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Docket #(s): W-01445A-15-0277

Arizona Corporation Commission
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Exhibit #: FRS-1; WA 1-4806, WA 1-5076, WA 1-5164 WA 1-5165

Part 8 of 12

For parts 1-7, see barcodes 0000170605 through 0000170611
For parts 9-12, see barcodes 0000170613 through 0000170616

Western Group Rate Case

Exhibit FKS-1

4806 Coolidge Well No. 13 ARF

ARIZONA WATER COMPANY
WORK AUTHORIZATION

W.A. NUMBER: 1-4806
P.E. NUMBER:
BUDGET ITEM NO.: B-1
SHEET NO.: 1 of 2

SYSTEM:	PINAL VALLEY	RETENTION REQUIRED:	☐ YES ☑ NO
DIVISION:	CASA GRANDE	WORK TO START BY:	UPON AUTHORIZATION
RESPONSIBLE PERSON:	JAMES WILSON	WORK TO BE FINISHED BY:	WITHIN 300 DAYS
TAX CODE:			

DESCRIPTION OF WORK:

Design and permit a 800 gpm Arsenic Removal Facility (ARF) at Coolidge Well No.13 in the Pinal Valley water system.

FACTORS JUSTIFYING WORK:

Coolidge Well No. 13 was taken out of service in 2011. Company operators routinely took water quality samples for Arsenic from 2009 through 2011. During this time EPA's Arsenic MCL of 0.010 mg/L was exceeded in the majority of the samples. The collected data shows Arsenic concentrations ranged from between 0.0079 to 0.023 mg/L, with an average of 0.0146 mg/L. The well is needed to meet increasing demands within the Heartland development and Coolidge area. Company engineers have determined that design of an Arsenic Removal Facility (ARF) employing either adsortive media or coagulation/filtration removal technologies is required for the well in order to facilitate expedited construction and implementation of the ARF.

COST ESTIMATE		AUTHORIZATION	DATE
COST OF WORK:		PREPARED BY: James Wilson	
MATERIAL	0		
LABOR	4,400	REVIEWED FOR ESMT/ROW VERIFICATION: Charles Briggs	
CONTRACT PORTION	125,000		
OVERHEAD	15,500	REVIEWED BY: Andy Haas	
TOTAL AUTHORIZED EXPENDITURES CHARGEABLE TO THIS W.A.	$ 144,900		
FUNDS RECEIVED:		APPROVED BY ENGINEERING: Fredrick Schneider	
CONTRIBUTIONS RECEIVED	0		
REFUNDABLE ADVANCES RECEIVED	0	APPROVED BY FINANCE: Joseph Harris	
TOTAL CONTRIBUTIONS/ADVANCES	0		
NET COMPANY CASH REQUIRED	$ 144,900	AUTHORIZED BY PRESIDENT: William Garfield	

COMMENTS:

RELEASE TO DESIGN ONLY

CONSTRUCTION RELEASE:

2015 BUDGET

AFH

ARIZONA WATER COMPANY

WORK AUTHORIZATION - DETAIL SHEET

W.A. NUMBER: 1-4806
P.E. NUMBER:
BUDGET ITEM NO.: B-1
SHEET NO.: 2 of 2

RETIREMENT PROPERTY UNITS	PLANT PROPERTY ACCOUNT	UNIT DESCRIPTION	QUANTITY	YEAR INSTALLED AND W.A. NUMBER

PROJECT DESCRIPTION:

Design and permit a 800 gpm Arsenic Removal Facility (ARF) at Coolidge Well No. 13 in the Pinal Valley water system.

	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST	TOTAL
CONTRACT WORK	Cost Incurred to Date	332	1	$ 50,000.00	$ 50,000
	Engineering Design	332	1	$ 75,000.00	$ 75,000
	SERVICE CONNECTIONS COMPLETE: DOUBLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: DOUBLE-SHORT	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-SHORT	345			
TOTAL CONTRACT WORK					$ 125,000
MATERIALS					
	SERVICE CONNECTIONS: DOUBLE-LONG	345			
	SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	SERVICE CONNECTIONS: SINGLE-LONG	345			
	SERVICE CONNECTIONS: SINGLE-SHORT	345			
	METERS	346			
TOTAL MATERIALS					$ -
LABOR	Engineering and Project Management	332	80	$ 55.00	$ 4,400
	TESTING FEE				
	PERMIT FEE				
	SURVEY FEE				
	FIELD INSPECTION				
	INSTALL SERVICE CONNECTIONS: DOUBLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-SHORT	345			
TOTAL LABOR					$ 4,400
SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR					$ 129,400
OVERHEAD					15,500
TOTAL	REFUNDABLE PORTION ☐	NON-REFUNDABLE PORTION ☐		**COST ESTIMATE**	$ 144,900

AFH

ARIZONA WATER COMPANY

COOLIDGE WELL NO. 13
ARSENIC REMOVAL FACILITY

Alternatives Evaluation Technical Memorandum

DRAFT
November 2011

4600 EAST WASHINGTON STREET • SUITE 500 • PHOENIX, ARIZONA 85034 • (602) 263-9500 • FAX (602) 265-1422

ARIZONA WATER COMPANY

COOLIDGE WELL NO. 13 ARSENIC REMOVAL FACILITY

ALTERNATIVES EVALUATION TECHNICAL MEMORANDUM

TABLE OF CONTENTS

		Page
1.0	INTRODUCTION/BACKGROUND	1-1
2.0	BASIS OF EVALUATION	2-2
2.1	Design Criteria and Assumptions	2-3
2.2	Site Constraints	2-7
3.0	ALTERNATIVE 1 – PARTIAL TREATMENT	3-9
3.1	Alternative 1 Coagulation/Filtration (1 C/F)	3-9
3.2	Alternative 1 Ion Exchange (1 IX)	3-9
3.3	Alternative 1 Sorptive Media (1SM)	3-9
3.3.1	Lead-Lag Operation	3-9
3.3.2	Parallel Operation	3-9
3.4	Conclusions for Alternative 1	3-10
4.0	ALTERNATIVE 2 – FULL TREATMENT	4-19
4.1	Alternative 2 Coagulation/Filtration (2 C/F)	4-19
4.2	Alternative 2 Ion Exchange (2 IX)	4-19
4.3	Alternative 2 Sorptive Media (2 SM)	4-19
4.3.1	Lead-Lag Operation	4-19
4.3.2	Parallel Operation	4-19
4.4	Conclusions for Alternative 2	4-20
5.0	COST ANALYSIS	5-25
5.1	Comparison of Costs	5-26
6.0	QUALITATIVE EVALUATION OF ARSENIC TREATMENT ALTERNATIVES	6-36
6.1	Current State of Filter Medias	6-38
6.2	Current State of Sorptive Medias	6-39
6.3	Ranking of C/F and SM Medias	6-41
7.0	EVALUATION SUMMARY	7-44
7.1	Site Layout Conclusions	7-44
7.2	Cost Conclusions	7-45
7.3	Recommendation	7-45

APPENDICES

APPENDIX A	WATER QUALITY (WELL NO. 11 AND NO. 13)
APPENDIX B	CONSTRUCTION COST DETAILS
APPENDIX C	O&M COST DETAILS

LIST OF TABLES

Table 1	Arsenic Treatment Technology and Mitigation Strategy Alternatives	1-2
Table 2	Design Criteria and Assumptions Used for Sizing Treatment Footprints	2-4
Table 3	Summary of Bypass Flows and Treatment Equipment Footprints	2-5
Table 4	Summary of Ancillary Equipment Sizes and Footprints	2-6
Table 5	Capital and O&M Cost Details for Alternative No. 1 (Partial Treatment) for Well No. 13	5-27
Table 6	Capital and O&M Cost Details for Alternative No. 2 (Full Treatment) for Well No. 13	5-28
Table 7	Capital and Life-Cycle Cost Summary for Alternative No. 1 and No. 2 for Well No. 13	5-29
Table 8	Capital and O&M Cost Details for Alternative No. 1 (Partial Treatment) for Well No. 11	5-33
Table 9	Capital and O&M Cost Details for Alternative No. 2 (Full Treatment) for Well No. 11	5-34
Table 10	Capital and Life-Cycle Cost Summary for Alternative No. 1 and No. 2 for Well No. 11	5-35
Table 11	Comparison of Arsenic Treatment Alternatives	6-37
Table 12	Current Status of Medias Used for Coagulation/Filtration [(1)]	6-39
Table 13	Current Status of Arsenic Sorptive Medias	6-40
Table 14	Qualitative Ranking of C/F and SM Medias	6-43

LIST OF FIGURES

Figure 1	Well No. 13 Site Constraints	2-8
Figure 2	C/F Process Flow Schematic	3-11
Figure 3	Alternative 1 C/F Site Layout	3-12
Figure 4	IX Process Flow Schematic	3-13
Figure 5	Alternative 1 IX Site Layout	3-14
Figure 6	SM Lead-Lag Process Flow Schematic	3-15
Figure 7	Alternative 1 SM Lead-Lag Site Layout	3-16
Figure 8	SM Parallel Process Flow Schematic	3-17
Figure 9	Alternative 1 SM Parallel Site Layout	3-18
Figure 10	Alternative 2 C/F Site Layout	4-21
Figure 11	Alternative 2 IX Site Layout	4-22
Figure 12	Alternative 2 SM Lead-Lag Site Layout	4-23
Figure 13	Alternative 2 SM Parallel Site Layout	4-24
Figure 14	Life-Cycle Costs for Alternative No. 1 (Partial Treatment)	5-30
Figure 15	Life-Cycle Costs for Alternative No. 2 (Full Treatment)	5-31
Figure 16	Life-Cycle Costs for C/F and SM at Various Well Utilization Rates	5-32

1.0 INTRODUCTION/BACKGROUND

Arizona Water Company (AWC) owns a production well site located within a residential area on Vah Ki Inn Road in Coolidge, Arizona. The well historically has a production capacity of 1,250 gallons per minute (gpm), which is pumped directly into the distribution system. The current arsenic concentration in Well No. 13 approximately 0.013 mg/L, but is anticipated to increase to an ultimate concentration of approximately 0.018 mg/L based on observed water quality trends of surrounding wells. The range of duty cycle for the well is initially anticipated to be from 25 to 50 percent, and increase to a range of duty cycle from 75 to 100 percent as the water system demands increase. Future demands will also be met with additional flow of 1,250 gpm from a second nearby well currently drilled, but not yet equipped.

AWC has contracted with Carollo Engineers (Carollo) to conduct an evaluation of various arsenic treatment technologies or mitigation strategies for Well No. 13. The objective of this study is to determine the most cost effective strategy for implementation that meets AWC's and regulatory requirements.

Two treatment alternatives will be evaluated during this study:

- Partial stream arsenic treatment at Well No. 13.
- Full stream arsenic treatment at Well No. 13.

Three arsenic treatment technology options will be considered for this study:

- Coagulation/filtration (C/F) including horizontal and vertical pressure vessel arrangements.
- Ion exchange (IX).
- Sorptive media (SM), including parallel flow vs. lead-lag flow treatment vessel arrangements.

These technologies were selected for evaluation in this study, as they are the primary groundwater arsenic removal technologies currently in use. Other arsenic treatment technologies are also available; however, they are generally some variation of the primary categories. Additionally, due to potential contamination and liability issues, AWC will not use arsenic treatment systems that require off-site media regeneration.

Coagulation/filtration treatment involves a pressurized granular media filtration process following iron addition. Ion exchange treatment includes arsenic adsorption onto resin-type media, which requires regeneration using concentrated sodium chloride solution (i.e., brine). This is a very complex process that involves pumps, storage of waste brine, and periodic discharge of the brine to onsite or offsite facilities. Adsorption is a simpler process and includes treatment using a special disposable or regenerable media, which possess effective arsenic removal capabilities.

Table 1 provides a summary of the various treatment technology and mitigation strategies evaluated as part of this study.

Table 1 Arsenic Treatment Technology and Mitigation Strategy Alternatives
Arsenic Removal Facility Alternatives Evaluation
Arizona Water Company

		Coagulation/ Filtration (CF)	Ion Exchange (IX)	Sorptive Media (SM)
Alt. 1	Partial treatment	Alt. 1 C/F	Alt. 1 IX	Alt. 1 SM
Alt. 2	Full treatment	Alt. 2 C/F	Alt. 2 IX	Alt. 2 SM

After the initial workshop, AWC requested that Well No. 11 be considered for treatment at the Coolidge Well No. 13 site. Costs were developed based on a single sam ple collected during well development of Well No. 11. The pH and arsenic are higher in Well No. 11 compared to Well No. 13 so pH adjustment will likely be needed. Costs are presented at the end of Section 5.

2.0 BASIS OF EVALUATION

This evaluation will review the advantages and disadvantages of the various treatment technologies evaluated, as well as site constraints and issues. The evaluation will also include a cost analysis for each alternative. In order to properly select the best arsenic mitigation alternative, the evaluation process for this study will include the following components:

- Site space restrictions and new equipm ent spacing and layouts.
- Limitations on building heights.
- Potential of blending groundwater for partial stream treatment to reduce treatment equipment footprints and costs.
- Disposal costs for residual streams from the treatment processes for each of the treatment alternatives evaluated.

- Evaluation of extra pipeline costs for centralized treatment system, versus dedicated treatment systems for each site.
- Well production, AWC system production requirements, and well water quality parameters and their impacts on the different treatment technologies.
- Capital construction costs for each alternative.
- O&M costs for each alternative.
- 20-year life cycle costs for each analysis.
- Relative pros and cons of each alternative including:
  - Treatment technology effectiveness and reliability.
  - Each of operations, and the ability of the treatment systems to be shut down for weeks or months and then be restarted.
  - Disposal of residuals, regulatory permitting, and potential issues and costs associated with generation and disposal of Resource Conservation and Recovery Act (RCRA) wastes.
  - Constructability.
  - Footprint.
  - Impact on neighbors.
  - Issues associated with the relative remoteness of Coolidge Well #13 site as it relates to chemical shipments and chemical storage.

2.1 Design Criteria and Assumptions

Table 2 summarizes the design criteria and assumptions used to calculate the approximate sizes and footprints of new equipment. Table 3 summarizes the bypass flow calculations, and main treatment equipment footprints. Table 4 summarizes the ancillary equipment footprints (e.g., dewatering system, brine supply, ferric system).

Table 2 Design Criteria and Assumptions Used for Sizing Treatment Footprints
Arsenic Removal Facility Alternatives Evaluation
Arizona Water Company

Item	Units	Value	Notes
Treatment Equipment (Pressure Vessels & Backwash Tanks)			
Flow Rates			
Coolidge #13	gpm	1250	
(other wells)	gpm	0	(not used)
Well Utilization Rates			
Coolidge #13	%	25 -100	
Raw Water Arsenic			
Coolidge #13	µg/L	18	
(other wells)	µg/L	0	(not used)
Level of Treatment per Process			Arsenic concentration coming off filters/contactors. Value will affect blending ratio.
C/F	µg/L	6	AWC Oasis Site has 8 µg/L arsenic in filter effluent.
IX	µg/L	4	
SM (parallel)	µg/L	4	
SM (lead-lag)	µg/L	1	
Treatment goal for arsenic			Arsenic concentration going to distribution system. Value set by AWC.
C/F	µg/L	7	
IX	µg/L	7	
SM (parallel)	µg/L	7	ST and Siemens bed volume estimate (Well No. 13) was 76,000 and 30,000 respectively.
SM (lead-lag)	µg/L	8	ST bed volume estimate (Well No. 13) was 95,000.
Media Bed Depth			
C/F	ft	3.33	
IX	ft	3.33	
SM	ft	3.33	
Setback distances			
Between vessels or tanks	ft	3	C/F, IX, SM parallel
Between trains of vessels	ft	6	SM...between lead-lag and between train no.1 / no.2
Edge of Equipment to Edge of Pad	ft	2	BW, brine tanks, bag filters
Dished head height	ft	2	semi-elliptical dish assumed
Property line to equipment	ft	5	for equipment on north property line. Based on existing setback for chlorine storage shed
Property line to equipment	ft	10	for all other equipment
Backwash rates	gpm/ft^2	12	SM
		20	C/F
	gpm	---	Should not exceed total pumping capacity of well(s)
Backwash duration	min	10	
Backwash Storage Tank			
No. of backwash volumes	no.	1.5	SM
		3.5	C/F...all three cells washed sequentially when operator is on-site
Height	ft	11.5	Storage volume only. Does not include freeboard or roof pitch
Ancillary Equipment (Chemical Tanks, Dewatering Equipment and Brine Tanks)			
Setbacks			
Tank to pad	ft	1.75	
Pad to curb	ft	3	
Curb Width	ft	0.5	
Curb Height	ft	0.75	
Tank Size			
Ferric System			Approximately 30 days of storage at average dose and maximum well flow Minimum 250 gallon considering minimum delivery size provided by suppliers Size based on standard sizes for double-lined tanks from Polyprocessing (HDPE)
Ferric chloride dose	mg/L	3	
Containment volume	%	25	% of total bulk storage volume
Dewatering			Reflects standard size for SludgeMate dewatering equipment including setbacks
Brine Supply			30 days of storage
Brine Waste	gal/gpm	40	gallons storage per gpm of treatment capacity
Brine Reuse	%	10	of waste storage

Table 3 Summary of Bypass Flows and Treatment Equipment Footprints
Arsenic Removal Facility Alternatives Evaluation
Arizona Water Company

Alternative No.	Treatment Technology	Coolidge #13											
		Flowrates (gpm)			Treatment Vessel			Vessel Pad			Backwash Tank		Backwash Tank Pad
		Treated	Bypassed	Total	No.	Dia. (ft)	Length (ft)	Length (ft)	Width (ft)	Pad (ft^2)	Dia. (ft)	Vol. (gal)	Length or Width (ft)
1	C/F (vertical)	1,146	104	1,250	2	11.0	—	30	16	480	31	66,523	37
	C/F (horizontal)	1,146	104	1,250	1	9.0	25	25	14	354	26	44,730	31
	SM (parallel)	982	268	1,250	2	10	—	28	15	420	14	14,137	18
	SM (lead-lag)	735	515	1,250	4	8.7	—	28	28	807	13	10,700	17
	IX	982	268	1,250	3	10	—	41	15	615	(see "Ancillary Equipment" table)		
2	C/F (vertical)	1,250	0	1,250	2	11.5	—	31	17	512	33	72,708	37
	C/F (horizontal)	1,250	0	1,250	1	9.8	25	25	15	374	27	48,706	31
	SM (parallel)	1,250	0	1,250	2	11.3	—	31	16	499	16	18,052	20
	SM (lead-lag)	1,250	0	1,250	4	11.3	—	34	34	1129	16	18,052	20
	IX	1,250	0	1,250	3	11.3	—	45	16	732	(see "Ancillary Equipment" table)		

Notes:

1. "Total" represents total flow to distribution system,
2. Backwashing for C/F or SM will use distribution system water, thus eliminating the need to design using smaller filters to accommodate backwash flowrates.
3. Footprints represent large unit processes. Refer to "Ancillary Equipment" table for additional tanks. Small process pumps and equipment (e.g., backwash return) are not considered. These will be small enough to fit adjacent to tanks.
4. For IX, the vessel quantity and sizing is the same as SM (parallel) except for the addition on an additional vessel to serve as standby after media regeneration.

Table 4 **Summary of Ancillary Equipment Sizes and Footprints**
Arsenic Removal Facility Alternatives Evaluation
Arizona Water Company

Alternative No.	Treatment Technology	Ancillary Unit Process	Tank				Pad			Containment Volumes	
			No.	Size	Units	Diameter (ft)	Length (ft)	Width (ft)	Area (ft^2)	Min. Required (gal)	Calculated (gal)
1	C/F (w/ bypass)	Ferric	1	540	gal	7	14	11	142	135	154
		Sludge Dewatering	2	25	CY	—	24	16	372	—	—
2	C/F (no bypass)	Ferric	1	540	gal	7	14	11	142	135	154
		Sludge Dewatering	2	25	CY	—	24	16	372	—	—
3	IX (w/ bypass)	Bag Filters (Prefilter)	9	982	gpm	1	19	3	57	—	—
		Brine Supply	2	30	ton	10	27	14	378	—	—
		Brine Waste	3	9,100	gal	12	46	16	736	—	—
		Brine Recycle	1	5,893	gal	9	13	13	173	—	—
4	IX (no bypass)	Bag Filters (Prefilter)	12	1,250	gpm	1	25	3	75	—	—
		Brine Supply	2	40	ton	10	27	14	378	—	—
		Brine Waste	3	12,150	gal	12	46	16	736	—	—
		Brine Recycle	1	5,893	gal	9	13	13	173	—	—
5	SM Parallel (w/ bypass)	Bag Filters (Prefilter)	9	982	gpm	1	19	3	57	—	—
		Bag Filters (Recycle)	1	98	gpm	1	3	3	9	—	—
6	SM Lead-Lag (w/ bypass)	Bag Filters (Prefilter)	7	735	gpm	1	15	3	45	—	—
		Bag Filters (Recycle)	1	98	gpm	1	3	3	9	—	—
7	SM Parallel (no bypass)	Bag Filters (Prefilter)	12	1,250	gpm	1	25	3	75	—	—
		Bag Filters (Recycle)	1	125	gpm	1	3	3	9	—	—
8	SM Lead-Lag (no bypass)	Bag Filters (Prefilter)	12	1,250	gpm	1	25	3	75	—	—
		Bag Filters (Recycle)	1	125	gpm	1	3	3	9	—	—

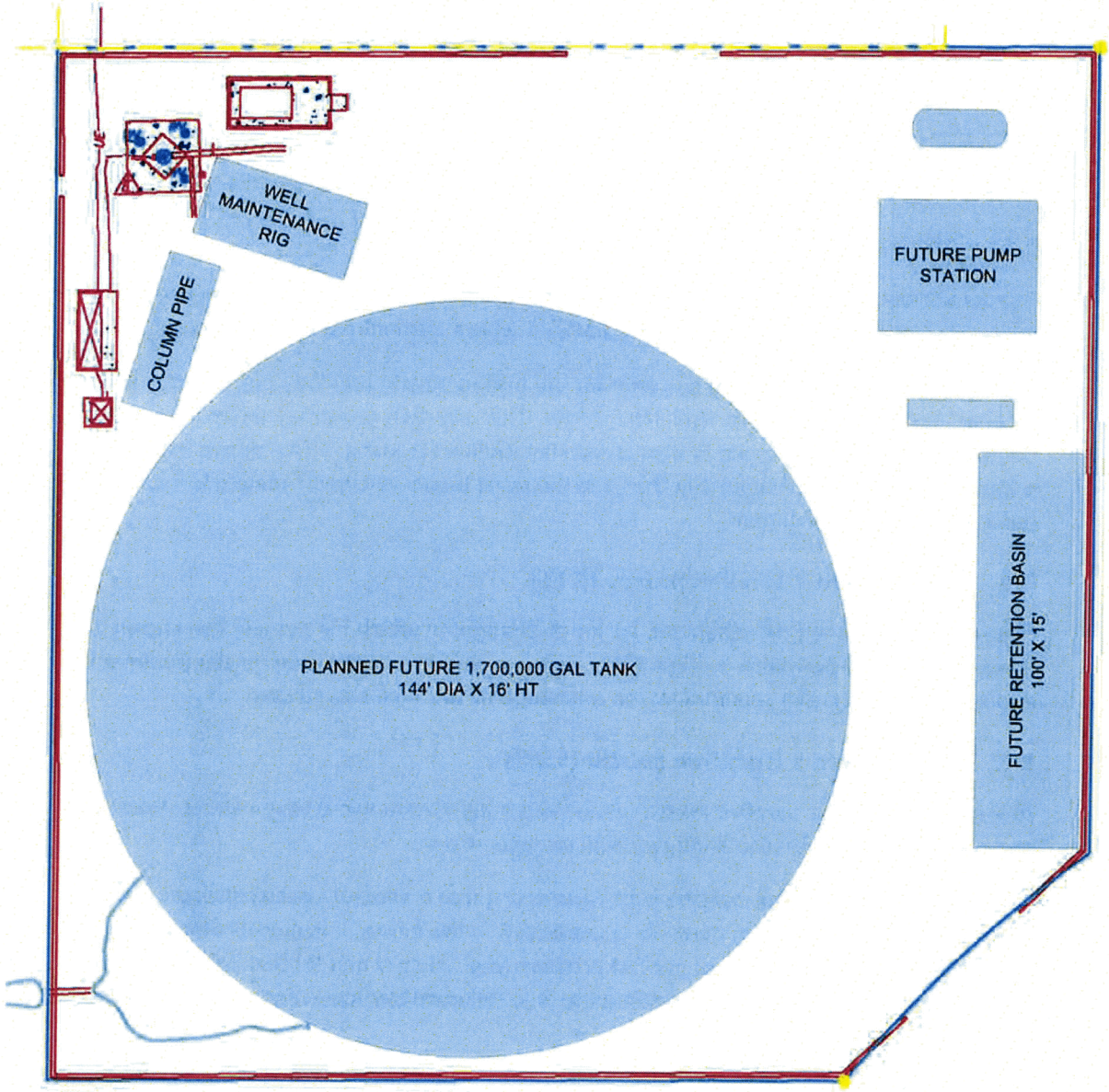
2.2 Site Constraints

This evaluation includes conceptual site layouts for each alternative in order to visualize the footprints of treatment and ancillary equipment on the site, which must take into account the significant area constraints at the Well No. 13 site. Site constraints associated with the Well No. 13 site are depicted in Figure 1 and described as follows:

- Well No. 13 in northwest corner of the site.
- Existing chlorination building and electrical control panel are located in the northwest corner of the site.
- Allow areas for rig to access Well 13, and for column pipe to be laid.
- Future retention basin on east side of the site, can be relocated to the southwest corner of the site.
- Future 1.7-MG storage tank is planned in the center of the site.
- Future booster pump station and hydropneumatic tank in northeast corner of the site.
- Future primary access to site will be via the southeast corner of the site, therefore the area must remain unobstructed.

The site layouts presented as part of the evaluation for each alternative includes the footprints of AWC's future planned equipment. These planned components are shown in light blue in the figures for the alternative site layouts. The grey components represent the footprints of the arsenic treatment equipment required for the first phase of construction to treat a flow of 1,250 gpm from Well No. 13. The light green components represent the footprints of the additional arsenic treatment equipment required for buildout flow of 2,500 gpm from both Well Nos. 11 and 13.

All sites layouts presented herein use an raw water arsenic concentration of 0.023 mg/L. This is a conservative approach used to take into account any incr eases in groundwater arsenic concentration coming from Well No. 13 or if nearby Well No. 11 is ever brought to the site for treatment. Well No. 11 has higher arsenic levels compared to Well No. 13.



LEGEND

- AWC future planned equipment
- Proposed arsenic treatment equipment
- Future arsenic treatment equipment

Figure 1 – Well No. 13 Site Constraints

COOLIDGE WELL NO. 13
ARSENIC REMOVAL FACILITY ALTERNATIVES EVALUATION
ARIZONA WATER COMPANY

carollo

3.0 ALTERNATIVE 1 – PARTIAL TREATMENT

Alternative 1 involves a partial treatment stream (coagulation/filtration, ion exchange, or sorptive media) allowing for blending in order to meet finished water arsenic goals.

3.1 Alternative 1 Coagulation/Filtration (1 C/F)

A process flow schematic for coagulation/filtration treatment is presented in Figure 2. The bypass line shown is applicable for Alternative 1 where partial treatment will occur.

Figure 3 provides a conceptual site plan for the treatment and ancillary equipment required for coagulation/filtration at the Well No. 13 site. This site plan assumes horizontal pressure vessels. An equipment space is also shown for "Solids Handling." This space is based on a SludgeMate type bin that further thickens the used backwash water residuals in order to reduce the disposal volumes.

3.2 Alternative 1 Ion Exchange (1 IX)

Figure 4 is a process flow schematic for ion exchange, in which the bypass line shown will be applicable for Alternative 1. Figure 5 provides a conceptual site plan for the treatment and ancillary equipment required for ion exchange at the Well No. 13 site.

3.3 Alternative 1 Sorptive Media (1SM)

Arsenic treatment via sorptive media can be accomplished in two configurations: lead-lag and parallel. This evaluation explored both configurations.

A conservative layout was considered by assuming that a second backwash waste tank is required when the treatment capacity is expanded in the future. It is possible that due to such infrequent backwashing of the SM process (e.g., once a month) that only one tank would be needed. There would be adequate time between backwashing vessels to recycle the decanted backwash water.

3.3.1 Lead-Lag Operation

Figure 6 provides a process flow schematic for arsenic treatment using sorptive media in the lead-lag configuration. For partial treatment of Well No. 13, the bypass line would be utilized.

Figure 7 provides a conceptual site plan for treatment and ancillary equipment needed for sorptive media the Well No. 13 site in a lead-lag configuration.

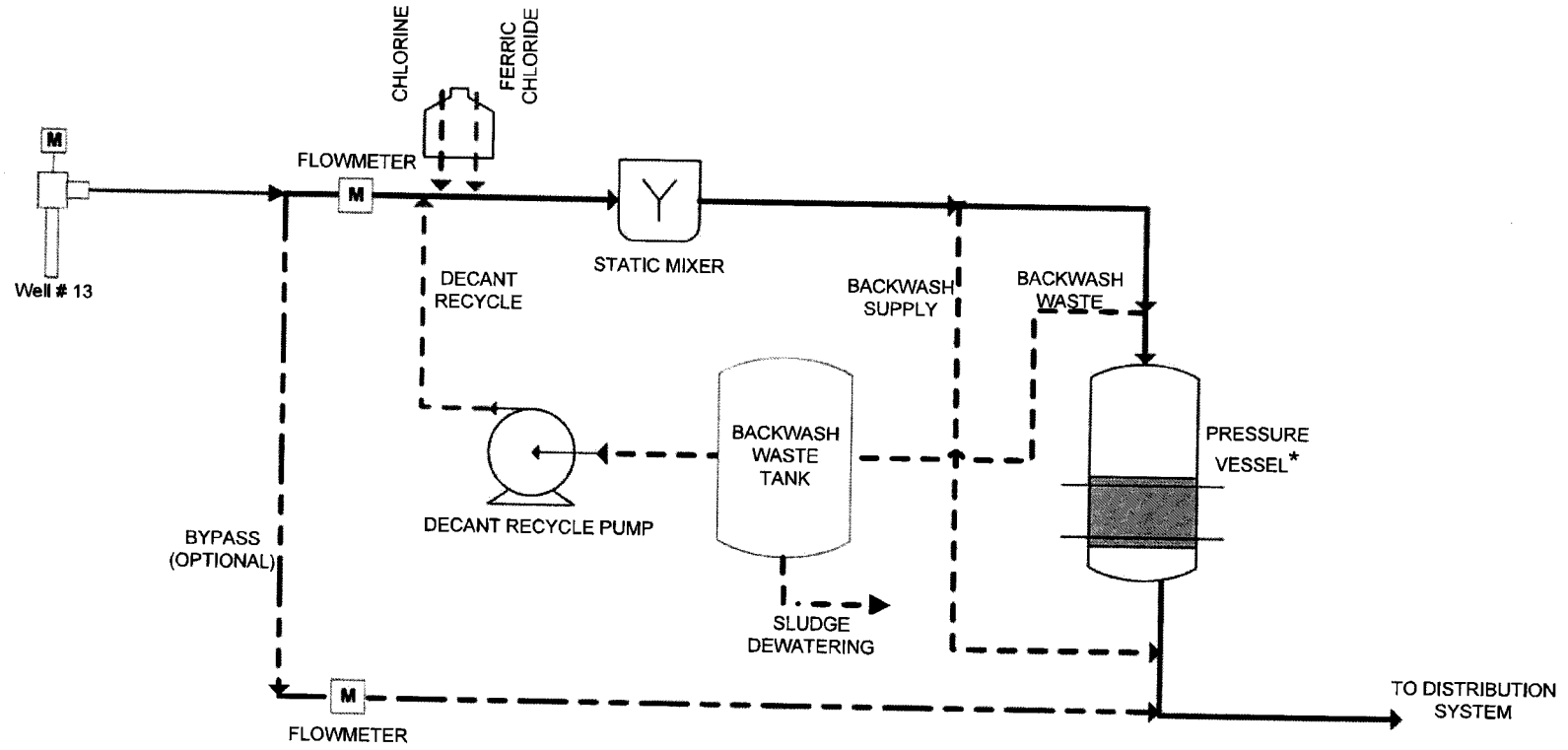
3.3.2 Parallel Operation

Figure 8 presents the process flow schematic for arsenic treatment using sorptive media in the parallel configuration.

Figure 9 shows the conceptual site plan for the treatment and ancillary equipment needed for sorptive media at the Well No. 13 site, but in a parallel configuration

3.4 Conclusions for Alternative 1

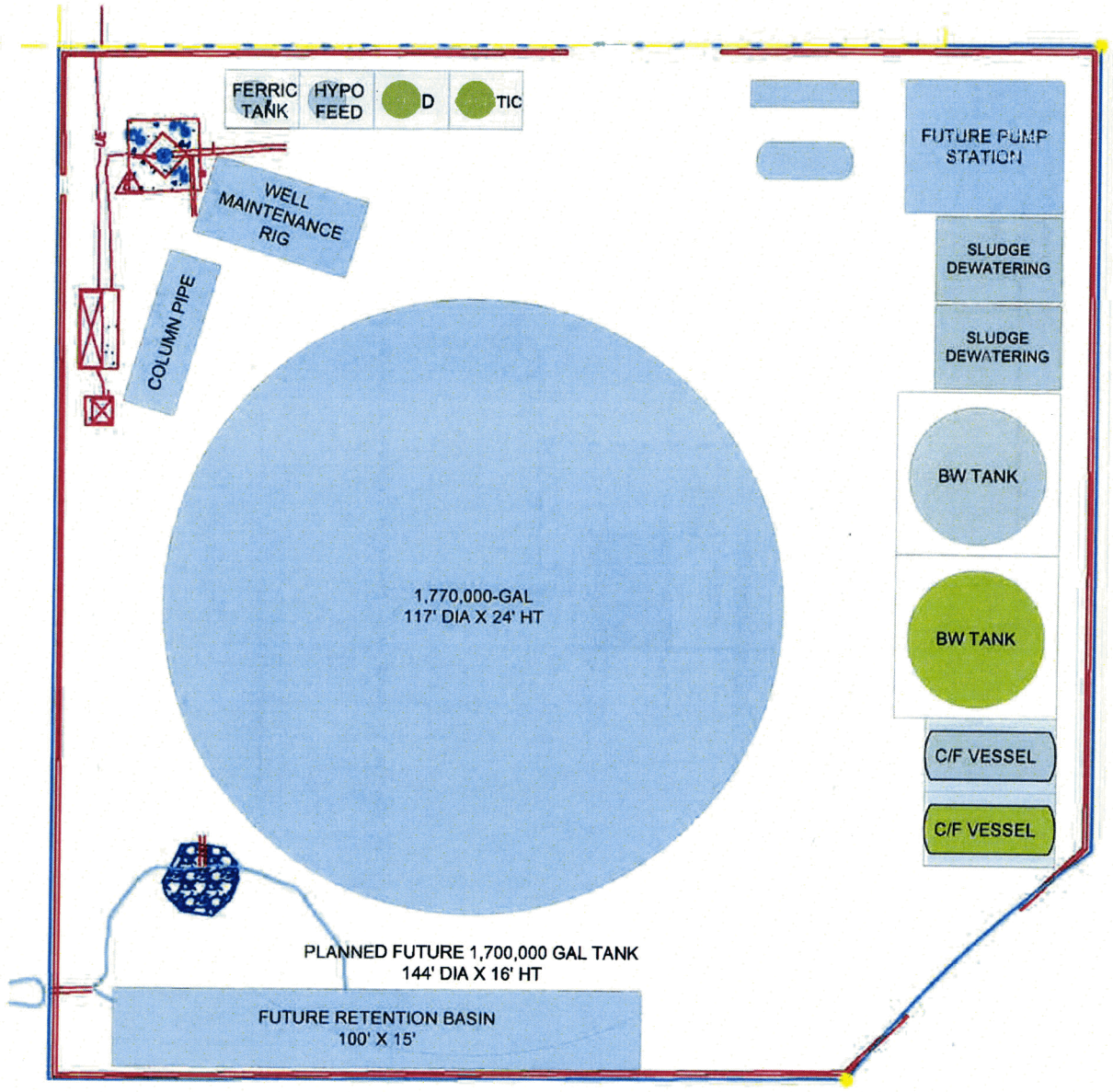
This alternative considers partial treatment of the well. A portion of raw well water is bypassed and then blended with the treatment effluent. The final blend before going into the distribution system is less than 0.010 mg/L. In order of increasing footprint, treatment technologies ranked as follows: SM (parallel), SM (lead-lag), C/F and IX. All treatment technologies were able to fit on the site considering that most of the area is undeveloped. Treatment equipment for all technologies was located on the east side of the site. This provides maintenance access between the treatment equipment and future storage tank.



* ONLY ONE VESSEL SHOWN FOR CLARITY. PFD IS APPLICABLE WHETHER VESSELS IS VERTICAL OR HORIZONTAL IN ORIENTATION.

Figure 2 – C/F Process Flow Schematic

COOLIDGE WELL NO. 13
ARSENIC REMOVAL FACILITY ALTERNATIVES EVALUATION
ARIZONA WATER COMPANY



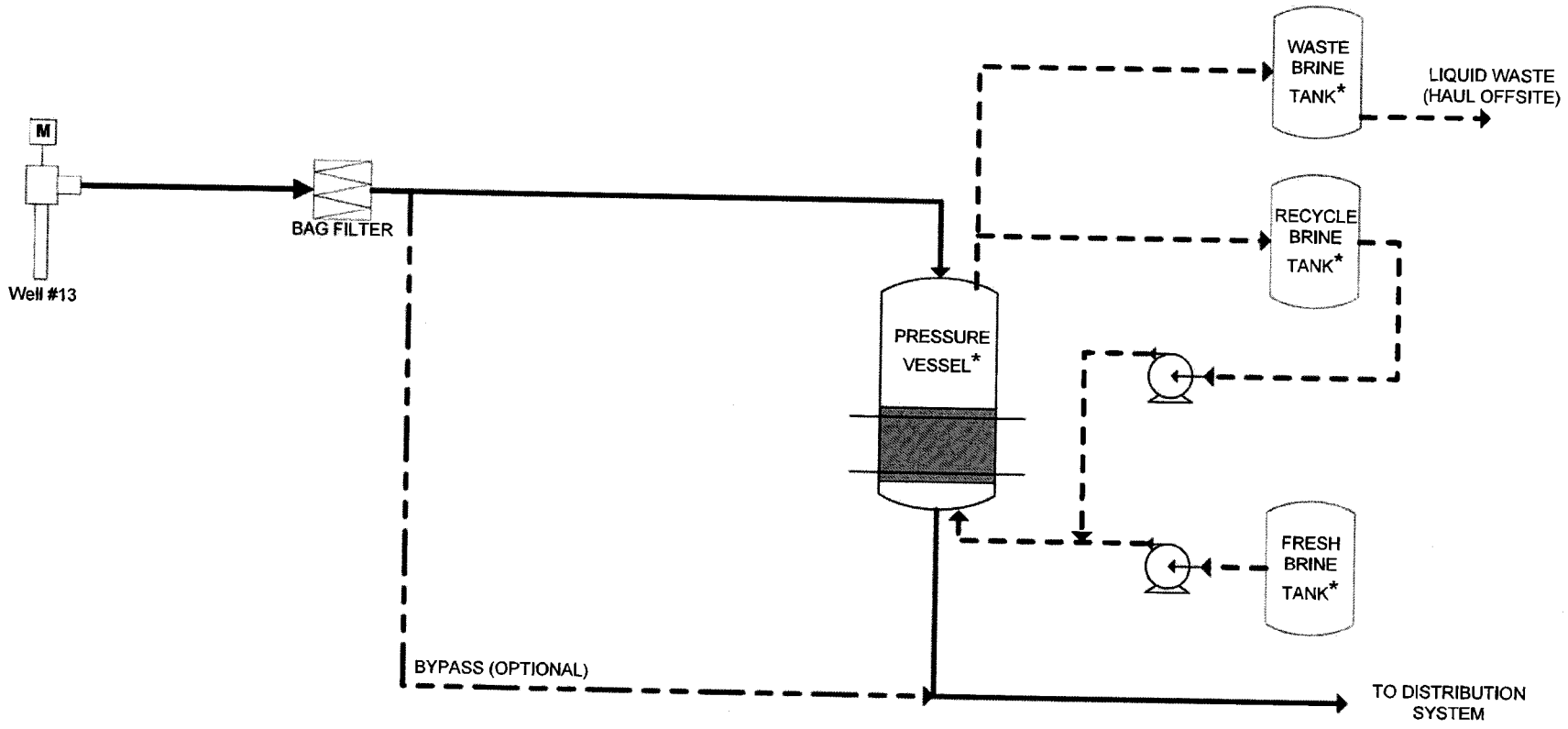
LEGEND

- AWC future planned equipment
- Proposed arsenic treatment equipment
- Future arsenic treatment equipment

Figure 3 – Alternative 1 C/F Site Layout

COOLIDGE WELL NO. 13
ARSENIC REMOVAL FACILITY ALTERNATIVES EVALUATION
ARIZONA WATER COMPANY

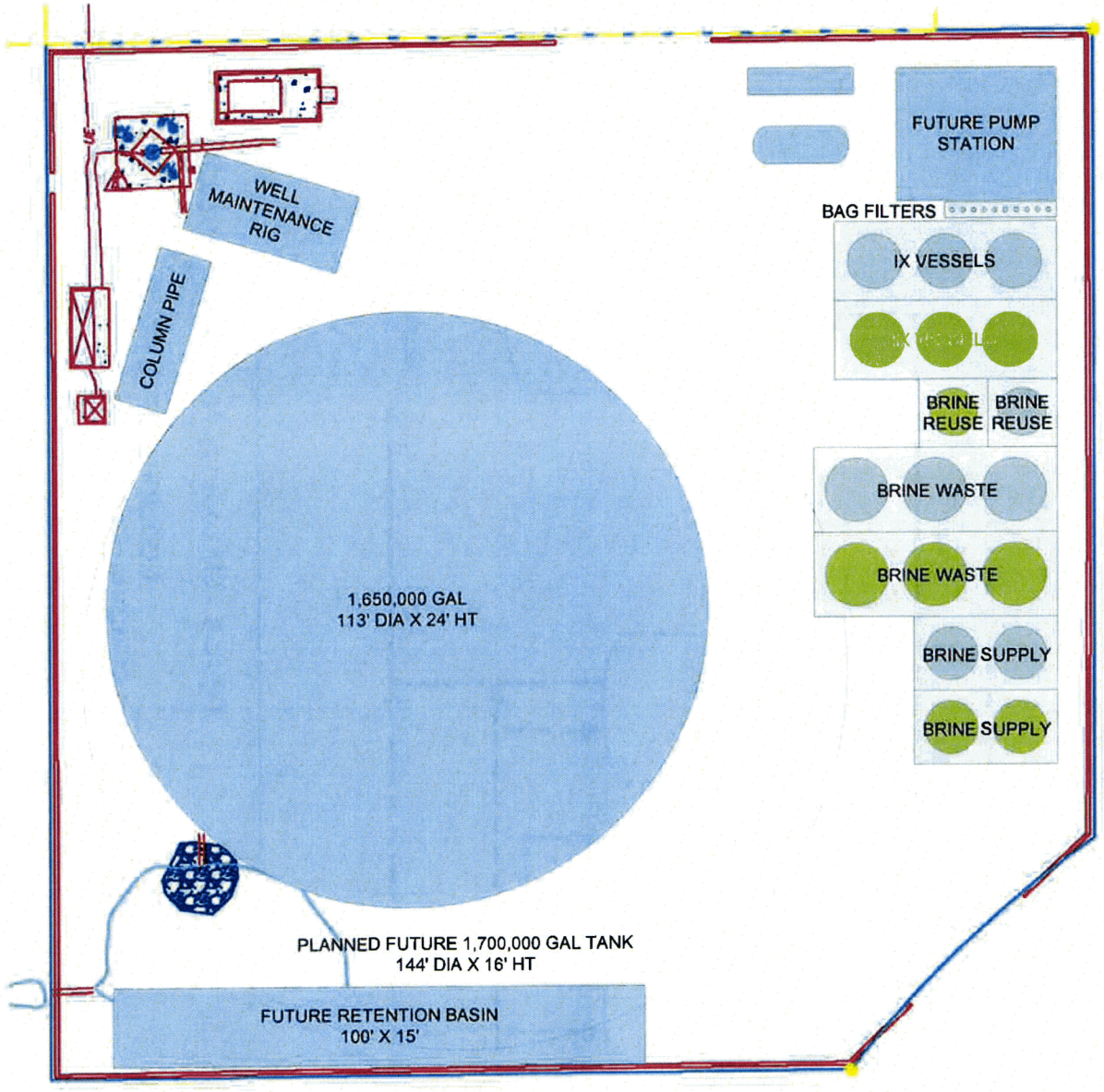
carollo



* ONLY ONE TANK/VESSEL SHOWN FOR CLARITY

Figure 4 – IX Process Flow Schematic

COOLIDGE WELL NO. 13
ARSENIC REMOVAL FACILITY ALTERNATIVES EVALUATION
ARIZONA WATER COMPANY



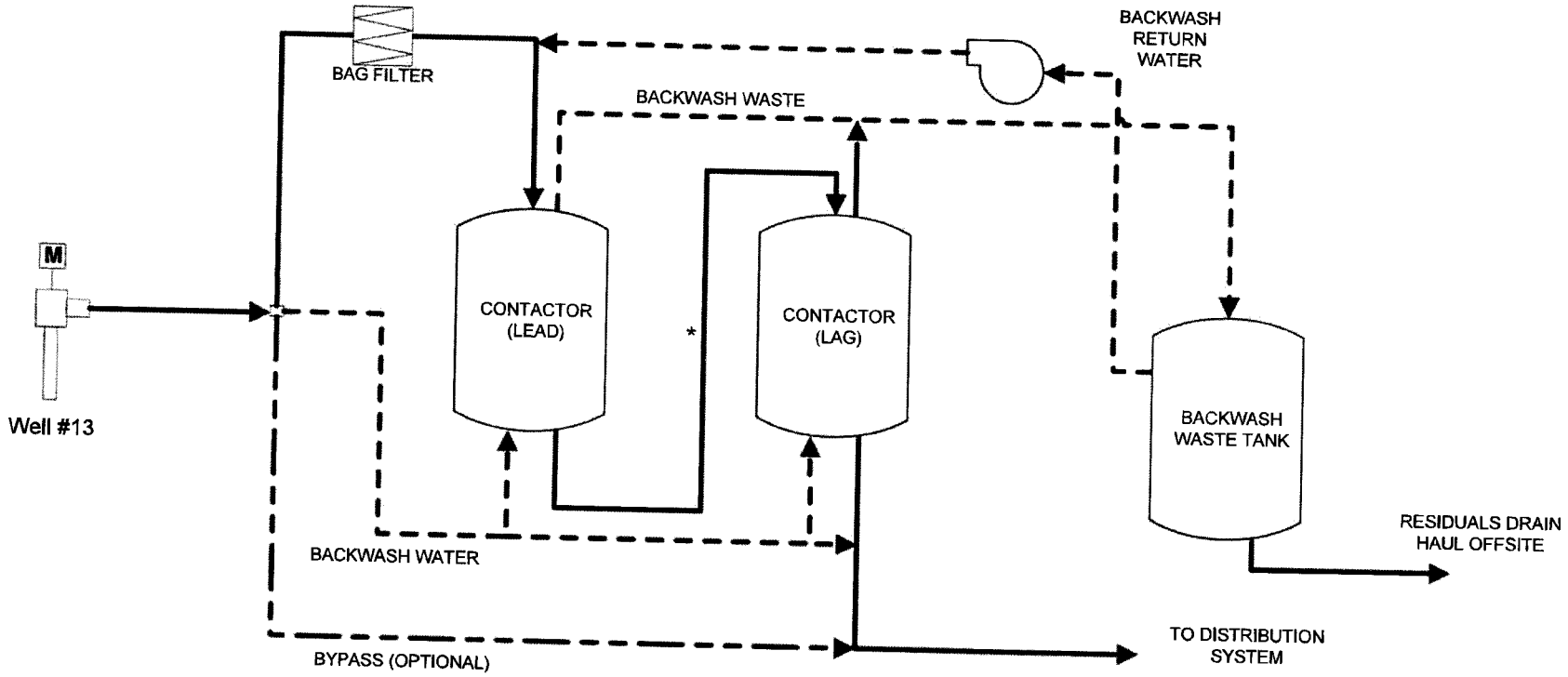
LEGEND

- AWC future planned equipment
- Proposed arsenic treatment equipment
- Future arsenic treatment equipment

Figure 5 – Alternative 1 IX Site Layout

COOLIDGE WELL NO. 13
ARSENIC REMOVAL FACILITY ALTERNATIVES EVALUATION
ARIZONA WATER COMPANY

carollo



* FOR CLARITY, PIPING DOES NOT SHOW HOW LEAD CONTACTOR BECOMES LAG CONTACTOR.

Figure 6 – SM Lead-Lag Process Flow Schematic

COOLIDGE WELL NO. 13
ARSENIC REMOVAL FACILITY ALTERNATIVES EVALUATION
ARIZONA WATER COMPANY

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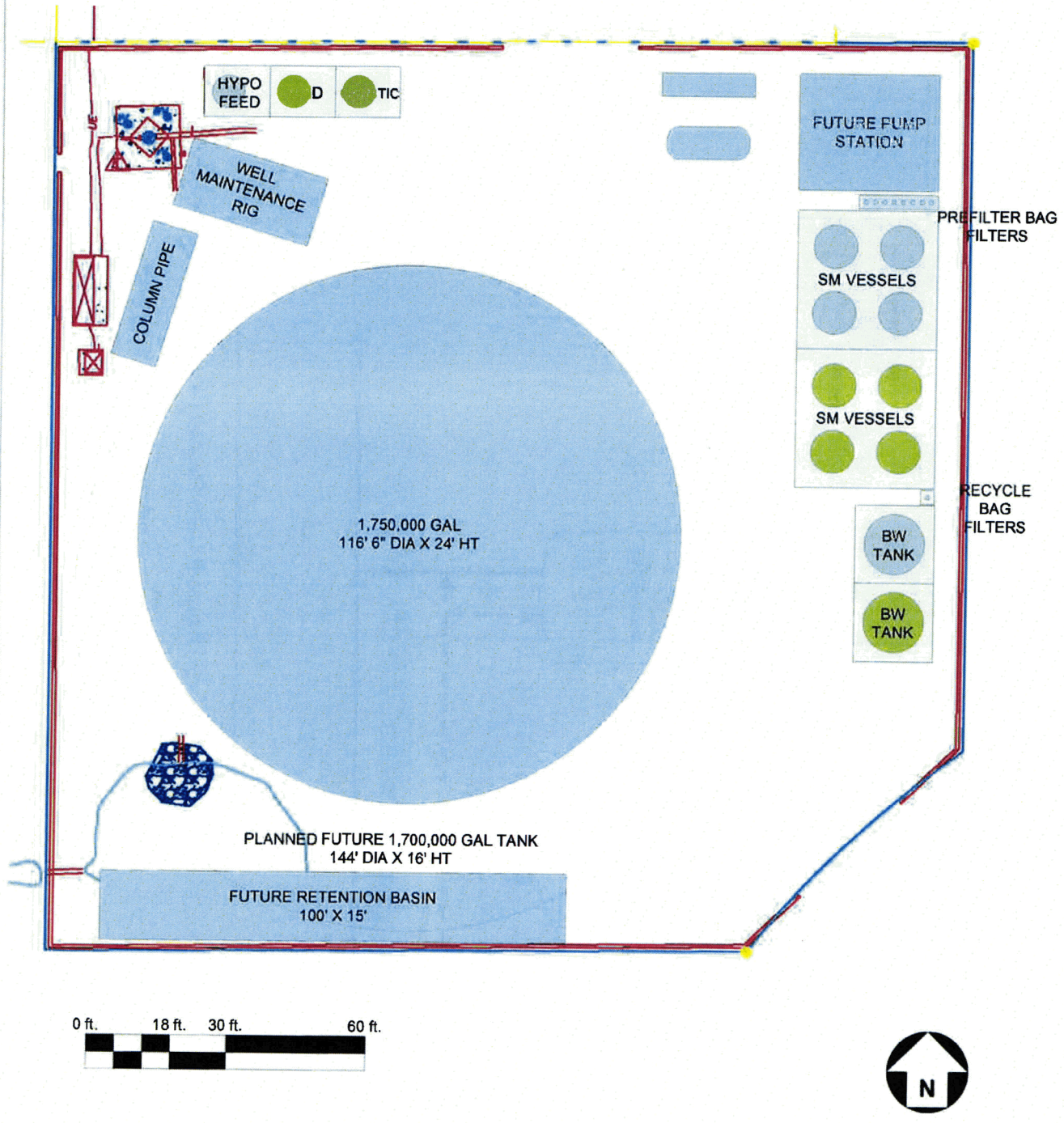

LEGEND

- AWC future planned equipment
- Proposed arsenic treatment equipment
- Future arsenic treatment equipment

Figure 7 – Alternative 1 SM Lead-Lag Site Layout

COOLIDGE WELL NO. 13
ARSENIC REMOVAL FACILITY ALTERNATIVES EVALUATION
ARIZONA WATER COMPANY

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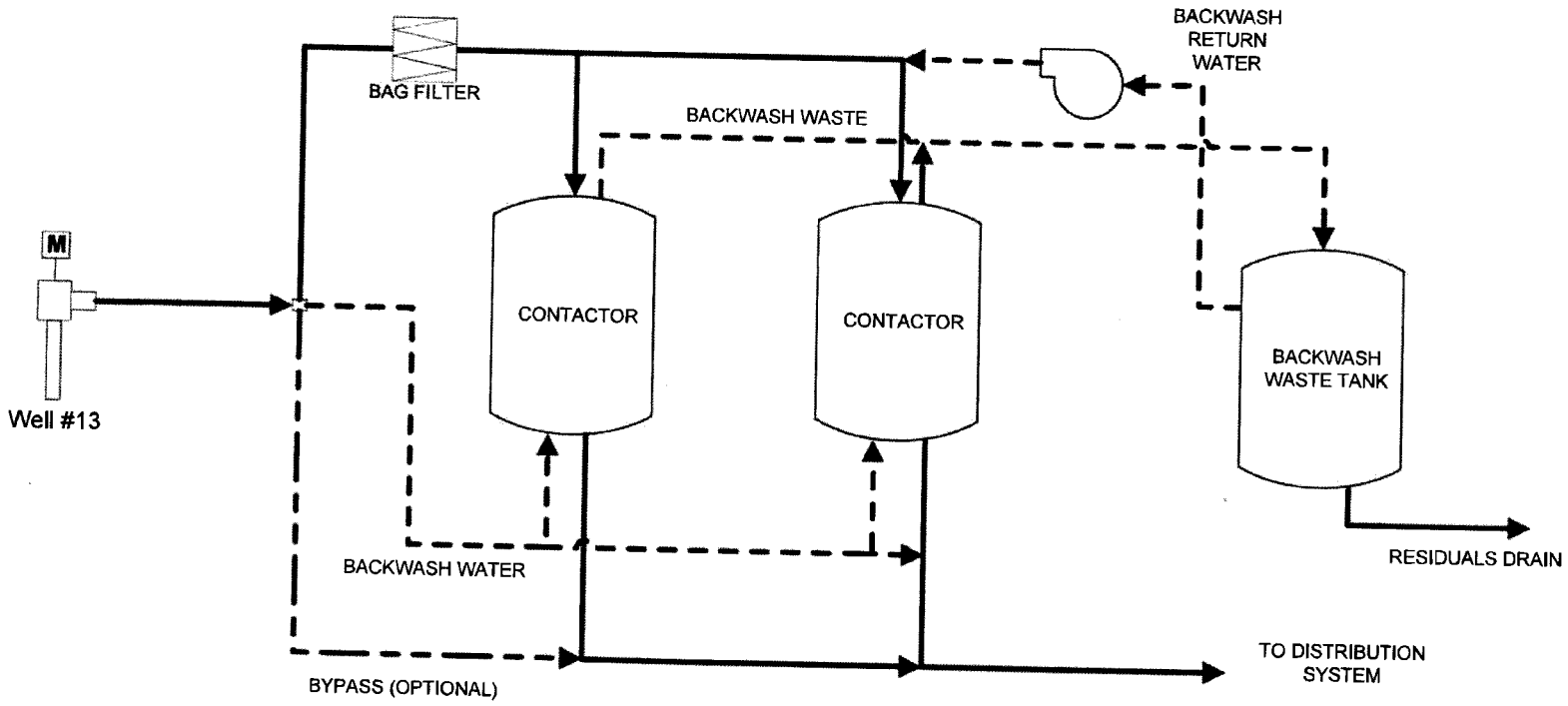
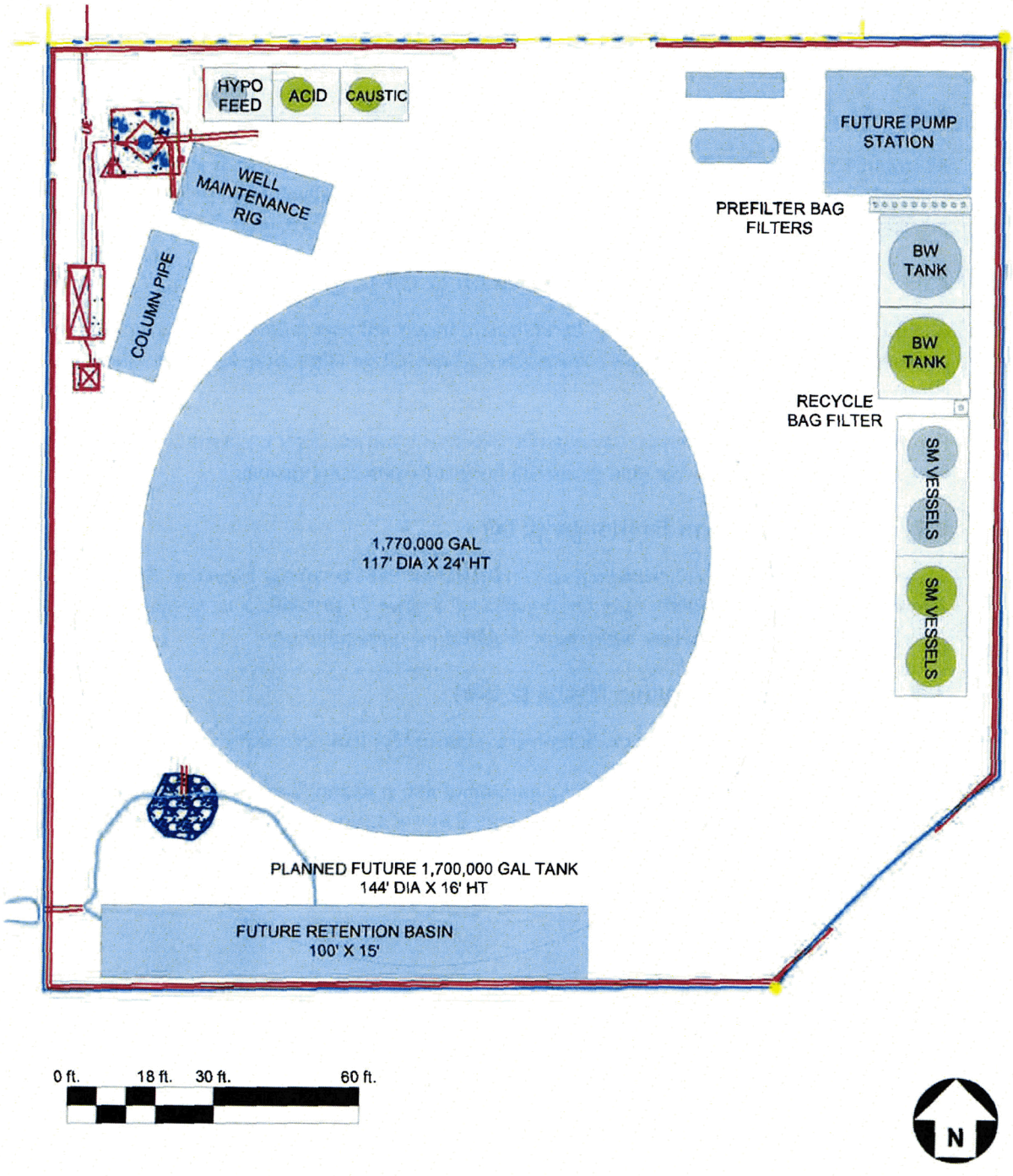


Figure 8 – SM Parallel Process Flow Schematic

COOLIDGE WELL NO. 13
ARSENIC REMOVAL FACILITY ALTERNATIVES EVALUATION
ARIZONA WATER COMPANY



LEGEND

- AWC future planned equipment
- Proposed arsenic treatment equipment
- Future arsenic treatment equipment

Figure 9 – Alternative 1 SM - Parallel Site Layout

COOLIDGE WELL NO. 13
ARSENIC REMOVAL FACILITY ALTERNATIVES EVALUATION
ARIZONA WATER COMPANY

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4.0 ALTERNATIVE 2 – FULL TREATMENT

Alternative 2 assumes full treatment (coagulation/filtration, ion exchange or sorptive media) of flow from Well No. 13. In contrast to Alternative 1, this alternative does not allow for blending of treated and raw water in order to meet finished water arsenic goals.

4.1 Alternative 2 Coagulation/Filtration (2 C/F)

A process flow schematic for coagulation/filtration treatment was provided in Figure 2. In contrast to Alternative 1, the bypass line shown would not be applicable for Alternative 2 as full treatment would occur.

Figure 10 provides a conceptual site plan for treatment and ancillary equipment required for coagulation/filtration. This site plan assumes horizontal pressure vessels.

4.2 Alternative 2 Ion Exchange (2 IX)

Figure 4 provided a general process flow schematic for ion exchange; however, for Alternative 2, the bypass line would not be utilized. Figure 11 provides a conceptual site plan for treatment and ancillary equipment required for ion exchange.

4.3 Alternative 2 Sorptive Media (2 SM)

Both lead-lag and parallel configurations were explored for this alternative.

A conservative layout was considered by assuming that a second backwash waste tank is required when the treatment capacity is expanded in the future. It is possible that due to such infrequent backwashing of the SM process (e.g., once a month) that only one tank would be needed. There would be adequate time between backwashing vessels to recycle the decanted backwash water.

4.3.1 Lead-Lag Operation

Figure 6 provided a general process flow schematic for arsenic treatment using sorptive media in the lead-lag configuration. For full treatment of Well No. 13, the bypass line shown would not be applicable for Alternative 2.

Figure 12 provides a conceptual site plan for treatment and ancillary equipment needed for sorptive media in a lead-lag configuration.

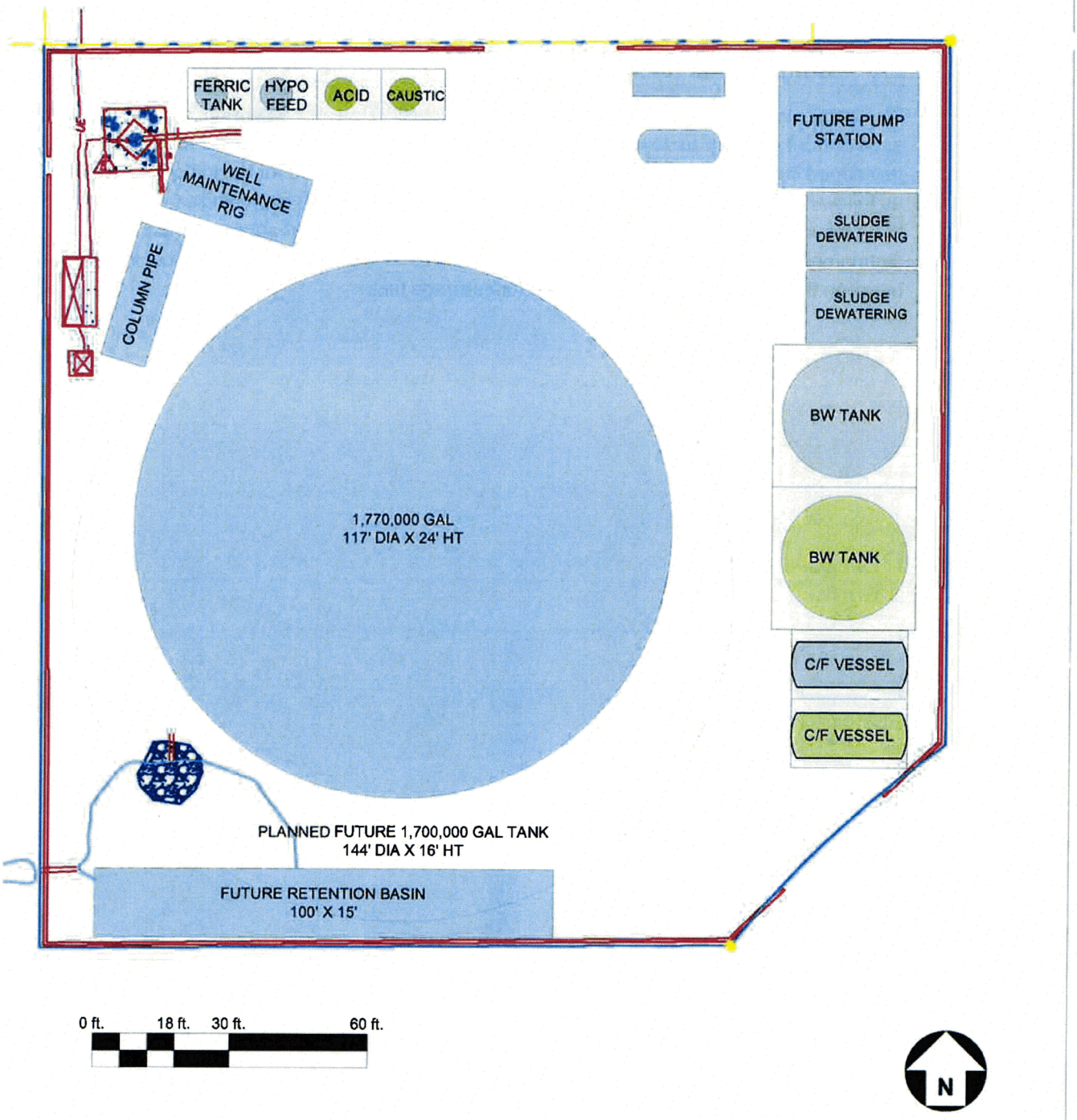
4.3.2 Parallel Operation

Figure 8 presented the general process flow schematic for arsenic treatment using sorptive media in the parallel configuration. Alternative 2 is represented without the bypass line.

Figure 13 also shows the conceptual site plan for the treatment and ancillary equipment needed for sorptive media, but in a parallel configuration

4.4 Conclusions for Alternative 2

This alternative considers full flow treatment of the well. Thus, the footprints associated with each of the treatment technologies for Alternative 2 will be larger compared to footprints developed for Alternative 1. In order of increasing footprint, treatment technologies ranked as follows: SM (parallel), SM (lead-lag), C/F and IX. All treatment technologies were able to fit on the site considering that most of the area is undeveloped. Treatment equipment for all technologies was located on the east side of the site. This provides maintenance access between the treatment equipment and future storage tank.



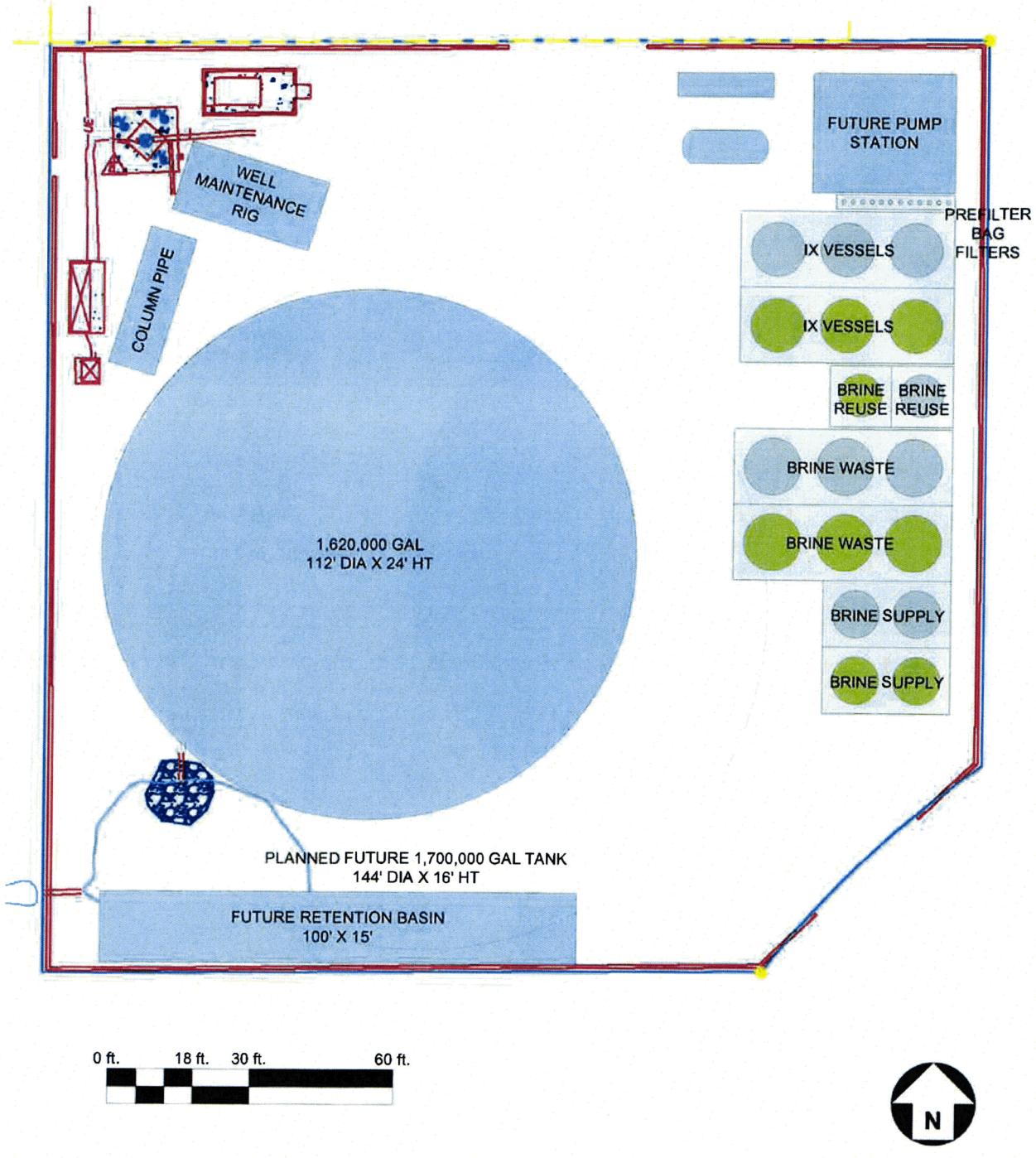
LEGEND

- AWC future planned equipment
- Proposed arsenic treatment equipment
- Future arsenic treatment equipment

Figure 10 – Alternative 2 C/F Site Layout

COOLIDGE WELL NO. 13
ARSENIC REMOVAL FACILITY ALTERNATIVES EVALUATION
ARIZONA WATER COMPANY

carollo



LEGEND

- AWC future planned equipment
- Proposed arsenic treatment equipment
- Future arsenic treatment equipment

Figure 11 – Alternative 2 IX Site Layout

COOLIDGE WELL NO. 13
ARSENIC REMOVAL FACILITY ALTERNATIVES EVALUATION
ARIZONA WATER COMPANY

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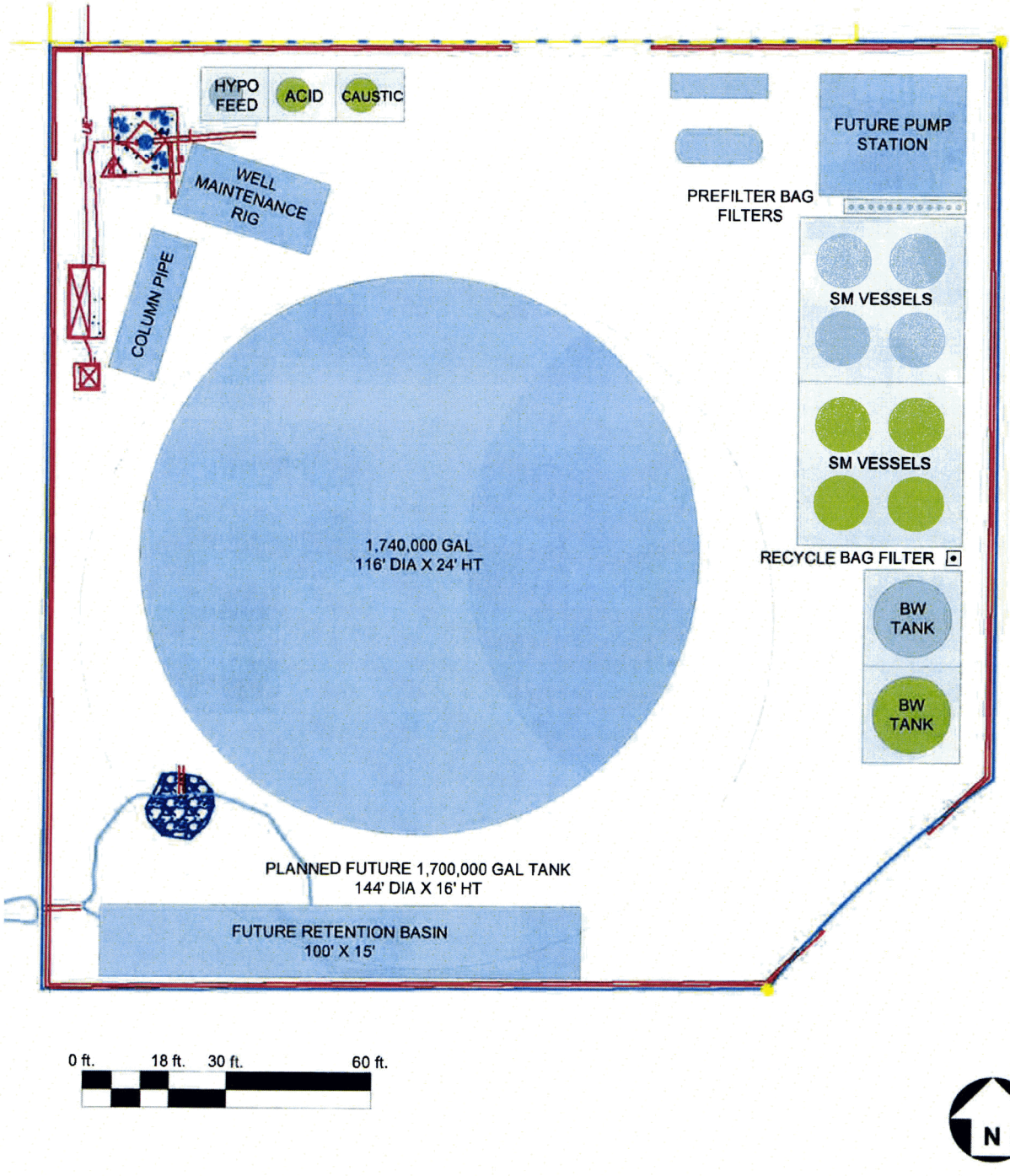

LEGEND

- AWC future planned equipment
- Proposed arsenic treatment equipment
- Future arsenic treatment equipment

Figure 12 – Alternative 2 SM – Lead-Lag Site Layout

COOLIDGE WELL NO. 13
ARSENIC REMOVAL FACILITY ALTERNATIVES EVALUATION
ARIZONA WATER COMPANY

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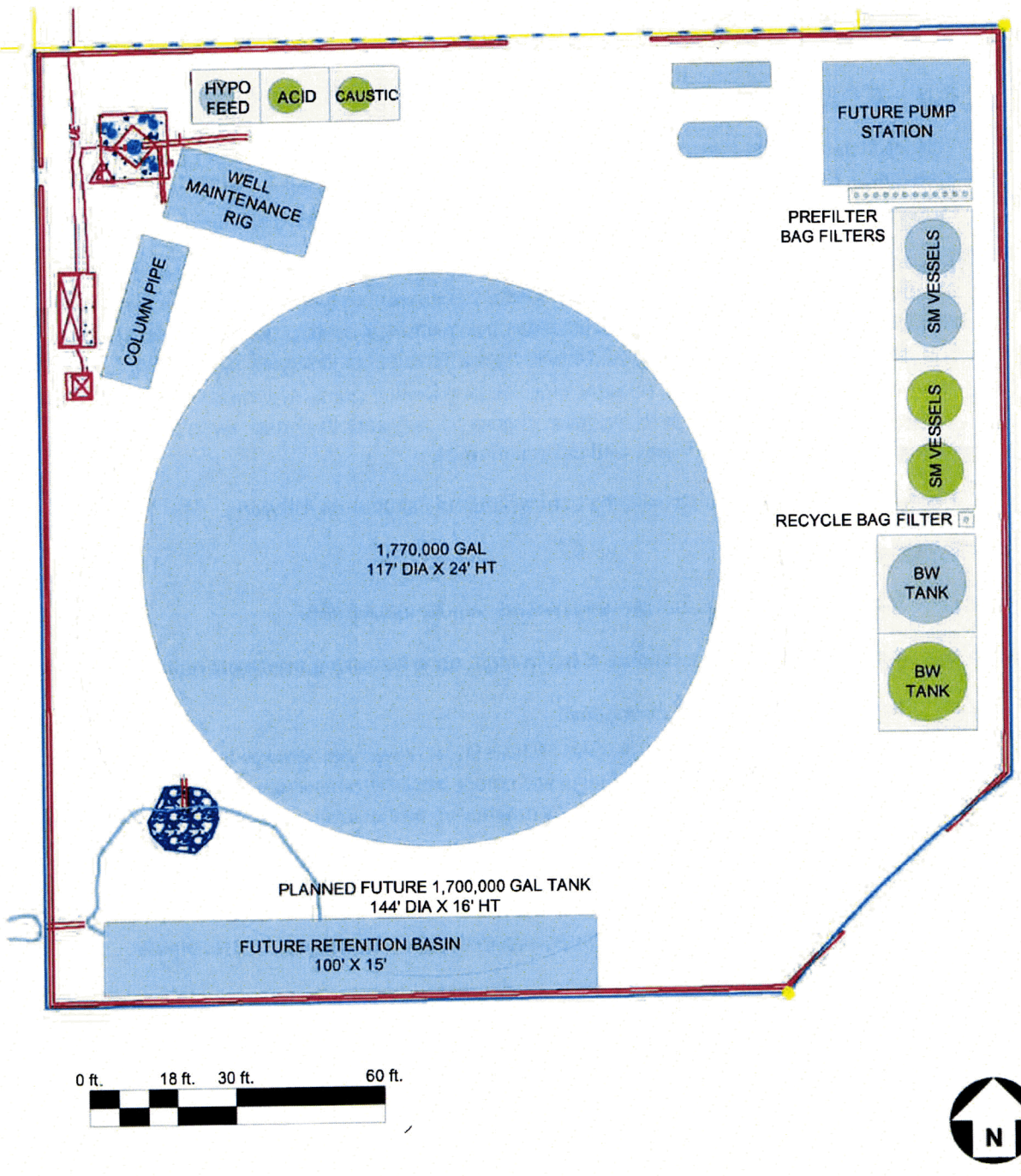


LEGEND

- AWC future planned equipment
- Proposed arsenic treatment equipment
- Future arsenic treatment equipment

Figure 13 – Alternative 2 SM - Parallel Site Layout

COOLIDGE WELL NO. 13
ARSENIC REMOVAL FACILITY ALTERNATIVES EVALUATION
ARIZONA WATER COMPANY

carollo

5.0 COST ANALYSIS

This section presents construction costs, operating and maintenance (O&M) costs, and life-cycle costs for each alternative. Construction costs were developed using a combination of sources including Carollo cost databases, RS Means, and supplier quotations.

Table 5 and 6 present the cost breakdowns for Alternative 1 (partial treatment) and Alternative 2 (full treatment) respectively. Table 7 presents a summary of life-cycle costs for all alternatives. Appendices B and C provides the unit costs used to develop construction and O&M costs respectively. Figure 14 and Figure 15 present life-cycle cost curves for Alternative 1 and Alternative 2 to determine the break-even point (or crossover point) between different treatment technologies. Figure 16 presents the break-even point between C/F and SM at different well utilization rates.

Key assumptions used for developing cost estimates include the following:

Construction Costs

- "Custom layout" (i.e., not pre-engineered, vendor packages)
- Arsenic influent concentration of 0.018 mg/L used for sizing treatment equipment.
- Percentage markups of direct cost:
  - E&IC: 20% (C/F and IX) and 10% (SM). A higher percentage is assumed for those treatment technologies with more ancillary processes that must be connected and coordinated for monitoring and control.
  - Civil Site Work: 10%
  - Contingency: 20%
- General Conditions Includes: bonds, superintendent & foreman salary, on-site trailer/facilities & profit: 10%.
- Sales Tax: 4% (of half of all direct costs).
- The costs are in today's dollars (November 2011) and are not escalated for future construction or operation.

O&M Costs

- 20-year life-cycle with 4-percent interest rate.
- AWC staff operating the systems (i.e., no leasing agreement with system supplier).

To normalize the cost comparison, all treatment technologies were sized based on a "custom" design. All of the treatment technologies are offered in vendor-designed, package

plants of a variety of sizes. Vendors may adjust and fine tune treatment footprints as appropriate for their given system.

5.1 Comparison of Costs

Key findings from the cost comparison among the different alternatives and treatment technologies are as follows:

- As would be expected, partial treatment (Alternative 1) has lower construction (capital), life cycle, and O&M costs. Subsequent findings below are bas ed on results from Alternative 1 only.
- In order of lowest to highest construction costs: SM (parallel), SM (lead-lag), C/F (horizontal vessel), C/F (vertical vessel) and IX.
- Lowest construction cost is SM (parallel) at $1.3 million.
- Lowest life-cycle cost alternative at 50% well utilization rate is SM (lead-lag) at $3.3 million.
- At a 50% well utilization rate, SM (lead-lag) has a lower life-cycle cost after year 7 compared to SM (parallel) and C/F.
- For well utilization rates greater than 70%, CF has a slightly lower life-cycle cost (only 3% at year 20).

Table 5 Capital and O&M Cost Summary for Alternative No. 1 (Partial Treatment) for Well No. 13
Arsenic Removal Facility Alternatives Evaluation
Arizona Water Company

DESCRIPTION	Treatment Technologies				
	Coagulation/Filtration (Vertical Vessel)	Coagulation/Filtration (Horizontal Vessel)	Sorptive Media (Parallel)	Sorptive Media (Lead-Lag)	Ion Exchange
Capital Cost					
Site Work	$216,000	$205,000	$137,000	$182,000	$311,000
Yard Piping	$349,000	$349,000	$325,000	$289,000	$325,000
Treatment Equipment	$282,000	$340,000	$323,000	$517,000	$413,000
E&IC	$300,000	$290,000	$100,000	$120,000	$350,000
Ancillary Systems	$84,000	$84,000	$18,000	$14,000	$179,000
Waste Storage / Treatment	$271,000	$189,000	$75,000	$62,000	$182,000
Direct Costs	**$1,500,000**	**$1,460,000**	**$980,000**	**$1,180,000**	**$1,760,000**
Contingency	$300,000	$290,000	$200,000	$240,000	$350,000
General Conditions	$180,000	$180,000	$120,000	$140,000	$210,000
Sales Tax	$40,000	$40,000	$30,000	$30,000	$50,000
Indirect Costs	**$520,000**	**$510,000**	**$350,000**	**$410,000**	**$610,000**
TOTAL CONSTRUCTION COSTS	**$2,020,000**	**$1,970,000**	**$1,330,000**	**$1,590,000**	**$2,370,000**
Annual O&M Cost					
Labor	$38,800	$38,800	$22,800	$22,800	$46,800
Electricity	$49,100	$49,100	$34,800	$34,800	$43,100
Chemicals	$2,600	$2,600	$400	$400	$155,200
Media / Equipment Replacement	$13,300	$13,300	$119,200	$70,600	$16,700
Waste Handling/Disposal	$5,100	$5,100	$200	$200	$120,800
TOTAL ANNUAL COSTS	**$108,900**	**$108,900**	**$177,400**	**$128,800**	**$382,600**
Life-Cycle Cost (2011 USD)					
Capital Cost	$2,020,000	$1,970,000	$1,330,000	$1,590,000	$2,370,000
Annualized O&M Cost	$1,480,000	$1,480,000	$2,411,000	$1,750,000	$5,200,000
TOTAL VALUE	**$3,500,000**	**$3,450,000**	**$3,741,000**	**$3,340,000**	**$7,570,000**

Table 6 Capital and O&M Cost Summary for Alternative No. 2 (Full Treatment) for Well No. 13
Arsenic Removal Facility Alternatives Evaluation
Arizona Water Company

DESCRIPTION	Treatment Technologies				
	Coagulation/Filtration (Vertical Vessel)	Coagulation/Filtration (Horizontal Vessel)	Sorptive Media (Parallel)	Sorptive Media (Lead-Lag)	Ion Exchange
Capital Cost					
Site Work	$228,000	$216,000	$153,000	$244,000	$339,000
Yard Piping	$365,000	$365,000	$365,000	$365,000	$365,000
Treatment Equipment	$291,000	$372,000	$380,000	$721,000	$471,000
E&IC	$320,000	$310,000	$110,000	$160,000	$410,000
Ancillary Systems	$84,000	$84,000	$23,000	$23,000	$206,000
Waste Storage / Treatment	$295,000	$204,000	$91,000	$91,000	$243,000
Direct Costs	**$1,580,000**	**$1,550,000**	**$1,120,000**	**$1,600,000**	**$2,030,000**
Contingency	$320,000	$310,000	$220,000	$320,000	$410,000
General Conditions	$190,000	$190,000	$130,000	$190,000	$240,000
Sales Tax	$40,000	$40,000	$30,000	$40,000	$50,000
Indirect Costs	**$550,000**	**$540,000**	**$380,000**	**$550,000**	**$700,000**
TOTAL CONSTRUCTION COSTS	**$2,130,000**	**$2,090,000**	**$1,500,000**	**$2,150,000**	**$2,730,000**
Annual O&M Cost					
Labor	$38,800	$38,800	$22,800	$22,800	$46,800
Electricity	$53,600	$53,600	$59,100	$59,100	$54,900
Chemicals	$2,900	$2,900	$700	$700	$197,600
Media / Equipment Replacement	$13,400	$13,400	$149,600	$117,300	$19,100
Waste Handling/Disposal	$5,600	$5,600	$200	$200	$153,700
TOTAL ANNUAL COSTS	**$114,300**	**$114,300**	**$232,400**	**$200,100**	**$472,100**
Life-Cycle Cost (2011 USD)					
Capital Cost	$2,130,000	$2,090,000	$1,500,000	$2,150,000	$2,730,000
Annualized O&M Cost	$1,553,000	$1,553,000	$3,158,000	$2,719,000	$6,416,000
TOTAL VALUE	**$3,683,000**	**$3,643,000**	**$4,658,000**	**$4,869,000**	**$9,146,000**

Table 7 Capital and Life-Cycle Cost Summary for Alternative No. 1 and No. 2 for Well No. 13
Arsenic Removal Facility Alternatives Evaluation
Arizona Water Company

DESCRIPTION	Treatment Technologies				
	Coagulation/Filtration (Vertical Vessel)	Coagulation/Filtration (Horizontal Vessel)	Sorptive Media (Parallel)	Sorptive Media (Lead-Lag)	Ion Exchange
Alternative No. 1 (Partial Treatment)					
Construction Cost	$2,020,000	$1,970,000	$1,330,000	$1,590,000	$2,370,000
Life-Cycle Cost	$3,500,000	$3,450,000	$3,741,000	$3,340,000	$7,570,000
Alternative No. 2 (Full Treatment)					
Construction Cost	$2,130,000	$2,090,000	$1,500,000	$2,150,000	$2,730,000
Life-Cycle Cost	$3,683,000	$3,643,000	$4,658,000	$4,869,000	$9,146,000

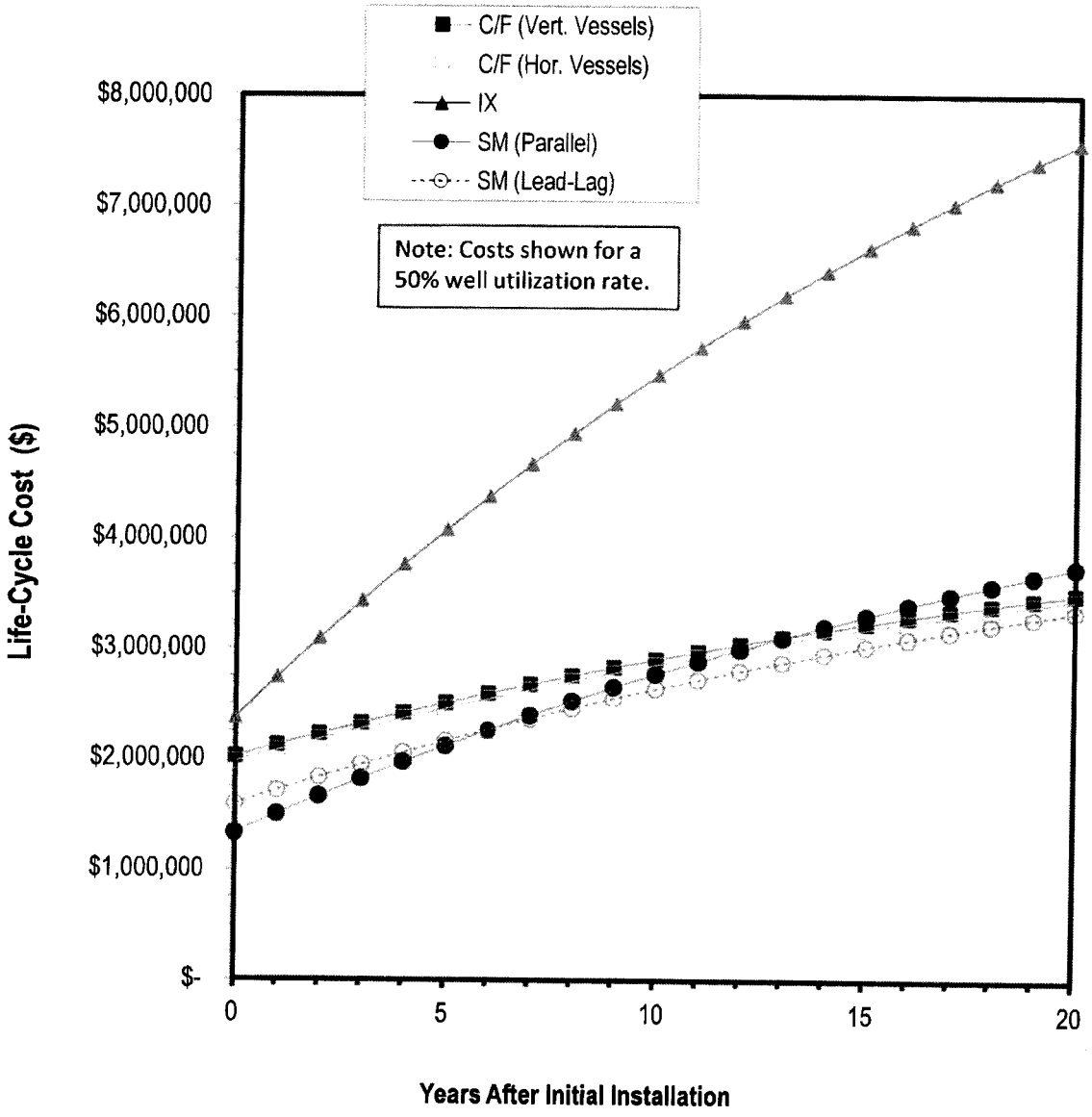


Figure 14
LIFE-CYCLE COSTS FOR ALTERNATIVE NO. 1 (Partial Treatment)
Arsenic Removal Facility Alternatives Evaluation
ARIZONA WATER COMPANY

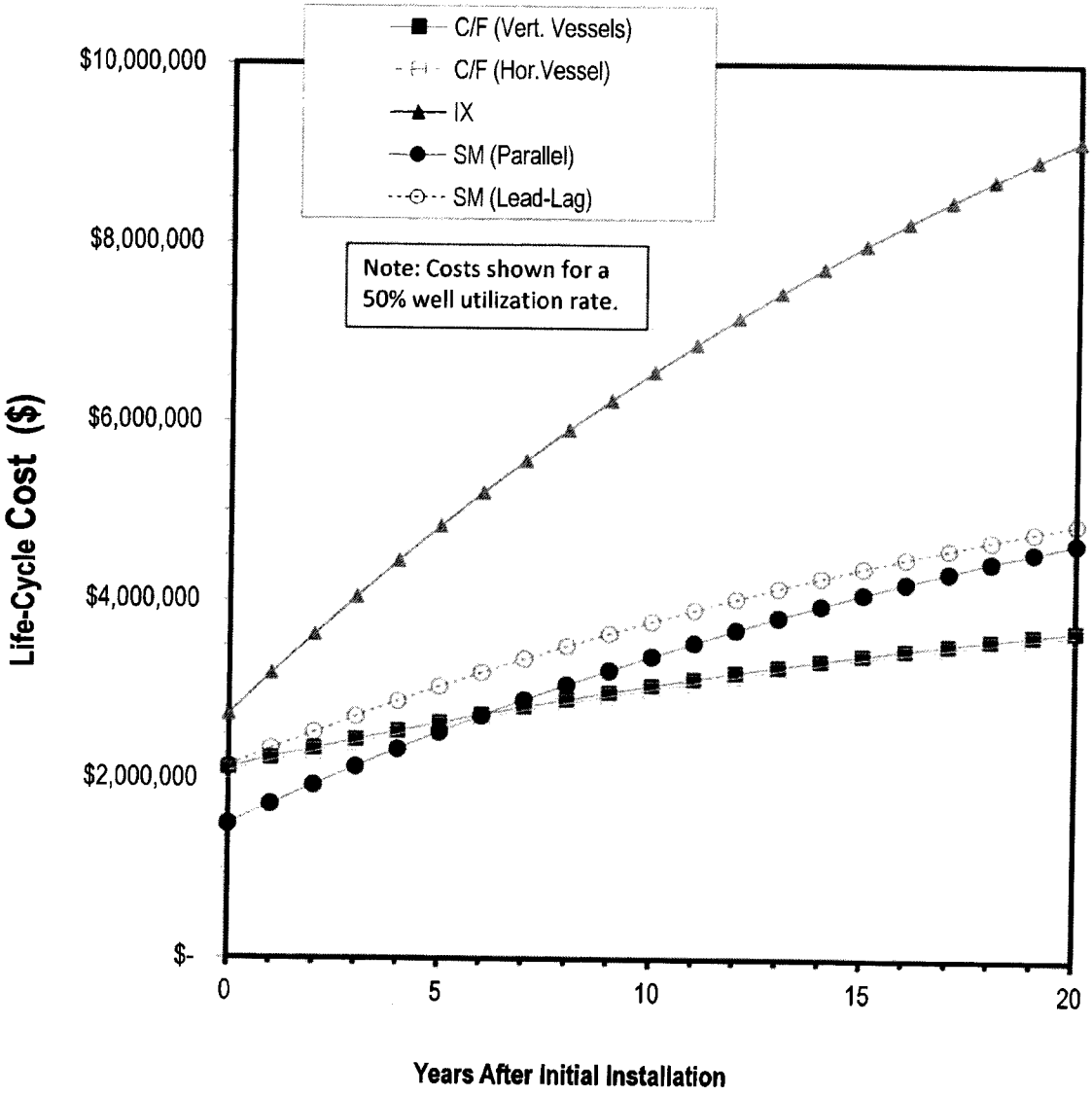


Figure 15
LIFE-CYCLE COSTS FOR ALTERNATIVE NO. 2 (Full Treatment)
Arsenic Removal Facility Alternatives Evaluation
ARIZONA WATER COMPANY

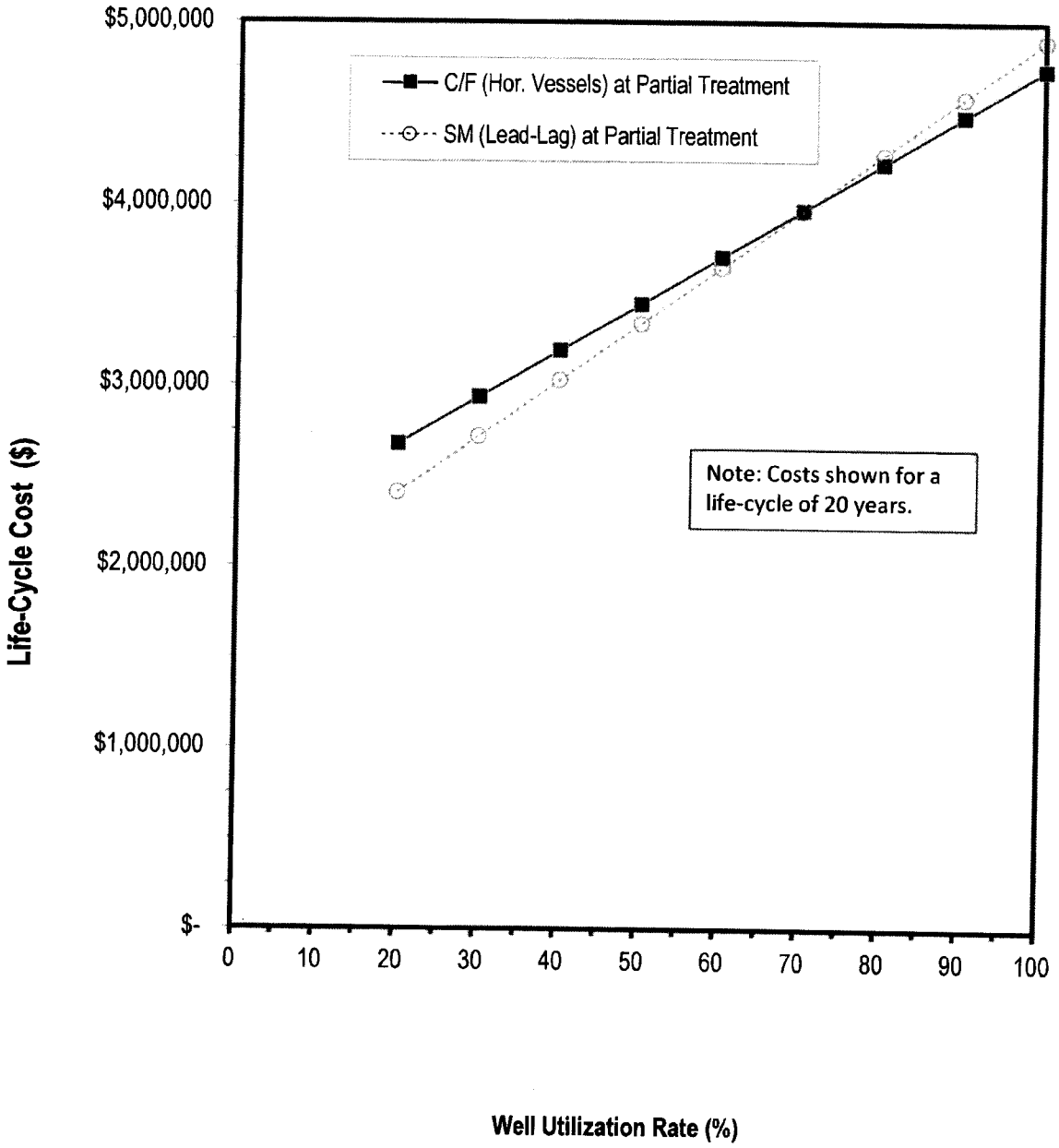


Figure 16
LIFE-CYCLE COSTS FOR C/F AND SM AT VARIOUS WELL UTILIZATION RATES
Arsenic Removal Facility Alternatives Evaluation
ARIZONA WATER COMPANY

Table 8 Capital and O&M Cost Summary for Alternative No. 1 (Partial Treatment) for Well No. 11
Arsenic Removal Facility Alternatives Evaluation
Arizona Water Company

DESCRIPTION	Treatment Technologies				
	Coagulation/Filtration (Vertical Vessel)	Coagulation/Filtration (Horizontal Vessel)	Sorptive Media (Parallel)	Sorptive Media (Lead-Lag)	Ion Exchange
Capital Cost					
Site Work	$216,000	$205,000	$139,000	$196,000	$313,000
Yard Piping	$354,000	$354,000	$336,000	$307,000	$336,000
Treatment Equipment	$286,000	$345,000	$337,000	$557,000	$428,000
E&IC	$300,000	$290,000	$100,000	$130,000	$360,000
Ancillary Systems	$84,000	$84,000	$20,000	$16,000	$182,000
Waste Storage / Treatment	$281,000	$193,000	$80,000	$68,000	$182,000
Direct Costs	**$1,520,000**	**$1,470,000**	**$1,010,000**	**$1,270,000**	**$1,800,000**
Contingency	$300,000	$290,000	$200,000	$250,000	$360,000
General Conditions	$180,000	$180,000	$120,000	$150,000	$220,000
Sales Tax	$40,000	$40,000	$30,000	$30,000	$50,000
Indirect Costs	**$520,000**	**$510,000**	**$350,000**	**$430,000**	**$630,000**
TOTAL CONSTRUCTION COSTS	**$2,040,000**	**$1,980,000**	**$1,360,000**	**$1,700,000**	**$2,430,000**
Annual O&M Cost					
Labor	$38,800	$38,800	$22,800	$22,800	$46,800
Electricity	$50,400	$50,400	$40,300	$40,300	$46,200
Chemicals	$6,800	$6,800	$3,400	$3,400	$166,400
Media / Equipment Replacement	$13,300	$13,300	$139,300	$85,500	$17,400
Waste Handling/Disposal	$5,200	$5,200	$200	$200	$129,500
TOTAL ANNUAL COSTS	**$114,500**	**$114,500**	**$206,000**	**$152,200**	**$406,300**
Life-Cycle Cost (2011 USD)					
Capital Cost	$2,040,000	$1,980,000	$1,360,000	$1,700,000	$2,430,000
Annualized O&M Cost	$1,556,000	$1,556,000	$2,800,000	$2,068,000	$5,522,000
TOTAL VALUE	**$3,596,000**	**$3,536,000**	**$4,160,000**	**$3,768,000**	**$7,952,000**

Table 9 **Capital and O&M Cost Summary for Alternative No. 1 (Full Treatment) for Well No. 11**
Arsenic Removal Facility Alternatives Evaluation
Arizona Water Company

DESCRIPTION	Treatment Technologies				
	Coagulation/Filtration (Vertical Vessel)	Coagulation/Filtration (Horizontal Vessel)	Sorptive Media (Parallel)	Sorptive Media (Lead-Lag)	Ion Exchange
Capital Cost					
Site Work	$228,000	$216,000	$153,000	$244,000	$339,000
Yard Piping	$365,000	$365,000	$365,000	$365,000	$365,000
Treatment Equipment	$291,000	$372,000	$380,000	$721,000	$471,000
E&IC	$320,000	$310,000	$110,000	$160,000	$410,000
Ancillary Systems	$84,000	$84,000	$23,000	$23,000	$209,000
Waste Storage / Treatment	$295,000	$204,000	$91,000	$91,000	$243,000
Direct Costs	**$1,580,000**	**$1,550,000**	**$1,120,000**	**$1,600,000**	**$2,040,000**
Contingency	$320,000	$310,000	$220,000	$320,000	$410,000
General Conditions	$190,000	$190,000	$130,000	$190,000	$250,000
Sales Tax	$40,000	$40,000	$30,000	$40,000	$50,000
Indirect Costs	**$550,000**	**$540,000**	**$380,000**	**$550,000**	**$710,000**
TOTAL CONSTRUCTION COSTS	**$2,130,000**	**$2,090,000**	**$1,500,000**	**$2,150,000**	**$2,750,000**
Annual O&M Cost					
Labor	$38,800	$38,800	$22,800	$22,800	$46,800
Electricity	$53,600	$53,600	$59,100	$59,100	$54,900
Chemicals	$7,200	$7,200	$5,000	$5,000	$197,600
Media / Equipment Replacement	$13,400	$13,400	$163,900	$123,600	$19,200
Waste Handling/Disposal	$5,600	$5,600	$200	$200	$153,700
TOTAL ANNUAL COSTS	**$118,600**	**$118,600**	**$251,000**	**$210,700**	**$472,200**
Life-Cycle Cost (2011 USD)					
Capital Cost	$2,130,000	$2,090,000	$1,500,000	$2,150,000	$2,750,000
Annualized O&M Cost	$1,612,000	$1,612,000	$3,411,000	$2,863,000	$6,417,000
TOTAL VALUE	**$3,742,000**	**$3,702,000**	**$4,911,000**	**$5,013,000**	**$9,167,000**

Table 10 Capital and Life-Cycle Cost Summary for Alternative No. 1 and No. 2 for Well No. 11
Arsenic Removal Facility Alternatives Evaluation
Arizona Water Company

DESCRIPTION	Treatment Technologies				
	Coagulation/Filtration (Vertical Vessel)	Coagulation/Filtration (Horizontal Vessel)	Sorptive Media (Parallel)	Sorptive Media (Lead-Lag)	Ion Exchange
Alternative No. 1 (Partial Treatment)					
Construction Cost	$2,040,000	$1,980,000	$1,360,000	$1,700,000	$2,430,000
Life-Cycle Cost	$3,596,000	$3,536,000	$4,160,000	$3,768,000	$7,952,000
Alternative No. 2 (Full Treatment)					
Construction Cost	$2,130,000	$2,090,000	$1,500,000	$2,150,000	$2,750,000
Life-Cycle Cost	$3,742,000	$3,702,000	$4,911,000	$5,013,000	$9,167,000

6.0 QUALITATIVE EVALUATION OF ARSENIC TREATMENT ALTERNATIVES

In addition to site footprint and cost evaluations, each of the alternatives was evaluated based on qualitative criteria including impact on neighbors (noise, truck traffic), ease of operation, and residuals disposal. The comparison evaluation is summarized in Table 11. Since partial treatment with blending is viable and costs much less than the full treatment alternatives, the qualitative evaluation foc used primarily on Alternatives 1 and 2.

Table 11 presents the various evaluation components and criteria, and rates each alternative according to a relative scale. The color ranking designations are as follows: green is easiest or best, red is challenging or worst, and yellow is some challenges or average. Therefore, alternatives with more green designations than red indicate more overall advantages. Table 6 shows that the Alternative 1 SM options were the most positively ranked qualitatively in terms of the evaluation components established for this study. These include:

- Treatment Effectiveness/Robustness: SM provides effective treatment for the given water quality. Severn Trent has projected that their E-33 media would provide at least 76,000 bed volumes between media exchanges with an influent arsenic of 0.018 mg/L and when operated with vessels in parallel.

- Treatment Effectiveness/Robustness: C/F and IX technologies have many more moving parts and instruments than does SM due to additional ancillary processes and the use of automatic valves. It is anticipated that the O&M costs will be higher as it is likely that items such as plastic pipe and valve actuators would probably need replacement within a few years. AWC has observed at their other IX and C/F sites that maintenance requirements in general are much higher for these technologies, than for SM.

- Chemical Deliveries: SM does not require chemical deliveries. C/F and IX will require frequent chemical deliveries which is an important consideration given the that the entrance to Well No. 13 site will be directly off residential street in a subdivision.

- Site Restrictions/Footprints: SM has the overall smallest footprint over the other technologies.

- Constructability / Installation Complexity: SM is the least complex system to install, since it has fewer process components.

Table 11 Comparison of Arsenic Treatment Alternatives
Arsenic Removal Facility Alternatives Evaluation
Arizona Water Company

	Treatment Effectiveness / Robustness	Chemical Delivery	Site Restrictions / Footprint	Constructability / Installation Complexity	Aesthetics/ Noise / Odors	Ease of Operation	Residuals Generation / Disposal	Ease of Start-up following off-time
CF (partial) - w/ Solids Handling								
IX (partial)								
SM - Parallel (partial)								
SM - Lead Lag (partial)								
CF (full) w/ Solids Handling								
IX (full)								
SM - Parallel (full)								
SM - Lead lag (full)								

Green=Easiest or best
Yellow = Some challenges or average
Red=Challenging or worst

- Aesthetics / Noise / Odors: Since the C/F and IX systems require chemicals for operation, and off-site disposal of residuals, they received red ratings compared, especially when compared to SM. At other AWC sites salt delivery trucks have had minor spills which is still enough to kill nearby landscaping. Additionally, delivery trucks will bring noise and exhaust fumes through the residential areas.

- Ease of Operation: SM was rated the best since it is the easiest to operate (e.g., manually operated valves). C/F and IX have many more moving parts (e.g., valve actuation daily) and ancillary process (e.g., ferric storage, brine storage and regeneration pumps) compared to SM.

- Residuals Generation / Disposal: C/F was rated the worst (red) with IX as yellow, and SM as green. C/F and IX will require more frequent truck trips for residuals disposal compared to SM. SM will require the least amount of truck traffic for residuals disposal at approximately once every 8 months (at 50% well utilization rate). All arsenic treatment technologies will produce waste residuals (either sludge or media) that contain arsenic. Eventually waste residuals for all technologies are landfilled with origination paperwork linked to the original source of production. AWC currently mitigates this risk by contracting with third-part waste handlers who indemnify AWC, decreasing the risk associated with landfilling arsenic-laden residuals.

- Ease of Start-Up Following Off Time: AWC's water production requirements in the winter months are much less than in the summer, and this allows AWC to not operate some of their wells during this time period. Arsenic treatment systems often require additional attention and maintenance after an extended off-period. Instruments need to be recalibrated, tubing and pipes verified for no leakage, chemical tanks need to be refilled, etc. The more complex the treatment process, the more time it takes to re-start a system after an outage. Since SM has the least amount of moving parts and instrumentation compared to IX and C/F, its start-up will be easier. AWC confirms this has been their experience at their existing arsenic treatment systems.

6.1 Current State of Filter Medias

The C/F treatment process may utilize a variety of medias both of proprietary nature (i.e., single supplier) and readily available on the market place. Table 12 presents a list of C/F medias that have been used to remove arsenic from water. All these medias are acceptable contingent upon proof testing at the Coolidge Well No. 13 site.

Table 12 Current Status of Medias Used for Coagulation/Filtration [1] Arsenic Removal Facility Alternatives Evaluation Arizona Water Company		
Media Name	**Manufacturer**	**Status**
Anthracite	(none)	•Standard product with AWWA specification. • Multiple suppliers located nationwide.
Electromedia	Filtronics	• Proprietary media from one supplier. • Capable of filtration rates of up to 12 gpm/ft^2.[3]
Greensand	Hungerford & Terry	• Proprietary media from one supplier.
High-density Sand	Several	• Also known as garnet, hematite, ilmenite, and magnetite. •Typically used as part of support system for Anthractite/Sand media beds.
Macrolite	Kinetico	• Ceramic-based media. • Capable of filtration rates of up to 10 gpm/ft^2.[3] • Lower backwash rates (8 gpm/ft^2) • Focus on small systems (POU/POE). • Does not provide system packages.
Manganese Dioxide	Several	• Packaged by several suppliers (e.g., LayneOx, Pureflow, Prince Minerals, Birm, Catalox)
Sand	(none)	• Standard product with AWWA specification. • Multiple suppliers located nationwide.

Note:

(1) Any of the following suppliers may be used to provide a system package: Everfilt, Hungerford & Terry, Loprest, Pureflow, Severn-Trent, Siemens, Tonka, WesTech.

(2) Shaded entries indicate those medias that appear viable for use at the Coolidge Well No. 13 site based on water quality and performance record.

(3) Vendors typically require field testing before providing a performance warranty as part of the system.

6.2 Current State of Sorptive Medias

Carollo previously conducted a review of sorptive medias in spring 2011 for AWC. Since then there have been no new suppliers brought to the market place that have any significant full-scale installations. Although the initial promulgation of the Arsenic Rule by the U.S. EPA in 2001, saw a rush of potential medias, these medias were primarily at the research level. Now in 2011, there are only a few medias that have the track record and ability to provide a complete system package.

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

June 24, 2015

Mr. Randy Gates
MGC Contractors, Inc.
4110 E. Elwood Street
Phoenix, AZ 85040

Re: Coolidge Well No. 13 Arsenic Removal Facility

Dear Mr. Gates:

Enclosed is a Request for Proposal ("RFP") for the above referenced project. Arizona Water Company ("Company") requests your submission of a proposal for Coolidge Well No. 13 Arsenic Removal Facility.

A mandatory pre-proposal meeting will be held at Coolidge Well No. 13, 2107 W. Vah Ki Inn Road, Coolidge, AZ 85128 on July 9, 2015, at 10:00 a.m. Proposals must be submitted no later than 2:00 p.m. on July 30, 2015. Submit the original proposal plus three (3) copies to the attention of James Wilson at the Phoenix Office located at 3805 N. Black Canyon Highway, Phoenix, AZ 85015. Company will not consider incomplete or late submittals for evaluation.

RFP evaluation will be weighted as follows:

- Work History and Experience of Consultant and Project Manager – 40%
- RFP/Scope thoroughness – 30%
- Consultant Proposed Fee – 30%

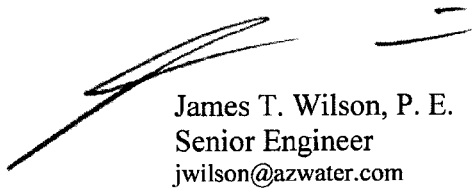
The following documents are attached for your review:

- Proposal/Contract (two copies)
- Request for Proposal
- Adsorptive Media Technical Specifications and Exhibits A thru N
- Coagulation/Filtration Technical Specifications and Exhibits A thru N

E-MAIL: engineering@azwater.com

The Company anticipates issuing a notice of award for Coolidge Well No. 13 Arsenic Removal Facility on or around September 3, 2015, following evaluation of the submitted qualifications and fees. The Company intends to select the successful contractor directly from the submitted RFP. However, the Company reserves the right to have a formal interview process following review of the submitted RFPs. If you have any questions regarding this request, please contact me at (602) 240-6860.

Very truly yours,



James T. Wilson, P. E.
Senior Engineer
jwilson@azwater.com

afh
Enclosures

ARIZONA WATER COMPANY

Pinal Valley - Casa Grande Division
220 E. 2nd Street

PROPOSAL/CONTRACT

CONTRACTOR: MGC CONTRACTORS, INC.	SYSTEM: PINAL VALLEY
ADDRESS: P. O. BOX 61748	W.A. No(s): 1-4806
CITY ST ZIP: PHOENIX, AZ 85082	BID DUE DATE: July 30, 2015

CONTRACTOR SUBMITS this PROPOSAL/CONTRACT to ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), to perform the work and complete the project described on Page 2 (the "Project"), as an independent prime contractor.

1. Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings, (the "Specifications"), all of which are attached hereto. Contractor has examined the specific plans and related construction drawings for the Project (the "Drawings"), copies of which are also attached hereto. The General Conditions of Contract, Specifications and Drawings are incorporated into this Proposal/Contract. Contractor affirms that all work and materials to be furnished or purchased for the Project will be in strict conformance with the General Conditions of Contract, Specifications and Drawings.

2. Contractor represents and warrants that it has satisfied and complied with the provisions of Section 6, Contractor Understands Work and Working Conditions, of the General Conditions of Contract prior to submitting this Proposal/Contract.

3. Contractor represents that this Proposal/Contract is fair and honest in all respects, is submitted in good faith and is not submitted in collusion with any other company, entity or person.

4. Contractor acknowledges that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work.

5. Prior to the commencement of work, Contractor will submit to the Company a list of all materials to be used in the Project. The materials list will include the manufacturer, part number, price and quantity included in this Proposal/Contract.

6. Contractor will furnish all labor, tools, equipment and materials required to complete the Project according to the General Conditions of Contract, Specifications and Drawings. No materials purchased by Contractor to be incorporated into the Project are subject to tax at the time of purchase and Contractor will not charge the Company for any such tax. Contractor will pay the applicable transaction privilege tax (the "Contracting Tax") on the Project after Contractor receives payment of the final Project invoice from the Company. The cost of materials incorporated into the Project which are exempt by Arizona Revised State Statues ("A.R.S.") from the Contracting Tax, for example, pipes or valves having a diameter of four (4) inches or larger, including equipment, fittings and any other related part that is used in operating the pipes or valves (A.R.S. §42-5061 B.6.), will not be included in the total cost of the labor and materials upon which the Contracting Tax is computed. Contractor retains full liability and obligation to pay the Contracting Tax and will defend and indemnify the Company against any demand or obligation to pay the Contracting Tax.

7. Contractor will maintain detailed accounting records of all materials purchased and incorporated into the Project. Such records will include all supporting original vendor invoices for all materials purchased. Following completion of the Project, Contractor will submit an itemized accounting to the Company which will include all supporting original vendor invoices and satisfactory evidence of payment thereof. The Company will not pay Contractor for materials not actually incorporated into the Project, and the disposition of such materials will remain Contractor's responsibility.

8. The Estimated Total Cost of the Project, shown on Page 2, is based on estimated labor and material quantities to be furnished. It includes an estimate of the Contracting Tax and the cost of the required Performance and Payment Bonds. Contractor will not cancel, modify or withdraw this Proposal/Contract during a ninety-day (90) period commencing on the Bid Due Date. The Company may accept this Proposal/Contract by signing and mailing, or otherwise delivering, a copy hereof to Contractor during such ninety-day (90) period. If the Company does not accept this Proposal/Contract during such ninety-day (90) period, Contractor may cancel this Proposal/Contract by giving written notice of cancellation to the Company.

9. Prior to the commencement of work, Contractor will provide the Company with a detailed construction schedule, in either Gantt or CPM form, identifying all tasks to be performed from the date of the written Commencement Notice through completion of the Project, including testing, training of Company Personnel and final Project invoicing. Contractor will provide the Company with a copy of such construction schedule documenting the progress of work on the Project at least monthly.

10. Contractor will not commence work on the Project until the Company gives Contractor a written Commencement Notice. Contractor will complete the Project within _____ calendar days after the Commencement Notice is issued.

11. Following the Company's written notice of satisfactory completion of the Project, and upon receipt of the final Project invoice from Contractor, the Company shall pay Contractor the actual total cost of the Project, which will be calculated as shown on Page 2, except that actual labor and material quantities installed/constructed will be substituted for the estimated labor and materials quantities and the Contracting Tax will be recalculated based on such actual labor and materials quantities.

12. The amount of applicable liquidated damages for Contractor's failure to deliver or perform within the time limit shown in Paragraph 10 may be deducted from the Company's payment of the final Project invoice. This provision shall not limit the Company's ability to terminate this Proposal/Contract for Contractor's unsatisfactory performance or failure to perform as provided in the General Conditions of Contract, Specifications or Drawings, or in this Proposal/Contract.

SPECIAL CONDITIONS:

See attached Request for Proposal and Technical Specifications dated June 23, 2015. Company will make five (5) progress payments.

CONTRACTOR	PROPOSAL/CONTRACT ACCEPTED:
MGC CONTRACTORS, INC.	***ARIZONA WATER COMPANY***
By:	By:
Print Name:	Print Name: Fredrick K. Schneider, PE
Title:	Title: Vice President - Engineering
Date:	Date:

am

ARIZONA WATER COMPANY

Pinal Valley - Casa Grande Division
220 E. 2nd Street
Casa Grande, AZ 85122 PH: 520-836-8785

PROPOSAL/CONTRACT

CONTRACTOR: MGC CONTRACTORS, INC.	SYSTEM: PINAL VALLEY
AZ CONTRACTOR LICENSE NO: CLASSIFICATION:	W.A. No(s): 1-4806
ADDRESS: P. O. BOX 61748	BID DUE DATE: July 30, 2015
CITY ST ZIP PHOENIX, AZ 85082	BID BOND REQUIRED ☑ Yes ☐ No

DESCRIPTION OF PROJECT: Design, permit and construct an Arsenic Removal Facility at Coolidge Well No. 13 in the Pinal Valley water system.

1-2. MATERIALS EXEMPT FROM CONTRACTING TAX (per Paragraph 6)	QUANTITY	UNIT PRICE LABOR	UNIT PRICE MATERIALS	TOTAL COST LABOR	TOTAL COST MATERIALS
Provide and install on-site piping, valves and related appurtenances.	1				
				1	2

3. Total Labor to Install Exempt Materials (add the amounts in column 1)	3	
4. Total Exempt Materials (add the amounts in column 2)		4

5-6. NON-EXEMPT MATERIALS	QUANTITY	LABOR	MATERIALS	LABOR	MATERIALS
Perform design phase services and obtain ATC and other required permits and approvals.	1				
Mobilization, demobilization, site maintenance and closeout.	1				
Perform grading, drainage and site improvements.	1				
Provide and install ARF vessels with media, piping and related appurtenances.	1				
Provide and install chemical injection system including tanks, piping and related appurtenances.	1				
Provide and install backwash system including tanks, pumps, piping and related appurtenances.	1				
Provide and install solids handling facilities including dewatering bin, pumps and related appurtenances (coagulation/filtration only).	1				
Perform disinfection, testing, commissioning and on-site operator training.	1			5	6
Provide and install SCADA system, perform PLC programming and integrate ARF and Well No. 13 site into Pinal Valley SCADA system.	1				
Prepare record drawings, O&M manual and obtain AOC.	1				

7. Total Labor to Install Non-Exempt Materials (add the amounts in column 5)	7	
8. Total Non-Exempt Materials (add the amounts in column 6)		8
9. Subtotal A (add lines 3, 7 and 8)		9
10. Contracting Tax Base (multiply the amount on line 9 by 0.65)	10	
11. Applicable Contracting Tax Rate	11	
12. Contracting Tax (multiply the amount on line 10 by line 11)		12
13. Subtotal B (add lines 4, 9 and 12)		13
14. 100% Performance and Payment Bonds Cost		14
15. Estimated Total Cost (add lines 13 and 14)		15

ARIZONA WATER COMPANY

Pinal Valley - Casa Grande Division
220 E. 2nd Street

PROPOSAL/CONTRACT

CONTRACTOR: MGC CONTRACTORS, INC.	SYSTEM: PINAL VALLEY
ADDRESS: P. O. BOX 61748	W.A. No(s): 1-4806
CITY ST ZIP: PHOENIX, AZ 85082	BID DUE DATE: July 30, 2015

CONTRACTOR SUBMITS this PROPOSAL/CONTRACT to ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), to perform the work and complete the project described on Page 2 (the "Project"), as an independent prime contractor.

1. Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings, (the "Specifications"), all of which are attached hereto. Contractor has examined the specific plans and related construction drawings for the Project (the "Drawings"), copies of which are also attached hereto. The General Conditions of Contract, Specifications and Drawings are incorporated into this Proposal/Contract. Contractor affirms that all work and materials to be furnished or purchased for the Project will be in strict conformance with the General Conditions of Contract, Specifications and Drawings.
2. Contractor represents and warrants that it has satisfied and complied with the provisions of Section 6, Contractor Understands Work and Working Conditions, of the General Conditions of Contract prior to submitting this Proposal/Contract.
3. Contractor represents that this Proposal/Contract is fair and honest in all respects, is submitted in good faith and is not submitted in collusion with any other company, entity or person.
4. Contractor acknowledges that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work.
5. Prior to the commencement of work, Contractor will submit to the Company a list of all materials to be used in the Project. The materials list will include the manufacturer, part number, price and quantity included in this Proposal/Contract.
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7. Contractor will maintain detailed accounting records of all materials purchased and incorporated into the Project. Such records will include all supporting original vendor invoices for all materials purchased. Following completion of the Project, Contractor will submit an itemized accounting to the Company which will include all supporting original vendor invoices and satisfactory evidence of payment thereof. The Company will not pay Contractor for materials not actually incorporated into the Project, and the disposition of such materials will remain Contractor's responsibility.
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9. Prior to the commencement of work, Contractor will provide the Company with a detailed construction schedule, in either Gantt or CPM form, identifying all tasks to be performed from the date of the written Commencement Notice through completion of the Project, including testing, training of Company Personnel and final Project invoicing. Contractor will provide the Company with a copy of such construction schedule documenting the progress of work on the Project at least monthly.
10. Contractor will not commence work on the Project until the Company gives Contractor a written Commencement Notice. Contractor will complete the Project within _____ calendar days after the Commencement Notice is issued.
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12. The amount of applicable liquidated damages for Contractor's failure to deliver or perform within the time limit shown in Paragraph 10 may be deducted from the Company's payment of the final Project invoice. This provision shall not limit the Company's ability to terminate this Proposal/Contract for Contractor's unsatisfactory performance or failure to perform as provided in the General Conditions of Contract, Specifications or Drawings, or in this Proposal/Contract.

SPECIAL CONDITIONS:

See attached Request for Proposal and Technical Specifications dated June 23, 2015. Company will make five (5) progress payments.

CONTRACTOR	**PROPOSAL/CONTRACT ACCEPTED:**
MGC CONTRACTORS, INC.	***ARIZONA WATER COMPANY***
By:	By:
Print Name:	Print Name: Fredrick K. Schneider, PE
Title:	Title: Vice President - Engineering
Date:	Date:

am

ARIZONA WATER COMPANY

Pinal Valley - Casa Grande Division
220 E. 2nd Street
Casa Grande, AZ 85122 PH: 520-836-8785

PROPOSAL/CONTRACT

CONTRACTOR: MGC CONTRACTORS, INC.	SYSTEM: PINAL VALLEY
AZ CONTRACTOR LICENSE NO: CLASSIFICATION:	W.A. No(s): 1-4806
ADDRESS: P. O. BOX 61748	BID DUE DATE: July 30, 2015
CITY ST ZIP PHOENIX, AZ 85082	BID BOND REQUIRED ☑ Yes ☐ No

DESCRIPTION OF PROJECT: Design, permit and construct an Arsenic Removal Facility at Coolidge Well No. 13 in the Pinal Valley water system.

1-2. MATERIALS EXEMPT FROM CONTRACTING TAX (per Paragraph 6)	QUANTITY	UNIT PRICE LABOR	UNIT PRICE MATERIALS	TOTAL COST LABOR	TOTAL COST MATERIALS
Provide and install on-site piping, valves and related appurtenances.	1				
				1	2
3. Total Labor to Install Exempt Materials (add the amounts in column 1)				3	
4. Total Exempt Materials (add the amounts in column 2)					4

5-6. NON-EXEMPT MATERIALS	QUANTITY	LABOR	MATERIALS	LABOR	MATERIALS
Perform design phase services and obtain ATC and other required permits and approvals.	1				
Mobilization, demobilization, site maintenance and closeout.	1				
Perform grading, drainage and site improvements.	1				
Provide and install ARF vessels with media, piping and related appurtenances.	1				
Provide and install chemical injection system including tanks, piping and related appurtenances.	1				
Provide and install backwash system including tanks, pumps, piping and related appurtenances.	1				
Provide and install solids handling facilities including dewatering bin, pumps and related appurtenances (coagulation/filtration only).	1			5	6
Perform disinfection, testing, commissioning and on-site operator training.	1				
Provide and install SCADA system, perform PLC programming and integrate ARF and Well No. 13 site into Pinal Valley SCADA system.	1				
Prepare record drawings, O&M manual and obtain AOC.	1				
7. Total Labor to Install Non-Exempt Materials (add the amounts in column 5)				7	
8. Total Non-Exempt Materials (add the amounts in column 6)					8
9. Subtotal A (add lines 3, 7 and 8)					9
10. Contracting Tax Base (multiply the amount on line 9 by 0.65)				10	
11. Applicable Contracting Tax Rate				11	
12. Contracting Tax (multiply the amount on line 10 by line 11)					12
13. Subtotal B (add lines 4, 9 and 12)					13
14. 100% Performance and Payment Bonds Cost					14
15. Estimated Total Cost (add lines 13 and 14)					15

ARIZONA WATER COMPANY

Pinal Valley - Casa Grande Division
220 E. 2nd Street

PROPOSAL/CONTRACT

CONTRACTOR:	SYSTEM: PINAL VALLEY
ADDRESS:	W.A. No(s): 1-4806
CITY ST ZIP:	BID DUE DATE: July 30, 2015

CONTRACTOR SUBMITS this PROPOSAL/CONTRACT to ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), to perform the work and complete the project described on Page 2 (the "Project"), as an independent prime contractor.

1. Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings, (the "Specifications"), all of which are attached hereto. Contractor has examined the specific plans and related construction drawings for the Project (the "Drawings"), copies of which are also attached hereto. The General Conditions of Contract, Specifications and Drawings are incorporated into this Proposal/Contract. Contractor affirms that all work and materials to be furnished or purchased for the Project will be in strict conformance with the General Conditions of Contract, Specifications and Drawings.
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3. Contractor represents that this Proposal/Contract is fair and honest in all respects, is submitted in good faith and is not submitted in collusion with any other company, entity or person.
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SPECIAL CONDITIONS:

See attached Request for Proposal and Technical Specifications dated June 23, 2015. Company will make five (5) progress payments.

CONTRACTOR	**PROPOSAL/CONTRACT ACCEPTED:** *ARIZONA WATER COMPANY*
By:	By:
Print Name:	Print Name: Fredrick K. Schneider, PE
Title:	Title: Vice President - Engineering
Date:	Date:

arh

ARIZONA WATER COMPANY

Pinal Valley - Casa Grande Division
220 E. 2nd Street
Casa Grande, AZ 85122 PH: 520-836-8785

PROPOSAL/CONTRACT

CONTRACTOR:	SYSTEM: PINAL VALLEY
AZ CONTRACTOR LICENSE NO: CLASSIFICATION:	W.A. No(s): 1-4806
ADDRESS:	BID DUE DATE: July 30, 2015
CITY ST ZIP	BID BOND REQUIRED ☑ Yes ☐ No

DESCRIPTION OF PROJECT: Design, permit and construct an Arsenic Removal Facility at Coolidge Well No. 13 in the Pinal Valley water system.

1-2. MATERIALS EXEMPT FROM CONTRACTING TAX (per Paragraph 6)	QUANTITY	UNIT PRICE LABOR	UNIT PRICE MATERIALS	TOTAL COST LABOR	TOTAL COST MATERIALS
Provide and install on-site piping, valves and related appurtenances.	1				
				1	2
3. Total Labor to Install Exempt Materials (add the amounts in column 1)				3	
4. Total Exempt Materials (add the amounts in column 2)					4

5-6. NON-EXEMPT MATERIALS	QUANTITY	UNIT PRICE LABOR	UNIT PRICE MATERIALS	TOTAL COST LABOR	TOTAL COST MATERIALS
Perform design phase services and obtain ATC and other required permits and approvals.	1				
Mobilization, demobilization, site maintenance and closeout.	1				
Perform grading, drainage and site improvements.	1				
Provide and install ARF vessels with media, piping and related appurtenances.	1				
Provide and install chemical injection system including tanks, piping and related appurtenances.	1				
Provide and install backwash system including tanks, pumps, piping and related appurtenances.	1				
Provide and install solids handling facilities including dewatering bin, pumps and related appurtenances (coagulation/filtration only).	1				
Perform disinfection, testing, commissioning and on-site operator training.	1			5	6
Provide and install SCADA system, perform PLC programming and integrate ARF and Well No. 13 site into Pinal Valley SCADA system.	1				
Prepare record drawings, O&M manual and obtain AOC.	1				
7. Total Labor to Install Non-Exempt Materials (add the amounts in column 5)				7	
8. Total Non-Exempt Materials (add the amounts in column 6)					8
9. Subtotal A (add lines 3, 7 and 8)					9
10. Contracting Tax Base (multiply the amount on line 9 by 0.65)				10	
11. Applicable Contracting Tax Rate				11	
12. Contracting Tax (multiply the amount on line 10 by line 11)					12
13. Subtotal B (add lines 4, 9 and 12)					13
14. 100% Performance and Payment Bonds Cost					14
15. Estimated Total Cost (add lines 13 and 14)					15

ARIZONA WATER COMPANY

SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT: E-4-1

CONSTRUCTION SPECIFICATIONS: E-8-1

STANDARD SPECIFICATION DRAWINGS: E-9-1

gw 7/16/15

2007 EDITION WITH **2010** REVISIONS;
2012 GENERAL CONDITIONS OF CONTRACT

A copy of this entire Spec Book was sent out with MGC Contractors invitation to bid package for 1-4806 Coolidge Well #13 ARF on 7/17/15 AH

REQUEST FOR PROPOSAL

Design, Permitting and Construction of Arsenic Removal Facility and Related Appurtenances Coolidge Well No. 13 Site Coolidge, Arizona

June 23, 2015

Project No. 1-4806

Arizona Water Company
3805 N. Black Canyon Highway
Phoenix, Arizona 85015
(602) 240-6860

Table of Contents

1. PROJECT DESCRIPTION 1
   - A. Background 2
   - B. Scope of Services 2

2. PROPOSAL SUBMITTAL REQUIREMENTS 3
   - A. General Requirements 3
   - B. Proposal Requirements 4

Technical Specifications – Adsorptive Media

Technical Specifications – Coagulation/Filtration

Request for Proposal
Design, Permitting and Construction of
Arsenic Removal Facility and Related Appurtenances
Coolidge Well No. 13 Site

June 23, 2015

1. PROJECT DESCRIPTION

Through the issuance of this request for proposal ("RFP"), Arizona Water Company ("Company") is soliciting competitive, sealed bids from Contractors to design, construct, and obtain all permits and governmental approvals for an Arsenic Removal Facility and related appurtenances ("ARF") for the Company's Coolidge Well No. 13 Site ("Site") located at 2107 W. Vah Ki Inn Road, Coolidge, Pinal County, Arizona (Assessor's Parcel No. 209-20-001P) (see Exhibit "A" of the Technical Specifications). Acceptable ARF treatment technologies include:

1. Adsorptive Media
2. Coagulation/Filtration

The contractor, its engineer and subcontractors (collectively referred to as "Contractor") are responsible for the overall design/build project, including construction and all design disciplines necessary to deliver the ARF "turnkey" to the Company. The Contractor, at its option, may select one ARF technology to use as the basis for its proposal. Technical Specifications for both ARF technologies are attached.

The Contractor is responsible for the design, construction, permitting, programming, commissioning, record drawings, and Operations and Maintenance ("O&M") manual for the ARF included in this RFP. Contractor shall provide design submittals to Company at the 30, 60, 90 and 100 percent complete submittals. See the enclosed Technical Specifications for a detailed Scope of Services.

It is the Contractor's responsibility to obtain any information it requires regarding existing facilities, utility locations and site conditions prior to responding to this RFP. The Contractor may collect samples and perform its own water quality analyses for design purposes.

Design criteria for the ARF are provided in Exhibit "E" of the Technical Specifications. The ARF vessels shall have full flow treatment capacity. A portion of the raw groundwater from Well No. 13 ("the well") will bypass the ARF and blend with the treated water to produce water with an arsenic concentration of less than 7 micrograms per liter ("µg/L") prior to discharge to the distribution system. The distribution system will provide the water necessary to backwash the ARF vessels when required. The design includes, but is not limited to: vessel layout, chemical equipment, sludge handling equipment

(coagulation/filtration only), backwash storage and recycling, electrical equipment, communications equipment, instrumentation, programming, piping, site work and drainage. A conceptual site plan, site survey and sample designs that are acceptable to the Company are provided in the exhibits of the Technical Specifications for the Contractor's use.

A. Background

The well is located in a rural area near the Heartland residential subdivision on the south side of Vah Ki Inn Road, approximately 1,000 feet west of Skousen Road. The Site is approximately 0.9 acres and is enclosed by a concrete masonry unit block wall. Other existing facilities at the Site include a storage building, a liquid chlorinator, electrical equipment and a retention basin. Future facilities planned for the Site include two 0.5 million gallon water storage reservoirs and a booster pump station (see Exhibit "D" of the Technical Specifications). The Company has completed an ALTA and topographical survey of the Site, which is available for the Contractor's use.

Well No. 13 is equipped to produce 1,250 gpm and is currently not in service. The Company will replace the existing well pump with a new well pump that produces 800 gpm. When the groundwater from the well was last sampled in October 2011; the arsenic concentration was 14 µg/L. From September 2009 through October 2011; the highest concentration of arsenic was approximately 18 µg/L (see Exhibit "F" of the Technical Specifications).

B. Scope of Services

See Scope of Services in Technical Specifications.

2. PROPOSAL SUBMITTAL REQUIREMENTS

A. General Requirements

The Contractor must deliver proposals to the Company's Phoenix office (address provided below) before 2:00 p.m., Mountain Standard Time, on July 30, 2015. The Company may not accept late proposals.

Arizona Water Company
Attention: James T. Wilson
3805 N. Black Canyon Hwy.
Phoenix, Arizona 85015

An onsite pre-proposal meeting is scheduled for Thursday, July 9, 2015, beginning promptly at 10:00 a.m., Mountain Standard Time, at the Coolidge Well No. 13 site located at:

2107 W. Vah Ki Inn Road
Coolidge, AZ 85128

The pre-proposal meeting is mandatory. The Company may not accept proposals from Contractors who do not attend the meeting.

The schedule for this project is shown below. Proposals must include a detailed design and construction schedule with the completion date on or before the date shown below.

Pre-Proposal Meeting:	July 9, 2015
RFI's Due	July 23, 2015
Proposal Due:	August 6, 2015
Contract Awarded:	September 3, 2015

Proposals must include a completed Proposal/Contract. The Company may reject incomplete Proposal/Contracts. The Contractor must submit questions regarding this RFP in writing by mail or email to:

Arizona Water Company
Attention: James T. Wilson, P.E.
3805 N. Black Canyon Hwy.
Phoenix, Arizona 85015
E-mail: jwilson@azwater.com

Company will only respond to written questions and requires a minimum of 48 hours to provide written responses. Company will send responses to all written questions received to each contractor who is provided a RFP package. Oral statements or instructions

made by the Company shall not constitute an amendment or addendum to this RFP. The Company will provide all amendments or addendums to each Contractor in writing.

For the Adsorption treatment technology, the Company requires a completed form of Exhibit "B" of the Technical Specifications. The contract term of the Proposal/Contract in Exhibit "B" of the Technical Specifications is no less than 5 years from the completion of the ARF which is renewable for an additional 5 year term at the Company's discretion. The Contractor shall provide a performance guarantee on the treatment media per Exhibit "B" of the Technical Specifications.

B. Proposal Requirements

The Contractor shall submit a proposal of no more than 15 typed pages in length (excluding resumes, project schedule, fee schedule, hourly rate schedule and, for the adsorptive option only, Exhibit "B" of the Technical Specifications) and in font of no smaller than 11 point.

The Contractor shall submit the following information with the proposal. The Company will use this information to select the successful bidder.

i. Relevant Experience and Qualifications of the Contractor and Engineer.

a. The Contractor shall provide with its proposal submittal the following information to the Company, along with other pertinent information the Contractor may deem necessary to demonstrate its qualifications in the design, permitting, and construction of the ARF as described in this RFP:

1. Name and address of Contractor.

2. Number of years Contractor has been in business.

3. Information concerning the Contractor's financial capacity and stability to assure the full and timely performance of the Contract.

4. Number of ARFs Contractor has designed, permitted, constructed, and made operational for the removal of arsenic.

5. Name and address of Engineer.

6. Number of years Engineer's key personnel has been registered engineers.

7. Number and description of ARFs the Engineer has designed.

8. List a minimum of three (3) similar projects that Contractor has successfully completed. This list must include at a minimum:

a) Name and address of Engineer.

b) The dates of work (note if pending and status of completion).

c) Project Description including the type of work performed, including the contaminant removed, capacity of water treated and the influent and effluent contaminant levels.

d) The name and telephone number of a contact person or owner of the facility.

e) Contractor's role in the project.

f) Engineer's role in the project.

g) Construction cost.

ii. Key Personnel Qualifications.

a. Organizational chart including key personnel from the Contractor and Engineer.

b. Position descriptions and one page resumes of key personnel assigned to this project. Include resumes in an appendix to the proposal.

c. List of Arizona professional and contractor licenses held by the Contractor, Engineer, and key personnel assigned to this project.

d. Type and amount of work Contractor will self-perform.

e. Proposed subcontractors.

iii. Performance Record and Reputation.

a. Litigation and claims history relating to performance, completion, and progress for all projects.

b. Willingness to abide by Contract Documents with no objections or changes.

iv. Contractor's Understanding of, and Approach to Project.

a. Contractor's understanding of the project.

b. Approach to dealing with potential problems.

v. **Contractor's ability to Manage Project.**

a. Quality control, dispute resolution, and safety management.

b. Subcontractor selection plan.

c. Planning, scheduling, estimating, and construction management tools.

vii. **Contractor's Ability to Meet Project Schedule Deadlines and Complete the Project on Budget.** Provide a preliminary schedule, in Gantt chart form, beginning with the award of the contract and ending with the completion of construction Include time for reviews and applicable regulatory agency approvals.

viii. **Twenty Year Life Cycle Analysis.** Include the construction costs, media replacement costs, chemical costs, and any other operating and maintenance costs. Assumptions for the 20-year life cycle cost analysis are provided in Exhibit "L" of the Technical Specifications.

ix. **Hourly Rates.** Provide supplemental hourly rates with overhead for all levels of staff members by discipline, including subcontractors and consultants, for use in determining appropriate compensation or reimbursement for any changes in the Scope of Services.

x. **Task Additions and/or Deletions.** If, during the course of the Contractor's preparation of this proposal, modifications to the Scope of Services are identified that would better facilitate the design, construction and/or operation and maintenance, provide a brief description and justification for the recommended change along with a corresponding addendum to the fee schedule.

xi. **Permit List.** Prepare a list of all Federal, State, and local permits required for design and construction. The list must state the name of the permit, the respective regulatory agency or municipality, a brief description of the purpose of the permit, and the typical or legal review time required by each respective agency.

xii. **Preliminary Drawing List.** Provide a preliminary drawing list that indicates the drawing type and sheet count for all drawings proposed for this project.

Note: The Company at its sole discretion reserves the right to reject or accept any bid proposal.

ARIZONA WATER COMPANY

Technical Specifications – Adsorptive Media
Design, Permitting and Construction of
Arsenic Removal Facility and Related Appurtenances
Coolidge Well No. 13 Site

Table of Contents

1. Summary of Work 1
2. Scope of Services 1
   - A. Project Management 1
   - B. Permits and Approvals 2
   - C. Design Phase Submittals 2
   - D. 30% Design 2
   - E. 60% Design 4
   - F. 90% Design 4
   - G. 100% Design 4
   - H. Construction Phase Submittals 5
   - I. Construction 6
3. Treatment Performance Requirements 8
   - A. General 8
   - B. Design Criteria 8
   - C. Water Quality Data 8
   - D. Media Change-Out Contract 8
4. Process Design Requirements 8
   - A. Special Site Conditions 8
   - B. ARF Configuration 8
   - C. Media Flux Rate 8
   - D. Empty Bed Contact Time 9
   - E. Bypassing and Blending 9
   - F. Backwashing and Recycling 9
   - G. Chemical Feed Systems 9
   - H. pH Adjustment 10
   - I. Programming and SCADA 10
5. ARF Component Design 10

A. Filter Vessels 10
B. External Piping 12
C. Valves and Appurtenances 13
D. Flow Meters 14
E. HDPE Backwash Tank 16
F. Welded Steel Backwash Tank 16
G. Chemical Feed Systems 17
H. Backwash Recycle Pumps 19
I. Ecternal Component Paint 20
8. Electrical and Instrumentation 20
A. General 20
B. SCADA 20
C. Equipment Monitoring 20

Exhibit A: Location Map
Exhibit B: Media Change-Out Agreement and Proposal/Contract
Exhibit C: Site Survey
Exhibit D: Conceptual Site Plan
Exhibit E: Design Criteria
Exhibit F: Water Quality
Exhibit G: Approved Adsorptive Media
Exhibit H: Arizona Water Company Water Storage Tank Coating Specifications O-12-2
Exhibit I: Sample Design of Adsorptive Media ARF
Exhibit J: Sample Design of Chemical Feed System
Exhibit K: Sample Design of Sodium Hypochlorite Feed System
Exhibit L: 20-Year Life Cycle Cost Assumptions
Exhibit M: Arizona Water Company EI&C Design Guidelines Technical Specification
Exhibit N: ADEQ Initial Start-Up Monitoring Form

ARIZONA WATER COMPANY

Technical Specifications – Adsorptive Media
Design, Permitting and Construction of
Arsenic Removal Facility and Related Appurtenances
Coolidge Well No. 13 Site

1. SUMMARY OF WORK

An Arsenic Removal Facility and Related Appurtenances ("ARF") is required at the Coolidge Well No. 13 Site ("Site") located at 2017 W. Vah Ki Inn Road, Coolidge, Arizona 85128, Assessor's Parcel Number ("APN") 209-20-001P (Exhibit "A"). The ARF is necessary to treat groundwater to comply with the maximum contaminant level ("MCL") for arsenic. The intent of these Technical Specifications is to provide general descriptions and establish minimum requirements for the ARF. It is the Contractor's responsibility to design, permit and construct a complete, fully functional, and reliable ARF which complies with Treatment Performance Requirements and specifications set forth herein ("Work").

The ARF shall include, but is not limited to, vessels, media, piping, valves, storage tanks, concrete pads, meters, controls, electrical equipment, chemicals, start-up, training and commissioning. Contractor shall perform due diligence as needed to design, permit and construct the ARF. Any analysis of water quality parameters that may affect performance of the ARF, life-cycle of any media, or waste produced, are the responsibility of the Contractor. Contractor is responsible for all site improvements associated with construction of the ARF, including grading and drainage and partial resurfacing of the Site. Contractor is responsible for integration of the ARF into the Company's Pinal Valley SCADA system.

Contractor is responsible for paying for and obtaining all permits and approvals necessary to begin and complete construction of the ARF. Contractor shall enter into a 5-year Media Change-Out Contract with the Company, which is extendable for an additional 5 years (Exhibit "B").

2. SCOPE OF SERVICES

A. Project Management

i. Contractor shall submit to Company a detailed critical path schedule, in Gantt chart form, beginning with the award of contract and ending with the completion of construction and commissioning. Contractor shall identify applicable regulatory agency approvals and project milestones. Contractor shall update the schedule at a minimum of once per month.

ii. Contractor shall attend all project design and construction meetings including, but not limited to, kick-off meetings, bi-weekly design phase

meetings/workshops, bi-weekly construction phase meetings and special meetings as required. Contractor shall conduct meetings, distribute meeting minutes within three (3) business days after each meeting/workshop, and monitor progress of project versus schedule.

iii. Company will confirm schedule for project meetings and review and approve schedule updates.

B. Permits and Approvals

i. Contractor shall pay for and obtain all permits and approvals for the ARF including, but not limited to: Approval to Construct ("ATC"), Approval of Construction ("AOC") and an approval of a blend plan from the Arizona Department of Environmental Quality ("ADEQ"), building permit, use permit or setback variance, right-of-way encroachment permit and dust control permit. Contractor shall submit design reports, construction drawings applications, certifications, record drawings, and any other documentation required to obtain the permits and approvals required to construct, startup and commission the ARF.

ii. Contractor shall prepare and submit a Storm Water Pollution Prevention Plan, Traffic Control Plan and any other plan required for approval prior to commencing construction.

iii. Contractor must obtain Company approval prior to submitting permit applications, construction drawings, reports and any other required supplemental materials to regulatory agencies.

C. Design Phase Submittals

i. Contractor shall submit to Company a minimum of four (4) design package submittals (30%, 60%, 90% and 100%). Company will review all required design package submittals and requires a review period of a minimum of ten (10) working days for the 30% submittal, twenty (20) working days for both the 60% and 90% submittals and fifteen (15) working days for the 100% submittal.

ii. Contractor shall incorporate Company review comments with each subsequent design submittal package. Contractor shall return redlines and provide a comment response letter with each subsequent design submittal package.

D. 30% Design

i. Data Gathering: Contractor shall perform data gathering activities that includes, but is not limited to obtaining as-built drawings, water use records, water quality samples, surveys and other information as required; obtaining permit application forms and requirements from approval agencies; requesting utility information and maps from utility companies; locating and potholing for utilities; obtaining local design

requirements and standard details; meeting with the City of Coolidge, Pinal County, ADEQ and other permitting and reviewing agencies to determine the design requirements for approvals and permitting; and visiting the Site and noting conditions that may impact the design. An ALTA and topographical survey of the Site is provided in Exhibit "C". Sample plans for an adsorptive media ARF, a chemical feed system and a standalone sodium hypochlorite feed system are provided in Exhibits "I", "J" and "K", respectively. Company will provide example technical specifications in CSI format for Contractor's use as a model for the preparation of technical specifications. The Company, upon receipt of written request of the Contractor, will provide supplemental information if sufficient information is not available.

ii. Base Map Preparation: Contractor shall prepare a base map showing the locations of all existing utilities and structures with dimensions from the site property line and roadway monument line. Contractor shall identify diameter, type of material and type of utility. Contractor shall show the locations of all existing valves and structures.

iii. Geotechnical Investigation: Contractor shall perform geotechnical investigation to determine soil characteristics, excavation and compaction requirements, soil bearing capacities, electrical conductivity and other information needed to establish design parameters for construction. Contractor shall prepare a report that presents the findings and recommendations of the geotechnical investigation.

iv. Design Report: Contractor shall prepare a draft design report that provides a design narrative for the ARF and addresses detailed design criteria that includes, but not limited to: chemical dosages, hydraulic loading rates, empty bed contact times, backwashing rates and frequencies, type of media, media volumes, backwash volumes, tank and vessel capacities, pumping capacities and other related process information. Contractor shall provide the maximum pressure drop through the ARF throughout the full life-cycle of media. Contractor shall provide calculations to confirm the design of the ARF will comply with the Treatment Performance Requirements set forth herein. The design report shall also include, but is not limited to, design description, equipment selection, performance specifications for all equipment, controls description, site improvements and required permits and approvals. Contractor shall provide figures and supplemental information including, but not limited to, design calculations, site layout, details, process flow schematic, equipment cut sheets with name of manufacturer, model numbers and dimensions and weights; list of chemicals used in the treatment process and the quantity, concentration, and storage requirements for each.

v. Blend Plan: Contractor shall prepare a draft blend plan for the ARF.

vi. Submittals: Contractor shall submit to Company for review a 30% design package that includes, but is not limited to: base map, 30% construction drawings, design report, blend plan and geotechnical report.

E. 60% Design

i. Construction Drawings: Contractor shall prepare scaled construction drawings that include, but are not limited to, general, civil, mechanical, structural, electrical and instrumentation plans, sections and details. Contractor shall produce construction drawings in MicroStation Version 8i or AutoCad in 2-D format.

ii. Blend Plan: Contractor shall revise blend plan as required.

iii. Design Report: Contractor shall revise design report as required.

iv. Technical Specifications: Contractor shall prepare draft technical specifications in CSI format.

v. Submittals: Contractor shall submit to Company for review a 60% design package that incorporates Company 30% review comments from the previous review and includes, but is not limited to, two (2) hard copies and one (1) CD of the 60% construction drawings, design report, blend plan and technical specifications.

F. 90% Design

i. Construction Drawings: Contractor shall revise construction drawings as required.

ii. Design Report: Contractor shall revise design report.

iii. Blend Plan: Contractor shall revise blend plan.

iv. Technical Specifications: Contractor shall revise technical specifications as required.

v. Permits and Approvals: Contractor shall prepare permit and review applications required by regulatory agencies.

vi. Submittals: Contractor shall submit to Company for review a 90% design package that incorporates Company 60% review comments from the previous review and includes, but is not limited to, two (2) hard copies and one (1) CD of the 90% construction drawings, design report, blend plan, technical specifications and permit applications. Upon approval from the Company, Contractor shall submit permit applications and supplemental materials as required to regulatory agencies for review and approval.

G. 100% Design

i. Construction Drawings: Contractor shall finalize construction drawings.

ii. Design Report: Contractor shall finalize design report.

iii. Blend Plan: Contractor shall finalize blend plan.

iv. Technical Specifications: Contractor shall revise technical specifications.

v. Permits and Approvals: Contractor shall obtain all permits and approvals granted from regulatory agencies.

vi. Submittals: Contractor shall submit the 100% design package to Company that incorporates Company 90% review comments, regulatory review comments and includes, but is not limited to: two (2) hardcopy sets of signed and sealed full size (24"x36") plans; two (2) hard copy sets of technical specifications, design report, blend plan, permits; and electronic versions of each on CD for in-house reproduction needs.

H. Construction Phase Submittals

i. Company requires a minimum of ten (10) working days for each submittal review. Contractor shall submit equipment and materials submittals that require longer lead times prior to submittals for equipment and materials that require shorter lead times.

ii. Contractor shall submit to Company for review a construction safety plan, shop drawings, samples, and engineering data covering all equipment and fabricated materials which will become a permanent part of the ARF. Data shall include drawings and descriptive information in sufficient detail to show the type, size, arrangement, and operation of component materials and devices; external connections, anchorages, weights and support required; performance characteristics and dimensions needed for installation and correlation with other materials and equipment. Submittals in electronic format are preferred. Hard copies, binders and actual samples are acceptable when electronic copies are not possible.

iii. Contractor shall identify any deviations from the approved plans and specifications on each submittal. Contractor shall accept full responsibility for the completeness of each submittal, and, in the case of a re-submittal, shall verify that all exceptions previously noted by Company are addressed.

iv. Company will not grant extensions of contract time for submittals.

v. Contractor's letter of re-submittal shall list the date of its original submittal letter, Company's submittal response date(s), and re-submittal dates.

vi. Company's review of drawings and data submitted by Contractor will cover only general conformity to the construction drawings and technical specifications, external connections, and dimensions which affect the layout. Company's review does not indicate a thorough review of all dimensions, quantities, and details of the material, equipment, device, or item shown. Company's review of submittals shall not relieve Contractor from responsibility for errors, omissions, or deviations, or responsibility for compliance with the construction drawings and technical specifications.

vii. Contractor shall number submittals by CSI division and sequence of submittal and without division by subcontracts or trades (i.e., 15000-xxx-xxx).

I. Construction

i. General: Contractor shall mobilize to the site; locate existing utilities; prepare site; perform construction staking; construct ARF; perform materials, pipe and equipment testing; and perform flushing, disinfection and hydrostatic testing.

ii. Requests for Information, Change Orders and Pay Requests: Contractor shall submit requests for information, change order and payment applications to Company in writing. Company will maintain the administrative files and logs for the project during construction including submittals, correspondence, payment applications, etc. Company will review all Contractor payment applications in accordance with Contract documents. Company's project manager will interface with the Contractor and coordinate and delegate construction related questions. Company will review and issue all change orders in accordance with the General Conditions of Contract.

iii. Inspection: Company will provide on-site representation during construction.

iv. Work Hours: Normal working hours are 8am-5pm Monday-Friday. Company may consider working hour exemptions on a case by case basis and will provide approval in writing.

v. Staging: Contractor shall coordinate construction staging locations and acquire the required approvals to use such locations.

vi. Wastewater: Contractor is responsible for capturing and disposing of all wastewater generated during construction and for obtaining proper approvals to do so. Contractor shall not discharge any water, backwash water, wastewater, or any other discharge onto or off the site without written approval from the Company and the governing regulatory agencies.

vii. Grading and Drainage: Contractor shall grade the site to drain and compact the subgrade and surface improvements within the limits shown on the

Conceptual Site Plan in Exhibit "D". Contractor shall provide a minimum of 8-inches of aggregate base course compacted to 95% standard proctor density for the surface improvements.

viii. O&M Manual and Warranties: Contractor shall submit an O&M manual for the ARF including, but not limited to: recommended spare parts list, equipment warranties, and guarantees for Company for review four (4) weeks prior to startup. Company requires a minimum of two weeks to complete its review. Contractor shall provide written procedures detailing the ARF start-up, shutdown, backwash, operation, control, and monitoring.

ix. Spare Parts: Contractor shall submit a list of recommended spare parts for an operating period of 3 years. The list shall describe each part; include the manufacturer's part number, the quantity recommended, vendor to purchase from and the unit price of the part. Company may purchase from Contractor all, some, or none of the recommended spare parts at the Company's option.

vii. Testing: Contractor shall notify Company a minimum of 48 hours prior to any testing. Contractor shall submit a Field Acceptance Test Report including the results of all field tests conducted on the ARF within two weeks of completion of each test required. Contractor shall pay for all testing services required.

viii. Startup and Training: Contractor shall startup the ARF. Prior to Contractor's application for the AOC, Company will assist Contractor during startup by collecting water quality samples while Contractor runs the ARF to waste. Contractor shall conduct operator training consisting of two (2) 8-hour sessions on separate days, conduct pre-final walkthrough, prepare punch list of items for correction, and load facility with media and chemicals. Contractor shall video tape each training session and provide a DVD to the Company. Contractor shall pay for all testing, startup and training services.

ix. Project Closeout: Contractor shall correct all deficiencies, demobilize from site, submit record drawings, commission the ARF, prepare Engineer's Certification of Completion and obtain the AOC and Certificate of Occupancy. Contractor shall submit to Company the Certificate of Occupancy, Engineer's Certificate of Completion, AOC and record drawings on CD, three (3) hard copies of the O&M manual and an electronic copy on CD, and the results of testing. Company will assist Contractor during commissioning by collecting water samples as required in ADEQ's Initial Start-Up Monitoring Form (Exhibit "N"). Contractor shall submit record drawings drawn in MicroStation Version 8i or AutoCAD 2D and signed and sealed by the Engineer of Record.

x. Acceptance of ARF: The Company may accept the ARF after the latest of the following: 1) Receipt of the AOC from ADEQ; 2) Receipt of Certificate of Occupancy from Pinal County or the City of Coolidge; 3) The Company's written confirmation that the ARF meets the Treatment Performance Requirements described

herein; or 4) completion of successful commissioning of the ARF.

3. TREATMENT PERFORMANCE REQUIREMENTS

A. General

The ARF shall reduce the effluent arsenic level to less than or equal to seven (7) micrograms per liter ("µg/L") throughout the full life-cycle of all media. The ARF shall maintain or improve the quality of the treated water as it relates to other chemical constituents. Contractor shall submit, in writing, all changes to treated water quality and their respective impact on the water distribution system for Company approval during design. Contractor shall fully mitigate negative impacts to water quality or the distribution system in the ARF design.

B. Design Criteria

Design flow rates, storage volumes, system pressures, treated water quality requirements and other design criteria are provided in Exhibit "E".

C. Water Quality Data

Water quality data for Coolidge Well No. 13 is provided in Exhibit "F".

D. Media Change-Out Contract

Contractor shall complete and sign a 5-year Media Change-Out Contract, extendable at the Company's sole discretion for an additional 5 years (Exhibit "B").

4. PROCESS DESIGN REQUIREMENTS

A. Special Site Conditions

The ARF shall treat full flow from Well No. 13. Two 0.5 million gallon storage reservoirs and a booster pump station are planned for construction on the site in the future.

B. ARF Configuration

The ARF shall consist of parallel treatment vessels containing one of the approved adsorptive media in Exhibit "G". The Contractor shall provide all necessary controls, piping, and all other appurtenances. Contractor shall design the ARF for expansion in the future.

C. Media Flux Rate

Contractor shall design the filter vessels and controls to conform to the manufacturer's minimum and maximum recommended media flux rate during all operating conditions, but shall not exceed the maximum design media flux rate per Exhibit "E" during any operating condition, including during backwash reinjection.

D. Empty Bed Contact Time

Contractor shall design the filter vessels and controls in conformance with the media and equipment manufacturer's requirements and the minimum empty bed contact time per Exhibit "E" during all operating conditions, including backwash reinjection.

E. Bypassing and Blending

Contractor shall design an ARF bypass with an operator adjustable bypass flow rate set point. Contractor shall use ClaVal control valves to control flow rate through the bypass line and ARF.

F. Backwashing and Recycling

Contractor shall design the ARF so that the media is backwashed in place without removal in accordance with the hydraulic design criteria in Exhibit "E". Manual operation of the backwash procedure is required. The Contractor shall design the on-site piping to utilize the distribution system as the backwash water source. An on-site backwash tank shall capture all backwash water. Sufficient time is required for any fines in the backwash water to adequately settle. A backwash recycle pump shall transfer water from the backwash tank and blend with the raw well water on the influent side of the ARF for treatment. Level controls in the backwash tank shall control the operation of the backwash recycle pump but at no time shall the backwash water recycle rate exceed 10 percent treated water flow rate. Backwash recycle pump shall only operate when the well is operating and water is being treated.

G. Chemical Feed Systems

If the chemical feed system only utilizes sodium hypochlorite, Contractor will utilize the existing FRP enclosure and provide a sodium hypochlorite chemical feed system similar to the example plans provided in Exhibit "K". If, in addition to, sodium hypochlorite other chemicals are required for the ARF, Contractor shall install each chemical feed pump and chemical storage tank required for the ARF on a concrete pad with a shade canopy with side panels to protect from direct sunlight and 6-inch containment curb capable of storing a minimum of 10 percent of the tank capacity. Contractor shall mount chemical feed pumps and chemical storage tanks on elevated concrete pedestals within the containment curb. Contractor shall provide double-walled chemical storage tanks for 100% secondary containment. Chemical tanks shall include visual and ultrasonic level indicators (see Exhibit "J" for a sample design). All chemicals provided for use must conform to NSF 60 standards. Contractor shall provide

emergency eyewash and shower in the vicinity of the chemical storage area in accordance ANSI Z358.1 and 29 CFR 1910.151.

H. pH Adjustment

If required to meet the Treatment Performance Requirements, Contractor shall provide pH adjustment upstream and/or downstream of the ARF. Effluent water quality must match historical pH levels as shown in Exhibit "F". Contractor shall install one pH analyzer for each pH injection point. Approved chemicals for pH adjustment are: sulfuric acid (93 to 91 percent) and sodium hydroxide (50 percent in summer and 25 percent in winter).

I. Programming and SCADA

The Contractor shall integrate the ARF signals and alarms into the Pinal Valley SCADA system. Contractor shall design a SCADA system to send water production data, pH data, alarms and any other information as required to the Casa Grande office. Contractor shall sub-contract and coordinate all SCADA programming with Delta Systems Engineering and all ARF programming with Brown and Caldwell.

5. ARF COMPONENT DESIGN

A. Filter Vessels

i. Design ARF for parallel operation. Make provisions for ultimate expansion with vessels of equal size and appurtenances.

ii. Carbon steel ASME and National Code stamped pressure vessels with vertical orientation and minimum vessel pressure rating per Exhibit "E".

iii. Contractor shall line the filter vessel interiors with Carboline 4500S (30-40 mil) epoxy coating in accordance with the manufacturer's recommendations. Contractor shall coat the filter vessel exteriors in accordance with Company's Water Storage Tank Coating Specifications O-12-2 (Exhibit H) or approved equal.

iv. Contractor shall subcontract with one of the Company's approved inspectors to inspect and approve blasting, coating and condition of vessels prior to shipment. Contractor shall pay initial and subsequent re-inspections, if required. Contact information Company's inspectors are as follows:

a. Mr. Greg Sprinkle
Industrial Inspection and Consulting, LLC
P. O. Box 51026
Phoenix, AZ 85076-1026

b. Mr. Patrick Sweeney

v. Manual backwash with manual handwheel operated butterfly valves for all service, backwash, and rinse cycles.

vi. Stainless steel sample ports with for operator monitoring of raw water, treated water from each vessel and blended water sample location.

vi. Three (3) side-mounted media sample ports for obtaining media samples for testing.

viii. Magnetic flow/totalizer meters on each vessel for measuring individual instantaneous gallons per minute and total gallons through the system in service and in backwash cycles.

ix. Contractor shall design all internal vessel piping and fittings, including the underdrain system and laterals, of Type 316 grade stainless steel.

x. Contractor shall provide isolation kits at all dissimilar metal connections, including stainless steel connections to any other metal, and address any dissimilar metal concerns within the vessel to the Company's satisfaction. Welded connections between stainless steel and mild steel are not acceptable.

xi. All vessel penetrations shall have flanged connections.

xii. Contractor shall provide hub and laterals with support launchers attached to vessel or false bottom with nozzles.

xiii. Contractor shall size internal laterals or nozzles appropriately to distribute flow uniformly across the cross sectional area of the filter vessels during treatment and backwashing. Contractor shall obtain approval of the treatment vessels, internal laterals, and ground support bed designs in writing from the adsorptive media manufacturer, filter vessel manufacturer and the Company.

xiv. Contractor shall design all internal piping and fasteners of Type 316 stainless steel. Contractor shall powder coat all stainless steel components internal to vessel, with exception of the laterals or nozzles.

xv. Contractor shall design internal laterals appropriately for proper operation with all of the approved adsorptive media in Exhibit "G".

xvi. Contractor shall equip all vessels with air release valves and pressure relief valves sized for the maximum flow rate to the vessel. Rupture discs are not acceptable.

xvii. The adsorptive media manufacturer must state, in writing, if gravel under bed is required. The adsorptive media manufacturer, filter vessel manufacturer, and the Company must approve the gravel under bed design in writing.

xviii. Contractor shall provide a hinged access manway on the side and hinged inspection hatch on the top. The access manway shall have vertical davit arm or similar hinge that will support the weight of the hatch without sagging when opened.

xx. Contractor shall permanently attach filter vessels to an engineered concrete slab.

xxi. Vessel shall provide a passive cathodic protection system utilizing sacrificial anodes to protect the vessels from corrosion.

B. External Piping

i. Contractor shall provide external connections that consist of flanged pipe connections or restrained flanged coupling adaptors (raw water inlet, finished water outlet, backwash feed inlet, and backwash waste outlet).

a. Manufacturers:

1) StarFlange Series 3200
2) Romac Industries, Inc. Style RFCA
3) Approved equal

ii. Contractor shall provide external aboveground and belowground piping that is ductile iron pipe ("DIP") for pipe 3-inches and larger and conforms to the Company's Construction Specifications: E-8-1 and Standard Specification Drawings: E-9.

iii. Contractor shall provide corrosion protection of the piping from corrosive soils and/or stray current based on recommendations provided in the geotechnical investigation.

iv. Contractor shall provide seamless copper external piping for pipes smaller than 3-inches that conforms to ASTM B88, Type K, soft temper. Contractor shall provide fittings that are compression type per the Company's Construction Specification: E-8-1 and Standard Specification Drawings: E-9.

vi. Contractor shall paint all external above ground pipe and fittings with Tnemec or approved equal with an approved tan color determined by the Company.

vii. Contractor shall inform Company in writing of any conflict in specifications, and Company will determine the prevailing specification.

C. Valves and Appurtenances

All valves and appurtenances shall conform to the Company's Construction Specifications: E-8-1 and Standard Specification Drawings: E-9, unless otherwise specified.

i. Aboveground Manual Butterfly Valves

a. Contractor shall provide manually actuated butterfly valves with hand wheels at aboveground locations for the control of flows for backwash, rinse, and normal treatment operations. Contractor shall provide chain wheel actuators on valves greater than 5 feet in height above the ground surface. Gate valves are required for all isolation and belowground installations.

b. Manufacturers:

1) Mueller.
2) Dezurik.
3) Pratt

ii. Pressure Switch High

a. Contractor shall install high pressure cut-off switches between the well discharge head and the inlet of the ARF.

b. Manufacturers:

1) Mercoid

ii. Pressure Gauges

a. Contractor shall install Ashcroft stainless steel pressure gauges with 4-inch dials on the ARF inlet, outlet and bypass lines, pressure vessels and at all locations as required.

D. Flow Meters

i. Contractor shall provide one supply flow meter with remote mounted transmitter per filter vessel.

ii. General

a. Type: Magnetic flow meter conforming to NSF 61

b. Materials:

1) Liner: PTFE (Teflon)
2) Electronics Housing: Wal Alu, IP67 NEMA4X
3) Electrodes: Alloy C-22, bullet nose

iii. Flow rate display indication in gpm and totalized flow in gallons

iv. Accuracy: +/-0.5% of flow rate or better

v. End Connection: Flanged

vi. Manufacturer:

a. Endress + Hauser – Promag 53P.

E. HDPE Backwash Tank

i. Contractor shall provide tank of virgin polyethylene resin as compounded and certified by the manufacturer, rotationally molded, one-piece seamless construction, cylindrical in cross-section and vertical in axis, with a design specific gravity of 1.9 and fully conform to ASTM D 1998-04.

ii. The manufacturer shall mold the top head integrally with the cylinder straight shell and the bottom head integrally with the cylinder straight shell.

iii. Resin shall contain a minimum of a UV 8 stabilizer as compounded by the resin manufacturer.

iv. Contractor shall provide an 18-inch threaded polyethylene, vented and easily accessible manway.

v. Contractor shall provide all tank fitting attachments with flexible couplings or other provisions to allow for movement without rupture or separation of connections. Flexible couplings shall allow deflection in all directions per manufacturer's requirements. Support all connections larger than 2-inches independently from the tank to prevent weight transfer to the tank flange.

vi. Contractor shall provide an ultrasonic, radar type level transducer with antenna and transmitter displaying water level on an LCD screen as manufactured by Endress+Hauser Micropilot M FMR231.

vii. Contractor shall provide tank with clearly marked with manufacturer, date of manufacture, and serial number.

viii. Contractor shall provide tank with all opening cut edges trimmed smooth.

ix. Uncoated or exposed carbon steel appurtenances, fasteners, or anchorage are not acceptable.

x. Contractor shall provide anchor bolts sized by the manufacturer and install on engineered concrete slab or other anchoring point approved by the Company.

xi. Contractor shall provide tank with minimum required wall thickness for the cylinder sufficient to support its own weight in an upright position without any external support.

xii. Contractor shall provide tank with a sloped floor and side molded outlet to provide complete drainage of the tank.

xiii. Tank shall have a minimum of three (3) lifting lugs integrally molded in the cylinder straight shell. Contractor shall provide lifting lugs made of Type 316 stainless steel.

xiv. Contractor shall provide a minimum of four (4) tie-down lugs integrally molded into the top head. Provide tie-down lugs designed to allow tank retention in wind and seismic loading without damage to the tank.

xv. Contractor shall provide a level and smooth concrete tank pad within the tolerances recommended by the tank manufacturer.

xvi. Contractor shall provide tank that is vented for the material, flow, and withdrawal rates expected.

xvii. Design Loads

a. Contractor shall design to resist both wind and seismic for both tank full and tank empty conditions.

b. The design and provision of adequate an anchorage system for the service conditions is the responsibility of the Contractor.

c. Contractor shall submit design calculations signed and sealed by an Arizona registered engineer that are approved in writing by the tank manufacturer.

d. Anchorage systems requiring tank penetrations are not acceptable.

e. Contractor shall provide galvanized carbon steel anchorage systems unless otherwise specified.

xviii. Fittings

a. Threaded bulkhead fittings are not allowed for connections greater than 2 inches in diameter.

b. Bolted double 150 lb. flange fittings shall consist of two (2) 150 lb. flanges and two (2) 150 lb. flange gaskets, and the correct number and size of all-thread bolts for the flange specified by the flange manufacturer.

xix. Tank color shall match pipe, vessels and other ARF components. Contractor shall provide colors available from manufacturer.

F. Welded Steel Backwash Tank (Alternate to HDPE Tank)

i. Contractor shall design welded steel tanks, accessories and foundation in accordance with ANSI/AWWA D100 and build in accordance with OSHA.

ii. Contractor shall place the tank shell on a concrete footing adequately sized to support the tank structure when filled with backwash water.

iii. Tank walls and roof shall have a thickness designed according to submitted engineering calculations in accordance with AWWA D100. Minimum steel plate thicknesses are as follows:

a.	Walls	1/4 inch
b.	Roof	3/16 inch
c.	Floor	3/8 inch

Contractor shall design self supporting roof without the need for a center column with a minimum pitch of 1-inch rise to 12-inch run.

iv. Contractor shall provide tank accessories in accordance with all applicable safety and building codes, including AWWA D100, Code of Federal Regulations, 29 CFR 1910.27, OSHA and IBC.

v. Contractor shall provide at a minimum one (1) 24-inch hinged manhole near tank base and one (1) 24-inch roof hatch with hinges an, handle, hold open device, hasp lock and weather tight seal.

vi. Contractor shall provide an exterior ladder in accordance with ANSI A14.3-Q4 and 29 CFR 1910.27 and in accordance with any other applicable OSHA requirement complete with ladder up safety post as manufactured by Bilco, a LAD-SAF

flexible cable ladder safety system as manufactured by DBI SALA and a 36-inch side swing ladder door.

vii. Contractor shall provide personal fall arrest system extending from the center of the tank to the outer edge of the tank. The personal fall arrest system shall allow for safe access to the vent on the tank roof.

viii. Contractor shall provide an ultrasonic, radar type level transducer with antenna and transmitter displaying water level on an LCD screen as manufactured by Endress+Hauser Micropilot M FMR231.

ix. Contractor shall provide flanged pipe connections per ASTM A53, Grade B, Type E or S, or ASTM 106, Grade B.

x. Contractor shall provide Welding Inspectors certified by American Welding Society to Standard AWS QC-1-88 with prior inspection experience using governing welding codes. Provide Weld Testing Personnel certified to perform nondestructive testing (NDT) in accordance with current American Society of Nondestructive Testing (4153 Arlingate Plaza, Columbus, OH 432128) Recommended Practice No. SNT-TC-1A and all supplements, NDT Level II.

xi. Contractor shall provide coating in accordance with the Company's Water Storage Tank Coating Specifications: O-12-2 (Exhibit "H") or approved equal.

G. Chemical Feed Systems

i. General – Contractor shall design, furnish and install NSF/ANSI 61 compliant chemical feed systems as required, complete with metering pumps, motors, drives, meters, calibration chambers, piping, valves, controls and all accessories and appurtenances as required for a complete and operable system.

ii. Chemical Pumps

a. Contractor shall provide Grundfos DDA chemical pumps compatible for use with sodium hypochlorite, sulfuric acid, ferric chloride and/or any other chemical used.

b. Contractor shall size for the appropriate chemical feed rate and system pressure.

c. Contractor shall provide one (1) duty and one (1) standby chemical pump for each application.

iii. Tubing and Conduit

a. For liquid chemical service, Contractor shall provide tubing compatible with chemicals used in the treatment process. Contractor shall install tubing in electrical conduit for ease of installation/replacement, as well as non-pressure rated secondary containment. Tubing manufacturer shall confirm chemical compatibility of tubing with chemical system being served. Contractor shall provide UV resistant tubing.

b. Contractor shall provide tubing adequately sized for the flow and pressure requirements of this application with the minimum following dimensions and pressure rating:

1) Outside diameter: 3/8 inch.

2) Inside diameter: ¼ inch.

3) Pressure Rating at 120° Fahrenheit: 200 psi.

c. Contractor shall provide 3-inch conduit for chemical tubing made of PVC electrical conduit with sweeps instead of elbows.

d. Contractor shall provide all necessary fittings clamps, and adapters for connection of tubing at the chemical metering pump outlet, chemical feed point, and any other connections. Contractor shall provide barbed or compression-style fittings, specifically designed for use with the tubing being provided, and compatible with the service (both with the fluid being carried in pipe and pressure rating). Contractor shall provide fittings at locations that are accessible at all times. Do not locate fittings in the carrier pipe. Contractor shall construct all connections per the tubing manufacturer's recommendations that provides a connection that is equal to or greater than tubing pressure rating. Contractor shall ensure that parts and fittings that are in contact with the fluid in the tubing are compatible with the chemical being carried.

e. Contractor shall provide an injector quill with ball valve and static mixer at the point of injection of each chemical at an appropriate aboveground location.

iv. Chemical Storage Tanks

a. Contractor shall provide tanks that are rotationally molded, vertical, high density cross-linked polyethylene, one-piece seamless construction, cylindrical in cross-section with flat bottoms.

b. Contractor shall provide tanks that are double walled and designed for aboveground, vertical, outdoor installation. Provide tanks manufactured from virgin materials.

c. Contractor shall provide tanks that are designed to store approved chemicals at atmospheric pressure and vented as recommended by the manufacturer of the chemicals.

d. Contractor shall provide tanks equipped with level indicators.

e. Contractor shall provide tanks sized for a minimum 30 day storage capacity.

f. Contractor shall provide tanks equipped with a restraint system composed of the type of metal that compatible with the chemical being stored in the tank and designed to meet the proper seismic zone.

g. Contractor shall provide tank fittings and gaskets that are compatible with the chemical being stored as recommended by the chemical manufacturer.

h. Contractor shall provide tank fitting attachments with flexible couplings or other provisions to allow for movement without rupture or separation of connections in accordance with the manufacturer's recommendations. Contractor shall support all connections larger than 2-inches independently from the tank to prevent weight transfer to the tank flange.

i. Contractor shall provide an ultrasonic, radar type level transducer with antenna and transmitter displaying water level on an LCD screen as manufactured by Endress+Hauser Micropilot M FMR231.

j. Contractor shall provide a reverse float with sight glass for installation on each tank.

k. Contractor shall provide tanks manufactured by:

1) Poly Processing Company
2) Snyder
3) Approved equal.

l. Tank color shall be tan. Contractor shall provide colors available from manufacturer.

v. Safety Equipment

a. Contractor shall provide an emergency eyewash and shower and locate in the vicinity of the chemical storage area.

b. Contractor shall provide a first aid kit, protective gear and any additional safety equipment as recommended by the chemical manufacturer.

H. Backwash Recycle Pumps

i. Contractor shall provide two Grundfos centrifugal backwash recycle pumps (one duty, one standby) with variable frequency drive units.

ii. Contractor shall provide pumps capable of outdoor installation and operation.

iii. Contractor shall submit performance curves with design set points.

I. External Component Paint

i. Contractor shall paint all external aboveground pipe and components of the ARF a Company approved tan color with the exception of flow meters, Cla-Vals, gauges, displays, equipment data plates and equipment identification tags.

6. ELECTRICAL AND INSTRUMENTATION

A. General

All electrical components shall comply with the Company's EI&C Design Guidelines Technical Specification (Exhibit "M"). Contractor shall submit complete electrical instrumentation control schematics, wiring diagrams, load calculations and terminal strip information. Contractor shall provide factory pre-wired panels only.

B. SCADA

i. Contractor shall provide and install a complete and functional SCADA system with alarms, displays and controls in substantial conformance with SCADA controls at the Company's existing ARFs, wells and pump stations.

ii. Contractor shall integrate the Coolidge Well No. 13 Site into the existing Pinal Valley SCADA system by replacing the existing radio and PLC with a GE I-net II radio and Modicon M340 PLC so all analog values are historized at the Casa Grande master SCADA computer (Master Computer).

iii. Contractor shall provide 20% available spare I/O.

iv. Contractor shall provide runtime and totalized flow values to have current day, previous day, current week, previous week, current month, and previous month values calculated and displayed locally and at the Master Computer.

v. Contractor shall send all alarms to the Master Computer for operator notification via Win911. Alarms include, but are not limited to, high and low

liquid levels, motor high temperature, high and low pressure, equipment/motor failure, intrusion and valve sequencing.

C. Equipment Monitoring

i. Contractor shall provide and install one (1) Schneider Electric 15" OIT for onsite SCADA monitoring and control.

ii. The Contractor shall provide the necessary software and programming to monitor and control the following equipment and processes:

a. One well pump including all phase voltage, current, and power readings from the existing Motor Saver 777 Ethernet base power quality meter; local/remote, auto/manual, run/stopped, alarm, fail-to-run, and start/stop count; one (1) Cla-Vals and well discharge flow meter.

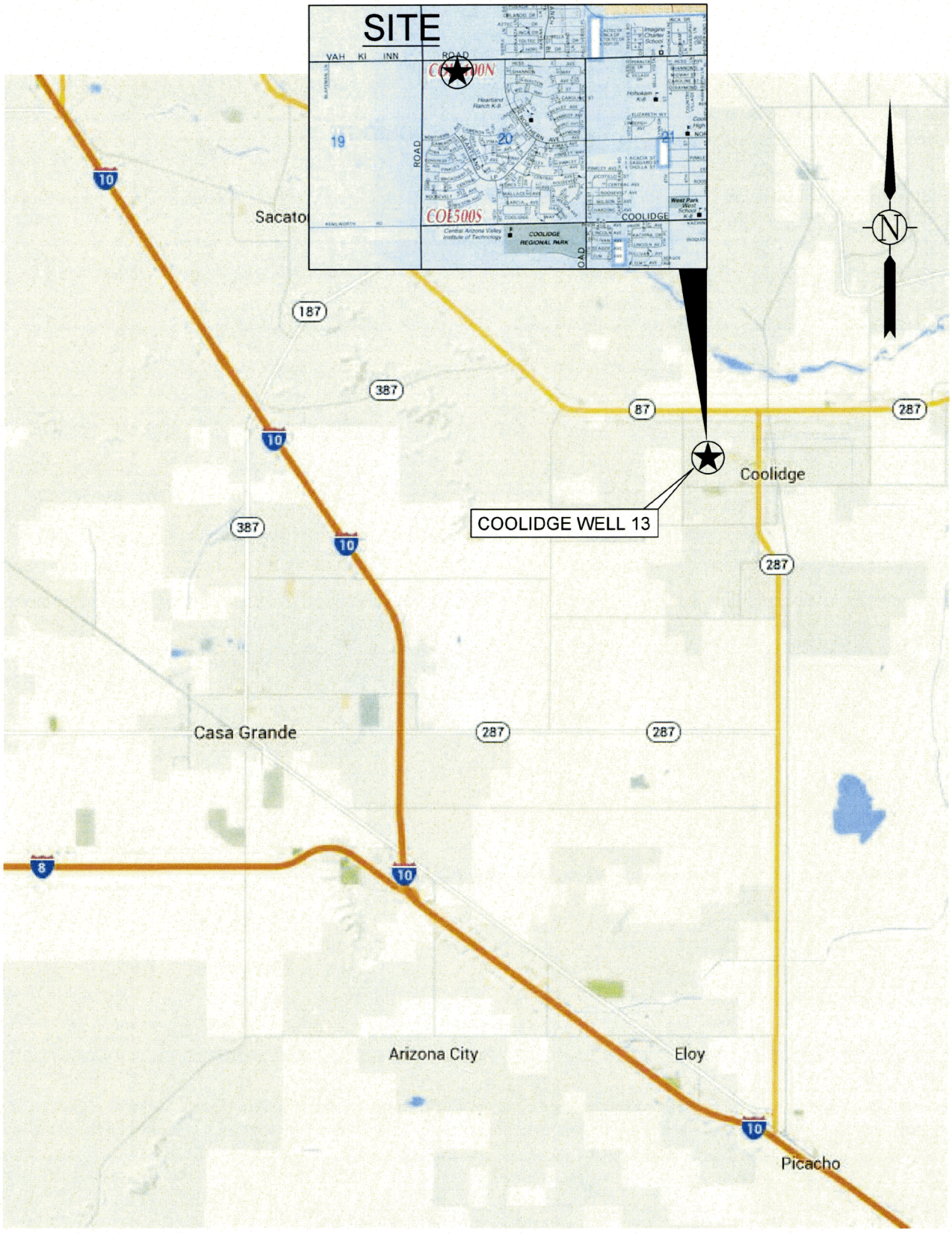
b. ARF influent flow meter, bypass flow meter, backwash flow meter, bypass flow control valve with operator adjustable set points, influent pressure, and effluent chlorine and pH levels.

c. Backwash tank level and backwash recycle pump run/stopped, alarm, fail-to-run.

d. Each chemical feed system shall include injection pump operator adjustable chemical dosing rate set point, run/stopped, alarm, fail-to-run (display only), tank level indication and set points.

Exhibit "A"

Location Map



LOCATION MAP

Exhibit "B"

Media Change-Out Agreement and Proposal Contract

ARIZONA WATER COMPANY

INPUT DIVISION INFORMATION
DIVISION ADDRESS

PROPOSAL/CONTRACT

CONTRACTOR:	SYSTEM: Pinal Valley
ADDRESS:	W.A. No(s): 1-4806
CITY ST ZIP:	BID DUE DATE:

_____, an _____, ("CONTRACTOR") SUBMITS this PROPOSAL/CONTRACT to ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), to perform the work as specifically described in Attachment "A" hereto, which by this reference is incorporated herein ("Work") as an independent prime contractor.

1a. Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings, (the "Specifications"), all of which are attached hereto as Attachment "B". The General Conditions of Contract and Specifications are incorporated into this Proposal/Contract. Contractor affirms that all work and materials to be furnished or purchased for the Project will be in strict conformance with the General Conditions of Contract, Specifications and Drawings.

1b. Section 2 and 36 in General Conditions of Contract are modified as provided in Attachment "A", and Section 41 of the General Conditions of Contract is replaced in its entirety by paragraph 4.3 of Attachment "A". In all other respects the General Conditions of Contract remain in full force and effect.

2. Contractor represents and warrants that it has satisfied and complied with the provisions of Section 6, Contractor Understands Work and Working Conditions, of the General Conditions of Contract prior to submitting this Proposal/Contract.

3. Contractor represents that this Proposal/Contract is fair and honest in all respects, is submitted in good faith and is not submitted in collusion with any other company, entity or person.

4. Contractor acknowledges that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work.

5. Prior to the commencement of Work, Contractor will submit to the Company a list of all materials to be used in the Project. The materials list will include the manufacturer, part number, price and quantity included in this Proposal/Contract.

6. Contractor will furnish all labor, tools, equipment and materials required to complete the Work according to this Proposal/Contract and the General Conditions of Contract and Specifications. No materials purchased by Contractor to be incorporated into the Project are subject to tax at the time of purchase and Contractor will not charge the Company for any such tax. Contractor will pay the applicable transaction privilege tax (the "Contracting Tax") on the Work after Contractor receives payment of the final invoice from the Company. The cost of materials incorporated into the Work which are exempt by Arizona Revised State Statues ("A.R.S.") from the Contracting Tax, for example, pipes or valves having a diameter of four (4) inches or larger, including equipment, fittings and any other related part that is used in operating the pipes or valves (A.R.S. §42-5061 B.6.), will not be included in the total cost of the labor and materials upon which the Contracting Tax is computed. Contractor retains full liability and obligation to pay the Contracting Tax and will defend and indemnify the Company against any demand or obligation to pay the Contracting Tax.

7. Contractor will maintain detailed accounting records of all materials purchased and incorporated into the Work. Such records will include all supporting original vendor invoices for all materials purchased. Following completion of the Work, Contractor will submit an itemized accounting to the Company which will include all supporting original vendor invoices and satisfactory evidence of payment thereof. The Company will not pay Contractor for materials not actually incorporated into the Work, and the disposition of such materials will remain Contractor's responsibility.

8. The Estimated Total Cost of the Work, shown on Page 2, is based on estimated labor and material quantities to be furnished. It includes an estimate of the Contracting Tax and the cost of the required Performance and Payment Bonds. Contractor will not cancel, modify or withdraw this Proposal/Contract during a ninety-day (90) period commencing on the Bid Due Date. The Company may accept this Proposal/Contract by signing and mailing, or otherwise delivering, a copy hereof to Contractor during such ninety-day (90) period. If the Company does not accept this Proposal/Contract during such ninety-day (90) period, Contractor may cancel this Proposal/Contract by giving written notice of cancellation to the Company.

9. Prior to the commencement of the Work, Contractor will provide the Company with a detailed construction schedule, in either Gantt or CPM form, identifying all tasks to be performed from the date of the written Commencement Notice through completion of the Work, including testing, training of Company Personnel and the final Project invoice.

10. Contractor will not commence the Work until the Company gives Contractor a written Commencement Notice. Contractor will complete the Work within the time specified in Section 5 of Attachment A.

11. Following the Company's written notice of satisfactory completion of the Work, and upon receipt of the final invoice from Contractor, the Company shall pay Contractor the actual total cost of the Work, which will be calculated as shown on Page 2, except that actual labor and material quantities installed/constructed will be substituted for the estimated labor and materials quantities and the Contracting Tax will be recalculated based on such actual labor and materials quantities.

12. The Company may deduct from the Company's payment of the final invoice the amount of applicable liquidated damages if Contractor does not deliver or perform within the time limit shown in Paragraph 10. This provision shall not limit the Company's ability to terminate this Proposal/Contract for Contractor's unsatisfactory performance or failure to perform as provided in the General Conditions of Contract, Specifications or Drawings, or in this Proposal/Contract.

13. This Proposal/Contract shall continue until _____, unless terminated earlier as provided in paragraph 14, (the "Term").

14. The Company, at its option, may terminate this Proposal/Contract at any time prior to the end of the Term upon thirty (30) days notice to Contractor.

SPECIAL CONDITIONS:

CONTRACTOR	**PROPOSAL/CONTRACT ACCEPTED:** *ARIZONA WATER COMPANY*
By:	By:
Print Name:	Print Name: Fredrick K. Schneider, PE
Title:	Title: Vice President - Engineering
Date:	Date:

AFH

ARIZONA WATER COMPANY

INPUT DIVISION INFORMATION
DIVISION ADDRESS
DIVISION PHONE NUMBERS

PROPOSAL/CONTRACT

CONTRACTOR:	SYSTEM: Pinal Valley
AZ CONTRACTOR LICENSE NO: CLASSIFICATION:	W.A. No(s): 1-4806
ADDRESS:	BID DUE DATE:
CITY ST ZIP	BID BOND REQUIRED ☑ Yes ☐ No

DESCRIPTION OF PROJECT: Provide all equipment, material and labor necessary and appropriate to remove and replace the used adsorptive media at the Coolidge Well No. 13 Arsenic Treatment Facility in the Pinal Valley water system.

1-2. MATERIALS EXEMPT FROM CONTRACTING TAX (per Paragraph 6)	QUANTITY	UNIT PRICE LABOR	UNIT PRICE MATERIALS	TOTAL COST LABOR	TOTAL COST MATERIALS
Media Change-Out Contract per Attachment "B"	1			1	2
3. Total Labor to Install Exempt Materials (add the amounts in column 1)				3	
4. Total Exempt Materials (add the amounts in column 2)					4

5-6. NON-EXEMPT MATERIALS	QUANTITY	LABOR	MATERIALS	LABOR	MATERIALS
				5	6
7. Total Labor to Install Non-Exempt Materials (add the amounts in column 5)				7	
8. Total Non-Exempt Materials (add the amounts in column 6)					8
9. Subtotal A (add lines 3, 7 and 8)					9
10. Contracting Tax Base (multiply the amount on line 9 by 0.65)				10	
11. Applicable Contracting Tax Rate				11	
12. Contracting Tax (multiply the amount on line 10 by line 11)					12
13. Subtotal B (add lines 4, 9 and 12)					13
14. 100% Performance and Payment Bonds Cost					14
15. Estimated Total Cost (add lines 13 and 14)					15

NOTE: The Estimated Total Cost includes all labor and materials for backfill, pavement replacement, chip seal, and traffic control necessary for the Project.

Attachment "A"

Coolidge Well No. 13 Site
Media Change-Out Contract

The Company's Coolidge Well No. 13 is equipped with an adsorption media treatment system (the "Facilities") used to reduce the concentration of arsenic (the "Contaminant") to ensure that the water from Well No. 13 complies with Safe Drinking Water Standards.

1. Site.

The Facilities are located at 2107 W. Vah Ki Inn Road, Coolidge, AZ 85128 ("Site").

2. Removal and Replacement of Used Media.

As more specifically set forth below, Contractor will provide all equipment, material and labor necessary and appropriate to remove and replace the used media in the Facilities ("Media Change-Out"). Used media may contain arsenic and other substances.

2.1 Characterization and Classification of Used Media.

Contractor shall obtain from the Site a representative sample of the used media. Contractor will obtain a laboratory analysis of the used media using a method of analysis approved by the United States Environmental Protection Agency or State of Arizona. Such analysis must be performed by an Arizona Department of Health Services certified laboratory. Contractor will use the laboratory results to complete all characterization, classification and documentation required by all regulatory agencies. Characterization, classification and documentation shall be conducted in accordance with all federal, state, and local requirements. Contractor will provide, or arrange for its laboratory to provide copies of the test results to Company within three (3) days of Contractor's receipt of such test results. Company will provide the following information to Contractor at the time of Media Change-Out:

A. Flow totalizer readings at the time of initial media installation or previous Media Change-Out.

B. Flow totalizer reading at time the Facilities are removed from service for current Media Change-Out.

C. Most recent laboratory test results for the Contaminant.

2.2 Removal of Used Media from the Vessels.

Contractor will make the necessary arrangements to remove the used media. Contractor will use a vacuum extractor to remove all used media from the vessels and thoroughly clean out the backwash tanks. Contractor will remove all residual media from the vessel by spraying residual media off the sides of the vessel and interior of the backwash tank with a hose. Contractor shall handle and dispose of all water used at the Site during the removal of the used media, in compliance with all applicable laws and regulations. No water will be discharged onto or from the Site. After each vessel and backwash tank is cleaned, Contractor will notify Company that the vessels and backwash tanks are clean and ready for inspection. Contractor will clean up any spilled media and restore the Site to its original condition.

2.3 Packaging, Transportation and Disposal of Used Media.

Contractor will remove, package, transport and dispose of the used media from the Site in compliance with all applicable federal, state and local laws, regulations and standards. Contractor will transport and dispose of used media in a disposal facility that is expressly authorized to receive used media. Contractor will provide waste manifests and all other waste documentation required under all laws applicable to the used media to Company within thirty (30) days of the date the used media is removed from the Site or with Contractor's Approval to Bill, whichever is earlier. No payments will be made to Contractor before Company receives all required documentation.

2.4 Inspection of the Vessels.

Contractor will inspect the interior of each vessel, distribution laterals and nozzles of the empty vessels upon each Media Change-Out at no additional cost to Company. Contractor will enter each vessel and visually inspect the interior of the vessel, including the distribution laterals and nozzles, after removing the used media from the vessel per Section 2.2. Contractor must comply with all applicable confined space entry requirements established by the Occupational Safety and Health Administration or other governing agencies with jurisdiction over Contractor's work. Contractor will identify any corrosion, accumulation of scale or other buildup that may be present inside the vessels or backwash tanks during its inspection. If Contractor finds any clogged or obstructed distribution laterals or nozzles, Contractor will immediately notify Company. The Company will be present or available by telephone during the inspection. Company may choose to repair or replace internal components prior to the replacement of the media. Company will separately negotiate the price and terms of such repairs or replacements of distribution laterals, nozzles or coating, if any, directly with Contractor or others. Within fifteen (15) days after the Media Change-Out is completed, Contractor will submit a written report to Company for each inspection completed. Contractor will not charge Company for any stand-by costs incurred while Company completes the repairs or replacements.

Contractor will supply all tools, labor, and equipment necessary to inspect the vessels and backwash tank at its own cost. Contractor is responsible for determining the details of vessel entry and access at the Site prior to commencement of the Work. Contractor must properly reinstall any part(s) removed to gain entry or

access to the vessels after completing its inspection and restore the vessels to working order.

2.5 Replacement of Used Media.

After Contractor removes used media and the vessels are determined to be in good condition or after repairs have been completed, Contractor will load new media into the vessels.

Contractor will load new _____ media into each empty vessel in accordance with all applicable manufacturer recommendations, specifications and warranty requirements. Contractor will provide any necessary hoses, pumping equipment and piping for water needed to load or rinse any new media. Contractor must take all necessary precautions to prevent spills of used media, liquid, or new media.

2.6 Disinfection and Coliform Testing.

After completing the inspection and all necessary repairs, Contractor shall notify Company when vessels are ready for disinfection. Contractor will disinfect all vessels to comply with the Company's requirements. Contractor must document and verify adequate disinfection of all media and vessels. Contractor shall place the Facilities back in service when authorized by Company.

3. Water Quality.

After Contractor completes a Media Change-Out, Contractor will return Facilities to full operation and all water produced by the Facilities must comply with the Water Quality Specification in 4.3.C. Contractor further warrants and guarantees that its performance under this Proposal/Contract will at all times comply with the terms and provisions of the Media Performance Guarantee described below.

4. Modifications to the General Conditions of Contract.

4.1 Section 2, "Bonds", is modified as follows:

Contractor shall furnish Company with a performance bond and a material payment bond in the amount of $200,000 in a form and from a surety acceptable to Company.

4.2 Section 36, "Working Hours", is modified to include the following:

Work shall only be performed between the hours of 8 a.m. and 4 p.m., Monday through Friday, unless otherwise authorized by the Company in writing.

4.3 In addition to all implied or expressed warranties and guarantees, whether set forth in the General Conditions of Contract or otherwise:

Contractor also provides a Media Performance Guarantee (defined below), which guarantees that the adsorptive media ("Media") it provides and loads into the Facilities will remove arsenic to a concentration less than or equal to 7 micrograms per liter. Contractor further guarantees that Media shall continue to remove arsenic to comply with the Water Quality Specification for a minimum volume of water treated of not less than _____ gallons ("Media Performance Guarantee"). In the event that the Media does not treat the minimum volume of water before a Media Change-Out is required, Contractor will provide a prorated savings ("Discount") on the future purchases and installations of Media for use in the Facilities for the Term. At its sole discretion, Company may require Contractor to pay Discount in cash in lieu of future Media purchases. In the event that Contractor proposes a new, improved, or different Media that would have a performance benefit to Company over the present Media, Contractor will offer such new, improved, or different Media at an equal Discount, if accepted by Company.

Design Parameters for Media Performance Guarantee:

A. Company's Coolidge Well No. 13 supplying the Facilities

B. Total Flow – 800 gpm

C. Treatment Requirement – Treated water arsenic concentration less than or equal to 7 micrograms per liter.

D. Configuration – Vessel(s) in parallel

E. Pretreatment – Chlorination with liquid sodium hypochlorite ("NaOCl")

F. _____-ft. diameter vessel with _____ cubic feet of Media

Wells	Total Media Volume, cubic feet	Media Change-Out Fee	Media Type	Media Performance Guarantee, Gallons
Coolidge Well No. 13	_____	$_____	_____	_____

G. Company and Contractor agree that the raw water quality set forth below is representative of the water being treated in the Facility. This water quality is the basis for the media Performance Guarantee. Variances greater than ten percent (10%) above these values (or +0.3 pH units) may result in recalculation of the Media Performance Guarantee. In such event, Company and Contractor will meet and confer and mutually agree to such recalculated Media Performance Guarantee. Contractor bears the responsibility to demonstrate the impacts to the Media Performance Guarantee.

Coolidge Well No. 13

Inorganics	Sample Date	Concentration (mg/L – unless stated otherwise)
Arsenic	28-Sep-09	0.020
Arsenic III	23-Aug-11	0.004
Arsenic V	19-Oct-11	0.0113
Cadmium	08-Aug-07	< 0.0002
Calcium	23-Aug-11	58
Calcium Hardness as CaCO3	23-Aug-11	144
Chromium	23-Aug-11	0.012
Iron	17-Oct-11	<0.05
Lead	08-Aug-07	0.008
Magnesium	25-May-11	7
Manganese	25-May-11	< 0.02
pH	08-Oct-07	8
Phosphate	19-Oct-11	< 0.15
Selenium	25-May-11	0.005
Silica, Total	23-Aug-11	31.8
Sulfate	25-May-11	234
Sulfide, Total	25-May-11	< 0.04
Total Alkalinity as CaCO3	17-Oct-11	85
Total Phosphorous	19-Oct-11	0.02
Total Suspended Solids	19-Oct-11	< 1
Turbidity (NTU)	23-Aug-11	< 1.00
Vanadium	13-Oct-09	0.024
Uranium (pci/L)	23-Aug-11	6.8 +/- 1.1

If the treated water arsenic concentration from the treatment vessels exceeds 9 micrograms per liter before the media treats _____ gallons, Contractor will replace the Total Media Volume stated above at the current Media Change-Out Fee less the Discount, as set forth by the following formula:

Discount equals Media Change-Out Fee multiplied by
[(Media Performance Guarantee (gallons) minus
Actual gallons of water treated) divided by
Media Performance Guarantee (gallons)]

<u>Example of Discount Calculation</u>

Media Change-Out Fee = $77,925.00
Media Performance Guarantee = 67,200,000 gallons
Actual quantity of water treated = 60,000,000 gallons
Discount = $77,925.00 x [(67,200,000 - 60,000,000)/ 67,200,000]
Discount = $8,349.11

If Contractor replaces any Media pursuant to this Media Performance Guarantee or otherwise, such replacement Media will also be guaranteed under the Media Performance Guarantee throughout the Term. Contractor will credit or deduct the full amount of the Discount provided by the Media Performance Guarantee from the final invoice.

5. Time for Performance.

Contractor will perform its obligations under this Agreement in a diligent, lawful, prompt, timely, and professional manner. Company will monitor the water quality of water produced from the Facilities and will notify Contractor when a Media Change-Out is required.

Contractor will provide Company with a written schedule for Media Change-Out within five (5) business days of receipt of Company's notice. Contractor will coordinate the Media Change-Out by contacting Company's Division Manager at the following address:

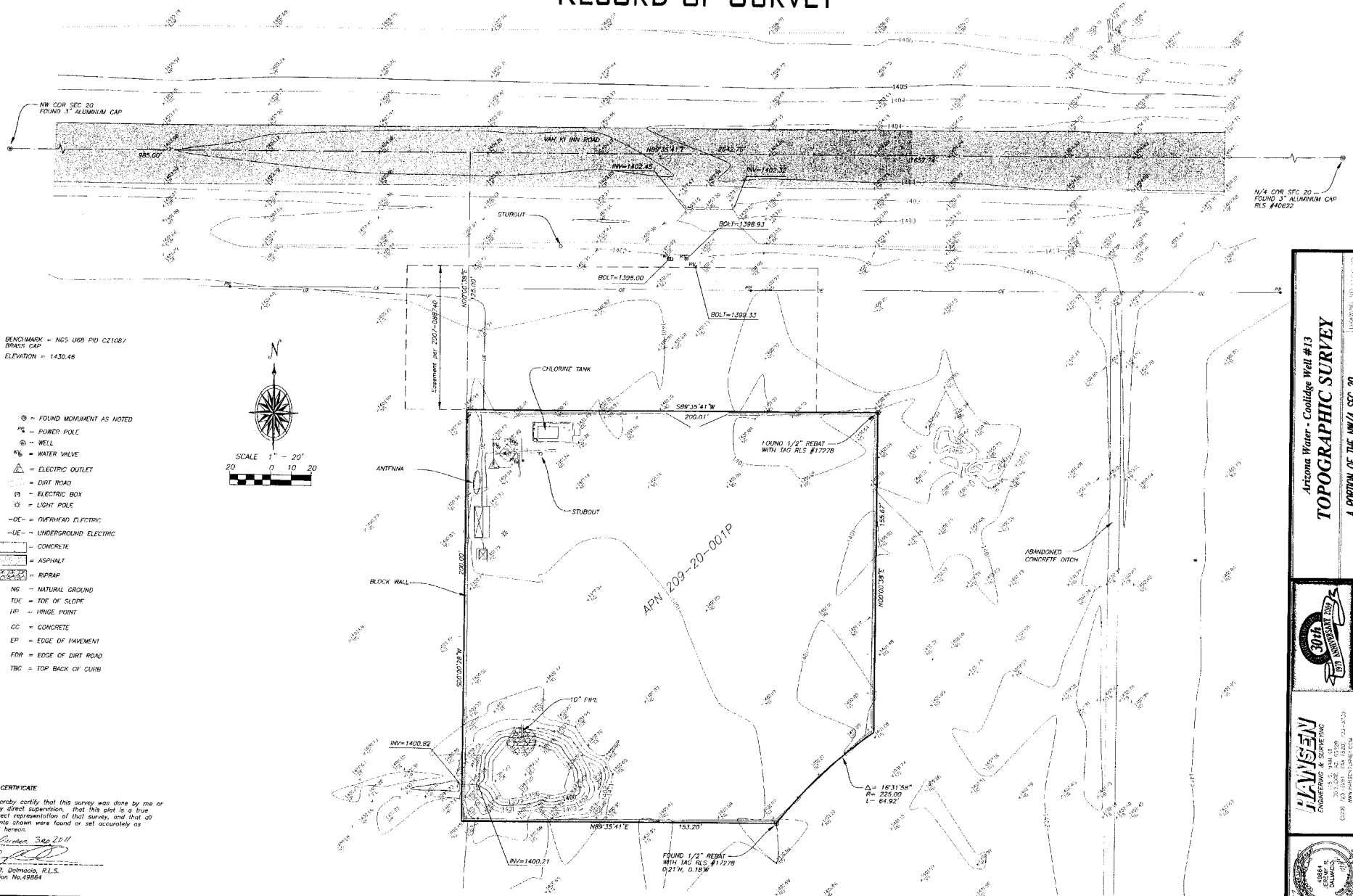
Arizona Water Company
220 East 2nd Street
Casa Grande, AZ 85122
Attn: Manager
Phone: 520-836-8785
Fax: 520-836-2850

Contractor must complete any Media Change-Out within fifteen (15) days of receipt of notice to perform a Media Change-Out, but no later than two (2) days after starting any Media Change-Out.

Exhibit "C"

Site Survey

RECORD OF SURVEY



SURVEY CERTIFICATE

I hereby certify that this survey was done by me or under my direct supervision, that this plat is a true and correct representation of that survey, and that all monuments shown were found or set accurately as indicated hereon.

Dated: October 3rd 2011

Jeremy R. Dalmacio, R.L.S.
Registration No.49864

Arizona Water - Coolidge Well #13

TOPOGRAPHIC SURVEY

A PORTION OF THE NW/4 SEC 20
T5S, R8E, G&SRBM, PINAL COUNTY, ARIZONA

DRAWING NO. 1 OF 1

SHEET 1 OF 1

LAWSEN
ENGINEERING & SURVEYING
1484 S. ELLSWORTH RD. #103
MESA, ARIZONA 85209
(480) 832-3287 FAX (480) 832-3289
www.LAWSENENGINEERING.COM

NO.	DATE	REVISED BY
1	10/3/11	JRD

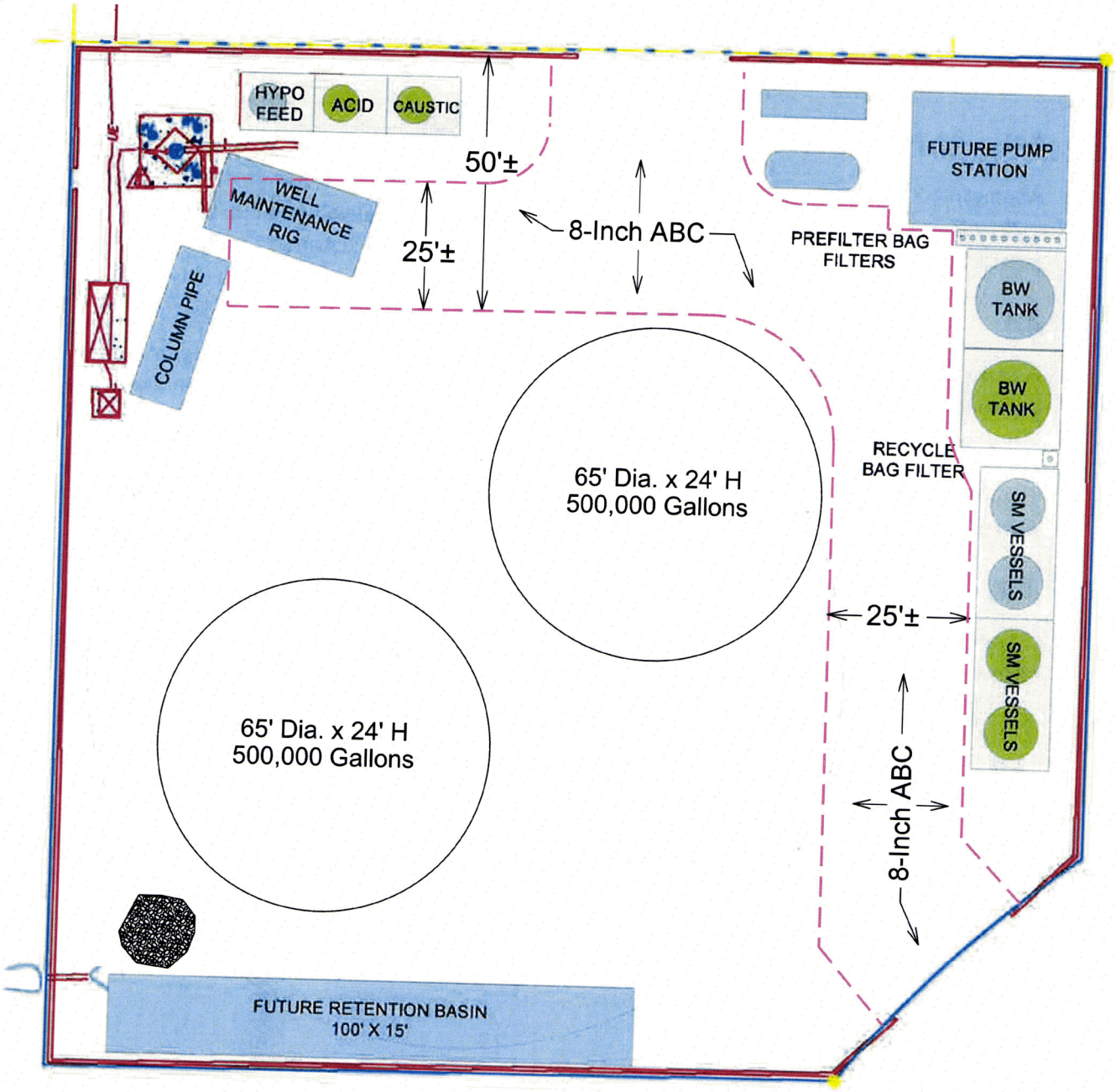
SURVEY: JRD DRAWN BY: JRD CHECKED BY: JRD SCALE: 1"=20'

30th ANNIVERSARY 1980

JEREMY R. DALMACIO
EXPIRES 9/30/13

Exhibit "D"

Conceptual Site Plan



0 ft. 18 ft. 30 ft. 60 ft.

N

LEGEND

- AWC future planned equipment
- Proposed arsenic treatment equipment
- Future arsenic treatment equipment

Coolidge Well 13
Adsorptive Conceptual Site Plan

Exhibit "E"

Design Criteria

Exhibit "E"

Design Criteria

1. ARF Design Capacity:	
a. Initial:	800 gpm (plus max 10% recycled water)
b. Build-Out:	2,400 gpm (plus max 10% recycled water)
2. Arsenic Concentration:	
a. Influent:	20 µg/L
b. Maximum Blended Effluent:	7 µg/L
3. Number of Vessels:	2
4. Vessel Orientation:	Vertical
5. Well No. 13 Pump Capacity:	800 gpm
6. Minimum Pipe Hydrostatic Testing Pressure:	200 psi
7. Minimum Pressure Vessel Rating:	150 psi at 120°F
8. Minimum Empty Bed Contact Time:	3.5 minutes
9. Maximum Flux Rate:	6 gpm/sf
10. Backwash Rate:	12 gpm/sf
11. Available Backwash Supply Flow Rate:	920 gpm @ 32 psi dynamic; 62 psi static
12. Maximum Pipe Velocity:	5 fps
13. Maximum Headloss through ARF:	10 psi
14. Minimum Backwash Tank Capacity:	1.5 X Backwash Volume

Exhibit "F"

Water Quality

ARIZONA WATER COMPANY
COOLIDGE WELL NO. 13 WATER QUALITY DATA

Contaminant	Sample Date	Result (mg/L unless stated otherwise)
Arsenic	20-Sep-09	0.016
Arsenic	28-Sep-09	0.0177
Arsenic	10-May-10	0.0079
Arsenic	25-May-11	0.0152
Arsenic	30-Jun-11	0.0098
Arsenic	06-Jul-11	0.011
Arsenic	23-Aug-11	0.014
Arsenic	18-Oct-11	0.014
Arsenic	19-Oct-11	0.014
Arsenic III	25-May-11	0.004
Arsenic III	23-Aug-11	0.004
Arsenic III	18-Oct-11	0.0035
Arsenic III	19-Oct-11	0.0027
Arsenic V	18-Oct-11	0.0105
Arsenic V	19-Oct-11	0.0113
Cadmium	08-Aug-07	< 0.0002
Cadmium	25-May-11	< 0.0001
Cadmium	23-Aug-11	< 0.0001
Calcium	08-Aug-07	47
Calcium	25-May-11	56
Calcium	23-Aug-11	58
Calcium	18-Oct-11	57
Calcium Hardness as CaCO3	08-Aug-07	117
Calcium Hardness as CaCO3	25-May-11	141
Calcium Hardness as CaCO3	23-Aug-11	144
Chromium	08-Aug-07	0.007
Chromium	25-May-11	0.012
Chromium	23-Aug-11	0.012
Iron	13-Oct-09	< 0.05
Iron	25-May-11	< 0.05
Iron	23-Aug-11	< 0.05
Iron	18-Oct-11	< 0.05
Iron	19-Oct-11	< 0.05

ARIZONA WATER COMPANY
COOLIDGE WELL NO. 13 WATER QUALITY DATA

Contaminant	Sample Date	Result (mg/L unless stated otherwise)
Lead	08-Aug-07	0.008
Lead	25-May-11	< 0.001
Lead	23-Aug-11	< 0.001
Magnesium	08-Aug-07	5
Magnesium	25-May-11	7
Manganese	13-Oct-09	< 0.02
Manganese	25-May-11	< 0.02
pH	08-Aug-07	8
pH	17-Oct-11	7.8
pH	18-Oct-11	7.9
pH	19-Oct-11	7.8
Phosphate	13-Oct-09	< 0.15
Phosphate	19-Oct-11	< 0.15
Selenium	08-Aug-07	< 0.002
Selenium	25-May-11	0.005
Selenium	23-Aug-11	0.003
Silica, Total	13-Oct-09	27.9
Silica, Total	25-May-11	30.5
Silica, Total	23-Aug-11	31.8
Sulfate	08-Aug-07	200
Sulfate	25-May-11	234
Sulfate	23-Aug-11	212
Sulfide, Total	25-May-11	< 0.04
Total Alkalinity as CaCO3	08-Aug-07	83
Total Alkalinity as CaCO3	13-Oct-09	73
Total Alkalinity as CaCO3	25-May-11	77
Total Alkalinity as CaCO3	23-Aug-11	75
Total Alkalinity as CaCO3	17-Oct-11	85
Total Alkalinity as CaCO3	18-Oct-11	77
Total Alkalinity as CaCO3	19-Oct-11	76

ARIZONA WATER COMPANY
COOLIDGE WELL NO. 13 WATER QUALITY DATA

Contaminant	Sample Date	Result (mg/L unless stated otherwise)
Total Phosphorous	13-Oct-09	< 0.05
Total Phosphorous	19-Oct-11	0.02
Total Suspended Solids	25-May-11	< 1
Total Suspended Solids	19-Oct-11	< 1
Turbidity	25-May-11	< 1.00 NTU
Turbidity	23-Aug-11	< 1.00 NTU
Vanadium	13-Oct-09	0.024
Vanadium	25-May-11	0.022
Vanadium	23-Aug-11	0.023
Uranium	08-Aug-07	3.9 +/- 0.9 pci/L
Uranium	25-May-11	4.9 +/- 1.0 pci/L
Uranium	23-Aug-11	6.8 +/- 1.1 pci/L

Exhibit "G"

Approved Adsorptive Media

Exhibit "G"

Approved Adsorptive Media

Media Requirements

1. Adsorptive media shall be discardable as solid waste in a RCRA subtitle D (non-hazardous) landfill when saturated and pass all TCLP tests.
2. Adsorptive media shall be a durable, attrition resistant media suitable for backwashing and removal of Arsenic.

Approved Manufacturers

1. Severn Trent - Bayoxide E-33 Granular Ferric Oxide
2. Evoqua - GFH

Exhibit "H"

Arizona Water Company Water Storage Tank Coating Specifications O-12-2

ARIZONA WATER COMPANY
O-12-2
WATER STORAGE TANK COATING SPECIFICATIONS

DEFINITIONS

A. *Company* — The words "Company" or "Arizona Water Company" mean Arizona Water Company and, where applicable, any division of Arizona Water Company, whose principal place of business is located at 3805 North Black Canyon Highway, Phoenix, Arizona 85015-5351 (Post Office Box 29006, Phoenix, Arizona 85038-9006).

B. *Company's Authorized Representative* — The words "Company's Authorized Representative" mean any officer of the Company, any Division Manager and/or such other person(s) designated in writing as the "Company's Authorized Representative" by the President or any Vice President of the Company.

C. *Contractor* — The word "Contractor" means either an individual or other entity contracted with to provide the services detailed in the Contract and as specified herein.

D. *Contract* — The word "Contract" means the written document titled "Contract" when such document has been signed by an officer or other authorized representative of both the Contractor and the Company.

E. *General Conditions of Contract* — The words "General Conditions of Contract" refer to the Company's Operating Order O-12-3 in the Company's Operating Memorandums.

F. *Independent Coating Inspector* — The words "Independent Coating Inspector" mean any Certified NACE III inspector hired by the Company to inspect coatings on water storage tanks.

1. GENERAL

These specifications identify the material and workmanship necessary to produce a quality coating system. All work shall be completed in a safe, workmanlike manner in strict accordance with:

a. Product manufacturer's instructions
b. General Conditions of Contract (E-4-1)
c. American Water Works Association Standard AWWA C652
d. Applicable sections of ANSI/AWWA D102-11, "Standard for Coating Steel Water Storage Tanks"
e. ANSI/AWWA D101-53 (R86), "Standard for Inspecting and Repairing Steel Water Tanks, Standpipes, Reservoirs, and Elevated Tanks, for Water Storage"
f. ANSI/NSF Std. 61, Section 5, "Protective (Barrier) Materials"
g. SSPC-SP1 – Solvent Cleaning
   SSPC-SP2 – Hand Tool Cleaning
   SSPC-SP3 – Power Tool Cleaning
   SSPC-SP5 – White Metal Blast Cleaning
   SSPC-SP6 – Commercial Blast Cleaning
   SSPC-SP7 – Brush-off Blast Cleaning

SSPC-SP10 – Near White Metal Blast Cleaning
SSPC-SP11 – Power Tool Cleaning to Bare Metal
SSPC-SP12 – Hydroblasting

h. SSPC PA2 –Dry Paint Thickness with Magnetic Gauges

i. SSPC-Guide 7 – Guide for the Disposal of Lead-Contaminated Surface Debris

2. QUALITY OF PAINT

The protective coatings identified in these specifications are set up as standards of quality. The standard "or equal" clause shall apply.

No substitution shall be considered unless the Company's Authorized Representative has received a written request for approval at least ten (10) days prior to the date for receipt of bids. Each such request must include: (a) the name of the specified material for which a substitution is being requested; (b) the name and number of the proposed substitution material; (c) a complete description of the proposed substitute, including performance and test data; and (d) any other information necessary for an evaluation. The burden of proof of the merit of the proposed substitute is upon the Contractor. Approval or disapproval of the proposed substitution rests solely with the Company's authorized representative and his decision shall be final.

Protective coatings for interior wet applications must be listed by NSF International as approved for potable water contact according to ANSI/NSF Std. 61, Section 5, "Protective (Barrier) Materials."

The Contractor shall be responsible for assuring that all materials are delivered to the job site in the original sealed and labeled containers of the protective coating manufacturer. All material on the job shall be subject to inspection by the Company's Authorized Representative.

The Company's Authorized Representative shall select colors not previously specified.

3. SPECIAL PROVISIONS

The Contractor shall be responsible for completing the removal of all remaining water, sediment, rust, etc. that is required prior to surface preparation. All preliminary preparation work will be at the Contractor's expense.

The Contractor shall:

a. Protect aluminum gauge boards and nametags during sandblasting and painting procedures.
b. Protect copper lines, light fixtures, valve threads, and electrical boxes.
c. Replace all manhole bolts with cadmium-plated or galvanized bolts if the Contractor opens a manhole.
d. Replace all gaskets.

The Contractor shall **NOT**:

a. Paint concrete unless otherwise specified.
b. Allow the use of silica sand for surface preparation.

The Contractor shall only mix FULL kits of approved coating. No partial kits will be saved or mixed at a later time.

4. MATERIALS TO BE PROVIDED AND PROCEDURES TO BE FOLLOWED BY THE CONTRACTOR

Unless otherwise specified in the contract, the Contractor shall supply all of the necessary materials to complete the work. The Contractor shall provide the following materials and services:

a. TANKS WITH EXISTING COATING SYSTEM: Interior Steel – Conventional Coating System; Surface Preparation: SSPC-SP 10 Near White Metal Blast Cleaning.

All abrasive materials shall be thoroughly removed from the surface of the tank in accordance with SSPC-SP 10 standards prior to coating.

Tnemec Coating

(1) Prime Coat*: Tnemec Series N140-1255 (Beige) Pota Pox Plus**, one (1) coat; spray applied; 6 to 8 mils dry film thickness ("DFT").

(2) Finish Coat: Tnemec Series N140-15BL (Tank White) Pota Pox Plus; one (1) coat; spray applied; 6 to 8 mils DFT.

TOTAL DFT: 12 to 16 mils DFT.

*Weld Seams: All plate weld seams shall receive an additional brushed coat of Series N140 Pota Pox Plus in color 15BL (Tank White). This application will be made after the full prime coat. Additionally, brush coating shall be applied on all welds, corners, nuts, bolts, edges, or other irregular surfaces.

**Tnemec Series N140 Pota Pox Plus FC (fast cure) may be substituted for Series N140 Pota Pox Plus when conditions warrant. It may be beneficial when curing between 35° F and 56° F is required.

or

Devoe Coating

(1) Prime Coat*: Devoe Bar-Rust 233H1642 (Buff)**, one (1) coat; spray applied; 6 to 8 mils DFT.

(2) Finish Coat: Devoe Bar-Rust 233 H3501 (White), one (1) coat: spray applied; 6 to 8 mils DFT.

TOTAL DFT: 12 to 16 mils DFT.

*Weld Seam: All plate weld seams shall receive an additional brushed coat of Devoe's Bar-Rust 233H in or 3501 (White) after the full prime coat.

Additionally, brush coating shall be applied on all corners, welds, nuts, bolts, edges, or other irregular surfaces.

**Devoe Bar-Rust 233H is a high solids (80%) advanced technology NSF International (National Sanitation Foundation) approved epoxy, which can be applied at steel temperatures down to 0° F (-18° C).

or

Carboline Coating

(1) Prime Coat*: Carbogurard 891 NSF Epoxy; one (1) coat; spray applied; 6 to 8 mils dry film thickness ("DFT").

(2) Finish Coat: Carbogurard 891 NSF Epoxy; one (1) coat; spray applied; 6 to 8 mils DFT.

TOTAL DFT: 12 to 16 mils DFT

*Weld Seams: All plate weld seams shall receive an additional brushed coat of Carbogurard 891 NSF Epoxy. This application will be made after the full prime coat. Additionally, brush coating shall be applied on all welds, corners, nuts, bolts, edges, or other irregular surfaces.

b. TANKS WITH EXISTING COATING SYSTEM: Interior Steel – Alternative Floor Coating System for Badly Pitted Tank Floors. For floors in existing tanks that are highly corroded with severe pitting, the following floor system may be applied after completion of the NSF Epoxy system to the roof and shell, subject to prior approval by the Company's Authorized Representative.

Floor Surface Preparation: SSPC-SP10 Near White Metal Blast Cleaning.

All abrasive materials shall be thoroughly removed from the surface of the tank in accordance with SSPC-SP10 standards prior to coating.

Tnemec Coating

(1) Steel Conditioners: Wet the floor surface and up the wall a few inches with a fine mist of Tnemec Series 260 Tnemec-Bond. Allow to evaporate and apply the topcoat within four (4) hours.

(2) Elastomeric Urethane: After mixing according to the manufacturer's recommendations, pour out and level with trowels or notched squeegees, Tnemec Series 264 Elasto-Shield over the entire floor to DFT of 80 to 100 mils and bring up the wall to where there is a two- to three-inch (2" to 3") overlap on the newly applied epoxy coating system.

TOTAL DFT: 80 to 100 mils DFT

or

Tnemec Coating

(1) 100% Solids Epoxy Finish Coat: Apply Devoe's Devran 133 100% Solids Epoxy Tank Coating at 80 to 100 mils DFT.

TOTAL DFT: 80 mils minimum DFT

or

Tnemec Coating

(1) 100% Solids: Apply Reactamine 760 NSF 100% Solids Tank Coating at 80 to 100 mils DFT.

TOTAL DFT: 80 mils minimum DFT

c. TANKS WITH EXISTING COATING SYSTEM: Exterior Steel; Level 1 Re-coat: For aged epoxy/urethane systems that are in sound shape and where re-coat adhesion is assured, the following overcoat system applies:

Tnemec Coating

(1) Surface preparation: Remove all dust, dirt, grime, and chalk by power washing.

All rusted, abraded, and exposed steel shall be power tool cleaned to bare metal according to SSPC-SP 11. All loose paint shall be removed with the same power tools. Feather all edges. Existing runs and chips shall be sanded out.

(2) Spot Prime (exposed metal): Tnemec Series 135 Chembuild or Series N140 Pota Pox Plus; one (1) coat; roller, brush, or spray applied, overlapping to the feathered areas; 3 to 5 mils DFT.

(3) Finish Coat: Tnemec Series 73 (spec color) Endura-Shield or Tnemec 1075 Endura-Shield II; one (1) coat; spray applied; 3 to 5 mils DFT.

TOTAL ADDITIONAL DFT: 3 to 5 mils DFT
(on top of existing system)

or

Devoe Coating

(1) Surface preparation: Remove all dust, dirt, grime, and chalk by power washing.

All rusted, abraded, and exposed steel shall be power tool cleaned to bare metal according to SSPC-SP 11. All loose paint shall be removed with the same power tools. Feather all edges. Existing runs and chips shall be sanded out.

(2) Spot Prime (exposed metal): Devoe's 233H Bar-Rust one (1) coat; roller, brush, or spray applied, overlapping to the feathered areas; at 3 to 5 mil DFT.

(3) Finish Coat: Devoe's Devthane 378 aliphatic Acrylic Urethane (spec color), one (1) coat; spray applied; 3 to 5 mils DFT.

TOTAL ADDITIONAL DFT: 3 to 5 mils DFT
(on top of existing system)

or

Carboline Coating

(1) Surface preparation: Remove all dust, dirt, grime, and chalk by power washing.

All rusted, abraded, and exposed steel shall be power tool cleaned to bare metal according to SSPC-SP 11. All loose paint shall be removed with the same power tools. Feather all edges. Existing runs and chips shall be sanded out.

(2) Spot Prime (exposed metal): Carbogurard 891 NSF Epoxy one (1) coat; roller, brush, or spray applied, overlapping to the feathered areas; at 3 to 5 mil DFT.

(3) Finish Coat: Carbothane 133HB (spec color), one (1) coat; spray applied; 3 to 5 mils DFT.

TOTAL ADDITIONAL DFT: 3 to 5 mils DFT
(on top of existing system)

d. TANKS WITH EXISTING COATING SYSTEM: Exterior Steel; Level 2 Re-coat. If complete removal of the existing system is required, the following overcoat system applies:

Surface preparation: SSPC-SP 6 Commercial Abrasive Blast Cleaning.

All abrasive materials shall be thoroughly removed from the surface of the tank in accordance with SSPC-SP 10 standards prior to coating.

Tnemec Coating

(1) Prime Coat: Tnemec Series N140-1255 (Beige) Pota Pox Plus or Tnemec 1075 Endura-Shield II; one (1) coat; spray applied; 4 to 6 mils DFT.

(2) Finish Coat: Tnemec Series 73 (spec color) Endura-Shield III; one (1) coat; spray applied; 3 to 5 mils DFT.

TOTAL DFT: 7 to 11 mils.

or

Devoe Coating

(1) Prime Coat: Devoe's Bar-Rust 235 Epoxy; one (1) coat; spray applied; 4 to 6 mils DFT.

(2) Finish Coat: Devoe's Devthane 378 aliphatic Acrylic Urethane (spec color); one (1) coat; spray applied; 3 to 5 mils DFT.

TOTAL DFT: 7 to 11 mils DFT.

or

Carboline Coating

(1) Prime Coat: Carboguard 891 NSF Epoxy; one (1) coat; spray applied; 4 to 6 mils DFT.

(2) Finish Coat: Carbothane 133HB; one (1) coat; spray applied; 3 to 5 mils DFT.

TOTAL DFT: 7 to 11 mils.

e. TANKS WITH NEW STEEL: Exterior steel – Surface preparation: SSPC-SP 6 Commercial Abrasive Blast Cleaning.

All abrasive materials shall be thoroughly removed from the surface of the tank in accordance with SSPC-SP 10 standards prior to coating.

Tnemec Coating

(1) Prime Coat: Tnemec Series N140-1255 (Beige) Pota Pox Plus or Tnemec 1075 Endura-Shield II; one (1) coat; spray applied; 4 to 6 mils DFT.

(2) Finish Coat: Tnemec Series 73 (spec color) Endura-Shield III; one (1) coat; spray applied; 3 to 5 mils DFT.

TOTAL DFT: 7 to 11 mils.

or

Devoe Coating

(1) Prime Coat: Devoe's Bar-Rust 235 Epoxy; one (1) coat; spray applied; 4 to 6 mils DFT.

(2) Finish Coat: Devoe's Devthane 378 aliphatic Acrylic Urethane (spec color); one (1) coat; spray applied; 3 to 5 mils DFT.

TOTAL DFT: 7 to 11 mils DFT.

or

Carboline Coating

(1) Prime Coat: Carboguard 891 NSF Epoxy; one (1) coat; spray applied; 4 to 6 mils DFT.

(2) Finish Coat: Carbothane 133HB; one (1) coat; spray applied; 3 to 5 mils DFT.

TOTAL DFT: 7 to 11 mils.

f. TANKS WITH NEW STEEL: Interior Steel – Conventional Coating System; Surface Preparation: SSPC-SP 10 Near White Metal Blast Cleaning.

All abrasive materials shall be thoroughly removed from the surface of the tank in accordance with SSPC-SP 10 standards prior to coating.

Tnemec Coating

(1) Prime Coat*: Tnemec Series N140-1255 (Beige) Pota Pox Plus**, one (1) coat; spray applied; 6 to 8 mils dry film thickness ("DFT").

(2) Finish Coat: Tnemec Series N140-15BL (Tank White) Pota Pox Plus; one (1) coat; spray applied; 6 to 8 mils DFT.

TOTAL DFT: 12 to 16 mils DFT.

*Weld Seams: All plate weld seams shall receive an additional brushed coat of Series N140 Pota Pox Plus in color 15BL (Tank White). This application will be made after the full prime coat. Additionally, brush coating shall be applied on all welds, corners, nuts, bolts, edges, or other irregular surfaces.

**Tnemec Series N140 Pota Pox Plus FC (fast cure) may be substituted for Series N140 Pota Pox Plus when conditions warrant. It may be beneficial when curing between 35° F and 56° F is required.

or

Devoe Coating

(1) Prime Coat*: Devoe Bar-Rust 233H1642 (Buff)**, one (1) coat; spray applied; 6 to 8 mils DFT.

(2) Finish Coat: Devoe Bar-Rust 233 H3501 (White), one (1) coat: spray applied; 6 to 8 mils DFT.

TOTAL DFT: 12 to 16 mils DFT

*Weld Seam: All plate weld seams shall receive an additional brushed coat of Devoe's Bar-Rust 233H in or 3501 (White) after the full prime coat. Additionally, brush coating shall be applied on all corners, welds, nuts, bolts, edges, or other irregular surfaces.

**Devoe Bar-Rust 233H is a high solids (80%) advanced technology NSF International (National Sanitation Foundation) approved epoxy, which can be applied at steel temperatures down to 0° F (-18° C).

or

Carboline Coating

(1) Prime Coat*: Carbogurard 891 NSF Epoxy; one (1) coat; spray applied; 6 to 8 mils dry film thickness ("DFT").

(2) Finish Coat: Carbogurard 891 NSF Epoxy; one (1) coat; spray applied; 6 to 8 mils DFT.

TOTAL DFT: 12 to 16 mils DFT

*Weld Seams: All plate weld seams shall receive an additional brushed coat of Carbogurard 891 NSF Epoxy. This application will be made after the full prime coat. Additionally, brush coating shall be applied on all welds, corners, nuts, bolts, edges, or other irregular surfaces.

5. TANK REPAIRS PRIOR TO TANK COATING/PAINTING

The Contractor is required to notify the Company's Authorized Representative on a timely basis when tank repairs are necessary, and to identify the nature and extent of repairs that are required.

If repairs to the tank are necessary, the Contractor shall be responsible for coordinating all such repairs, and shall request a change order from the Company's Authorized Representative before initiating such repairs as required in the General Conditions of Contract.

All repairs are to be made according to ANSI/AWWA D101-53 (R86), "Standard for Inspection and Repairing Steel Water Tanks, Standpipes, Reservoirs, and Elevated Tanks, for Water Storage."

The Company will not allow the Contractor to alter the structure of the tank.

6. SURFACE PREPARATION – DEBRIS CONTAINMENT AND DISPOSAL

When required by Federal, State, or local regulation, the Contractor shall enclose the entire tank and structure and contain surface preparation debris. Refer to SSPC-Guide 6, "Guide for Containing Debris Generated During Paint Removal Operations."

The Contractor shall dispose of all surface preparation debris according to applicable Federal, State, and local regulations. Refer to SSPC-Guide 7, "Guide for the Disposal of Lead-Contaminated Surface Debris."

Worker protection and environmental protection shall be followed in accordance with the following Federal Regulatory Standards and other applicable Federal, State, or local regulations:

1. 29 CFR 1910 – OSHA General Industry Standards
2. 29 CFR 1910.134 – Respiratory Protection
3. 29 CFR 1910.1000 – Air Contaminants – Permissible Exposure Limits
4. 29 CFR 1910.1020 – Employee Access to Exposure and Medical Records
5. 29 CFR 1926 – OSHA Construction Industry Standards
6. 29 CFR 1926.59 – Hazard Communications
7. 29 CFR 1926.62 – Lead Exposure in Construction; Interim Final Rule
8. 40 CFR 261 – Identification and Listing of Hazardous Waste
9. 40 CFR 262 – Standards Applicable to Generators of Hazardous Waste
10. 40 CFR263 – Standards Applicable to Transporters of Hazardous Waste
11. 40 CFR 264 – Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

Cleaning

Surfaces that have been in contact with chemicals can be assumed to be contaminated. Depending on the type of chemical, it may be necessary to clean the surface before dry blasting and again after blasting in order to remove contaminants that can otherwise cause blistering of the coating system.

Most common methods are:

- Steam Cleaning
- Hot Water/Detergent Washing (Pressure)
- Solvent Washing
- Hydroblasting or Wet Sandblasting
- Prebaking at Very High Temperatures

The first two methods can efficiently remove most soluble and emulsified contaminants. Solvent cleaning is only feasible for small tanks or small areas. Solvent cleaning will not remove water-soluble materials. When detergents are used, a fresh water rinse is necessary to remove traces of the detergent left on the surface.

Hydroblasting will seldom be used for the cleaning of tanks due to the very high pressure involved. Wet sandblasting is possible. It can remove old coatings, water soluble contaminants, and corrosion products simultaneously. It cannot remove oil or grease products.

Before cleaning takes place, the surface must be free from oil, grease, salt deposits, and other foreign material that cannot be removed by abrasive blasting. These contaminants, which differ from mill scale and rust, would otherwise be forced into the profile and interfere with the adhesion and the chemical resistance.

Blasting

Steel surfaces must be blasted to white metal (SSPC-SP5/SA3) or as near as possible to white metal, but never less than near-white-metal (SSPC-SP10/SA2 ½).

Mill scale, when present on a ferrous surface, is cathodic to the surface, meaning the steel will sacrifice itself to save the mill scale. All mill scale MUST be removed prior to coating application. Although the surface may in fact already have a coating visible, the CONTRACTOR SHALL NOT assume that the previous contractor has removed the mill scale prior to applying the existing coating. All bids will be submitted with the understanding that mill scale MAY be present beneath the existing coating, and that an SP-10 (near-white) blast will be required prior to any new coating application unless otherwise specified. NO additional costs, above the bid price, will be submitted to Arizona Water Company for removal of any mill scale that is found on the surface. Arizona Water Company requires that ALL bids reflect this understanding by the CONTRACTOR.

Profile

The blast anchor profile must average 2 to 3 mils, but preferably 2.5 mils.

Abrasives

The abrasive media shall be garnet and shall be of sufficient grit size to attain a specified blast anchor profile between 2 to 3 mils DFT.

Pre-Preparation and Operational Testing of Abrasives for Soluble Salts Contamination:

Test abrasive media for chloride contamination using test kit as described below, entitled "Test Kit for Measuring Chlorides in Abrasives." The maximum allowable chloride concentration is 3 PPM. Test media immediately prior to use, and in no case more than 24 hours prior to use.

Pre-Application Testing for Soluble Salts Contamination

Test blasted surfaces for chloride contamination using the Test Kit described below, entitled "Test Kit for Measuring Chlorides on Steel Surfaces." Test all surfaces at the rate of three tests for the first 1000 square feet plus one test for each additional 3000 square feet or part thereof. Concentrate testing of bare steel at areas of coating failure to bare steel and areas of corrosion pitting. Perform 30% of tests on bare metal at welds, divided equally between horizontal and vertical welds. One or more readings greater than 3 micrograms per square centimeter of chlorides shall be cause for rejection of surface. Wash all surfaces with Chlor*Rid according to the manufacturer's recommendations, allow to dry and retest until all required test show allowable results. Re-blast tested and cleaned areas to required specifications. Label all test tubes and retain for test verification.

ALLOWABLE SOLUBLE SALTS TEST KITS

Test kit for measuring Chlorides on Steel Surfaces
(Test Kits called Chlor*Test, as manufactured by CHLOR*RID International. Inc. of Chandler, Arizona (www.chlor-rid.com)).

Test kit for measuring Chlorides in Abrasives

(Test Kits called Chlor*Test "A", as manufactured by CHLOR*RID International, Inc. of Chandler, Arizona (www.chlor-rid.com)).

Welds and Edges

These areas need special attention because they are often the first place where corrosion starts. Weld splatters must be removed by power tool grinding. Welds must be ground to a smooth radius and sharp edges must be rounded to prevent the coating from pulling away.

Dehumidification

Depending on the ambient conditions, it may be necessary to use dehumidifiers to prevent rustblooming of the blasted steel surface. In all instances the dewpoint must remain at least 5°F or 3°C below the steel temperature.

Although not very often the case with new steel, black spotrusting may occur shortly after blasting. This is a sign that the steel has been infected with sulfates or chlorides, etc., which cannot completely be removed by dry abrasive blasting. In such a case, refer to section B, Old Corroded and/or Previously Coated Steel Surfaces.

Dust Removal

After the blasted steel surface is approved, abrasive dust must be removed with a vacuum cleaner. A broom is insufficient. Most effective is the combination of blowing and vacuum cleaning in that order. Dust particles left on the surface will interfere with coating adhesion.

7. PREPARATION OF COATING MATERIAL

Storage

At least 24 hours before coating material will be used, the material must be placed in an area where the temperature is kept between 50°F and 86°F (10°C - 30°C).

Premixing

The coating system is a two-component thermosetting material that requires thorough mechanical mixing.

After opening the can of base component, it is necessary to premix the base until no sediment is left on the bottom of the can. A squirrel-cage-type mixer such as the Jiffy mixer is efficient. Care must be taken not to introduce air (foam). After sufficient premixing, the hardener component may be added to the base and mixed immediately.

Mixing Ratio

Unless otherwise indicated, base and hardener are supplied in the correct ratio: one can of hardener to one can of base. The use of the exact ratio is of prime importance for the chemical resistance of the cured coating film. Therefore, the hardener container must be emptied completely into the base. A very small amount of thinner may be used for cleaning the hardener can. The amount used must be deducted from the overall amount of thinner used for correction of spray viscosity.

Spray Equipment

Conventional air spray or airless spray may be used to apply coatings. Because airless spray is almost exclusively used, the following information will deal only with this method.

The airless pump must have a pressure ratio of at least 30 to 1, but preferably 45 to 1. A tip size between 0.018" and 0.021" is strongly recommended. A reversible tip is recommended.

All equipment and lines must be absolutely clean to prevent blocking of the tip and to prevent coating contamination.

8. APPLICATION OF PROTECTIVE COATINGS

The Contractor shall apply each coating according to the specifications and the protective coating manufacturer's recommendations.

The Contractor shall apply the coating at the specified thickness. If the specified thickness is not obtained, the Contractor shall apply an additional coating.

The Contractor shall apply all protective coatings in strict accordance with the applicable manufacturer's current printed product data sheet and container label. The Contractor shall not apply protective coatings above or below the minimum/maximum surface temperatures as stated on the product data sheet. The Contractor shall not apply protective coatings to wet or damp surfaces and shall not apply protective coatings in rain, snow, fog, or mist. Surface temperatures must be at least 5° F above the dew point and the Contractor shall delay painting until such condition exists. The Contractor shall complete the painting well in advance of the probable time of day when condensation may occur and/or the surface temperature may be expected to drop below the minimum listed on the applicable product data sheet.

The Contractor shall measure DFT according to current SSPC PA2, "Dry Paint Thickness with Magnetic Gauges."

It is essential that the first coat wet the steel surface perfectly. An addition of up to 10% thinner may be added, but confirm that if thinning, it is within the manufacturers printed data sheet and complies with all local, state and federal VOC laws. When wet film thickness gauges are used, it must be kept in mind that the steel profile will have an effect on the readings. Thinner ratios can vary from project to project due to application equipment, weather conditions, substrate conditions, etc.

Before starting the actual spray application, it is a good practice to observe the spray pattern on a separate piece of steel or cardboard. Good atomization without fingering, heavy spots, or insufficient flow, etc. must be obtained. If imperfections occur, corrections must be made quickly. Use a somewhat higher pressure or use the next size smaller tip. If this does not correct the problem, add a small amount of thinner.

Dry spray or coarse paint globules at extremes of the spay pattern are unacceptable.

Dry spray or overspray is often caused by spraying at improper angles to the surface. Move the gun parallel with the surface, releasing the trigger of the gun before reversing direction for the next stroke.

Measure the wet film thickness regularly.

The second coat is applied in the same way, and using the same thinning ratio, after sufficient drying time of the previous coat.

Stripe Coating

As an extra measure for corrosion protection, it is standard practice to apply a stripe coat of the primer with a brush in the welds, edges, and areas that are hard to reach with the spray gun. For that purpose, enough of the mixed primer must be thinned with approximately 25% thinner. The lower viscosity of this mixture will help to penetrate crevices and will prevent an undesirable film build-up. This stripe coating can best be done with a short round-tip bristle brush. Another stripe coat may be applied when the full primer coat has dried sufficiently.

Potlife and Thinning

No mixed material may be used beyond the potlife. No thinner may be used to increase the potlife. Methyl Ethyl Ketone shall not be used for thinning purposes. Thinners must be that as manufactured by the coating supplier utilized for each specific project.

Drying/Curing Interval

The ideal temperature of air and steel for the application and drying between coats is between 68°F and 77°F (20°C and 25°C).

Best results are obtained by drying for 16 to 24 hours at 68°F (20°C) between coats. Lower temperatures require longer drying intervals. When hot air blowers are used to bring the steel temperatures higher than 68°F (20°C), it is strongly recommended to let the coating dry for one (1) hour at ambient temperature with sufficient fresh air ventilation before application of heat. It is further recommended that only indirect fire heaters be used for forced air curing in order to prevent intercoat contamination.

Final Curing

At 68°F (20°C) the tank lining will cure enough for most services in 7 days minimum. Ventilation is required for the first 24 hours. When not enough time is available to cure at 68°F (20°C), hot air blowers should be used to continuously circulate heated fresh air to maintain a surface temperature of 140°F (60°C).

9. INSPECTION

The inspection during and after the tank lining job can be divided into two different functions:

A. Inspection on a pass/fail basis.
B. The above-mentioned function together with preventive actions during the application.

The following list gives the essential checkpoints for an inspection:

Test	Instruments
Blast Profile	Replica Tape of Comparator
Temperatures	Surface Thermometer
Humidity/Dew Point	Sling Psychrometer or Digital
Thickness of Each Coat	Magnetic Film Thickness Gauge
Pinhole/Sags/Runs/Dryspray/Flow	Holiday Detector and Magnifying Glass
Cure	MEK Rubs (50 rubs)

Preventive Inspection

Inspection service can be very helpful when attention is paid to all parts of the operation. Although not claimed to be complete, the following list may contribute:

– Type of abrasive and cleanliness of the abrasive
– Cleaning method used before blasting
– Check for salt contamination on the steel surface after blasting
– Dehumidification
– Mixing procedure
– Paint storage and consumption
– Spray pattern
– Wet film thickness
– Ventilation
– Pinhole and holiday detection
– Drying/curing procedures
– Safety procedures

Dry Film Thickness

One of the most controversial subjects of application and inspection is the measurement and judgment of DFT.

Highly skilled application techniques are required to keep the DFT within specified limits. It must be understood that most tank linings are exposed to severe conditions. In such a case, the idea "the thicker the better" is definitely false.

Five spot measurements must be taken over an area of 100 square feet. Each spot measurement consists of three gauge readings next to one another. The average of three readings is used to calculate the average of the spot readings.

The average of the spot readings has to be in the specified mil thickness range. According to SSPC-PA2, no spot reading lower than 80% of the specified milage is acceptable.

In addition, the maximum film thickness also is limited. No spot reading (average of a cluster of three gauge readings) higher than 120% of the specified film thickness is acceptable.

Where the film thickness is too low, an extra coat must be applied In accordance with procedures established in this guide.

In case of high film thickness, the thick area must be sanded (after sufficient curing) and a very light extra finish coat applied to "renew" the film.

The magnetic film thickness gauges must be calibrated frequently enough to ensure correct readings. The original calibration must take place with shims placed on the blasted surface as described in SSPC-PA2. This method prevents higher thickness readings found than are actually applied, especially with deeper profiles.

10. LITERATURE

Additional literature to be used in conjunction with these guidelines:

A. Steel Structures Painting Manual, Volume 1

In particular, chapters:

- 2.0 Surface Preparation
- 2.2 Metallic Abrasives
- 2.4 Abrasive Air Blast Cleaning
- 2.6 Hand and Power Tool Cleaning
- 2.9 Chemical Cleaning
  - a. Solvent Wipe
  - b. Steam Cleaning
  - c. High Pressure – Hot Detergent
- 5.3 Safety in Paint Application
- 6.0 Inspection
- 14.2 The Lining of Tanks

B. Steel Structures Painting Manual, Volume 2

Surface Preparation Standards
Chapter 5, Paint Application Specifications SSPC-PA2
A Guide to Safety in Paint Application SSPC-PA Guide 311

11. CURING, VENTILATION, AND DISINFECTION

The Contractor shall provide adequate ventilation to effectively remove solvent vapors for proper drying of paint on interior surfaces. The Contractor shall be required, upon request from the Company's Authorized Representative or the Independent Coating Inspector, during the pre-construction meeting to provide specific details on its plan to provide adequate curing and ventilation.

A combination of forced and natural ventilation shall be continued after coating application is completed to ensure complete curing and solvent removal. Coating life may be shortened if there is inadequate ventilation during the curing period and residual coating solvent may contribute to taste and odor problems in stored water. Lower temperatures or higher humidity may extend the time that ventilation is necessary. The Contractor shall use forced air ventilation with heating units when applying coatings at low temperatures and higher humidities.

The ventilation must be designed in such a way that no solvent vapors remain in corners, etc. The air used must be clean and dry enough to prevent any condensation of moisture on the coated surface. Good ventilation will prevent solvent entrapment in the film.

Following final coat application and final inspection, the Contractor shall not disinfect the tank until the coating system is fully cured and approved by the Independent Coating Inspector. Refer to the applicable product data sheet for dry time/temperature requirements. The Contractor shall disinfect the tank according to the current American Water Works Association Standard AWWA C652 – Method 2, or as instructed by the Company's Authorized Representative. The Contractor, at its expense, shall be responsible for disinfecting the tank immediately before placing the tank in service.

All cathodic protection systems shall be disabled and locked out before initiating tank draining and shall remain disabled until completion of the interior warranty inspection. Once the tank is placed back into service, the lock shall be removed and the cathodic protection system energized.

12. CLEAN UP

The Contractor shall remove from the Company's property and from all public and private property, at its own expense, all temporary structures, rubbish, and waste materials from its operations. In the event the Contractor fails to do so, the Company may remove same at the expense of the Contractor.

13. CONTAINMENT/DISPOSAL COSTS

The Contractor shall be responsible for all costs associated with containment and waste disposal, and for all waste removal as specified in the General Conditions of Contract.

14. GUARANTEE/INSPECTION

The Contractor shall guarantee all labor, workmanship, and materials it applies for the minimum guarantee period, as specified in the General Conditions of Contract.

Approximately eleven (11) months after the Contractor's completion of the work and the Company's acceptance of the completed work, the Company's Authorized Representative shall schedule with an Independent Coating Inspector a date for an inspection for all interior coating work completed, and shall notify the Contractor of such date at least thirty (30) days in advance.

If repairs are necessary, the Contractor shall be responsible for properly disinfecting the water storage tank prior to it being placed back into service. All such repair work will be subject to the conditions of the original Contract.

Exhibit "I"

Sample Design of Adsorptive Media ARF

ARIZONA WATER COMPANY

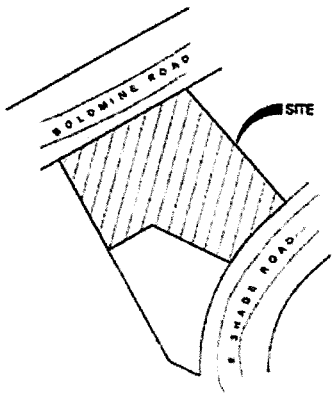
MONTEZUMA HAVEN WELLS NO. 2 AND NO. 3
ARSENIC REMOVAL FACILITY
4105 EAST GOLDMINE ROAD, LAKE MONTEZUMA, AZ 86335

RECORD DRAWINGS

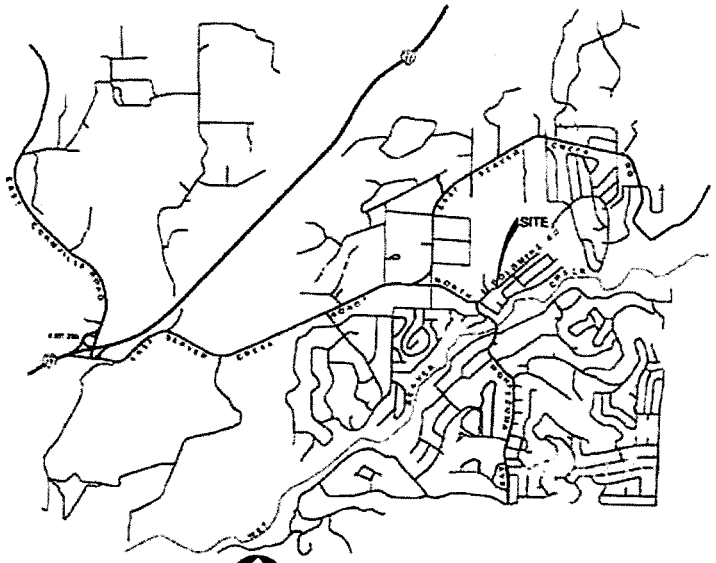
THESE DRAWINGS REFLECT CHANGES FROM THE ORIGINAL CONTRACT DRAWINGS THAT WERE MADE DURING CONSTRUCTION AND HAVE BEEN PREPARED FROM INFORMATION PROVIDED TO THE ENGINEER BY THE CONSTRUCTION CONTRACTOR(S). THE ENGINEER DOES NOT WARRANT THESE DRAWINGS TO BE COMPLETE AND ACCURATE IN ALL RESPECTS.

WATERWORKS ENGINEERS, LLC
BY: BENJAMIN W. LEE — MARCH 2012

AWC PROJECT NO. 1-4874
DECEMBER 2011



PROJECT LOCATION MAP
NTS



VICINITY MAP
NTS

OWNER
ARIZONA WATER COMPANY
3805 N Black Canyon Hwy
Phoenix, AZ 85015

Phone: 602-240-6860
Fax: 602-264-7169

Contact: Andrew Hiser

ENGINEER
WATERWORKS ENGINEERS
4640 E Cheyenne Road, Suite 280
Scottsdale, AZ 85250

Phone: (480) 551-4742 x112
Fax: (480) 551-4743

Contact: Ben Lee, P.E.

ARIZONA WATER COMPANY

CALL YOUR ENGINEERING REPORTING AGENCY
602-263-1100
1-800-STAKE-IT
(ARIZONA BLUE STAKE, INC.)

ORIGINALLY SIGNED AND SEALED BY	ORIGINALLY SIGNED AND SEALED BY
ARIZONA REGISTERED PROFESSIONAL ENGINEER (CIVIL)	ARIZONA REGISTERED PROFESSIONAL ENGINEER (CIVIL)
JOHN H. MATTA 35812 ON 12/29/11	BENJAMIN W. LEE 47882 ON 12/29/11

WATERWORKS ENGINEERS

ARIZONA WATER COMPANY
MONTEZUMA HAVEN WELLS NO. 2 AND NO. 3
ARSENIC REMOVAL FACILITY

ORIGINAL

COVER SHEET

DECEMBER 2011
11-487
G-001
SHEET 1 OF 1
SCALE: NOT TO SCALE

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DRAWING INDEX

SHEET NUMBER	DRAWING NUMBER	TITLE
	GENERAL	
1	G-001	COVER SHEET
2	G-002	DRAWING INDEX AND NOTES
3	G-003	ABBREVIATIONS
4	G-004	STANDARD DESIGNATIONS
5	G-005	LEGEND
6	G-006	PROCESS FLOW DIAGRAM 1
7	G-007	PROCESS FLOW DIAGRAM 2
	CIVIL	
8	C-100	SITE PLAN
	STRUCTURAL	
9	S-001	NOTES AND ABBREVIATIONS
10	S-301	DETAILS
	MECHANICAL	
11	M-001	ISOMETRIC
12	M-100	SITE PLAN
13	M-101	PARTIAL PLAN 1
14	M-102	PARTIAL PLAN 2
15	M-201	SECTIONS
16	M-301	TYPICAL DETAILS 1
17	M-302	TYPICAL DETAILS 2
	ELECTRICAL	
18	E-101	SPECIFICATIONS AND LEGEND
19	E-102	SES AND MCC SINGLE LINE DIAGRAM
20	E-103	SITE PLAN
21	E-104	EXISTING WELL PUMP #3 SCHEMATIC DIAGRAM REVISIONS
22	E-105	MISCELLANEOUS SCHEMATIC DIAGRAMS
23	E-106	DETAILS

GENERAL NOTES

1. REFERENCES TO MAG STANDARD DETAILS REFER TO THE "UNIFORM STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION" SPONSORED AND DISTRIBUTED BY THE MARICOPA ASSOCIATION OF GOVERNMENTS, LATEST VERSION.
2. ALL WORK UNDER THE PUBLIC WORKS PERMIT SHALL BE DONE IN ACCORDANCE WITH THE MAG SPECIFICATIONS AND DETAILS, UNLESS OTHERWISE STATED ON PLANS. MINIMUM COVER OVER WATER LINES IS 24" FOR PIPE DIAMETERS 2" AND LESS AND 36" FOR PIPE DIAMETERS LARGER THAN 2".
3. THE ARIZONA WATER COMPANY (AWC) OPERATIONS STAFF SHALL BE NOTIFIED 48 HOURS PRIOR TO STARTING CONSTRUCTION.
4. ACCEPTANCE OF THE COMPLETED IMPROVEMENTS WILL NOT BE GIVEN UNTIL RED LINE DRAWINGS "AS-BUILTS" HAVE BEEN GIVEN TO AWC APPROVED BY THE ENGINEER.
5. CONTRACTOR SHALL ENSURE CONSTRUCTION MATERIALS REMAIN ISOLATED FROM THE WATER DISTRIBUTION SYSTEM. ISOLATION VALVES CONNECTING TO THE DISTRIBUTION SYSTEM SHALL BE LOCKED IN CLOSED POSITION BY CONTRACTOR.
6. BACKFILL CONSOLIDATION BY FLOODING OR WATER IS PROHIBITED.
7. NO JOB WILL BE CONSIDERED COMPLETE UNTIL ALL CURB, PAVEMENT AND SIDEWALKS HAVE BEEN SWEPT CLEAN OF ALL DIRT AND DEBRIS AND ALL DISTURBED SURVEY MONUMENTS REPLACED.
8. ALL EXISTING MONUMENTATION SHALL BE PRESERVED.
9. THE CONTRACTOR WILL UNCOVER ALL EXISTING LINES BEING TIED INTO TO VERIFY THEIR LOCATION, MATERIAL TYPE, AND SIZE PRIOR TO ORDERING FITTINGS. THE CONTRACTOR WILL LOCATE OR HAVE LOCATED ALL EXISTING UNDERGROUND PIPELINES, TELEPHONE AND ELECTRIC CONDUITS, AND STRUCTURES IN ADVANCE OF CONSTRUCTION AND WILL OBSERVE ALL POSSIBLE PRECAUTIONS TO AVOID DAMAGE TO THE SAME.
10. BACKFILLING SHALL NOT BE STARTED UNTIL LINES ARE INSPECTED BY THE ENGINEER AND AWC INSPECTOR (48 HOURS PRIOR NOTIFICATION MUST BE GIVEN).
11. APPROVAL BY THE ENGINEER INDICATES REVIEW FOR GENERAL CONFORMANCE WITH STANDARDS. THIS APPROVAL SHALL NOT PREVENT AWC FROM REQUIRING CORRECTION OF ERRORS OR OMISSIONS OR VIOLATIONS OF ANY LAW OR ORDINANCE.
12. EXISTING UTILITIES AND OTHER FACILITIES SHOWN ON PLANS ARE BASED ON INFORMATION OBTAINED FROM FIELD SURVEY, EXISTING MAPS, AS-BUILTS AND OTHER PLANS WITHIN THE AREA OF THIS PROJECT. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION AND/OR ELEVATION OF EXISTING UTILITIES WHICH PERTAIN TO AND MAY AFFECT CONSTRUCTION. NO ADDITIONAL PAYMENT FOR THIS ITEM WILL BE ALLOWED.
13. THE CONTRACTOR SHALL MAINTAIN AN APPROVED SET OF PLANS, WHICH SHALL BE ON THE JOBSITE AT ALL TIMES.
14. THE CONSTRUCTION FOREMAN SHALL BE ON THE JOB SITE AT ALL TIMES WHILE CONSTRUCTION ACTIVITIES ARE IN OPERATION.
15. IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE ENGINEER AND AWC BEFORE THE FITTINGS ARE COVERED SO INDEPENDENT "AS-BUILT" MEASUREMENTS MAY BE TAKEN. ANY CHANGES TO THE APPROVED PLANS MUST BE AUTHORIZED BY THE ENGINEER AND AWC BEFORE THE CHANGE IS MADE IN THE FIELD.
16. CONTRACTOR IS RESPONSIBLE TO FOLLOW ALL APPLICABLE GUIDELINES AND RECOMMENDATIONS SET FORTH BY OSHA.
17. THE CONTRACTOR WILL PROVIDE ADEQUATE MEANS FOR CLEANING TRUCKS AND/OR OTHER EQUIPMENT OF MUD PRIOR TO ENTERING PUBLIC STREETS. CONTRACTOR SHALL MAINTAIN ROADS IMPACTED BY CONSTRUCTION ACTIVITIES IN A CLEAN AND DUST FREE CONDITION AT ALL TIMES.
18. CONTRACTOR TO VERIFY EXISTING UTILITIES WHICH MAY CONFLICT WITH CONTRACTOR'S WORK. ANY EXISTING UTILITY LOCATIONS WHICH MAY BE SHOWN ON THE DRAWINGS ARE APPROXIMATE ONLY AND SHALL BE FIELD VERIFIED. THE CONTRACTOR WILL LOCATE OR HAVE LOCATED ALL EXISTING UNDERGROUND PIPELINES, TELEPHONE AND ELECTRIC CONDUITS, AND STRUCTURES IN ADVANCE OF CONSTRUCTION AND WILL OBSERVE ALL POSSIBLE PRECAUTIONS TO AVOID DAMAGE TO SAME.
18. THE CONTRACTOR IS REQUIRED TO CALL THE "BLUE STAKE" CENTER PRIOR TO ANY WORK AND SHALL BE RESPONSIBLE TO MAINTAIN CURRENT "BLUE STAKE" MARKINGS THROUGHOUT CONSTRUCTION.
20. CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY EROSION CONTROL MEASURES AS REQUIRED BY ALL REGULATORY AGENCIES.
21. CONTRACTOR TO COORDINATE INTERFACE OF EXISTING UTILITIES WITH THE APPROPRIATE UTILITY COMPANIES.
22. PROVIDE SEPARATION BETWEEN UTILITIES PER MAG STANDARD SPECIFICATIONS 610.
23. INSTALL NEW PIPELINES AT UNIFORM SLOPE BETWEEN POINTS FOR WHICH ELEVATIONS ARE GIVEN ON THE DRAWINGS.
24. PIPING ROUTING AND DIMENSIONS, AS SHOWN, DO NOT CONSTITUTE DETAILED LAYOUT DRAWINGS. CONTRACTOR TO DETAIL AND DETERMINE EXACT PIPE LENGTHS, FITTINGS AND JOINTS REQUIRED TO INSTALL PIPELINES IN ACCORDANCE WITH THE ROUTING SHOWN ON THE DRAWINGS.
25. COORDINATE BEGINNING OF PIPELINE AND END OF PIPELINE WITH ADJACENT WORK. IF ADJACENT WORK IS COMPLETE, TIE PIPELINE IN AS REQUIRED.
26. ALL MATERIALS IN CONTACT WITH POTABLE WATER SHALL CONFORM TO NATIONAL SANITATION FOUNDATION STANDARDS 60 AND 61.
27. THE FIELD ENGINEER AND AWC SHALL INSPECT AND APPROVE ALL TRENCHING, BEDDING, PIPE INSTALLATION, BACKFILL AND COMPACTION. FIELD ENGINEER AND AWC SHALL INSPECT AND APPROVE ALL PRESSURE TESTING, DISINFECTIONS AND ALL OPERATIONAL SYSTEMS TESTS BEFORE ACCEPTANCE BY AWC INTO THE WARRANTY PERIOD. ALL PUNCH LIST ITEMS MUST BE 100 PERCENT (100%) COMPLETED, AS GENERATED BY AWC AND ENGINEER.
28. CONTRACTOR SHALL ARRANGE FOR ALL INSPECTIONS REQUIRED BY REGULATORY AGENCIES.
29. ALL FRAMES, COVERS, VALVE BOXES SHALL BE ADJUSTED TO FINISHED GRADE PRIOR TO THE COMPLETION OF CONSTRUCTION.
30. PRESSURE & LEAKAGE TESTING SHALL CONFORM TO AWWA STANDARD SPEC. 5.2 HYDROSTATIC TESTING.
31. METERS - MINIMUM FITTING FREE PIPE DIA. UPSTREAM (UP) & DOWNSTREAM (DN) OF METER: PROPELLER - 5 UP & 30N / MAG - 5UP & 2DN.
32. IDENTIFY ALL ABOVE GROUND PIPING AS PER ADEQ BULLETIN NO. 10 CHAPTER 4.A.1.B. LABEL ALL ABOVE GROUND PIPING WITH DIRECTION OF FLOW ARROWS.
33. PAINT ALL ABOVE GROUND PIPING TO MATCH VESSELS / BACKWASH TANKS / ENCLOSURES.
34. CONTRACTOR SHALL CLEAN AND DISINFECT ALL NEWLY CONSTRUCTED AND REPAIRED PIPING AND EQUIPMENT IN ACCORDANCE WITH AWWA C651, C652 AND C653.

ORIGINALLY SIGNED AND SEALED BY
ARIZONA REGISTERED PROFESSIONAL ENGINEER (CIVIL)
BENJAMIN W. LEE
47862
ON 12/21/11

MGC

WATERWORKS ENGINEERS

ARIZONA WATER COMPANY
MONTEZUMA WATER WELLS NO. 2 AND NO. 3 ARSENIC REMOVAL FACILITY

GENERAL
DRAWING INDEX AND NOTES

DECEMBER 2011
G-002

REUSE OF DOCUMENTS

ABBREVIATIONS

@	AT
AB	ANCHOR BOLT, AGGREGATE BASE
AC	ASPHALTIC CONCRETE
ACI	AMERICAN CONCRETE INSTITUTE
ADD	ADDITIONAL
ADH AB	ADHESIVE ANCHOR BOLT
ADJ	ADJACENT, ADJUSTABLE
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AHP	AIR HIGH PRESSURE
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AL, ALUM	ALUMINUM
ALP	AIR LOW PRESSURE
ALTN	ALTERNATE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATE
APVD	APPROVED
ARCH, A	ARCHITECTURAL
ARV	AIR RELEASE VALVE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AUTO	AUTOMATIC
AUX	AUXILIARY
AV	AIR/VACUUM ASSEMBLY
AVE	AVENUE
AWG	AMERICAN WIRE GAGE
AWWA	AMERICAN WATER WORKS ASSOCIATION
B	BORING
BC	BEGIN CURVE
BF	BLIND FLANGE, BOTTOM FACE
BFD	BUTTERFLY VALVE DAMPER
BFV	BUTTERFLY VALVE
BLDG	BUILDING
BLM	BUREAU OF LAND MANAGEMENT
BM	BENCH MARK, BEAM
BO	BLOW OFF
BOO	BOTTOM OF OPENING
BOT	BOTTOM
BRG	BEARING
BV	BALL VALVE
BVC	BEGINNING OF VERTICAL CURVE
B/P	BYPASS
C to C, CC	CENTER TO CENTER
C	CHANNEL (BEAM)
CAA/ARV	COMBINATION AIR ADMISSION/AIR RELEASE VALVE
CARV	COMBINATION AIR RELEASE VALVE
CATH	CATHODIC PROTECTION
CATV	CABLE TELEVISION
CB	CATCH BASIN
CCP	CONCRETE CYLINDER PIPE
CCS	CENTRAL CONTROL SYSTEM
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CHEM	CHEMICAL
CI	CAST IRON
CIGC	CAST IRON GROOVED COUPLING
CIMJ	CAST IRON MECHANICAL JOINT
CIP	CAST IRON PIPE
CIRJ	CAST IRON RESTRAINED JOINT
CISP	CAST IRON SOIL PIPE
CJ	CONSTRUCTION JOINT, CONTRACTION JOINT
CLDIP	CEMENT LINED DUCTILE IRON PIPE
CLG	CEILING
CLR	CLEAR, CLEARANCE
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CL	CENTERLINE
CML, CSP	CONCRETE MORTAR LINED AND COATED STEEL PIPE
CMLSP	CEMENT MORTAR LINED STEEL PIPE
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT
COL	COLUMN
COM	COMMUNICATION
COMB	COMBINED
CONC	CONCRETE
CONN	CONNECTION
CONT	CONTINUOUS, CONTINUATION
COORD	COORDINATE
COP	COPPER
CPLG	COUPLING
CTD	CENTERED
CTR	CENTER
CU FT	CUBIC FOOT
CU IN	CUBIC INCH
CU YD	CUBIC YARD
CULV	CULVERT
CV	CHECK VALVE
°C	CELSIUS
d	PENNY
DBA	DEFORMED BAR ANCHOR
DR	DRAIN
DBL	DOUBLE
DEC	DECANT
DET	DETAIL
DF	DOUGLAS FIR/LARCH
DI	DROP INLET, DUCTILE IRON
DIA	DIAMETER
DIAG	DIAGONAL
DIL	DILUTE
DIM	DIMENSION
DIMJ	DUCTILE IRON MECHANICAL JOINT
DIP	DUCTILE IRON PIPE
DIPPL	DUCTILE IRON PIPE, POLYETHYLENE LINED
DIR	DIRECTION
DIST	DISTANCE
DN	DOWN
do	DITTO
DWG	DRAWING
E	EAST, ELECTRIC, ELECTRICAL
EA	EACH
EC	END CURVE
ECC	ECCENTRIC
EF	EACH FACE, EXHAUST FAN
EFL	EFFLUENT
EJ	EXPANSION JOINT
EL	ELEVATION
ELB, ELL	ELBOW
ELC	ELECTRICAL LOAD CENTER
ELEC	ELECTRIC, ELECTRICAL
ENGR	ENGINEER
EO	EMERGENCY OVERFLOW
EQL SP	EQUALLY SPACED
EQPT	EQUIPMENT
ERW	EFFLUENT REUSE WATER
ESA	ENVIRONMENTALLY SENSITIVE AREA
EVC	END OF VERTICAL CURVE
EW	EACH WAY
EWEF	EACH WAY, EACH FACE
EXC	EXCAVATE
EXP	EXPOSED, EXPANSION
EXP JT	EXPANSION JOINT
EXST	EXISTING
FB	FLAT BAR
FC	FLEXIBLE COUPLING
FCA	FLANGED COUPLING ADAPTER
FCO	FLOOR CLEAN OUT
FD	FLOOR DRAIN
FDA	FLOOR DRAIN W/INTEGRAL TRAP
FDN	FOUNDATION
FES	FLARED END SECTION
FEXT	FIRE EXTINGUISHER
FF	FINISH FLOOR
FG	FINISH GRADE
FHY	FIRE HYDRANT
FIG	FIGURE
FL	FLOOR, FLOW LINE
FLG	FLANGE
FLH	FLAT HEAD
FLL	FLOW LINE
FLTR	FILTER
FNSH	FINISH
FOC	FACE OF CONCRETE
FRP	FIBERGLASS REINFORCED PLASTIC
FT	FOOT OR FEET
FTG	FOOTING
FWD	FORWARD
°F	DEGREE FAHRENHEIT
G	GAS
GA	GAGE
GAL	GALLON
GALV	GALVANIZED
GB	GRADE BREAK
GC	GROOVED COUPLING
GCO	GRADE CLEAN OUT
GCF	GROOVED COUPLING FITTING
GE	GROOVED END
GL	GLASS
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GRTG	GRATING
GSP	GALVANIZED STEEL PIPE
GV	GATE VALVE
GVL	GRAVEL
GW	GROUND WATER
HD	HUB DRAIN
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HDR	HEADER
HDW	HARDWARE
HGT	HEIGHT
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HP	HORSEPOWER
HR	HANDRAIL
HSS	HOLLOW STRUCTURE STEEL
HV	HOSE VALVE
I&C	INSTRUMENTATION & CONTROL
ID	INSIDE DIAMETER
IF	INSIDE FACE
IN	INCH
INFL	INFLUENT
INSTM	INSTRUMENTATION
INSUL	INSULATE, INSULATION
INV	INVERT
JT	JOINT
KIP	THOUSAND POUNDS
KW	KILOWATT
L	LEFT, ANGLE, LENGTH
LAB	LABORATORY
LATL	LATERAL
LB	POUNDS
LB/CU FT	POUNDS PER CUBIC FOOT
LF	LINEAR FEET
LG	LONG
LONG	LONGITUDINAL
LP	LOW POINT
LR	LONG RADIUS
MAX	MAXIMUM
MCC	MOTOR CONTROL CENTER
MCJ	MASONRY CONTROL JOINT
MECH	MECHANICAL
MFR	MANUFACTURER
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MIN	MINIMUM, MINUTE
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MPH	MILES PER HOUR
MSNRY	MASONRY
MSP	MILL STEEL PIPE, MANUAL OF STANDARD PRACTICE
MTL	MATERIAL
MWS	MAXIMUM WATER SURFACE
N	NORTH
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NUMBER, NUMBERING
NPT	NATIONAL PIPE THREAD
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER, OVERFLOW DRAIN
OF	OUTSIDE FACE, OVERFLOW
OFR	OVERFLOW RETURN
OG	ORIGINAL GROUND
OHE	OVERHEAD ELECTRIC
OMRF	ORDINARY MOMENT RESISTING FRAME
O TO O	OUT TO OUT
OPNG	OPENING
OZ	OUNCE
PC	POINT OF CURVE
PE	PLAIN END, POLYETHYLENE AND PERMANENT EASEMENT
PENT	PENETRATION
PI	POINT OF INTERSECTION
PJF	PREMOLDED JOINT FILLER
PL	PLATE, PROPERTY LINE
PLYWD	PLYWOOD
POB	POINT OF BEGINNING
PP, P&P	PLAN AND PROFILE, POWER POLE
PPM	PARTS PER MILLION
PRC	POINT OF REVERSE CURVE
PRCST	PRECAST
PREFAB	PREFABRICATED
PRESS	PRESSURE
PRC	POINT OF REVERSE CURVE
PRI	PRIMARY
PROP	PROPERTY
PSF	POUNDS PER SQUARE FOOT
PS	PUMP STATION
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH, GAUGE
PT	POINT OF TANGENCY
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE PLASTIC
PVCGS	POLYVINYL CHLORIDE PLASTIC-GRAVITY SEWER TYPE
PVCW	POLYVINYL CHLORIDE PLASTIC-WATER DISTRIBUTION SERVICE TYPE
PVMT	PAVEMENT
PVT	PRIVATE
PW	POTABLE WATER
R, RAD	RADIUS
RC	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD, ROOF DRAIN
RDCR	REDUCER
REF	REFER OR REFERENCE
REINF	REINFORCED, REINFORCING, REINFORCE
REQD	REQUIRED
RJ	RESTRAINED JOINT
RLS	RUBBER LINED STEEL
RM	ROOM
RMJ	RESTRAINED MECHANICAL JOINT
RO	ROUGH OPENING
R&R	REMOVE AND REPLACE
RST	REINFORCING STEEL
RTN	RETURN
RV	ROOF VENT
RW	RAW WATER
R/W	RIGHT-OF-WAY
S	I-BEAM, SOUTH, SLOPE
SA	SAMPLE
SAT	SUSPENDED ACOUSTIC TILE
SC	SCUM
SCFH	STANDARD CUBIC FEET PER HOUR
SCFM	STANDARD CUBIC FEET PER MINUTE
SCH	SCHEDULE
SD	STORM DRAIN
SEC	SECONDARY
SECT	SECTION
SH	SHEET
SIM	SIMILAR
SLD	SLUDGE
SLP	SLOPE
SOLN	SOLUTION
SP	SPACE OR SPACES
SPD	SUMP PUMP DRAIN
SPEC	SPECIFICATIONS
SPLY	SUPPLY
SQ	SQUARE
SQ FT	SQUARE FOOT
SQ IN	SQUARE INCH
SS	SANITARY SEWER
SSH	SAFETY SHOWER
SST	STAINLESS STEEL
STA	STATION
STD	STANDARD
STIF	STIFFENER
STL	STEEL, STEEL PIPE
STLS	STEEL PIPE (SPECIAL)
STR	STRAIGHT
STRL	STRUCTURAL
STRUCT	STRUCTURE
SUBFL	SUBFLOOR
SUSP	SUSPEND
SYMM	SYMMETRICAL
T	TANGENT, TELEPHONE LINE
TBG	TUBING
T&B	TOP AND BOTTOM
TC	TOP OF CURB, TOP OF CONCRETE
TCE	TEMPORARY CONSTRUCTION EASEMENT
TDH	TOTAL DYNAMIC HEAD
TECH	TECHNICAL
TEL	TELEPHONE
TEMP	TEMPORARY, TEMPERATURE
TF	TOP FACE
T&G	TONGUE AND GROOVE
THD	THREAD
THK	THICK
TP	TURNING POINT, TEST PIT
TRANS	TRANSITION
TRANSV	TRANSVERSE
TS	TUBE STEEL
TST	TOP OF STEEL
TT	THRUST TIE
TW	TOP OF WALL
TYP	TYPICAL
LT	THICKNESS
UBC	UNIFORM BUILDING CODE
UD	UNDERDRAIN
UG	UNDERGROUND
UH	UNIT HEATER
UNK	UNKNOWN
V	VENT, VOLT, VALVE
VAC	VACUUM
VAR	VENT ACID RESISTANT
VC	VERTICAL CURVE
VERT	VERTICAL
VPI	VERTICAL POINT OF INTERSECTION
VPS	VENEER PLASTER SYSTEM
VTR	VENT THRU ROOF
W/	WITH
W	WIDE FLANGE (BEAM), WEST, WATER
WC	WATER CLOSET
WD	WOOD
WH	WATER HEATER
WM	WATER METER
WR	WATER RESISTANT
WS	WATER SURFACE, WATER STOP
WSH ST	WEATHERING SHEET STEEL
WSP	WELDED STEEL PIPE
WT	WATER TIGHT
WTR	WATER
WW	WASTEWATER
WWF	WELDED WIRE FABRIC
YD	YARD

NOTES:

1. FOR ELECTRICAL AND INSTRUMENTATION ABBREVIATIONS SEE E-101
2. CONTACT THE ENGINEER FOR ABBREVIATIONS NOT LISTED
3. THIS IS A STANDARD LEGEND SHEET THEREFORE, SOME SYMBOLS OR ABBREVIATIONS MAY APPEAR ON THIS SHEET AND MAY NOT BE UTILIZED ON THIS PROJECT

ORIGINALLY SIGNED AND SEALED BY
ARIZONA REGISTERED PROFESSIONAL ENGINEER (CIVIL)
BENJAMIN Y. LEE
43562
ON 12/2/11

MGC CONTRACTORS, INC.

WATERWORKS ENGINEERS

ARIZONA WATER COMPANY
MONTEZUMA HAVEN WELLS NO. 2 AND NO. 3 ARSENIC REMOVAL FACILITY

GENERAL
ABBREVIATIONS

DATE: DECEMBER 2011
PROJECT NUMBER: 11-057
DRAWING NUMBER: G-003
SHEET - OF -

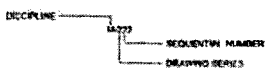
DISCIPLINE

LETTER	DISCIPLINE
G	GENERAL
D	DEMOLITION
C	CIVIL YARD
A	ARCHITECTURAL
S	STRUCTURAL
M	MECHANICAL
H	HEATING, VENTILATION AND COOLING
P	PLUMBING
E	ELECTRICAL
N	INSTRUMENTATION

DRAWING NUMBERING

DRAWING SERIES	DESCRIPTION
000	GENERAL / OVERALL
100	PLANS
200	SECTIONS
300	DETAILS
400	ELEVATIONS
500	SCHEDULES

DRAWING NUMBER



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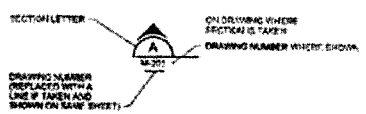
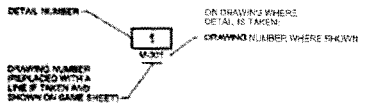
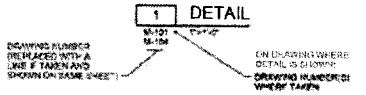
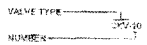


DETAIL





STANDARD VALVE AND OPERATOR



UNIQUE VALVE AND OPERATOR

EQUIPMENT DESIGNATION

LINE TYPE APPEARANCE

———	BLACK	NEW ON DISCIPLINE
———	LIGHT OR MEDIUM GRAY OR SCREENED	EXISTING ON OR OFF DISCIPLINE
———	DARK GRAY	NEW OFF DISCIPLINE

GENERAL SYMBOLOGY

	STRUCTURE OR EQUIPMENT TO BE REMOVED OR DEMOLISHED
XXXX	LINE OF REMOVAL OR DEMOLITION

PROCESS FLOW STREAM IDENTIFIERS

PIPING SYSTEM ABBREVIATION	PIPING SYSTEM DESCRIPTION	PIPING MATERIAL
BW	BACKWASH	DIP
DR	DRAIN	COP
GW	GROUND WATER	DIP
OF	OVERFLOW	DIP
SHC OR NaOCl	SODIUM HYPOCHLORITE	LDPE
REC	RECYCLED WATER	COP
PW	POTABLE WATER	DIP
V	VENT	GALV

EQUIPMENT TYPE IDENTIFIERS

ABBREVIATION	DESCRIPTION
AMV	ADSORPTION MEDIA VESSEL
APV	AIR RELEASE VALVE
BAV	BALL VALVE
BFV	BUTTERFLY VALVE
CKV	CHECK VALVE
F	FILTER
FE	FLOW ELEMENT
GAV	GATE VALVE
IQ	INJECTION QUILL
LE	LEVEL ELEMENT
RD	RUPTURE DISK
RP	RECYCLE PUMP
T	TANK

ORIGINALLY SIGNED AND SEALED BY
ARIZONA REGISTERED PROFESSIONAL ENGINEER (CIVIL)
BENJAMIN W. LIKE
47862
ON 12/21/11

WATERWORKS

GENERAL
STANDARD DESIGNATIONS

47-3827

G-004

REUSE OF DOCUMENTS:

PIPE AND FITTING SYMBOLS

DOUBLE LINE	SINGLE LINE	
		EXISTING PIPE (SCREENED)
		NEW PIPE
		EXISTING PIPE TO BE ABANDONED
		EXISTING PIPE TO BE REMOVED
		BALL JOINT
		FLANGE COUPLING ADAPTER
		FLEXIBLE COUPLING
		FLEXIBLE COUPLING WITH THRUST TIES
		DISMANTLING JOINT
		STEEL BELLOWS EXPANSION JOINT
		ELASTOMER BELLOWS EXPANSION JOINT
		ELBOW - 90 DEGREE
		ELBOW UP - 90 DEGREE
		ELBOW DOWN - 90 DEGREE
		ELBOW - 45 DEGREE
		ELBOW UP - 45 DEGREE
		ELBOW DOWN - 45 DEGREE
		TEE
		TEE UP
		TEE DOWN
		CROSS
		LATERAL
		LATERAL UP
		LATERAL DOWN
		REDUCER - CONCENTRIC

PIPE AND FITTING SYMBOLS

DOUBLE LINE	SINGLE LINE	
		REDUCER - ECCENTRIC
		UNION
		BLIND FLANGE
		PLUG
		CAP

VALVE SYMBOLS

DOUBLE LINE	SINGLE LINE	
		GATE
		KNIFE GATE
		BUTTERFLY
		GLOBE
		BALL
		VEE BALL
		PLUG OR COCK
	SEAT PORT	ECCENTRIC PLUG WITH RESURFACED SEAT LOCATION
FP	FP	FULL PORT PLUG
		NEEDLE
		DIAPHRAGM
		FULL PORT PLUG
		SWING CHECK
		DOUBLE DISC OR SILENT CHECK
		BALL CHECK
	HR	HOSE VALVE
	X	NON FREEZE HOSE VALVE XX=NUMBER IN SPECIFICATIONS
	XX	NON FREEZE HOSE VALVE WITH HOSE RACK XX=NUMBER IN SPECIFICATIONS
	SA	SAMPLE
		PLUG
		PRESSURE RELIEF
		AIR AND OR VACUUM RELEASE
	REGULATED SIDE	PRESSURE CONTROL
		MUSHROOM VALVE ARROWS INDICATE FLOW PATTERN. SEAT PORTS ARE IMPLIED BY INDICATED FLOW PATTERN. BALL VALVE SHOWN. FOR OTHER VALVE TYPES, APPROPRIATE VALVE SYMBOL SHOWN
		FIRE HYDRANT
		CATHODIC PROTECTION TEST STATION
		CATHODIC PROTECTION ANODE

FLOW METERS

DOUBLE LINE	SINGLE LINE	
		MAGMETER
		PROPELLER METER
		INSERTION METER

PUMPS

- METERING
- DIAPHRAGM
- CENTRIFUGAL
- PERISTALTIC

MIXERS

- STATIC MIXER

ACTUATORS

- PNUEMATIC
- MOTORIZED
- SOLENOID

MISCELLANEOUS PIPING SYMBOLS

- STRAINER
- SIGHT GLASS
- FLEXIBLE (ELASTOMER) PIPE CONNECTION
- GAUGE WITH COCK
- THERMOMETER
- ROTAMETER
- GALVANIC ANODE
- AIR SET XX = SUPPLY PRESSURE (PSIG)
- TYPICAL INSTRUMENT SYMBOL (SEE ISO LEGEND)
- DRAIN
- DOUBLE CONTAINMENT PIPE
- RUPTURE DISK

INSTRUMENTATION SYMBOLS

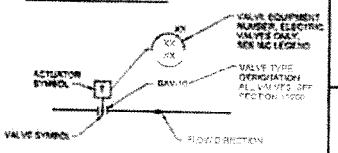
SYMBOL	DESCRIPTION
PS	PRESSURE SWITCH
PSH	PRESSURE SWITCH HIGH
PI	PRESSURE INDICATOR
LSL	LOW LEVEL SWITCH
LSLL	LEVEL SWITCH LOW LOW
LSH	LEVEL SWITCH HIGH
LSHH	LEVEL SWITCH HIGH HIGH
DPI	DIFFERENTIAL PRESSURE INDICATOR
FS	FLOW SWITCH
FM	FLOWMETER

PIPING DESIGNATION

DOUBLE LINE

SINGLE LINE

VALVE DESIGNATIONS



NOTES

1. ELECTRIC VALVE SHOWN, MANUAL VALVE SIMILAR

NOTES

1. ONLY FLANGED END CONNECTIONS ARE SHOWN HERE FOR DOUBLE LINE FITTINGS. FITTINGS WITH OTHER END PATTERNS ARE SHOWN SIMILARLY IN THE CONSTRUCTION DRAWINGS. ALSO SEE PIPING SPECIFICATIONS AND THE PIPING SCHEDULE.
2. SYMBOLS SHOWN HERE FOR SINGLE LINE FITTINGS ARE GENERIC ONLY. REFER TO PIPING SPECIFICATIONS FOR SPECIFIC END CONNECTIONS FOR SINGLE LINE PIPE AND FITTINGS.

ORIGINALLY SIGNED AND SEALED BY
ARIZONA REGISTERED PROFESSIONAL ENGINEER (CIVIL)
BENJAMIN W. LEE
11457
ON 12/21/11

WATERWORKS ENGINEERS

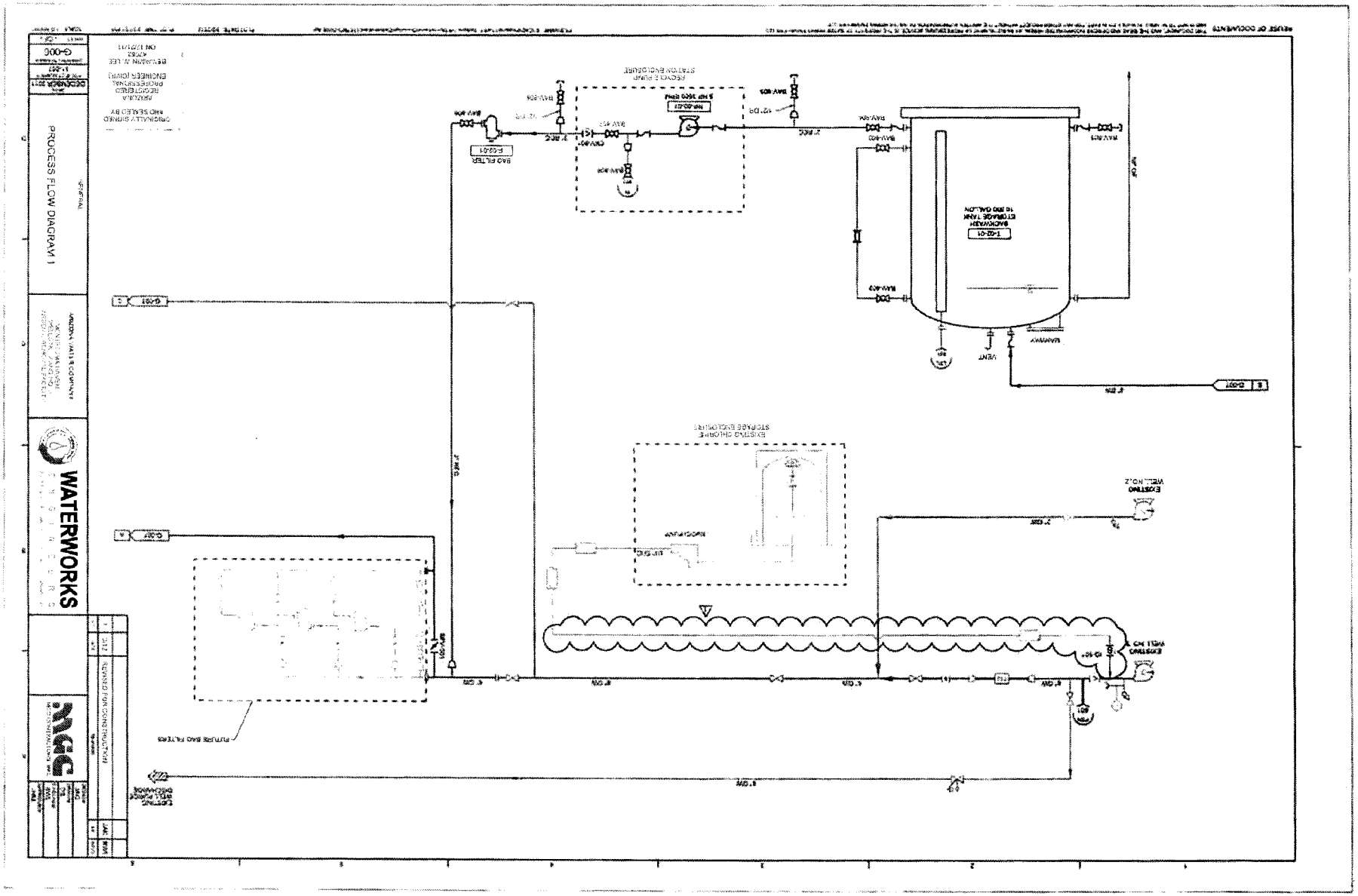
GENERAL

LEGEND

DECEMBER 2011

C-005

REUSE OF DOCUMENTS


PROCESS FLOW DIAGRAM 1
WATERWORKS
BACKWASH WATER RECOVERY BASIN
BACKWASH WATER RECOVERY PUMP STATION
BACKWASH WATER STORAGE TANK
1-00-01
EXISTING CHLORINE STORAGE ENCLOSURE
EXISTING WELL NO.2
EXISTING WELL NO.3
PLUMBING BAG FILTERS
EXISTING WELL PUMP DISCHARGE
BAG FILTER
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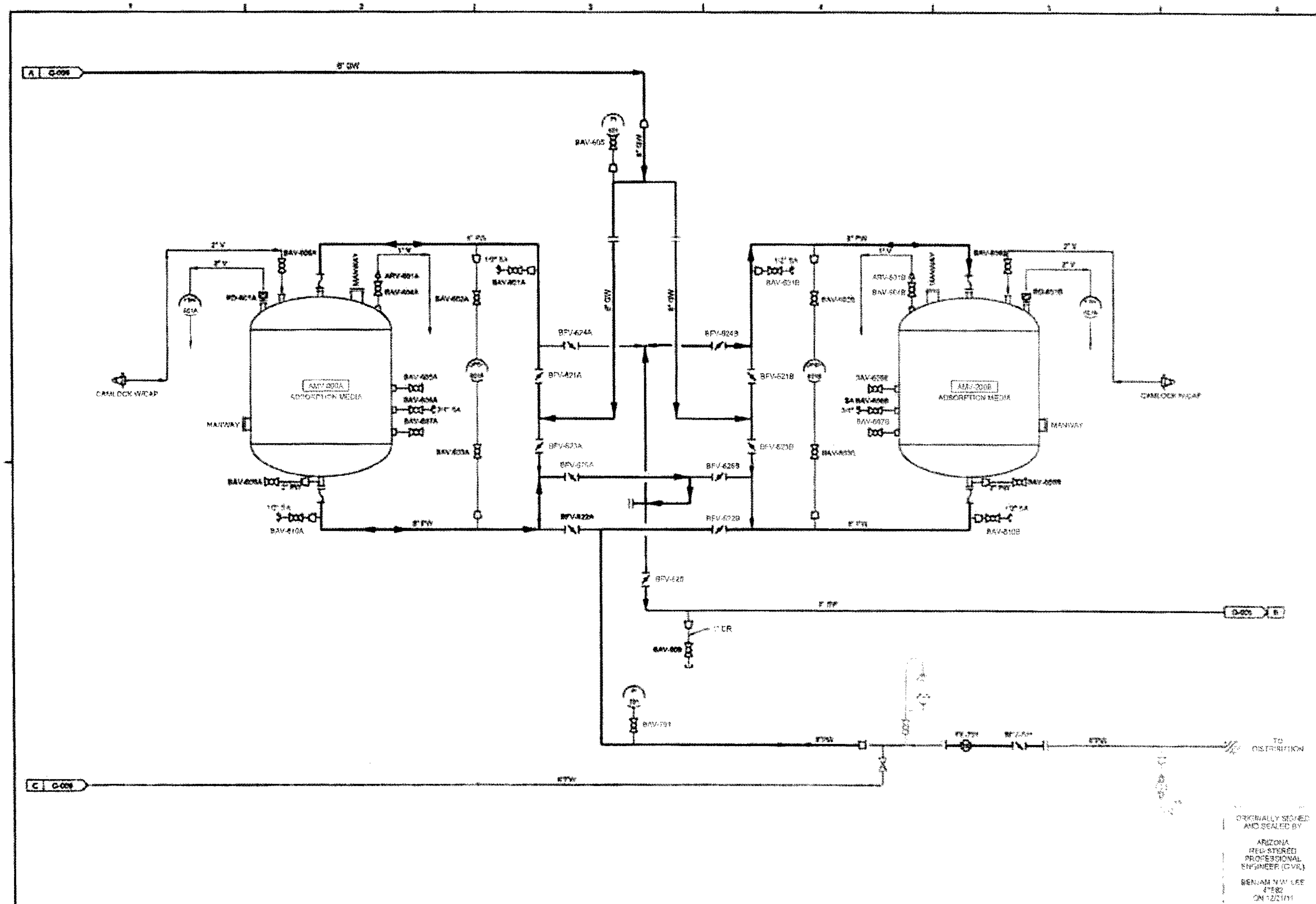


ORIGINALLY SIGNED AND SEALED BY

ARIZONA REGISTERED PROFESSIONAL ENGINEER (CIVIL)

BENJAMIN W. LEE
47582
ON 12/21/11

WATERWORKS
ENGINEERS

MGC
MGC CONTRACTORS, INC.

ARIZONA WATER COMPANY

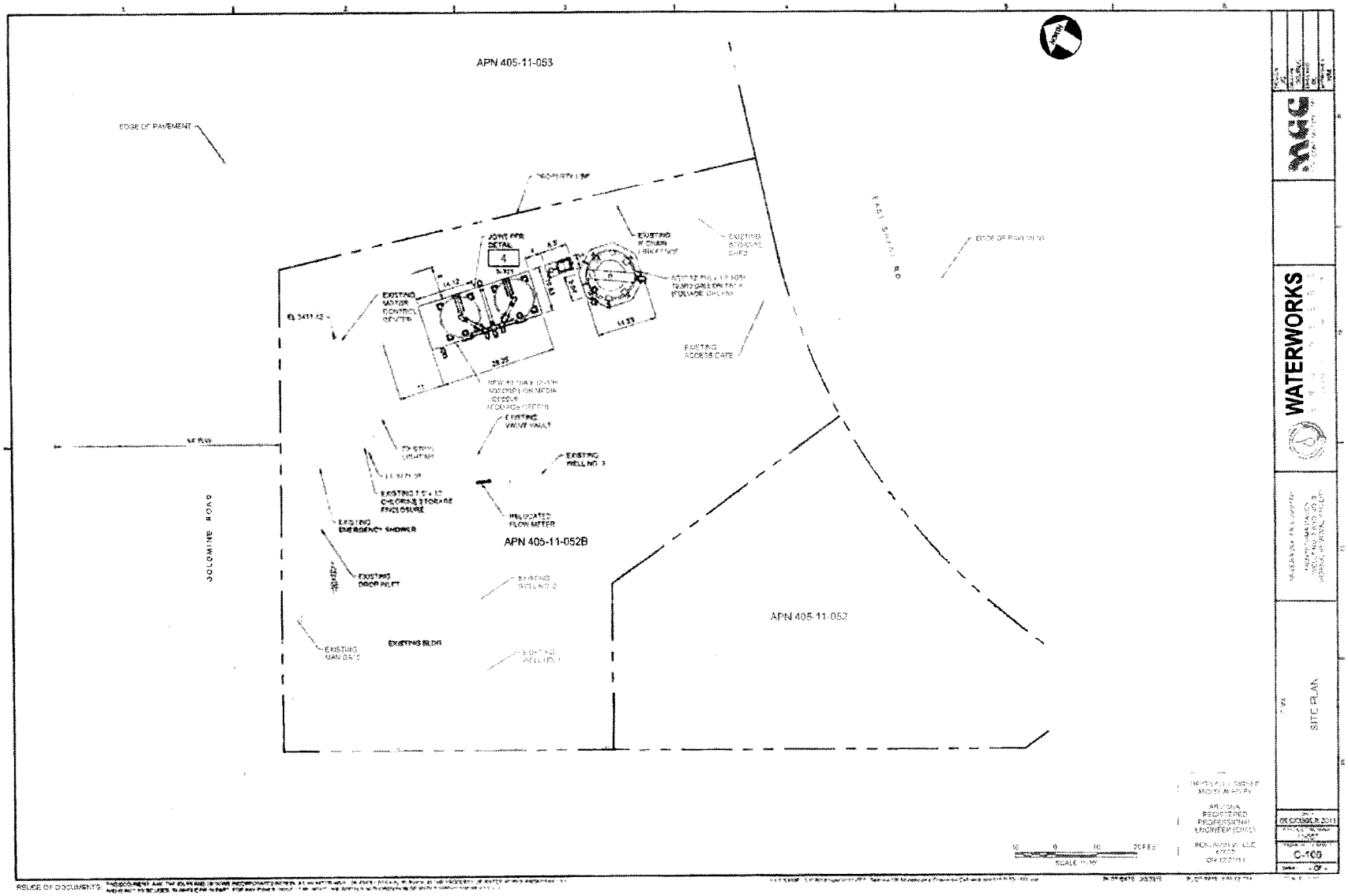
MONTEZUMA HAVEN
WELLS NO. 2 AND NO. 3
ARSENIC REMOVAL FACILITY

GENERAL

PROCESS FLOW DIAGRAM 2

DECEMBER 2011

G-007


APN 405-11-053
EDGE OF PAVEMENT
JOINT PER DETAIL 4
EXISTING MOTOR CONTROL CENTER
EXISTING ACCESS GATE
EDGE OF PAVEMENT
EXISTING VAULT
EXISTING WELL NO. 3
RELOCATED FLOW METER
EXISTING EMERGENCY SHOWER
APN 405-11-052B
EXISTING DROP INLET
EXISTING WELL NO. 2
EXISTING BLDG
EXISTING MAN GATE
APN 405-11-052
SOLOMINE ROAD
WATERWORKS
SITE PLAN
C-100
SCALE

DESIGN CRITERIA:

1. APPLICABLE CODE: 2006 INTERNATIONAL BUILDING CODE (IBC)
2. REFER TO THE SPECIFICATIONS FOR ADDITIONAL AND SPECIFIC STRUCTURE LOADINGS AND REQUIREMENTS

GENERAL INFORMATION:

1. ALL CONSTRUCTION SHALL CONFORM TO THE LATEST EDITION OF THE IBC
2. FOR ABBREVIATIONS NOT LISTED, SEE ASME Y14.38 "ABBREVIATIONS AND ACRONYMS" PUBLICATION AS DISTRIBUTED BY THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)
3. **DESIGN DETAILS ARE INTENDED TO BE TYPICAL AND SHALL APPLY TO ALL SIMILAR SITUATIONS OCCURRING THROUGHOUT THE PROJECT, WHETHER OR NOT THEY ARE KEYED IN EACH LOCATION. CONSULT THE ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION**
4. VERIFY ALL OPENING DIMENSIONS IN WALLS, SLABS, AND DECKS WITH THE ARCHITECTURAL, MECHANICAL, HVAC AND ELECTRICAL DRAWINGS
5. **FOR NUMBER, TYPE, SIZE ARRANGEMENT, AND/OR LOCATION OF EQUIPMENT PADS SEE ARCHITECTURAL, MECHANICAL, ELECTRICAL, HVAC AND PLUMBING DRAWINGS. COORDINATE WITH EQUIPMENT SUPPLIER PRIOR TO PLACING SLABS, WALLS AND FOUNDATIONS. COORDINATE ALL MECHANICAL, ELECTRICAL, AND HVAC PIPING OPENINGS WITH MECHANICAL, ELECTRICAL AND HVAC DRAWINGS**
6. NO STRUCTURAL MEMBERS SHALL BE CUT FOR PIPES, DUCTS, ETC UNLESS SPECIFICALLY DETAILED OR APPROVED IN WRITING BY THE ENGINEER
7. **SPECIAL INSPECTION IS REQUIRED IN ACCORDANCE WITH** IBC SECTION 1704 AND CHAPTER 17 ON THE FOLLOWING PORTIONS OF THE WORKS: CONCRETE PLACEMENT, REINFORCING STEEL PLACEMENT, EMBEDS AND BOLTS INSTALLED IN CONCRETE, POST INSTALLED ADHESIVE ANCHORS

FOUNDATIONS

1. **IN ACCORDANCE WITH THE CITY OF SEDONA** THE FOUNDATIONS HAVE BEEN DESIGNED **FOR ALLOWABLE BEARING VALUES OF 1,500 PSF**
2. FOOTINGS SHALL EXTEND 1'-6" INTO FIRM, UNDISTURBED, NATURAL SOIL
3. NO BACKFILL SHALL BE PLACED BEHIND WALLS UNTIL THE CONCRETE HAS ATTAINED 100% OF IT'S SPECIFIED COMPRESSIVE STRENGTH
4. THE CONTRACTOR SHALL PROVIDE THE ENGINEER AT LEAST 48 HOURS NOTICE FOLLOWING EXCAVATION FOR FOUNDATIONS AND PRIOR TO THE PLACEMENT OF FORMWORK, REINFORCING STEEL AND CONCRETE

EPOXY ANCHORS

1. EPOXY ANCHORS AND EPOXY DOWELS SHALL BE HILTI HIT-RE 500-SD UNLESS NOTED OTHERWISE. INSTALL ANCHORS IN CONFORMANCE WITH THE MANUFACTURER'S REQUIREMENTS AND ICC REPORT ESR-2322
2. SPECIAL INSPECTION IS REQUIRED PER IBC SECTION 1704 AND THE REQUIREMENTS OF THE ICC REPORT
3. THREADED RODS TO BE GALVANIZED ASTM F1554 GRADE 36. REBAR TO BE ASTM A615
4. **CONTRACTOR SHALL VERIFY MINIMUM EDGE DISTANCES, SPACING AND THICKNESSES ARE IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS PRIOR TO INSTALLING ANCHORS**
5. WHEN DRILLING HOLES IN EXISTING CONCRETE USE CARE AND CAUTION TO AVOID CUTTING OR DAMAGING THE EXISTING REINFORCING BARS. MAINTAIN A REASONABLE CLEARANCE BETWEEN REINFORCEMENT AND THE DRILLED-IN ANCHOR. CORE DRILLED HOLES ARE NOT PERMITTED
6. **THE SPECIAL INSPECTOR MUST BE PRESENT ON THE JOB SITE CONTINUOUSLY DURING ANCHOR INSTALLATION TO VERIFY ANCHOR TYPE, ANCHOR DIMENSIONS, HOLE CLEANLINESS, EMBEDMENT DEPTH, CONCRETE TYPE, CONCRETE COMPRESSIVE STRENGTH, DRILL BIT DIAMETER, HOLE DEPTH, EDGE DISTANCE, ANCHOR SPACING**, CONCRETE THICKNESS AND ADHESIVE INJECTION

CONCRETE:

1. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 4,000 psi AS SPECIFIED IN SECTION 03300
2. THE CONTRACTOR SHALL SUBMIT THE CONCRETE MIX DESIGNS TO THE ENGINEER FOR **REVIEW PRIOR TO USE**
3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER 48 HOURS PRIOR TO THE PLACEMENT OF CONCRETE
4. HORIZONTAL CONSTRUCTION JOINTS SHALL BE PREPARED TO EXPOSE CLEAN, SOLIDLY EMBEDDED AGGREGATE OVER THE ENTIRE JOINT INTERFACE
5. PLACEMENT OF PIPES, CONDUITS OR OTHER EMBEDDED ITEMS IN THE CONCRETE SHALL BE IN ACCORDANCE WITH THESE DRAWINGS OR SHALL BE APPROVED BY THE ENGINEER
6. NO ALUMINUM CONDUIT OR PRODUCTS CONTAINING ALUMINUM OR ANY OTHER MATERIAL INJURIOUS TO CONCRETE SHALL BE EMBEDDED IN THE CONCRETE
7. ALL DIMENSIONS SHOWN FOR LOCATION OF REINFORCING STEEL ARE TO FACE OF BAR AND DENOTE CLEAR COVERAGE. SLABS ON GRADE SHALL HAVE REINFORCING AT MIDDEPTH UNLESS NOTED OTHERWISE
8. CONCRETE SHALL BE MIXED AND DELIVERED IN ACCORDANCE WITH ASTM C94
9. THE REQUIREMENTS FOR CONCRETE MIXES, PLACING, TESTING AND CURING ARE CONTAINED IN IBC SECTIONS 1905 - 1908
10. PORTLAND CEMENT SHALL CONFORM TO ASTM C150 TYPE II. AGGREGATE SHALL CONFORM TO ASTM C33
11. **CONTINUOUS WATERSTOP AS SPECIFIED** SHALL BE INSTALLED IN ALL CONSTRUCTION **JOINTS IN WALLS OF WATER HOLDING** BASINS, CHANNELS, AND BELOW GRADE STRUCTURES **EXCEPT WHERE SPECIFICALLY NOTED** OTHERWISE

CONCRETE REINFORCING

1. **PROVIDE REINFORCING IN ALL SECTIONS OF CONCRETE AS REQUIRED BY THE DETAILS ON THE DRAWINGS OR BY THE SPECIFICATIONS. IF REINFORCEMENT IS NOT SPECIFIED** IN DRAWINGS OR SPECIFICATIONS, **MINIMUM REQUIREMENTS SHALL BE MET AS NOTED BELOW**
2. CLEARANCE FOR REINFORCEMENT BARS UNLESS SHOWN OTHERWISE SHALL BE: CAST AGAINST EARTH = 3", ALL OTHER CONCRETE SURFACES, #5 BAR OR SMALLER = 1 1/2", #6 BAR OR LARGER = 2"
3. **ALL BENDS, UNLESS OTHERWISE SHOWN, SHALL BE 90 DEGREE ACI 318 STANDARD HOOKS**
4. PROVIDE A MINIMUM OF TWO VERTICAL DOWELS AT WALL ENDS, CORNERS AND INTERSECTIONS WITH SIZE TO MATCH TYPICAL VERTICAL REINFORCING STEEL SHOWN
5. ALL REINFORCING BENDS AND LAPS, UNLESS OTHERWISE NOTED, SHALL SATISFY THE FOLLOWING MINIMUM REQUIREMENTS

CONCRETE DESIGN STRENGTH = 4,000 PSI		GRADE 60 REINF STEEL				
LAP SPLICE LENGTH						
BAR SIZE		#3	#4	#5	#6	#7
SPACING ≥ 6"	TOP BAR *	24"	32"	[illegible]	47"	70"
	OTHER BAR	19"	25"	[illegible]	[illegible]	54"

* **TOP BARS SHALL BE DEFINED AS ANY HORIZONTAL BARS** PLACED SUCH THAT **MORE THAN 12" OF CONCRETE IS CAST IN THE MEMBER** BELOW THE BAR IN ANY **SINGLE POUR. HORIZONTAL WALL BARS ARE CONSIDERED** TOP BARS

STRUCTURAL ABBREVIATIONS

[illegible]

ORIGINALLY SIGNED AND SEALED BY

ARIZONA REGISTERED PROFESSIONAL ENGINEER (CIVIL)

JEREMY A. [illegible]

[illegible]

ON 12/21/11

MGC

MGC CONTRACTORS, INC.

WATERWORKS

ARIZONA WATER COMPANY

MONTEZUMA RIMROCK WELLS NO. 2 AND NO. 3 ARSENIC REMOVAL FACILITY

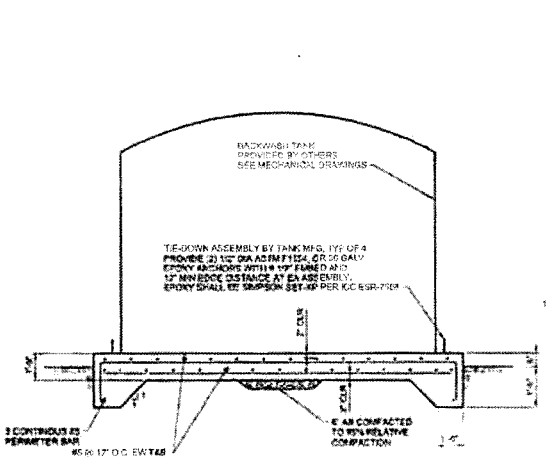
STRUCTURAL

NOTES AND ABBREVIATIONS

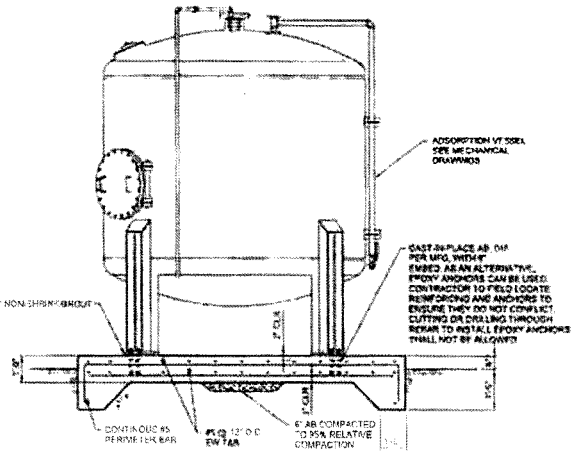
DATE: DECEMBER 2011

S-001

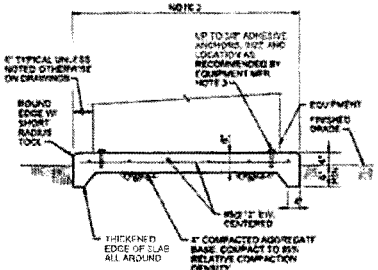
REUSE OF DOCUMENTS



1 BACKWASH TANK SLAB



2 ADSORPTION VESSEL SLAB



NOTES

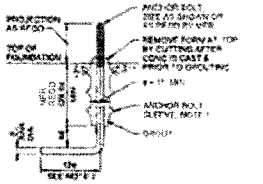
1. THE SIZE, NUMBER, TYPE, LOCATION AND THREAD PROJECTION OF THE ANCHOR BOLTS SHALL BE DETERMINED BY THE EQUIPMENT MANUFACTURER, AND SHALL BE AS APPROVED BY THE ENGINEER. ANCHOR BOLTS SHALL BE HELD IN POSITION WITH A ONE PIECE TEMPLATE, MATCHING THE BASE PLATE, WHILE PAD IS BEING POURED
2. EQUIPMENT PAD SIZE PER DRAWINGS. WHERE PAD SIZE IS NOT SHOWN, SIZE TO FIT EQUIPMENT.
3. 12" ANCHOR BOLTS ARE CALLED OUT FOR CH DRAWINGS. PROVIDE ANCHOR BOLTS PER DTL THIS SHEET IN LIEU OF ADHESIVE ANCHORS
4. ANCHOR BOLT LOCATION SHALL BE WITHIN 1/4 INCH OF THE FINAL LOCATION REQUIRED FOR EQUIPMENT MOUNTING OF EQUIPMENT PAD SHALL BE DRAG-BRUSHED AND RE-CONSTRUCTED
5. EQUIPMENT BASES SHALL BE INSTALLED LEVEL UNLESS SPECIFIED OTHERWISE

3 TYPICAL EQUIPMENT SLAB

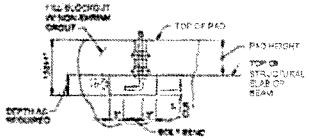
NOTES

1. SAW-CUT SAME DAY AS POUR AS SOON AS SPALLING WILL NOT OCCUR
2. CONTRACTOR SHALL USE STRING LINE OR OTHER POSITIVE MEANS TO PLACE REINFORCING AND LOCATE SAW-CUT
3. BREAK REINF AND ADD SPLICE BARS SIMILAR AT DOUBLE MAT

4 SLAB ON GRADE JOINT-TYPE A



MACHINERY ANCHOR BOLT DETAIL



ANCHOR BOLT BLOCKOUT

NOTES

1. ANCHOR BOLT SLEEVE BY THE ANCHOR BOLT SLEEVE COMPANY SHELTON, CT, OR EQUAL
2. IN WHERE MANUFACTURER VERIFIES NO BOLT PULLOUT RESISTANCE REQUIRED

ANCHOR BOLT DETAILS

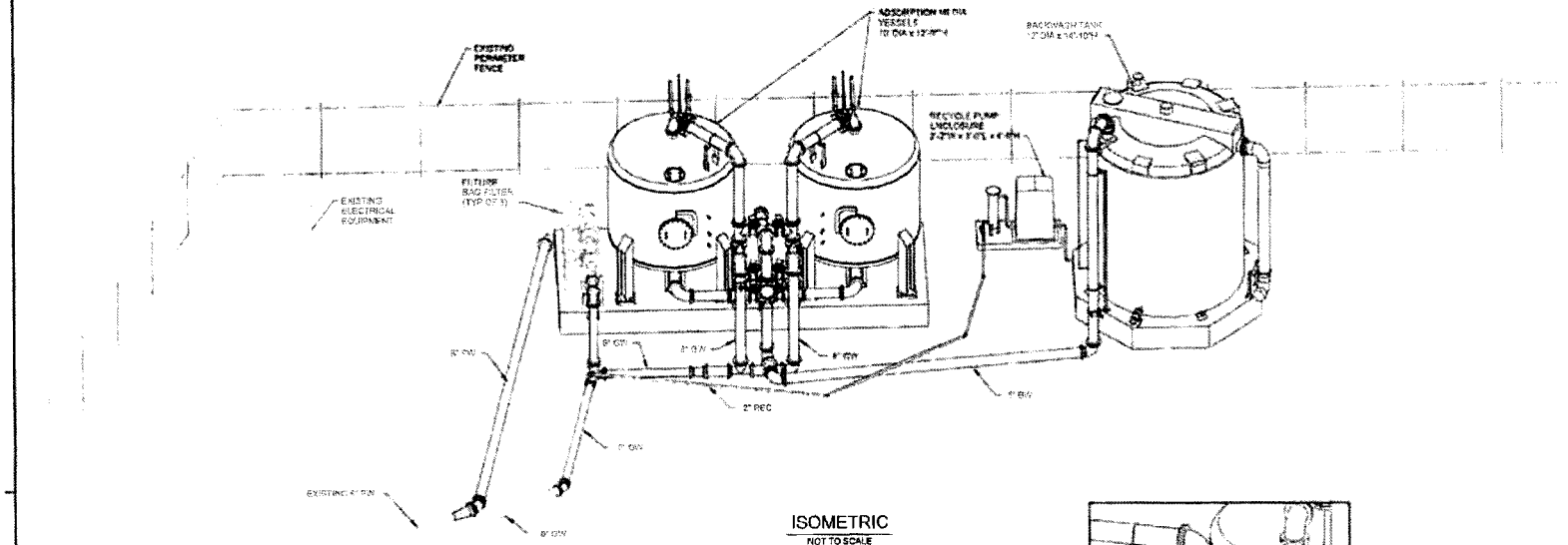
ORIGINALLY ISSUED AND SEALED BY

ARIZONA REGISTERED PROFESSIONAL ENGINEER (CIVIL)

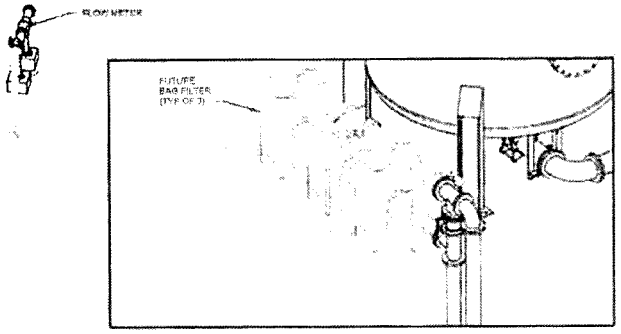
JEREMY A DELLCOG
21695
ON 12/31/11

MGC
WATERWORKS
STRUCTURAL
DETAILS
DECEMBER 2011
11052
S-201

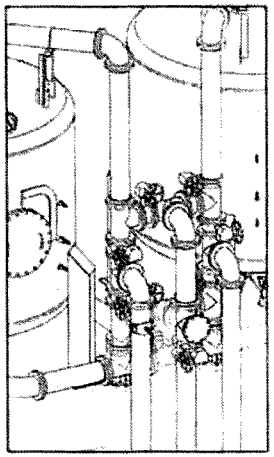
REUSE OF DOCUMENTS



ISOMETRIC
NOT TO SCALE



BAG FILTER ISOMETRIC
NOT TO SCALE



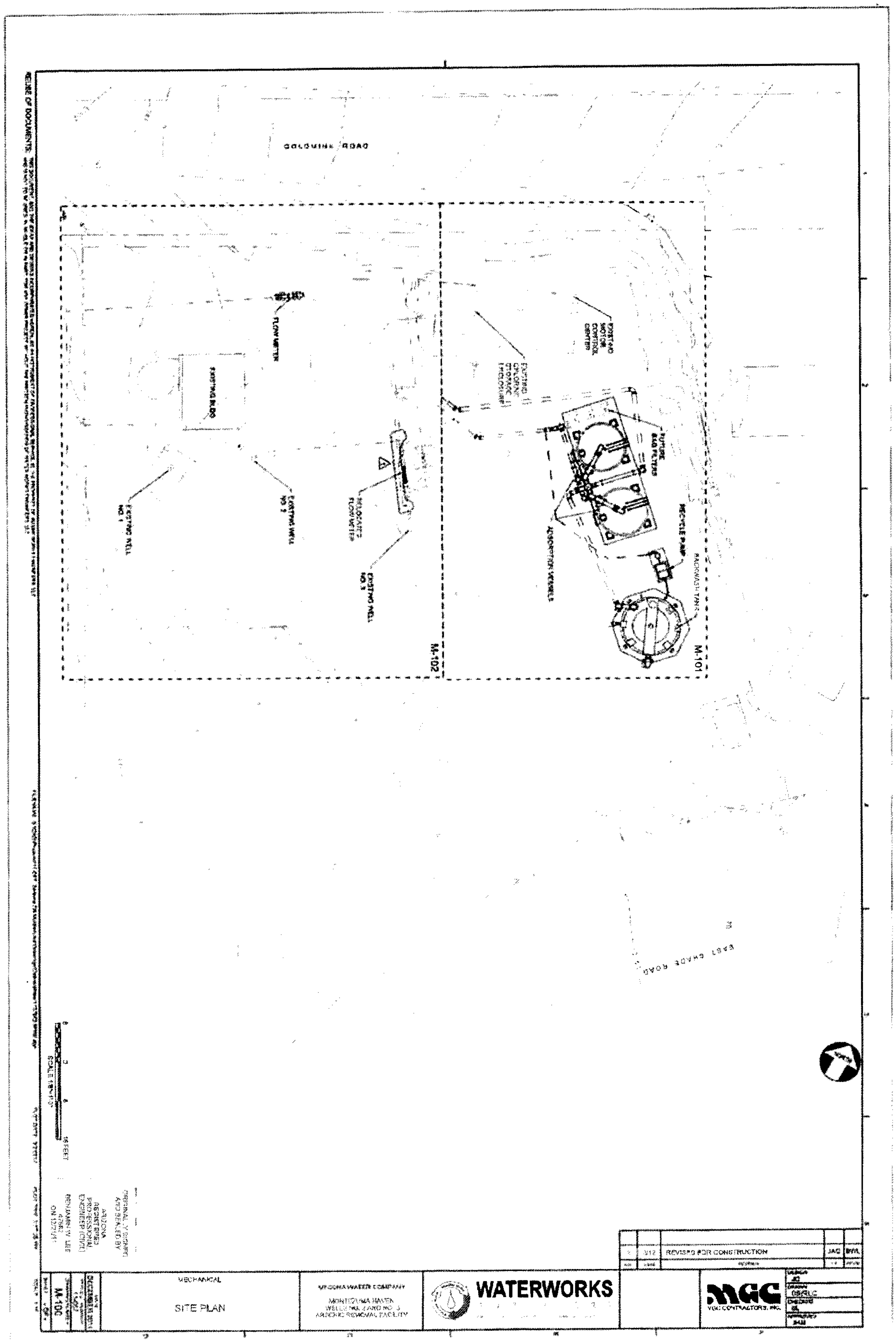
VALVE TREE ISOMETRIC
NOT TO SCALE

WATERWORKS

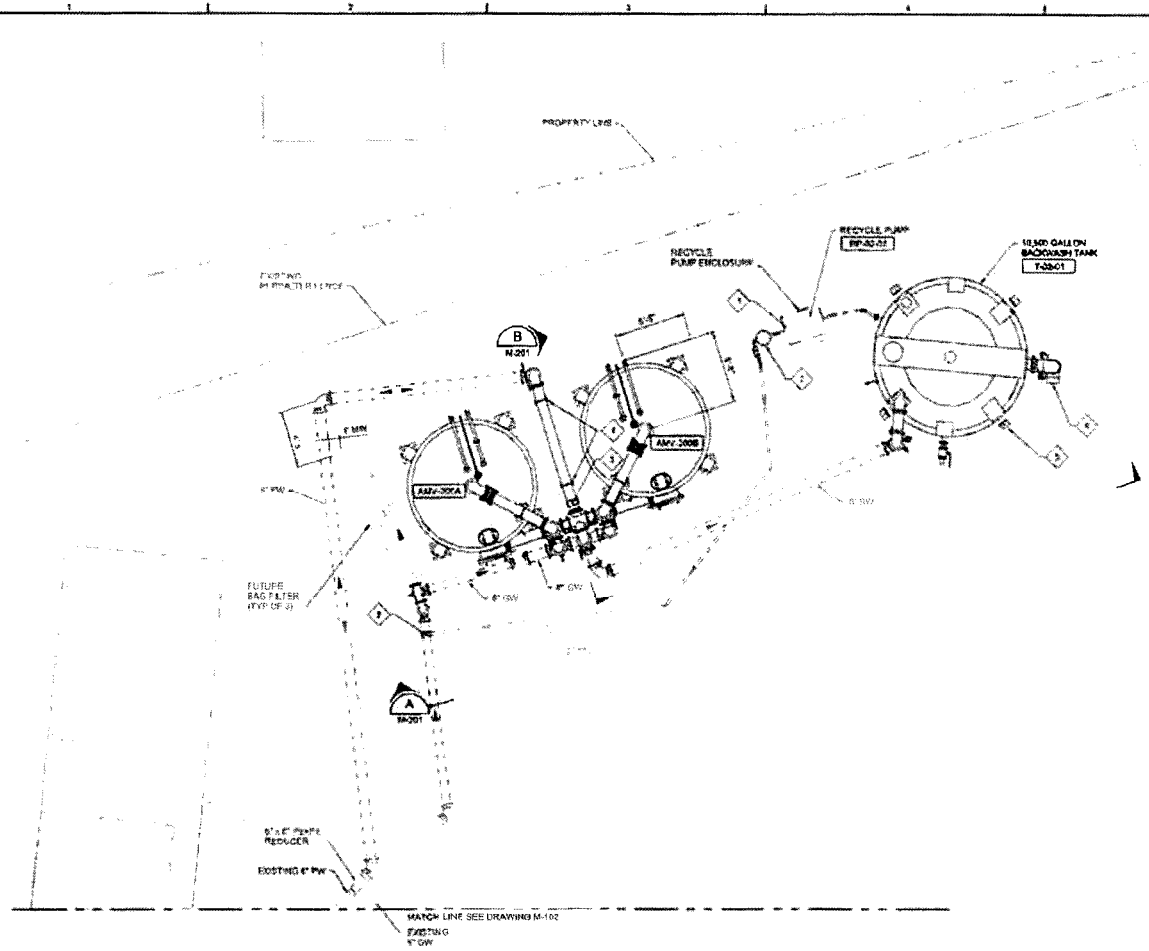
ISOMETRIC

M-001

REUSE OF DOCUMENTS



FLOW METER
EXISTING BLDG
EXISTING WELL NO. 1
EXISTING WELL NO. 2
RELOCATED FLOW METER
EXISTING WELL NO. 3
M-102
EXISTING MOTOR CONTROL CENTER
FUTURE BAG FILTERS
RECYCLE PUMP
BACKWASH TANK
ADSORPTION VESSELS
M-101
16 FEET
ORIGINALLY SIGNED AND SEALED BY
ARIZONA REGISTERED PROFESSIONAL ENGINEER (CIVIL)
REVISED FOR CONSTRUCTION
MECHANICAL
SITE PLAN
MONTEZUMA HAVEN
WELLS NO. 2 AND NO. 3
ARSENIC REMOVAL FACILITY
WATERWORKS
MGC
MGC CONTRACTORS, INC.
M-100



NOTES

1. PIPE SUPPORTS PER DETAIL 8 ON M-301
2. SERVICE SADDLE CONNECTIONS PER DETAIL 4 ON M-301
3. PRESSURE GAUGE MOUNTING PER DETAIL 5 ON M-301
4. PIPE SUPPORT PER DETAIL 12 ON M-302
5. INSTALL TIE DOWNS PER MANUFACTURERS INSTRUCTIONS
6. INSTALL 316 STAINLESS STEEL MESH
7. INSTALL BAG FILTER 4 BAG FILTER MODEL BF411 OR EQUAL WITH 2" FLANGED INLET/OUTLET, #2 BAG SIZE

ORIGINALLY SIGNED AND SEALED BY

ARIZONA REGISTERED PROFESSIONAL ENGINEER (CIVIL)

BENJAMIN W. LEE
47662
ON 10/27/11

0 3 6 FEET
SCALE: 1/8"=1'-0"

WATERWORKS ENGINEERS

ARIZONA WATER COMPANY
ARIZONA DIVISION
WILLIAMS, AZ AND VICINITY
ANTELOPE REMOVAL FACILITY

SHEET MANUAL

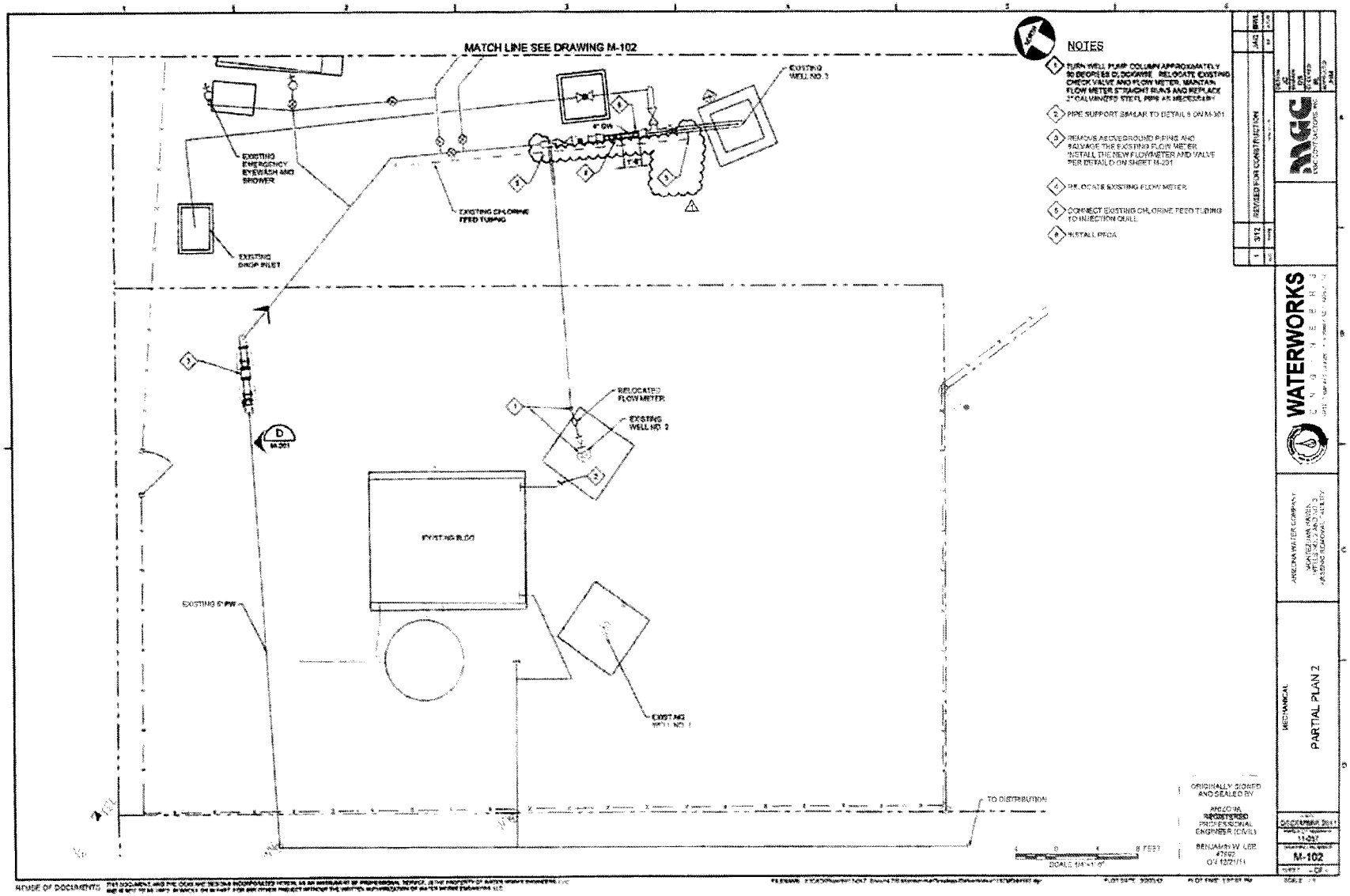
PARTIAL PLAN 1

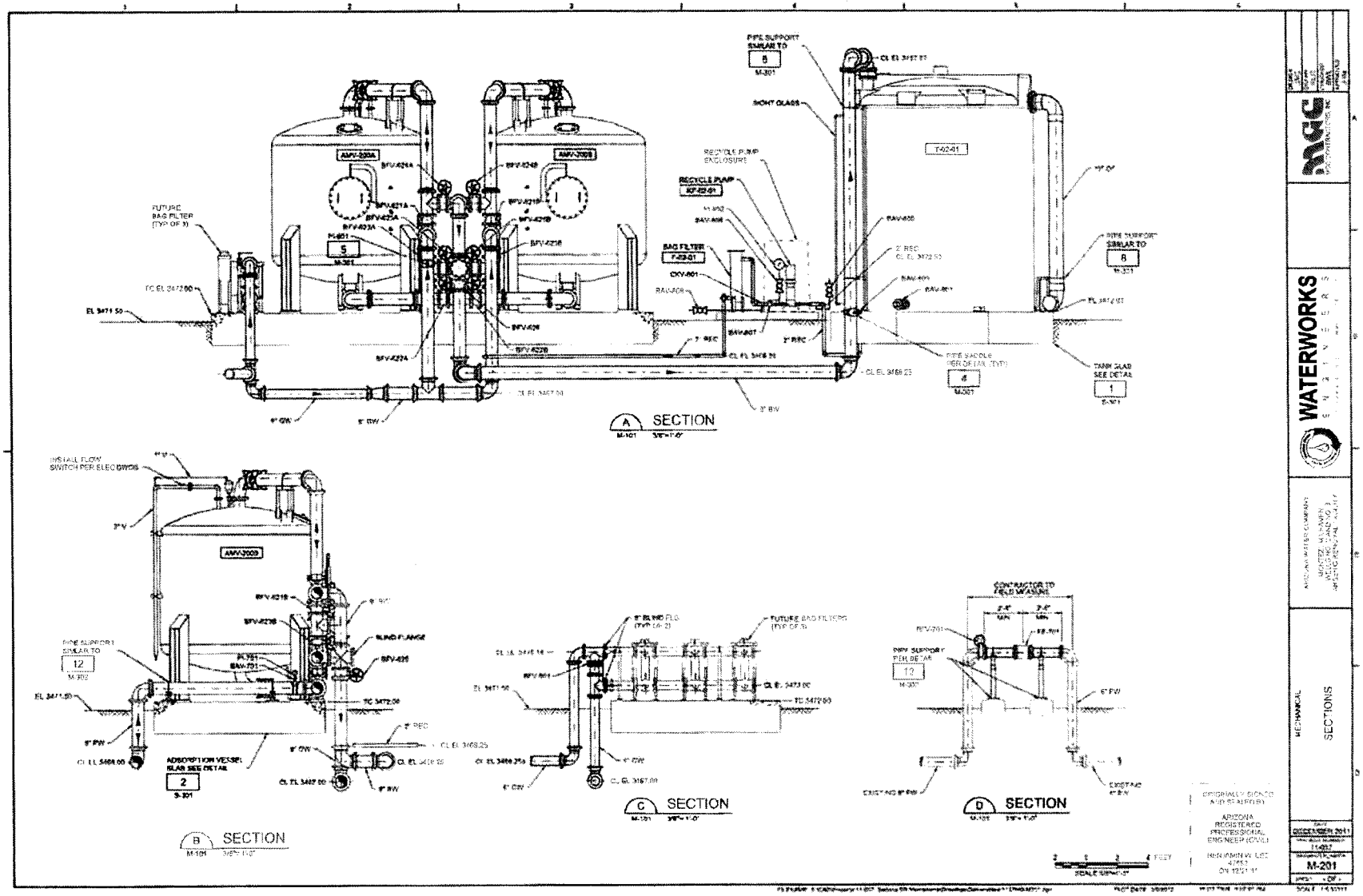
DATE
DECEMBER 2011

SHEET NO.
M-101

SHEET ___ OF ___

REUSE OF DOCUMENTS


MATCH LINE SEE DRAWING M-102
NOTES
1 TURN WELL PUMP COLUMN APPROXIMATELY 90 DEGREES CLOCKWISE. RELOCATE EXISTING CHECK VALVE AND FLOW METER. MAINTAIN FLOW METER STRAIGHT RUNS AND REPLACE 3" GALVANIZED STEEL PIPE AS NECESSARY
2 PIPE SUPPORT SIMILAR TO DETAIL 5 ON M-301
3 REMOVE ABOVEGROUND PIPING AND SALVAGE THE EXISTING FLOW METER. INSTALL THE NEW FLOWMETER AND VALVE PER DETAILS ON SHEET M-201
4 RELOCATE EXISTING FLOW METER
5 CONNECT EXISTING CHLORINE FEED TUBING TO INJECTION QUILL
6 INSTALL PRDA
EXISTING WELL NO. 3
6" DW
EXISTING EMERGENCY EYEWASH AND SHOWER
EXISTING CHLORINE FEED TUBING
EXISTING DROP INLET
RELOCATED FLOW METER
EXISTING WELL NO. 2
EXISTING BLDG
EXISTING 6" PW
EXIST NG
TO DISTRIBUTION
D
M-201
ORIGINALLY SIGNED AND SEALED BY
ARIZONA REGISTERED PROFESSIONAL ENGINEER (CIVIL)
BENJAMIN W. LEE
47627
07/27/11
WATERWORKS
MECHANICAL
PARTIAL PLAN 2
M-102



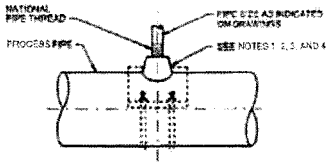
WATERWORKS

MECHANICAL

SECTIONS

DECEMBER 2011

M-201

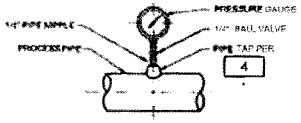


PIPE TAPS

NOTES:

1. FOR STEEL, GALVANIZED STEEL, AND PVC 2 1/2" AND SMALLER USE A BUSHING IN A TEE
2. FOR DUCTILE IRON ALL SIZES USE SERVICE SADDLE
3. FOR NEW STEEL AND STAINLESS STEEL PIPES 3" AND LARGER, AND PRESSURE VESSELS, USE THREO-OLET AS SHOWN.
4. FOR EXISTING PVC, STEEL AND STAINLESS STEEL PIPES 3" AND LARGER, USE SERVICE SADDLE

4 PIPE TAPS
M.TYP NTS

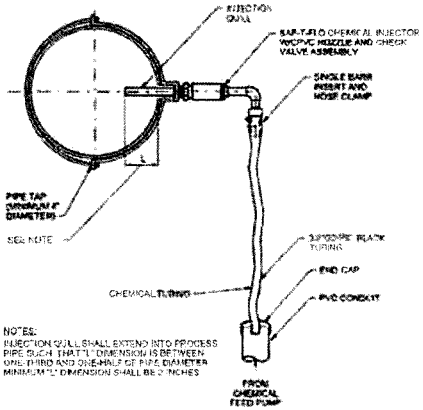


DIRECT INSTALLATION

NOTES:
UNLESS NOTED OTHERWISE ON THE DRAWINGS

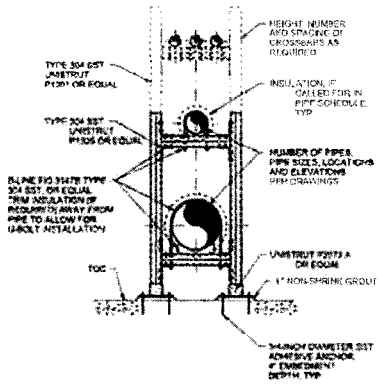
1. USE DIRECT INSTALLATION FOR POTABLE WATER, RAW WATER RECLAIMED WATER PROCESS PIPES, UNTI AIR PIPING
2. USE DIAPHRAGM SEAL INSTALLATION FOR SEWAGE, SLUDGE, CHEMICAL AND ALL PROCESS PIPES THAT ARE NOT WATER OR AIR
3. ALL PIPE NIPPLES TO BE TYPE 304 STAINLESS STEEL

5 PRESSURE GAUGE MOUNTING
M.TYP NTS

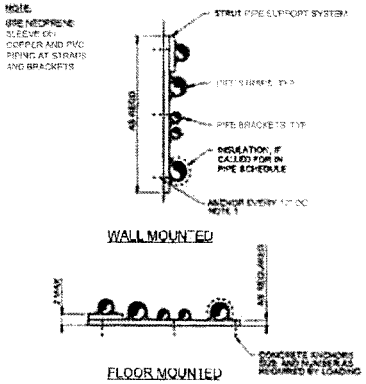


NOTES:
INJECTION QUILL SHALL EXTEND INTO PROCESS PIPE SUCH THAT "L" DIMENSION IS BETWEEN ONE-THIRD AND ONE-HALF OF PIPE DIAMETER. MINIMUM "L" DIMENSION SHALL BE 2" INCHES

7 CHEMICAL INJECTION POINT
M.TYP NTS



8 FIXED PIPE SUPPORT RACK
M.TYP NTS



NOTE:
1. ATTACH TO WALL WITH 3/8" ANCHORS, 2½" DIAMETER MIN. COORDINATES WITH WALL CONSTRUCTION

9 PIPE SUPPORTS
M.TYP NTS

ORIGINALLY SIGNED AND SEALED BY

ARIZONA REGISTERED PROFESSIONAL ENGINEER (CIVIL)

BENJAMIN W. LEE #73842 ON 12/21/18

MGC

WATERWORKS

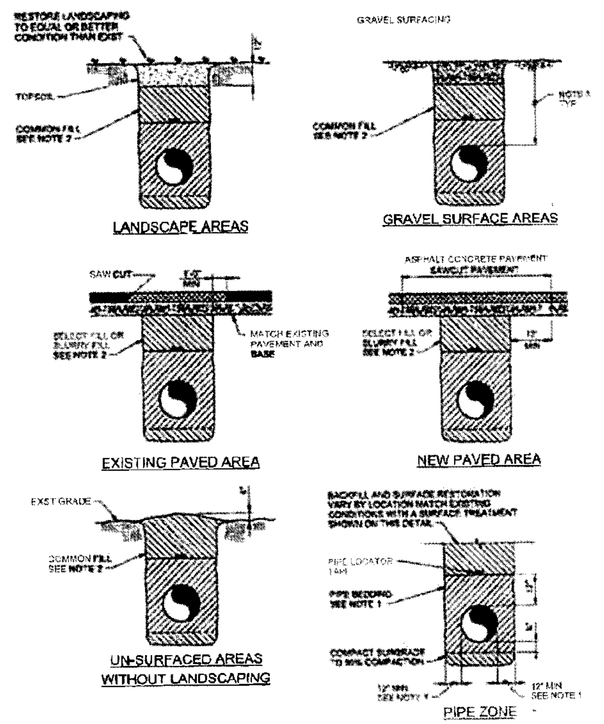
VIRGINIA WATER COMPANY
MONTALVA WATER DISTRICTS NO. 2 AND NO. 3
VIRGINIA BEACH, VIRGINIA

TYPICAL DETAILS 1

DECEMBER 2018

M-301

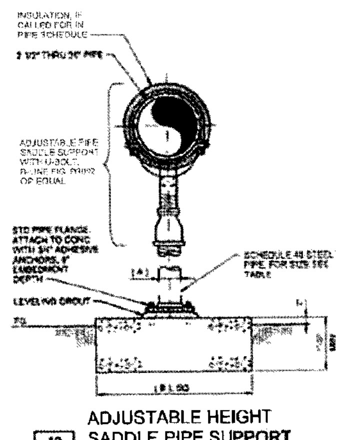
REUSE OF DOCUMENTS



NOTES

1. PIPE BEDDING SHALL BE GRANULAR BEDDING FOR ALL DUCTILE IRON OR STEEL PIPE AND SAND FOR ALL OTHER PIPE COMPACT TO 90% RELATIVE COMPACTION. ALTERNATIVELY, SLURRY FILL MAY BE USED FOR PIPE BEDDING. IF SLURRY FILL IS USED, TAKE PRECAUTIONS TO PREVENT PIPE FLOATING. ALSO IF SLURRY FILL IS USED, TRENCH WIDTH CAN BE NARROWED TO 6-INCHES OUTSIDE OF PIPE WALL ON EACH SIDE
2. COMPACT ALL TRENCH BACK FILL (COMMON FILL AND SELECT FILL) TO 90% COMPACTION MORE THAN 2 FEET BELOW GRADE; 95% COMPACTION LESS THAN 2-FEET BELOW GRADE.
3. UNLESS NOTIFIED OTHERWISE, PROVIDE MINIMUM 3-FEET OF COVER OVER ALL BURIED PIPELINES

11 TYPICAL TRENCH SECTIONS
M-TYP NTS



12 ADJUSTABLE HEIGHT SADDLE PIPE SUPPORT
M-TYP NTS

DIMENSION TABLE		
PIPE SIZE	(A)	(B)
2-1/2"	2-1/2"	2'-0"
3"	2-1/2"	2'-0"
4"	3"	[illegible]
6"	3"	[illegible]
8"	3"	[illegible]
10"	3"	[illegible]
12"	3"	[illegible]
14"	4"	[illegible]
16"	4"	[illegible]
18"	4"	[illegible]
20"	4"	[illegible]
24"	4"	[illegible]
30"	6"	4'-0"
36"	6"	4'-0"

ORIGINALLY SIGNED AND SEALED BY
ARIZONA REGISTERED PROFESSIONAL ENGINEER (CIVIL)
BENJAMIN W. LEE
47587
ON 12/21/11

MGC CONTRACTORS, INC.

WATERWORKS ENGINEERS

ARIZONA WATER COMPANY

MECHANICAL

TYPICAL DETAILS 2

DECEMBER 2011

M-302

REUSE OF DOCUMENTS: [illegible]

ELECTRICAL SPECIFICATIONS AND GENERAL NOTES

1. PERFORM ALL WORK IN ACCORDANCE WITH THE CURRENTLY ADOPTED ISSUE OF THE NATIONAL ELECTRICAL CODE (NEC), STATE AND LOCAL REGULATIONS, AND OTHER ORDINANCES HAVING JURISDICTION.
2. CONTRACTOR SHALL COORDINATE WITH THE ELECTRIC UTILITY COMPANY TO DETERMINE THE REQUIREMENTS TO PROVIDE THE ELECTRIC SERVICE FOR THE FACILITY.
3. PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT AS SHOWN AND AS REQUIRED FOR THE COMPLETION OF THE WORK.
4. THE LAYOUT OF THE CONTRACT DRAWINGS IS DIAGRAMMATIC. IT IS NOT THE INTENT OF THESE PLANS AND/OR SPECIFICATIONS TO SHOW EVERY DETAIL OF CONSTRUCTION. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL ITEMS FOR A COMPLETE ELECTRICAL SYSTEM AND PROVIDE ALL REQUIREMENTS NECESSARY FOR EQUIPMENT TO BE PLACED IN PROPER WORKING ORDER.
5. CONTRACTOR SHALL VISIT THE JOBSITE PRIOR TO SUBMITTING THEIR BID TO VERIFY ALL EXISTING CONDITIONS, LOCATIONS, DIMENSIONS AND QUANTITIES AS SHOWN AND/OR AS SPECIFIED.
6. EQUIPMENT, MATERIAL, AND WORKMANSHIP SHALL BE GUARANTEED FREE FROM DEFECTS FOR ONE YEAR FROM THE DATE OF ACCEPTANCE.
7. WORK SHALL BE PERFORMED BY A LICENSED COMMERCIAL CONTRACTOR IN A FIRST-CLASS WORKMANLIKE MANNER AND ALL SYSTEMS SHALL BE TESTED IN THE PRESENCE OF THE OWNER TO DEMONSTRATE THAT EQUIPMENT IS WORKING PROPERLY. [illegible] SHALL BE CORRECTED AT NO COST TO THE OWNER. EQUIPMENT REQUIRING ADJUSTMENTS OR CALIBRATIONS FOR PROPER OPERATION SHALL BE SET BY THE CONTRACTOR AS NECESSARY, SPECIFIED OR DIRECTED BY THE OWNER.
8. ELECTRICAL EQUIPMENT, DEVICES AND MATERIAL SHALL BE NEW, UL LISTED FOR THE INTENDED USE. ALL ELECTRICAL PANELS SHALL BE ASSEMBLED BY A UL 508 CERTIFIED FACILITY AND SHALL BE SO LABELED.
9. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH OTHER TRADES TO DETERMINE ELECTRICAL REQUIREMENTS, SPACES AND ADEQUATE CLEARANCES WITH RESPECT TO OTHER EQUIPMENT IN THE FACILITY, AND PROVIDE ANY RACEWAY, WIRING, OR CONNECTIONS REQUIRED FOR PROPER OPERATION.
10. WIRING DEVICES SHALL BE NEMA WD-1 HEAVY DUTY INDUSTRIAL GRADE HUBBELL, LEVITON OR EQUAL. RECEPTACLES SHALL HAVE NYLON OR POLYCARBONATE FACES AND BE LABELED MEETING FEDERAL SPECIFICATIONS, UNLESS NOTED OTHERWISE. RECEPTACLES SHALL BE 120V, 15A DUPLEX AND SHALL BE GROUND FAULT TYPE. SWITCHES SHALL BE 20A 120V RATED WITH METAL [illegible] SWITCH COVER, HUBBELL CSP1CR OR EQUAL.
11. CONDUCTORS SHALL BE STRANDED COPPER WIRE (LIGHTING AND RECEPTACLE CIRCUITS MAY BE SOLID). ALL CONDUCTOR INSULATION SHALL BE TYPE THWN/THHN OR [illegible] OR [illegible]. IDENTIFY EACH CONDUCTOR AT EACH TERMINATION POINT WITH HEAT SHRINK OR PLASTIC SLEEVE TYPE WIRE MARKER PERMANENTLY MACHINE IMPRINTED WITH A UNIQUE COMBINATION OF NUMBERS AND LETTERS.
12. EQUIPMENT LUGS, CONNECTORS AND TERMINATIONS, INCLUDED IN PANELS, SWITCHES, STARTERS, CONTACTORS AND CIRCUIT BREAKERS SHALL BE SUITABLE FOR USE WITH CONDUCTORS OPERATING AT 75 DEGREES C.
13. ALL CONDUCTORS SHALL BE IN APPROVED RACEWAY. RACEWAYS FOR THE FOLLOWING:
    GALVANIZED RIGID STEEL (GRS). WHERE CONDUIT BENDS UPWARD FROM UNDERGROUND TO ABOVE GROUND, USE GRS ELBOW WITH AN APPROVED PVC TO GRS COUPLER. GRS CONDUIT SHALL EXTEND A MINIMUM OF 24" BELOW GRADE. USE GRS IN ALL AREAS WHERE CONDUIT MAY BE EXPOSED TO PHYSICAL DAMAGE. USE THREADED STEEL FITTINGS. THREADS OF CONDUIT INSTALLED [illegible] SHALL BE COATED WITH ZINC RICH PAINT PRIOR TO MAKING UP. PROTECT UNDERGROUND METAL CONDUIT WITH HALF LAPPED [illegible] SCOTCHWRAP 50 TAPE OR EQUAL.
    INTERMEDIATE METAL CONDUIT (IMC) MAY BE USED IN SIZES 1-1/2" AND LARGER IN LIEU OF RIGID STEEL. FITTINGS AND INSTALLATION SHALL BE AS FOR RIGID STEEL.
    POLYVINYL CHLORIDE (PVC) SCHEDULE 40 SHALL BE USED BELOW FINISHED GRADE. INSTALL 24 INCHES MINIMUM BELOW FINISHED GRADE SURROUNDED BY 3 INCHES OF SAND OR SELECTED FILL FREE OF ORGANIC MATTER, STICKS, GRAVEL, ROCKS OR OTHER SHARP OBJECTS EXCEPT THAT UNDER CONCRETE SLABS NO MINIMUM DEPTH IS REQUIRED.
    LIQUIDTIGHT FLEXIBLE METAL CONDUIT: USE TO CONNECT TO EQUIPMENT INSTALLED OUTDOORS (36 INCHES MAX LENGTH). USE STEEL FITTINGS. USE COMPRESSION TYPE CONNECTORS.
14. FITTINGS, BOXES, AND SUPPORTS SHALL BE PROVIDED AS REQUIRED TO PROVIDE A COMPLETE SYSTEM. FS AND FD BOXES SHALL BE GALVANIZED CAST IRON. [illegible] BOXES SHALL BE NEMA 3R PAINTED STEEL. USE WATERTIGHT THREADED HUBS FOR ALL CONDUIT CONNECTIONS TO THE TOPS OR SIDES OF ENCLOSURES THAT DO NOT HAVE INTEGRAL THREADED HUBS.
15. PROVIDE PULL BOXES FOR UNDERGROUND ELECTRICAL CONDUITS SUCH THAT NO SINGLE CONDUIT RUN HAS BENDS IN EXCESS OF 360 DEGREES. PULL BOXES SHALL BE PRECAST CONCRETE WITH H-20 [illegible]. WARNING TAPES WHICH SAY "WARNING-BURIED ELECTRICAL" SHALL BE PLACED IN TRENCHES ABOVE ALL UNDERGROUND ELECTRIC CONDUITS. WARNING TAPE SHALL BE METALLIC TRACEABLE TYPE.
16. FUSES SHALL BE TIME DELAY, CLASS RK-1, BUSS LPS-RK_SP, OR EQUAL. FUSES FOR MOTOR CONTROL CIRCUITS SHALL BE TIME DELAY, BUS FNM OR EQUAL. FUSES FOR CONTROL TRANSFORMER PRIMARY SHALL BE TIME DELAY, CLASS CC, BUS FNQ-R OR EQUAL.
17. DISCONNECT SWITCHES SHALL BE FUSED, 3 POLE WITH CLASS R FUSE CLIPS AND VOLTAGE RATING AS REQUIRED UNLESS OTHERWISE SHOWN. OUTDOOR UNITS SHALL BE WEATHERPROOF. UNITS SHALL BE HEAVY DUTY, HORSEPOWER RATED, AND HAVE MEANS FOR PAD LOCKING IN THE OPEN POSITION. SWITCHES SHALL BE SQUARE D, GE OR EATON/CUTLER HAMMER.
18. DISCONNECT SWITCHES, STARTERS, PANELS AND CONTROLLERS SHALL BE LABELED WITH ENGRAVED PLASTIC LAMINATE NAMEPLATES ATTACHED WITH SCREWS.
19. PROVIDE EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS. SIZE WIRE PER NEC, UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
20. INSULATE ALL ABOVE GRADE PIPING AND TUBING 1" AND SMALLER WITH 3/8" THICK, CLOSED CELL POLYETHYLENE FOAM PIPE INSULATION OF THE APPROPRIATE SIZE TO PROVIDE FREEZE PROTECTION.
21. ALL REQUIRED SYSTEM SHUTDOWNS SHALL BE COORDINATED WITH THE OWNER AT LEAST FOUR DAYS IN ADVANCE OF THE SHUTDOWN.
22. REFER TO ARIZONA WATER COMPANY STANDARD ELECTRICAL SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. IN CASE OF CONFLICT, AWC SPECIFICATIONS TAKE PRECEDENCE OVER THESE SPECIFICATIONS.

IDENTIFIER SYMBOLS

- INSTRUMENT DEVICE IDENTIFIER
- INSTRUMENT LOOP NUMBER
- AUX PANEL IDENTIFIER
- INSTRUMENT FUNCTION IDENTIFIER

HAND SWITCH FUNCTIONS

- HOA – HAND–OFF–AUTO
- OCA – OPEN–CLOSE–AUTO
- OO – OFF–ON
- 1,2 – DEVICE SELECT
- OCS – OPEN–CLOSE–STOP
- MA – MANUAL–AUTO
- SFT–BYP – SOFT–BYPASS

EXAMPLES: HS HOA, HS 1,2

PUSHBUTTON (MOMENTARY CONTACT)

EXAMPLES: HMS

SINGLE LINE AND CONDUIT DIAGRAM SYMBOLS

- TRANSFORMER
- UTILITY COMPANY METER
- SINGLE PHASE AMMETER WITH 3 PHASE SELECTOR SWITCH AND 3 CURRENT TRANSFORMERS
- SINGLE PHASE TRANSFORMER RATED VOLTMETER WITH PHASE TO PHASE SELECTOR SWITCH (A-B, B-C, C-A) AND 2 SINGLE PHASE POTENTIAL TRANSFORMERS
- JUNCTION BOX OF SAME MATERIAL AS CONDUIT SYSTEM
- WP – SUBSCRIPT INDICATES WEATHER PROOF DEVICE
- EP – SUBSCRIPT INDICATES EXPLOSION PROOF DEVICE
- DOUBLE THROW SAFETY SWITCH RATING AND POLES PER DRAWINGS
- SYSTEM GROUND PER DRAWINGS
- COMBINATION TYPE MOTOR STARTER DISCONNECT
- DISCONNECT SWITCH RATING AND POLES PER DRAWINGS (30/3)
- MOTOR WITH HP RATING (7.5 HP)
- MOTOR WITH INTEGRAL COMBINATION MOTOR STARTER (7.5 HP)
- FUSE
- CIRCUIT BREAKER
- 30A SIMPLEX RECEPTACLE 3 POLE 4 WIRE GROUNDING
- DUPLEX RECEPTACLE GFD – HUBBELL #GF 5262
- THERMOSTAT
- PHOTOCELL (PC)
- FIRE ALARM CONTROL PANEL (FACP)
- SMOKE DETECTOR (SD)
- FIRE ALARM MANUAL PULL STATION
- FIRE ALARM HORN AND STROBE
- LIGHT SWITCH TOGGLE TYPE. 3 DENOTES 3 WAY, EX DENOTES EXPLOSIONPROOF, WP DENOTES WEATHERPROOF
- CONDUIT IDENTIFIER
- ABOVE GROUND CONDUIT
- UNDER GROUND CONDUIT

SCHEMATIC DIAGRAM SYMBOLS

- NORMALLY CLOSED CONTACT
- NORMALLY OPEN CONTACT
- RELAY COIL
- 2 WAY SOLENOID VALVE FAIL TO CLOSE
- 3 WAY SOLENOID VALVE FAIL TO EXHAUST
- 2 POSITION MAINTAINED SELECTOR SWITCH (OFF / ON)
- NORMALLY OPEN MOMENTARY CONTACT PUSHBUTTON
- NORMALLY CLOSED MOMENTARY CONTACT PUSHBUTTON
- 3 POSITION MAINTAINED SELECTOR SWITCH (HAND–OFF–AUTO)
- PILOT LIGHT COLOR PER DRAWINGS
- PUSH TO TEST PILOT LIGHT COLOR PER DRAWINGS (GREEN INDICATED HERE)
- FUSE
- CIRCUIT BREAKER
- THERMAL OVERLOAD SWITCH
- NORMALLY OPEN PRESSURE SWITCH
- NORMALLY CLOSED PRESSURE SWITCH
- NORMALLY OPEN FLOW SWITCH
- NORMALLY CLOSED FLOW SWITCH
- NORMALLY OPEN TEMPERATURE SWITCH
- NORMALLY CLOSED TEMPERATURE SWITCH
- NORMALLY OPEN LEVEL SWITCH
- NORMALLY CLOSED LEVEL SWITCH
- HORN
- RESISTOR
- DIODE
- CONTROL PANEL TERMINAL BLOCK
- TERMINAL BLOCK
- NORMALLY OPEN TIME DELAY CONTACT
- NORMALLY CLOSED TIME DELAY CONTACT
- ● TERMINAL IN CONTROL CABINET

LEGEND

CR-130 — MATCHES COIL LOCATION

NC CONTACT LOCATION · [illegible] WIRE NUMBER · PANEL WIRING · TERMINAL BLOCK · NO CONTACT LOCATION · FIELD WIRING · [illegible]

INSTRUMENT & DEVICE LETTERING TABLE
IDENTIFICATION LETTERS

	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	CONDUCTIVITY			CONTROL	
D	DENSITY (MASS)	DIFFERENTIAL			
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)			
G	GAGING		CLASS OR VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME OR TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	MOTOR	MOMENTARY			MIDDLE OR INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE RESTRICTION		
P	PRESSURE OR VACUUM		POINT (TEST CONNECTION)		
Q	QUANTITY	INTEGRATE OR TOTALIZE			
R	RADIATION		RECORD		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION			VALVE, DAMPER, LOUVER	
W	WEIGHT OR FORCE		WELL		
X	UNCLASSIFIED		UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT STATE OR PRESENCE			RELAY, COMPUTE, CONVERT	
Z	POSITION OR DIMENSION			DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

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MGC CONTRACTORS, INC.

Jensen Engineering, LLC
Cave Creek, Arizona

WATERWORKS
ENGINEERS

ARIZONA WATER COMPANY
MONTEZUMA HAVEN WELLS NO. 2 AND NO. 3 ARSENIC REMOVAL FACILITY

ELECTRICAL
SPECIFICATIONS AND LEGEND

DECEMBER 2011
11-057
E-101

LOAD CALCULATIONS
NOTES:
1. THIS FACILITY IS SERVED BY AN OVERHEAD 480VAC 3 PHASE 4 WIRE DELTA SYSTEM. THE EXISTING SERVICE SHALL REMAIN OVERHEAD AND IN PLACE.
2. INSTALL 4 CORE #500 GREEN COPPER BOND WIRE IN ALL CONDUITS AS SHOWN
3. ALL CONDUITS RUN OUTDOOR EXPOSED AT THE MCC SHALL BE GALVANIZED RIGID STEEL CONDUIT. ALL RUNS BELOW GRADE SHALL BE RIGID STEEL.
4. ALL JUNCTION AND PULL BOXES SHALL BE OF THE SAME MATERIAL AS THE CONDUIT SYSTEM.
5. UNDERGROUND CONDUIT SHALL BE BURIED A MINIMUM OF 24" BELOW GRADE IN UNPAVED AREAS OR TWO GRADED INCHES BELOW ASPHALT.
6. ALL CONDUCTORS SHALL BE STRANDED COPPER.
7. NEW TELEPHONE SERVICE IS RESERVED (SHALL EXIST). CONTRACTOR SHALL CONTACT AND COORDINATE WITH THE LOCAL PROVIDER FOR THE NEW SERVICE. CONTRACTOR SHALL PROVIDE ALL CONDUIT AND CABLES AS REQUIRED AND AS DIRECTED BY THE LOCAL TELEPHONE PROVIDER
ELECTRICAL
SERVICE ENTRANCE SECTION AND MOTOR CONTROL CENTER SINGLE LINE DIAGRAM
ARIZONA WATER COMPANY
MONTEZUMA HAVEN WELLS NO. 2 AND NO. 3 ARSENIC REMOVAL FACILITY
WATERWORKS ENGINEERS
Jensen Engineering, L.L.C.
Coral Creek, Arizona
MAC CONSTRUCTION, INC.
E-102

ELECTRICAL

SITE PLAN

ARIZONA WATER COMPANY

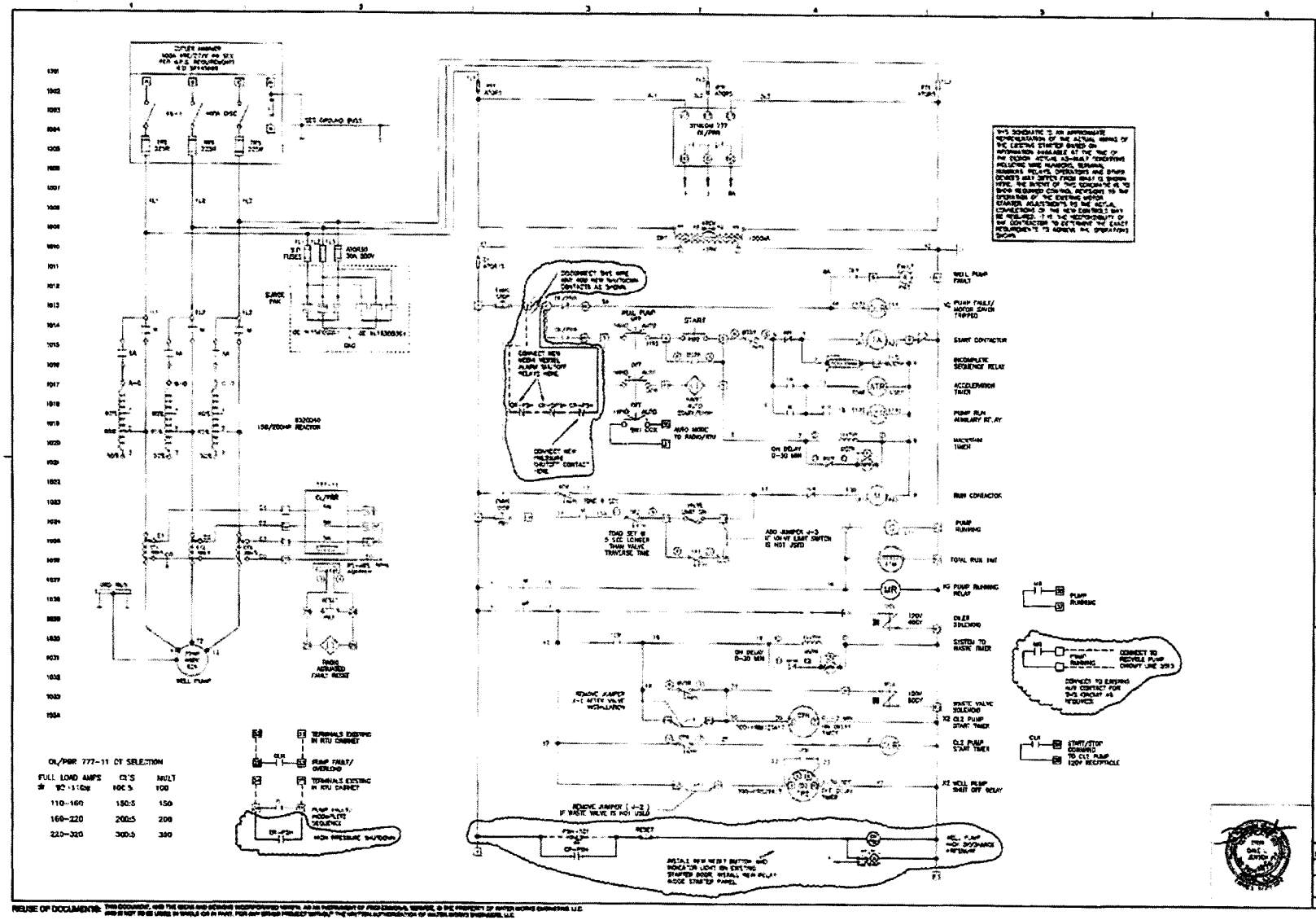
MONTEZUMA HAVEN
WELLS NO. 7 AND NO. 3
ARSENIC REMOVAL FACILITY

WATERWORKS ENGINEERS

Jensen Engineering, L.L.C.
Cave Creek, Arizona

MGC CONTRACTORS, INC.

E-101



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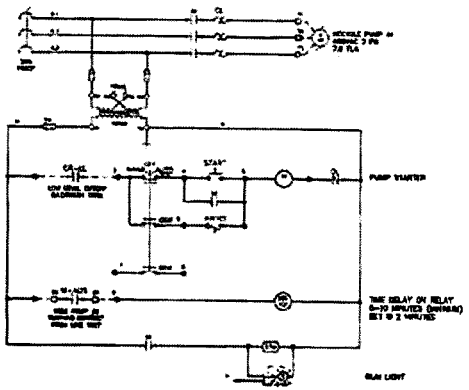
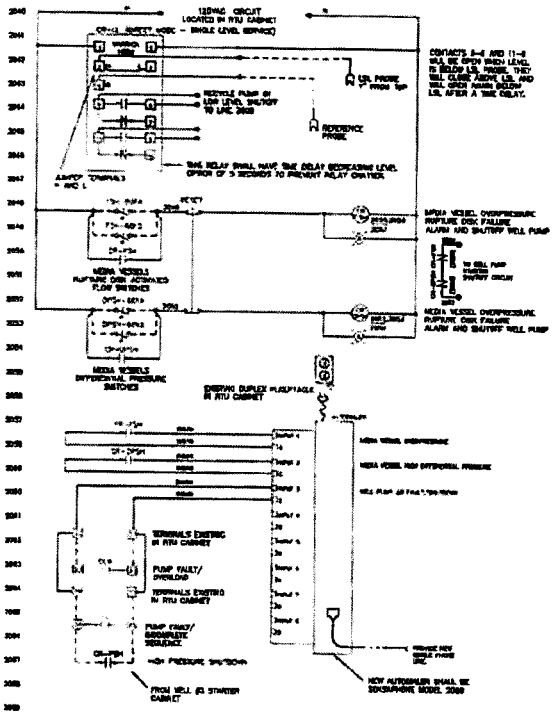


A RECYCLE PUMP SCHEMATIC



BACKWASH TANK LEVEL
& AUTODIALER
B SCHEMATIC

WATERWORKS ENGINEERS

MISCELLANEOUS
SCHEMATIC DIAGRAMS

ELECTRICAL

E-105

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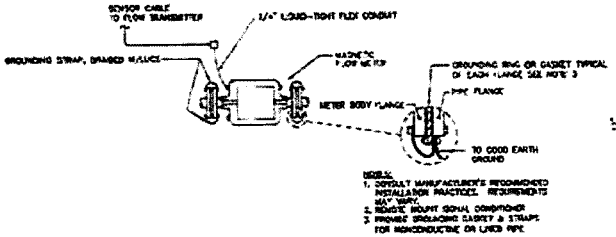
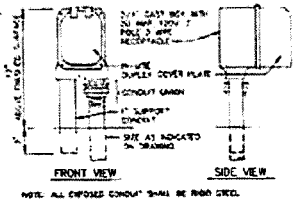


MAGNETIC FLOW METER INSTALLATION

A DETAIL

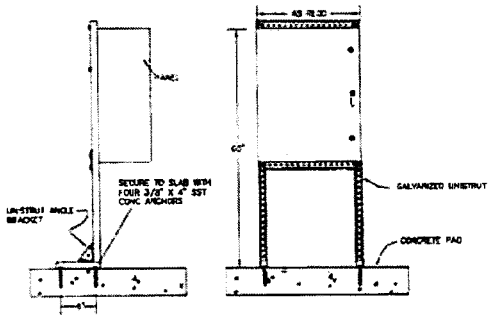
N.T.S.



TYPICAL WEATHERPROOF RECEPTACLE

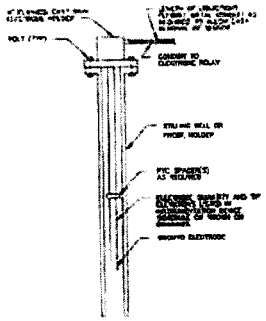
B MOUNTING DETAIL

N.T.S.



D CONTROL PANEL/STARTER MOUNTING DETAIL

E-401 N.T.S.



ELECTRODE RELAY TYPE LEVEL SWITCH

C ELECTRODE INSTALLATION DETAIL

N.T.S

PANEL SCHEDULE

PANELBOARD A (EXISTING)

E PANEL SCHEDULE

N.T.S

NOTE:
ITEMS SHOWN AS BOLD ARE NEW THIS PROJECT.

ELECTRICAL DETAILS

DATE: DECEMBER 2011
PROJECT NUMBER: 11-052
DRAWING NUMBER: E-106
SHEET

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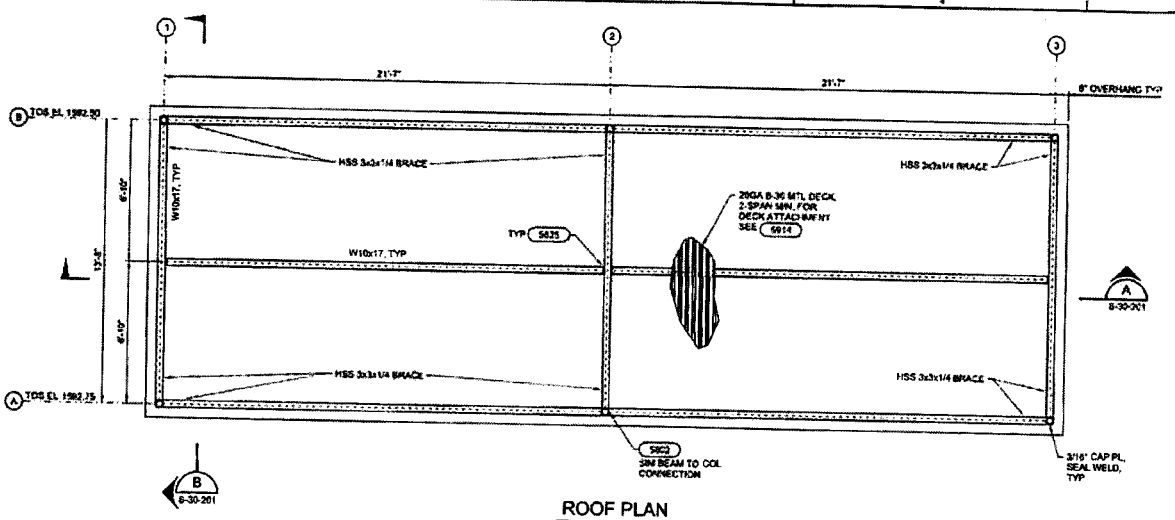
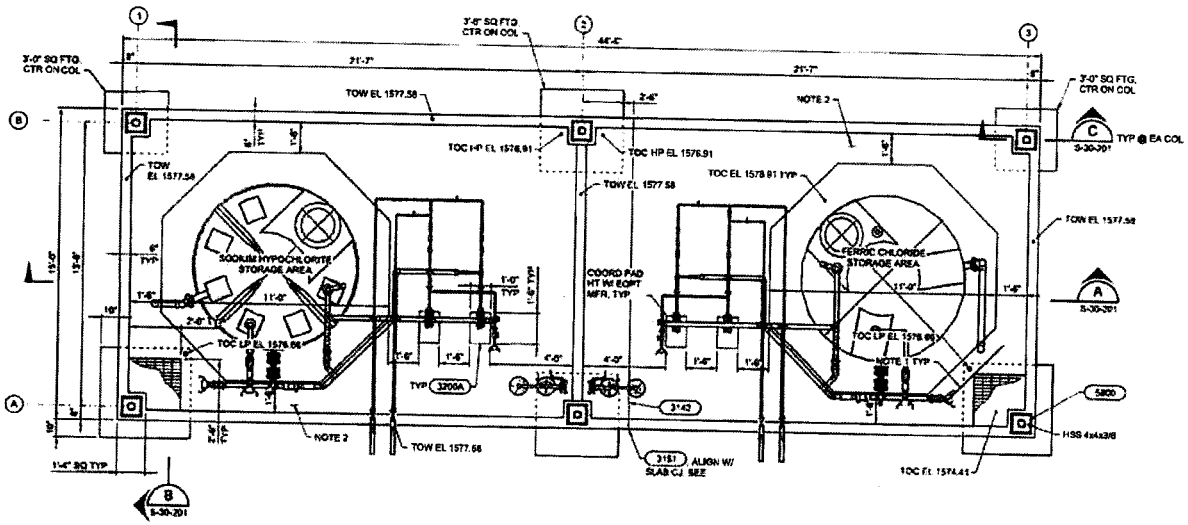
Exhibit "J"

Sample Design of Chemical Feed System



ROOF PLAN

3/8" = 1'-0"



FOUNDATION PLAN

3/8" = 1'-0"

NOTES

1. PROVIDE #5x4'-0" DIAGONAL BAR AT EACH REENTRANT CONCRETE CORNER AT EACH REBAR MAT.
2. APPLY CONCRETE DENSIFIER TO SLAB SURFACE AFTER COMPLETION OF THE SPECIFIED WATER CURE AND INSTALLATION OF CONCRETE CURBS AND PADS.

2 0 2 4 FEET

SCALE 3/8"=1'-0"

ARIZONA WATER COMPANY

WATERWORKS ENGINEERING

ARIZONA WATER COMPANY
BASELINE
ARSENIC REMOVAL FACILITY
EXPANSION

STRUCTURAL
CHEMICAL AREA PLANS

DATE MARCH 2014
PROJECT NUMBER 13-047
DRAWING NUMBER S-30-101
SHEET - OF -
SCALE: 1:2

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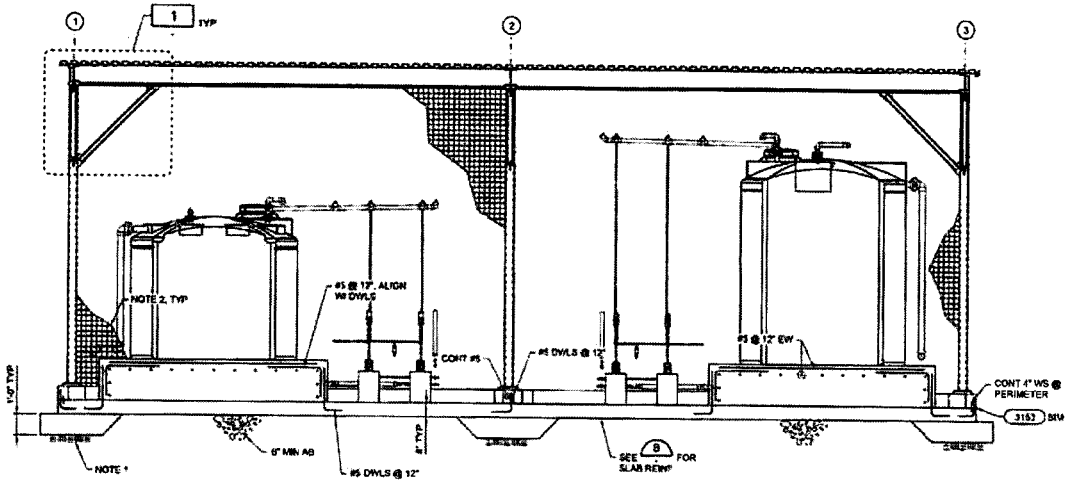
FILENAME: S:\CAD\Projects\13-047 AZ Water Baseline ARF Exp\Drawings\Civil\models\13470-S-30-101.dgn PLOT DATE: 3/11/2014 PLOT TIME: 9:49:51 AM

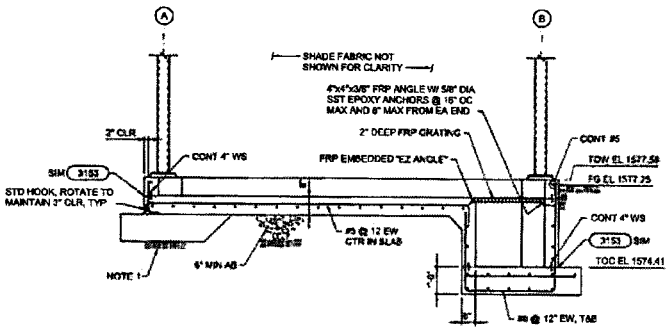
NOTES

1 OVER-EXCAVATE BELOW ENTIRE STRUCTURE TO A MINIMUM EL 1575.00 EXTEND EXCAVATION HORIZONTALLY FIVE FEET MINIMUM BEYOND STRUCTURE FOOTPRINT. REPLACE W/ SELECT FILL AND AGG BASE.

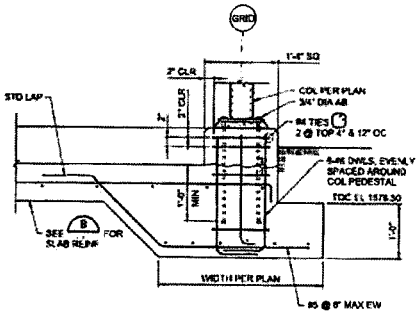
2 INSTALL SHADE FABRIC AROUND STRUCTURE PERIMETER. ATTACH IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. HARDWARE SHALL INCLUDE SNAP-LINKS AT THE CURTAIN PERIMETER TO ALLOW REMOVAL. PROVIDE A ROLL-UP ASSEMBLY ALONG GRID LINE A. INSTALL INTERMEDIATE SHADE FABRIC SUPPORTS AS REQUIRED FOR FABRIC.



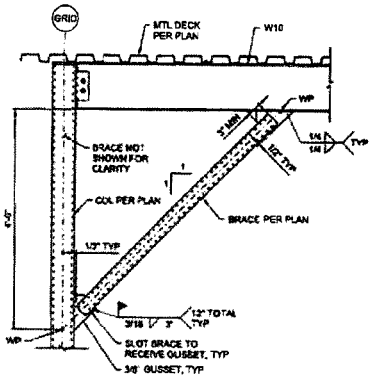
A SECTION
S-30-101 3/8" = 1'-0"



B SECTION
S-30-101 1/2" = 1'-0"



C SECTION
S-30-101 1" = 1'-0"



1 DETAIL
1" = 1'-0"

1 0 1 2 FEET
SCALE 1"=1'-0"
2 0 2 4 FEET
SCALE 1/2"=1'-0"
2 0 2 4 FEET
SCALE 3/8"=1'-0"

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY

DESIGN	DRAWN	CHECKED
JAK	JAK	DRD/JS

ARIZONA WATER COMPANY

WATERWORKS ENGINEERS

ARIZONA WATER COMPANY
BASELINE
ARSENIC REMOVAL FACILITY
EXPANSION

STRUCTURAL

CHEMICAL AREA SECTIONS

DATE MARCH 2014
PROJECT NUMBER 13-047
DRAWING NUMBER S-30-201
SHEET - OF -
SCALE: 1:2.666667

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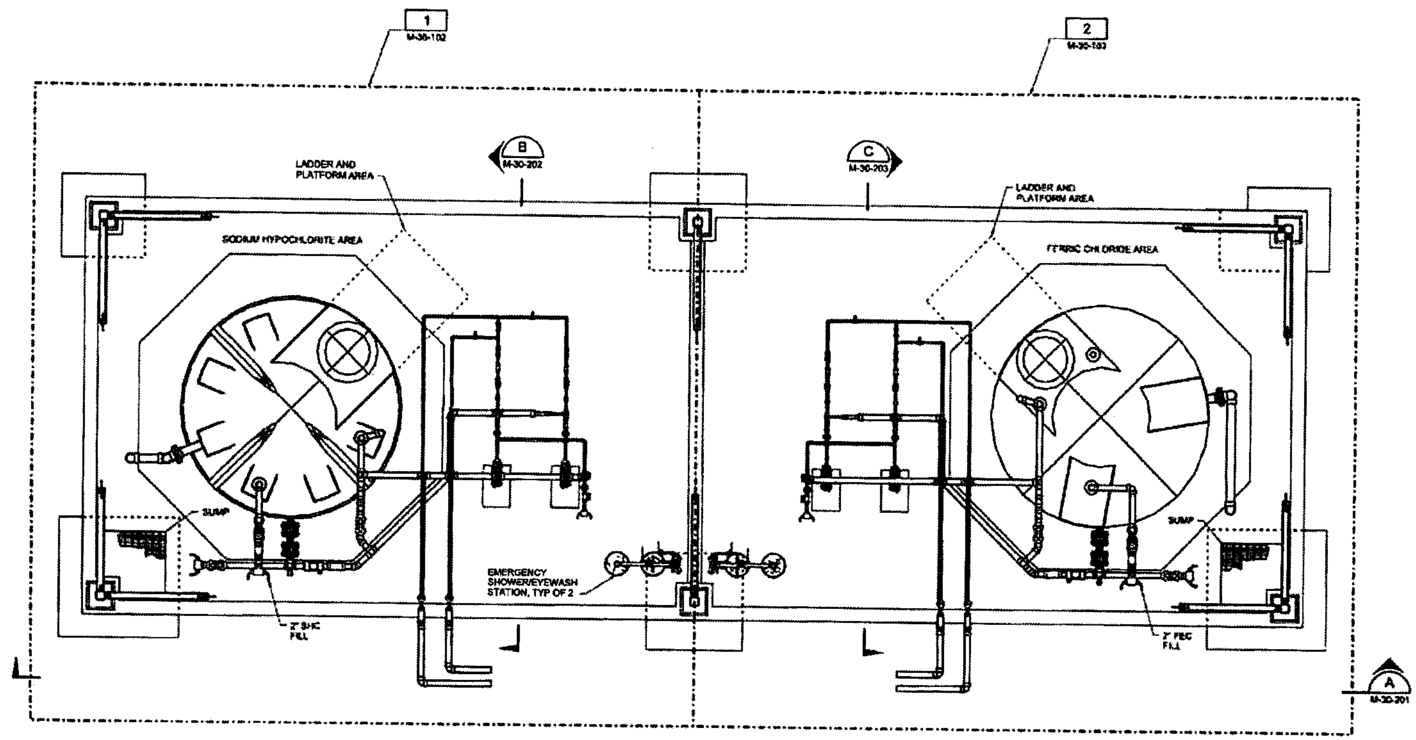
I:\ FNAME: S:\CAD\Projects\13-047 AZ Water Baseline ARF Fac\Drawings\Structural\13-047S-30-201.dgn PLOT DATE: 3/11/2014 PLOT TIME: 9:48:53 AM



PLAN
1/2" = 1'-0"

SCALE 1/2"=1'-0"
2 0 2 4 FEET

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PLOT DATE: 3/11/2014

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DESIGN: AR
DRAWN: JWJ
CHECKED: BML
APPROVED: JHM

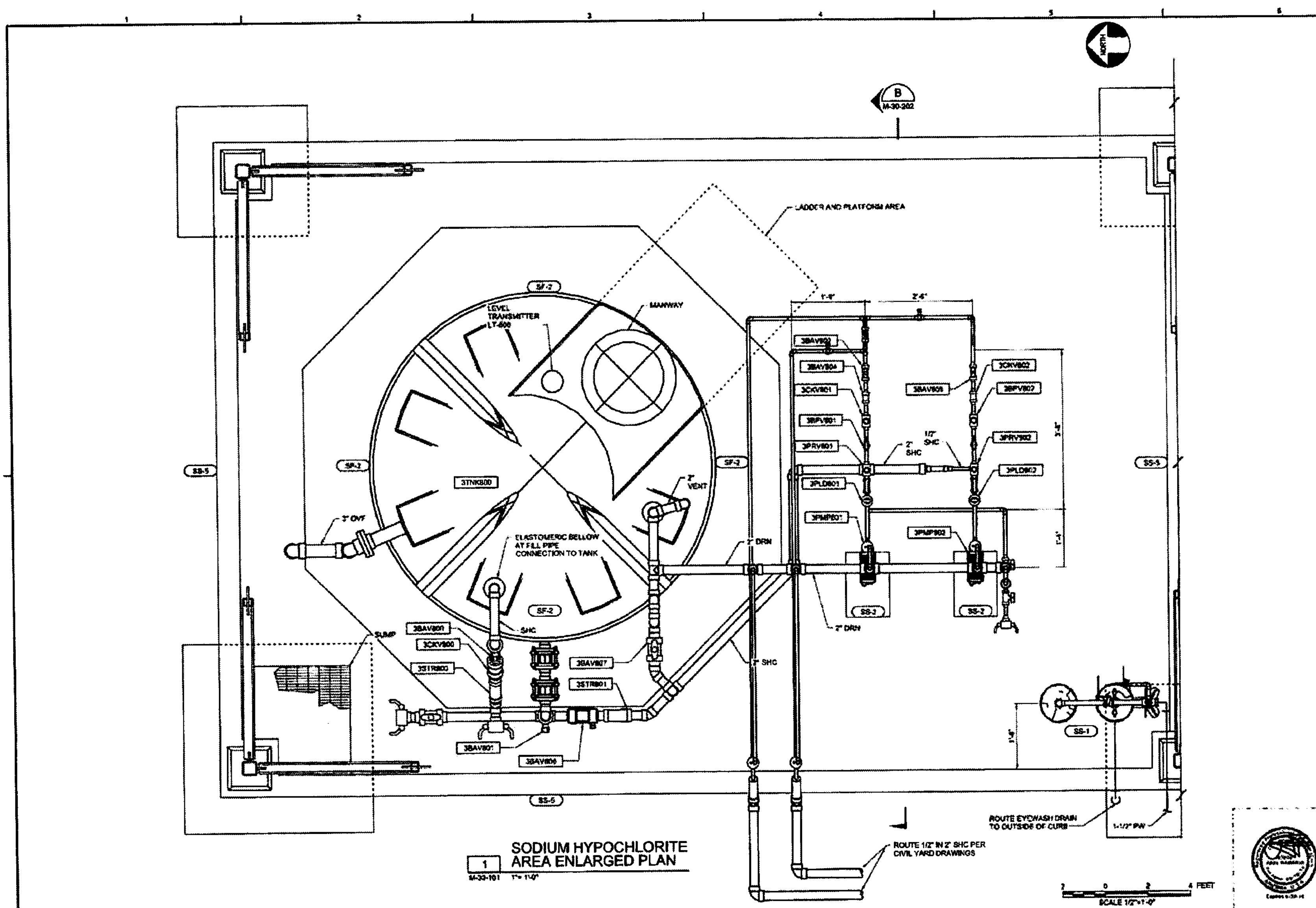
ARIZONA WATER COMPANY

WATERWORKS
ENGINEERS

ARIZONA WATER COMPANY
BASELINE
ARSENIC REMOVAL FACILITY
EXPANSION

MECHANICAL
CHEMICAL AREA PLAN

DATE: MARCH 2014
PROJECT NUMBER: 13-047
DRAWING NUMBER: M-30-101
SHEET - OF -



1 SODIUM HYPOCHLORITE AREA ENLARGED PLAN
M-30-101 1"= 1'-0"

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DESIGN AR
DRAWN JWJ
CHECKED BWL
APPROVED JHM

ARIZONA WATER COMPANY

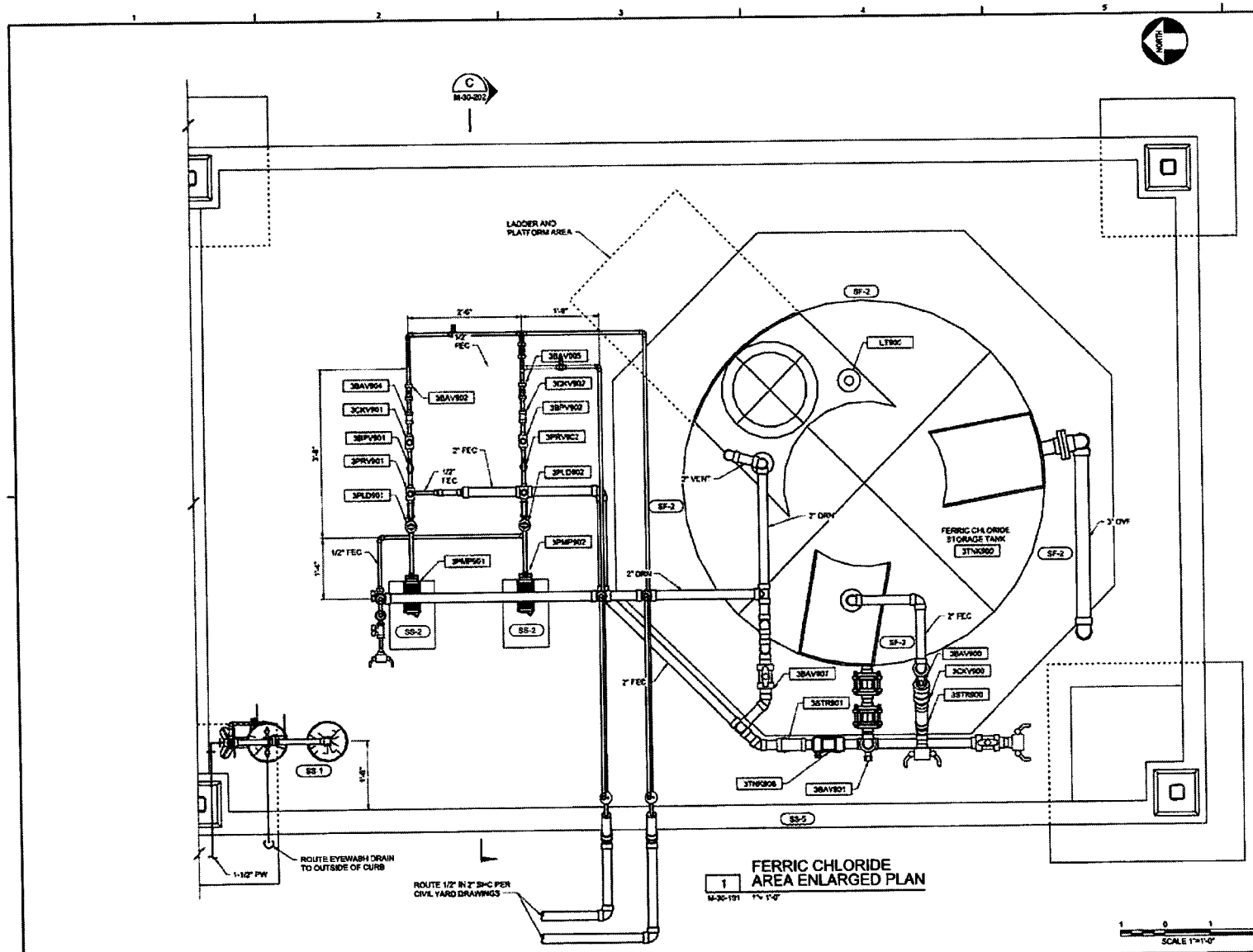
WATERWORKS ENGINEERS

ARIZONA WATER COMPANY
BASELINE
ARSENIC REMOVAL FACILITY
EXPANSION

MECHANICAL
SODIUM HYPOCHLORITE
CHEMICAL AREA
ENLARGED PLAN

DATE MARCH 2014
PROJECT NUMBER 13-047
DRAWING NUMBER M-30-102
SHEET - OF -
SCALE 1"=1'

PLOT DATE 3/11/2014 PLOT TIME 11:29:03 AM



VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY

DESIGN	AJS
DRAWN	AMJ
CHECKED	AMJ
APPROVED	AJS

ARIZONA WATER COMPANY

WATERWORKS ENGINEERS

ARIZONA WATER COMPANY
BASELINE
ARSENIC REMOVAL FACILITY
EXPANSION

MECHANICAL

FERRIC CHLORIDE CHEMICAL AREA ENLARGED PLAN

DATE	MARCH 2014
PROJECT NUMBER	13-047
DRAWING NUMBER	M-30-103
SHEET	- OF -
SCALE:	1:1

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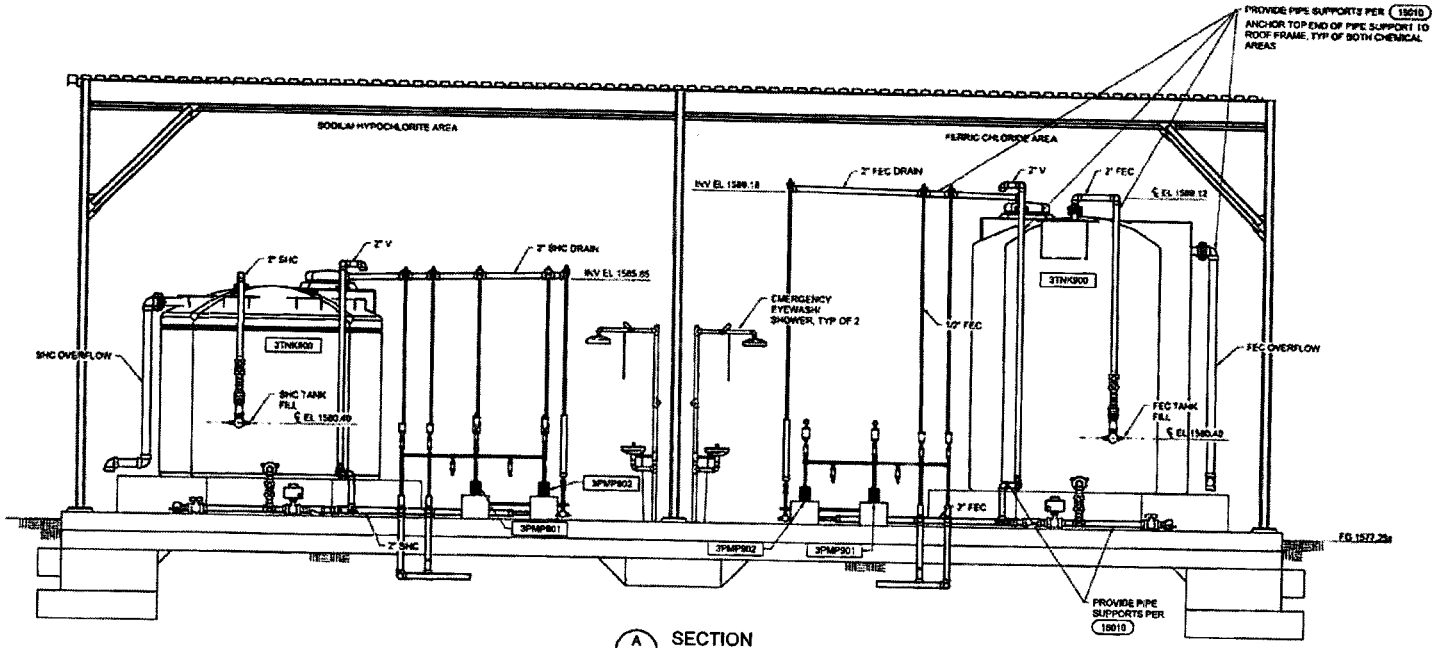

A SECTION
M-30.101 1/2" = 1'-0"

2 0 2 4 FEET
SCALE 1/2"=1'-0"

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VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY

DESIGN AR
DRAWN JWJ
CHECKED RWL
APPROVED JWH

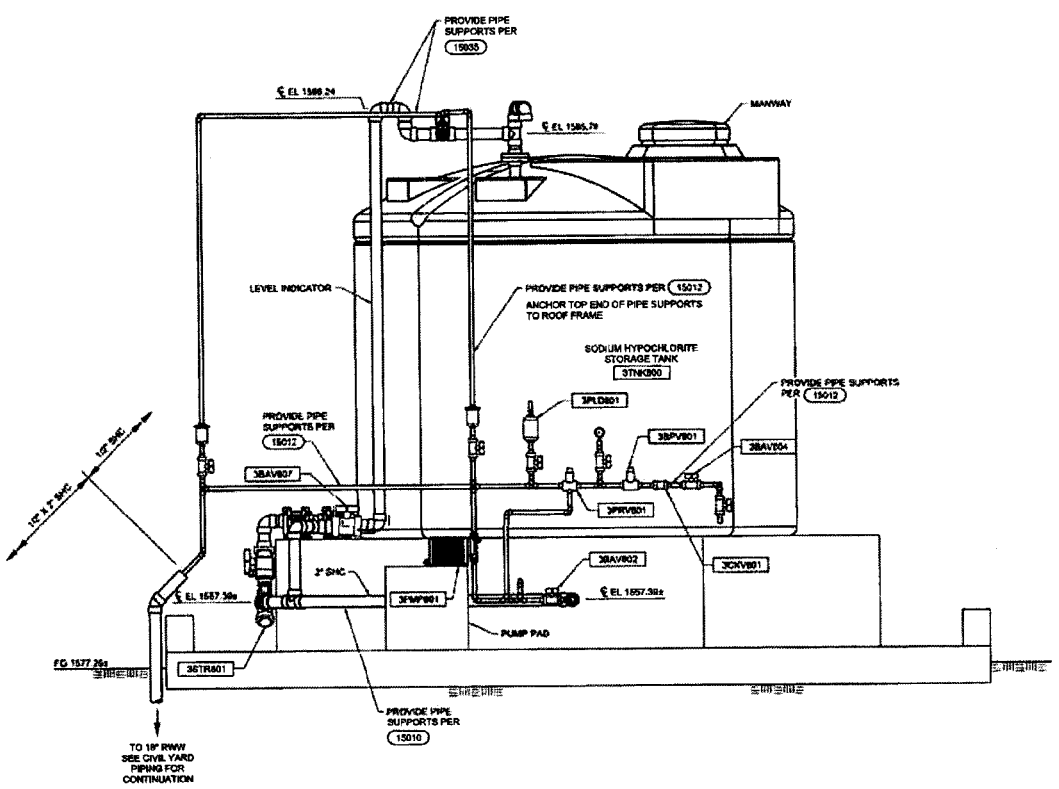
ARIZONA WATER COMPANY

WATERWORKS ENGINEERS

ARIZONA WATER COMPANY
BASELINE
ARSENIC REMOVAL FACILITY EXPANSION

MECHANICAL
CHEMICAL AREA SECTION 1

DATE MARCH 2014
PROJECT NUMBER 13-047
DRAWING NUMBER M-30-201
SHEET OF
SCALE 1:2



B SECTION
M-30-101 1" = 1'-0"

1 0 1 2 FEET
SCALE 1"=1'-0"

VERIFY SCALE
BAR IS 1" ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DESIGN
DRAWN
CHECKED
APPROVED
DATE

ARIZONA WATER COMPANY

WATERWORKS ENGINEERS

ARIZONA WATER COMPANY
BASELINE
ARSENIC REMOVAL FACILITY
EXPANSION

MECHANICAL
SODIUM HYPOCHLORITE SECTION

DATE
MARCH 2014
PROJECT NUMBER
13-047
DRAWING NUMBER
M-30-202
SHEET - OF -
SCALE: 1:1

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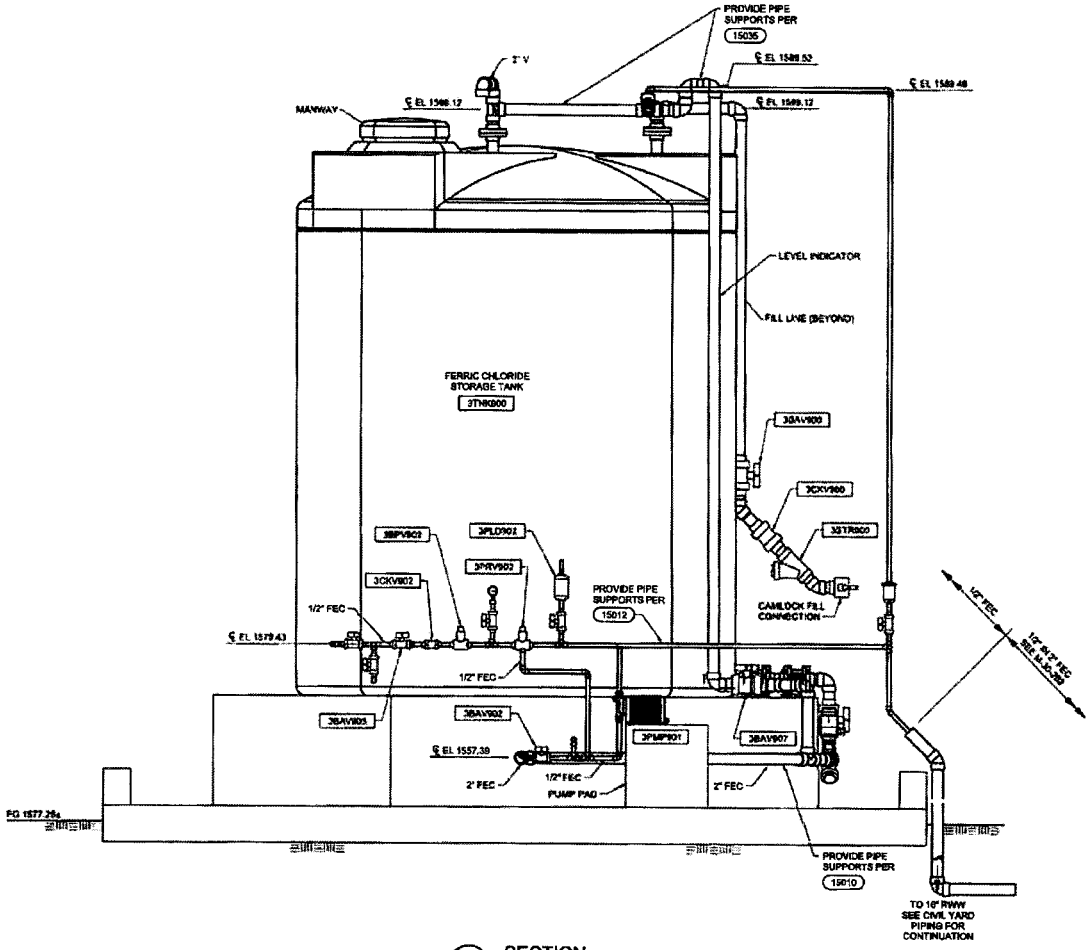

C SECTION
M-30-101 1" = 1'-0"

SCALE 1"=1'-0"
0 1 2 FEET

VERIFY SCALE

WATERWORKS ENGINEERS

ARIZONA WATER COMPANY

ARIZONA WATER COMPANY
BASELINE
ARSENIC REMOVAL FACILITY
EXPANSION

MECHANICAL
FERRIC CHLORIDE SECTION

DATE
MARCH 2014
PROJECT NUMBER
13-047
DRAWING NUMBER
M-30-203
SHEET - OF -
SCALE: 1:1

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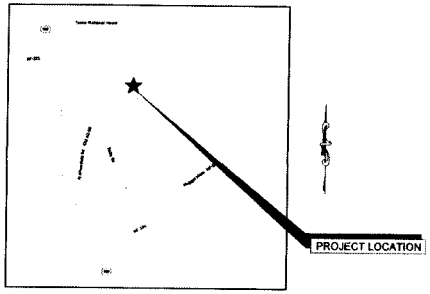
FILENAME: S:\CAD\Projects\13-047 AZ Water Baseline ART 2 apr\Drawings\Mech\13047D-M-30-203.dgn PLOT DATE: 3/11/2014 PLOT TIME: 11:29:14 AM

Exhibit "K"

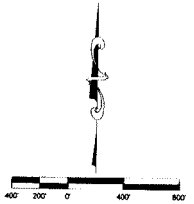
Sample Design of Sodium Hypochlorite Feed System

CONSTRUCT LIQUID CHLORINATION DISINFECTION SYSTEM AT WELL SITE No. 28, NEAR GLOBE, ARIZONA SE 1/4 SEC. 29, T. 2 N., R. 15 E. OF THE G. & S. R. B. & M.

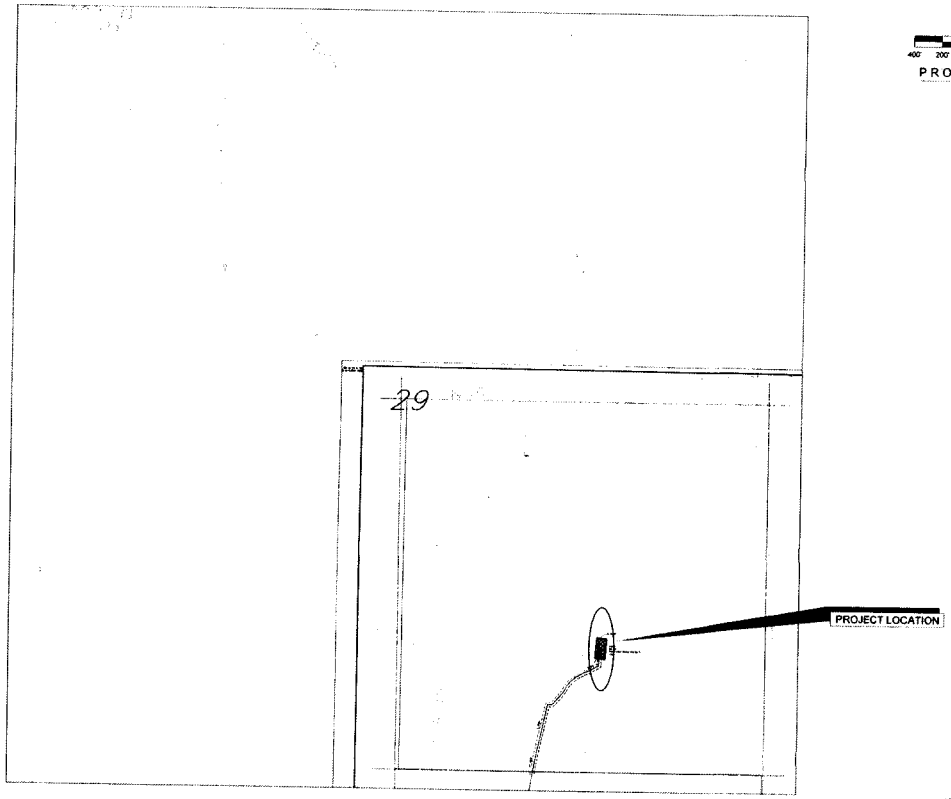


VICINITY MAP

T2N R15E



PROJECT OVERALL



GENERAL NOTES

1. All work and materials shall conform to current County Health Department Standards and Revisions, Arizona Water Company Standard Specifications and Details, and Arizona Department of Health Services Engineering Bulletin No. 10.
2. Permits required will be secured from the appropriate agency, i.E., county permit at county right-of-way.
3. Prior to construction, the appropriate agency(ies) will be notified as required by the permit(s).
4. All backfill, compaction, and testing shall be per current County, City, State, ADOT, and Arizona Water Company standards and specifications.
5. All water lines 8" and less are to have a minimum cover of 36 inches & all water lines 12" and greater are to have 48" of minimum cover over the top of pipe to finished grade, unless otherwise specified on the construction drawings.
6. All frames, covers, valve boxes, etc. shall be adjusted to finished grade prior to placing of asphaltic concrete surface course by the contractor. (where applicable)
7. All water lines shall be pressure and leakage tested in accordance with AWWA C-600 or MAG 610-1.
8. All water lines are to be disinfected per ADEQ Engineering Bulletin No.8 and AWWA C651-92
9. Air release valves are required at water system high points per Arizona Water Company standard details.
10. Water/sewer separation shall be per current Arizona Water Company standards and ADEQ AAC R18-4-503.C.
11. It shall be the contractors responsibility to uncover all existing water lines being connected to, and to verify the location, depth and size of pipe before any construction begins.
12. Any construction performed without the knowledge of the inspector or his representative is liable for removal and replacement at the contractor's expense.
13. In accordance with AAC R18-4-213, all materials added after January 1, 1993 which may come in contact with drinking water, shall conform to National Sanitation Foundation Standards 60 and 61.
14. All water services shall be set a minimum of 2 Feet on the customer's property and NOT within right-of-way.
15. Unless otherwise specified on the construction drawings, all water mains are to be installed 5 Feet from the property use inside the right-of-way or easement.
16. Water valves shall be spaced not more than 500 Feet in commercial districts and not more than 800 Feet in other districts. Variations may be required for transmission mains or special applications. Sufficient valving is required where water lines cross streams, railroads and major highways.
17. Maximum Joint Deflection For 6" Mechanical Joint Ductile Iron Pipe Is 7° 7' Or 27° For 18 Foot Length Pipe, For A Maximum Curve Of 145 Feet.
18. Maximum Joint Deflection For 6", 8", & 12" Push On Joint Ductile Iron Pipe Is 5° Or 19° For 18 Foot Length Pipe, For A Maximum Curve Of 205 Feet.
19. Maximum Joint Deflection For 8" & 12" Mechanical Joint Ductile Iron Pipe Is 5° 21' Or 20° For 18 Foot Length Pipe, For A Maximum Curve Of 195 Feet.

ADEQ APPROVAL

FILE No

DATE

RELEASED TO CONSTRUCTION

JUL 10 2014

FRED SCHNEIDER

SITE STATISTICS

APN: 203-17-001C
SITE ADDRESS: 2965 GIBERT ROAD
GLOBE, AZ. 85501

OWNER/ENGINEER/DEVELOPER

ARIZONA WATER COMPANY
POST OFFICE BOX 29006
PHOENIX, AZ. 85038-9006
VOICE: (602) 240-6850 FAX: (602) 294-2169
CONTACT: RICHARD HACKER

SHEET INDEX

SHT. No.	DWG. No.	DESCRIPTION	PREPARED BY
1	SS-0199	PROJECT OVERALL	A.W.Co.
2	SS-0199	SITE PLAN	A.W.Co.
3	SS-0199	GENERAL NOTES	A.W.Co.
4	SS-0199	DETAILS	A.W.Co.

PROVISIONS

The installation shown is to be installed in accordance with the Arizona Water Company standard specifications on file with the Arizona Department of Environmental Quality.

Dig Tess Notification
263-1100
1-800-STAKE-IT
(ARIZONA BLUE STAKE, INC.)

P.W. NO. 1-5137
SYSTEM MIAMI
LEGAL DESCRIPTION SE 1/4 SEC. 29, T. 2 N., R. 15 E.
AZ. GRID 0100
DATE 11/4/2014
DRAWN BY JAK
SCALE AS SHOWN
CHECKED BY

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

PROJECT DESC. CONSTRUCT LIQUID CHLORINATION DISINFECTION SYSTEM AT WELL SITE No. 28, NEAR GLOBE, ARIZONA

PROJECT SHEET DESC. PROJECT OVERALL

53726
RICHARD D HACKER
REGISTERED ARIZONA U.S.A.
Expires 9-30-2015

DWG. No.
SS-0199
SHEET 1 OF 4

FITTING SCHEDULE

1.	PUMP: ECCENTRIC PUMP MODEL (SEE DETAIL)	1 (EXIST)	CONTR	CONTR	CONTR	CONTR
2.	6" X 10' X 6" THICK CONCRETE BASE	1	CONTR	CONTR	CONTR	CONTR
3.	6 & 6 & 2 FERNCO MODEL W-SERIES OR EQUIVALENT WITH STD SPEC 6-9.25-2	1	CONTR	A.W. Co.	CONTR	A.W. Co.
4.	(E) GALVANIZED CHANNEL STRUT	2	CONTR	A.W. Co.	CONTR	A.W. Co.
5.	6" X 8" UP FLANGE CAST STEEL SADDLE	2	CONTR	CONTR	CONTR	CONTR
6.	8" BALL COMP STOP MUELLER W/COMPRESSION GLAND	1	CONTR	CONTR	CONTR	CONTR
7.	1 1/2" P.V.C. SCH 80 TUBE F.E.P. X M.I.P.	10'-1"	CONTR	CONTR	CONTR	CONTR
8.	1 1/2" CAP SCH 80 P.V.C. (DRILL HOLE FOR TUBING & SPRT KIT)	1	CONTR	CONTR	CONTR	CONTR
9.	1/4" O.D. TUBING/POLYPROPYLENE	25' LF	CONTR	CONTR	CONTR	CONTR
10.	1 1/2" (22.5 x 45) 90 F.I.I.S. SCH 80 P.V.C.	1	CONTR	CONTR	CONTR	CONTR
11.	1 1/2" PVC (SCH 80) F.V.C.	4	CONTR	CONTR	CONTR	CONTR
12.	1 1/2" X 1" REDUCER BUSHING MIP/FIP (SCH 80 PVC)	1	CONTR	CONTR	CONTR	CONTR
13.	1" MALE ADAPTER MIP X SWDU	1	CONTR	CONTR	CONTR	CONTR
14.	1" UNION S/CU	1	CONTR	CONTR	CONTR	CONTR
15.	1" 90° ELL S/CU	1	CONTR	CONTR	CONTR	CONTR
16.	1" PIPE/TYPE 'K' CU	25' LF	CONTR	CONTR	CONTR	CONTR
17.	3/4" (10 TO 150 S.I.S.) S.D.R. REPLACEABLE INJECTION QUILL	1	CONTR	CONTR	CONTR	CONTR
18.	1/2" SPRING LOADED DUAL CHECK VALVE	1	CONTR	CONTR	CONTR	CONTR
19.	GASKETS TO BE DETERMINED DURING CONSTRUCTION		CONTR	CONTR	CONTR	CONTR

RELEASED TO CONSTRUCTION
JUL 16 2014
FRED SCHNEIDER

ARIZONA WATER COMPANY	W.O. NO. 1-5137	P.E. NO.	REVISIONS
3805 N. BLACK CANYON HWY POST OFFICE BOX 29006 PHOENIX, ARIZONA 85038-9006 (602) 240-6860	SYSTEM MIAMI		
PROJECT DESC. CONSTRUCT LIQUID CHLORINATION DISINFECTION SYSTEM AT WELL SITE No. 28, NEAR GLOBE, ARIZONA	LEGAL DESC. SE 1/4 SEC. 29, T. 2 N., R. 15 E.		
PROJECT SHEET DESC. SITE PLAN	TAX DIST. 0100		
	DATE 1/14/2014	SCALE AS SHOWN	
	DRAWN BY JAK	CHKD BY	

The installation shown is to be installed in accordance with the Arizona Water Company standard specifications on file with the Arizona Department of Environmental Quality

CALL TWO WORKING DAYS BEFORE YOU DIG 263-1100 1-800-STAKE-IT OUTSIDE MARICOPA COUNTY

DWG. NO. SS-0199

SHEET 2 OF 4

STATE OF ARIZONA RICHARD D. HACKER 33178 REGISTERED PROFESSIONAL ENGINEER

Expires 9-30-2015

C.8.1
CONSTRUCTION SPECIFICATIONS
FOR THE INSTALLATION OF WATER DISTRIBUTION SYSTEMS
DUCTILE IRON

DEFINITIONS

A. Company. The words "Company" or "Arizona Water Company" mean Arizona Water Company, and where applicable, any division of Arizona Water Company, whose principal place of business is located at 3805 North Black Canyon Highway, Phoenix, Arizona 85015-5351 (Post Office Box 29006, Phoenix, Arizona 85038-9006)

B. Company's Authorized Representative. The words "Company's Authorized Representative" mean any officer of the Company, and any of the Company's Engineers, any Division Manager or Superintendent of the Company and/or such other person(s) designated in writing as the "Company's Authorized Representative" by the President or any Vice President of the Company

C. Contractor. The word "Contractor" means either an individual or other entity employed to do the work as shown on the Construction Drawings and as specified herein

D. Construction Drawings. The words "Construction Drawings" mean plans prepared by or on behalf of Arizona Water Company

E. Contract. The word "Contract" means the written document titled "Proposal/Contract" when such document has been signed by an officer or other authorized representative of both the Contractor and the Company

(1) GENERAL

All work is to be completed in a safe, workmanlike manner and in accordance with these Construction Specifications; any deviation therefrom must be approved in writing by the Company.

Installations must conform with the requirements of all governmental regulating agencies and the cost of conforming to such regulations must be included in the unit bid prices. Examples of such regulations without attempting to be inclusive, are:

a. Special compaction and paving for street crossing.
b. Shoring when required because of the trench depth
c. Closing a trench in those areas where no open trench is allowed overnight.
d. Barricading and traffic control as required

(2) LOCATION MARKING

Alignment stakes as required in the opinion of the Company shall be furnished by the Company to the Contractor and shall be set by the Company at agreed upon intervals and offsets. Under normal circumstances these will reference the pipeline location five feet (5') into the right-of-way measured from property pins. Grade stakes will be provided only when the Construction Drawings show a pipeline depth other than covered in these Specifications. It is the responsibility of the Contractor to preserve all survey work.

(3) TRENCH EXCAVATION

The trench location is to be determined by the Construction Drawings.

FOR 8-INCH OR SMALLER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between thirty-six inches (36") and forty-two inches (42") of cover unless otherwise specified on the Construction Drawings.

FOR 12-INCH AND LARGER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between forty-eight inches (48") and sixty inches (60") of cover unless otherwise specified on the Construction Drawings.

The width of the trench at and below the level of the top of the pipe shall be a minimum of twelve inches (12") plus the outside diameter of the pipe barrel and a maximum of twenty four inches (24") plus the outside diameter of the pipe barrel.

The bottom of the trench shall be accurately graded to provide a uniform bearing for each length of pipe for the full length of the pipe. If the native material on the trench bottom can be reasonably dug by hand, bell holes shall be dug for the joints so that the joints in no way support the pipe. When native materials such as rock are encountered during trenching that will not provide a uniform support for the pipe, the trench will be over-excavated an additional six inches (6") and suitable bedding material will be placed in the trench.

Bedding material will be placed by hand in four inch (4") lifts and compacted to ensure uniform compaction and to eliminate any voids under the pipe. When the space between the pipe and trench bottom varies, this must be backfilled and compacted in four-inch (4") lifts to the mid-section of the pipe.

Whenever the trench is over-excavated for whatever reason, the trench bottom will be brought up to the correct depth at the Contractor's expense using either method (a) or (b) as follows:

a. A.B.C. material shall be used and compacted to a uniform density of not less than 80% of the maximum density as determined by AASHTO T-99 method A and T-191.

b. Native material 100% of which will pass through a one and one-half inch (1-1/2") screen and at least 20% of which will pass through a number-8 screen shall be used and compacted to a uniform density of not less than 85% of the maximum density as determined by AASHTO T-99 method A and T-191.

(4) MATERIALS TO BE PROVIDED BY CONTRACTOR

Unless otherwise specified on the Construction Drawings or in the Contract, the Contractor will supply all of the necessary materials which will become a permanent and integral part of the water distribution system, including concrete blocking, anchors, backfill material, paving material and supplies used during the prosecution of the work. All materials provided by the Contractor to construct the water distribution system must be NSF Standard 61 approved. All potable water pipes and fittings shall have NSF-PW seal. Construction materials used in the water system shall be lead free as defined at AAC R28-4-504 and R18-1-101. The Contractor will provide the following materials:

a. FIRE HYDRANTS: Mueller Super Centurion 250 Fire Hydrant, meets ANSI/AWWA C502 Standard, Model No. A-423, 5-1/4" main valve opening, three way, 6" Mechanical Joint Shoe, 1-1/2" pentagon operating nut, color - yellow, drain open, open direction - left, 4' or 4'-6" bury depending on application. For pumper and hose nozzle information see below.

(1) One - 4" Pumper Nozzle, NST and Two - 2-1/2" Hose Nozzles, NST (These locations only: Ajo, Casa Grande, Coolidge and San Manuel.)

(2) One - 4-1/2" Pumper Nozzle, NST and Two - 2-1/2" Hose Nozzles, NST (These locations only: Apache Junction, Arizona City, Lakeside, Oracle, Overgaard, Pinewood, Rimrock, Sedona, Sierra Vista, White Tank and Winkelman.)

(3) One - 4-1/2" Pumper Nozzle, NST and Two - 2-1/2" Hose Nozzles, NPT (Bisbee only.)

(4) One - 3" Pumper Nozzle GA 6 350 (6 threads per inch, 3.50 pitch diameter) and Two - 2-1/2" Hose Nozzles, NPT (Miami only.)

(5) One - 3-1/2" Pumper Nozzle GA 6 411 (6 threads per inch, 4.11 pitch diameter) and Two - 2-1/2" Hose Nozzle, NST (Superior only.)

b. FITTINGS: Manufactured by Tyler or Union: Crosses, Elbows, Tees, Cap, Reducer, Adapter, Plug, Blind Flange and Tapped Flange: Ductile Iron, Class 350, SSB, Cast Iron Cement Lined.

(1) Foster Adaptors for MJ, made by Infact Corporation: Available in size 4" to 16" Part No. 4" - 4FA-BC, 6" - 6FA-BC, 8" - 8FA-BC, 10" - 10FA-BC, 12" - 12FA-BC, 16" - 16FA-BC

c. DETECTOR CHECK VALVE: Mueller/ Hersey EDC III, iron body, including 5/8" x 3/4" Trim Kit. Trim Kit Part No.: 4" - 282080, 6" - 282082, 8" - 282085, 10" - 282496.

d. GATE VALVES: Mueller Resilient Wedge Gate Valves, meets AWWA C509 specification, 250 psig, Non-rising stem, Part No. A-2360 sizes 4" through 12", Part No. A-2361 sizes 14" through 36", low zinc stems, epoxy coated inside and outside to meet the NSF 61 rating. The bonnet and stuffing box shall have 304 stainless steel bolts/nuts.

e. TRACER WIRE and WARNING TAPE:

(1) TRACER WIRE: Shall be direct bury AWG #14 solid copper wire, Color: Blue

(2) WARNING TAPE: Reef Industries, Standard Terra Tape in 3" widths. Color Blue and imprinted "Arizona Water Company"

f. AIR RELEASE VALVE: Crispin Model AR10 with 1" NPT inlet and 1/2" NPT outlet, cast iron body and top flange: with a 5/64" orifice with stainless steel valve sealing faces and BUNA-N rubber

g. PRESSURE RELIEF VALVE: Watts 174A, Model M, 2" inlet, 2" outlet, Bronze Body, 30lb. to 150lb. pressure range.

h. MEGALUG: Mechanical Joint restraint made of ductile iron conforming to ASTM 536-80, 250 psi made by EBAA Iron, Inc., series 1100 or equal.

i. METER BOXES:

(1) Concrete Box with a steel regular lid, Number 1: Tucson specification.

(2) Concrete Box with a steel regular lid, Number 2, 3, and 4: Phoenix specification.

j. PIPE, COPPER: type K soft copper in 60 or 100-foot coils, per ASTM B88

k. PIPE, DUCTILE IRON: Ductile Iron Pipe, Cement Lined, Push-on, conform to current ANSI/AWWA Specification A21.51/C151, Pressure Class 350 (sizes 4" through 12"), Pressure Class 250 (sizes 14" through 20"), or Pressure Class 200 for 24" through 36" pipe. Vendors:

(1) Pacific States Cast Iron Pipe Company
(2) Griffin Pipe
(3) United States Pipe and Foundry Company
(4) American Ductile Iron Pipe
(5) Clow Pipe (McWane, Inc.)

l. PIPE, PLASTIC: Plastic pipe, C-900 PVC per ANSI/AWWA C900, Class 150, sizes 6" through 12". NSF61 approved. Furnished in laying lengths of 20'. The barrel shall conform to the outside dimensions of steel pipe (IPS) or cast iron (CI) pipe equivalent and the wall thickness of dimension ratio (DR) 18.

m. POLYETHYLENE ENCASEMENT (Polywrap): For all pipeline and related fittings installed, EXCEPT for the Coolidge Division. Minimum 8 Mil. and installed per AWWA C105/A21.5-93 and ASTM A-674-89. Manufactured by the Pacific States Cast Iron Pipe Company. The wrapping tape shall be minimum 10 mil. vinyl tape. No duct tape shall be used.

n. COUPLING: Mueller, straight three part union, tested to meet ANSI/AWWA C800, H15403, conductive compression.

Mueller, H15428, straight coupling, conductive compression by male iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 2".

Mueller, H15451, straight coupling, conductive compression by female iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 2"

Viking Johnson brand, sold by Mueller: MaxiFit Straight (2"-24"), MaxiFit Xtra Straight (4"-8") or MaxiStep Transition, tested to meet AWWA/ANSI C.219-91 specifications - certified to ISO 9001:1994 / Smith - Blair Quantum.

o. STOP, ANGLE METER, BALL: Mueller, valve, B24258, conductive compression by meter swivel nut, tested to meet ANSI/AWWA C800, size 5/8" x 3/4" x 3/4" for a 3/4" service or size 1" for a 1" service.

Mueller, valve, B24265, female pipe thread by meter swivel nut, tested to meet ANSI/AWWA C800, size 5/8" x 3/4" x 3/4" for a 3/4" service or size 1" for a 1" service.

p. STOP, CORP: Mueller, ball valve, B25008, taper thread by conductive compression, tested to meet ANSI/AWWA C800 specification, sizes: 3/4", 1" and 2"

Mueller, ball valve, B25028, iron pipe thread by conductive compression, tested to meet ANSI/AWWA C800 specification. Sizes: 3/4", 1", and 2".

Mueller, 300 Ball Curb Valve, B-25122, taper thread by conductive compression, tested to meet ANSI/AWWA C800 specifications, size: 2" (2" service)

q. STOP, CURB: Oriseal valve, H10291, iron pipe thread by iron pipe thread, quarter turn check, brass, tested to 300 psi working pressure, tested to meet ANSI/AWWA C800 specification, size: 2".

Mueller, B20283, Mueller 300 ball curb valve, female iron pipe by female iron pipe, quarter turn check, tested to meet ANSI/AWWA C800 specification. Size: 2". (Blow-off E-9-8-1).

r. TAPPING SADDLE: Smith Blair, Cast Bronze ASTM-B584 85-5-5-5, double strap, iron pipe threads, Models 321 and 323. Washers are silicon bronze, ASTM-B96. Gaskets are grade 60 Buna N, or Mueller bronze double strap service saddle, BR 2 B series, cast bronze, ASTM-B585, 85-5-5-5, or H16084, 200 psig, meets ANSI/AWWA C800.

s. TAPPING SLEEVE: Mueller H304 Stainless Steel Tapping Sleeve, JCM 432 18-8 Type 304 Stainless Steel Tapping Sleeve, Romac "SST" Type 304 Stainless Steel Tapping Sleeve or CASCADE-style CST-EX stainless steel pressure-rated tapping sleeve.

t. TAPPING VALVE: Mueller Resilient Wedge tapping valve, Catalog Number T-2360-16, Class 125, sizes 4" through 12"; T-2361-16, Class 125, sizes 14" to 36" all with Type 304 stainless steel fasteners; bypass valves are required on 18" - 36" valves flange by mechanical joint per ANSI/AWWA C111, iron wedge, non-rising stem. Epoxy coated interior/exterior per ANSI/AWWA C550 for NSF 61 compliance 250 PSI range for valves 4" to 12", 150 PSI range for valves 14" to 36"

u. U-BRANCH: Mueller, H15364, 1" male iron pipe by 3/4" male iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 1" x 3/4" x 13-1/2", straight line.

v. VALVE BOXES: Valve Box with Cover, adjustable, Tyler 562-A or equal, made of cast iron.

w. VAULTS: Utility Vault Company, Chandler, AZ

(1) 4484-WA concrete vault with a 3660 aluminum double torsion door with a recessed padlock hasp, two - 18" x 24" center knockouts.

(2) 575-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two - 18" x 24" center knock outs and adjustable frame.

(3) 612-SX-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two - 18" x 24" center knockouts

x. VALVE, METER: Mueller, B24265-1, Mueller 300 ball angle meter valve, female iron pipe by meter nut, quarter turn check, lock wing, tested to meet ANSI/AWWA C800 specification. Size: 1".

Mueller, B25170, Mueller 300 ball straight valve, conductive compression by female iron pipe, quarter turn check, lock wing, tested to meet ANSI/AWWA C800 specification. Size: 1".

y. YOKES, METER: Relocator type copper meter yoke with horizontal inlet and outlet and meter thread ends, B24118, with lock wing Mueller 300 angle ball valve, full port, sizes: 1" x 12", 5/8" x 3/4" x 7", 5/8 x 3/4" x 9".

Mueller, 2" copper meter yoke with horizontal inlet and outlet and female iron pipe threads, B2423-99000, with lock wing Mueller 300 ball angle meter valves on inlet and outlet risers. Raised 1" by-pass with lock wing Mueller 300 ball valve

The Contractor also will be required to provide the following materials, the cost of which will be included in its unit bid price:

All material and concrete for thrust blocks, other anchors, reinforcing steel; all gravel, crushed stone, A.B.C., earth, sand, or screened material which may be required; all material for bracing and shoring trenches and for construction of forms; all barricades and traffic control equipment; all material for paving replacement and any water used for compaction of backfill.

(5) INSTALLATION OF MATERIALS

All materials are to be installed in accordance with manufacturers recommendations unless otherwise directed by these Specifications.

All pipe, fittings and valves shall be laid true to the lines, grades and locations established by the Specifications and the Construction Drawings.

The ends and inside of the pipe shall be thoroughly cleaned and inspected for damage. No damaged materials shall be installed in the water distribution system. Whenever the work ceases for any reason, all open pipeline ends shall be tightly plugged by the Contractor. Plugs shall be watertight and approved by the company.

Concrete thrust blocks of the sizes required by the plans and specifications are to be provided at all valves, changes in direction or size, or at any other point where an unbalanced thrust due to water pressure would exist. Thrust blocks are to be formed to prevent any concrete from spilling over or into a joint.

Trench curves as shown on the Construction Drawings may be made without fittings when using push on joint pipe up to twelve inches (12") in diameter, if the deflection of the pipe does not exceed five degrees (5°) or nineteen inches (19") per eighteen-foot (18') length of pipe. The minimum radius of such curves will be two hundred five feet (205').

Prior to construction, the appropriate agency(ies) will be notified as required by the permit(s).

It shall be the Contractor's responsibility to uncover all existing water lines being connected to, and to verify the location, depth and size of pipe before any construction begins.

Any construction performed without the knowledge of the duly authorized representative is liable for removal and replacement at the Contractor's expense.

All fire hydrants, frames, covers and valve boxes, etc. shall be adjusted to finished grade prior to the placing of the asphalt concrete surface course by the Contractor (where applicable).

Air release valves shall be installed at water system high points per Standard Detail E-9-8-2/E-9-8-3.

All water services shall be set a minimum of two feet (2') on the customer's property, preferably within the P.U.E. and not within right-of-way.

Unless otherwise specified on the construction drawings, all water mains shall be installed five feet (5') from the property line inside the right-of-way or easement.

Water valves shall be spaced not more than five hundred feet (500') in commercial districts and not more than eight hundred feet (800') in other districts. Variations may be required for transmission mains or special applications.

Installation of water line casing shall be per Standard Specification E-9-24-1.

Tracer Wire and Warning Tape are to be installed on all mains, tees, crosses, ells and fire hydrant laterals. They will not be installed on service lines. The tracer wire will be installed on the water main 45 degrees from the vertical centerline of the pipe and shall be taped to the fittings directly and on the main every 10 feet using a minimum 10 mil vinyl tape. The tracer wire shall be placed between the valve riser and box with a minimum of 12" of wire inside. The warning tape shall be installed a minimum of two feet below the surface, being measured from final grade, directly over the center of the pipe. Any splices in the tracer wire shall be joined using waterproof connectors. Any splices in the warning tape shall be joined using minimum 10 mil vinyl tape. The tracer wire shall be tested for continuity after backfill and compaction, but before paving. Any detected damages to the wire shall be repaired before paving will be allowed.

(6) BACKFILL OF WATER MAIN TRENCHES

Backfill of any excavation shall conform to the requirements of any of the governmental agencies having jurisdiction over the location. If no governmental agency having such jurisdiction specifies backfill or compaction requirements, and no special requirements are shown on the Construction Drawings, the procedure set forth in this section will apply for water line trenches.

The bedding material above the pipe and backfill material shall be compacted to a minimum of 70% compaction within a utility easement and 80% compaction within a right-of-way as determined by AASHTO T-99 method A and T-191. If water settling is used for compaction, it is the responsibility of the Contractor to prevent the pipe from floating.

The bedding material shall be either native material, 100% of which will pass through a one and one-half inch (1-1/2") screen and at least 20% of which will pass through a number-8 screen, or imported material which conforms to M.A.G. specifications for A.B.C. or type-B select materials. Bedding material shall be used below and around the pipe and a minimum of twelve inches (12") above the pipe. Shade and bedding material to be mechanically compacted prior to remainder of trench back-fill.

The remainder of the trench shall be backfilled with native or imported material which shall be of sound earthen material free from broken concrete, wood, broken pavement, or other unsuitable substances. Except as otherwise specified, backfill may be material containing no pieces larger than six inches (6") in greatest dimension.

Where settlement occurs, additional backfill material shall be placed and compacted and the trench shall be brought to final grade.

(7) HYDROSTATIC TESTING OF COMPLETED PIPELINES

Hydrostatic testing of water pipelines will be completed before the new system is connected into the existing water system so that all testing can be done against all new materials.

The completed section of water pipeline to be tested shall be slowly filled with water with care being taken to expel all air from the pipe. If necessary, the pipe will be tapped at high points to vent air.

The Contractor shall provide all equipment and labor necessary to accomplish this testing and the price shall be included in the unit prices. The Contractor shall notify the Company in advance of the testing so that the Company can schedule a duly authorized representative to be at the site during testing. The Contractor, at its own expense, shall make any necessary repairs to the system being tested in order to cause the section being tested to meet the test limits set below. The Contractor may request authorization of the Company to connect the new pipelines to the existing system prior to completion of pressure testing when, in the Company's sole opinion and judgment, conditions warrant such connection.

The Contractor shall assume all responsibility to complete pressure testing to Company's specifications after such connection, including, but not limited to, isolation of the new pipelines from the existing system, if necessary.

Connections prior to completion of pressure testing shall not be made unless prior Company authorization has been obtained, and any extra expenses resulting from such connections shall be the sole responsibility of the Contractor.

Leakage tests will be for a period of two hours at 200 + or - 5 psi at the point of lowest elevation; leakage may not exceed 0.1 gallons per hour per one thousand feet (1,000') of pipe per inch of diameter. If dry utilities are not installed, a second pressure test is required.

(8) STERILIZATION AND FLUSHING OF COMPLETED WATER PIPELINES

Sterilization and flushing will conform to recommendations of Arizona State Department of Health Services Engineering Bulletin Number 8, latest edition, or any future Arizona Department of Environmental Quality bulletins. Contractor to follow all conditions of any discharge permit.

(9) NO OTHER UTILITIES ALLOWED IN OR NEAR WATER PIPELINE TRENCHES

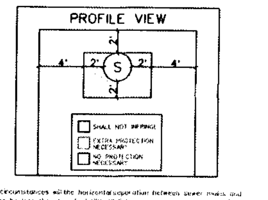
No other utility installations will be permitted in the water pipeline trench or within five feet (5') of the Company's water pipeline when running parallel to the water pipelines.

(10) PROTECTION OF WATER MAINS NEAR SEWERS

In order to protect water mains from contamination by sewers, the installation of the water mains must conform to the following requirements:

a. Horizontal: When water lines and sewers are laid parallel with each other, the horizontal distance between them shall not be less than six feet (6'). Each line shall be laid on undisturbed or bedded material in a separate trench. Where conditions prevent the minimum horizontal separation set forth above, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing both water and sewer main in concrete. See AWC Standard Detail E-9-30-1 and E-9-30-2.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department. Refer to the diagram below for clarification.



Under no circumstances will the horizontal separation between sewer mains and water mains be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main.

b. Vertical: When a water main is parallel with or crosses a sewer main within two feet (2') above the sewer or greater than two feet (2') below the sewer, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing both water and sewer main in concrete. See AWC Standard Detail E-9-30-1 and E-9-30-2.

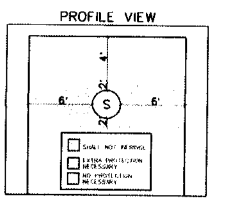
The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department.

Under no circumstances will the vertical separation of a sewer main installed above a water main be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main. Refer to the diagram above for clarification.

c. When unusual conditions such as, but not limited to, highway or bridge crossings prevent the water and sewer main separations required from being met, the appropriate state and/or county health department will review and may approve requests for authorization to use alternate construction techniques, materials and joints on a case-by-case basis.

d. No water pipe shall pass through or come into contact with any part of a sewer manhole. The minimum horizontal separation between water mains and manholes shall be six feet (6'), measured from the center of the manhole.

e. The minimum separation between force mains or pressure sewers and water mains shall be two feet (2') vertically and six feet (6') horizontally under all conditions. Where a sewer force main crosses above, or less than six feet (6') below, a water line, the sewer main shall be encased in at least six inches (6") of concrete for ten feet (10') on either side of the water main. Refer to the diagram below for clarification.



f. Sewer mains (gravity, pressure, force) shall be kept a minimum of fifty feet (50') from drinking water wells, unless the following conditions are met.

1. Water main pipe, pressure tested in place to 50 psi without excessive leakage, may be used for gravity sewers at distances greater than twenty feet (20') from drinking water wells.

2. Water main pipe, pressure tested in place to 150 psi without excessive leakage, may be used for pressure sewers and force mains at distances greater than twenty feet (20') from drinking water wells.

g. No septic tank/disposal field system shall be constructed within one hundred feet (100') of a drinking water well.

h. All distances are measured perpendicularly from the outside of the sewer main to the outside of the water main. These separation requirements do not apply to building plumbing or individual house service connections.

i. Use Mechanical Joint ductile iron pipe with Megalug thrust restraints a minimum of ten (10') feet on each side of a sewer or storm drain crossing.

(11) COMPACTION

When crossing existing water mains a minimum of 95% compaction is required to the bottom of existing mains.

Arizona Water Company requires that no slurry be permitted to contact existing cement/asbestos or ductile iron pipes, unless authorized by the company. Slurry may be poured in the bottom of the sewer trench stopping three inches (3") below the existing water main. The backfill used around the main should be ABC in sufficient depth to prevent slurry from contacting existing main.

(12) WATER MAIN MATERIAL SPECIFICATIONS

Ductile iron pipe (Push-on type) minimum class 350, cement lined and conform to AWWA C151.

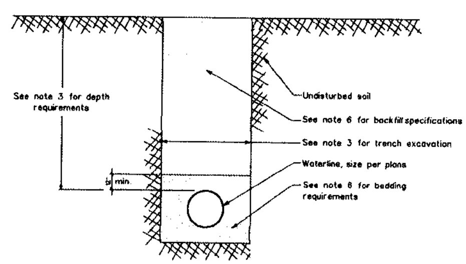
All gate valves shall conform to AWWA C500 with a minimum working pressure of 200 psi.

All cast iron fittings to be cement lined in accordance with AWWA C104 and shall conform to AWWA C110 with a minimum working pressure of 250 psi. Except for the Coolidge System - See Note 4i.

Maximum joint deflection for 6" mechanical joint ductile iron pipe is seven degrees, seven minutes (7°,7') or twenty-seven inches (27") per eighteen-foot (18') length pipe, for a maximum curve of one hundred forty five feet (145').

Maximum joint deflection for 8" and 12" mechanical joint ductile iron pipe is five degrees, twenty-one minutes (5°,21') or twenty inches (20") per eighteen foot (18') length pipe, for a maximum curve of one hundred ninety-five feet (195').

Maximum joint deflection for 6", 8" and 12" push-on joint ductile iron pipe is five degrees (5°) or nineteen inches (19") per eighteen foot (18') length pipe for a maximum curve of two hundred five feet (205').



TYPICAL TRENCH DETAIL
Per MAG Detail 601, 601.4.2, 601.4.6

RELEASED TO CONSTRUCTION
JUL 1 0 2014
FRED SCHNEIDER

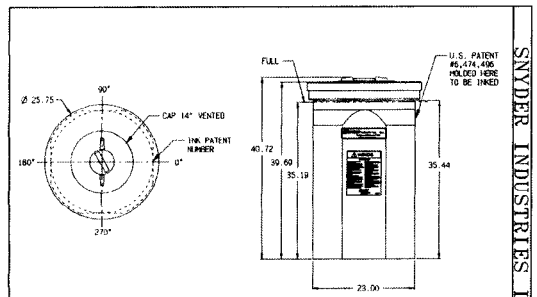
REVISIONS	
The installation shown is to be installed in accordance with the Arizona Water Company standard specifications on file with the Arizona Department of Environmental Quality	263-1100 / 1-800-STAKE-IT
W.A. No.	1-5137
SYSTEM	MIAMI
LEGAL DESC.	SE 1/4 SEC. 29, T. 2 N., R. 15 E.
TAX DIST.	0100
DATE	1/14/2014
SCALE	AS SHOWN
DRAWN BY	JAK
CHECKED BY	MZM

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

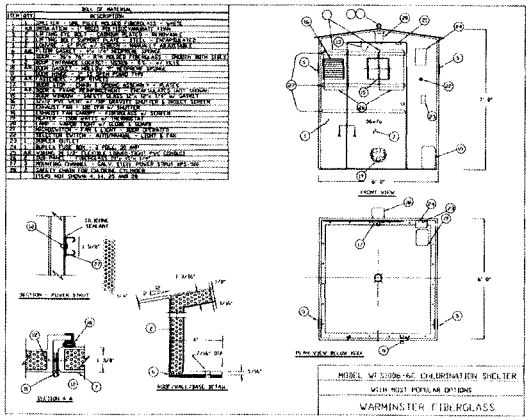
PROJECT DESC.: CONSTRUCT LIQUID CHLORINATION DISINFECTION SYSTEM AT WELL SITE No. 28, NEAR GLOBE, ARIZONA
PROJECT SHEET DESC.: GENERAL NOTES

53726
RICHARD D HACKER
ARIZONA, U.S.A.
Expires 9-30-2015

DWG. No.: SS-0199
SHEET 3 OF 4

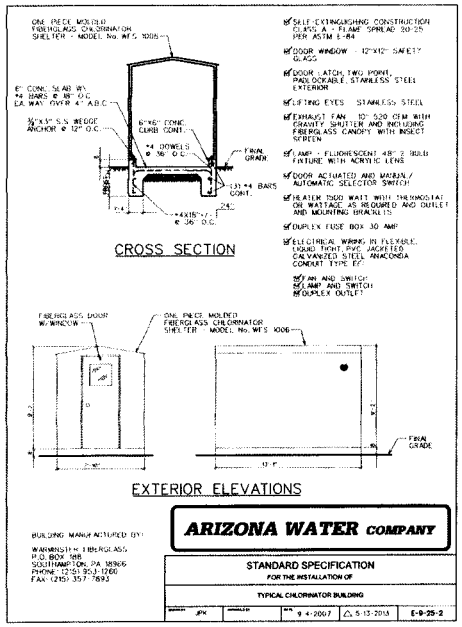


60 GALLON DOUBLE CONTAINMENT TANK ASSEMBLY



	FITTING SCHEDULE	QUANTITY	SUPPLIED BY	INSTALLED BY
1.	PUMP - ECCENTRIC P/MDT MN6 (EXISTING)	1 (EXIST.)	A.W.Co.	CONTR.
2.	6'-X 10'-X 6"- THICK CONCRETE BASE	1	CONTR.	CONTR.
3.	6'-X 8'-X 7'-FIBERGLASS CHLORINATOR SHED (WARMINSTER, MODEL WFS1006-6C CHLORINATION SHELTER) PER A.W.Co. STD SPEC. E-9-25-2	1	CONTR.	CONTR.
4.	60 GAL DBL. CONT. CHLORINE STOR. TANK (REF. SHT. 4)	2	A.W.Co.	A.W.Co.
5.	6" X 1" I.P. THRD. DBL. STRAP SADDLE	2	CONTR.	CONTR.
6.	1" BALL CORP. STOP M.I.P. X M.I.P. W/COMPRESSION GLAND	1	CONTR.	CONTR.
7.	1/2" P.V.C. SOLUTION TUBE P.E. X M.I.P.	10+ L.F.	CONTR.	CONTR.
8.	1-1/2" CAP, SCH. 80 P.V.C. (DRILL HOLE FOR TUBING & DRY FIT)	1	CONTR.	CONTR.
9.	1/4" O.D. TUBING/POLYPROPYLENE	50+ L.F.	CONTR.	CONTR.
10.	1-1/2" (22.5, 45, 90) ELLS SCH. 80 P.V.C.	---	CONTR.	CONTR.
11.	1-1/2" PIPE/SCH. 80 P.V.C.	60+ L.F.	CONTR.	CONTR.
12.	1-1/4" X 1" REDUCER BUSHING MPT/FPT/SCH. 80 PVC	1	CONTR.	CONTR.
13.	1" MALE ADAPTER MPT X S/CU	1	CONTR.	CONTR.
14.	1" UNION S/CU	1	CONTR.	CONTR.
15.	1" 90° ELL S/CU	1	CONTR.	CONTR.
16.	1" PIPE/TYPE 'K' CU	50+ L.F.	CONTR.	CONTR.
17.	SAF-T-FLO EB-1SS-S-H-S-B RETRACTABLE INJECTOR	1	CONTR.	CONTR.
18.	1/2" SPRING LOADED BALL CHECK VALVE	1	CONTR.	CONTR.

*** QUANTITIES TO BE DETERMINED DURING CONSTRUCTION



Sodium Hypochlorite Chlorinator Specifications

DESCRIPTION:
The chlorination system shall be a sodium hypochlorite chlorinator as supplied by Chemical Injection Technology Inc., P.O. Box 4144, Cave Creek, AZ 85331 or its equivalent. The chlorination system shall be completely assembled and ready to install.

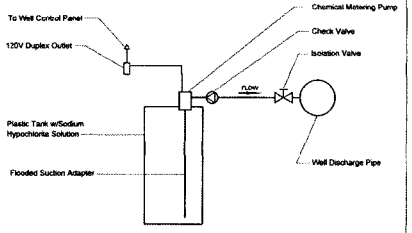
COMPONENTS:
The Chlorination system shall have the following components.
A. Welchem Iwaki chemical metering pump w/ a total solution output control valve
B. Flooded Suction Adapter
C. Plastic tank assembly
D. Reverse flow check valve
E. Manual isolation valve
F. On/off pump control (switched outlet)

ELECTRICAL FIXTURES:
120V,15A,1PH, weatherproof duplex outlet (G.F.I.)

CHLORINATOR DESIGN:
The chlorination facility shall be designed and constructed in accordance with Arizona State Department of Health Engineering Bulletin Number 8 - "Disinfection of Water Systems". Latest Revision.

CHLORINATOR EQUIPMENT:
The sodium hypochlorite chlorinator equipment shall conform to NSF Standard 60 and 61.

CHLORINATOR OPERATION:
The chlorination facility shall be operated in accordance with Arizona State Department of Health Engineering Bulletin Number 8, "Disinfection of Water Systems", Table 1. latest revision.



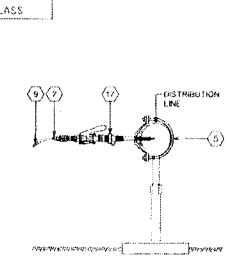
Chlorinator Schematic

FOUNDATION NOTES

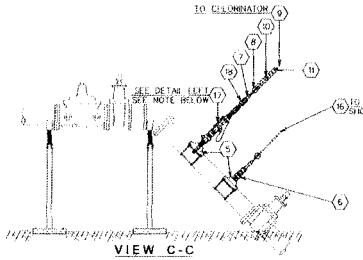
1. FOUNDATION: USE FOOTING ON UNDISTURBED SOIL OR APPROVED ENGINEERED FILL. SOIL PRESSURE 1,500 PSF PER IBC 1804.2, CLASS 4 MATERIAL
2. CONCRETE: A.C.I. MANUAL OF CONCRETE PRACTICE, TYPE II CEMENT, MINIMUM 28 DAY STRENGTH OF 2,500 PSI MAXIMUM SLUMP 5"
3. REINFORCING: ASTM A615, GRADE 60 DEFORMED BARS #4 REBAR SPACING 12" O.C. EACH WAY

CONCRETE COVER TO REINFORCING:
A. CONCRETE AGAINST EARTH ..... 3"
B. OTHER ..... 1½"

LAP SPLICES: 48 BAR DIAMETERS UNLESS OTHERWISE NOTED.



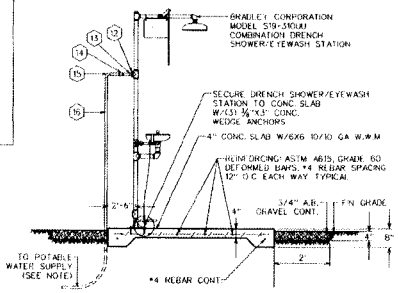
INJECTION POINT DETAIL
NOT TO SCALE



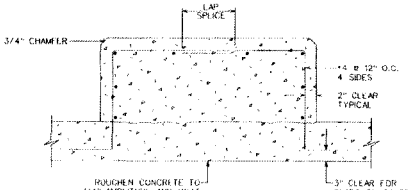
VIEW C-C

NOTE (11) LENGTH OF 1/2" SOLUTION TUBE TO BE DETERMINED BY FIELD PERSONNEL

NOTE:
THE ANSI Z358.1 STANDARD REQUIRES AN UNINTERRUPTABLE SUPPLY OF FLUSHING FLUID AT A MINIMUM 30 PSI FLOWING PRESSURE.



DRENCH SHOWER/EYEWASH STATION
DETAIL 'F'



PUMP PEDESTAL DETAIL
NOT TO SCALE

RELEASED TO CONSTRUCTION
DEC 10 2014
FRED SCHNEIDER

The installation shown is to be installed in accordance with the Arizona Water Company standard specifications on file with the Arizona Department of Environmental Quality

BLUE STAKE, INC. 602-263-1100 1-800-782-5348 (OUTSIDE METRO AREA)

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

PROJECT: CONSTRUCT LIQUID CHLORINATION DISINFECTION SYSTEM AT WELL SITE NO. 28, NEAR GLOBE, ARIZONA
PROJECT SHEET TITLE: DETAILS

W.O. No. 1-5137 | P.E. No. | SYSTEM: MIAMI | LEGAL DESC: SE 1/4 SEC. 29, T. 2 N., R. 15 E. | AP DIST. 0100 | DATE: 1/14/2014 | SCALE: AS SHOWN | DRAWN BY: JAK | CHECKED BY:

53726 RICHARD D. HACKER REGISTERED ARIZONA U.S.A.
Expires 9-30-2015

DWG No. SS-0199
SHEET 4 OF 4

Exhibit "L"

20-Year Life Cycle Cost Assumptions

Exhibit "L"

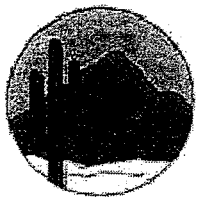
20-Year Life Cycle Cost Analysis Assumptions

1. Interest Rate: 4% per year
2. Capital Cost: Bid Price
3. O&M Costs:
    a. Utilization: 25% (winter) to 50% (summer)
    b. Method of Operation: Partial treatment with bypass
    c. Company Operator Labor Rate: $75/hr (specify expected manhours)
    d. Media Removal/Replacement Cost: Per Exhibit "B" (specify frequency per guarantee)
    e. Power Cost: $0.15/kWh (specify expected power consumption)
    f. Laboratory: $500/month
    g. Vehicles/Fuel: $250/month
    h. Routine Repairs/Parts: $1,000/month
    i. Chemical Costs (specify chemical demand) :

i.	Delivery frequency:	Once per month.
ii.	Sodium hypochlorite (12.5%):	$1.67/gal (includes tax and delivery)
iii.	Sulfuric acid (91-93%):	$2.23/gal (includes tax and delivery)
iv.	Sodium hydroxide: (50% summer/25% winter)	$2.59/gal (includes tax and delivery)
v.	Ferric chloride (38-42%):	$3.16/gal (includes tax and delivery)
vi.	Chlorine Demand:	1 ppm
vii.	Desired Chlorine Residual:	1 ppm

Exhibit "M"

Arizona Water Company
EI&C Design Guidelines Technical Specification



ARIZONA WATER COMPANY

EI&C DESIGN GUIDELINES

TECHNICAL SPECIFICATIONS

NOVEMBER 2009

Corporate Office
3805 North Black Canyon Hwy • Phoenix, AZ 85015-5351
P.O. Box 29006 • Phoenix, AZ 85038-9006
602.240.6860 (Phone)
602.240.6878 or 602.240.6874 (Fax)

Exhibit "N"

ADEQ Initial Start-Up Monitoring Form

Initial Start-Up Monitoring Form

For Ground Water Systems with Treatment Plants and/or Blending Plans

Please mail completed form and all Field & Lab analyses to:
ADEQ Drinking Water Monitoring and Protection Unit
1110 W. Washington St., Mail Code 5415B-2,

PWS ID Number (5 digits):	AZ04 –	**PWS Name:**			
Contact Person/Title:		**Phone #**		**E-Mail Address:**	
Choose One:	☐ Treatment Plant Only	☐ Treatment Plant & Blending Plan		☐ Blending Plan Only	
Entry Point to the Distribution System (EPDS) #:		**Contaminant:**	☐ Arsenic ☐ Fluoride ☐ Nitrate ☐ Other:		

Samples	MM/DD/YY	Sample Time (24h)	Raw Water Result (mg/L) (Insert well registration numbers below)					Treated Water Result (mg/L)	Finished Blended Water Results (mg/L)	Test Method
			Well # 55-	Well # 55-	Well # 55-	Well # 55-	Well # 55-			
Day 1										☐Field ☐Lab
Day 2										☐Field ☐Lab
Day 3										☐Field ☐Lab
Day 4										☐Field ☐Lab
Day 5										☐Field ☐Lab
Week 2										☐Lab
Week 3										☐Lab
Week 4										☐Lab
Month 2										☐Lab
Month 3										☐Lab

If Water System chooses to take Field Tested Water Samples, any of the following Field Test Kits are acceptable: *ITS Arsenic Quick II Test Kit, Pat No. 481303, ITS Fluoride eXact Xtra Micro Strips, Part No. 486611 or Hach Nitrate Color Disc Test Kit Model NI-14.* All Water Samples from week 2 thru Month 3 must be submitted to a Certified Laboratory for analysis. Hard copies of Certified Lab Results must be provided with this form.

I hereby certify that the information listed above is accurate to the best of my knowledge. Furthermore, unless otherwise directed by the State, I understand that quarterly compliance monitoring shall commence for the above noted contaminant after initial monitoring has been completed. This quarterly routine compliance monitoring frequency shall remain in effect for the life of the treatment plant.

Water System Owner/Representative (Print)	Signature	Date

PRELIMINARY [X]
ACTUAL [ ]

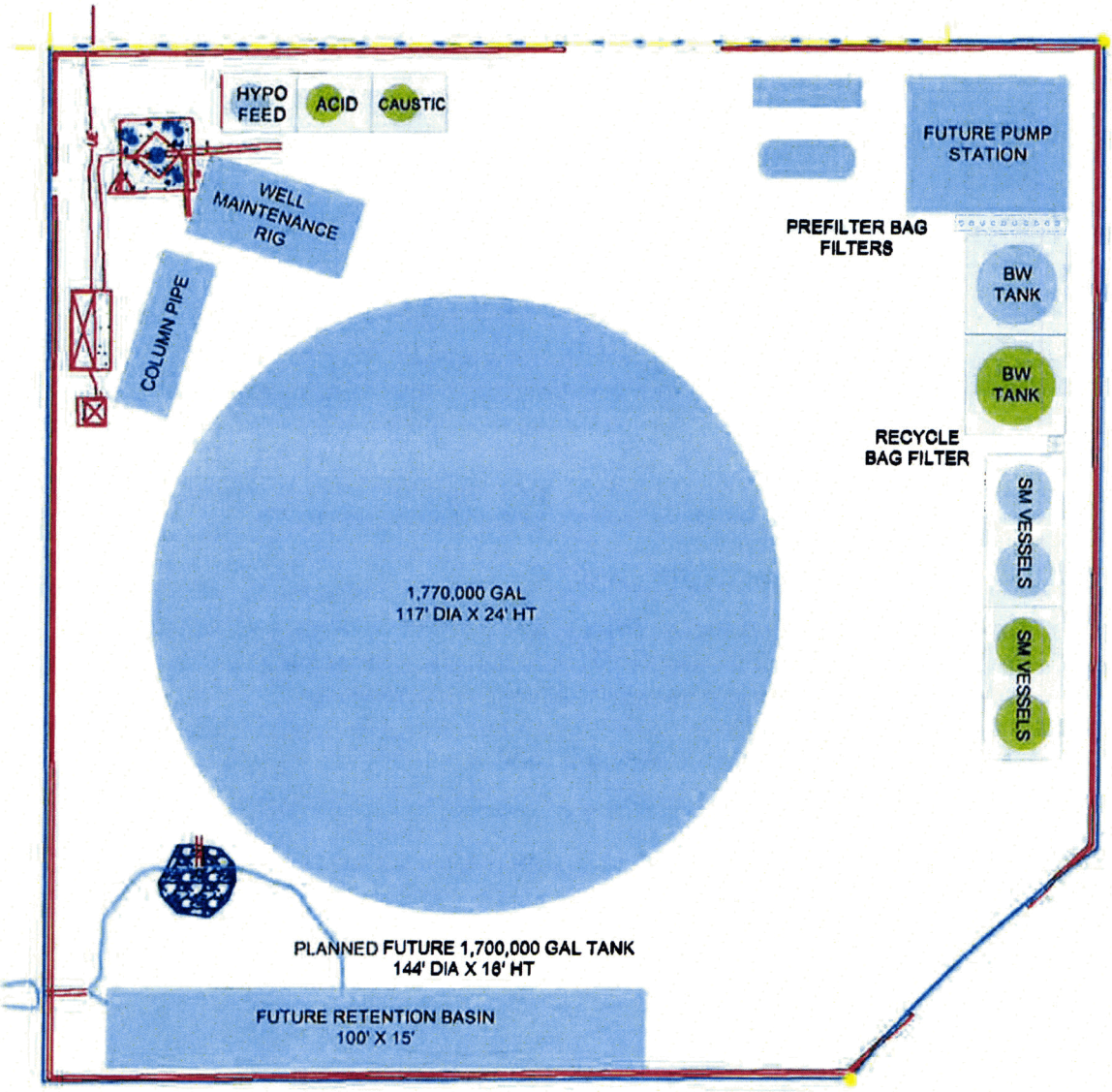
ARIZONA WATER COMPANY
COST ESTIMATE WORKSHEET

PREPARED BY: James Wilson
SYSTEM: Pinal Valley
DATE PREPARED: 11/3/2014
1 OF 1
PROJECT LOCATION:
DRAWING NO.

PROJECT DESCRIPTION:

Design and construct an Arsenic Removal Facility at Coolidge Well No. 13

	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST	TOTAL
CONTRACT WORK	Preliminary ARF Design Analysis	332	1	$ 28,000.00	$ 28,000
	ARF Design	332	1	75,000.00	75,000
	Provide and install ARF vessels with median and all related fittings	332	1	350,000.00	350,000
	Provide and install chemical system	332	1	250,000.00	250,000
	Provide and intall onsite piping with all related fittings	332	1	165,000.00	165,000
	Provide and install backwash system with all related fittings	332	1	200,000.00	200,000
	Testing commissioning and training	332	1	75,000.00	75,000
	CA Services	332	1	60,000.00	60,000
	Contracting tax	332	1	75,000.00	75,000
	Performance and Payment bond	332	1	15,000.00	15,000
	SERVICE CONNECTIONS: DOUBLE-LONG	345			
	SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	TAXABLE SERVICE CONNECTIONS COMPLETE: SINGLE-LONG	345			
	TAXABLE SERVICE CONNECTIONS COMPLETE: SINGLE-SHORT	345			
					$ 1,293,000
MATERIALS					
	SERVICE CONNECTIONS: DOUBLE-LONG	345			
	SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	TAXABLE SERVICE CONNECTIONS: SINGLE-LONG	345			
	TAXABLE SERVICE CONNECTIONS: SINGLE-SHORT	345			
	TAXABLE METERS	346			
	METERS	346			
TOTAL MATERIALS					$ -
LABOR	Project management and submittal review	332	120	$ 55.00	$ 6,600
	TESTING FEE	332	1	$ 1,500.00	1,500
	PERMIT FEE	332	1	11,000.00	11,000
	SURVEY FEE	332	1	1,500.00	1,500
	FIELD INSPECTION	332	120	55.00	6,600
	INSTALL SERVICE CONNECTIONS: DOUBLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	INSTALL **TAXABLE** SERVICE CONNECTIONS: SINGLE-LONG	345			
	INSTALL **TAXABLE** SERVICE CONNECTIONS: SINGLE-SHORT	345			
TOTAL LABOR					$ 27,200
SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR					$ 1,320,200
OVERHEAD					158,500
TOTAL	REFUNDABLE PORTION [ ] NON-REFUNDABLE PORTION [ ]			**COST ESTIMATE**	$ 1,478,700



LEGEND

- AWC future planned equipment
- Proposed arsenic treatment equipment
- Future arsenic treatment equipment

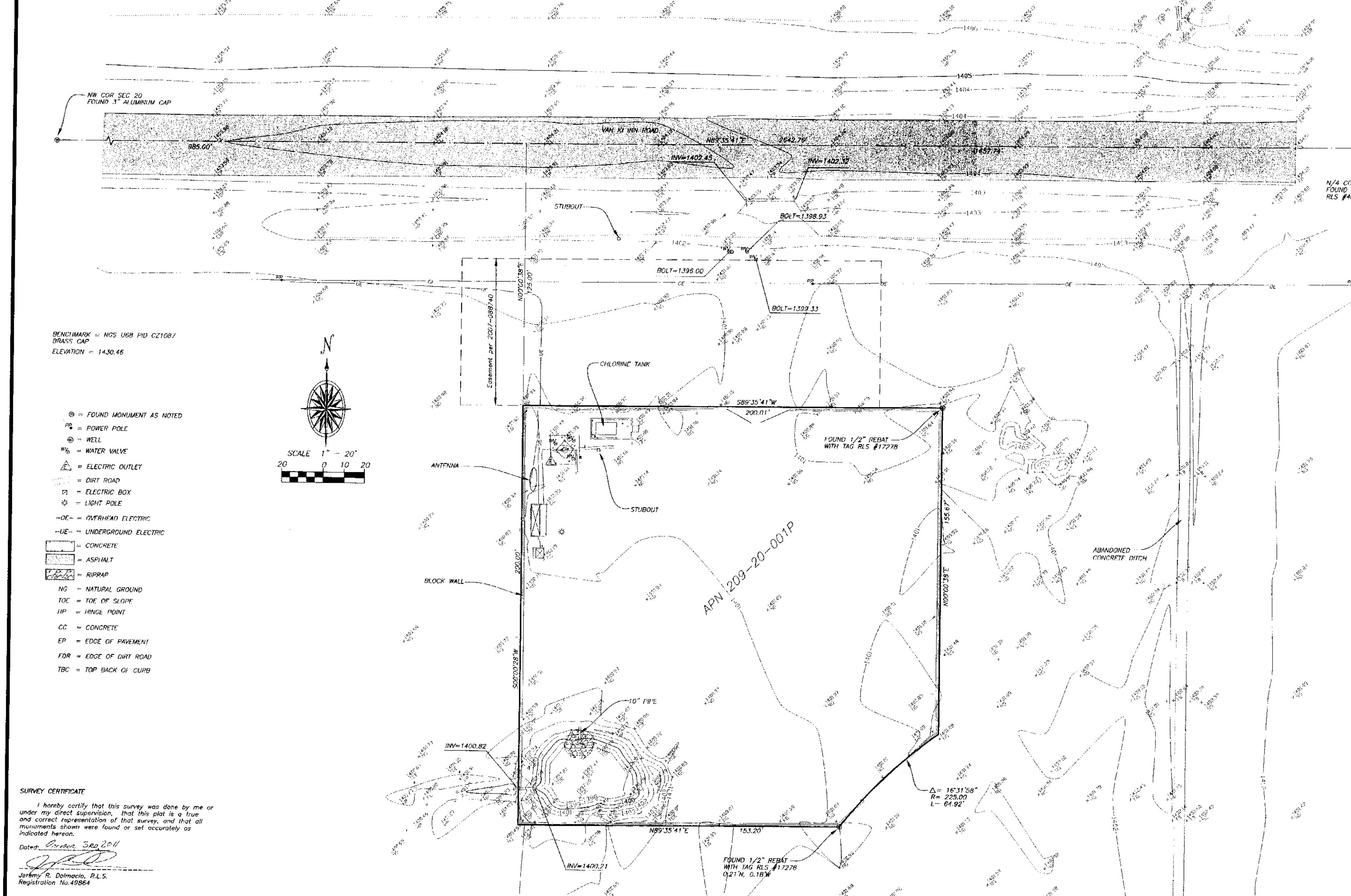
ADSORPTIVE

~~Figure 9 – Alternative 1 SM - Parallel Site Layout~~

COOLIDGE WELL NO. 13
ARSENIC REMOVAL FACILITY ALTERNATIVES EVALUATION
ARIZONA WATER COMPANY

carollo

RECORD OF SURVEY



BENCHMARK = NGS U68 PID CZ1087
BRASS CAP
ELEVATION = 1430.46

- ⊚ = FOUND MONUMENT AS NOTED
- PP = POWER POLE
- ⊕ = WELL
- WV = WATER VALVE
- = ELECTRIC OUTLET
- = DIRT ROAD
- = ELECTRIC BOX
- = LIGHT POLE
- —OE— = OVERHEAD ELECTRIC
- —UE— = UNDERGROUND ELECTRIC
- = CONCRETE
- = ASPHALT
- = RIPRAP
- NG = NATURAL GROUND
- TOE = TOE OF SLOPE
- HP = HINGE POINT
- CC = CONCRETE
- EP = EDGE OF PAVEMENT
- EDR = EDGE OF DIRT ROAD
- TBC = TOP BACK OF CURB

SURVEY CERTIFICATE

I hereby certify that this survey was done by me or under my direct supervision, that this plat is a true and correct representation of that survey, and that all monuments shown were found or set accurately as indicated hereon.

Dated: October Sep 2011

Jeremy R. Dalmacio, R.L.S.
Registration No. 49864

Arizona Water - Coolidge Well #13

TOPOGRAPHIC SURVEY

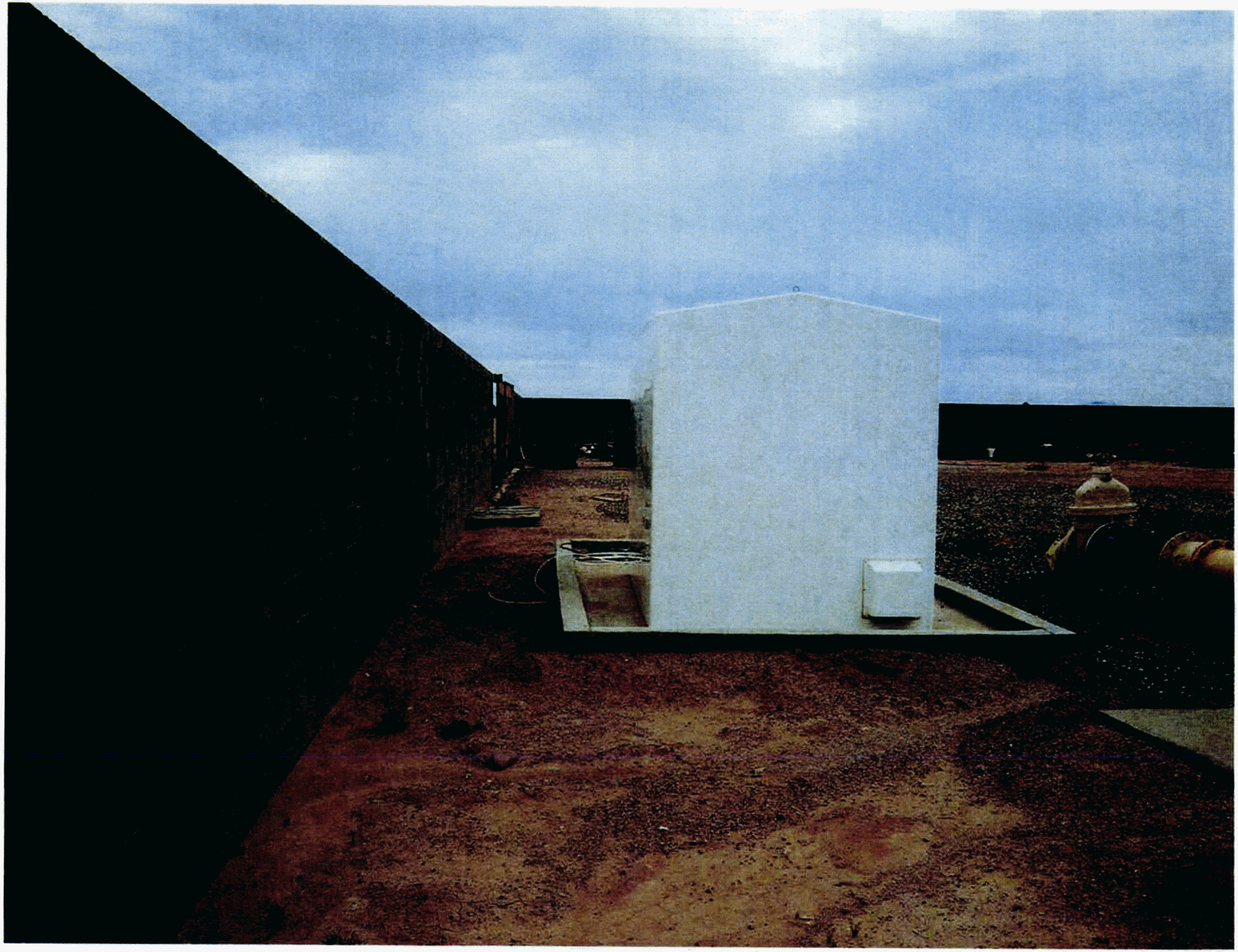
A PORTION OF THE NW/4 SEC 20
T5S, R8E, G&SRM, PINAL COUNTY, ARIZONA

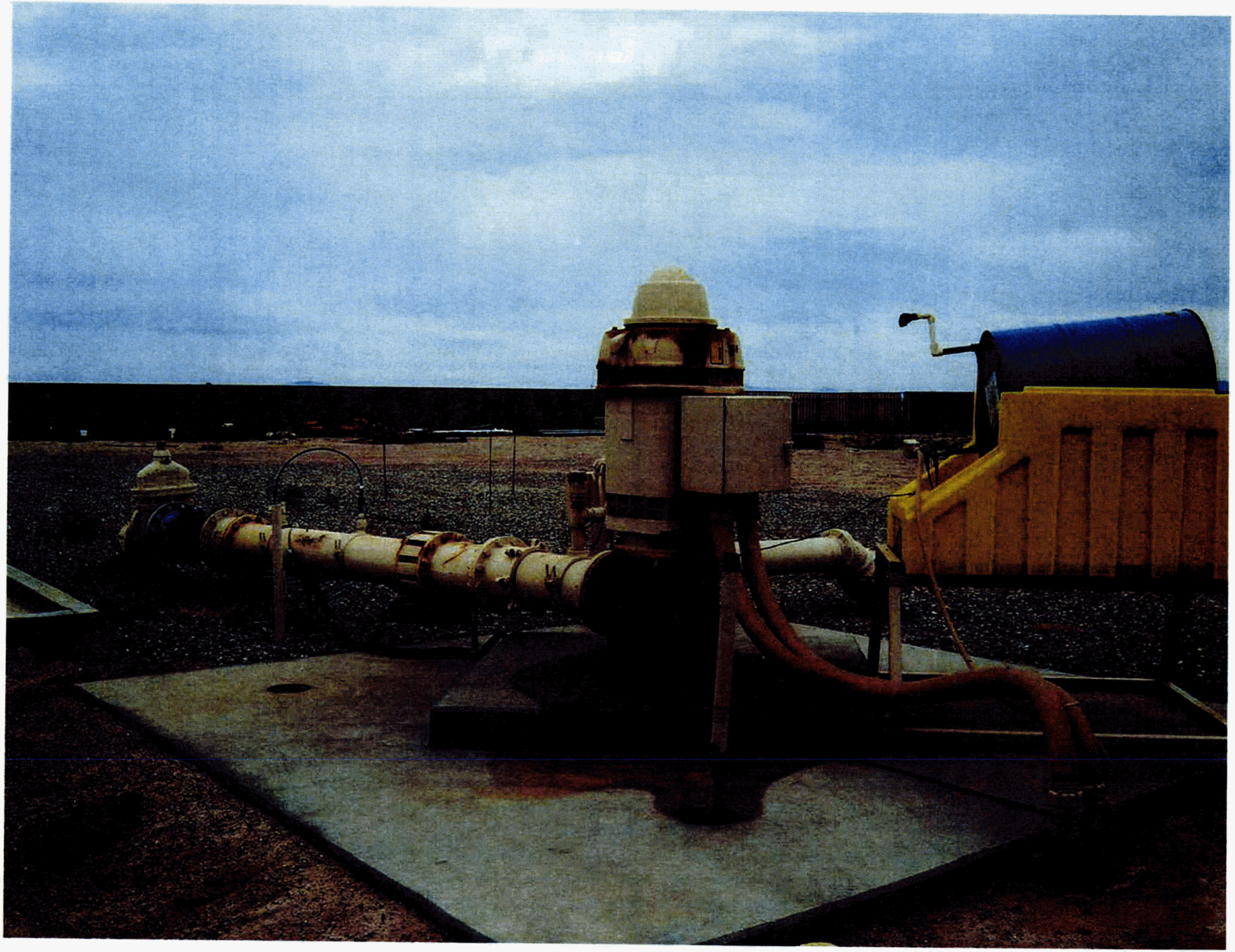
SHEET 1 OF 1

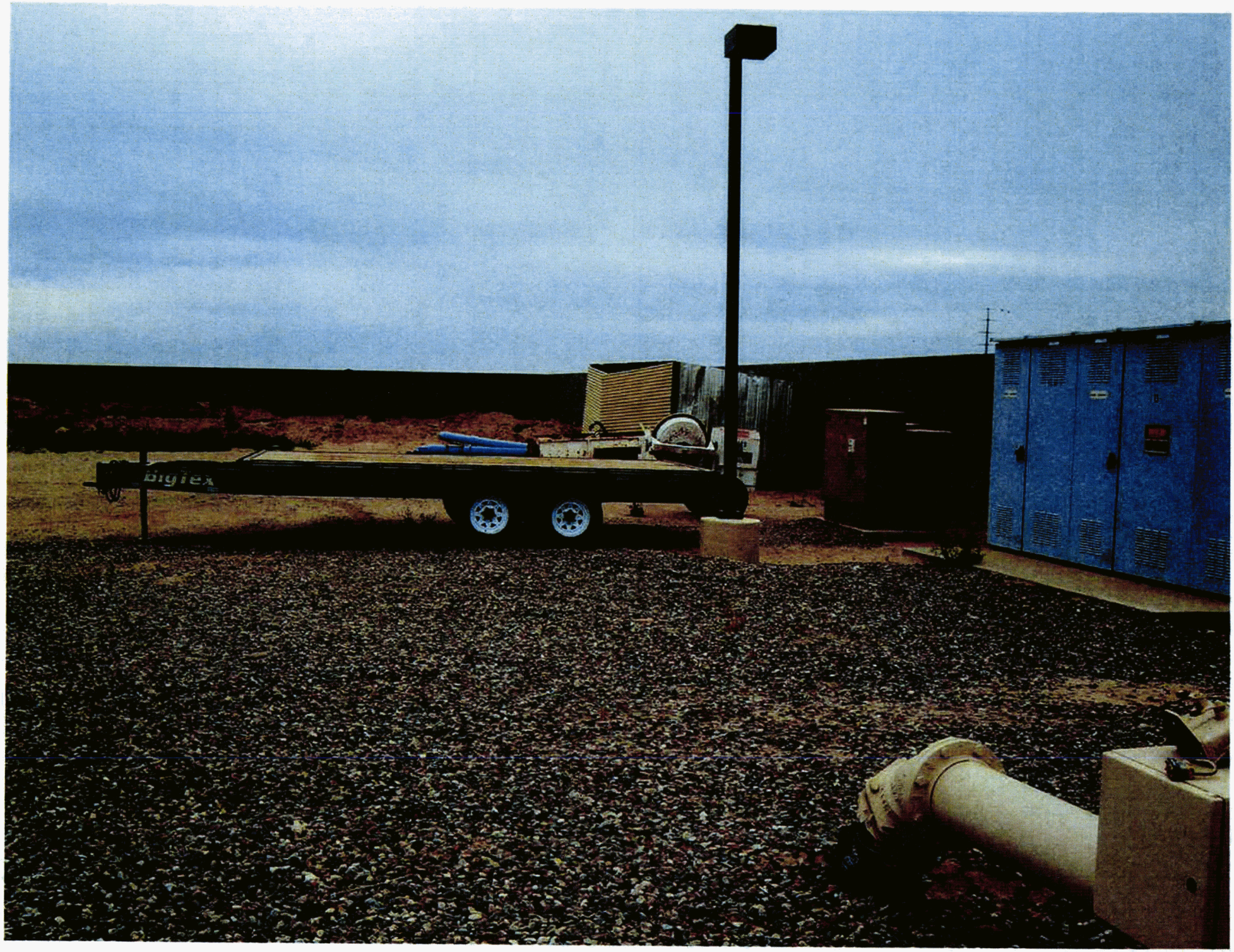
HANSEN
ENGINEERING & SURVEYING

30th ANNIVERSARY 1979 2009

49864
JEREMY R. DALMACIO



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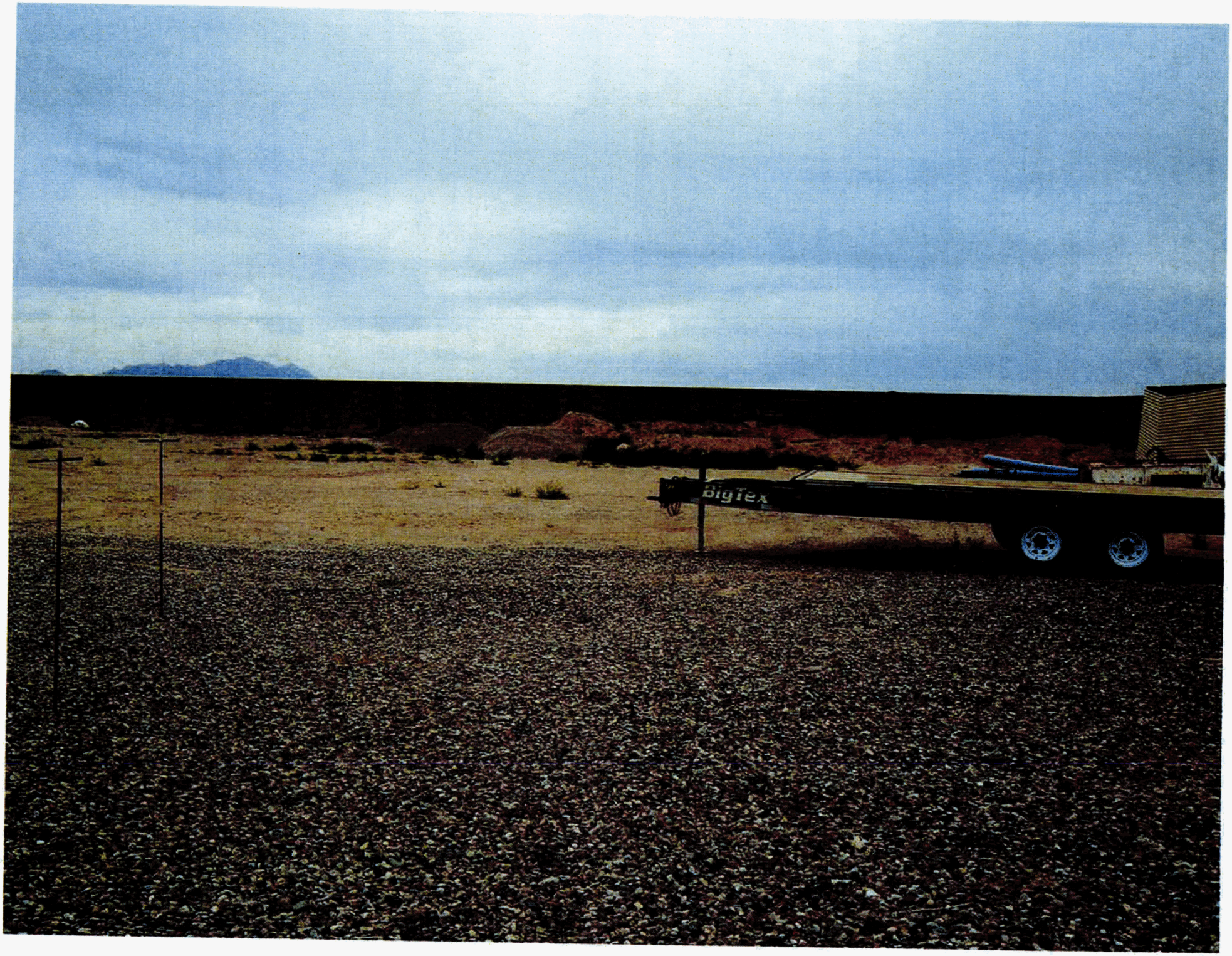
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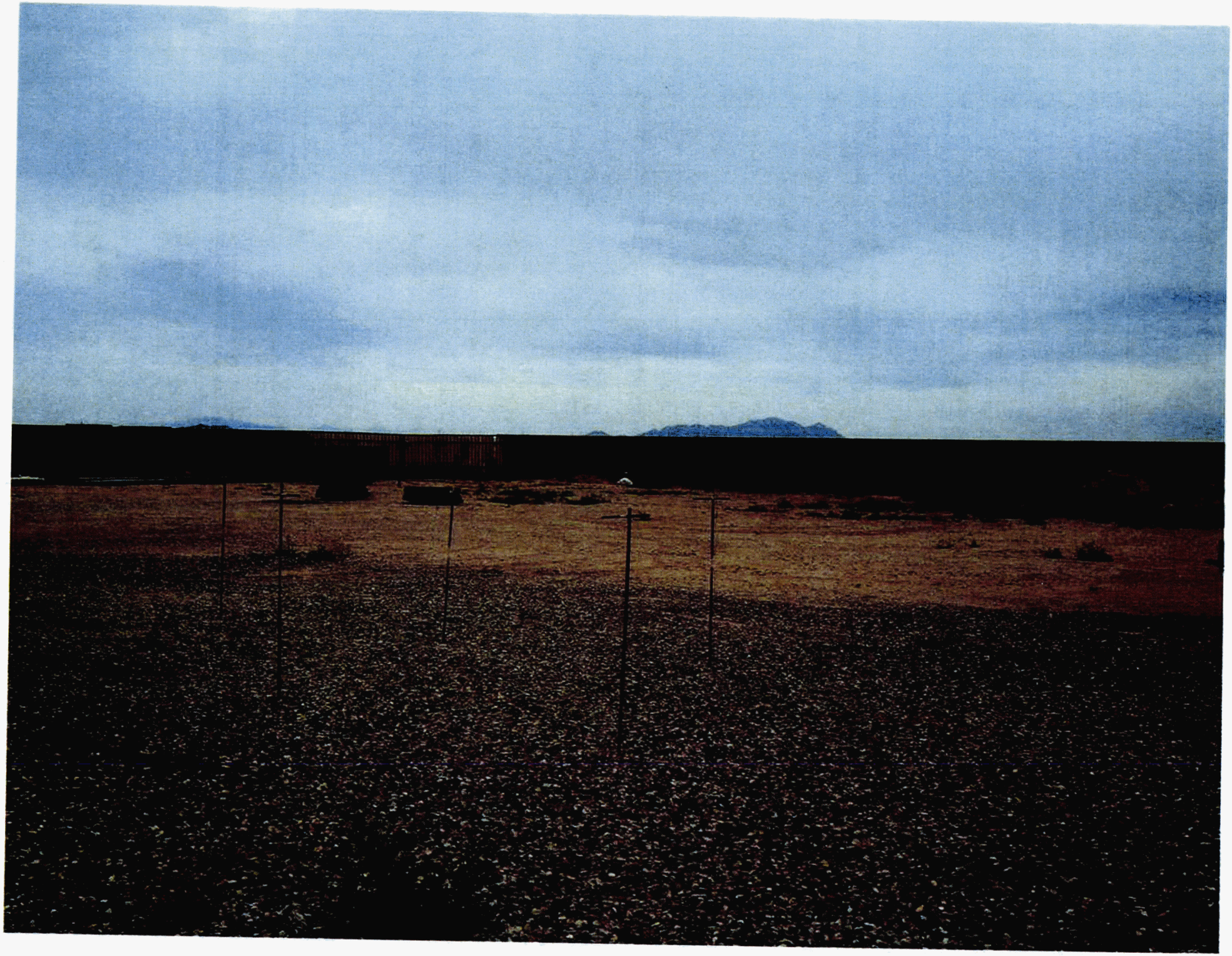

DANGER
UNAUTHORIZED
PERSONNEL
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NO
TRESPASSING
WARNING!
FEDERAL
OFFENSE!
13
ARIZONA
WATER
COMPANY
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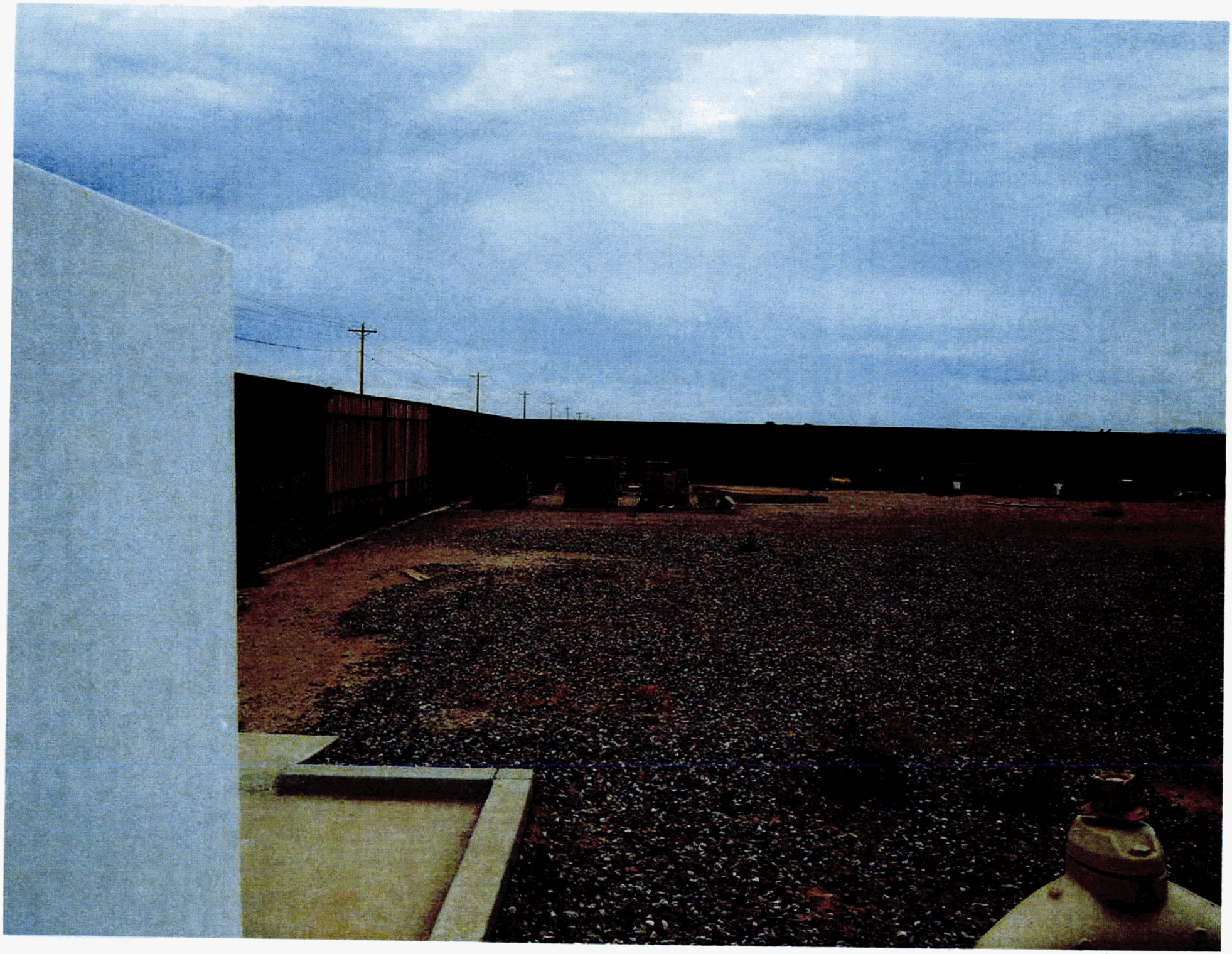

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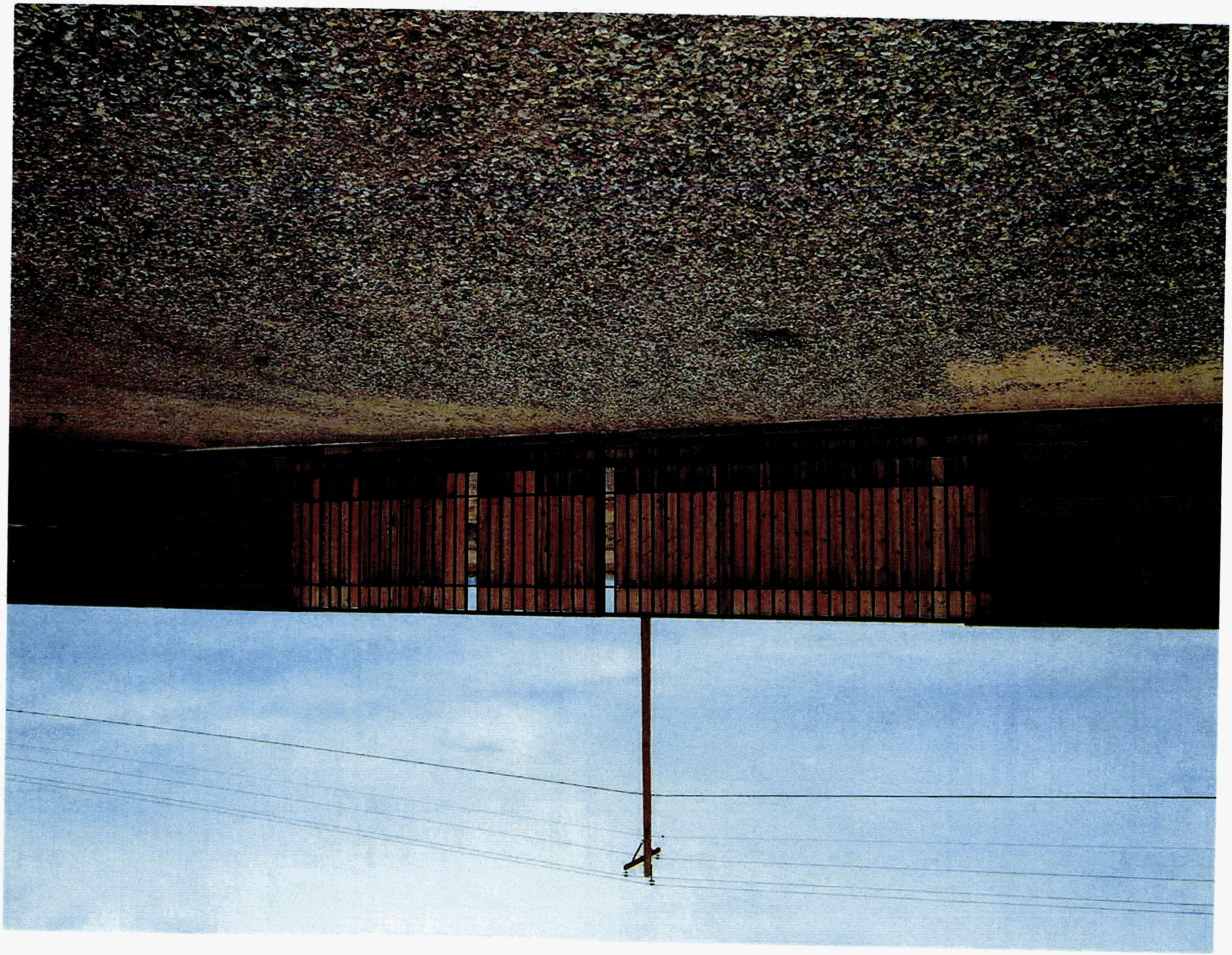
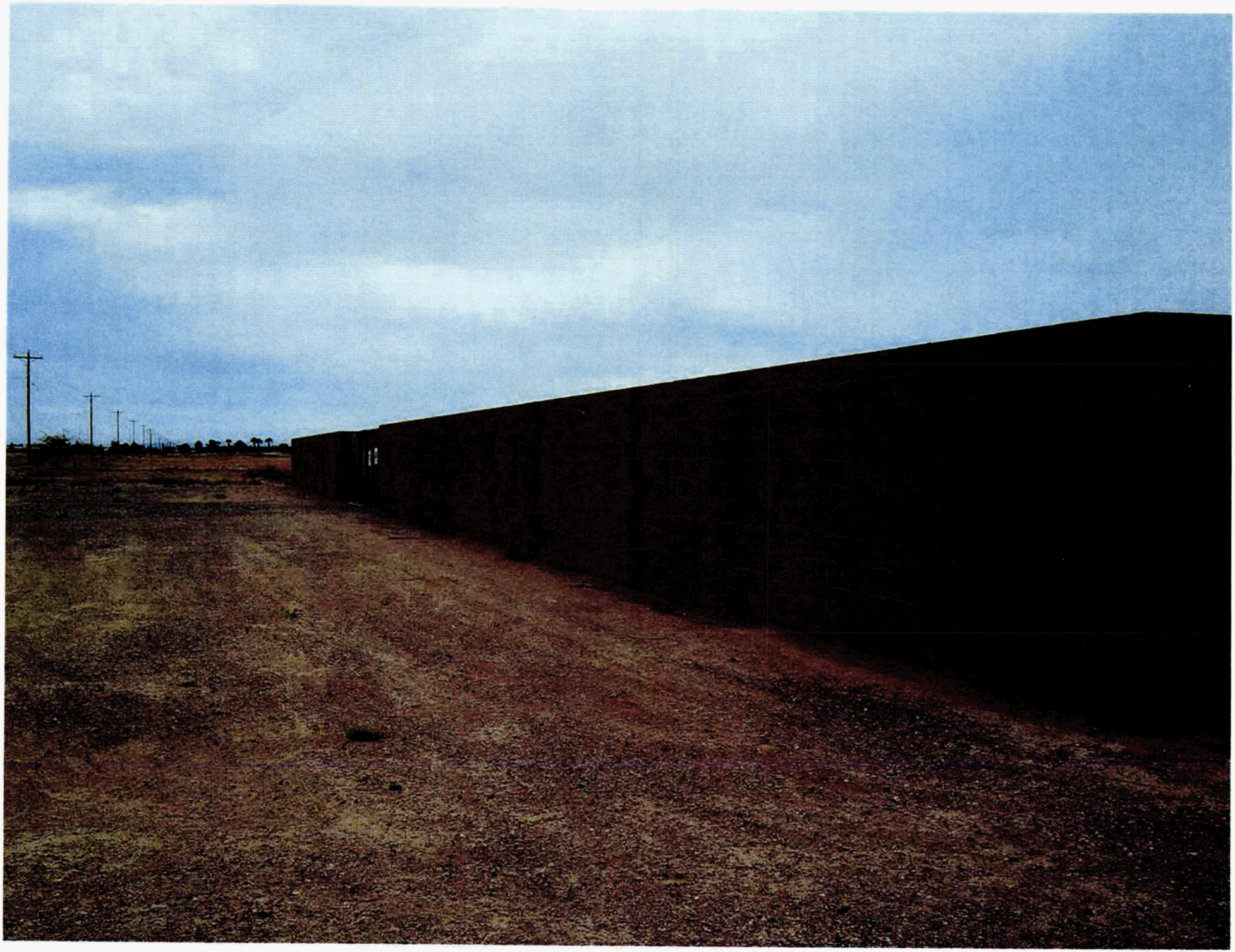
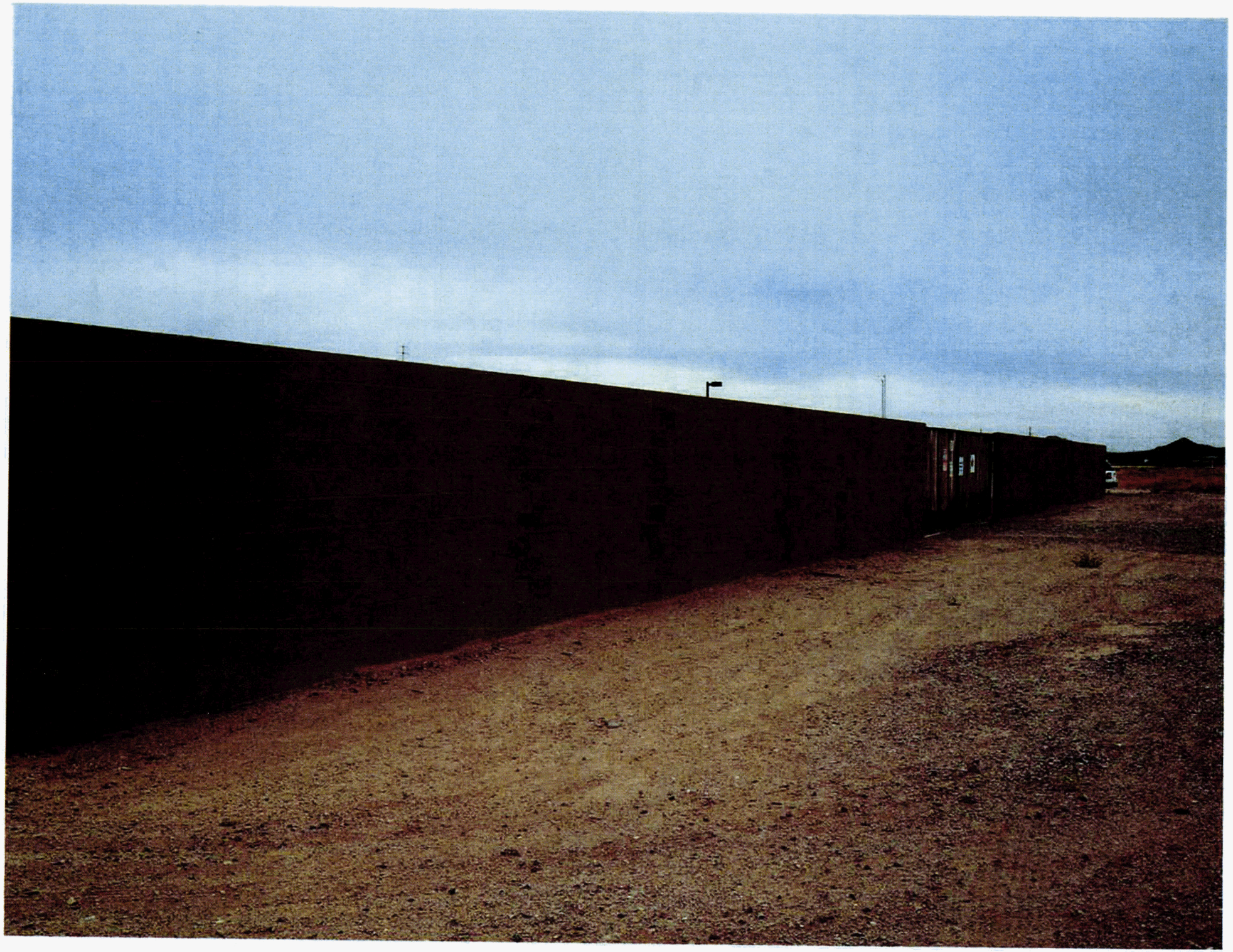
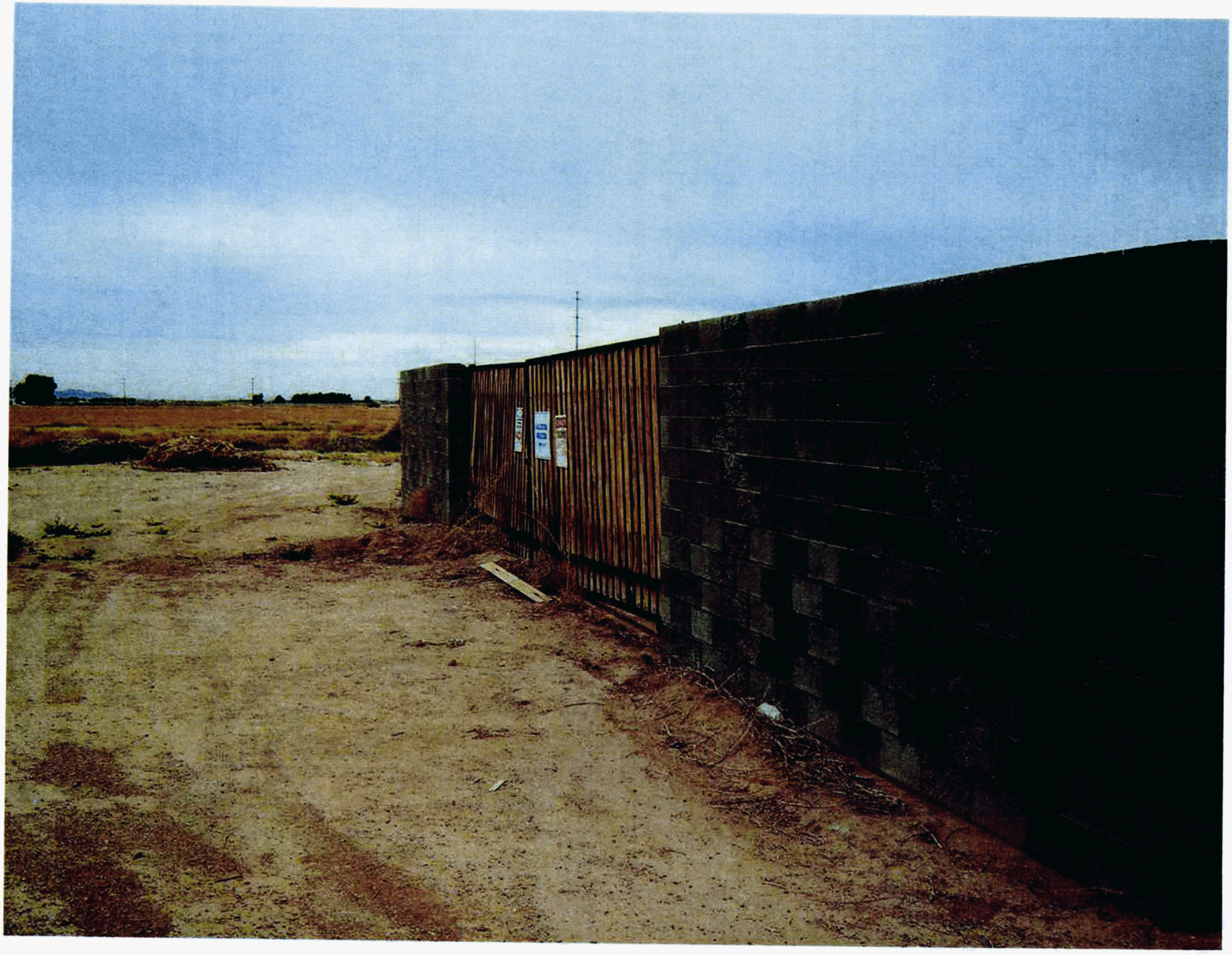
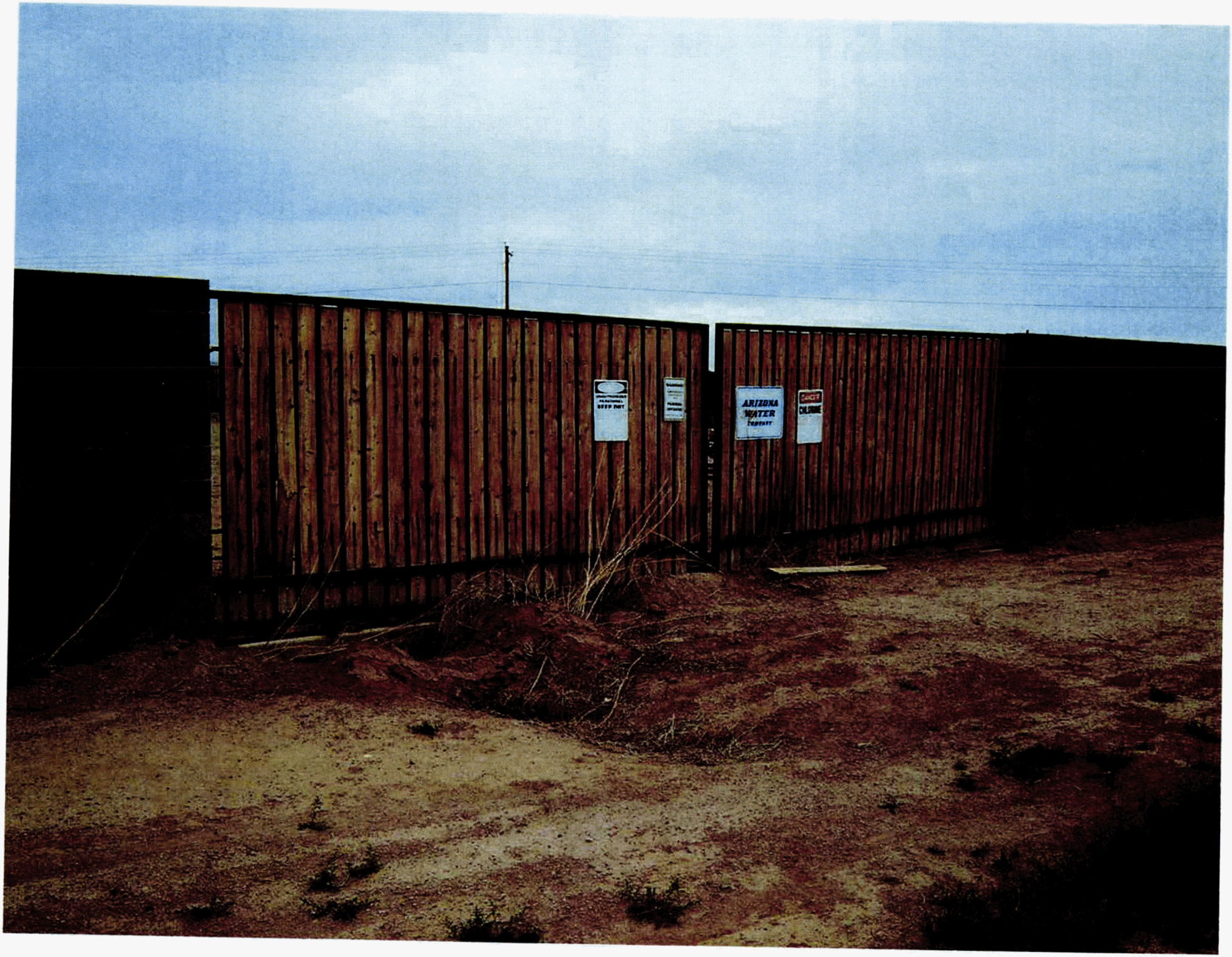
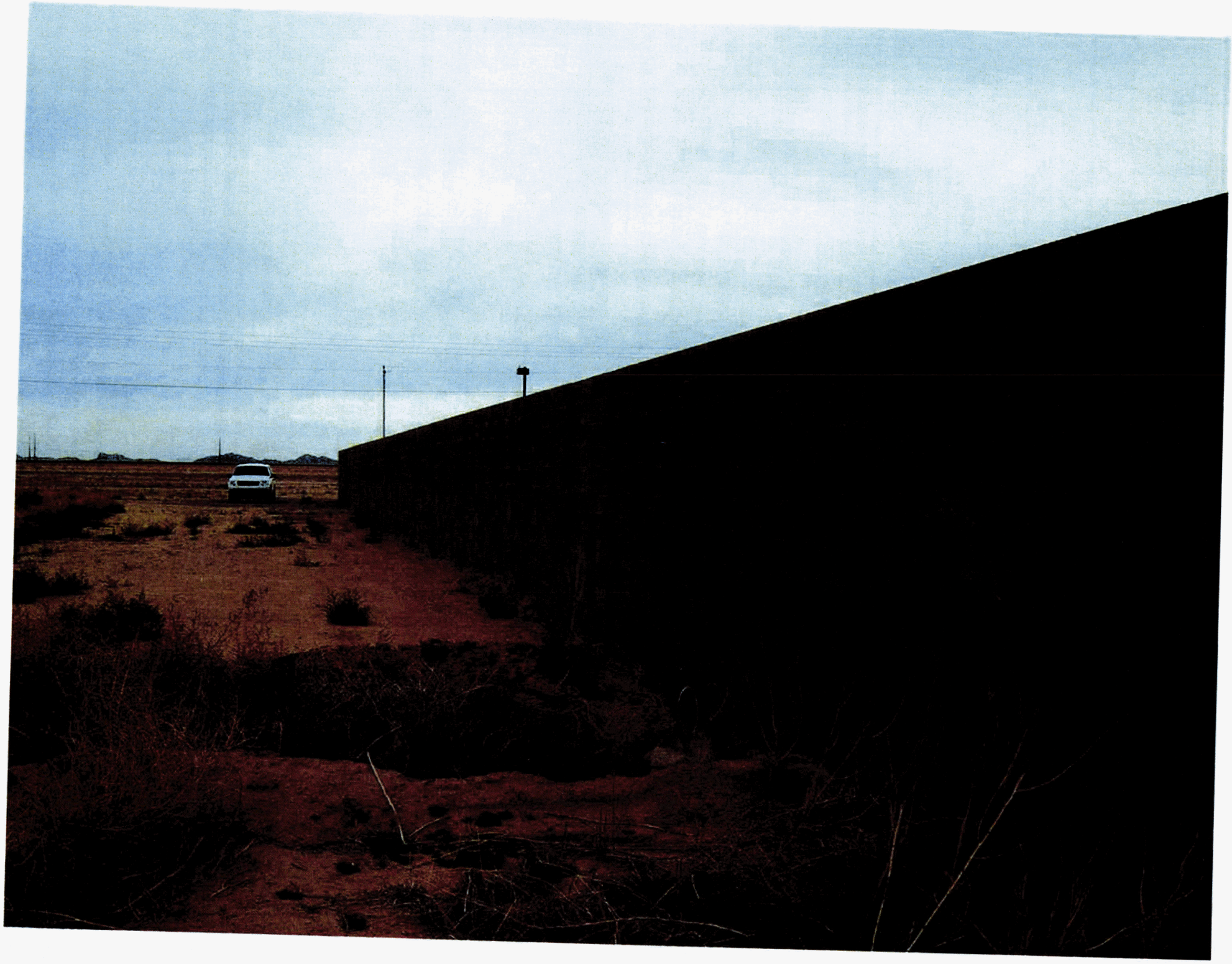









ARIZONA
WATER
CHLORINE



Western Group Rate Case

Exhibit FKS-1

5076 Arizona Grain

ARIZONA WATER COMPANY
WORK AUTHORIZATION

W.A. NUMBER: 1-5076
P.E. NUMBER:
BUDGET ITEM NO.: Special #12
SHEET NO.: 1 of 2

SYSTEM:	PINAL VALLEY		
DIVISION:	CASA GRANDE		
RESPONSIBLE PERSON:	RAY MURRIETA	WORK TO START BY:	UPON AUTHORIZATION
TAX CODE:	0489	WORK TO BE FINISHED BY:	WITHIN 30 DAYS

DESCRIPTION OF WORK:

Lower and Replace approximately 460 LF of 6-inch CA with 6-inch DIP and related fittings along the UPRR Rail Road in the NW ¼ Sec. 29 T. 6 S. R 6 E. Construct in accordance with attached drawings and/or Arizona Water Company specifications.

FACTORS JUSTIFYING WORK:

The Union Pacific Railroad ("UPRR") is constructing a railroad spur to serve Arizona Grain in Casa Grande. The proposed railroad spur is in conflict with the Company's existing water line. Because the facilities will be located under the proposed rail road spur and continued use of these facilities will be inaccessible for maintenance and repairs and a main break would cause significant damage to the rail road leading to costly repairs, Company engineers have determined the above-listed main must be lowered and placed into steel casing.

COST ESTIMATE		AUTHORIZATION	DATE
COST OF WORK:		PREPARED BY: Joe Whelan	4-17-13 5/10/13
MATERIAL	0		
LABOR	6,100	REVIEWED FOR ESMT/ROW VERIFICATION: Charles Briggs CB 5-16-2013	4-17-2013
CONTRACT PORTION	106,114		
OVERHEAD	12,344	REVIEWED BY: Mike Loggins MJL 5-10-13	4-17-13
TOTAL AUTHORIZED EXPENDITURES CHARGEABLE TO THIS W.A.	$ 124,558		
FUNDS RECEIVED:		APPROVED BY ENGINEERING: Fredrick Schneider FS 5/13/13	4-22-13
CONTRIBUTIONS RECEIVED	0		
REFUNDABLE ADVANCES RECEIVED	0	APPROVED BY FINANCE: Joseph Harris	4/23/13
TOTAL CONTRIBUTIONS/ADVANCES	0		
NET COMPANY CASH REQUIRED	$ 124,558	SPECIAL ITEM EXCEEDING $10,000; AUTHORIZED BY PRESIDENT: William M Garfield	4-26-13
		SPECIAL ITEM EXCEEDING $10,000; AUTHORIZED BY CHAIRMAN: APPROVED VIA FAX M. L. Whitehead	4/29/2013

COMMENTS:

CONSTRUCTION RELEASE:

RELEASED TO CONSTRUCTION
Authorized by FRED SCHNEIDER
Date 5/10/13

AFH

ARIZONA WATER COMPANY

WORK AUTHORIZATION - DETAIL SHEET

W.A. NUMBER: 1-5076
P.E. NUMBER:
BUDGET ITEM NO.: Special 12
SHEET NO.: 2 of 2

RETIREMENT PROPERTY UNITS	PLANT PROPERTY ACCOUNT	UNIT DESCRIPTION	QUANTITY	YEAR INSTALLED AND W.A. NUMBER

PROJECT DESCRIPTION:

Lower and Replace approximately 460 LF of 6-inch CA with 6-inch DIP and related fittings along the UPRR Rail Road in the NW ¼ Sec. 29 T. 6 S. R 6 E.

	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST	TOTAL
CONTRACT WORK	Install 16" steel casing	343	400	$ 164.00	$ 65,600
	Install 6" DIP and related fittings	343	460	48.00	22,080
	Cut in new 6" MJ gate valve	343	2	1,056.00	2,112
	Install 6" 45° ELL	343	4	488.00	1,952
	Abandon existing 6" water line	343	450	5.85	2,633
	Cut and plug existing 6" waterline	343	2	1,200.00	2,400
	Tie into existing waterline	343	2	510.00	1,020
	Contracting Tax	343	1	5,343.80	5,344
	Tie over customer service line	345	1	385.00	385
	PERFORMANCE AND PAYMENT BOND	343	1	2,588.00	2,588
	SERVICE CONNECTIONS COMPLETE: DOUBLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: DOUBLE-SHORT	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-LONG	345			
	SERVICE CONNECTIONS COMPLETE: SINGLE-SHORT	345			
TOTAL CONTRACT WORK					$ 106,114
MATERIALS					
	SERVICE CONNECTIONS: DOUBLE-LONG	345			
	SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	SERVICE CONNECTIONS: SINGLE-LONG	345			
	SERVICE CONNECTIONS: SINGLE-SHORT	345			
	METERS	346			
TOTAL MATERIALS					$ -
LABOR					
	TESTING FEE	343	1	$ 100.00	100
	PERMIT FEE	343	1	500.00	500
	SURVEY FEE	343	1	2,500.00	2,500
	FIELD INSPECTION	343	1	3,000.00	3,000
	INSTALL SERVICE CONNECTIONS: DOUBLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-SHORT	345			
TOTAL LABOR					$ 6,100
SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR					$ 112,214
OVERHEAD					12,344
TOTAL	REFUNDABLE PORTION ☐	NON-REFUNDABLE PORTION ☐		COST ESTIMATE	$ 124,558

AFH

ARIZONA WATER COMPANY
WORK AUTHORIZATION

W.A. NUMBER: 1-5076
P.E. NUMBER:
BUDGET ITEM NO.: Special No. 15
SHEET NO.: 1 of 2

SYSTEM:	PINAL VALLEY	RETENTION REQUIRED:	☑ YES ☐ NO
DIVISION:	CASA GRANDE	WORK TO START BY:	UPON AUTHORIZATION
RESPONSIBLE PERSON:	RAY MURRIETA	WORK TO BE FINISHED BY:	WITHIN 30 DAYS
TAX CODE:	0489		

DESCRIPTION OF WORK:

Lower and Replace approximately 460 LF of 6-inch CA with 6-inch DIP and related fittings along the UPRR Railroad in the NW ¼ Sec. 29 T. 6 S. R 6 E. Construct in accordance with attached drawings and/or Arizona Water Company specifications.

FACTORS JUSTIFYING WORK:

The Union Pacific Railroad ("UPRR") is constructing a railroad spur to serve Arizona Grain in Casa Grande. The Company's existing water main is in conflict with the proposed railroad spur and is inaccessible for maintenance and repairs. A water main break under the proposed railroad spur would cause significant damage to the railroad resulting in costly repairs. Company engineers determined the water main must be lowered and placed into a steel casing. This project was not completed in 2013 due to conflicts with an existing Kinder Morgan gas line.

COST ESTIMATE		AUTHORIZATION	DATE
COST OF WORK:		PREPARED BY: James Wilson JW 5/2/14	4/16/14
MATERIAL	0	REVIEWED FOR ESMT/ROW VERIFICATION: Charles Briggs CB 05-02-2014	04-16-2014
LABOR	7,300	REVIEWED BY: Mario Mendez MM 5/2/14	4/21/14
CONTRACT PORTION	150,026	APPROVED BY ENGINEERING: Fredrick Schneider FS 05-14	4-24-14
OVERHEAD	18,879	APPROVED BY FINANCE: Joseph Harris	4/25/14
TOTAL AUTHORIZED EXPENDITURES CHARGEABLE TO THIS W.A.	$ 176,205	SPECIAL ITEM EXCEEDING $10,000; AUTHORIZED BY PRESIDENT: William Garfield	4-26-2014
FUNDS RECEIVED:		SPECIAL ITEM EXCEEDING $10,000; AUTHORIZED BY CHAIRMAN: APPROVED VIA FAX M. L. Whitehead	4/28/2014
CONTRIBUTIONS RECEIVED	0		
REFUNDABLE ADVANCES RECEIVED	0		
TOTAL CONTRIBUTIONS/ADVANCES	0		
NET COMPANY CASH REQUIRED	$ 176,205		

COMMENTS:

Required funds are transferred from WA 1-4913 (Henness ARF Expansion)

CONSTRUCTION RELEASE:

RELEASED TO CONSTRUCTION

Authorized by FRED SCHNEIDER

Date 4/29/2014

2014 RE-AUTHORIZATION AND RE-RELEASE

AFH

AFH

ARIZONA WATER COMPANY

WORK AUTHORIZATION - DETAIL SHEET

W.A. NUMBER: 1-5076
P.E. NUMBER:
BUDGET ITEM NO.: Special No. 15
SHEET NO.: 2 of 2

RETIREMENT PROPERTY UNITS	PLANT PROPERTY ACCOUNT	UNIT DESCRIPTION	QUANTITY	YEAR INSTALLED AND W.A. NUMBER

PROJECT DESCRIPTION

Lower and Replace approximately 460 LF of 6-inch CA with 6-inch DIP and related fittings along the UPRR Railroad in the NW ¼ Sec. 29 T. 6 S. R 6 E.

	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST	TOTAL
CONTRACT WORK	Install 16" steel casing	343	400	$ 164.00	$ 65,600
	Install 6" DIP and related fittings	343	460	48.00	22,080
	Cut in new 6" MJ gate valve	343	2	1,056.00	2,112
	Install 6" 45° ELL	343	4	488.00	1,952
	Abandon existing 6" water line	343	450	5.85	2,633
	Cut and plug existing 6" water line	343	2	1,200.00	2,400
	Tie into existing water line	343	2	510.00	1,020
	Contracting Tax	343	1	5,343.80	5,344
	Tie over customer service line	345	1	385.00	385
	Performance and payment bond	343	1	2,588.00	2,588
	Relocate and tie over two 2-inch services	345	1	3,253.71	3,254
	Pavement Replacement	343	1	13,500.00	13,500
	Expose gas line	343	1	1,133.41	1,133
	Set barricades for Kinder Morgan to tap abandoned gas line	343	1	1,333.37	1,333
	Stand-by for Kinder Morgan removal of gas line from trench	343	1	9,403.69	9,404
	Water Barrier	343	1	775.00	775
	Deepen bore pits and extend trench boxes to go under gas	343	1	8,550.00	8,550
	Backfill and relocate bore pit	343	1	3,962.81	3,963
	Mobilization and Demobilization charges	343	1	2,000.00	2,000
TOTAL CONTRACT WORK					$ 150,026
MATERIALS					
	SERVICE CONNECTIONS: DOUBLE-LONG	345			
	SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	SERVICE CONNECTIONS: SINGLE-LONG	345			
	SERVICE CONNECTIONS: SINGLE-SHORT	345			
	METERS	346			
TOTAL MATERIALS					$ -
LABOR	Project Management	343	16	$ 75.00	$ 1,200
	TESTING FEE	343	1	$ 100.00	100
	PERMIT FEE	343	1	500.00	500
	SURVEY FEE	343	1	2,500.00	2,500
	FIELD INSPECTION	343	1	3,000.00	3,000
	INSTALL SERVICE CONNECTIONS: DOUBLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-SHORT	345			
TOTAL LABOR					$ 7,300
SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR					$ 157,326
OVERHEAD					18,900
TOTAL	REFUNDABLE PORTION ☐	NON-REFUNDABLE PORTION ☐		COST ESTIMATE	$ 176,226

AFH

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
CERTIFICATE OF APPROVAL TO CONSTRUCT
WATER FACILITIES

ADEQ File No: 20130103	**LTF No:** 57993
System Name: Pinal Valley	**System Number:** 11-009
Project Owner: Arizona Water Company	
Address: P O Box 29006, Phoenix, AZ 85038	
Project Location: Casa Grande	**County:** Pinal
Description: ARIZONA WATER COMPANY-PINAL VALLEY WATER SYSTEM (WA 1-5076). ATC PERMIT FOR APPROXIMATELY 460 LF OF 6-INCH CLASS 350 DIP WATERLINE AND RELATED FITTINGS. TO REPLACE EXISTING 6-INCH WATERLINE ALONG SOUTHERN PACIFIC RR @ AZ GRAIN COMPANY.	

Approval to construct the above-described facilities as represented in the approved documents on file with the Arizona Department of Environmental Quality is hereby given subject to provisions 1 through 5 continued on page 2 through 2

1. This project must be constructed in accordance with all applicable laws, including Title 49, Chapter 2, Article 9 of the Arizona Revised Statutes and Title 18, Chapter 5, Article 5 of the Arizona Administrative Code.
2. Upon completion of construction, the engineer shall fill out the Engineer's Certificate of Completion and forward it to the Central Regional Office located in Phoenix. If all requirements have been completed, that unit will issue a Certificate of Approval of Construction. R18-5-507(B), Ariz. Admin.Code. At the project owner's request, the Department **may** conduct the final inspection required pursuant to R18-5-507(B); such a request must be made in writing in accordance with the time requirements of R18-5-507(C), Ariz. Admin. Code.
3. This certificate will be void if construction has not started within one year after the Certificate of Approval to Construct is issued, there is a halt in construction of more than one year, or construction is not completed within three years of the approval date. Upon receipt of a written request for an extension of time, the Department may grant an extension of time; an extension of time must be in writing. R18-5-505(E), Ariz. Admin. Code.
4. Operation of a newly constructed facility shall not begin until a Certificate of Approval of Construction has been issued by the Department. R18-5-507(A), Ariz. Admin. Code.

Reviewed by: FMS

By: For JKD 5/10/13
Janak K. Desai, P.E. Unit Manager Date
Engineering Review Section
Water Quality Division

cc: File No: 20130103
Regional Office: Central
Owner: Arizona Water Company
County Health Department: Pinal
Engineer: Arizona Water Company
Planning and Zoning/Az Corp. Commission
Engineering Review Database - Etr021

5. The Arizona Department of Environmental Quality's review of this application was subject to the requirements of the licensing time frames ("LTF") statute under Arizona Revised Statutes ("A.R.S.") § 41-1072 through § 41-1079 and the LTF rules under Arizona Administrative Code ("A.A.C.") R18-1-501 through R18-1-525. This Notice is being issued within the overall time frame for your application.

ADEQ hereby approves your application for Approve to Construct Drinking Water Facilities under A.R.S. § 49-351. Your copy is enclosed.

This decision is an appealable agency action under A.R.S. § 41-1092. You have a right to request a hearing and file an appeal under A.R.S. § 41-1092.03(B). You must file a written Request for Hearing or Notice of Appeal within **30 days** of your receipt of this Notice. A Request for Hearing or Notice of Appeal is filed when it is received by ADEQ's Hearing Administrator as follows:

Office of Administrative Counsel
Arizona Department of Environmental Quality
1110 W. Washington Street
Phoenix, AZ 85007

The Request for Hearing or Notice of Appeal shall identify the party, the party's address, the agency and the action being appealed and shall contain a concise statement of the reasons for the appeal. Upon proper filing of a Request for Hearing or Notice of Appeal, ADEQ will serve a Notice of Hearing on all parties to the appeal. If you file a timely Request for Hearing or Notice of Appeal you have a right to request an informal settlement conference with ADEQ under A.R.S. § 41-1092.06. This request must be made in writing no later than **20 days** before a scheduled hearing and must be filed with the Hearing Administrator at the above address.

Please contact Frank M. Smaila at (602) 771-4237 or fms@azdeq.gov if you have questions regarding this Notice or the Certificate of Approved to Construct.

RECORD OF SURVEY

OF PORTIONS OF

SECTIONS 28,29,32 AND 33

SITUATED IN TOWNSHIP 6 SOUTH, RANGE 8 EAST, OF THE GILA AND SALT RIVER BASE AND MERIDIAN, PINAL COUNTY, ARIZONA.

AND PORTIONS OF

SECTIONS 2,3,4,5 AND 6

SITUATED IN TOWNSHIP 7 SOUTH, RANGE 8 EAST, OF THE GILA AND SALT RIVER BASE AND MERIDIAN, PINAL COUNTY, ARIZONA.

STATE OF ARIZONA } SS
COUNTY OF PINAL }

2005-145871
1 of 6

I hereby certify that the within instrument is filed in the official records of this
County in Book 16 of Surveys,
Page 075
Date: November 30, 2005
Request of: Vaughn Land Surveying
Witness my hand and official seal.
LAURA DEAN-LYTLE, Pinal County Recorder
By: _____ Deputy

NOTES

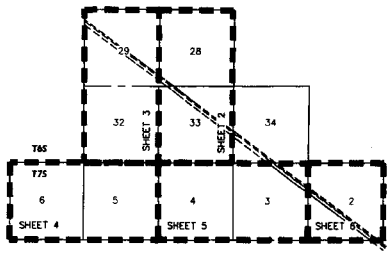
1. The "BASIS OF BEARING" is S 16°39' 09" W, an assumed bearing from a Brass Cap in Hand Hole, found marking the Northeast Corner of Section 29, Township 6 South, Range 8 East, to a Brass Cap Flush (USGS AD 47), near the Southwest Corner of Section 5, Township 7 South, Range 8 East.
2. Adjoining owner information is per Pinal County Assessor's Maps.
3. Any distances, bearings, descriptions, etc., which may vary from the provisions of the record information, reflects actual measured data, or the best interpretation of the undersigned.
4. Survey field work was completed on October 31, 2005.
5. The word "certify" or "certificate" as shown and used hereon means an expression of professional opinion regarding the facts of the survey and does not constitute a warranty or guarantee, expressed or implied.
6. Line established through measuring the location of canal.

OWNER OF RECORD

KENNICOTT ACQUISITIONS

LEGEND

- Adjoining Property Line
- Centerline of Roadway
- Property Line of Survey
- Section Line
- (C) Calculated Data
- (M) Measured Data
- (P) Plat Data (ALTA/ACSM LAND TITLE SURVEY BY EPS GROUP, INC. JOB NO. 05-043)
- R.L.S. Registered Land Surveyor
- P.C.R. Pinal County Records
- A.P.N. Assessor Parcel Number



SHEET INDEX

REFERENCE MATERIALS

ADOT ROW MAPS

ARIZONA DEPT. OF TRANSPORTATION RIGHT OF WAY PLANS OF S.R. 84.
PROJECT NO. M-950-4-74
DRAWING NO. D-11-T-469
SHEETS 4-13.

ARIZONA DEPT. OF TRANSPORTATION RIGHT OF WAY PLANS
PHOENIX- CASA GRANDE HWY. VAL VISTA BLVD.- HWY. 287
PROJECT NO. I-10-3(43)187
DRAWING NO. D-11-T-402
SHEETS 8-15

ARIZONA DEPT. OF TRANSPORTATION RIGHT OF WAY PLANS
PHOENIX- CASA GRANDE HWY. STATE RT. 287-JCT. RT. 8
PROJECT NO. I-10-3(31)194
DRAWING NO. D-11-T-405
SHEETS 3-12

ARIZONA DEPT. OF TRANSPORTATION RIGTH OF WAY PLANS
CASA GRANDE- TUCSON HIGHWAY, INTERSTATE 10
PROJECT NO. 010 PN 196 H5487 O/R
DRAWING NO. D-11-T-473
SHEET 2

GLO PLAT MAPS

OFFICE OF U.S. SUPERVISOR OF SURVEYS
DEPARTMENT OF THE INTERIOR GENERAL LAND OFFICE
DATED OCTOBER 5, 1929
OFFICIALLY FILED 5-15-1930

R.R. ROW MAPS

SOUTHERN PACIFIC COMPANY
RIGHT OF WAY AND TRACK MAP
VALUATION DEPARTMENT
SANFRANCISCO CALIFORNIA

MAP NO. C.E. 43899 02-08-16-20 V-12/15
MAP NO. C.E. 44000 02-08-16-21 V-12/15a
MAP NO. C.E. 44001 02-08-16-22 V-12/15b
MAP NO. C.E. 44002 02-08-16-23 V-12/16
MAP NO. C.E. 44003 02-08-17-01 V-12/17
MAP NO. C.E. 44004 02-08-17-02 V-12/S-17
MAP NO. C.E. 44005 02-08-17-03 V-12/18
MAP NO. C.E. 44006 02-08-17-04 V-12/19

UNRECORDED DOCUMENTS

UNRECORDED SURVEY BY MANHARD CONSULTING LTD.
DRAWING NO. RBRCGA 5407 DATED 09-07-04

ALTA/ACSM LAND TITLE SURVEY BY EPS GROUP, INC.
JOB NO. 05-043

RECORDED DOCUMENTS

VILLA VERDE SUBDIVISION
CABINET A, PAGE 35 P.C.R.

SECOND AMENDED VILLA VERDE SUBDIVISION
CABINET A, PAGE 82 P.C.R.

BOUNDARY SURVEY
SURVEYS BOOK 2, PAGE 64 P.C.R.

BOUNDARY SURVEY
SURVEYORS BOOK 2, PAGE 64 P.C.R.

RESULTS OF SURVEY
SURVEYS BOOK 2 PAGE 87 P.C.R.

RECORD OF SURVEY
SURVEYS BOOK 2 PAGE 88 P.C.R.

RECORD OF SURVEY/MINOR LAND DIVISION
SURVEYS BOOK 3, PAGE 59 P.C.R.

RECORD OF SURVEY/MINOR LAND DIVISION
SURVEYS BOOK 3, PAGE 343 P.C.R.

MINOR LAND DIVISION/RECORD OF SURVEY
SURVEYS BOOK 4, PAGE 038 P.C.R.

A.D.O.T. RESULTS OF SURVEY
SURVEYS BOOK 5, PAGE 189 P.C.R.

RIGHT OF WAY ABANDONMENT
SURVEYS BOOK 7, PAGE 096 P.C.R.

RECORD OF SURVEY/AMENDED MINOR LAND DIVISION
SURVEYS BOOK 8, PAGE 265 P.C.R.

ALTA/ACSM LAND TITLE SURVEY
SURVEYS BOOK 9, PAGE 105 P.C.R.

RECORD OF SURVEY/AMENDED MINOR LAND DIVISION
SURVEYS BOOK 10, PAGE 39 P.C.R.

RECORD OF SURVEY / MINOR LAND DIVISION
SURVEYS BOOK 10, PAGE 061 P.C.R.

RECORD OF SURVEY
SURVEYORS BOOK 10, PAGE 061 P.C.R.

RECORD OF SURVEY OF A MINOR LAND DIVISION
SURVEYS BOOK 11 PAGE 079 P.C.R.

RECORD OF SURVEY
SURVEYS BOOK 11, PAGE 084 P.C.R.

RECORD OF SURVEY
BOOK 12 OF SURVEYS, PAGE 101 P.C.R.

MOELLER-SELLER'S UNIT NO. 1
SURVEYS BOOK 13, PAGE 76 P.C.R.

MARICOPA GROVES UNIT 3 IRRIGATION SYSTEM
BOOK 17 OF MAPS, PAGE 4 P.C.R.

MYERS SECOND ADDITION TO CASA GRANDE P.C.R.

ELLIOT ADDITION TO CASA GRANDE P.C.R.

MAP OF TOWNSITE OF CASA GRANDE
BOOK 4 PAGE 266-267 P.C.R.

CENTURY HOMES SUBDIVISION
MAP BOOK 12 PAGE 40 P.C.R.

CENTURY HOMES VENTURE
BOOK 16 OF MAPS AND PLATS, PAGE 7 P.C.R.

MYERS ADDITION TO CASA GRANDE
BOOK 16 MISCELLANEOUS RECORDS P.C.R.

CENTRAL PLAZA
BOOK 18 PAGE 41 P.C.R.

This survey was completed under my direction during the month of November, 2005.

REVISION

SURVEYED BY: S.L. MARTIN
DRAWN BY: G.A.S. / W.M.M.
CHECKED BY: F.A. RORYCANEK

VAUGHN LAND SURVEYING INC.
25560 West 85A Suite # 5
Buckeye, Arizona 85326
Ph (623) 386-2388
Fax (623) 386-1947
1707 East Weber Drive, Suite # 2
Tempe, Arizona 85281
Ph (480) 921-1565
Fax (480) 921-1567
www.VaughnLS.com

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RECORD OF SURVEY
COVER SHEET
T6S, R8E SEC. 28,29,32 AND 33
T7S, R8E SEC. 2,3,4,5 AND 6
GILA AND SALT RIVER B & M
PINAL COUNTY, ARIZONA

DATE: November 11, 2005
FILE: 944 ALTA
JOB: 945

SHEET 1 OF 6

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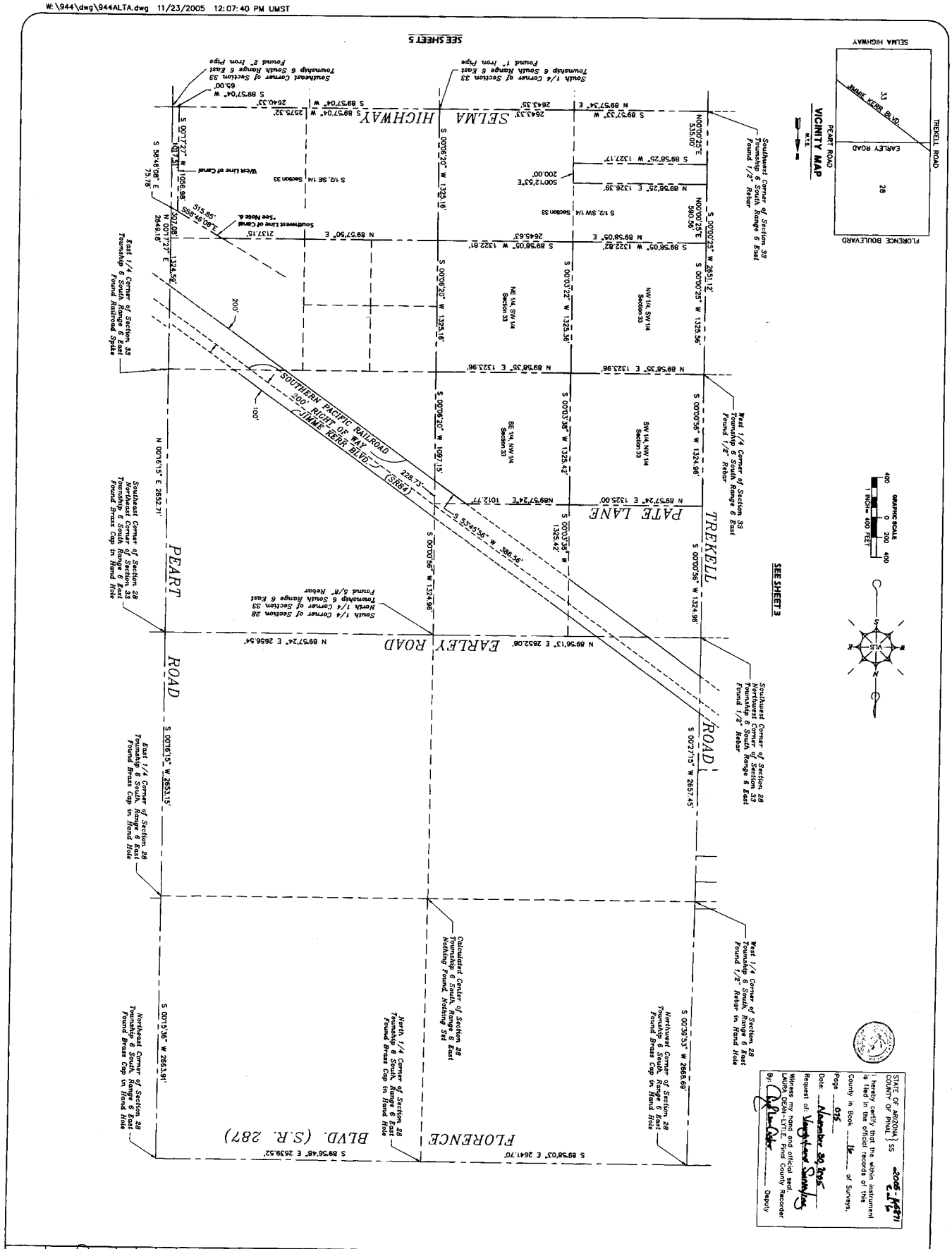

STATE OF ARIZONA } ss
COUNTY OF PINAL }

I hereby certify that the within instrument is filed in the official records of the County in Book 12 of Surveys, Page 015
Date: November 30, 2005
Request of: Vaughn Land Surveying
Witness my hand and official seal.
LAURA DEAN-LITTLE, Pinal County Recorder
By: _____ Deputy

2005-94771

SHEET 2 OF 6	RECORD OF SURVEY SECTIONS 28 & 33 T6S, R6E SEC 28,29,32 AND 33 T7S, R6E SEC 2,3,4,5 AND 6 OF THE G. & S.R. B. & M. PINAL COUNTY, ARIZONA	VAUGHN LAND SURVEYING INC. 1707 East Weber Drive Suite # 2 Tempe, Arizona 85281 Ph (480) 921-1565 Fax (480) 921-1567 www.VaughnLS.com COPYRIGHT 2005 All Rights Reserved 25560 West 85A Suite # 5 Buckeye, Arizona 85326 Ph (623) 386-2388 Fax (623) 386-1947	SURVEYED BY: S.L. MARTIN DRAWN BY: G.A.D. / W.M.M. CHECKED BY: F.A. KORYCANEK REVISION
DATE: November 11, 2005 FILE: 944 ALTA JOB: 945			

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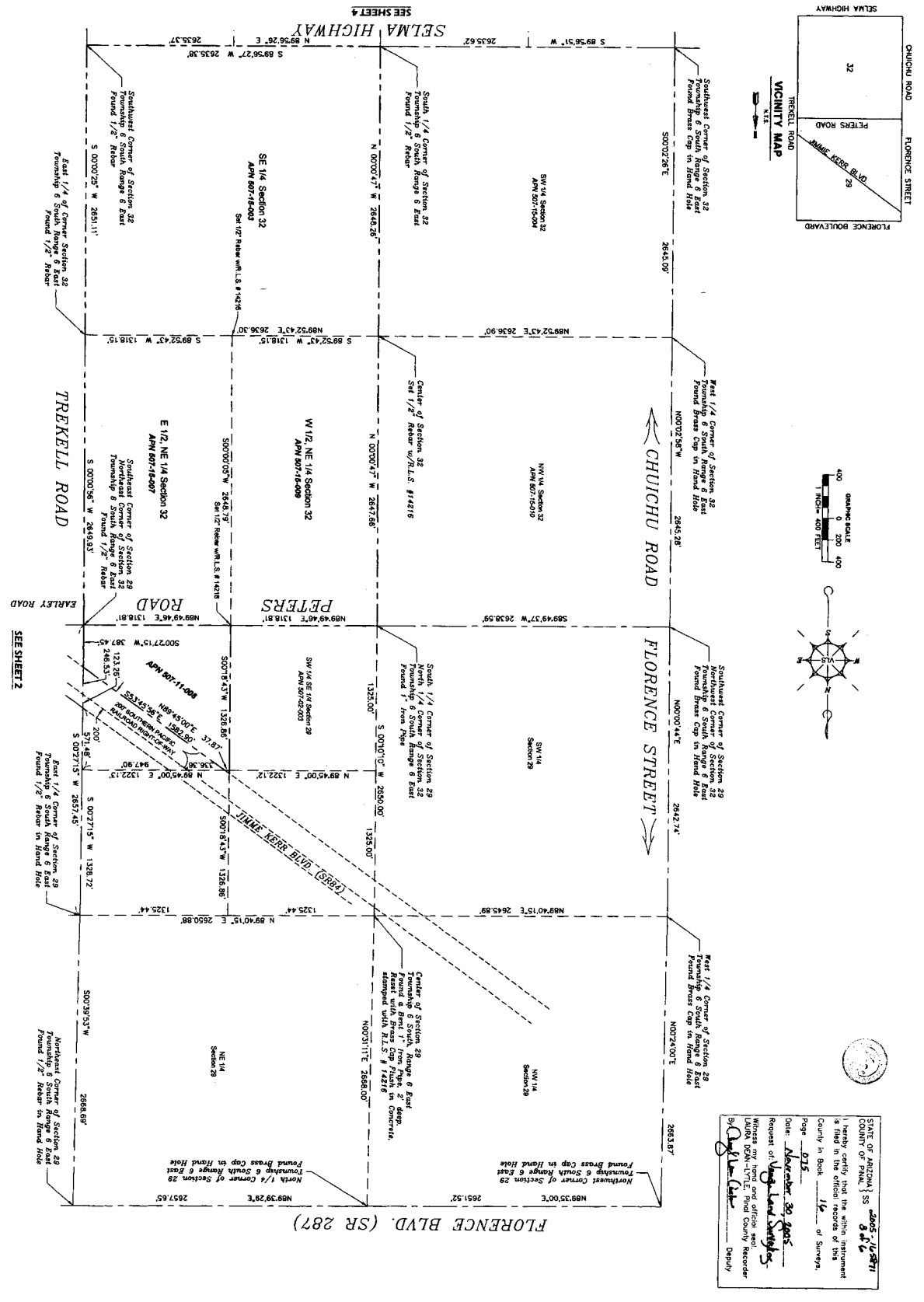

STATE OF ARIZONA } SS
COUNTY OF PINAL }

I hereby certify that the within instrument is filed in the official records of this County in Book 16 of Surveys, Page 075
Date: November 30, 2005
Request of: Vaughn Land Surveying
Witness my hand and official seal:
LAURA DEAN-LYTLE, Pinal County Recorder
By: Deputy

2005-16-075
8 of 6

SHEET	3 OF 6
DATE:	November 11, 2005
FILE:	944 ALTA
JOB:	945

RECORD OF SURVEY
SECTIONS 29 & 32
T4S, R6E SEC 28,29,32 AND 33
T7S, R6E SEC 2,3,4,5 AND 6
OF THE G. & S.R.B. & M.
PINAL COUNTY, ARIZONA

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DRAWN BY:	G.A.D. / W.M.M.
CHECKED BY:	F.A. KORYCANER

REVISION

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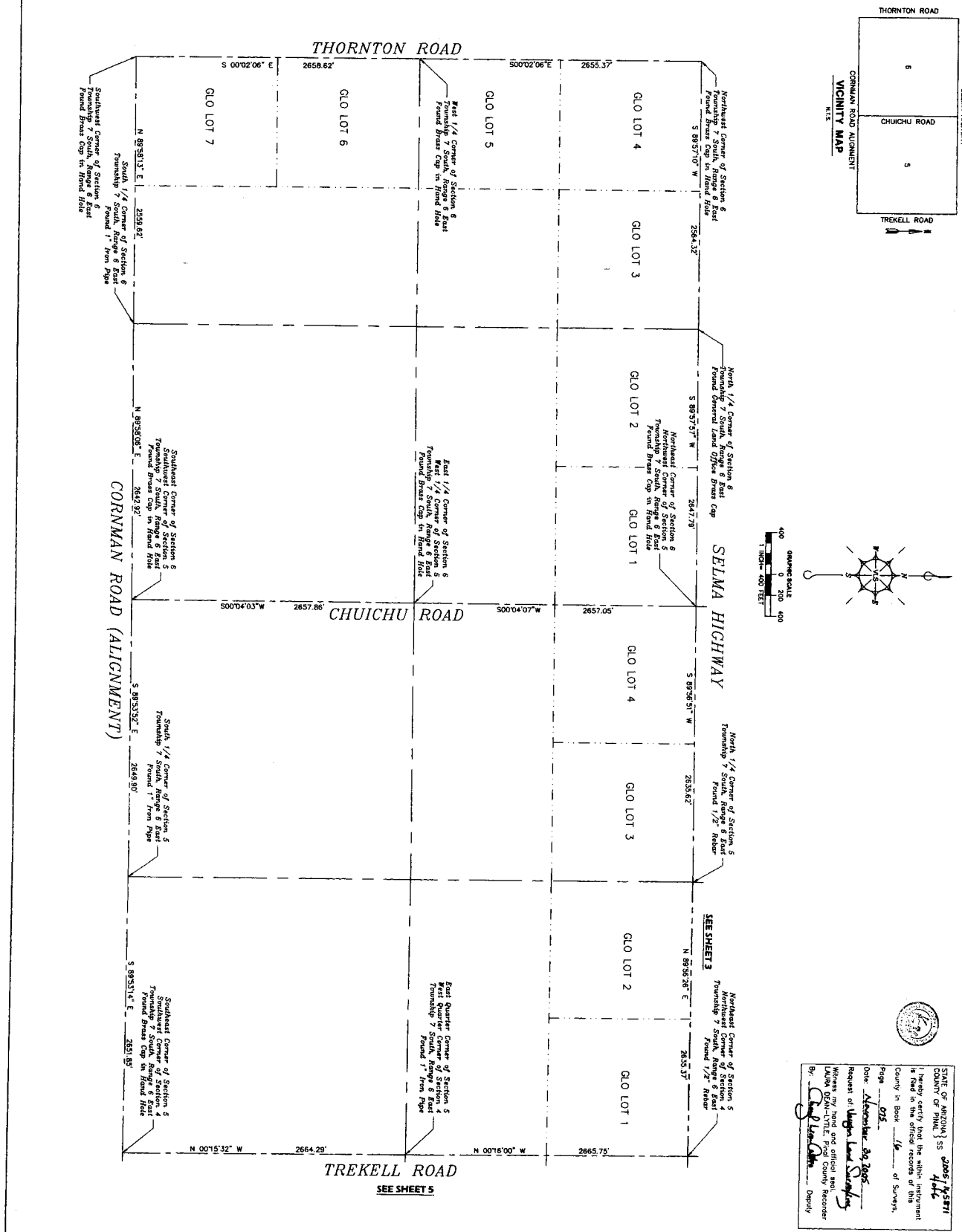

STATE OF ARIZONA } SS
COUNTY OF PINAL }

I hereby certify that the within instrument is filed in the official records of this County in Book 16 of Surveys, Page 015 Date: November 30, 2005 Request of: Vaughn Land Surveying

Witness my hand and official seal LAURA DEAN-LYDLE, Pinal County Recorder By: Deputy

2005-145871

RECORD OF SURVEY
SECTIONS 5 & 6
T4S, R6E SEC 28,29,32 AND 33
T5S, R6E SEC 2,3,4,5 AND 6
OF THE G. & S.R. B. & M.
PINAL COUNTY, ARIZONA

DATE: November 11, 2005
FILE: 944 ALTA
JOB: 945

SHEET 4 OF 6

VAUGHN LAND SURVEYING INC.
1707 East Weber Drive Suite # 2
Tempe, Arizona 85281
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Fax (480) 921-1567
www.VaughnLS.com
25560 West BSA Suite # 5
Buckeye, Arizona 85326
Ph (623) 386-2388
Fax (623) 386-1947

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SURVEYED BY:	REVISION
S.L. MARTIN	
DRAWN BY:	
G.A.D. / W.M.M.	
CHECKED BY:	
F.A. KORYCANEK	

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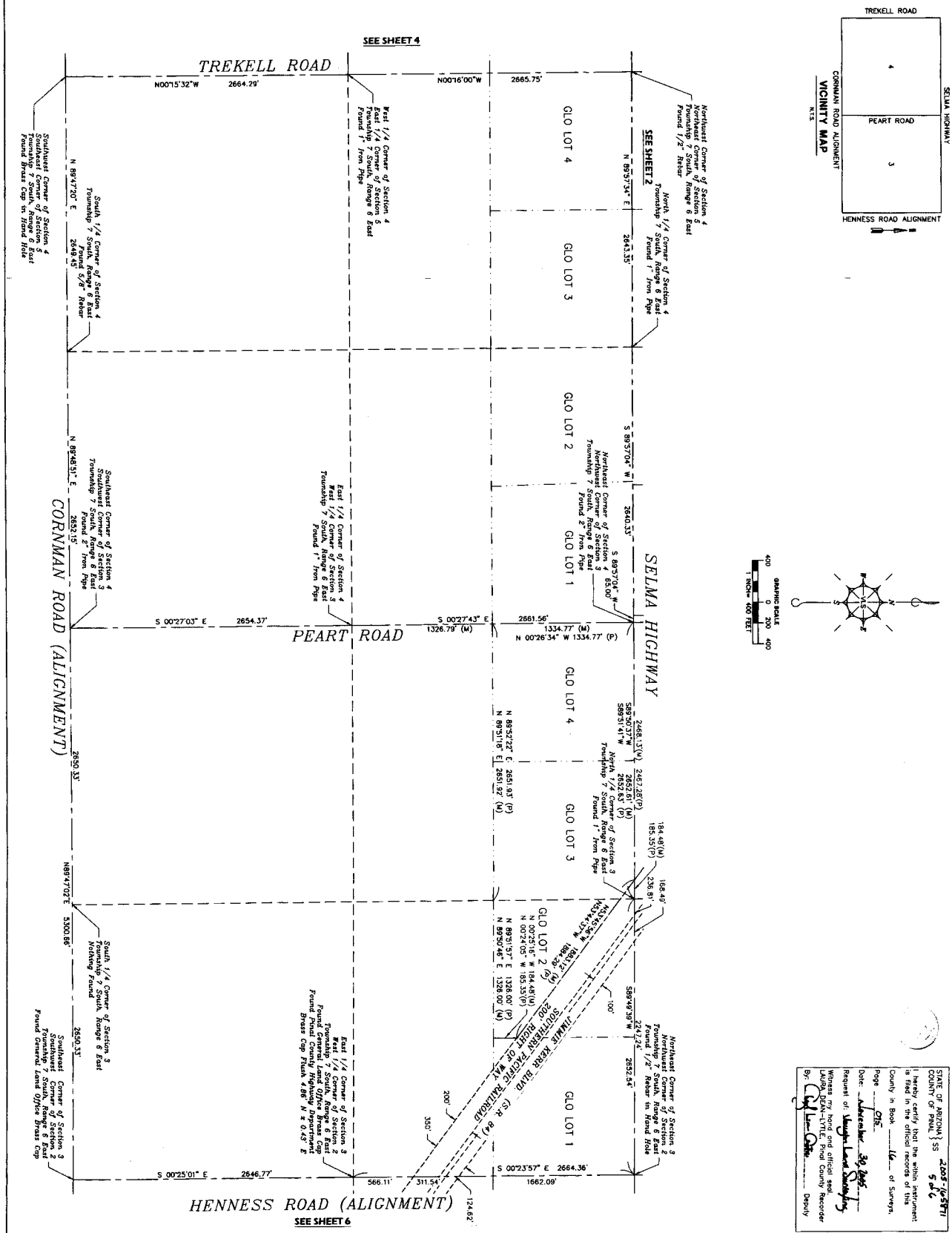

VICINITY MAP
N.T.S.

GRAPHIC SCALE
1 INCH= 400 FEET
400 0 200 400

STATE OF ARIZONA } SS
COUNTY OF PINAL }

I hereby certify that the within instrument is filed in the official records of this County in Book 16 of Surveys, Page 015
Date: December 30, 2005
Request of: Vaughn Land Surveying
Witness my hand and official seal.
LAURA DEAN-LYTLE, Pinal County Recorder
By: [signature] Deputy

2005-165481
5 of 6

SHEET	5 OF 6
DATE	November 11, 2005
FILE	944 ALTA
JOB	945

RECORD OF SURVEY
SECTIONS 3 & 4
T6S, R6E SEC 28,29,32 AND 33
T7S, R6E SEC 2,3,4,5 AND 6
OF THE G. & S.R. B. & M.
PINAL COUNTY, ARIZONA

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SURVEYED BY:	S.L. MARTIN
DRAWN BY:	G. A. D. / W.M.M.
CHECKED BY:	P.A. RORYCANEK

REVISION

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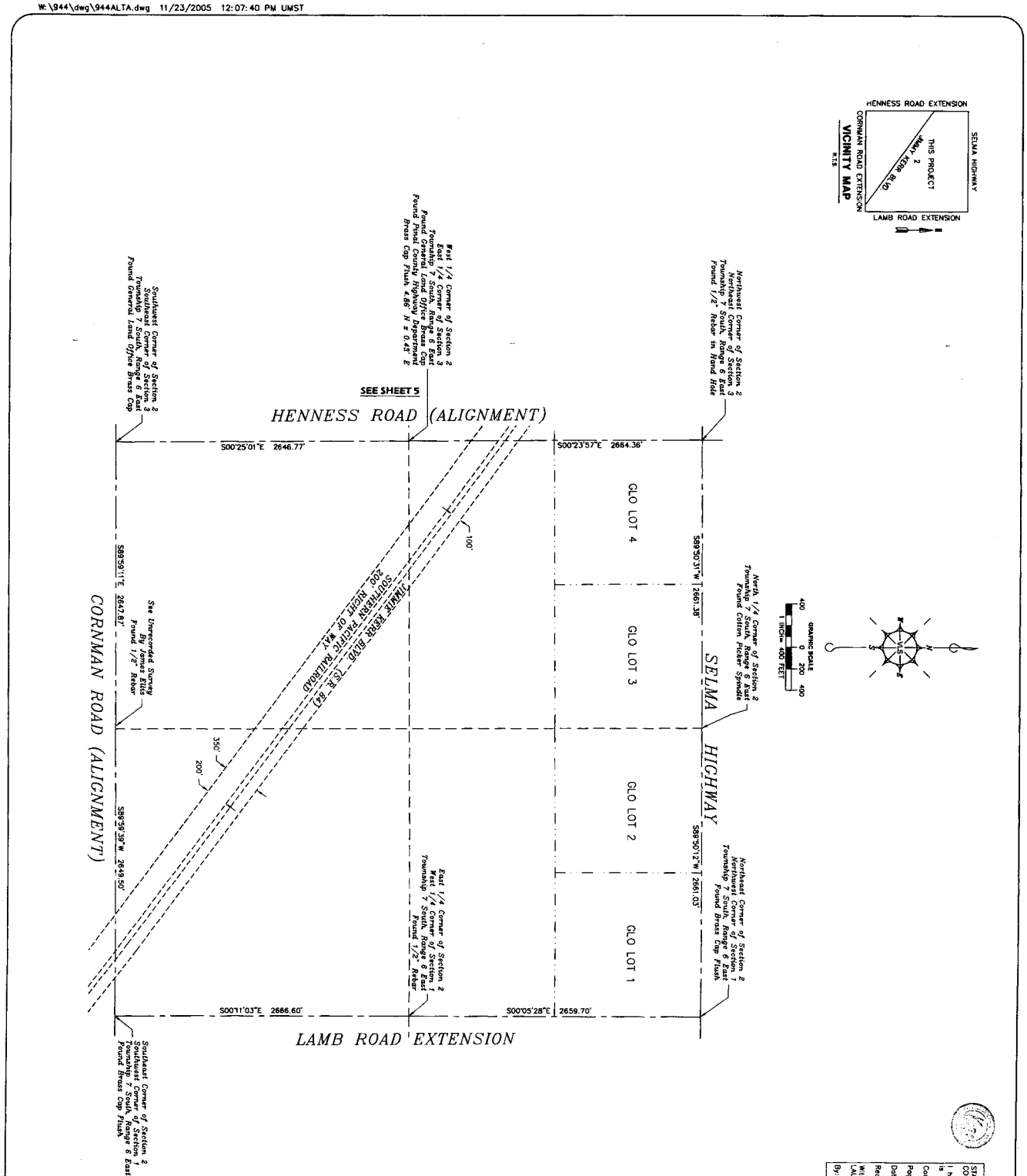

STATE OF ARIZONA } SS
COUNTY OF PINAL }

I, hereby, certify that the within instrument is filed in the official records of this County in Book ___ of Surveys, Page ___

Date: _____

Request of: _____

Witness my hand and official seal
LAURA DEAN-LEE, Pinal County Recorder
By: _____ Deputy

SHEET	6 OF 6
DATE:	November 11, 2005
FILE:	944 ALTA
JOB:	945

RECORD OF SURVEY

SECTION 2
T6S, R6E SEC 28,29,32 AND 33
T7S, R6E SEC 2,3,4,5 AND 6
OF THE G. & S.R. B. & M.
PINAL COUNTY, ARIZONA

VAUGHN LAND SURVEYING INC.

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SURVEYED BY:	S. L. MARTIN
DRAWN BY:	G.A.D. / W.M.M.
CHECKED BY:	F.A. KORYCANEK

REVISION

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

May 10, 2013

Mr. Javier Gonzalez
Talis Construction Corporation
2342 S. McClintock Drive
Tempe, AZ 85282

Re: UPRR at Arizona Grain Company

PROJECT: UPRR at Arizona Grain Co.	
SYSTEM: Pinal Valley	
CONTRACT NO.:	
P.E. NO.:	W.A. NO.: 1-5076

Dear Mr. Gonzalez:

Enclosed is your copy of the Proposal/Contract for the above-referenced project, which has been accepted by Arizona Water Company (the "Company"). The project shall be constructed in accordance with the Company's *General Conditions of Contract, the Specifications and the Drawings* which were included with the Company's previously provided Proposal/Contract, copies of which are being provided again and attached herewith.

Also enclosed are two copies of the Commencement Notice for the above-referenced project. Please sign one of the copies and return it to my attention retaining the other for your records.

As provided in paragraph 4 of the Company's Proposal/Contract executed by the Company on May 10, 2013, Talis Construction Corporation acknowledged that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work. In addition, as provided in paragraph 44 of the Company's General Conditions of Contract, the 100% Performance and Payment Bonds must be provided within ten (10) calendar days of the date of the Commencement Notice. Failure to provide an acceptable 100% Performance and Payment Bond does not limit the Company's

ability to terminate the Proposal/Contract or seek restitution for damages that the Company may have or will incur.

Prior to the start of construction, please call Ray Murietta, Division Manager at 520-836-8785 to schedule a pre-construction meeting. In addition, please provide the required Performance and Payment Bonds to the Company promptly so that the contracted work can be completed within the contract's timeline.

If you have any questions, please call me at this office.

Very truly yours,

Joseph Whelan
Engineering Development Coordinator
engineering@azwater.com

afh
Enclosure

ARIZONA WATER COMPANY
Casa Grande Office: PO Box 1030- Casa Grande, AZ 85130-1030
Voice: 520-836-8785 Fax: 520-836-2850

PROPOSAL/CONTRACT

CONTRACTOR: TALIS Construction Corporation	SYSTEM: Pinal Valley / CG
ADDRESS: 2342 S. McClintock Drive	W.A. No(s): 1-5076
CITY ST ZIP: Tempe, AZ 85282	BID DUE DATE: December 14, 2012

CONTRACTOR SUBMITS this PROPOSAL/CONTRACT to ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), to perform the work and complete the project described on Page 2 (the "Project"), as an independent prime contractor.

1. Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings, (the "Specifications"), all of which are attached hereto. Contractor has examined the specific plans and related construction drawings for the Project (the "Drawings"), copies of which are also attached hereto. The General Conditions of Contract, Specifications and Drawings are incorporated into this Proposal/Contract. Contractor affirms that all work and materials to be furnished or purchased for the Project will be in strict conformance with the General Conditions of Contract, Specifications and Drawings.
2. Contractor represents and warrants that it has satisfied and complied with the provisions of Section 6, Contractor Understands Work and Working Conditions, of the General Conditions of Contract prior to submitting this Proposal/Contract.
3. Contractor represents that this Proposal/Contract is fair and honest in all respects, is submitted in good faith and is not submitted in collusion with any other company, entity or person.
4. Contractor acknowledges that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work.
5. Prior to the commencement of work, Contractor will submit to the Company a list of all materials to be used in the Project. The materials list will include the manufacturer, part number, price and quantity included in this Proposal/Contract.
6. Contractor will furnish all labor, tools, equipment and materials required to complete the Project according to the General Conditions of Contract, Specifications and Drawings. No materials purchased by Contractor to be incorporated into the Project are subject to tax at the time of purchase and Contractor will not charge the Company for any such tax. Contractor will pay the applicable transaction privilege tax (the "Contracting Tax") on the Project after Contractor receives payment of the final Project invoice from the Company. The cost of materials incorporated into the Project which are exempt by Arizona Revised State Statues ("A.R.S.") from the Contracting Tax, for example, pipes or valves having a diameter of four (4) inches or larger, including equipment, fittings and any other related part that is used in operating the pipes or valves (A.R.S. §42-5061 B.6.), will not be included in the total cost of the labor and materials upon which the Contracting Tax is computed. Contractor retains full liability and obligation to pay the Contracting Tax and will defend and indemnify the Company against any demand or obligation to pay the Contracting Tax.
7. Contractor will maintain detailed accounting records of all materials purchased and incorporated into the Project. Such records will include all supporting original vendor invoices for all materials purchased. Following completion of the Project, Contractor will submit an itemized accounting to the Company which will include all supporting original vendor invoices and satisfactory evidence of payment thereof. The Company will not pay Contractor for materials not actually incorporated into the Project, and the disposition of such materials will remain Contractor's responsibility.
8. The Estimated Total Cost of the Project, shown on Page 2, is based on estimated labor and material quantities to be furnished. It includes an estimate of the Contracting Tax and the cost of the required Performance and Payment Bonds. Contractor will not cancel, modify or withdraw this Proposal/Contract during a ninety-day (90) period commencing on the Bid Due Date. The Company may accept this Proposal/Contract by signing and mailing, or otherwise delivering, a copy hereof to Contractor during such ninety-day (90) period. If the Company does not accept this Proposal/Contract during such ninety-day (90) period, Contractor may cancel this Proposal/Contract by giving written notice of cancellation to the Company.
9. Prior to the commencement of work, Contractor will provide the Company with a detailed construction schedule, in either Gantt or CPM form, identifying all tasks to be performed from the date of the written Commencement Notice through completion of the Project, including testing, training of Company Personnel and final Project invoicing. Contractor will provide the Company with a copy of such construction schedule documenting the progress of work on the Project at least monthly.
10. Contractor will not commence work on the Project until the Company gives Contractor a written Commencement Notice. Contractor will complete the Project within 30 calendar days after the Commencement Notice is issued.
11. Following the Company's written notice of satisfactory completion of the Project, and upon receipt of the final Project invoice from Contractor, the Company shall pay Contractor the actual total cost of the Project, which will be calculated as shown on Page 2, except that actual labor and material quantities installed/constructed will be substituted for the estimated labor and materials quantities and the Contracting Tax will be recalculated based on such actual labor and materials quantities.
12. The amount of applicable liquidated damages for Contractor's failure to deliver or perform within the time limit shown in Paragraph 10 may be deducted from the Company's payment of the final Project invoice. This provision shall not limit the Company's ability to terminate this Proposal/Contract for Contractor's unsatisfactory performance or failure to perform as provided in the General Conditions of Contract, Specifications or Drawings, or in this Proposal/Contract.

SPECIAL CONDITIONS:

MUST COMPLY WITH BNSF / UPRR PERMIT REQUIREMENTS & THE CITY OF CASA GRANDE RIGHT OF WAY PERMIT & TRAFFIC CONTROL.

CONTRACTOR	PROPOSAL/CONTRACT ACCEPTED:
TALIS CONSTRUCTION	ARIZONA WATER COMPANY
By:	By:
Print Name: Javier Gonzalez	Print Name: Fredrick K. Schneider, PE
Title: Project Manager	Title: Vice President - Engineering
Date: 12/14/12	Date: 5-13-2013

ARIZONA WATER COMPANY
Casa Grande Office: PO Box 11030 - Casa Grande , AZ 85130-1030
Voice: 520-836-8785 Fax: 520-836-2850

PROPOSAL/CONTRACT

CONTRACTOR: TALIS Construction Corporation	SYSTEM: Pinal Valley / CG
AZ CONTRACTOR LICENSE NO: 99126 CLASSIFICATION: General Engineering	W.A. No(s): 1-5076
ADDRESS: 2342 S. McClintock Drive	BID DUE DATE: December 14, 2012
CITY ST ZIP Tempe, AZ 85282	BID BOND REQUIRED ☑ Yes ☐ No

DESCRIPTION OF PROJECT: Replace Existing 6" Water Line With 6" Ductile Iron Pipe Along SPRR at Arizona Grain Co. Located in Casa Grande, AZ. Located in the W 1/2 of Sec 29 T.6S. - R6E.

1-2. MATERIALS EXEMPT FROM CONTRACTING TAX (per Paragraph 6)	QUANTITY	UNIT PRICE LABOR	UNIT PRICE MATERIALS	TOTAL COST LABOR	TOTAL COST MATERIALS
Install 16" steel casing 3/8" thick By Bore with related fittings	400	$134.00	$30.00	$53,600.00	$12,000.00
Install 6" ductile iron pipe with polywrap & related fittings	460	$20.00	$28.00	$9,200.00	$12,880.00
Install 6" MJ Gate Valve with V.B. & C. with related fittings	2	$456.00	$600.00	$912.00	$1,200.00
Install 45° MJ ells with related fittings	4	$300.00	$188.00	$1,200.00	$752.00
Abandon existing 6" waterline / slurry fill abandon waterline (300psi clsm)	450	$5.00	$0.85	$2,250.00	$382.50
Cut & plug existing 6" waterline	2	$1,100.00	$100.00	$2,200.00	$200.00
Tie into existing w/ Transition couplings	2	$260.00	$250.00	$520.00	$500.00
PRICE ONLY					
Install 16" steel casing 3/8" thick By Bore with related fittings	200	$162.00	$34.00	XXXXXXXXX	XXXXXXXXXX
Install 6" ductile iron pipe with polywrap & related fittings	230	$25.00	$32.00	XXXXXXXXX	XXXXXXXXXX
3. Total Labor to Install Exempt Materials (add the amounts in column 1)				3 $69,882.00	
4. Total Exempt Materials (add the amounts in column 2)					4 $27,914.50

5-6. NON-EXEMPT MATERIALS	QUANTITY	LABOR	MATERIALS	LABOR	MATERIALS
PRICE ONLY					
Relocate / Install a 2" copper service with related fittings	1	$875.00	$600.00	XXXXXXXXX	XXXXXXXXX
Tie into to existing customer line with related fittings	1	$260.00	$125.00	$260.00	$125.00
7. Total Labor to Install Non-Exempt Materials (add the amounts in column 5)				7 $260.00 0	
8. Total Non-Exempt Materials (add the amounts in column 6)					8 $ 125.00 -
9. Subtotal A (add lines 3, 7 and 8)					9 $70,267.00 -
10. Contracting Tax Base (multiply the amount on line 9 by 0.65)				10 $45,673.55 -	
11. Applicable Contracting Tax Rate				11 11.7 %	
12. Contracting Tax (multiply the amount on line 10 by line 11)					12 $5,343.80
13. Subtotal B (add lines 4, 9 and 12)					13 $103,525.31
14. 100% Performance and Payment Bonds Cost					14 $2,586.13
15. Estimated Total Cost (add lines 13 and 14)					15 $106,113.44

NOTE: The Estimated Total Cost includes all labor and materials for backfill, pavement replacement, chip seal, and traffic control necessary for the Project.

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 4/18/2013

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an **ADDITIONAL INSURED**, the policy(ies) must be endorsed. If **SUBROGATION IS WAIVED**, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: Yvonne Knizek
Lovitt & Touche' Inc - Tempe 1050 West Washington St, #233 Tempe AZ 85281	PHONE (A/C, No, Ext): 602-956-2250 FAX (A/C, No): 602-956-2258 E-MAIL ADDRESS: yknizek@lovitt-touche.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A: Westfield Insurance Company	24112
INSURER B:	
INSURER C:	
INSURER D:	
INSURER E:	
INSURER F:	

INSURED

TALIS Construction Corp.
2342 S McClintock Drive
Tempe AZ 85281

COVERAGES **CERTIFICATE NUMBER:** 278839168 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	GENERAL LIABILITY	Y	Y	CMM7582072	4/18/2013	4/18/2014	EACH OCCURRENCE	$2,000,000
	X COMMERCIAL GENERAL LIABILITY						DAMAGE TO RENTED PREMISES (Ea occurrence)	$500,000
	CLAIMS-MADE X OCCUR						MED EXP (Any one person)	$10,000
	X Contractual Liab						PERSONAL & ADV INJURY	$2,000,000
							GENERAL AGGREGATE	$4,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						PRODUCTS - COMP/OP AGG	$4,000,000
	POLICY X PRO-JECT LOC						PD Occ Ded	$2,000
A	AUTOMOBILE LIABILITY	Y	Y	CMM7582072	4/18/2013	4/18/2014	COMBINED SINGLE LIMIT (Ea accident)	$1,000,000
	X ANY AUTO						BODILY INJURY (Per person)	$
	ALL OWNED AUTOS / SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	X HIRED AUTOS / X NON-OWNED AUTOS						PROPERTY DAMAGE (Per accident)	$
								$
A	UMBRELLA LIAB X OCCUR			CMM7582072	4/18/2013	4/18/2014	EACH OCCURRENCE	$5,000,000
	X EXCESS LIAB / CLAIMS-MADE						AGGREGATE	$5,000,000
	DED X RETENTION $0							$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y/N						WC STATU-TORY LIMITS / OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH)	N/A					E.L. EACH ACCIDENT	$
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$
							E.L. DISEASE - POLICY LIMIT	$

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

Certificate Holder and others (if applicable) is/are an additional insured as respects to general liability if required in a written contract. Liability Additional Insured, Per Project Aggregate, Primary Non Contributory, and Waiver of Subrogation applies per forms: CG7137 11/12, CG2010S 07/04, CG2037S 07/04, CG2503 5/09. Auto Additional Insured: CA 7078 9/11; Auto Waiver of Subrogation CA0444 3/10. Subject to all policy terms, conditions, definitions and exclusions.
RE: Any and all operations by or on behalf of the insured during the policy terms indicated on this form. Arizona Water Company its officers, agents and employees are addiitonal insureds.

CERTIFICATE HOLDER

Arizona Water Company
PO Box 29006
Phoenix AZ 85038-9006

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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The ACORD name and logo are registered marks of ACORD

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 03/30/2013

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: SCF Arizona
SCF Arizona and its subsidiaries 3030 N. 3rd Street Phoenix AZ 85012-3068	PHONE (A/C, No, Ext): 602.631.2600 or 866.284.2694 FAX (A/C, No): 602.631.2599 E-MAIL ADDRESS: askscf@scfaz.com or webcerts@scfaz.com
	INSURER(S) AFFORDING COVERAGE — NAIC #
	INSURER A : SCF Premier Insurance Company — 12741
INSURED TALIS Construction Corporation 2342 S McClintock Dr Tempe AZ 85282	INSURER B : INSURER C : INSURER D : INSURER E : INSURER F :

COVERAGES CERTIFICATE NUMBER: 423 REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	GENERAL LIABILITY						EACH OCCURRENCE	$
	☐ COMMERCIAL GENERAL LIABILITY						DAMAGE TO RENTED PREMISES (Ea occurrence)	$
	☐ CLAIMS-MADE ☐ OCCUR						MED EXP (Any one person)	$
							PERSONAL & ADV INJURY	$
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$
	☐ POLICY ☐ PRO-JECT ☐ LOC						PRODUCTS - COMP/OP AGG	$
								$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$
	☐ ANY AUTO						BODILY INJURY (Per person)	$
	☐ ALL OWNED AUTOS ☐ SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	☐ HIRED AUTOS ☐ NON-OWNED AUTOS						PROPERTY DAMAGE (Per accident)	$
								$
	☐ UMBRELLA LIAB ☐ OCCUR						EACH OCCURRENCE	$
	☐ EXCESS LIAB ☐ CLAIMS-MADE						AGGREGATE	$
	☐ DED ☐ RETENTION $							$
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N ☐ If yes, describe under DESCRIPTION OF OPERATIONS below	N/A		P10696	04/01/2013	04/01/2014	☒ WC STATU-TORY LIMITS ☐ OTH-ER	
							E.L. EACH ACCIDENT	$ 1,000,000
							E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

Location: All Jobs

WATER MAIN OR CONNEC CONST-INCL TUN

Should any of the above described policies be cancelled before the expiration date thereof, the issuing insurer will endeavor to mail 30 days written notice to the certificate holder named, but failure to do so shall impose no obligation or liability of any kind upon the insurer, its agents and representatives.

CERTIFICATE HOLDER

Arizona Water Company
P.O. Box 29006

Phoenix AZ 85038-9006

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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ARIZONA WATER COMPANY

SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT: E-4-1

CONSTRUCTION SPECIFICATIONS: E-8-1

STANDARD SPECIFICATION DRAWINGS: E-9-1

5/10/13

2007 EDITION WITH **2010** REVISIONS;
2012 GENERAL CONDITIONS OF CONTRACT

A copy of this entire Spec Book was sent out with Talis Construction Proposal package for WA 1-5076 UPRR @ Az Grain on 5/14/13

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

December 1 , 2014

Engineering Review Desk
Arizona Department of Environmental Quality
1110 W Washington St, 5th Floor
Phoenix, Az 85007

Re: Engineer's Certificate of Completion for Arizona Grain
AWC W.A. No. 1-5076
ADEQ File No. 20130103

Dear Engineering Review Desk:

Enclosed is the Engineer's Certificate of Completion for the above-referenced project along with a copy of the Approval to Construct, the pressure, chlorination, bacteriological test data, and As Built Drawing.

If you have any questions concerning this construction, please call or write at your convenience.

Very truly yours,

Andrew J. Haas, P. E.
Chief Engineer

afh
Enclosures

ENGINEER'S CERTIFICATE OF COMPLETION AND FINAL INSPECTION "ECC"

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY (ADEQ) – WATER QUALITY DIVISION 5/01

ADEQ FILE NO.: 20130103 → X DRINKING WATER DESIGN *(New separate form now used for WASTEWATER DESIGN)* If separate Drinking Water & Wastewater Approvals to Construct were issued, separate ECCs required	COUNTY: Pinal OWNER: ARIZONA WATER COMPANY

Project Name: Arizona Grain *(as shown on Approval to Construct)*

W.A. No.1-5076 SYSTEM No.11-009

Project Description: Install approximately 460 LF of 6-inch Class 350 DIP water line and related fittings to replace existing 6-inch water line along Southern Pacific RR at Arizona Grain.

(as shown on Approval to Construct, unless completed project differed, in which case describe in detail)

I, James T. Wilson, a Professional Engineer registered in the State of Arizona, have inspected the construction of the above described project, and certify that *(check all applicable boxes, complete applicable blanks):*

ITEMS 1) THRU 4) MUST BE COMPLETED

☒ **1) The work on this project was completed on November 12, 2014 (date).**

☒ **2) On November 12, 2014 a final construction inspection was conducted by ☐ MYSELF [←check one→] ☒ under MY DIRECT SUPERVISION by Scott Johnson (print name).**

☒ **3) The materials utilized and the installation and construction of those materials and equipment are in conformance with the approved plans and specifications.**

☒ **4) All provisions listed in the ADEQ Approval to Construct for this project, a copy of which I have attached to this certificate, have been fully satisfied or exceptions are listed on the reverse side of this certificate.**

☒ **5) All construction and preoperational tests (infiltration, exfiltration, (pressure), deflection, (chlorination), (bacti), etc.)** ***[circle types performed]*** **were properly conducted, met ADEQ requirements, and are represented in attachments to this Certificate. The total number of pages of test results attached is 2.**

EITHER 6A) or 6B) MUST BE CHECKED

☒ **6A) Any deviation from the approved plans and the ADEQ Certificate of Approval to Construct have been noted on the attached "As-Built" plans (as stipulated in the Approval to Construct provisions) prepared and sealed pursuant to A.R.S.§ 32-125 on 11-21-14 (date). Of the total 4 sheets of "As-Built" plans attached, deviations from the approved plans are shown on sheets numbered 1-2. All deviations from the approved plans comply with the ADEQ minimum design and construction standards contained in statute, rule, bulletin or referenced codes, and with the key elements of the approved plans.**

☐ **6B) The completed project did not deviate from the plans which received the Approval to Construct.**

EITHER 7A) or 7B) MUST BE CHECKED

☒ **7A) This project did not require the preparation of an Operation and Maintenance Manual.**

(the only projects which do NOT require an O&M manual are gravity-only sewage collection systems, single-family residence septic systems, and drinking water distribution projects that include no source, storage, or pressurization facilities).

☐ **7B) A FINAL Operation and Maintenance Manual has been prepared for this project and a copy is attached. This manual meets all ADEQ minimum design and construction standards contained in statute, rule, bulletin, referenced codes, the key elements of the approved plans, and, if applicable, with Attachment B of the September 10, 1994 Engineering Advisory for Individual Alternate Systems.**

EITHER 8A) or 8B) MUST BE CHECKED

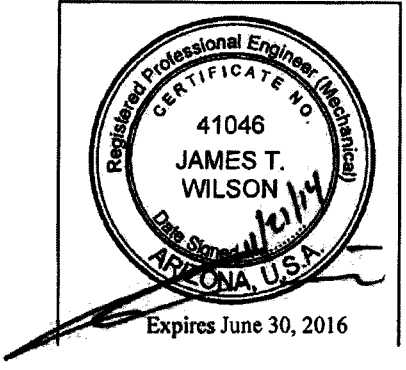
☒ **8A) Review of this project for Approval of Construction issuance does not require a fee because this project involves only drinking water, not wastewater.**

☐ **8B) In accordance with A.A.C. R18-9-103 Schedule B, a check in the amount of $_____ is attached as initial fee for review of the submitted and other information for issuance of an Approval of Construction.**

ADDITIONAL INFORMATION

☐ **9) Other, see additional information on reverse side.**

↓ **ENGINEER'S SEALperAAC R4-30-304.B** ↓



Expires June 30, 2016

Engineer Address PO Box 29006, Phoenix, AZ 85038-9006

Phone 602-240-6860

AZ DEPARTMENT OF ENVIRONMENTAL QUALITY ACCEPTANCE

EMPLOYEE SIGNATURE **(PRINTED NAME)** **DATE**

ADEQ Arizona Department of Environmental Quality

ENGINEERING REVIEW SECTION
DATA REQUIRED WITH ECC

Please complete the test data and submit this form with the Engineers Certificate of Completion. An Approval of Construction cannot be issued without the data identified below in accordance with Arizona Administrative Code (A.A.C.) R18-5-508(C). Please attach all supplemental information and calculations to this form.

DATA

1-5076

1.

PRESSURE TEST DATA

Indicate Segment Tested				
Pressure and Leakage Test Results (Pass/Fail)	PASSED			
Date Tested	10-31-14			
Time Started	1:45pm			
Time Finished	3:45pm			
Pipe Diameter	6"			
Footage Tested	3364F			
Allowable Leakage	0.4032			
Leakage Observed	0			
Pressure at Test Point	200psi			
Employee Observing the Test (Please Print Legibly)	SCOTT H. JOHNSON			
Signature of Employee Observing the Test	Scott H. John			

2.

DISINFECTION SAMPLING

Initial Sampling (Minimum 50 ppm available chlorine)	Date	10/31/14			
	Time	4:00pm			
	ppm Cl_2	200ppm			
After 24 Hours Detention Time (Minimum 10 ppm free chlorine)	Date	11/3/14			
	Time	10:00AM			
	ppm Cl_2	200ppm			
After Sufficient Flushing (Water is clear and system Cl_2 residual is measured)	Date	11/3/14			
	Time	11:30AM			
	ppm Cl_2	1.0			
Bacteriological Sampling(s):	Date	11/3/14			
	Time	11:45AM			
	Attached (Y/N)	Y			
		(Yes/No	Yes/No	Yes/No	Yes/No

3.

Certification

I, SCOTT H. JOHNSON, certify that I have inspected the work performed and have found it to be satisfactory and in accordance with Arizona Administrative Code, Arizona Engineering Bulletins, and the approved specifications.

Scott H. John — Authorized Persons Signature

11/12/14 — Date

Professional Engineer (Mechanical)
As per Rule R4-30-301
Registered Professional Engineer
CERTIFICATE NO.
41046
JAMES T.
WILSON
Date Signed 11/14
ARIZONA U.S.A.
EXPIRES 6/30/2016

LEGEND
Technical Services, Inc.
www.legend-group.com

17631 N. 25th Avenue • Phoenix, AZ 85023
P (602) 324-6100 • F (602) 324-6101

Regina Lynde
Arizona Water Company
3805 N. Black Canyon Hwy
Phoenix, AZ85015

Project: Specials
Project Number: Az. Grain Wa-1-5076 11/3/14

Reported:
11/10/14 10:19

Analyte

Az Grain #1 (4110130-01) Drinking Water (Grab) Sampled: 11/03/14 11:45 Received: 11/04/14 08:00

Analyte	Result	PQL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Legend Technical Services of Arizona, Inc.									
Microbiology									
E. coli	Absent		P/A	1	B4K0079	11/04/14 10:45	11/04/14 10:45	SM 9223B	
Total Coliforms	Absent		P/A	1	B4K0079	11/04/14 10:45	11/04/14 10:45	SM 9223B	

Sample Condition Upon Receipt:

Temperature: 2.00 C
All samples were received in acceptable condition unless noted otherwise in the case narrative.

Case Narrative:

Holding Times: All holding times were met unless otherwise qualified.
QA/QC Criteria: All analyses met method requirements unless otherwise qualified.
Accreditations: AZ(PHX)0004, AZ(TUC)OOO4, AIHA#102982, CDC ELITE Member.
Accreditation is applicable only to the test methods specified on each scope of accreditation held by LEGEND.
Comments: There were no problems encountered during the processing of the samples, unless otherwise noted.
All samples were analyzed on a "wet" basis unless designated as "dry weight".

Chain of Custody indicates special only do not report to ADEQ- BF
Notified Scott of the absent results on 11/07/14. BF

Notes and Definitions

Legend Technical Services of Arizona, Inc.

Barbara Crank

Client Services Representative

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Phone Number: (602) 324-6100

Regina Lynde
Arizona Water Company
3805 N. Black Canyon Hwy
Phoenix, AZ85015

Project: Specials
Project Number: Az. Grain Wa-1-5076 11/3/14

Reported:
11/10/14 10:19

Laboratory Sample ID: 4110130

CHAIN OF CUSTODY RECORD

LEGEND Technical Services, Inc.
www.legend-group.com

☐ 17631 N. 25th Avenue · Phoenix, AZ 85023 · (602) 324-6100 · Fax (602) 324-6101
☐ 4585 S. Palo Verde Rd, Ste 423 · Tucson, AZ 85714 · (520) 327-1234 · Fax (520) 327-0518

Page 1 of 1

Please Print Clearly

CLIENT INFORMATION

Client Name	Address		State	Zip	Phone	Fax Number or Email Address
ARIZONA WATER Co.	220 E. 2ND ST	CASA GRANDE	AZ	85122	(520) 836-8785	(520) 836-2780

Project Name	Project Number	Contact	P.O. No.	Fax Results ☒	QC Report ☐ EDD ☐
Az. GRAIN	WA-1-5076	RAY MIRRIZITTA		Email Results ☐	Special Detection Limits ☐

SAMPLE TYPE CODES

DW=Drinking Water; WW=Wastewater; SW=Surface Water; GW=Groundwater; O=Other; S=Soil/Solid; T=Travel Blank; F=Food; G=Sludge/Biosolids

TURN AROUND TIME

Laboratory Authorization Required for Rush

☐ Standard 7-10 Day
☐ Other _____

REQUESTED ANALYSES

Client's Sample Identification	Date	Time	Sample Location	Composite	Grab	Sample Type	Compliance	No. of Containers	pH (Lab Use Only)	CALCIUM	LAB NO.
AZ. GRAIN #1	11/3/14	11:45AM	AZ. GRAIN #1		X	WW		1	X	X	01

TO ENSURE COMPLETION OF ANALYSIS, SAMPLES MUST BE RECEIVED AT LEAST 3 HOURS PRIOR TO THE HOLD TIME EXPIRATION

Comments / Special Instructions: (SPECIAL) Filter DO NOT REPORT TO A.D.E.Q. Clz-I.D

SAMPLE CONDITION UPON RECEIPT (Lab Use)

No. of Containers	1	
Temperature	2.0 °C	
Custody Seals	Y	(N)
Bottles Intact	Y	N
Preserved	(Y)	N

RELINQUISHED BY

	Signature / Printed Name	Date	Time
①	Sampler Signature: Scott H. Jones / Sampler Printed Name: Scott H. Jones IV	11/3/14	
②	Signature / Printed Name: UPS	11/4/14	8:00
③	Signature / Printed Name		

SAMPLES RECEIVED BY

	Signature / Printed Name	Date	Time
	UPS		
	Howard Howard	11/4/14	8:00

WHITE-LAB YELLOW-CLIENT

FORM GEN-170 (12/13)

1278149041595 6612 65

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

2013 5 26

2014 10 23

2013 10

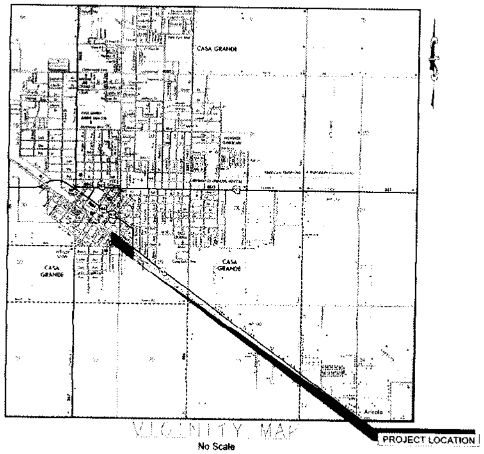
2013 11 4

2019 9 26

2013 10 3

2014 12 30

2014 12 30



VICINITY MAP

No Scale

CONSTRUCTION NOTES:

1. All work and materials shall conform to current County Health Department Standards and Revisions, Arizona Water Company Standard Specifications and Details, MAG Standard Specifications and Details, and Arizona Department of Health Services Engineering Bulletin No. 10.
2. Developer shall obtain a Pinal County Right of Way Use Permit prior to any work being performed within the County right-of-way. Contact Pinal County Public Works Inspection Section at least seven (7) working days, prior to work.
3. Prior to construction, the appropriate agency(ies) will be notified as required by the permits.
4. All backfill, compaction, and testing shall be per current County, City, State, ADOT and Arizona Water Company Standards and specifications.
5. *All water lines 8" and less are to have a minimum cover of 36 inches* & all water lines 12" and greater are to have 48 inches of minimum cover over the top of pipe to finish grade, unless otherwise specified on the construction drawings.
6. All frames, covers, valve boxes, and manhole covers shall be adjusted to finish grade prior to completion of construction. (If located outside pavement section, prefer level with finished grade but allow 6" max above finished grade.)
7. All water lines shall be pressure and leakage tested in accordance with AWWA C-600 or MAG 610-14.
8. All water lines are to be disinfected per ADEQ Engineering Bulletin No. 8 and AWWA C651-92.
9. Air release valves are required at water system high points per Arizona Water Company standard details.
10. Water/sewer separation shall be per current Arizona Water Company standards ADEQ AAC R18-4-502-C.
11. It shall be the contractors responsibility to uncover all existing water lines being connected to, and to verify the location, depth and size of pipe before any construction begins.
12. Any construction performed without the knowledge of the inspector or his representative is liable for removal and replacement at the contractors expense.
13. In accordance with AAC R18-4-213, all materials added after January 1, 1993 which may come in contact with drinking water, shall conform to National Sanitation Foundation Standards 60 and 61.
14. All water services shall be set a minimum of 2 feet on the customers property *and NOT in the right-of-way.*
15. Unless otherwise specified on the construction drawings, all water mains are to be installed 5 feet from the property line inside the right-of-way or easement.
16. Water valves shall be spaced not more than 500 feet in commercial districts and not more than 800 feet in other districts. Variations may be required for transmission mains or special applications. Sufficient valving is required where water lines cross streams, *railroads and major highways.*
17. Contractor is responsible for Blue Stake marking daily as construction is in progress.
18. All residents to be notified in person 24 hours prior to driveway crossing.
19. Traffic control and barricading shall be according to the Manual on Uniform Traffic Control Devices or Pinal County requirements. Contractor to supply lighted barricade at 50' intervals with open trench signage.
20. Contractor shall submit a Traffic Control plan to Pinal County Public Works Inspection Section at least three (3) working days prior to work for review and approval.
21. Any work on arterial or collector roads shall require an off-duty Pinal County Sheriff's Officer for traffic control. Contact shall be made through PCSO representative.
22. No trench to be left open/uncovered after working hours unless properly signed and barricaded per the approved Traffic Control Plan.
23. Plan approval is Valid for (12) months from the date of County approval. If approval expires, the plans must be resubmitted to Pinal County Public Works for update review and re-approval.
24. Trench excavation, back filling and compaction shall be per MAG Standard Specifications Section 601. Bedding shall be specifically per MAG Standard Specifications 601.4.2 and 601.4.6.
25. All work required to complete the construction covered by these plans shall be in accordance with MAG Standard Specifications and Details.

ADEQ APPROVAL

FILE No. ____________

DATE ____________

RECORD DRAWING CERTIFICATION

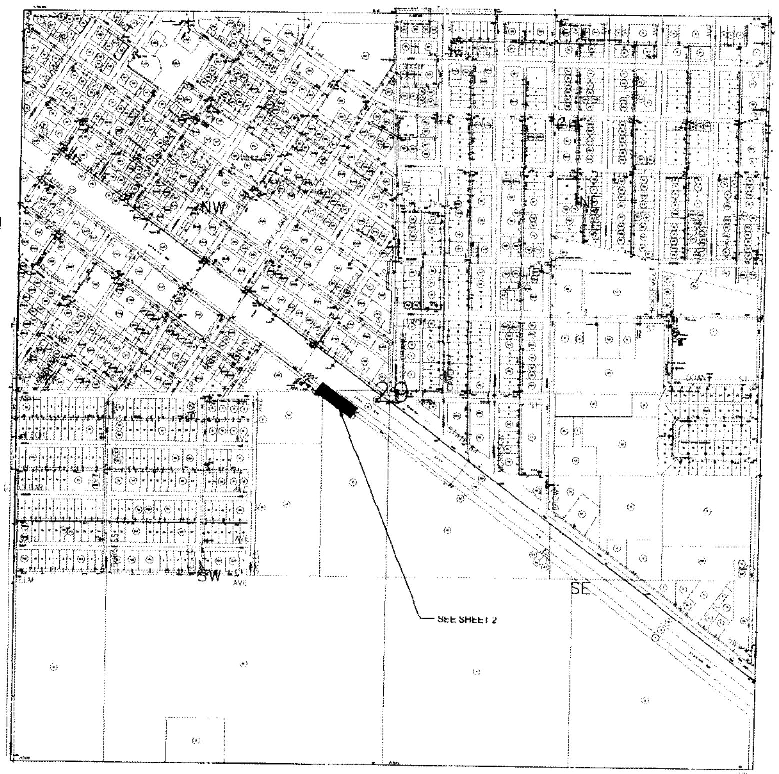
I HEARBY CERTIFY THAT THE "RECORD DRAWING" MEASUREMENTS AS SHOWN HEREON WERE MADE UNDER MY SUPERVISION OR AS NOTED AND ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF

REGISTERED ENGINEER/LAND SURVEYOR ____________

REGISTRATION NUMBER ____________ DATE ____________

WATERLINE INSTALLATION PLANS PROVIDED BY ARIZONA WATER COMPANY TO SERVE

ARIZONA GRAIN CO.



SCALE: 1" = 400'

400 0 400 1200

QUANTITIES LIST

	ITEM DESCRIPTION	QTY. IN R/W	QTY. TOTAL
	INSTALL 6" DIP		336 LF
	INSTALL 6" MJ G.V.		1 EA.
	INSTALL 16" STEEL CASING		200 LF
	INSTALL 45° MJ ELL		8 EA.
	EXISTING 6" WATERLINE		N/A
	ABANDON EXISTING 6" WATERLINE		345 LF
	CUT & PLUG EXISTING 6" WATERLINE		2 EA.

BASIS OF BEARING

THE WEST BOUNDRY LINE OF SECTION 29 T6S R6E ACCORDING TO THE GENERAL LAND OFFICE PLAT

NORTH 0° 28' EAST

BENCHMARK

PID - CZ2098

ALTITUDE 1431 FEET, NAVD 88

SHEET INDEX

SHEET 1 - COVER
SHEET 2 - PLAN
SHEET 3 - AWC NOTES
SHEET 4 - AWC SPECS.

263–1100
1-800-STAKE-IT

STATION DESCRIPTION

DESCRIBED BY DEFENSE MAP AGENCY 1967
T-6-S. R-6-E. IN SECTION 34 NEAR THE SOUTHWEST CORNER.

THE STATION MARK IS A CORPS OF ENGINEERS, U.S. ARMY DISK CENTERED IN THE TOP OF A ROUND CONCRETE POST 8 INCHES IN DIAMETER PROJECTING 0.2 FOOT ABOVE THE SURFACE OF THE GROUND. THE MARK IS STAMPED--AF 46 1967 ARMY MAP SERVICE.

THE STATION MARK IS LOCATED 49.0 FEET EAST OF NORTH-SOUTH FENCE. 57.0 FEET EAST OF NORTH-SOUTH POWERLINE. 83.0 FEET EAST OF THE CENTERLINE OF NORTH-SOUTH ROAD. 96.0 FEET NORTH OF EXTENDED CENTERLINE OF ROAD WEST.

TO REACH FROM THE JUNCTION OF STATE ROUTES 84 AND 93 IN CASA GRANDE, ARIZONA GO SOUTHEAST ON 84 AND 93 FOR 2.6 MILES TO A NORTH-SOUTH CROSSROAD. TURN RIGHT AND GO SOUTH FOR 0.45 MILE TO A T ROAD WEST AND THE STATION SITE.

W.A. 1-5076	DATE 6/6/2013
SYSTEM	PINAL VALLEY
LOCATION	W1/2 SEC. 29-T.6S., R.6E.
COUNTY	PINAL
SCALE	AS SHOWN
DRAWN BY JS	TAX DIST. 0489 0490

41046
JAMES T. WILSON
Expires 6/30/16

AS BUILT

FOR WATER ONLY

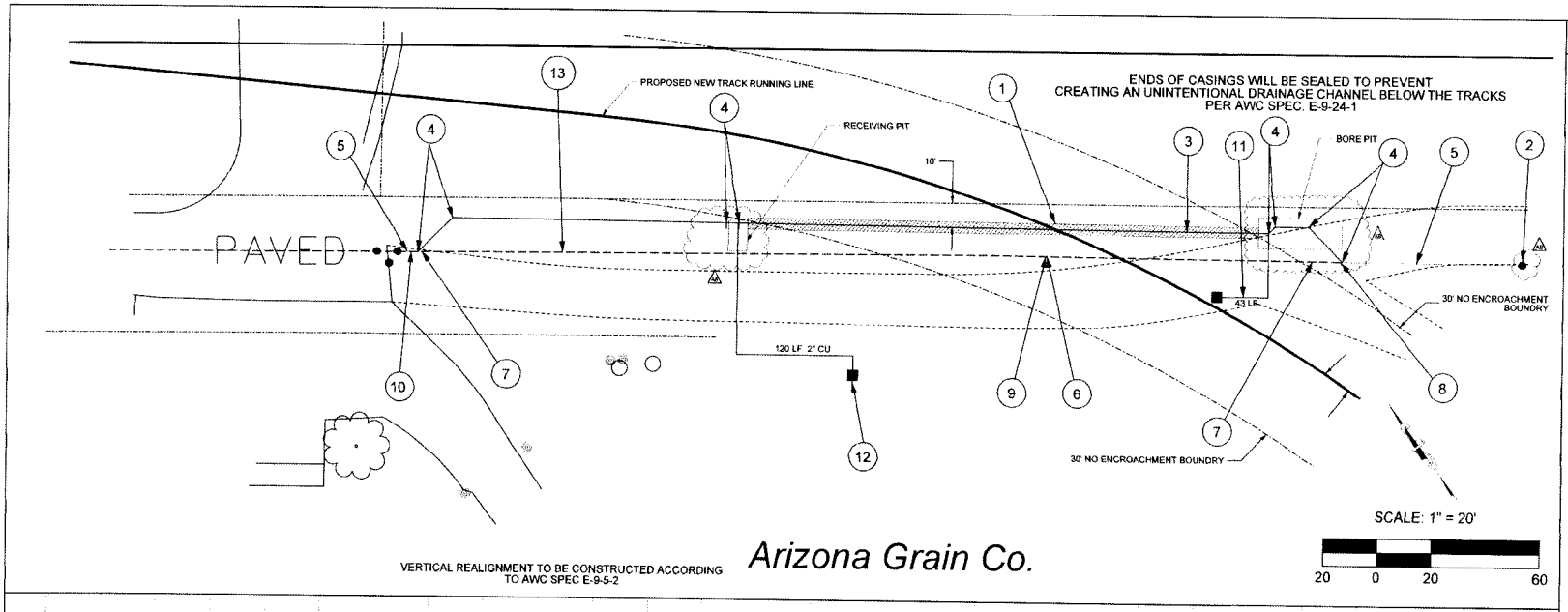
REVISED BY MC ON 11/17/14 PER FIELD AS BUILTS.

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006
PHOENIX, AZ 85015 PHOENIX, AZ 85038
(602) 240-6860

DESCRIPTION: REPLACE EXISTING 6" WATERLINE WITH 6" DIP ALONG SPRR AT ARIZONA GRAIN CO.

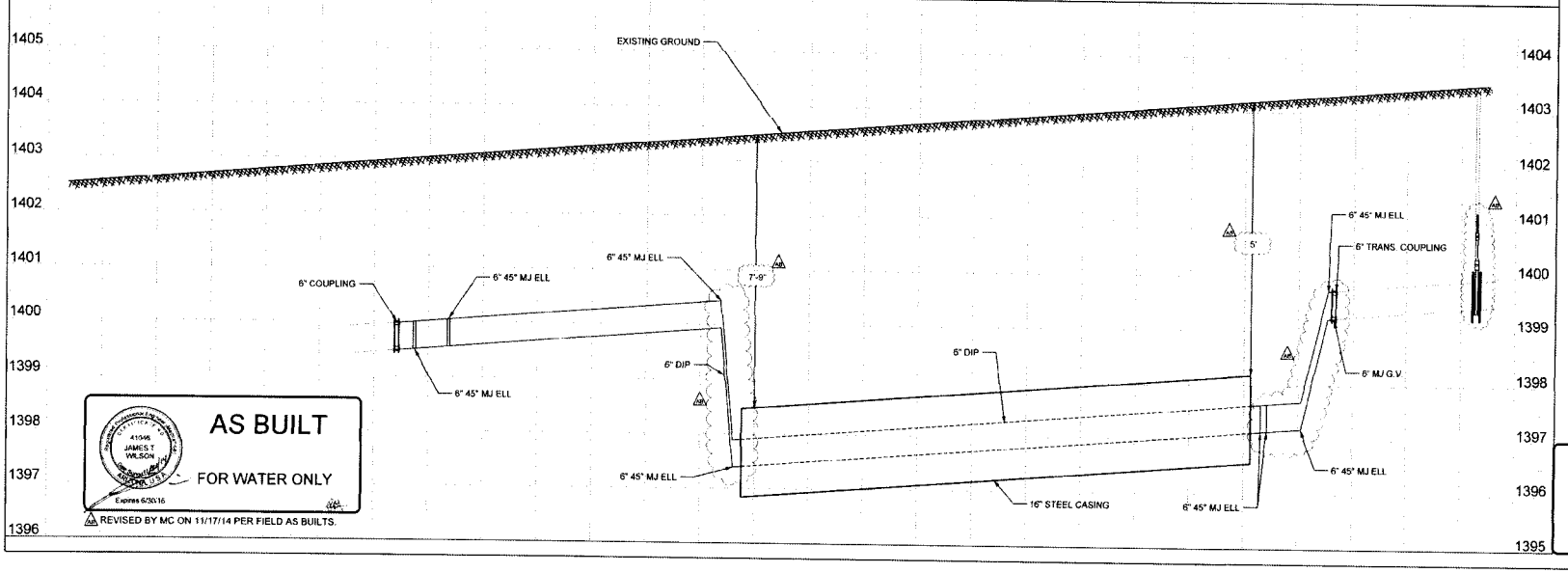
DWG. NUMBER: PV-0017 SHEET: 1 OF 4



VERTICAL REALIGNMENT TO BE CONSTRUCTED ACCORDING TO AWC SPEC E-9-5-2

Arizona Grain Co.

1	INSTALL 16" STEEL CASING (3/8" THICK)	200 LF
2	INSTALL 6" MJ G.V.	1 EA.
3	INSTALL 6" DIP	336 LF
4	INSTALL 45° MJ ELL	8 EA.
5	EXISTING 6" DIP WATERLINE	N/A
6	ABANDON EXISTING 6" WATERLINE	345 LF
7	CUT & PLUG EXISTING 6" WATERLINE	2 EA.
8	TIE INTO EXIST. w/TRANSITION COUP.	1 EA.
9	SLURRY IN ABANDON EXISTING 6" WATERLINE (300 PSI CLSM)	345 LF
10	TIE INTO EXISTING DIP w/ COUPLING	1 EA.
11	TIE IN EXISTING 1" SERVICE PER AWC STANDARD DETAIL E-9-11-1	1 EA.
12	TIE IN EXISTING SERVICE PER AWC STANDARD DETAIL E-9-11-1	1 EA.
13	STREET CUTS ON ASPHALT PAVEMENT PER CITY OF CASA GRANDE STANDARD PLAN NOTES 8,10. TRENCH BACKFILL AND PAVEMENT REPLACEMENT PER MAG STANDARD DETAIL 200-2 W/ ASPHALTIC CONCRETE PER CITY OF CASA GRANDE STANDARD PLAN NOTES 8,12 -SEE SHEET 4	130 LF



AS BUILT

FOR WATER ONLY

41046 JAMES T WILSON Registered Land Surveyor ARIZONA U.S.A. Expires 6/30/16

REVISED BY MC ON 11/17/14 PER FIELD AS BUILTS.

FOR WATER ONLY

ARIZONA WATER COMPANY

DRAWING No.

PV-0017

SHEET 2 OF 4

CONSTRUCTION SPECIFICATIONS FOR THE INSTALLATION OF WATER DISTRIBUTION SYSTEMS

DEFINITIONS

(1) GENERAL

(2) LOCATION MARKING

(3) TRENCH EXCAVATION

(4) MATERIALS TO BE FURNISHED BY CONTRACTOR

(5) INSTALLATION OF MATERIALS

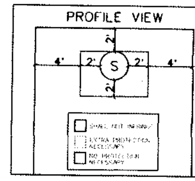
(6) BACKFILL OF WATER MAIN TRENCHES

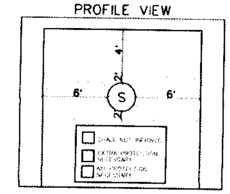
(7) HYDROSTATIC TESTING OF COMPLETED PIPELINES

(8) STERILIZATION AND FLUSHING OF COMPLETED WATER PIPELINES

(9) NO OTHER UTILITIES ALLOWED IN OR NEAR WATER PIPELINE TRENCHES

(10) PROTECTION OF WATER MAINS FROM SEWERS





(11) CORROSION

(12) WATER MAIN MATERIAL SPECIFICATIONS

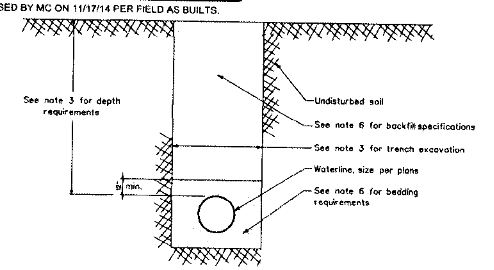
AS BUILT

FOR WATER ONLY

41046 JAMES T. WILSON

Expires 6/30/16

REVISED BY MC ON 11/17/14 PER FIELD AS BUILTS.



TYPICAL TRENCH DETAIL

For MAG Detail 601, 601.4.2, 601.4.6

263-1100
1-800-STAKE-IT

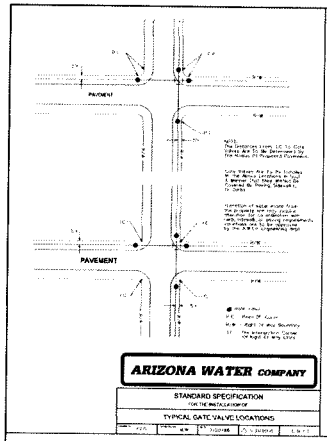
FOR WATER ONLY

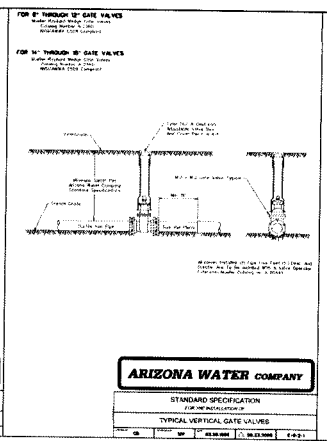
ARIZONA WATER COMPANY

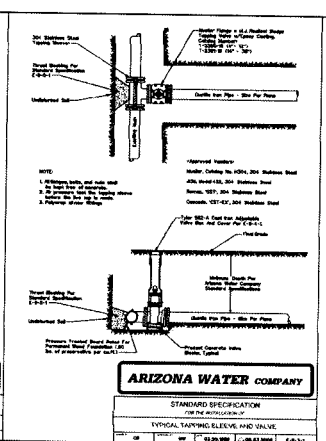
DRAWING No.

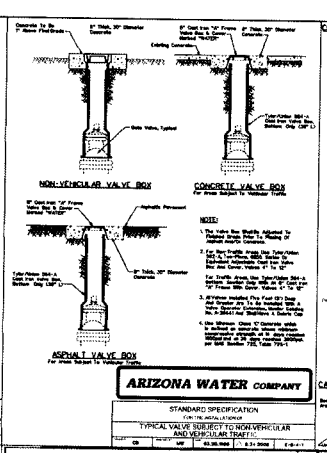
PV-0017

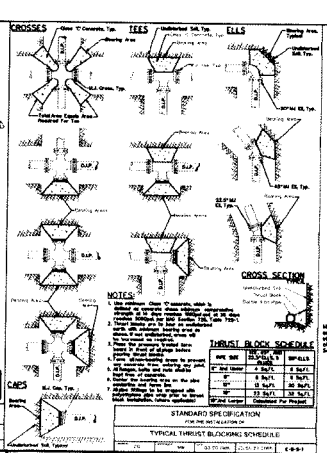
SHEET 3 OF 4

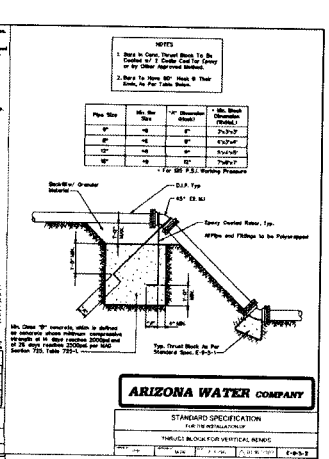








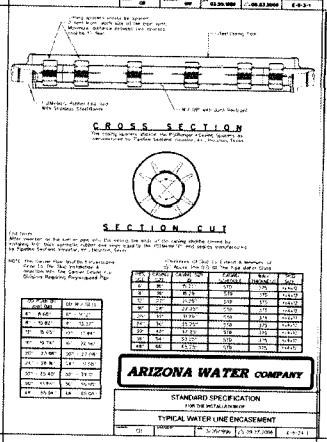


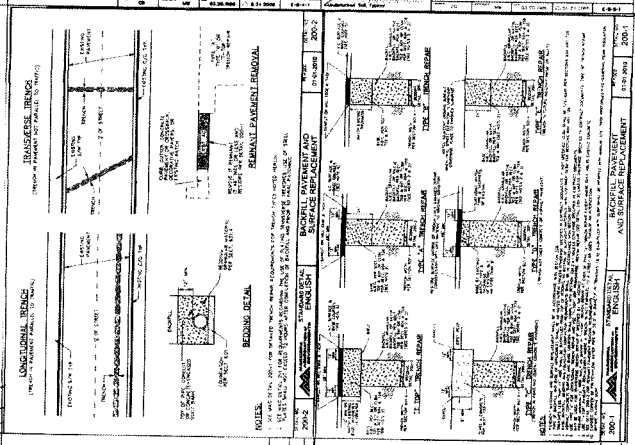


City of Casa Grande Standard Plan Notes

6.10 Street cuts on asphalt pavement: Cut existing pavement at one (1') from the utility trench cut, per M.A.G. detail 200 type (T) top, Tack edges. (Using A19mm per. MAG Sect. 710 Asphaltic concrete hot mix.) Asphaltic concrete shall be tested for compaction, to 95%. The contractor, at his expense, will have a private lab core sample and run a Marshall for compaction test, for acceptance on all street cuts. All replacement pavements shall match existing, unless authorized in writing by the City Engineer.

6.12 Asphaltic concrete for shall conform to M.A.G. USSD section 710 mix specifications. The minimum pavement section for Arterials and Major Collectors shall be a 2" (12.5mm) AC surface course with a 3" (19mm) AC base course with a minimum 10" aggregate base course. Alternate pavement sections based on a geotechnical report may be considered, but must contain at least the 2" + 3" AC pavement noted above in the top section of the pavement structure and equivalent load capacity.





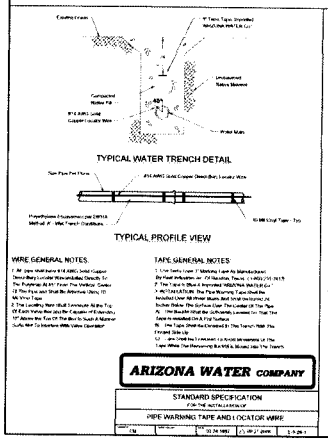
AS BUILT

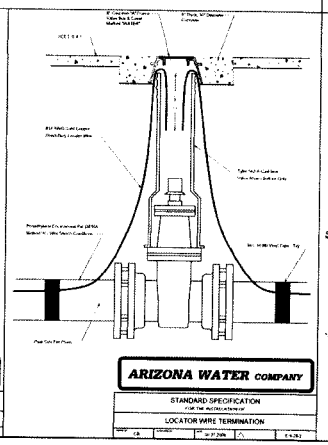
FOR WATER ONLY

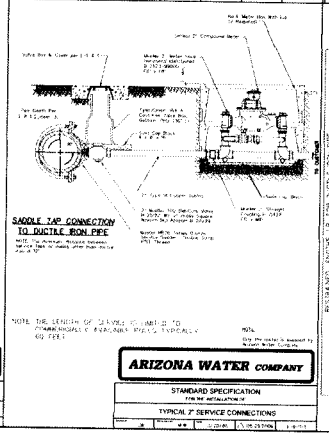
41046 JAMES T. WILSON

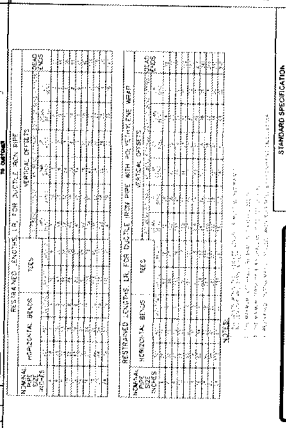
Expires 6/30/16

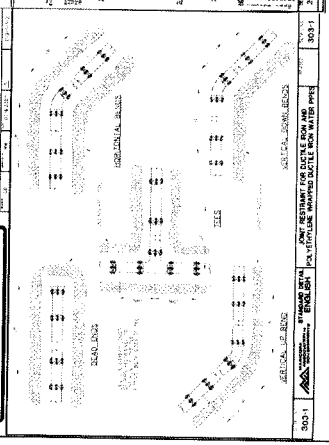
REVISED BY MC ON 11/17/14 PER FIELD AS BUILTS.











263-1100
1-800-STAKE-IT

FOR WATER ONLY

ARIZONA WATER COMPANY

DRAWING No

PV-0017

SHEET 4 OF 4

Janice K. Brewer
Governor

ARIZONA DEPARTMENT
OF
ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • azdeq.gov

Henry R. Darwin
Director

APPROVAL OF CONSTRUCTION

Project Description: Arizona Water Company-Pinal Valley Water System (WA 1-5076). AOC Permit for approximately 340 LF of 6-inch Class 350 DIP Waterlines and Related Fittings. To replace existing 6-inch waterline along Southern Pacific Railroad at Arizona Grain.

Location: Casa Grande, AZ

Project Owner: Arizona Water Company, c/o Mr. Andrew J. Haas
Address: PO Box 29006, Phoenix, AZ 85038

The Arizona Department of Environmental Quality (ADEQ) hereby issues an Approval of Construction for the above-described facility based on the following provisions of Arizona Administrative Code (A.A.C.) R18-5-507 et seq.

On May 10, 2013, ADEQ issued a Certificate of Approval to Construct for the referenced project.

On November 21, 2014 James T. Wilson, P.E., certified the following:

- A final construction inspection was conducted on November 12, 2014;
- The referenced project was constructed according to the as-built plans and specifications and ADEQ's Certificate of Approval to Construct;
- Water system pressure and leakage tests were conducted on October 31, 2014, and the results were within the allowable leakage rates; and
- The applicant has the right to appeal this AOC Permit. Appeal information is on reverse side of this Permit.

Microbiological samples were collected on November 3, 2014 and analyzed on November 4, 2014 by Legend Technical Services, Inc., ADHS License No. AZ0004. The sample results were negative for total coliform.

This Approval of Construction authorizes the owner to begin operating the above-described facilities as represented in the approved plan on file with the ADEQ. Be advised that A.A.C. R18-5-124 requires the owner of a public water system to maintain and operate all water production, treatment and distribution facilities in accordance with ADEQ Safe Drinking Water Rules.

FMS

PWS No.: 11-009
LTF No.: 61535

David Burchard, Manager
Engineering Review Unit

12/11/14
Date Approved

c: TEU File No.: 20130103
Pinal County Health Department
AZ Corporation Commission
Engineer

RIGHT TO APPEAL INFORMATION

The Arizona Department of Environmental Quality's review of this application was subject to the requirements of the licensing time frames ("LTF") statute under Arizona Revised Statutes ("A.R.S.") § 41-1072 through § 41-1079 and the LTF rules under Arizona Administrative Code ("A.A.C.") R18-1-501 through R18-1-525. This Notice is being issued within the overall time frame for your application.

ADEQ hereby approves your application for Approval of Construction Drinking Water Facilities under A.R.S. § 49-351. Your copy of the Approval of Construction Permit is on the reverse side of this Right to Appeal Information sheet.

This decision is an appealable agency action under A.R.S. § 41-1092. You have a right to request a hearing and file an appeal under A.R.S. § 41-1092.03(B). You must file a written Request for Hearing or Notice of Appeal within **30 days** of your receipt of this Notice. A Request for Hearing or Notice of Appeal is filed when it is received by ADEQ's Hearing Administrator as follows:

Office of Administrative Counsel
Arizona Department of Environmental Quality
1110 W. Washington Street
Phoenix, AZ 85007

The Request for Hearing or Notice of Appeal shall identify the party, the party's address, the agency and the action being appealed and shall contain a concise statement of the reasons for the appeal. Upon proper filing of a Request for Hearing or Notice of Appeal, ADEQ will serve a Notice of Hearing on all parties to the appeal. If you file a timely Request for Hearing or Notice of Appeal you have a right to request an informal settlement conference with ADEQ under A.R.S. § 41-1092.06. This request must be made in writing no later than **20 days** before a scheduled hearing and must be filed with the Hearing Administrator at the above address.

Please contact Frank M. Smaila at (602) 771-4237 or fms@azdeq.gov if you have questions regarding this Notice or the Certificate of Approved of Construction.

ARIZONA WATER COMPANY

CONSTRUCTION PLACED IN SERVICE NOTICE

WORK AUTHORIZATION NO.: 1-5076

DIVISION: CG

DATE PLACED IN SERVICE: 12 | 23 | 14

CONTRACT NO:

FOR PURPOSES OF *MODIFIED ACCELERATED COST RECOVERY SYSTEM*, AN ASSET IS "PLACED IN SERVICE" WHEN IT IS IN A CONDITION OR STATE OF READINESS AND AVAILABILITY FOR A SPECIFICALLY ASSIGNED FUNCTION, WHETHER IT BE FOR USE IN A TRADE OR BUSINESS, OR FOR THE PRODUCTION OF INCOME.

I CERTIFY THAT THE ASSET(S) CONSTRUCTED PURSUANT TO THE PROVISIONS OF THE ABOVE-REFERENCED WORK AUTHORIZATION ARE READY FOR SERVICE AS OF THE DATE SHOWN ABOVE.

Division Manager or Operations Superintendent
(signature)

1-8-15
Date

SUBMIT ORIGINAL TO ACCOUNTING DEPARTMENT

A-1-3-1
FKS 11/24/11

emailed to Bink 1-8-15

ARIZONA WATER COMPANY

PROJECT CLOSE-OUT NOTICE

PROJECT CLOSE-OUT DATE:	12/31/14	DIVISION/ SYSTEM:	CG/PV
		WORK AUTHORIZATION NUMBER:	1-5076

THE FOLLOWING RECORD REQUIREMENTS ARE ATTACHED: — PREPARED BY

1. W.A. FINAL COMPLETION CHECKLIST ..... kp
2. FINAL AUTHORIZATION TO BILL HAS BEEN SENT TO PHOENIX ON _____ (Date) ..... NA

WA FINAL COMPLETION CHECK LIST

FACILITIES RECORDS
- ☒ Valve Records – Main & Blow-off
- ☐ Fire Hydrant Records – Include Flow Test Data

ABANDONED FACILITIES
- ☒ Property Disposal Report (PDR)
- ☐ Voided Valve Records
- ☐ Voided Fire Hydrant Records

COMPLETION DOCUMENTS
- ☐ Public Fire Hydrants Installation Request (E-3-23)
- ☐ Notice of Fire Hydrant Installation (E-5-5)
- ☐ Permits Acquired By Division Office
- ☐ Bill Of Sale (E-3-36-3)
- ☐ Final Acceptance of Facilities Letter (E-3-36-5)

ON-SITE PHOTOGRAPHS
- ☐ To Show All New Installations At Completion Of W.A.

IF NO ATB IS REQUIRED

- ☒ ADEQ DATA REQUIRED WITH ECC APPLICATION
  NOTE: "Footage Tested" to match total pipe installed ("343" ONLY)

AS-BUILT DRAWING
- ☒ Label Cover Sheet "AS BUILT"
- ☒ Pipe footage and size to be listed on AS-BUILT cover sheet ("343" ONLY)
- ☒ Printed name of AS-BUILT preparer
- ☒ ONLY Changes to original construction drawing to be marked in red on AS-BUILTs, NOTE: Include any additional Air Release Valves

FORMS
- ☐ Well Record (E-5-7)
- ☐ Storage Tank Record (E-5-8)
- ☐ Booster Pump Record (E-5-9)
- ☐ Hydropneumatic Tank Record (E-5-10)

OPERATIONS & MAINTENANCE MANUALS
- ☐ Electric S.E.S. & M.C.C.
- ☐ S.C.A.D.A./Controls
- ☐ Treatment Facilities

- ☒ AOC (Approval of Construction)
- ☒ Placed in Service Notice
- ☐ Daily Progress Reports

I certify that construction on the above Work Authorization is complete and for which all materials have been accounted. I further certify that I have inspected the work and determined it s satisfactory and in accordance with Company specifications.

Division Manager, Operations Superintendent, or Project Engineer *(signature)*

2-17-15
Date of Notice

ATTACH TO CONSTRUCTION & ENGINEERING FILE COPY OF WORK AUTHORIZATION

TO: ACCOUNTING DEPARTMENT (ACCOUNTANT II)
CC: ENGINEERING DEPARTMENT (ENG. SEC.)

Western Group Rate Case

Exhibit FKS-1

5164 Coolidge 9 and 10 BPS

ARIZONA WATER COMPANY
WORK AUTHORIZATION

W.A. NUMBER: 1-5164
P.E. NUMBER:
BUDGET ITEM NO.:
SHEET NO.: 1 of 3

SYSTEM:	PINAL VALLEY	RETENTION REQUIRED:	☑ YES ☐ NO
DIVISION:	CASA GRANDE	WORK TO START BY:	UPON AUTHORIZATION
RESPONSIBLE PERSON:	JAMES WILSON	WORK TO BE FINISHED BY:	WITHIN DAYS
TAX CODE:	2102		

DESCRIPTION OF WORK:

Design and construct a vertical can booster pump station (BPS) with a firm capacity of 2,200 gpm at the Vacuum tank site in Coolidge, Arizona (Phase 1 of 2). Construct in accordance with attached drawings and/or Arizona Water Company specifications.

FACTORS JUSTIFYING WORK:

Approved 2014 Construction Budget Amount $75,000
The Vacuum tank BPS produces approximately 65% of the water for the Coolidge portion of the Pinal Valley water distribution system. The existing BPS includes two boosters that have been in service for 29 years. Production has decreased from 2,200 gpm to 1,900 gpm. Company engineers initially planned to replace only the pumps, motors and discharge heads. However, during a recent inspection of the pump can interior for booster No. 2, Company engineers discovered severe internal corrosion of the pump cans, and determined the cans are nearing the end of their useful life and require replacement. The existing welded steel suction and discharge headers are also corroded, leaking, and require replacement. The Company cannot remove the existing BPS from service to replace the pump cans and maintain a sufficient supply of water to the distribution system. Therefore, a new BPS must be constructed adjacent to the existing BPS and made operational prior to removing the existing BPS from service. Company engineers designed the new BPS next to the existing BPS so that Company operators can continue to operate the existing BPS while the new BPS is constructed. The Company's design policy requires that all new BPS include a backup pump for use in the event of a pump failure. The new BPS will produce a firm capacity of 2,200 gpm with two pumps and include a third pump for system reliability in the event of a pump failure. Replacing the booster pump station will allow the Company to provide a safe, reliable, and sufficient supply of water to meet the demands of the Pinal Valley Water system.

COST ESTIMATE		AUTHORIZATION	DATE
COST OF WORK:		PREPARED BY: James Wilson JW 10/1/14	9/25/14
MATERIAL	0		
LABOR	15,400	REVIEWED FOR ESMT/ROW VERIFICATION: Charles Briggs CB 10-01-2014	09-25-2014
CONTRACT PORTION	54,472		
OVERHEAD	8,400	REVIEWED BY: Mario Mendez MM 10/2/14	9/25/14
TOTAL AUTHORIZED EXPENDITURES CHARGEABLE TO THIS W.A.	$ 78,272		
FUNDS RECEIVED:		APPROVED BY ENGINEERING: Fredrick Schneider 10-3-14	9-25-14
CONTRIBUTIONS RECEIVED	0		
REFUNDABLE ADVANCES RECEIVED	0	APPROVED BY FINANCE: Joseph Harris	9/27/14
TOTAL CONTRIBUTIONS/ADVANCES	0		
NET COMPANY CASH REQUIRED	$ 78,272	AUTHORIZED BY PRESIDENT: William Garfield	9-29-14

COMMENTS:

Approved 2014 Construction Budget Amount $75,000
Transfer additional funds required ($ 3,272) from WA 1-4913
2014 RTC Construction Amount $78,000
2015 Anticipated Construction Budget Amount $655,000
Total Project Cost $733,000

CONSTRUCTION RELEASE:

RELEASED TO CONSTRUCTION
Authorized by FRED SCHNEIDER
Date 10/3/14

ARIZONA WATER COMPANY

WORK AUTHORIZATION - DETAIL SHEET

W.A. NUMBER: 1-5164
P.E. NUMBER:
BUDGET ITEM NO.: B-1
SHEET NO.: 2 of 2

RETIREMENT PROPERTY UNITS	PLANT PROPERTY ACCOUNT	UNIT DESCRIPTION	QUANTITY	YEAR INSTALLED AND W.A. NUMBER

PROJECT DESCRIPTION:

Design and construct a vertical can booster pump station (BPS) with a firm capacity of 2,200 gpm at the Vacuum tank site in Coolidge, Arizona.

	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST	TOTAL
CONTRACT WORK	***Pull and replace Pancake Tank Booster No. 2***				
	Labor to pull and replace booster pump no. 2	325	1	$ 4,180.00	$ 4,180
	Provide and install National Pump E12MC (5 stage) bowl assembly	325	1	5,685.00	5,685
	Provide and install stuffing box on existing discharge head	325	1	2,484.00	2,484
	Contracting tax	325	1	859.00	859
	Performance and payment bonds	325	1	264.00	264
	Design and construct a 2,200 gpm vertical can BPS				
	Provide and install 16-inch suction pipe and related fittings	325	0	187,500.00	
	Provide and install 12-inch discharge pipe and related fittings	325	0	95,400.00	
	Provide and install 6-inch Cla-Val Series 581 silent globe check valve	325	0	10,900.00	
	Provide and install 6-inch Endress+Hauser 53W MAG Meter	325	0	4,350.00	
	Design and layout booster pump station and VFD motor controller	325	1	28,500.00	28,500
	Provide and install National Pump E12MC (5 stage) bowl assembly	325	0	0.00	
	Pull existing Booster No. 2 and install the existing National E12MC				
	pump in the No. 3 location of the new booster pump station	325	0	0.00	
	Provide and install pump can, shaft, column, discharge head, 125 HP				
	VSS WP-1 premium inverter duty motor with thermal switch	325	0	37,000.00	
	Provide and install booster pump station concrete foundation	325	0	10,509.00	
	Provide and install 150HP Toshiba HX7 18-pulse VFD motor controller	325	0	18,000.00	
	Provide and install concrete foundation for VFD motor controller	325	0	3,600.00	
	Provide and install all conduits, wires, boxes, relays, terminations,				
	grounding and electrical controls	325	0	27,000.00	
	Paint all above ground booster pump station piping and motors	325	0	5,000.00	
	Provide and install system and SCADA programming	325	0	6,000.00	0
	Booster pump startup, testing and commissioning	325	0	8,910.00	
	Provide and install shade canopy over the MCC and SES	325	0	30,000.00	
	Contracting tax	325	0	17,927.83	
	Performance and payment bonds	325	1	5,000.00	5,000
	Construction contingency	325	0	15,000.00	4,500
	Geotechnical investigation and report	325	1	3,000.00	3,000
TOTAL CONTRACT WORK					$ 54,472
MATERIALS					
	SERVICE CONNECTIONS: DOUBLE-LONG	345			
	SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	METERS	346			
TOTAL MATERIALS					$ -
LABOR	Engineering design and review	325	40	$ 65.00	$ 2,600
	Project management	325	40	65.00	2,600
	TESTING FEE	325	1	$ 1,000.00	1,000
	PERMIT FEE	325	1	5,000.00	5,000
	SURVEY FEE	325	1	2,000.00	2,000
	FIELD INSPECTION	325	40	55.00	2,200
TOTAL LABOR					$ 15,400
SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR					$ 69,872
OVERHEAD					8,400
TOTAL	REFUNDABLE PORTION ☐	NON-REFUNDABLE PORTION ☐		**COST ESTIMATE**	$ 78,272

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

September 30, 2014

Mr. Randy Gates
MGC Contractors, Inc.
4110 E. Elwood Street
Phoenix, AZ 85040

Re: Design-Build a 2,200 GPM Vertical Lineshaft Turbine Booster Pump Station

PROJECT: Coolidge Pancake Tank	
SYSTEM: Pinal Valley	
CONTRACT NO.:	
P.E. NO.:	W.A. NO.: 1-5164

Dear Mr. Gates:

Enclosed is your copy of the Proposal/Contract for the above-referenced project, which has been accepted by Arizona Water Company (the "Company"). The project shall be constructed in accordance with the Company's *General Conditions of Contract, the Specifications and the Drawings* which were included with the Company's previously provided Proposal/Contract, copies of which are being provided again and attached herewith.

Also enclosed are two copies of the Commencement Notice for the above-referenced project. Please sign one of the copies and return it to my attention retaining the other for your records.

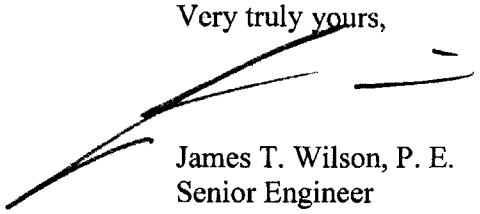
As provided in paragraph 4 of the Company's Proposal/Contract executed by the Company on October 3, 2014, MGC Contractors, Inc. acknowledged that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work. In addition, as provided in paragraph 44 of the Company's General Conditions of Contract, the 100% Performance and Payment Bonds must be provided within ten (10) calendar days of the date of the Commencement Notice. Failure to provide an acceptable 100% Performance and Payment Bond does not limit the Company's

ability to terminate the Proposal/Contract or seek restitution for damages that the Company may have or will incur.

Prior to the start of construction, please call Ray Murrieta, Division Manager at 520-836-8785 to schedule a pre-construction meeting. In addition, please provide the required Performance and Payment Bonds to the Company promptly so that the contracted work can be completed within the contract's timeline.

If you have any questions, please call me at this office.

Very truly yours,



James T. Wilson, P. E.
Senior Engineer
jwilson@azwater.com

afh
Enclosure

ARIZONA WATER COMPANY

Pinal Valley - Casa Grande
220 E. 2nd Street
Casa Grande, AZ 85122 PH: 520-836-8785

PROPOSAL/CONTRACT

CONTRACTOR: MGC Contractors, Inc.	SYSTEM: PINAL VALLEY
ADDRESS: 4110 East Elwood Street	W.A No(s): 1-5164
CITY ST ZIP: Phoenix, AZ 85040	BID DUE DATE: August 28, 2014

CONTRACTOR SUBMITS this PROPOSAL/CONTRACT to ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), to perform the work and complete the project described on Page 2 (the "Project"), as an independent prime contractor.

1. Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings, (the "Specifications"), all of which are attached hereto. Contractor has examined the specific plans and related construction drawings for the Project (the "Drawings"), copies of which are also attached hereto. The General Conditions of Contract, Specifications and Drawings are incorporated into this Proposal/Contract. Contractor affirms that all work and materials to be furnished or purchased for the Project will be in strict conformance with the General Conditions of Contract, Specifications and Drawings.

2. Contractor represents and warrants that it has satisfied and complied with the provisions of Section 6, Contractor Understands Work and Working Conditions, of the General Conditions of Contract prior to submitting this Proposal/Contract.

3. Contractor represents that this Proposal/Contract is fair and honest in all respects, is submitted in good faith and is not submitted in collusion with any other company, entity or person.

4. Contractor acknowledges that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work.

5. Prior to the commencement of work, Contractor will submit to the Company a list of all materials to be used in the Project. The materials list will include the manufacturer, part number, price and quantity included in this Proposal/Contract.

6. Contractor will furnish all labor, tools, equipment and materials required to complete the Project according to the General Conditions of Contract, Specifications and Drawings. No materials purchased by Contractor to be incorporated into the Project are subject to tax at the time of purchase and Contractor will not charge the Company for any such tax. Contractor will pay the applicable transaction privilege tax (the "Contracting Tax") on the Project after Contractor receives payment of the final Project invoice from the Company. The cost of materials incorporated into the Project which are exempt by Arizona Revised State Statues ("A.R.S.") from the Contracting Tax, for example, pipes or valves having a diameter of four (4) inches or larger, including equipment, fittings and any other related part that is used in operating the pipes or valves (A.R.S. §42-5061 B.6.), will not be included in the total cost of the labor and materials upon which the Contracting Tax is computed. Contractor retains full liability and obligation to pay the Contracting Tax and will defend and indemnify the Company against any demand or obligation to pay the Contracting Tax.

7. Contractor will maintain detailed accounting records of all materials purchased and incorporated into the Project. Such records will include all supporting original vendor invoices for all materials purchased. Following completion of the Project, Contractor will submit an itemized accounting to the Company which will include all supporting original vendor invoices and satisfactory evidence of payment thereof. The Company will not pay Contractor for materials not actually incorporated into the Project, and the disposition of such materials will remain Contractor's responsibility.

8. The Estimated Total Cost of the Project, shown on Page 2, is based on estimated labor and material quantities to be furnished. It includes an estimate of the Contracting Tax and the cost of the required Performance and Payment Bonds. Contractor will not cancel, modify or withdraw this Proposal/Contract during a ninety-day (90) period commencing on the Bid Due Date. The Company may accept this Proposal/Contract by signing and mailing, or otherwise delivering, a copy hereof to Contractor during such ninety-day (90) period. If the Company does not accept this Proposal/Contract during such ninety-day (90) period, Contractor may cancel this Proposal/Contract by giving written notice of cancellation to the Company.

9. Prior to the commencement of work, Contractor will provide the Company with a detailed construction schedule, in either Gantt or CPM form, identifying all tasks to be performed from the date of the written Commencement Notice through completion of the Project, including testing, training of Company Personnel and final Project invoicing. Contractor will provide the Company with a copy of such construction schedule documenting the progress of work on the Project at least monthly.

10. Contractor will not commence work on the Project until the Company gives Contractor a written Commencement Notice. Contractor will complete the Project within 210 calendar days after the Commencement Notice is issued.

11 Following the Company's written notice of satisfactory completion of the Project, and upon receipt of the final Project invoice from Contractor, the Company shall pay Contractor the actual total cost of the Project, which will be calculated as shown on Page 2, except that actual labor and material quantities installed/constructed will be substituted for the estimated labor and materials quantities and the Contracting Tax will be recalculated based on such actual labor and materials quantities.

12. The amount of applicable liquidated damages for Contractor's failure to deliver or perform within the time limit shown in Paragraph 10 may be deducted from the Company's payment of the final Project invoice. This provision shall not limit the Company's ability to terminate this Proposal/Contract for Contractor's unsatisfactory performance or failure to perform as provided in the General Conditions of Contract, Specifications or Drawings, or in this Proposal/Contract.

SPECIAL CONDITIONS:

See attached Special Conditions dated: 8-8-2014. The Company will make two progress payments and a final payment.

CONTRACTOR MGC Contractors, Inc. ~~FELIX CONSTRUCTION COMPANY~~	**PROPOSAL/CONTRACT ACCEPTED:** ARIZONA WATER COMPANY
By: [signature]	By: [signature]
Print Name: Randy L. Gates	Print Name: Fredrick K. Schneider, PE
Title: President	Title: Vice President - Engineering
Date: 08/28/2014	Date: 10-3-2014

AP11

ARIZONA WATER COMPANY

Pinal Valley - Casa Grande
220 E. 2nd Street
Casa Grande, AZ 85122 PH: 520-836-8785

PROPOSAL/CONTRACT

CONTRACTOR: MGC Contractors, Inc.	SYSTEM: PINAL VALLEY
AZ CONTRACTOR LICENSE NO: ROC069949 ROC071441 CLASSIFICATION: A Engineering B Comm Bldg	W A No(s): 1-5164
ADDRESS: 4110 East Elwood Street	BID DUE DATE: August 28, 2014
CITY ST ZIP Phoenix, AZ 85040	BID BOND REQUIRED ☑ Yes ☐ No

DESCRIPTION OF PROJECT: Design-Build a 2,200 GPM firm capacity vertical lineshaft turbine booster pump station at the Vacuum Tank site in Coolidge, Arizona. Construct in accordance with the attached design plans and Arizona Water Company Specifications.

1-2. MATERIALS EXEMPT FROM CONTRACTING TAX (per Paragraph 6)	QUANTITY	UNIT PRICE LABOR	UNIT PRICE MATERIALS	TOTAL COST LABOR	TOTAL COST MATERIALS
Provide and install 16-inch suction pipe and related fittings	Lot	$19,500	$168,000	$19,500	$168,000
Provide and install 12-inch discharge pipe and related fittings	Lot	$15,000	$80,400	$15,000	$80,400
Provide and install 6-inch Cla-Val Model 60G-11BYKC pump control valve	3	$2,500	$8,400	$7,500	$25,200
Provide and install 6-inch Endress+Hauser Promag 53W1F electromagnetic flowmeter	3	$750	$3,600	$2,250	$10,800
3. Total Labor to Install Exempt Materials (add the amounts in column 1)				3 $44,250.00	
4. Total Exempt Materials (add the amounts in column 2)					4 $284,400

5-6. NON-EXEMPT MATERIALS	QUANTITY	UNIT PRICE LABOR	UNIT PRICE MATERIALS	TOTAL COST LABOR	TOTAL COST MATERIALS
Design and layout booster pump,s piping, VFD motor controller with concrete foundation, conduit, wiring and controls complete	Lot	$4,500	$24,000	$4,500	$24,000
Provide and install National Pump E12MC 5 stage, 1770 RPM pump assembly	3	------	----------	----------	---------
Provide and install pump can, shaft, column, class 150 flange discharge head with John Crane mechanical seal, 125 HP, VSS WP-1, premium inverter duty motor with thermal switch, and all related fittings	3	$5,000	$32,000	$15,000	$96,000
Provide and install booster pump station concrete foundation	1	$9,309	$1,200	$9,309	$1,200
Provide and install 150 HP Toshiba HX7 eighteen pulse motor control system	1	------	$18,000	--------	$18,000
Provide and install concrete foundation for VFD motor controller system	1	$3,000	$600	5 $3,000	6 $600
Provide and install all conduits, wires, boxes, relays, terminations, grounding and electrical controls	Lot	$3,000	$24,000	$3,000	$24,000
Provide and install system and SCADA programming	Lot	------	$6,000	--------	$6,000
Booster pump startup, testing and commissioning	Lot	$4,950	$3,960	$4,950	$3,960
Pull existing Booster No. 2 and install the existing National E12MC pump in the No. 3 location of the new booster pump station (price only).	1	no bid	no bid		
Provide and install alternate, equal Allen Bradley or Eaton motor controller	1	------	$15,000		
Provide and install shade canopy over the MCC and SES (price only)	1	$4000	$26,000		
7. Total Labor to Install Non-Exempt Materials (add the amounts in column 5)				7 $39,759.00	
8. Total Non-Exempt Materials (add the amounts in column 6)					8 $173,760
9. Subtotal A (add lines 3, 7 and 8)					9 $257,769
10. Contracting Tax Base (multiply the amount on line 9 by 0.65)				10 $167,549.85	
11. Applicable Contracting Tax Rate				11 0.10700	
12. Contracting Tax (multiply the amount on line 10 by line 11)					12 $17,927.83
13. Subtotal B (add lines 4, 9 and 12)					13 $560,096.83
14. 100% Performance and Payment Bonds Cost					14 $5,000
15. Estimated Total Cost (add lines 13 and 14)					15 $565,096.83

NOTE: The Estimated Total Cost includes all labor and materials for backfill, pavement replacement, chip seal, and traffic control necessary for the Project.

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

August 26, 2014

Mr. Randy Gates
MGC Contractors, Inc.
4110 E. Elwood Street
Phoenix, AZ 85040

Re: Addendum No. 1 to Design-Build a 2,200 GPM firm capacity vertical lineshaft turbine booster pump station at the Vacuum Tank Site in Coolidge, Arizona.

Dear Mr. Gates:

Enclosed with this letter is Addendum No. 1 to the Proposal/Contract for the above referenced project.

For questions regarding this project, please contact James T. Wilson at the Company.

Arizona Water Company
Attention: James T. Wilson
3805 N. Black Canyon Hwy.
Phoenix, Arizona 85015
Fax: (602) 294-2169
E-mail: jwilson@azwater.com

Contractor shall acknowledge receipt of this Addendum by signing below and submitting a copy of this Addendum with the Proposal/Contract.

Very truly yours,

Andrew J. Haas, P. E.
Chief Engineer
engineering@azwater.com

APPROVAL AND ACCEPTANCE
The terms and conditions set for the above are approved and accepted.

By _____

Title Randy L. Gates, President

Date 08/28/2014

afh

Arizona Water Company

DESIGN-BUILD A 2,200 GPM FIRM CAPACITY VERTICAL LINESHAFT TURBINE BOOSTER PUMP STATION AT THE VACUUM TANK SITE IN COOLIDGE, ARIZONA

ADDENDUM No. 1

August 26, 2014

SECTION NO. 1: Questions and Responses

Question 1

The existing service entrance section (SES) does not appear to be sized to operate three 125 HP booster pumps at the same time. Will the existing SES require an upgrade?

Response: No. The third booster pump is designed as a backup pump and will only operate upon failure of either booster pump one or two. The Contractor shall design an electrical interlock to prevent all three pumps from operating at the same time.

ARIZONA WATER COMPANY

VACUUM TANK BOOSTER PUMP STATION – COOLIDGE, AZ
SPECIAL CONDITIONS 8-8-2014

Existing Facility Information

Location: 14732 North Union Road Coolidge, AZ 85128
Approximately 950' east of Arizona Blvd. and approximately 1300' north of Hwy 287

Site Facilities: See site plan dated 6-20-14 attached as "Exhibit A"

Bidding

1. MANDATORY PRE-BID MEETING ON ***August 14, 2014 AT 2:00 PM*** at the site.
2. RFI's will not be accepted after ***August 21, 2014.***
3. Bids are due by ***August 28, 2014 AT 2:00 PM*** at the following address:
   Arizona Water Company
   Attn: James Wilson
   3805 North Black Canyon Highway
   Phoenix, AZ 85015

Special Conditions

1. Contractor supplied VFD motor controller must match the existing starter panel specifications attached as "Exhibit B". Site electrical record drawings are attached as "Exhibit C".
2. VFD motor controller must conform to the Company's EI&C Design Guidelines and Specifications attached as "Exhibit D".
3. Contractor shall provide detailed design plans signed by a professional engineer:
   a. Contractor shall plan for, at a minimum, one (1) design review meeting prior to final construction plans.
   b. Company will provide available CAD drawings for design purposes.
   c. Contractor shall provide signed and sealed As-Built drawings and O&M manuals at the end of the project (three hard copies and one compact disk).
4. Contractor's electrical subcontractor shall provide 24 hour on-call service for a period of one year following the date of completion and acceptance by the Company.
5. Contractor shall subcontract all programming services to Delta Systems Engineering.
6. Contractor shall provide a complete ADEQ Approval to Construct application package including design plans and report for review and approval by the Company.
7. Existing facility shall be maintained fully operational during construction. Termination of new wiring and switch over shall be completed in less than 2 hours.

Canned Vertical Lineshaft Turbine Pumps

Design Conditions:

1. 1,100 GPM @ 293 ft. TDH
2. 500 GPM @ 155 ft. TDH
3. $NPSH_A$= 32 ft. at the inlet to the existing pump can.
4. Existing Pump Cans: 16-inch Ø x 9-feet deep

Equipment to be furnished and installed by the Contractor:

1. Three National E12MC 5-stage vertical lineshaft turbine pumps or alternate with Arizona Water Company Engineering approval.
2. Pump can, column, shaft, discharge head, and John Crane mechanical seals and related appurtenances for complete operation of the booster pumps.
3. Pump assemblies shall be designed and constructed in accordance with all applicable Hydraulic Institute standards
4. The minimum pump can inner diameter is 18-inches
5. The minimum pump can depth is 10-feet
6. All materials removed for disposal shall be removed from the site and disposed of by the Contractor.
7. No invoice will be accepted for payment unless accompanied by a completed Booster Pump Record E-5-9-1 "Exhibit E".

Bowl Assembly Construction Materials:

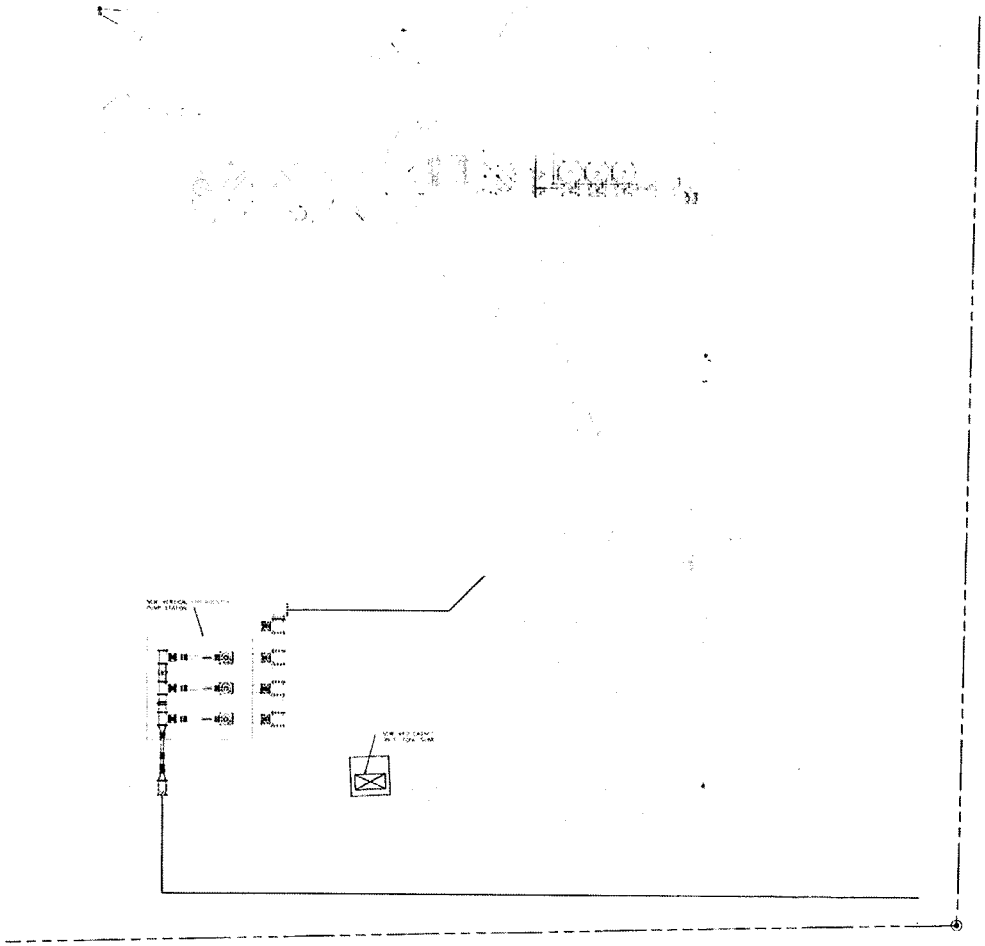
1. Alternate vertical lineshaft turbine pumps may be considered subject to final approval by Arizona Water Company's Engineering department.

VFD Starter Panel and Programming

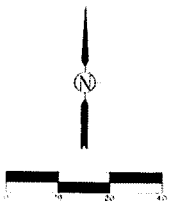
Equipment to be furnished and installed by the Contractor:

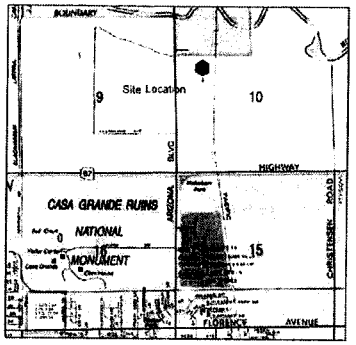
1. One new ground mounted Toshiba HX7 Eighteen Pulse 150 HP VFD motor controller.
2. Alternate Allen Bradley or Eaton VFD motor Controllers may be considered subject to final approval by Arizona Water Company's Engineering department.
3. 6-inch concrete foundation. Concrete foundation shall be sized to match existing starter panel foundations.
4. Programming to operate the VFD motor controller. Operation and control of the site will not change. The third pump will operate as a backup pump. The programming shall allow the operator to select the lead, lag and backup pump operation from the Master SCADA computer and onsite OIT.
5. New main feed from existing 600 amp service entrance section.
6. New motor leads to each motor from VFD motor controllers.
7. New VFD control loop and screens on the Master SCADA computer and onsite OIT.
8. Disconnect existing 125 HP motors and remove wires.

Exhibit A



SITE PLAN





T 5S R 8E

VICINITY MAP

ARIZONA WATER COMPANY
POST OFFICE BOX 29006
PHOENIX, AZ 85038-9006
VOICE: (602) 240-6860 FAX: (602) 294-2189
CONTACT: JAMES WILSON

14732 N. UNION ROAD
COOLIDGE, AZ 85128

LEGEND

- PROPERTY CORNER
- PROPERTY LINE
- EX. WATER LINE
- EX. WATER VALVE
- OE — EX. OVERHEAD ELEC. LINE
- UE — EX. UNDERGROUND ELEC. LINE

The modifications shown is to be installed in accordance with the Arizona Water Company standard specifications and with the Arizona Department of Environmental Quality

PINAL VALLEY

NW 1/4 SEC.10-T.5 S.-R. 8 E

6-20-2014 | AS SHOWN

JRK

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

REPLACE THE BOOSTER PUMP STATION @ THE COOLIDGE
PLANT SITE IN COOLIDGE, ARIZONA

SITE PLAN

SHEET 1 OF 1

Exhibit B

TOSHIBA

Adjustable Speed Drives

HX7 Plus Pack

XT

CUST. NAME: ARIZONA WATER COOLIDGE
PROJECT NO.: 178876
P.O. NUMBER:
DESCRIPTION: PANCAKE TANK BOOSTER STATION
150HP VFD PUMP

☐ FINAL

☒ PRELIMINARY

☐ FOR APPROVAL

Note: Final Engineering and Manufacturing will proceed upon receipt of final approval

☐ NOT APPROVED AS NOTED – RESUBMIT DRAWINGS FOR APPROVAL. DO NOT PROCEED WITH FINAL ENGINEERING OR MANUFACTURING.

☐ APPROVED AS NOTED – PROCEED WITH FINAL ENGINEERING AND MANUFACTURING.

☐ APPROVED AS SUBMITTED – PROCEED WITH FINAL ENGINEERING AND MANUFACTURING.

APPROVAL BY:

_____ Initial

_____ Date

NO	DRAWING NO	REV	DRAWING DESCRIPTION
00	177876-VFD-00	0	DRAWING LIST
01	---	---	-----
02	177876-VFD-02	0	DRAWING LEGEND
03	---	---	-----
04	177876-VFD-04	0	SAMPLE SCHEMATIC
05	177876-VFD-05	0	EQUIPMENT RATINGS
06	---	--	-----
07	---	--	-----
08	177876-VFD-08	0	THREE-LINE DIAGRAM
09	---	--	-----
10	---	--	-----
11	---	--	-----
12	---	--	-----
13	---	--	-----
14	---	--	-----
15	---	--	-----

NO	DRAWING NO	REV	DRAWING DESCRIPTION
16	177876-VFD-16	0	CONTROL CIRCUIT – 120VAC VFD CONTROL
17	---	--	-----
18	177876-VFD-18	0	LOGIC INTERFACE CIRCUIT
19	---	---	-----
20	---	--	-----
21	177876-VFD-21	0	CONTROL CIRCUIT – TEMPERATURE CONTROL
22	---	--	-----
23	---	--	-----
24	---	--	-----
25	---	--	-----
26	---	--	-----
27	---	--	-----
28	---	--	-----
29	---	--	-----
30	177876-VFD-30	0	CUSTOMER CONNECTIONS DIMENSIONS
31	177876-VFD-31	0	ENCLOSURE OUTLINE – OUTDOOR

REV	DATE	DESCRIPTION	BY	CHK	APPR
4					
3					
2					
1					
0	08/06/13	FIRST ISSUED	HS	CE	

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TITLE:
DRAWING LIST
150HP HX7+ 480VAC 18P

CUSTOMER NAME: ARIZONA WATER COOLIDGE

PROJECT NO.: 178876

REVISION: 0

SCALE:

P.O.NO.:

DRAWING NO.: 178876-VFD-00

PAGE	DEVICE	DESCRIPTION	163kVA, 480V, 196A		
			TYPE FORM	RATING	PART NUMBER
8	(1) FU1-FU?	SEMICONDUCTOR FUSE	CRP 6,9URD31TTF0315	690V, 315A	46112
	SFU1, 2	CPT1 PRIMARY FUSE	CRP ATQR 6	6A, 600V, CC, 200KAC	PC28143P600
	SFU3	CPT1 SECONDARY FUSE	GLD TRM 5	5A, 250V, TD, 10KAC	[illegible]
	CPT1	CNTL. PWR. TRANSFORMER	MCX 9750-0101-5H	480/415/380-230V, 750VA	[illegible]
	MCCB1	CIRCUIT BREAKER	SQD JGL36250	[illegible] 1250-2500A	PC11708P095
	MCCB1	CIRCUIT BREAKER SHUNT TRIP	SQD S29387	300VAC/250VDC	S29381
	MCCB1	CIRCUIT BREAKER INPUT LUGS	SQD CU250JG	1 X 1/0 ~ 300	PC11708P011
	MCCB1	CIRCUIT BREAKER OUTPUT LUGS	SQD PDC3JD20	2 X 14~1AWG, 1 X 3AWG~3/0	PC11708P105
	(3) VFD	VARIABLE FREQUENCY DRIVE	TIC VT130G7-418K	480V, 163KVA	VT130G7-418K
	(4) VFD	VARIABLE FREQUENCY DRIVE	TIC VT130G7D418K	480V, 163KVA	VT130G7D418K
	T1	AUTOTRANSFORMER	CTL CE-1341	480V, 18P, 200HP	[illegible]
	SFU34~36	T1 FUSE	CRP AJT 125	600V, 125A, JT, 200KAC	[illegible]
	RECA	DIODE	[illegible]	1600V, 175A [illegible]	46245
	DCL1	DC REACTOR	[illegible]	0.16mH, 290A	41445
	FAN31	FAN	EBM W2E250-HI14-09	460V, 3Ø, 165W	[illegible]
	SFU31~33	FAN FUSE	CRP ATQR 6	6A, 600V, CC, 200KAC	PC28143P600
	DS1	DOOR SWITCH	[illegible]	10A, 600V	[illegible]
	OL1A	OVERLOAD RELAY	SQD LRD03	690V, 0.25-0.40A	[illegible]
	OL1B	RELAY MOUNT	SQD LA07[illegible]	690V, 32A	[illegible]
18	(3) EOI	OPERATOR INTERFACE	58363-X	-	58363-X
	(4) EOI	OPERATOR INTERFACE	63333-V	-	63333-V
	TS1A	T-STAT 90°C FIXED NO	TKN OH03-90	90°C	37819
	TS3	T-STAT 90°C FIXED NO	TKN OH03-90	90°C	37819
21	FAN1	HEATSINK FAN	EBM R4E280-[illegible]-13	230VAC, 50/60HZ	[illegible]
	C1	FAN RUN CAPACITOR	[illegible]	350V, 2.5uF	PC45000P413
	FAN2~3	INTERNAL FAN	ETR 126[illegible]	230V	00224
	(5) [illegible]	T-STAT 90°C FIXED NC	TKN OH03-90	90°C	37819
	HEX	HEAT EXCHANGER	DAN PS0350[illegible]-P2	230VAC, 0.88A, 35W/°F	PC67906P198
	TCR, TCD	CONTROL RELAY	[illegible]	240V COIL, 10A	PC20240P200
	TCRX	CONTROL RELAY	[illegible]	240V COIL, 3A	PC20246P711
	CDT	TIMER, OFF DELAY	[illegible]	0.05S-300H, 240V COIL	PC20111P203
	FAN4	FAN	ETR 126[illegible]	230V	00224
	MOV1-11	SURGE SUPPRESSOR	[illegible]	300VAC, 0.22uF, 220 OHM	00427

DEVICE	DESCRIPTION	MANUFACTURER	RATING	PART NUMBER
CPT2	CNTL. PWR. TRANSFORMER	EATON	480-120VAC, 350VA	[illegible]
PFU1, 2	CPT2 PRIMARY FUSE	[illegible]	1.5A, 600V, CC, 200KAC	[illegible]
CF	CPT2 SECONDARY FUSE	[illegible]	4.5A, 250V, TD, 10KAC	[illegible]
TBC	TERMINAL BLOCK	ALLEN-BRADLEY	NA	1492-J3
CR1, 2, 3	CONTROL RELAY	IDEC	120VAC, 3PDT	[illegible]
CR1, 2, 3	CONTROL RELAY SOCKET	IDEC	250VAC, 10A	[illegible]
RUN	INDICATOR	EATON	120VAC, LED, RED	10250T181LRP06
FAULT	INDICATOR	EATON	120VAC, LED, AMBER	10250T181LAP06
H-O-A	3 POS. SELECTOR SWITCH	EATON	600VAC, (2) 2 N/O CONTACT	10250T1323-2-2-2
START, RESET	PB OPERATOR, BLACK	EATON	600VAC, 1 N/O CONTACT	10250T101-53
STOP	PB OPERATOR, RED	EATON	600VAC, 1 N/C CONTACT	10250T102-51
SPEED CTRL.	POTENTIOMETER	EATON	2500-OHM	10250T332

NOTES:

(1) 163kVA: INPUT FUSES ARE P.U's STANDARD.

(2) ONLY 1 FAN IN 66~110kVA

(3) STANDARD SOFTWARE

(4) VLP SOFTWARE

(5) ON VFD POWER MODULE

HX7+ DRIVE MODEL NUMBER DEVELOPMENT

HX7+ - 4 __ __ __

HX7+ SERIES DRIVE

VERSION C
VERSION D - VLP

RATED VOLTAGE
4 - 480VAC

DRIVE RATING
66D - 66KVA
830 - 83KVA
10K - 110kVA
13K - 130kVA
16K - 163kVA

OPTIONS
CE - IEC COMPLIANCE

CONFIGURATION
CD1 - INDOOR, NEMA 1 (FUTURE)
CD - OUTDOOR, NEMA 3R

REV	DATE	DESCRIPTION	BY	CHK	APPR
4					
3					
2					
1					
0	09/09/13	FIRST ISSUE	HS	CE	

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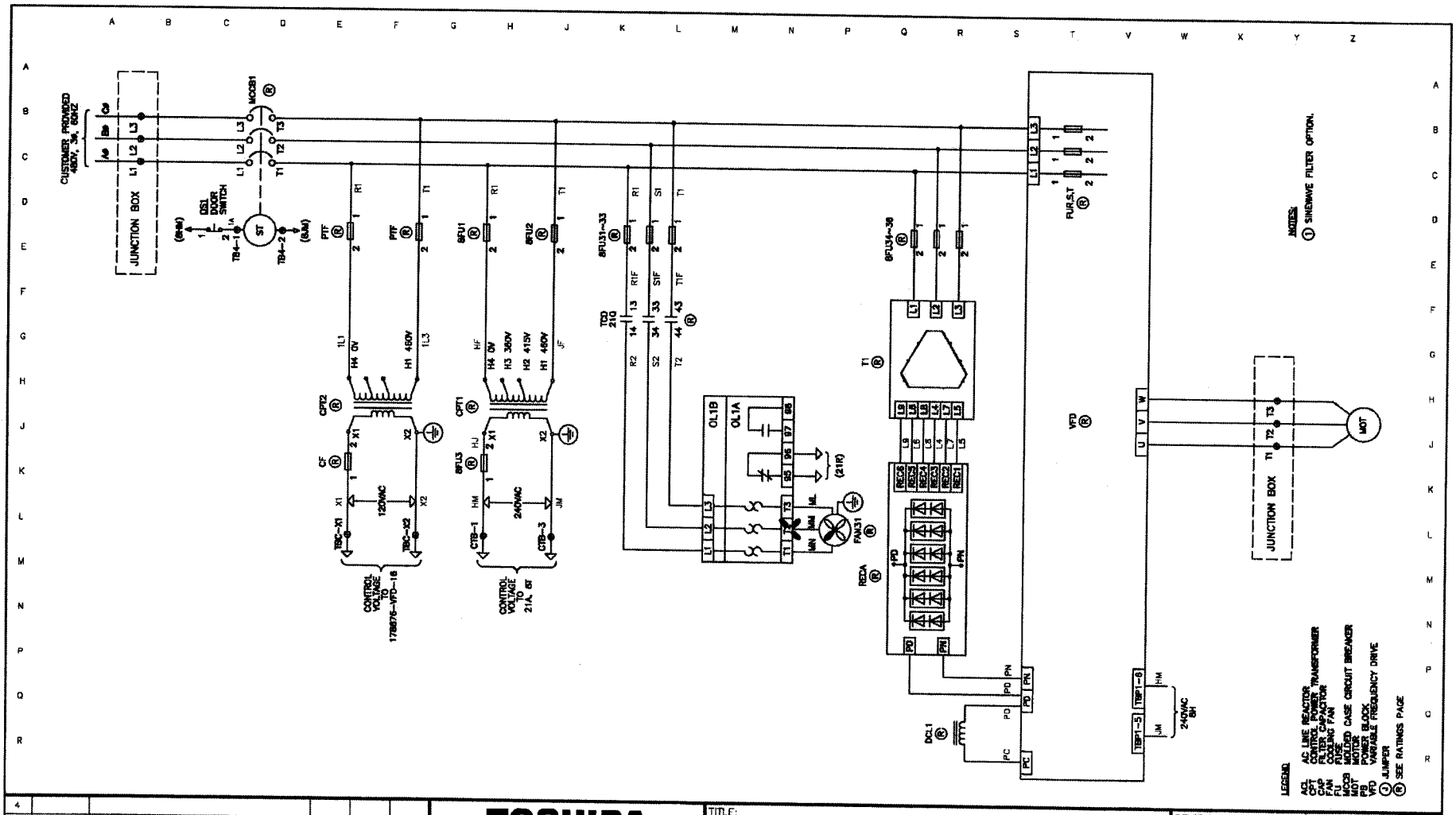
TITLE:
EQUIPMENT RATINGS
150HP HX7+ 480VAC 18P

CUSTOMER NAME:
ARIZONA WATER COOLIDGE

PROJECT NO.: 178876

REVISION: 0
SCALE:
P.O.NO.:
DRAWING NO.: 178876-VFD-05



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3					
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TITLE:
THREE LINE DIAGRAM
150Hp HX7+ 480VAC 18P

CUSTOMER NAME:
ARIZONA WATER COOLIDGE

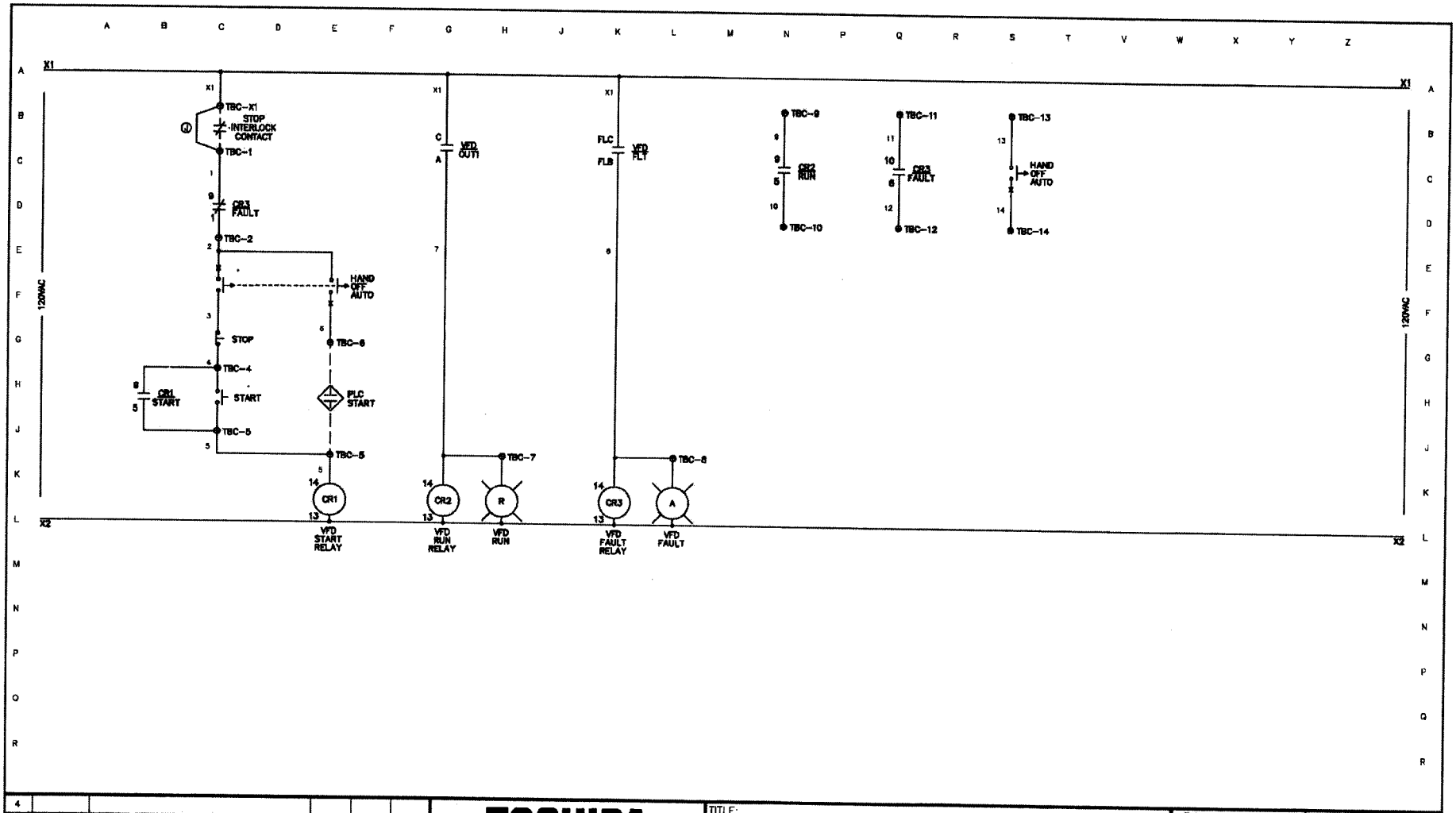
PROJECT NO.:
178876

REVISION:
0

SCALE:

P.O.NO.:

DRAWING NO.:
178876-VFD-08



REV	DATE	DESCRIPTION	BY	CHK	APPR
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3					
2					
1					
0	09/09/13	FIRST ISSUE	HS		

TOSHIBA

TOSHIBA INTERNATIONAL CORPORATION

MADE IN HOUSTON, TEXAS U.S.A.

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TITLE:
CONTROL CIRCUIT – 120VAC VFD CONTROL
150Hp HX7+ 480VAC 18P

CUSTOMER NAME:
ARIZONA WATER COOLIDGE

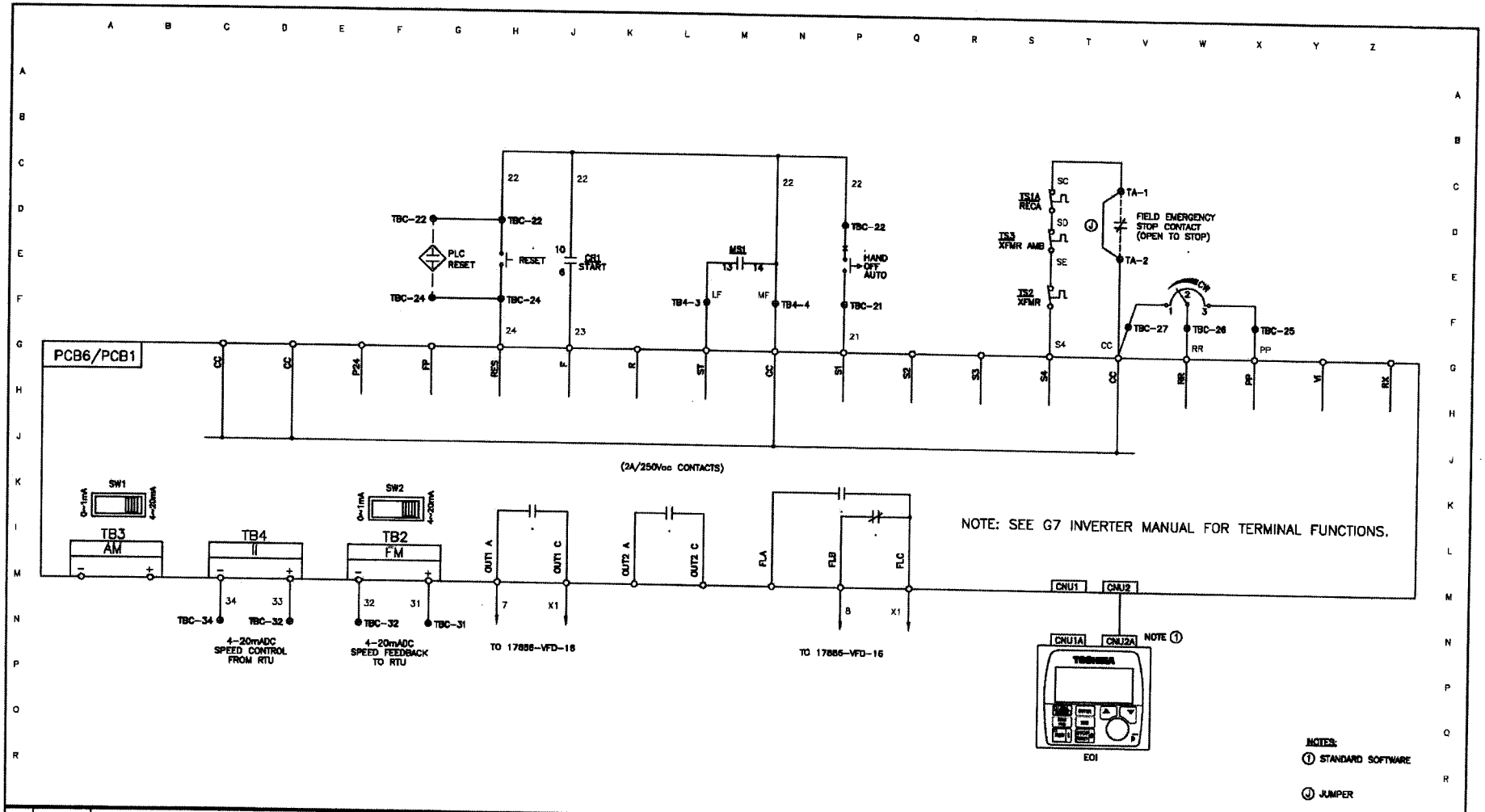
PROJECT NO.:
178876

REVISION:
0

SCALE:

P.O.NO.:

DRAWING NO.:
178876-VFD-16



REV	DATE	DESCRIPTION	BY	CHK	APPR
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2					
1					
0	09/09/13	FIRST ISSUE	HS	CE	

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TITLE:
LOGIC INTERFACE CIRCUIT
150Hp HX7+ 480VAC 18P

CUSTOMER NAME:
ARIZONA WATER COOLIDGE

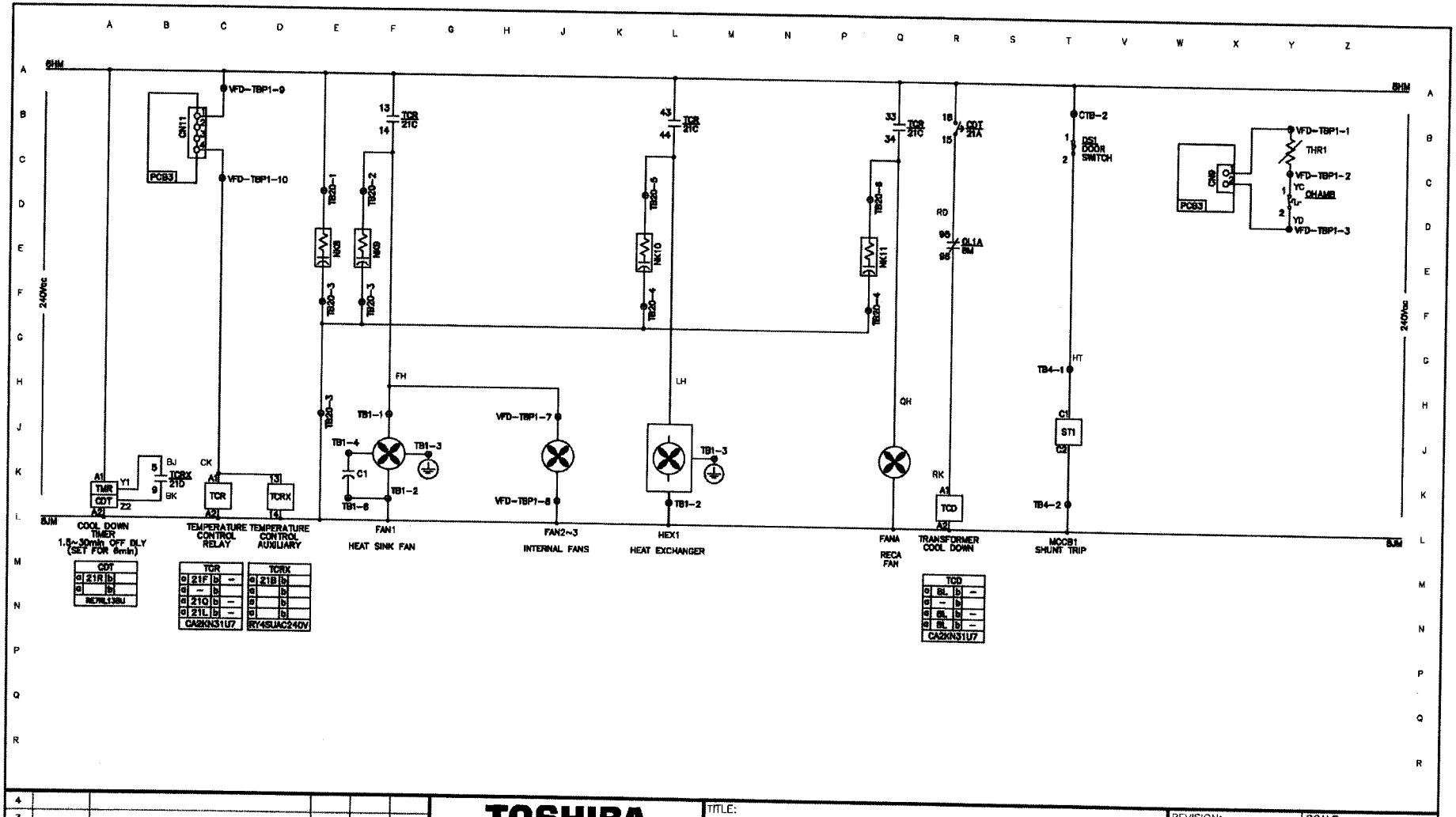
PROJECT NO.:
178876

REVISION:
0

SCALE:

P.O.NO.:

DRAWING NO.:
178876-VFD-18



REV	DATE	DESCRIPTION	BY	CHK	APPR
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3					
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1					
0	09/09/13	FIRST ISSUE	XN	HP	AM

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TITLE:
CONTROL CIRCUIT – TEMPERATURE CONTROL
150Hp HX7+ 480VAC 18P

CUSTOMER NAME:
ARIZONA WATER COOLIDGE

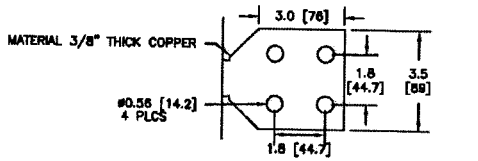
PROJECT NO.:
178876

REVISION:
0

SCALE:

P.O.NO.:

DRAWING NO.:
178876-VFD-21



INPUT/OUTPUT TERMINATIONS (NOT TO SCALE) (1)

NOTES

- FOR IEC (INTERNATIONAL ELECTROTECHNICAL COMMISSION) VERSIONS, SEE DRAWING I808KJ07 FOR JUNCTION BOX DETAILS.
- DIMENSIONS IN INCHES [mm].
- DIMENSIONS FOR REFERENCE ONLY.
- INPUT/OUTPUT TERMINATION BENDING SPACE IN ACCORDANCE WITH NEC TABLE 312-6(b).
- LUGS LISTED DO NOT NECESSARILY INDICATED PROPER CABLE SIZING. INPUT, OUTPUT, AND GROUND CABLES MUST BE SIZED ACCORDING TO NEC OR APPLICABLE LOCAL STANDARDS.

(1) INPUT/OUTPUT TERMINATIONS
66~163kVA (LUG TO BE PROVIDED BY CUSTOMER)

REV	DATE	DESCRIPTION	BY	CHK	APPR
4					
3					
2					
1					
0	12/16/11	FIRST ISSUE	KN		

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TITLE:
CUSTOMER CONNECTIONS DIMENSIONS
150Hp HX7+ 480VAC 18P

CUSTOMER:
ARIZONA WATER COOLIDGE

PROJECT NUMBER:
178876

REVISION:
0

SCALE:

DRAWING NUMBER:
178876-VFD-30

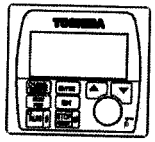
LEGEND

H – GROUND LUG (1)
66~163kVA 1 x (4AWG~3/0) [21.2mm²~85mm²]

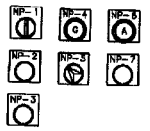
I – INPUT TERMINATIONS (1)
66~163kVA (LUG TO BE PROVIDED BY CUSTOMER, SEE SHEET 30 FOR DETAILS)

K – OUTPUT TERMINATIONS (1)
66~163kVA (LUG TO BE PROVIDED BY CUSTOMER, SEE SHEET 30 FOR DETAILS)

L – GROUNDING STUD (3/8-16 x 3/4)



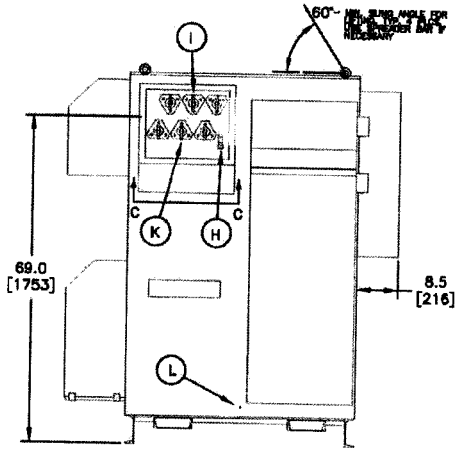
KEYPAD DETAILED VIEW (2)



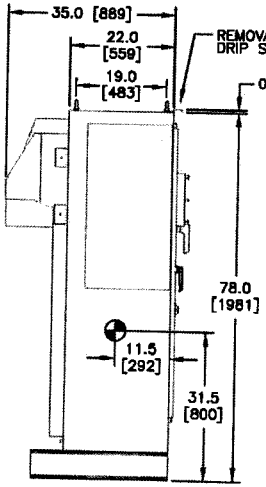
PILOT DEVICES DETAILED VIEW

NAMEPLATE

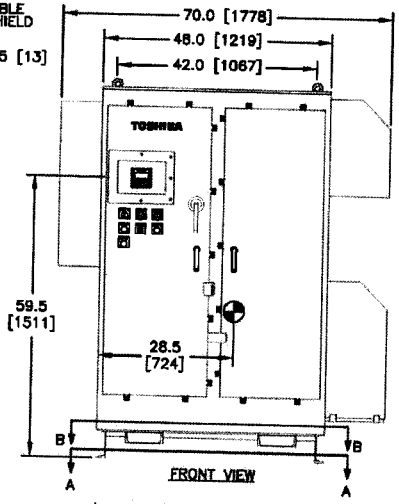
NP-1: HAND-OFF-AUTO
NP-2: START
NP-3: STOP
NP-4: RUN
NP-5: SPEED CONTROL
NP-6: VFD FAULT
NP-7: RESET



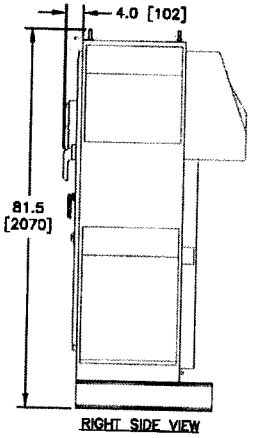
REAR VIEW



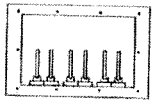
LEFT SIDE VIEW



FRONT VIEW

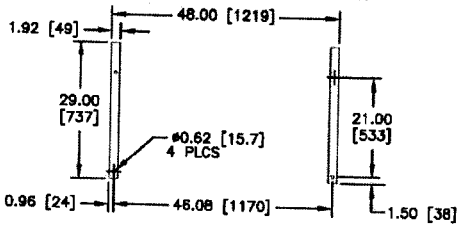


RIGHT SIDE VIEW

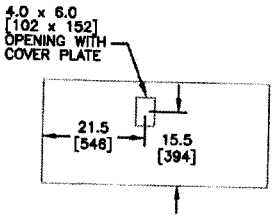


SECTION C–C

10.0 x 16.0 [254 x 406]
OPENING WITH REMOVABLE
COVER PLATE



SECTION A–A



SECTION B–B (WITHOUT CHANNEL BASE)

NOTES

- DIMENSIONS ARE IN INCHES [mm].
- DIMENSIONS FOR REFERENCE ONLY.
- WEIGHT: APPROX. 2550lbs [1157kg]
- COLOR: WHITE (NONE IF STAINLESS STEEL)
- INPUT/OUTPUT TERMINATION BENDING SPACE IN ACCORDANCE WITH NEC TABLE 312-6(b).
- LUGS LISTED DO NOT NECESSARILY INDICATE PROPER CABLE SIZING. INPUT, OUTPUT, AND GROUND CABLES MUST BE SIZED ACCORDING TO NEC OR APPLICABLE LOCAL STANDARDS.

(1) FOR IEC (INTERNATIONAL ELECTROTECHNICAL COMMISSION) VERSIONS, SEE DRAWING I808KJ07 FOR JUNCTION BOX DETAILS.

(2) STANDARD SOFTWARE

CENTER OF GRAVITY, 24 INCHES [51].

REV	DATE	DESCRIPTION	BY	CHK	APPR
4					
3					
2					
1					
0	09/09/13	FIRST ISSUE	XN	HP	AM

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TITLE:
ENCLOSURE OUTLINE – OUTDOOR
150Hp HX7+ 480VAC 18P

CUSTOMER NAME:
ARIZONA WATER COOLIDGE

PROJECT NO.:
178876

REVISION: 0

SCALE: 1.0=24.0

P.O.NO.:

DRAWING NO.:
178876-VFD-31

RECORD

Keller Electrical

MOTORS | CONTROLS | SERVICES

1881 E. UNIVERSITY DRIVE
PHOENIX, AZ 85034
602-437-3015
WWW.KELLERELECTRICAL.COM
PROJECT # 178876

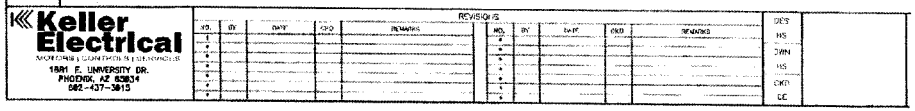
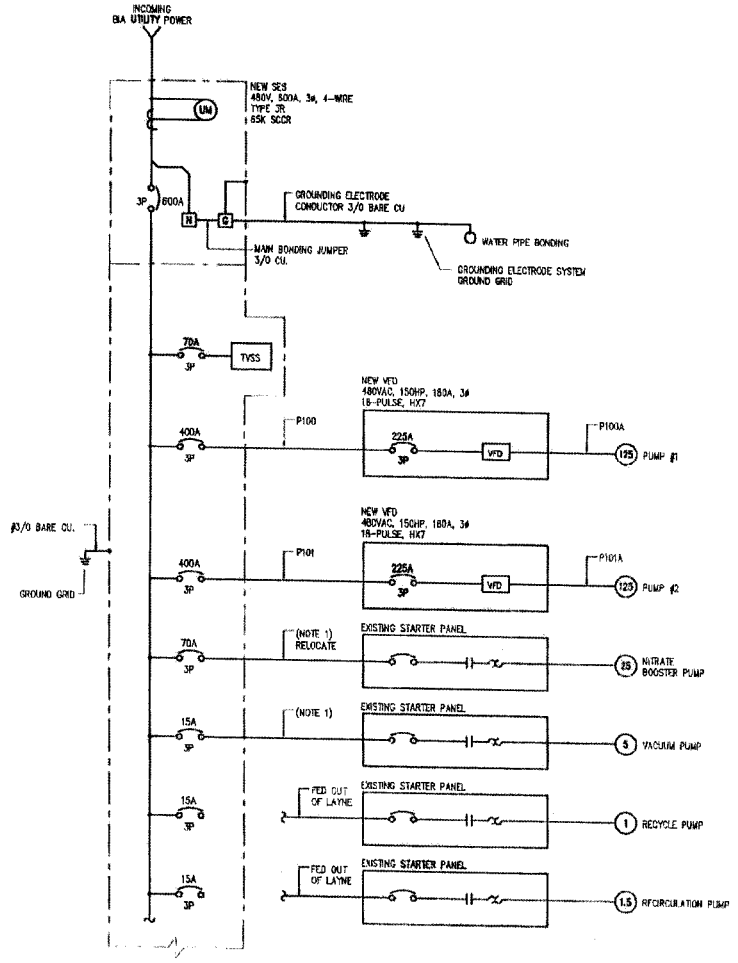
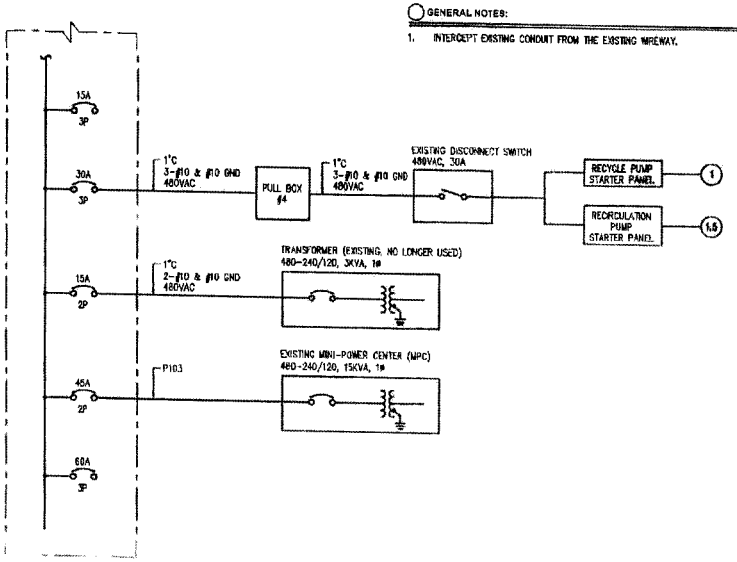


Exhibit C

RECORD





GENERAL NOTES:

1. INTERCEPT EXISTING CONDUIT FROM THE EXISTING WIREWAY.

CIRCUIT/DESCRIPTION	KVA	HP	FLA
MOTOR LOADS			
PUMP-1 (NEW VFD)		125.0	156.0
PUMP-2 (NEW VFD)		125.0	156.0
BOOSTER PUMP		25.0	34.0
VACUUM PUMP		5.0	7.0
RECYCLE PUMP		1.0	2.1
RECIRCULATION PUMP		1.5	3.0
TREATMENT SYSTEM			5.0
NON-MOTOR LOADS			
SINGLE PHASE TRANSFORMER	3.0		6.0
THREE PHASE TRANSFORMER	15.0		31.3
			0.0
SUBTOTAL			401.3
+ 25% OF LARGEST MOTOR			39.0
TOTAL AMPS @ 480V/3PHASE			440.2
SERVICE SIZE (AMPS)			600.0

RECORD DRAWING

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Registered Professional Engineer (Electrical)
CERTIFICATE NO
50884
HOWARD
SUN
Date Signed 7-11-16
ARIZONA U.S.A.
Expires 6/30/16

Keller Electrical
MOTORS | CONTROLS | SERVICES
1881 E. UNIVERSITY DR.
PHOENIX, AZ 85034
602-437-3815

REVISIONS

NO.	BY	DATE	CKD	REMARKS

NO.	BY	DATE	CKD	REMARKS

DES	
DWN	
CKD	

ARIZONA WATER COMPANY

GOLDIES VACUUM TANK SITE

125HP STARTERS REPLACEMENT

ELECTRICAL

SINGLE LINE DIAGRAM

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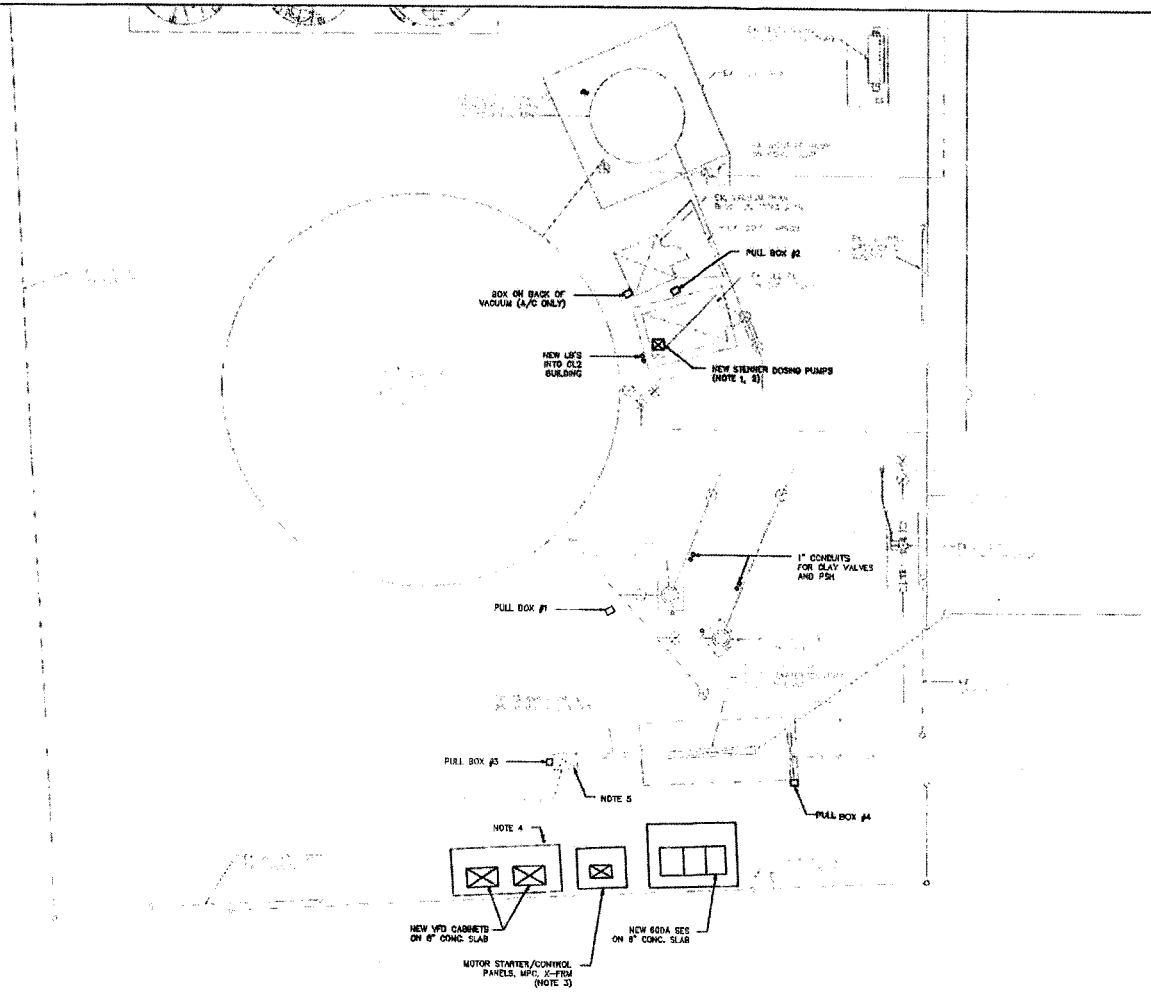
KELLER PROJECT NO: E170670

DATE: 06/07/16

DWG. NO.: 78978-E-R1

RECORD



GENERAL NOTES:

1. FURNISH AND INSTALL 2 NEW STENNER DOSING PUMPS TO REPLACE EXISTING.
2. INSTALL 1" CONDUIT FROM PLC TO CHLORINE BUILDING FOR 2-TSP SIGNAL WIRES FOR CHLORINE PUMP SPEED CONTROL.
3. FIELD VERIFY AND RELOCATE EXISTING ELECTRICAL EQUIPMENT, (MOTOR STARTER, CONTROL PANELS, MINI-POWER CENTER, TRANSFORMER) TO NEW LOCATION.
4. STUB (3) 1" CONDUIT OUT OF THE SLAB FOR FUTURE LIGHTING/RECEPTACLE CIRCUIT FOR CANOPY.
5. FURNISH AI AND AO MODULES IN RTU FOR NEW CHLORINE PUMP ANALOG SIGNALS.
6. MAINTAIN 1'6" MINIMUM PAD ON ALL SIDES AROUND THE EQUIPMENTS.
7. INSTALL 4" AB UNDERNEATH PAD.
8. CALL FOR COMPACTION TEST PRIOR TO POURING PAD.
9. USE #4 REBAR TO REINFORCE THE CONCRETE PAD.

RECORD DRAWING

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Registered Professional Engineer (Electrical)
CERTIFICATE NO
50684
HOWARD SUN
Date Signed 2-4-16
ARIZONA U.S.A.
Expires 6/30/16

REVISIONS

NO.	BY	DATE	CKD	REMARKS
1				
2				
3				
4				
5				
6				

NO.	BY	DATE	CKD	REMARKS
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2				
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DES HS
DWN HS
CKD GE

Keller Electrical
ENGINEERS | CONTROLS | SERVICES
1881 E. UNIVERSITY DR.
PHOENIX, AZ 85034
602-437-3815

ARIZONA WATER COMPANY
COOLIDGE VACUUM TANK SITE
175HP STARTERS REPLACEMENT

ELECTRICAL

SITE PLAN

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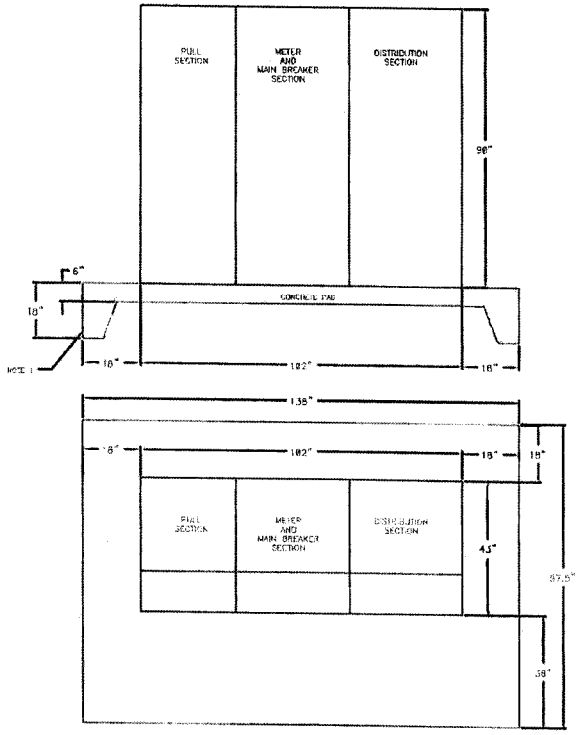
KELLER PROJECT NO: E178878
DATE: 08/01/13
DWG NO.: 178878 E-02

REFERENCES
REV NO. | DRAWING NAME | PROJECT NO. | DATE | REMARKS | DRAWING NAME | PROJECT NO. | DATE | SHT NO.

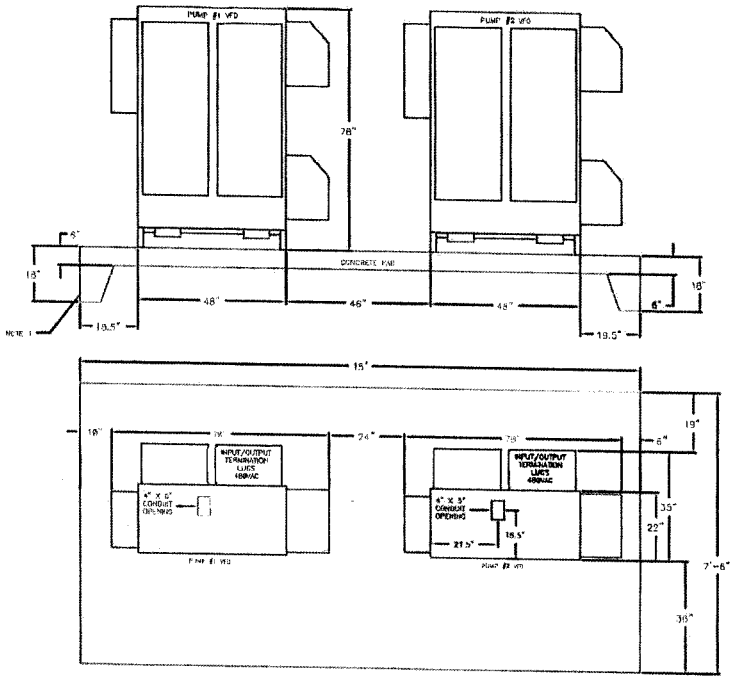
RECORD

GENERAL NOTES:

1. ADD 12" TURNDOWN TO PAD.
2. PROVIDE #4 REBAR AT 18" O.C.



SERVICE ENTRANCE SECTION LAYOUT



VFD PANELS LAYOUT

RECORD DRAWING

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Registered Professional Engineer (Electrical)
CERTIFICATE NO
50884
HOWARD SUN
Date Signed 2-11-16
ARIZONA U.S.A.
Expires 6/30/16

Keller Electrical
MOTOR CONTROL SPECIALISTS
1861 E. UNIVERSITY DR.
PHOENIX, AZ 85034
602-437-3013

REVISIONS

NO.	BY	DATE	CKD	REMARKS

NO.	BY	DATE	CKD	REMARKS

DES
HS
DWN
RB
CKD
CF

ARIZONA WATER COMPANY
COOLIDGE MAGELINI TANK SITE
125HP STARTERS R/PLACEMENT

ELECTRICAL
NEW EQUIPMENT LAYOUT

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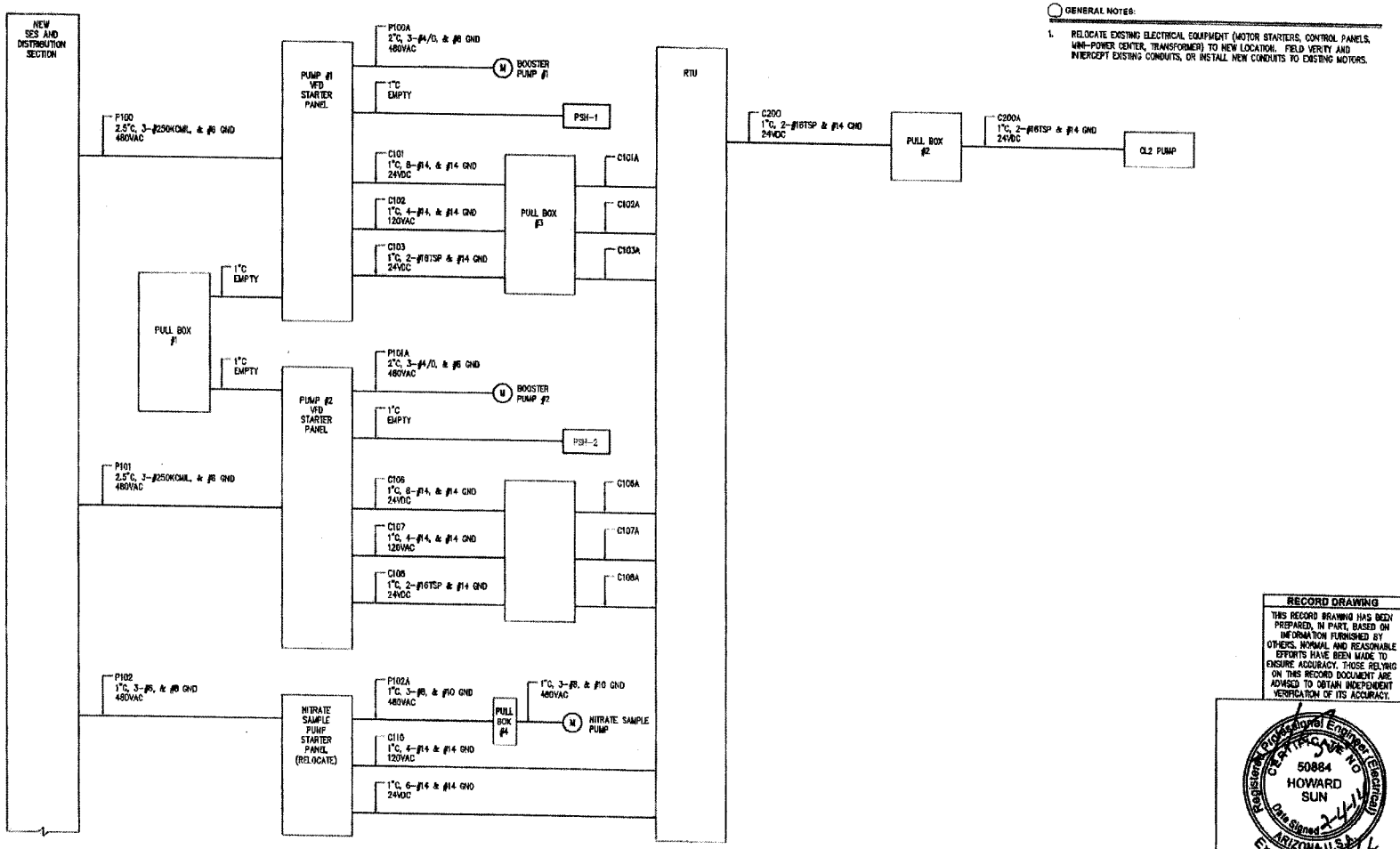
KELLER PROJECT NO. E176815
DATE 08/07/15
DWG NO.: 170878-E-43

REFERENCES | REMARKS | DRAWING NAME | PROJECT NO. | DATE | LAST REV.

RECORD



GENERAL NOTES:

1. RELOCATE EXISTING ELECTRICAL EQUIPMENT (MOTOR STARTERS, CONTROL PANELS, MINI-POWER CENTER, TRANSFORMER) TO NEW LOCATION. FIELD VERIFY AND INTERCEPT EXISTING CONDUITS, OR INSTALL NEW CONDUITS TO EXISTING MOTORS.

RECORD DRAWING

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Registered Professional Engineer (Electrical) CERTIFICATE NO 50884 HOWARD SUN Date Signed 2-4-11 ARIZONA U.S.A. Expires 6/30/12

REFERENCES

REF NO.	SHEET	DRAWING NAME	PROJECT NO.	DATE	REMARKS	DRAWING NAME	PROJECT NO.	DATE

Keller Electrical
MOTORS | CONTROLS | SERVICES
1881 E. UNIVERSITY DR.
PHOENIX, AZ 85034
602-437-3015

REVISIONS									
NO.	BY	DATE	CKD	REMARKS	NO.	BY	DATE	CKD	REMARKS

DES HS
DWN HS
CKD CF

ARIZONA WATER COMPANY
COOLIDGE VACUUM TANK SITE
125HP STARTERS REPLACEMENT

ELECTRICAL

NEW EQUIPMENT CONDUIT BLOCK DIAGRAM

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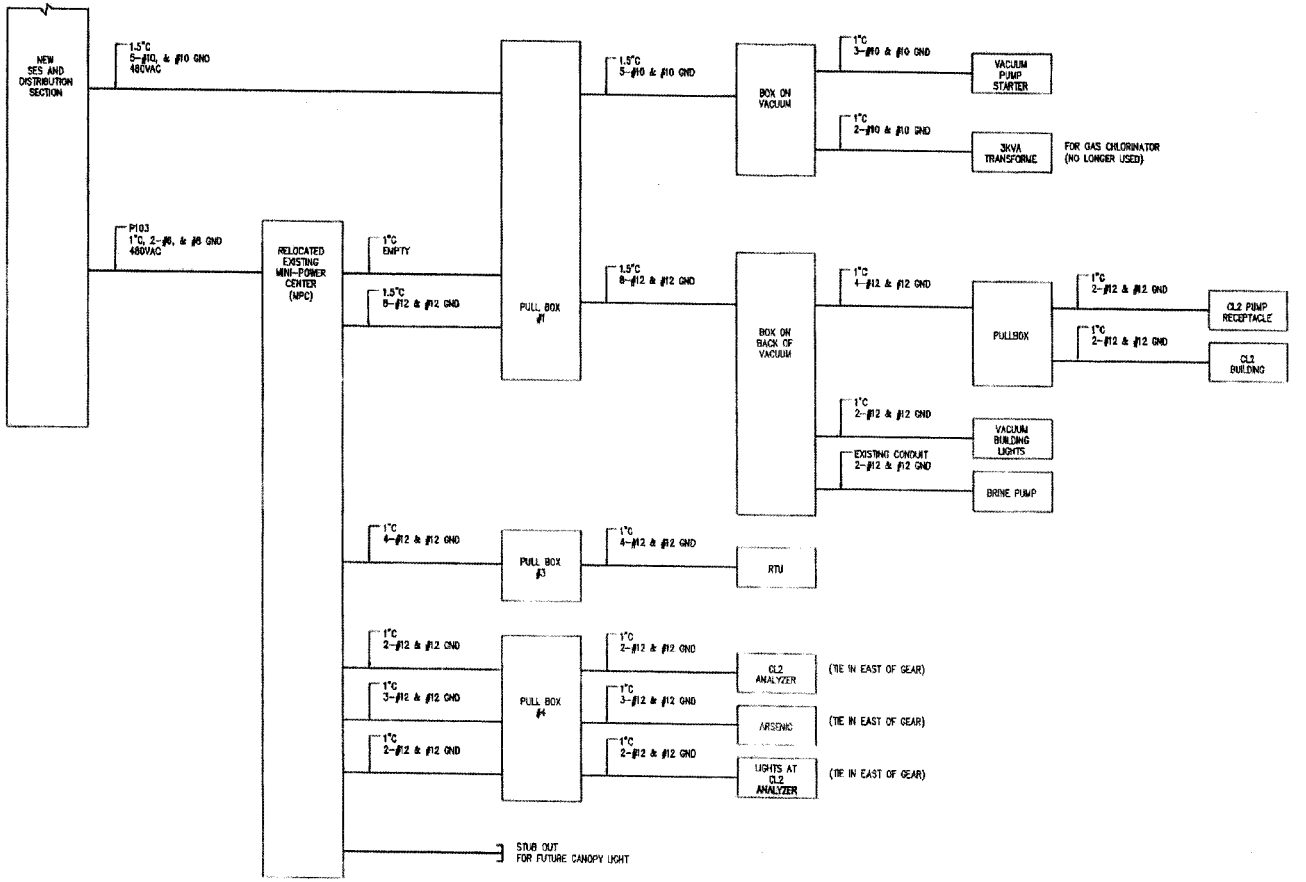
KELLER PROJECT NO. C17937G
DATE: 06/07/10
DWG NO.: 17937G-E-B4

RECORD



RECORD DRAWING

THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, BASED ON INFORMATION FURNISHED BY OTHERS. NORMAL AND REASONABLE EFFORTS HAVE BEEN MADE TO ENSURE ACCURACY. THOSE RELYING ON THIS RECORD DOCUMENT ARE ADVISED TO OBTAIN INDEPENDENT VERIFICATION OF ITS ACCURACY.

Registered Professional Engineer (Electrical) CERTIFICATE NO 50884 HOWARD SUN Date Signed 4-11-16 ARIZONA U.S.A. Expires 6/30/16

Keller Electrical
MOTORS | CONTROLS | SERVICES
1861 E. UNIVERSITY DR.
PHOENIX, AZ 85034
602-437-3015

REVISIONS										
NO.	BY	CAT	CKD	REMARKS	NO.	BY	DATE	CKD	REMARKS
1					5				
2					6				
3					7				
4					8				

DES	HS
DWN	HS
CKD	CE

ARIZONA WATER COMPANY
CIRCLE'G VACUUM TANK SITE
125HP STARTERS REPLACEMENT

ELECTRICAL
NEW EQUIPMENT CONDUIT BLOCK DIAGRAM
120V PANEL PIPING MPC

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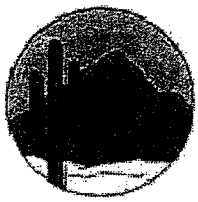
KELLER PROJECT NO. E178876
DATE: 06/07/13
DWG NO.: 178873-E-35

Exhibit D



ARIZONA WATER COMPANY

EI&C DESIGN GUIDELINES

TECHNICAL SPECIFICATIONS

NOVEMBER 2009

Corporate Office
3805 North Black Canyon Hwy • Phoenix, AZ 85015-5351
P.O. Box 29006 • Phoenix, AZ 85038-9006
602.240.6860 (Phone)
602.240.6878 or 602.240.6874 (Fax)

Exhibit E

ARIZONA WATER COMPANY

BOOSTER PUMP RECORD

THIS SECTION TO BE COMPLETED BY AWC

IDENTIFICATION DATA

System:	Map Reference (e.g. Site Name):	Booster No.:
Pinal Valley	Vacuum Booster Pump Station	

W.A. #	Location (e.g. SE ¼ SEC 25 T1N R7E):	Booster Status: (e.g. In Service, Not In Service, Abandoned, etc)

Remarks:

PHOTOGRAPHS ARE TO BE TAKEN BY AWC

BOOSTER HEAD PHOTOGRAPHS

ARIZONA WATER COMPANY

BOOSTER PUMP RECORD

System:	Map Reference (e.g. Site Name):	Booster No.
Pinal Valley	Vacuum Booster Pump Station	

THIS SECTION TO BE COMPLETED BY AWC

PUMP DESIGN DATA	
Design: G.P.M. @ T.D.H.(feet)	
Suction Pressure (PSI): (pump off)	Suction Pressure (PSI): (pump on)
Discharge Pressure (PSI): (pump off)	Discharge Pressure (PSI): (pump on)
Pumping Into:	Controlled By:
Designed By:	Date Designed:
Remarks:	

THIS SECTION TO BE COMPLETED BY AWC OR CONTRACTOR

PUMP DATA	
Configuration: ☐ Lineshaft Turbine ☐ Submersible Turbine	
Manufacturer:	Model No.:

ARIZONA WATER COMPANY

BOOSTER PUMP RECORD

Serial No.:	Stages:	Bowl O.D. (inch):
Impeller O.D. (inch):	Thrust K Factor:	
Shaft Thread O.D. (inch):	Threads Per Inch:	Thread Direction:
Oil Tube Thread I.D. (inch):	Threads Per Inch:	Thread Direction:
Column Thread I.D. (inch):	Thread Type:	Threads Per Inch:
Suction Thread I.D. (inch):	Thread Type:	Threads Per Inch:
Supplier:		Date Installed:
Remarks:		

System:	Map Reference (e.g. Site Name):	Booster No.

THIS SECTION TO BE COMPLETED BY AWC OR CONTRACTOR

COLUMN PIPE DATA

Column Tread O.D. (inch):	Length (feet):	Thread Type:
Threads Per Inch:	Thread Direction:	
Supplier:		Date Installed:
Remarks:		

THIS SECTION TO BE COMPLETED BY AWC OR CONTRACTOR

OIL TUBE DATA

Oil Tube Thread I.D. (inch):	Threads Per Inch:	Thread Direction:
Supplier:		Date Installed:
Remarks:		

ARIZONA WATER COMPANY

BOOSTER PUMP RECORD

THIS SECTION TO BE COMPLETED BY AWC OR CONTRACTOR

SHAFT DATA

Shaft Thread O.D. (inch):	Threads Per Inch:	Thread Direction:
Supplier:		Date Installed:
Remarks:		
System: Pinal Valley	Map Reference (e.g. Site Name):	Booster No. Vacuum Booster No.

THIS SECTION TO BE COMPLETED BY AWC OR CONTRACTOR

AIR LINE DATA

Air Line O.D. (inch):	Length (feet):	Material:
Supplier:		Date Installed:
Remarks:		

THIS SECTION TO BE COMPLETED BY AWC OR CONTRACTOR

DISCHARGE HEAD DATA

Manufacturer:	Model No.:	
Serial No.:	Suction Size (inch):	Discharge Size (inch):
Motor Base Dia. (inch):	Surface Plate Dia. (inch) Submersible Only:	

ARIZONA WATER COMPANY

BOOSTER PUMP RECORD

Supplier:	Date Installed
Remarks:	

ARIZONA WATER COMPANY

BOOSTER PUMP RECORD

System:	Map Reference (e.g. Site Name):	Booster No.
Pinal Valley	Vacuum Booster Pump Station	

THIS SECTION TO BE COMPLETED BY AWC OR CONTRACTOR

POWER SUPPLY DATA

XFMR Type (e.g. Delta, Open Delta, Delta-Wye):	XFMR Size (KVA):		Underground or Overhead Service:	
Service Size (Amps):	Disconnect Size (Amps):	Volts:	Phase:	Wires:
Power Provider:		Date Installed		
Remarks:				

THIS SECTION TO BE COMPLETED BY AWC OR CONTRACTOR

CONTROL / STARTER PANEL DATA

Manufacturer:		Catalog No.:	
Motor Voltage:	Max. H.P.:	Nema Size:	Nema Enclosure:
Supplier:		Date Installed:	
☐ Soft Start With Electronic Overloads	☐ Reduced Voltage Contractor	Reduced Voltage XFMR Type: ☐ Reactance	☐ Auto Transformer
Reduced Volt. XFMR H.P.:	☐ Voltage Phase Imbalance Protection	☐ Current Phase Imbalance Protection	
Voltage Phase Imbalance Protection Manuf. & Mod:		Current Phase Imbalance Protection Manuf. & Mod.:	
Wire Size to Motor:		☐ Parallel Conduits	
Flush Valve Timer (Minutes Max.):		Backspin Timer (Minutes Max.):	
Shut Down Timer (Minutes Max.):		Controlled By:	
Remarks:			

ARIZONA WATER COMPANY

BOOSTER PUMP RECORD

System:	Map Reference (e.g. Site Name):	Booster No.
Pinal Valley	Vacuum Booster Pump Station	

PHOTOGRAPHS ARE TO BE TAKEN BY AWC

SERVICE ENTRANCE SECTION PHOTOGRAPHS

PHOTOGRAPHS ARE TO BE TAKEN BY AWC

CONTROLS / STARTER PANEL PHOTOGRAPHS

ARIZONA WATER COMPANY

BOOSTER PUMP RECORD

System:	Map Reference:	Booster No.
Pinal Valley	Vacuum Booster Pump Station	

THIS SECTION TO BE COMPLETED BY AWC OR CONTRACTOR

MOTOR DATA

Configuration: ☐ Vertical Hollowshaft ☐ Vertical Hollowshaft-Right Angle Drive ☐ Submersible

Manufacturer:				Model No.	
Catalog No.		Serial No.			Enclosure:
Horse Power:	R.P.M.:	Motor Dia. (inch): (Sub. Only)	Type:	Frame:	Base Dia. (inch):
Phase:	Hertz:	Poles:	Volts:		F.L. Amps:
Service Factor:		Thrust Rating (lbs.):	P.E. Bearing:		S.E. Bearing:
Supplier:				Date Installed:	

Remarks:

ARIZONA WATER COMPANY

BOOSTER PUMP RECORD

System:	Map Reference:	Booster No.
Pinal Valley	Vacuum Booster Pump Station	

THIS SECTION TO BE COMPLETED BY AWC OR CONTRACTOR

BOOSTER MAINTENANCE DATA

W.A. No.	OR	Blanket No.

Work Description:	Date of Work:

Work Description:

Reason For Work:

Remarks:

ARIZONA WATER COMPANY

SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT: E-4-1

CONSTRUCTION SPECIFICATIONS: E-8-1

STANDARD SPECIFICATION DRAWINGS: E-9-1

APK 8-13-14

2007 EDITION WITH **2010** REVISIONS;
2012 GENERAL CONDITIONS OF CONTRACT

A copy of this entire Spec Book was sent out with M&C Contractors invitation to bid package for 1-5164 Vacuum Tank Booster Pump Station on 8/13/14 APK

CNA SURETY

Bid Bond

Bond No. N/A

CONTRACTOR:
(Name, legal status and address)
MGC Contractors, Inc.
4110 E Elwood St
Phoenix, AZ 85040

SURETY: Western Surety Company: South Dakota Corporation
(Name, legal status and principal place of business)
333 S. Wabash Avenue
41st Floor
Chicago, IL 60604

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

OWNER:
(Name, legal status and address)
Arizona Water Company
3805 N. Black Canyon Highway
Phoenix, AZ 85015-5351

BOND AMOUNT: Ten Percent (10%) of the Amount Bid

PROJECT:
(Name, location or address, and Project number, if any)
Booster Pump Station at Vacuum Tank Site

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this 28th day of August, 2014.

(Witness)

MGC Contractors, Inc.
(Principal) *(Seal)*
(Title) Randy L. Gates, President

(Witness)

Western Surety Company
(Surety) *(Seal)*
(Title) Cindy K. Mullooly, Attorney-In-Fact

Printed in cooperation with the American Institute of Architects (AIA).
The language in this document conforms to the language used in AIA Document A310 - Bid Bond - 2010 Edition.

Western Surety Company

POWER OF ATTORNEY APPOINTING INDIVIDUAL ATTORNEY-IN-FACT

Know All Men By These Presents, That WESTERN SURETY COMPANY, a South Dakota corporation, is a duly organized and existing corporation having its principal office in the City of Sioux Falls, and State of South Dakota, and that it does by virtue of the signature and seal herein affixed hereby make, constitute and appoint

Ted H Rarrick, Cindy K Mullooly, Individually

of Tempe, AZ, its true and lawful Attorney(s)-in-Fact with full power and authority hereby conferred to sign, seal and execute for and on its behalf bonds, undertakings and other obligatory instruments of similar nature

- In Unlimited Amounts -

and to bind it thereby as fully and to the same extent as if such instruments were signed by a duly authorized officer of the corporation and all the acts of said Attorney, pursuant to the authority hereby given, are hereby ratified and confirmed.

This Power of Attorney is made and executed pursuant to and by authority of the By-Law printed on the reverse hereof, duly adopted, as indicated, by the shareholders of the corporation.

In Witness Whereof, WESTERN SURETY COMPANY has caused these presents to be signed by its Vice President and its corporate seal to be hereto affixed on this 20th day of March, 2014.

WESTERN SURETY COMPANY

Paul T. Bruflat, Vice President

State of South Dakota
County of Minnehaha } ss

On this 20th day of March, 2014, before me personally came Paul T. Bruflat, to me known, who, being by me duly sworn, did depose and say: that he resides in the City of Sioux Falls, State of South Dakota; that he is the Vice President of WESTERN SURETY COMPANY described in and which executed the above instrument; that he knows the seal of said corporation; that the seal affixed to the said instrument is such corporate seal; that it was so affixed pursuant to authority given by the Board of Directors of said corporation and that he signed his name thereto pursuant to like authority, and acknowledges same to be the act and deed of said corporation.

My commission expires
June 23, 2015

J. MOHR
NOTARY PUBLIC
SOUTH DAKOTA

J. Mohr, Notary Public

CERTIFICATE

I, L. Nelson, Assistant Secretary of WESTERN SURETY COMPANY do hereby certify that the Power of Attorney hereinabove set forth is still in force, and further certify that the By-Law of the corporation printed on the reverse hereof is still in force. In testimony whereof I have hereunto subscribed my name and affixed the seal of the said corporation this 28th day of August, 2014.

WESTERN SURETY COMPANY

L. Nelson, Assistant Secretary

Form F4280-7-2012

Authorizing By-Law

ADOPTED BY THE SHAREHOLDERS OF WESTERN SURETY COMPANY

This Power of Attorney is made and executed pursuant to and by authority of the following By-Law duly adopted by the shareholders of the Company.

Section 7. All bonds, policies, undertakings, Powers of Attorney, or other obligations of the corporation shall be executed in the corporate name of the Company by the President, Secretary, and Assistant Secretary, Treasurer, or any Vice President, or by such other officers as the Board of Directors may authorize. The President, any Vice President, Secretary, any Assistant Secretary, or the Treasurer may appoint Attorneys in Fact or agents who shall have authority to issue bonds, policies, or undertakings in the name of the Company. The corporate seal is not necessary for the validity of any bonds, policies, undertakings, Powers of Attorney or other obligations of the corporation. The signature of any such officer and the corporate seal may be printed by facsimile.

STATE OF ARIZONA

DEPARTMENT OF INSURANCE

THIS IS TO CERTIFY, THAT THIS INSTRUMENT IS A FULL, TRUE AND CORRECT COPY OF THE ORIGINAL ON FILE WITH THE DEPARTMENT OF INSURANCE OF THE STATE OF ARIZONA AND CONSISTS OF 1 PAGE(S)

HEREUNTO SET MY HAND AND THE OFFICIAL SEAL OF THIS DEPARTMENT

FOR THE DIRECTOR OF INSURANCE THIS 3 JULY 2013.

AUTHORIZED REPRESENTATIVE

CERTIFICATE NO.: 286633

STATE OF ARIZONA

DEPARTMENT OF INSURANCE

Phoenix, Arizona

CERTIFICATE OF AUTHORITY

IT IS HEREBY CERTIFIED, That

WESTERN SURETY COMPANY
Sioux Falls, South Dakota

has complied with the requirements of the Arizona Revised Statutes and is hereby authorized, subject to the provisions thereof and the Charter Powers of said Company, to transact the following kinds of insurance, to-wit:

SURETY
CASUALTY (EXCLUDING WORKMEN'S COMPENSATION)

within the State of Arizona until terminated at the request of the insurer or suspended or revoked by the Director of Insurance.

Arizona Revised Statute 20-217 (C) states:

"A Certificate of Authority remains the property of this state. Upon termination at the request of the insurer or revocation by the Director, the insurer shall immediately deliver the Certificate of Authority to the Director."

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the official seal of the Director of Insurance at the City of Phoenix, this 21st day of July, 1979

Director of Insurance

E-146 7/79

286633

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 12/6/2013

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an **ADDITIONAL INSURED**, the policy(ies) must be endorsed. If **SUBROGATION IS WAIVED**, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Lovitt & Touche' Inc - Phoenix P. O. Box 64985 Phoenix AZ 85082	**CONTACT NAME:** Elaine Leaman **PHONE (A/C, No, Ext):** 602-956-2250 **FAX (A/C, No):** 602-956-2258 **E-MAIL ADDRESS:** elaman@lovitt-touche.com
INSURED MGCCO-1 MGC Contractors, Inc. P.O. Box 61748 Phoenix AZ 85082	**INSURER(S) AFFORDING COVERAGE** — **NAIC #** **INSURER A :** Amerisure Partners Insurance Compan **INSURER B :** Amerisure Insurance Company **INSURER C :** Greenwich Insurance Company **INSURER D :** **INSURER E :** **INSURER F :**

COVERAGES **CERTIFICATE NUMBER:** 1636119935 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
B	GENERAL LIABILITY [X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS-MADE [X] OCCUR [X] $5,000 PD Ded GEN'L AGGREGATE LIMIT APPLIES PER: [ ] POLICY [X] PRO-JECT [X] LOC	Y	Y	CPP2072201	12/31/2013	12/31/2014	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$1,000,000 $1,000,000 $10,000 $1,000,000 $2,000,000 $2,000,000
B	AUTOMOBILE LIABILITY [X] ANY AUTO [ ] ALL OWNED AUTOS [ ] SCHEDULED AUTOS [ ] HIRED AUTOS [ ] NON-OWNED AUTOS	Y	Y	CA20722000	12/31/2013	12/31/2014	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$1,000,000 $ $ $
B	[X] UMBRELLA LIAB [X] OCCUR [ ] EXCESS LIAB [ ] CLAIMS-MADE [ ] DED [X] RETENTION $0	Y	Y	CU2072202	12/31/2013	12/31/2014	EACH OCCURRENCE AGGREGATE	$9,000,000 $9,000,000
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N [N] If yes, describe under DESCRIPTION OF OPERATIONS below	N / A	Y	WC2073813	12/31/2013	12/31/2014	[X] WC STATU-TORY LIMITS [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $1,000,000 $1,000,000 $1,000,000
C	Professional Pollution	Y Y	Y Y	PEC003325703	12/31/2013	12/31/2014	Aggregate Each Deductible	$4,000,000 $2,000,000 $15,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

Certificate Holder and owner (if applicable) are additional insureds as respects general liability, automobile liability and excess liability if required in a written contract, subject to all the policy terms, conditions, definitions and exclusions. A Waiver of Subrogation in favor of the certificate holder and owner (if applicable) applies to the general liability, automobile liability, excess liability and workers' compensation if required in a written contract. The general liability and excess liability insurance is primary and certificate holder's insurance is non-contributory if required by written contract. (CG7048 11/09, CG7049 11/09, CA7115 11/09, WC000313 04/84, CU2403 09/00, CU7467 08/10)

CERTIFICATE HOLDER

Arizona Water Company
3805 North Black Canyon Highway
Phoenix AZ 85015

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Dennis M. Tsosie

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ARIZONA WATER COMPANY

SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT: E-4-1

CONSTRUCTION SPECIFICATIONS: E-8-1

STANDARD SPECIFICATION DRAWINGS: E-9-1

10/1/14 sw

2007 EDITION WITH **2010** REVISIONS;
2012 GENERAL CONDITIONS OF CONTRACT

A copy of this entire Spec Book was sent out with MGC Contractors Proposal package for 1-5164 Coolidge Pancake Tank on 10/3/14 ASA

Received
OCT 30 2014
WeberWaterResources

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

October 29, 2014

Mr. Martin Weber
Weber Water Resources, LLC
16825 S. Weber Drive
Chandler, AZ 85226

Re: Coolidge Pancake Tank Booster No. 2

PROJECT: Pump Assemble Replacement	
SYSTEM: Pinal Valley	
CONTRACT NO.:	
P.E. NO.:	W.A. NO.: 1-5164

Dear Mr. Weber:

Enclosed is your copy of the Proposal/Contract for the above-referenced project, which has been accepted by Arizona Water Company (the "Company").

If you have any questions, please call me at this office.

Very truly yours,

John P. Knobbe
Lead Designer
jknobbe@azwater.com

afh
Enclosure

ARIZONA WATER COMPANY

Pinal Valley - Coolidge
448 W. Central Avenue

PROPOSAL/CONTRACT

CONTRACTOR: WEBER WATER RESOURCES, LLC	SYSTEM: PINAL VALLEY
ADDRESS: 16825 S. WEBER DRIVE	W.A. No(s): 1-5164
CITY ST ZIP: CHANDLER, AZ 85226	BID DUE DATE: June 13, 2014

CONTRACTOR SUBMITS this PROPOSAL/CONTRACT to ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), to perform the work and complete the project described on Page 2 (the "Project"), as an independent prime contractor.

1. Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings, (the "Specifications"), all of which are attached hereto. Contractor has examined the specific plans and related construction drawings for the Project (the "Drawings"), copies of which are also attached hereto. The General Conditions of Contract, Specifications and Drawings are incorporated into this Proposal/Contract. Contractor affirms that all work and materials to be furnished or purchased for the Project will be in strict conformance with the General Conditions of Contract, Specifications and Drawings.
2. Contractor represents and warrants that it has satisfied and complied with the provisions of Section 6, Contractor Understands Work and Working Conditions, of the General Conditions of Contract prior to submitting this Proposal/Contract.
3. Contractor represents that this Proposal/Contract is fair and honest in all respects, is submitted in good faith and is not submitted in collusion with any other company, entity or person.
4. Contractor acknowledges that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work.
5. Prior to the commencement of work, Contractor will submit to the Company a list of all materials to be used in the Project. The materials list will include the manufacturer, part number, price and quantity included in this Proposal/Contract.
6. Contractor will furnish all labor, tools, equipment and materials required to complete the Project according to the General Conditions of Contract, Specifications and Drawings. No materials purchased by Contractor to be incorporated into the Project are subject to tax at the time of purchase and Contractor will not charge the Company for any such tax. Contractor will pay the applicable transaction privilege tax (the "Contracting Tax") on the Project after Contractor receives payment of the final Project invoice from the Company. The cost of materials incorporated into the Project which are exempt by Arizona Revised State Statues ("A.R.S.") from the Contracting Tax, for example, pipes or valves having a diameter of four (4) inches or larger, including equipment, fittings and any other related part that is used in operating the pipes or valves (A.R.S. §42-5061 B.6.), will not be included in the total cost of the labor and materials upon which the Contracting Tax is computed. Contractor retains full liability and obligation to pay the Contracting Tax and will defend and indemnify the Company against any demand or obligation to pay the Contracting Tax.
7. Contractor will maintain detailed accounting records of all materials purchased and incorporated into the Project. Such records will include all supporting original vendor invoices for all materials purchased. Following completion of the Project, Contractor will submit an itemized accounting to the Company which will include all supporting original vendor invoices and satisfactory evidence of payment thereof. The Company will not pay Contractor for materials not actually incorporated into the Project, and the disposition of such materials will remain Contractor's responsibility.
8. The Estimated Total Cost of the Project, shown on Page 2, is based on estimated labor and material quantities to be furnished. It includes an estimate of the Contracting Tax and the cost of the required Performance and Payment Bonds. Contractor will not cancel, modify or withdraw this Proposal/Contract during a ninety-day (90) period commencing on the Bid Due Date. The Company may accept this Proposal/Contract by signing and mailing, or otherwise delivering, a copy hereof to Contractor during such ninety-day (90) period. If the Company does not accept this Proposal/Contract during such ninety-day (90) period, Contractor may cancel this Proposal/Contract by giving written notice of cancellation to the Company.
9. Prior to the commencement of work, Contractor will provide the Company with a detailed construction schedule, in either Gantt or CPM form, identifying all tasks to be performed from the date of the written Commencement Notice through completion of the Project, including testing, training of Company Personnel and final Project invoicing. Contractor will provide the Company with a copy of such construction schedule documenting the progress of work on the Project at least monthly.
10. Contractor will not commence work on the Project until the Company gives Contractor a written Commencement Notice. Contractor will complete the Project within 30 calendar days after the Commencement Notice is issued.
11. Following the Company's written notice of satisfactory completion of the Project, and upon receipt of the final Project invoice from Contractor, the Company shall pay Contractor the actual total cost of the Project, which will be calculated as shown on Page 2, except that actual labor and material quantities installed/constructed will be substituted for the estimated labor and materials quantities and the Contracting Tax will be recalculated based on such actual labor and materials quantities.
12. The amount of applicable liquidated damages for Contractor's failure to deliver or perform within the time limit shown in Paragraph 10 may be deducted from the Company's payment of the final Project invoice. This provision shall not limit the Company's ability to terminate this Proposal/Contract for Contractor's unsatisfactory performance or failure to perform as provided in the General Conditions of Contract, Specifications or Drawings, or in this Proposal/Contract.

SPECIAL CONDITIONS:

See attached Equipment Specifications dated June 10, 2014.

CONTRACTOR	PROPOSAL/CONTRACT ACCEPTED:
WEBER WATER RESOURCES, LLC	ARIZONA WATER COMPANY
By: Fred Tregaskes	By:
Print Name: FRED TREGASKES	Print Name: Fredrick K. Schneider, PE
Title: DIRECTOR	Title: Vice President - Engineering
Date: 6-23-14	Date: 6-30-2014

ARIZONA WATER COMPANY

Pinal Valley - Coolidge
448 W. Central Avenue
Coolidge, AZ 85128 PH: 520-723-5346

PROPOSAL/CONTRACT

CONTRACTOR: WEBER WATER RESOURCES, LLC	SYSTEM: PINAL VALLEY
AZ CONTRACTOR LICENSE NO: CLASSIFICATION:	W.A. No(s): 1-51164
ADDRESS: 16825 S. WEBER DRIVE	BID DUE DATE: June 13, 2014
CITY ST ZIP CHANDLER, AZ 85226	BID BOND REQUIRED ☐ Yes ☑ No

DESCRIPTION OF PROJECT: Pull and replace Pancake Tank Booster No. 2 pump assembly in Coolidge, Arizona.

1-2. MATERIALS EXEMPT FROM CONTRACTING TAX (per Paragraph 6)	QUANTITY	UNIT PRICE LABOR	UNIT PRICE MATERIALS	TOTAL COST LABOR	TOTAL COST MATERIALS
3. Total Labor to Install Exempt Materials (add the amounts in column 1)				3	
4. Total Exempt Materials (add the amounts in column 2)					4

5-6. NON-EXEMPT MATERIALS	QUANTITY	LABOR	MATERIALS	LABOR	MATERIALS
Labor to pull and replace booster pump	1	4180-		4180-	
Provide and install National Pump E12MC (5 stage) bowl assembly, 1770 RPM 9-inch Ø impeller, shaft, column and related fittings complete	1	300-	5385-	300-	5385-
Provide and install stuffing box on existing discharge head	1	360-	2124-	360-	2124-
7. Total Labor to Install Non-Exempt Materials (add the amounts in column 5)				7 4840-	
8. Total Non-Exempt Materials (add the amounts in column 6)					8 7509-
9. Subtotal A (add lines 3, 7 and 8)					9 12349-
10. Contracting Tax Base (multiply the amount on line 9 by 0.65)				10 8027-	
11. Applicable Contracting Tax Rate				11 10.7	
12. Contracting Tax (multiply the amount on line 10 by line 11)					12 859-
13. Subtotal B (add lines 4, 9 and 12)					13 13208-
14. 100% Performance and Payment Bonds Cost					14 264-
15. Estimated Total Cost (add lines 13 and 14)					15 13472-

NOTE: The Estimated Total Cost includes all labor and materials for backfill, pavement replacement, chip seal, and traffic control necessary for the Project.

ARIZONA WATER COMPANY
VACUUM TANK BOOSTER PUMP STATION
COOLIDGE, ARIZONA

DECEMBER 2014

DESIGN REVIEW SUBMITTAL
NOT FOR CONSTRUCTION

SHEET INDEX

SHT	DWG	DRAWING TITLE
1	G1	COVER SHEET AND INDEX
2	G2	GENERAL AND ENGINEER NOTES
3	G3	BOOSTER PUMP STATION ISOMETRIC
4	C1	YARD PIPING PLAN
5	M1	BOOSTER PUMP STATION ENLARGED PLAN
6	M2	SECTIONS
7	E1	SINGLE LINE DIAGRAM
8	E2	PANEL ELEVATIONS
9	E3	ELECTRICAL SITE LAYOUT
10	I1	BOOSTER PUMP STATION - PROCESS AND INSTRUMENTATION

OWNER:

ARIZONA WATER COMPANY
CONTACT: JAMES WILSON
P.O. BOX 29006
PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860
FAX: (602) 240-6878

DESIGN REVIEW SUBMITTAL – NOT FOR CONSTRUCTION

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

REPLACE TWO EXISTING 100 H.P. STARTER PANELS WITH TWO VARIABLE FREQUENCY DRIVES (VFD) @ THE COOLIDGE VACUUM TANK SITE IN COOLIDGE, ARIZONA

COVER SHEET

G1

SHEET

The installation shown is to be installed in accordance with the Arizona Water Company standard details and conforms to the requirements of Arizona Department of Environmental Quality

263-1100
1-800-STAKE-IT

A.C. No. 1-5019
DIVISION PINAL VALLEY
TOWN, RANGE, SECTION NW 1/4 SEC. 10 - T5 S, R 8 E.
DATE DEC 2014
SCALE AS SHOWN
DESIGNED BY JPK

GENERAL NOTES:

1. THE TERM COMPANY HEREIN SHALL REFERENCE THE ARIZONA WATER COMPANY.

2. REFERENCE COMPANY'S CONSTRUCTION SPECIFICATIONS AND STANDARD SPECIFICATION DRAWINGS (COMPANY SPECIFICATIONS).

3. FOR WORK INVOLVING THE OPERATION OF AN EXISTING EQUIPMENT AND/OR PROCESS WATER PIPES, THE CONTRACTOR SHALL COORDINATE WITH COMPANY PRIOR TO SHUT DOWN OF EQUIPMENT OR ISOLATION OF PROCESS WATER PIPE.

WATER NOTES:

1. ALL PIPE CONNECTIONS SHALL BE RESTRAINED.

2. PIPE SUPPORTS SHALL, AT A MINIMUM, BE INSTALLED AT THE FOLLOWING LOCATIONS:

A. ON BOTH SIDES OF EACH VALVE, PIECE OF EQUIPMENT OR OTHER APPURTENANCE, SUCH THAT ALLOWANCE IS MADE FOR REMOVAL OF THE VALVE, PIECE OF EQUIPMENT, OR OTHER APPURTENANCE WHILE LEAVING THE PIPE SYSTEM FULLY SUPPORTED. SUPPORT PIPING CONNECTIONS TO EQUIPMENT BY PIPE SUPPORT AND NOT BY THE EQUIPMENT.

B. ALONG STRAIGHT RUNS OF PIPE, THE MAXIMUM DISTANCE BETWEEN SUPPORTS SHALL BE AS LISTED BELOW:

PIPE DIAMETER	MAXIMUM DISTANCE BETWEEN SUPPORTS
2" AND SMALLER	6 FEET
2 1/2" TO 6"	8 FEET
8" TO 12"	10 FEET
14" TO 18"	10 FEET

C. DIRECTLY SUPPORTING VALVES 8-INCH IN DIAMETER AND LARGER.

D. AT LEAST TWO SUPPORTS ON EACH SIDE OF FLEXIBLE COUPLINGS OR FLANGED COUPLING ADAPTERS TO PROVIDE THAT NO LOAD IS APPLIED TO THE FLEXIBLE COUPLING.

E. ON THE PIPE WITHIN TWO PIPE DIAMETERS OF EACH SIDE OF ELBOWS AND EACH BRANCH OF TEES AND CROSSES.

F. PROVIDE STEEL AND DUCTILE IRON STANCHION COMPONENTS.

G. STANCHION-TYP SUPPORT SYSTEMS

i. B-LINE

ii. ANVIL

H. ADJUSTABLE PIPE SADDLE SUPPORT

i. B-LINE, FIGURE 3092

I. COAT STANCHIONS AFTER ASSEMBLY.

3. PRESSURE TEST IN ACCORDANCE WITH COMPANY SPECIFICATIONS.

4. FLUSH AND DISINFECT IN ACCORDANCE WITH COMPANY SPECIFICATIONS.

EARTHWORK NOTES:

1. EROSION CONTROL: IMPLEMENT THE CONSTRUCTION PROCEDURES TO ASSURE MINIMUM DAMAGE TO THE ENVIRONMENT DURING CONSTRUCTION. TAKE ALL ADDITIONAL MEASURES REQUIRED TO CONFORM TO THE REQUIREMENTS OF APPLICABLE STANDARDS, CODES AND REGULATIONS.

A. MAKE PROVISIONS TO REGULATE DRAINAGE, AVOID EROSION AND MINIMIZE DAMAGE TO VEGETATION.

B. APPLY MEASURES TO CONTROL EROSION AND TO MINIMIZE THE SILTATION OF THE EXISTING WATERWAYS, AND NATURAL PONDING AREAS.

2. CONTROLLED LOW STRENGTH MATERIAL (CLSM):

A. SELECT AND PROPORTION INGREDIENTS TO OBTAIN COMPRESSIVE STRENGTH BETWEEN 50 AND 150 PSI AT 7 DAYS IN ACCORDANCE WITH ASTM D4832. SUFFICIENT CEMENT SHALL BE ADDED TO MEET THE STRENGTH AND MATERIAL REQUIREMENTS GIVEN BELOW AND AS REQUIRED TO PROVIDE SUFFICIENT STRENGTH FOR COMPACTING OVERLYING TRENCH BACKFILL.

B. MATERIALS:

i. CEMENT: ASTM C150, TYPE I OR II, TWO SACKS MINIMUM PER CUBIC YARD.

ii. AGGREGATE: ASTM C33, MAXIMUM SIZE 7. THE AMOUNT OF MATERIAL PASSING A NO. 200 SIEVE SHALL NOT EXCEED 12 PERCENT. THE ABOVE NO. 200 SIEVE MATERIAL SHALL BE WELL GRADED SO AS TO AVOID SEGREGATION. THE MINUS #200 SIEVE FRACTION SHALL BE NONPLASTIC.

iii. FLY ASH (IF USED): ASTM C618, CLASS C OR F.

iv. WATER: CLEAN, POTABLE, CONTAINING LESS THAN 500 PPM OF CHLORIDES.

C. MIX DESIGN: TBD

3. EXPOSED SUBGRADE SHALL BE SCARIFIED MINIMUM 6 INCHES AND COMPACTED TO MINIMUM 95% COMPACTION DENSITY BASED ON ASTM D 1557.

4. PIPE TRENCH SHALL BE IN ACCORDANCE WITH STANDARD DETAIL 2000. COMPACTION REQUIREMENTS NOTED SHALL BE MINIMUM COMPACTION DENSITY BASED ON ASTM D 1557.

DUST CONTROL NOTES:

1. PREVENT BLOWING AND MOVEMENT OF DUST FROM EXPOSED SOIL SURFACES AND ACCESS ROADS TO REDUCE ON- AND OFF-SITE DAMAGE AND HEALTH HAZARDS.

2. TAKE ALL ADDITIONAL MEASURES REQUIRED TO CONFORM TO THE REQUIREMENTS OF APPLICABLE STANDARDS, CODES AND REGULATIONS.

CONCRETE NOTES:

1. CLASS A CONCRETE SHALL BE STEEL REINFORCED AND INCLUDES:

A. FOUNDATION

B. SLABS

C. PIPE SUPPORT

D. EQUIPMENT BASES

2. CEMENT:

3. AGGREGATE:

4. WATER:

5. PREPARE DESIGN MIXES OF CONCRETE. MIXES SUBJECT TO THE FOLLOWING LIMITATIONS:

A. CLASS A CONCRETE

B. SPECIFIED 28-DAY COMPRESSIVE STRENGTH: 4,000 PSI.

C. AIR CONTENT: 1.5%.

D. SLUMP, BEFORE ADDITION OF SUPERPLASTICIZER: 3½" ± ½"

E. SLUMP, AFTER ADDITION OF SUPERPLASTICIZER: 8" MAXIMUM

COARSE AGGREGATE SIZE	CEMENTITIOUS CONTENT-POUNDS PER CUBIC YARD	WATER-CEMENT RATIO WITH SUPERPLASTICIZER
3/4"	625 MIN, 800 MAX	0.375
1"	600 MIN, 800 MAX	0.385
1 1/2"	590 MIN, 800 MAX	0.400

F. USE SUPERPLASTICIZER IN ALL CLASS A CONCRETE. USE WATER REDUCERS IN COMBINATION WITH SUPERPLASTICIZER AS REQUIRED FOR MIXING.

G. REINFORCING BARS: ASTM A615, GRADE 60.

DESIGN REVIEW SUBMITTAL – NOT FOR CONSTRUCTION

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

REPLACE TWO EXISTING 100 H.P. STARTER PANELS WITH TWO VARIABLE FREQUENCY DRIVES (VFD) @ THE COOLIDGE VACUUM TANK SITE IN COOLIDGE, ARIZONA

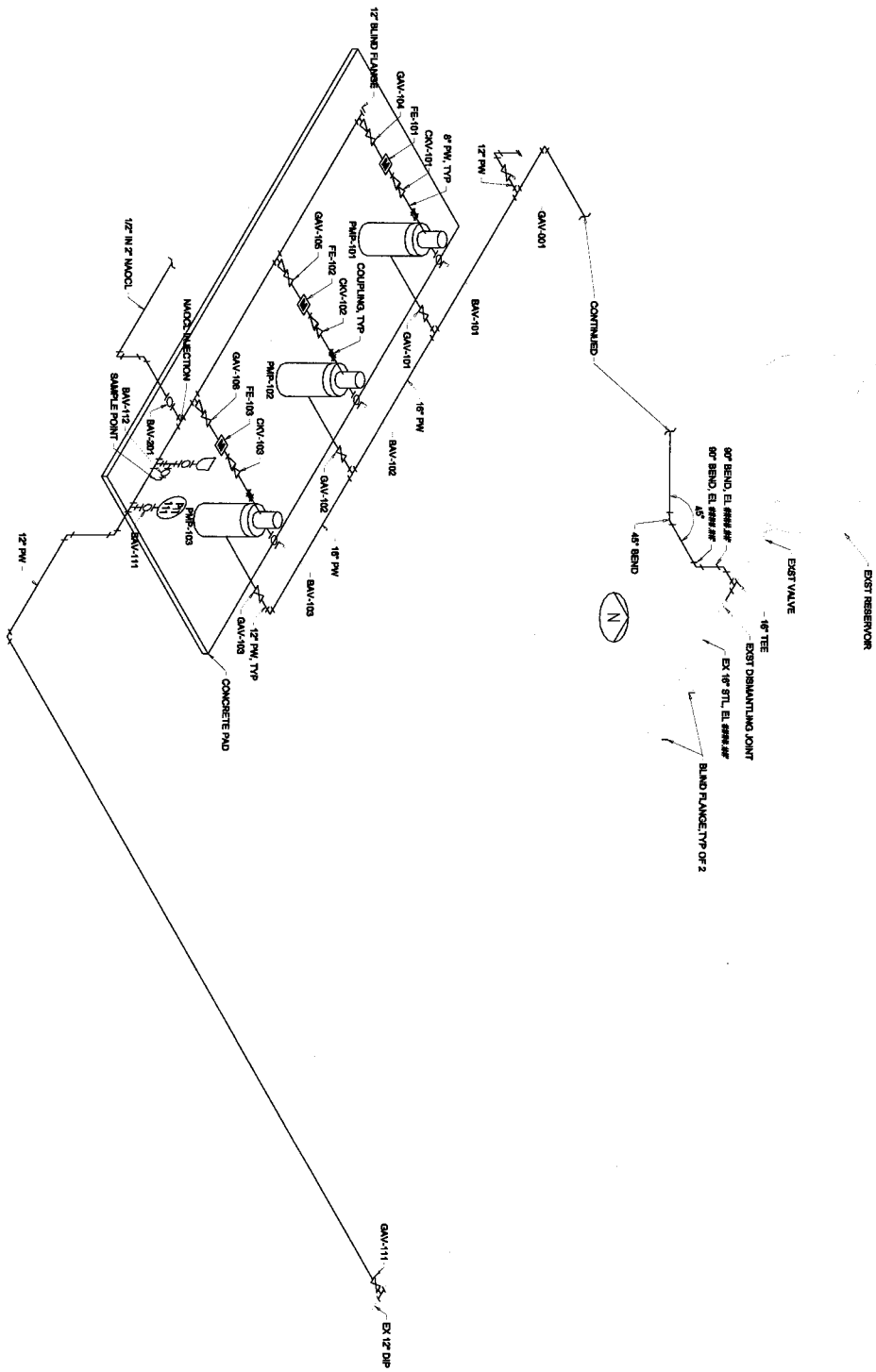
GENERAL NOTES

1-5019
PINAL VALLEY
NW 1/4 SEC.10-T5 S.R.8 E.
DEC 2014 AS SHOWN
JPK

The installation shown is to be installed in accordance with the Arizona Water Company standard specifications on file with the Arizona Department of Environmental Quality

263-1100
1-800-STAKE-IT

SHEET G2



ISOMETRIC

DESIGN REVIEW SUBMITTAL – NOT FOR CONSTRUCTION

SHEET G3

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

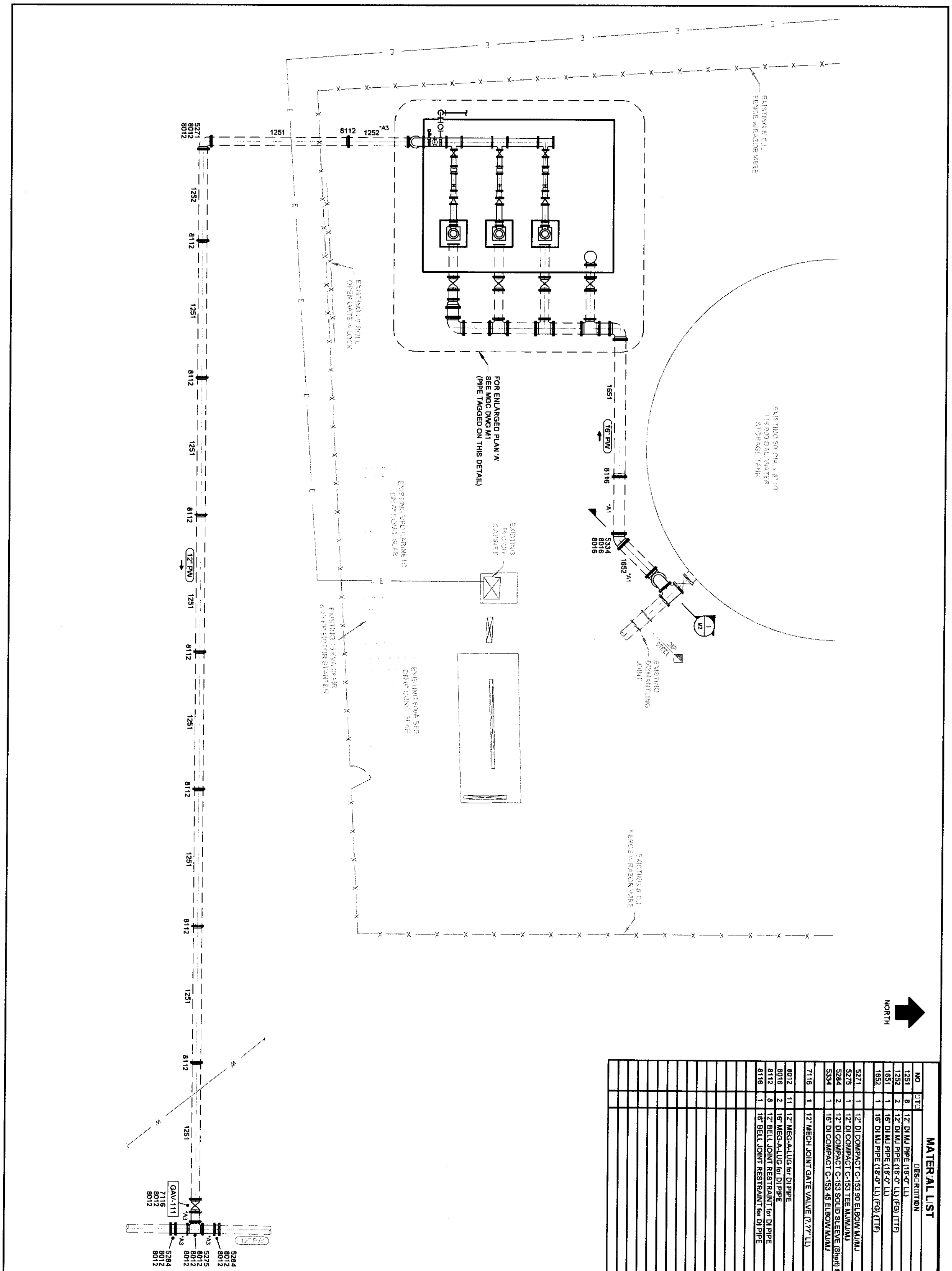
REPLACE TWO EXISTING 100 H.P. STARTER PANELS WITH TWO VARIABLE FREQUENCY DRIVES (VFD) @ THE COOLIDGE VACUUM TANK SITE IN COOLIDGE, ARIZONA

BOOSTER PUMP STATION ISOMETRIC

W.O. No.: 1-5019
SYSTEM: PINAL VALLEY
LEGAL DESC.: NW 1/4 SEC.10 -T5 S,R.8 E.
DATE: DEC 2014
SCALE: AS SHOWN
DESIGN BY: JPK

The installation shown is to be installed in accordance with the Arizona Water Company standard specifications on file with the Arizona Department of Environmental Quality

263-1100
1-800-STAKE-IT



MATERIAL LIST

NO	QTY	DESCRIPTION
1251	8	12" DI MJ PIPE (18'-0" LL)
1252	2	12" DI MJ PIPE (18'-0" LL) (FG) (TTF)
1651	1	16" DI MJ PIPE (18'-0" LL)
1652	1	16" DI MJ PIPE (18'-0" LL) (FG) (TTF)
5271	1	12" DI COMPACT C-153 90 ELBOW MJ/MJ
5275	1	12" DI COMPACT C-153 TEE MJ/MJ/MJ
5284	2	12" DI COMPACT C-153 SOLID SLEEVE (Short) MJ/MJ
5334	1	16" DI COMPACT C-153 45 ELBOW MJ/MJ
7116	1	12" MECH JOINT GATE VALVE (?.??" LL)
8012	11	12" MEG-A-LUG for DI PIPE
8016	2	16" MEG-A-LUG for DI PIPE
8112	8	12" BELL JOINT RESTRAINT for DI PIPE
8116	1	16" BELL JOINT RESTRAINT for DI PIPE

DESIGN REVIEW SUBMITTAL – NOT FOR CONSTRUCTION

SHEET C1

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

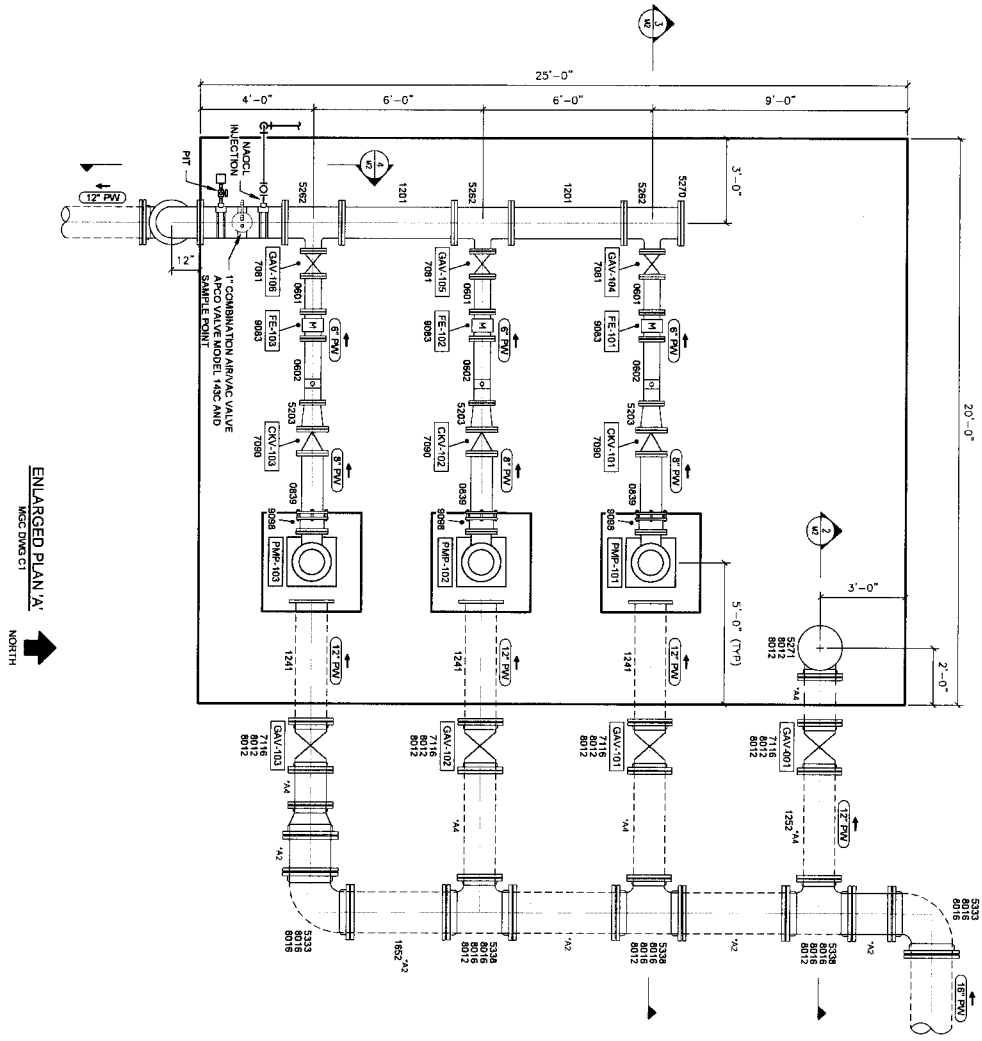
REPLACE TWO EXISTING 100 H.P. STARTER PANELS WITH TWO VARIABLE FREQUENCY DRIVES (VFD) @ THE COOLIDGE VACUUM TANK SITE IN COOLIDGE, ARIZONA

YARD PIPING PLAN

1-5019
PINAL VALLEY
NW 1/4 SEC.10 -T5 S.,R. 8 E.
DEC 2014
AS SHOWN
JPK

The installation shown is to be installed in accordance with the Arizona Water Company standard specifications on file with the Arizona Department of Environmental Quality

263-1100
1-800-STAKE-IT



NO	QTY	MATERIAL LIST
		(EST. TRUITON)
0601	3	6" DI SPOOL (7'-7" F/P)
0602	3	8" DI SPOOL (7'-7" F/P)
0639	3	8" DI SPOOL (7'-7" F x PE) (TTP)
1201	2	12" DI SPOOL (6'-11 3/4" F/P)
1241	3	12" DI SPOOL (7'-7" F x PE) (TTP)
1252	1	12" DI MJ PIPE (18'-0" LU) (F/G) (TTP)
1652	1	16" DI MJ PIPE (18'-0" LU) (F/G) (TTP)
5203	3	8" x 6" DI FLANGED ECCENTRIC REDUCER
5262	3	12" x 8" DI FLANGED REDUCING TEE
5270	1	12" DI RUBBER FLANGE MEGA-FLEX
5271	1	12" DI COMPACT C-153 90 ELBOW MJ/MJ
5333	2	16" DI COMPACT C-153 90 ELBOW MJ/MJ
5338	3	16" x 12" DI COMPACT C-153 RED TEE MJ/MJ/MJ
7081	3	6" FLANGED GATE VALVE (7.77" F/D)
7090	3	8" APCO 300 SERIES SILENT CHECK VALVE
7116	4	12" MECH JOINT GATE VALVE (7.77" LU)
8012	13	12" MEGA-A-LUG for DI PIPE
8016	10	16" MEGA-A-LUG for DI PIPE
9083	3	6" FLG MAG FLOWMETER w/GRD RINGS (7.77" LU)
9088	3	8" RFCA

DESIGN REVIEW SUBMITTAL – NOT FOR CONSTRUCTION

SHEET M1

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

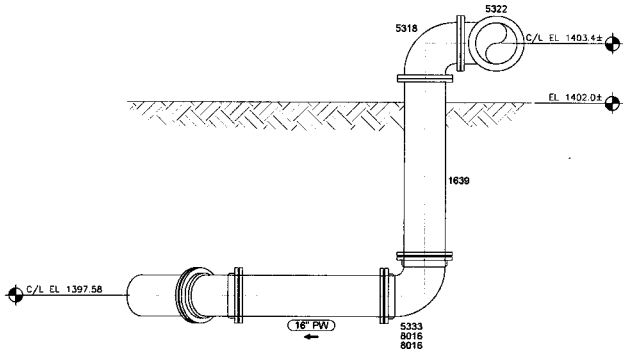
PROJECT TITLE: REPLACE TWO EXISTING 100 H.P. STARTER PANELS WITH TWO VARIABLE FREQUENCY DRIVES (VFD) @ THE COOLIDGE VACUUM TANK SITE IN COOLIDGE, ARIZONA

PROJECT SHEET TITLE: BOOSTER PUMP STATION ENLARGE PLAN

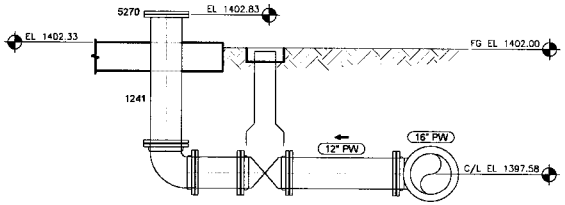
W.A. No.: 1-5019 P.E. No.:
SYSTEM: PINAL VALLEY
LEGAL DESC.: NW 1/4 SEC.10 -T5 S.,R.8 E.
THE DIST.:
DATE: DEC 2014 SCALE: AS SHOWN
DRAWN BY: JPK DESIGNED BY:

The installation shown is to be installed in accordance with the Arizona Water Company standard specifications on file with the Arizona Department of Environmental Quality

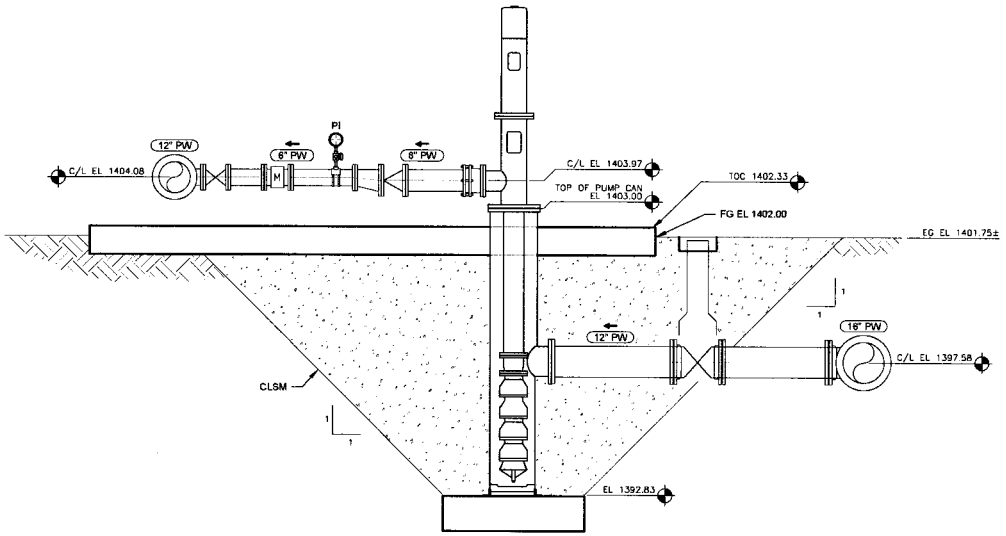
263-1100
1-800-STAKE-IT



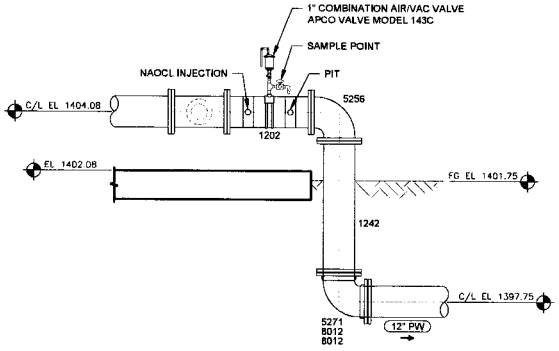
SECTION 1
MGC DWG C1



SECTION 2
MGC DWG M1



SECTION 3
MGC DWG M1



SECTION 4
MGC DWG M1

MATERIAL LIST		
NO	QTY	DESCRIPTION
1202	1	12" DI SPOOL (2'-11 3/4" F/F)
1241	1	12" DI SPOOL (7'-7?" F x PE) (TTF)
1242	1	12" DI SPOOL (7'-7?" F x PE) (TTF)
1639	1	16" DI SPOOL (7'-7?" F x PE) (TTF)
5256	1	12" DI FLANGED 90 SR ELBOW
5270	1	12" DI BLIND FLANGE
5271	1	12" DI COMPACT C-153 90 ELBOW MJ/MJ
5318	1	16" DI FLANGED 90 SR ELBOW
5322	1	16" DI FLANGED TEE
5333	1	16" DI COMPACT C-153 90 ELBOW MJ/MJ
8012	2	12" MEG-A-LUG for DI PIPE
8016	2	16" MEG-A-LUG for DI PIPE

The installation shown is to be installed in accordance with the latest Arizona Water Company standard specifications on file with the Arizona Department of Environmental Quality

BLUE STAKE, INC.
263-1100
1-800-STAKE-IT

DESIGN REVIEW SUBMITTAL – NOT FOR CONSTRUCTION

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY.
PHOENIX, ARIZONA 85015
POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

W.O. No. 1-5019
DRAWN PINAL VALLEY
LOCATION NW 1/4SEC.10-T5 S.R.8 E.
DATE DEC 2014
SCALE AS SHOWN
DESIGNED BY JPK

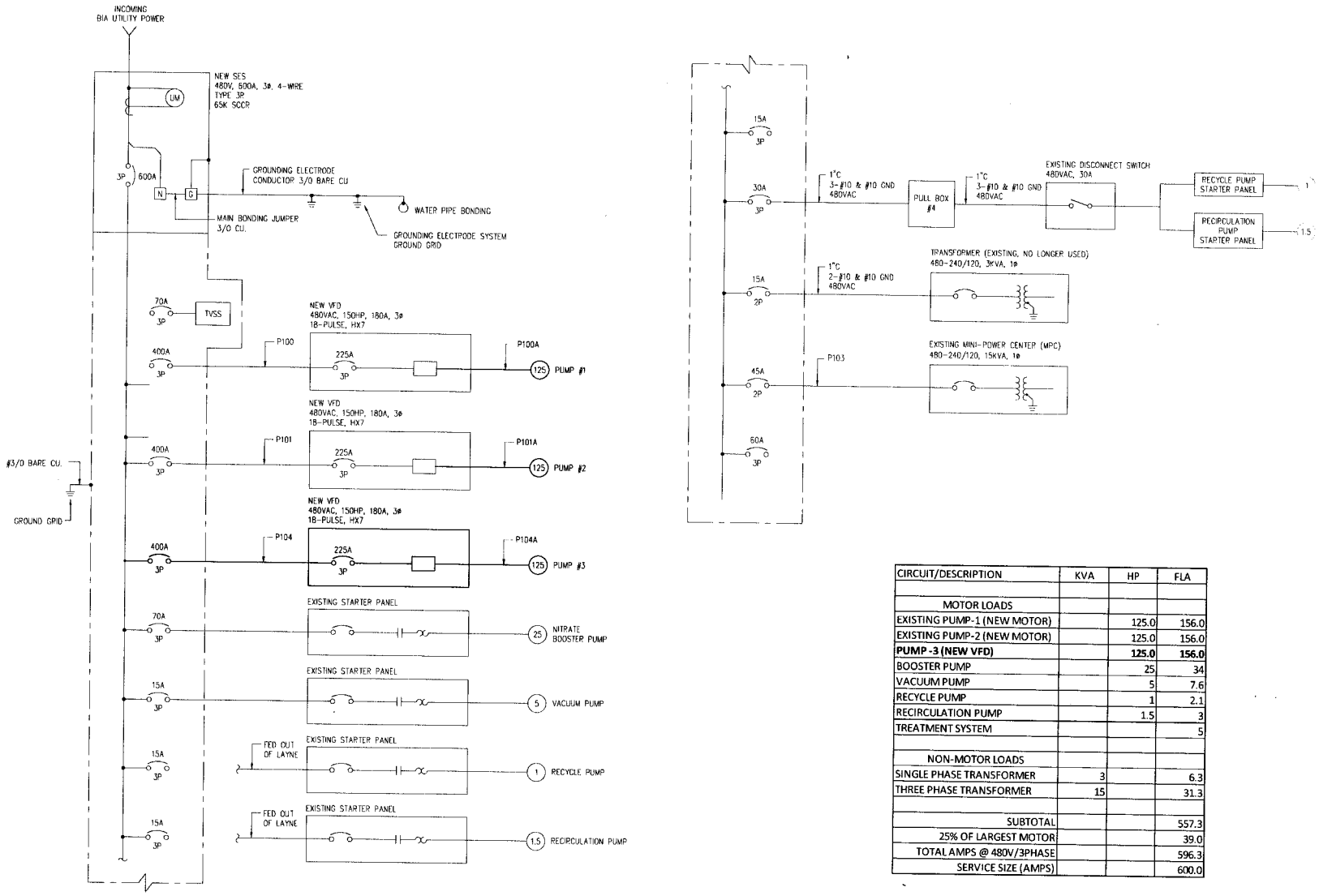
PROJECT NAME
REPLACE TWO EXISTING 100 H.P. STARTER PANELS WITH TWO VARIABLE FREQUENCY DRIVES (VFD) @ THE COOLIDGE VACUUM TANK SITE IN COOLIDGE, ARIZONA

SHEET TITLE
SECTIONS

PROJECT NO.

M2

SHEET



CIRCUIT/DESCRIPTION	KVA	HP	FLA
MOTOR LOADS			
EXISTING PUMP-1 (NEW MOTOR)		125.0	156.0
EXISTING PUMP-2 (NEW MOTOR)		125.0	156.0
PUMP -3 (NEW VFD)		**125.0**	**156.0**
BOOSTER PUMP		25	34
VACUUM PUMP		5	7.6
RECYCLE PUMP		1	2.1
RECIRCULATION PUMP		1.5	3
TREATMENT SYSTEM			5
NON-MOTOR LOADS			
SINGLE PHASE TRANSFORMER	3		6.3
THREE PHASE TRANSFORMER	15		31.3
SUBTOTAL			557.3
25% OF LARGEST MOTOR			39.0
TOTAL AMPS @ 480V/3PHASE			596.3
SERVICE SIZE (AMPS)			600.0

DESIGN REVIEW SUBMITTAL - NOT FOR CONSTRUCTION

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY.
PHOENIX, ARIZONA 85038-9008
POST OFFICE BOX 29008
(602) 240-5860

PROJECT NAME: REPLACE TWO EXISTING 100 H.P. STARTER PANELS WITH TWO VARIABLE FREQUENCY DRIVES (VFD) @ THE COOLIDGE VACUUM TANK SITE IN COOLIDGE, ARIZONA
PROJECT SHEET NAME: SINGLE LINE DIAGRAM

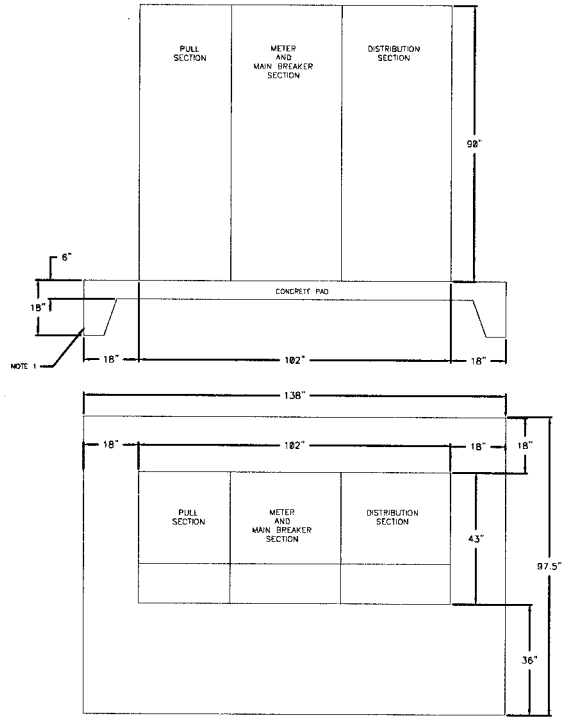
The installation shown is to be installed in accordance with Arizona Water Company standard specifications on file with the Arizona Department of Environmental Quality

811 BLUE STAKE, INC. 263-1100 1-800-STAKE-IT

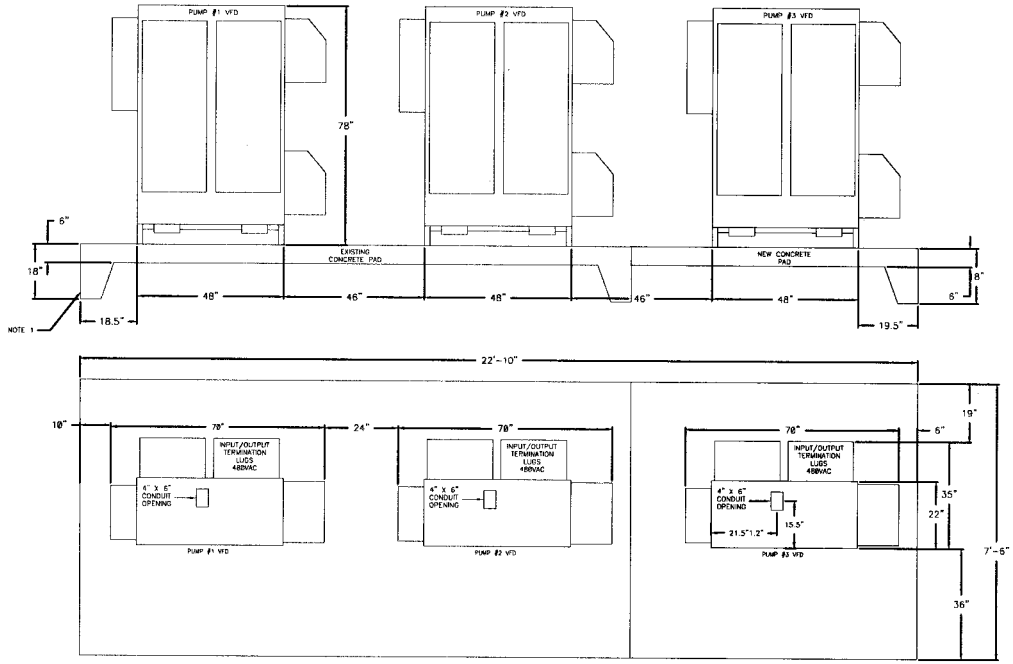
A.F.E. NO. 1-5019
DIVISION: PINAL VALLEY
COUNTY, TOWN: NW 1/4 SEC.10 -T5 S.,R.8 E.
SCALE: AS SHOWN
DATE: DEC 2014
DESIGNED BY: JLB
DRAWN BY: JPK

SHEET: E1

GENERAL NOTES:
1. ADD 12" TURNDOWN TO PAD.
2. PROVIDE #4 REBAR AT 16" O.C.
3. EXTEND EXISTING VFD PAD TO ACCOMODATE THIRD VFD.



SERVICE ENTRANCE SECTION



VFD PANELS LAYOUT

DESIGN REVIEW SUBMITTAL – NOT FOR CONSTRUCTION

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY.
PHOENIX, ARIZONA 85035-9006
(602) 240-6860

REPLACE TWO EXISTING 100 H.P STARTER PANELS WITH TWO VARIABLE FREQUENCY DRIVES (VFD) @ THE COOLIDGE VACUUM TANK SITE IN COOLIDGE, ARIZONA

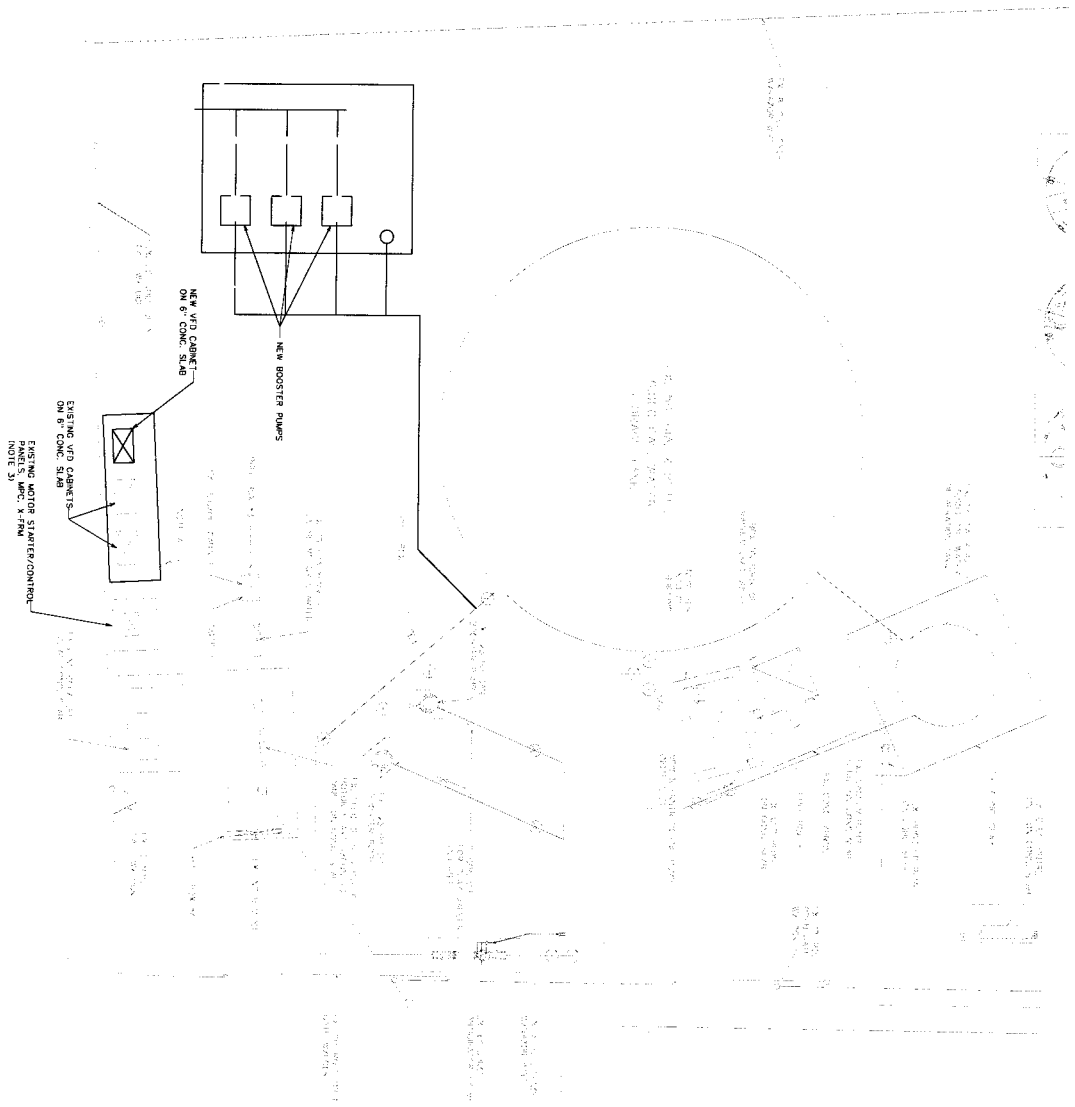
PANEL ELEVATIONS

The installation shown is to be installed in accordance with the Arizona Water Company standard specifications on file with the Arizona Department of Environmental Quality

263-1100
1-800-STAKE-IT

PLAT NO.	1-5019
DIVISION	PINAL VALLEY
LEGAL DESC.	NW 1/4SEC.10-T5 S,R.8 E.
DATE	DEC 2014
SCALE	AS SHOWN
DESIGNED BY	JLB
DRAWN BY	JPK

SHEET E2



GENERAL NOTES:

1. MAINTAIN 1'-6" MINIMUM PAD ON ALL SIDES AROUND THE EQUIPMENTS.
2. INSTALL 4" AB UNDERNEATH PAD.
3. CALL FOR COMPACTION TEST PRIOR TO POURING PAD.
4. USE #4 REBAR TO REINFORCE THE CONCRETE PAD.
5. EXTEND EXISTING VFD PAD TO ACCOMODATE THIRD VFD.

DESIGN REVIEW SUBMITTAL – NOT FOR CONSTRUCTION

SHEET E3

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

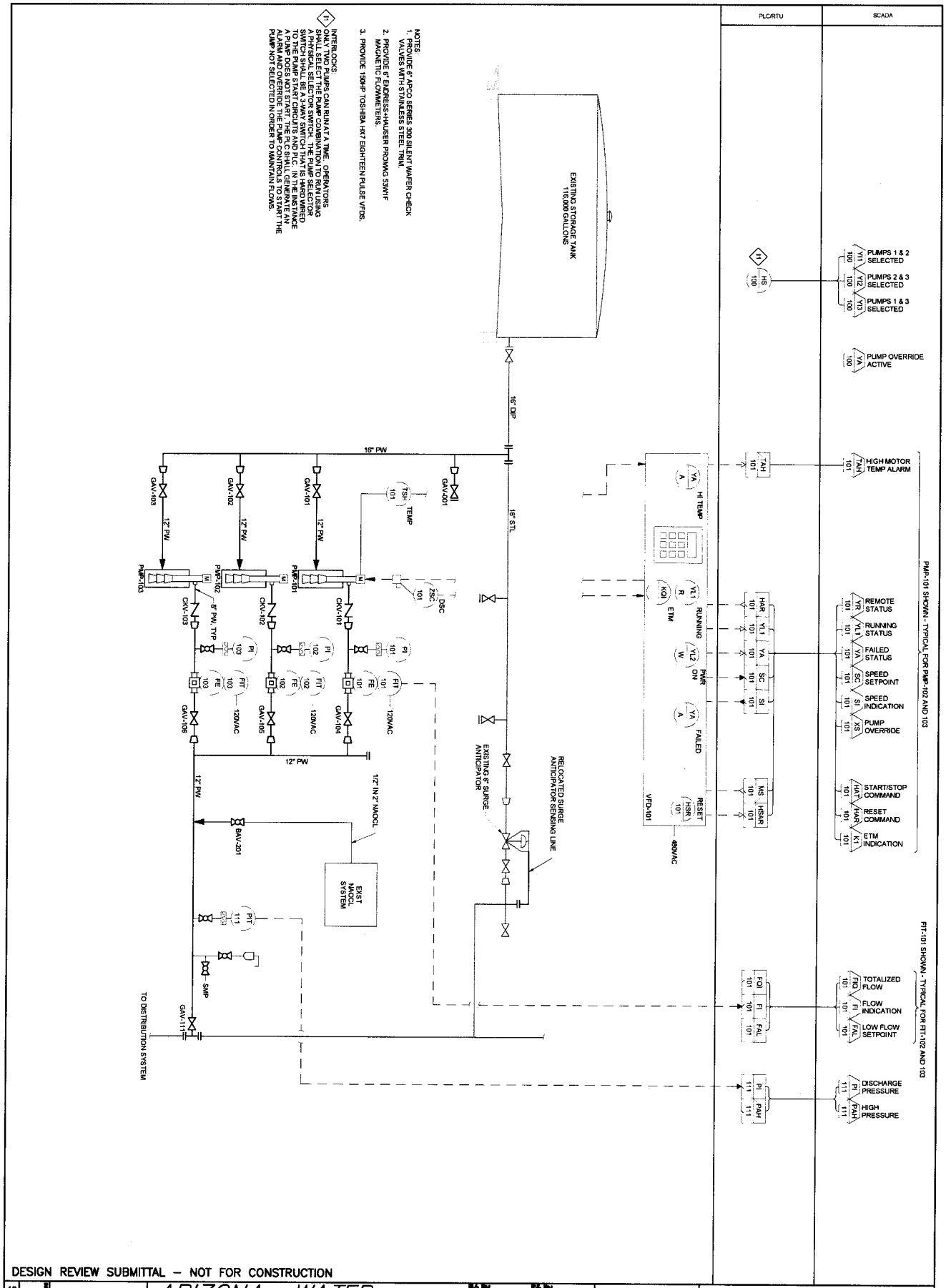
PROJECT NAME: REPLACE TWO EXISTING 100 H.P. STARTER PANELS WITH TWO VARIABLE FREQUENCY DRIVES (VFD) @ THE COOLIDGE VACUUM TANK SITE IN COOLIDGE, ARIZONA

PROJECT SHEET TITLE: ELECTRICAL SITE LAYOUT

W.O. No.: 1-5019 P.E. No.:
SYSTEM: PINAL VALLEY
LEGAL DESC.: NW 1/4 SEC. 10 - T5 S, R. 8 E.
TAX DIST.:
DATE: DEC 2014 SCALE: AS SHOWN
DRAWN BY: JPK DESIGNED BY: JLB

The installation shown is to be installed in accordance with the Arizona Water Company standard specifications on file with the Arizona Department of Environmental Quality

BLUE STAKE, INC. 263-1100 1-800-STAKE-IT



DESIGN REVIEW SUBMITTAL – NOT FOR CONSTRUCTION

SHEET 11

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

PROJECT NUMBER: 1-5019
DISTRICT: PINAL VALLEY
LEGAL DESCRIPTION: NW 1/4 SEC. 10 - T.5 S., R. 8 E.
DATE: DEC 2014
SCALE: AS SHOWN
DESIGNED BY: JPK
DRAWN BY: JLB

PROJECT NAME: REPLACE TWO EXISTING 100 H.P. STARTER PANELS WITH TWO VARIABLE FREQUENCY DRIVES (VFD) @ THE COOLIDGE VACUUM TANK SITE IN COOLIDGE, ARIZONA
PROJECT SHEET TITLE: BOOSTER PUMP P&ID

The installation shown is to be installed in accordance with the Arizona Water Company standard specifications on file with the Arizona Department of Environmental Quality

263-1100
1-800-STAKE-IT

Western Group Rate Case

Exhibit FKS-1

5165 CMU Block Walls

ARIZONA WATER COMPANY
WORK AUTHORIZATION

W.A. NUMBER: 1-5165
P.E. NUMBER:
BUDGET ITEM NO.: B-1
SHEET NO.: 1 of 3

SYSTEM:	PINAL VALLEY	RETENTION REQUIRED:	☑ YES ☐ NO
DIVISION:	CASA GRANDE	WORK TO START BY:	UPON AUTHORIZATION
RESPONSIBLE PERSON:	JAMES WILSON	WORK TO BE FINISHED BY:	WITHIN 90 DAYS
TAX CODE: (21,30)	0403 and 0408 (31)		

DESCRIPTION OF WORK:

Design, permit and construct 220 LF of 8-feet tall, 8 x 8 x 16 C.M.U. and split-face block wall around Well No. 30. Design and construct 238 LF of 6-feet tall, 8 x 8 x 16 C.M.U. block wall along the east property line and construct onsite retention basin at Well No. 31. Construct 376 LF of 8-feet tall, 8 x 8 x 16 C.M.U. block wall around Well No. 21. Reconstruct and rehabilitate retention basin and install secondary well flush bypass piping at Well No. 26 in Casa Grande, AZ.

FACTORS JUSTIFYING WORK:

APPROVED 2014 BUDGET ITEM ($175,000) The City of Casa Grande requested the Company replace several existing chain link fences with block walls at the Company's water facility sites in the community to reflect the city's modern and developed theme and to help mitigate noise complaints and concerns. Approximately six years ago, at the City's request, the Company began replacing existing chain link fences with block walls at two well sites each year. However, because of budget restrictions, this improvement project was postponed until sufficient funds were available. At a recent meeting with the Casa Grande City Manager, the City requested the Company restart its fence replacements. The wall at Well No. 30 is being constructed due to the high visibility of the site, and a Conditional Use Permit has been acquired for this site. The wall at Well No. 21 is being constructed due to the high visibility of the site and has been permitted for construction. The temporary chain link fence along the east property line at Well No. 31 is failing, falling down and requires replacement. Constructing an onsite retention basin on this site, and rehabilitation of the retention basin at Well No. 26 will mitigate standing discharged water on HOA property in the Tamaron subdivision.

COST ESTIMATE		AUTHORIZATION	DATE
COST OF WORK:		PREPARED BY: James Wilson JW 9/10/14	9/4/14
MATERIAL	0		
LABOR	16,400	REVIEWED FOR ESMT/ROW VERIFICATION: Charles Briggs CB 09-18-2014	09-04-2014
CONTRACT PORTION	274,403		
OVERHEAD	32,900	REVIEWED BY: Mario Mendez MM 9/18/14	9/5/14
TOTAL AUTHORIZED EXPENDITURES CHARGEABLE TO THIS W.A.	$ 323,703		
FUNDS RECEIVED:		APPROVED BY ENGINEERING: Fredrick Schneider FS 9-20-14	9-16-14
CONTRIBUTIONS RECEIVED	0		
REFUNDABLE ADVANCES RECEIVED	0	APPROVED BY FINANCE: Joseph Harris	9/17/14
TOTAL CONTRIBUTIONS/ADVANCES	0		
NET COMPANY CASH REQUIRED	$ 323,703	AUTHORIZED BY PRESIDENT: William Garfield	9-17-14

COMMENTS:

$148,703
Transfer additional funds required from WA 1-5167 Valley Farms ARF.
2014 EXPENDITURE $324,000
2015 ANTICIPATED EXPENDITURE $20,000
TOTAL PROJECT COST $344,000

CONSTRUCTION RELEASE:

RELEASED TO CONSTRUCTION
Authorized by FRED SCHNEIDER
Date 9/17/14

ARIZONA WATER COMPANY

WORK AUTHORIZATION - DETAIL SHEET

W.A. NUMBER: 1-5165
P.E. NUMBER:
BUDGET ITEM NO.: B-1
SHEET NO.: 2 of 2

RETIREMENT PROPERTY UNITS	PLANT PROPERTY ACCOUNT	UNIT DESCRIPTION	QUANTITY	YEAR INSTALLED AND W.A. NUMBER

PROJECT DESCRIPTION

Design, permit and construct 220 LF of 8-feet tall, 8 x 8 x 16 C.M.U. and split-face block wall around Well No. 30. Design and construct 238 LF of 6-feet tall, 8 x 8 x 16 C.M.U. block wall along the east property line and construct onsite retention basin at Well No. 31. Construct 376 LF of 8-feet tall, 8 x 8 x 16 C.M.U. block wall around Well No. 21. Reconstruct and rehabilitate retention basin and install secondary well flush bypass piping at Well No. 26 in Casa Grande, AZ.

	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST	TOTAL
CONTRACT WORK	**Well No. 21**				
	Demolish and remove 400 LF chain link fences and gates	314	1	8,000.00	8,000
	Provide and install 376 LF of C.M.U. block wall and gates	314	1	72,000.00	72,000
	Paint exterior of block walls	314	1	1,300.00	1,300
	Remove and reinstall 16-inch basin outfall pipe	314	1	2,000.00	2,000
	Provide temporary site security fence	314	1	1,000.00	1,000
	Contracting Tax and Performance and Payment Bond	314	1	6,000.00	6,000
	Well No. 26				
	Demolish concrete splash pad and reconstruct retention basin	314	1	3,831.63	3,832
	Provide and install 4' x 48" dia. manhole riser with concrete base	314	1	5,778.30	5,778
	Provide and install concrete stairs in retention basin	314	1	1,702.07	1,702
	Provide and install D50 (6" and 2") riprap (SY)	314	269	12.16	3,271
	Trim dry well pipe and install trash screens	314	2	1,400.54	2,801
	Provide and install 8" D.I.P. catch basin drain pipe (LF)	314	36	70.71	2,546
	Provide and install 6" D.I.P. flush to waste bypass pipe, fittings	314	1	5,265.85	5,266
	Contracting Tax and Performance and Payment Bond	314	1	1,690.09	1,690
	Well No. 30				
	Geotechnical services and Structural calculations and drawings	314	1	3,390.00	3,390
	Demolish and remove chain link fences, gates, and block walls	314	1	4,500.00	4,500
	Provide and install 220 LF of C.M.U. block wall and gates	314	1	40,000.00	40,000
	Provide and install automatic gate opener and 120v power supply	314	1	2,500.00	2,500
	Contracting Tax and Performance and Payment Bond	314	1	6,000.00	6,000
	Well No. 31				
	Geotechnical services and Structural calculations and drawings	314	1	3,390.00	3,390
	Demolish and remove 238 LF chain link fence and gates	314	1	4,760.00	4,760
	Provide and install 18 LF 8-inch D.I.P. and related fittings	314	1	8,269.00	8,269
	Provide and install 12-inch fittings, install Company C-900 pipe	314	1	4,050.15	4,050
	Provide and install 12-inch D.I.P. and 12-inch gate valve for outfall	314	1	8,115.89	8,116
	Provide and install 238 LF of C.M.U. block wall and gates	314	1	23,642.92	23,643
	Paint exterior of block walls	314	1	1,265.00	1,265
	Construct 40' x 30' x 5' retention basin and dry well	314	1	17,632.43	17,632
	Provide and install 4' x 48" dia. manhole riser with concrete base	314	1	5,504.19	5,504
	Provide and install D50 (6") riprap and 3/4-inch crushed rock	314	1	8,616.00	8,616
	Contracting Tax and Performance and Payment Bond	314	1	5,581.81	5,582
	Project Contingency	314	1	10,000.00	10,000
TOTAL CONTRACT WORK					274,403
LABOR	Project Management and Engineering Design	314	80	$ 55.00	$ 4,400
	TESTING FEE	314	3	$ 1,500.00	4,500
	PERMIT FEE	314	1	1,500.00	1,500
	SURVEY FEE	314	1	1,600.00	1,600
	FIELD INSPECTION	314	80	55.00	4,400
TOTAL LABOR					$ 16,400
SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR					$ 274,403
OVERHEAD					32,900
TOTAL	REFUNDABLE PORTION ☐	NON-REFUNDABLE PORTION ☐		**COST ESTIMATE**	$ 323,703

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

September 17, 2014

Mr. Mike Mills
Ellison-Mills Contracting, Inc.
3152 N. Lear Avenue, Suite 2
Casa Grande, AZ 85122

Re: Pinal Valley Well No. 21 CMU Block Walls

PROJECT: Well No. 21 CMU Block Walls	
SYSTEM: Pinal Valley	
CONTRACT NO.:	
P.E. NO.:	W.A. NO.: 1-5165

Dear Mr. Mills:

Enclosed is your copy of the Proposal/Contract for the above-referenced project, which has been accepted by Arizona Water Company (the "Company"). The project shall be constructed in accordance with the Company's *General Conditions of Contract, the Specifications and the Drawings* which were included with the Company's previously provided Proposal/Contract, copies of which are being provided again and attached herewith.

Also enclosed are two copies of the Commencement Notice for the above-referenced project. Please sign one of the copies and return it to my attention retaining the other for your records.

As provided in paragraph 4 of the Company's Proposal/Contract executed by the Company on September 22, 2014 Ellison-Mills Contracting, Inc. acknowledged that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work. In addition, as provided in paragraph 44 of the Company's General Conditions of Contract, the 100% Performance and Payment Bonds must be provided within ten (10) calendar days of the date of the Commencement Notice. Failure to provide an acceptable 100% Performance and Payment Bond does not limit the Company's

ability to terminate the Proposal/Contract or seek restitution for damages that the Company may have or will incur.

Prior to the start of construction, please call Ray Murrieta, Division Manager at 520-836-8785 to schedule a pre-construction meeting. In addition, please provide the required Performance and Payment Bonds to the Company promptly so that the contracted work can be completed within the contract's timeline.

If you have any questions, please call me at this office.

Very truly yours,

Jeff Kelty
Engineering Technician
engineering@azwater.com

afh
Enclosure

ARIZONA WATER COMPANY

INPUT DIVISION INFORMATION
DIVISION ADDRESS
DIVISION PHONE NUMBERS

PROPOSAL/CONTRACT

CONTRACTOR:	ELLISON-MILLS CONTRACTING, INC.	SYSTEM: Pinal Valley
ADDRESS:	3152 N. LEAR AVENUE, SUITE 2	W.A No(s): Well # 21 1-5165
CITY ST ZIP:	CASA GRANDE, AZ 85122	BID DUE DATE: September 5, 2014

CONTRACTOR SUBMITS this PROPOSAL/CONTRACT to ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), to perform the work and complete the project described on Page 2 (the "Project"), as an independent prime contractor

1. Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings, (the "Specifications"), all of which are attached hereto. Contractor has examined the specific plans and related construction drawings for the Project (the "Drawings"), copies of which are also attached hereto. The General Conditions of Contract, Specifications and Drawings are incorporated into this Proposal/Contract. Contractor affirms that all work and materials to be furnished or purchased for the Project will be in strict conformance with the General Conditions of Contract, Specifications and Drawings.

2. Contractor represents and warrants that it has satisfied and complied with the provisions of Section 6, Contractor Understands Work and Working Conditions, of the General Conditions of Contract prior to submitting this Proposal/Contract.

3. Contractor represents that this Proposal/Contract is fair and honest in all respects, is submitted in good faith and is not submitted in collusion with any other company, entity or person.

4. Contractor acknowledges that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work.

5. Prior to the commencement of work, Contractor will submit to the Company a list of all materials to be used in the Project. The materials list will include the manufacturer, part number, price and quantity included in this Proposal/Contract.

6. Contractor will furnish all labor, tools, equipment and materials required to complete the Project according to the General Conditions of Contract, Specifications and Drawings. No materials purchased by Contractor to be incorporated into the Project are subject to tax at the time of purchase and Contractor will not charge the Company for any such tax. Contractor will pay the applicable transaction privilege tax (the "Contracting Tax") on the Project after Contractor receives payment of the final Project invoice from the Company. The cost of materials incorporated into the Project which are exempt by Arizona Revised State Statues ("A.R.S.") from the Contracting Tax, for example, pipes or valves having a diameter of four (4) inches or larger, including equipment, fittings and any other related part that is used in operating the pipes or valves (A.R.S. §42-5061 B.6.), will not be included in the total cost of the labor and materials upon which the Contracting Tax is computed. Contractor retains full liability and obligation to pay the Contracting Tax and will defend and indemnify the Company against any demand or obligation to pay the Contracting Tax.

7. Contractor will maintain detailed accounting records of all materials purchased and incorporated into the Project. Such records will include all supporting original vendor invoices for all materials purchased. Following completion of the Project, Contractor will submit an itemized accounting to the Company which will include all supporting original vendor invoices and satisfactory evidence of payment thereof. The Company will not pay Contractor for materials not actually incorporated into the Project, and the disposition of such materials will remain Contractor's responsibility.

8. The Estimated Total Cost of the Project, shown on Page 2, is based on estimated labor and material quantities to be furnished. It includes an estimate of the Contracting Tax and the cost of the required Performance and Payment Bonds. Contractor will not cancel, modify or withdraw this Proposal/Contract during a ninety-day (90) period commencing on the Bid Due Date. The Company may accept this Proposal/Contract by signing and mailing, or otherwise delivering, a copy hereof to Contractor during such ninety-day (90) period. If the Company does not accept this Proposal/Contract during such ninety-day (90) period, Contractor may cancel this Proposal/Contract by giving written notice of cancellation to the Company.

9. Prior to the commencement of work, Contractor will provide the Company with a detailed construction schedule, in either Gantt or CPM form, identifying all tasks to be performed from the date of the written Commencement Notice through completion of the Project, including testing, training of Company Personnel and final Project invoicing. Contractor will provide the Company with a copy of such construction schedule documenting the progress of work on the Project at least monthly.

10. Contractor will not commence work on the Project until the Company gives Contractor a written Commencement Notice. Contractor will complete the Project within 120 calendar days after the Commencement Notice is issued.

11. Following the Company's written notice of satisfactory completion of the Project, and upon receipt of the final Project invoice from Contractor, the Company shall pay Contractor the actual total cost of the Project, which will be calculated as shown on Page 2, except that actual labor and material quantities installed/constructed will be substituted for the estimated labor and materials quantities and the Contracting Tax will be recalculated based on such actual labor and materials quantities.

12. The amount of applicable liquidated damages for Contractor's failure to deliver or perform within the time limit shown in Paragraph 10 may be deducted from the Company's payment of the final Project invoice. This provision shall not limit the Company's ability to terminate this Proposal/Contract for Contractor's unsatisfactory performance or failure to perform as provided in the General Conditions of Contract, Specifications or Drawings, or in this Proposal/Contract.

SPECIAL CONDITIONS:

Contractors Pollution Liability Insurance is not required for this project. Any request for information (RFI) must be received no later than August 29, 2014.

CONTRACTOR	PROPOSAL/CONTRACT ACCEPTED:
ELLISON-MILLS CONTRACTING, INC.	ARIZONA WATER COMPANY
By:	By:
Print Name: Mike Mills	Print Name: Fredrick K. Schneider, PE
Title: Owner	Title: Vice President - Engineering
Date: 9/5/14	Date: 9-22-2014

RECEIVED
SEP 8 2014
PHOENIX OFFICE
ENGINEERING

ARIZONA WATER COMPANY

INPUT DIVISION INFORMATION
DIVISION ADDRESS
DIVISION PHONE NUMBERS

PROPOSAL/CONTRACT

CONTRACTOR: ELLISON-MILLS CONTRACTING, INC.	SYSTEM: Pinal Valley
AZ CONTRACTOR LICENSE NO: 241164 CLASSIFICATION: A	W.A No(s): #21 1-5165
ADDRESS: 3152 N. LEAR AVENUE, SUITE 2	BID DUE DATE: September 5, 2014
CITY ST ZIP CASA GRANDE, AZ 85122	BID BOND REQUIRED: ☑ Yes ☐ No

DESCRIPTION OF PROJECT: Demolish and remove perimeter wall, fences and gates, construct 8-feet tall, 8 x 8 x 16 C.M.U. block wall and gates with Ultra-Barrier at Well No. 21 in Casa Grande, Arizona per A.W.C. Dwg. No. PV-0049 and A.W.C. Standard Details and Specifications.

1-2. MATERIALS EXEMPT FROM CONTRACTING TAX (per Paragraph 6)	QUANTITY	UNIT PRICE LABOR	UNIT PRICE MATERIALS	TOTAL COST LABOR	TOTAL COST MATERIALS
				1	2
3. Total Labor to Install Exempt Materials (add the amounts in column 1)				3	
4. Total Exempt Materials (add the amounts in column 2)					4

5-6. NON-EXEMPT MATERIALS	QUANTITY	LABOR	MATERIALS	LABOR	MATERIALS
Demolish and remove existing chain link fence and gates	400 LF	$10.00		$4,000.00	$0.00
Provide and install 8-feet tall, 8 x 8 x 16 C.M.U. block wall with Ultra-Barrier	376 LF	68.51	$61.71	$25,759.76	$23,202.96
Provide and install 8-feet tall, 25-feet wide rolling gate with expanded metal painted to match color of exterior walls	1	$2175.00	$8000.00	2,175.00	8,000.00
Provide and install 8-feet tall, 4-feet wide man gate	1	580.00	600.00	580.00	600.00
Remove and reinstall 16-inch retention basin outfall pipe	1	2750.00	1200.00	2,750.00	1,200.00
Provide 6-feet tall temporary site security fence	LOT			5	6
Powder coat 8-feet tall, 25-feet wide expanded metal gate (Price Only)	1		1045.00		
7. Total Labor to Install Non-Exempt Materials (add the amounts in column 5)				7 $35,264.76	
8. Total Non-Exempt Materials (add the amounts in column 6)					8 $33,002.96
9. Subtotal A (add lines 3, 7 and 8)					9 68,267.72
10. Contracting Tax Base (multiply the amount on line 9 by 0.65)				10 44,374.02	
11. Applicable Contracting Tax Rate				11 10.7%	
12. Contracting Tax (multiply the amount on line 10 by line 11)					12 4,748.02
13. Subtotal B (add lines 4, 9 and 12)					13 73,015.74
14. 100% Performance and Payment Bonds Cost					14 511.11
15. Estimated Total Cost (add lines 13 and 14)					73,526.85 15

NOTE: The Estimated Total Cost includes all labor and materials for backfill, pavement replacement, chip seal, and traffic control necessary for the Project.

ARIZONA WATER COMPANY

SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT: E-4-1

CONSTRUCTION SPECIFICATIONS: E-8-1

STANDARD SPECIFICATION DRAWINGS: E-9-1

2007 EDITION WITH **2010** REVISIONS;
2012 GENERAL CONDITIONS OF CONTRACT

A copy of this entire Spec Book was sent out with Ellison Mills Proposal package for 1-5165 Well #21 Fencing on 9/22/14 AK

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

September 19, 2014

Mr. Mike Mills
Ellison-Mills Contracting, Inc.
3152 N. Lear Avenue, Suite 2
Casa Grande, AZ 85122

Re: Pinal Valley Well No. 26 Retention Basin

PROJECT: Well No. 26 Retention Basin	
SYSTEM: Pinal Valley	
CONTRACT NO.:	
P.E. NO.:	W.A. NO.: 1-5165

Dear Mr. Mills:

Enclosed is your copy of the Proposal/Contract for the above-referenced project, which has been accepted by Arizona Water Company (the "Company"). The project shall be constructed in accordance with the Company's *General Conditions of Contract, the Specifications and the Drawings* which were included with the Company's previously provided Proposal/Contract, copies of which are being provided again and attached herewith.

Also enclosed are two copies of the Commencement Notice for the above-referenced project. Please sign one of the copies and return it to my attention retaining the other for your records.

As provided in paragraph 4 of the Company's Proposal/Contract executed by the Company on September 22, 2014 Ellison-Mills Contracting, Inc. acknowledged that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work. In addition, as provided in paragraph 44 of the Company's General Conditions of Contract, the 100% Performance and Payment Bonds must be provided within ten (10) calendar days of the date of the Commencement Notice. Failure to provide an acceptable 100% Performance and Payment Bond does not limit the Company's

ability to terminate the Proposal/Contract or seek restitution for damages that the Company may have or will incur.

Prior to the start of construction, please call Ray Murrieta, Division Manager at 520-836-8785 to schedule a pre-construction meeting. In addition, please provide the required Performance and Payment Bonds to the Company promptly so that the contracted work can be completed within the contract's timeline.

If you have any questions, please call me at this office.

Very truly yours,

Jeff Kelty
Engineering Technician
engineering@azwater.com

afh
Enclosure

ARIZONA WATER COMPANY

Pinal Valley - Casa Grande
220 E. 2nd Street

PROPOSAL/CONTRACT

CONTRACTOR: ELLISON - MILLS CONTRACTING, INC.	SYSTEM: Pinal Valley
ADDRESS: 3152 N. LEAR AVENUE, SUITE 2	W.A. No(s): WELL #26 1-51165
CITY ST ZIP: CASA GRANDE, AZ 85122	BID DUE DATE: August 21, 2014

CONTRACTOR SUBMITS this PROPOSAL/CONTRACT to ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), to perform the work and complete the project described on Page 2 (the "Project"), as an independent prime contractor.

1. Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings, (the "Specifications"), all of which are attached hereto. Contractor has examined the specific plans and related construction drawings for the Project (the "Drawings"), copies of which are also attached hereto. The General Conditions of Contract, Specifications and Drawings are incorporated into this Proposal/Contract. Contractor affirms that all work and materials to be furnished or purchased for the Project will be in strict conformance with the General Conditions of Contract, Specifications and Drawings.
2. Contractor represents and warrants that it has satisfied and complied with the provisions of Section 6, Contractor Understands Work and Working Conditions, of the General Conditions of Contract prior to submitting this Proposal/Contract.
3. Contractor represents that this Proposal/Contract is fair and honest in all respects, is submitted in good faith and is not submitted in collusion with any other company, entity or person.
4. Contractor acknowledges that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work.
5. Prior to the commencement of work, Contractor will submit to the Company a list of all materials to be used in the Project. The materials list will include the manufacturer, part number, price and quantity included in this Proposal/Contract.
6. Contractor will furnish all labor, tools, equipment and materials required to complete the Project according to the General Conditions of Contract, Specifications and Drawings. No materials purchased by Contractor to be incorporated into the Project are subject to tax at the time of purchase and Contractor will not charge the Company for any such tax. Contractor will pay the applicable transaction privilege tax (the "Contracting Tax") on the Project after Contractor receives payment of the final Project invoice from the Company. The cost of materials incorporated into the Project which are exempt by Arizona Revised State Statues ("A.R.S.") from the Contracting Tax, for example, pipes or valves having a diameter of four (4) inches or larger, including equipment, fittings and any other related part that is used in operating the pipes or valves (A.R.S. §42-5061 B.6.), will not be included in the total cost of the labor and materials upon which the Contracting Tax is computed. Contractor retains full liability and obligation to pay the Contracting Tax and will defend and indemnify the Company against any demand or obligation to pay the Contracting Tax.
7. Contractor will maintain detailed accounting records of all materials purchased and incorporated into the Project. Such records will include all supporting original vendor invoices for all materials purchased. Following completion of the Project, Contractor will submit an itemized accounting to the Company which will include all supporting original vendor invoices and satisfactory evidence of payment thereof. The Company will not pay Contractor for materials not actually incorporated into the Project, and the disposition of such materials will remain Contractor's responsibility.
8. The Estimated Total Cost of the Project, shown on Page 2, is based on estimated labor and material quantities to be furnished. It includes an estimate of the Contracting Tax and the cost of the required Performance and Payment Bonds. Contractor will not cancel, modify or withdraw this Proposal/Contract during a ninety-day (90) period commencing on the Bid Due Date. The Company may accept this Proposal/Contract by signing and mailing, or otherwise delivering, a copy hereof to Contractor during such ninety-day (90) period. If the Company does not accept this Proposal/Contract during such ninety-day (90) period, Contractor may cancel this Proposal/Contract by giving written notice of cancellation to the Company.
9. Prior to the commencement of work, Contractor will provide the Company with a detailed construction schedule, in either Gantt or CPM form, identifying all tasks to be performed from the date of the written Commencement Notice through completion of the Project, including testing, training of Company Personnel and final Project invoicing. Contractor will provide the Company with a copy of such construction schedule documenting the progress of work on the Project at least monthly.
10. Contractor will not commence work on the Project until the Company gives Contractor a written Commencement Notice. Contractor will complete the Project within 120 calendar days after the Commencement Notice is issued.
11. Following the Company's written notice of satisfactory completion of the Project, and upon receipt of the final Project invoice from Contractor, the Company shall pay Contractor the actual total cost of the Project, which will be calculated as shown on Page 2, except that actual labor and material quantities installed/constructed will be substituted for the estimated labor and materials quantities and the Contracting Tax will be recalculated based on such actual labor and materials quantities.
12. The amount of applicable liquidated damages for Contractor's failure to deliver or perform within the time limit shown in Paragraph 10 may be deducted from the Company's payment of the final Project invoice. This provision shall not limit the Company's ability to terminate this Proposal/Contract for Contractor's unsatisfactory performance or failure to perform as provided in the General Conditions of Contract, Specifications or Drawings, or in this Proposal/Contract.

SPECIAL CONDITIONS:

Mandatory pre-bid meeting on July 31, 2014 at 9:00 AM the site. Any request for information (RFI) must be received no later than August 7, 2014. Company will provide written response to RFI no later than August 14, 2014.

CONTRACTOR	PROPOSAL/CONTRACT ACCEPTED:
ELLISON-MILLS CONTRACTING, INC.	ARIZONA WATER COMPANY
By:	By:
Print Name: Mike Mills	Print Name: Fredrick K. Schneider, PE
Title: Owner	Title: Vice President - Engineering
Date: 8/14/14	Date: 9-22-2014

AFH

ARIZONA WATER COMPANY

Pinal Valley - Casa Grande
220 E. 2nd Street
Casa Grande, AZ 85122 PH: 520-836-8785

PROPOSAL/CONTRACT

CONTRACTOR: ELLISON-MILLS CONTRACTING, INC.	SYSTEM: Pinal Valley
AZ CONTRACTOR LICENSE NO: CLASSIFICATION:	W.A No(s): 1-51105
ADDRESS: 3152 N. LEAR AVENUE, SUITE 2	BID DUE DATE: August 21, 2014
CITY ST ZIP CASA GRANDE, AZ 85122	BID BOND REQUIRED ☑ Yes ☐ No

DESCRIPTION OF PROJECT: Reconstruct and rehabilitate Casa Grande Well No. 26 retention basin and install secondary well flush to waste bypass piping in Casa Grande, Arizona. Construct in accordance with the attached design plans and Arizona Water Company Specifications.

1-2. MATERIALS EXEMPT FROM CONTRACTING TAX (per Paragraph 6)	QUANTITY	UNIT PRICE LABOR	UNIT PRICE MATERIALS	TOTAL COST LABOR	TOTAL COST MATERIALS
Provide and install 8" DIP flush to waste bypass piping and related fittings	Lot	1693.00	3592.95	1693.00	3592.95
3. Total Labor to Install Exempt Materials (add the amounts in column 1)				3 1693.00	
4. Total Exempt Materials (add the amounts in column 2)					4 3592.95

5-6. NON-EXEMPT MATERIALS	QUANTITY	UNIT PRICE LABOR	UNIT PRICE MATERIALS	TOTAL COST LABOR	TOTAL COST MATERIALS
Demo and remove existing concrete splash pad from retention basin	1	930.28	56.10	930.28	56.10
Reconstruct, repair, regrade, enlarge and recompact existing retention basin	Lot	2103.75	841.50	2103.75	841.50
Provide and install 48"Øx46"HT. Jensen Precast manhole riser and 6'x6"x6' (WxHxL) concrete slab	Lot	1009.80	4768.50	1009.80	4768.50
Provide and install concrete stairs in retention basin	1	1009.80	692.27	1009.80	692.27
Provide and install D50 (6") riprap over geotextile fabric	60 SY	5.61	11.22	336.60	673.20
Provide and install D50 (2") riprap	209 SY	1.61	9.21	336.49	1924.89
Trim existing dry well pipe and re-install dry well screen cap	2	154.27	Ø	308.54	Ø
Provide and install 36"Øx30"HT. expanded metal primary trash screen	2	154.27	1092	308.54	2184.00
Provide and install 8" DIP catch basin drain pipe	36 LF	46.75	23.96	1683.00	862.56
7. Total Labor to Install Non-Exempt Materials (add the amounts in column 5)				7 7924.80	
8. Total Non-Exempt Materials (add the amounts in column 6)					8 12003.92
9. Subtotal A (add lines 3, 7 and 8)					9 21612.92
10. Contracting Tax Base (multiply the amount on line 9 by 0.65)				10 14,048.53	
11. Applicable Contracting Tax Rate				11 10.7%	
12. Contracting Tax (multiply the amount on line 10 by line 11)					12 1503.17
13. Subtotal B (add lines 4, 9 and 12)					13 26698.84
14. 100% Performance and Payment Bonds Cost					14 186.92
15. Estimated Total Cost (add lines 13 and 14)					15 26885.76

NOTE: The Estimated Total Cost includes all labor and materials for backfill, pavement replacement, chip seal, and traffic control necessary for the Project.

ARIZONA WATER COMPANY

COMMENCEMENT NOTICE

CONTRACTOR:

Mr. Mike Mills
Ellison-Mills Contracting, Inc.
3152 N. Lear Avenue, Suite 2
Casa Grande, AZ 85122

DATE: 9/22/14
DIVISION: CASA GRANDE
SYSTEM: PINAL VALLEY
W.A.: 1-5165

THIS IS YOUR NOTICE TO PROCEED WITH THE FOLLOWING PROJECT(S):

DESCRIPTION OF WORK:

Reconstruct and rehabilitate Casa Grande Well No. 26 retention basin and install secondary well flush to waste bypass piping in Casa Grande, Arizona.

PERFORMANCE AND PAYMENT BONDS REQUIRED: [X] Yes [ ] No

TOTAL DAYS ALLOWED: 100

COMPLETION DATE: 12/31/14

Prior to the start of construction, please call Ray Murrieta, Division Manager at 520-836-8785 to schedule a pre-construction meeting.

ARIZONA WATER COMPANY	***ELLISON-MILLS CONTRACTING, INC***
Company	Contractor *(type name)*
By [signature]	By
Title Vice President - Engineering	Title

AFH
W:\PROJECTS\2014\PV\1-5165 CG WELLS 21, 26, 30, 31\AGREEMENTS\CONTRACTS\WELL 26\E-3-18-2 ELLISON MILLS COMMENCEMENT NOTICE 1-5165 WELL #26CMU BLOCK WALLS.DOCX 1/15/09 | FKS:afh | E-3-18-2
AFH

ARIZONA WATER COMPANY

SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT: E-4-1

CONSTRUCTION SPECIFICATIONS: E-8-1

STANDARD SPECIFICATION DRAWINGS: E-9-1

2007 EDITION WITH **2010** REVISIONS;
2012 GENERAL CONDITIONS OF CONTRACT

A copy of this entire Spec Book was sent out with Ellison Mills Proposal package for 1-5165 Well #20 Fencing on 9/22/14

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

September 18, 2014

Mr. Mike Mills
Ellison-Mills Contracting, Inc.
3152 N. Lear Avenue, Suite 2
Casa Grande, AZ 85122

Re: Pinal Valley Well No. 31 CMU Block Walls

PROJECT: Well No. 31 CMU Block Walls	
SYSTEM: Pinal Valley	
CONTRACT NO.:	
P.E. NO.:	W.A. NO.: 1-5165

Dear Mr. Mills:

Enclosed is your copy of the Proposal/Contract for the above-referenced project, which has been accepted by Arizona Water Company (the "Company"). The project shall be constructed in accordance with the Company's *General Conditions of Contract, the Specifications and the Drawings* which were included with the Company's previously provided Proposal/Contract, copies of which are being provided again and attached herewith.

Also enclosed are two copies of the Commencement Notice for the above-referenced project. Please sign one of the copies and return it to my attention retaining the other for your records.

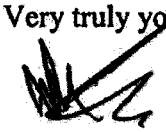
As provided in paragraph 4 of the Company's Proposal/Contract executed by the Company on September 22, 2014, Ellison-Mills Contracting, Inc. acknowledged that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work. In addition, as provided in paragraph 44 of the Company's General Conditions of Contract, the 100% Performance and Payment Bonds must be provided within ten (10) calendar days of the date of the Commencement Notice. Failure to provide an acceptable 100% Performance and Payment Bond does not limit the Company's

ability to terminate the Proposal/Contract or seek restitution for damages that the Company may have or will incur.

Prior to the start of construction, please call Ray Murrieta, Division Manager at 520-836-8785 to schedule a pre-construction meeting. In addition, please provide the required Performance and Payment Bonds to the Company promptly so that the contracted work can be completed within the contract's timeline.

If you have any questions, please call me at this office.

Very truly yours,



Jeff Kelty
Engineering Technician
engineering@azwater.com

afh
Enclosure

ARIZONA WATER COMPANY

Pinal Valley - Casa Grande
220 E. 2nd Street

PROPOSAL/CONTRACT

CONTRACTOR: ELLISON-MILLS CONTRACTING, INC.	SYSTEM: PINAL VALLEY
ADDRESS: 3152 N. LEAR AVENUE, SUITE 2	W.A. No(s): 1-5165
CITY ST ZIP: CASA GRANDE, AZ 85122	BID DUE DATE: August 7, 2014

CONTRACTOR SUBMITS this PROPOSAL/CONTRACT to ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), to perform the work and complete the project described on Page 2 (the "Project"), as an independent prime contractor.

1. Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings, (the "Specifications"), all of which are attached hereto. Contractor has examined the specific plans and related construction drawings for the Project (the "Drawings"), copies of which are also attached hereto. The General Conditions of Contract, Specifications and Drawings are incorporated into this Proposal/Contract. Contractor affirms that all work and materials to be furnished or purchased for the Project will be in strict conformance with the General Conditions of Contract, Specifications and Drawings.
2. Contractor represents and warrants that it has satisfied and complied with the provisions of Section 6, Contractor Understands Work and Working Conditions, of the General Conditions of Contract prior to submitting this Proposal/Contract.
3. Contractor represents that this Proposal/Contract is fair and honest in all respects, is submitted in good faith and is not submitted in collusion with any other company, entity or person.
4. Contractor acknowledges that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work.
5. Prior to the commencement of work, Contractor will submit to the Company a list of all materials to be used in the Project. The materials list will include the manufacturer, part number, price and quantity included in this Proposal/Contract.
6. Contractor will furnish all labor, tools, equipment and materials required to complete the Project according to the General Conditions of Contract, Specifications and Drawings. No materials purchased by Contractor to be incorporated into the Project are subject to tax at the time of purchase and Contractor will not charge the Company for any such tax. Contractor will pay the applicable transaction privilege tax (the "Contracting Tax") on the Project after Contractor receives payment of the final Project invoice from the Company. The cost of materials incorporated into the Project which are exempt by Arizona Revised State Statues ("A.R.S.") from the Contracting Tax, for example, pipes or valves having a diameter of four (4) inches or larger, including equipment, fittings and any other related part that is used in operating the pipes or valves (A.R.S. §42-5061 B.6.), will not be included in the total cost of the labor and materials upon which the Contracting Tax is computed. Contractor retains full liability and obligation to pay the Contracting Tax and will defend and indemnify the Company against any demand or obligation to pay the Contracting Tax.
7. Contractor will maintain detailed accounting records of all materials purchased and incorporated into the Project. Such records will include all supporting original vendor invoices for all materials purchased. Following completion of the Project, Contractor will submit an itemized accounting to the Company which will include all supporting original vendor invoices and satisfactory evidence of payment thereof. The Company will not pay Contractor for materials not actually incorporated into the Project, and the disposition of such materials will remain Contractor's responsibility.
8. The Estimated Total Cost of the Project, shown on Page 2, is based on estimated labor and material quantities to be furnished. It includes an estimate of the Contracting Tax and the cost of the required Performance and Payment Bonds. Contractor will not cancel, modify or withdraw this Proposal/Contract during a ninety-day (90) period commencing on the Bid Due Date. The Company may accept this Proposal/Contract by signing and mailing, or otherwise delivering, a copy hereof to Contractor during such ninety-day (90) period. If the Company does not accept this Proposal/Contract during such ninety-day (90) period, Contractor may cancel this Proposal/Contract by giving written notice of cancellation to the Company.
9. Prior to the commencement of work, Contractor will provide the Company with a detailed construction schedule, in either Gantt or CPM form, identifying all tasks to be performed from the date of the written Commencement Notice through completion of the Project, including testing, training of Company Personnel and final Project invoicing. Contractor will provide the Company with a copy of such construction schedule documenting the progress of work on the Project at least monthly.
10. Contractor will not commence work on the Project until the Company gives Contractor a written Commencement Notice. Contractor will complete the Project within 120 calendar days after the Commencement Notice is issued.
11. Following the Company's written notice of satisfactory completion of the Project, and upon receipt of the final Project invoice from Contractor, the Company shall pay Contractor the actual total cost of the Project, which will be calculated as shown on Page 2, except that actual labor and material quantities installed/constructed will be substituted for the estimated labor and materials quantities and the Contracting Tax will be recalculated based on such actual labor and materials quantities.
12. The amount of applicable liquidated damages for Contractor's failure to deliver or perform within the time limit shown in Paragraph 10 may be deducted from the Company's payment of the final Project invoice. This provision shall not limit the Company's ability to terminate this Proposal/Contract for Contractor's unsatisfactory performance or failure to perform as provided in the General Conditions of Contract, Specifications or Drawings, or in this Proposal/Contract.

SPECIAL CONDITIONS:

Company will make (1) Progress Payment and (1) Final Payment.

CONTRACTOR	PROPOSAL/CONTRACT ACCEPTED:
ELLISON-MILLS CONTRACTING, INC.	ARIZONA WATER COMPANY
By:	By:
Print Name: Mik mills	Print Name: Fredrick K. Schneider, PE
Title: Owner	Title: Vice President - Engineering
Date: 8/7/14	Date: 9-22-2014

ARIZONA WATER COMPANY

Pinal Valley - Casa Grande
220 E. 2nd Street
Casa Grande, AZ 85122 PH: 520-836-8785

PROPOSAL/CONTRACT

CONTRACTOR: ELLISON-MILLS CONTRACTING, INC.	SYSTEM: PINAL VALLEY
AZ CONTRACTOR LICENSE NO: 241166 CLASSIFICATION: A	W.A. No(s): 1-5165
ADDRESS: 3152 N. LEAR AVENUE, SUITE 2	BID DUE DATE: August 7, 2014
CITY ST ZIP CASA GRANDE, AZ 85122	BID BOND REQUIRED ☑ Yes ☐ No

DESCRIPTION OF PROJECT: Demolish and remove 238 LF chain link fence and gates, install 238 LF of 6-feet tall 8 x 8 x 16 C.M.U. block wall with Ultra-Barrier on east property line, and construct retention basin at Well Site No. 31 in Casa Grande, Arizona per A.W.C. Dwg. No. PV-0073.

1-2. MATERIALS EXEMPT FROM CONTRACTING TAX (per Paragraph 6)	QUANTITY	UNIT PRICE LABOR	UNIT PRICE MATERIALS	TOTAL COST LABOR	TOTAL COST MATERIALS
Provide and install 8-inch D.I.P. and related fittings	18 LF	104.28	356.11	1877.04	6391.98
Provide and install 12-inch fittings (and install 35 LF of Company-provided 12-inch C-900 PVC flush pipe)	1	2044.96	2005.19	2044.96	2005.19
Provide and install 12-inch M.J. gate valve	1	1106.46	1941.68	1106.46	1941.68
Provide and install 8-inch D.I.P. and related fittings (in lieu of 12-inch C-900 PVC and fittings) Price Only	35 LF	58.43	21.44		
3. Total Labor to Install Exempt Materials (add the amounts in column 1)				3 5028.46	
4. Total Exempt Materials (add the amounts in column 2)					4 10338.85

5-6. NON-EXEMPT MATERIALS	QUANTITY	UNIT PRICE LABOR	UNIT PRICE MATERIALS	TOTAL COST LABOR	TOTAL COST MATERIALS
Provide and install approx. 238 LF of 6-feet tall 8 x 8 x 16 C.M.U. block wall with Ultra-Barrier	238 LF	48.78	50.56	11609.64	12033.28
Paint exterior of block wall	1	605.00	660.00	605.00	660.00
Construct 40' x 30' x 5' deep retention basin	1	4056.81	Ø	4056.81	Ø
Provide and install 12-inch D.I.P. and tie-in to existing weir box	25 LF	156.88	45.83	3922.00	1145.75
Provide and install 4-feet tall x 48-inch diameter precast manhole riser with 6-feet x 6-feet x 6-inch thick concrete pad	1	829.19	4675.00	829.19	4675.00
Provide and install dry well	1	2630.62	10945.00	5 2630.62	8 10945.00
Provide and install 6-inch D(50) riprap	56 SY	33.51	7.78	1876.56	435.68
Provide and install 3/4-inch decomposed granite	83 CY	22.61	53.34	1876.63	4427.22
Demolish and remove chain link fence and gates	238 LF	20.00	Ø	4760.00	Ø
7. Total Labor to Install Non-Exempt Materials (add the amounts in column 5)				7 32146.45	
8. Total Non-Exempt Materials (add the amounts in column 6)					8 34321.93
9. Subtotal A (add lines 3, 7 and 8)					9 71514.84
10. Contracting Tax Base (multiply the amount on line 9 by 0.65)				10 46485.95	
11. Applicable Contracting Tax Rate				11 10.72%	
12. Contracting Tax (multiply the amount on line 10 by line 11)					12 4974.00
13. Subtotal B (add lines 4, 9 and 12)					13 86829.69
14. 100% Performance and Payment Bonds Cost					14 607.81
15. Estimated Total Cost (add lines 13 and 14)					15 87437.50

NOTE: The Estimated Total Cost includes all labor and materials for backfill, pavement replacement, chip seal, and traffic control necessary for the Project.

ARIZONA WATER COMPANY

CONTRACT CHANGE ORDER

CONTRACTOR: ELLISON-MILLS 3152 N. LEAR AVENUE, SUITE 2 CASA GRANDE, AZ 85122	DATE: August 15, 2014	CONTRACT DATE:
	W.A. NO.: 1-5165	CHANGE ORDER NO.: 1
DESCRIPTION OF WORK: Install 8-inch D.I.P. and related fittings in lieu of Company-provided 12-inch C-900 PVC flush pipe.	APPLICABLE C. O. COST: $ -1,254.70	
	ORIGINAL CONTRACT AMOUNT: $ 87,437.50	
	SUM OF ALL CHANGE ORDERS TO DATE: $ -1,254.70	
REASON FOR ADDITIONAL WORK: Cost of using new materials is less than using existing C-900 PVC pipe, which requires rehabilitation prior to installation.	APPROVAL LEVEL REQ'D: (CIRCLE ALL THAT APPLY) (BASED ON COST) Mgr & Eng: Up to $10,000 or 10% whichever is less VP Eng: Up to $100,000 or 20% whichever is less VP Tres & Pres: greater than $100,000 or 20%	

BASIS OF PAYMENT:

- ☐ In accordance with rates contained in Contractor's Proposal/Contract dated:
- ☒ In accordance with material prices, labor and equipment rates shown on Proposal dated: August 7, 2014
- ☐ Lump Sum Price (including taxes) of: (Include supporting documentation) $
- ☐ Other:

Contractor is hereby authorized to proceed with the work as described above. The Company will pay for the above-described work as indicated above.

Contractor agrees, as an independent contractor, to perform the above-described work in accordance with the Company's *General Conditions of Contract, and the Company's Construction Specifications* and *Standard Specification Drawings* ("General Conditions of Contract") and related construction drawings which, were provided with the original Proposal/Contract and supplemented herein, and agrees that all provisions of said General Conditions of Contract dated as of April 2004, including any subsequent amendments thereto, and related construction drawings, apply to work covered under this Contract Change Order.

Work Authorization Approval for additional funds required — YES (NO) (circle one) If yes, attach applicable form & proof of payment for outside funded work.

Division Superintendent/Manager

Project Engineer/Project Manager

AWC Vice President – Engineering

Ellison-Mills Contracting
Contractor: (Name)

By: _____
Contractor's Representative Signature

Name: Mike Mills
(Printed)

It's: Owner
(Title or Position)

CHANGE ORDER AUTHORIZATION OVER $100,000 OR 20% OF THE CONTRACT NOT VALID WITHOUT SIGNATURES BELOW

AWC Vice President and Treasurer

AWC President

Date Work Started

Date Work Completed

CONTRACTOR'S INVOICE APPROVED BY:

Company's Representative Overseeing the Work (signature)

DISTRIBUTION:
Original to Person Authorizing Work and, when completed, to Accounting Dept. with approved invoice for the work with supporting documentation. Copy to Contractor. Copy to Project Engineer.

Labor and Material Releases Required: ☐ Yes ☐ No
Releases Received and Approved By:

Company's Authorized Signature

ARIZONA WATER COMPANY

COMMENCEMENT NOTICE

CONTRACTOR:

Mr. Mike Mills
Ellison-Mills Contracting, Inc.
3152 N. Lear Avenue, Suite 2
Casa Grande, AZ 85122

DATE: 9/22/14
DIVISION: CASA GRANDE
SYSTEM: PINAL VALLEY
W.A.: 1-5165

THIS IS YOUR NOTICE TO PROCEED WITH THE FOLLOWING PROJECT(S):

DESCRIPTION OF WORK:

Demolish and remove 238 LF chain link fence and gates, install 238 LF of 6-feet tall 8 x 8 x 16 CMU block wall with Ultra-Barrier on east property line, and construct retention basin at Well Site No. 31 in Casa Grande, Arizona per AWC DWG No. PV-0073.

PERFORMANCE AND PAYMENT BONDS REQUIRED: [X] Yes [ ] No

TOTAL DAYS ALLOWED: 100

COMPLETION DATE: 12/31/14

Prior to the start of construction, please call Ray Murrieta, Division Manager at 520-836-8785 to schedule a pre-construction meeting.

ARIZONA WATER COMPANY
Company

By [signature]
Title Vice President - Engineering

ELLISON-MILLS CONTRACTING, INC
Contractor *(type name)*

By _____
Title _____

AFH
W:\PROJECTS\2014\PV\1-5165 CG WELLS 21, 26, 30, 31\AGREEMENTS\CONTRACTS\WELL 31\E-3-18-2 ELLISON MILLS COMMENCEMENT NOTICE 1-5165 CMU BLOCK WALLS.DOCX

AJH
1/15/09 | FKS:afh | E-3-18-2

ARIZONA WATER COMPANY

SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT: E-4-1

CONSTRUCTION SPECIFICATIONS: E-8-1

STANDARD SPECIFICATION DRAWINGS: E-9-1

2007 EDITION WITH **2010** REVISIONS;
2012 GENERAL CONDITIONS OF CONTRACT

A copy of this entire Spec Book was sent out with Ellison Mills Proposal package for I-5165 Pinal Valley CMU Blackwalls on 9/22/14

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

September 17, 2014

Mr. Joel Felix
Felix Construction Company
1326 W. Industrial Drive
Coolidge, AZ 85128

Re: Pinal Valley Well No. 30 CMU Block Walls

PROJECT: Well No. 30 CMU Block Walls	
SYSTEM: Pinal Valley	
CONTRACT NO.:	
P.E. NO.:	W.A. NO.: 1-5165

Dear Mr. Felix:

Enclosed is your copy of the Proposal/Contract for the above-referenced project, which has been accepted by Arizona Water Company (the "Company"). The project shall be constructed in accordance with the Company's *General Conditions of Contract, the Specifications and the Drawings* which were included with the Company's previously provided Proposal/Contract, copies of which are being provided again and attached herewith.

Also enclosed are two copies of the Commencement Notice for the above-referenced project. Please sign one of the copies and return it to my attention retaining the other for your records.

As provided in paragraph 4 of the Company's Proposal/Contract executed by the Company on September 22, 2014 Felix Construction Company acknowledged that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work. In addition, as provided in paragraph 44 of the Company's General Conditions of Contract, the 100% Performance and Payment Bonds must be provided within ten (10) calendar days of the date of the Commencement Notice. Failure to provide an acceptable 100% Performance and Payment Bond does not limit the Company's

ability to terminate the Proposal/Contract or seek restitution for damages that the Company may have or will incur.

Prior to the start of construction, please call Ray Murrieta, Division Manager at 520-836-8785 to schedule a pre-construction meeting. In addition, please provide the required Performance and Payment Bonds to the Company promptly so that the contracted work can be completed within the contract's timeline.

If you have any questions, please call me at this office.

Very truly yours,

Jeff Kelty
Engineering Technician
engineering@azwater.com

afh
Enclosure

ARIZONA WATER COMPANY

INPUT DIVISION INFORMATION
DIVISION ADDRESS
DIVISION PHONE NUMBERS

PROPOSAL/CONTRACT

CONTRACTOR: FELIX CONSTRUCTION COMPANY	SYSTEM: Pinal Valley
ADDRESS: 1326 W. INDUSTRIAL AVENUE	W A No(s).: 1-5165
CITY ST ZIP: COOLIDGE, AZ 85128	BID DUE DATE: September 5, 2014

CONTRACTOR SUBMITS this PROPOSAL/CONTRACT to ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), to perform the work and complete the project described on Page 2 (the "Project"), as an independent prime contractor.

1. Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings, (the "Specifications"), all of which are attached hereto. Contractor has examined the specific plans and related construction drawings for the Project (the "Drawings"), copies of which are also attached hereto. The General Conditions of Contract, Specifications and Drawings are incorporated into this Proposal/Contract. Contractor affirms that all work and materials to be furnished or purchased for the Project will be in strict conformance with the General Conditions of Contract, Specifications and Drawings.

2. Contractor represents and warrants that it has satisfied and complied with the provisions of Section 6, Contractor Understands Work and Working Conditions, of the General Conditions of Contract prior to submitting this Proposal/Contract

3. Contractor represents that this Proposal/Contract is fair and honest in all respects, is submitted in good faith and is not submitted in collusion with any other company, entity or person.

4. Contractor acknowledges that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work

5. Prior to the commencement of work, Contractor will submit to the Company a list of all materials to be used in the Project. The materials list will include the manufacturer, part number, price and quantity included in this Proposal/Contract.

6. Contractor will furnish all labor, tools, equipment and materials required to complete the Project according to the General Conditions of Contract, Specifications and Drawings. No materials purchased by Contractor to be incorporated into the Project are subject to tax at the time of purchase and Contractor will not charge the Company for any such tax. Contractor will pay the applicable transaction privilege tax (the "Contracting Tax") on the Project after Contractor receives payment of the final Project invoice from the Company. The cost of materials incorporated into the Project which are exempt by Arizona Revised State Statues ("A.R.S.") from the Contracting Tax, for example, pipes or valves having a diameter of four (4) inches or larger, including equipment, fittings and any other related part that is used in operating the pipes or valves (A.R.S. §42-5061 B 6.), will not be included in the total cost of the labor and materials upon which the Contracting Tax is computed. Contractor retains full liability and obligation to pay the Contracting Tax and will defend and indemnify the Company against any demand or obligation to pay the Contracting Tax.

7. Contractor will maintain detailed accounting records of all materials purchased and incorporated into the Project. Such records will include all supporting original vendor invoices for all materials purchased. Following completion of the Project, Contractor will submit an itemized accounting to the Company which will include all supporting original vendor invoices and satisfactory evidence of payment thereof. The Company will not pay Contractor for materials not actually incorporated into the Project, and the disposition of such materials will remain Contractor's responsibility.

8. The Estimated Total Cost of the Project, shown on Page 2, is based on estimated labor and material quantities to be furnished. It includes an estimate of the Contracting Tax and the cost of the required Performance and Payment Bonds. Contractor will not cancel, modify or withdraw this Proposal/Contract during a ninety-day (90) period commencing on the Bid Due Date. The Company may accept this Proposal/Contract by signing and mailing, or otherwise delivering, a copy hereof to Contractor during such ninety-day (90) period. If the Company does not accept this Proposal/Contract during such ninety-day (90) period, Contractor may cancel this Proposal/Contract by giving written notice of cancellation to the Company.

9. Prior to the commencement of work, Contractor will provide the Company with a detailed construction schedule, in either Gantt or CPM form, identifying all tasks to be performed from the date of the written Commencement Notice through completion of the Project, including testing, training of Company Personnel and final Project invoicing. Contractor will provide the Company with a copy of such construction schedule documenting the progress of work on the Project at least monthly.

10. Contractor will not commence work on the Project until the Company gives Contractor a written Commencement Notice. Contractor will complete the Project within 60 calendar days after the Commencement Notice is issued.

11. Following the Company's written notice of satisfactory completion of the Project, and upon receipt of the final Project invoice from Contractor, the Company shall pay Contractor the actual total cost of the Project, which will be calculated as shown on Page 2, except that actual labor and material quantities installed/constructed will be substituted for the estimated labor and materials quantities and the Contracting Tax will be recalculated based on such actual labor and materials quantities.

12. The amount of applicable liquidated damages for Contractor's failure to deliver or perform within the time limit shown in Paragraph 10 may be deducted from the Company's payment of the final Project invoice. This provision shall not limit the Company's ability to terminate this Proposal/Contract for Contractor's unsatisfactory performance or failure to perform as provided in the General Conditions of Contract, Specifications or Drawings, or in this Proposal/Contract.

SPECIAL CONDITIONS:

Contractors Pollution Liability Insurance is not required for this project. Any request for information (RFI) must be received no later than August 29, 2014.

CONTRACTOR	PROPOSAL/CONTRACT ACCEPTED:
FELIX CONSTRUCTION COMPANY	ARIZONA WATER COMPANY
By: [signature]	By: [signature]
Print Name: Joel Felix	Print Name: Fredrick K. Schneider, PE
Title: Manager	Title: Vice President - Engineering
Date: 09.05.14	Date: 9-22-2014

ARIZONA WATER COMPANY

INPUT DIVISION INFORMATION
DIVISION ADDRESS
DIVISION PHONE NUMBERS

PROPOSAL/CONTRACT

CONTRACTOR: FELIX CONSTRUCTION COMPANY	SYSTEM: Pinal Valley
AZ CONTRACTOR LICENSE NO: CLASSIFICATION:	W.A. No(s): 1-5165
ADDRESS: 1326 W. INDUSTRIAL AVENUE	BID DUE DATE: September 5, 2014
CITY ST ZIP: COOLIDGE, AZ 85128	BID BOND REQUIRED: ☑ Yes ☐ No

DESCRIPTION OF PROJECT: Demolish and remove perimeter wall, fences and gates, construct 8-feet tall, 8 x 8 x 16 C.M.U. block wall and gates with Ultra-Barrier and automatic gater opener at Well No. 30 in Casa Grande, Arizona per A.W.C. Dwg. No. PV-0072.

1-2. MATERIALS EXEMPT FROM CONTRACTING TAX (per Paragraph 6)	QUANTITY	UNIT PRICE LABOR	UNIT PRICE MATERIALS	TOTAL COST LABOR	TOTAL COST MATERIALS
				1	2
3. Total Labor to Install Exempt Materials (add the amounts in column 1)				3	
4. Total Exempt Materials (add the amounts in column 2)					4

5-6. NON-EXEMPT MATERIALS	QUANTITY	UNIT PRICE LABOR	UNIT PRICE MATERIALS	TOTAL COST LABOR	TOTAL COST MATERIALS
Demolish and remove chain link fence and existing 6-feet tall block wall on south property line. (Protect in place existing neighboring block walls on north and west property lines.)	LOT	4,800		4,800	
Provide and install 6-feet tall, 8 x 8 x 16 C.M.U. block wall and gates with Ultra-Barrier as shown on A.W.C. Dwg. No. PV-0072	220 LF	175	210	38,500	46,200
Paint 8-feet tall, 30-feet wide expanded metal gate to match exterior walls	1	2,200	1,200	2,200	1,200
Provide and install automatic gate opener and 120v power supply	1	2,400	1,200	5 2,400	6 1,200
Powder coat 8-feet tall, 30-feet wide expanded metal gate (Price Only)	1	No Bid			
7. Total Labor to Install Non-Exempt Materials (add the amounts in column 5)				7 47,900	
8. Total Non-Exempt Materials (add the amounts in column 6)					8 48,600
9. Subtotal A (add lines 3, 7 and 8)					9 96,500
10. Contracting Tax Base (multiply the amount on line 9 by 0.65)				10 62,725	
11. Applicable Contracting Tax Rate				11 10.7%	
12. Contracting Tax (multiply the amount on line 10 by line 11)					12 6,712
13. Subtotal B (add lines 4, 9 and 12)					13 103,212
14. 100% Performance and Payment Bonds Cost					14 1,239
15. Estimated Total Cost (add lines 13 and 14)					15 104,450

NOTE: The Estimated Total Cost includes all labor and materials for backfill, pavement replacement, chip seal, and traffic control necessary for the Project

ARIZONA WATER COMPANY

COMMENCEMENT NOTICE

CONTRACTOR:

Mr. Joel Felix
Felix Construction Company
1326 W. Industrial Drive
Coolidge, AZ 85128

DATE: 9/22/14
DIVISION: CASA GRANDE
SYSTEM: PINAL VALLEY
W.A.: 1-5165

THIS IS YOUR NOTICE TO PROCEED WITH THE FOLLOWING PROJECT(S):

DESCRIPTION OF WORK:

Demolish and remove perimeter wall, fences and gates, construct 8-feet tall, 8 x 8 x 16 C.M.U. block wall and gates with Ultra-Barrier and automatic gate opener at Well No. 30 in Casa Grande, Arizona.

PERFORMANCE AND PAYMENT BONDS REQUIRED: [X] Yes [ ] No

TOTAL DAYS ALLOWED: 70

COMPLETION DATE: 12/1/14

Prior to the start of construction, please call Ray Murrieta, Division Manager at 520-836-8785 to schedule a pre-construction meeting.

ARIZONA WATER COMPANY	FELIX CONSTRUCTION COMPANY
Company	Contractor (type name)
By [signature]	By
Title Vice President - Engineering	Title

AFH
W:\PROJECTS\2014\PV\1-5165 CG WELLS 21, 26, 30, 31\AGREEMENTS\CONTRACTS\WELL 30\E-3-18-2 ELLISON MILLS COMMENCEMENT NOTICE 1-5165 WELL #30 CMU BLOCK WALLS.DOCX 1/15/09 | FKS:afh | E-3-18-2

AFH

ARIZONA WATER COMPANY

SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT: E-4-1

CONSTRUCTION SPECIFICATIONS: E-8-1

STANDARD SPECIFICATION DRAWINGS: E-9-1

2007 EDITION WITH **2010** REVISIONS;
2012 GENERAL CONDITIONS OF CONTRACT

A copy of this entire Spec Book was sent out with Felix Construction Proposal package for 1-5165 Well # 30 Fencing 9/22/14 @ AA

Geotechnical Engineering Report
Screen Walls
Arizona Water Company
Well Sites 30 and 31
1882 East Florence Boulevard
and 1697 East Elaine Court
Casa Grande, Arizona
RAMM Project No. G21393

Expires 3/31/2016

For:
Arizona Water Company
3805 North Black Canyon Highway
Phoenix, Arizona 85015-5351

◆◆◆

By:
Ricker • Atkinson • McBee • Morman & Associates, Inc.
2105 South Hardy Drive, Suite 13
Tempe, Arizona 85282

TABLE OF CONTENTS

REPORT PAGE

Introduction 1

Proposed Construction 1

Site Conditions 1

Field Explorations 1

Laboratory Analysis 2

Subsurface Conditions 2

Discussion of Test Results 3

Foundation Design Recommendations

Foundations 3

Lateral Earth Pressures 4

Site Development Recommendations

Surface Drainage 4

Excavatability 5

Corrosion Potential 5

Concrete Durability 5

Workability 6

Materials Suitability and Requirements

Site Soils 6

Imported Soils 6

Site Preparation and Grading Procedures

Screen Wall Areas 6

APPENDIX A - FIELD EXPLORATION

Site Plan A1

Soil Legend A2

Test Boring Logs A3

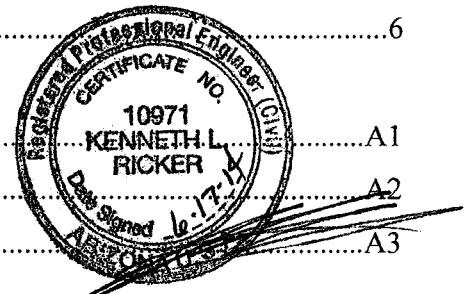
APPENDIX B - LABORATORY ANALYSIS

Compression B1

Percent Passing No. 200 Sieve, Atterberg Limits, Percent Expansion B3

pH, Minimum Resistivity B4

Soluble Salts, Sulfates and Chlorides B5



REPORT

R·A·M·M

INTRODUCTION

This report presents the results of our geotechnical engineering services for the Screen Walls at Well Sites 30 and 31, located in Casa Grande, Arizona. The scope of our services included performing a field exploration program, laboratory analysis and geotechnical engineering evaluation, analysis and recommendations. The geotechnical recommendations presented herein include those for anticipated excavation conditions, foundation design for support of the new facilities, site development, and material use and requirements. We would be pleased to discuss with you any additional recommendations you may require. In addition, we are available to review project specifications and plans for conformance with our recommendations at no charge to you.

This firm should be notified for additional evaluation and recommendations should the project design parameters, site use or conditions encountered during construction differ from those presented herein.

PROPOSED CONSTRUCTION

The proposed Screen Walls will be 6 to 8-foot high masonry walls constructed with 8-inch by 8-inch by 16-inch concrete masonry units (CMU) around the perimeter of the Well Site 30 and along the east side of Well Site 31. The Screen Walls will be supported on spread footings. Maximum structural loads for the Screen Walls are expected to range from 0.3 to 1.0 kips per lineal foot (klf) for walls.

SITE CONDITIONS

Well Site 30 is located at 1882 East Florence Boulevard and Well Site 31 is located at 1697 East Elaine Court. Both sites are in Casa Grande, Arizona. At the time of our investigation, the well sites had existing perimeter chain-link fences with some small areas of masonry fence.

FIELD EXPLORATIONS

Subsurface conditions at the well sites were explored by drilling one test boring to a depth of 20 feet in the proposed screen wall area at each site, at the locations shown on the Site Plans in Appendix A. The test borings were drilled with a CME 55 drill rig using 8-inch diameter, hollow-stem auger. The drilling equipment and crew were provided by D&S Drilling, Inc. The test boring locations were determined in the field by our field technician. During the field

exploration, representative undisturbed and disturbed samples were obtained, the field exploration logged and soils field-classified by our field technician, who also directed the drill crew. Relatively undisturbed samples of the subsoils were obtained by driving a 3-inch diameter, ring-lined, open-end sampler into the soil with a 140-pound hammer dropping 30 inches. In addition to drilling and sampling, continuous penetration tests using a 2-inch diameter rod and the 140-pound hammer dropping 30 inches were performed and extended to s depth of 7 feet adjacent to Test Borings 1 and 2. The results of the field explorations are presented on the Test Boring Logs in Appendix A.

LABORATORY ANALYSIS

Representative samples obtained during the field explorations were subjected to the following tests in our laboratory.

Type of Test	Type of Sample	Number of Samples Tested
Compression	Undisturbed	2
Percent Passing No. 200 Sieve & Atterberg Limits	Representative	2
Swell	Remolded	2
pH/Minimum Resistivity	Representative	2
Moisture Content/Dry Density *	Undisturbed	8
Soluble Salts, Sulfates and Chlorides **	Representative	2

* Reported in the test boring logs.
** Testing performed by Motzz Laboratory, Inc.

The results of the laboratory analysis are presented in Appendix B.

SUBSURFACE CONDITIONS

The results of the test borings are presented in Appendix A in the Test Boring Logs. At Test Boring 1 (Well Site 30), the surface and near-surface soils to a depth of 3.5 feet consisted of sandy clay with some gravel fill. These soils were very stiff, had medium plasticity and were underlain by stiff sandy clay with a trace of gravel which extended to the remaining depth of exploration (20 feet). At Test Boring 2 (Well Site 31), the surface and near surface soils to a depth of 1.0 feet consisted of clayey sand with a trace of gravel fill. These soils were medium dense, had medium plasticity fines and were underlain by medium dense clayey sand with a trace of gravel which extended to the remaining depth of exploration (20 feet). Soil moisture contents

were described as slightly damp to damp in Test Boring 1 to a depth of 3.5 and were described as slightly damp for the remainder of Test Boring 1 and for the full depth of Test boring 2. No groundwater was observed in the test borings during the field exploration.

DISCUSSIONS OF TEST RESULTS

Remolded samples of the near surface soils from Well Site 30 exhibited a moderate swell potential and remolded samples from Well Site 31 exhibited a low swell potential following wetting when tested in the laboratory. Undisturbed samples of the soils from anticipated shallow foundation grades at Well Sites 30 and 31 were found to undergo slight compression during loading to approximate foundation loads. Upon wetting at approximate foundation loads these soils exhibited slight additional compression.

FOUNDATION DESIGN RECOMMENDATIONS

Foundations:

The proposed screen walls from Well Sites 30 and 31 can be supported on spread footings. Footing elements for the screen walls may be supported on the existing fill, undisturbed native soils and/or new compacted fill. Shallow spread footings may be designed using an allowable bearing pressure of 1000 psf, provided the bottom of the footings are at least 2.0 feet and 1.0 foot below the lowest adjacent finished grade within 5 feet of the perimeter of the screen walls at Well Sites 30 and 31, respectively. Structural loads should not exceed 2 kips per lineal foot. All footing excavations should be reviewed by a representative of the geotechnical engineer prior to placing reinforcing steel or concrete. Any loose fill, disturbed or unstable soils should be removed from the bearing surface and replaced with MAG cement/AB slurry or as otherwise directed by the geotechnical engineer.

The allowable bearing capacity should be applied to maximum, design dead plus live loads and may be increased by one-third when considering temporary loads such as transient wind or seismic loads. A one-third increase may also be used for toe pressures due to eccentric or lateral loadings, assuming the entire footing bearing surface remains in compression. The weight of the footing concrete below grade may be neglected in dead load computations. The recommended minimum footing width is 1.33 feet for continuous wall footings. A Site Class designation of C should be used for the site per the 2006, 2009 and 2012 International Building Code (IBC). The soil profile and site class designations are based on site conditions and a review of available well

holes within a one mile radius of the site. This data was available on ADWR's website and indicated that dense, cemented material exists to depths over 100 feet in the immediate vicinity of the site.

The estimated total and differential footing settlements for the loading conditions described above are on the order of ½ inch. These estimated settlements are applicable where soils below footing level remain at or below the construction moisture content. Additional post-construction, differential settlement of equal magnitude could occur if bearing soils become wet after construction. Therefore, continuous footings and stem walls should be reinforced and masonry walls constructed with properly designed reinforcement and with frequent expansion/contraction joints. Positive drainage away from the perimeter of the Screen Walls is essential to minimize the potential for moisture infiltration into bearing soils.

Lateral Earth Pressures:

The following tabulation presents the recommended lateral earth pressures and base friction values which should be used in the lateral design of footings and earth retaining systems. The lateral pressures are equivalent fluid pressures for average anticipated conditions.

Backfill Pressures:
Unrestrained walls ---------- 40 psf/ft
Passive Pressures:
Continuous ---------- 250 psf/ft
Coefficient of Base Friction:
Concrete to soil ---------- 0.40

The above equivalent fluid pressures are for vertical walls with horizontal backfills and do not include temporary loads imposed by compaction equipment or permanent loads resulting from backfill swell pressures, hydrostatic pressures or surcharge loads. Any retaining walls should contain weep holes to reduce the potential for the buildup of hydrostatic pressures.

SITE DEVELOPMENT RECOMMENDATIONS

Surface Drainage:

Most soils will undergo some degree of volume change as the result of wetting. The degree of volume change will depend on the type of soil, swell potential, natural soils structure or degree of compaction (if a fill). These volume changes could result in movements in overlying structures and non-structure elements including sidewalks, planters, screen walls, etc. Therefore, good site

and surface drainage away from these elements is required. In addition, water should not be allowed to pond within 10 feet of the structures or other elements which are sensitive to movements.

Excavatability:

The excavatability of site materials is difficult to evaluate based only on the exploration equipment used during this design report. Therefore, we recommend that the contractor evaluate the excavatability of site materials by performing test excavations with the size and type of equipment the contractor plans on using at the site. For design purposes the following paragraph presents our best analysis as to the excavatability of site soils.

The near surface soils to a depth of at least 10 feet can probably be removed with conventional excavating equipment. OSHA requires all excavations over five feet in depth, in which personnel are to enter, be either braced or sloped in accordance with OSHA regulations.

Corrosion Potential:

As part of this investigation, laboratory pH and Minimum Resistivity, and Soluble Salts, Sulfates and Chlorides testing of site soils was conducted. The results of the laboratory testing are included in Appendix B. Based on these results and corrosion potential criteria presented in the Arizona Department of Transportation (ADOT) Preliminary Engineering and Design Manual, Figure 203.04-5 and National Association of Corrosion Engineers (NACE) International Corrosion Severity Ratings, there appears to be a high potential for corrosion to buried ferrous metal structures and pipelines. This potential is a function of soil type and moisture content, material type and/or composition, water chemistry and other factors. Accordingly, the results of the laboratory testing should be made available to material suppliers and corrosion experts for review.

Concrete Durability:

As part of this investigation, Soluble Salts, Sulfates and Chlorides testing of site soils was conducted. The results of the laboratory testing are included in Appendix B. Based on our laboratory test results and 2006 IBC Concrete Durability Requirements, Section 1904, there appears to be a low potential for deterioration to concrete in contact with site soils. This potential is a function of soil type and moisture content, material type and/or composition, water

chemistry and other factors. Accordingly, the results of the laboratory testing should be made available to material suppliers and corrosion experts for review.

Workability:

Wetting site soils such that moisture contents are at or above optimum could result in some soil pumping under dynamic loadings such as heavy construction equipment driving over the area. In structure areas, some pumping is not detrimental to foundation or exterior slabs provided the specified percent compaction is achieved. However, in structure and slab areas where severe pumping has damaged subgrade conditions, the area should be allowed to dry until soils are workable without pumping or the wetted areas removed and replaced with drier site soils.

MATERIALS SUITABILITY AND REQUIREMENTS

Site Soils:

The near surface fill and native soils have medium plasticity fines and exhibit moderate and low swell potentials when compacted and wetted at Well Sites 30 and 31, respectively. These soils may be used as fill and backfill in all areas provided these soils are placed and compacted at moisture contents in the range of optimum to 3% above optimum. All materials should be free of organics, debris, rubble and material greater than 6 inches in size.

Imported Soils:

Fill required beyond that available from site sources and used to raise at-grade equipment areas, or for use as retaining wall backfills, should be imported soils meeting the following requirements:

Maximum Particle Size ---------- 6 inches
Maximum Swell Potential ---------- 1.5%*

* Based on a sample which is remolded to 95% of the ASTM D698 maximum dry density at a moisture content of 2 percent below optimum, placed under a surcharge load of 100 psf and wetted.

SITE PREPARATION AND GRADING PROCEDURES

Screen Wall Areas:

Recommendations presented in the previous sections of this report are based upon the following site preparation and grading procedures. Therefore, all earthwork should be accomplished with observation and testing by a qualified technician under the direction of a registered geotechnical/

materials engineer. The following apply to the areas within and extending 5 feet beyond the screen walls.

1. Clear and grub the area by removing and disposing of all vegetation, debris, rubble and remnants of any former developments.

2. Strip the site of any loose fill zones, any dumped fill piles and any unstable soils. During stripping observe the surface for evidence of buried debris, vegetation or disturbed materials which will require additional removal. Areas steeper than 5H to 1V should be benched and any depressions widened to accommodate compaction equipment.

3. Prepare the ground surface in at-grade areas and in fill areas by scarifying, moisture conditioning and compacting the exposed surface soils to a depth of 8 inches.

4. Moisture condition and place all fill and backfill materials required to achieve specified grades. Fill materials should be moisture conditioned, placed and compacted in horizontal lifts of thickness compatible with the compaction equipment being used.

5. Compact subgrade, fill, backfill or subbase fill to the following minimum percent compaction of the ASTM D698 maximum dry density for each lift.

Material	Minimum Percent Compaction
Soil:	
Below foundations	95
Backfill: *	90

* Outside of screen wall areas.

6. The moisture content of soil and base materials at the time of compaction should be:

Type	Area of Use	Moisture Content
On-Site	Screen Walls	Optimum to optimum plus 3%
Imported	Screen Walls	Optimum plus or minus 3%

7. Any soils which are disturbed or overexcavated by the contractor outside the limits of the plans or specifications should be replaced with materials compacted as specified above. The above compaction requirements will also apply to any disturbance occurring within the construction limits, including but not limited to backfilling of trenches inside and outside of the building pad.

APPENDIX A
FIELD EXPLORATIONS

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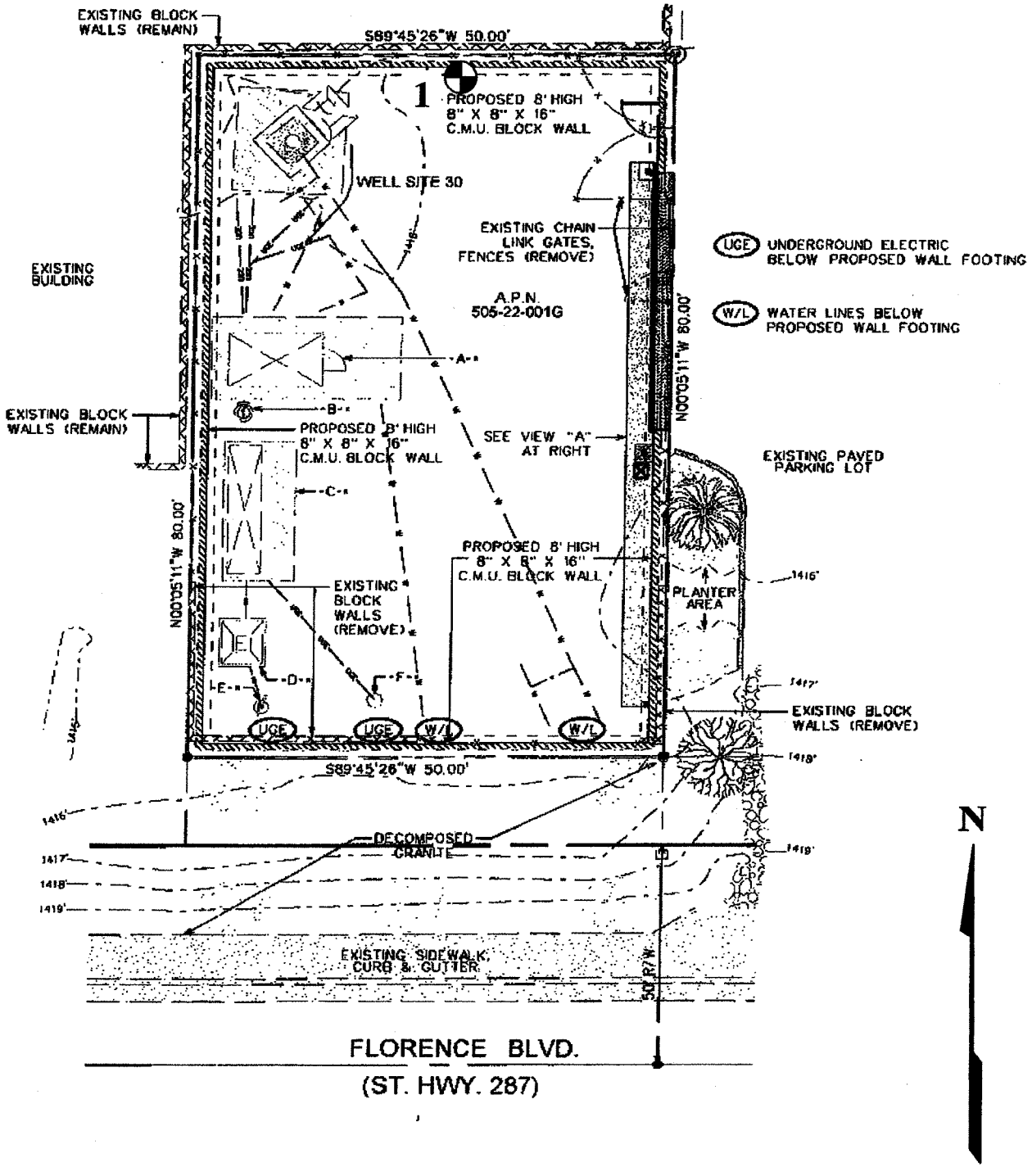
Arizona Water Company - Well Site No. 30
1882 East Florence Boulevard, Casa Grande



Test Boring Location

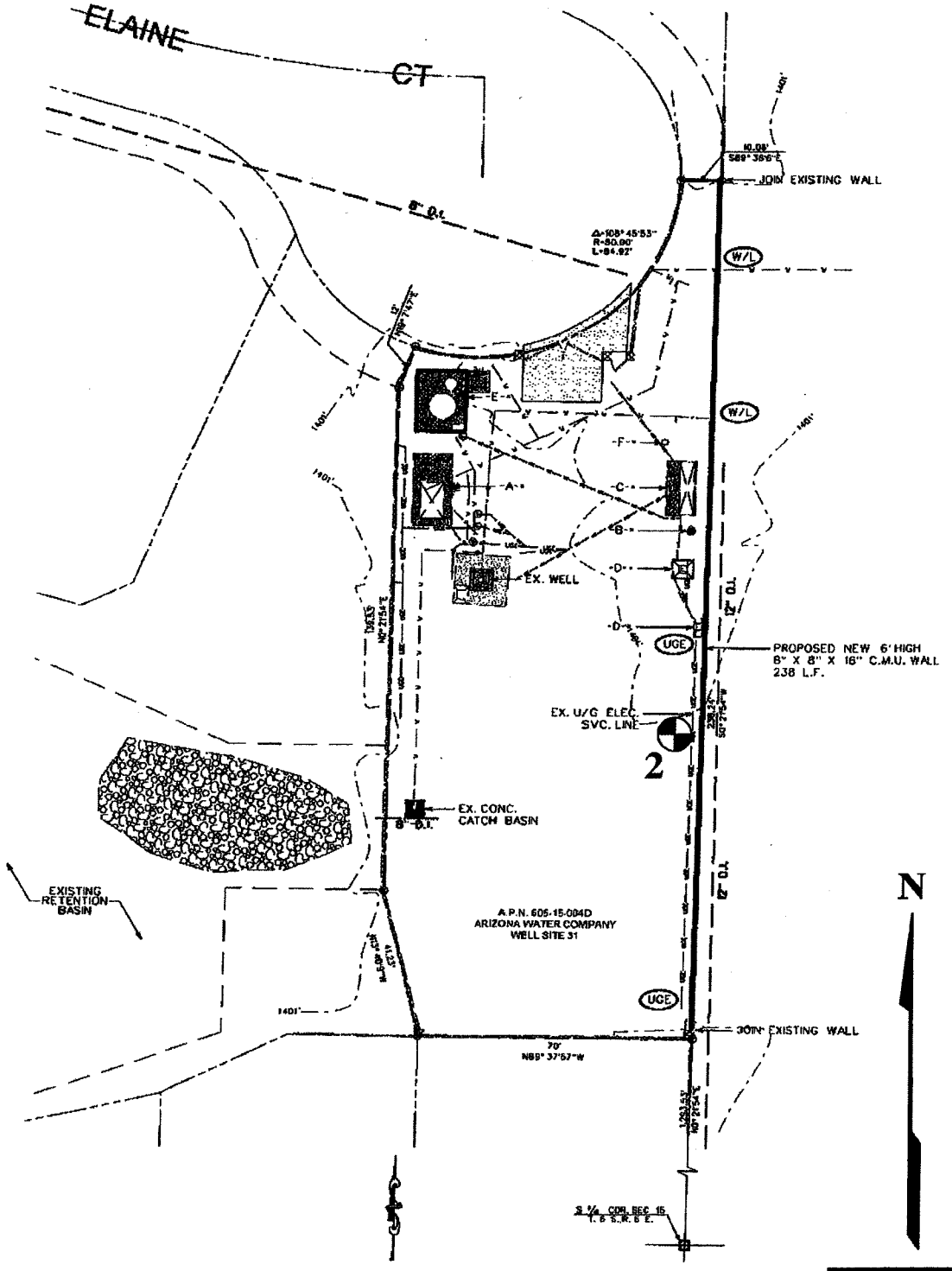
Not To Scale

SITE PLAN

RAMM Project No. G21393

A1-1

Arizona Water Company - Well Site No. 31
1697 East Elaine Court, Casa Grande



Test Boring Location

Not To Scale

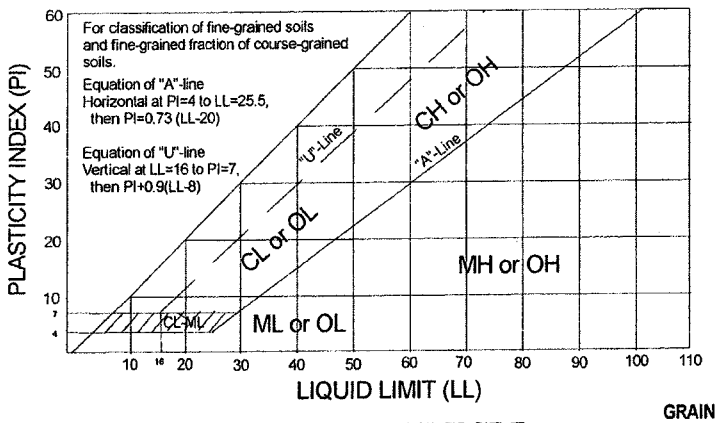
SITE PLAN

LEGEND

CLASSIFICATION OF SOILS

ASTM Designation: D2487-11
(Based on Unified Soil Classification System)

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests					Soil Classification: Group Symbol	Soil Classification: Name
COARSE-GRAINED SOILS More than 50% retained on No. 200 Sieve	Gravels More than 50% coarse fraction retained on No. 4 Sieve	Clean Gravels Less than 5% fines	Cu >4 and 1 <Cc <3		GW	Well graded gravel
			Cu<4 and/or 1>Cc>3		GP	Poorly graded gravel
		Gravels with Fines More than 12% fines	Fines classify as ML or MH		GM	Silty gravel
			Fines classify as CL or CH		GC	Clayey gravel
	Sands 50% or more of coarse fraction passes No. 4 sieve	Clean Sands Less than 5% fines	Cu >6 and 1 <Cc <3		SW	Well-graded sand
			Cu<6 and/or 1>Cc>3		SP	Poorly graded sand
		Sands with Fines More than 12% fines	Fines classify as ML or MH		SM	Silty sand
			Fines classify as CL or CH		SC	Clayey sand
FINE-GRAINED SOILS 50% or more passes the No. 200 Sieve	Silts and Clays Liquid limit less than 50	Inorganic	PI>7 and plots on or above "A" line		CL	Lean clay
			PI<4 or plots below "A" line		ML	Silt
		Organic	Liquid Limit - oven dried / Liquid limit - not dried	<0.75	OL	Organic clay / Organic silt
	Silts and Clays Liquid limit 50 or more	Inorganic	PI plots on or above "A" line		CH	Fat clay
			PI plots below "A" line		MH	Elastic silt
		Organic	Liquid limit - oven dried / Liquid limit - not dried	<0.75	OH	Organic clay / Organic silt
HIGHLY ORGANIC SOILS	Primarily organic matter, dark in color, and organic odor				PT	Peat



TEST BORING LOG DEFINITIONS

Blows per foot using 140 pound hammer with 30 inch free-fall.

Depth, feet	Blows/Foot: C	Blows/Foot: N/R	Sample Type	Dry Density pcf	Water Content, %	Unified Classification	Description

C = Continuous Penetration Resistance (2 inch diameter rod)
N = Standard Penetration Resistance (ASTM D1586)
R = Penetration Resistance (3 inch diameter ring line sampler)

GRAIN SIZES

U.S. STANDARD SERIES SIEVE				CLEAR SQUARE SIEVE OPENINGS			
200	40	10	4	3/4"	3"	12"	
SILTS & CLAYS DISTINGUISHED ON BASIS OF PLASTICITY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

MOISTURE CONDITION (INCREASING MOISTURE ⟶)

DRY | SLIGHTLY DAMP | DAMP | MOIST (Plastic Limit) | VERY MOIST | WET (SATURATED) (Liquid Limit)

CONSISTENCY CORRELATION		RELATIVE DENSITY CORRELATION	
CLAYS & SILTS	BLOWS/FOOT*	SANDS & GRAVELS	BLOWS/FOOT*
VERY SOFT	0-2	VERY LOOSE	0-4
SOFT	2-4	LOOSE	4-10
FIRM	4-8	MEDIUM DENSE	10-30
STIFF	8-16	DENSE	30-50
VERY STIFF	16-32	VERY DENSE	OVER 50
HARD	OVER 32		

*Number of blows of 140 lb hammer falling 30" to drive a 2" O.D. (1-3/8" I.D.) split-spoon sampler (ASTM D1586).

TEST BORING LOG

Project: Screen Walls-Arizona Water Company – Casa Grande, Arizona Test Boring: 1

Elevation: Not Determined Datum: --- Date: 5-30-14

Depth, feet	Blows/Foot C	Blows/Foot N/R	Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description Well Site #30
	15	24	R	107	9	CL	FILL: Sandy Clay, Some Gravel; brown, slightly damp to damp, very stiff, medium plasticity.
	12						
	9	11	R	108	12		
	15					CL	Sandy Clay, Trace Gravel; brown, slightly damp, stiff, medium plasticity, moderate cementation below 9 feet.
5	25						
	26	28	R	104	9		
	29						
10		43	R	96	7		
15							
20							
							Stopped drilling at 20 feet. No groundwater observed.
25							

This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.

TEST BORING LOG

Project: Screen Walls-Arizona Water Company – Casa Grande, Arizona Test Boring: 2

Elevation: Not Determined Datum: --- Date: 5-30-14

Depth, feet	Blows/Foot C	Blows/Foot N/R	Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description Well Site #31
	19	27	R	120	8	SC	FILL: Clayey Sand, Trace Gravel; brown, slightly damp, medium dense, medium plasticity fines.
	20					SC	Clayey Sand, Trace Gravel; brown, slightly damp, medium dense, medium plasticity fines.
	20	27	R	121	6		
	30						
5	29						5
	31	26	R	111	7		
	34						
10							10
		16	R	88	18		
15							15
20							20
							Stopped drilling at 20 feet. No groundwater observed.
25							25

This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.

APPENDIX B
LABORATORY ANALYSIS

R·A·M·M

LABORATORY TEST RESULTS

Date: 11-Jun-14

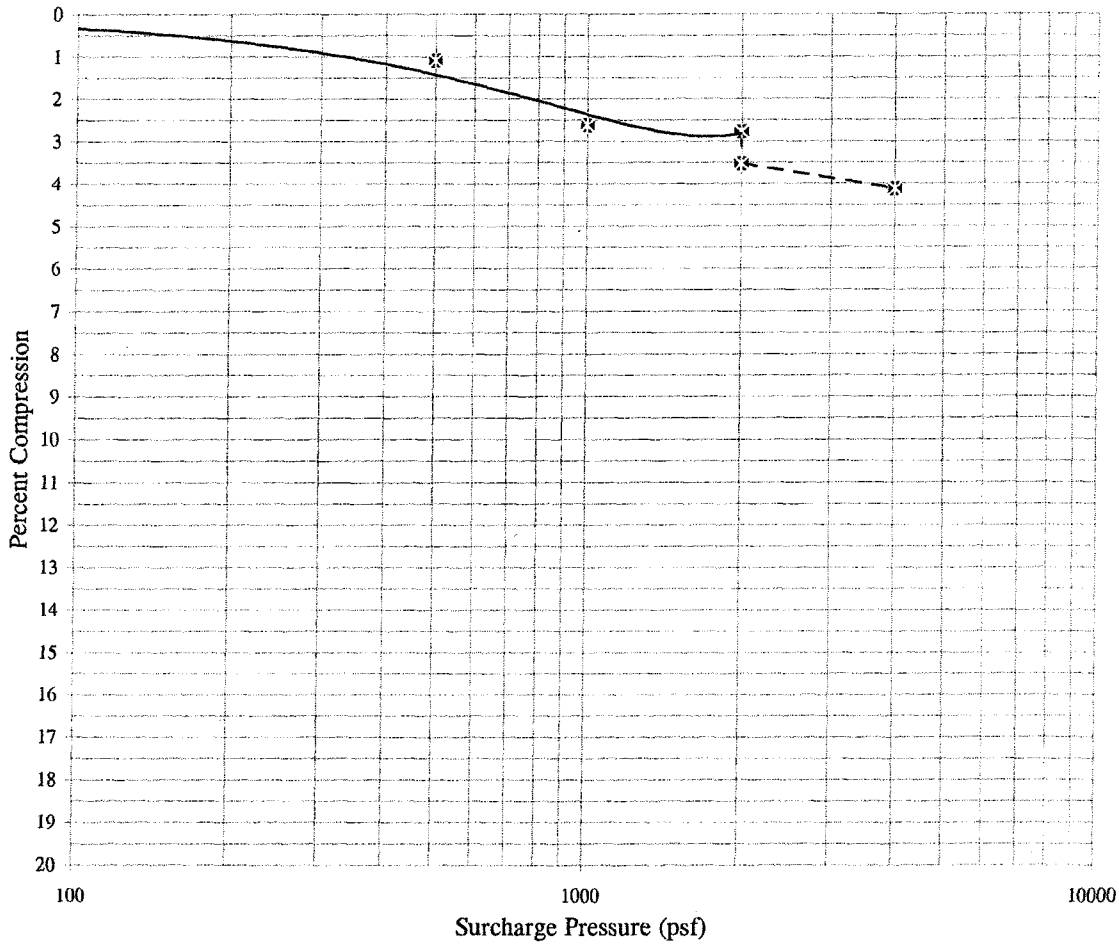
SAMPLE SOURCE: 1 @ 2'-3'

TESTING PERFORMED: Compression (ASTM D2435) - Driven Ring Sample

SAMPLED BY: RAMM/Miller

RESULTS:

Dry Density (pcf): 108 Moisture Content (%): 12



REMARKS: Sample submerged at 2000 psf.

LABORATORY TEST RESULTS

Date: 11-Jun-14

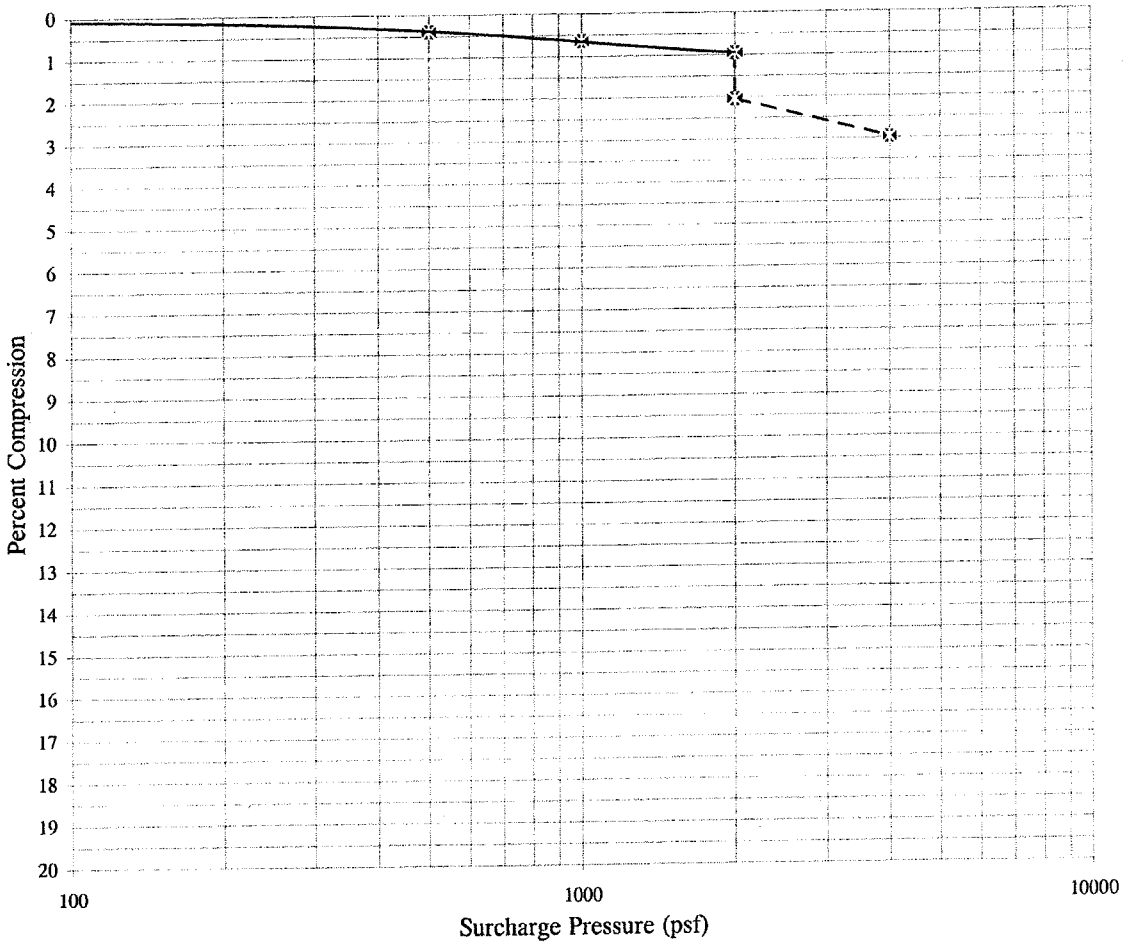
SAMPLE SOURCE: 2 @ 2'-3'

TESTING PERFORMED: Compression (ASTM D2435) - Driven Ring Sample

SAMPLED BY: RAMM/Miller

RESULTS:

Dry Density (pcf): 121 Moisture Content (%): 6



REMARKS: Sample submerged at 2000 psf.

LABORATORY TEST RESULTS

Date: 12-May-14

SAMPLE SOURCE: As noted below

TESTING PERFORMED: Percent Passing No. 200 Sieve, Atterberg Limits, Percent Expansion (ASTM D1140, D4318, D4546)

SAMPLED BY: RAMM/Miller

RESULTS:

Sample Source	Percent Retained No. 4 Sieve	Percent Passing No. 200 Sieve	Liquid Limit	Plasticity Index	Percent Expansion*	Remolded Dry Density (pcf)	Remolded Moisture Content (%)
1 @ 0'-5'	10	57	28	12	4.1	105	14
2 @ 0'-5'	1	41	22	7	0.9	117	9

* Based upon sample remolded to 95% of the estimated maximum dry density at 2% below the estimated optimum moisture content, with a surcharge pressure of 100 psf.

LABORATORY TEST RESULTS

Date: 11-Jun-14

SAMPLE SOURCE: As noted below

TESTING PERFORMED: pH, Minimum Resistivity (ADOT 236a)

SAMPLED BY: RAMM/Miller

RESULTS:

Sample Source	pH	Minimum Resistivity (ohm-cm)
1 @ 0'-5'	8.1	816
2 @ 0'-5'	8.2	879

MOTZZ LABORATORY, INC.

Soil Analysis Report

Ricker-Atkinson-McBee-Morman
Ken Ricker
2105 South Hardy Dr.
Suite 13
Tempe , AZ 85282-1924

Project: G21393
Sampler:
Date Received: 6/6/2014
Date Reported: 6/11/2014
PO Number: G21393

Lab Number: 910417-01 **1 (0-5')**

Soluble Salts, Sulfate & Chloride	Method	Result	Units	Levels
Soluble Salts	ARIZ 237b SS	1293	ppm	
Sulfate, SO4	ARIZ 733	161	ppm	
Chloride, Cl	ARIZ 736	83	ppm	

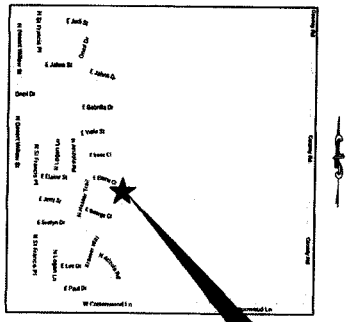
Soluble Salts 0.13%; Sulfate 0.016% ; Chloride 0.0083%

Lab Number: 910417-02 **2 (0-5')**

Soluble Salts, Sulfate & Chloride	Method	Result	Units	Levels
Soluble Salts	ARIZ 237b SS	1741	ppm	
Sulfate, SO4	ARIZ 733	72	ppm	
Chloride, Cl	ARIZ 736	72	ppm	

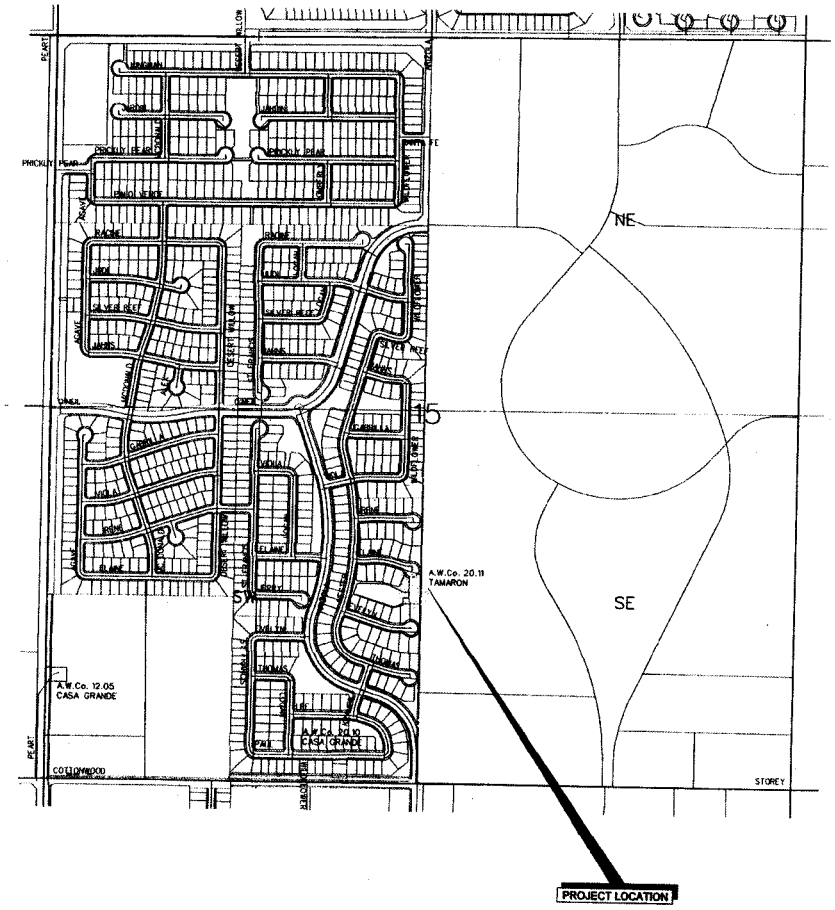
Soluble Salts 0.17%; Sulfate 0.0072% ; Chloride 0.0072%

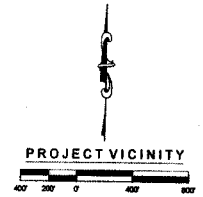
CONSTRUCT 238 LF OF 6 FT. HIGH C.M.U. BLOCK WALL ALONG THE EAST PROPERTY LINE, CONSTRUCT RETENTION BASIN AT WELL 31 CASA GRANDE, AZ.
SW 1/4 SEC. 15, T. 6 S., R. 6 E. OF THE G. & S. R. B. & M.



SITE ADDRESS: 1697 E. ELAINE COURT
CASA GRANDE, AZ. 85222

VICINITY MAP





SITE STATISTICS
APN: 505-15-004D
SITE ADDRESS: 1697 E. ELAINE CT.
CASA GRANDE, AZ. 85222
SITE AREA: 0.36 ACRES
SITE USE: WATER WELL SITE
ZONING: PAD

OWNER/ENGINEER/DEVELOPER
ARIZONA WATER COMPANY
POST OFFICE BOX 29006
PHOENIX, AZ. 85038-9006
VOICE: (602) 240-6860 FAX: (602) 294-2169
CONTACT: JAMES WILSON

SHEET INDEX

SHT. No.	DWG. No.	DESCRIPTION	PREPARED BY
1	PV-0073	PROJECT VICINITY	A.W.Co.
2	PV-0073	EXISTING SITE AND DEMOLITION PLAN	A.W.Co.
3	PV-0073	WALL CONSTRUCTION PLAN	A.W.Co.
4	PV-0073	PIPING, BASIN CONSTRUCTION DETAILS	A.W.Co.
5	PV-0073	PIPING, BASIN SECTIONS	A.W.Co.
S1	JOB# 398-14	STRUCTURAL WALL AND DETAILS	S.M.I., INC.

LEGEND
- ½" REBAR PROPERTY CORNER
- ELECTRICAL EQUIPMENT/BOXES
- LIGHT/POWER POLES
- ANTENNA/PEDESTAL
- WATER VALVE
- EYEWASH/SHOWER STATION
- STREET CENTERLINE/MONUMENT LINE
- PROPERTY LINE
- EASEMENT LINE
- 8" D.I. — EXIST. WATER LINE
- EXIST. WATER LINE (BLUESTAKE)
- EXIST. UNDERGROUND ELECTRIC
- EXIST. WALLS
- EXIST. CHAIN LINK FENCE
- PROPOSED NEW WALL
- CONTOURS

RELEASED TO CONSTRUCTION
SEP 23 2014
FRED SCHNEIDER

The installation shown is to be installed in accordance with the Arizona Water Company Standard Specifications on file with the Arizona Department of Environmental Quality

Call Before You Dig 263-1100 1-800-STAKE-IT (Arizona residents only)

R.C. No. 1-5165 | P.C. No. 1337
SERVED: PINAL VALLEY
LEGAL DESC: SW 1/4 SEC. 15, T. 6 S., R. 6 E.
SEC. 15 T. 6 S. R. 6 E. | 0408
DATE: 1/2/2014 | SCALE: AS SHOWN
DRAWN BY: JAK | CHECKED BY:

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

PROJECT DESC: CONSTRUCT 238 LF OF 6 FT. HIGH C.M.U. BLOCK WALL ALONG THE EAST PROPERTY LINE, CONSTRUCT RETENTION BASIN AT WELL 31, CASA GRANDE, AZ.
PROJECT SHEET DESC: PROJECT OVERALL

41046 JAMES T. WILSON Expires 6/30/15

DWG. No. PV-0073
SHEET 1 OF 5

SITE EQUIPMENT INDEX		
INDEX	NAME	DESCRIPTION OF EQUIPMENT
-A-	CHLOR. BLDG.	6' X 6' X 7' HIGH CHLORINATOR SHED ON CONC. PAD
-B-	ANTENNA	APPROX. 15' HIGH RADIO ANTENNA
-C-	ELEC. CABINET	APPROX. 5' X 12' X 6' HIGH ELEC. CAB. ON CONC. PAD
-D-	EX. XFMR	APPROX. 3' HIGH ELEC. TRANSFORMER BOX
-E-	COVERED PAD	CHEMICAL STORAGE PAD/EYEWASH STATION
-F-	EX. LIGHT POLE	APPROX. 12' HIGH SITE LIGHT
-G-	WELL No. 31	EXISTING WELL
-H-	WEIR BOX	WELL DISCHARGE DRAINAGE

NOTES:

1. CONTRACTOR TO PROVIDE TEMPORARY SITE SECURITY FENCE DURING CONSTRUCTION.

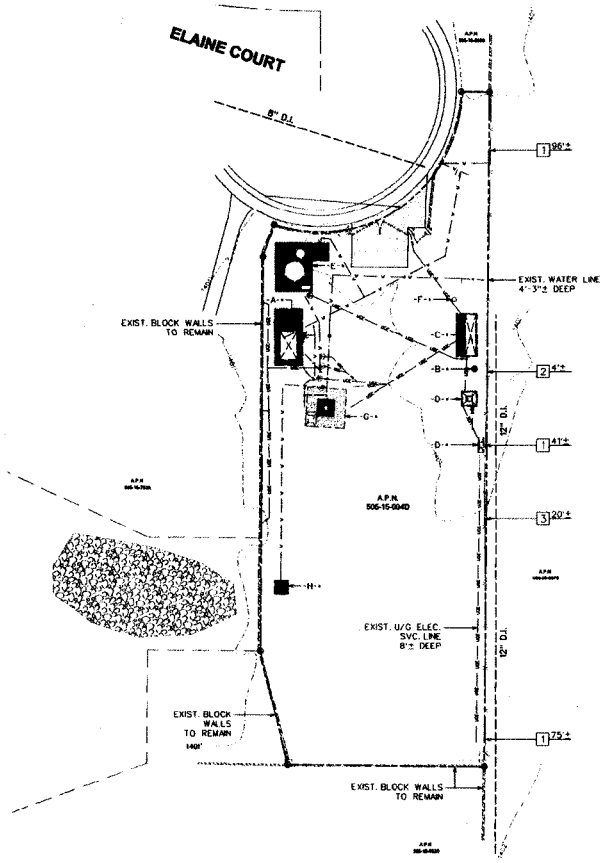
2. ARIZONA WATER COMPANY WILL BE RESPONSIBLE FOR PROPERTY CORNER STAKING IF NECESSARY.

3. CONTRACTOR TO REMOVE SUN-BURNT LAYER ON C-900 PIPE.

4. FILL TRENCHES WITH 18" - 24" SAND. NATIVE SOIL TO BACKFILL WITH MECHANICAL COMPACTION.

5. CONTRACTOR TO ADD 3/4" DECOMPOSED GRANITE APPROXIMATELY 2" DEEP TO ENTIRE SITE.

6. CONTRACTOR TO PAINT EXTERIOR OF WALL TO MATCH EXISTING WALLS.



DEMOLITION PLAN NOTES

TO BE DEMOLISHED AND REMOVED:

1. APPROX. 212 LF OF EXISTING 6' TALL CHAIN LINK FENCE AND SLATS, BARBED WIRE AND CONCRETE FOOTING. REMOVE FENCING ALONG EAST PROPERTY LINE ONLY.
2. CHAIN LINK SWING GATE 4' WIDE X 6' TALL
3. CHAIN LINK SLIDING GATE 20' WIDE X 6' TALL

LEGEND

- ½" REBAR PROPERTY CORNER
- ELECTRICAL EQUIPMENT/BOXES
- LIGHT/POWER POLES
- ANTENNA/PEDESTAL
- WATER VALVE
- EYEWASH/SHOWER STATION
- STREET CENTERLINE/MONUMENT LINE
- PROPERTY LINE
- EASEMENT LINE
- 8" D.I. EXIST. WATER LINE
- EXIST. WATER LINE (BLUESTAKE)
- EXIST. UNDERGROUND ELECTRIC
- EXIST. WALLS
- EXIST. CHAIN LINK FENCE
- PROPOSED NEW WALL
- CONTOURS

EXISTING SITE AND DEMOLITION PLAN

20' 10' 0' 20' 40'

RELEASED TO CONSTRUCTION
SEP 2 8 2014
FRED SCHNEIDER

REVISIONS

The installation shown is to be installed in accordance with the Arizona Company standard specifications on file with the Arizona Department of Environmental Quality

811 Know what's below. Call before you dig. 263-1100 1-800-STAKE-IT (arizona nevada stake, inc.)

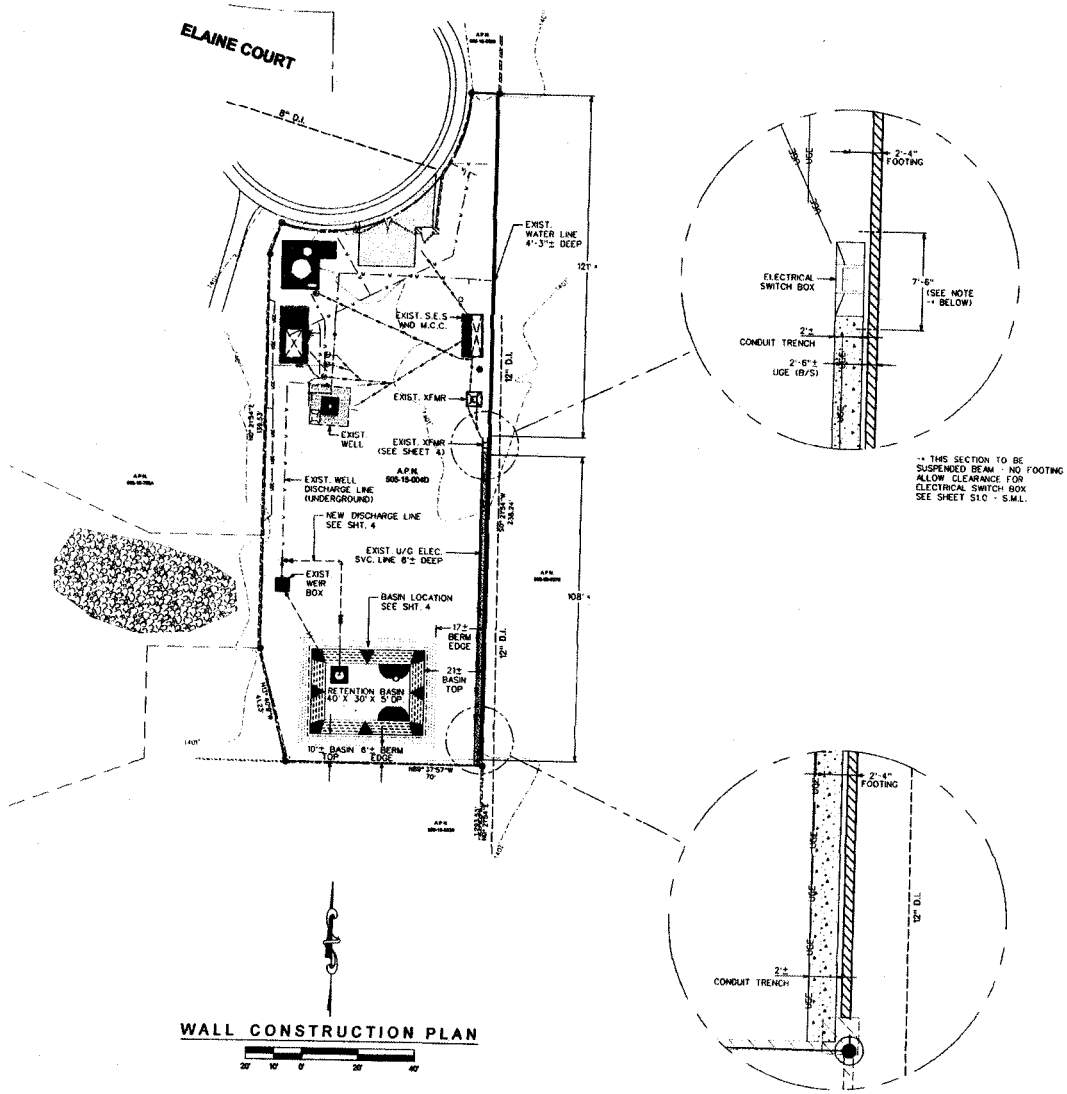
W.O. No.: 1-5165 | P.E. ID: 1337
SYSTEM: PINAL VALLEY
LEGAL DESC: SW 1/4 SEC. 15, T. 6 S., R. 6 E.
AZ GRID:
PROJECT NO.: 0408
SCALE: AS SHOWN
DATE: 1/22/2014
DRAWN BY: JAK
CHECKED BY:

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

PROJECT DESC.: CONSTRUCT 238 LF OF 6 FT. HIGH C.M.U. BLOCK WALL ALONG THE EAST PROPERTY LINE, CONSTRUCT RETENTION BASIN AT WELL 31, CASA GRANDE, AZ.
PROJECT SHEET TITLE: EXISTING SITE AND DEMOLITION PLAN

41045 JAMES T. WILSON REGISTERED LAND SURVEYOR
Expires 6/30/16

DWG No.: PV-0073
SHEET 2 OF 5



WALL CONSTRUCTION PLAN

NOTE: INSTALL 238 L.F. OF ULTRA-BARRIER ALONG THE TOP OF THE C.M.U. WALL (PURCHASE FROM: UNISEC, INC., 2555 NICHOLSON ST., SAN LEANDRO, CA 94577-4216 TOLL FREE: 1-800-982-4587)

NOTES:

1. CONTRACTOR TO PROVIDE TEMPORARY SITE SECURITY FENCE DURING CONSTRUCTION.
2. ARIZONA WATER COMPANY WILL BE RESPONSIBLE FOR PROPERTY CORNER STAKING IF NECESSARY.
3. CONTRACTOR TO REMOVE SUN-BURNT LAYER ON C-900 PIPE.
4. FILL TRENCHES WITH 18" - 24" SAND. NATIVE SOIL TO BACKFILL WITH MECHANICAL COMPACTION.
5. CONTRACTOR TO ADD 3/4" DECOMPOSED GRANITE APPROXIMATELY 2" DEEP TO ENTIRE SITE.
6. CONTRACTOR TO PAINT EXTERIOR OF WALL TO MATCH EXISTING WALLS.

LEGEND

- ½" REBAR PROPERTY CORNER
- ELECTRICAL EQUIPMENT/BOXES
- LIGHT/POWER POLES
- ANTENNA/PEDESTAL
- WATER VALVE
- EYEWASH/SHOWER STATION
- STREET CENTERLINE/MONUMENT LINE
- PROPERTY LINE
- EASEMENT LINE
- 8" D.I. EXIST. WATER LINE
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- EXIST. UNDERGROUND ELECTRIC
- EXIST. WALLS
- EXIST. CHAIN LINK FENCE
- PROPOSED NEW WALL
- CONTOURS

RELEASED TO CONSTRUCTION
SEP 23 2014
FRED SCHNEIDER

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

P.E. NO. 1-5165 | P.S. NO. 1337
DISTRICT: PINAL VALLEY
LEGAL DESC: SW 1/4 SEC. 15, T. 8 S., R. 6 E.
JOB ORDER: 0408
DATE: 1/2/2014
DRAWN BY: JAK
SCALE: AS SHOWN
CHECKED BY:

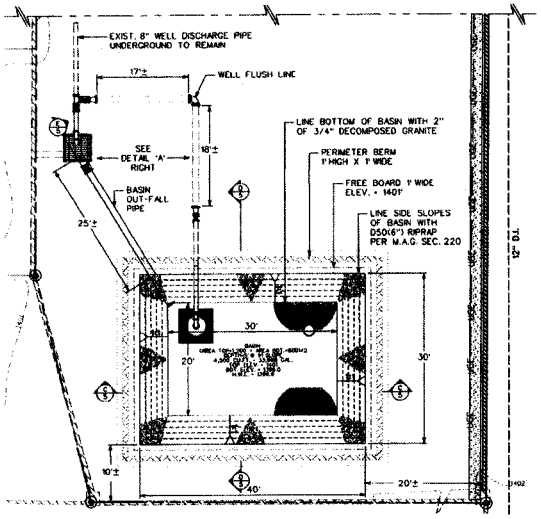
The installation shown is to be installed in accordance with the Arizona Water Company standard practices and with the Arizona Department of Environmental Quality

Dial 811 or 602-263-1100 1-800-STAKE-IT (outside metropolitan Phoenix)

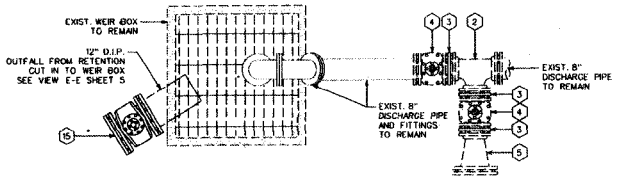
PROJECT DESC: CONSTRUCT 238 LF OF 8 FT. HIGH C.M.U. BLOCK WALL ALONG THE EAST PROPERTY LINE, CONSTRUCT RETENTION BASIN AT WELL 31, CASA GRANDE, AZ.
PROJECT SHEET DESC: WALL CONSTRUCTION PLAN

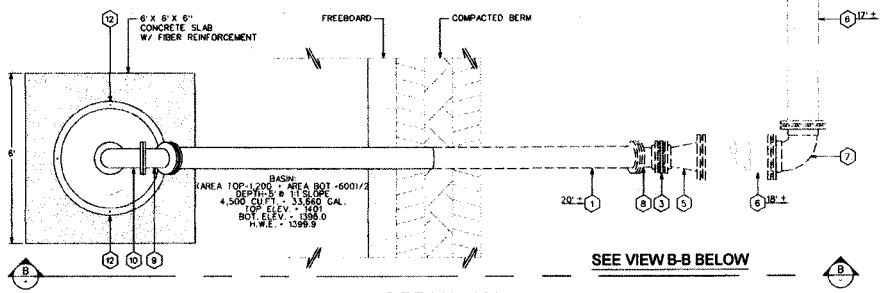
41048 JAMES T. WILSON REGISTERED ARIZONA LAND SURVEYOR Expires 6/30/16

DWG. NO. PV-0073
SHEET 3 OF 5

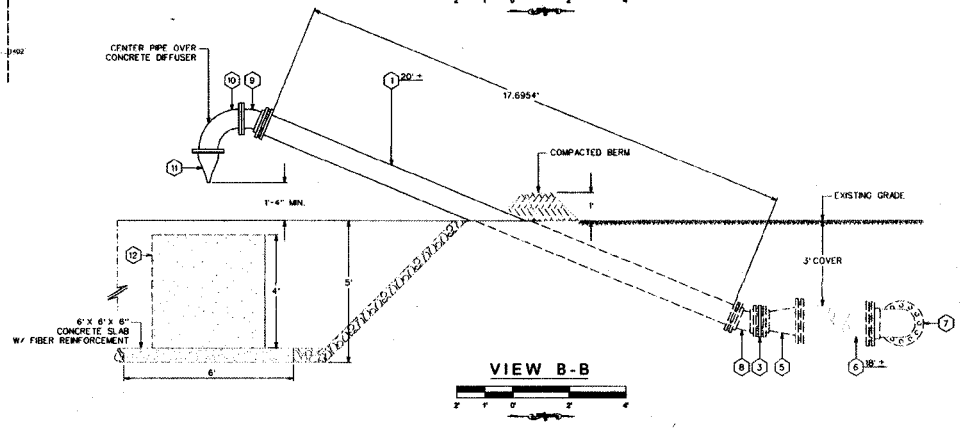


PIPING AND BASIN CONSTRUCTION DETAILS





DETAIL 'A'



VIEW B-B

	FITTING SCHEDULE	QUANTITY	SUPPLIED BY	INSTALLED BY
1	8" D.I.P.	18 LF	CONTR.	CONTR
2	8" M.J. TEE	1	CONTR.	CONTR
3	8" FOSTER ADAPTER	4	CONTR.	CONTR
4	8" M.J. GATE VALVE BOX AND COVER	2	CONTR.	CONTR
5	8" M.J. 12" X 8" REDUCER	2	CONTR.	CONTR
6	12" C-900 PIPE (A.W.C. INVENTORY SEE NOTE 3.)	35 LF	A.W.C.	CONTR.
7	12" M.J. 90° ELL	1	CONTR.	CONTR.
8	8" M.J. 22.5° ELL	1	CONTR.	CONTR.
9	8" M.J. X FLG. 22.5° ELL	1	CONTR.	CONTR.
10	8" FLG. 90° ELL	1	CONTR.	CONTR.
11	8" FLG. DUCKBILL CHECK VALVE (CLA-VAL DBF)	1	CONTR.	CONTR.
12	4' DIA X 48" JENSEN PRECAST MANHOLE RISER W/CONCRETE PAD	1	CONTR.	CONTR.
13	12" D.I.P.	25 LF	CONTR.	CONTR.
14	DRY WELL (DETAIL SHEET 5)	1	CONTR.	CONTR.
15	12" M.J. GATE VALVE	1	CONTR.	CONTR.

NOTES:

1. CONTRACTOR TO PROVIDE TEMPORARY SITE SECURITY FENCE DURING CONSTRUCTION.
2. ARIZONA WATER COMPANY WILL BE RESPONSIBLE FOR PROPERTY CORNER STAKING IF NECESSARY.
3. CONTRACTOR TO REMOVE SUN-BURNT LAYER ON C-900 PIPE.
4. FILL TRENCHES WITH 18" - 24" SAND. NATIVE SOIL TO BACKFILL WITH MECHANICAL COMPACTION.
5. CONTRACTOR TO ADD 3/4" DECOMPOSED GRANITE APPROXIMATELY 2" DEEP TO ENTIRE SITE.

RELEASED TO CONSTRUCTION
SEP 23 2014
FRED SCHNEIDER

REVISIONS

The installation shown is to be installed in accordance with the Arizona Water Company standard specifications and in accordance with the Arizona Department of Environmental Quality

Blue Stake, Inc. 263-1100 1-800-STAKE-IT

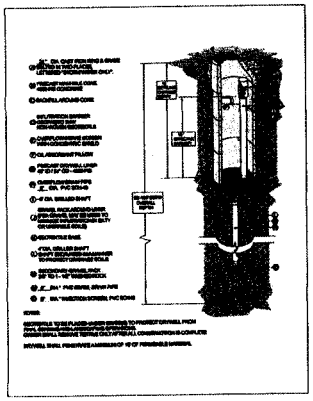
P.S. No.: 1-5165 | P.C. No.: 1337
SYSTEM: PINAL VALLEY
LOCATION: SW 1/4 SEC. 15, T. 6 S., R. 6 E.
FILE DIR.: 0408
DATE: 1/29/2014
DRAWN BY: JAK
SCALE: AS SHOWN
CHECKED BY: JAK

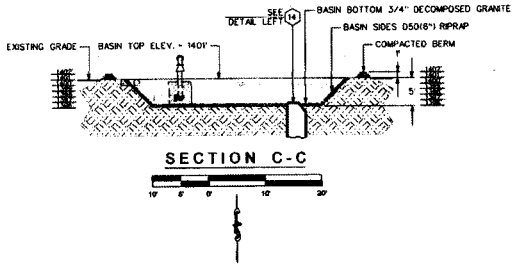
ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

PROJECT DESC: CONSTRUCT 238 LF OF 6 FT. HIGH C.M.U. BLOCK WALL ALONG THE EAST PROPERTY LINE, CONSTRUCT RETENTION BASIN AT WELL 31, CASA GRANDE, AZ.
PROJECT SHEET DESC: PIPING AND BASIN CONSTRUCTION DETAILS

41040 JAMES T. WILSON Expires 6/30/15

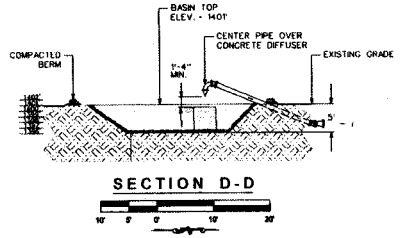
DWG. No.: PV-0073
SHEET 4 OF 5





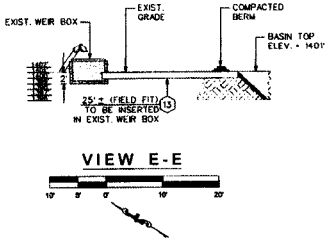
SECTION C-C

10' 5' 0' 10' 20'



SECTION D-D

10' 5' 0' 10' 20'



VIEW E-E

10' 5' 0' 10' 20'

NOTES:

1. CONTRACTOR TO PROVIDE TEMPORARY SITE SECURITY FENCE DURING CONSTRUCTION.
2. ARIZONA WATER COMPANY WILL BE RESPONSIBLE FOR PROPERTY CORNER STAKING IF NECESSARY.
3. CONTRACTOR TO REMOVE SUN-BURNT LAYER ON C-900 PIPE.
4. FILL TRENCHES WITH 18" - 24" SAND. NATIVE SOIL TO BACKFILL WITH MECHANICAL COMPACTION.
5. CONTRACTOR TO ADD 3/4" DECOMPOSED GRANITE APPROXIMATELY 2" DEEP TO ENTIRE SITE.

	FITTING SCHEDULE	QUANTITY	SUPPLIED BY	INSTALLED BY
1	8" D.I.P.	18 LF	CONTR.	CONTR.
2	8" M.J. TEE	1	CONTR.	CONTR.
3	8" FOSTER ADAPTER	4	CONTR.	CONTR.
4	8" M.J. GATE VALVE BOX AND COVER	2	CONTR.	CONTR.
5	8" M.J. 12" X 8" REDUCER	2	CONTR.	CONTR.
6	12" C-900 PIPE (A.W.C. INVENTORY SEE NOTE 3.)	35 LF	A.W.C.	CONTR.
7	12" M.J. 90° ELL	1	CONTR.	CONTR.
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9	8" M.J. X FLG. 22.5° ELL	1	CONTR.	CONTR.
10	8" FLG. 90° ELL	1	CONTR.	CONTR.
11	8" FLG. DUCKBILL CHECK VALVE (CLA-VAL DBF)	1	CONTR.	CONTR.
12	4' DIA. X 48" JENSEN PRECAST MANHOLE RISER W/CONCRETE PAD	1	CONTR.	CONTR.
13	12" D.I.P.	25 LF	CONTR.	CONTR.
14	DRY WELL (DETAIL SHEET 5)	1	CONTR.	CONTR.
15	12" M.J. GATE VALVE	1	CONTR.	CONTR.

PIPING AND BASIN SECTIONS

RELEASED TO CONSTRUCTION
SEP 23 2014
FRED SCHNEIDER

REVISIONS

The installation shown is to be installed in accordance with the Arizona water Company standard specifications and in accordance with the Arizona Department of Environmental Quality

"BLUE STAKE, INC." 263-1100 1-800-STAKE-IT (For new construction)

W.O. No.: 1-5165 | P.C. No.: 1337
SYSTEM: PINAL VALLEY
LEGAL DESC.: SW 1/4 SEC. 15, T. 6 S., R. 6 E.
MAP REF.: 0408
DATE: 12/2/2014
SCALE: AS SHOWN
DRAWN BY: JAK
CHECKED BY:

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

PROJECT DESC.: CONSTRUCT 238 LF OF 6 FT. HIGH C.M.U. BLOCK WALL ALONG THE EAST PROPERTY LINE, CONSTRUCT RETENTION BASIN AT WELL 31, CASA GRANDE, AZ.
PROJECT SHEET DESC.: PIPING AND BASIN SECTIONS

61046 JAMES T. WILSON Expires 6/30/16

DWG. No.: PV-0073
SHEET 5 OF 5

GENERAL STRUCTURAL NOTES:

DESIGN CRITERIA:

CODE: 2006 EDITION OF THE INTERNATIONAL BUILDING CODE

WIND:
V (3-SECOND GUST SPEED) = 90 MPH
IMPORTANCE FACTOR, Iw = 1.00
EXPOSURE = C

NOTES TO CONTRACTOR:

PROJECT SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR OR PERSONS IN CHARGE OF THE DAY-TO-DAY CONSTRUCTION. COMPLY WITH ALL OSHA REQUIREMENTS. UNSECURED ROOF OR FLOOR JOISTS ARE SUBJECT TO ROLL OVER AND SHOULD NOT BE USED AS A WALKING SURFACE UNTIL THEY ARE SECURED AT BOTH SUPPORTS AND LATERALLY BRACED. PROVIDE TEMPORARY BRACING, SHORING, GUYING OR OTHER MEANS TO AVOID EXCESSIVE STRESSES AND TO HOLD STRUCTURAL ELEMENTS IN PLACE DURING ERECTION.

VERIFY EXISTING CONDITIONS SHOWN IN DRAWINGS. PROMPTLY NOTIFY THE ENGINEER OR ARCHITECT IF DETAILS AND INFORMATION CONTAINED ON THESE PLANS DO NOT CONFORM TO THE CONSTRUCTION SITE CONDITIONS.

VERIFY ALL DIMENSIONS AND ELEVATIONS WITH THE ARCHITECTURAL DRAWINGS AND WITH ACTUAL FIELD CONDITIONS. DIMENSIONAL CONTROL IS THE RESPONSIBILITY OF THE ARCHITECT AND THE GENERAL CONTRACTOR. GENERAL CONTRACTOR SHALL VERIFY ALL DOOR AND WINDOW OPENINGS WITH THE ARCHITECTURAL DRAWINGS. ESTABLISH AND VERIFY ALL OPENINGS AND INSERTS FOR MECHANICAL, ELECTRICAL AND PLUMBING WITH APPROPRIATE TRADES, DRAWINGS AND SUBCONTRACTORS PRIOR TO CONSTRUCTION.

IF THERE ARE CONFLICTS IN THE DRAWINGS, THE CONFLICTING ITEMS SHOWN SHALL BE GIVEN FOR BIDDING PURPOSES, OR SUBMIT A PRE-BID REQUEST FOR CLARIFICATION.

ENGINEERING DESIGN PROVIDED BY OTHERS SHALL BEAR THE SEAL OF AN ENGINEER REGISTERED IN THE STATE OF ARIZONA.

SAFETY:

PROJECT SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR OR PERSONS IN CHARGE OF THE DAY-TO-DAY CONSTRUCTION.

SPECIAL STRUCTURAL INSPECTION:

PROVIDE SPECIAL INSPECTION ADDITION TO THE INSPECTIONS CONDUCTED BY THE DEPARTMENT OF BUILDING SAFETY. SPECIAL INSPECTIONS DO NOT RELIEVE THE OWNER FROM REQUESTING THE INSPECTIONS REQUIRED BY IBC SECTION 109

PROVIDE SAFE ACCESS TO THE WORK FACILITIES BY THE SPECIAL STRUCTURAL INSPECTOR. NOTIFY ENGINEER OF CONSTRUCTION START DATE AND COORDINATE INSPECTIONS. PROVIDE THE ENGINEER 24 HOURS NOTICE OF SPECIAL INSPECTIONS. SPECIAL INSPECTIONS MAY BE CONDUCTED AS NOTED IN PARENTHESES BELOW. SEE IBC CHAPTER 17 FOR MORE SPECIFIC INFORMATION.

THE FOLLOWING ITEMS REQUIRE SPECIAL INSPECTION PER IBC CHAPTER 17:

1. MASONRY REINFORCING AND GROUT PLACEMENT (PRIOR TO GROUT PLACEMENT)

FOUNDATION:

SOILS REPORT BY RAMM AND ASSOCIATES, INC., DATED JUNE 17, 2014
REPORT NO. 6236-9 DESIGN SOIL PRESSURE 1,000 PSF

BEAM FOOTINGS ON UNDISTURBED SOIL OR APPROVED ENGINEERED FILL AT 1'-6" BELOW LOWEST ADJACENT FINISHED GRADE.

CONCRETE:

SHALL MEET ALL THE REQUIREMENTS OF THE CURRENT ISSUE OF THE A.C.I. MANUAL OF CONCRETE PRACTICE, WITH TYPE II CEMENT.

MINIMUM 28 DAY STRENGTH OF 2500 PSI.

MECHANICALLY VIBRATE ALL CONCRETE WHEN PLACED, MAXIMUM SLUMP 5"

REINFORCING:

ASTM A615, GRADE 60 EXCEPT AS FOLLOWS:

#4 BARS OR SMALLER ———— GRADE 40

ALL REINFORCING BARS DEFORMED, THE LATEST A.C.I. CODE AND DETAILING MANUAL SHALL APPLY. GRADE 60 BARS SHALL NOT BE FIELD BENT.

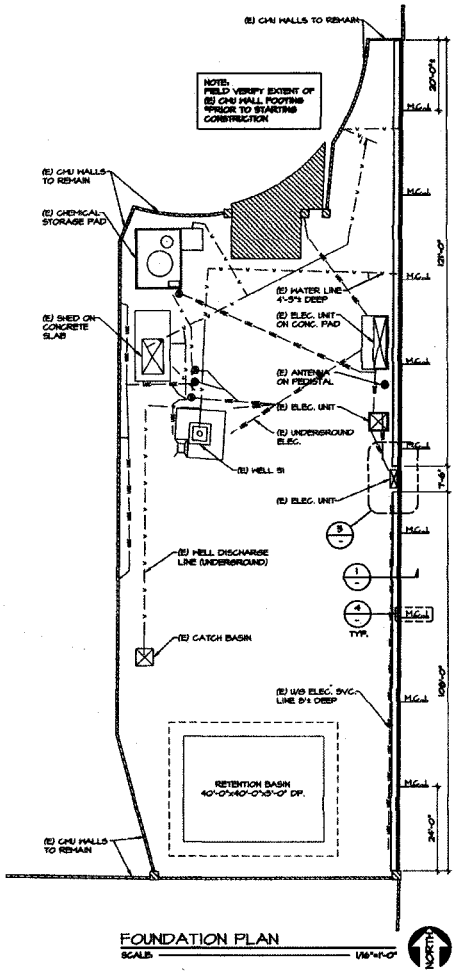
MASONRY:

BLOCK UNITS: ASTM C90-00, f'm = 1500 PSI, RUNNING BOND, MORTAR TYPE S 1,800 PSI, GROUT 3,000 PSI. VIBRATE GROUT IN REINFORCED CELLS IMMEDIATELY AFTER POURING. PROVIDE CLEAN OUTS IF GROUT LIFT EXCEEDS 4'-0" IN BLOCK WALLS. ALL GROUT LIFTS OVER 4'-0" SHALL HAVE PRIOR APPROVAL OF THE STRUCTURAL ENGINEER, UNLESS NOTED OTHERWISE ON PLANS. PLACE CONTROL JOINTS IN MASONRY WALLS SUCH THAT NO STRAIGHT RUN OF WALL EXCEEDS 24'-0" MAXIMUM. USE OPEN END BLOCK AT ALL SOLID GROUTED MASONRY.

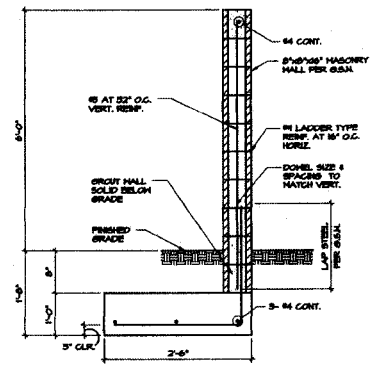
VERTICAL REINFORCING SHALL BE PLACED PER STRUCTURAL DETAILS AND AS FOLLOWS:

1. (1) #5 AT ALL CORNERS (AND 1ST ADJACENT CELL TO CORNER), INTERSECTIONS, WALL ENDS, AND EACH SIDE OF EXPANSION JOINTS.

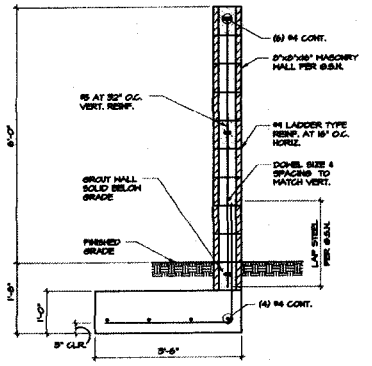
LAP SPLICES SHALL BE 52 BAR DIAMETERS.



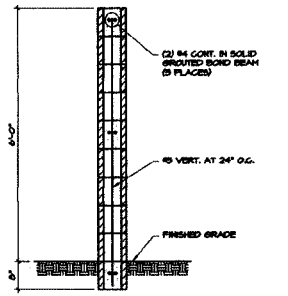
FOUNDATION PLAN
SCALE: 1/16"=1'-0"



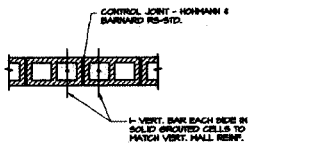
1 SECTION
SCALE: 3/4"=1'-0"



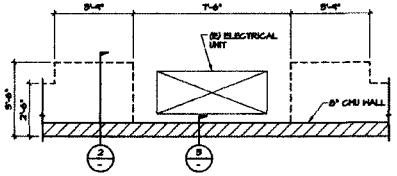
2 SECTION
SCALE: 3/4"=1'-0"



3 SECTION
SCALE: 3/4"=1'-0"



4 SECTION
SCALE: 3/4"=1'-0"



5 PARTIAL FOUNDATION PLAN
SCALE: 3/8"=1'-0"
NORTH

RELEASED TO CONSTRUCTION
SEP 23 2014
FRIED SCHNEIDER

SML
Consulting Structural and Forensic Engineers

Starling Madison Lofquist, Inc.
5224 S. 39th Street
Phoenix, Arizona 85040
(602) 438-2500
fax. (602) 438-2505

PRELIMINARY NOT SIGNED AND SEALED
RESPONSIBLE: T.W. SHAMBLIN, R.C.E. OR M.

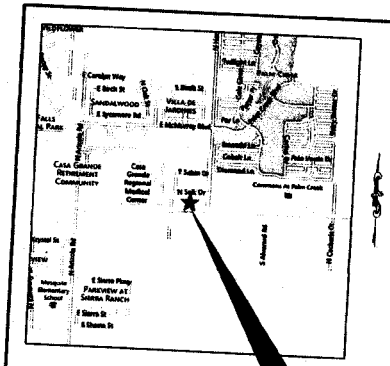
JOB # 398-14

WELL SITE 31
1697 E. ELAINE CT.
CASA GRANDE AZ, 85222

ARIZONA WATER COMPANY
P.O. BOX 29006
PHOENIX AZ, 85038-9006

S1.0

REMOVE EXISTING BLOCK WALL AND CHAIN LINK FENCE AND REPLACE WITH 220 LF OF 8' HIGH C.M.U. PERIMETER WALL AND GATES AROUND WELL SITE NO. 30, CASA GRANDE, AZ.
SE 1/4 SEC. 22, T. 6 S., R. 6 E. OF THE G. & S. R. B. & M.



SITE ADDRESS: 1882 E. FLORENCE BLVD.
CASA GRANDE, AZ. 85222

VICINITY MAP
T 6 S, R 6 E

PROJECT VICINITY

400 200 0 400 800

SITE STATISTICS

APN: 505-15-004D
SITE ADDRESS: 1882 E. FLORENCE BLVD
CASA GRANDE, AZ. 85222
SITE AREA: 0.09 ACRES
SITE USE: WATER WELL SITE
ZONING: UR

OWNER/ENGINEER/DEVELOPER

ARIZONA WATER COMPANY
POST OFFICE BOX 29006
PHOENIX, AZ. 85038-9006
VOICE: (602) 240-6860 FAX: (602) 294-2169
CONTACT: JAMES WILSON

LEGEND

- ½" REBAR PROPERTY CORNER
- ELECTRICAL EQUIPMENT/BOXES
- LIGHT/POWER POLES
- ANTENNA/PEDESTAL
- WATER VALVE
- EYEWASH/SHOWER STATION
- EXISTING TREES
- STREET CENTERLINE/MONUMENT LINE
- RIGHT-OF-WAY LINE
- PROPERTY LINE
- EASEMENT LINE
- 8" D.I. — EX. WATER LINE
- EX. WATER LINE (BLUESTAKE)
- EX. UNDERGROUND ELECTRIC
- EXISTING WALLS
- EX. CHAIN LINK FENCE
- PROPOSED WALLS
- C.M.U. BLOCK PLAIN
- C.M.U. BLOCK SPLIT-FACE
- EXISTING (NEIGHBORING) STUCCO WALLS
- CONTOURS

SHEET INDEX

SHT. No.	DWG. No.	DESCRIPTION	PREPARED BY
1	PV-0072	PROJECT VICINITY	A.W.Co.
2	PV-0072	EXISTING SITE AND DEMOLITION PLAN	A.W.Co.
3	PV-0072	CONSTRUCTION PLAN	A.W.Co.
4	PV-0072	BLOCK WALL LAYOUT (BLOCK PATTERN)	A.W.Co.
5	PV-0072	STANDARD SPECIFICATIONS AND DETAILS, GATE ELEVATIONS	A.W.Co.
S1.0-2.0	JOB#387-14	STRUCTURAL WALL AND DETAILS	S.M.I., INC.

RELEASED TO CONSTRUCTION
SEP 30 2014
FRED SCHNEIDER

REVISIONS

The installation shown is to be installed in accordance with the Arizona Water Company standard specifications on file with the Arizona Corporation Commission and all applicable rules of Environmental Quality.

Call before you dig 263-1100 1-800-STAKE-IT (Arizona residents only)

P.E. No. 1337
SYSTEM: PINAL VALLEY
DRAWING REF: SE 1/4 SEC. 22, T. 6 S., R. 6 E.
JOB NO. 0403
DATE 1/2/2014
SCALE AS SHOWN
DRAWN BY JAK
CHECKED BY
P.W. JOB NO. 1-5185

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

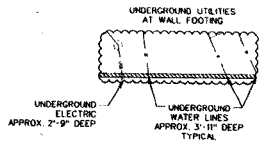
PROJECT DESC: REMOVE EXISTING BLOCK WALL AND CHAIN LINK FENCE AND REPLACE WITH 220 LF OF 8' HIGH C.M.U. PERIMETER WALL AND GATES AROUND WELL SITE NO. 30
PROJECT SHEET DESC: PROJECT VICINITY

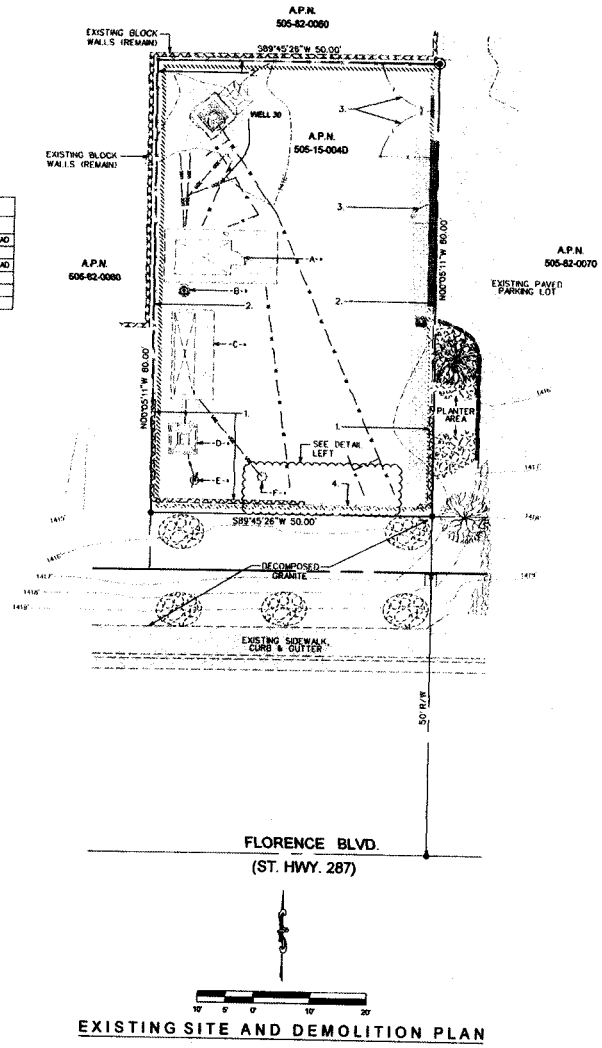
41046 JAMES T. WILSON Expires 6/30/15

DWG. NO.: PV-0072
SHEET 1 OF 5

* - SITE EQUIPMENT INDEX

LABEL	NAME	DESCRIPTION OF EQUIPMENT
-A-	CHLOR. BLDG.	8' X 6' X 7' HIGH CHLORINATOR SHED ON CONC. PAD
-B-	ANTENNA	APPROX. 15' HIGH RADIO ANTENNA
-C-	ELEC. CABINET	APPROX. 7' X 15' X 6' HIGH ELEC. CAB. ON CONC. PAD
-D-	EX. XFMR	APPROX. 3' HIGH ELEC. TRANSFORMER BOX
-E-	EX. POWER POLE	APPROX. 20' HIGH UTILITY POLE
-F-	EX. LIGHT POLE	APPROX. 12' HIGH SITE LIGHT





EXISTING SITE AND DEMOLITION PLAN

DEMOLITION PLAN

TO BE DEMOLISHED AND REMOVED:

1. APPROX. 66 LF OF EXISTING 6' HIGH BLOCK WALL.
2. APPROX. 170 LF OF EXISTING CHAIN LINK FENCE, BARBED WIRE.
3. SWING GATES (1 AT 4' WIDE, 1 AT 16' WIDE), BARBED WIRE.
4. ROLLING GATE (1 AT 20' WIDE), BARBED WIRE

GENERAL NOTES:

1. CONTRACTOR TO PROVIDE TEMPORARY SITE SECURITY FENCE DURING CONSTRUCTION.
2. ARIZONA WATER COMPANY WILL BE RESPONSIBLE FOR PROPERTY CORNER STAKING IF NECESSARY.

LEGEND

- ½" REBAR PROPERTY CORNER
- ELECTRICAL EQUIPMENT/BOXES
- LIGHT/POWER POLES
- ANTENNA/PEDESTAL
- WATER VALVE
- EYEWASH/SHOWER STATION
- EXISTING TREES
- STREET CENTERLINE/MONUMENT LINE
- RIGHT-OF-WAY LINE
- PROPERTY LINE
- EASEMENT LINE
- 8" D.I. — EX. WATER LINE
- EX. WATER LINE (BLUESTAKE)
- EX. UNDERGROUND ELECTRIC
- EXISTING WALLS
- EX. CHAIN LINK FENCE
- PROPOSED WALLS
- C.M.U. BLOCK SMOOTH FACE
- C.M.U. BLOCK SPLIT-FACE
- EXISTING (NEIGHBORING) STUCCO WALLS
- CONTOURS

RELEASED TO CONSTRUCTION
SEP 30 2014
FRED SCHNEIDER

REVISIONS

The installation shown is to be installed in accordance with the Arizona Water Company Standard Specifications and with the Arizona Department of Environmental Quality

811 Call Before You Dig 602-263-1100 1-800-STAKE-IT (for hearing impaired)

A.C.C. No.: 1-5165 | P.E. No.: 1337
SYSTEM: PINAL VALLEY
TWP. SEC.: SE 1/4 SEC. 22, T. 6 S., R. 8 E.
M.C. DIST.: 0463
SCALE: 1/2"=1'-0" | SHEET SIZE: AS SHOWN
DRAWN BY: JAK | CHECKED BY:

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

PROJECT DESC.: REMOVE EXISTING BLOCK WALL AND CHAIN LINK FENCE, AND REPLACE WITH 220 LF OF 6' HIGH C.M.U. PERIMETER WALL AND GATES AROUND WELL SITE NO. 30
PROJECT SHEET DESC.: EXISTING SITE AND DEMOLITION PLAN

41046 JAMES T. WILSON
Expires 9/30/16

DRC No.:
PV-0072
SHEET 2 OF 5

CONSTRUCTION NOTES:

1. SEE SHEET 4 FOR BLOCK WALL LAYOUT (BLOCK PATTERN).

2. 30-FOOT ROLLING GATE WITH 3/4" No. 9 EXPANDED METAL POWDER COAT TO MATCH EXTERIOR WALL COLOR.

3. INSTALL ULTRA-BARRIER ALONG THE TOP OF THE ENTIRE PERIMETER OF THE WALL AND GATES (UNISEC, INC., 2555 NICHOLSON ST., SAN LEANDRO, CA 94577-4216 TOLL FREE: 1-800-982-4587).

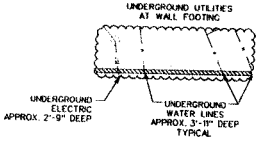
4. PROPOSED 8' TALL, 8" X 8" X 16" C.M.U. BLOCK WALL TO BE 'WESTERN BROWN' OR EQUIVALENT.

5. CONTRACTOR TO PROVIDE 120V POWER AND RELATED ELECTRICAL CONDUIT AND MATERIALS TO AUTOMATIC GATE OPENER.

GENERAL NOTES:

1. CONTRACTOR TO PROVIDE TEMPORARY SITE SECURITY FENCE DURING CONSTRUCTION.

2. ARIZONA WATER COMPANY WILL BE RESPONSIBLE FOR PROPERTY CORNER STAKING IF NECESSARY.



LEGEND

- ½" REBAR PROPERTY CORNER
- ELECTRICAL EQUIPMENT/BOXES
- LIGHT/POWER POLES
- ANTENNA/PEDESTAL
- WATER VALVE
- EYEWASH/SHOWER STATION
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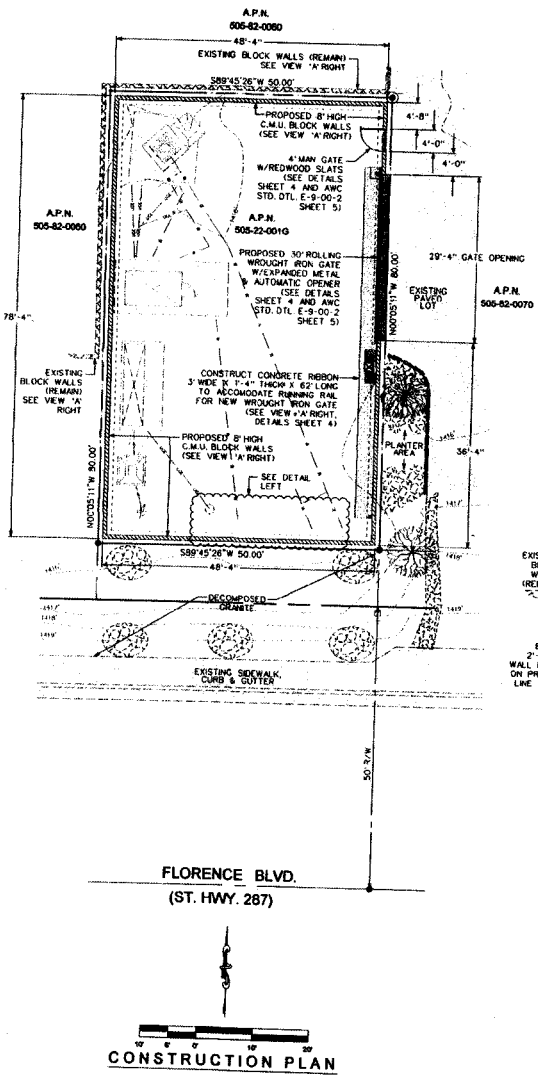
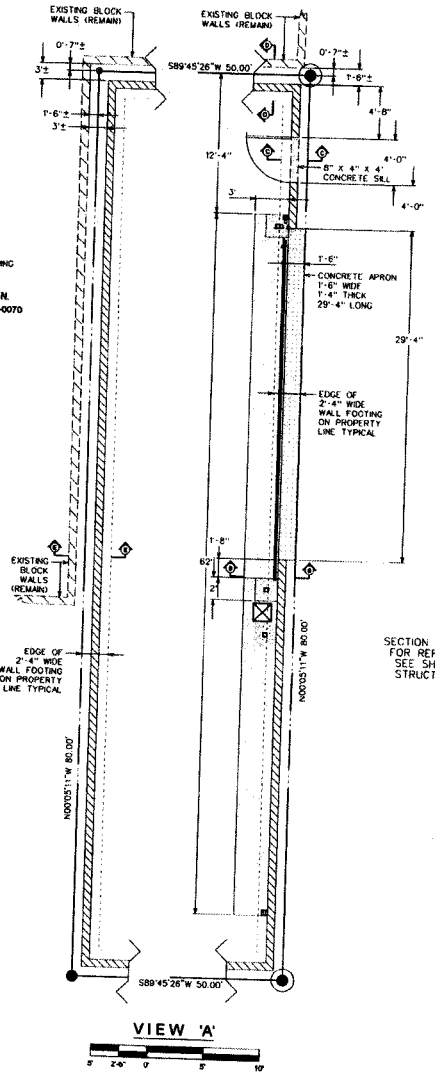
- PROPOSED WALLS
- C.M.U. BLOCK SMOOTH FACE
- C.M.U. BLOCK SPLIT-FACE
- EXISTING (NEIGHBORING) STUCCO WALLS
- CONTOURS

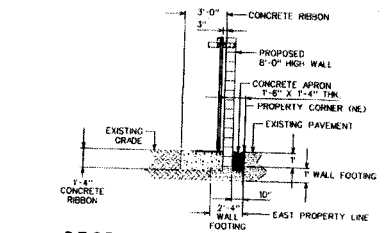


CONSTRUCTION PLAN

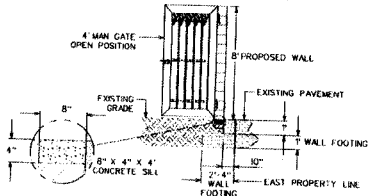


VIEW 'A'

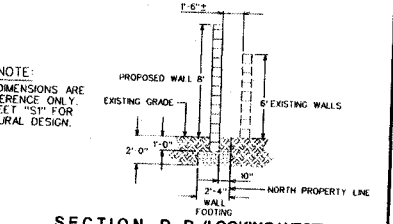
NOTE:
SECTION DIMENSIONS ARE FOR REFERENCE ONLY. SEE SHEET "S1" FOR STRUCTURAL DESIGN.



SECTION B-B (LOOKING NORTH)

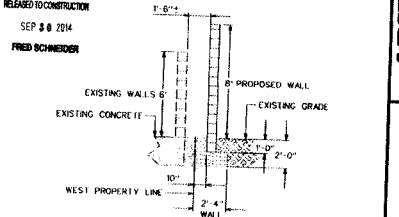


SECTION C-C (LOOKING NORTH)



SECTION D-D (LOOKING WEST)

RELEASED TO CONSTRUCTION
SEP 30 2014
FRED SCHNEIDER



SECTION E-E (LOOKING NORTH)

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

PROJECT DESC.: REMOVE EXISTING BLOCK WALL AND CHAIN LINK FENCE, AND REPLACE WITH 220 LF OF 8' HIGH C.M.U. PERIMETER WALL AND GATES AROUND WELL SITE NO. 30

PROJECT SHEET DESC.: CONSTRUCTION PLAN

#1046 JAMES T. WILSON REGISTERED LAND SURVEYOR
Expires 6/30/16

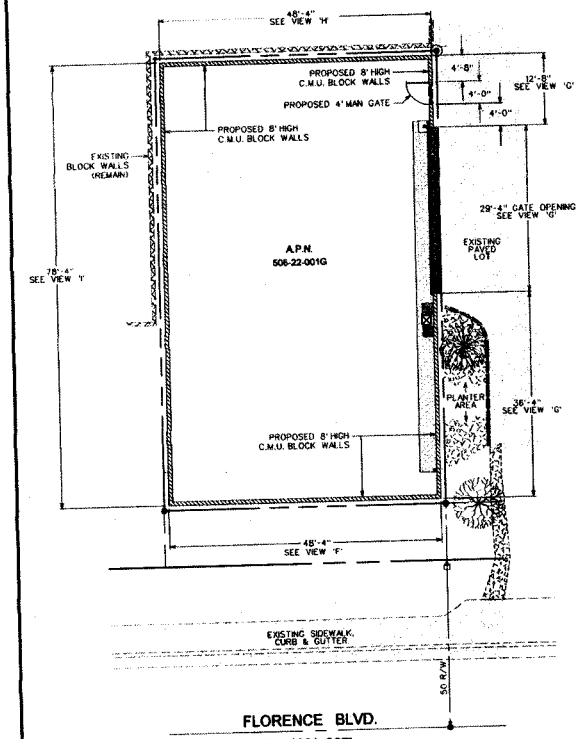
W.O. NO.	1-5165
P.C. NO.	1337
SYSTEM:	PINAL VALLEY
LOC. SEC.:	SE 1/4 SEC. 22, T. 6 S., R. 6 E.
AZ GRID:	0403
DATE:	1/2/2014
SCALE:	AS SHOWN
Drawn BY:	JAK

The installation shown is to be installed in accordance with the Arizona Water Company standards and specifications and with the Arizona Department of Environmental Quality

Dig Right Arizona 263-1100 1-800-STAKE-IT (782-5348) www.azbluestake.com

DOC. No.: PV-0072

SHEET 3 OF 5



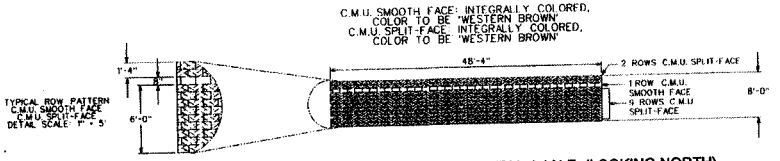
BLOCK WALL LAYOUT (BLOCK PATTERN)

CONSTRUCTION NOTES:

1. SEE SHEET 4 FOR BLOCK WALL LAYOUT (BLOCK PATTERN).
2. 30-FOOT ROLLING GATE WITH 3/4" No. 9 EXPANDED METAL POWDER COAT TO MATCH EXTERIOR WALL COLOR.
3. INSTALL ULTRA-BARRIER ALONG THE TOP OF THE ENTIRE PERIMETER OF THE WALL AND GATES (UNISEC, INC., 2555 NICHOLSON ST., SAN LEANDRO, CA 94577-4216 TOLL FREE: 1-800-982-4587).
4. PROPOSED 8' TALL, 8" X 8" X 16" C.M.U. BLOCK WALL TO BE 'WESTERN BROWN' OR EQUIVALENT.
5. CONTRACTOR TO PROVIDE 120V POWER AND RELATED ELECTRICAL CONDUIT AND MATERIALS TO AUTOMATIC GATE OPENER.

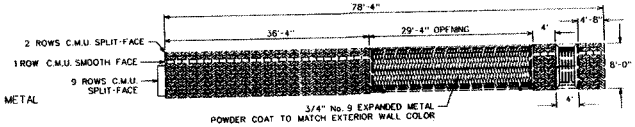
GENERAL NOTES:

1. CONTRACTOR TO PROVIDE TEMPORARY SITE SECURITY FENCE DURING CONSTRUCTION.
2. ARIZONA WATER COMPANY WILL BE RESPONSIBLE FOR PROPERTY CORNER STAKING IF NECESSARY.



VIEW 'F' - SOUTH PROPERTY LINE (LOOKING NORTH)

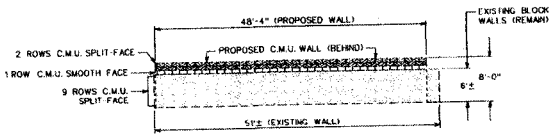
APPROX. 36 BLOCKS/ROW
C.M.U. SMOOTH FACE = 1 ROW = 36
C.M.U. SPLIT-FACE = 11 ROWS = 396



VIEW 'G' - EAST PROPERTY LINE (LOOKING WEST)

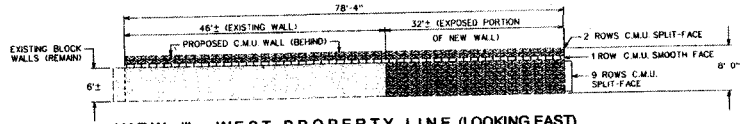
36'-4" SECTION:
APPROX. 27 BLOCKS/ROW
C.M.U. SMOOTH FACE = 1 ROW = 27
C.M.U. SPLIT-FACE = 11 ROWS = 297

8'-8" SECTION (SURROUNDS MAN GATE):
APPROX. 6.5 BLOCKS/ROW
C.M.U. SMOOTH FACE = 1 ROW = 7
C.M.U. SPLIT-FACE = 11 ROWS = 72



VIEW 'H' - NORTH PROPERTY LINE (LOOKING SOUTH)

APPROX. 36 BLOCKS/ROW
C.M.U. SMOOTH FACE = 1 ROW = 36
C.M.U. SPLIT-FACE = 11 ROWS = 396



VIEW 'I' - WEST PROPERTY LINE (LOOKING EAST)

APPROX. 59 BLOCKS/ROW
C.M.U. SMOOTH FACE = 1 ROW = 59
C.M.U. SPLIT-FACE = 11 ROWS = 649

10' 5' 0' 10' 20'

RELEASED TO CONSTRUCTION
SEP 30 2014
FRED SCHNEIDER

REVISIONS

The installation shown is to be installed in accordance with A.A.C. R18-5-505 and the company standard specifications on file with the Arizona Department of Environmental Quality

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY., POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

PROJECT BASE: REMOVE EXISTING BLOCK WALL AND CHAIN LINK FENCE AND REPLACE WITH 7,220 LF OF 8' HIGH C.M.U. PERIMETER WALL AND GATES AROUND WELL SITE NO. 30
PROJECT SHEET SIZE: BLOCK WALL LAYOUT (BLOCK PATTERN)

W.O. No.: 1-5165 | P.E. No.: 1337
SYSTEM: PINAL VALLEY
CLERK'S MAP: SE 1/4 SEC. 22, T. 6 S., R. 6 E.
AZ 811: 0403
DATE: 12/2/2014 | SCALE: AS SHOWN
DRAWN BY: JAK | CHECKED BY:

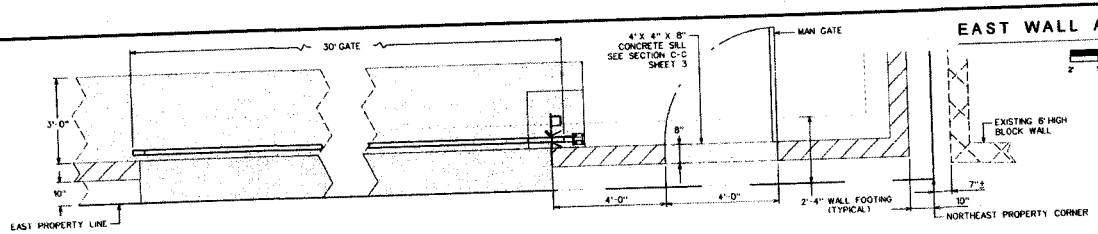
41046 JAMES T. WILSON
REGISTERED LAND SURVEYOR
Expires 6/30/16

DWG. No.: PV-0072
SHEET 4 OF 5

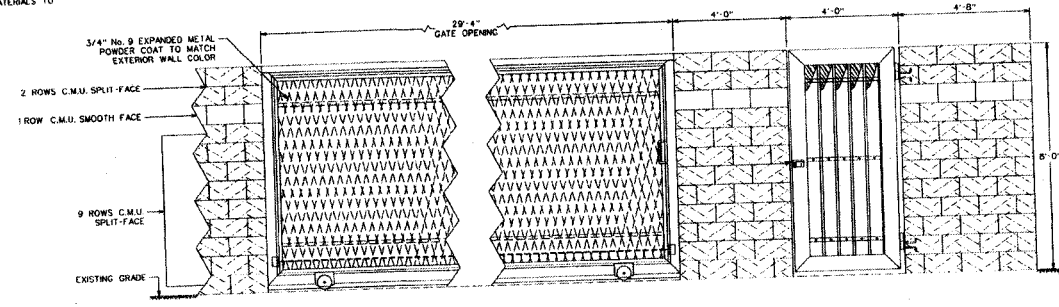
CONSTRUCTION NOTES:

1. SEE SHEET 4 FOR BLOCK WALL LAYOUT (BLOCK PATTERN).
2. 30-FOOT ROLLING GATE WITH 3/4" No. 9 EXPANDED METAL POWDER COAT TO MATCH EXTERIOR WALL COLOR.
3. INSTALL ULTRA-BARRIER ALONG THE TOP OF THE ENTIRE PERIMETER OF THE WALL AND GATES (UNISEC, INC., 2555 NICHOLSON ST., SAN LEANDRO, CA 94577-4216 TOLL FREE: 1-800-982-4587).
4. PROPOSED 8" TALL, 8" X 8" X 16" C.M.U. BLOCK WALL TO BE "WESTERN BROWN" OR EQUIVALENT.
5. CONTRACTOR TO PROVIDE 120V POWER AND RELATED ELECTRICAL CONDUIT AND MATERIALS TO AUTOMATIC GATE OPENER.

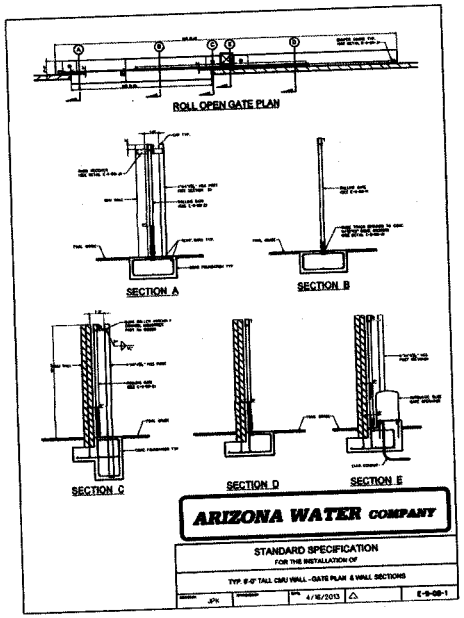
EAST WALL AND GATES PLAN VIEW

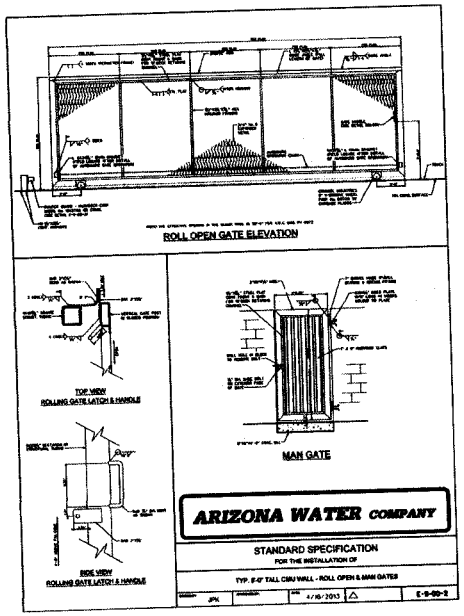


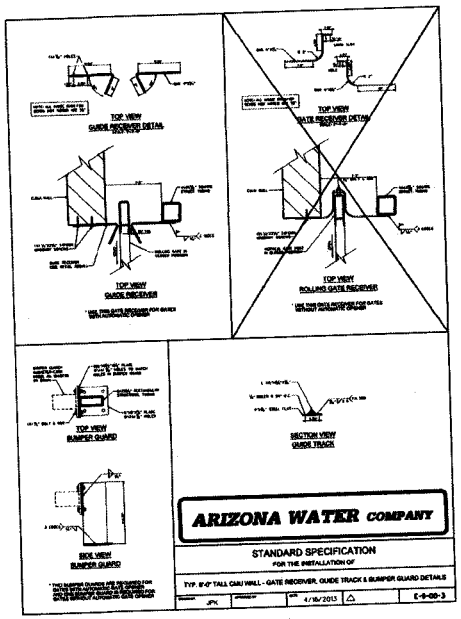
EAST WALL AND GATES ELEVATION



RELEASED TO CONSTRUCTION
SEP 30 2014
FRED SCHNEIDER







STANDARD SPECIFICATIONS AND DETAILS

RECORDS

The installation shown is to be installed in accordance with the Arizona Water Company standard specifications or as noted by the Environmental Quality

Know what's below. Call before you dig. 811 or 1-800-STAKE-IT (782-5348)

J.O. NO.:	1-5185	P.F. NO.:	1337
SYSTEM:	PINAL VALLEY		
LOCATION:	SE 1/4 SEC. 22, T. 6 S., R. 6 E.		
FAC. DIST.:	0403	SCALE:	AS SHOWN
DATE:	1/2/2014	DESIGN BY:	JAK
DRAWN BY:	JAK		

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

PROJECT DESC.: REMOVE EXISTING BLOCK WALL AND CHAIN LINK FENCE, AND REPLACE WITH 2260 LF OF 8' HIGH CMU PERIMETER WALL, AND GATES AROUND WELL SITE NO. 30

PROJECT SHEET DESC.: STANDARD SPECIFICATIONS AND DETAILS, GATE ELEVATIONS

41040
JAMES T. WILSON
Expires 6/30/16

DWG. No.:
PV-0072
SHEET 5 OF 5

GENERAL STRUCTURAL NOTES:

DESIGN CRITERIA:

CODE: 2009 EDITION OF THE INTERNATIONAL BUILDING CODE

WIND:
V (3-SECOND GUST SPEED) = 90 MPH
IMPORTANCE FACTOR, Iw = 1.00
EXPOSURE = C

NOTES TO CONTRACTOR:

PROJECT SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR OR PERSONS IN CHARGE OF THE DAY-TO-DAY CONSTRUCTION. COMPLY WITH ALL OSHA REQUIREMENTS. UNBRACED ROOF OR FLOOR JOISTS ARE SUBJECT TO ROLL OVER AND SHOULD NOT BE USED AS A WALKING SURFACE UNTIL THEY ARE SECURED AT BOTH SUPPORTS AND LATERALLY BRACED. PROVIDE TEMPORARY BRACING, SHORING, GUYING OR OTHER MEANS TO AVOID EXCESSIVE STRESSES AND TO HOLD STRUCTURAL ELEMENTS IN PLACE DURING ERECTION.

VERIFY EXISTING CONDITIONS SHOWN IN DRAWINGS. PROMPTLY NOTIFY THE ENGINEER OR ARCHITECT IF DETAILS AND INFORMATION CONTAINED ON THESE PLANS DO NOT CONFORM TO THE CONSTRUCTION SITE CONDITIONS.

VERIFY ALL DIMENSIONS AND ELEVATIONS WITH THE ARCHITECTURAL DRAWINGS AND WITH ACTUAL FIELD CONDITIONS. DIMENSIONAL CONTROL IS THE RESPONSIBILITY OF THE ARCHITECT AND THE GENERAL CONTRACTOR. GENERAL CONTRACTOR SHALL VERIFY ALL DOOR AND WINDOW OPENINGS WITH THE ARCHITECTURAL DRAWINGS. ESTABLISH AND VERIFY ALL OPENINGS AND INSERTS FOR MECHANICAL, ELECTRICAL AND PLUMBING WITH APPROPRIATE TRADES, DRAWINGS AND SUBCONTRACTORS PRIOR TO CONSTRUCTION.

IF THERE ARE CONFLICTS IN THE DRAWINGS, THE COSTLIER ITEMS SHOWN SHALL BE USED FOR BIDDING PURPOSES, OR SUBMIT A PRE-BID "REQUEST FOR CLARIFICATION".

ENGINEERING DESIGN PROVIDED BY OTHERS SHALL BEAR THE SEAL OF AN ENGINEER REGISTERED IN THE STATE OF ARIZONA.

SAFETY:

PROJECT SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR OR PERSONS IN CHARGE OF THE DAY-TO-DAY CONSTRUCTION.

SPECIAL STRUCTURAL INSPECTION:

PROVIDE SPECIAL INSPECTION ADDITION TO THE INSPECTIONS CONDUCTED BY THE DEPARTMENT OF BUILDING SAFETY. SPECIAL INSPECTIONS DO NOT RELIEVE THE OWNER FROM REGISTERING THE INSPECTIONS REQUIRED BY IBC SECTION 109

PROVIDE SAFE ACCESS TO THE WORK FACILITIES BY THE SPECIAL STRUCTURAL INSPECTOR. NOTIFY ENGINEER OF CONSTRUCTION START DATE AND COORDINATE INSPECTIONS. PROVIDE THE ENGINEER 24 HOURS NOTICE OF SPECIAL INSPECTIONS. SPECIAL INSPECTIONS MAY BE CONDUCTED AS NOTED IN PARENTHESES BELOW. SEE IBC CHAPTER 17 FOR MORE SPECIFIC INFORMATION

THE FOLLOWING ITEMS REQUIRE SPECIAL INSPECTION PER IBC CHAPTER 17:

1. MASONRY REINFORCING AND GROUT PLACEMENT (PRIOR TO GROUT PLACEMENT)

FOUNDATION:

SOILS REPORT BY RANN AND ASSOCIATES, INC., DATED JUNE 17, 2014 REPORT NO. 6029SB DESIGN SOIL PRESSURE 1,000 PSF

BEAR FOOTINGS ON UNDISTURBED SOIL OR APPROVED ENGINEERED FILL AT 2'-0" BELOW LOWEST ADJACENT FINISHED GRADE.

CONCRETE:

SHALL MEET ALL THE REQUIREMENTS OF THE CURRENT ISSUE OF THE A.C.I. MANUAL OF CONCRETE PRACTICE, WITH TYPE II CEMENT.

MINIMUM 28 DAY STRENGTH OF 2,500 PSI.

MECHANICALLY VIBRATE ALL CONCRETE WHEN PLACED, MAXIMUM SLUMP 5"

REINFORCING:

ASTM A615, GRADE 60 EXCEPT AS FOLLOWS:

#4 BARS OR SMALLER——————— GRADE 40

ALL REINFORCING BARS DEFORMED. THE LATEST A.C.I. CODE AND DETAILING MANUAL SHALL APPLY. GRADE 60 BARS SHALL NOT BE FIELD BENT.

MASONRY:

BLOCK UNITS: ASTM C90-00; f'm = 1,500 PSI; RUNNING BOND, MORTAR TYPE S 1,800 PSI, GROUT 3,000 PSI. VIBRATE GROUT IN REINFORCED CELLS IMMEDIATELY AFTER POURING. PROVIDE CLEAN OUTS IF GROUT LIFT EXCEEDS 4'-0" IN BLOCK WALLS. ALL GROUT LIFTS OVER 4'-0" SHALL HAVE PRIOR APPROVAL OF THE STRUCTURAL ENGINEER, UNLESS NOTED OTHERWISE ON PLANS. PLACE CONTROL JOINTS IN MASONRY WALLS SUCH THAT NO STRAIGHT RUN OF WALL EXCEEDS 24'-0" MAXIMUM. USE OPEN END BLOCK AT ALL SOLID GROUTED MASONRY.

VERTICAL REINFORCING SHALL BE PLACED PER STRUCTURAL DETAILS AND AS FOLLOWS:

1. (1) #5 AT ALL CORNERS (AND 1ST ADJACENT CELL TO CORNERS), INTERSECTIONS, WALL ENDS, AND EACH SIDE OF EXPANSION JOINTS.

LAP SPLICES SHALL BE 32 BAR DIAMETERS.

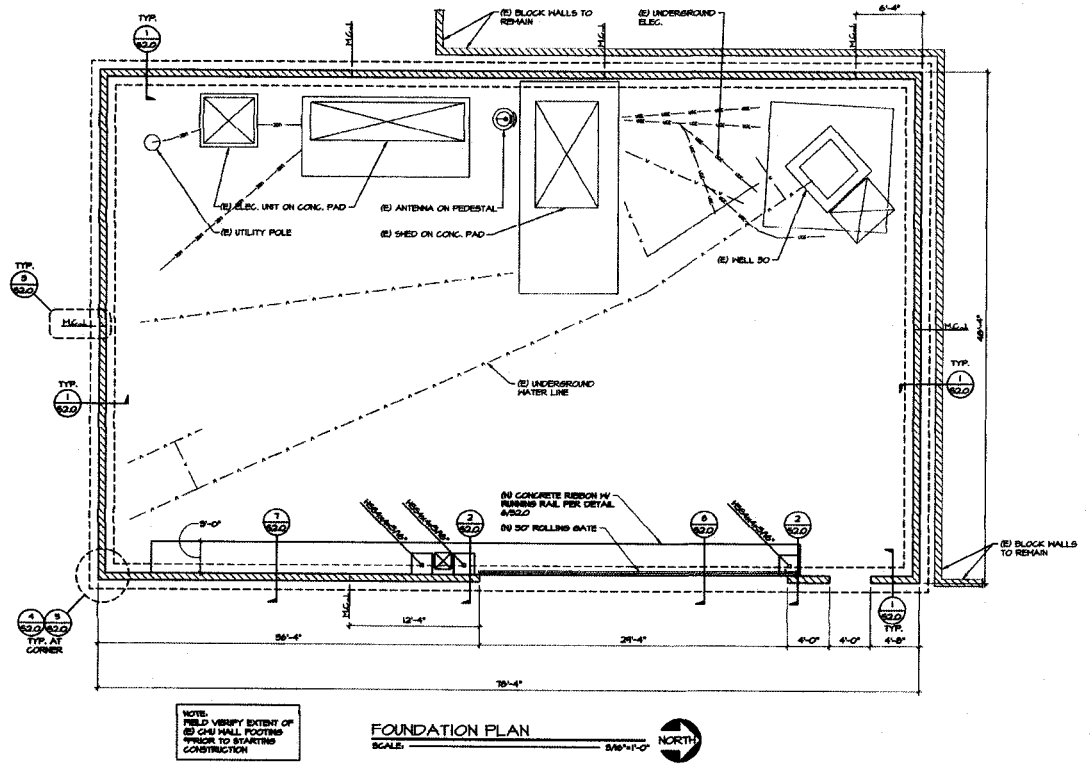
STRUCTURAL STEEL:

TUBE STEEL: ASTM A500 GRADE B (F_y) = 46 KSI
ROLLED SECTIONS, ANGLES, PLATES AND BARS: ASTM A36

POST-INSTALLED ANCHORS:
POST INSTALLED ANCHORS SHALL ONLY BE USED WHERE SPECIFIED ON THE CONSTRUCTION DOCUMENTS. ALL POST-INSTALLED ANCHORS SHALL BE TORQUED TO MANUFACTURER'S REQUIREMENTS. ALL POST-INSTALLED ANCHORS SHALL REQUIRE CONTINUOUS SPECIAL INSPECTION PER THE APPLICABLE ICC-ESR.

ADHESIVE ANCHORS (CONCRETE): COMPLY WITH ICC AC 308, AND SHALL BE ONE OF THE FOLLOWING:
1. SIMPSON SET-XP (ICC-ES ESR-2508)
2. HILTI HIT-RE 500-SD (ICC-ES ESR-2322) OR APPROVED EQUAL

WELDERS SHALL HOLD VALID CERTIFICATES AND HAVE CURRENT EXPERIENCE IN THE TYPES OF WELDS REQUIRED. USE E-70 SERIES LOW HYDROGEN RODS. CONFORM TO AMERICAN WELDING SOCIETY STANDARDS. COMPLETE PENETRATION WELDS SHALL BE TESTED AND CERTIFIED BY AN INDEPENDENT TESTING LABORATORY.



NOTE:
FIELD VERIFY EXTENT OF (E) CHU HALL FOOTING PRIOR TO STARTING CONSTRUCTION

FOUNDATION PLAN
SCALE: 3/16"=1'-0"

NORTH

RELEASED TO CONSTRUCTION
SEP 29 2014
FRED SCHNEIDER

Consulting Structural and Forensic Engineers

Starling Madison Lofquist, Inc.
5224 S. 39th Street
Phoenix, Arizona 85040
(602) 438-2500
fax. (602) 438-2505

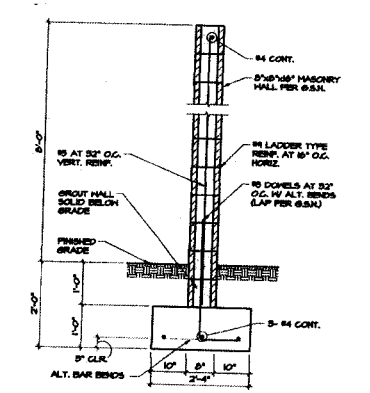
PRELIMINARY NOT SIGNED AND SEALED

JOB # 397-14

WELL SITE 30
1882 E. FLORENCE BLVD.
CASA GRANDE AZ, 85222

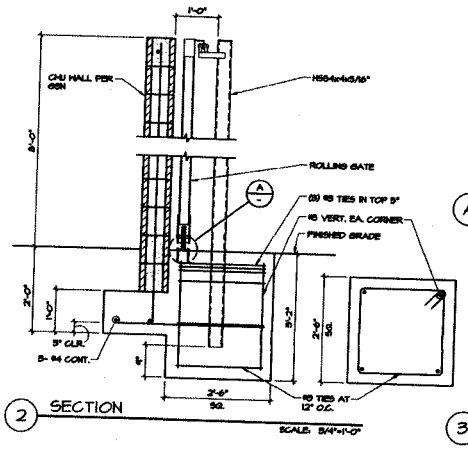
ARIZONA WATER COMPANY
P.O. BOX 29006
PHOENIX AZ, 85038-9006

S1.0



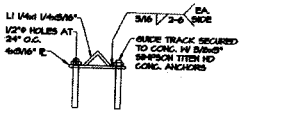
1 SECTION

SCALE: 3/4"=1'-0"



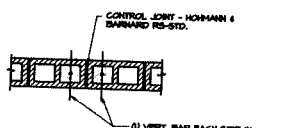
2 SECTION

SCALE: 3/4"=1'-0"



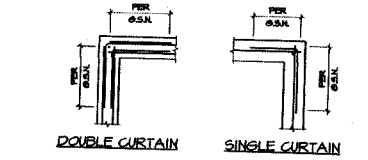
A SECTION

SCALE: 3"=1'-0"



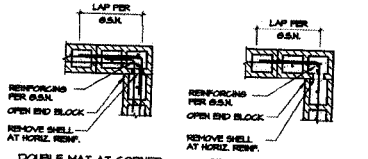
3 SECTION

SCALE: 3/4"=1'-0"



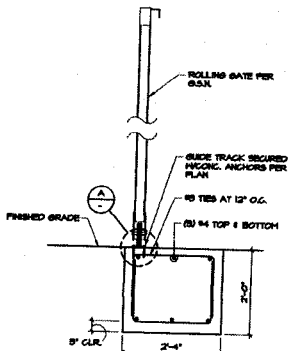
4 SECTION

SCALE: 3/4"=1'-0"



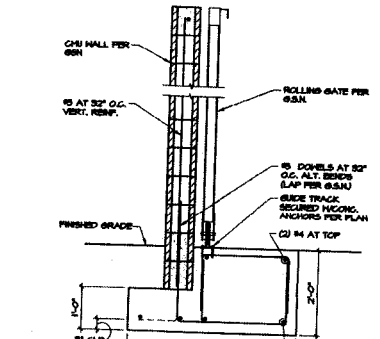
5 SECTION

SCALE: 3/4"=1'-0"



6 SECTION

SCALE: 3/4"=1'-0"



7 SECTION

SCALE: 3/4"=1'-0"

RELEASED TO CONSTRUCTION

SEP 30 2014

FRED SCHNEIDER

Consulting Structural and Forensic Engineers

Starling Madison Lofquist, Inc.
5224 S. 39th Street
Phoenix, Arizona 85040
(602) 438-2500
fax. (602) 438-2505

EXPIRES 09/30/2015
PRELIMINARY IF NOT SIGNED AND SEALED

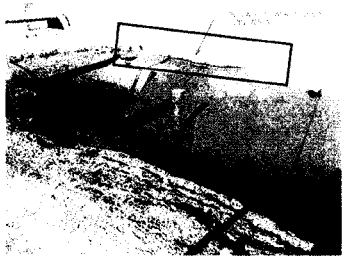
DESIGN: T.W. DRAWN: K.C. CHK.BY:

JOB # 397-14

WELL SITE 30
1882 E. FLORENCE BLVD.
CASA GRANDE AZ, 85222

ARIZONA WATER COMPANY
P.O. BOX 29006
PHOENIX AZ, 85038-9006

S2.0



CONCRETE STAIR DETAIL

PRIMARY TRASH SCREEN

DETAIL 'A'

PIPE SUPPORT DETAIL

RETENTION BASIN DETAIL

COTTONWOOD LANE

SITE PLAN

SECTION 'A'

RELEASED TO CONSTRUCTION
SEP 23 2014
FRED SCHNEIDER

PINAL VALLEY
SW ¼ SEC. 15 - T.6S., R.6E.
0408
4-24-2014
MC
AS SHOWN

263-1100
RO STAGE-T

ARIZONA WATER COMPANY
3802 N. BLACK CANYON HWY PHOENIX, ARIZONA 85038-9008
POST OFFICE BOX 29006
(602) 240-6860

REHAB C.G. WELL NO. 26 RETENTION BASIN IN CASA GRANDE, ARIZONA

SITE PLAN & DETAILS

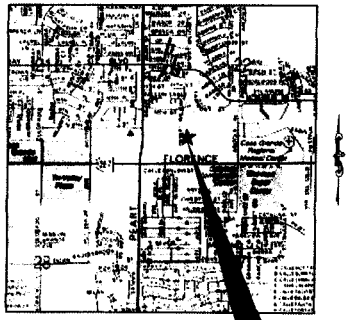
#10046
JAMES T. WILSON
Expires 6/30/16

FOR WATER ONLY

PV-0078

SHEET 1 OF 1

REMOVE EXISTING CHAIN LINK FENCE AND GATES, INSTALL 375 LF OF 8' HIGH C.M.U. PERIMETER WALL, 25' ROLLING GATE AND 4' MAN GATE AROUND WELL SITE NO. 21 SW 1/4 SEC. 22, T. 6 S., R. 6 E. OF THE G. & S. R. B. & M.

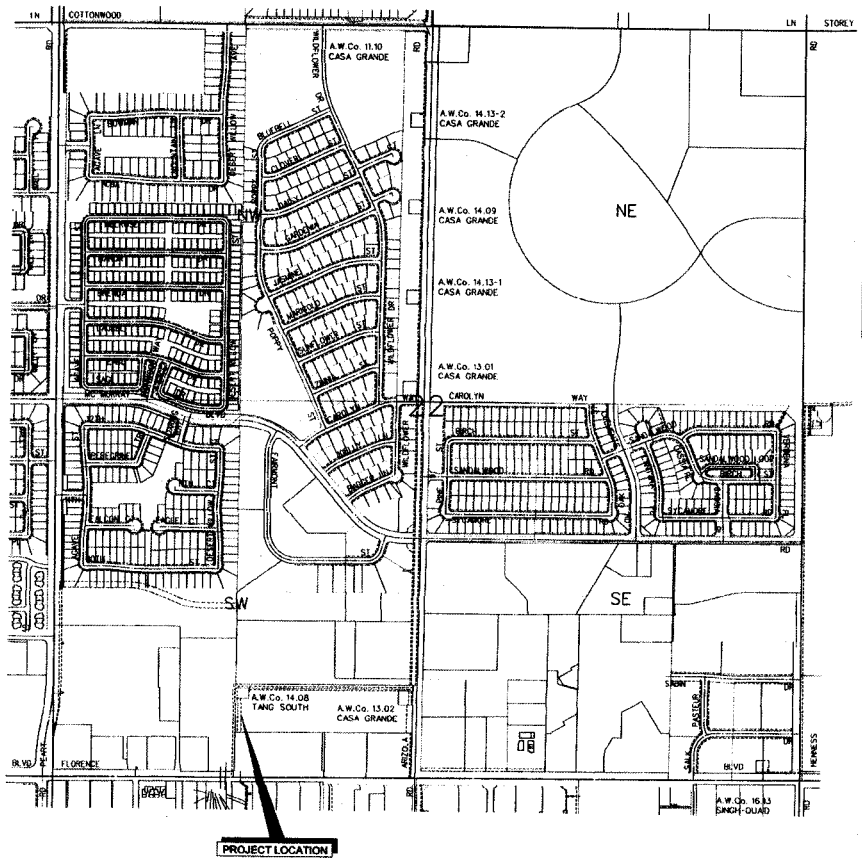


SITE ADDRESS: 1882 E. FLORENCE BLVD.
CASA GRANDE, AZ. 85222

VICINITY MAP

LEGEND

- PROPERTY CORNER
- PROPERTY LINE
- EASEMENT LINE
- W — W — EXIST. WATER LINE
- EXIST. CHAIN LINK FENCE
- NEW WALL
- CONTOURS



PROJECT VICINITY

400' 200' 0' 400' 800'

SITE STATISTICS

APN: 505-15-0040
SITE ADDRESS: 835 N. ARIZOLA RD.
CASA GRANDE, AZ. 85222
SITE AREA: 0.23 ACRES
SITE USE: WATER WELL SITE
ZONING: UR

OWNER/ENGINEER/DEVELOPER

ARIZONA WATER COMPANY
POST OFFICE BOX 29006
PHOENIX, AZ. 85038-9006
VOICE: (602) 240-6860 FAX: (602) 294-2169
CONTACT: JAMES WILSON

SHEET INDEX

SHT. No.	DWG. No.	DESCRIPTION	PREPARED BY
1	PV-0049	PROJECT VICINITY	A.W.Co.
2	PV-0049	EXISTING SITE AND DEMOLITION PLAN	A.W.Co.
3	PV-0049	CONSTRUCTION PLAN	A.W.Co.
4	PV-0049	GATE DETAILS	A.W.Co.
5	PV-0049	SECTIONS AND DETAILS	A.W.Co.
S1.0	JOB#15-13	STRUCTURAL WALL AND DETAILS	S.W.L., INC.

RELEASED TO CONSTRUCTION
SEP 23 2014
FRED SCHNEIDER

REVISIONS
1 REPLACE WOOD SLATS WITH EXPANDED METAL ON 25' GATE

The installation shown is to be installed in accordance with the Arizona Water Company Standard Specifications and with the Arizona Department of Environmental Quality

Blue Stake, Inc. 602-263-1100 1-800-STAKE-IT

P.W. No. 1-516571-5029
SYSTEM: PINAL VALLEY
LOC. DESC.: SW 1/4 SEC. 22, T. 6 S., R. 6 E.
AZ GRID: 0403
DATE: 1/22/2014
SCALE: AS SHOWN
DRAWN BY: JAK
CHECKED BY:

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

PROJECT DESC.: REMOVE EXISTING CHAIN LINK FENCE AND REPLACE WITH 375 LF OF 8' HIGH C.M.U. PERIMETER WALL AND GATES AROUND WELL SITE NO. 21
PROJECT SHEET DESC.: PROJECT VICINITY

41086
JAMES T. WILSON
Expires 6/30/16

DWG. No.: PV-0049
SHEET 1 OF 5

TO BE DEMOLISHED AND REMOVED:

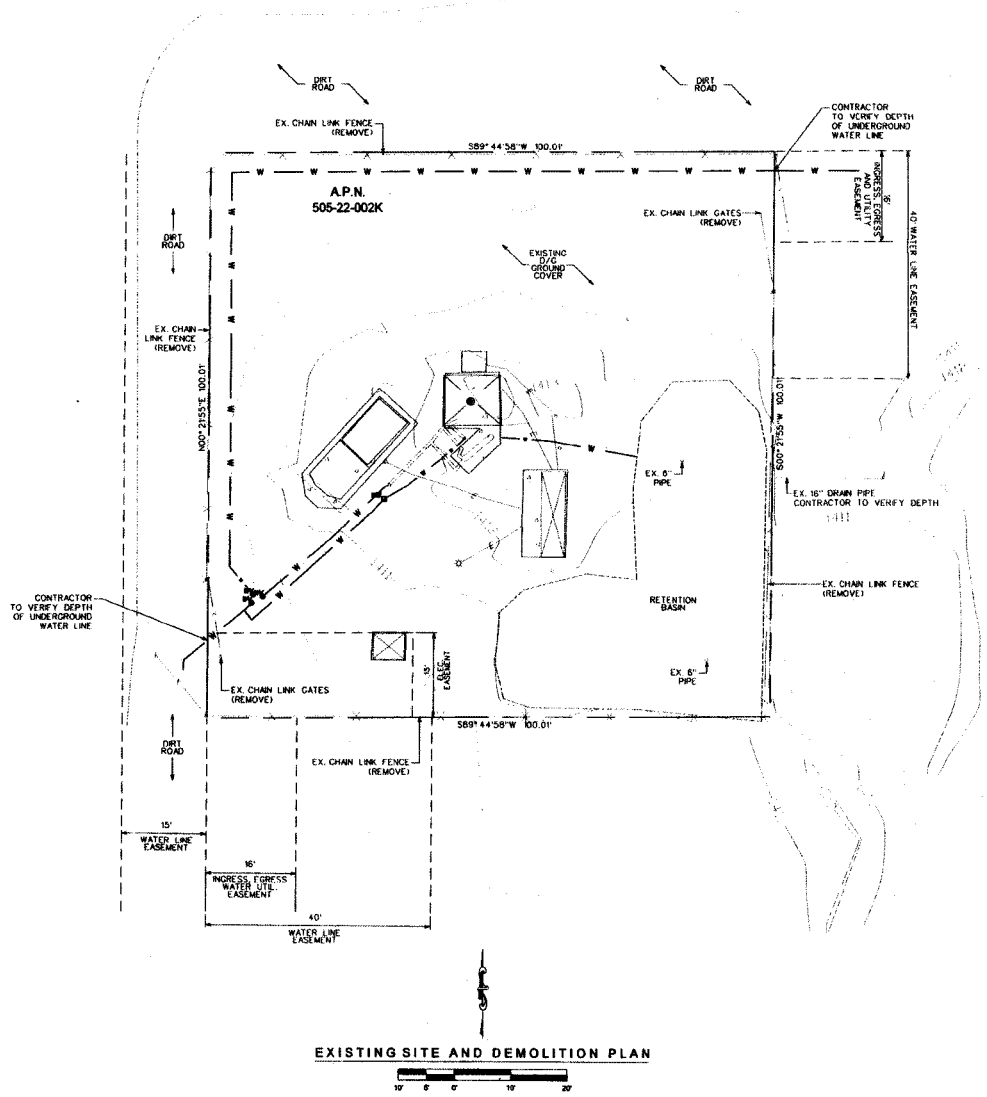
1. APPROX. 350 LF OF EXISTING 6' CHAIN LINK FENCE AND RAZOR WIRE.
2. EXISTING 6' HIGH X 24' LONG CHAIN LINK FENCE GATES (2).

NOTES:

1. CONTRACTOR TO PROVIDE TEMPORARY SITE SECURITY FENCE DURING CONSTRUCTION.
2. ARIZONA WATER COMPANY WILL BE RESPONSIBLE FOR PROPERTY CORNER STAKING IF NECESSARY.

LEGEND

- PROPERTY CORNER
- PROPERTY LINE
- EASEMENT LINE
- W — W — EXIST. WATER LINE
- EXIST. CHAIN LINK FENCE
- NEW WALL
- CONTOURS



EXISTING SITE AND DEMOLITION PLAN

10' 5' 0' 10' 20'

RELEASED TO CONSTRUCTION
SEP 2 3 2014
FRED SCHNEIDER

REVISIONS:
1. REPLACE 6000 SLATS WITH EXPANDED METAL ON 25' ROLLING GATE

This installation shown is to be installed in accordance with the Arizona Water Company standard specifications on file with the Arizona Department of Environmental Quality

Know what's below. Call before you dig. 811 or 1-800-STAKE-IT (outside Arizona, dial 811)

A.W.C. SYSTEM: 4-01651-5029
CERT. NO.: PINAL VALLEY
CERT. DESC.: SW 1/4 SEC. 22, T. 6 S., R. 6 E.
W.O. DIST.: 0403
DATE: 1/2/2014
SCALE: AS SHOWN
DESIGN BY: JAK
DRAWN BY:

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-5860

PROJECT DESC: REMOVE EXISTING CHAIN LINK FENCE AND REPLACE WITH 375 LF OF 8' HIGH CMU PERIMETER WALL AND GATES (RECORD WELL SITE NO. 21
PROJECT SHEET DESC: EXISTING SITE AND DEMOLITION PLAN

41068
JAMES T. WILSON
Expires 6/30/15

DWG. No.: PV-0049
SHEET 2 OF 5

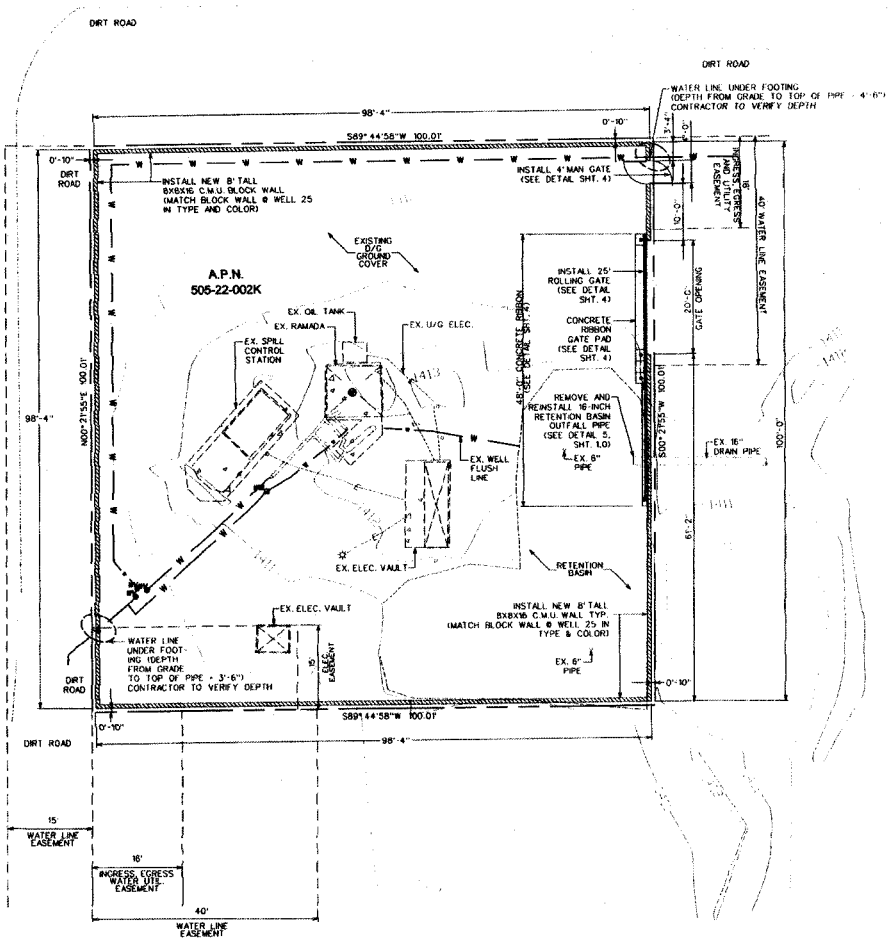
NOTES:

1. CONTRACTOR TO PROVIDE TEMPORARY SITE SECURITY FENCE DURING CONSTRUCTION.
2. ARIZONA WATER COMPANY WILL BE RESPONSIBLE FOR PROPERTY CORNER STAKING IF NECESSARY.

LEGEND

- PROPERTY CORNER
- PROPERTY LINE
- EASEMENT LINE
- EXIST. WATER LINE
- EXIST. CHAIN LINK FENCE
- NEW WALL
- CONTOURS

NOTE: INSTALL 375 L.F. OF ULTRA-BARRIER ALONG THE TOP OF THE PERIMETER FENCE & GATES. (PURCHASE FROM: UNISEC, INC. 2555 NICHOLSON ST., SAN LEANDRO, CA 94577-4218 TOLL FREE: 1-800-982-4587)



CONSTRUCTION PLAN

10' 5' 0' 10' 20'

RELEASED TO CONSTRUCTION
SEP 2 3 2014
FRED SCHNEIDER

REVISIONS:
1. REPLACE 4000 SLATE WITH EXPANDED METAL ON 21 ROLLING SITE. (10.08.14 - JAK)

This installation shown is to be installed in accordance with the Arizona Water Company standard specifications on file with the Arizona Department of Environmental Quality

Blue Stake, Inc. 602-263-1100 1-800-STAKE-IT (for safe excavation)

A.P.N.: 410-16521-5029
SYSTEM: PINAL VALLEY
CTR/C. DESC.: SW 1/4 SEC. 22, T. 6 S., R. 6 E.
W.O. DWG.: 0403
DATE: 1/2/2014
SCALE: AS SHOWN
DRAWN BY: JAK
CHKD BY:

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

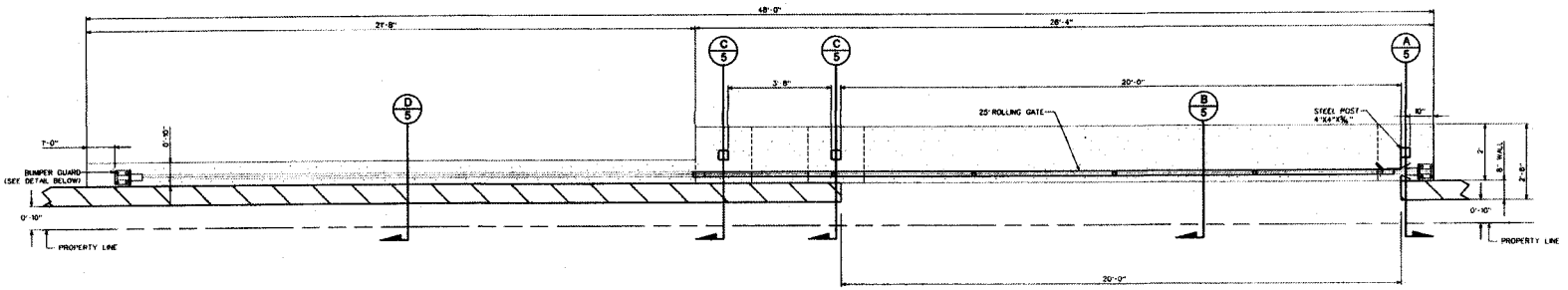
PROJECT DESC.: REMOVE EXISTING CHAIN LINK FENCE AND REPLACE WITH 375 LF OF 8' HIGH C.M.U. PERIMETER WALL AND GATES AROUND WELL SITE NO. 21

PROJECT SHEET DESC.: CONSTRUCTION PLAN

41046 JAMES T. WILSON
Expires 6/30/16

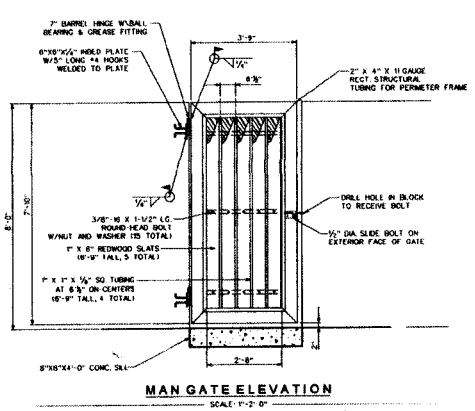
DWG No.: PV-0049

SHEET 3 OF 5



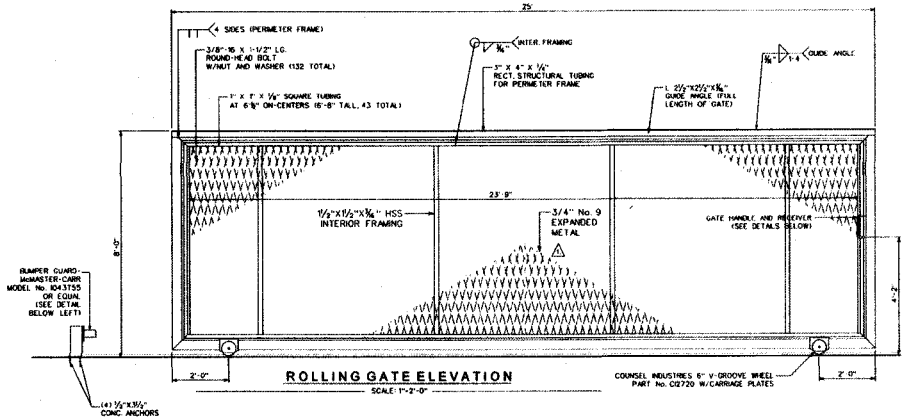
CONCRETE RIBBON AND ROLLING GATE (TOP VIEW)

SCALE: 1"=2'-0"



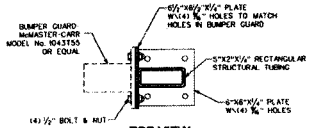
MAN GATE ELEVATION

SCALE: 1"=2'-0"



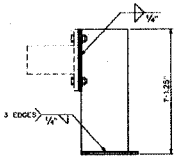
ROLLING GATE ELEVATION

SCALE: 1"=2'-0"



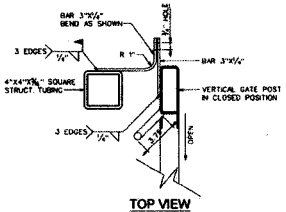
TOP VIEW
BUMPER GUARD

SCALE: 2"=1'-0"



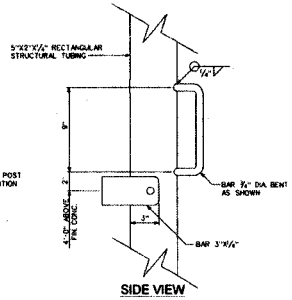
SIDE VIEW
BUMPER GUARD

SCALE: 2"=1'-0"



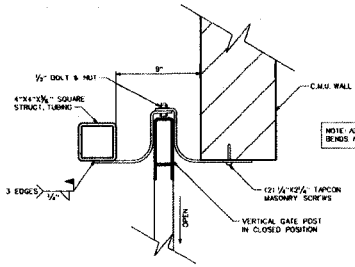
TOP VIEW
ROLLING GATE LATCH & HANDLE

SCALE: 2"=1'-0"



SIDE VIEW
ROLLING GATE LATCH & HANDLE

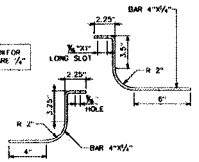
SCALE: 2"=1'-0"



NOTE: ALL INSIDE RADII FOR BENDS NOT NOTED ARE 1/2"

TOP VIEW
ROLLING GATE RECEIVER

SCALE: 2"=1'-0"



TOP VIEW
GATE RECEIVER DETAIL

SCALE: 2"=1'-0"

RELEASED TO CONSTRUCTION

SEP 23 2014

FRED SCHNEIDER

REVISIONS:

1. REPLACE WOOD SLATS WITH EXPANDED METAL ON 2/3 OF FENCE HEIGHT. (7/30/2014 - J.A.K.)

The installation shown is to be installed in accordance with the Arizona Water Company standard specifications on file with the Arizona Department of Environmental Quality

811 Know what's below. Call before you dig. 263-1100 1-800-STAKE-IT (arizona edition ctr)

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

PROJECT DESC: REMOVE EXISTING CHAIN LINK FENCE, AND REPLACE WITH 375 LF OF 8' HIGH C.M.U. PERIMETER WALL, AND GATES AROUND WELL SITE NO. 21

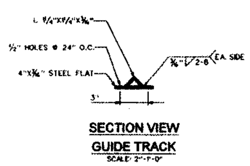
PROJECT SHEET DESC: GATE DETAILS

W.O. No.: 1-46165/1-5029
SYSTEM: PINAL VALLEY
LEGAL DESC: SW 1/4 SEC. 22, T.6 S., R. 6 E.
JOB DIST.: 0403
DATE: 12/2014
SCALE: AS SHOWN
Drawn BY: JAK
CHECKED BY:

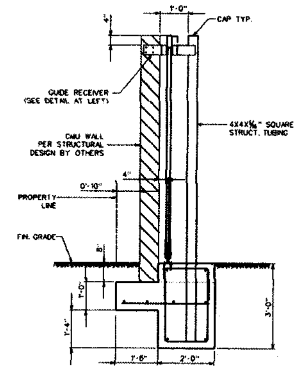
41046 JAMES T WILSON Expires 6/30/15

DWG No.: PV-0049

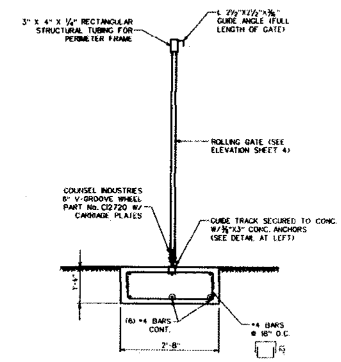
SHEET 4 OF 5



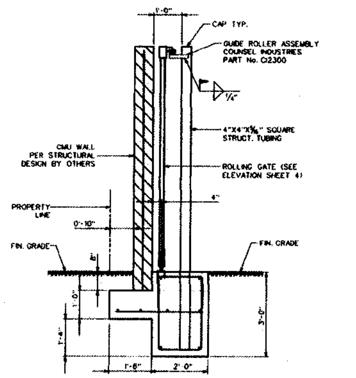
SECTION VIEW
GUIDE TRACK
SCALE: 2"=1'-0"



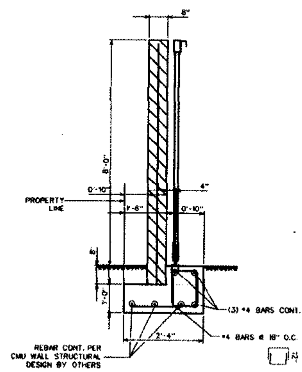
A SECTION
SCALE: 1/2"=1'-0"



B SECTION
SCALE: 1/2"=1'-0"



C SECTION
SCALE: 1/2"=1'-0"



D SECTION
SCALE: 1/2"=1'-0"

GATE DETAILS
SCALE: AS SHOWN

GENERAL NOTES

1. GATES ARE TO BE PRIMED AND PAINTED TO MATCH EXTERIOR WALL COLOR.
2. INSTALL ULTRA-BARRIER ALONG THE TOP OF THE ENTIRE PERIMETER OF THE WALL & GATES (UNISEC, INC., 2555 NICHOLSON ST., SAN LEANDRO, CA 94577-4216 TOLL FREE: 1-800-982-4587).
3. ROTATE ONE (1) 8X8X16 BLOCK EVERY 20'-0" AT GRADE TO PROVIDE DRAINAGE WEEP HOLE ON NORTH, EAST, AND SOUTH WALLS.

STRUCTURAL NOTES (GATES AND CONCRETE APRON ONLY)

FOUNDATION:
BEAR FOOTING ON UNDISTURBED SOIL OR APPROVED ENGINEERED FILL. SOIL PRESSURE 1,500 PSF PER IBC 1804.2, CLASS 4 MATERIAL.

CONCRETE:
A.C.I. MANUAL OF CONCRETE PRACTICE, TYPE II CEMENT. MINIMUM 28 DAY STRENGTH OF 2,500 PSI. MECHANICALLY VIBRATE WHEN PLACED, MAXIMUM SLUMP 5".

REINFORCING:
ASTM A615, GRADE 60 DEFORMED BARS. BARS SHALL NOT BE FIELD BENT.

CONCRETE COVER TO REINFORCING:

1. CONCRETE AGAINST EARTH-------3"
2. OTHER-------------------------1 1/2"

LAP SPLICES: 48 BAR DIAMETERS UNLESS OTHERWISE NOTED.

STEEL:
STRUCTURAL TUBING SHALL CONFORM TO ASTM A500 GRADE B.

RELEASED TO CONSTRUCTION
SEP 23 2014
FRED SCHNEIDER

W.A. No.	1-5165/1-5029
SYSTEM	PINAL VALLEY
LEGAL DESC.	SW 1/4 SEC. 22, T. 6 S., R. 6 E.
TAX DIST.	0403
DATE	1/2/2014
SCALE	AS SHOWN
DRAWN BY	JAK
CHECKED BY	[signature]

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006
(602) 240-6860

PROJECT DESC.: REMOVE EXISTING CHAIN LINK FENCE AND REPLACE WITH 375 LF OF 8' HIGH C.M.U. PERIMETER WALL AND GATES AROUND WELL SITE NO. 21

PROJECT SHEET DESC.: SECTIONS AND DETAILS

The installation shown is to be installed in accordance with the Arizona Water Company standard specifications on file with the Arizona Department of Environmental Quality

263-1100
1-800-STAKE-IT

REVISIONS:
1 REPLACE WOOD SLATS WITH EXPANDED METAL ON 25' ROLLING GATE (7/30/2014 - J.A.K.)

41046 JAMES T. WILSON
Expires 6/30/16

DWG. No.: PV-0049
SHEET 5 OF 5

GENERAL STRUCTURAL NOTES

CODE: COMPLY WITH THE 2009 EDITION OF THE INTERNATIONAL BUILDING CODE.

SPECIAL STRUCTURAL INSPECTION:

PROVIDE SPECIAL INSPECTION ADDITION TO THE INSPECTIONS CONDUCTED BY THE DEPARTMENT OF BUILDING SAFETY. SPECIAL INSPECTIONS DO NOT RELIEVE THE OWNER FROM REQUESTING THE INSPECTIONS REQUIRED BY IBC SECTION 109.

PROVIDE SAFE ACCESS TO THE WORK FACILITIES BY THE SPECIAL STRUCTURAL INSPECTOR. NOTIFY ENGINEER OF CONSTRUCTION START DATE AND COORDINATE INSPECTIONS. PROVIDE THE ENGINEER 24 HOURS NOTICE OF SPECIAL INSPECTIONS. SPECIAL INSPECTIONS MAY BE CONDUCTED AS NOTED IN PARENTHESES BELOW. SEE IBC CHAPTER 17 FOR MORE SPECIFIC INFORMATION.

THE FOLLOWING ITEMS REQUIRE SPECIAL INSPECTION PER IBC CHAPTER 17:

1. MASONRY REINFORCING AND GROUT PLACEMENT (PRIOR TO GROUT PLACEMENT)

MASONRY:

BLOCK UNITS: ASTM C90-09) f'm = 1500 PSI; RUNNING BOND. MORTAR TYPE S f'c 1,800 PSI. GROUT 2,000 PSI. VIBRATE GROUT IN REINFORCED CELLS IMMEDIATELY AFTER POURING. PROVIDE CLEAN OUTS IF GROUT LIFT EXCEEDS 4'-0" IN BLOCK WALLS. ALL GROUT LIFTS OVER 4'-0" SHALL HAVE PRIOR APPROVAL OF THE STRUCTURAL ENGINEER. UNLESS NOTED OTHERWISE ON PLANS, PLACE CONTROL JOINTS IN MASONRY WALLS SUCH THAT NO STRAIGHT RUN OF WALL EXCEEDS 24'-0" MAXIMUM. USE OPEN END BLOCK AT ALL SOLID GROUTED MASONRY.

VERTICAL REINFORCING SHALL BE REPLACED PER STRUCTURAL DETAILS AND AS FOLLOWS:

1. #5@ AT ALL CORNERS (AND 1ST ADJACENT CELL TO CORNER), INTERSECTIONS, WALL ENDS, AND EACH SIDE OF EXPANSION JOINTS.

FOUNDATION:

BEAR FOOTINGS ON UNDISTURBED SOIL OR APPROVED ENGINEERED FILL AT 1'-6" BELOW LOWEST ADJACENT FINISHED GRADE. SOIL PRESSURE 1500 PSF PER IBC 1804.2, CLASS 5 MATERIAL.

CONCRETE:

SHALL MEET ALL THE REQUIREMENTS OF THE CURRENT ISSUE OF THE A.C.I. MANUAL OF CONCRETE PRACTICE, WITH TYPE II CEMENT.

MINIMUM 28 DAY STRENGTH OF 2500 PSI.

MECHANICALLY VIBRATE ALL CONCRETE WHEN PLACED, MAXIMUM SLUMP 5"

REINFORCING:

ASTM A615, GRADE 60 EXCEPT AS FOLLOWS:

#4 BARS OR SMALLER ---------- GRADE 40

ALL REINFORCING BARS DEFORMED. THE LATEST A.C.I. CODE AND DETAILING MANUAL SHALL APPLY. GRADE 60 BARS SHALL NOT BE FIELD BENT.

SPLICES:

MASONRY:

LAP SPLICES SHALL BE 48 BAR DIAMETERS.

CONCRETE: LAP SPLICES SHALL BE IN ACCORDANCE WITH ACI 318-99, SECTION 12.14 AND 12.15 CLASS B SPLICE UNLESS OTHERWISE NOTED. THE FOLLOWING TABLE MAY BE USED FOR LAP SPLICES:

BAR SIZE	MINIMUM TENSION SPLICE
#4	37"
#5	47"

M.C.J. = MASONRY CONTROL JOINT

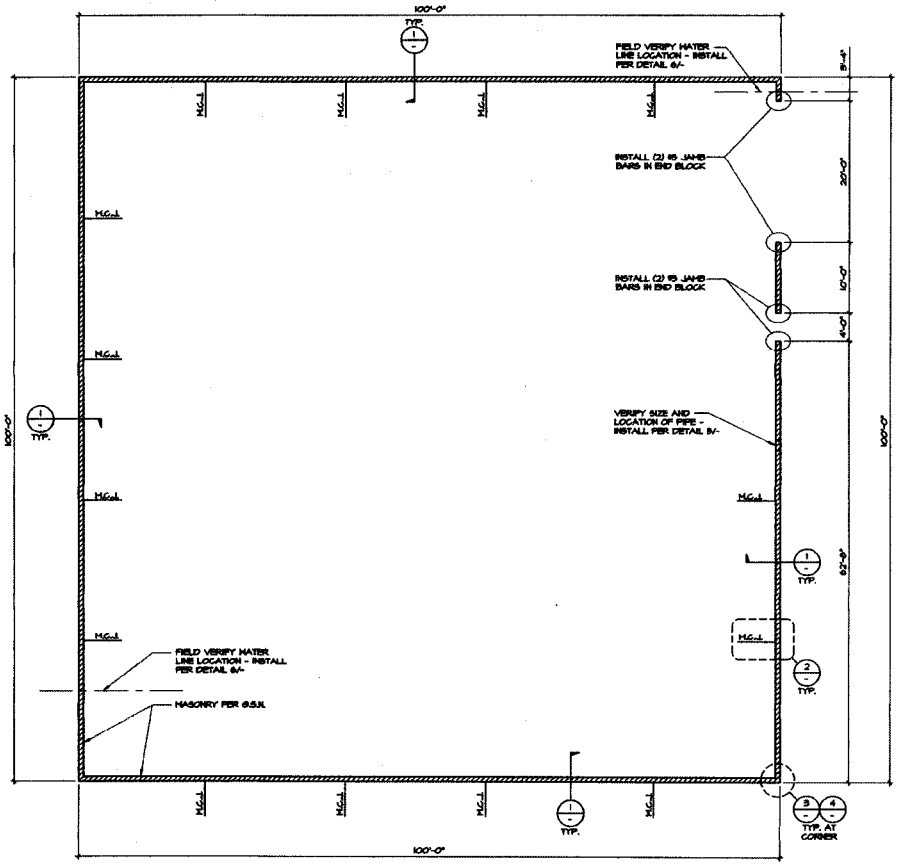
NOTE TO CONTRACTOR:

IF FOR ANY REASON THE DETAILS AND INFORMATION CONTAINED ON THESE PLANS DO NOT CONFORM TO THE CONSTRUCTION SITE CONDITIONS, IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO PROMPTLY NOTIFY THE ENGINEER OR ARCHITECT. THERE IS NO ACCEPTABLE EXCUSE FOR UNAUTHORIZED FIELD MODIFICATIONS.

THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY BRACING, SHORING, GUYING OR OTHER MEANS TO AVOID EXCESSIVE STRESSES AND TO HOLD STRUCTURAL ELEMENTS IN PLACE DURING ERECTION. ESTABLISH AND VERIFY ALL OPENINGS AND INSERTS FOR MECHANICAL, ELECTRICAL AND PLUMBING WITH APPROPRIATE TRADES, DRAWINGS AND SUBCONTRACTORS PRIOR TO CONSTRUCTION. CONTRACTOR SHALL VERIFY IN FIELD ALL EXISTING CONDITIONS SHOWN IN DRAWINGS. CONTRACTOR SHALL PROVIDE SCAFFOLDING AS REQUIRED BY OSHA.

PROJECT SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR OR PERSONS IN CHARGE OF THE DAY-TO-DAY CONSTRUCTION.

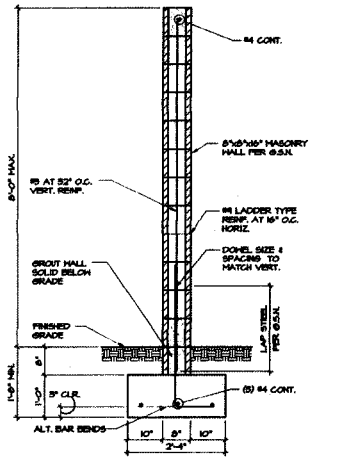
ANY ENGINEERING DESIGN PROVIDED BY OTHERS AND SUBMITTED FOR REVIEW SHALL BEAR THE SEAL OF AN ENGINEER REGISTERED IN THE STATE OF ARIZONA.



NOTE:
COORDINATE ALL DIMENSIONS WITH CIVIL DRAWINGS

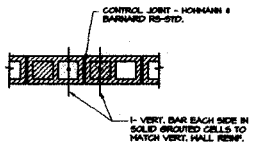
SITEWALL PLAN

SCALE: 1/8"=1'-0"



1 SECTION

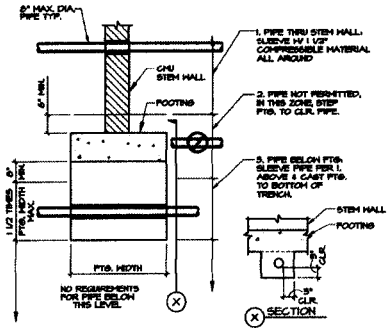
SCALE: 3/4"=1'-0"



2 MASONRY CONTROL JOINT (M.C.J.)

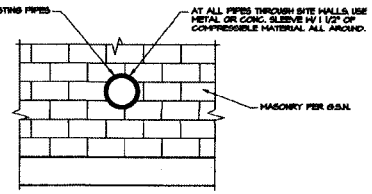
SCALE: 3/4"=1'-0"

RELEASED TO CONSTRUCTION
SEP 23 2014
FRED SCHNEIDER



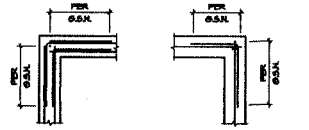
6 PIPE AT WALL FOOTING

SCALE: 3/4"=1'-0"



5 ELEVATION

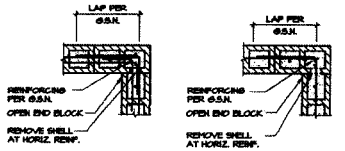
SCALE: 1/2"=1'-0"



DOUBLE CURTAIN SINGLE CURTAIN

4 REINFORCING AT CONC. FOOTING

SCALE: 3/4"=1'-0"



DOUBLE MAT AT CORNER SINGLE MAT AT CORNER

3 MASONRY WALL INTERSECTIONS

SCALE: 3/4"=1'-0"

SML
Consulting Structural and Forensic Engineers

Starling Madison Lofquist, Inc.
5224 S. 39th Street
Phoenix, Arizona 85040
(602) 438-2500
fax. (602) 438-2505

EXPIRES 09/30/2015
PRELIMINARY IF NOT SIGNED AND SEALED

JOB #115-13

PERIMETER MASONRY SITE FENCE
CASA GRANDE WELL #21
CASA GRANDE, ARIZONA

ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY.
P.O. BOX 29006
PHOENIX, AZ 85038-9006

S1.0

AGREEMENT FOR GENERAL ENGINEERING SERVICES BETWEEN ARIZONA WATER COMPANY AND HANSEN LAND SURVEYING, INC.

TASK ORDER AUTHORIZATION

Hansen Land Surveying Project Number 140140

AWC Project Number: Casa Grande Well Site 21 & 31 Property Corner Staking.

Arizona Water Company
P. O. Box 29006
Phoenix, Arizona 85038-9006

Effective Date of Authorization October 3, 2014

Upon execution of this Task Order, and effective as of the date shown above, the parties agree that Hansen Land Surveying shall perform the following services:

SCOPE OF SERVICES

As per the attached "Scope of Services" per the attached Exhibit A. **NOTE: Authorization to commence will be given verbally by Division Manager (Ray Murrieta or in his absence, Kevin Pakka, Operations Superintendant).**

COMPENSATION

As per the attached "Exhibit B" dated September 30, 2014

GENERAL TERMS AND CONDITIONS

Hansen Land Surveying's services shall be governed by the Master Agreement dated January 25, 2011 together with this Task Order and any Exhibits attached hereto.

The services performed within this Task Order shall commence on or about October 3, 2014, and shall be complete on or before October 24, 2014.

Hansen Land Surveying's Representative in charge of the services is Taylor Hansen, who may be contacted at 520-723-3261 and taylor@hansensurvey.com. Client's Representative in charge of the services is Charles Briggs, who may be contacted at 602-240-6860 and cbriggs@azwater.com.

Arizona Water Company 1-5165	**HANSEN LAND SURVEY**
By [signature]	By [signature]
Title REAL PROPERTY SPECIALIST	Title PLS.
Date OCTOBER 1, 2014	Date 10/2/14

September 30, 2014

Well Site 21 & 31
Property Corner Staking & Construction Staking
Casa Grande, Arizona

We at Hansen Engineering and Surveying want to thank you for the opportunity to serve you on your project. We pride ourselves in building strong relationships with our clients and contractors. It is our integrity, work ethic and professional experience that have kept our company progressing for over 35 years. It is our goal to meet or exceed our client's needs and expectations to deliver a successful project. That is what you can expect when we partner up to meet the challenges in our market and the kind of service you can expect in this project.

The following is our proposal for services that we believe will allow you to meet your schedules and complete your project on time.

Should you have any questions or concerns we would be glad to meet with you and discuss how we can meet your specific needs.

Sincerely

Taylor S. Hansen, RLS (37512), President
Hansen Engineering and Surveying
Arizona Board of Technical Registration Firm Registration # 10345-0
Office (520) 723-3261

CB
10-1-14
1-5165

HANSEN
ENGINEERING & SURVEYING
115 South Main Street
Coolidge, AZ 85128
520-723-9261 520-723-3739(F)
www.hansensurvey.com

Hansen Engineering and Surveying Proposed Survey Plan
For
Well Site 21 & 31
Property Corner Staking & Construction Staking
Casa Grande, Arizona

September 30, 2014

1. **Project Control:** We will verify the project horizontal and vertical controls through standard survey practices and provide a formal report if required.

2. **Construction Staking:** This will be done in accordance with project specifications. We will set double offset reference stakes for the drywell.

3. **Property Corners:** This will be done in accordance with project specifications and Arizona State Board of Technical Registration requirements. We will determine and mark the specified property corners of both well sites. Upon marking any of said property corners, we find that the monuments called for on either of the respective Records of Survey do not match or have been removed, we will properly monument said corners. This will require a new Record of Survey to be completed which we will prepare and record, and provide copies to the owner.

CB
10-1-14
1-5165

Hansen Engineering and Surveying Proposal of Survey Services
For
Well Site 21 & 31
Property Corner Staking & Construction Staking
Casa Grande, Arizona

September 30, 2014

Property Corner Staking and Construction Staking:

Staking:	**$1,800**
***Record of Survey Preparation and Recording (if necessary):**	**$1,150**

Hourly Service Rates - Registered Land Surveyor / $140, Project Manager / $180, Calculations / $85, 1 man crew / $105, 2 man crew / $135 3 man crew / $165, Travel / $ 0.55/mi.

We are pleased to provide survey services at our hourly rate plan for items outside of this proposal. This proposal is based on our services being completed within 1 site visit. Additional mobilizations due to alternate construction schedules will include a $300 fee to compensate us for travel and set-up expenses.
If this proposal is acceptable please sign below and return a copy to our office. You will be invoiced according to the project specifications. This proposal when accepted shall become part of the subcontract agreement as representation of services offered for this project. Offer good for thirty days.

Thank you,

Taylor S. Hansen, RLS (37512), President
Hansen Engineering and Surveying
Office (520) 723-3261

Accepted By: _____ Date: 10-01-2014

1-5165

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

October 1, 2014

Mr. Taylor Hansen
Hansen Land Surveying
115 S. Main Street
Coolidge, Arizona 85228

Re: Casa Grande Well Site 21 & 31 Property Corner Staking

Dear Mr. Hansen:

Attached is a copy of the Task Order for the above referenced projects. Please sign and return it to my attention.

If you have any questions, please call me at this office.

Very truly yours,

Charles E. Briggs
Real Property Specialist
engineering@azwater.com

afh
Enclosure

AGREEMENT FOR GENERAL ENGINEERING SERVICES BETWEEN ARIZONA WATER COMPANY AND STARLING MADISON LOFQUIST, INC.

TASK ORDER AUTHORIZATION

Starling Madison Lofquist, Inc. Project Number 44691

AWC Project Number 1-5165 Casa Grande Well No. 21 CMU Perimeter Wall

Arizona Water Company
P.O. Box 29006
Phoenix, Arizona 85038-9006

Effective Date of Authorization October 10, 2014

Upon execution of this Task Order, and effective as of the date shown above, the parties agree that **Starling Madison Lofquist, Inc.** shall perform the following services:

SCOPE OF SERVICES

See Proposal attached as Exhibit A, dated October 16, 2014.

COMPENSATION

Lump sum fee of $107.50 in accordance with Exhibit A, dated October 16, 2014, attached hereto.

GENERAL TERMS AND CONDITIONS

Starling Madison Lofquist, Inc.'s services shall be governed by the Master Agreement dated June 26, 2014 together with this Task Order and any Exhibits attached hereto.

The services performed within this Task Order shall commence on or about October 10, 2014, and shall be complete on or before October 16, 2014.

Starling Madison Lofquist, Inc.'s Representative in charge of the services is Tres Warner, who may be contacted at 602-438-2500 and twarner@smleng.com. Client's Representative in charge of the services is Jeff Kelty, who may be contacted at 602-240-6860 and jkelty@azwater.com.

Arizona Water Company	**Starling Madison Lofquist, Inc.**
By _____	By _____
Title ENGINEERING TECHNICIAN	Title DESIGN DIVISION MANAGER
Date Oct - 16, 2014	Date 10/16/14

W:\01-Agreements, Drafts, Ltrs & Docs\Master Agreements\Starling Madison Lofquist\1-5165 CG 21 Perimeter Wall Task Order Starling Madison.docx
JK:AFH 2:58 PM 10/16/14

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

April 28, 2014

Mr. Kenneth Ricker
Ricker, Atkinson, McBee, Morman & Associates, Inc.
2105 S. Hardy Drive, Suite 13
Tempe, AZ 85282

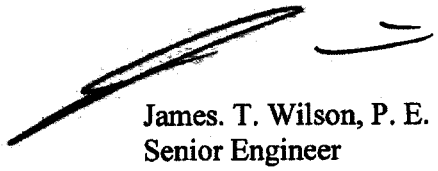
Re: WA 1-5165 Casa Grande Well Sites 30 and 31

Dear Mr. Ricker:

Enclosed is your copy of the Task Order for the above referenced project, which has been accepted by Arizona Water Company (the "Company").

If you have any questions, please call me at this office.

Very truly yours,



James. T. Wilson, P. E.
Senior Engineer
engineering@azwater.com

afh
Enclosure

AGREEMENT FOR GENERAL ENGINEERING SERVICES BETWEEN ARIZONA WATER COMPANY AND RICKER, ATKINSON, MCBEE, MORMAN & ASSOCIATES, INC.

TASK ORDER AUTHORIZATION

Ricker, Atkinson, McBee, Morman & Associates, Inc. Project Number _____

AWC Project Number WA 1-5165 Casa Grande Well Sites 30 and 31

Arizona Water Company
P.O. Box 29006
Phoenix, Arizona 85038-9006

Effective Date of Authorization April 28, 2014

Upon execution of this Task Order, and effective as of the date shown above, the parties agree that Ricker, Atkinson, McBee, Morman & Associates, Inc. shall perform the following services:

SCOPE OF SERVICES

Describe here, or attach an Exhibit entitled "Exhibit "A"" dated March 26, 2014

COMPENSATION

Describe here, or attach an Exhibit entitled "Exhibit "B"" dated March 26, 2014

GENERAL TERMS AND CONDITIONS

Ricker, Atkinson, McBee, Morman & Associates, Inc.'s services shall be governed by the Master Agreement dated April 26, 2012 together with this Task Order and any Exhibits attached hereto.

The services performed within this Task Order shall commence on or about May 5, 2014, and shall be complete on or before May 26, 2014.

Ricker, Atkinson, McBee, Morman & Associates, Inc.'s Representative in charge of the services is Kenneth Ricker, who may be contacted at 480-921-8100 and krickere@rammeng.com. Client's Representative in charge of the services is James Wilson who may be contacted at 602-240-6860 and engineering@azwater.com.

Arizona Water Company

By _____

Title SR. ENGINEER

Date 5/6/14

Ricker, Atkinson, McBee, Morman & Associates, Inc.

By _____

Title President

Date 4/25/14

RICKER • ATKINSON • MCBEE • MORMAN & ASSOCIATES, INC.
Geotechnical Engineering • Construction Materials Testing

R·A·M·M

March 26, 2014

Arizona Water Company
3805 North Black Canyon Highway
Phoenix, Arizona 85015-5351

Attention: James Wilson, email (jwilson@azwater.com)

Re: Proposal for Geotechnical Engineering Services — RAMM Proposal No. PG14471
Casa Grande Well Sites 30 and 31
1882 East Florence Boulevard and 1697 East Elaine Court
Casa Grande, Arizona

Ricker, Atkinson, McBee, Morman & Associates, Inc. is pleased to submit this proposal to conduct Geotechnical Engineering Services for the above-referenced project.

If this proposal meets with your approval, please sign, date and return one copy of the enclosed Attachment "A", which outlines project description, our scope of services, completion time and fee to perform services.

If there are any questions regarding the proposed scope of work, please call. Thank you for considering our firm for this project.

Respectfully submitted,

RICKER • ATKINSON • McBEE • MORMAN & ASSOCIATES, INC.

Kenneth L. Ricker, P.E.

/dh

2105 South Hardy Drive, Suite 13, Tempe, AZ 85282-1924 • Telephone (480) 921-8100 • Facsimile (480) 921-4081
www.rammeng.com

EXHIBIT "A" 3/26/2014 JAK

RICKER • ATKINSON • MCBEE • MORMAN & ASSOCIATES, INC.

ATTACHMENT "A" Proposal for Geotechnical Engineering Services
For: Arizona Water Company
RAMM Proposal No. PG14471

PROJECT: Casa Grande Well Sites 30 and 31
1882 East Florence Boulevard and 1697 East Elaine Court
Casa Grande, Arizona

DESCRIPTION:

The proposed project will include a new masonry wall at each site. Each site will be in the separate reports but field work will be accomplished in the same trip.

SCOPE OF SERVICES:

1. Test borings will be performed to determine subsurface conditions and obtain representative samples for laboratory analyses. Two test borings (one at each site) 20 feet in depth are proposed inside the fenced area. Test Borings will be Blue Staked. Site access and on-site utility locations will be provided by Arizona Water Company Casa Grande office.

2. Laboratory analyses of representative samples will include:

   Moisture Content and Dry Density
   Compression
   Swell
   Minus No. 200 Sieve and Plasticity Index
   pH/Minimum Resistivity, Soluble Salts, Sulfate, Chloride

3. The field and laboratory data will be used in engineering evaluation and analyses to formulate our geotechnical recommendations.

4. An Engineer's report will be provided presenting the results of the field and laboratory testing and recommendations for foundation support (including footing depth, bearing capacity, and estimated settlement), lateral earth pressures, site grading and preparation procedures, thickness of pavements, corrosion potential and concrete durability parameters.

EXHIBIT "B" 3/26/2014 JAK

RICKER • ATKINSON • MCBEE • MORMAN & ASSOCIATES, INC.

ATTACHMENT "A" Proposal for Geotechnical Engineering Services
For: Arizona Water Company
RAMM Proposal No. PG14471

PROJECT: Casa Grande Well Sites 30 and 31
1882 East Florence Boulevard and 1697 East Elaine Court
Casa Grande, Arizona

COMPLETION TIME:

Final report approximately 3 weeks after authorized to proceed.

FEE: $ 2,900.00

The undersigned agrees to the forgoing Scope and Fee.

RICKER • ATKINSON • McBEE • MORMAN & ASSOCIATES, INC.

By: _____
Kenneth L. Ricker, P.E., Project Engineer

Client: _____

By: _____

Date: _____

AGREEMENT FOR GENERAL ENGINEERING SERVICES BETWEEN ARIZONA WATER COMPANY AND RICKER, ATKINSON, MCBEE, MORMAN & ASSOCIATES, INC.

TASK ORDER AUTHORIZATION

Ricker, Atkinson, McBee, Morman & Associates, Inc. Project Number _____

AWC Project Number WA 1-5165 Casa Grande Well Sites 30 and 31

Arizona Water Company
P.O. Box 29006
Phoenix, Arizona 85038-9006

Effective Date of Authorization April 28, 2014

Upon execution of this Task Order, and effective as of the date shown above, the parties agree that Ricker, Atkinson, McBee, Morman & Associates, Inc. shall perform the following services:

SCOPE OF SERVICES

Describe here, or attach an Exhibit entitled "Exhibit "A"" dated March 26, 2014

COMPENSATION

Describe here, or attach an Exhibit entitled "Exhibit "B"" dated March 26, 2014

GENERAL TERMS AND CONDITIONS

Ricker, Atkinson, McBee, Morman & Associates, Inc.'s services shall be governed by the Master Agreement dated April 26, 2012 together with this Task Order and any Exhibits attached hereto.

The services performed within this Task Order shall commence on or about May 5, 2014, and shall be complete on or before May 26, 2014.

Ricker, Atkinson, McBee, Morman & Associates, Inc.'s Representative in charge of the services is Kenneth Ricker, who may be contacted at 480-921-8100 and krickere@rammeng.com. Client's Representative in charge of the services is James Wilson who may be contacted at 602-240-6860 and engineering@azwater.com.

Arizona Water Company

By _____

Title SR. ENGINEER

Date 5/6/14

Ricker, Atkinson, McBee, Morman & Associates, Inc.

By _____

Title PRESIDENT

Date _____

W:\Projects\2014\PV\1-5165 CG Well 30\Agreements\Exhibit A Task Order RAMM.docx
XXX.XXX 12:34 PM 4/23/14

RICKER • ATKINSON • MCBEE • MORMAN & ASSOCIATES, INC.
Geotechnical Engineering • Construction Materials Testing

R·A·M·M

Arizona Water Company
3805 North Black Canyon Highway
Phoenix, Arizona 85015-5351

March 26, 2014

Attention: James Wilson, email (jwilson@azwater.com)

Re: Proposal for Geotechnical Engineering Services
Casa Grande Well Sites 30 and 31
1882 East Florence Boulevard and 1697 East Elaine Court
Casa Grande, Arizona

RAMM Proposal No. PG14471

Ricker, Atkinson, McBee, Morman & Associates, Inc. is pleased to submit this proposal to conduct Geotechnical Engineering Services for the above-referenced project.

If this proposal meets with your approval, please sign, date and return one copy of the enclosed Attachment "A", which outlines project description, our scope of services, completion time and fee to perform services.

If there are any questions regarding the proposed scope of work, please call. Thank you for considering our firm for this project.

Respectfully submitted,

RICKER • ATKINSON • McBEE • MORMAN & ASSOCIATES, INC.

Kenneth L. Ricker, P.E.

/dh

2105 South Hardy Drive, Suite 13, Tempe, AZ 85282-1924 • Telephone (480) 921-8100 • Facsimile (480) 921-4081
www.rammeng.com

EXHIBIT "A" 3/26/2014 JAK

RICKER • ATKINSON • MCBEE • MORMAN & ASSOCIATES, INC.

ATTACHMENT "A" Proposal for Geotechnical Engineering Services
For: Arizona Water Company
RAMM Proposal No. PG14471

PROJECT: Casa Grande Well Sites 30 and 31
1882 East Florence Boulevard and 1697 East Elaine Court
Casa Grande, Arizona

DESCRIPTION:

The proposed project will include a new masonry wall at each site. Each site will be in the separate reports but field work will be accomplished in the same trip.

SCOPE OF SERVICES:

1. Test borings will be performed to determine subsurface conditions and obtain representative samples for laboratory analyses. Two test borings (one at each site) 20 feet in depth are proposed inside the fenced area. Test Borings will be Blue Staked. Site access and on-site utility locations will be provided by Arizona Water Company Casa Grande office.

2. Laboratory analyses of representative samples will include:

   Moisture Content and Dry Density
   Compression
   Swell
   Minus No. 200 Sieve and Plasticity Index
   pH/Minimum Resistivity, Soluble Salts, Sulfate, Chloride

3. The field and laboratory data will be used in engineering evaluation and analyses to formulate our geotechnical recommendations.

4. An Engineer's report will be provided presenting the results of the field and laboratory testing and recommendations for foundation support (including footing depth, bearing capacity, and estimated settlement), lateral earth pressures, site grading and preparation procedures, thickness of pavements, corrosion potential and concrete durability parameters.

EXHIBIT "B" 3/26/2018 JAK

RICKER • ATKINSON • MCBEE • MORMAN & ASSOCIATES, INC.

ATTACHMENT "A" Proposal for Geotechnical Engineering Services
For: Arizona Water Company
RAMM Proposal No. PG14471

PROJECT: Casa Grande Well Sites 30 and 31
1882 East Florence Boulevard and 1697 East Elaine Court
Casa Grande, Arizona

COMPLETION TIME:

Final report approximately 3 weeks after authorized to proceed.

FEE: $ 2,900.00

The undersigned agrees to the forgoing Scope and Fee.

RICKER • ATKINSON • McBEE • MORMAN & ASSOCIATES, INC.

By: _____
Kenneth L. Ricker, P.E., Project Engineer

Client: _____

By: _____

Date: _____

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

July 17, 2014

Mr. Tres Warner, P. E.
Starling Madison Lofquist, Inc.
5224 S. 39th Street
Phoenix, AZ 85040

Re: Casa Grande Well Sites 30 and 31 CMU Wall

Dear Mr. Warner:

Enclosed is your copy of the Task Order for the above referenced project, which has been accepted by Arizona Water Company (the "Company").

If you have any questions, please call me at this office.

Very truly yours,

Jeff Kelty
Engineering Technician
engineering@azwater.com

afh
Enclosure

AGREEMENT FOR GENERAL ENGINEERING SERVICES BETWEEN ARIZONA WATER COMPANY AND STARLING MADISON LOFQUIST, INC.

TASK ORDER AUTHORIZATION

Starling Madison Lofquist, Inc. Project Number 397-14

AWC Project Number 1-5165 Casa Grande Well No. 31 CMU Perimeter Wall

Arizona Water Company
P.O. Box 29006
Phoenix, Arizona 85038-9006

Effective Date of Authorization July 10, 2014

Upon execution of this Task Order, and effective as of the date shown above, the parties agree that **Starling Madison Lofquist, Inc.** shall perform the following services:

SCOPE OF SERVICES

See Proposal attached as Exhibit A, dated June 20, 2014.

COMPENSATION

Lump sum fee of $1,940.00 in accordance with Exhibit B, dated June 20, 2014, attached hereto.

GENERAL TERMS AND CONDITIONS

Starling Madison Lofquist, Inc.'s services shall be governed by the Master Agreement dated June 26, 2014 together with this Task Order and any Exhibits attached hereto.

The services performed within this Task Order shall commence on or about July 10, 2014, and shall be complete on or before July 17, 2014.

Starling Madison Lofquist, Inc.'s Representative in charge of the services is Tres Warner, who may be contacted at 602-438-2500 and twarner@smleng.com. Client's Representative in charge of the services is Jeff Kelty, who may be contacted at 602-240-6860 and jkelty@azwater.com.

Arizona Water Company	**Starling Madison Lofquist, Inc.**
By _____	By _____
Title ENGINEERING MANAGER	Title DESIGN MANAGER
Date JUN 11, 2014	Date 7-14-14

EXHIBIT A

Starling Madison Lofquist, Inc.
Consulting Structural and Forensic Engineers
5224 South 39th Street, Phoenix, Arizona 85040
tel: (602) 438-2500 fax: (602) 438-2505

PROPOSAL

TO: Arizona Water Company
3805 N. Back Canyon Hwy
Phoenix, AZ 85015
Attn: Jeff Kelty

June 20, 2014

PROJECT: Well Site No. 31 – CMU Perimeter Wall
Casa Grande, Arizona
SML No. 397-14

DESCRIPTION

This proposal is based on the information provided by Arizona Water Company ("the Company") contained in the e-mail and attachments received from Jeff Kelty (Arizona Water Co.) on Wednesday, June 18, 2014. This proposal is for Structural Design and Special Structural Inspection Services.

Our detailed Scope of Work for the project is shown in the attached EXHIBIT A. Our Lump Sum fee for the work is shown in the attached EXHIBIT B. ~~Design changes and additions to the project scope will be billed hourly in accordance with the attached Fee Schedule, with prior approval from the client. This proposal is subject to the attached General Conditions.~~

~~Please~~ sign and return one copy of this proposal.

APPROVALS:

FOR: STARLING MADISON LOFQUIST, INC. Tres J. Warner, ~~PE (ENGINEER)~~	ARIZONA WATER COMPANY (CLIENT)
~~Design Division Manager~~ 06/20/2014	
~~TITLE:~~ DATE:	DATE:

EXHIBIT A - SCOPE OF WORK:

A. Structural Design

1. Review the site-specific geotechnical report prepared by RAMM & Associates.
2. Prepare the structural design of the 6 foot tall CMU perimeter wall and *L-Shaped* foundation in accordance with the requirements of the International Building Code (IBC). The specifications will be shown in note form on the drawings.
3. Prepare the structural design for a 7'-4" section of wall that cannot have a footing beneath it due to the presence of existing utilities. We expect this section of wall will have more horizontal reinforcing than is standard, and also a larger footing on each side.

B. Special Structural Inspection

1. Observe and report on construction activities as required by Chapter 17 of the IBC for Structural Masonry / Grout Placement.
2. Provide on-site, on-call special structural inspector for the activities listed above. We request as much advance notice as possible, but we require at least 24 hours notice. If we are called to perform an inspection, and we arrive on-site and the contractor is not ready, we will still bill for the inspection.
3. A written report will be left with the field superintendent. A final stamped/signed report will be issued within 5 business days.
4. At the end of the project, once all non-compliant items have been addressed, we will issue a final letter of compliance to the Company stating that the construction is in substantial conformance with the approved drawings, change orders and engineer's directives.
5. The following items are specifically excluded from this proposal:
    a. Geotechnical Engineering inspections, including sub-grade preparation, special grading, excavation, and compaction.
    b. Materials testing (e.g. concrete and grout compression tests)
    c. Weekend or holiday work. If we are able to work the inspection into our schedule, weekend or holiday work will be billed at 50% premium over our normal rates.

Well Site No. 31 – CMU Perimeter Wall
Casa Grande, Arizona
Structural Fee Proposal
June 20, 2014

EXHIBIT B - FEES:

We propose to provide the services outlined in the Scope of Work as follows:

Structural Calculations and Drawings for Well Site No. 31	$1040.00
Special Inspection for Well Site No. 31 (2x $450/inspection)	$900.00
Total Fee	**$1940.00**

Billing will be monthly based upon the percentage of work completed.

Services not included in the scope of work, including design changes, will be provided at our current hourly rates as follows or under a separate agreement.

Fee Schedule 2014:
Fed Tax ID #86-1002197

Engineer	$145.00/hr
Forensic Investigation (Principal)	$195.00/hr
Forensic Investigation (Staff)	$160.00/hr
Expert Witness Testimony	$395.00/hr
Engineering Technician	$110.00/hr
CADD Drafting	$95.00/hr
Administration	$65.00/hr
Travel expenses (automobile)	$0.56 / mile
Out-of-pocket expenses	Cost + 10%
Reproductions, printing, photo processing	Cost + 10%
Digital Imaging	$2.00/sheet
CADD plotting	$10.00/sheet
Special Inspections	$110.00/hr
	$290.00 trip minimum

AGREEMENT FOR GENERAL ENGINEERING SERVICES BETWEEN ARIZONA WATER COMPANY AND STARLING MADISON LOFQUIST, INC.

TASK ORDER AUTHORIZATION

Starling Madison Lofquist, Inc. Project Number 397-14

AWC Project Number 1-5165 Casa Grande Well No. 30 CMU Perimeter Wall

Arizona Water Company
P.O. Box 29006
Phoenix, Arizona 85038-9006

Effective Date of Authorization July 10, 2014

Upon execution of this Task Order, and effective as of the date shown above, the parties agree that **Starling Madison Lofquist, Inc.** shall perform the following services:

SCOPE OF SERVICES

See Proposal attached as Exhibit A, dated June 20, 2014.

COMPENSATION

Lump sum fee of $1,940.00 in accordance with Exhibit B, dated June 20, 2014, attached hereto.

GENERAL TERMS AND CONDITIONS

Starling Madison Lofquist, Inc.'s services shall be governed by the Master Agreement dated June 26, 2014 together with this Task Order and any Exhibits attached hereto.

The services performed within this Task Order shall commence on or about July 10, 2014, and shall be complete on or before July 17, 2014.

Starling Madison Lofquist, Inc.'s Representative in charge of the services is Tres Warner, who may be contacted at 602-438-2500 and twarner@smleng.com. Client's Representative in charge of the services is Jeff Kelty, who may be contacted at 602-240-6860 and jkelty@azwater.com.

Arizona Water Company	**Starling Madison Lofquist, Inc.**
By _____	By _____
Title ENGINEERING TECHNICIAN	Title DESIGN MANAGER
Date JULY 11, 2014	Date 7.14.14

EXHIBIT A

Starling Madison Lofquist, Inc.
Consulting Structural and Forensic Engineers
5224 South 39th Street, Phoenix, Arizona 85040
tel: (602) 438-2500 fax: (602) 438-2505

PROPOSAL

TO: Arizona Water Company
3805 N. Back Canyon Hwy
Phoenix, AZ 85015
Attn: Jeff Kelty

June 20, 2014

PROJECT: Well Site No. 30 – CMU Perimeter Wall
Casa Grande, Arizona
SML No. 397-14

DESCRIPTION

This proposal is based on the information provided by Arizona Water Company ("the Company") contained in the e-mail and attachments received from Jeff Kelty (Arizona Water Co.) on Wednesday, June 18, 2014. This proposal is for Structural Design and Special Structural Inspection Services.

Our detailed Scope of Work for the project is shown in the attached EXHIBIT A. Our Lump Sum fee for the work is shown in the attached EXHIBIT B. ~~**Design changes and additions to the project scope will be billed hourly in accordance with the attached Fee Schedule, with prior approval from the client. This proposal is subject to the attached General Conditions.**~~

~~Please~~ sign and return one copy of this proposal.

APPROVALS:

FOR: STARLING MADISON LOFQUIST, INC.	ARIZONA WATER COMPANY
Tres J. Warner, PE (ENGINEER)	(CLIENT)
Design Division Manager	
TITLE:	
06/20/2014	
DATE:	DATE:

EXHIBIT A - SCOPE OF WORK:

A. Structural Design

1. Review the site-specific geotechnical report prepared by RAMM & Associates.
2. Prepare the structural design of the 8 foot tall CMU perimeter wall and foundation in accordance with the requirements of the International Building Code (IBC). The specifications will be shown in note form on the drawings.
3. Prepare the structural design for a 30 foot rolling gate and automatic gate opener.

B. Special Structural Inspection

1. Observe and report on construction activities as required by Chapter 17 of the IBC for Structural Masonry / Grout Placement.
2. Provide on-site, on-call special structural inspector for the activities listed above. We request as much advance notice as possible, but we require at least 24 hours notice. If we are called to perform an inspection, and we arrive on-site and the contractor is not ready, we will still bill for the inspection.
3. A written report will be left with the field superintendent. A final stamped/signed report will be issued within 5 business days.
4. At the end of the project, once all non-compliant items have been addressed, we will issue a final letter of compliance to the Company stating that the construction is in substantial conformance with the approved drawings, change orders and engineer's directives.
5. The following items are specifically excluded from this proposal:
    a. Geotechnical Engineering inspections, including sub-grade preparation, special grading, excavation, and compaction.
    b. Materials testing (e.g. concrete and grout compression tests)
    c. Weekend or holiday work. If we are able to work the inspection into our schedule, weekend or holiday work will be billed at 50% premium over our normal rates.

EXHIBIT B - FEES:

We propose to provide the services outlined in the Scope of Work as follows:

Structural Calculations and Drawings for Well Site No. 30	$1040.00
Special Inspection for Well Site No. 30 (2x $450/inspection)	$900.00
Total Fee	**$1940.00**

Billing will be monthly based upon the percentage of work completed.

Services not included in the scope of work, including design changes, will be provided at our current hourly rates as follows or under a separate agreement.

Fee Schedule 2014:
Fed Tax ID #86-1002197

Engineer	$145.00/hr
Forensic Investigation (Principal)	$195.00/hr
Forensic Investigation (Staff)	$160.00/hr
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Administration	$65.00/hr
Travel expenses (automobile)	$0.56 / mile
Out-of-pocket expenses	Cost + 10%
Reproductions, printing, photo processing	Cost + 10%
Digital Imaging	$2.00/sheet
CADD plotting	$10.00/sheet
Special Inspections	$110.00/hr
	$290.00 trip minimum

City of Casa Grande, Development Center, 510 East Florence Blvd., Casa Grande, Arizona 85122
Office: (520) 421-8630 Fax (520) 421-8631 Inspection Line: (520) 421-8684
dcpermits@casagrandeaz.gov www.casagrandeaz.gov

Special Inspector Designation

A. Project Identification

Project: INSTALL 375' LF OF 8' HIGH C.M.U. PERIMETER WALL AND GATES Date: NOV. 10, 2014

Address: 835 N. ARIZOLA RD. CASA GRANDE, AZ. 85122 (ARIZONA WATER CO. WELL SITE 21)

Permit number CDP13-01627 Standard Plan number PC-0049

B. Designation of Special Inspector Design Professional in Responsible Charge by Owner

In compliance with Section 1704 of the International Building Code as adopted, which requires the owner or agent to employ a Special Inspector to be present at all times during the construction of work, I do hereby designate the following Architect or Engineer to be in responsible charge of the Special Inspections on the above project.

TRES J. WARNER — Designated Design Professional in Responsible Charge

REGISTERED P.E. (STRUCTURAL) — (specify type) ☐ Architect ☒ Engineer

Original Signature of Owner or Legal Agent

JEFF KELLY — Print Name

C. Special Inspection Responsibility Certificate

I certify that I am familiar with the above-named project. I have assigned the following person(s) to inspect the designated work, and in accordance with Section 1704 of the International Building Code as adopted, hereby assume full responsibility for the Special Inspection of the following type(s) of construction.

Required?	Special Inspection	Name of Special Inspector
	Concrete	
	Bolts Installed in Concrete	
	Post Installed Anchors	
	Ductile Moment-Resisting	
YES	Reinforcing and Pre-stressing Steel	JIM SCHANTEL
	Welding	
	High Strength Bolting	
YES	Structural Masonry	JIM SCHANTEL
	Reinforced Gypsum Concrete	
	Insulating Concrete Fill	
	Spray-Applied Fireproofing	
	Piling, Drilled Piers and Caissons	
	Shotcrete	
	Special Grading, Excavation and Filling	
	Smoke Control Systems	
	Special Cases:	

ATTACH SPECIAL INSPECTOR'S QUALIFICATIONS AND CERTIFICATION TO THIS DOCUMENT

Original Signature — TRES J. WARNER (Print Name) — 43901 (Arizona Reg. No.) — 11/10/14 (Date)

Preparers Seal

Registered Professional Engineer (Structural) CERTIFICATE NO. 43901 TRES J. WARNER Date Signed 11-10-14 ARIZONA, U.S.A.

EXPIRES 3/31/2015

Accepted by Building Official — 11/6/14 (Date)

CITY OF CASA GRANDE, ARIZONA
DEVELOPMENT SERVICES
510 East Florence Blvd. 85122

Certificate of Completion

Permit #: CDP-14-01052

Department of Building Regulations

This certificate is issued pursuant to the requirements of Section 308 of the City of Casa Grande International Building Code - 2003 ICC.

Certifying that at the time of issuance this structure was in compliance with the various ordinances of the City regulating building construction or use for the following:

Address: 1882 E FLORENCE BLVD
Casa Grande, AZ 85122

Parcel Number: 505-22-001-G

Property Owner: ARIZONA WATER COMPANY

Type of Use: Well Site Perimeter Fence - Arizona Water Co

Construction Type: Type V-B

Sprinkler System: NO

Occupancy Load:

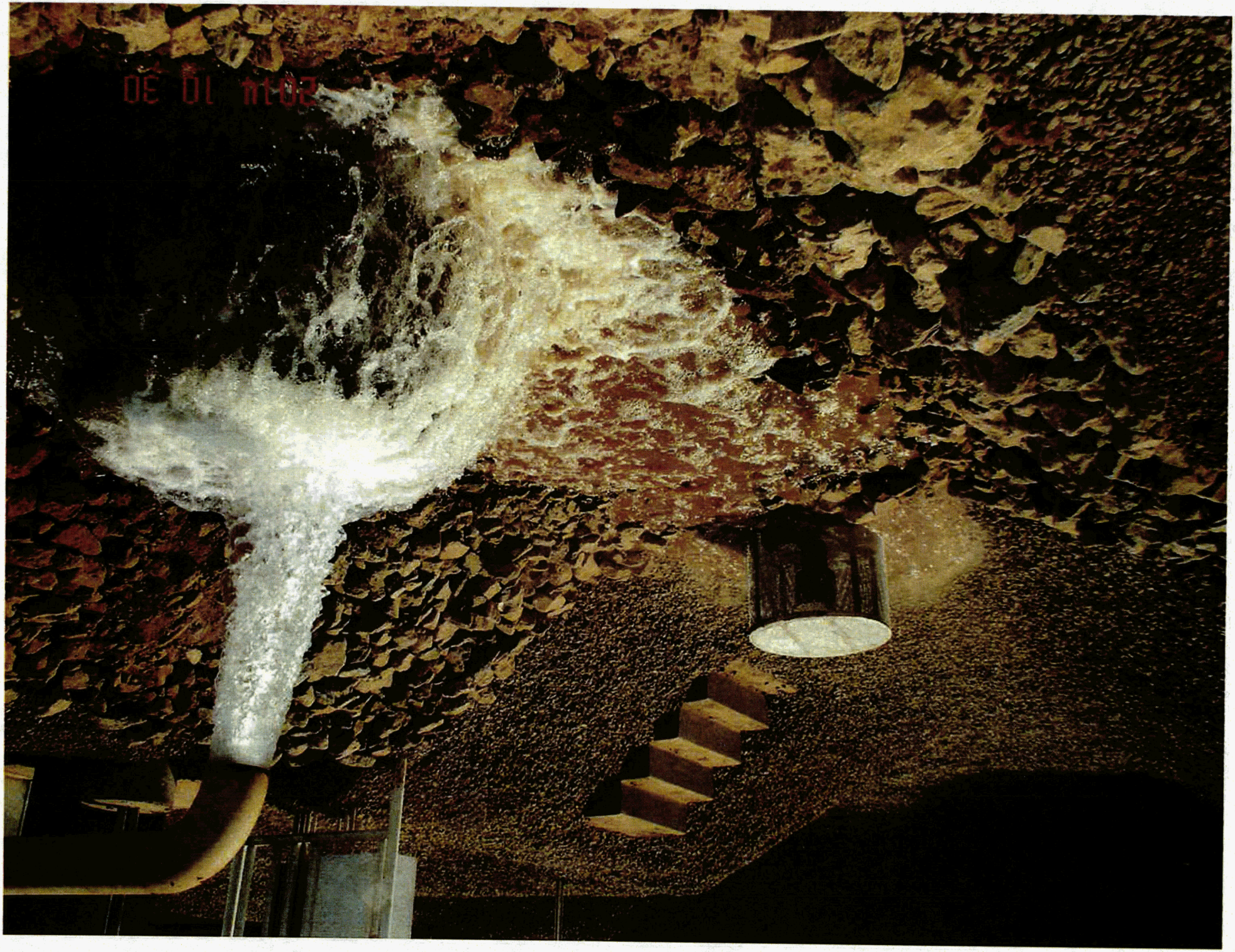
Occupancy Group: U

Signature: Josea M. Cobb
for Dwight Williams, Building Official

Issued: 1/13/2015

Note: Should any of the above statements change, this Certificate of Occupancy will become void.

Post in a conspicuous place.



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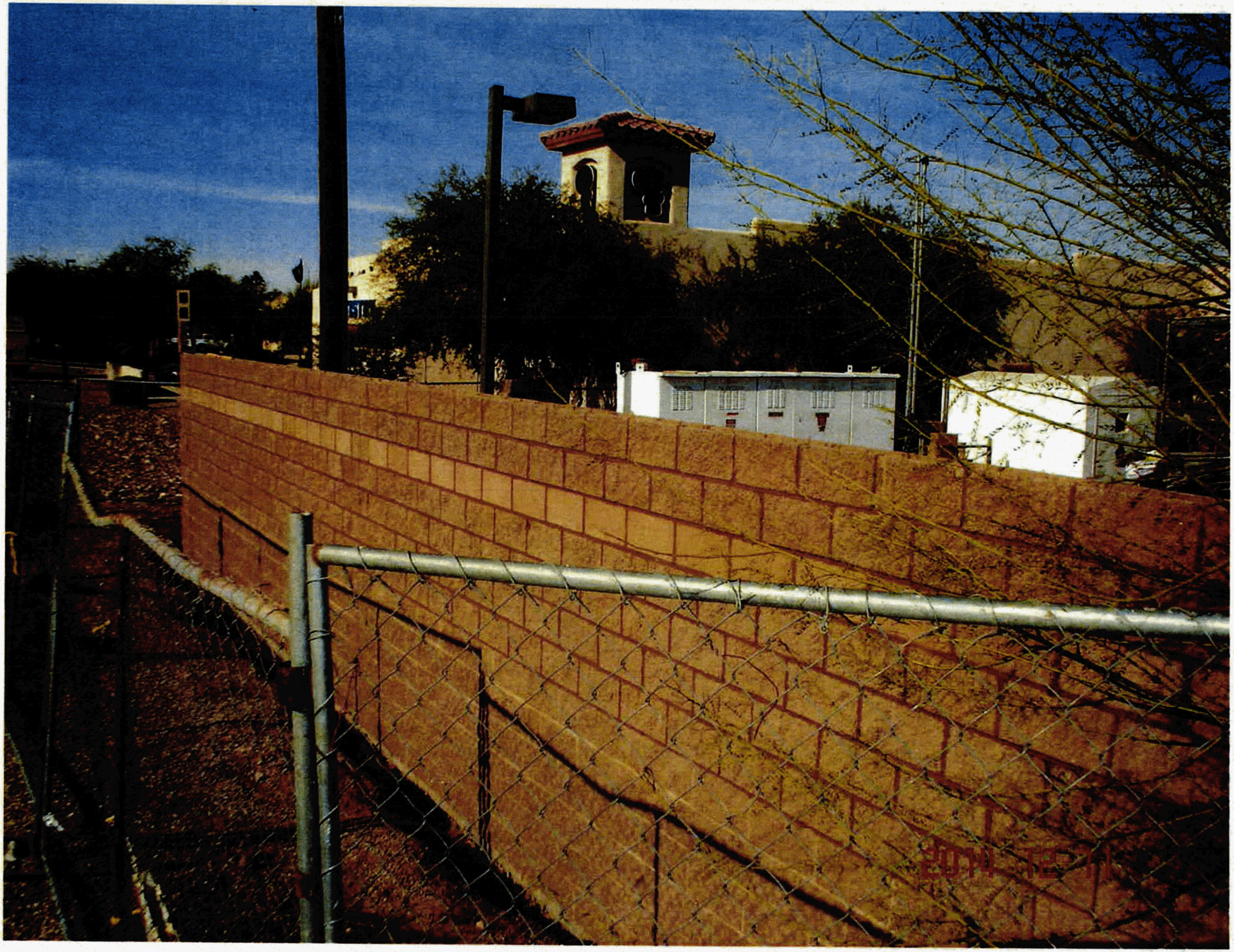

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Date 10-1-08

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ARIZONA WATER COMPANY

CONSTRUCTION PLACED IN SERVICE NOTICE

WORK AUTHORIZATION NO.: 1-5165

DIVISION: PV-CG

DATE PLACED IN SERVICE: 1/12/15

CONTRACT NO:

FOR PURPOSES OF *MODIFIED ACCELERATED COST RECOVERY SYSTEM*, AN ASSET IS "PLACED IN SERVICE" WHEN IT IS IN A CONDITION OR STATE OF READINESS AND AVAILABILITY FOR A SPECIFICALLY ASSIGNED FUNCTION, WHETHER IT BE FOR USE IN A TRADE OR BUSINESS, OR FOR THE PRODUCTION OF INCOME.

I CERTIFY THAT THE ASSET(S) CONSTRUCTED PURSUANT TO THE PROVISIONS OF THE ABOVE-REFERENCED WORK AUTHORIZATION ARE READY FOR SERVICE AS OF THE DATE SHOWN ABOVE.

Division Manager or Operations Superintendent
(signature)

1-12-15
Date

A-1-3-1
RKS 11/24/11

Document
XXX/XXX 10:50 AM 1/7/15

ARIZONA WATER COMPANY

PROJECT CLOSE-OUT NOTICE

PROJECT CLOSE-OUT DATE:	1-12-15	DIVISION/ SYSTEM:	PV-CG
		WORK AUTHORIZATION NUMBER:	

THE FOLLOWING RECORD REQUIREMENTS ARE ATTACHED: PREPARED BY

1. W.A. FINAL COMPLETION CHECKLIST ..... [signature]
2. FINAL AUTHORIZATION TO BILL HAS BEEN SENT TO PHOENIX ON _____ ..... _____
   Date

WA FINAL COMPLETION CHECK LIST

FACILITIES RECORDS
- ☒ N/A Valve Records – Main & Blow-off
- ☒ N/A Fire Hydrant Records – Include Flow Test Data

ABANDONED FACILITIES
- ☒ Property Disposal Report (PDR)
- ☒ N/A Voided Valve Records
- ☒ N/A Voided Fire Hydrant Records

COMPLETION DOCUMENTS
- ☐ Public Fire Hydrants Installation Request (E-3-23)
- ☐ Notice of Fire Hydrant Installation (E-5-5)
- ☐ Permits Acquired By Division Office
- ☐ Bill Of Sale (E-3-36-3)
- ☐ Final Acceptance of Facilities Letter (E-3-36-5)

ON-SITE PHOTOGRAPHS
- ☒ To Show All New Installations At Completion Of W.A.

IF NO ATB IS REQUIRED

- ☒ N/A ADEQ DATA REQUIRED WITH ECC APPLICATION
  NOTE: "Footage Tested" to match total pipe installed ("343" ONLY)

AS-BUILT DRAWING
- ☐ Label Cover Sheet "AS BUILT"
- ☐ Pipe footage and size to be listed on AS-BUILT cover sheet ("343" ONLY)
- ☐ Printed name of AS-BUILT preparer
- ☐ ONLY Changes to original construction drawing to be marked in red on AS-BUILTs.
  NOTE: Include any additional Air Release Valves

FORMS
- ☒ N/A Well Record (E-5-7)
- ☒ Storage Tank Record (E-5-8)
- ☒ Booster Pump Record (E-5-9)
- ☒ Hydropneumatic Tank Record (E-5-10)

OPERATIONS & MAINTENANCE MANUALS
- ☒ N/A Electric S.E.S. & M.C.C.
- ☐ S.C.A.D.A./Controls
- ☐ Treatment Facilities

AOC (Approval of Construction)
- ☐ Placed In Service Notice
- ☒ Daily Progress Reports

I certify that construction on the above Work Authorization is complete and for which all materials have been accounted. I further certify that I have inspected the work and determined it a satisfactory and in accordance with Company specifications.

[signature]
Division Manager, Operations Superintendent, or Project Engineer *(signature)*

1-12-15
Date of Notice

[redacted]

TO: ACCOUNTING DEPARTMENT (ACCOUNTANT II)
CC: ENGINEERING DEPARTMENT (ENG. SEC.)

4/26/13 | FKS:ah | II-5-4-2