standards (SWQS).
- 2) Daily sampling, monitoring, and recording of E. Coli, Flow Rate, Oil and Grease, pH, Total Residual Chlorine (Max), Turbidity, and Duration of Discharge.
- 3) Coordinate and assist the Engineer with the required water sampling.

- 4) Clean water discharges must be made on the City's property and must not erode the existing wash. The Contractor shall use tanks, gravel, rock, etc., and a distribution header to maintain the discharge on the City property and allow the areas natural runoff patterns control the discharge.
- b. Other Federal, state, and local laws, regulations, and ordinances related to disposing of materials generated in constructing wells.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

- A. Notify Engineer at least 48 hours prior to beginning the step-rate drawdown test. Conduct in the presence of Engineer.
- B. Do not begin testing before well water level has recovered following well development.
- C. Measure static water level prior to start of testing.
- D. Separate suspended solids from fluids generated during testing using appropriate equipment, including temporary tankage to allow sufficient settling time to meet discharge requirements for suspended solids and turbidity.
- E. Recovery: Considered complete after well has been allowed to rest for a period at least equal to elapsed pumping time of aborted test, with the exception that if any three successive water level measurements spaced at least 20 minutes apart show no further rise in water level, test may be resumed at the direction of Engineer.

3.02 EQUIPMENT AND MATERIALS

- A. Pump: Capable of producing up to 2,500 gpm.
- B. Tanks: As required to provide to allow sufficient settling time to meet discharge requirements for suspended solids and turbidity. Water must be discharged on the site area with no erosion of soils, so to flow to a natural discharge channel near to the well site. The Contractor shall obtain all necessary approvals with the appropriate Regulating Body.
- C. Meet the discharge requirements specified in Section 33 21 13.09.
- D. Discharge Piping: Provide size and length to conduct up to 2,500 gpm water to discharge location approved by Engineer.
- E. Sounding Tubes:

1. Two, 2-inch diameter with perforations along the bottom 10 feet, adequate for insertion of water level sensing devices into well before, during, and after test pumping.
2. Allow free passage of pressure transducers that are 1-inch diameter and approximately 8 inches long.

F. Flowmeter:

1. Capable of measuring pump discharge within plus or minus 5 percent of true flow rate up to 2,500 gpm.
2. Capable of instantaneous rate and total flow readings.

G. Throttling Valve: Suitable to accurately regulate pumping rates throughout required range.

H. Provide Rossum Sand Tester during development to measure amount of sand produced from well.

I. Data Logger:

1. Provide water level data logger, transducer of suitable range, and adequate length of cables.
2. Manufacturer: Insitu, Inc.
3. Model: Troll 700, 100 psi probe.

3.03 STEP-RATE DRAWDOWN TESTING

A. General:

1. Set pump suction inlet at a depth of approximately 250 feet below ground surface in Well S-1 and 500 feet in Well 24-2.
2. Securely fasten sounding tube to pump column assembly, terminate approximately 5 feet above pump.
3. Install throttling valve downstream of flowmeter.

B. Pump Discharge Rate:

1. Control by a throttling valve.
2. Control and maintain at approximately the desired discharge rate for each step with an accuracy of at least plus or minus 5 percent, using instantaneous and totalizing flowmeters.
3. Perform test at rates of approximately 1/2, 3/4, 1, 1-1/4, and 1-1/2 times design capacity of well.
4. Well Design Capacity: Approximately 1,400 gpm, or greater.

C. Duration: Perform each step of the step-rate test for 120 minutes.

- D. Water Level Measurement Schedule: Measure at the following intervals, unless otherwise specified by Engineer:
 - 1. Set Insitu transducer logger to record at a logarithmic frequency at the start of the test and up to a maximum interval of 2 minutes throughout the test.

3.04 CONSTANT-RATE TESTING

A. General:

- 1. Set pump suction inlet at a depth of approximately 400 feet below ground surface.
- 2. Securely fasten sounding tube to pump column assembly, terminate approximately at the top of the pump.
- 3. Install throttling valve downstream of flowmeter a minimum length of 5 pipe diameters.

B. Pump Discharge Rate:

- 1. Control by a throttling valve.
- 2. Control and maintain at discharge rate specified by Engineer for duration of test with an accuracy of at least plus or minus 5 percent, using instantaneous and totalizing flowmeters. When necessary, make adjustments in pumping rate using an in-line valve rather than engine throttle.

- C. Duration: Conduct by pumping well continuously at a constant rate of up to 2,500 gpm for a period of 24 hours, or until Engineer terminates test.

- D. Water Level Measurement Schedule: Measure at the following intervals, unless otherwise specified by Engineer:
 - 1. Set Insitu transducer logger to record at a logarithmic frequency at the start of the test and up to a maximum interval of 2 minutes throughout the test.

- E. Conduct fluid velocity log of well near end of constant-rate drawdown test as directed by Engineer.

- F. Following completion of the constant-rate test do not conduct activities in the well or nearby well that might affect water levels during recovery period.

3.05 FINAL SAND CONTENT

- A. Sand content shall not exceed 5 ppm within first 15 minutes of pumping at test discharge rate. If sand concentration exceeds 5 ppm, perform development work to reduce sand concentration to less than 5 ppm, as directed by Engineer.

3.06 TEST FAILURE

- A. In the event that test fails to meet specified duration requirement, or if test is initiated too soon after an aborted test, test will be declared invalid, and shall require a retest.
- B. Aborted Test: Failure of pump operation during test shall require test be aborted and further testing suspended until well recovery is achieved.

3.07 WELL TEST DATA

- A. Maintain for each test.
- B. Records shall include depth of transducer, pumping rate, static and pumping water level, drawdown, elevation of gravel pack, sand content, color of discharge water, and all other pertinent information regarding well testing.
- C. Submit at end of each test.

3.08 CLEANUP

- A. Remove sand and debris that accumulated in the bottom of well after completion of water level monitoring, and after pump has been removed.
- B. Remove lubricating oil from well.

END OF SECTION

SECTION 33 21 13.11
WATER WELL PLUMBNESS AND ALIGNMENT TEST

PART 1 GENERAL

1.01 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
 - 1. American Water Works Association (AWWA): A100, Water Wells.
 - 2. ASTM International (ASTM):
 - a. A53/A53M, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - b. A139/A139M, Standard Specification for Electric-Fusion (Arc)-Welded Steel Pipe (NPS 4 and Over).

1.02 SUBMITTALS

- A. Action Submittals:
 - 1. Detailed description and data sheets on gyroscopic tools and equipment.
 - 2. Survey specialist detailed experience description.
- B. Informational Submittals: Plumbness and Alignment Survey Data.
- C. The submittals shall be made in accordance with Section 01 33 00, Submittal Procedures.

1.03 QUALITY ASSURANCE

- A. Survey Specialist Qualifications: Shall have been in the business of conducting plumbness and alignment tests for a minimum of 5 years.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

- A. Notify Engineer 48 hours in advance of performing plumbness and alignment survey.
- B. Notify Engineer of anticipated delays whenever they become apparent.
- C. Perform test in the presence of Engineer and explain results to Engineer.

3.02 EQUIPMENT AND MATERIALS

A. Gyroscopic Probe Features:

1. Capable of reaching a depth of 600 feet in a nominal 20-inch diameter cased hole filled with either air or liquid.
2. Azimuth Range: 0 degree to 360 degrees.
3. Azimuth Accuracy: Meet or exceed 2 percent.
4. Inclination Range: 0 degree to 30 degrees.
5. Inclination Accuracy: Meet or exceed 0.25 percent.

3.03 GYROSCOPIC SURVEY

A. Test well for plumbness and alignment using a gyroscopic probe.

1. Probe shall measure borehole inclination and borehole azimuth (compass direction) at maximum 10-foot depth intervals in order to derive horizontal borehole deviations.
2. Run gyroscopic survey on pilot borehole at total depth and final well casing and screen at total depth.

B. Conduct analysis of data following the procedures in AWWA A100, Appendix D to determine the deviation of well from pump centerline.

C. Method of calculation shall be reviewed by Engineer, and at Engineer's discretion will provide an independent analysis of data.

3.04 PLUMBNESS AND ALIGNMENT CRITERIA

A. Maximum Allowable Horizontal Deviation:

1. Plumbness: Shall not exceed 0.0067 times the smallest inside diameter of that part of the well being tested per 1 foot of depth.
2. Alignment:
 - a. Distance between well centerline, and a straight line representing proposed pump center line shall not exceed one-half the difference between inside diameter of casing and 16-inch outside diameter pump.
3. Demonstrate compliance with plumbness and alignment specification in Plumbness and Alignment Survey submittal.

B. Meet plumbness or alignment limitations as set forth herein and if necessary correct at Contractor's sole expense.

3.05 SURVEY DATA

A. Document, in writing, a report demonstrating the results of the following:

1. Raw field data of azimuth and inclination at minimum depth measurement intervals of 10 feet.
2. Calculated true horizontal deviation with depth at specified depth measurement intervals (x, y, and z coordinates).
3. Vertical cross-sectional plot of true horizontal deviation with depth in the north-south plane and in the east-west plane, similar to Figure D.4, of AWWA A100, Appendix D.
4. Plan view plot showing deviation at each specified depth measurement interval, similar to Figure D.5 of AWWA A100, Appendix D.
5. Analysis showing compliance with maximum allowable deviation from required plumbness and alignment tolerance, as described in AWWA A100, Appendix D.

END OF SECTION

SECTION 33 21 13.12
WATER WELL VIDEO INSPECTION

PART 1 GENERAL

1.01 SUBMITTALS

- A. Action Submittals:
 - 1. Product data for camera.
 - 2. Survey specialist detailed experience description.
- B. Informational Submittals:
 - 1. Video Survey Data: Provide original video survey and two copies immediately upon completion of survey.
- C. The submittals shall be made in accordance with Section 01 33 00, Submittal Procedures.

1.02 QUALITY ASSURANCE

- A. Survey Specialist Qualifications: Shall have been in the business of conducting video survey for a minimum of 5 years.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

- A. Perform color video survey to serve as a final inspection document for each well.
- B. Perform color video survey as required in Section 33 21 13.15.
- C. Notify Engineer 48 hours prior to performing the video survey. Perform survey in the presence of Engineer.
- D. Notify Engineer of anticipated delays whenever they become apparent.
- E. Conduct Video Survey:
 - 1. As required in other sections of these specifications. Following completion of well pumping tests.
 - 2. After sediment accumulated in well from test pumping has been removed.

3. After fresh water has been introduced, if required, from surface to clarify water standing in well.
4. Prior to final disinfection of well.

3.02 EQUIPMENT

A. Camera Features:

1. Color vertical down-hole and horizontal side-hole viewing capability with centralizers.
2. Horizontal side-hole viewing shall be controllable to allow viewing at angles within a 360-degree rotation.
3. Produce a video with an automatic on-screen depth indication to nearest 0.1 foot.

3.03 VIDEO SURVEY

A. Procedures:

1. Prior to conducting survey, remove test pump and bail well clean of lubricating oil, sediment, and debris; allow to remain idle for at least 24 hours.
2. Prior to and during survey, to the satisfaction of Engineer, introduce sufficient quantity of clear water into well to produce clear viewing conditions during survey.
3. Disinfect camera prior to placing in well.
4. Run a dynamic vertical down-hole view video from top of well to the bottom of well at a speed not exceeding 30 feet per minute.

B. Survey shall pause at selected intervals of interest during the dynamic vertical down-hole view run for periodic static horizontal side-hole viewing.

3.04 FIELD QUALITY CONTROL

A. If survey fails to produce a clear picture of internal casing condition, introduce clear, potable water and conduct survey to Engineer's satisfaction until a clear video is obtained.

B. Defects:

1. Engineer shall inspect video survey of the well for defects in well casing and screen.
2. Defects noted will be cause for rejection by Engineer.
3. Correct defects found in casing and bear cost for repairs and cost of resurveying hole.

3.05 VIDEO SURVEY DATA

A. Features:

1. Original and copies of survey shall be in DVD format.
2. Beginning and end of video shall contain date and well name.
3. Clearly label exterior of DVD with Project name, date, and well name.

END OF SECTION

SECTION 33 21 13.13
WATER WELL DISINFECTION

PART 1 GENERAL

1.01 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
 - 1. American Water Works Association (AWWA):
 - a. 10084, Standard Methods for the Examination of Water and Wastewater.
 - b. A100, Water Wells.
 - c. C654, Disinfection of Wells.

1.02 SUBMITTALS

- A. Action Submittals: Disinfection products and procedures.
- B. Informational Submittals: Chlorine concentration test results.
- C. The submittals shall be made in accordance with Section 01 33 00, Submittal Procedures.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

- A. Notify Engineer at least 5 working days before disinfection activities begin.
- B. Notify Engineer of anticipated delays whenever they become apparent.
- C. Disinfect well at two stages; initially after completing the constant-rate discharge test but before removing the test pump, and again before final capping of the well head.
- D. Sodium Hypochlorite Solution: In accordance with AWWA A100, Section 4.9.

3.02 DISINFECTION BEFORE TEST PUMP REMOVAL

- A. Disinfect well after completing constant-rate discharge test, including recovery.

- B. Place sodium hypochlorite solution into well and work solution throughout water column and into gravel pack by turning pump on and off while recirculating a portion of pump discharge.

3.03 VERIFICATION FOLLOWING DISINFECTION BEFORE TEST PUMP REMOVAL

- A. All discharges that leave the site shall comply with the requirements of 33 21 13.09.
- B. After well has been chlorinated and pumped to waste for a minimum of 15 minutes with zero chlorine residual, take duplicate samples and test for presence of Coliform Bacteria.
- C. Analysis method shall be in accordance with AWWA 10084.
- D. If sample shows presence of Coliform Bacteria, Contractor may attempt to resample.
- E. If second sampling attempt shows presence of Coliform Bacteria, re-disinfect well until it passes.
- F. Remove pump from the well following successful coliform sampling and analysis.

3.04 DISINFECTION BEFORE FINAL WELL CAPPING

- A. Disinfect well prior to final capping by adding sufficient sodium hypochlorite solution to achieve 100 ppm chlorine concentration in the well.
- B. Apply chlorine solution by placing through continuously raised tubing so to reach all portions of the well. Leave applied chlorine in the well following Disinfection Before Final Well Capping.

3.05 WELL CAPPING

- A. Upon completion of construction, development, testing, disinfection and bacteriological evaluation and verification, cap well as shown on the Drawings.
- B. The Engineer shall complete ADWR form 55-39 and submit to ADWR.

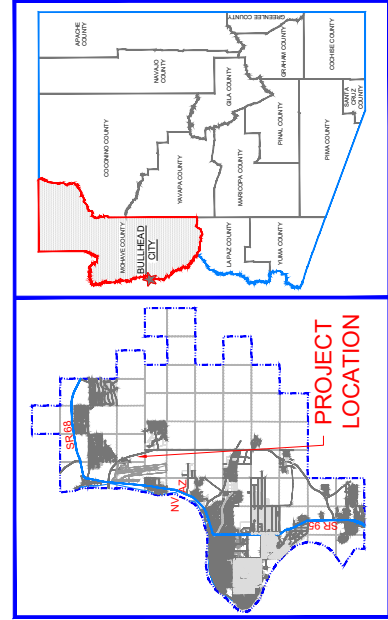
END OF SECTION

11.0 CONSTRUCTION DRAWINGS

Construction drawings issued for this project titled “6-1 WELL DRILLING” consisting of 3 pages and dated August 26, 2025, are incorporated herein by this reference and are an integral part of the Contract Documents for this project.

CITY OF BULLHEAD CITY

6-1 WELL DRILLING



2355 TRANE ROAD
BULLHEAD CITY, ARIZONA 86442

BHC VICINITY/AREA MAP
SCALE: 1" = 1 MILE

ARIZONA STATE MAP
SCALE: 1" = 100 MILES



PROJECT SCOPE AREA MAP
SCALE: 1" = 100 FEET

APPROVED: _____
DATE: _____

PROJECT DESCRIPTION:
DRILL AND CASE 20" DIAMETER WATER SUPPLY
WELL, TEST PUMP AND DISINFECT.

PROJECT DATE: AUGUST, 2025

UTILITIES

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SHEET NO.	DESCRIPTION
NOS. 1 OF 4	COVER SHEET
NOS. 2 OF 4	WATER SUPPLY PLAN
NOS. 3 OF 4	6-1 WELL DIAGRAM AND DETAIL

GENERAL NOTES

1. TEMPORARY PIPE SUPPORT PILES FOR ALL UTILITIES SHALL BE 40 TYPE "A" PILES.
2. CONTRACTOR TO PROTECT AND MAINTAIN ALL UTILITIES EXISTING ON SITE.
3. CONTRACTOR TO PROVIDE ALL THE NECESSARY EROSION CONTROL MEASURES TO PREVENT EROSION DURING CONSTRUCTION.
4. NOT ALL UTILITIES MAY BE SHOWN ON THIS PLAN.
5. CONTRACTOR RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FOR CONSTRUCTION.
6. CONTRACTOR TO MAINTAIN ALL EXISTING UTILITIES AND STRUCTURES ON SITE.
7. ALL CUBES TO BE 6' CUBES & CUTTER SHALL BE USED FOR ALL UTILITIES.
8. ROADWAY TO CITY RIGHT-OF-WAY.



Design: BOGENSEHL	Check: R FARNELL
Date: 2025-08-25	
Revision: _____	Description: _____
By: _____	



Design:	BOGENSCHILD	Drawn:	BOGENSCHILD	Checked:	R. FARNELL
Date:	2025-08-26				
Revision	Date	Description	By		

6-1 WELL DRILLING	6-1 WELL SITE PLAN
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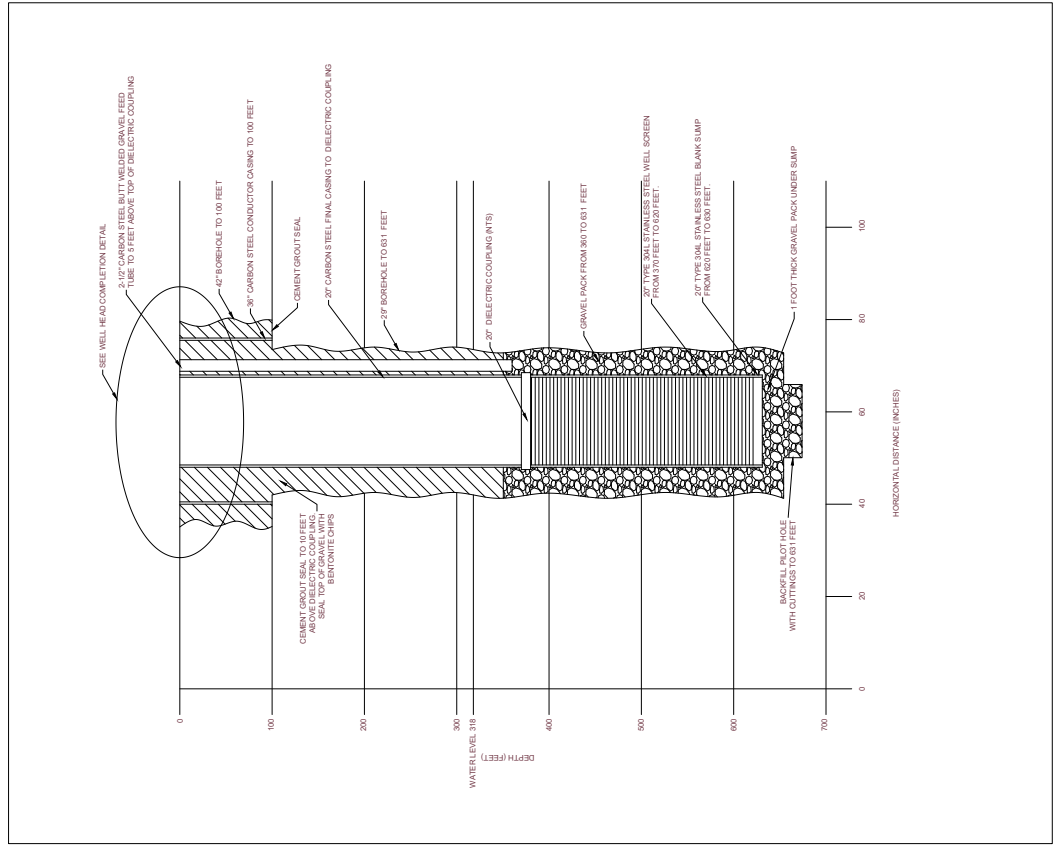


- NOTES
1. PROPOSED LOCATIONS ARE DRAFT FOR PLANNING ONLY. LOCATIONS TO BE DETERMINED BY CITY AND CONTRACTOR
 2. VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION. VERIFY DEPTH AND LOCATION PRIOR TO EXCAVATION. PROTECT ALL EXISTING UTILITIES DURING CONSTRUCTION.
 3. DISCHARGE WATER FROM CONSTRUCTION AND TESTING TO THE WASH TO THE SOUTH OF THE WELL SITE.

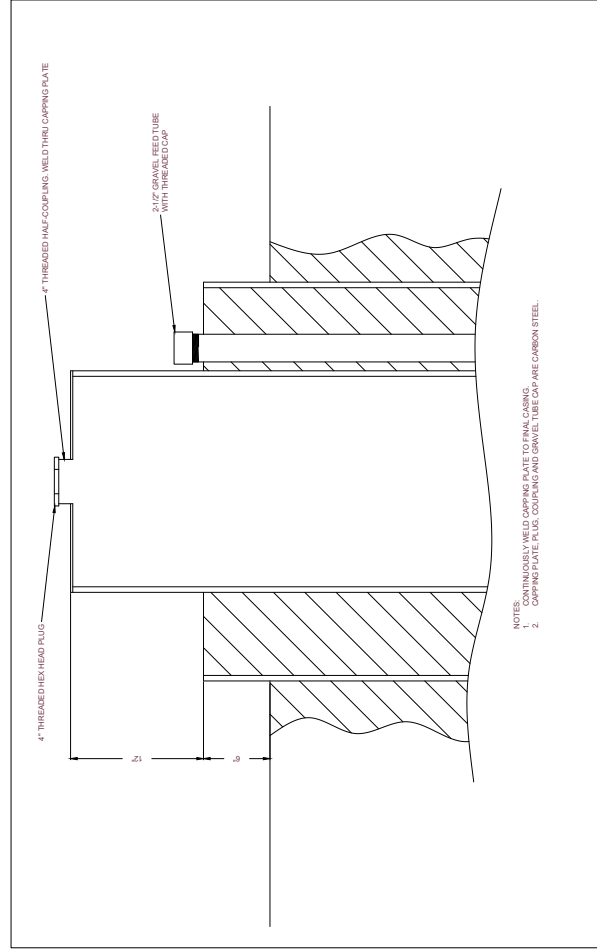


Design:	BOGENSEN	Checked:	R. FARNELL
Date:	2025-09-02	Description:	
By:			
Revision:			

WELL DIAGRAM & DETAIL
6-1 WELL DRILLING



6-1 WELL DIAGRAM - NTS



WELL HEAD COMPLETION DETAIL - NTS