Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

CHANDLER arizona Community of Innovation

City of Chandler, Arizona
Public Works & Utilities Department
Capital Projects Division

CONSTRUCTION BID

ARROWHEAD MEADOWS
WATER MAIN REPLACEMENT
CITY PROJECT NO.: WA2203.402

MAYOR
Kevin Hartke

VICE MAYOR
Angel Encinas

COUNCIL
OD Harris **Matt Orlando**
Christine Ellis **Jane Poston** **Jennifer Hawkins**

Daniel Haskins

Daniel Haskins, P.E.
CIP City Engineer

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CITY OF CHANDLER, ARIZONA

CONSTRUCTION BID

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LEGAL AD DEPARTMENT

CHANDLER arizona
Community of Innovation

INVITATION TO BID

ARROWHEAD MEADOWS WATER MAIN REPLACEMENT
CITY PROJECT NO.: WA2203.402

NOTICE IS HEREBY GIVEN that sealed bids will be received and date/time stamped by the City of Chandler Capital Projects Office, 215 East Buffalo Street, Chandler, Arizona 85225 until the bid submission date specified below.

Solicitation documents and addenda may be downloaded at the Arizona Procurement Portal - https://app.az.gov/. It is the contractor's sole responsibility to obtain all addenda from the Arizona Procurement Portal prior to submitting their bid proposal, and to acknowledge receipt and acceptance of the addenda in their bid proposal submittal. No separate notification of addenda will be issued. The City recommends Contractors regularly check Arizona Procurement Portal - https://app.az.gov/ for updated information.

PRE-BID CONFERENCE:

January 29, 2026 **01:00 p.m.** **Arizona time**	**THERE WILL BE A PRE-SUBMITTAL CONFERENCE - VIRTUAL** Via Microsoft Teams virtual meeting at the following link: Virtual:WA2203.402 Arrowhead Meadows WMR Pre-Bid Meeting Non-Mandatory | Meeting-Join | Microsoft Teams. Meeting ID: 291 276 089 777 0 Passcode: 7p4Kr6Pg or join by phone 1-469-998-7682 and use Phone conference ID: 964 693 713#. City staff will discuss the project, explain the selection process, and answer any questions. Learn more about Microsoft Teams at https://support.microsoft.com/en-us/teams.

SOLICITATION QUESTIONS DUE DATE:

February 4, 2026 **5:00 p.m.** **Arizona time**	All solicitation questions must be emailed to Bid.Questions@chandleraz.gov with the subject line of: **"WA2203.402 Arrowhead Meadows Water Main Replacement BID QUESTION".** Questions received **after the due date and time** will **NOT** be considered.

BID SUBMISSION:

February 18, 2026 **3:00 p.m.** **Arizona time**	Sealed bids must be delivered to the City of Chandler Capital Projects Office located at 215 East Buffalo Street, Chandler, Arizona, 85225. **Bids must be received on or before date and time specified.** At that time, bids will be publicly opened and read aloud in the **Saguaro Conference Room**. Bids received after the due date and time will be returned unopened without consideration. All bids must be submitted in a sealed envelope plainly marked as follows: **BID OF _____, CONTRACTOR** **FOR: *"Arrowhead Meadows Water Main Replacement"*** **"WA2203.402"**

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Work under this Agreement includes:

Replacement of approximately 7,550 linear feet of existing water mains with new piping and appurtenances ranging in size from 4-inch to 8-inches.

Work must be completed within 210 consecutive calendar days from the Notice to Proceed. The Engineer's Estimate range is $4 Million to $6 Million**.**

Bids must be submitted on the Proposal Form provided and be accompanied by the Bid Bond for not less than ten percent (10%) of the total bid, payable to the City of Chandler, Arizona, or a certified or cashier's check. PERSONAL OR INDIVIDUAL SURETY BONDS ARE NOT ACCEPTABLE.

The successful bidder will be required to execute the standard form of agreement for construction prior to Council award

The successful bidder must furnish a Payment Bond and Performance Bond in the amount equal to one hundred percent (100%) of the Agreement Price.

The right is hereby reserved to accept or reject any or all bids or parts thereto, to waive any informalities in any proposal and reject the bids of any persons who have been delinquent or unfaithful to any agreement with the City of Chandler.

All Bids will remain open for 90 days after the Bid opening day, but the City may, in its sole discretion, release any Bid and return the bid security prior to that date. No Bidder may withdraw his Bid during this period without written permission from the City.

Find PRELIMINARY BID RESULTS at: https://www.chandleraz.gov/business/vendor-services/capital-projects
Protest Policy - A protest of a proposed award must be filed WITH THE PURCHASING OFFICE within 5 calendar days of the first posting of the award recommendation. Award recommendations are posted on the Capital Projects web site or the City Clerk web site. If the due date occurs on a weekend or holiday the protest must be filed the next business day.
A Protest must include:

- The name, address and telephone number of the protester;
- The signature of the protester or its representative;
- Identification of the project and the solicitation or agreement number;
- A detailed statement of the legal and factual grounds of the protest including copies of relevant documents; and
- The form of relief requested.

City will review the protest and issue a written response.

PUBLISHED DATE:	**1/21/2026** **1/28/2026** Arizona Republic AFFIDAVIT OF PUBLICATION

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BID SUBMITTAL LIST

This list may not include all required bid submission items. It is the Contractor's responsibility to read the entire bid and determine all items required by the submission date and time.

DO NOT DOUBLE-SIDE ANY PART OF THE BID SUBMITTAL

PROJECT NAME: **ARROWHEAD MEADOWS WATER MAIN REPLACEMENT**

CITY PROJECT NO.**:** **WA2203.402**

PLEASE INCLUDE THE FOLLOWING ITEMS IN YOUR SUBMITTAL ACCORDING TO THE DATE AND TIME LISTED IN THE INVITATION TO BID ADVERTISEMENT:

A. Bid Bond (Original – with Seal)

B. Signed Proposal Acknowledgement, and licenses

C. Bid Schedule

D. Subcontractor's List Form

E. Non-Collusion Bidding Certification

F. Certificate of Insurability and Bonding

G. Arizona Department of Revenue Privilege Tax License

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BID BOND

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

KNOW ALL MEN BY THESE PRESENTS: That, Lincoln Constructors, Inc. (hereinafter "Principal"), as Principal, and Employers Mutual Casualty Company, (hereinafter "Surety"), a corporation organized and existing under the laws of the State of Iowa, with its principal offices in Des Moines, IA, holding a certificate of authority to transact surety business in Arizona issued by the Director of the Department of Insurance pursuant to Title 20, Chapter 2, Article 1, as Surety, held and firmly bound unto City of Chandler, (hereinafter "Obligee"), as Obligee, in the amount of Ten Percent (10%) of the amount of the bid of Principal, submitted by Principal to the Obligee for the work described below, for the payment of which sum, the Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for construction of:

Arrowhead Meadows Water Main Replacement
WA2203.402

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

Witness our hands this 18th day of February, 20 26

Lincoln Constructors, Inc.
Principal SEAL

By: _____

Its: _____

Employers Mutual Casualty Company
SURETY

By: _____
Gregory P. Griffith, Attorney-in-Fact

Constructors Bonding, Inc. of Nevada
Gregory P. Griffith, Arizona Resident Agent
AGENCY OF RECORD

P. O. Box 36797, Las Vegas, NV 89133-6797
AGENCY ADDRESS

CITY OF CHANDLER
CHANDLER, ARIZONA

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

emc INSURANCE

P.O. Box 712 • Des Moines, Iowa 50306-0712

POWER OF ATTORNEY APPOINTING INDIVIDUAL ATTORNEY-IN-FACT

KNOW ALL MEN BY THESE PRESENTS, that:

1. **Employers Mutual Casualty Company, an Iowa Corporation**
2. **EMCASCO Insurance Company, an Iowa Corporation**
3. **Union Insurance Company of Providence, an Iowa Corporation**
4. **Illinois EMCASCO Insurance Company, an Iowa Corporation**
5. **Dakota Fire Insurance Company, a North Dakota Corporation**
6. **EMC Property & Casualty Company, an Iowa Corporation**

hereinafter referred to severally as "Company" and collectively as "Companies", each does, by these presents, make, constitute and appoint:

Gregory P Griffith

its true and lawful attorney-in-fact, with full power and authority conferred to sign, seal, and execute the Bid Bond

In an amount not exceeding Ten Million Dollars.....$10,000,000.00

and to bind each Company thereby as fully and to the same extent as if such instruments were signed by the duly authorized officers of each such Company, and all of the acts of said attorney pursuant to the authority hereby given are hereby ratified and confirmed.

AUTHORITY FOR POWER OF ATTORNEY

This Power-of-Attorney is made and executed pursuant to and by the authority of the following resolution of the Boards of Directors of each of the Companies at the first regularly scheduled meeting of each company duly called and held in 1999:

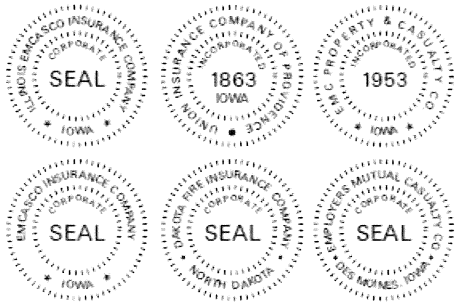
RESOLVED: The President and Chief Executive Officer, any Vice President, the Treasurer and the Secretary of Employers Mutual Casualty Company shall have power and authority to (1) appoint attorneys-in-fact and authorize them to execute on behalf of each Company and attach the seal of the Company thereto, bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof; and (2) to remove any such attorney-in-fact at any time and revoke the power and authority given to him or her. Attorneys-in-fact shall have power and authority, subject to the terms and limitations of the power-of-attorney issued to them, to execute and deliver on behalf of the Company, and to attach the seal of the Company thereto, bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof, and any such instrument executed by any such attorney-in-fact shall be fully and in all respects binding upon the Company. Certification as to the validity of any power-of-attorney authorized herein made by an officer of Employers Mutual Casualty Company shall be fully and in all respects binding upon this Company. The facsimile or mechanically reproduced signature of such officer, whether made heretofore or hereafter, wherever appearing upon a certified copy of any power-of-attorney of the Company, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

IN WITNESS THEREOF, the Companies have caused these presents to be signed for each by their officers as shown, and the Corporate seals to be hereto affixed this 17th day of September, 2025.

Scott R. Jean, President & CEO
of Company 1; Chairman, President
& CEO of Companies 2, 3, 4, 5 & 6

Todd Strother, Executive Vice President
Chief Legal Officer & Secretary of
Companies 1, 2, 3, 4, 5 & 6

Seals



AMY DANIEL
Commission Number 866839
My Commission Expires
August 13, 2028

On this 17th day of September, 2025 before me a Notary Public in and for the State of Iowa, personally appeared Scott R. Jean and Todd Strother, who, being by me duly sworn, did say that they are, and are known to me to be the CEO, Chairman, President, Executive Vice President, Chief Legal Officer and/or Secretary, respectively, of each of the Companies above; that the seals affixed to this instrument are the seals of said corporations; that said instrument was signed and sealed on behalf of each of the Companies by authority of their respective Boards of Directors; and that the said Scott R. Jean and Todd Strother, as such officers, acknowledged the execution of said instrument to be their voluntary act and deed, and the voluntary act and deed of each of the Companies.

My Commission Expires August 13, 2028.

Notary Public in and for the State of Iowa

CERTIFICATE

I, Ryan J. Springer, Vice President of the Companies, do hereby certify that the foregoing resolution of the Boards of Directors by each of the Companies, and this Power of Attorney issued pursuant thereto on 17th day of September, 2025, are true and correct and are still in full force and effect.

In Testimony Whereof I have subscribed my name and affixed the facsimile seal of each Company this 18th day of February, 2026.

Vice President

"For verification of the authenticity of the Power of Attorney you may call (515) 345-7548."

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Arrowhead Meadows Water Main Replacement
WA2203.402

PROPOSAL ACKNOWLEDGEMENT

PROPOSAL to the City Engineer of the City of Chandler,
In compliance with the Advertisement for Bids, the undersigned bidder:

Having examined the agreement documents, site of work, and being familiar with the conditions to be met, hereby submits the following Proposal for furnishing the material, equipment, labor and everything necessary for the completion of the work listed and agrees to execute the agreement documents and furnish the required bonds and certificates of insurance for the completion of said work, at the locations and for the prices set forth on the inside pages of this form.

Understands that construction of this project shall be in accordance with all applicable Uniform Standard Specifications and Standard Details except as otherwise required by the Project Plans and Project Specific Provisions.

Understands that the Proposal shall be submitted with a Proposal guarantee of cash, certified check, cashier's check, or surety bond for an amount of not less than ten percent (10%) of the amount bid.

Agrees that upon receipt of Notice of Award from the City of Chandler, the undersigned bidder will execute the agreement documents.

Work shall be completed within **210 consecutive calendar days**, beginning with the day following the starting date specified in the Notice to Proceed. Said Notice will be issued in accordance with the Project Specific Provisions "NOTICE TO PROCEED," or, when, in the opinion of the Engineer, sufficient materials are, or will be available for the continuous prosecution of the work.

Acknowledges that bid prices submitted include all applicable sales and/or use taxes, and no further compensation will be approved for these items.

The Bidder hereby acknowledges receipt of and agrees that the submitter's Proposal is based on the following Addenda:

Addendum	Date Received	Addendum No.	Date Received
#1	02/09/2026		

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PROPOSAL ACKNOWLEDGEMENT

THIS BID IS SUBMITTED BY: Lincoln Constructors Inc.,
a corporation organized under the laws of the State of Arizona; a
partnership consisting of _____;
or individual trading as _____
and is the holder of an Arizona State Contractor's License: A 310165

ATTACH PHOTOCOPY

Classification A General Engineering No. 310165

Failure to fill in the information above, regarding the bidder being a holder of Arizona State Contractor's License is grounds for rejection of the bid.

Joint venture bid proposals will not be accepted for projects bidding in the amount (for base bid) of less than $5 million dollars.

Contractors are reminded it is a violation of State law to submit a bid if not properly licensed. Bids submitted without designating the Contractor's license classification and number, in the spaces provided above, shall be rejected. Bids submitted by Contractors without the required license shall be rejected.

Contractor acknowledges by signing below that bid prices submitted include all applicable sales and/or use taxes, and no further compensation shall be approved for these items. If there is a conflict between the unit bid price and the unit price extension for a particular pay item, the unit prices shall govern, per MAG 102.5. Also, per MAG 102.7, a proposal shall be considered irregular and may be rejected if there are unauthorized additions, statements, conditional or alternate bids, or irregularities of any kind.

Respectfully submitted,

Lincoln Constructors Inc.
Firm

81-4143667
Federal Tax ID Number

1802 N 27th Ave — Phoenix, AZ 85009
Address — City, State and Zip Code

602-316-3800
Phone

By (Signature Required)

Robert K. Sanders
Name and Title (Print)

bobs@lci-az.com
Email Address

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NAME OF BIDDER: Lincoln Conctructors Inc.

CITY OF CHANDLER

Arrowhead Meadows Water Main Replacement Project No. WA2203.402

BID SCHEDULE

NO.	SPEC SECTION	KEYNOTE	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	EXTENDED PRICE
1	104101	-	PROJECT SIGNS	EA	3	$ 500.00	$ 1,500.00
2	105801	-	SURVEY	LS	1		$ 30,000.00
3	105802	-	AS-BUILTS & GIS DATA	LS	1		$ 30,000.00
4	107210	-	EROSION CONTROL (SWPPP PREPARATION, INSTALLATION, MAINTENANCE, AND REMOVAL)	LS	1		$ 30,000.00
5	324000	120	SAWCUT, REMOVE, AND REPLACE CONCRETE PAVEMENT. MATCH EXISTING THICKNESS UP TO 8"	SY	36	$ 150.00	$ 5,400.00
6	332200	89	SURVEY MARKERS / MONUMENTS DAMAGED DURING CONSTRUCTION SHALL BE REPLACED BY CONTRACTOR AND BE CERTIFIED BY A R.L.S. PER MAG STD. DET. 120, SURVEY MARKER TYPE AND ENCLOSURE SHALL MATCH EXISTING	EA	1	$ 4,000.00	$ 4,000.00
7	332200	5	APPLY ASPHALT EMULSION SLURRY SEAL COAT, TYPE II, QUICK SETTING, TO ENTIRE ROADWAY WIDTH.	SY	27,481	$ 9.00	$ 247,329.00
8	337000	7	SEAL AND FILL PAVEMENT CRACKS PER MAG STD. SPEC. SECT. 337.	LF	51,769	$ 2.50	$ 129,422.50
9	340001	11	SAWCUT, REMOVE, AND REPLACE CURB AND GUTTER PER MAG STD. DET. 220-1, TYPE "A", JOINT TO JOINT	LF	280	$ 65.00	$ 18,200.00
10	340041	12	SAWCUT, REMOVE, AND REPLACE ROLL CURB AND GUTTER PER MAG STD. DET. 220-1, TYPE "C", JOINT TO JOINT	LF	280	$ 80.00	$ 22,400.00
11	340200	10	SAWCUT, REMOVE, AND REPLACE, FULL WIDTH OF CONCRETE SIDEWALK TO NEAREST JOINT PER MAG STD. DET. 250	SF	3,560	$ 15.00	$ 53,400.00
12	340400	18	SAWCUT, REMOVE, AND REPLACE VALLEY GUTTER AND BOTH APRONS PER MAG STD. DET. 240	SF	394	$ 24.00	$ 9,456.00
13	340401	117	SAWCUT, REMOVE, AND REPLACE, EXISTING CONCRETE RAMP, CURB AND DETECTABLE WARNING STRIP PER COC STD. DET. C-249& C-258-2 AND MAG STD. DET. 234 & 236-4	EA	1	$ 4,000.00	$ 4,000.00
14	340900	19	SAWCUT, REMOVE, AND REPLACE SPEED HUMP PER COC STD. DET. C-234. LENGTH TO MATCH EXISTING ROADWAY	EA	6	$ 5,000.00	$ 30,000.00
15	350000	80	ABANDON EXISTING WATERLINE AND APPURTENANCES IN PLACE. ABANDON EXISTING GATE VALVES PER MAG STD. DET. 350. SET VALVE IN THE CLOSED POSITION (UNLESS NOTED OTHERWISE), REMOVE THE VALVE STEM AND BACKFILL WITH 1/2-SACK CLSM. PROTECT EXISTING WATERLINES IN PLACE DURING CONSTRUCTION.	LS	1		$ 250,000.00
16	350001	82	ABANDON EXISTING VALVE IN PLACE. BACKFILL VALVE BOX WITH 1/2 SACK CLSM AFTER CITY HAS CLOSED VALVE. CAP WITH 9" OF CONCRETE	EA	4	$ 2,000.00	$ 8,000.00
17	350100	112	ABANDON EXISTING WATERLINE IN PLACE, FILL WITH CEMENT GROUT. GROUT SEGMENT AT EDGE OF PAVEMENT PER DET. 9, SHT. G3	LF	470	$ 30.00	$ 14,100.00
18	350230	123	REMOVE AND DISPOSE OF EXISTING METER AND METER BOX. BACKFILL REMAINING VOID WITH COMPACTED ABC IN DRIVEWAYS AND NATIVE MATERIAL IN YARDS	EA	67	$ 800.00	$ 53,600.00
19	350300	113	DEMOLISH EXISTING WATER VAULT. SEE SPECIFICATIONS FOR DEMOLITION DETAILS	LS	1		$ 15,000.00
20	350700	70	REMOVE AND DISPOSE OF EXISTING FIRE HYDRANT ASSEMBLY PER PROJECT SPECIFICATIONS AND DET. 4 SHT. G3. PROTECT EXISTING WATERLINE(S) IN PLACE DURING CONSTRUCTION.	EA	14	$ 5,000.00	$ 70,000.00
21	401000	-	TRAFFIC CONTROL	LS	1		$ 130,000.00
22	402000	71	RE-STRIPE ROADWAY PAVEMENT IN KIND AS NECESSARY	LS	1		$ 40,000.00
23	430000	93	REMOVE AND REPLACE EXISTING LANDSCAPE MATERIAL AND IRRIGATION IN KIND	LS	1		$ 30,000.00

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NAME OF BIDDER: Lincoln Conctructors Inc.

BID SCHEDULE

NO.	SPEC SECTION	KEYNOTE	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	EXTENDED PRICE
24	440058	125	INSTALL NEW 5/8" BACKFLOW PREVENTION ASSEMBLY PER COC STD. DET. C-311. ASSEMBLY SHALL BE INSTALLED 6" OFF OF METER. CONNECT TO AND EXTEND OR MODIFY EX. PRIVATE SERVICE	EA	1	$ 4,400.00	$ 4,400.00
25	440075	104	INSTALL NEW 3/4" BACKFLOW PREVENTION ASSEMBLY PER COC STD. DET. C-311. ASSEMBLY SHALL BE INSTALLED 6" OFF OF METER. CONNECT TO AND EXTEND OR MODIFY EX. PRIVATE SERVICE	EA	16	$ 3,550.00	$ 56,800.00
26	440125	105	INSTALL NEW 1.25" BACKFLOW PREVENTION ASSEMBLY PER COC STD. DET. C-311. ASSEMBLY SHALL BE INSTALLED 6" OFF OF METER. CONNECT TO AND EXTEND OR MODIFY EX. PRIVATE SERIVCE	EA	1	$ 4,500.00	$ 4,500.00
27	440200	107	INSTALL NEW 2" BACKFLOW PREVENTION ASSEMBLY PER COC STD. DET. C-311. ASSEMBLY SHALL BE INSTALLED 6" OFF OF METER. CONNECT TO AND EXTEND OR MODIFY EX. PRIVATE SERVICE	EA	6	$ 5,500.00	$ 33,000.00
28	440400	109	INSTALL NEW 4" BACKFLOW PREVENTION ASSEMBLY PER COC STD. DET. C-315	EA	2	$ 17,000.00	$ 34,000.00
29	440500	111	DEMOLISH EXISTING BACKFLOW ASSEMBLY. SEE SPECIFICATIONS FOR DEMOLITION DETAILS.	EA	1	$ 5,000.00	$ 5,000.00
30	440600	124	RELOCATE AND TEST EXISTING BACKFLOW PREVENTION ASSEMBLY	EA	1	$ 3,500.00	$ 3,500.00
31	505600	78	INSTALL THRUST COLLAR PER DET. 1 AND 2 SHT. G3	EA	7	$ 1,325.00	$ 9,275.00
32	610131	62	INSTALL NEW 1" SERVICE LINE CONNECTION PER COC STD. DET. C-301-1, REPLACE EXISTING WATER METER AND BOX IN CURRENT LOCATION WITH SIZE LISTED ON TABLES ON SHT. W64 - W66. CONNECT TO EX. PRIVATE SERVICE.	EA	37	$ 2,600.00	$ 96,200.00
33	610132	60	INSTALL NEW 2" SERVICE LINE CONNECTION PER COC STD. DET. C-301-1, REPLACE EXISTING WATER METER AND BOX IN CURRENT LOCATION WITH SIZE LISTED ON TABLES ON SHT. W64 - W66. CONNECT TO EX. PRIVATE SERVICE	EA	3	$ 6,400.00	$ 19,200.00
34	610133	64	INSTALL NEW 1" SERVICE LINE CONNECTION PER COC STD. DET. C-301-1, WATER METER AND BOX. INSTALL WATER METER AND BOX IN NEW LOCATION WITH SIZE LISTED ON TABLES ON SHT. W64 - W66. CONNECT TO EX. PRIVATE SERVICE	EA	61	$ 2,500.00	$ 152,500.00
35	610134	102	INSTALL NEW 1.5" SERVICE LINE CONNECTION PER COC STD. DET. C-301-1, WATER METER AND BOX. INSTALL WATER METER AND BOX AT CURRENT LOCATION WITH SIZE LISTED ON TABLES ON SHT. W64-66. PROVIDE TRAFFIC RATED BOX WHEN NOTED. CONNECT TO EX. PRIVATE SERVICE	EA	7	$ 3,400.00	$ 23,800.00
36	610135	103	INSTALL NEW 2" SERVICE LINE CONNECTION PER COC STD. DET. C-301-1, WATER METER AND BOX. INSTALL WATER METER AND BOX IN NEW LOCATION WITH SIZE LISTED ON TABLES ON SHT. W64-W66. CONNECT TO EX. PRIVATE SERVICE	EA	2	$ 7,000.00	$ 14,000.00
37	610140	122	INSTALL NEW 1" PRIVATE SERVICE LINE. CONNECT TO EXISTING PRIVATE SERVICE	LF	128	$ 13.00	$ 1,664.00
38	610141	119	BORE UNDER EXISTING FEATURE COC STD. DET. C-112, MAG SPEC 608, AND COC SUPPLEMENTAL SPEC 608. PREPARE A BORING PLAN AND PROFILE FOR REVIEW AND APPROVAL	EA	4	$ 8,500.00	$ 34,000.00
39	610304	35	INSTALL 4" D.I.P. CLASS 350 WATERLINE IN POLYWRAP. TRENCH, BACKFILL, AND PAVEMENT REPLACEMENT PER DET. 8 SHT. G3	LF	54	$ 220.00	$ 11,880.00
40	610306	1	INSTALL 6" D.I.P. CLASS 350 WATERLINE IN POLYWRAP. TRENCH, BACKFILL, AND PAVEMENT REPLACEMENT PER DET. 8 SHT. G3	LF	521	$ 155.00	$ 80,755.00
41	610308	2	INSTALL 8" D.I.P. CLASS 350 WATERLINE IN POLYWRAP. TRENCH, BACKFILL, AND PAVEMENT REPLACEMENT PER DET. 8 SHT. G3	LF	7028	$ 173.00	$ 1,215,844.00
42	610600	72	CUT AND CAP EXISTING WATERLINE WITH WATERTIGHT PLUG PER DET. 3 SHT. G3. REMOVE EX. PIPE AS REQUIRED BETWEEN CAPS. WHEN ONE OF THE CAPS IS ADJACENT TO AN EXISTING VALVE, INSTALL BLIND FLANGE IN LIEU OF PLUG.	EA	53	$ 790.00	$ 41,870.00

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NAME OF BIDDER: Lincoln Conctructors Inc.

BID SCHEDULE **Bid Page 3 of 3**

NO.	SPEC SECTION	KEYNOTE	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	EXTENDED PRICE
43	610700	90	CAUTION SANITARY SEWER CROSSING. INVERTS OF CROSSING ESTIMATED. CONTRACTOR TO FIELD VERIFY PRIOR TO INSTALLATION OF LATERAL. PROVIDE 1' MIN. SEPARATION ABOVE AND 2' MIN. SEPARATION BELOW EXISTING SEWER PER MAG STD. DET. 404-1. ENCASE AS NECESSARY PER MAG STD. DET. 404-2 AND 404-3. ALL ELEVATIONS LISTED ARE FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE AT CROSSING	LF	126	$ 45.00	$ 5,670.00
44	610900	57	INSTALL NEW FIRE HYDRANT ASSEMBLY PER COC STD. DET. C-303-1 AND C-305. FIRE HYDRANT COLOR CODE SHALL BE TYPE 1 PER COC STD. DET. C-303-2. RESTRAIN ALL JOINTS. INSTALL GATE VALVE (FLxFL). BOX AND COVER PER COC STD. DET. C-307. ADD VALVE BLOCKING PER MAG STD. DET. 301.	EA	17	$ 8,500.00	$ 144,500.00
45	619904	108	INSTALL NEW 4" WATER METER AND NEW METER VAULT PER COC STD. DET. C-316	EA	1	$ 8,000.00	$ 8,000.00
46	630306	46	INSTALL 6" GATE VALVE, BOX AND COVER PER COC STD. DET. C-307. INSTALL CONCRETE RING AND ADJUST FRAME AND COVER PER MAG STD. DET. 270.	EA	5	$ 4,000.00	$ 20,000.00
47	630308	47	INSTALL 8" GATE VALVE, BOX AND COVER PER COC STD. DET. C-307. INSTALL CONCRETE RING AND ADJUST FRAME AND COVER PER MAG STD. DET. 270.	EA	24	$ 4,000.00	$ 96,000.00
48	630401	49	CONNECT NEW LINE TO EXIST. LINE WITH 16"x8" T.S.&V. PER MAG STD. DET. 340. INSTALL VALVE. BOX AND COVER PER COC STD. DET. C-307. ADD VALVE BLOCKING PER MAG STD. DET. 301	EA	1	$ 6,000.00	$ 6,000.00
49	800000	-	MOBILIZATION/DEMOBILIZATION	LS	1		$ 400,000.00
50	9000000	-	OWNER'S ALLOWANCE	AL	1		$ 450,000.00

TOTAL BASE BID: $4,198,165.50

Note 1: Bidders must fill in all blank spaces with an entry. Bids submitted with blank spaces will be considered "Non- Responsive".

Note 2: Bids will be opened and read aloud at an open public meeting at the time and place designed in the invitation for bids. Bids will not be modified after the bid opening. A bidder withdrawing a bid after the bid opening will be deemed non-responsible and the City may make a claim against the bidder's bid bond.

Note 3: The City reserves the right to determine the low bidder based on the Base Bid with or without any Bid Alternate(s).

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

SUBCONTRACTOR'S LIST FORM

ARROWHEAD MEADOWS WATER MAIN REPLACEMENT
WA2203.402

If Bidder intends to subcontract any portion of this Agreement, the bidder must submit the name, address, and contractor's license number (if applicable) of each subcontractor, including the work component of such subcontracting. Include this form with the bid submittal documents. Prime Contractor must self-perform according to MAG Specification 108.2. Bidder may make multiple copies of this form as needed.

Company Name:	Franklin Striping Inc.	**Company Name:**	
Contact Name:	Ethan Spelde	Contact Name:	
Contact Email:	ethan@franklinstriping.com	Contact Email:	
Contact Phone:	480-980-1211	Contact Phone:	
Work Component:	Striping	Work Component:	
Percentage of Total Work Performed:	1%	Percentage of Total Work Performed:	

Company Name:		**Company Name:**	
Contact Name:		Contact Name:	
Contact Email:		Contact Email:	
Contact Phone:		Contact Phone:	
Work Component:		Work Component:	
Percentage of Total Work Performed:		Percentage of Total Work Performed:	

Company Name:		**Company Name:**	
Contact Name:		Contact Name:	
Contact Email:		Contact Email:	
Contact Phone:		Contact Phone:	
Work Component:		Work Component:	
Percentage of Total Work Performed:		Percentage of Total Work Performed:	

Subcontractor Total Work Performed:	$ 40,000	Overall Bid Total:	$ 4,198,165.50
Overall Prime Contractor Self-performance %:	99%		

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

NON-COLLUSION BIDDING CERTIFICATION

(STATE OF) Arizona
ss.
(COUNTY OF) Maricopa

I, Robert K. Sanders of the City of Phoenix,
in the County of Maricopa and the State of Arizona, of full age,
being duly sworn according to the law of my oath depose and say that:

I am Robert K. Sanders (Name) a, President (Title, Position, etc.)

of the firm of Lincoln Constructors Inc., the Bidder making the Bid for City of Chandler, **Arrowhead Meadows Water Main Replacement**, **City Project No. WA2203.402** and that I executed the said Bid with full authority so to do; that said Bidder has not, directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free, competitive bidding in connection with the above named Project; and that all statements contained in said Bid and in this affidavit are true and correct, and made with full knowledge that the City of Chandler relies upon the truth of the statements contained in said Bid and in the statements contained in this affidavit in awarding the Contract for the said Project.

I further warrant that no person or selling agency has been employed or retained to solicit or secure such Contract upon an agreement of understanding, for a commission, percentage, brokerage or contingent fee, except bonafide employees or bonafide established commercial or selling agencies maintained by:

(Signature of Bidder)

Robert K. Sanders
(Printed or Typed Name of Bidder)

Sworn to before me this 18TH day of FEBRUARY, 2026, in the County of ~~MARICOPA~~ MARICOPA, State of ARIZONA.

(Notary Public)

FRANK PAVLICH
NOTARY PUBLIC · ARIZONA
Maricopa County
Commission # 655500
My Comm. Exp. July 17, 2027

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

CERTIFICATE OF INSURABILITY AND BONDING

I hereby certify that as Bidder to **City of Chandler Arrowhead Meadows Water Main Replacement WA2203.402**, I am fully aware of the City of Chandler's Insurance and Bonding Requirements for Contractors and that by the submission of this Bid Proposal, assure the City of Chandler that I am able to produce the insurance and bonding coverage required should I be selected to be the successful bidder.

Should I be selected to be the successful bidder by the City of Chandler, and then become unable to produce the insurance and bonding coverage specified within ten working days I am fully aware and understand that my Bid Proposal will be rejected by the City of Chandler, and that I will forfeit my posted Bid Bond.

Signature of Bidder

President

Title

02/17/2026

Date

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

Bond Department

EMC INSURANCE

Employers Mutual Casualty Company - Seal Addendum

Employers Mutual Casualty Company hereby authorizes its Attorneys-in-Fact to affix Employers Mutual Casualty Company's corporate seal to any bond executed by said Attorney-in-Fact for Employers Mutual Casualty Company by attaching this Seal Addendum. In accordance with the above, Employers Mutual Casualty Company hereby affirms that the corporate seal hereon shall be deemed affixed to said bond with the same force and effect as if Employers Mutual Casualty Company's raised corporate seal was present.

Dated this 5th day of July, 2022.

Employers Mutual Casualty Company

EMPLOYERS MUTUAL CASUALTY CO. CORPORATE SEAL DES MOINES, IOWA

By: _____
Ryan J. Springer, Vice President

717 Mulberry Street | Des Moines, IA 50309-3872 | 515.280.2511 | F 877.250.6538 | www.emcins.com

Employers Mutual Casualty Company
EMCASCO Insurance Company
EMC Reinsurance Company
Illinois EMCASCO Insurance Company
Dakota Fire Insurance Company
EMC Property & Casualty Company
Union Insurance Company of Providence
Hamilton Mutual Insurance Company
EMC Risk Services, LLC
EMC Underwriters, LLC
EMC National Life Company (affiliate)

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

ARIZONA DEPARTMENT OF REVENUE
ATTN: Customer Care and Outreach
PO BOX 29032
Phoenix, AZ 85038-9032

ARIZONA DEPARTMENT OF REVENUE

TRANSACTION PRIVILEGE TAX LICENSE
NOT TRANSFERABLE

The licensee listed below is licensed to conduct business upon the condition that taxes are paid to Arizona Department of Revenue as required under provisions of A.R.S. Title 42, Chapter 5, Article 1.

2026

ISSUED TO: LINCOLN CONSTRUCTION INC
1802 N 27TH AVE
PHOENIX AZ 85009-2614

ALL communications and reports MUST REFER to this LICENSE NO.

LICENSE: 21455674
START DATE: 06/01/2022
ISSUED: 10/31/2025
EXPIRES: 12/31/2026

LOCATION: CODE 001
LINCOLN CONSTRUCTION INC
3028 W LINCOLN ST
PHOENIX, AZ 85009
2500071133533

BUSINESS CODE	REGION	JURISDICTION
015 - CONTRACTING - PRIME	MAR - MARICOPA	COUNTY
017 - RETAIL	MAR - MARICOPA	COUNTY
015 - CONTRACTING - PRIME	PX - PHOENIX	CITY
017 - RETAIL	PX - PHOENIX	CITY

This License is issued to the business named above for the address shown. Licenses, by law, cannot be transferred from one person to another, nor can they be transferred from one location to another. Arizona law requires licensees to notify the Department of Revenue if there is a change in business name, trade name, location, mailing address, or ownership. In addition, when the business ceases to operate or the business location changes and a new license is issued, this license must be returned to the Arizona Department of Revenue. According to R15-5-2201, license must be displayed in a conspicuous place.

0006602023000P7148270300066

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

STATE OF ARIZONA

Office of the Registrar of Contractors

License No. ROC 310165

This is to Certify That

Lincoln Constructors Inc

DBA (If any)

Having been shown to possess all the necessary qualifications, and having complied with all the requirements of the law, is by order of the Registrar of Contractors duly licensed and admitted to engage in and pursue the business of

A

General Engineering

Contractor in the State of Arizona. Given my hand and the seal of the Registrar of Contractors in my office, City of Phoenix, on 01/04/2017

Arizona Registrar of Contractors •1931•

DIRECTOR, ARIZONA REGISTRAR OF CONTRACTORS

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

Contractor Search

DISCLAIMER

The data supplied below is based on your specific request(s) and is correct to the best of our knowledge as of the date and time it was extracted from our data files. The information is provided without personal research or analysis. The data is subject to change on a daily basis. You may obtain additional public records related to any licensee, including dismissed complaints and nondisciplinary actions and orders, by contacting the ROC directly. If this information is required for legal purposes, you may request an affidavit or certified copies for a fee as specified in A.R.S. 32-1104.A3 (https://www.azleg.gov/viewdocument/?docName=http://www.azleg.gov/ars/32/01104.htm). Please read our Standard Terms of Use at roc.az.gov/terms (https://roc.az.gov/terms)

Please note: The company or individuals listed on this license may hold other Arizona contracting licenses. To view information, status and complaint history for the past two years on other licenses held, go to the License Inquiry page and do a "Company Name and Personnel" search by entering the name of the company or individuals listed on the license.

DETAILS FOR

Lincoln Constructors Inc

LICENSE NUMBER ROC 310165

This information is current as of 2025-10-20 09:35:13

Share this License or Send it to Yourself: Email | Save for Later

If you are the contractor listed, feel free to contact our Licensing Department at (602) 542-1525 for more information.

CONTRACTOR

Business Entity Name	**Lincoln Constructors Inc**
City and State	**Phoenix, AZ, 85009**
Phone	**(602) 316-3800**
Status / Action	Active

LICENSE

Class & Description	General Commercial A General Engineering
Entity Type	Corporation
Issued / Renewal	
First Issued	2017-01-04
Renewed Through	2027-01-31

QUALIFYING PARTY & PERSONNEL

The Qualifying Party listed below is associated with this license. All other persons named, if any, are associated with the company. They are not all necessarily associated with this license.

Name : ROBERT K SANDERS Sr
Position : Qualifying Party
Other Positions : OFFICER

Name : ROBERT K SANDERS Sr
Position : Officer
Other Positions : OFFICER

COMPLAINT INFORMATION

Complaints against this contractor are listed below. Complaints that were cancelled, resolved or settled without a corrective work order or dismissed are not included. Contact the Registrar of Contractors at 602-542-1525 or toll-free statewide at 1-877-My AZROC (1-877-692-9762) to identify the ROC office location you need to visit to view complete complaint documentation. This website does not display all public sanctions or public information concerning a license's disciplinary history. Obtain any additional public information by using the Public Records Request form to confirm the license's entire history.

	CLOSED CASES	
0	0	0
Open Cases	Disciplined Cases	Resolved / Settled Cases

BOND INFORMATION

How to collect from a license bond (https://roc.az.gov/recovery-fund?targetclass=answer-question-collect#question-collect)

Bond Type :	**Surety**
Bond Number :	**35663**
Effective Date :	**2016-12-18**
Bond Company :	**Western National Mutual Insurance Company**
Amount :	**$ 75000**
Paid :	**$ 0**
Available :	**$ 75000**
Status :	**Active**

To find out if a contractor's ROC license is current and see other information related to the license, enter their 6 digit license number or their name below. If searching by a person's name, be sure to use first then last - for example: 'John Doe' instead of 'Doe, John'. You can also use the ADVANCED SEARCH functions by clicking the gray "Advanced Search" button below to search by City, Classification, Status and more. Click to read the complete instructions.

If you are looking for a complete list of our current contractors, we highly recommend using our Posting List (https://roc.az.gov/posting-list) page.

Enter your search terms here'... Search

Advanced Search Clear

IF YOU EXPERIENCE A TECHNICAL PROBLEM, PLEASE CLICK HERE (mailto:Webmaster@roc.az.gov).

FOR A LIST OF PENDING LICENSE APPLICATIONS CLICK HERE (https://roc.az.gov/posting-list#newAppsLicensesDiscipline)

If you are looking for a complete list of our current contractors, we highly recommend using our Posting List (https://roc.az.gov/posting-list) page.

For a list of contractors with their full information, please submit a Public Records Request through our Public Records Request One-Stop page. (https://azroc.my.site.com/AZRoc/s/roc-online-services) Thank you.

This resource is being provided for the information and convenience of the public. The listed businesses and their order of appearance do not constitute an endorsement, preference, or recommendation by the Registrar of Contractors.

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

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Fax: (602) 542-1599

(https://twitter.com/az_ROC)
(https://www.facebook.com/Arizonal
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registrar-of-contractors/)
(https://www.instagram.com/az_regis
(https://www.youtube.com/channel/U

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CITY OF CHANDLER, ARIZONA

ARROWHEAD MEADOWS WATER MAIN REPLACEMENT

PROJECT NO. WA2203.402

ADDENDUM NO. 1

DATE: FEBRUARY 9, 2026

1. Bidder must acknowledge the receipt of this addendum on the Proposal Acknowledgement page of the **BID SUBMITTAL**. This addendum, containing **41 pages**, is hereby incorporated into the Construction Agreement by this reference.

2. Exhibit D. **Replace** the Exhibit D GIS/GPS Data Delivery Documents in their entirety with the accompanying revised documents.

3. **Question:** As it relates to Bid Item 34 ("INSTALL NEW 1" SERVICE LINE CONNECTION PER COC STD. DET. C-301-1, WATER METER AND BOX. INSTALL WATER METER AND BOX IN NEW LOCATION WITH SIZE LISTED ON TABLES ON SHT. W64 - W66. CONNECT TO EX. PRIVATE SERVICE"):
   - Where is the connection on the private side intended to occur? Specifically, this refers to the tie-in from the existing meter box location to the new meter box/service line.
   - Should this private-side connection (from existing to new) be included under Bid Item 37 ("INSTALL NEW 1" PRIVATE SERVICE LINE. CONNECT TO EXISTING PRIVATE SERVICE"), or is it covered under Bid Item 34?
   - Will this be the same for bid-item 36?

   Response: The new tubing will connect to the existing service tubing directly downstream of the existing water meter location. This private tubing segment will run from the downstream side of the new meter to the downstream side of the existing meter.

   When a new 1" meter and box are installed in a new location under Item 34 (Keynote 64), the short tubing length and connections between the new meter and the existing private service at the existing meter box location shall be included in Item 34. This bid item is measured on an "each" basis.

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When a new 2" meter and box are installed in a new location under Item 36 (Keynote 103), the short tubing length and connections between the new meter and existing private service at the existing meter box location shall be included in Item 36. This bid item is measured on an "each" basis.

Item 37 only includes longer lengths of private tubing on private property, which are called out using Keynote 122. The tubing under this item is measured on a per "linear foot" basis.

If you have any questions, please email Bid.Questions@chandleraz.gov.

Daniel Haskins

Daniel Haskins, P.E.
CIP City Engineer
Public Works & Utilities Dept. – Capital Projects

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

GIS / GPS Data Delivery Requirements

Contractor shall provide survey grade GPS / GIS data, meeting the following requirements for all facilities to be owned and/or operated by the City of Chandler.

a) ESRI File Geodatabase format:

All GPS point data, along with corresponding GIS Attribute data, must be submitted in ESRI File Geodatabase format. The City of Chandler will provide a copy of the File Geodatabase in ESRI ArcGIS format. Please submit your request through the Project Manager.

b) Data dictionary and Attribute data:

Attribute data should be provided for each of the GPS'd Utility Features listed in Section 'd' below. All Attribute data should conform to the ESRI File Geodatabase format, provided by the City. A copy of the data dictionary is also attached here for reference.

c) Coordinate System:

Horizontal Datum: Arizona State Plane Coordinates, Central Zone NAD83 (HARN)
Vertical Datum: NAVD88

d) Point Data for GPS:

1) Water System Features:
- Water main location (top of pipe), size and material (one (1) coordinate provided every 100 feet minimum) and at fittings.
- Water fitting location (top of feature), size, material and type including: Bend (22.5, 45, or 90), Tee, Tapping Sleeve, Cross, Coupling, End Cap, Line Stop, Reducer, Saddle, Other.
- Water valve location (center of valve box cover), size and type.
- Fire hydrant location (top of hydrant), manufacturer and year.
- Water service line location (at connection to main, any bends, and termination at meter box or meter vault or at the edge of easement or ROW), size and material.
- Water blow-off and air release valve location (center of cover), size, type and manufacturer.
- Water manhole or vault location (center of cover), size and type.

2) Waste Water System Features:
- Sewer manhole and cleanout location (center of cover), size, material, and cover type.
- Sewer gravity main location (invert of pipe), size, material and flow direction (from) at all manholes, cleanouts and structures.
- Sewer service line location, size and material (at connection to main, and termination at cleanout, or stub out at edge of the easement or ROW).
- Sewer force main location (top of pipe), size, and material (one (1) coordinate provided every 100 feet minimum) and at fittings.

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

- Sewer force main (and gravity) fitting location (top of feature), size, material and type including: Bend (22.5, 45, or 90), Tee, Tapping Sleeve, Cross, Coupling, End Cap, Linestop, Reducer, Saddle, Wye, Other
- Sewer force main valve location (center of valve box cover), size and type.
- Sewer force main air release valve location (center of cover), size, type and manufacturer.
- Sewer force main manhole or vault location (center of cover), size and material.
- Sewer structure (center of structure), type (diversion, junction box).

3) Reclaimed Water System Features:
   - Reclaimed main location (top of pipe), size, and material (one (1) coordinate provided every 100 feet minimum) and at fittings.
   - Reclaimed fitting location (top of feature), size, material and type including: Bend (22.5, 45, or 90), Tee, Tapping Sleeve, Cross, Coupling, End Cap, Linestop, Reducer, Saddle, Other.
   - Reclaimed valve location (center of valve box cover), size and type.
   - Reclaimed service line location (at connection to main, any bends, and termination at meter box or meter vault or at the edge of easement or ROW), size and material.
   - Reclaimed blow-off and air release valve location (center of cover), size, type and manufacturer.
   - Reclaimed manhole or vault location (center of cover), size and type.

4) Storm Water System Features:
   - Storm manhole and cleanout location (center of cover), size, material, and cover type.
   - Storm gravity main location (invert of pipe), size, material, and flow direction (from) at all manholes, cleanouts and structures.
   - Storm structure location (center of structure), type and category including: Drywell, Catch Basin, Scupper, Bubbler Box, and Collection Vault.

5) Streetlight Feature:
   - Streetlights

6) Abandonments:
   - Use Miscellaneous Feature (MISC_POINT) to capture abandoned utilities.

7) Standard GPS Metadata on all points collected: Date, Time, Horizontal Accuracy, Vertical Accuracy, Latitude, Longitude, Altitude (Orthometric Height), Surveyor, and Comments.

8) Electronic Data Submittal: Each submittal must consist of
   - ESRI – ArcGIS Geodatabase with cumulative data and attributes
   - Construction plans with collected utilities clearly redlined and changes marked

   The frequency of data submittals will be every two weeks after water, sewer, reclaim or storm assets go into the ground. Please email submittals to: GIS@chandleraz.gov

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

DATA DICTIONARY: WATER

WATER_BACKFLOW				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	GIS_BACKFLOW_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	GIS_BACKFLOW_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	GIS_BACKFLOW_SPATIALSOURCE
SIZE	SIZE	Double		
TYPE	TYPE	Text	25	GIS_BACKFLOW_TYPE
MANUFACTURER	MANUFACTURER	Text	25	GIS_BACKFLOW_MANUFACTURER
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	15	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

WATER_FITTING				
Field Name	**Alias Name**	**Data Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	20	WS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	20	WS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	WS_SPATIALSOURCE_STD
MATERIAL	MATERIAL	Text	20	WS_FITTING_MATERIAL
DIAMETER1	DIAMETER1	Text	8	RWS_FITTING_DIAMETER
DIAMETER2	DIAMETER2	Text	8	RWS_FITTING_DIAMETER
TYPE	TYPE	Text	30	WS_FITTING_TYPE
BEND	BEND	Text	20	WS_FITTING_BEND
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

WATER_HYDRANT				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	Feature Owner	Text	25	WS_FEATUREOWNER
LIFECYCLESTATUS	Lifecycle Status	Text	25	WS_LIFECYCLESTATUS
SPATIALSOURCE	Spatial Source	Text	25	WS_SPATIALSOURCE_STD
BARRELDIAMETER	Barrel Diameter	Double		
LARGENOZZLEDIAMETER	Large Nozzle Diameter	Double		
SMALLNOZZLEDIAMETER	Small Nozzle Diameter	Double		
OUTLETCONFIGURATION	Outlet Configuration	Double		
SEATDIAMETER	Seat Diameter	Double		
MANUFACTURER	Manufacturer	Text	25	WS_HYD_MANUFACTURER
YEARMANUFACTURED	Manufacture Year	Text	25	
HASLOCK	Has Lock ?	Text	25	GIS_BOOLEAN_YES_NO
COLOR	Color	Text	25	WS_HYD_COLOR
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	25	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

WATER_MANHOLE				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	20	WS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	20	WS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	WS_SPATIALSOURCE_STD
ACCESSDIAMETER	ACCESSDIAMETER	Text	8	
ACCESSTYPE	ACCESSTYPE	Text	20	
GROUNDTYPE	GROUNDTYPE	Text	20	WS_SYSVAL_GROUNDTYPE
COVERMATERIAL	COVERMATERIAL	Text	10	
COVERTYPE	COVERTYPE	Text	8	
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

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WATER_METER				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	Feature Owner	Text	20	GBA_WMSL_FEATUREOWNER
LIFECYCLESTATUS	Lifecycle Status	Text	25	GBA_WMSL_LIFECYCLESTATUS
SPATIALSOURCE	Spatial Source	Text	25	GBA_STATIC_SPATIALSOURCE
DIAMETER	DIAMETER	Double		WS_METER_DIAM
MANUFACTURER	Manufacturer	Text	25	WS_METER_MANUFACTURER
METERTYPE	Meter Type	Text	25	WS_METER_TYPE
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	15	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

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WATER_SYSTEM_VALVE				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATURE OWNER	Text	20	WS_SYSVAL_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLE STATUS	Text	20	WS_SYSVAL_LIFECYCLESTATUS
SPATIALSOURCE	SPATIAL SOURCE	Text	20	WS_SYSVAL_SPATIALSOURCE
TYPE	TYPE	Text	25	WS_SYSVAL_TYPE
VALVETYPE	VALVE TYPE	Text	10	WS_SYSVAL_VALVETYPE
FUNCTION	FUNCTION	Text	25	WS_SYSVAL_FUNCTION
GROUNDTYPE	GROUNDTYPE	Text	25	WS_SYSVAL_GROUNDTYPE
DIAMETER	Diameter	Text	8	WS_SYSVAL_DIAM
GPS_DATE	GPS DATE	Date		
GPS_TIME	GPS TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS COMMENT	Text	30	

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Water Domains:

Domain name	WS_LIFECYCLESTATUS
ABANDONED	ABANDONED
ACTIVE	ACTIVE
FUTURE	FUTURE
INACTIVE	INACTIVE
REMOVED	REMOVED
UNKNOWN	UNKNOWN

Domain name	WS_SYSVAL_SPATIALSOURCE
APPROVED PLANS	APPROVED PLANS
ASBUILT	ASBUILT
DESIGN	DESIGN
GPS	GPS
HYDRMAINT	HYDRMAINT
ORTHOPHOTO	ORTHOPHOTO
TM7	TM7
UNKNOWN	UNKNOWN

Domain name	WS_HYD_MANUFACTURER
AMERICANDARLING	AMERICANDARLING
AVK	AVK
CLOW	CLOW
DRESSER	DRESSER
GREENBERG	GREENBERG
KENNEDY	KENNEDY
MUELLER	MUELLER
PACIFIC	PACIFIC
UNKNOWN	UNKNOWN
WATEROUS	WATEROUS

Domain name	WS_FEATUREOWNER
COC	Chandler
COG	Gilbert
COM	Mesa
COP	Phoenix
COT	Tempe
COUNTY	Maricopa County
GOULD	Gould
GRIC	GRIC
INTEL	Intel
MICROCHIP	Microchip
MOTOROLA	Motorola
PRIVATE	Private
SRP	SRP
SRVWUA	SRVWUA
UNKNOWN	UNKNOWN

Domain name	WS_SYSVAL_LIFECYCLESTATUS
FUTURE	FUTURE
UNKNOWN	UNKNOWN
INACTIVE	INACTIVE
ACTIVE	ACTIVE
REMOVED	REMOVED
ABANDONED	ABANDONED

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Domain name	WS_FITTING_BEND
HORIZONTAL	HORIZONTAL
VERTICAL	VERTICAL

Domain name	WS_SYSVAL_DIAM
2	2
3	3
4	4
6	6
8	8
10	10
12	12
16	16
20	20
24	24
30	30
36	36
42	42
48	48
54	54

Domain name	WS_HYD_COLOR
0	YELLOW
1	BLACK/YELLOW
2	RED
3	UNKNOWN

Domain name	WS_FITTING_TYPE
11B	11B
22B	22B
45B	45B
90B	90B
COUPLING	COUPLING
CROSS	CROSS
ENDCAP	ENDCAP
LINESTOP	LINESTOP
OTHER	OTHER
REDUCER	REDUCER
SADDLE	SADDLE
TAPPING SLEEVE	TAPPING SLEEVE
TEE	TEE
UNKNOWN	UNKNOWN
WYE	WYE

Domain name	WS_SYSVAL_GROUNDTYPE
CONCRETE	CONCRETE
ASPHALT	ASPHALT
LANDSCAPE	LANDSCAPE
UNKNOWN	UNKNOWN

Domain name	WS_SPATIALSOURCE_STD
ASBUILT	ASBUILT
DESIGN	DESIGN
FIELD	FIELD
GPS	GPS
ORTHOPHOTO	ORTHOPHOTO
UNKNOWN	UNKNOWN

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Domain name	WS_METER_DIAM
0.63	.63
0.75	.75
1	1
1.5	1.5
2	2
2.5	2.5
3	3
4	4
6	6
8	8
10	10

Domain name	WS_METER_MANUFACTURER
BADGER METERS	BADTER METERS
NEPTUNE METERS	NEPTUNE METERS
PRECISION METERS	PRECISION METERS
BADGER-NEPTUNE	BADGER-NEPTUNE
SENSUS	SENSUS

Domain name	WS_METER_TYPE
BYPASS	BYPASS
COMBO	COMBO
CMPND	CMPND
DISC	DISC
MAG	MAG
FDTEC	FDTEC
MLTJET	MLTJET
TURBIN	TURBIN
Ultrasonic	Ultrasonic

S

Domain name	WS_SYSVAL_FEATUREOWNER
COC	COC
PRIVATE	PRIVATE
COM	COM
MOTOROLA	MOTOROLA
INTEL	INTEL
UNKNOWN	UNKNOWN
TOG	TOG

Domain name	WS_FITTING_MATERIAL
DI	DI
PVC	PVC
BRASS	BRASS
STL	STL
COPPER	COPPER
AC	AC
CC	CC
CI	CI

Domain name	WS_SYSVAL_TYPE
STANDARD	STANDARD
BLOWOFF	BLOWOFF
ARV	ARV
AIR VACUUM	AIR VACUUM
PERMASEAL	PERMASEAL

Domain name	GBA_WMSI_LIFECYCLESTATUS
Operational	Operational
Empty	Empty
Out of Service	Out of Service
Abandoned	Abandoned

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Domain name	WS_SYSVAL_FUNCTION
INLINE	INLINE
HYDRANT	HYDRANT
STUBOUT	STUBOUT
UNKNOWN	UNKNOWN
SERVICE	SERVICE
BYPASS	BYPASS
WPF	WPF
FDC	FDC
VAULT	VAULT
BACKFLOW	BACKFLOW
PUMPOUT	PUMPOUT
PUMPSTATION	PUMPSTATION
FIRELINE	FIRELINE
ARV	ARV
ZONE_SPLIT_VALVES	ZONE_SPLIT_VALVES

Domain name	GIS_BACKFLOW_FEATUREOWNER
COC	COC
PRIVATE	PRIVATE
CONTRACTOR	CONTRACTOR
INTEL	INTEL
OCA	OCA
OMG	OMG
TOG	TOG
UNKNOWN	UNKNOWN

Domain name	WS_SYSVAL_VALVETYPE
GATE	GATE
BUTTERFLY	BUTTERFLY
BALL	BALL
PLUG	PLUG
PIV	PIV
UNKNOWN	UNKNOWN
INSERTA	INSERTA

Domain name	GIS_BACKFLOW_MANUFACTURER
FEBCO	FEBCO
WATTS	WATTS
WILKINS	WILKINS
AMES	AMES
CONBRACO	SERVICE
HERSEY	HERSEY
RAIN BIRD	RAIN BIRD
APOLLO VALVES	APOLLO VALVES
METRON	METRON
OTHER	OTHER

Domain name	GIS_BACKFLOW_TYPE
Air Gap	Air Gap
Unknown	Unknown
Double Check Detector	Double Check Detector
Pressure Vacuum Breaker	Pressure Vacuum Breaker
Double Check	Double Check
Reduced Pressure Detector	Reduced Pressure Detector
Atmoshpheric Vacuum Breaker	Atmoshpheric Vacuum Breaker

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DATA DICTIONARY: SEWER

SEWER CLEANOUT				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	20	WW_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	20	WW_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	WW_SPATIALSOURCE
RIM_ELEV	RIM_ELEV	Double		
INV_ELEV	INV_ELEV	Double		
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

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SEWER CONTROL VALVE				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	20	WW_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	20	WW_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	WW_SPATIALSOURCE
TYPE	TYPE	Text	25	WW_CONTROL_VALVE_TYPE
DIAMETER	DIAMETER	Text	8	
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

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SEWER_FITTING				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	20	WW_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	20	WW_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	WW_SPATIALSOURCE
MATERIAL	MATERIAL	Text	20	WW_FITTING_MATERIAL
TYPE	TYPE	Text	30	WW_FITTING_TYPE
BEND	BEND	Text	20	WW_FITTING_BEND
SIZE	SIZE	Text	20	
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

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SEWER_MANHOLE				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	WW_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	WW_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	WW_SPATIALSOURCE
TYPE	TYPE	Text	20	WW_MH_TYPE
COVER_MATERIAL	COVER_MATERIAL	Text	25	WW_MH_COVER_MATERIAL
COVER_HOLE	COVER_HOLE	Text	25	WW_MH_COVER_HOLE
COVER_SIZE	COVER_SIZE	Text	20	WW_MH_COVER_SIZE
RIM_ELEV	RIM_ELEV	Double		
INV_ELEV	INV_ELEV	Double		
LINING	LINING	Text	255	WW_MH_LINER
WALL_MATERIAL	WALL_MATERIAL	Text	255	WW_MH_WALL_MATERIAL
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

Sewer Domains:

Domain name	WW_FEATUREOWNER
COC	COC
PRIVATE	PRIVATE
TOG	TOG
UNKNOWN	UNKNOWN

Domain name	WW_SPATIALSOURCE
GPS	GPS
ASBUILT	ASBUILT
UNKNOWN	UNKNOWN

Domain name	WW_MH_COVER_HOLE
UNKNOWN	UNKNOWN
SEALED	SEALED

Domain name	WW_MH_LINER
CAST-IN-PLACE	CAST-IN-PLACE
CEMENTITIOUS	CEMENTITIOUS
COMPOSITE	COMPOSITE
CURED-IN-PLACE	CURED-IN-PLACE
EPOXY	EPOXY
FR PLASTIC INSERT	FR PLASTIC INSERT
FR POLYMER INSERT	FR POLYMER INSERT
INSERT	INSERT
UNKNOWN	UNKNOWN

Domain name	WW_LIFECYCLESTATUS
ABANDONED	ABANDONED
ACTIVE	ACTIVE
INACTIVE	INACTIVE
PULLED	PULLED
UNKNOWN	UNKNOWN

Domain name	WW_MH_COVER_MATERIAL
ALUMINUM	ALUMINUM
CASTIRON	CASTIRON
HDPE COMPOSITE - CAP	HDPE COMPOSITE - CAP
HDPE COMPOSITE - EJ	HDPE COMPOSITE - EJ
HDPE COMPOSITE - HD20	HDPE COMPOSITE - HD20
STEEL	STEEL
UNKNOWN	UNKNOWN

Domain name	WW_MH_COVER_SIZE
0	Unknown
4	4
6	6
8	8
22	22
24	24
26	26
28	28
30	30
32	32
38	38
48	48
60	60

Domain name	WW_MH_WALL_MATERIAL
NONE	NONE
COMPOSITE	COMPOSITE
UNKNOWN	UNKNOWN
CONCRETE	CONCRETE
POURED	POURED
TLOCK	TLOCK
PRECAST	PRECAST
BRICK	BRICK

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Domain name	WW_FITTING_MATERIAL
PVC	PVC
DIP	DIP
HDPE	HDPE
RCP	RCP
ACP	ACP
ABS	ABS
RUBBER	RUBBER
CONCRETE	CONCRETE
CLAY	CLAY
STEEL ENCASED VCP	STEEL ENCASED VCP
TLOCK LINE	TLOCK LINE
LINED RCP	LINED RCP
PVC LINED RCP	PVC LINED RCP
PVC LINED DIP	PVC LINED RCP

Domain name	WW_FITTING_BEND
HORIZONTAL	HORIZONTAL
VERTICAL	VERTICAL
NONE	NONE

Domain name	WW_MH_TYPE
0	UNKNOWN
1	SANITARY SEWER
2	ARV

Domain name	WW_FITTING_TYPE
TEE	TEE
WYE	WYE
90 BEND	90 BEND
45 BEND	45 BEND
22 BEND	22 BEND
11 BEND	11 BEND
ENCAP	ENCAP
PLUG	PLUG
REDUCER	REDUCER
ARV	ARV
FLOW METER	FLOW METER
NO FLOW POINT	NO FLOW POINT
OWNERSHIP CHANGE	OWNERSHIP CHANGE
OTHER	OTHER
UNKNOWN	UNKNOWN
COUPLING	COUPLING

Domain name	WW_CONTROL_VALVE_TYPE
AIRRELEASE	AIRRELEASE
AIRVACUUMRELEASE	AIRVACUUMRELEASE
PRESSURERELIEF	PRESSURERELIEF
VACUUMRELEASE	VACUUMRELEASE
UNKNOWN	UNKNOWN
N/A	N/A

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DATA DICTIONARY: RECLAIM

RECLAIM_WATER_BACKFLOW				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	GIS_BACKFLOW_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	GIS_BACKFLOW_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	GIS_BACKFLOW_SPATIALSOURCE
SIZE	SIZE	Double		
TYPE	TYPE	Text	25	GIS_BACKFLOW_TYPE
MANUFACTURER	MANUFACTURER	Text	25	GIS_BACKFLOW_MANUFACTURER
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	15	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

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RECLAIM_WATER_FITTING				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	20	RWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	20	RWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	RWS_SPATIALSOURCE
MATERIAL	MATERIAL	Text	20	RWS_MAIN_OR_SERVICE_MATERIAL
DIAMETER1	DIAMETER1	Text	8	RWS_FITTING_DIAMETER
DIAMETER2	DIAMETER2	Text	8	RWS_FITTING_DIAMETER
TYPE	TYPE	Text	30	RWS_FITTING_TYPE
BEND	BEND	Text	20	RWS_FITTING_BEND
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double	8	
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double	8	
GPS_COMMENT	GPS_COMMENT	Text	30	

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RECLAIM_WATER_MANHOLE				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	20	RWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	20	RWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	RWS_SPATIALSOURCE
ACCESSDIAMETER	ACCESSDIAMETER	Text	8	
ACCESSTYPE	ACCESSTYPE	Text	20	
GROUNDTYPE	GROUNDTYPE	Text	20	RWS_GROUNDTYPE
COVERMATERIAL	COVERMATERIAL	Text	10	RWS_COVER_MATERIAL
COVERTYPE	COVERTYPE	Text	8	RWS_COVER_TYPE
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

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RECLAIM_WATER_METER				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	Feature Owner	Text	20	GBA_WMSL_FEATUREOWNER
LIFECYCLESTATUS	Lifecycle Status	Text	25	GBA_WMSL_LIFECYCLESTATUS
SPATIALSOURCE	Spatial Source	Text	25	GBA_STATIC_SPATIALSOURCE
DIAMETER	DIAMETER	Double		RWS_METER_DIAM
MANUFACTURER	Manufacturer	Text	25	RWS_METER_MANUFACTURER
METERTYPE	Meter Type	Text	25	RWS_METERTYPE
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	15	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

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RECLAIM WATER SYSTEM VALVE				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATURE OWNER	Text	20	RWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLE STATUS	Text	20	RWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIAL SOURCE	Text	20	RWS_SPATIALSOURCE
TYPE	TYPE	Text	25	RWS_SYSVAL_TYPE
VALVETYPE	VALVE TYPE	Text	10	RWS_SYSVAL_VALVETYPE
FUNCTION	FUNCTION	Text	25	RWS_SYSVAL_FUNCTION
GROUNDTYPE	GROUNDTYPE	Text	25	RWS_SYSVAL_GROUNDTYPE
DIAMETER	DIAMETER	Double		RWS_SYSVAL_DIAM
GPS_DATE	GPS DATE	Date	8	
GPS_TIME	GPS TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS COMMENT	Text	30	

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Reclaim Water Domains:

Domain name	RWS_SYSVAL_VALVETYPE
BALL	BALL
BUTTERFLY	BUTTERFLY
GATE	GATE
INSERTA	INSERTA
PIV	PIV
PLUG	PLUG
UNKNOWN	UNKNOWN

Domain name	RWS_SYSVAL_FUNCTION
ARV	ARV
INLINE	INLINE
PUMPOUT	PUMPOUT
PUMPSTATION	PUMPSTATION
SERVICE	SERVICE
STUBOUT	STUBOUT
UNKNOWN	UNKNOWN
VAULT	VAULT

Domain name	RWS_SYSVAL_TYPE
ARV	ARV
AIR VACUUM	AIR VACUUM
BLOWOFF	BLOWOFF
PERMASEAL	PERMASEAL
STANDARD	STANDARD

Domain name	RWS_FITTING_BEND
HORIZONTAL	HORIZONTAL
VERTICAL	VERTICAL

Domain name	RWS_MAIN_OR_SERVICE_MATERIAL
AC	AC
CC	CC
CI	CI
CU	COPPER
DI	DI
PVC	PVC
UNKNOWN	UNKNOWN
AC	AC
CC	CC

Domain name	RWS_FITTING_TYPE
11B	11B
22B	22B
45B	45B
90B	90B
COUPLING	COUPLING
CROSS	CROSS
ENDCAP	ENDCAP
LINESTOP	LINESTOP
MECHANICAL JOINT	MECHANICAL JOINT
OTHER	OTHER
RECHARGE WELL	RECHARGE WELL
REDUCER	REDUCER
SADDLE	SADDLE
TAPPING SLEEVE	TAPPING SLEEVE
TEE	TEE
UNKNOWN	UNKNOWN
WYE	WYE

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Domain name	RWS_SPATIALSOURCE
ASBUILT	ASBUILT
FIELD	FIELD
GPS	GPS
ORTHOPHOTO	ORTHOPHOTO
UNKNOWN	UNKNOWN

Domain name	RWS_LIFECYCLESTATUS
ABANDONED	ABANDONED
ACTIVE	ACTIVE
INACTIVE	INACTIVE
REMOVED	REMOVED
UNKNOWN	UNKNOWN

Domain name	RWS_SYSVAL_DIAM
1.5	1.5
2	2
3	3
4	4
6	6
8	8
10	10
12	12
16	16
20	20
24	24
30	30
36	36
42	42
48	48
9999	UNKNOWN

Domain name	RWS_GROUNDTYPE
ASPHALT	ASPHALT
CONCRETE	CONCRETE
DIRT	DIRT
UNKNOWN	UNKNOWN

Domain name	RWS_SYSVAL_GROUNDTYPE
ASPHALT	ASPHALT
CONCRETE	CONCRETE
LANDSCAPE	LANDSCAPE
UNKNOWN	UNKNOWN

Domain name	RWS_FITTING_DIAMETER
0.63	0.63
0.75	0.75
1	1
1.25	1.25
1.5	1.5
2	2
2.5	2.5
3	3
4	4
6	6
8	8
10	10
12	12
15	15
16	16
18	18
20	20
24	24
30	30

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Domain name	RWS_COVER_MATERIAL
CAST IRON	CAST IRON
ALUMINUM	ALUMINUM
UNKNOWN	UNKNOWN

Domain name	RWS_COVER_TYPE
SEALED	SEALED
VENTED	VENTED
BOLTED	BOLTED
UNKNOWN	UNKNOWN

Domain name	RWS_METER_MANUFACTURER
BADGER METERS	BADGER METERS
NEPTUNE METERS	NEPTUNE METERS
PRECISION METERS	PRECISION METERS
BADGER-NEPTUNE	BADGER-NEPTUNE
SENSUS	SENSUS

Domain name	RWS_METERTYPE
BYPASS	BYPASS
COMBO	COMBO
CMPND	CMPND
DISC	DISC
MAG	MAG
FDTEC	FDTEC
MLTJET	MLTJET
TURBIN	TURBIN

Domain name	RWS_METER_DIAM
0.63	.63
0.75	.75
1	1
1.5	1.5
2	2
2.5	2.5
3	3
4	4
6	6
8	8
10	10

Domain name	RWS_FEATUREOWNER
COC	CHANDLER
COM	MESA
INTEL	INTEL
OCA	OCA
OMG	OMG
PRIVATE	PRIVATE
SRP	SRP
TOG	GILBERT
UNKNOWN	UNKNOWN

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DATA DICTIONARY: STORM

STORM_BUBBLER_BOX				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	SWS_SPATIALSOURCE
GRATE_OPENINGS_NUM	GRATE_OPENINGS_NUM	Short		SWS_GRATE_OPENINGS
GRATE_LENGTH	GRATE_LENGTH	Double	8	SWS_GRATE_LENGTH
GRATE_WIDTH	GRATE_WIDTH	Double	8	SWS_GRATE_WIDTH
DRYWELL_ASSOC	DRYWELL_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

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STORM_CATCHBASIN				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	SWS_SPATIALSOURCE
STRUCTURE_TYPE	STRUCTURE_TYPE	Short		SWS_STRUCTURE_TYPE
CATCHBASIN_TYPE	CATCHBASIN_TYPE	Text	25	SWS_CB_TYPE
CITY_EMBLEM	CITY_EMBLEM	Text	5	GIS_BOOLEAN_YES_NO
ACCESS_OPENING_TYPE	ACCESS_OPENING_TYPE	Text	25	SWS_CB_ACCESS_OPENING_TYPE
GRATE_LENGTH	GRATE_LENGTH	Double		SWS_GRATE_LENGTH
GRATE_WIDTH	GRATE_WIDTH	Double		SWS_GRATE_WIDTH
LID	LID	Text	5	GIS_BOOLEAN_YES_NO
LID_TYPE	LID_TYPE	Text	25	SWS_CB_LID_TYPE
DRYWELL_CONN	DRYWELL_CONN	Text	5	GIS_BOOLEAN_YES_NO
OUTLET_CONN	OUTLET_CONN	Text	5	GIS_BOOLEAN_YES_NO
BUBBLERBOX_CONN	BUBBLERBOX_CONN	Text	5	GIS_BOOLEAN_YES_NO
BUBBLERBOX_DRYWELL_ASSOC	BUBBLERBOX_DRYWELL_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
LAKE_DRAIN	LAKE_DRAIN	Text	5	GIS_BOOLEAN_YES_NO
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

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STORM_COLLECTION_VAULT				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	20	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	20	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	SWS_SPATIALSOURCE
INLET_NUM	INLET_NUM	Short		SWS_CV_NUMB_INLETS
INLET_DIAM	INLET_DIAM	Short		SWS_CV_PIPE_SIZE
INLET_PIPE_TYPE	INLET_PIPE_TYPE	Text	30	SWS_CV_PIPE_TYPE
NUISANCE_LINE_ASSOC	NUISANCE_LINE_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
DRYWELL_ASSOC	DRYWELL_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
LID_GRATE	LID_GRATE	Text	5	SWS_LID_GRATE
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

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STORM_DRAIN_MANHOLE				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	SWS_SPATIALSOURCE
STRUCTURE_TYPE	STRUCTURE_TYPE	Short	2	SWS_STRUCTURE_TYPE
CHANDLER_NAME	CHANDLER_NAME_ON_LID	Text	5	GIS_BOOLEAN_YES_NO
DIAMETER	DIAMETER	Short	2	SWS_SDMH_SIZE
VENT_HOLE	VENT_HOLE	Text	30	GIS_BOOLEAN_YES_NO
ACCESS_OPENING_TYPE	ACCESS_OPENING_TYPE	Text	25	SWS_SDMH_ACCESS_OPENING_TYPE
LID_TYPE	LID_TYPE	Text	30	SWS_SDMH_TYPE
LID_TEXT	LID_TEXT	Text	30	SWS_SDMH_LID_TEXT
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

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STORM_DRYWELL				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	SWS_SPATIALSOURCE
FIELD_LOC	FIELD_LOC	Text	100	SWS_DW_LOCATION
INSTALLER	INSTALLER	Text	30	SWS_DW_INSTALLER
CHAMBER_TYPE	CHAMBER_TYPE	Text	30	SWS_DW_CHAMBER_TYPE
LID_SIZE	LID_SIZE	Short		SWS_DW_LID_SIZE
LID_TYPE	LID_TYPE	Text	25	SWS_DW_LID_TYPE
NUISANCE_LINE_ASSOC	NUISANCE_LINE_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
CONCRETE_PAD	CONCRETE_PAD	Text	5	GIS_BOOLEAN_YES_NO
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

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STORM_INLET				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	SWS_SPATIALSOURCE
CATCHBASIN_TYPE	CATCHBASIN_TYPE	Text	25	SWS_CB_TYPE
FIELD_LOC	FIELD_LOC	Text	100	SWS_FIELD_LOC
GRATE_ASSOC	GRATE_ASSOC	Text	25	GIS_BOOLEAN_YES_NO
GRATE_LENGTH	GRATE_LENGTH	Double		SWS_GRATE_LENGTH
GRATE_WIDTH	GRATE_WIDTH	Double		SWS_GRATE_WIDTH
INLET_PIPE_DIAM	INLET_PIPE_DIAM	Short		SWS_INLET_PIPE_DIAM
INLET_NUMBER	NUMBER_OF_INLETS	Short		SWS_INLET_NUMBER
TRASHRACK_ASSOC	TRASHRACK_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
TRASH_LENGTH	TRASH_LENGTH	Double		
TRASH_WIDTH	TRASH_WIDTH	Double		
NUISANCE_LINE_ASSOC	NUISANCE_LINE_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
BUBBLER_BOX_DRYWELL_ASSOC	BUBBLER_BOX_DRYWELL_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
HEADWALLASSOC	HEADWALLASSOC	Text	5	GIS_BOOLEAN_YES_NO
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

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STORM_OUTLET				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	SWS_SPATIALSOURCE
GRATE_ASSOC	GRATE_ASSOC	Text	25	GIS_BOOLEAN_YES_NO
GRATE_LENGTH	GRATE_LENGTH	Double		SWS_GRATE_LENGTH
GRATE_WIDTH	GRATE_WIDTH	Double		SWS_GRATE_WIDTH
INLET_PIPE_DIAM	INLET_PIPE_DIAM	Short		SWS_INLET_PIPE_DIAM
INLET_NUMBER	NUMBER_OF_INLETS	Short		SWS_INLET_NUMBER
TRASHRACK_ASSOC	TRASHRACK_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
TRASH_LENGTH	TRASH_LENGTH	Double		
TRASH_WIDTH	TRASH_WIDTH	Double		
NUISANCE_LINE_ASSOC	NUISANCE_LINE_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
BUBBLER_BOX_DRYWELL_ASSOC	BUBBLER_BOX_DRYWELL_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
HEADWALLASSOC	HEADWALLASSOC	Text	5	GIS_BOOLEAN_YES_NO
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

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STORM_SCUPPER				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	SWS_SPATIALSOURCE
CITY_EMBLEM	CITY_EMBLEM	Text	5	GIS_BOOLEAN_YES_NO
NUMBER_OPENINGS	NUMBER_OPENINGS	Short		
WIDTH	WIDTH	Double		
SPILLWAY_ASSOC	SPILLWAY_ASSOC	Text	25	GIS_BOOLEAN_YES_NO
HEADWALL_ASSOC	HEADWALL_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
NUISANCE_LINE_ASSOC	NUISANCE_LINE_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
BUBBLERBOX_ASSOC	BUBBLERBOX_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
BUBBLER_BOX_DRYWELL_ASSOC	BUBBLER_BOX_DRYWELL_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
LAKE_DRAIN	LAKE_DRAIN	Text	5	GIS_BOOLEAN_YES_NO
RIPRAP	RIPRAP	Text	25	GIS_BOOLEAN_YES_NO
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

Storm Domains:

Domain name	SWS_DW_LOCATION
AIRPORT	AIRPORT
CITYRETENTION	CITY RETENTION
PARK	PARK
PARKING_LOT	PARKING LOT
PRIVATERETENTION	PRIVATE RETENTION
STREET	STREET
WELL_SITE	WELL SITE

Domain name	SWS_GRATE_LENGTH
12	12
24	24
28	28
30	30
36	36
38	38
40	40
50	50
60	60
76	76

Domain name	SWS_CB_LID_TYPE
STEEL	STEEL
CONCRETE	CONCRETE

Domain name	SWS_DW_CHAMBER_TYPE
DOUBLE	DOUBLE
SINGLE	SINGLE
TRIPLE	TRIPLE

Domain name	SWS_LIFECYCLESTATUS
ACTIVE	ACTIVE
REMOVED	REMOVED
ABANDONED	ABANDONED
INACTIVE	INACTIVE
FUTURE	FUTURE

Domain name	SWS_GRATE_OPENINGS
1	1
2	2
3	3
4	4
5	5
6	6

Domain name	SWS_SPATIALSOURCE
APPROVED_PLANS	APPROVED_PLANS
ASBUILT	ASBUILT
DESIGN	DESIGN
FIELD	FIELD
GPS	GPS
ORTHOPHOTO	ORTHOPHOTO
UNKNOWN	UNKNOWN

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Domain name	SWS_SDMH_SIZE
22	22
24	24
26	26
28	28
30	30
32	32
38	38

Domain name	SWS_DW_LID_SIZE
22	22
24	24
25	25
26	26
32	32
38	38

Domain name	SWS_STRUCTURE_TYPE
1	CATCH BASIN
2	SCUPPER
3	DRYWELL
4	MANHOLE
5	OUTLET
6	INLET
7	BUBBLERBOX
8	SPILLWAY
9	SEPARATOR

Domain name	SWS_SDMH_LID_TEXT
CHANDLER_SANITATION_SEWER	CHANDLER SANITATION SEWER
CHANDLER_STORM/SEWER	CHANDLER STORM/SEWER
NONE	NONE
OTHER	OTHER
STORM SEWER	STORM SEWER

Domain name	SWS_DW_INSTALLER
McGUCKINDRILLING	McGUCKIN DRILLING
TORRENTRESOURCES	TORRENT RESOURCES
WACODRILLING	WACO DRILLING
OTHER	OTHER

Domain name	SWS_CB_ACCESS_OPENING_TYPE
NONE	NONE
RECTANGULAR	RECTANGULAR
ROUND	ROUND
SQUARE	SQUARE

Domain name	SWS_FEATUREOWNER
ADOT	ADOT
CITY_OF_CHANDLER	CITY_OF_CHANDLER
HOA	HOA
OTHER	OTHER

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Domain name	SWS_GRATE_WIDTH
6	6
12	12
16	16
18	18
24	24
28	28
30	30
36	36
38	38
44	44
72	72

Domain name	SWS_SDMH_ACCESS_OPENING_TYPE
NONE	NONE
RECTANGULAR	RECTANGULAR
ROUND	ROUND
SQUARE	SQUARE

Domain name	SWS_FIELD_LOC
PARK	PARK
WELLSI	WELL_SITE
PRKLOT	PARKING_LOT
STREET	STREET
AIRPOR	AIRPORT
CTYRTN	CITYRETENTION
PVRET	PRIVATERETENTION

Domain name	SWS_SDMH_TYPE
PRESSURIZED	PRESSURIZED
NON-PRESSURIZED	NON-PRESSURIZED

Domain name	SWS_DW_LID_TYPE
STEEL	STEEL
GRANITE	GRANITE
CONCRETE_SEALED	CONCRETE_SEALED
GRATE	GRATE

Domain name	SWS_INLET_PIPE_DIAM
12	12
13	13
14	14
15	15
16	16
18	18
24	24
26	26
30	30
36	36
42	42
46	46
60	60
72	72

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Domain name	SWS_INLET_NUMBER
1	1
2	2
3	3
4	4

Domain name	SWS_CB_TYPE
TYPE_A	TYPE_A
TYPE_B	TYPE_B
TYPE_C	TYPE_C
TYPE_D	TYPE_D
TYPE_E	TYPE_E
TYPE_F	TYPE_F
TYPE_G	TYPE_G
TYPE_H	TYPE_H
TYPE_Q	TYPE_Q
NONE	NONE

Domain name	SWS_LID_GRATE
LID	LID
GRATE	GRATE

Domain name	SWS_CV_PIPE_TYPE
CONCRETE	CONCRETE
OTHER	OTHER
METAL	METAL

Domain name	SWS_CV_PIPE_SIZE
12	12
14	14
16	16
18	18
20	20
24	24
30	30
36	36

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DATA DICTIONARY: MISCELLANEOUS POINTS

MISCELLANEOUS POINT				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
SIZE	SIZE	Double		
MATERIAL	MATERIAL	Text	30	
UTILITY_TYPE	UTILITY_TYPE	Text	30	PW_UTILITY_TYPE
NOTES	NOTES	Text	150	
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

Domains:

Domain name	PW_UTILITY_TYPE
WATER	WATER
WASTEWATER	WASTEWATER
RECLAIM	RECLAIM
STORM	STORM
OTHER	OTHER

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DATA DICTIONARY: STREETLIGHTS

STREETLIGHTS				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	POLE_OWNER	Text	10	ST_STLITINV_FEATUREOWNER
SPATIALSOURCE	SPATIALSOURCE	Text	25	GBA_STATIC_SPATIALSOURCE
POLENUMBER	POLENUMBER	Text	10	
POLE_HEIGHT	POLE_HEIGHT	Short		
POLE_TYPE	POLE_TYPE	Text	30	TE_STLITINV_POLE_TYPE
POLE_COAT	POLE_COAT	Text	30	TE_STLITINV_POLE_COAT
FOUNDATION	FOUNDATION	Text	30	GIS_BOOLEAN_YES_NO
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	255	

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Streetlights Domains:

Domain name	ST_STLITINV_FEATUREOWNER
COC	CITY OF CHANDLER
PRIVATE	PRIVATE
SRP	SRP
AP	APS

Domain name	GBA_STATIC_SPATIALSOURCE
GPS	GPS
ORTHOPHOTO	ORTHOPHOTO
APPROVED_PLANS	APPROVED_PLANS
GEOCODED	GEOCODED
UNKNOWN	UNKNOWN

Domain name	TE_STLITINV_POLE_TYPE
SL 1	SL 1
SL 6	SL 6
SL 8	SL 8
SL 10	SL 10
SL 16	SL 16
SL 17	SL 17
CURVED	CURVED
CUSTOM	CUSTOM
STERNBERG	STERNBERG
SIGNAL POLE	SIGNAL POLE
POWER POLE	POWER POLE

Domain name	TE_STLITINV_POLE_COAT
GALVANIZED	GALVANIZED
PAINTED	PAINTED
POWDER COATED	POWDER COATED

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CITY OF CHANDLER, ARIZONA
PUBLIC WORKS & UTILITIES DEPARTMENT
CAPITAL PROJECTS DIVISION

CONSTRUCTION AGREEMENT

Arrowhead Meadows Water Main Replacement
CITY PROJECT NO.: WA2203.402

MAYOR
Kevin Hartke

VICE MAYOR
Angel Encinas

COUNCIL
OD Harris Matt Orlando
Christine Ellis Jane Poston Jennifer Hawkins

Daniel Haskins
_____
Daniel Haskins, P.E.
CIP City Engineer

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

CITY OF CHANDLER, ARIZONA

ARROWHEAD MEADOWS WATER MAIN REPLACEMENT
CITY PROJECT NO.: WA2203.402

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CONSTRUCTION SERVICES AGREEMENT

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

PROJECT NO.: WA2203.402

This Agreement ("Agreement") is made and entered into on the _____ day of _____, 2026**,** by and between City of Chandler, an Arizona municipal corporation, hereinafter called "City" and Lincoln Constructors Inc. the "Contractor" designated below (City and Contractor may individually be referred to as "Party" and collectively referred to as "Parties").

City and Contractor agree as follows:

ARTICLE 1 - PARTICIPANTS AND PROJECT

CITY: CIP City Engineer: Daniel Haskins, P.E.
Public Works & Utilities Department
P.O. Box 4008, Mail Stop 407 Chandler, AZ 85244-4008
Phone: 480-782-3335 Email: Daniel.haskins@chandleraz.gov

CITY: Construction Project Manager: Adam Kleiser
Public Works & Utilities Department
P.O. Box 4008, Mail Stop 407 Chandler, AZ 85244-4008
Phone: 480-782-3325 Email: Adam.Kleiser@chandleraz.gov

Contractor:

Legal Company Name:	**Lincoln Constructors Inc.**
Mailing Address:	**1802 North 27th Avenue Phoenix, AZ 85009**
Physical Address:	**1802 North 27th Avenue Phoenix, AZ 85009**
Arizona Roc No.:	**310165**
Federal Tax Id No.:	**81-4143667**
State Where Organized:	**Arizona**
Business Organization:	**Corporation**
Statutory Agent Name:	**Robert K. Sanders**
Statutory Agent Mailing Address:	**1802 North 27th Avenue Phoenix, AZ 85009**
Statutory Agent Physical Address:	**1802 North 27th Avenue Phoenix, AZ 85009**

Contractor's Authorized Project Representative:

Name:	**Robert K. Sanders**
Title:	**President**
Phone:	**602-316-3800**
Email:	**bobs@lci-az.com**

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PROJECT DESCRIPTION:

Replacement of approximately 7,550 linear feet of existing water mains with new piping and appurtenances ranging in size from 4-inch to 8-inches.

PROJECT LOCATION:

Arrowhead Meadows near Chandler Boulevard and Alma School Road

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ARTICLE 2 - AGREEMENT DOCUMENTS

2.1 AGREEMENT DOCUMENTS

The Agreement between City and Contractor will consist of the following Agreement Documents:

1. This Construction Services Agreement and all of its Exhibits, including Project Plans and Technical Specifications.
2. General Conditions and General Conditions Appendices, incorporated by reference.
3. Project Specific Special Provisions as set forth in Exhibit A, incorporated by reference.
4. Project Bid Proposal.

2.2 In the event of any inconsistency, conflict, or ambiguity between or among the Agreement Documents, the Agreement Documents will take precedence as described in Section 14.1.4 of the General Conditions.

2.3 DEFINITIONS

The definitions in Section 2 of the General Conditions apply to all the Agreement Documents, including this Agreement.

ARTICLE 3 - CONSTRUCTION SERVICES

3.1 GENERAL

3.1.1 Scope of Work. All terms and conditions are set forth in the Agreement. Any terms and conditions and exceptions noted in the Contractor's proposal or other documents do not apply unless agreed to in this Agreement or an approved addendum.

3.1.2 Contractor agrees this is a Unit Price Agreement. Contractor agrees at its own cost and expense, to do all Work necessary required to fully, timely and properly complete the construction of the Project in strict accordance with the Agreement Documents in a good and workmanlike manner, free and clear of all claims, liens, and charges whatsoever, in the manner and under the conditions specified, within the Agreement time.

3.1.3 Contractor must provide all of the labor and materials, and perform the Work in accordance with Section 4 of the General Conditions. Some, but not all, of the major components of the Construction Services and the corresponding subsections of Section 4 of the General Conditions are set forth below.

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3.1.4 At all times relevant to this Agreement and performance of the Work, the Contactor must fully comply with all Laws, Regulations, or Legal Requirements applicable to City, the Project and the Agreement, including, without limitation, those set forth on attached Exhibit A.

3.1.5 Contractor must perform the Work under this Agreement using only those firms, team members and individuals designated by Contractor consistent with Contractor's accepted Bid, or otherwise, approved by City pursuant to the General Conditions. No other entities or individuals may be used without the prior written approval of the Project Manager.

3.1.6 Contractor must comply with all terms and conditions of the General Conditions.

3.1.7 In the event of a conflict between this Agreement and the General Conditions or an exhibit hereto or appendix thereto, the terms of this Agreement will control.

3.1.8 Ownership of Work Product. Notwithstanding anything to the contrary in this Agreement, all Work Product prepared or otherwise created in connection with the performance of this Agreement, including the Work, are to be and remain the property of City. For purposes of this provision, "Work Product" will include all designs, drawings, plans, specifications, ideas, renderings and other information or matter, in whatever form created (e.g., electronic or printed) and in all media now known or hereinafter created. All Work Product will be considered Work Made for Hire as defined in the United States Copyright Act 17 U.S.C. § 101 (Copyright Act). If for any reason, any such Work is found not to be a Work Made for Hire, Contractor hereby transfers and assigns ownership of the copyright in such Work to City. The rights in this Section are exclusive to City in perpetuity.

3.2 CONTRACTOR'S PRE-AGREEMENT AND PRE-WORK DELIVERABLES

3.2.1 The Contractor must provide the Deliverables in accordance with Section 4.2 of the General Conditions.

3.3 PRE-CONSTRUCTION CONFERENCE

Contractor must attend the Pre-Construction Conference in accordance with Section 4.3 of the General Conditions.

3.4 PERFORMANCE OF THE WORK (INCLUDING FIELD MEASUREMENTS, SUBCONTRACTORS, AND SUPPLIERS)

Contractor must perform the Work in accordance with Section 4.4 of the General Conditions.

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3.5 **CONTROL OF THE PROJECT SITE**

Contractor must control and maintain the Project Site in accordance with Section 4.5 of the General Conditions.

3.6 **PROJECT SAFETY**

Contractor must implement and enforce Project safety in accordance with Section 4.6 of the General Conditions.

3.7 **MATERIALS QUALITY, SUBSTITUTIONS AND SHOP DRAWINGS**

Contractor must provide materials testing and submit substitute materials and Shop Drawings in accordance with Section 4.7 of the General Conditions.

3.8 **PROJECT RECORD DOCUMENTS**

Contractor must maintain and make available the Project Record Documents in accordance with Section 4.8 of the General Conditions.

3.9 **WARRANTY AND CORRECTION OF DEFECTIVE WORK**

Contractor must provide warranties and correct defective Work in accordance with Section 4.9 of the General Conditions.

ARTICLE 4 - CITY RESPONSIBILITIES

4.1 City will have the responsibilities, and provide the information specified in, and subject to the conditions set forth in, Section 5 of the General Conditions.

ARTICLE 5 - AGREEMENT TIME

5.1 **GENERAL**

5.1.1 The total Agreement Duration is 210 Calendar Days (including Substantial Completion by 180 Calendars Days and Final Acceptance by 210 Calendar Days).

5.1.2 The Agreement Time will start with the Notice to Proceed (NTP) and end with Final Acceptance, as set forth in Article 5.4 below.

5.1.3 The Agreement Time will be as set forth in the Project Schedule. Contractor agrees that it will commence performance of the Work and complete the Project through Final Acceptance within the Agreement Time.

5.1.4 Time is of the essence of this Agreement for the Project, and for each phase and designated Milestone thereof.

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5.1.5 Failure on the part of Contractor to adhere to the approved Project Schedule will be deemed a material breach and sufficient grounds for termination of this Agreement by City.

5.2 PROJECT SCHEDULE

5.2.1 The Project Schedule will be updated and maintained throughout Contractor's performance under this Agreement in accordance with Section 6.2 of the General Conditions.

5.3 SUBSTANTIAL COMPLETION

Substantial Completion must be achieved no later than the Substantial Completion Date set forth in the Project Schedule. Substantial Completion will be determined in accordance with Section 6.3 of the General Conditions.

5.4 FINAL ACCEPTANCE

5.4.1 Final Acceptance will be obtained within the time period set forth in the Project Schedule.

5.4.2 Final Acceptance will be issued pursuant to Section 6.5 of the General Conditions.

5.5 LIQUIDATED DAMAGES

5.5.1 Substantial Completion Liquidated Damages. Contractor acknowledges and agrees that if Contractor fails to obtain Substantial Completion of the Work within the Agreement Time, City will sustain extensive damages and serious loss as a result of such failure. The exact amount of such damages will be extremely difficult to ascertain. Therefore, City and Contractor agree that if Contractor fails to achieve Substantial Completion of the Work within the Agreement Time, City will be entitled to retain or recover from Contractor, as liquidated damages and not as a penalty, the sum per calendar day as indicated in MAG § 108.9.

5.5.2 Final Acceptance Liquidated Damages. For the same reasons set forth in Article 5.5.1 above, City and Contractor further agree that if Contractor fails to achieve Final Acceptance of the Work within the Agreement Time, City will be entitled to retain or recover from Contractor, as liquidated damages and not as a penalty, the sum per calendar day as indicated in MAG § 108.9 commencing from the actual date of Substantial Completion or Final Acceptance as required under the Agreement.

5.5.3 MAG Liquidated Damages. Liquidated damages provisions in MAG § 108.9 will apply.

5.5.4 City may deduct liquidated damages described in this Article 5.5 from any unpaid amounts then or thereafter due Contractor under this Agreement. Any liquidated

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damages not so deducted from any unpaid amounts due Contractor will be payable to City at the demand of City, together with interest from the date of the demand at the highest lawful rate of interest payable by Contractor.

5.6 MUTUAL WAIVER OF CONSEQUENTIAL DAMAGES ONLY

5.6.1 Contractor and City waive claims against each other for consequential damages arising out of or relating to this Agreement. This mutual waiver includes.

1. Damages incurred by City for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

2. Damages incurred by Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

5.6.2 This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination of this Agreement. Nothing contained in this Article 5.6 will be deemed to preclude an award of liquidated damages, when applicable, in accordance with Article 5.5 above.

5.6.3 Nothing herein will be deemed to constitute a waiver of any other remedy available to City in the event of Contractor's default under this Agreement prior to full performance of the Work including, as applicable, specific performance or completion of the Work on behalf of Contractor, the cost and expense of which will be offset against any monies then or thereafter due to Contractor (if any) and otherwise immediately reimbursed to City by Contractor.

AGREEMENT PRICE

5.7 AGREEMENT PRICE

5.7.1 In exchange for Contractor's full, timely, and acceptable performances and construction of the Work under this Agreement, and subject to all of the terms of this Agreement, City will pay Contractor the "Agreement Price," which is $4,198,165.50.

5.7.2 The Agreement Price is all-inclusive and specifically includes all fees, cost, insurance and bond premiums, and taxes of any type necessary to fully, properly and timely perform and construct Work.

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5.8 **CHANGES TO AGREEMENT PRICE**
Shall be determined under Section 9 of the General Conditions.

ARTICLE 6 - PAYMENT

Payments will be made to Contractor in accordance with Section 8 of the General Conditions.

ARTICLE 7 - CHANGES TO THE AGREEMENT

Changes to the Agreement may be made in strict accordance with Section 9 of the General Conditions.

ARTICLE 8 - SUSPENSION AND TERMINATION

This Agreement may be suspended or terminated in accordance with Section 10 of the General Conditions.

ARTICLE 9 - INSURANCE AND BONDS

9.1 Contractor must provide insurance in accordance with Sections 11.1 through 11.3 of the General Conditions. Contractor must provide proof of such insurance and all required endorsements in forms acceptable to City prior to commencing any Work under this Agreement.

9.2 Contractor must provide performance and payment bonds to City in Accordance with Section 11.4 of the General Conditions and A.R.S. § 34-222.

9.3 Failure to provide proof of insurance and the required endorsements, or the required bonds, in forms acceptable to City, will be a material breach and grounds for termination for cause of this Agreement.

ARTICLE 10 - INDEMNIFICATION

Contractor must have and assume the indemnity obligations set forth in Section 12 of the General Conditions.

ARTICLE 11 - DISPUTE RESOLUTION

Any claims or disputes relating to this Agreement will be resolved according to the dispute resolution process set forth in Section 13 of, and Appendix 6 to, the General Conditions.

ARTICLE 12 - FORCED LABOR OF ETHNIC UYGHURS PROHIBITED By entering into this Agreement, Contractor certifies and agrees Contractor does not currently use and will not use for the term of this Agreement: (i) the forced labor of ethnic Uyghurs in the People's Republic of China; or (ii) any goods or services produced by the forced labor of ethnic Uyghurs in the People's Republic of China; or (iii) any contractors, subcontractors or suppliers

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that use the forced labor or any goods or services produced by the forced labor of ethnic Uyghurs in the People's Republic of China.

SIGNATURE PAGE TO FOLLOW

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IN WITNESS WHEREOF, the Parties hereto have executed this Agreement through their duly authorized representatives and bind their respective entitles as of the effective date.

"CITY"
CITY OF CHANDLER

Mayor

RECOMMENDED BY:

Daniel Haskins March 10, 2026

Daniel Haskins, P.E.
CIP City Engineer

APPROVED AS TO FORM:

City Attorney JMB

ATTEST:

City Clerk Seal

"CONTRACTOR"
LINCOLN CONSTRUCTORS INC.

Robert K. Sanders March 10, 2026

Signature Date

Robert K. Sanders

Print Name

CEO

Title

bobs@lci-az.com

Signer Email Address

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EXHIBIT A

PROJECT SPECIFIC
SPECIAL PROVISIONS

4.2.7 Aerial Construction Photography

General Conditions Section 4 Subsections 4.2.7.1 & 4.2.7.2 are not applicable to this project.

4.2.8 Government Approvals and Permits

General Conditions Section 4 Subsection 4.2.8.1, City permit fees will be paid internally by the City and all other fees will be the responsibility of the Contractor.

Subletting of Agreement

Contractor must perform, with his own organization, work amounting to not less than 50 percent of the total Agreement cost.

Failure to submit Subcontractor's List Form, demonstrating self-performance not less than 50 percent of the total Agreement cost, will cause the bid to be deemed non-responsive.

Bidders should contact the Arizona Registrar of Contractors for information on license requirements.

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EXHIBIT B

GENERAL CONDITIONS

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CHANDLER arizona
Community of Innovation

GENERAL CONDITIONS

Approved date: July 20, 2022

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SECTION 1 - SCOPE OF THESE GENERAL CONDITIONS

These General Conditions encompass provisions that apply, and are incorporated into all construction Agreements entered into by the City of Chandler, unless otherwise specifically excluded in the executed Agreement.

SECTION 2 - GENERAL DEFINITIONS

Allowance: A specific amount for a specific item of Work, if any, that City agrees has not been sufficiently designed, detailed, or selected (including design changes from 90% to 100% as authorized by and at the discretion of the City) at the time the Agreement Price is agreed to for Contractor to provide a definitive price.

Alternate Systems Evaluations or Alternative Analysis: Alternatives for design, means and methods or other scope considerations that are evaluated using value analysis principles and have the potential to reduce construction costs while still delivering a quality and functional Project that meets City requirements.

Change Order: A written instrument issued after execution of the Agreement Documents signed by City and Contractor, stating their agreement upon all of the following: the addition, deletion or revision in the scope of services or deliverables; the amount of the adjustment to the Agreement Price, the extent of the adjustment to the Agreement Time, or modifications of other agreement terms. The Agreement Price and the Agreement Time may be changed only by Change Order.

Consultant: Person or firm that provides professional services.

City (Owner or OWNER): City of Chandler, a municipal corporation, with whom Contractor has entered into the Agreement and for whom the Work or Services are to be provided pursuant to the Agreement(s).

Contingent Bid Items: This is a minor bid item which is likely, but not certain, to occur during the course of work. If the Engineer determines that this work is required, the Contractor will accomplish the work and payment will be made based on the contingent unit bid price included in the proposal. Since the quantity listed in the proposal is primarily for bid comparison, the amount of work required by the Engineer may vary materially from this.

Agreement: The written agreement executed between City and Contractor, including all of the Agreement Documents.

Agreement Documents: The documents which together form the Agreement between City and Contractor, as identified in Article 2 of the Agreement, or are otherwise incorporated into the Agreement, including the Agreement, the exhibits thereto, these General Conditions, any Notice to Proceed, and any Job Order (if applicable), the Plans and Specifications, Project Schedule, written and properly executed Change Orders, MAG Specifications and City's amendments thereto, and any other documents so designated in the Agreement.

Agreement Price: The agreed-upon price to be paid to Contractor for full, timely, and acceptable completion of the Work or Services under the terms of the Agreement.

Agreement Time(s): The number of calendar days or the dates related to the applicable phase, Substantial Completion, or Final Acceptance as stated in Agreement Documents. Agreement Time starts

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with the Notice to Proceed (NTP) and ends with Final Acceptance. The Agreement Time is set forth in the Agreement and is based upon the Project Schedule agreed to by City in writing.

Contractor: The person or business association with whom City has entered into an agreement for construction related Work or Services in relation to the Project at issue.

Contractor Payment Request: The form that is accepted by City and used by Contractor in requesting progress payments or final payment and which must include such supporting documentation as is required by the Agreement Documents or City.

Construction Budget: The City's budget for construction of the Project.

Construction Documents: The Plans, Specifications, and Drawings prepared and issued by the Design Professional and approved by City for construction, meaning the documents are sealed by the Design Professional (as required), acceptable for permitting and incorporated into the Agreement by this reference. All amendments and modifications to the Construction Documents must be approved in writing by City prior to incorporation into the Agreement.

Cost of the Work: The term Cost of the Work will mean costs necessarily incurred by Contractor in the proper performance of the Work. Such costs will be at rates not higher than the standard paid at the place of the Project except with prior consent of City.

Critical Path Method (CPM): A scheduling technique which identifies the logical sequence of the activities occurring in a Construction Project, the anticipated time required to complete each activity in the Project, and the activities that must be completed on schedule to finish the Project within the anticipated time. Typically, activities are arranged in a network that shows both activities and their dependencies. CPM is also used as a management technique which enables contracting parties to predict when activities may occur so that resources can be effectively used and limitations can be identified.

Critical Path: Critical Path is the sequence of project network activities which add up to the longest overall duration. Once established in the Project Schedule, the Critical Path for the Project must not be changed without prior written approval of City.

Day: Calendar day(s) unless otherwise specifically stated in the Agreement Documents.

Design Professional: The qualified, licensed person, firm or corporation who furnishes design and construction administration services required under the Agreement Documents. These services may include, but are not limited to: development of Construction Drawings and Documents, review of Contractor Submittal(s), review of and response to Requests for Information, approval and certification of progress payment applications, construction administration, and construction agreement close out.

Differing Site Conditions: Concealed or latent physical conditions or subsurface conditions at the Site that, (i) materially differ from the conditions indicated in the Agreement Documents, or (ii) are of an unusual nature, differing materially from the conditions ordinarily encountered and generally recognized as inherent in the Work at the general area of the Site. Caliche, rock, hard-digging or sandy/silty soil encountered on a project is not considered a "Differing Site Condition."

Drawings (Plans): Documents, which visually represent the scope, extent and character of the Work to be furnished and performed by Contractor during the construction phase and which have been prepared

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or approved by the Design Professional and City. These documents include Drawings that have reached a sufficient state of completion and released by Design Professional solely for the purposes of review and use in performing constructability or bid-ability reviews by Contractor and in preparing cost estimates (e.g. Master Planning and Programming, Schematic Design, Design Development, and Construction Drawings), but *"not for construction*." Shop Drawings are not Drawings as so defined.

Final Acceptance: The City's acceptance of the facility or project from the Contractor after all Work is completed, tested, and inspected in accordance with the Agreement requirements. Final Acceptance results in a Letter of Acceptance (LOA).

Fixed Price: A fixed price or amount for an Agreement Price, Scope of Work, materials, or other item under an Agreement, Change Order, or other agreement, which City agrees, in writing, to pay instead of the actual cost.

Float: The number of Days by which an activity can be delayed without lengthening the Critical Path and extending the Agreement Time. Unless otherwise expressly agreed in writing, all Float belongs to City.

Laws, Regulations, or Legal Requirements: Any and all applicable laws, rules, regulations, ordinances, codes and orders applicable to the Project of any and all governmental bodies, agencies, authorities and courts having jurisdiction and any applicable provisions of the Development Agreement for the Project (if any), including, without limitation, those provisions relating to the design and construction of the Project.

Line Item: The individual elements of Work identified on a bid or other schedule and associated with a price or a unit price and quantity particular to that individual element of the Work. Also refers to individual items of work within the Schedule of Values.

Liquidated Damages: Designated damages for the City to collect as compensation upon a specific breach (example: late delivery).

Long-Lead Item: Long-lead item refers to the equipment, product, or system that is identified at the earliest stage of a project to have a delivery time long enough to affect directly the Critical Path/the overall lead time of the project.

MAG: The Maricopa Association of Governments.

MAG Specifications: The most current version of the Uniform Standard Specifications for Public Works Construction published by MAG.

MAG Standard Details: The most current version of the Uniform Standard Details as published by MAG.

Minor change: A change in the Work having no impact on cost or time or the City-approved design intent, as determined by City.

Notice to Proceed (NTP): A written notice given by City to Contractor fixing the date on which Contractor will start to perform Contractor's obligations under the Agreement.

Project: The Project specified in the Agreement (including a Job Order).

Project Manager: The Project Manager designated in Article 1 of the Agreement, or any successor thereto

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designated by City. The Project Manager has the authority to act on behalf of City, as delineated and limited by the Agreement Documents and applicable law. And City will communicate with Contractor through the Project Manager. However, the Project Manager has no authority to bind City or City Council in contravention of any City code, State or Federal statute or regulation, or these General Conditions.

Project Schedule: The schedule for the completion of the Project agreed to and required by City.

Project Specific Conditions: Additional conditions which apply to the specific Project and Scope of Work which are set forth in Exhibit D of the Agreement.

Project Team: The Project Team consisting of the Design Professional, Contractor, Project Manager, and such others as City may designate.

Punch List: The list initially prepared by Contractor pursuant to the Agreement Documents, reviewed and supplemented by the Project Manager (and at the sole option of the Project Manager, the Design Professional) and approved by City containing items of incomplete work not impacting Substantial Completion, if allowed for under the Agreement, and to be completed or corrected by Contractor after Substantial Completion and before Final Acceptance in accordance with the Agreement Documents.

Quality Assurance (QA) Testing: Testing performed to verify the accuracy and applicability of the QC testing results and to ascertain that the materials installed meet the specified levels of quality in accordance with the Agreement Documents.

Quality Control (QC) Testing: Testing performed to assure that the materials installed comply with the requirements in the Agreement Documents.

Requests for Information (RFIs): Formal written request from Contractor to City or Design Professional for the Project seeking clarification or additional information needed for Contractor to properly complete the Work or Services under the Agreement. City may require RFI's to be submitted on a specific form or in a specified format.

Schedule of Values (SOV): The specified document prepared by Contractor, and approved and accepted by City, which divides the Agreement Price into pay items, such that the sum of all pay items equals the Agreement Price for the construction phase Work, or for any portion of the Work having a separate specified Agreement Price.

Scope of Work: The scope of work agreed to or required by City and incorporated into the Agreement as Exhibit A.

Shop Drawings: All drawings, diagrams, schedules and other data specifically prepared for the Work by Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

Site: The land or premises on which the Project is located.

Specifications: The part(s) of the Agreement Documents for the construction phase consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto. Where specified, the Project must be constructed using the current Uniform Standard Specifications and Details for Public Works

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Construction as furnished by the Maricopa Association of Governments, as amended by City.

Subconsultant: A person, firm or corporation having an Agreement with Consultant/Contractor to furnish services required as its independent professional associate or consultant with respect to the Project.

Subcontractor: An individual or firm having a direct Agreement with Contractor or any other individual or firm having an Agreement with the aforesaid contractors at any tier, who undertakes to perform a part of pre-construction services or construction phase Work at the Site for which Contractor is responsible. Subcontractors must be selected through the Subcontractor selection process described in the Agreement Documents, if any.

Substantial Completion: The date when the City determines that the Work (or separable units of Phases as provided in the Agreement Documents) is essentially and satisfactorily complete in accordance with the Agreement Documents such that the Project is ready for use by the City for its intended purpose, opening to the general public, full occupancy or use by City (including, without limitation, all separate units, or rooms, facilities, access, income-generating areas, and all areas serving the general public, as applicable, must be ready for full operation without material inconvenience or discomfort), including, to the extent applicable to the Work, the following: all materials, equipment, systems, controls, features, facilities, accessories, and similar elements are installed in the proper manner and in operating condition, inspected, and approved; surfaces have been painted; masonry and concrete cleaned with any sealer or other finish applied; utilities and systems connected and functioning; site work complete; permanent heating, ventilation, air conditioning, vertical transportation, and other systems properly operating with proper controls; lighting and electrical systems installed, operable and controlled; paving completed, signage installed, and other work as applicable, has been performed to a similar state of essential and satisfactory completion.

Supplier: A manufacturer, fabricator, distributor, or vendor having a direct Agreement with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the construction phase Work by Contractor or any Subcontractor.

Total Float: Number of Days by which pre-construction services or construction phase Work or any part of the same may be delayed without necessarily extending a pertinent Agreement Time or schedule milestone in the Project Schedule.

Work: The entire completion of construction or the various separately identifiable parts thereof, required to be furnished during the construction phase. Work includes and is the result of performing or furnishing labor and furnishing and incorporating materials, resources and equipment into the construction, and performing or furnishing services and documents as required by the Agreement Documents for the construction phase.

Writing: Typing, printing, photography and other modes of representing or reproducing words in a visible form, including email, and expressions.

SECTION 3 - STANDARD SPECIFICATIONS AND DETAILS

3.1 City operates under the latest revision of the MAG Specifications and MAG Standard Details as amended by City. City's current amendment to the MAG Specifications, part of the City's Unified Development Manual, may be found and downloaded from City's website at http://www.chandleraz.gov.

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3.2 Copies of the MAG Specifications and MAG Standard Details are available at the Maricopa Association of Governments office, 302 N. 1st Avenue, Suite 300, Phoenix, Arizona. They may also be downloaded from their website at: http://www.azmag.gov/Newsroom/Publications

3.3 The MAG Specifications and Standard Details and City's amendments thereto are incorporated into the Agreement by this reference.

SECTION 4 - CONTRACTOR'S RESPONSIBILITIES FOR CONSTRUCTION SERVICES

4.1 **GENERAL**

4.1.1 Contractor must construct the Work in accordance with the Agreement Documents and as outlined in Exhibit A of the Agreement to the satisfaction of City, exercising the degree of professional care, skill, diligence, quality and judgment that a professional construction manager engaged, experienced and specializing in the construction management of construction and facilities of similar scope, function, size, quality, complexity and detail in urban areas throughout the United States comparable to Chandler, Arizona would exercise at such time, under similar conditions. Contractor must, at all times, perform the Work in conformance with sound and generally accepted engineering principles and construction management and construction contracting practices.

4.1.2 If Contractor observes errors, discrepancies or omissions in the Agreement Documents, Contractor must promptly notify the Design Professional and City and request clarification. If Contractor, with the exercise of reasonable care, should have recognized such error, inconsistency, omission, or difference and fails to report it to City, and if Contractor proceeds with the Work affected by such observed errors, discrepancies or omissions, without receiving such clarifications, Contractor does so at its own risk and will be liable to City for damages resulting from proceeding without clarification.

4.1.3 Project Team and agents of each of them, testing agencies and governmental agencies with jurisdictional interests will be provided access to the Work at reasonable times for their observation, inspection, and testing. Contractor must provide proper and safe conditions for such access.

4.1.4 Contractor must comply with, and require all Subcontractors to comply with, the Arizona Contractors' license laws, including all requirements with respect to being duly registered and licensed.

4.1.5 Contractor must ensure that all employees performing any Work for which Contractor is responsible have a legal right to live and work in the United States. In addition, all compensation of any such employee must meet all applicable requirements of the Fair Labor Standards Act (FLSA) and Federal Minimum Wage laws.

4.1.6 Contractor must comply with the Immigration Reform and Control Act of 1986 (IRCA). Contractor understands and acknowledges the applicability of the IRCA activities. Contractor agrees to comply with the IRCA while performing their work and to permit City inspection of Contractor personnel records to verify such compliance.

4.1.7 Pursuant to MAG Specifications §§ 107.4, Contractor must report immediately any discovery of archeological ruins or artifacts. Excavation must stop immediately so that City can decide on the pertinent steps to follow such discovery.

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4.1.8 All property owners that may be affected by the proposed construction activities must be notified of the scope, duration of the construction activities and possible interference with their day-to-day activities by Contractor prior to start of construction. In addition, individual residential or commercial interferences, such as driveway restrictions, water outages, and all other Work adjacent to residence/business, require 48-hour notification in advance of specific adjoining Work. Notification may be through door hangers or other procedures approved by the City.

4.1.9 Access must be maintained to adjacent properties at all times during construction. Where property has more than one point of access, no more than one access will be restricted or closed at any one time. Access to adjacent private driveways will be maintained during all non-working hours.

4.1.10 Contractor must furnish and erect construction signs in accordance with Project Specifications. The signs must be professionally prepared and subject to approval by City, must be maintained by Contractor for the duration of the project, and must be removed by Contractor during the final project clean up.

4.1.11 The number of signs required, the size, shape, installation requirements and information to be included for construction signs is established on the detail sheet, provided, however, signs must be a minimum of 4 foot by 8 foot and must be installed so that the bottom of the sign is at least 4 foot above grade. No direct payment will be made for furnishing and erecting construction signs. The cost thereof must be included in other items for which direct payment is made. Sign locations will be determined by City.

4.1.12 All required construction signs must be installed by Contractor within 7 Days of Notice to Proceed.

4.1.13 The Work to be accomplished under these Agreement Documents has been designed for City by a Design Professional retained by City for this purpose. It is understood that normal construction Administration for the purpose of interpretation of the Agreement Documents is provided by City. Should any services of the Design Professional be required to assist in the corrections of errors or omissions by Contractor, or services of the Design Professional be required because of changes in structure or equipment where Contractor has requested approval of substitute methods or material, or any other items detailed herein below, those services will be provided by the Design Professional at the standard hourly rates previously negotiated with City and must be paid for by the Contractor.

4.1.14 Contractor must reimburse City for costs incurred by the Design Professional for additional services to the Project through no fault of City or the Design Professional including, but not limited to, the following conditions:

a. Additional Site visits, investigations, inspections, design work or reports by the Design Professional which are required due to damages to existing facilities or completed Work caused by the Contractor in his performance, Contractor's negligence, or Contractor's Work which is rejected as defective or as failing to conform to the Agreement Documents;

b. Design Professional construction phase services rendered on the project during the time the project remains incomplete after the Agreement date of final completion will be charged to Contractor at a rate previously negotiated City; and

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c. All retesting required due to the failure of Contractor's Work to meet the requirements of the Agreement Documents will be at Contractor's expense. All standby and travel time by the City's testing lab, the Design Professional or City due to Contractor's inability to be prepared for testing at the agreed upon time will be at the Contractor's expense.

4.1.15 City may withhold from any payment otherwise due to Contractor any amounts necessary to pay the Design Professional for such additional services as provided herein above.

4.1.16 Contractor will not be required to bear additional costs incurred by City due to errors by the Design Professional.

4.2 **CONTRACTOR'S PRE-AGREEMENT AND PRE-WORK DELIVERABLES**

4.2.1 Prior to award of the Agreement, Contractor must execute Agreement and deliver to City. Failure to do so may delay Agreement award. Contractor must also provide to City its Contractor's License classification and number and its Federal Tax I.D. number.

4.2.2 Before beginning any Work under the Agreement, Agreement must be fully executed by City.

4.2.3 After Agreement award, City will issue to Contractor an award letter. At that time Contractor must deliver to City such bonds and certificates of insurance with endorsements in such amounts (and other evidence of insurance requested by City) required under Section 11 of these General Conditions, and as the Agreement requires.

4.2.4 As evidence of Workmen's Compensation Insurance, Contractor must, upon request, provide a letter of certification from the Industrial Commission of Arizona that Contractor is insured by the State Compensation Fund or is an authorized self-insurer or a certificate of insurance issued by an insurance company authorized by the Insurance Department of Arizona to write Workmen's Compensation and Occupational Disease Insurance in the State of Arizona.

4.2.5 Within 10 Days of the date of the executed Agreement letter issued by City, Contractor must submit to City for review and acceptance the following items:

4.2.5.1 Comprehensive construction Project Schedule including a Critical Path Method (CPM) diagram schedule as described in Section 6.2. Project Schedule must be in Microsoft Project standard file format. Within 10 Days of receipt of City's comments, Contractor must make all required corrections, adjustments, and additions to complete the Project Schedule and resubmit to City for review.

4.2.5.2 Preliminary schedule of submittals and Shop Drawings. Within 10 Days of receipt of City's comments, Contractor must submit the corrected and completed schedule of Shop Drawings submissions for approval. Contractor's schedule of Shop Drawings and sample submittals will be acceptable to City if it provides a workable arrangement for reviewing and processing the required submittals.

4.2.5.3 Schedule of Values in a form specified by City reflecting the subcontracts and other categories that will be used to submit Pay Applications for the Work. The total amount of the Schedule of Values must not be greater than the Agreement Price. The Schedule of Values will be reviewed at the Pre-Construction Conference and revised by Contractor within 10 Days after Pre-Construction Conference in response to comments and questions from

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City. Once accepted by City in writing, the Schedule of Values for the Project must not be changed without the prior written approval of City.

4.2.6 Video Recording Requirement. Prior to performing any Work, Contractor must document the existing conditions of the Site, all other areas where Work will occur and all adjacent areas that may be impacted by the Work via digital video format. Contractor must video record and index all areas, features, buildings and other public and private improvements that could potentially be impacted by the Work. Video recording must be coordinated with City. When video recording private property, Contractor must also coordinate the video recording with the private property owner, if possible. Contractor must provide City with a copy of said digital video format prior to performing any Work.

4.2.7 Aerial Drone Construction Photography.

4.2.7.1 If Agreement duration is greater than 90 calendar days, Contractor must engage a professional unmanned aerial vehicle (UAV) aerial pilot to photograph the Site prior to construction mobilization, at three-month intervals during construction, and following final inspection. Drone camera specifications must meet the following minimum requirements:

a. 1-inch CMOS
b. Pixels: 20M
c. FOV 84 8.8 mm/24 mm (35 mm format equivalent) f/2.8-f/11 auto focus at 1 m-
d. For photographing: 16.9 Aspect Ratio: 5472x3078
e. For video shooting: MP4/MOV/H.264
f. FHD: 1920x1080 120p @100Mbps
g. File format: High Definition (HD) JPEG for digital photos and HD MPEG 4 for digital video.
h. All metadata to be recorded including GPS data and preserved with photographs provided.

Interval	**JPEG**
3 month intervals	At an altitude (AGL) between 70-90 ft.
3 month intervals	Images to be taken every 50-100 ft. to be determined based on project scope.

4.2.7.2 Drone photos to be taken in sequential geographical order and then organized and provided in the same manner unless otherwise specified.

4.2.7.3 Photos to be provided digitally via an online file share service and/or by a USB drive to contractor.

4.2.7.4 Drone pilots to obey ALL local (city, county, state) UAV regulations as well as FAA UAV guidelines including, but not limited to, conducting all flights during daylight hours, not exceeding maximum altitude ceilings (depending on area), not flying over people, yielding to other aircraft.

4.2.7.5 Drone pilots must fly drone within visual line of sight (VSOL) and have visual spotter when needed. Drone pilots only to operate in favorable weather conditions when minimum visibility is 3 miles or greater.

4.2.7.6 Drone pilots to conduct a preflight checklist and visually inspect the entire flight path prior to flying to ensure a safe flight.

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4.2.7.7 Airspace Authorizations. Operations in Class G airspace are allowed without air traffic control (ATC) permission. Operations in Class B, C, D and E airspace need ATC authorization. Drone pilots to schedule each flight in advance and based on airspace if required will notify nearby airports/control towers, etc.

4.2.8 Government Approvals and Permits.

4.2.8.1 Contractor must obtain all necessary permits for the Work and pay all applicable fees, unless otherwise noted on the Plans and in the Specifications. City permit fees will be paid internally by City. For bidding purposes, an allowance for all permit fees is included in the bid schedule under the item "allowance for permit fees." The Contractor will be paid for the actual cost of the permit fees upon submitting a receipt showing the fee Contractor has paid. Excluded from the above allowance are items such as all costs incurred by the Contractor in securing the permit except for the actual permit fee established by the agency, cost for all shutdowns or outages, cost for pole bracing, cost of permits for construction water, cost of construction water, cost for any additional insurance requirements, cost for any licenses, and other similar type costs. Contractor is specifically notified of the need to obtain the necessary environmental permits or file the necessary environmental and regulatory permit notices.

4.2.8.2 Copies of all permits and the associated notices must be provided to City prior to starting the permitted activity.

4.3 PRE-CONSTRUCTION CONFERENCE

4.3.1 Prior to the commencement of any Work, City will schedule a Pre-Construction Conference.

4.3.2 The purpose of this Conference is to establish a working relationship between Contractor, the utility firms, and various City agencies. The agenda will include critical elements of the Work schedule, submittal schedule, cost breakdown of major lump sum items, Payment Requests and processing, coordination with the involved utility firms, and emergency telephone numbers for all representatives involved in the course of construction.

4.3.3 Minimum attendance by Contractor at any mandatory meeting with City must be (1) Contractor's Representative, who is authorized to execute and sign documents on behalf of the firm, (2) Contractor's on-site Superintendent, and (3) Contractor's Safety Office, or other employee responsible for safety.

4.4 PERFORMANCE OF THE WORK (INCLUDING FIELD MEASUREMENTS, SUBCONTRACTORS, AND SUPPLIERS)

4.4.1 Unless otherwise provided in the Agreement Documents to be the responsibility of City or a separate Contractor, Contractor must provide through itself or Subcontractors the necessary supervision, labor, inspection, testing, start-up, material, equipment, machinery, temporary utilities and other temporary facilities to permit Contractor to complete the Work consistent with the Agreement Documents.

4.4.2 Contractor must perform all construction activities efficiently and with the requisite expertise, skill and competence to satisfy the requirements of the Agreement Documents. Contractor must at all times exercise complete and exclusive control over the means, methods, safety, sequences and techniques of construction.

4.4.3 Contractor's Superintendent must be present at the Site at all times that material Work

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under this Agreement is taking place. Contractor's Superintendent or designee must be present at the Site at all times any other Work under this Agreement is taking place. Superintendent must not be replaced without written notice to City. Whenever the Superintendent is not present at a particular part of the Work where the City or Design Professional may desire to inform the Contractor relative to interpretation of the Drawings and Specifications or to disapproval or rejection of materials or Work performed, the City or Design Professional may provide such information in writing to the foreman or other worker in charge of the particular part of the Work in reference to which the information is given. Information so given will be as binding as if given to the Superintendent.

4.4.4 All elements of the Work must be under the direct supervision of a foreman or his designated representative on the Site who must have the authority to take actions required to properly carry out that particular element of the Work.

4.4.5 Working Hours. Except in connection with the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise indicated, all Work at the Site must be performed during regular working hours, and Contractor will not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without City's written consent given after prior written notice to City. If it will become absolutely necessary to perform Work at night or on Saturdays, Sundays or legal holidays, the City must be informed at least 24 hours in advance of the beginning of performance of such Work. Only such Work will be done at night as can be done satisfactorily as determined by the City. Good lighting and all other necessary facilities for carrying out and inspecting the Work must be provided and maintained at all points where such Work is being done. Further, unless such non-normal work hours are performed at City's request or required by the Agreement Documents, Contractor must pay to City all additional costs incurred by City by reason of such non-normal working hours. Expenses incurred by City for overtime compensation must be reimbursed by Contractor as follows: (i) City staff at the rate set forth in current City Fee Schedule as published on City website, (ii) Design Professional and staff at the standard hourly rates previously negotiated with City, and (iii) all others at actual cost plus ten percent administrative overhead. Such costs may be deducted by City from any payments due to Contractor. Provided, however, if overtime work or work during other than normal hours is at the request of City and not due to Contractor delay, City will pay the cost of City overtime expenses.

4.4.6 Where the Agreement Documents require that a particular product be installed or applied by an applicator approved by the manufacturer, it is Contractor's responsibility to ensure the Subcontractor employed for such work is approved by the manufacturer. All materials and equipment must be stored, applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable manufacturer, fabricator, supplier or distributor, except as otherwise provided in the Agreement Documents; but no provisions of any such instructions will be effective to impose on City of Design Professional responsibility for the means, methods, techniques, sequences or procedures of construction or for safety precautions incident thereto.

4.4.7 Before starting the Work, Contractor must carefully study and compare the various Plans, Drawings, other Agreement Documents, and Specifications relative to that portion of the Work, as well as the information furnished by City, must take field measurements of any existing conditions related to that portion of the Work and must observe any conditions at the Site affecting it. The exactness of grades, elevations, dimensions, or locations given on any Drawings, or the Work installed by other contractors, is not guaranteed by City.

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4.4.8 Before ordering materials or doing Work, Contractor and each Subcontractor must verify measurements at the Site and will be responsible for the correctness of such measurements. No extra charge or compensation will be allowed because of differences between actual dimensions and the dimensions indicated on the Agreement Documents, including the Drawings.

4.4.9 Ground Level Construction Photography.

4.4.9.1 The Contractor must furnish progress photographs of the project. The photographer selected by the Contractor must be approved by the City and must be either a commercial photographer or an individual experienced and equipped for such photography.

4.4.9.2 The Contractor must deliver to City all photographs taken during that period with each application for payment. If the current photographs do not accompany the application, the application will not be reviewed and will be returned to the Contractor as incomplete.

4.4.9.3 Photographs must be identified by use of typewritten labels affixed to the back of the photograph. The label must provide a description of the view, the direction from which the photograph was taken, the name of the project, City's project number, the name of Contractor and the date of the photography. The stationing must also be included for all pipeline installations.

4.4.9.4 Photographs must be taken during the construction period and must be of aesthetic composition and depict the progress of the Work from the beginning of construction through and including the finished product. City may vary the specified frequency so that significant progress or changes can be recorded on the photographs.

4.4.10 Underground Facilities.

4.4.10.1 The existence and number of facilities as shown on the Plans are estimated from information furnished by the particular utility. Contractor is responsible for field verification and location of all utilities prior to the start of construction. No field work will be allowed to start until Contractor has contacted Arizona 811 and all affected utilities have been located. In addition, Contractor must expose and physically locate all potentially conflicting utilities prior to construction. The actual locations of the utilities must be compared to locations shown on the Plans and any required changes in alignment and grade must be made at the time of construction in consultation with Project Manager. It is generally recognized and Contractor should anticipate that information from Arizona 811 or information from utility companies during project design, frequently fails to disclose all underground facilities. The fact that more utility lines or other underground facilities are located in the Project Site than shown on the Project Plans does not constitute an "unforeseen Condition" and such undisclosed underground facilities do not differ materially from the conditions which Contractor should expect. The provisions of Sections 105.4, 105.6, 107.11 and 109.8.1 of the MAG Uniform Standard Specifications for Public Works Construction apply and are incorporated herein by this reference.

4.4.10.2 Contractor is responsible for all coordination with utility companies. The provisions of Sections 105.4, 105.6, 107.11 and 109.8.1 of the MAG Uniform Standard Specifications for Public Works Construction strictly apply and no additional compensation will be paid to Contractor for delays due to utility work on the project.

4.4.11 Relocation of Existing Water Meters. When a service line has been extended and a line

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setter installed in a meter box, City forces will re-install meter. No compression fittings will be utilized.

4.4.12 Water Turn-On or Turn-Off.

4.4.12.1 Contractor must coordinate all water line turn-ons and turn-offs through the City. Application must be made to the Municipal Utility Division and Contractor must pay the established charges. The City will close existing valves, but will not guarantee a bone-dry Shutdown.

4.4.12.2 Contractor must notify all customers affected by the turn-off not less than 48 hours in advance. Notification must be in writing, must give the reason for the turn-off and must give the estimated time and duration that water service will be interrupted. Contractor is also notified that water turn-off will not be permitted on the Day before and after Thanksgiving Day and Christmas Day.

4.4.12.3 No direct payment will be made to Contractor for turn-ons or turn-offs. Costs associated therewith will be included in other items for which direct payment is made.

4.4.13 Tests and Inspections.

4.4.13.1 Contractor must give City timely (at a minimum, twenty-four hours) notice of readiness of the Work for all required inspections, tests or approvals. Contractor must give timely notice to City in advance of backfilling or otherwise covering any part of the Work so that city representative may, if desired, observe such part of the Work before it is concealed. Whenever Contractor varies the normal period during which Work or any portion of it is carried on each Day, Contractor must give timely notice to City so that city representative may, if desired, be present to observe the Work in progress. If Contractor fails to give such timely notice, any Work done in the absence of city representative will be subject to rejection. If Contractor gives such notice to City, but then is not ready for such inspections, tests, approvals or observations at the time so noticed, Contractor must reimburse City for all costs incurred by the attendance of city representatives.

4.4.13.2 If any law, ordinance, rule, regulation, code, or orders of any public body having jurisdiction requires any Work (or part thereof) to be inspected, tested or approved, Contractor (unless another party is specified in the Agreement Documents) must assume full responsibility therefor, pay all costs in connection therewith and furnish City the required certificates of inspection, testing, or approval. Contractor must also be responsible for and must pay all costs in connection with any inspection or testing required by the Specifications in connection with City's acceptance of a manufacturer, fabricator, supplier or distributor of materials or equipment proposed to be incorporated in the Work, or of materials or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. The cost of all other inspections, tests and approvals required by the Agreement Documents will be paid by City (unless otherwise specified).

4.4.13.3 All inspections, tests or approvals other than those required by law, ordinance, rule, regulation, code or order of any public body having jurisdiction must be performed by organizations acceptable to City and by the Design Professional if so specified.

4.4.13.4 Neither observations by City, the Design Professional nor inspections, tests or approvals by others will relieve Contractor from their obligations to perform the Work in accordance with the Agreement Documents.

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4.4.14 Uncovering Work. If any Work that is to be observed, inspected, tested or approved is covered without written concurrence of City, it must, if requested by City be uncovered for observation. Unless Contractor has given City timely notice of Contractor's intention to cover such Work and City has not acted with reasonable promptness in response to such notice, Contractor must furnish all necessary labor, material and bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, including compensation for additional professional services, and an appropriate deductive Change Order will be issued.

4.4.15 In all cases of interconnection of its Work with existing or other Work, Contractor must verify at the Site all dimensions relating to such existing or other Work. Any errors due to Contractor's failure to so verify all such grades, elevations, locations or dimensions must be promptly rectified by Contractor without any increase in the Agreement Price. Any design errors or omissions noted by Contractor during this review must be reported promptly to City.

4.4.16 Contractor must establish and maintain all construction grades, lines, levels, and benchmarks, and will be responsible for accuracy and protection of same. This Work must be performed or supervised by a licensed civil engineer or surveyor in the State of Arizona.

4.4.17 Contractor must photograph all buried piping of greater than four (4) inches in diameter prior to backfill.

4.4.18 Contractor is responsible for the proper performance of the work of Subcontractors and any acts and omissions in connection with such performance. Nothing in the Agreement Documents is intended or deemed to create any legal or contractual relationship between City and any Subcontractor or Sub-Subcontractor, including but not limited to any third-party beneficiary rights.

4.4.19 Contractor must coordinate the activities of all Subcontractors. Contractor must coordinate performance of the Work with City's Public Works & Utilities Department and other departments or agencies within City. The Design Professional and other contractors or parties involved in the Project. If City performs other work on the Project or at the Site with separate contractors under City's control, Contractor agrees to cooperate and coordinate its activities with those of such separate contractors so that the Project can be completed in an orderly and coordinated manner without unreasonable disruption.

4.4.20 Contractor will not substitute or change any Subcontractor or Supplier without the prior written approval of City. Any substitute or replacement Subcontractor or Supplier must be required to meet the same qualifications and selection criteria and process as the original Subcontractor or Supplier. If a Subcontract/Supplier selection plan has been approved by City, Contractor will follow that plan unless otherwise approved by City in writing.

4.4.21 Contractor must not change or replace any members of its Project team, including Contractor's Representative, Project Manager, or Superintendent, without an explanation for the change being given to City, and receiving prior written approval of the change from City, which approval will not be unreasonably withheld.

4.4.22 Subcontractors whose scope of work has a value greater than 15% of the total Agreement Price are required to furnish performance and payment bonds to Contractor, unless

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otherwise approved in writing by City.

4.4.23 Contractor must comply with MAG Specification § 108.2 (E) unless otherwise specified in Agreement Documents.

4.5 **CONTROL OF THE PROJECT SITE**

4.5.1 Throughout all phases of construction, including suspension of Work, Contractor must keep the Site reasonably free from debris, trash and construction wastes to permit Contractor to perform its construction services efficiently, safely and without interfering with the use of adjacent land areas. Prior to Final Acceptance of the Work, or a portion of the Work, Contractor must remove all debris, trash, construction wastes, materials, equipment, machinery and tools arising from the Work or applicable portions thereof to permit City to occupy the Project or a portion of the Project for its intended use.

4.5.2 Contractor must take whatever steps, procedures or means necessary to prevent dust nuisance due to construction operations. The dust control measures must be maintained at all times to the satisfaction of City and in accordance with the requirements of the Maricopa County Bureau of Air Pollution Control Rules and Regulations.

4.5.3 Contractor must maintain Americans with Disabilities Act (ADA) and American National Standards Institute (ANSI) accessibility requirements during construction activities, including without limitation compliance with the 2010 regulations governing implementation of the ADA to the extent applicable. ADA and ANSI accessibility requirements must include, but not be limited to, parking, building access, areas of refuge, and emergency exit paths of travel. Contractor i s responsible for the coordination of all Work to minimize disruption to residents and the public.

4.5.4 Only materials and equipment used directly in the Work will be brought to and stored on the Site by Contractor. When equipment is no longer required for Work, it must be removed promptly from the Site. Protection of construction materials and equipment stored at the Site from weather, theft, damage and all other adversity is solely the responsibility of the Contractor.

4.5.5 Contractor agrees all persons working on the Site must act at all times in the best interest of the Project and will comply with all applicable rules and regulations reasonably set forth by City related to the Site. Notwithstanding the foregoing or anything in this Agreement to the contrary, City may remove from the Site any individual who City deems in their reasonable discretion to be creating a disturbance or causing any problem on the Site.

4.5.6 Contractor will be responsible to City for the acts and omissions of Contractor's employees, Subcontractors and their agents and employees, and any other person performing any of the Work under an Agreement with Contractor, or claiming by, through or under Contractor, for all damages, losses, costs and expenses resulting from such acts or omissions.

4.5.7 City may conduct criminal, drive history, and all other requested background checks of Contractor and Subcontractor personnel performing Work or who have access to City's information, data, or facilities in accordance with City's current background check policies, or the provisions of the Project Specific Conditions. Any officer, employee or agent that fails to background check must be replaced immediately.

4.5.8 City will have a final authority, based upon security reasons: (i) to determine when

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security clearance of Contractor's and Subcontractor's personnel is required; (ii) to determine the nature of the security clearance, up to and including fingerprinting personnel; and (iii) to determine whether or not any individual or entity may provide Services or perform Work under the Agreement.

4.5.9 If City objects to any personnel for any reasonable cause, then Contractor must, upon notice from City, remove such individual from the Project.

4.6 **PROJECT SAFETY**

4.6.1 The Project and all Work performed in relation thereto is governed by applicable provisions of the federal laws, including but not limited to, the latest amendments of the following:

a. Williams-Steiger Occupational Safety & Health Act of 1970, Public Law, 91-596.

b. Part 1910 and Part 1926 – Occupational Safety and Health Standards, Chapter XVII of Title 29, Code of Federal Regulations.

c. Part 1518 – Safety and Health Regulations for Construction, Chapter XIII of Title 29, Code of Federal Regulations.

4.6.2 Contractor is responsible for safety of the job Site for employees of Contractor as well as for members of the general public and others who may drive or walk through or be at the Site.

4.6.3 Contractor recognizes the importance of performing the Work in a safe manner so as to prevent damage, injury or loss to: (i) all individuals at the Site, whether working or visiting; (ii) the Work, including materials and equipment incorporated into the Work and stored On-Site or Off-Site; and (iii) all other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction; and (iv) the owners or tenants of adjacent property and their patrons, employees and invitees.

4.6.4 Contractor assumes responsibility for implementing and monitoring all safety precautions and programs related to the performance of the Work.

4.6.5 Contractor must provide a "competent person' as required by O.S.H.A regulations. The "competent person" must be identified at the Pre-Construction Conference with City advised in writing of any changes.

4.6.6 The "competent person" must make routine daily inspections of the Site and must hold weekly safety meetings with Contractor's personnel, Subcontractors and others as applicable.

4.6.7 Contractor and Subcontractors must comply with all legal and regulatory requirements relating to safety, as well as any City specific safety requirements set forth in the Agreement Documents, provided that such City-specific requirements do not violate any applicable legal and regulatory requirements.

4.6.8 Contractor will immediately report in writing any safety-related injury, loss, damage or accident arising from the Work to Project Manager and, to the extent mandated by Legal Requirements, to all government or quasi-government authorities having jurisdiction over safety-related matters involving the Project or the Work.

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4.6.9 Contractor's responsibility for safety under this Section is not intended in any way to relieve Subcontractors and Sub-Subcontractors of their own contractual and legal obligations and responsibility for (i) complying with all Legal Requirements, including those related to health and safety matters, and (ii) taking all necessary measures to implement and monitor all safety precautions and programs to guard against injury, losses, damages or accidents resulting from their performance of the Work.

4.6.10 As between City and Contractor, Contractor is responsible to City for any and all the safety issues relating to the Work on the Project. Contractor must administer and manage the safety program. This will include, but not necessarily be limited to review of the safety programs of each Subcontractor. Contractor must monitor the establishment and execution of compliance with all applicable regulatory and advisory agency construction safety standards. Contractor's responsibility for review, monitoring, and coordination of the Subcontractor's safety programs will not extend to direct control over execution of the Subcontractors' safety programs. Notwithstanding Contractor's safety obligations to City, it is agreed and understood that each individual Subcontractor will remain controlling employer responsible for the safety programs and precautions applicable to its own work and the activities of other's work in areas designated to be controlled by such Subcontractor for purposes of workers compensation insurance coverage.

4.6.11 Nothing in this agreement will relieve Contractor of his responsibility to maintain traffic, structures, etc., as noted on the Plans, Specifications, and Project Specific Conditions. Contractor is responsible to provide all necessary shoring, bracing and trench support as is necessary to maintain traffic structures, etc., as stipulated in the Plans, Specifications, and Special Provisions. If the stability of adjoining building, walls, roadways, etc., is endangered by Contractor's excavation, shoring, bracing, or under pinning must be provided as necessary to ensure project safety. Cost for shoring, bracing, underpinnings, and trench support will be included in the appropriate items listed in the Agreement Price, and no additional payment will be made for this work.

4.7 MATERIALS QUALITY, SUBSTITUTIONS, AND SHOP DRAWINGS

4.7.1 Quality Control and Quality Assurance Testing.

4.7.1.1 All construction materials to be used or incorporated in the Project are subject to inspection, Quality Control & Quality Assurance Testing, and approval or rejection by City. Any material rejected by City must be removed immediately and replaced in an acceptable manner to City at no additional cost to City. When QC/QA tests indicate noncompliance with the Agreement Documents, retesting must be performed by the same testing laboratory that performed the tests that indicated noncompliance.

4.7.1.2 The Contractor must establish, provide, and maintain an effective Quality Control Testing Program (QCTP). The Contractor must develop his own program or procure the services of a consultant. In either case, the party performing the tests must be currently certified by the National Bureau of Standards in the National Voluntary Laboratory Accreditation Program (NVLAP) for construction services or the AASHTO Accreditation Plan (AAP) for Soils, Asphalt and Concrete. The Contractor must provide all support necessary to perform QC and QA testing and sampling (i.e. shoring for testing trench backfill, backhoes, motor graders, loaders, etc. to facilitate testing and sampling). The City will perform the QA testing.

4.7.1.3 The Contractor must submit a written QCTP to the City as a required submittal. The Contractor must not begin Work until the Quality Control Program has been reviewed and

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accepted by the City. Resumes of all personnel that will be associated directly or indirectly with the QCTP must be included.

4.7.1.4 The QCTP must include, but not be limited to, on-site/field and laboratory testing of all material delivered to the Site and any existing materials or conditions pertinent to the project.

4.7.1.5 All testing must be under the direction of a Professional Engineer registered in the State of Arizona, knowledgeable in Materials Testing. All "Test Report" forms must be stamped by said Engineer.

4.7.1.6 The written QCTP will set forth the responsibilities of the engineer, project manager, supervisory personnel and each technician assigned to this project. Substitutions or replacement of personnel must require prior written approval by the City. All personnel must be proficient within their assigned duties and possess certification(s) commensurate with their position and responsibilities. The minimum certification(s) for each technician must be NICET Level II, Arizona Technical Testing Institute, American Concrete Institute, or other nationally recognized program applicable to the project and approved by the City of Chandler. The written QCTP must include a description of the required field and construction materials laboratory tests, including required frequencies that meet the minimums established herein.

4.7.1.7 The Contractor must establish a system to record and report all material test results. The daily test reports must include, but not be limited to:

a. Test designation;
b. Date of test;
c. Name of tester;
d. Location of test/sample (station and offset);
e. Product suppliers and product codes (as applicable);
f. Depth/elevation of test/sample;
g. Test result;
h. Control requirement(s);
i. Cause of rejection (if applicable);
j. Results of retests (if applicable); and
k. Remedial action (if applicable).

4.7.1.8 The Contractor must submit test results to the designated City representative.

4.7.1.9 The Contractor must also submit a weekly report to the City summarizing the testing and construction activities completed by emailing the report to the email addresses noted above. All weekly reports must be submitted simultaneously to the Contractor and the City of Chandler. The report must include individual summary sheets for each utility line, structure, and portion of the pavement section. Cores must be numbered sequentially throughout the Project. Re-cores must reference the original core by number and must contain the averaged values for thickness and density. Total pavement thickness must be reported**.** Vertical location of tests for underground utilities must indicate the depth of the

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excavation at the location of the test (i.e., cut to flow line [if applicable], depth to bottom or top of pipe, etc.). Density tests must be numbered sequentially. If the minimum number of tests has not been performed per the written QCTP, this must be stated in the weekly summary report with an explanation of the circumstances.

4.7.1.10 The City will maintain a copy of the Project test results and weekly reports in the Project file. In cases where quality control activities do not comply with the Agreement provisions, the City may:

a. Order the Contractor to replace ineffective or unqualified quality control personnel.

b. Order the Contractor to stop operations until appropriate corrective action is taken.

4.7.1.11 Although minimum testing requirements are specified herein, the Contractor bears full responsibility for the quality of the materials and their installation and may elect to perform additional testing beyond the requirements set forth herein to ensure compliance.

4.7.1.12 The Quality Control requirements contained in this Section are in addition to and separate from Quality Assurance Testing, which will be performed by the City of Chandler or its representative. If the Quality Assurance test results are not in agreement with the Quality Control test results, the Contractor will have the option to retain a third party consultant for referee tests. The third party consultant must meet the same requirements as the consultant performing the Quality Control Testing. The results of the third party will be binding. All cost incurred by the referee testing will be the Contractor's expense. If the Contractor elects not to retain a third party for referee testing, the City of Chandler test results will prevail.

4.7.1.13 Except as otherwise noted within this Section, Work or materials required by this Section are non- pay items. Per MAG Section 101, a non-pay item is an item of Work for which no separate payment will be made, the cost of which is to be included as an incidental cost for associated item(s) included on the Bid Schedule or Schedule of Values.

4.7.2 Trade Names and Substitutions.

4.7.2.1 Substitutions prior to bid will only be considered if in compliance with Arizona Revised Statute § 34-104.

4.7.2.2 Contractor, if requested by City, must submit Samples or any additional information that may be necessary to evaluate the acceptability of the substitution.

4.7.2.3 City will make the final decision and will notify Contractor in writing as to whether the substitution has been accepted or rejected.

4.7.2.4 If City does not respond within 15 working days, Contractor must continue to perform the Work in accordance with the Agreement Documents and the substitution will be considered rejected.

4.7.3 Shop Drawings.

4.7.3.1 Contractor must prepare and submit Shop Drawings which show details of all Work to insure proper installation of the Work using those materials and equipment specified under the approved Plans and Specifications.

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4.7.3.2 Contractor must submit a schedule of Shop Drawing submissions, which avoids bulk submissions to the extent reasonably possible, with the Project Schedule for City approval. The schedule of Shop Drawing submissions must include all of the items for which Shop Drawings are required by the Agreement Documents, including the Specifications. Unless otherwise noted, Shop Drawings will not be required for items specified or detailed in the Uniform Standard Specifications and Details or the Technical Specifications.

4.7.3.3 Shop Drawings must be numbered consecutively for each Specification section and must accurately and distinctly present the following:

a. All working and erection dimensions.

b. Arrangements and sectional views.

c. Necessary details, including complete information for making connections between work under this Agreement and work under other Agreements.

d. Kinds of materials and finishes.

e. Parts list and description thereof.

4.7.3.4 Each Drawing or page must include:

a. Project Name, City of Chandler Project Number and descriptions.

b. Submittal date and space for revision dates.

c. Identification of equipment, product or material.

d. Name of Contractor and Subcontractor.

e. Name of Supplier and Manufacturer.

f. Relation to adjacent structure of material.

g. Physical dimensions clearly identified.

h. ASTM and Federal Specifications references.

i. Identification of and justification for deviations from the Agreement Documents.

j. Contractor's stamp, initialed or signed, dated and certifying the review of submittal, certification of field measurements and compliance with Agreement.

k. Location at which the equipment or materials are to be installed.

4.7.3.5 Location will mean both physical location and location relative to other connected or attached material. City will return unchecked any submittal, which does not contain complete data on the Work and full information on related matters.

4.7.3.6 Stock or standard drawings will not be accepted for review unless full identification and supplementary information is shown thereon in ink or typewritten form.

4.7.3.7 Contractor must schedule, prepare and submit all Shop Drawings in accordance with a time-table that will allow its suppliers and manufacturers sufficient time to fabricate, manufacture, inspect, test and deliver their respective products to the project Site in a timely manner so as to not delay the complete performance of the Work.

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4.7.3.8 If the Shop Drawings show departures from the Agreement requirements, Contractor must make specific mention thereof in the Letter of Transmittal; otherwise review of such submittals by City will not constitute review of the departure. Review of the Drawings will constitute review of the specific subject matter for which the Drawings were submitted and not of any other structure, material, equipment, or apparatus shown on the Drawings.

4.7.3.9 The review of Shop Drawings will be general and will not relieve Contractor of responsibility for the accuracy of such Drawings, nor for the proper fitting and construction of the Work, nor for the furnishing of materials or Work required by the Agreement. No construction called for by Shop Drawings will be initiated until such Drawings have been reviewed and approved by City.

4.7.3.10 The procedure in seeking review of the Shop Drawings will be as follows:

a. Contractor must submit complete sets of Shop Drawings and other descriptive data as specified in this Section.

b. After Contractor's submittal or resubmittal of Shop Drawings, if Contractor has submitted Shop Drawings in accordance with the City-approved submittal schedule, or upon resubmission, City will be provided with three (3) calendar weeks for review. Should City require additional review time above and beyond the three (3) calendar weeks, Contractor may ask for a time extension or monetary compensation, if they can present valid, factual evidence that actual damages were incurred by Contractor. City will determine the amount of the time extension or the monetary compensation to be awarded Contractor, if any, in accordance with City's Policy Statement for Calculating Delays and Damages, Appendix 1.

4.7.3.11 Contractor will be responsible for all extra costs incurred by City caused by Contractor's failure to comply with the procedure outline above.

4.7.4 Long Lead Time Items. Contractor must submit Shop Drawings, as required by the Engineer, on all long lead items to be furnished and installed as part of the project within 10 Days after the date of the executed Agreement letter issued by City. In addition, Contractor must order all long lead items to be furnished and installed as part of this Project within 3 Days after receiving approved Shop Drawings. For all long lead times for which Shop Drawings are not required, Contractor must order said long lead items within 15 Days after the date of the executed Agreement letter issued by City. Within 2 Days after ordering long lead items, Contractor must supply copies of all purchase orders, along with an accurate delivery schedule from the supplier.

4.7.5 Construction Water. If Contractor uses water from City's water system for construction water, Contractor must obtain a fire hydrant meter from City of Chandler Utility Services (480-782-2280) and all construction water must be obtained through the hydrant meter. Contractor must pay all fees related to the hydrant meter and all water bills for construction water. All cost for meters and construction water will be included in the Agreement Price.

4.8 PROJECT RECORD DOCUMENTS

4.8.1 During the construction period, Contractor must maintain at the jobsite a full-size set of prints of the Construction Document Drawings and Shop Drawings for Project Record Document purposes.

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4.8.2 Contractor must mark these Drawings to indicate the actual installation where the installation varies from the original Construction Documents. Contractor must give particular attention to information on elements that will be concealed, which would be difficult to identify or measure and record later. Items required to be marked include but are not limited to:

a. Dimensional changes to the Drawings.

b. Revisions to details shown on Drawings.

c. Locations and depths of underground utilities.

d. Revisions to routing of piping and conduits.

e. Actual equipment locations.

f. Changes made by Change Order or Addendum.

g. Details not on original Agreement Drawings.

4.8.3 Contractor must mark completely and accurately Project Record Drawing sets of Construction Documents.

4.8.4 Contractor must mark Project Record Drawings sets with red erasable colored pencil.

4.8.5 Contractor must note Request for Information (RFI) Numbers and Change Order numbers, etc., as required to identify the source of the change to the Construction Documents.

4.8.6 Contractor must submit Project Record Drawing sets and Shop Drawings to City or its representative for review and comment.

4.8.7 Upon receipt of the reviewed Project Record Drawings from City, Contractor must correct any deficiencies and omissions to the Drawings and submit the final original of the Project Record Drawings to City prior to Final Payment.

4.8.8 Project Manager will review the Project Record Drawings monthly prior to the date established for the Payment Request and will be the sole judge of acceptance of these Drawings.

4.9 WARRANTY AND CORRECTION OF DEFECTIVE WORK

4.9.1 Contractor warrants to City that the construction, including all materials and equipment furnished as part of the Work, will be new unless otherwise specified in the Agreement Documents, of good quality, and free of defects in materials and workmanship. Contractor's warranty obligation excludes defects caused by abuse, alterations, or unreasonable failure to maintain the construction by persons other than Contractor, subcontractors, or others under Contractor's control. Nothing in this warranty will limit any manufacturer's warranty which provides City with greater warranty rights than set forth herein or in the Agreement. Contractor will provide City with all manufacturers' warranties and operation and maintenance manuals upon substantial completion of the Work. Contractor's warranty must be for one (1) year, in accordance with MAG Specification § 108.8, and will commence for all portions of the Work upon Final Acceptance of the entire Work as determined by City under the Agreement. All statutory or other warranties, express or implied, related to latent defects will remain in force and are not limited by this provision.

4.9.2 City May Stop the Work. If the Work is defective, or Contractor fails to supply sufficient skilled workmen or suitable materials or equipment, City may order Contractor to stop the

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Work without cost to City, or any portion thereof, until the cause for such order has been eliminated; however, this right of City to stop the Work will not give rise to any duty on the part of City to exercise this right for the benefit of Contractor or any other party.

4.9.3 Correction or Removal of Defective Work.

4.9.3.1 If required by City, Contractor must promptly, without cost to City and as specified by City, either correct any defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by City, remove it from the Site and replace it with non-defective Work. Contractor must correct any Work which may be displaced in correcting, removing or replacing defective Work. No compensation will be allowed Contractor for such removal, replacement or remedial Work. Contractor must reimburse City for costs incurred by City due to such correction or removal including but not limited to additional expenses for inspection, testing or observation and for repeated reviews by the City or Design Professional.

4.9.3.2 Upon failure on the part of the Contractor to comply within a reasonably prompt time with any written order of City to correct or remove defective Work, City has authority to cause nonconforming materials or rejected Work to be remedied, removed, or replaced at the Contractor's expense and to deduct the costs from any moneys due or to become due the Contractor.

4.9.4 City May Correct Defective Work. If Contractor fails within a reasonable time after written notice of City to proceed to correct defective Work or to remove and replace rejected Work as required by City or if Contractor fails to perform the Work in accordance with the Agreement Documents (including any requirements of the progress schedule), City may, after 7 Days' written notice to Contractor, correct and remedy any such deficiency. To the extent necessary to complete corrective and remedial action, City may exclude Contractor from all or part of the Work, and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site and incorporate in the Work all materials and equipment stored at the Site or for which City has paid Contractor, but which are stored elsewhere. Contractor must allow City, city representatives, agents and employees such access to the Site as may be necessary to enable City to exercise City’s rights under this Section. All direct and indirect costs of City in exercising such rights will be charged against Contractor in an amount verified by City representative, and a Change Order will be issued incorporating the necessary revisions in the Agreement Documents and a reduction in the Agreement Price. Such direct and indirect costs will include, in particular but without limitation, compensation for additional professional services required and all costs of repair and replacement of Work or others destroyed or damaged by correction, removal or replacement of Contractor's defective Work. Contractor will not be allowed an extension of the Agreement Time because of any delay in Contractor’s performance of the Work attributable to the exercise by City or City's rights hereunder.

4.9.5 Correction or Removal of Unauthorized Work.

4.9.5.1 Any Work done beyond the lines and grades shown on the Drawings or established by the Design Professional or any changes in, additions to, or deductions from the Work done without written authority will be considered as unauthorized and will not be paid for. Work so done may be ordered remedied, removed, or replaced at the Contractor's expense.

4.9.5.2 Upon failure on the part of the Contractor to comply promptly with any order of the City,

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City will have authority to cause unauthorized Work to be remedied, removed, or replaced at the Contractor's expense and to deduct the costs from any moneys due or to become due the Contractor.

4.9.6 Correction Period - One Year Guarantee.

4.9.6.1 If, within one year after the date of Final Acceptance, or such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Agreement Documents, or by any specific provision of the Agreement Documents, any Work is found to be defective, Contractor must promptly, without cost to City and in accordance with City's written instructions, either correct such defective Work, or, if it has been rejected by City, remove it from the Site and replace it with non-defective Work. If Contractor does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, City may have the defective Work corrected or the rejected Work removed and replaced, and all direct and indirect costs of such removal and replacement, including compensation for additional professional services, must be paid by Contractor. Such action by the City will not relieve the Contractor of the guarantees required by this Section or elsewhere in the Agreement Documents.

4.9.6.2 If, in the opinion of the City, defective Work creates a dangerous condition or requires immediate correction or attention to prevent further loss to the City or to prevent interruption of operation of the City, the City will attempt to give the notice required by this Section. If the Contractor cannot be contacted or does not comply with the City's request for correction within a reasonable time as determined by the City, the City may, notwithstanding the provisions of this Section, proceed to make such correction or provide such attention; and the costs of such correction or attention will be charged against the Contractor. Such action by the City will not relieve the Contractor of the guarantees required by this Section or elsewhere in the Agreement Documents.

4.9.6.3 This Section does not in any way limit the guarantee on any items for which a longer guarantee is specified or on any items for which a manufacturer or supplier gives a guarantee for a longer period. The Contractor agrees to act as co-guarantor with such manufacturer or supplier and must furnish the City all appropriate guarantee or warranty certificates upon completion of the Project. No guarantee period, whether provided for in this Section or elsewhere, will in any way limit the liability of Contractor or their sureties or insurers under the indemnity or insurance provisions of these General Conditions and the Project Specific Special Conditions.

4.9.7 Acceptance of Defective Work.

4.9.7.1 If, instead of requiring correction or removal and replacement of defective Work, City may accept Work when in the best interest of the City to do so with appropriate monetary credit from Contractor. If any such acceptance occurs prior to final payment, a Change Order will be issued incorporating the necessary revisions in the Agreement Documents, including appropriate reduction in the Agreement Price; or, if the acceptance occurs after final payment, an appropriate amount must be paid by Contractor to City.

4.9.7.2 Alternatively, City may require Contractor to furnish at Contractor's expense, a special performance guarantee or other surety prior to acceptance of defective work.

4.9.8 The Warranty period begins on the Final Acceptance date noted in the Certificate of Completion, irrespective of early completion by some Subcontractors of their work.

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4.9.9 Contractor's warranty obligation must be in accordance with MAG Specifications.

4.9.10 Nothing in the warranties contained in the Agreement Documents are intended to limit any manufacturer's warranty which provides City with greater warranty rights than set forth in this Section or the Agreement Documents. Contractor must provide City with all manufacturers' warranties prior to Substantial Completion, if applicable, or Final Acceptance.

4.9.11 Contractor agrees that it will be responsible to manage and administer the correction of any Work that is not in conformance with the Agreement Documents during the warranty periods set forth in this Section, or during any longer periods to the extent required by the Agreement Documents. A progress payment, or partial or entire use or occupancy of the Project by City, will not constitute acceptance of Work not in accordance with the Agreement Documents.

4.9.12 When notified of a warranty issue, Contractor must respond in writing within 48-hours and must perform warranty Work as soon as material for said repairs are available (as judged solely by City), and in any event Contractor must, take immediate steps to commence and complete correction of nonconforming Work no later than the time period set forth in City's written notification in accordance with the Agreement Documents. This includes the correction, removal or replacement of the nonconforming Work and any damage caused to other parts of the Work affected by the nonconforming Work. If defects develop which are determined by City to be an emergency, City will notify Contractor, via the most expeditious means regarding the nature and condition of the defects. In turn, Contractor must immediately dispatch necessary forces to correct the defect or the emergency condition in accordance with Agreement Documents.

4.9.13 The time periods referenced in this Section apply only to Contractor's obligation to correct nonconforming Work and is not intended to constitute a period of limitations for any other rights or remedies that City may have regarding Contractor's other obligations under the Agreement Documents.

4.9.14 Without limiting the foregoing or anything in these General Conditions or the Agreement to the contrary, Contractor must obtain and provide to City all warranties for any portion of the Project offered by the manufacturer, installer or provider thereof. City and the user of the facility will have the right to the full value and benefit of all such warranties. Contractor must ensure all such warranties are fully transferrable to facilitate the full value of this Section.

4.9.15 Contractor's warranty excludes damages or defects caused by abuse, alterations to the Work not executed by or through Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage.

4.9.16 In the event of any noncompliance with this entire Section 4, City may require Contractor to stop or suspend the Work in whole or in part.

SECTION 5 - CITY RESPONSIBILITIES

5.1 CITY PROJECT MANAGER AND INSPECTORS

5.1.1 Project Manager is responsible for providing City-supplied information and approvals in a timely manner to assist Contractor to fulfill its obligations under the Agreement Documents.

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5.1.2 Project Manager will also provide Contractor with prompt notice when it observes any failure on the part of Contractor to fulfill its contractual obligations, including any default or defect in the Project or non-conformance with the Drawings and Specifications.

5.1.3 City may utilize Field Inspectors to assist Project Manager during construction in observing performance of Contractor. City's use of Inspectors is for the purpose of assisting Project Manager.

5.1.4 The Inspectors are authorized to inspect all Work and materials furnished. Such inspections may extend to all or part of the Work and to preparation, fabrication or manufacture of the materials to be used. The Inspectors have the authority to issue instructions contrary to the Construction Documents if approved and coordinated with the directions of Project Manager.

5.1.5 The Inspectors have the authority to reject work or materials until any questions at issue can be decided by Project Manager.

5.1.6 The use of Inspectors by City will not make City responsible for or give City control over construction means, methods, techniques, sequences or procedures or for safety precautions or programs or responsibility for Contractor's failure to perform the Work in accordance with Agreement Documents. The Inspectors are not authorized to direct any of Contractor's activities, employees or Subcontractors.

5.2 **DESIGN PROFESSIONAL SERVICES**

City may contract separately with one or more Design Professionals to provide construction administration of the Project. The Design Professional's Agreement, as well as other firms hired by City may be furnished to Contractor. Contractor does not have the right to limit or restrict or reject any Agreement modifications that are mutually acceptable to City and Design Professional.

5.3 **CITY'S SEPARATE CONTRACTORS**

City is responsible for all work performed on the Project or at the Site by separate contractors retained by City. City will contractually require its separate contractors to reasonably cooperate with, and reasonably coordinate their activities so as not to interfere with Contractor in order to enable Contractor to timely complete the Work consistent with the Agreement Documents. Contractor must immediately notify the Project manager, and address the matter in the next monthly status report, if any activities of such separate contractors are expected to interfere, or are interfering, with Contractor and such interference will or could result in any delay in Contractor's performance of the Work.

5.4 **PERMIT REVIEW AND INSPECTIONS**

5.4.1 If requested by Contractor, Project Manager will provide assistance and guidance in obtaining necessary reviews, permits and inspections.

5.4.2 The regulating agencies of City, such as Development and Sustainability, Fire and Planning Departments, enforce legal requirements. The enforcement activities of City are independent and separate from this Agreement.

5.5 **PLANS AND SPECIFICATIONS TO THE CONTRACTOR**.

Contractor will be provided up to five copies of the Agreement Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished,

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upon request, at the cost of reproduction.

SECTION 6 - AGREEMENT TIME

6.1 AGREEMENT TIME

6.1.1 The Agreement Time will start with the Notice to Proceed ("NTP") and end with Final Acceptance.

6.1.2 Beginning on the date of the NTP, Contractor must begin to fulfill Contractor's obligations under the Agreement. Contractor's obligations include providing City and other agencies with any submittals required by the Project Specific Special Provisions, including but not limited to, an approved Project Schedule, Traffic Control Plans, and a Stormwater Pollution Prevention Plan. Contractor must submit all such required submittals before any physical construction work commences on the Site. NTP does not authorize construction work until all agreement insurance, bonds, and schedules are submitted to and accepted by the City.

6.1.3 The Agreement Time will be as set forth in the Project Schedule. Contractor agrees that it will commence performance of the Work and complete the Project through both Substantial Completion and Final Acceptance within the Agreement Time.

6.1.4 Time is of the essence of this Agreement, for the Project, for the Work, and for each phase and designated Milestone thereof.

6.1.5 Failure of Contractor to perform any covenant or condition contained in the Agreement Documents within the time periods specified herein, will constitute a material breach of this Agreement entitling City to terminate the Agreement unless Contractor applies for and receives an extension of time, in accordance with the procedures set forth in the Agreement Documents.

6.1.6 Failure of City to insist upon the performance of any covenant or condition within the time periods specified herein, will not constitute a waiver of Contractor's duty to perform every other covenant or condition within the designated periods, unless a specific waiver is granted in writing for each such covenant or condition.

6.1.7 City's agreement to waive a specific time provision or to extend the time for performance will not constitute a waiver of any other time provisions contained in the Agreement Documents. Failure of Contractor to complete performance promptly within the additional time authorized in the waiver or extension of time agreement constitutes a material breach of this Agreement entitling City to all the remedies set forth herein or provided by law.

6.2 PROJECT SCHEDULE

6.2.1 The Project Schedule must be in Microsoft Project standard file format, must be updated and maintained throughout the Agreement Time, and must contain the following:

6.2.1.1 Detailed representation of all activities for the project, both on-site construction and major procurement. All significant activities together with the resource loading requirements for each and all items appearing on the schedule of values or bid schedule for progress payments must be shown on the Project Schedule or in attached transmittal letter as described in Section 6.2.8.

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6.2.1.2 Dependencies between activities must be indicated so that it may establish as to the effect the progress of any one activity would have on other activities and on the Schedule.

6.2.1.3 Activities for submission, review, and approval of all required submittals.

6.2.1.4 An amount of time will be established prior to the final completion date for "punch list and cleanup". No other activities will be scheduled during this period. Punch list and cleanup must be shown on the Project Schedule and must be entirely completed prior to the expiration of the Agreement Time.

6.2.2 Within 10 Days of receipt of City's comments, Contractor must make all required corrections, adjustments, and additions to complete the Project Schedule and resubmit to City for review. City's review of and response to the Project Schedule is for the purpose of: (1) City planning and staffing for the Project as may be required from time to time; (2) ensuring Contractor's general conformance with the scheduling requirements of the Agreement Documents and completion of the Project within the Agreement Time; and (3) monitoring and evaluating the construction status for purposes of approving monthly progress payments. Acceptance of a submitted schedule by City should in no way be construed as an affirmation or admission that the schedule is reasonable or workable by Contractor. The responsibility for completing the Work on the Project within the Agreement Time remains the obligation of Contractor. City's review does not relieve Contractor from compliance with the requirements of the Agreement Documents or be construed as relieving Contractor of its complete and exclusive control over the means, methods, sequences and techniques for executing the work.

6.2.3 The Project Schedule must show milestones, including milestones for City-furnished information, and must include activities for City-furnished material and construction by other contractors when those activities are interrelated with Contractor activities.

6.2.4 The Project Schedule must be revised as required by conditions and progress of the Work, but such revisions do not relieve Contractor of its obligations to complete the Work within the Agreement Time, as adjusted in accordance with the Agreement Documents. No modification to the Agreement Documents or the Agreement Time will be effective unless approved in advance by City.

6.2.5 For all items of materials and equipment that are critical or may require long lead times to acquire, the Project Schedule must show dates for submission, review and approval of submittals, ordering, and delivery.

6.2.6 An updated Project Schedule must be submitted monthly to City as part of the Payment Request. The monthly submittal must include one full size plot of the entire schedule and one electronic copy containing the schedule in Microsoft Project standard file format. In addition, Contractor must, upon request by City, provide a copy of all submitted schedule data in electronic format which must be clearly labeled with the Project description, scheduling program name and version number, and schedule print/data date.

6.2.7 Contractor must provide City with a monthly status report with each Project Schedule detailing the progress of the Work, including: (i) if the Work is proceeding according to schedule, (ii) any discrepancies, conflicts, or ambiguities found to exist in the Agreement Documents that require resolution, and (iii) other information detailing items that require resolution so as not to jeopardize the ability to complete the Work in the Agreement Time.

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6.2.8 With each Project Schedule submittal, Contractor must include a transmittal letter including the following:

a. Description of problem tasks, referenced to field instructions or requests for information (RFI's), as appropriate.

b. Current and anticipated delays including:

(i) Cause of the delay.

(ii) Corrective action and schedule adjustments to correct the delay.

(iii) Known or potential impacts and their delay on other activities, milestones, and their impact on the Substantial Completion and Final Acceptance dates.

(iv) Changes in construction sequence.

c. Pending items and status thereof including but not limited to:

(i) Time Extension requests;

(ii) Substantial Completion date status;

(iii) Final Acceptance date status.

d. If ahead of schedule, the number of calendar Days ahead.

e. If behind schedule, the number of calendar Days behind.

f. Other Project or scheduling concerns.

6.2.9 Critical Path Method (CPM).

6.2.9.1 Unless otherwise specified in the Agreement, the Project Schedule must include a Critical Path Method (CPM) diagram schedule showing the sequence of activities, the interdependence of each activity and identifies the Critical Path.

6.2.9.2 The CPM diagram schedule must be in calendar Days and indicate duration, earliest and latest start and finish dates for all activities, and total Float Times for all activities except critical activities. The CPM diagram must be presented in a time scaled graphical format for the Project as a whole.

6.2.9.3 The CPM diagram schedule must indicate all relationships between activities.

6.2.9.4 The activities making the Project Schedule must contain sufficient detail to assure that adequate planning has been done for proper execution of the Work and such that it provides an appropriate basis for monitoring and evaluation the progress of the Work. Individual activities must not exceed 30 Days in length, in most cases.

6.2.9.5 The CPM diagram schedule must be based upon activities, which coincide with the Schedule of Values.

6.2.9.6 The CPM diagram schedule must show all submittals associated with each work activity and the review time for each submittal.

6.2.10 Float Time.

6.2.10.1 The total Float Time within the overall schedule is for the exclusive use of City, but City may approve Contractor's use of Float as needed to meet Agreement Milestones and

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the Project completion date.

6.2.10.2 Contractor will not be allowed to sequence, hide, or reallocate Float Time through such strategies, as extending activity duration estimates to consume available Float, using preferential logic, or using extensive crew/resource sequencing, tec. No time extensions will be granted nor delay damages paid until a delay occurs which extends the Work beyond the Agreement Time.

6.2.11 City-Caused Delays. City-caused delays on the Project, if any, may be offset by City-caused time savings (i.e., Critical Path submittals returned in less time than allowed by the Agreement, approval of substitution requests and credit changes which result in savings of time to Contractor, etc.) In such an event, Contractor will not be entitled to receive a time extension or delay damages until all City-caused time savings are exceeded and the Agreement Time is also exceeded.

6.2.12 Rain-Related Delays. Contractor is required, in preparing the Project Schedule to take into account all relevant weather conditions, including normal rainfall and distribution. No additional compensation will be given for any rain-related delays or impacts on the Work or the Project Schedule. No time extension will be granted in the Project Schedule unless the rainfall during the construction of Work is unusually severe, was not reasonably anticipated, and the total rainfall was significantly in excess of the normal rainfall for the Project Site location. Normal rainfall for the Project will be determined from the 10-year average rainfall for the Site as measured by the National Oceanic and Atmospheric Administration or comparable source of reliable information for rainfall in Chandler, Arizona. In addition, the excessive rainfall must have actually impacted Work activities on the Critical Path and caused delay beyond any remaining Float at the time of the rain- caused delay. The burden of documenting normal rainfall, the excessive rainfall and the impact on Critical Path activities is on Contractor. All other provisions in the Agreement Documents relating to claims, including without limitation notice requirements, apply to any claim by Contractor for a rain delay.

6.2.13 City's "Policy Statement for Calculating Delays and Damages," Appendix 1 to these General Conditions, will apply to all claims of delay and delay damages.

6.2.14 Force Majeure. If Contractor is delayed or prevented from the performance of any Work required under this Agreement by reason of acts of God or other causes beyond the control and without fault of Contractor (financial inability excepted), performance of that Work will be excused, but only for the period of the delay. The time for performance of the Work will be extended for a period equivalent to the period of delay. In addition, the parties agree if Contractor's delayed or suspended performance directly arises out of or directly results from the COVID-19 pandemic, Contractor's delayed or suspended performance may be excused as set forth in this clause. Provided, however; Contractor must give the City written notice within 30 days of the occurrence of the event giving rise to COVID-19 pandemic related delayed or suspended performance. For COVID-19 pandemic related delay or suspended performance, the parties must agree in writing to the length of the excused delay or suspended performance. Further, Contractor must obtain the City's written approval to use any allowance established as part of the project for delays and costs related to the COVID-19 pandemic.

6.3 SUBSTANTIAL COMPLETION

6.3.1 When Contractor considers that the Work, phase or a portion thereof, which City agrees in

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writing to accept separately, is substantially complete, City will prepare and submit to Contractor a comprehensive Punch List of items to be completed or corrected prior to Final Acceptance and Final Payment. Failure to include an item on such Punch List does not alter the responsibility of Contractor to complete all Work in accordance with the Agreement Documents.

6.3.2 Upon receipt of Contractor's Punch List, Project Manager will make an inspection to determine whether the Work or designated portion thereof is substantially complete. Project Manager may, at Project Manager's sole option, be assisted in such inspection by the Design Professional for the Project. If the inspection by the Project Manager discloses any item, whether or not included on Contractor's Punch List, which is not sufficiently completed in accordance with the Agreement Documents so that City can occupy or utilize the Work, phase or designated portion thereof for its intended use, Contractor must, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by Project Manager. In such case, Contractor must then submit a request for another inspection by Project Manager to determine Substantial Completion.

6.3.3 Certificate of Substantial Completion.

6.3.3.1 The Project Manager will not issue a Certificate of Substantial Completion unless and until the Work (or separable units or Phases as provided in the Agreement Documents) is essentially and satisfactorily complete in accordance with the Agreement Documents, such that the Project is ready for use by City for its intended purpose, opening to the general public, full occupancy or use by City (including, without limitation, all separate units, or rooms, facilities, access, income-generating areas, and all areas serving the general public, as applicable, must be ready for full-operation without material inconvenience or discomfort), including, to the extent applicable to the Work, the following: all materials, equipment, systems, controls, features, facilities, accessories and similar elements are installed in the proper manner and in operating condition, inspected and approved; surfaces have been painted; masonry and concrete cleaned with any sealer or other finish applied; utilities and systems connected and functioning; site work complete; permanent heating, ventilation, air condition, vertical transportation and other systems properly operating with proper controls; lighting and electrical systems installed, operable and controlled; paving completed, signage installed, and other Work as applicable, has been performed to a similar state of essential and satisfactory completion. A minor amount of Work, as determined by and at the discretion of the Project Manager, such as installation of minor accessories or items, a minor amount of painting, minor replacement of defective work, minor adjustment of controls or sound systems, or completion or correction of minor exterior work that cannot be completed as a result of weather conditions, will not delay determination of Substantial Completion. If prior written approval is obtained from City for purposes of Substantial Completion, specified areas of the entire Work or Project may be individually certified as Substantially Complete. In no event will Substantial Completion be deemed to have occurred unless and until: (i) a temporary certificate of occupancy has been issued by the appropriate Governmental Authorities (as applicable) and (ii) all terms and Work required under this Agreement have been fulfilled by Contractor and same will have also been approved and accepted by City, subject only to the Punch List items.

6.3.3.2 If requested by City, Contractor must complete and turn-over to City the Project on a phased basis. Each phase will have a separate inspection by the Project Manager, a Punch List generated, and then an inspection by City with final approval and acceptance only after the

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Project Manager's Punch List.

6.4 **PARTIAL UTILIZATION**

6.4.1 City at City's option may use and occupy any substantially completed parts of the Work which has specifically been identified in the Agreement Documents, or which City, the Design Professional and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by City for its intended purpose, without significant interference with Contractor's performance of the remainder of the Work, provided, however, if the portion of the Work to be used or occupied has not been found to be substantially complete, City must do so in accordance with Section 6.3 prior to such occupancy.

6.4.2 In lieu of the issuance of a Certificate of Substantial Completion as to part of the Work, City may take over operation of a facility constituting part of the Work whether or not it is substantially complete if such facility is functionally and separately usable; provided that prior to any such takeover, City and Contractor agree in writing as to the division of responsibilities between City and Contractor for security, operation, safety, maintenance, correction period, heat, utilities and insurance with respect to such facility.

6.4.3 Substantial Completion of or City's beneficial occupancy of a part of the Project will not alter the fact that the one-year warranty for the whole Project starts at the date of Final Completion of the whole Project.

6.5 **FINAL ACCEPTANCE**

6.5.1 Unless otherwise expressly agreed to in writing by City, Final Acceptance must be obtained by no later than 30 Days (60 Days for federally funded agreements) after the date of Substantial Completion. Failure to timely obtain Final Acceptance will be a material breach of the Agreement.

6.5.2 Upon receipt of written notice that the Work is ready for final inspection and acceptance, City and Contractor will jointly inspect to verify that the remaining items of Work have been completed. There will be no partial acceptance. Final Acceptance will not occur until all items of Work, including Punch List Items, have been completed to City's satisfaction as reflected in the written Final Acceptance.

6.5.3 Final Payment will not be due, owing, or paid by City until Final Acceptance is issued.

6.5.4 Landscape Establishment Period. Unless otherwise expressly agreed to in writing by City, the Landscape Establishment Period will begin on the date of Final Acceptance of the Project and will run 90 Calendar Days thereafter. Landscape Establishment Period requirements are detailed in General Conditions Appendices, attached herein.

6.6 **CONTINUATION OF WORK**

6.6.1 Permitting Contractor to continue and finish the Work or any part of it after the time fixed for its completion (whether milestone, phase, Substantial Completion or Final Acceptance) or after the date to which the time fixed for any completion may have been extended, does not operate as a waiver by City of any rights under the Agreement Documents, law or equity.

6.6.2 Furthermore, the timely completion of the Work being of the utmost importance under this Agreement, notwithstanding the existence of one or more disputes between the parties

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concerning the scope of the Work, the Project Schedule, Agreement Time, payments or any other matter, and further notwithstanding a party's invocation of the Dispute Resolution provisions specified in Appendix 6 of these General Conditions, unless City suspends the Agreement or Contractor's performance pursuant to Section 10 of these General Conditions, Contractor will continue to prosecute the Work, including any Change Order work or Extra Work Orders, in a diligent and timely manner and not stop, slow down or impede by action or inaction the progress of the Work, including commencing performance of and thereafter completing any additional work called out in any Change Order or Extra Work Order issued by Project Manager with the approval of City, so long as City makes payment to Contractor in accordance with Section 8 of these General Conditions.

SECTION 7 - AGREEMENT PRICE

7.1 UNIT PRICE AGREEMENTS

7.1.1 The Agreement Price for all Unit Price Agreements will be the amount set forth in the Agreement or Change Order multiplied by the verified quantity provided.

7.1.2 Measurements of quantities to determine the total Agreement Price must be in accordance with MAG Specification §§ 109.1 and 109.2.

7.1.3 The Unit Price may only be changed as set forth in Section 9 below.

7.2 CHANGE ORDERS

7.2.1 Unit Price Change Orders. The Change Order Price for all Unit Price Change Orders will be the amount set forth in the Change Order multiplied by the verified quantity provided.

7.2.2 Measurements of quantities to determine the total Change Order Price must be in accordance with MAG Specifications §§ 109.1 and 109.2.

7.2.3 The Unit Price may only be changed as set forth in Section 9 below.

7.2.4 MAG Specification § 109.4.1 is modified as follows: Before § 109.4.1, the following is added: Any deduction or increase in the Agreement Price must be supported by a signed, written Change Order fully executed by City, and supported by such backup as the Project Manager may require.

7.3 SALES TAX

Contractor is required to pay all applicable sales tax in accordance with the law of the state of Arizona and this cost must be included in all Agreement Prices. When equipment, materials or supplies generally taxable to Contractor are eligible for a tax exemption due to the nature of the Project, Contractor must assist City in applying for and obtaining such tax credits and exemptions which will be paid or credited to City.

SECTION 8 - PAYMENT

8.1 PAYMENT FOR CONSTRUCTION SERVICES

8.1.1 Payment for the Work will be made in accordance with MAG Standard Specification § 109 as amended below.

8.1.2 Contractor must submit to City for review a completed Contractor Payment Request signed

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by Contractor, covering the Work completed as of the date of the Request and accompanied by such supporting documentation as is required by the Agreement Documents and also as City may reasonably require. A Contractor Payment Request will not be considered complete unless it is accompanied by an updated Project Schedule and a certification that the on-site, red lined, as built Drawings are up to date. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably, securely stored at the Site or at another location (such as a bonded warehouse) agreed to in writing, the Contractor Payment Request must also be accompanied by such data, satisfactory to City, as will establish City's title to the material and equipment and protect City's interest therein, including applicable insurance. Each subsequent Contractor Payment Request must include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied to discharge in full all of Contractor's obligations reflected in prior Contractor Payment Requests.

8.1.3 Except for Work performed under a JOC Agreement, the Contracting Agency will retain 10 percent of all estimates as a guarantee for complete performance of the Agreement in accordance with Arizona Revised Statutes Section 34-221 or 34-607. The Contractor may elect to deposit securities in lieu of retention in accordance with Arizona Revised Statutes Section 34-221, Paragraph C.5. or 34-607, Paragraph B.5.

8.1.4 The payment process functions as follows: Prior to the payment cycle date, Contractor must send a draft Contractor Payment Request to Project Manager. The Project Team will review the Request and agree upon any necessary adjustments. Contractor must certify the final Request by signing and returning to Project Manager.

8.1.5 When construction of the Project is fifty percent (50%) completed, Contractor may request payment of one-half of the retention pursuant to A.R.S. § 34-609(B)(3), subject to all of City’s rights to withhold or offset payments, and other rights of City, under the Agreement.

8.1.6 City reserves the right under A.R.S. § 34-609(B)(3) to reinstate the ten percent (10%) retention if City determines that satisfactory progress is not being made.

8.1.7 Contractor’s Warranty of Title.

8.1.7.1 Contractor warrants and guarantees that title to all Work, materials and equipment covered by any Contractor Payment Request, whether incorporated in the Project or not, will pass to City at the time of payment, free and clear of all liens, claims, security interests, and encumbrances, provided that this will not preclude the Contractor from installing metering devices or other equipment of utility companies or municipalities, the title of which is commonly retained by the utility company or municipality.

8.1.7.2 No materials, supplies, or equipment for the Work under this Agreement will be purchased subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest therein, or any part thereof, is retained by the seller or supplier.

8.1.7.3 Nothing contained in this Section will defeat or impair the right of such persons furnishing materials or labor under any bond given by the Contractor for their protection, or any right under any law permitting such persons to look to funds due the Contractor in the hands of the City. The provisions of this Section must be inserted in all subcontracts and material agreements, and notices of its provision must be given to all persons furnishing materials for the Work when no formal agreement is entered into for such materials.

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8.2 **PAYMENT UPON SUBSTANTIAL COMPLETION**

8.2.1 No payment will be made upon Substantial Completion, except for a regularly-scheduled monthly progress payment, as allowed by Section 8.2.2.

8.2.2 No further payments will be made to Contractor until Final Acceptance.

8.3 **FINAL PAYMENT**

8.3.1 Subject to all of City's rights to withhold or offset payment, and other rights under the Agreement, Final Payment including remaining retainage will be paid only after:

a. Work has been fully completed (including completion of all incorrect or incomplete work items) and the written Final Acceptance has been issued by City;

b. Necessary operating manuals, any excess materials and supplies necessary for matching materials and supplies incorporated into the Work, acceptable sewer video results (if applicable), and complete "as-built" Drawings (including the Building Information Model, if required by the Agreement Documents) have been delivered to City, as specified in this Section 8.3;

c. Full and unconditional lien waivers and releases by Contractor and any person performing labor or supplying material, machinery, fixtures, or tools for the Work have been delivered to Contractor;

d. All conditions and requirements imposed by City or any financing entity for the corresponding disbursement have been met; and

e. Contractor delivers to City a Contractor Payment Request requesting Final Payment.

8.3.2 Contractor must also submit a signed copy of Contractor's Affidavit Regarding Settlement of Claims, Appendix 3 to these General Conditions, and Certificate of Completion, Appendix 7 to these General Conditions, prior to Final Payment.

8.3.3 In addition, if required under the Project Specific Special Provisions, Contractor must compile a complete equipment list and maintenance manual to be submitted to City as a precondition to Final Payment. The list must include the following items for all equipment supplied under the Plumbing, Electrical, Air Conditioning, Elevator, and other Special Equipment Specifications:

a. Name, Model and Manufacturer.

b. Complete parts lists and Drawings.

c. Local source of supply for replacement parts along with suppliers' telephone numbers.

d. Local service organizations serving the equipment and their telephone numbers.

e. All tags, inspection slips, instruction packages, etc., removed from equipment must be properly identified as to pieces of equipment from which they were taken.

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8.3.4 Contractor must also deliver to City, prior to Final Payment, one (1) digital (in the format specified by City), and if requested by City, one (1) hard copy, of any applicable Maintenance manuals. Each manual must include all manufacturer's operation and maintenance instructions and "as-built" Drawings with the list herein specified. It must also include all other diagrams and instructions necessary to properly operate and maintain the equipment, the name, address and telephone number of Contractor and all Subcontractors involved.

8.4 **CITY'S RIGHT TO WITHHOLD PAYMENT**

City may withhold payment to such extent as may be necessary in City's opinion to protect City from loss for which Contractor is responsible, including, without limitation, if any of the following conditions exist:

a. Defective Work not remedied;

b. Third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to City is provided by Contractor;

c. Failure of Contractor to make payments properly to Subcontractors or for labor, materials or equipment;

d. Reasonable evidence that the Work cannot be completed for the unpaid balance of the Agreement Price;

e. Damage to City or another Contractor;

f. Reasonable evidence that the Work will not be completed within the Agreement Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;

g. Failure to carry out the Work in accordance with the Agreement Documents; or

h. Contractor is in default of any of its other obligations under the Agreement Documents.

8.5 **JOINT/DIRECT CHECKS**

To promote the timely completion and progress of the Work or when appropriate and necessary, payments to Contractor may be made jointly to Contractor and its employees, agents, Subcontractors and suppliers, or any of them. For federally funded agreements, see federal provisions for additional requirements for the joint check process.

8.6 **PAYMENT NOT A WAIVER**

No payment (nor use or occupancy of the Project by City) will be deemed acceptance or approval of the Work or as a waiver of any claims, rights, or remedies of City.

8.7 **LIENS AND BOND CLAIMS**

Contractor must make all payments, in the time required, of all labor and materials furnished to Contractor in the course of the Work and must promptly furnish evidence of such payments as City may require. Contractor must pay when due all claims arising out of performance of the Work covered by this Agreement for which a lien may be filed either against the real estate or leasehold interest of City, or against payments due from City to Contractor, or for which a claim may be made against any payment or performance bond or both. To the fullest extent permitted by law, Contractor agrees that no liens or other claims in the nature of a lien against the real estate, leasehold, or other interest of City,

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against payment due from City to Contractor, or against any payment or performance bond, must be filed or made in connection with the Work by any party who has supplied professional services, labor, materials, machinery, fixtures, tools, or equipment used in or in connection with the performance of this Agreement, and Contractor agrees to remove or to cause to be removed any such liens or claims in the nature of a lien or bond claim within 10 Days upon receiving notice or obtaining actual knowledge of the existence of such liens or claim. In addition, Contractor agrees to defend, indemnify, and hold harmless City from and against any and all such liens and claims. This paragraph does not apply to claims and liens of Contractor due to non-payment for work performed.

8.8 **FINANCIAL RECORDKEEPING AND CITY'S AUDIT RIGHT**

8.8.1 Records for all Agreements between City and Contractor must, upon reasonable notice, be open to inspection and subject to audit, scanning, and reproduction during normal business working hours. Such audits may be performed by any City's representative or any outside representative engaged by City for the purpose of examining such records. City or its designee may conduct such audits or inspections throughout the term of this Agreement and for a period of five years after Final Payment or longer if required by law. City's representatives may (without limitation) conduct verifications such as counting employees at the Site, witnessing the distribution of payroll, verifying information and amounts through interviews and written confirmations with Contractor employees, field and agency labor, Subcontractors, and vendors.

8.8.2 Contractor's "records" must include any and all information, materials and data of every kind and character, including without limitation, records, books, papers, documents, subscriptions, recordings, agreements, purchase orders, leases, contracts, commitments, arrangements, notes daily diaries, superintendent reports, drawings, receipts, vouchers and memoranda, and any and all other agreements, sources of information and matters that may in City's judgment have any bearing on or pertain to any matters, rights, duties or obligations under or covered by any Agreement Document. Such records must include (hard copy, as well as computer readable data if it can be made available), written policies and procedures; time sheets; payroll registers; payroll records; cancelled payroll checks; subcontract files (including proposals of successful and unsuccessful bidders, bid recaps, negotiation notes, etc.); original bid estimates; estimating work sheets; correspondence; Change Order files (including documentation covering negotiated settlements); back-charge logs and supporting documentation; invoices and related payment documentation; general ledger, information detailing cash and trade discounts earned, insurance rebates and dividends; and any other Contractor records which may have a bearing on matters of interest to City or the Project in connection with Contractor's dealings with City or the Project (all foregoing hereinafter referred to as "records") to the extent necessary to adequately permit evaluation and verification of any or all of the following:

a. Compliance with Agreement requirements for deliverables;

b. Compliance with approved Plans and Specifications;

c. Compliance with § 14.9 below;

d. Compliance with Agreement provisions regarding the pricing of Change Orders;

e. Accuracy of Contractor representations regarding the pricing of invoices; or

f. Accuracy of Contractor representations related to claims submitted by

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Contractor or any of their employees.

8.8.3 Contractor must require all payees (examples of payees include Subcontractors, Suppliers, Insurance Carriers, etc.) to comply with the provisions of this Section by including the requirements hereof in a written agreement between Contractor and payee. Contractor will ensure that all payees (including those entering into lump sum agreements) have the same right to audit provisions contained in this Agreement included in their agreements with Contractor.

8.8.4 City's authorized representative(s) (including, without limitation, Project Manager) must have reasonable access to Contractor's facilities, must be allowed to interview all current or former employees to discuss matters pertinent to the performance of this Agreement and must be provided adequate and appropriate work space, in order to conduct audits in compliance with this Section.

8.8.5 If an audit inspection or examination in accordance with this Section, discloses overpricing or overcharges to City (of any nature) by Contractor or Contractor's Subcontractors in excess of $100,000 in addition to making adjustments for the overcharges, the reasonable actual cost of City's audit must be reimbursed to City by Contractor. Any adjustments or payments which must be made as a result of any such audit or inspection of Contractor's invoices or records must be made within a reasonable amount of time (not to exceed 90 Days) from presentation of City's findings to Contractor.

8.8.6 In addition to the normal paperwork documentation Contractor typically furnishes to City, Contractor agrees to furnish, upon written request from City, any of the documentation necessary for City to exercise its audit rights under this Section 8.8 in computer readable file formats (Word, Excel, or .pdf), as City may designate.

8.8.7 City, its authorized representative, and the appropriate agency, reserve the right to audit Contractor's records in compliance with local, state or federal policies, statutes or at City's discretion, within three (3) years of Final Acceptance of the Work.

SECTION 9 - CHANGES TO THE AGREEMENT

9.1 **FIELD ORDERS**

City may authorize minor changes in the Work not involving an adjustment in the Agreement Price or the Agreement Times, which are consistent with the overall intent of the Agreement Documents. These may be accomplished by a written Field Order on the standard form approved and executed by City. Such Field Orders must be binding and Contractor must perform the change promptly. If Contractor believes that a Field Order justifies an increase in the Agreement Price or Agreement Time, Contractor may make a claim therefor as provided in Section 7.2.

9.2 **EXTRA WORK/CHANGES IN THE WORK**

9.2.1 City reserves the right to make such changes in the Plans and Specifications for the Work, as it may deem appropriate and any such change as set forth in a written Change Order must be deemed a part of this Agreement as if originally incorporated herein.

9.2.2 In the event City and Contractor cannot agree on the terms of a Change Order, or when circumstances otherwise require, the Project Manager has the authority to direct the Contractor to perform extra work, if the work in question is an item not provided for in the

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Agreement as awarded. The Project Manager will have the authority to determine, based upon factual evidence presented by the Contractor, whether the work in question is an item not provided for in the Agreement as awarded. If the Project Manager directs the Contractor to perform extra work, the Project Manager's instructions will include a price that the Contractor cannot exceed in charging the City for the extra work. Upon receipt of the Project Manager's directions to perform extra work, the Contractor must promptly proceed with the extra work and document the actual cost thereof. Contractor's right to payment for extra work will be determined under Subsection 9.2.4 below. The Contractor is responsible to manage the extra work to ensure that the price limits set by the Project Manager are not exceeded. Contractor must perform the extra work and submit documentation for the actual cost of the extra work to the City. A Change Order will be issued to cover this work.

9.2.3 Contractor will not be entitled to payment for extra work unless a written Change Order, in form and content prescribed by City, has been executed by City. On all requests for Change Orders, Contractor must specify the increased or decreased costs and whether it believes any extensions of time will be necessary to complete its Work as modified by the Change Order. If extra work is performed under Subsection 9.2.2 above, a corresponding Change Order will be prepared, approved and processed by City before payment can be made to Contractor.

9.2.4 In general, pricing for Change Orders will include the same mark-up percentages that were in effect when the Agreement was awarded. The cost or credit to the City resulting from a change in the Work is subject to Appendix 1 (Policy Statement for Calculating Delays and Damages) and will be determined, based on the type of pricing for the Agreement involved, as follows:

a. By mutual acceptance of a lump sum properly itemized in a form acceptable to City;

b. By unit prices stated in the Agreement Documents;

c. When the City determines that a Unit Price Book Job Order associated with a Job Order Agreement requires a Change Order, by using the same Total Cost Data and CCI that are in effect when the Change Order is anticipated to be issued; or

d. By actual cost and a percentage fee covering overhead and profit, as follows:

(i) Contractor will perform the extra work and be compensated for actual cost of labor, materials and equipment.

(ii) Contractor will have the right to add the fee percentage applicable to the Work under the Agreement, or if no such fee has been agreed to by the parties, not more than five percent (5%) to the Subcontractor's prices for authorized extra work performed solely by Subcontractors. Such percentage will include all of Contractor's charges for overhead, profit, administration and supervision.

(iii) Contractor or Subcontractor will have the right to add the fee percentage applicable to Work under the Agreement for self-performed extra work, or if no such fee has been agreed to by the parties, Contractor's or Subcontractor's maximum total allowable additions for overhead, profit, administration and supervision will

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not exceed ten percent (10%) of actual verifiable labor, materials and equipment for such self- performed extra work.

9.2.5 Any agreement which modifies the terms of the Agreement (including Change Orders) will be approved in writing by the Project Manager. Once properly executed by both parties, these modifications to the Agreement will have the same effect as if they had been included in the original Agreement.

9.3 **ACCURACY OF CHANGE ORDER PRICING INFORMATION**

9.3.1 Subject to Sections 9.3.2 through 9.3.4, signature by the contracting parties constitutes full accord and satisfaction between City and Contractor for all costs, damages, and expenses of whatever kind of nature, including delay, impact or acceleration damages, which may be occasioned by a Change Order of other modification of the Agreement agreed to in writing.

9.3.2 Accurate Change Order Pricing Information: Contractor agrees that it is responsible for submitting accurate cost and pricing data to City to support its Fixed Price, Unit Price, or Cost Plus Change Order Proposals or other Agreement Price adjustments under the Agreement. Contractor further agrees to submit Change Order proposals with cost and pricing data which is accurate, complete, current, and in accordance with the terms of the Agreement with respect to pricing of change orders. Contractor agrees that any "buy-out savings" on Change Orders will accrue 100% to Owner. "Buy-out savings" are defined as any savings negotiated by the Contractor with a Subcontractor or a Material Supplier after receiving approval of a Change Order amount that was designated to be paid to a specific Subcontractor or Supplier for the Approved Change Order work.

9.3.3 Right to Verify Change Order Pricing Information: Contractor agrees that City, through its designated representative, will have the right to examine, copy, and scan the records of the Contractor, Subcontractor or Sub-Subcontractor's records (during the Agreement period and up to three years after final payment is made on the Agreement) to verify the accuracy and appropriateness of the pricing data used to price all Change Order proposals or claims. Contractor agrees that if City determines the cost and pricing data submitted (whether approved or not) was inaccurate, incomplete, not current, or not in compliance with the terms of the Agreement regarding pricing of Change Orders, an appropriate Agreement Price adjustment will be made. Such post-approval Contact Price adjustments will apply to all levels of contractors and Subcontractors and to all types of Change Order proposals, specifically including Fixed Price, Unit Price, and Cost Plus Change Orders.

9.3.4 Requirements for Detailed Change Order Pricing Information: Contractor agrees to provide a detailed breakdown of allowable labor and labor burden cost (i.e., base wage rate of applicable classifications of workers, payroll taxes, and insurance and benefits costs). This information will be used to evaluate the potential cost of labor and labor burden related to Change Order work. It is intended that this information represent an accurate estimate of the Contractor's actual labor and labor burden cost components. Information is not intended to establish fixed billing or Change Order pricing labor rates. However, at the time Change Orders are priced, the submitted cost data for labor rates may be used to price Change Order work. The accuracy of any such agreed upon labor rate cost components used to price Change Orders will be subject to later audit. Approved Change Order amounts may be adjusted later to correct the impact of inaccurate labor cost components if the agreed upon labor cost components are determined to be inaccurate.

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9.4 **EMERGENCIES**

In any emergency affecting the safety of persons or property, Contractor will act, at its discretion, to prevent threatened damage, injury or loss. Any change in the Agreement Price or Agreement Time resulting from emergency work will be determined as provided in this Section.

9.5 **DIFFERING SITE CONDITIONS**

9.5.1 If Differing Site Conditions are encountered at the Project Site, then notice by the observing party must be given to the other party promptly before conditions are disturbed (to the extent practicable) and in no event later than 14 Days after first observance of the conditions. City will promptly investigate such conditions and, if City determines that Differing Site Conditions exist and they materially cause an increase in the cost of, or time required for, performance of any part of the Work, Contractor will be entitled to equitable adjustment in the Agreement Price or Construction Schedule (and other time requirements), or both. If it is determined by City that the conditions at the Project Site are not Differing Site Conditions and no change is justified, then City will so notify Contractor in writing, stating the reasons. Claims in opposition to such determination must be made within 14 Days after City has given notice of its decision. If City and Contractor cannot agree on an adjustment in the Agreement Price or Construction Schedule (and other time requirements), the adjustment may be submitted to dispute resolution as provided these General Conditions.

9.6 **CHANGES IN LAWS, REGULATIONS, OR LEGAL REQUIREMENTS OR TAXES**

In the event of a material change in applicable Laws, Regulations, or Legal Requirements, or taxes subsequent to the date of the Agreement by the parties, Contractor may be entitled to a Change Order, in City's discretion, to the extent Contractor can document to the satisfaction of City that such change significantly increases Contractor's actual cost of performance of the Work.

SECTION 10 -SUSPENSION AND TERMINATION

10.1 **SUSPENSION**

City may suspend the Agreement and Contractor's performance in accordance with MAG Specifications § 105.1 and 108.7.

10.2 **TERMINATION BY THE CITY FOR CAUSE**

10.2.1 MAG Specifications § 108.11 applies to the Agreement.

10.2.2 City may also terminate the Agreement if City determines, in its sole discretion that Contractor has:

a. After prior written notice, refused or failed to supply enough properly skilled workers or proper materials;

b. After prior written notice, failed to make payment to Subcontractors for materials or labor in accordance with the respective agreements between Contractor and the Subcontractors;

c. After prior written notice, disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction;

d. After prior written notice, repeatedly failed to comply with written directives from City;

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e. Is adjudged as bankrupt or insolvent;

f. Made a general assignment for the benefit of creditors;

g. Appointed a trustee or receiver for itself or any of its property;

h. Filed a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or similar laws; or

i. Otherwise breached a provision of the Agreement Documents or any other Agreement between City and Contractor.

10.2.3 When any of the above reasons exist, City may terminate the Agreement, without prejudice to any other rights or remedies of City, after giving Contractor and Contractors' surety, if any, 7 Days written notice of City's intent to terminate the Agreement and Contractor's failure to cure any such reasons. Upon such termination, City may: (1) take possession of the Site and of all materials thereon owned by Contractor; or (2) finish the Work by whatever reasonable method City may deem expedient. When City terminates the Agreement for one of the reasons state above, Contractor will not be entitled to receive further payment until the Work is finished. If the unpaid balance of the Agreement Price existing at the time of such termination exceeds the costs and expenses of finishing the Work and any other damages incurred by City, such excess will be paid to Contractor. If such costs, expenses and damages exceed such unpaid balance, Contractor must pay the difference to City. This obligation for payment will survive termination of the Agreement.

10.3 **TERMINATION BY CITY FOR CONVENIENCE**

City may also terminate the Agreement at any time for its convenience upon 7 Days written notice to Contractor specifying the termination date. In the event of termination which is not the fault, in whole or in part, of Contractor, City will pay to Contractor only such compensation, including reimbursable expenses, due for Work properly performed on the Project prior to the termination date. Upon any termination of the Agreement, no further payments will be due from City to Contractor.

10.4 **A.R.S. § 38-511**

The Agreement is subject to, and may be terminated by City in accordance with, the provisions of A.R.S. § 38-511.

SECTION 11 -INSURANCE AND BONDS

11.1 **INSURANCE REQUIREMENTS**

11.1.1 After Agreement award, the Contractor must furnish the City a certificate of insurance on a standard insurance industry ACORD form. The ACORD form must be issued by an insurance company authorized to transact business in the State of Arizona possessing a current A.M. Best, Inc. rating of A-7, or better and legally authorized to do business in the State of Arizona with policies and forms satisfactory to City. Provided, however, the A.M. Best rating requirement may not be deemed to apply to required Worker's Compensation coverage.

11.1.2 The Contractor and any of its Subcontractors must procure and maintain, until all of their obligations have been discharged, including any warranty periods under this Agreement are satisfied, the insurances set forth below.

11.1.3 The insurance requirements set forth below are minimum requirements for this Agreement and in no way limit the indemnity covenants contained in this Agreement.

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11.1.4 The City in no way warrants that the minimum insurance limits contained in this Agreement are sufficient to protect Contractor from liabilities that might arise out of the performance of the Agreement services under this Agreement by Contractor**,** its agents, representatives, employees, or Subcontractors and the Contractor is free to purchase any additional insurance as may be determined necessary.

11.1.5 Failure to demand evidence of full compliance with the insurance requirements in this Agreement or failure to identify any insurance deficiency will not relieve the Contractor from, nor will it be considered a waiver of its obligation to maintain the required insurance at all times during the performance of this Agreement.

11.1.6 Use of Subcontractors: If any Work is subcontracted in any way, the Contractor must execute a written agreement with Subcontractor containing the same Indemnification Clause and Insurance Requirements as the City requires of the Contractor in this Agreement. The Contractor is responsible for executing the Agreement with the Subcontractor and obtaining Certificates of Insurance and verifying the insurance requirements.

11.2 **MINIMUM SCOPE AND LIMITS OF INSURANCE**

11.2.1 The Contractor must provide coverage with limits of liability not less than those stated below.

11.2.1.1 Commercial General Liability-Occurrence Form. Contractor must maintain "occurrence" form Commercial General Liability insurance with a limit of not less than $2,000,000 for each occurrence, $4,000,000 aggregate. Said insurance must also include coverage for products and completed operations, independent contractors, personal injury and advertising injury. If any Excess insurance is utilized to fulfill the requirements of this paragraph, the Excess insurance must be "follow form" equal or broader in coverage scope than underlying insurance.

11.2.1.2 Automobile Liability-Any Automobile or Owned, Hired and Non-Owned Vehicles. Contractor must maintain Business/Automobile Liability insurance with a limit of $1,000,000 each accident on Contractor owned, hired, and non-owned vehicles assigned to or used in the performance under this Agreement. If any Excess or Umbrella insurance is utilized to fulfill the requirements of this paragraph, the Excess or Umbrella insurance must be "follow form" equal or broader in coverage scope than underlying insurance.

11.2.1.3 Workers Compensation and Employers Liability Insurance. Contractor must maintain Workers Compensation insurance to cover obligations imposed by federal and state statutes having jurisdiction of Contractor employees engaged in the performance of Work under this Agreement and must also maintain Employers' Liability insurance of not less than $1,000,000 for each accident and $1,000,000 disease for each employee.

11.2.1.4 Builders' Risk/Installation Floater Insurance. The Contractor bears all responsibility for loss to all equipment or Work under construction. Unless waived in writing by the City the Contractor will purchase and maintain in force Builders' Risk/Installation Floater insurance on the entire Work until completed and accepted by the City. This insurance will be Special Causes of Loss policy form, (minimally including perils of fire, flood, lightning, explosion, windstorm and hail, smoke, aircraft and vehicles, riot and civil commotion, theft, vandalism, malicious mischief, and collapse), completed value, replacement cost policy form equal to the Agreement Price and all subsequent modifications. The Contractor's Builders'

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Risk/Installation Floater insurance must be primary and not contributory.

a. Builders' Risk/Installation Floater insurance must cover the entire Work including reasonable compensation for architects and engineers' services and expenses and other "soft costs" made necessary by an insured loss. Builders' Risk/Installation Floater insurance must provide coverage from the time any covered property comes under the Contractor's control and or responsibility, and continue without interruption during course of construction, renovation and or installation, including any time during which any Project property or equipment is in transit, off Site, or while on Site for future use or installation. Insured property must include, but not be limited to, scaffolding, false work, and temporary buildings at the Site. This insurance must also cover the cost of removing debris, including demolition as may be legally required by operation of any law, ordinance, regulation or code.

b. The Contractor must also purchase and maintain Boiler and Machinery insurance with the same requirements as Builders' Risk/Installation Floater insurance cited above if the Work to be performed involves any exposures or insurable property normally covered under a Boiler and Machinery insurance policy or made necessary as required by law or testing requirements in the performance of this Agreement. The Contractor will be responsible for any and all deductibles under these policies and the Contractor waives all rights of recovery and subrogation against the City under the Contractor- Builders' Risk/Installation Floater insurance described herein.

c. Builders' Risk/Installation Floater Insurance must be maintained until whichever of the following first occurs: (i) final payment has been made; or, (ii) until no person or entity, other than the City, has an insurable interest in the property required to be covered.

d. The Builders' Risk/Installation Floater insurance must be endorsed so that the insurance will not be canceled or lapse because of any partial use or occupancy by the City.

e. The Builders Risk/Installation Floater insurance must include as named insureds, the City, the Contractor, and all tiers of Subcontractors and others with an insurable interest in the Work who will be named as additional insureds unless they are able to provide the same level of coverage with the City and Contractor named as additional insureds. Certificates must contain a provision that the insurance will not be canceled or materially altered without at least 30 Days advance notice to the City. The City must also be named as a Loss Payee under the Builders' Risk/Installation Floater coverage.

f. The Builders Risk/Installation Floater insurance must be written using the Special Causes of Loss policy form, replacement cost basis.

g. All rights of subrogation under the Builders Risk/Installation Floater insurance are, by this Agreement, waived against the City, its officers, officials, agents and employees.

h. The Contractor is responsible for payment of all deductibles under the Builders' Risk/Installation Floater insurance policy.

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11.2.1.5 Pollution Liability Insurance (Including Errors and Omissions). For Job Orders, Pollution Liability Insurance is only required if applicable and determined on a project specific basis. Contractor must maintain Pollution Liability Insurance with a limit of not less than $5,000,000 per loss, $5,000,000 aggregate for losses caused by pollution conditions including coverage for bodily injury, property damage, defense costs, clean-up costs, and completed operations that arise from the operations of Contractor as described in this Agreement.

a. The policy must provide for complete professional service coverage, including coverage for pollution liability that is a result of a breach of professional duties.

b. The policy must provide for protection again claims for third-party bodily injury, property damage, or environmental damage caused for pollution conditions resulting from general contracting activities for which Contractor is legally liable.

c. The policy must provide for cleanup costs when mandated by governmental entities, when required by law, or as a result of third-party claims.

d. Completed Operations Coverage must be kept in place for up to the statute of repose.

e. The policy must be endorsed to include the following additional insured language: “City, its elected officials, trustees, employees, agents, and volunteers must be named as additional insureds with respect to liability arising out of the activities performed by, or on behalf of Contractor”.

f. If Work under this Agreement requires the transportation of any hazardous material or regulated substances, Contractor must carry Auto Liability with a CA 9948 endorsement or equivalent.

g. If Work under this Agreement requires the disposal of any hazardous materials from the job site, Contractor must obtain a certificate of insurance for Pollution Legal Liability from the disposal site operator with a limit of not less than $5,000,000 per loss, $5,000,000 aggregate.

11.3 **ADDITIONAL POLICY PROVISIONS REQUIRED**

11.3.1 Self-Insured Retentions or Deductibles. Any self-insured retentions and deductibles must be declared and approved by the City. If not approved, the City may require that the insurer reduce or eliminate any deductible or self-insured retentions with respect to the City, its officers, officials, agents, employees, and volunteers.

11.3.2 The Contractor’s insurance must contain broad form contractual liability coverage.

11.3.3 The Contractor's insurance coverage must be primary insurance with respect to the City, its officers, officials, agents, and employees. Any insurance or self-insurance maintained by the City, its officers, officials, agents, and employees will be in excess of the coverage provided by the Contractor and must not contribute to it.

11.3.4 The Contractor's insurance must apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

11.3.5 Coverage provided by the Contractor must not be limited to the liability assumed under the

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indemnification provisions of this Agreement.

11.3.6 The policies must contain a severability of interest clause and waiver of subrogation against the City, its officers, officials, agents, and employees, for losses arising from Work performed by the Contractor for the City.

11.3.7 The Contractor, its successors and or assigns, are required to maintain Commercial General Liability insurance as specified in this Agreement for a minimum period of 3 years following completion and acceptance of the Work. The Contractor must submit a Certificate of Insurance evidencing Commercial General Liability insurance during this 3 year period containing all the Agreement insurance requirements, including naming the required Additional Insureds set forth herein.

11.3.8 If a Certificate of Insurance is submitted as verification of coverage, the City will reasonably rely upon the Certificate of Insurance as evidence of coverage but this acceptance and reliance will not waive or alter in any way the insurance requirements or obligations of this Agreement.

11.3.9 Insurance Cancellation During Agreement Term.

11.3.9.1 If any of the required policies expire during the life of this Agreement, the Contractor must forward renewal or replacement Certificates to the City within 10 Days after the renewal date containing all the required insurance provisions.

11.3.9.2 Each insurance policy required by the insurance provisions of this Agreement must provide the required coverage and must not be suspended, voided or canceled except after 30 Days prior written notice has been given to the City, except when cancellation is for non-payment of premium, then 10 Days prior notice may be given. Such notice must be sent directly to Chandler Law-Risk Management Department, Post Office Box 4008, Mailstop 628, Chandler, Arizona 85225. If any insurance company refuses to provide the require notice, the Contractor or its insurance broker must notify the City of any cancellation, suspension, non-renewal of any insurance within 7 Days of receipt of insurers' notification to that effect.

11.3.10 City as Additional Insured. The above-referenced policies are to contain, or be endorsed to contain, the following provisions:

11.3.10.1 The Commercial General Liability and Automobile Liability policies are to contain, or be endorsed to contain, the following provisions: The City, its officers, officials, agents, and employees are additional insureds with respect to liability arising out of activities performed by, or on behalf of, the Contractor including the City's general supervision of the Contractor; Products and Completed Operations of the Contractor; and automobiles owned, leased, hired, or borrowed by the Contractor.

11.3.10.2 The City, its officers, officials, agents, and employees must be additional insureds to the full limits of liability purchased by the Contractor even if those limits of liability are in excess of those required by this Agreement.

11.4 BONDS AND OTHER PERFORMANCE SECURITY

11.4.1 After Agreement award, Contractor must provide a Performance Bond and a Payment Bond, each in an amount equal to the full amount of the Agreement Price.

11.4.2 Each such bond must be executed by a surety company or companies holding a Certificate

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of Authority to transact surety business in the State of Arizona, issued by the Director of the Arizona Department of Insurance and must be named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. A copy of the Certificate of Authority must accompany the bonds. The Certificate must have been issued or updated within two (2) years prior to the execution of this Agreement. The bonds must be written or countersigned by an authorized representative of the surety who is either a resident of the state of Arizona or whose principal office is maintained in this state, as by law required.

11.4.3 The bonds must be made payable and be acceptable to City. The bond forms for the performance and payment bonds must be in the forms required under A.R.S. § 34-221, *et. Seq.,* as in Appendices 4 and 5 of these General Conditions.

11.4.4 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Agreement Documents, Contractor must promptly furnish a copy of the bonds or must permit a copy to be made.

11.4.5 All bonds submitted for this Project must be provided by a company which has been rated AM Best rating of A- or better for the prior four quarters by the latest edition of the 'Results Best's Key Rating Guide (Property/Casualty)" published by the A.M. Best Company.

11.4.6 Personal or individual bonds are not acceptable.

11.4.7 If the surety on any Bond furnished by Contractor is declared a bankrupt or becomes insolvent, or Contractor's right to do business is terminated in any state where any part of the Project is located, or it ceases to meet the requirements of this Section 11.4, Contractor must within 5 Days thereafter substitute another Bond and surety, both of which must be acceptable to City.

SECTION 12 - INDEMNIFICATION

12.1 To the extent permitted by law, the Contractor and its owners, officers, directors, agents, employees, and subconsultants (collectively "lndemnitor") must indemnify, save, and hold harmless the City and its officers, officials, agents, and employees (collectively "lndemnitee") from any and all claims, actions, liabilities, damages, losses, or expenses (including court costs, attorneys' fees, and costs of claim processing, investigation, and litigation) (collectively "Claims") caused or alleged to be caused, in whole or in part, by the negligent, reckless, wrongful, or willful acts, errors, or omissions of Indemnitor in connection with this Agreement. This indemnity includes any Claim or amount arising out of or recovered under workers' compensation laws or on account of Indemnitor's failure to conform to any federal, state, or local law, statute, ordinance, rule, regulation, or court decree. Indemnitor must indemnify lndemnitee from and against any and all Claims, except those arising solely from lndemnitee's own negligent, reckless, wrongful, or willful acts, errors, or omissions. Indemnitor is responsible for primary loss investigation, defense, and judgment costs where this indemnification applies. In consideration of the award of this Agreement, Indemnitor agrees to waive all rights of subrogation against lndemnitee for losses arising from or related to this Agreement. Indemnitor's obligations under this provision survive the termination or expiration of this Agreement.

SECTION 13 -DISPUTE RESOLUTION

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13.1 All disputes arising out of or relating to the Agreement, the Work or the Project, other than termination under Section 10, will be resolved pursuant to the Dispute Resolution process set forth in Appendix 6 of these General Conditions, and not pursuant to MAG Specifications § 110.

13.2 Contractor agrees that during any dispute between the parties, Contractor will continue to perform its obligations under the Agreement until such dispute is resolved.

13.3 Notwithstanding any other provision in this Agreement, City has the right to immediately file in court and pursue an action for a temporary restraining order and injunctive relief against Contractor if City determines that such action is necessary to protect its interests under the Agreement, to obtain specific performance of any provision of the Agreement, to advance the completion of the Project, or to protect health, welfare and safety.

SECTION 14 - MISCELLANEOUS PROVISIONS

14.1 AGREEMENT DOCUMENTS

14.1.1 The Agreement Documents are intended to permit the parties to complete the Work and all obligations required by the Agreement Documents within the Agreement Times for the Agreement Price. The Agreement Documents are intended to be complementary and interpreted in harmony so as to avoid conflict, with words and phrases interpreted in a manner consistent with construction and design industry standards.

14.1.2 It is the intent of the Agreement Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Agreement Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Agreement Documents or from prevailing custom or trade usage as being required to produce the intended result must be provided by Contractor whether or not specifically called for at no additional cost to City.

14.1.3 The Agreement Documents establish the rights and obligations of the parties and include the Agreement, Addenda (which pertain to the Agreement Documents), Contractor's Bid or Proposal (including documentation accompanying the Bid and any post-Bid documentation submitted prior to Agreement award) when attached as an exhibit to the Agreement, the accepted Project Schedule, the Notice to Proceed, the Performance Bond, the Payment Bond, Project Design, Engineering and Specifications, these General Conditions, the Project Specific Special Provisions, Technical Specifications, Agreement Drawings, as the same may be more specifically identified in the Agreement, Change Orders, Work Change Directives, Field Orders and the written interpretations and clarifications of the Design Professional or City representative and Modifications issued after execution of the Agreement. Approved Shop Drawings and the reports and drawings of subsurface and physical conditions are not Agreement Documents.

14.1.4 In the event of any inconsistency, conflict, or ambiguity between or among the Agreement Documents, the Agreement Documents will take precedence as follows from highest to lowest: Change Orders, Addenda, Agreement, Project Specific Special Provisions, General Conditions, Technical Specifications, Drawings/Plans, Chandler Amendments to MAG Standard Specifications and Chandler Standard Details, and MAG Uniform Standard Specifications and Details for Public Works Construction. If applicable to this Agreement, Federal Provisions prevail.

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14.1.5 On the Drawings, given dimensions will take precedence over scaled measurements and large scale drawings over small-scale drawings.

14.1.6 Clarifications and interpretations of the Agreement Documents will be issued by the Design Professional through the City.

14.1.7 The headings used in this Agreement or any other Agreement Documents, are for ease of reference only and must not in any way be construed to limit or alter the meaning of any provision.

14.1.8 The Agreement Documents form the entire agreement between City and Contractor. No oral representations or other agreements have been made by the parties except as specifically stated in the Agreement Documents.

14.1.9 The Agreement Documents may not be changed, altered, or amended in any way except in writing signed by a duly authorized representative of each party in the form of a Change Order.

14.1.10 Re-Use of Documents. Neither Contractor nor any Subcontractor, manufacturer, fabricator, supplier or distributor will have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of the Design Professional; and they must not re-use any of them on extensions of the Project or any other project without written consent of City and the Design Professional and specific written verification or adaptation by the Design Professional.

14.2 REFERENCE STANDARDS

14.2.1 Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, will mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Agreement Documents.

14.2.2 The provisions of any such standard, specification, manual or code, or any instruction of a Supplier will not change the duties or responsibilities of City, Contractor, Design Professional or Project Manager, or any of their Subcontractors, consultants, agents, or employees from those set forth in the Agreement Documents, nor will any such provision or instruction assign to City, Contractor, Design Professional, or any of their agents, or employees any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Agreement Documents.

14.3 COMPLIANCE WITH ARIZONA LAW AND FEDERAL LAW

14.3.1 Compliance with A.R.S. § 41-4401. Pursuant to the provisions of A.R.S. § 41-4401, the Contractor hereby warrants to the City that the Contractor and each of its subcontractors ("Subcontractors") must comply with all Federal Immigration laws and regulations that relate to the immigration status of their employees and the requirement to use E-Verify set forth in A.R.S. §23-214(A).

14.3.2 A breach of the Contractor Immigration Warranty constitutes a material breach of this Agreement and subject to penalties up to and including termination of this Agreement.

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14.3.3 The City retains the legal right to inspect the papers of any Contractor or Subcontractor employee who works on this Agreement to ensure that the Contractor or Subcontractor is complying with the Contractor Immigration Warranty. The Contractor agrees to assist the City in the conduct of any such inspections.

14.3.4 The City may, at its sole discretion, conduct random verifications of the employment records of the Contractor and any Subcontractors to ensure compliance with Contractors Immigration Warranty. The Contractor agrees to assist the City in performing any such random verifications.

14.3.5 The provisions of this Article must be included in any agreement the Contractor enters into with any and all of its subcontractors who provide services under this Agreement or any subcontract. "Services" are defined as furnishing labor, time or effort in the State of Arizona by a contractor or subcontractor. Services include construction or maintenance of any structure, building or transportation facility or improvement to real property.

14.4 **HAZARDOUS ENVIRONMENTAL CONDITIONS**

14.4.1 Contractor will not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Agreement Document to be within the scope of the Work. Contractor will be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.

14.4.2 If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition. Contractor must immediately:

a. Secure or otherwise isolate such condition;

b. Stop all Work in connection with such condition and in any area affected thereby; and

c. Notify City and promptly thereafter confirm such notice in writing.

14.4.3 City will promptly retain a qualified expert to evaluate such condition or take corrective action, if any.

14.4.4 Contractor will be responsible for any and all civil or criminal penalties, fines, damages, or other charges imposed by any regulatory agency or court for sewage discharges that are in violation of applicable statutes and laws and that are a result, direct or indirect, of work performed under this Agreement. Contractor will also be responsible for reimbursement to City for administration, reporting, and tracking expenses required as a result of any spill event. In the event the regulatory agency or court imposes a probationary period, Contractor must post bond for the probationary period to ensure that all such costs are reimbursed to City. This responsibility will apply whether penalties are imposed directly on Contractor or any of its Subcontractors, or the City of Chandler. Contractor must defend and indemnify City against such penalties. Regulatory agencies may include, but are not limited to, the Arizona Department of Environmental Quality (ADEQ) and the United States Environmental Protection Agency (USEPA).

14.5 **COOPERATION AND FURTHER DOCUMENTATION**

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Contractor agrees to provide City such other duly executed documents as may be reasonably requested by City to implement the intent of the Agreement Documents.

14.6 **ASSIGNMENT**

Neither Contractor nor City will, without the written consent of the other assign, transfer or sublet any portion of this Agreement or part of the Work or the obligations required by the Agreement Documents, any such assignment will be void, will transfer no rights to the purported assignee, and would be a material breach of the Agreement.

14.7 **SUCCESSORS**

Contractor and City intend that the provisions of the Agreement Documents are binding upon the parties, their employees, agents, heirs, successors and assigns.

14.8 **LAWFUL PRESENCE**

Pursuant to A.R.S. §§ 1-501 and 1-502, City is prohibited from awarding an agreement to any natural person who cannot establish that such person is lawfully present in the United States. To establish lawful presence, a person must produce qualifying identification and sign a City-provided affidavit affirming the identification provided is genuine. This requirement will be imposed at the time of agreement award. This requirement does not apply to business organizations such as corporations, partnerships, or limited liability companies.

14.9 **NO BOYCOTT OF ISRAEL CERTIFICATION**

By Contractor's signature on this Agreement, Contractor certifies under A.R.S. § 35-393.01 that Contractor is not currently engaged in and for the duration of this Agreement will not engage in a boycott of Israel.

14.10 **NO THIRD PARTY BENEFICIARY**

Nothing under the Agreement Documents will be construed to give any rights or benefits in the Agreement Documents to anyone other than City and Contractor, and all duties and responsibilities undertaken pursuant to the Agreement Documents will be for the sole and exclusive benefit of City and Contractor and not for the benefit of any other party, unless otherwise expressly set forth in the Agreement Documents.

14.11 **GOVERNING LAW AND VENUE**

The Agreement and all Agreement Documents will be deemed to be made under, and will be construed in accordance with and governed by the laws of the State of Arizona without regard to the conflicts or choice of law provisions thereof. Any court action to enforce any provision of the Agreement or to obtain any remedy with respect hereto must be brought in the Superior Court, Maricopa County, Arizona, and for this purpose, each party hereby expressly and irrevocably consents to the jurisdiction and venue of such Court.

14.12 **SEVERABILITY**

If any provision of the Agreement Documents or the application thereof to any person or circumstance will be invalid, illegal or unenforceable to any extent, the remainder of the affected provision, the remainder of the Agreement Documents, and the application thereof will not be affected and will be enforceable to the fullest extent permitted by law.

14.13 **LEGAL REQUIREMENTS**

At all times relevant to its entry into this Agreement and performance of the Services and the Work, Contractor must fully comply with all Laws, Regulations, or Legal Requirements applicable to City, the Project, and the Agreement, including, without limitation, those set

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forth on Exhibit C of the Agreement.

14.14 **PARTIAL INVALIDITY**

If any provision of the Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions will nevertheless continue in full force without being impaired or invalidated in any way.

14.15 **ATTORNEYS' FEES**

Should either party to the Agreement bring an action to enforce any provision of the Agreement, the prevailing party will be entitled to recover reasonable attorneys' fees and costs in connection therewith.

14.16 **CONFLICT OF INTEREST**

14.16.1 Contractor agrees to disclose any financial or economic interest with the Project property, or any property affected by the Project, existing prior to the execution of the Agreement. Further, Contractor agrees to disclose any financial or economic interest with the Project property, or any property affected by the Project, if Contractor gains such interest during the course of this Agreement. If Contractor gains financial or economic interest in the Project during the course of this Agreement, this may be grounds for terminating this Agreement. Any decision to terminate the Agreement must be at the sole discretion of City.

14.16.2 Contractor will not engage the services on this Agreement of any present City employee who was involved as a decision maker in the selection or approval processes, or who negotiated or approved billings or Agreement Modifications for this Agreement.

14.16.3 Contractor agrees that it will not perform services on this Project for a contractor, subcontractor, or any supplier, not covered under this Agreement.

14.17 **INDEPENDENT CONTRACTOR**

Contractor is and must be an independent contractor. Any provisions in the Agreement Documents that may appear to give City the right to direct Contractor as to the details of accomplishing the Work or to exercise a measure of control over the Work means that Contractor must follow the wishes of City as the results of the Work only. These results must comply with all applicable laws and ordinances.

14.18 **NOTICE OF INJURY**

Should City or Contractor suffer injury or damage to their person or property because of any error, omission or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim must be made in writing to the other party within 7 Days of the first observance of such injury or damage.

14.19 **CONFIDENTIALITY**

Contractor, for the benefit of City, hereby agrees it will not release or cause or permit to be released to the public any press notices, publicity (oral or written) or advertising promotion relating to, any statement regarding, or any other public announcement or disclosure or cause or permit to be publicly announced or disclosed, in any manner whatsoever, the specific terms and conditions of this Agreement or any comment relating to the Project or the Site. Notwithstanding the foregoing, Contractor will be entitled to disclose the terms of the Agreement to the extent required by law or in the course of enforcing or defending a claim or action hereunder. Contractor must give City reasonably prompt notice of any disclosure or statement made pursuant to this provision.

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14.20 **DATA CONFIDENTIALITY**

14.20.1 As used in the Agreement, "data" means all information, whether written or verbal, including plans, specifications, renderings, photographs, studies, investigations, audits, analyses, samples, reports, calculations, internal memos, meeting minutes, data field notes, work product, proposals, correspondence and any other similar documents or information prepared by, obtained by, or transmitted to the City in the performance of this Agreement.

14.20.2 Contractor agrees that all data, regardless of form, including originals, images, and reproductions, prepared by, obtained by, or transmitted to City in connection with the Contractor's performance of this Agreement is confidential and proprietary information belonging to City.

14.20.3 Except as specifically provided in this Agreement, Contractor or its Subcontractors must not divulge data to any third party without prior written consent of City. Contractor or its Subcontractors must not use data for any purposes except to perform Work required under this Agreement. These prohibitions will not apply to the following data provided Contractor has first given the required notice to City:

a. Data which was known to Contractor or its Subcontractors prior to its performance under this Agreement unless such data was acquired in connection with Work performed for City;

b. Data which was acquired by Contractor or its Subcontractors in its performance under this Agreement and which was disclosed to Contractor or its Subcontractors by a third party, who to the best of Contractor's or its Subcontractor's knowledge and belief, had the legal right to make such disclosure and Contractor or its Subcontractors are not otherwise required to hold such data in confidence; or

c. Data which is required to be disclosed by virtue of law, regulation, or court order, to which the Contractor or its Subcontractors are subject.

14.20.4 In the event the Contractor or its Subcontractors are required or requested to disclose data to a third party, or any other information to which the Contractor or its Subcontractors became privy as a result of any other agreement with City, the Contractor must first notify City as set forth in this Section of the request or demand for the data. The Contractor or its Subcontractors must give City sufficient facts so that City can be given an opportunity to first give its consent or take such action that City may deem appropriate to protect such data or other information from disclosure.

14.20.5 Unless prohibited by law, within 10 Days after completion of services for a third party on real or personal property owned or leased by City, the Contractor must promptly deliver, as set forth in this Section, a copy of all data to City. All data will continue to be subject to the confidentiality agreements of this Agreement.

14.20.6 Contractor or its Subcontractors assume all liability for maintaining the confidentiality of the data in its possession and agree to compensate City if any of the provisions of this Section are violated by Contractor, its employees, agents, or Subcontractors. Solely for the purposes of seeking injunctive relief, it is agreed that a breach of this Section will be deemed to cause irreparable harm that justified injunctive relief in court. Contractor agrees that the requirements of this Section will be incorporated into all subcontracts entered into by Contractor. A violation of this Section may result in immediate termination of this

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Agreement without notice.

14.21 **SURVIVAL**

All warranties, representations and indemnifications by Contractor must survive the completion or termination of this Agreement.

14.22 **COVENANTS AGAINST CONTINGENT FEES**

Contractor warrants that no person has been employed or retained to solicit or secure this Agreement upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, and that no member of City Council, or any employee of City has any interest, financially, or otherwise, in the firm. For breach or violation of this warrant, City will have the right to annul the Agreement without liability or at its discretion to deduct from the Agreement Price or consideration, the full amount of such commission, percentage, brokerage, or contingent fee.

14.23 **NO WAIVER**

The failure of either party to enforce any of the provisions of the Agreement Documents or to require performance of the other party of any of the provisions hereof must not be construed to be a waiver of such provisions, nor will it affect the validity of the Agreement Documents or any part thereof, or the right of either party to thereafter enforce each and every provision.

14.24 **NONEXCLUSIVE REMEDIES**

The remedies set forth in this Agreement are cumulative and not exclusive, and failure to exercise any remedy (including, without limitation, any right to terminate) will not preclude any party from exercising any other right in seeking any other remedy available to it at law or in equity.

14.25 **PROJECT COMMUNICATIONS**

14.25.1 All communications concerning the performance of the Work or the Project will be provided to the designated Project Manager and Contractor's Representative set forth in Article 1 of the Agreement. City may change the designated Project Manager and, subject to Section 4.4.20 of these General Conditions, Contractor may change Contractor Representative, by written notice to the other.

14.25.2 Project communications may be exchanged by e-mail, but email communications cannot change the terms of the Agreement or the Scope of Work, or effectuate any change that requires a written Change Order.

14.25.3 When any provisions of the Agreement Documents requires Contractor or the Design Professional to give written notice to City, it will be deemed to have been validly given if delivered in person or if delivered at or sent by registered or certified mail, postage prepaid, to the Parties indicated in Agreement Article 1, incorporated by reference.

14.25.4 When any provisions of the Agreement Documents requires City, Project Manager, or the Design Professional to give written notice to Contractor, it will be deemed to have been validly given if delivered in person to the person designated in the Agreement Documents as Contractor's Resident Superintendent, or if delivered at or sent by registered or certified mail, postage prepaid, to Contractor at the last address in the Agreement Documents or such substitute address which Contractor designates in writing, or to the business address known to the giver of notice.

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14.26 **DRUG FREE WORKPLACE PROGRAM**

14.26.1 City has adopted a policy establishing a drug free workplace for itself and as a requirement for Contractors doing business with City, to ensure the safety and health of employees working on City projects.

14.26.2 Contractor must require a drug free workplace for all employees working under the Agreement. Specifically, all employees of Contractor who are working under an agreement with City must be notified, in writing, by Contractor that they are prohibited from the manufacture, distribution, dispensation, possession or unlawful use of a controlled substance in the workplace.

14.27 Failure to require a drug free workplace in accordance with the City's policy may result in termination of the Agreement and possible debarment form bidding on future City projects.

SECTION 15 - PROVISIONS APPLICABLE SOLELY TO GMP AND COST-BASED AGREEMENTS, CHANGE ORDERS, AND JOB ORDERS

15.1 **ADDITIONAL DEFINITIONS**

The definitions set forth in Section 2 apply to GMP and Cost-Based Agreements, Change Orders, and Job Orders, together with the additional definitions set forth below.

Baseline Cost Model –
A breakdown and estimate of the scope of the Project developed by CM@Risk pursuant to Section 17.5 of these General Conditions.

CM@Risk or Construction Manager at Risk –
The person or firm selected by City to provide pre-construction and/or construction services as detailed in a Construction Manager at Risk Agreement with City. In these General Conditions, the term "Contractor" includes CM@Risk under both Pre-Construction and Construction Services Agreements.

CM@Risk Fee or Contractor's Fee –
An agreed to percentage in an accepted GMP that represents the Contractor's fee for performance of the Work.

Agreement Documents –
Where compensation under the Agreement is based upon a GMP accepted by City, the term "Agreement Documents" also includes the accepted GMP Proposal.

Agreement Price –
Where compensation under the Agreement based upon a GMP accepted by City, the term "Agreement Price" refers to the GMP.

Cost-Based Agreement, Change Order, or Job Order –
A Agreement, Change Order, or Job Order where the Agreement Price is based upon the actual cost of performing the Work, subject to the terms of the Agreement Documents, including this Section 15. These would include those generally referred to as "Cost of the Work plus a Fee with a GMP," "Time and Materials," or "Cost Plus a Fee."

Cost of the Work –
The direct costs necessarily incurred by Contractor in the proper, timely, and complete performance on the Work. The Cost of the Work will include only those costs set forth in Section 15.2 of these

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General Conditions.

Deliverables –
The work products prepared by Contractor in performing the scope of work described in the Agreement. Some of the major deliverables to be prepared and provided by Contractor during pre-construction may include but are not limited to: the Baseline Cost Model and Schedule that validate City's plan and budget, Construction Management Plan, Detailed Project Schedule, Schedule of Values, alternative system evaluations, procurement strategies and plans, Detailed Cost Estimates, construction market surveys, cash flow projections, GMP Proposals, Subcontractor procurement plan, Subcontractor agreements, Subcontractor bid packages, Supplier agreements, Constructability Review, Cost Control Log, Traffic control and phasing plans and others as indicated in this Agreement or required by the Project Team.

Pre-Construction Services Agreement –
The Agreement entered into between City and the CM@Risk for Pre-Construction Services to be provided by the CM@Risk, including, without limitation, the generation of a GMP Proposal. If the GMP Proposal is accepted by City and a Construction Agreement is entered into between City and CM@Risk, the duties, obligations and warranties of the CM@Risk under the Pre-Construction Services Agreement survive and are incorporated into the resulting Construction Agreement.

Pre-Construction Services –
The services to be provided under the Pre-Construction Services Agreement, including Section 17 of these General Conditions.

Detailed Project Schedule –
The Detailed Project Schedule developed by the CM@Risk for the review and approval of the Project Manager in accordance with Section 17.3 of these General Conditions, if applicable.

General Conditions Costs –
Those costs set forth in Section 4 of Appendix 9 to these General Conditions.

GMP Plans and Specifications –
The plan and specifications upon which the Guaranteed Maximum price Proposal is based.

GMP Proposal –
The proposal of Contractor submitted pursuant to Section 17.7 of these General Conditions for the entire Work and/or portion (phases) of the Work.

Guaranteed Maximum Price or GMP –
The Guaranteed Maximum Price set forth in the Agreement, Change Order, or Job Order if applicable.

15.2 **AGREEMENT PRICE**

15.2.1 The Agreement Price for all Agreements, Change Orders, and Job Orders based upon payment of the Cost of the Work plus a Fee with a GMP, time and materials, or cost-plus a fee will be the Cost of the Work incurred plus the Fee agreed to in writing by City, limited to the amount of the GMP, if agreed to. Unless otherwise expressly provided in the Agreement, Change Order, or Job Order, all Cost Based pricing will be subject to and limited to GMP.

15.2.2 The Agreement Price may only be changed as set forth in Section 9 above.

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15.2.3 Only costs specifically designated as reimbursable costs are eligible for payment by City or may be charged against the Agreement Price. All other costs will not be paid by City and will not be chargeable against the Agreement Price.

15.2.4 Cost-Based Agreements. For Agreements, Change Orders, or Job Orders, reimbursable costs must be determined pursuant to Appendix 9 to these General Conditions, Cost of the Work, and not by MAG Specifications §109.5.

15.3 **ALLOWANCES**

15.3.1 Contractor must include in the Agreement Price all Allowances stated in the Agreement Documents and agreed to in writing by City. Items covered by these Allowances must be supplied for such amounts and by such persons as City may direct, provided Contractor will not be required to employ persons against whom Contractor makes a reasonable objection. Materials, labor, and equipment under an Allowance will be selected by City in accordance with a schedule to be mutually agreed upon by City, Design Professional and Contractor or otherwise in reasonably sufficient time to avoid delay in the Work.

15.3.2 Unless otherwise provided in the Agreement Documents:

15.3.2.1 These Allowances must cover the cost to Contractor, less any applicable trade discount, of the materials, labor, and equipment required by the Allowances, delivered at the Site, and all applicable taxes;

15.3.2.2 Contractor's costs for unloading and handling on the Site, labor, installation costs, overhead, profit and other expenses relating to materials, labor, and equipment required by the Allowance must be included in the Agreement Sum and not in the Allowance; and

15.3.2.3 Whenever the cost is more or less than the Allowance, the Agreement Sum must be adjusted accordingly by Change Order, the amount of which will recognize the difference between actual costs for an Allowance item and the amount of the Allowance item and changes, if any, in handling costs on the Site, labor, installation costs, overhead, profit and other expenses.

15.4 **CONTINGENCY**

An agreed to amount in the GMP that may only be used in accordance with the terms set forth in these General Conditions and with prior written approval by the City.

15.4.1 Construction Contingency. This GMP includes a dollar amount listed as a Construction Contingency which will be readily available for increased costs for subcontractors, material, and equipment subject to prior approval of City, which approval will not be withheld unreasonably. The Construction Contingency may also be used, at the discretion of City, to reimburse CM@Risk for unexpected costs due to (a) scope gaps between trade subcontractors; (b) agreement default by trade subcontractors; (c) unforeseen field conditions, but only as defined in Section 9.5 above; (d) work completed to meet the intent of the design, but which was not indicated on the plans; (e) costs overruns not covered by allowances; (f) costs of corrective work not provided for elsewhere; and (g) implementation of any Recovery Plan. Cost for which CM@Risk desires to be paid from the Construction Contingency must be documented by CM@Risk on a time and materials basis and are subject to verification by City. If agreed to by City, a "Use of Contingency" form will be executed by both parties authorizing the actual cost of the work to be paid and included in the Work Item Direct Costs. The Construction Contingency is not allocated to any particular

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item of the Project but may be used for any portion of the work as determined above. Any amount not used in the Construction Contingency will belong to City and will reduce the GMP.

15.4.2 Owner's Contingency. This GMP also includes a dollar amount listed as an Owner's Contingency which may be used only by the City (owner department) for upgrades and changes in scope or other changes not already included within the intent of the Project Program. City will provide CM@Risk with a Work Change Directive authorizing CM@Risk to perform the additional work and to transfer funds from the Owner's Contingency to the Work Item Direct Costs category to be paid with such direct costs. These additional costs will be in an amount mutually agreed upon by CM@Risk and City or will be documented by CM@Risk on a time and materials basis and are subject to verification by City. Any amount not used in the Owner's Contingency will belong to the City and will reduce the GMP.

15.5 **REDUCTION IN RETENTION**

If the Agreement Price is based upon a GMP, in order to receive payment of one-half of the retention as set forth in Section 8.1.5 above, Contractor must also submit to the Project Manager a complete accounting of the Actual Reimbursable Cost of the Work to date, including all such documentation (including, without limitation, invoices, subcontract, subcontractor change orders, purchase orders, records of payment, etc.) as City may require, to establish whether the payments made to Contractor equal, exceed, or are less than the actual reimbursable Cost of the Work to date. Any excess payments by City, as determined by the Project Manager, will be deducted from the one-half retention payment to be made to Contractor, and any additional excess amounts paid to Contractor will be refunded by Contractor to City. The Project Manager's determinations as to Actual Reimbursable Cost of the Work will be the basis of payment until final Project Closeout and Final Payment under the Agreement.

15.6 **FINAL PAYMENT**

If the Agreement Price is based upon a GMP, as a further condition precedent to Final Payment by City, Contractor must submit to the Project Manager a complete final accounting of the Actual Reimbursable Cost of the Work, including all such documentation (including, without limitation, invoices, subcontracts, subcontractor change orders, purchase orders, records of payment, etc.) as City may require, to establish whether the payments made to Contractor equal, exceed, or are less than the Actual Reimbursable Cost of the Work to date. Any excess payments by City, as determined by the Project Manager, will be deducted from the one-half retention payment to be made to Contractor, and any additional excess amounts paid to Contractor will be refunded by Contractor to City. Disputes relating to the Final Cost of the Work will be subject to City's audit rights under Sections 8.8 above and 15.7 below, and the dispute resolution process under Section 13 above.

15.7 **OPEN BOOK**

On any GMP-based or Cost-Based Agreement, Job Order, or Change Order, City may attend any and all meetings or discussions pertaining to the Project, including bid openings, and must have access to all books, invoices, accounts, memoranda, correspondence, and written communications or records of any kind pertaining to the Project, including without limitation, those stored in electronic format.

15.8 **DIFFERING SITE CONDITIONS AND/OR CHANGE IN LAWS**

A Change Order for increased costs under Section 9.5 or 9.6 above will only be considered

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or granted by City to the extent such actual, documented costs are justified.

SECTION 16 - PROVISIONS APPLICABLE SOLELY TO JOB ORDER AGREEMENTS (JOC)

16.1 **ADDITIONAL DEFINITIONS**

The definitions set forth in Sections 2 and below will apply to all Job Order Agreements and Job Orders. In addition, the definitions set forth in Section 15.1 above will apply to all Cost-Based Job Orders.

Agreement –
Includes the Job Order Master Agreement and Job Order Project Agreements issued and agreed to by City and JOC Contractor.

JOC Contractor's Coefficient –
A numerical factor that represents JOC Contractor total costs (indirect and direct costs, sales tax, profit, etc.) and other adjustments for market conditions.

Job Order Request for Proposal (RFP) –
The Request for Proposals issued by City for each Job Order Project Agreement relating to a specific Project.

Job Order Cost Proposal –
The Proposal submitted by JOC Contractor in response to a Job Order Request for Proposal (RFP) issued by City to develop a Job Order Project Agreement for a specific Project.

Guaranteed Maximum Price (GMP) Job Order –
Job Order under which JOC Contractor is compensated for actual costs incurred.

Job Order Project Agreement (Job Order) –
The agreement for a specific project, as it may be modified by all Change Orders, executed by the Parties, which incorporates the terms and conditions of the Job Order Master Agreement.

16.2 **ORDERING AND PROCESSING PROCEDURES FOR JOB ORDERS**

16.2.1 The process for developing and issuing a Job Order for a particular Project consists of three (3) procedures: (1) issuance of a RFP by City; (2) JOC Contractor's response to the RFP in the form of JOC Contractor's Job Order Cost Proposal; and (3) Issuance of a Job Order by City, as set for below.

16.2.2 RFP's For Job Orders

16.2.2.1 City will provide to JOC Contractor RFP with a Scope of Work (SOW) describing the Work to be performed, which may include special instructions and conditions, material submittal requirements, and, if applicable, a complete set of sketches, construction drawings and specifications for the Job Order.

16.2.2.2 Some Job Order RFP's will be issued by City without detailed sketches, drawing and specifications and will rely on JOC Contractor to produce them for City review and approval and is considered to be Pre-Construction and incidental design services included in JOC Contractor's overhead for GMP Job Orders. In addition JOC Contractor will not be reimbursed for any Pre-Job Order costs, including proposal preparation, attendance during negotiations, or site visits.

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16.2.3 JOC Contractor's Job Order Cost Proposal

16.2.3.1 JOC Contractor must respond within ten (10) calendar days of the RFP date or site visit, whichever is later or as otherwise indicated on a case-by-case basis, by submitting JOC Contractor's Job Order Cost Proposal to the City representative.

16.2.3.2 Unless otherwise required under the terms of the RFP, JOC Contractor's Job Order Cost Proposal must include the following.

a. JOC Contractor's Job Order Cost Proposal in PDF and electronic format;

b. A Project Schedule and schedule of values that reflects the costs of each work element on the schedule. The schedule must show all milestones (e.g., permits, submittals, ordering materials, demolition, work phases, closeout and completion date); and

c. Necessary documentation will be required to indicate that adequate scoping, layout, setup and planning to accomplish the Work has been done. Examples of documentation that might reasonably be expected include sketches, drawings, calculations, catalog cuts and specifications produced to a level of detail and skill that could be expected of experienced, competent Project Managers with five or more periods experience in their respective trade.

16.2.3.3 JOC Contractor must select Subcontractors based on qualifications alone or on a combination of qualifications and price and must not select Subcontractors based on price alone. A qualifications and price selection may be a one-step selection based on a combination of qualifications and price or two-step selection. In a two-step selection, the first step must be based on qualifications alone and the second step may be based or a combination of qualifications and price or on price alone.

16.2.3.4 Upon request, JOC Contractor must provide City with copies of Subcontractor quotes and the basis for selection of each Subcontractor.

16.2.3.5 If City objects to a selected Subcontractor, City will make the objection and the reasons for the objection known to the JOC Contractor. JOC Contractor must then present an acceptable Subcontractor for the applicable discipline. City will not unreasonably object to or withhold approval of a Subcontractor.

16.2.3.6 For self-performed work, the City retains the right to have the JOC Contractor establish JOC Contractor's costs by bidding their costs against at least three (3) other interested trade Contractors. No self- performed work will be allowed to be performed on a lump sum basis.

16.2.4 Issuance of Job Order

16.2.4.1 City Representative will compare the JOC Contractor's Job Order Cost Proposal with the City's estimate, schedules and other requirements, and then, if the City Representative determines it is in the best interest of City, arrange a meeting with JOC Contractor, at which time the JOC Contractor's Job Order Cost Proposal will be discussed and negotiated.

16.2.4.2 If the City Representative determines that it is in the best interest of the City, City will then issue a Job Order to JOC Contractor for execution.

16.2.4.3 Specific Job Orders may vary, but unless agreed to by City in writing otherwise, the content

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of Job Orders under the Agreement will generally be as follow, all of which will be signed and/or initialed by JOC Contractor's designated representative:

a. The description of the Scope of the Work and Project Schedule (attached as Exhibit A to the Job Order);

b. The address or location of the Work;

c. The Agreement Price for Work (Construction) included in the Project (attached as Exhibit B to the Job Order);

d. The name of the JOC Contractor representative for the Project;

e. The Drawings and Specifications for the Project;

f. If any shop drawings, project date and/or samples are required for the Job Order, the date for delivery of each required item (included in the Project Schedule, Exhibit A to the Job order); and

g. Project Specific Provisions, if any, in Exhibit A to the Job Order, including, without limitation, whether any of the following are required: Pre-Construction Conference, weekly progress meetings, field office, storage enclosure, materials and equipment handling facility, submittals, shop drawings, product data, equipment list, samples, project manual, schedule of values, Construction progress schedule, narrative reports, progress report, progress charts, progress photographs, materials status report, Construction diagram, Construction status report, operation and maintenance data, operating maintenance instructions and parts list, and as-build drawings.

16.2.5 Job Order Intent. Each Job Order will be interpreted to include all items reasonably necessary to complete the Project under that Job Order as described in the scope of the Work in that Job Order. All Work must be performed in a professional manner and all materials used must be new and of the highest quality and of the type best adapted to their purpose, unless otherwise specified. The Notice to Proceed date, and the award date established therein, will be deemed an integral part of the Job Order the same as if set forth therein.

16.3 **INCIDENTAL DESIGN SERVICES**

16.3.1 This effort includes all "extensions of design" for systems that are typically specified in a performance oriented manner by consultants and designers. Examples include: fire sprinkler systems, fire alarm and sprinkler systems, DDC controls, control systems, prefabricated metal building and similar situations. These designs are normally provided under submittals as a shop drawing with engineering backup and as appropriate, seals of registered engineers specializing in the particular system.

16.3.2 Incidental design includes all documents, sketches, schematic diagrams, floor plan layouts, equipment schedules and other documents produced by the JOC Contractor to define the work required for projects that the City does not develop formal or abbreviated designs requiring a seal by a registered engineer. Incidental design does not include preparation of designs requiring an architect or engineer seal.

16.3.3 JOC Contractor represents, covenants, and agrees, and contractually assumes the obligation to furnish, all of the required Design Services through properly licensed and

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experienced Design Professionals in complete accordance with all of the duties imposed on a Design Professional under the Agreement Documents, Laws, Regulations, or Legal Requirements, and the common law.

16.3.4 All Design Documents (and all other Project-related documents, models, computer drawings and other electronic expression, photographs and other expressions CADD, and BIM files and images included) that JOC Contractor and/or JOC Contractor's Design Professional(s) prepare in connection with a Job Order and the copyrights therein (collectively, the "Instruments of Service") will be the property of City. JOC Contractor covenants and agrees to execute any additional document reasonably requested by City to confirm such assignment without any additional compensation.

16.4 **CONSTRUCTION SERVICES**

16.4.1 The following subsections of this Section 16.4 set forth requirements beyond those set forth in Section 4 above which apply to Construction Services performed under a Job Order.

16.4.2 JOC Contractor must perform the Work using only those firms, team members and individuals designated by JOC Contractor consistent with each Job Order or otherwise approved by City pursuant to the General Conditions. No other entities or individuals may be used without the prior written approval of the Project Manager.

16.4.3 Construction Phasing

16.4.3.1 City use of the facilities is anticipated while the Work is being performed. The Work must be planned and accomplished so that there will be a minimum of interference and inconvenience to occupants in the building and agencies in the vicinity and to other craftsmen who may have to do work in the affected facilities. Any blockage of building exits or driveways must be coordinated in advance.

16.4.3.2 If applicable, furniture, portable office equipment and wall appurtenances not rigidly fastened to the walls must be moved by JOC Contractor, protected from damage and replaced to the original position upon completion of the work. If the work required by the Job Order will not allow furniture and portable office equipment to be replaced to its original position, new locations will be designated by City. Incidental costs associated with moving one-piece furnishings up to approximately 150 pounds to perform such tasks as painting, carpet or tile replacement, etc., are considered a general cost of building renovation and must be included in the JOC Contractor's Coefficient. Costs for large scale or wholesale removal and replacement of large quantities of desks or modular workstations, copiers, multiple full file cabinets, etc. to another location or storage outside the work space, or disassembly and reassembly of modular furniture is not considered part of the JOC Contractor's Coefficient and will be priced separately.

16.4.3.3 The work must, so far as practicable, be done in definite sections or divisions and confined to limited areas which must be completed before work in other sections or divisions are begun.

16.4.4 Work Site Conflicts. In the event of a conflict between JOC Contractor and others in an occupied facility or where other Contractors are performing work on the same facility under other Agreements, City will decide to dispute and that decision will be final.

16.4.5 Ownership of Work Product. Work Product prepared or otherwise created in connection

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with the performance of this Agreement, including the Work, are to be and remain the property of City. For purposes of this provision, "Work Product" will include all designs, drawings, plans, specifications, ideas, renderings and other information or matter, in whatever form created (e.g., electronic or printed) and in all media now known or hereinafter created. All Work Product will be considered Work Made for Hire as defined in the United States Copyright Act 17 U.S.C. §101 (Copyright Act). If for any reason any such Work is found not to be a work for hire, JOC Contractor hereby transfers and assigns ownership of the copyright in such Work to City. The rights in this Section are exclusive to City in perpetuity.

16.5 **OPTIONAL LIQUIDATED DAMAGES**

16.5.1 Specific Job Orders. City will have the right to assess liquidated damages in relation to any specific JOC Project Agreement as set forth below.

16.5.2 Substantial Completion Liquidated Damages. JOC Contractor acknowledges and agrees that if JOC Contractor fails to obtain Substantial Completion of the Work within the Agreement Time, City will sustain extensive damages and serious loss as a result of such failure. The exact amount of such damages will be extremely difficult to ascertain. Therefore, City and JOC Contractor agree that if JOC Contractor fails to achieve Substantial Completion of the Work within the Agreement Time, City will be entitled to retain or recover from JOC Contractor, as liquidated damages and not as a penalty, the sum per calendar day as indicated in MAG § 108.9.

16.5.3 Final Acceptance Liquidated Damages. For the same reasons set forth in Section 16.5.2 above, City and JOC Contractor further agree that if JOC Contractor fails to achieve Final Acceptance of the Work within the Agreement Time, City will be entitled to retain or recover from JOC Contractor, as liquidated damages and not as a penalty, the sum per calendar day as indicated in MAG § 108.9 commencing from the actual date of Substantial Completion or Final Acceptance as required under any specific JOC Project Agreement.

16.5.4 MAG Liquidated Damages. Liquidated damages provisions in MAG § 108.9 may apply to any specific JOC Project Agreement.

16.5.5 City may deduct liquidated damages assessed pursuant to this Section 16.5 from any unpaid amounts then or thereafter due JOC Contractor under the Agreement or any specific JOC Project Agreement between JOC Contractor and City. Any liquidated damages not so deducted from any unpaid amounts due JOC Contractor must be payable to City at the demand of City, together with interest from the date of the demand at the highest lawful rate of interest payable to JOC Contractor.

16.6 **PERFORMANCE MEASUREMENT**

16.6.1 Performance Assessment. After the Final Acceptance of Work under each Job Order, City will complete a written evaluation of the performance of JOC Contractor on the Job Order.

16.6.2 Consideration in Assignment of Work. JOC Contractor's record of cost, schedule and quality performance and comparative assessments will be significant considerations in City's determination whether to award future Job Orders. JOC Contractor agrees that any determination by City not to not award future Job Orders or Option periods based on performance will be at the sole discretion of City.

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SECTION 17 - PROVISIONS APPLICABLE SOLELY TO PRE-CONSTRUCTION SERVICES FOR CONSTRUCTION MANAGER AT RISK

17.1 ADDITIONAL DEFINITIONS

The definitions set forth in Section 2 and 15.1 above will apply to all Pre-Construction Services Agreements.

17.2 GENERAL

17.2.1 CM@Risk must perform the Services required by, and in accordance with the Agreement Documents and as outlined in Exhibit A of the Agreement to the satisfaction of the Project Manager, exercising the degree of care, skill, diligence and judgment a professional construction manager experienced in the performance of such services for construction and/or facilities of similar scope, function, size, quality, complexity and detail to the Project in urban areas throughout the United States, would exercise at such time, under similar conditions. CM@Risk must, at all times, perform the required services consistent with sound and generally accepted engineering principles and construction management and construction contracting practices.

17.2.2 As a participating member of the Project Team, CM@Risk must provide to City and Design Professional a written evaluation of City's Project Program and budget, each in terms of the other, with recommendations as to the appropriateness of each. CM@Risk must prepare a Baseline Cost Model that validates City's budget. The Baseline Cost Model must include all assumptions and basis of estimates in enough detail so that the Project Team can compare future detail estimates to the Baseline Cost model for variances. City and Design Professional will provide all the reasonably required data that is available in order to reach agreement between the team members that the Baseline Cost Model is an accurate projection of the costs of the Project.

17.2.3 CM@Risk must attend Project Team meetings, which may include, but are not limited to, bi- weekly Project management meetings, Project workshops, special Project meetings, construction document rolling reviews, public meetings and partnering sessions. CM@Risk attendance at design or other meetings in which CM@Risk is provided the opportunity but does not actively participate and/or is not properly prepared is not acceptable. Repeated instances of non-participation and/or lack of preparedness will be grounds for termination of CM@Risk Agreement for default.

17.2.4 CM@Risk must provide Pre-Construction Services, described herein, in a timely manner and consistent with the intent of the most current Drawings and Specifications. CM@Risk must promptly notify City in writing whenever CM@Risk determines any Drawings or Specifications are inappropriate for the Project and/or cause changes in the scope of Work that deviates more than the allowed contingencies within the Baseline Cost Model or requires an adjustment in the Baseline Cost Model, Detailed Cost Estimate, Detailed Project Schedule, GMP Proposals and/or in the Agreement Time for the Work, to the extent such as established.

17.2.5 CM@Risk when requested by City, must attend, make presentations and participate as may be appropriate in public agency and or community meetings, relevant to the Project. CM@Risk must provide drawings, schedule diagrams, budget charges and other materials describing the Project when their use is required or appropriate in any such public agency meetings.

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17.2.6 Ownership of Work Product. All Work Product prepared or otherwise created in connection with the performance of this Agreement, including the Work, are to be and remain the property of City. For purposes of this provision, "Work Product" will include all designs, drawings, plans, specifications, ideas, renderings and other information or material, in whatever form created (e.g., electronic or printed) and in all media now know or hereinafter created. All Work Product will be considered Work Made for Hire as defined in the United States Copyright Act 17 U.S.C.
§101 (Copyright Act). If for any reason any such Work is found not to be a work for hire, Contractor hereby transfers and assigns ownership of the copyright in such Work to City. The rights in this Section are exclusive to City in perpetuity.

17.2.7 CM@Risk represents to City in completing Pre-Construction Services and providing the reports and analysis required thereunder, that Work can be properly and timely constructed within the GMP Proposal, if accepted. CM@Risk does not assume any design responsibilities unless specifically called for in the scope of work, but CM@Risk will be responsible for their errors, omissions or inconsistencies included in the Work.

17.3 **DETAILED PROJECT SCHEDULE**

17.3.1 The fundamental purpose of the Detailed Project Schedule is to identify, coordinate and record the tasks and activities to be performed by all of the Project Team members and then for the Project Team to utilize that Deliverable as a basis for managing and monitoring all member's compliance with the schedule requirements of the Project. Each Project Team member is responsible for its compliance with the Detailed Project Schedule requirements. CM@Risk must, however, develop and maintain the Detailed Project Schedule on behalf of and to be used by the Project Team based on input from the other Project Team members. The Baseline Project Schedule must be developed as part of the Baseline Cost Model. The Detailed Project Schedule must use the Critical Path method ("CPM") technique, unless required otherwise, in writing by City. CM@Risk must use scheduling software acceptable to City to develop the Detailed Project Schedule. The Detailed Project Schedule must be presented in graphical and tabular reports as agreed upon by the Project Team. If Project phasing as described below is required, the Detailed Project Schedule must indicate milestone dates for the phases once determined. As part of construction phase, City may require CM@Risk to prepare a "resource loaded" schedule for all work, including work performed by Subcontractors, detailing each of the project tasks and the required/anticipated number of personnel per day for each task. CM@Risk must also indicate on the schedule its ability to meet said required/anticipated personnel requirements.

17.3.2 CM@Risk must include and integrate in the Detailed Project Schedule the services and activities required of City, Design Professional and CM@Risk including all construction phase activities based on the input received from City and the Design Professional. The Detailed Project Schedule must define activities as determined by City to the extent required to show: (a) the coordination between preliminary design and various pre-construction documents, (b) any separate long-lead procurements, (c) any permitting issues, (d) any land, right-of-way, or easement acquisition, (e) bid packaging strategy and awards to Subcontractors and Suppliers, (f) major stages of construction, (g) start-up and commissioning, and (h) occupancy of the completed Work by City. The Detailed Project Schedule must include by example and not limitation, proposed activity sequences and durations for design, procurement, construction and testing activities, milestone dates for actions and decisions by the Project Team, preparation and processing of shop drawings

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and samples, delivery of materials or equipment requiring long-lead time procurement (if any), milestone dates for various construction phases, Total Float for all activities to the extent authorized by City, relationships between the activities, City's occupancy requirements showing portions of the Project having occupancy priority, and proposed dates for Final Acceptance.

17.3.3 A Baseline Project Schedule must be initiated with the project Baseline Cost Model and agreed to by the project team at the same time. CM@Risk must update and maintain a detailed Project Schedule throughout pre-construction such that it will not require major changes at the start of the construction phase to incorporate CM@Risk's plan for the performance of the construction phase Work. CM@Risk must provide updates and/or revisions to the Detailed Project Schedule for use by the Project Team, whenever required, but no less often than at the Project Team meetings. CM@Risk must include with such submittals a narrative describing its analysis of the progress achieved to-date vs. the Baseline Project Schedule, including any concerns regarding delays or potential delays, and any recommendations regarding mitigating actions.

17.3.4 If phased construction is deemed appropriate at the time of developing the Baseline Cost Model or during the development of the Detailed Project Schedule, and City approves, CM@Risk must review the design and make recommendations regarding the phased issuance of Construction Documents to facilitate phased construction of the Work, with the objective of reducing the Project Schedule and/or Cost of the Work. CM@Risk must take into consideration such factors as natural and practical lines of work severability, sequencing effectiveness, access and availability constraints, total time for completion, construction market conditions, labor and materials availability, and any other factors pertinent to saving time and cost.

17.3.5 Long Lead Time Items. As part of developing the Detailed Project Schedule, CM@Risk must identify all long lead time materials, fabrications, equipment, or other items which may impact the Project Schedule and may require early action on the part of the Project Team. Dates for selecting and ordering long lead time items will be included and highlighted in the Detailed Project Schedule

17.3.6 Equipment Plan. Contractor must develop an Equipment Plan that addresses all rental and owned equipment, regardless of whether such equipment will be provided by CM@Risk or subcontractor(s), that will be necessary to construct the Project and the cost of which will be included as a Cost of the Work in the GMP Proposal. The Equipment Plan will seek to minimize the cost of the equipment to City and maximize the efficient and coordinated use of the equipment for completion of the Project. The Equipment Plan will not only include the costs and allowable lease rates for the equipment, but will also include an equipment schedule that will be incorporated into the Detailed Project Schedule and the Schedule of Values submitted with the GMP Proposal.

17.4 DESIGN DOCUMENT REVIEWS

17.4.1 CM@Risk must evaluate periodically the availability of labor, materials/equipment, cost-sensitive aspects of the design; and other factors that may create an unacceptable variance to the Baseline Cost Model and/or Baseline Project Schedule.

17.4.2 CM@Risk must recommend, in conjunction with the Project Team, those additional surface and subsurface investigations that, in its professional opinion, are required to provide the necessary information for CM@Risk to construct the Project. These additional

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investigations, if agreed to be necessary by the Project Manager and the Design Professional, will be acquired by City and copies of the reports will be provided to CM@Risk.

17.4.3 CM@Risk must meet with the Project Team as required to review designs during their development. CM@Risk must familiarize itself with the evolving documents through pre- construction. CM@Risk must proactively advise the Project Team and make recommendations on factors related to construction costs, and concerns pertaining to the feasibility and practicality of any proposed means and methods, selected materials, equipment and building systems, and, labor and material availability. CM@Risk must furthermore advise the Project Team on proposed site improvements, excavation and foundation considerations, as well as, concerns that exist with respect to coordination of the Drawings and Specifications. CM@Risk must use established value analysis principles in recommending cost effective alternatives.

17.4.4 CM@Risk must routinely conduct constructability and bid-ability reviews of the Drawings and Specifications as necessary to satisfy the needs of the Project Team. The reviews must attempt to identify all discrepancies and inconsistencies in the Construction Documents especially those related to clarity, consistency, completeness and coordination of Work of Subcontractors and Suppliers.

17.4.4.1 CM@Risk must evaluate whether: (a) the Drawings and Specifications are configured to enable efficient construction; (b) design elements are standardized; (c) construction efficiency is properly considered in the Drawings and Specifications; (d) module/preassembly design is prepared to facilitate fabrication, transport and installation; (e) sequences of Work required by or inferable from the Drawings and Specifications are practicable; (f) the design has taken into consideration efficiency issues concerning access and entrance to the site, laydown and storage of materials, staging of site facilities, construction parking, and other similar pertinent issues; and (g) the design maintains continued operation of the existing City systems and maintains traffic on adjacent roadways. CM@Risk must also review the Drawings and Specifications to ensure that what is depicted therein can be constructed as designed and must promptly inform the Project Team of any issues.

17.4.4.2 CM@Risk must check cross-reference and complementary Drawings and sections within the Specifications and in general evaluate whether: (a) the Drawings and Specifications are sufficiently clear and detailed to minimize ambiguity and to reduce scope interpretation discrepancies; (b) named materials and equipment are commercially available and are performing well, or otherwise, in similar installations; (c) Specifications include alternatives in the event a requirement cannot be met in the field; and (d) in its professional opinion, the Project is likely to be subject to Differing Site Conditions.

17.4.4.3 The results of the reviews must be provided to Project Team in formal, written reports clearly identifying all reviewed documents and the discovered discrepancies and inconsistencies in the Drawings and Specifications with notations and recommendations made on the Drawings, Specifications and other documents. CM@Risk must meet with Project Team to discuss any findings and review reports.

17.4.4.4 CM@Risk's reviews must be from a Contractor's perspective, and though it will serve to eliminate/reduce the number of RFIs) and changes during the construction phase, responsibility for the Drawings and Specifications will remain with the Design Professional and not CM@Risk.

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17.4.5 It is CM@Risk's responsibility to assist the Design Professional in ascertaining that, in CM@Risk's professional opinion, the Construction Documents are in accordance with applicable Laws, Regulations, or Legal Requirements, building codes, sound engineering principle's rules and regulations. If CM@Risk recognizes that portions of the Construction Documents are at variance with applicable laws, statutes, ordinances, building codes, sound engineering principle's rules and regulations, it must promptly notify the Project Team in writing, describing the apparent variance of deficiency. However, the Design Professional is ultimately responsible for the compliance of the Drawings and Specifications with those laws, statutes, ordinances, building codes, rules and regulations.

17.4.6 The Project Team will routinely identify and evaluate using value analysis principles and alternate systems, approaches, design changes that have the potential to reduce Project costs while still delivering a high quality and fully functional Project consistent with the Project Program. If the Project Team agrees, CM@Risk in cooperation with the Design Professional, will perform a cost/benefit analysis of the alternatives and submit such in writing to the Project Team. City, through the Project Manager, will direct which alternatives will be incorporated into the Project. The Design Professional will have full design responsibility for the review and incorporation of CM@Risk suggested alternatives into the Drawings and Specifications. CM@Risk must analyze the costs and schedule impacts of the alternatives against the Baseline Cost Model and Schedule and provide a recommendation for the Project Team's consideration and City's approval prior to the establishment of the GMP.

17.5 **BASELINE COSTS MODEL, DETAILED COST ESTIMATES, AND SCHEDULE OF VALUES**

17.5.1 At the conclusion of the Master Planning and Programming, if required, CM@Risk will review all available information regarding the design and scope of the Project using CM@Risk's experience in performing similar work, knowledge of similar projects and current and projected construction costs and, based upon that review, must develop a Baseline Cost Model for review by the Project Team and approval by City. Once approved by City, the Baseline Cost Model will be continually referenced as detailed estimates are created as the design progresses throughout Pre-Construction until the final GMP for the entire Project is established. A final GMP for the entire Project must be established and approved by City prior to the start of construction. It is the responsibility of CM@Risk to ensure City has sufficient information to evaluate and approve a final GMP prior to the time necessary to start construction so construction can be completed within the Agreement Time. The Project Detailed Cost Estimate will be the best representation from CM@Risk of what the complete functional Project's construction costs will be as indicated by the most current available documents and will be constantly checked against the Baseline Cost Model. CM@Risk must communicate to the Project Team and assumptions made in preparing the Baseline Cost Model. The Baseline Cost Model must support CM@Risk's Detailed Cost Estimates and may be broken down initially as dictated by the available information, as required by City.

17.5.2 After receipt of the Design Professional's most current documents from certain specified pre- construction milestones, CM@Risk must provide a draft Detailed Cost Estimate including a detailed written report detailing any variances to the Baseline Cost Model and Baseline Project Schedule. The Design Professional and CM@Risk will reconcile any disagreements on the estimate to arrive at an agreed upon Detailed Cost Estimate for the construction costs based on the scope of the Project through that specified pre-construction milestone. Pre-Construction milestones applicable to this paragraph are:

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Master Planning and Programming, Schematic Design, 50% Design Development, 100% Design Development, and 50% Construction Drawings, If no consensus is reached, City will make the final determination. If the Project Team requires additional updates of the Detailed Cost Estimate beyond that specified in this paragraph, CM@Risk must provide the requested information in a timely manner.

17.5.3 If at any point the Detailed Cost Estimate submitted to City exceeds the previously accepted Baseline Cost Model or previously approved Detailed Cost Estimate agreed to as set forth in Section 17.5.2 above, CM@Risk must make appropriate recommendations to project Team on means/methods, materials, and or other design elements that it believes will reduce the estimated construction costs, such that it is equal to or less than the established Project Team's Baseline Cost Model.

17.5.4 Unless other levels of completion are agreed to in writing in the Construction Documents, at 50% Construction Drawings and included with the associated report, CM@Risk must also submit to the Project Team for review and approval a Schedule of Values that complies with the following requirements. The Schedule of Values must be based on City standard bid schedule and highlight significant variances from any previously submitted Schedule of Values. The Schedule of Values must be directly related to the breakdowns reflected in the Detailed Project Schedule and CM@Risk's Detailed Cost Estimate. In addition, the Schedule of Values must: (a) detail unit prices and quantity take-offs, (b) detail all other contingencies and unit price Work shown and specified in the detailed design documents.

17.5.5 CM@Risk is to track, estimate/price and address the Project Team's overall project cost issues that arise outside of the Baseline Cost Model and the latest approved Detailed Cost Estimate such as: City generated changes, Project Team proposed changes, alternate system analysis, constructability items and value engineering analysis. The system used to implement this process will be referred to as the Design Evolution Log. This is to be addressed between the Baseline Cost Model and the Master Planning and Programming Detailed Cost Estimate, and then (unless other levels of completion are agreed to in writing in the Construction Documents) between the Detailed Cost Estimates for each of the pre-construction milestones thereafter, Schematic Design, 50% Design Development, 100% Design Development, and 50% Construction Documents, and the bid packages for all Phases.

17.5.6 Upon request by City, CM@Risk must submit to City a cash flow projection for the Project based on the current updated/revised Detailed Project Schedule and the anticipated level of payments for CM@Risk during the design and construction phases. In addition, if requested by City and based on information provided by City, CM@Risk must prepare a cash flow projection for the entire Project based on historical records for similar types of projects to assist City in the financing process.

17.5.7 Construction Water. CM@Risk must estimate the quantity of water to be used and include the cost thereof in each Detailed Cost Estimate and GMP Proposal provided by City.

17.6 SUBCONTRACTOR AND MAJOR SUPPLIER SELECTIONS

17.6.1 There are two ways to select Subcontractors and major Suppliers prior to submission of a GMP Proposal: (1) qualifications-based selection; or (2) a combination of qualifications and price. Except as noted below, the selection of Subcontractors/Suppliers is the sole responsibility of CM@Risk. In any case, CM@Risk is solely responsible for the performance of the selected Subcontractors/Suppliers, and for compliance with the requirements of

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Title 34 of the Arizona Revised Statutes in the selection of a Subcontractors/Suppliers, to the extent applicable. CM@Risk must comply with its Subcontractor Selection Plan submitted with its Statement of Qualifications.

17.6.2 City may approve the selection of a Subcontractor(s) or Suppliers(s) based only on their qualifications when CM@Risk can demonstrate it is in the best interest of the Project. All Work that is performed, after such a qualifications-based selection, for a price that is negotiated by CM@Risk will be billed in accordance with the GMP for actual costs and may be subject to audit by City.

17.6.2.1 Qualifications based selection of a Subcontractor(s)/Supplier(s) should only occur prior to the submittal of the GMP Proposal.

17.6.2.2 If a Subcontractor/Supplier selection plan was submitted and agreed to by City, CM@Risk must apply the plan in the evaluation of the qualifications of a Subcontractor(s) or Supplier(s) and provide City with its review and recommendations.

17.6.2.3 CM@Risk must receive written City approval for each selected Subcontractor(s) and Supplier(s).

17.6.2.4 CM@Risk must negotiate costs for services/supplies from each Subcontractor/Supplier selected under this method.

17.6.3 All Work must be competitively bid unless a Subcontractor or Supplier was selected pursuant to Section 17.6.2 above.

17.6.3.1 CM@Risk must develop Subcontractor and Supplier interest, submit the names of a minimum of three qualified Subcontractors or Suppliers for each trade in the Project for approval by City and solicit bids for the various Work categories. If there are not three qualified Subcontractors/Suppliers available for a specific trade or there are extenuating circumstances warranting such, CM@Risk may request approval by City to submit less than three names. Without prior written notice to City, no change in the recommended Subcontractors/Supplies will be allowed.

17.6.3.2 If City objects to any nominated Subcontractor/Supplier or to any self-performed Work for good reason, CM@Risk must nominate a substitute Subcontractor/Supplier that is acceptable to City.

17.6.3.3 CM@Risk must distribute Drawings and Specifications, and when appropriate, conduct a Pre- Bid Conference with prospective Subcontractors and Suppliers.

17.6.3.4 If CM@Risk desires to self-perform certain portions of the Work, it must request to be one of the approved Subcontractor bidders for those specific bid packages. CM@Risk's bid will be evaluated in accordance with the process identified below. If events warrant and City concurs that it is necessary in order to ensure compliance with the Project Schedule and/or the most recent Detailed Cost Estimate, CM@Risk may be authorized to self-perform Work without bidding or rebidding the Work. When CM@Risk self-performs work without bidding, only the actual costs associated with performing the Work in accordance with the approved GMP will be billed and may be subject to audit by City.

17.6.3.5 CM@Risk must receive, open, record and evaluate the bids; provided, however, that if CM@Risk or one of its affiliates is bidding to self-perform the Work that is the subject of the bid, then the bids must be received, opened, recorded and evaluated by Project Manager

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instead of CM@Risk. Bids for each category of Work must be opened and recorded at a pre-determined time. The apparent low bidders must be interviewed to determine the responsiveness of their proposals. In evaluating the responsiveness of bid proposals CM@Risk, in addition to bid price, may consider the following factors: past performance on similar projects, qualifications and experience of personnel assigned, quality management plan, approach or understanding of the Work to be performed, and performance schedule to complete the Work. The final evaluation of Subcontractor/Supplier bids must be done with Project Manager in attendance to observe and witness the process. CM@Risk must resolve any Subcontractor/Supplier bid withdrawal, protest or disqualification in connection with the award at no increase in the Cost of Work.

17.6.4 CM@Risk will be required to prepare two different reports on the subcontracting process.

17.6.4.1 Within fifteen days after each major Subcontractor/Supplier bid opening process; CM@Risk must prepare a report for City's review and approval identifying the recommended Subcontractors/Supplier for each category of Work. The report must detail: (a) the name of the recommended Subcontractor/Supplier and the amount of the Subcontractor/Supplier bid for each sub-agreement; (b) the sum of all recommended Subcontractor/Supplier bids received; (c) and trade work and its cost that CM@Risk intends to self-perform, if any.

17.6.4.2 Upon completion of the Subcontractor/Supplier bidding process, CM@Risk must submit a summary report to City of the entire Subcontractor/Supplier selection process. The report must indicate, by bid process, all Subcontractors/Suppliers contacted to determine interest, the Subcontractors/Suppliers solicited, the bids received and costs negotiated, and the recommended Subcontractors/Suppliers for each category of Work.

17.6.5 The approved Subcontractors/Suppliers will provide a Schedule of Values with their bid proposals, which will be used to create the overall Project Schedule of Values.

17.6.6 If after receipt of sub-bids or after award to Subcontractors and Suppliers, City objects to any nominated Subcontractor/Supplier or to any self-performed Work without any reasonable basis, CM@Risk must nominate a substitute Subcontractor or Supplier, preferably if such option is still available, from those who submitted Subcontractor bids for the Work affected. Once such substitute Subcontractors and Suppliers are consented to by City, CM@Risk's proposed GMP for the Work or portion thereof must be correspondingly adjusted to reflect any higher or lower costs form any such substitution.

17.7 **GMP PROPOSAL**

17.7.1 When a GMP Proposal is submitted for a phase of the Work, the GMP will have a Detailed Cost Estimate of the Costs of the Work (as set forth in Section 15.2) in each phase of the Work that is being proposed plus the current estimate for all other Work. City will not approve the GMP for the phase of work without a total estimate for the complete Project. City may request a GMP Proposal for all or any portion of the Project and at any time during pre-construction. Any GMP Proposals submitted by CM@Risk must be based on and consistent with Baseline Cost Model and the current update/revised Detailed Cost Estimate at the time of the request and include any clarifications or assumptions upon which the GMP Proposal(s) are based.

17.7.2 A GMP Proposal for the entire Project will be the sum of the Cost of the Work, CM@Risk Fee, and General Conditions Cost. CM@Risk guarantees to complete the Project at or less than

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the final GMP Proposal amount plus approved Change Orders. CM@Risk will be responsible for any costs for expenses that would cause the Cost of the Work actually incurred, including the Construction Fee and General Conditions Costs, to exceed the GMP.

17.7.3 CM@Risk must prepare its GMP Proposal in accordance with City's request for GMP Proposal requirements based on the most current completed Drawings and Specifications at that time, which unless otherwise directed by City in writing, will be at 100% Construction Drawings. CM@Risk must mark the face of each document of each set upon which its GMP Proposal is based. These documents must be identified as the GMP Plans and Specifications. CM@Risk must send one set of those documents to the Project Manager, keep one set and return the third set to the Design Professional.

17.7.4 An updated/revised Detailed Project Schedule, Equipment Plan, and Schedule of Values must be included in any GMP Proposal(s), all of which must reflect the GMP Plans and Specifications the Detailed Project Schedule must be shown in relationship to the Project Schedule and identify any variance to the Baseline Project Schedule. Any such Detailed Project Schedule updates/revisions must continue to comply with the requirements of Section 17.3.1 through 17.3.5.

17.7.5 GMP Proposals(s) Review and Approval

17.7.5.1 CM@Risk must meet with the Project Team to review the GMP Proposal(s) and the written statement of its basis. In the event the Project Team discovers inconsistencies or inaccuracies in the information presented, CM@Risk must make adjustments as necessary to the GMP Proposal.

17.7.5.2 If during the review and negotiation of GMP Proposals design changes are required, City may authorize and cause the Design Professional to revise the GMP Plans and Specifications to the extent necessary to reflect the agreed-upon assumptions and clarifications contained in the final approved GMP Proposal. Such revised GMP Plans and Specification will be furnished to CM@Risk. CM@Risk must promptly notify the Project Team in writing if any such revised GMP Plans and Specifications are inconsistent with the agreed upon assumptions and clarifications.

17.7.6 All portions of or items comprising the GMP Proposal are subject to audit by City, as deemed appropriate by City, including, without limitation, any based upon unit prices or Work to be self- performed by CM@Risk, or its affiliates.

17.8 **PAYMENT PROCEDURE FOR PRE-CONSTRUCTION SERVICES**

17.8.1 Requests for monthly payments by CM@Risk for Pre-Construction Services must be submitted monthly and must be accompanied by a progress report, detailed invoices and receipts, if applicable. Any requests for payment must include, as a minimum, a narrative description of the tasks accomplished during the billing period, a listing of any Deliverables submitted, and copies of any Subconsultants' requests for payment, plus similar narrative and listings of Deliverables associated with their Work. Payment for services negotiated as a lump sum will be made in accordance with the percentage of work completed during the preceding month.

17.8.2 In no event will City pay more than seventy-five (75%) of the Agreement Price until acceptance of ALL Pre-Construction Services and award of the final approved Construction Services Agreement for the entire Project by City Council. If CM@Risk does not prepare a

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GMP Proposal that is acceptable to City, or the GMP Proposal exceeds the City's Construction Budget, then CM@Risk understands and acknowledges that it will forfeit any right to receive the 25% of the Agreement Price being retained by City.

17.8.3 CM@Risk agrees that no charges or claims for costs or damages of any type will be made by it for any delays or hindrances beyond the reasonable control of City during the progress of any portion of Pre-Construction Services specified in this Agreement. Such delays or hindrances, if any, will be solely compensated for by an extension of time for such reasonable period and may be mutually agreed between the parties. It is understood and agreed, however, that permitting CM@Risk to proceed to complete any such Services, in whole or in part after the date to which the time of completion may have been extended, will in no way act as a waiver on the part of City of any of their respective legal rights herein.

17.8.4 No compensation to CM@Risk will be allowed contrary to Article I, Chapter I, Title 34 of the Arizona Revised Statutes.

17.8.5 If any service(s) executed by CM@Risk is abandoned or suspended in whole or in part, for a period of more than 180 days through no fault of CM@Risk, CM@Risk is to be paid for the services performed prior to the abandonment or suspension.

17.9 **SURVIVAL OF THE DESIGN SERVICES AGREEMENT, DUTIES, OBLIGATIONS AND WARRANTIES**

If the GMP Proposal is accepted by City and a Construction Agreement is entered into between City and CM@Risk, the duties, obligations and warranties of CM@Risk under the Pre- Construction Services Agreement survive and are incorporated into the resulting Construction Agreement.

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SECTION 15 – APPENDICES

The following Appendices attached hereto are referenced in the General Conditions and are incorporated herein.

Appendix 1 – Policy Statement for Calculating Delays and Damages
Appendix 2 – Cost Reduction Incentive Proposals for Design Bid Build Agreements
Appendix 3 – Contractor's Affidavit Regarding Settlement of Claims
Appendix 4 – Forms of Performance Bond
Appendix 5 – Forms of Payment Bond
Appendix 6 – Dispute Resolution
Appendix 7 – Certificate of Completion
Appendix 8 – Construction Sign Detail
Appendix 9 – Cost of the Work (Applicable solely to Construction Manager at Risk and Job Order Contracting)
Appendix 10 Landscape Establishment Period

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CALCULATING DELAYS AND DAMAGES

The purpose of this policy statement is to establish guidelines and procedures for negotiation between the Contractor and City of Chandler relating to compensation for delays pursuant to Arizona Revised Statutes (A.R.S.) 34-221(F). This policy statement contains notice requirements in addition to those set forth in the Agreement Documents, and will be the Agreement Provision contemplated by that statute.

NOTE: As used herein, the term "Engineer" will refer to the City of Chandler City Engineer or his/her designated representative. Nothing in this Policy Statement will be construed to void any provision in the Agreement which requires timely notice of delays or provides for arbitration or any other procedure for settlement or provides for liquidated damages.

I. TYPES OF DELAYS:

For the purposes of this document, there are essentially four types of delays encountered by City of Chandler Construction Contractors; excusable/compensable, excusable/non-compensable, non- excusable, and concurrent. Only delays that extend Agreement Completion Time set forth in the Agreement Document will be considered for issues relating to Agreement extensions or additional compensation. All other delays are considered to be activity delays and do not entitle the Contractor to either time extensions or additional compensation. Agreement Completion Time will be defined as the date set forth in Maricopa Association of Governments (MAG) Uniform Standard Specification Section 101 and as may be modified by the Agreement Documents.

A. Excusable/Compensable:

These are delays caused solely by the City's actions or inactions, are unreasonable under the circumstances, and which were not within the contemplation of the parties to the Agreement at or prior to the time of execution of the Agreement. Since the Contractor presumably has no control over the events causing the delay, he may be entitled to both Agreement time extensions and additional compensation for delay damages. Further, he/she may be entitled to additional compensation from the impact of that delay on other work. Examples of excusable/compensable (E/C) delays include: failure to properly locate an underground City-owned utility within 2 feet of the actual location; failure to relocate City-owned utilities far enough in advance of construction in an area where the Contractor is scheduled to work that it delays start or completion of the Contractor's regularly scheduled work; failure to provide City-furnished equipment or materials in a timely manner if required by the Agreement; failure to acquire necessary Right-of-Way or Public Utility Easements prior to the Contractor beginning Work in the area; failure to timely return Shop Drawings or other Agreement Submittals in accordance with the Agreement; unreasonable delay by the City in making decisions which affect critical activities; surveying errors when the City is contractually responsible for providing Project Surveying. This list is not meant to be all inclusive, but is intended merely as examples of the type of City action or inaction which can result in a Contractor's claim for additional time and compensation.

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B. Excusable/Non-compensable:

These are delays over which neither the City nor the Contractor had control. Since both parties to the Agreement have been potentially damaged by the delay, but neither have caused it, only Time Extensions are warranted. Examples of excusable, non-compensable (E/N) delays include: unusually severe weather; fire; acts of God; failure of non-City owned utilities (SRP, CenturyLink, Cable TV, Southern Pacific Railroad, and Southwest Gas, etc.) to properly or timely locate accurately; failure of non-City owned utilities to relocate in advance of construction; the voluntary or involuntary filing for Bankruptcy protection by a Supplier or Subcontractor which causes the Supplier/Subcontractor to fail to meet a contractual deadline provided the Contractor can provide documentation that he/she executed the required Purchase Orders/Subcontract Agreements and received delivery schedules which, if met, would have eliminated the delay; delays as a result of an incomplete shutdown of a City or non-City owned utility main (the City does not guarantee a complete shutdown). This list also is not necessarily all inclusive but merely indicative of type and class of E/N delays.

C. Non-excusable/Non-compensable:

These are delays caused by the actions or inactions of Contractor or an officer, employee, agent, Subcontractor, Supplier or any other party for whom the Contractor is responsible. Since the Contractor has assumed responsibility for the risks associated with the events that caused the delay, he/she are not entitled to either time extensions or monetary delay damages. All non-excusable delays are also non-compensable. Examples of non- excusable, non-compensable (N/N) delays include: failure to perform by the Contractor, its Subcontractors and/or Suppliers (except as noted in section I.B above); failure to provide adequate labor, materials, and/or equipment on the Project; failure to perform contractually-required coordination with utilities, agencies and other Contractors; failure to notify the Engineer, in writing, of delay impacts within two working days, as required by MAG 104.2.3, or the next work day, as required by MAG 109.8.2; failure to timely submit Shop Drawings; failure to pothole or otherwise visually locate utilities sufficiently ahead of the Work to allow the Engineer to direct corrective action when necessary; delays due to retesting of previously failed work, re-inspection, and/or restaking resulting from faulty workmanship, poor quality control, or lack of compliance with Agreement Specifications. Again, this list is not necessarily all inclusive.

D. Concurrent:

When two or more delays occur simultaneously or overlap, each delay is analyzed separately to determine its impact on the overall project completion date based on when that delay started. Once again, only those delays which actually extend the Agreement completion time are considered as delays. The concurrent delay is considered an additional delay only to the extent it prolongs the delay to the Agreement Completion Time beyond the date that the one it is concurrent with had already delayed that date. For example, if two delays are concurrent, and one is five days long and the second is seven days long, the second concurrent delay will only extend the Agreement Completion Time by two days. The same method of analysis is

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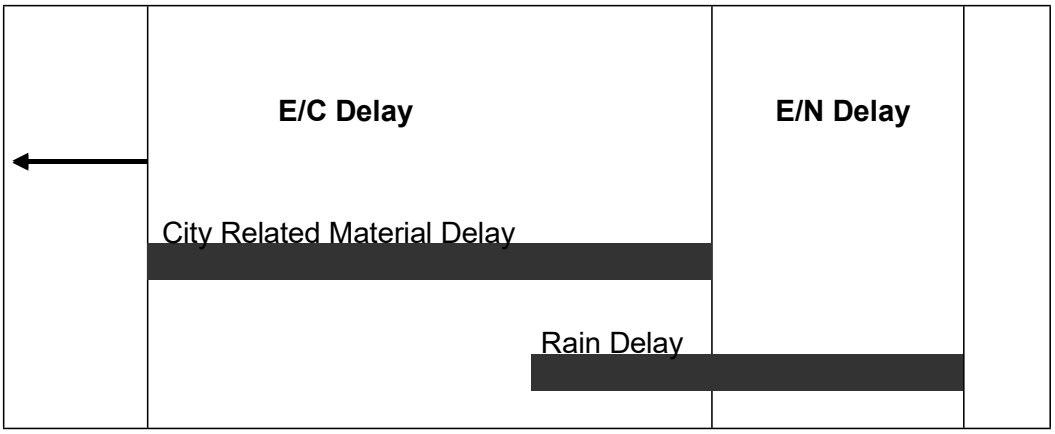
used when there are multiple concurrent delays. Only those extending the Project Completion Date are considered to be delays for the purposes of this policy. The portion of each concurrent delay that delays the completion of the work is classified in the same manner as described previously for individual delays and being either E/C, E/N or N/N.

An example of a concurrent delay is where the City delays furnishing material, but the Contractor could not have installed it anyway due to unusually severe weather. The effect of the first delaying activity will extend for the full duration and will be considered controlling on the Contractor's schedule. A subsequent, concurrent delay will thereafter only be considered to effect the project completion (if at all) once the first delaying activity has ceased to impact the project completion. In this case, if the unusually severe weather continued and delayed the work after the material was delivered, the first portion of the delay would be classified E/C (delay for material) and the second as E/N (delay due to unusually severe weather). Using the procedure set forth above, the entire concurrent portion would be considered E/C as shown in the chart which follows.

Example of a Concurrent Delay:



II. ANALYZING THE DELAY:

The Contractor must provide all documents required or requested by the Engineer to analyze the delay(s). It is important to understand that, prior to the delay analysis, delays and their impacts are alleged issues. The information the Contractor provides will be compared with the Inspector's Daily Log, Schedules and other available Project information and together they will support or refute that delays occurred and, if so, how they impact other work and the overall project completion. The Contractor's delay in providing these documents will be considered prima facie evidence that either the delay did not occur or it did not impact the Project Completion Date and any claim for time extension or damages will be denied.

The Engineer will accept delay analyses in CPM format, as these may demonstrate to his/her satisfaction whether or not Project Completion has been impacted by a specific event. If the Contractor chooses not to use CPM scheduling procedures, then the burden will be on the Contractor to prove to the Engineer's satisfaction that the Project Completion has been impacted. The procedures

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below assume that the Contractor is using CPM scheduling methods. As a minimum the Contractor must provide the following materials to the Engineer:

A. As-Planned Schedule. The initial construction schedule, required by the Agreement Documents, will be considered the baseline schedule. It is to the Contractor's advantage that the As-Planned (baseline) Schedule be as detailed as possible in order for delays, as they occur, to be incorporated into the schedule in representative locations. It is also to the Contractor's advantage to use a computer software program to generate the schedule since updated schedules are required monthly by the Agreement Documents and since updated schedules are required to support delays and requests for additional compensation for delays. The As-Planned (baseline) Schedule must be presented in network format which clearly shows the interrelationships of the activities. The Contractor must also provide a printout of the activities showing early start, early finish, late start, late finish, duration and float. The activity list printout must also indicate predecessor and successor activities.

B. As-Built Schedules. The as planned (baseline) schedule must be updated with complete progress-to-date information (actualized) up to the date of the start of the alleged delay. Each updated schedule will serve as the as-built schedule for analyzing the alleged delay and provide a new baseline as-planned schedule for the next delay. This process must be repeated for each alleged delay as it occurs. In updating the baseline schedule, the alleged delay must be treated as an activity and inserted into the schedule as a predecessor to the impacted activity (ies). When an activity that has already started is impacted, it is preferable to divide this activity into two parts and show the impact affecting the second part. For schedules which incorporate a time line (or data date), the delay activity must be inserted at the time it actually occurred. Some software scheduling programs have a PAUSE-RESUME feature that can be used to facilitate the requirements. The updated schedule must also be accompanied by a listing of activities as with the baseline schedule. This activities list must contain the alleged delay as an activity showing the duration and the activities which are predecessors and successors to it. When computer generated schedules are used, the Contractor must provide, in electronic media format, the complete data files for the updated schedule that included the delay activity, preferably either in Suretrak or in Microsoft Project. Each electronic media must contain a label identifying the Project name, Contractor's name, program name and version number, data date and project finish date.

C. Other Documents: In order to determine the amount of the alleged delay and if it is compensable, the Contractor must provide all backup documentation relevant to the issue and as required by the Engineer. This documentation must include copies of such items as: purchase orders; delivery schedules; correspondence; memoranda of telephone calls; force account daily worksheets (initialed by the Inspector); payroll data; estimating (bid) worksheets; and any other materials which may be requested by the Engineer.

D. Procedure: Only after receipt of sufficient documentation will the Engineer analyze each alleged delay and determine if it is supported or refuted. If supported, the Engineer will determine if it is excusable or non-excusable, compensable or non-

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compensable. If the Engineer determines that the delay did not affect the Project Completion, the as-planned schedule, which has been updated to the date of the alleged delay, must be revised to indicate this. If the Engineer determines the delay did occur but was N/N, then no time extension will be granted. It is imperative that an actualized schedule be submitted as soon as the occurrence of the alleged delay is known. In no event will the Contractor submit an actualized updated schedule later than 60 days after the occurrence of the alleged delay becomes known.

If the Engineer determines the delay did occur and was excusable but, due to a reason listed in section I.B. is non-compensable, he/she will determine the length of the E/N delay and prepare a Change Order to add that time to the Agreement. The Engineer's decision will be final.

If the Engineer determines the delay was excusable and compensable, he/she will determine the length of the E/C delay and proceed to review the Contractor's damage calculations in accordance with Section III. The Engineer will check the Contractor's calculations, review the backup documentation provided, and prepare a Change Order to cover both the additional compensation and the time extension. The Engineer's decision on both the time extension and additional compensation for the delay will be final.

If the issue involves a concurrent delay, the Engineer will analyze available data to determine the portions which are E/C, E/N, and/or N/N as described above. The Engineer will proceed to determine the length of E/C delay and verify the Contractor's delay damage calculations, if any are provided. Upon completion of this review, the Engineer will prepare a Change Order for the Contractor's review and signature. The Engineer's decision regarding excusable delay and additional compensation for the delay is final.

The amount of time the Engineer will require to analyze the alleged delay(s) will depend upon the Engineer's workload, the complexity of the delay analysis, availability of supporting data, extent of cooperation by the Contractor, and other factors beyond the Engineer's control. It is entirely possible other delay(s) may occur while the Engineer is analyzing particular claim for delay(s). The Engineer's failure to respond to the Contractor in a set period of time will not be used as the basis for a further delay claim or as justification for extending and existing delay claim. The time required for delay analysis by the Engineer will not be counted against the time allotted for processing Final Payment as required by (MAG Section 109.7(B)) or the release of retention and Final Payment as prescribed by A.R.S. Arizona Revised Statutes §34-221.

III. CALCULATING MONETARY DELAY DAMAGES:

Additional compensation for delay, when authorized by the Engineer, will be calculated in accordance with MAG Section 109.5 ACTUAL COST WORK with the following exceptions:

A. No additional compensation or other monetary damages will be awarded or paid for any loss of anticipated profits by the Contractor, Subcontractors or Suppliers.

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B. No additional compensation or other monetary damages will be awarded for home office overhead or non-project general conditions of the Contractor, Subcontractors or Suppliers.

C. Equipment:

1. Contractor-owned equipment rate calculations must be computed in accordance with Section 109.04(D)(3), Arizona Department of Transportation "Standard Specifications for Road and Bridge Construction," 2008 or latest edition and as modified herein. Year and regional adjustment factors must be based on the most recent publications of the Rental Rate Blue Book for Construction Equipment, published by the Equipment Guide-Book Company, San Jose, CA, same as provided by ADOT and in print as of the date of alleged delay. In no event will the compensation for Contractor-owned equipment exceed the purchase price, including tax, paid by the Contractor for the equipment. Compensation will not be allowed for small tools or equipment that show a daily equipment rental rate of less than $5.00 per day or for unlisted equipment that has a value of less than for hundred dollars ($400.00).
2. For leased and rented equipment or equipment not otherwise listed in the Blue Book, rental contracts, or other supporting data will be used to establish the hourly rate. No hourly operating expense will be allowed for delay on standby equipment. In no case will equipment be considered for rental which exceeds the hourly rate for the first eight hours and the daily rate divided by eight for all additional hours as compared with similar equipment listed in the Blue Book. The hourly standby rate must be computed as the lesser of:

    a. Dividing the monthly invoice or rental value by 176 hours per month when the equipment is utilized by the Contractor for more than three weeks;

    b. Dividing the monthly invoice or rental value by 40 hours per week when the equipment is utilized by the Contractor for more than three days.

    In no event will compensation be paid for delay at more than 8 hours per day or 40 hours per week.

3. Except for vehicles used by supervisory personnel, all equipment will be paid at the "standby" rate during the delay period.

4. Equipment brought solely to mitigate the delay (such as pumps, light plants, etc.) may be paid in accordance with ADOT section 109.04(D) (3).

5. The Blue Book regional adjustment will apply in determining rental rates.

D. Material:

Allowable material charges may include, in addition to material incorporated in the

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work material used to mitigate the delay such as barricades, plates, shoring, cold mix, etc. Except in emergencies the Contractor will not employ such material without the prior written approval of the Engineer.

E. Labor:

1. Except for Supervisory Personnel (Superintendent, Project Engineer, and Foremen), labor wages will not be paid after the first one-half day of claimed delay or impact. It is expected the Contractor will reassign or layoff unneeded employees.

2. For Foreman wages to be included, that Foreman must have been actively employed on the project prior to the commencement of the delay and be directly responsible for the activity being delayed.

3. Labor burden must be actual amounts incurred but must not exceed the ADOT approved rate.

F. All costs (equipment, material, and labor) must be substantiated by the City of Chandler's Daily Work Reports.

IV. DOCUMENT REQUIRED FOR CLAIM ANALYSIS:

For purposes of reviewing the Contractor's request for additional compensation, it will be required that the Contractor submit the following listed information. Information requested must be prepared on forms which are substantially similar to the City of Chandler's Daily Work Report form, a copy of which is attached as an exhibit.

A. Labor:

For each employee, laborer, and foreman, for which compensation is requested: Name, classification, dates of work performed, daily hours worked, total hours worked, labor rates, labor burden rates, overtime or premium time charges. Further, the Contractor must make available for inspection and copying to the Engineer the following listed documentation.

1. Certified payroll reports for the period of work claimed.
2. Accounting of Fringe Benefits – certified by a CPA.
3. Contractor's and Subcontractor's daily field reports and daily diaries.

B. Materials:

For all materials for which compensation is requested, if any, total quantities of materials, prices, extensions and transportation costs must be provided on a daily basis. Further, the Contractor must make available for inspection and copying to the Engineer the following listed documentation.

1. Invoices for all materials incorporated.
2. Weigh tickets.
3. Purchase orders.

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4. Delivery schedules.
5. Quotes or proposals from manufacturers or supplier.
6. Freight bills, Bills of Lading, or other documentation to show transportation costs.
7. Restocking charges-invoices from vendor.

C. Equipment:

For all equipment, the Contractor must provide the Engineer with the designation, dates and hours of usage, dates and hours of standby, if any, daily hours, total hours, rental rates and extension for each unit of equipment and machinery. Rental rates will be as established in Section III. Further, the Contractor must make available for inspection and copying to the Engineer the following listed documentation.

1. Owned:
   a. Purchase contracts(s).
   b. Depreciation schedule(s).
   c. Invoices for fuel, lube, repairs and other operating costs.

2. Leased:
   a. Lease agreement with hourly rate, overtime rate, double shift rate, etc.
   b. Invoices or other documentation showing hours worked on a daily basis.

D. Subcontractors/Owner-Operators:

In the event the Contractor submits a claim which includes requests for compensation for Subcontractors of Owner-Operators, the same information requested of the Contractor must be provided by the Subcontractor/Owner-Operator. Further, the Contractor must make available for inspection and copying to the Engineer the following listed documentation.

1. Bid/Estimate work sheets and/or spreadsheets.
2. Subcontract Agreements or Agreements with Owner-Operator.
3. All invoices and billing statements received from the Subcontractor/Owner-Operator which relates to the amount requested.

E. Miscellaneous:

Further, the Contractor must make available for inspection and copying to the Engineer the following listed documentation.

1. Evidence of payment for bonds and insurance premiums (MAG 109.5.6).
2. Taxes – unless the Contractor can show otherwise, taxes are reimbursable at 65% of the total cost (less bonds and insurance).

V. TIME LIMIT ON SUBMISSIONS OF CLAIM FOR DELAY OR IMPACT DAMAGES:

No claims for delay or impact damages will be considered or allowed more than 45 days after the event or occurrence which the Contractor claims gives rise to the delay or impact. In no event will a

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claim for delay or impact damages be considered after submission by the Contractor of the Final Payment Request.

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COST REDUCTION INCENTIVE PROPOSALS FOR DESIGN BID BUILD AGREEMENTS

The Contractor may submit to the Engineer proposals for modifying the Plans, Specifications, or other requirements of the Agreement for the sole purpose of reducing the total cost of Project construction. The proposals must not impair in any manner the essential functions or characteristics of the project; including but not limited to service life, economy of operations, ease of maintenance, desired appearance, compatibility with existing or planned equipment, standardization of systems, or design and safety standards.

It must not be inferred from this Policy that the Engineer is required to consider any proposal submitted.

Submissions that propose changes in the basic design of a bridge, propose changes in pipe line size, materials, bedding conditions, pipe specifications; or that propose any change in pavement design will not be considered.

Proposals submitted pursuant to this Policy will be identified as Cost Reduction Incentive Proposals. They must be submitted in writing and, at a minimum, contain the following.

1. Complete the attached or similar cost reduction incentive proposal form.

2. A description of both the existing Agreement Requirements for performing the work and the proposed changes.

3. All Engineering Drawings and computations necessary for the thorough and expeditious evaluation.

4. An itemization of the existing Agreement Requirements that must be changed if the Proposal is adopted and a recommendation as to the manner in which the change should be made.

5. A detailed estimate of the cost of performing the Work under the existing Agreement and under the proposed changes, including the cost of developing and implementing the changes.

6. The Agreement items affected by the proposed changes and any variations in quantities resulting from the changes.

7. An objective estimate of any effects the proposal will have on collateral cost to the City, costs of related items, and cost of maintenance and operation.

8. A statement as to the effect that the Proposal will have on the time for the completion of the Project.

9. A statement as to the time by which a Change Order adopting the Proposal must be executed or when the Engineer must have given verbal approval.

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Proposals will be processed expeditiously; however, the City will not be liable for any delay in acting upon any Proposal nor for any failure to accept any Proposal pursuant to this Special Provision.

The Engineer will be the sole judge of the acceptability of a Proposal and of the estimated net savings in construction costs from the adoption of all or any part of the Proposal. The Contractor will be notified in writing by the Engineer as to whether his/her Proposal has been accepted. The decision by the Engineer is final.

When the City deems such action to be appropriate, it reserves the right to require the Contractor to share equally in the cost to the City of investigating, evaluating, and processing the proposal as a condition for the consideration of such Proposal. Such cost must be shared whether the Proposal is accepted or rejected. When such a condition is imposed, the City will estimate these costs and the Contractor must indicate his acceptance thereof in writing. Such acceptance will authorize the City to deduct the Contractor's share of the costs from any monies due or that may become due to the Contractor under the Agreement.

If the Contractor's Proposal is accepted in whole or in part, the necessary Agreement Modifications and Agreement Price Adjustments will be affected by the execution of a Change Order which will specifically state that it is executed pursuant to this Special Provision.

The Contractor must continue to perform the work in accordance with the requirements of the Agreement until a Change Order incorporating the Proposal has been executed or until he/she has been given verbal approval by the Engineer that his/her Proposal has been accepted. If the Change Order has not been executed or he/she has not been given verbal approval on or before the date specified on the attached cost reduction incentive proposal form or on or before such other date as the Contractor may have subsequently specified in writing, the Proposal may be deemed to be rejected.

The executed Change Order will incorporate the changes in the Plans, Specifications, or other requirements of the Agreement which are necessary to permit the Proposal, or such part of it which has been accepted, to be put into effect, and will include any condition – upon which the City's approval thereof is based, if such approval is conditional. The executed Change Order may also extend the time for the completion of the Agreement if such an extension has been deemed to be warranted by the Engineer as a result of his evaluation of the Proposal.

The executed Change Order will also establish the estimated net savings in the cost of performing the Work attributable to the Proposal effectuated by the Change Order. In determining the net savings, the right is reserved to the Engineer to disregard the Agreement bid prices if, in his/her judgment, such prices do not represent a fair measure of the value of the Work to be performed or to be deleted. The net savings will be established by determining the Contractor's cost of performing the Work, taking into account his/her cost of developing the Proposal and implementing the change, and reducing this amount by any ascertainable collateral costs to the City. The executed Change Order may provide that the Contractor be paid 50 percent of the estimated net savings amount.

The executed Change Order may also provide for the adjustment in Agreement prices. Agreement prices may be adjusted by subtracting the City's share of the accrued net savings.

The amount specified to be paid to the Contractor in the executed Change Order which effectuates a Cost Reduction Proposal will constitute full compensation to the Contractor for the Cost Reduction

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Proposal and the performance of the work thereof pursuant to the said Change Order.

Upon acceptance of a Cost Reduction Incentive Proposal, any restrictions imposed by the Contractor on its use or on disclosure of the information will become void, and the City thereafter will have the right to use all or any part of the Proposal without obligation or compensation of any kind to the Contractor.

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COST REDUCTION INCENTIVE PROPOSAL FORM

TO: CIP City Engineer

FROM:

PROJECT NAME: **ARROWHEAD MEADOWS WATER MAIN REPLACEMENT**

CITY PROJECT NUMBER: **WA2203.402**

DATE:

Summary of Change (Brief description of proposed change including advantages and disadvantages):

ESTIMATED COST SUMMARY (Attached detailed estimate):

A.	Original Cost:	$
B.	Proposed Cost:	$
C.	Construction Savings (A-B):	$
D.	Gross Savings (Included OH %, Bond %)	$
E.	Contractor Implementing	$
F.	City Implementing Cost:	$
	Reduction in Agreement Price (C+D-E-F) x 50%:	$

Date by which a Change Order must be issued so as to obtain maximum cost reduction:

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CITY OF CHANDLER, ARIZONA
PUBLIC WORKS & UTILITIES DEPARTMENT

CONTRACTOR'S AFFIDAVIT REGARDING SETTLEMENT OF CLAIMS

_____, Arizona
Date _____

Project Name: Arrowhead Meadows Water Main Replacement
City Project No.: WA2203.402

To the City of Chandler, Arizona

Gentlemen:

This is to certify that all lawful claims for materials, rental of equipment and labor used in connection with the construction of the above project, whether by subcontractor or claimant in person, have been duly discharged.

The undersigned, for the total compensation of $_____, as set out in the final pay application, as full and complete payment under the terms of the Agreement, hereby waives and relinquishes any and all further claims or right of lien under, in connection with, or as a result of the above described project. The undersigned further agrees to indemnify and save harmless the City of Chandler against any and all liens, claims or liens, suits, actions, damages, charges and expenses whatsoever, which said City may suffer arising out of the failure of the undersigned to pay for all labor performances and materials furnished for the performance of said installation.

Signed and dated at _____, this _____ day of _____ 20_____.

_____
CONTRACTOR

By _____

STATE OF ARIZONA)
) SS
COUNTY OF MARICOPA)

The foregoing instrument was subscribed and sworn to before me this _____ day of _____ 20 _____.

_____
Notary Public

_____
My Commission Expires

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PERFORMANCE BOND

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

KNOW ALL MEN BY THESE PRESENTS THAT:_____

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

WHEREAS, the Principal has entered into a certain written Agreement with the Obligee, dated

the _____ day of _____, 20___ for construction of **WA2203.402, Arrowhead Meadows Water Main Replacement** which Agreement is hereby referred to and made a part hereof as fully and to the same extent as if copies at length herein.

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

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

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

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

_____
PRINCIPAL SEAL

_____
AGENT OF RECORD

By _____

_____
SURETY SEAL

_____
AGENT ADDRESS

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PAYMENT BOND

ARIZONA STATUTORY PAYMENT BOND
PURSUANT TO TITLES 28, 34, AND 41, OF THE ARIZONA REVISED STATUTES
(Penalty of this Bond must be 100% of the Agreement amount)

KNOW ALL MEN BY THESE PRESENTS THAT:_____

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

WHEREAS, the Principal has entered into a certain written Agreement with the Obligee, dated the _____ day of _____, 20___ for construction of **WA2203.402, Arrowhead Meadows Water Main Replacement** which Agreement is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

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

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

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

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

_____
PRINCIPAL SEAL

_____
AGENT OF RECORD

By _____

_____
SURETY SEAL

_____
AGENT ADDRESS

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

DISPUTE RESOLUTION

A. INFORMAL DISPUTE RESOLUTION

The parties to the Agreement agree that time is of the essence in relation to performance of the Agreement and completion of the Project, therefore any and all disputes in relation to the Agreement will initially be referred to the Project Manager, the Design Professional Representative and/or the Contractor Representative as applicable to the dispute, for immediate resolution. If, after good faith efforts to reach a resolution, none is reached, any party to the dispute may submit the dispute to the Dispute Resolution Representative ("DRR") process set forth below, which is intended to be an expedited process.

B. DISPUTE RESOLUTION REPRESENTATIVE ("DRR") PROCESS

1. The Parties under the Agreement agree that all claims and disputes in relation to the Project which are not resolved in the ordinary course of the Project ("Claim" or "Claims") will, as a prerequisite to any mediation, or litigation of the Claim, first be submitted for resolution between the designated Dispute Resolution Representatives of the Parties as set forth herein (the "DRR Process").

2. The DRR Process will be initiated through service of a DRR Notice as set forth below:

   a. For claims by the Contractor or the Design Professional, the DRR Process will be initiated by the party asserting the claim serving written notice on the City setting forth in detail: (i) the basis for the claim; (ii) the effect of the Claim upon the construction of, and/or Project Schedule for, the Project;
   (iii) the specific relief requested, the amount thereof, and how such was calculated; (iv) the parties involved in the Claim, and how they are involved; (v) the specific Agreement provisions in the Agreement Documents (including, if applicable, drawings and specifications) which apply; and (vi) efforts made to date to resolve the Claim.

   b. For claims by the City, the DRR process will be initiated by the City providing written notice to the other parties of the basis and amount of its claim, the parties involved in the Claim, and how they are involved, the provisions in the Agreement Documents that apply, and the relief requested.

   c. The DRR Notice will be hand-delivered and e-mailed to the other parties' designated Dispute Resolution Representatives.

3. The other parties will respond in writing to the DRR Notice ("DRR Response") within ten (10) calendar days of receipt of the DRR Notice, setting forth those items set forth in the DRR Notice that they agree with, dispute, and/or have questions concerning. The DRR Response will be hand-delivered and e-mailed to the other parties' Dispute Resolution Representatives.

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4. The designated Dispute Resolution Representatives for the Parties to the claim will then meet as soon as possible and in any event within twenty (20) calendar days of submission of the DRR Notice (regardless of whether a DRR Response has been submitted by all parties involved in the dispute), at a mutually agreed upon time and place, to attempt to resolve the Claim based upon the DRR Notice and DRR Response.

5. At any time after the first meeting required above, either party may terminate the DRR Process by written notice to the other party.

6. The parties may agree, in writing, to extend or modify the time limits or other provisions of the DRR process in relation to a specific pending Claim.

7. Unless otherwise designated in a written notice to the other parties, the City and the representatives of the Contractor and of the Design Professional will act as the parties' designated Dispute Resolution Representatives.

8. If a resolution of the Claim is reached, that resolution must be set forth in writing and must be signed by the Parties' designated Dispute Resolution Representative. If the resolution involves a change in any Agreement Documents, the Agreement Price, the Project Schedule, or any other change requiring a written Change Order or Amendment, the parties must execute an appropriate written Change Order or Amendment pursuant to the terms of the Agreement Documents.

C. MEDIATION

1. Unless extended by written agreement of the parties involved in the dispute, any Claim not resolved through the DRR process set forth above within five (5) calendar days after the meeting required under B (4) above, or after the DRR is terminated pursuant to B (5) above, whichever is earlier, will be submitted to mediation as a condition precedent to litigation by either party.

2. The mediation will be commenced by written demand upon the other party for mediation. If the parties cannot agree upon a mediator within ten (10) calendar days of the written demand, either party may make a request to the Civil Presiding Judge of the Maricopa County Superior Court to appoint a mediator. The mediation will occur within forth (40) calendar days of the written demand for mediation, unless the parties agree, in writing, to a longer period of time.

3. The qualifications for the mediator will be that he/she be: (a) an experienced mediator, arbitrator or litigator of construction disputes; and (b) having engaged a significant portion of his/her time involving and/or resolving construction disputes for at least the past five (5) years.

4. Each party will provide to the other party and the mediator all of the information and documentation required under B(1) and (2) above, together with any additional information and documentation which the party believes relevant. In addition, the parties will exchange, and provide to the mediator such additional memoranda, information and/or documentation, as the

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mediator may request, and in the form and at such times, as the mediator may direct.

5. The parties will share the mediator's fee and any filing fees equally. The mediation will be held in Chandler, Arizona, unless another location is mutually agreed upon. Agreements reached in mediation will be specifically enforceable in any court having jurisdiction thereof.

D. LITIGATION

Any claim arising out of or related to the Agreement, except Claims relating to aesthetic effect and except those claims waived as provided for in the Agreement Documents, must be resolved through litigation in the Maricopa County, Arizona Superior Court.

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CITY OF CHANDLER, ARIZONA
PUBLIC WORKS & UTILITIES DEPARTMENT

CERTIFICATE OF COMPLETION

PROJECT NAME:	**ARROWHEAD MEADOWS WATER MAIN REPLACEMENT**		
CITY PROJECT NO.:	**WA2203.402**		
If Federally Funded:			
FEDERAL NO.:		**ADOT NO:**	

(*This section to be completed by Prime*)
I HEREBY CERTIFY THAT ALL GOODS AND/OR SERVICES REQUIRED BY CITY OF CHANDLER FOR THIS PROJECT HAVE BEEN DELIVERED IN ACCORDANCE WITH THE AGREEMENT DOCUMENTS AND BID SPECIFICATIONS AND ALL ACTIVITIES REQUIRED BY THE AGREEMENTOR UNDER THE AGREEMENT HAVE BEEN COMPLETED AS OF THE COMPLETION DATE LISTED HERE:

FINAL ACCEPTANCE DATE:	

PRIME CONTRACTOR:

FIRM NAME:			
PRINCIPAL:			
TITLE:			
SIGNATURE:		DATE:	

CERTIFIED BY [*INSERT NAME AND TITLE OF PARTY THAT OVERSEES CONSTRUCTION*]:

FIRM NAME:			
SIGNATURE:		DATE:	

PROJECT ACCEPTED BY CITY OF CHANDLER:

NAME:			
SIGNATURE:		DATE:	

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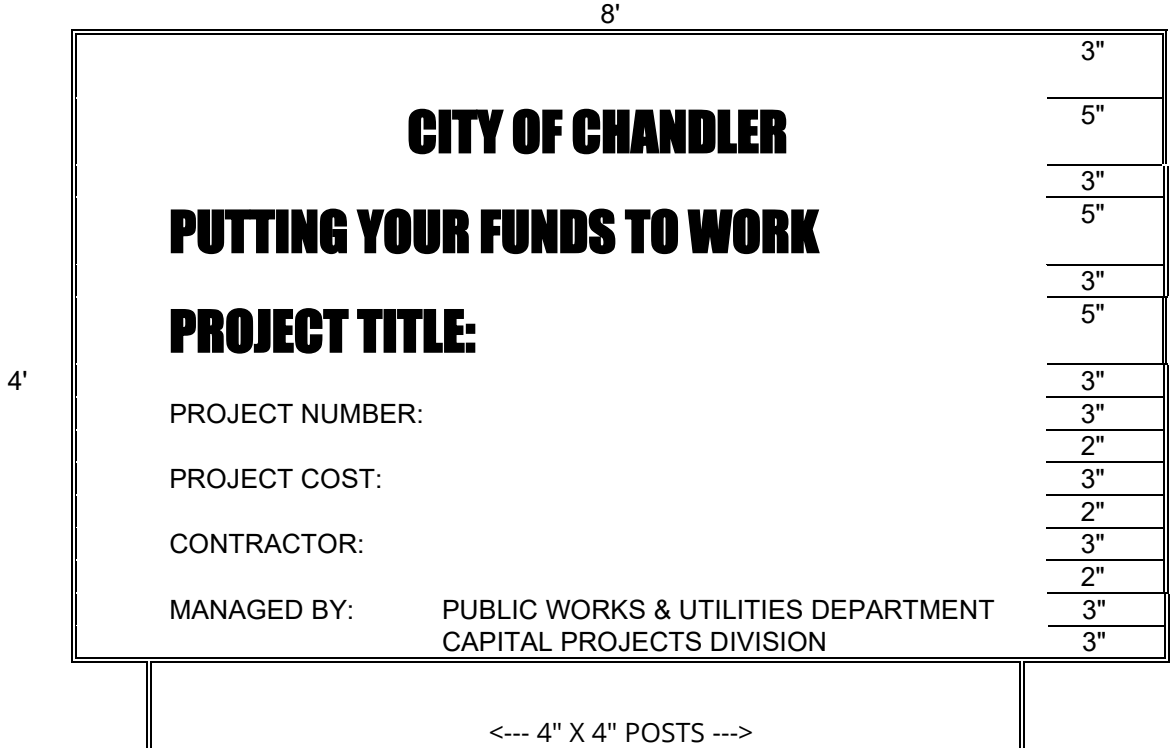
CONSTRUCTION SIGN DETAIL



NOTES:

SIGN(S) MUST BE FURNISHED AND ERECTED PRIOR TO COMMENCEMENT OF CONSTRUCTION. POSTS MUST BE ANCHORED A MINIMUM OF TWO FEET INTO THE GROUND. BOTTOM OF SIGN MUST BE A MINIMUM OF FOUR FEET ABOVE THE GROUND.

TYPICAL PROJECT IDENTIFICATION SIGN FOR GENERAL PROJECTS MUST BE NON-REFLECTORIZED GREEN BACKGROUND, AND NON-REFLECTORIZED WHITE LETTERS AND NUMERALS.

ONE SIGN MUST BE ERECTED FOR BUILDINGS AND OTHER LIMITED AREA SINGLE SITES. FOR MULTIPLE SITES, ONE SIGN MUST BE ERECTED AT EACH SITE.

FOR LINEAR PROJECTS ONE HALF MILE OR LONGER, PLACE ONE SIGN AT EACH END OF THE PROJECT.

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COST OF THE WORK

(APPLICABLE SOLELY TO CONSTRUCTION MANAGER AT RISK AND JOB ORDER CONTRACTING)

SECTION 1 – COSTS TO BE REIMBURSED

1.1 Cost of the Work

The term Cost of the Work will mean costs necessarily incurred by Contractor in the proper performance of the Work. Such costs must be at rates not higher than the standard paid at the place of the Project except with prior consent of City. The Cost of the Work will include only the items set forth in this Section 1.

1.2 Labor Costs

1.2.1 Wages of construction workers directly employed by the Contractor to perform the construction of the Work at the site or, with City's approval, at off-site workshops. Cost to be reimbursed will be the actual wages paid to the individuals performing the work.

1.2.2 Wages or salaries of the Contractor's supervisory and administrative personnel when stationed at the site with City's approval. No Contractor personnel stationed at the Contractor's home or branch offices will be charged to the Cost of the Work. Non-field office based Contractor management and support personnel are expected to provide service and advice from time to time throughout the job and his/her time devoted to Project matters is considered to be covered by the Contractor's Fee.

1.2.3 Wages and salaries of Contractor's supervisory or administrative personnel who would normally be stationed at the field office in accordance with Section 1.2.2 but who become engaged, at factories, workshops or on the road, in expediting the production or transportation of materials or equipment required for the Work, but only for that portion of his/her time required for the Work. Employee bonuses and/or costs associated with Employee Stock Ownership Plans ("ESOP") will not be considered reimbursable labor or labor burden costs and will be considered non-reimbursable costs considered to be covered by the Contractor's Fee.

1.2.4 Costs paid or incurred by Contractor for taxes, insurance, contributions, assessments and benefits required by law or collective bargaining agreements and, for personnel not covered by such agreements, customary benefits such as sick leave, medical and health benefits, holiday, vacations and pensions, provided such costs are based on wages and salaries included in the Cost of the Work under Subparagraphs 1.2.1 through 1.2.3.

1.2.4.1 Cost of the Work will include the actual net cost to Contractor for worker's compensation insurance attributable to the wages chargeable to the Cost of Work per this Agreement. The actual net cost of worker's compensation must take into consideration all cost adjustments due to experience modifiers, premium discounts, policy dividends, retrospective rating plan premium adjustments, assigned risk pool rebates, any applicable weekly maximums, etc. Contractor may charge an estimated amount for worker's compensation insurance costs, but will make appropriate cost adjustments to actual costs within 45 days of receipt of actual cost adjustments from the insurance carrier.

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1.2.4.3 Overtime wages paid to salaried personnel (if approved in advance in writing by City) will be reimbursed at the actual rate of overtime pay paid to the individual. No time charges for overtime hours worked on the Project will be allowed if the individual is not paid for the overtime worked.

1.2.4.4 Any overtime premium or shift differential expense to be incurred by Contractor for hourly workers will require City's advance written approval before the incremental cost of the overtime premium or shift differential will be considered a reimbursable cost. If the Contractor is required to work overtime as a result of an inexcusable delay or other coordination problems caused by the Contractor or anyone he/she is responsible for, the overtime premium and/or shift differential expense portion of the payroll expense and related labor burden costs will be considered as cost not to be reimbursed.

1.2.4.5 Reimbursable labor burden costs will be limited to payroll taxes, worker's compensation insurance, the employer's portion of union benefit costs for union employees working on the Project, and the actual verifiable fringe benefit costs incurred by Contractor for non-union individuals working on the Project subject to the following maximum percentages for the following reimbursable non-union fringe benefit costs. The following maximums (as a percentage of reimbursable actual wages by individual) will apply for each of the following types of fringe benefit costs specifically attributable to each of the non-union personnel working on the Project:

- Medical Insurance, Dental, Life & AD&D Insurance: 12.00%
- Holiday, vacation and other paid time not worked: 10.00%
- Pension Plan Contributions to Vested Employee Account, Simplified Employee Pension Plans, or 401K matching plans (Note: ESOP related costs are covered by the Contractor Fee) 10.00%

For non-union personnel, no other fringe benefit costs (other than the three specific categories listed immediately above, will be considered reimbursable Cost of Work. Any labor burden costs that are in excess of the amounts considered reimbursable or are otherwise not considered reimbursable under the terms of this agreement are intended to be covered by the Contractor Fee.

1.3 Subcontract Costs

1.3.1 Payments made by Contractor to Subcontractors in accordance with the requirements of the subcontracts.

1.3.2 For Scope of Work Bid Packages typically performed by Subcontractors, Contractor may "self- perform" such work on an actual cost basis subject to an agreed upon Guaranteed Maximum Price for the "self-performed work". The Contractor must, unless agreed to by City in writing, bid his/her proposed guaranteed Maximum Price for the work to be "self-performed" against at least three other interested trade Contractors. All savings under any such Subcontract for "self-performed work" must be applied to reduce the Cost of Work under the Agreement and the Guaranteed Maximum Price. For purposes of defining "self-performed work" subject to this provision, any division of Contractor, or any separate Contractor or Subcontractor that is partially owned or wholly owned by the Contractor or any of his/her employees or employee's relatives will be considered a related party entity and will be subject to this provision regarding "self-performed work". No self-performed work will

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be allowed to be performed on a Fixed Price basis.

1.3.3 Contractor (with respect to its Suppliers, Subcontractors and all lower tier Subcontractors) must provide City advance written notice and must obtain City's approval for any proposed Subcontract Change Order, Material Purchase Order, or other financial commitment in an amount in excess of $5,000 prior to placing such order or entering into such agreement (regardless of whether or not any such commitment will affect the prime Agreement Guaranteed Maximum Cost). It is agreed that sums applicable to any Subcontract Change Order, Purchase Order or other financial commitment entered into in violation of the above notice and approval requirement will not be included in the amounts owning to Contractor, Subcontractors or Suppliers whether as Costs of the Work or as reasonable termination costs in the event of termination.

1.4 Costs of Material and Equipment Incorporated in the Completed Construction

1.4.1 Costs, including transportation and storage, of materials and equipment incorporated or to be incorporated in the completed construction.

1.4.2 Costs of materials described in the preceding Subparagraph 1.4.1 in excess of those actually installed to allow for reasonable waste and spoilage. Unused excess materials, in any, will become City's property at the completion of the Work or, at City's option, may be sold by the Contractor. Any amounts realized from such sales must be credited to City as a deduction from the Cost of Work.

1.4.3 Proceeds from the sale of recyclable materials, scrap, waste, etc. will be credited to job cost.

1.5 Costs of Other materials and Equipment, Temporary Facilities and Related Items

1.5.1 Costs, including transportation and storage, installation, maintenance, dismantling and removal of materials, supplies, temporary facilities, machinery, equipment and hand tools not customarily owned by construction workers, that are provided by the Contractor at the site and fully consumed in the performance of the Work; and cost (less salvage value) of such items if not fully consumed, whether sold to others or retained by Contractor. Cost for items previously used by Contractor will mean fair market value.

1.5.2 Rental charges for temporary facilities, machinery, equipment, and hand tools not customarily owned by construction workers that are provided by Contractor at the site, whether rented from Contractor or others, and costs of transportation, installation, minor repairs and replacements, dismantling and removal thereof. Rates and quantities of equipment rented will be subject to City's prior written approval.

1.5.2.1 The Projected usage for each piece of equipment to be rented for use on the Project and the estimated total rentals must be considered by Contractor before the piece of equipment is rented so that an appropriate rent versus buy decision can be made. Purchased equipment must be considered "job owned". At the completion of the Project, Contractor must transfer title and possession of all remaining job-owned equipment to City, or Contractor may keep any such equipment for an appropriate fair market value credit to job cost, which will be mutually agreed to by City and Contractor.

1.5.2.2 Each piece of equipment to be rented must have hourly, daily, weekly and monthly rates and

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the most economical rate available will be reimbursed based on the circumstances of actual need and usage of the piece of equipment while it is stationed at the jobsite. When the piece of equipment is no longer needed for the work, no rental charges will be reimbursed if the piece of equipment remains at the jobsite for the convenience of Contractor.

1.5.2.3 Equipment Rental Rates

1.5.2.3.1 Compensation for equipment used on the Project will be paid in accordance with the Equipment Plan submitted by Contractor in the accepted GMP Proposal and no payments will be made in excess of the rates set forth in the Equipment Plan, or actual documented costs, whichever is less.

1.5.2.3.2 All equipment rental rates and costs are subject to City's right to audit when submitted as part of Equipment Plan and/or at any time during the Project.

1.5.2.4 The aggregate rentals chargeable for each piece of Contractor owned tools or equipment must not exceed 50% of the fair market value of such equipment at the time of its commitment to the Work. The original purchase price and date of purchase of the equipment will be documented with a copy of the purchase invoice for the piece of equipment. Such aggregate limitations will apply and no further rentals will be charged even if a piece of equipment is taken off the job and is later replaced by a similar piece of equipment. For purposes of computing the aggregate rentals applicable to aggregate rental limitations, rental charges for similar pieces of equipment will be combined if the pieces of equipment were not used at the same time.

1.5.2.5 Fair market value for used material and equipment as referred to in the Agreement Documents will mean the estimated price a reasonable purchaser would pay to purchase the used material or equipment at the time it was initially needed for the job. Note: This is usually lower than the price a reasonable purchaser would pay for similar new construction material or construction equipment.

1.5.2.6 All losses resulting from lost, damaged or stolen tools and equipment will be the sole responsibility of Contractor, and not City, and the cost of such losses will not be reimbursable under the Agreement.

1.5.2.7 Contractor will be required to maintain a detailed equipment inventory of all job-owned equipment (either purchased and charged to job cost or job-owned through aggregate rentals) and such inventory must be submitted to City each month. For each piece of equipment, such inventory should contain at a minimum (1) original purchase price or acquisition cost (2) acquisition date (3) approved Fair Market Value at the time the piece of equipment was first used on the job and (4) final disposition.

1.5.2.8 All costs incurred for minor maintenance and repairs will be reimbursed at actual cost. Such costs include routine and preventative maintenance, minor repairs and other incidental costs. Repairs and/or replacement of a capital nature are considered to be covered by the rental rates. Major repairs and overhauls are not considered routine and ordinary; consequently such costs are not reimbursable and are intended to be covered by the rental rates.

1.5.3 Costs of removal of debris from the Site.

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1.5.4 Costs of document reproductions, facsimile transmissions and long-distance telephone calls, postage and parcel delivery charges, telephone service at the site and reasonable petty cash expenses of the site office.

1.5.5 That portion of the reasonable expenses of Contractor's personnel incurred while traveling in discharge of duties connected with the Work.

1.5.5.1 No travel expenses will be reimbursed to Contractor's representatives unless Project related travel required them to travel to a destination more than 100 miles from the Project location. Any travel involving airfare will require advance written approval by an authorized City's representative.

1.5.6 Costs of materials and equipment suitably stored off the site at a mutually acceptable location, if approved in advance by the City.

1.5.7 Reproduction costs will be the actual costs of reproduction subject to a maximum of five cents ($.05) per square foot for prints and a maximum of five cents ($.05) per 8 ½ by 11-inch page for offset print or photo copied agreement documents, specifications, etc. Telephone costs will be the actual costs paid to the third party telephone company for the field office telephone.

1.6 Miscellaneous Costs

1.6.1 That portion of insurance and bond premiums that can be directly attributed to the Agreement. The City will reimburse Contractor for contractually required bond at time of first pay application for GMP and Cost-Based Agreements upon receipt of proof of payment from the Contractor. If the Contractor completes Work for less than the Agreement Price, Contractor must credit the City a pro- rated amount for the unused portion of the bond payment

1.6.1.1 Contractor's actual cost for insurance will be considered to be included within the Maximum limit for General Conditions Costs. All premiums for any insurance and bonds required for the Project must reflect the net actual costs to Contractor after taking into consideration cost adjustments due to experience modifiers, premium discounts, policy dividends, retrospective rating plan premium adjustments, assigned risk pool rebates, refunds, etc.

1.6.1.2 The amount to be reimbursed to Contractor for all contractually required insurance will be actual costs not to exceed a total of 2% of the Agreement Value, unless Contractor establishes to City's satisfaction that the actual cost is higher and City agrees to such actual higher cost in writing. If Contractor's cost of contractually required insurance is greater than the amount agreed to be reimbursed per this Agreement Provision, the difference will be considered to be covered by the Contractor's Fee. The City will reimburse Contractor for contractually required insurance on a monthly basis for GMP and Cost-Based Agreements. If Contractor can demonstrate substantial savings by paying for all insurance in advance, the City may agree to reimburse all insurance costs at time of first pay application for GMP and Cost-Based Agreements with proof of payment from Contractor.

1.6.2 Sales, use or similar taxes imposed by a governmental authority that are related to the Work.

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1.6.3 Fees and assessments for the building permit and for other permits, licenses and inspections for which Contractor is required by the Agreement Documents to pay.

1.6.4 Fees of laboratories for tests required by the Agreement Documents, except those related to defective or nonconforming Work and which do not fall within the scope of ¶ 1.7.3 below.

1.6.5 Royalties and license fees paid for the use of a particular design, process or product required by the Agreement Documents; the cost of defending suites or claims for infringement of patent rights arising from such requirement of the Agreement Documents; and payments made in accordance with legal judgments against Contractor resulting from such suites or claims and payments of settlements made with City's consent. However, such costs of legal defenses, judgments and settlements must not be included in the calculation of the Contractor's Fee or subject to the Guaranteed Maximum Price.

1.6.6 Data processing costs related to the Work. However, any such data processing costs will be limited to the cost of personal computer hardware used at the field office in the normal day to day administration, management and control of the Project. The aggregate charges for any such hardware must not exceed the Fair Market Value of the hardware at the time it was brought to the field office. If the total charges for any particular piece of hardware reach an amount equal to the Fair Market Value, that particular piece of hardware must be turned over to City whenever it is no longer needed for the Project. If Contractor elects to keep the particular piece of hardware, the job costs must be credited with a mutually agreeable amount which will represent the Fair Market Value of the particular piece of hardware at the time it was no longer needed for the job. Software or other costs associated with the use of computer programs will not be considered to be a reimbursable cost and will be considered to be covered by the Contractor's Fee.

1.6.7 Deposits lost for causes other than Contractor's negligence or failure to fulfill a specific responsibility to City as set forth in the Agreement Documents.

1.6.8 Legal, mediation and arbitration costs, including attorneys' fees, other than those arising from disputes between City and Contractor, reasonably incurred by Contractor in the performance of the Work and with City's prior written approval; which approval will not be unreasonably withheld.

1.6.9 Expenses incurred in accordance with Contractor's standard personnel policy for relocation and temporary living allowances of personnel required for the Work, if pre-approved by City in writing. If City authorizes the reimbursement of relocation costs, the reimbursable relocation expenses will be limited to a maximum of $50,000 per person. Any relocation cost incurred by Contractor in excess of the amount reimbursed by City will be considered to be covered by the Contractor's Fee.

1.7 Other Costs and Emergencies

1.7.1 Other costs incurred in the performance of the Work if and to the extent approved in advance in writing by City.

1.7.2 Costs due to emergencies incurred in taking action to prevent threatened damage, injury or

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loss in case of an emergency affecting the safety of persons and property.

1.7.3 Costs of repairing or correcting damaged or nonconforming Work executed by Contractor, Subcontractors or Suppliers, provided that such damaged or nonconforming Work was not caused by negligence or failure to fulfill a specific responsibility of Contractor and only to the extent that the cost of repair or correction is not recoverable by Contractor from insurance, sureties, Subcontractors or Suppliers.

1.8 Related Party Transactions

1.8.1 The term "related party" will mean a parent, subsidiary, affiliate or other entity having common ownership or management with Contractor; any entity in which any stockholder in, or management employee of, Contractor owns any interest in excess of ten percent in the aggregate; or any person or entity which has the right to control the business or affairs of Contractor. The term "related party" includes any member of the immediate family of any person identified above.

1.8.2 If any of the costs to be reimbursed arise from a transaction between Contractor and a related party, Contractor must notify City in writing of the specific nature of the contemplated transaction, including the identity of the related party and the anticipated cost to be incurred, before any such transaction is consummated or cost incurred. If City, after such notification, authorizes in writing the proposed transaction, then the cost incurred will be included as a cost to be reimbursed, and Contractor must procure the Work, equipment, goods or service from the related party, as a Subcontractor. If City fails to authorize the transaction, Contractor must procure the Work, equipment, goods or service from some person or entity other than a related party.

SECTION 2 – COSTS NOT TO BE REIMBURSED

2.1 The Cost of Work must not include:

2.1.1 Salaries and other compensation of Contractor's personnel stationed at Contractor's principal office or offices other than the site office, except as specifically provided in Subparagraphs 1.2.2 and 1.2.3.

2.1.2 Expenses of Contractors' principal office and offices other than the site office.

2.1.3 Overhead and general expenses, except as may be expressly included in Section 1.

2.1.3.1 Costs of Contractor's home office computer services or other outside computer processing services will be considered overhead and general expense. Accordingly, Contractor should not plan to perform any such computer related services or alternatives at the field office when such services or functions can be performed at Contractor's home or branch offices, or other outside service locations.

2.1.4 Contractor's capital expenses, including interest on Contractor's capital employed for the Work.

2.1.5 Rental costs of machinery and equipment, except as specifically provided in subparagraph 1.5.2.

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2.1.6 Except as provided in Subparagraph 1.7.3 of the Agreement, costs due to the negligence or failure to fulfill a specific responsibility of Contractor, Subcontractors and Suppliers or anyone directly or indirectly employed by any of them or for whose acts of them may be liable.

2.1.7 Any cost not specifically and expressly described in Section 1.

2.1.8 Costs, other than costs included in Change Orders approved by City that would cause the GMP to be exceeded.

SECTION 3 – DISCOUNTS, REBATES, REFUNDS AND SAVINGS

3.1 Cash discounts obtained on payments made by Contractor will accrue to City if (1) before making the payment, Contractor included them in an Application for Payment and received payment therefore from City, or (2) City has deposited funds with Contractor with which to make payments; otherwise, cash discounts will accrue to Contractor. Trade discounts, rebates, refunds and amounts received from sales or surplus materials and equipment will accrue to City, and Contractor must make provisions so that they can be secured.

3.1.1 Cost of the Work will be credited with all insurance policy discounts, performance and payment bond rebates or refunds, refunds or return premiums from any Subcontractor default insurance, refunds or rebates from any Contractor controlled insurance programs applicable to the Project, merchandise rebates of any nature, refunds of any nature, insurance dividends; and a portion of any volume rebates or free material credits earned with purchase of material or other goods and services charged to the job.

3.1.2 "Cash" discounts which may accrue to Contractor will be limited to a maximum of 1.5% of invoice cost. Any portion of "Cash" discounts greater than 1.5% will automatically accrue to City if Contractor is eligible to take advantage of the discounts.

3.2 Amounts that accrue to City in accordance with the provisions of Paragraph 3.1 will be credited to City as a deduction from the Cost of the Work.

3.3 Any and all savings on the GMP, or any separately guaranteed items comprising the GMP, will belong to City, subject to any express right in the Agreement for Contractor to share in savings. Savings are subject to City's right to audit, and may be audited separately.

SECTION 4 – GENERAL CONDITIONS COSTS

4.1 General Conditions Costs may include, but are not limited to, the following types of costs incurred by Contractor during construction of the Work to the extent they are reimbursable Costs of the Work as delineated above: payroll costs for Work conducted at the site, payroll costs for the superintendent and full-time general foremen, payroll costs for management personnel resident and working on the site workers not included as direct labor costs engaged in support (e.g. loading/unloading, clean-up, etc.), administrative office personnel, costs of offices and temporary facilities including office materials, office supplies, office equipment, minor expenses, utilities, fuel, sanitary facilities and telephone services at the site, costs of liability insurance premiums not included in labor burdens for direct labor

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costs, costs of bond premiums, costs of consultants not in the direct employ of Contractor or Subcontractors, fees for permits and licenses.

4.2 General Conditions Costs may be paid on a percentage of the Agreement Price or on a lump/stipulate sum basis as set forth in the Agreement. All costs included in the General Conditions Costs will not be separately invoiced to or paid by City.

4.3 The total amount of General Conditions Costs for the Work may be divided by the number of days allowed for performance of the Work, to determine a fixed daily rate for General Conditions Costs that may be used in computing the General Conditions Costs allocated to any period of time, or for any adjustments in the General Conditions Costs agreed to in writing by City.

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LANDSCAPE ESTABLISHMENT PERIOD

Section 1 – Description and General

Contractor is in direct control of work performed under the Landscape Establishment Period. If work is subcontracted, a representative of the Contractor will be present at the site of the work for all hours that the subcontractor works. Subcontracting of Landscape Establishment work will be permitted for weed eradication with herbicides, because of special licensing. A licensed temporary service may be used to supply labor to Contractor if Contractor has received approval from City Representatives. Contractor will submit the required subcontract documentation.

Contractor must provide adequate personnel to accomplish the required maintenance of the plant materials at intervals acceptable to City Representatives.

If not healthy at the end of the maintenance period, the maintenance must be continued until the plant material is approved by City.

1.1 Time and Schedule

Unless otherwise expressly agreed to in writing by City, the Landscape Establishment Period will be per General Conditions Section 6.5.4.

1.2 Planted Stock and Seeding Establishment

1.2.1 Tree planting and staking must be per City of Chandler Standard Detail C-801.

1.2.2 All trees will stand erect on their own without stakes when brought to this site. If the tree cannot stand on its own when nursery stakes are removed, the tree will be removed and replaced.

1.3 Pre-Emergent Herbicide and Weed Control

1.3.1 Contractor will provide three applications of an approved pre-emergent herbicide on all unpaved areas of the project, as directed by City Representatives, to control weed growth in all areas of the project. The number of applications may be increased as directed by the City Representative, and at no additional cost to City, if the City Representative deems additional applications are required to control weed growth.

1.3.2 Application sequence will be approved in advance by City. The first application of pre-emergent will be completed prior to the application of Decomposed Granite and will be included with the cost of the Decomposed Granite as specified and part of the Construction Phase portion of work. The second application of pre-emergent will be completed after installation of the Decomposed Granit and no later than half-way through the Landscape Establishment Period. The third and final application of pre-emergent will be applied 15 days prior to completion of the Landscape Establishment portion of the project. The second and third pre-emergent applications will be included with the cost of Landscape Establishment. Watering will be completed in accordance with the manufacturer's recommendations, as included and as related to each application.

1.3.3 The pre-emergent herbicide will be applied in accordance with the Technical Specifications and the recommendations of the pre-emergent herbicide manufacturer, as approved by City Representatives.

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1.3.4 The control of weeds will be accomplished by the use of herbicides. Manual removal of weeds will be required, after herbicides have taken affect.

1.3.5 Contractor is responsible for the removal and disposal of all trash and debris that during the Landscape Establishment Period. Contractor will keep the project in a neat and orderly manner during the duration of the Landscape Establishment Period.

1.4 Water

The water used during Landscape Establishment to properly maintain the plant material will be furnished by City, at designated sources from within the project limits, at no charge to Contractor. Contractor will be responsible for all equipment, materials and labor necessary to load, transport and unload water for watering purposes.

1.5 Plant Material Replacements

The plant material replacement will be considered as included in the work for Landscape Establishment, and will be made at no charge to the City.

1.5.1 Shrub and Plant Replacement - During the second half of the Landscaping Establishment period, Contractor will provide, where required, plant replacements as follows:

Original Size	**Replacement Size**
1 gallon	5 gallon
5 gallon	15 gallon
15 gallon	24-inch box
36-inch box	48-inch box

1.5.2 Tree Replacement – During the second half of the Landscape Establishment Period, Contractor will provide plant material replacements for existing plants that die as follows:

Existing Plant Material Sizes	**Replacement Size**
Trees:	
2-inch Caliper	24-inch box
4-inch Caliper	36-inch box
6-inch Caliper and greater	54-inch box
Shrubs:	
All Existing Shrubs	15 gallon

1.6 Measurement and Payment

See Technical Specifications for Measurement Payment provisions.

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EXHIBIT C

TECHNICAL SPECIFICATIONS

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CITY OF CHANDLER

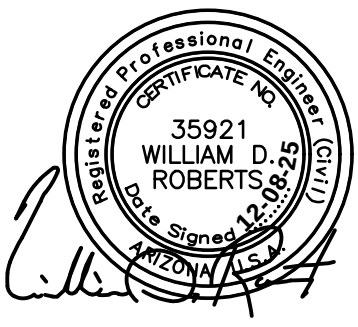
ARROWHEAD MEADOWS

Water Main Replacement
Technical Specifications

Project No. WA2203.402

December 2025

GHD Inc
3200 East Camelback Road, Suite 210
Phoenix, AZ 85018
(602) 216-7200
www.ghd.com



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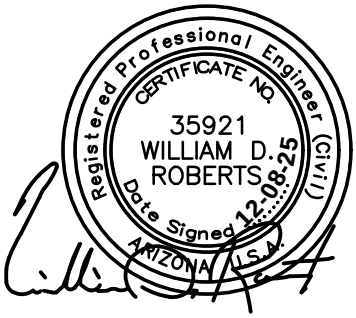

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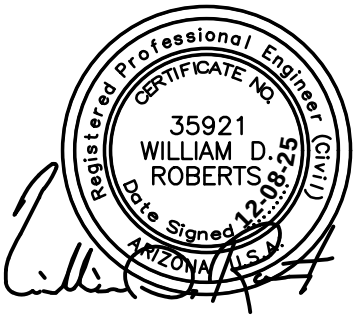

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TECHNICAL SPECIFICATIONS

PART A: SCOPE OF WORK

1. SCOPE OF WORK

General:

This section includes a basic description of the Work covered in detail on the drawings and these technical specifications. The Project consists of the replacement of approximately 7,550 linear feet of existing water mains in Chandler, Arizona. The existing mains will be replaced with new piping that ranges between 4 and 8 inches in diameter.

The new improvements will be installed in the following areas:

- Arrowhead Meadows: Replace water mains within an area between and including West Erie Street, North Alma School Road, West Chandler Boulevard, and North Arrowhead Drive.

The existing mains will be replaced with matching diameter piping unless they are smaller than the City of Chandler's (city) minimum 8-inch diameter. All existing mains that are smaller than the minimum size will be replaced with 8-inch piping.

The Scope of Work generally includes:

- Installation of water piping, fittings, connections, fire hydrants, valves, backflow prevention assemblies, and thrust collars
- Removal and replacement of AC pavement
- Fill and seal pavement cracks
- Slurry seal pavement
- Removal and replacement of concrete improvements
- Protection and bracing of existing utilities and other improvements
- Removal and restoration of landscaping and irrigation
- Traffic control and barricading

The construction requirements for the Work are in the following documents:

- City of Chandler General Conditions
- These Technical Specifications
- The project's construction drawings/plans
- The latest revision to the City of Chandler Maricopa Association of Governments (MAG) specification and detail supplements
- City of Chandler Technical Design Manuals
- Uniform Standard Specifications for Public Works Construction sponsored and distributed by the MAG
- MAG Uniform Standard Details

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The information written into these Technical Specifications will:

- Describe any special or unusual conditions.
- Explain details of the work not covered in other documents.
- Relate certain work to specific bid items or payment quantities.
- Contain the specifications and/or requirements of utility companies affected or included within the drawings and specifications of this project.

Geotechnical and potholing investigations of the site have been prepared and included in these technical specifications. It is the Contractor's responsibility to familiarize themselves with the findings of these reports including observed existing pavement thicknesses. The Contractor shall be responsible for determining the validity of the investigations along with any conclusions or interpretations drawn from the reports. Additional borings, testing, and/or potholes may be requested, but shall be arranged and scheduled by, and shall be at the expense of, the Contractor.

No blasting will be allowed on this project. All excavation shall be performed with conventional equipment approved by the Inspector. There will be no additional compensation for hard dig conditions.

General construction notes for city projects are included in the plan set and shall be applicable, unless specifically noted otherwise, to all plan sheets.

PART B: GENERAL INFORMATION

The following items are non-payment items being considered incidental to the project, the costs of which are to be included in project overhead or within a specific bid item.

102.4 EXAMINATION OF PLANS, TECHNICAL SPECIFICATIONS, AND SITE

General: Add the following:

If any person or entity contemplating submitting a bid for the proposed contract is in doubt as to the true meaning of any part of the plans, specifications, or other contract documents, or finds discrepancies in, or omissions from the plans and specifications or other contract documents, he may submit to the city a written request for an interpretation or correction thereof. The person submitting the request will be responsible for its prompt delivery. An interpretation or correction of the contract documents will be made only by Addendum duly issued by the city. Any information provided outside of the Addendum will not be binding. A copy of such addendum will be provided to each person or entity that has received a set of such documents. The Owner and the Consultant will not be responsible for any other explanation or interpretation of the documents.

Any work shown on the plans and not listed as a bid item will be considered incidental to the project, unless noted otherwise.

No direct measurement or direct payment will be made to Contractor for costs relating to the examination of plans, technical specifications, and site.

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102.5 PLANS AND SHOP DRAWINGS

Replace MAG Standard Specifications Section 105.2 with the following:

All submittals shall be in English units and dimensions. A marked up copy of the applicable specification and/or detail will be included with each submittal. When the submittal agrees or matches a requirement in the reference material, a check will be place beside it. When the submittal differs from a requirement in the reference material, it must be noted in the mark-up with an explanation on how and why the submittal differs. When a submittal includes multiple sizes or options, the options intended for the project must be highlighted.

All products submitted must comply with the City of Chandler List of approved products, latest edition found in the City of Chandler UDM Section 8.

Materials: The Contractor shall furnish to the city's Construction Manager product data, material certificates, mix designs and shop drawings in sufficient detail to show complete compliance with all specified requirements, including but not necessarily limited to the following:

Product Data:

- Pipes and appurtenances
- Fire hydrants
- Valves and valve boxes
- Restraint fittings
- Irrigation system components
- Meter boxes and service components
- Couplings

Product data shall include information such as the manufacturer's printed recommendations, compliance with recognized trade association standards, application of testing agency labels and seals, product dimensioning, and notation of coordination requirements. All products or materials in contact with potable water must include a statement that the products and/or materials are NSF certified.

Certificates:

- Piping materials (by inspection at source)
- Gaskets
- Polywrap

The Manufacturer or testing agency shall prepare the Certificates and should include technical specifications and compliance with industry trade association and testing agency standards.

Mix Designs:

- Asphaltic concrete pavement

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- Portland cement concrete
- CLSM backfill
- Slurry seal
- AC pavement crack seal and fill

The mix designs shall directly compare the proposed mix components and properties with those of the referenced standard mix or as modified within the technical specifications.

Shop Drawings and Plans:

- Sequence of construction details
- Water main testing and system connection plan
- Service switchover plans (minimizing disruption of service)
- Traffic control plans (including haul routes)
- Utility protection plans
- Hauling plans
- Details of structures if non-standardized (e.g. sidewalk and/or curb transitions, unique drainage structures, etc.)
- Trench shoring
- Utility and utility pole bracing

Shop drawings and plans shall include the name of the project, project number, date prepared, name of the Preparer, Contractor, and Subcontractor, if applicable. All dimensions and identification of products and materials included, along with notation of any coordination requirements and established field dimensions/measurements/verifications shall be clearly shown or noted.

The Contractor will prepare a water main testing and connection plan for review and approval and provide the labor, equipment, and materials required to execute those plans. Each plan will include:

- Mock testing and testing schedule
- Connection schedule with dates and times
- List of shut-off valves required for each connection/shut-off
- Number of customers impacted by each connection/shut-off
- Duration of each connection/shut-off
- Coordination and support for city staff to verify that existing shut off valves are functional
- An exhibit that illustrates the phased testing segments and connection points. The exhibits will also illustrate the existing valves required and customers impacted by shut-offs.
- Existing water mains must remain in service until:
    - The new mains parallel to them have been installed, tested, and approved
    - All the existing services on them have been transferred to a new or existing water main as shown on the plans.

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- Their shut-down has been approved by the city.

The Contractor shall provide a phasing plan that depicts the order in which the project will be constructed for review and approval. The Contractor will revise the testing and connection plan based on a city and Engineer review. Revisions may include additional testing phases and connections between new water main segments.

Samples:

Plant materials
Ground cover
Slurry seal (field applied)
AC Pavement crack seal and fill (field applied)

Samples shall be representative of the materials to be incorporated into the project and submitted in sufficient quantity to permit evaluation and/or comparison.

Distribution and Review: The Contractor shall anticipate and schedule for a review period of twenty-one (21) days or less by the city and/or its designee during which time will either approve, disapprove, or request modifications. The latter two will require resubmittal of the material and a subsequent additional review period. This process shall be repeated until all submitted materials have been approved.

Shop drawings shall be on sheets in standard size increments between 8½”x11”, 11”x17”, or 24”x36” size sheets. All drawings shall indicate the name of the job, the city’s job number, date, names of the Contractor, Subcontractor and Preparer, and the date of approval by the Contractor. Present all other data, certificates, or mix design reports on 8½”x11” sheets.

An electronic copy (.pdf format) of the Contractor approved submittal along with a letter of transmittal shall be delivered to the city’s Construction Manager. The Contractor shall first review all submitted data for compliance with specification and job requirements. Any Contractor comments, recommendations, etc. shall be clearly noted on the submitted data. The Contractor shall provide all submittals far enough in advance of the scheduled need to allow for the specified city review time, including any resubmittals. The city will not consider time extension requests or delays, damages, inefficiency claims, etc. resulting from the Contractor failing to properly schedule and deliver complete and compliant submittals.

If the submittal is acceptable, an electronic copy (.pdf format) will be stamped approved, dated, and initialed by the Reviewer, and returned to the Contractor.

If the submittal requires corrections or is rejected, an electronic copy (.pdf format) along with an explanation of the outstanding concerns will be returned to the Contractor for revision and the subsequent resubmittal as described above.

Resubmittal of any required corrections shall be made within ten working days.

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Contract Documents: Approved drawings, data, mixes and certificates as they are returned to the Contractor will become a portion of the Contract Documents.

No direct measurement or direct payment will be made to Contractor for costs relating to plan and shop drawing preparation, submittal, and revisions.

105.6 COOPERATION WITH UTILITIES

General: Add the following:

The locations of existing underground utilities have been shown on the plans to the best of the Design Engineer's knowledge at the time of the drawing preparation. It shall be the Contractor's responsibility to field verify all utility locations shown on the construction documents and/or bluestaked through advance potholing and to coordinate in a timely manner with the pertinent utility companies so that any obstructing utility installation may be adjusted without delay to the Contractor's project schedule. In addition, the city will not consider additional compensation requests from the Contractor to perform any potholing, utility company coordination, etc. needed to locate/verify utility locations shown on the plans and/or by Bluestake markings, to adjust contract work items as necessary to avoid conflicts with existing utilities if they are found to be different than what is illustrated on the on the plans or located by bluestake markings, or to cooperate with utilities in adjusting schedule as needed to allow for utility company work, relocations, etc. The Contractor's bid shall include the above coordination, work, and adjustments.

Any realignments to the proposed water mains due to unknown or unidentified utilities that are not illustrated on the plans or located by Bluestake markings shall be compensated under ITEM 9000000 OWNER'S ALLOWANCE after being approved by the city's Construction Manager.

The Contractor's bid will include the bracing of existing utilities and utility poles as required for trenching and installations whether they are called out on the plans or not. Bracing must be performed by the utility owner or a Contractor approved by the utility owner.

Utility Crossings: The crossing of existing utilities. The Contractor shall adhere to the specific requirements of the utility companies affected and install temporary support for existing utilities as required. The Contractor shall re-align and/or encase the proposed waterline as required to avoid existing utilities or establish a safe and sanitary crossing, respectively. The city Inspector must approve all realignments and encasements prior to their installation. All realignments shall be conducted in accordance with a detail proposed by the Contractor and approved by the city. The utility crossing callouts on the plans refer only to the type of utility being crossed, not necessarily the quantity of existing utilities or conduits. One crossing on the plans may represent multiple conduits of the same utility. The Contractor shall take this into consideration and budget accordingly.

The Contractor shall be responsible for repairing any utilities, irrigation piping, and/or storm

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drain piping damaged during construction. Any repair methods and work must be approved by the city and utility owner.

Potholing: The Contractor shall pothole all existing utilities that are crossed or impacted by the new improvements. Potholing shall also be performed on existing service connections to verify their location and alignments as required to install the proposed improvements. Potholing will be performed far enough in advance of materials acquisition and installation activities to allow alignment and profile changes without impacting the project's budget and/or schedule. The potholer shall provide the following:

1. Extract soils to expose any existing utilities, in such a manner to ensure the safety and integrity of the utility.
2. In a city approved format, observe and record the following minimum data for each utility located:
   - Pavement thickness and description of pavement surface and base.
   - Diameter/Width of utility, top and bottom depths, and configuration of systems.
   - Elevations accurately measured to 1/10th foot from original ground and/or pavement surface to utility.
   - Utility structure material composition, when reasonably ascertainable.
3. Furnish and install "PK" nails, "hubs", stakes, high-visibility "whiskers", or, markings, directly above the centerline of the utility structure (pipe and/or duct). Swing-tie referencing, for surveyors, may also be requested.

Contacts: The following telephone numbers should put the Contractor in contact with the proper personnel. The Contractor shall verify the contact information provided and invite a representative from each utility to the project's preconstruction meeting.

Utility Company	Telephone Number
City of Chandler (Water & Sewer)	(480) 782-3700
City of Chandler (Traffic Signals)	(480) 720-1380
American Telephone & Telegraph (Fiber)	(480) 510-8107
Arizona Public Service (Electric)	(602) 371-7546
Cox Communications (Cable, Fiber)	(623) 328-2202
CenturyLink (Telephone)	(815) 245-9640
MCI/Verizon (Fiber)	(480) 382-5844
Salt River Project (Inspector for Irrigation and Electric)	(602) 809-1304
Southwest Gas (Gas)	(480) 730-3855
Sprint Communications (Fiber)	(442) 202-5262
Zayo/AGL (Fiber)	(480) 564-3455

Coordination: Construction activities shall be coordinated and scheduled to incorporate the following applicable Utility construction activities.

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CenturyLink Inc. (Lumen)	Blue staking for location of CenturyLink facilities must be completed prior to any construction. When crossing facilities, the Contractor will be required to pothole to determine the depth and maintain a minimum of 12-inch vertical and horizontal separation from the facilities. Support and protection is required for all CenturyLink facilities.
Southwest Gas Corporation	Blue staking for location of Southwest Gas facilities must be completed prior to any construction. The Contractor shall hand dig carefully at marked locations until gas pipe has been exposed (without breaking the tracer wire). When crossing Southwest Gas facilities, a minimum of 24 inches face-to-face clearance is required at the point of crossing unless approval from Southwest Gas is granted for a smaller clearance. The mechanical trenching process shall be done by hand, and once this process is in progress no digging is allowed within two feet of a gas pipe. If the gas pipe should be hooked or strained while excavation is in process, the Contractor shall contact (623) 780-3350. Should a steel gas facility be exposed and the pipe coating is in need of repair, the Contractor should contact the Southwest Gas office so that the pipe may be rewrapped. Once excavations are complete all gas pipes should be protected. Southwest requires 6 inches of bedding and 6 inches of shading with material free of rocks and able to pass through a 3/8 inch screen prior to any backfill. If the trench is greater than 3 feet in width, the pipe must be supported in a manner where the support material does not damage the pipe or its protective wrapping.
Verizon	Blue stake for location of Verizon facilities prior to any construction. The Contractor shall use non-destructive potholing methods to carefully locate existing facilities at marked locations. Maintain 12” clearance when crossing Verizon facilities.
APS	In order to permit access to and maintenance of either facility without damage to the other, a 24-inch horizontal separation shall be maintained between APS Electric Facilities and water, sewer or gas

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	pipeline systems. In the event of an inconsistency or conflict with any Municipal specifications, the more stringent specification shall apply. Please be advised that it is the responsibility of the customer to maintain proper clearances and Blue Stake prior to digging. For actual conditions, please contact Arizona Blue Stake Center at (602) 263-1100, 811, or www.arizona811.com for Blue Stake to be performed.
Cox	Should project activities occur in the immediate vicinity of Cox Facilities, it will be the Contractor's responsibility to conduct potholing and to properly protect Cox's Facilities. Cox requests that a minimum of 12 inches of vertical and horizontal separation from existing Cox Facilities be always maintained. If you have any questions or require additional information, please contact the Corporate Traffic Management Center at constructionsupport@cox.com.
Cogent/Sprint	Cogent/Sprint is very concerned about any excavation near the fiber system. No mechanized excavation within 24 inches is allowed. Cogent/Sprint needs to be present for any activity near the fiber. The fiber can be electronically located horizontally but the vertical alignment can only be determined by potholing. No facilities may be added closer than 24 inches vertically or horizontally to Cogent/Sprint structures, including encasement. Contractors shall utilize the Arizona Blue Stake procedures before excavating.

No direct measurement or direct payment will be made to the Contractor for costs relating to coordination with and protection of utilities.

107 COORDINATION WITH OWNERS, PRIVATE PROPERTY, RECORD OF EXISTING CONDITIONS, AND PROTECTION OF EXISTING IMPROVEMENTS

General: Add the following:

Coordination with Owners of Impacted and Adjacent Properties: The Contractor shall notify the impacted and/or adjacent property owners which may include, but not be limited to, homeowners, business owners, property owners, tenants, schools, city departments which may be affected such as sanitation, police, fire department, etc., and any other parties which may be affected. This notice shall be in writing and distributed at least 48 hours prior to doing any work within private property. For any work on or in front of any

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driveway or access point, and prior to any street restrictions that will affect access to private property, the notice shall be distributed according to the Contractor's phasing schedule. Notification letters shall be approved in advance by the Construction Manager. All notifications shall also be posted at all common points of neighborhood, community, and district entry (adjacent to street entrances, delivery entrances, gates, guard shacks, and adjacent to group mailboxes). The notification shall be for the purpose of allowing the referenced parties to relocate any vehicles, reschedule routes, etc., as required prior to construction, and should specify the length of time the driveway and/or street will be impacted. If there are any delays in the construction, affected parties shall be re-notified.

In addition to notifications, the Contractor shall coordinate with the Engineer's public outreach consultant, who will review and approve the Contractor's door hangers, post cards, website material, and email notifications. The Contractor shall include the Engineer's public outreach consultant on schedule updates, shutdowns, closures, customer coordination, and public input. In addition to coordinating with the Contractor and reviewing the Contractor's public outreach materials, the Engineer's public outreach consultant will be responsible for the project's construction hotline.

The Contractor shall be responsible for containing all construction activities within the right-of-way, limits of construction, or limits of disturbance illustrated on the plans and/or defined in these technical specifications. The limits of disturbance along private water service installations shall be defined as a three (3) foot path along the proposed service alignment. The Contractor shall keep the site free from accumulation of waste materials, rubbish, and other debris resulting from construction operations. The Contractor shall provide on-site containers for collection and removal of waste materials in accordance with applicable regulations. The Contractor shall provide all required work and materials necessary to clean the site daily to the satisfaction of the city Inspector.

Work on Private Property: If work is required on or adjacent to private property, the Contractor shall coordinate with the owner and Construction Manager prior to beginning work. The Contractor shall contact the owner, in person, a minimum of 48 hours prior to commencing work on the property. If the first attempt is unsuccessful, the second and third attempts shall be in writing and in person. If the owner is unavailable for coordination after three attempts by the Contractor, the Contractor may only commence work with the written approval of the Inspector. If the property owner and the business owner or resident associated with a property are different, the Contractor shall contact and coordinate with both parties.

The Contractor shall inspect any private facilities (irrigation, lighting, etc.) along the proposed improvement alignment and satisfy themselves of conditions prior to the start of work. All utility crossing on public and private property must be potholed by the Contractor in advance of pipe and/or service installation. Any damage to or alteration of existing conditions while working, including markings placed outside the paved roadway during "Blue Stake" investigation, shall be repaired or replaced to the satisfaction of the owner and city Inspector by the Contractor at no additional cost to the city. Existing conditions as defined herein shall include, but not be limited to, plants, turf, trees, rocks, other landscaping materials, plastic under rock, masonry walls, walkways, pavers,

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sidewalks, driveways, patios, and sheds unless otherwise noted on the Approved Plans, hardscape, planters, electrical lines and lighting, telecommunication lines, sewer services, gas lines, flood irrigation piping, and underground sprinkler systems. Damaged irrigation or sprinkler lines shall be repaired and will operate to the owner and city inspector's satisfaction within 24 hours.

Notices shall include a description of the work proposed, Contractor's name, Contractor's contact person and telephone number of the contact person. The Contractor shall be prepared to answer questions from the property owner about how he will handle modifications to any existing improvements such as landscaping, sprinkler irrigation, walls and fences, driveways, etc., which may be required.

Record of Existing Conditions: Prior to the commencement of any construction activities, the Contractor shall photograph and video document the existing project area including private property. The Contractor shall furnish to the city Construction Manager two copies of the photos and video in a format of the Manager's choice prior to the start of construction. The photos and video shall illustrate the following:

- Landscape and hardscape features.
- Existing driveway conditions.
- Existing road, curb, and sidewalk conditions.
- The condition of existing buildings and structures adjacent to the proposed construction.
- The condition of existing private irrigation structures adjacent to the proposed construction. Photos and videos shall be taken while irrigation water is being delivered to confirm whether any leaking is present. This requirement applied to both flood and pressurized irrigation water systems.

The Contractor shall satisfy himself of the condition of existing improvements prior to any construction activities occurring in any area. Any repair or replacement required of the Contractor by the city after construction activities assumes that the existing improvement was in good or working condition unless proof otherwise is presented by the Contractor to the city and Property Owner prior to construction activities.

Any damage of existing conditions that are not shown to be demolished on the plans shall be reported to the city and owner within the same business day of initial damage. The Contractor shall first notify the city inspector prior to contacting the owner. If the owner is not available, a door hanger shall be left describing the damage and remedy. The Contractor will repair or replace the existing improvement in kind if requested by the city.

Protect Existing Improvements in Place: All existing improvements designated as "Protect in Place" shall be flagged in the field and surrounded with stakes and warning tape prior to construction activities in the area. In addition, the Contractor's project manager and superintendent shall notify all employees and subcontractors that these items shall not be disturbed. Should a protected feature or items be damaged or destroyed, the Contractor shall notify the Inspector and Owner immediately. The

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damaged or demolished feature shall then be replaced in kind to the satisfaction of the Inspector and Owner.

Existing walls/fences damaged during construction will be replaced in-kind or repaired to the satisfaction of the owner. If the wall includes integral coloring in its block, the existing block shall be protected, stored and reused. If the wall is painted or includes painted stucco, the entire wall section in which the repair occurs, shall be repainted.

Should the new coating not match the existing wall, the entire wall will be recoated at the Inspector's discretion. If the wall includes mounted gates, they will be salvaged and remounted after the wall is rebuilt.

No direct measurement or direct payment will be made to the Contractor for costs relating to coordination with owners, private property, record of existing conditions, and protection of existing improvements.

107.2 PERMITS

General: Add the following:

It shall be the responsibility of the Contractor to obtain and provide payment for all required permits for construction, dust control, relocation of plants, erection of signs, etc.

The Contractor shall be responsible for securing and payment for any necessary hydrant meters including deposits and all fees for water usage. The Contractor shall install temporary construction meters (with pressure regulator and check feature) for construction water. Construction meter locations shall be located as directed/approved by the city.

All haul routes for removals, excavation and dirt moving must be approved by the Construction Coordinator prior to commencement of operations.

This project is subject to the Maricopa County Air Pollution Control Regulations. The Contractor shall comply with the provisions of MAG Specification Subsection 104.1.4.

The Contractor shall obtain approval from the city for marshalling areas that they propose to use. The Contractor must demonstrate in writing to the city the minimum requirements set forth in MAG Section 107.6 prior to occupying the property for proposed marshalling areas.

Contractor is not responsible for any city encroachment permit, plan review fees, or Quality Assurance (QA) (i.e. city inspection) costs.

No direct measurement or direct payment will be made to the Contractor for costs relating to permitting and dust control and revisions thereto.

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108.4 CONTRACTOR'S CONSTRUCTION SCHEDULE

General: Replace Section 108.4 with the following

A construction schedule shall be prepared, submitted to, and found acceptable by the city. The schedule shall identify the work to be performed, including the location and duration of planned activities. Submittal of the Schedule shall be made a minimum of seven days prior to the planned work to allow sufficient time for the city to review the request and to schedule any necessary inspections.

The Contractor shall be responsible for payment for all contractor, engineer, and city overtime and off-hours inspection and testing services that occur outside the normal and accepted working hours due to the Contractor's negligence or request.

Sequence: All underground work must be completed to the satisfaction of the Construction Manager prior to the start of any roadwork, unless the Contractor can provide a sequence of work schedule and traffic control plan which will demonstrate, to the satisfaction of the city, that neither traffic safety nor Contractor operations will be adversely impacted. The Construction Manager shall have total discretion and authority to accept or reject the Contractor's proposed sequence of work schedule and traffic control plan.

Coordination: The following items are particular to this project.

- The Contractor's work sequence and schedule shall be reviewed and approved by the Construction Manager before it is implemented.
- The Contractor shall perform all construction activities in a manner that allows vehicle access as defined under the City of Chandler Engineering & Design Standards Manual for Public Works Construction, Chapter 7 Traffic Barricade Design.
- Traffic lane closures and the setup of traffic lane closures shall be per the City of Chandler Engineering & Design Standards Manual for Public Works Construction, Chapter 7 Traffic Barricade Design.
- Construction work hours shall be in compliance with City of Chandler Code of Ordinances Part III.11-10.2 Construction Noise.
- The Contractor shall pothole far enough ahead of installation to verify the locations, depths and sizes of existing utilities and to accommodate alignment changes without incurring additional work or delay.
- Vehicular access to at least one driveway per property shall be always available.
- Pavement, roadways, and work areas will be cleaned every day at the end of shift and as needed for dust and stormwater pollution control to the Inspector's satisfaction.
- No excavated material will be stored on site unless immediately used for backfilling of the trenches on the same day when allowed by project documents.
- Contractor is responsible for providing a marshalling yard. All material shall be stored in the marshalling yard and will not be strung out along the project. The marshalling yard shall be coordinated between the contractor and yard's property

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owner. Adequate proof of coordination shall be provided upon request.

- Existing waterlines shall be shut down a maximum of six hours at a time. Existing services shall be shut down a maximum of two hours at a time. If this is necessary, the Contractor shall notify the affected customers in writing seven days in advance. The Construction Manager shall approve of the shut down schedule and the notification letter prior to it being sent out. A second approved notice shall be delivered to the affected customers 48 hours in advance. The Contractor shall have all necessary equipment and personnel on site at the time of shutdown. Necessary equipment shall include pipe, pumps, fittings, etc.
- At the City's request, shut downs will occur during night time hours.
- Existing waterlines and services shall remain operational until such time that the city has accepted new construction and authorized in writing, tie-in to the existing waterlines. Any deviation from the construction sequence must be presented to the city prior to construction. Contractor shall field locate tie-in points at no cost to the city. Tie-in to the existing system will be done after completing new waterline disinfection.
- Contractor shall also install construction meters as directed by the city at no additional cost to the city.
- All construction activity and disturbances shall be contained within the public rightof way or limits of disturbance define on MAG, city, and project documents.
- All trees, plants, and their canopies not called out on the plans will be protected in place during construction. The Contractor shall adjust his installation methods to achieve this.
- All trench excavation, pipe installation, paving, slurry seal, and sidewalk work adjacent to schools and along school bus routes must be performed during the summer break or seasonal breaks that last at least two weeks. Work that occurs longer than two weeks must be shown in the proposed construction schedule and approved by the city. The Contractor may request to perform minor improvements during weekends if approved by the city but that approval is not guaranteed.

The Contractor shall be responsible for planning, scheduling and reporting the progress of the work as to ensure timely completion of the work called for in the contract. All schedules shall be computer generated created by critical path scheduling software.

The Contractor shall submit a complete critical path schedule for the entire project to the Construction Manager within ten (10) days of the date of execution of the Contract. The city will review and comment on the draft schedule and the Contractor will issue a final schedule with the city's comments incorporated within ten (10) days. Deviation from this schedule without written approval shall be considered a default to the contract.

The schedule shall include a complete critical path schedule to cover the Contractor's anticipated time schedule. The schedule shall include a detailed network diagram acceptable to the Construction Manager with the following features:

(A) The schedule shall be time-scaled in calendar days. All activities shall be plotted on their early start and finish dates. Activities shall not exceed 30 calendar days in length of

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time when detailed in each critical path schedule.

(B) The schedule shall show the order and interdependence of activities and the sequence of work as reflected in the schedule report as described below. The critical activities shall be prominently distinguished.

(C) The schedule shall include, in addition to all construction activities, such tasks as mobilization, demobilization, submittal and approval of samples of materials and shop drawings, procurement of significant materials and equipment, and fabrication of special items, traffic restrictions, as well as installation and testing, and interfacing with other projects/contractors/utility companies/etc.

(D) The schedule of activities shall be sufficiently detailed so that the Construction Manager can follow the sequence. For example, the activities shall show forming, reinforcing, and placement of concrete on the calendar days they are scheduled to be performed.

(E) The schedule diagram shall show for each activity the preceding and following event numbers and the description and duration of the activity in calendar days.

(F) The activities shall be organized and described so as to conform to the contract bid items.

(G) The diagram shall be accompanied by a schedule report of the network with a tabulation of the following data for each activity:

1. Preceding and following event numbers;
2. Activity description;
3. Activity duration;
4. Earliest start date;
5. Earliest finish date;
6. Latest start date;
7. Latest finish date;
8. Total float times;
9. Responsibility for activity (for example, Contractor, subcontractor, supplier, etc.;
10. Resource summary for each activity listing personnel, equipment and anticipated revenue.

The Contractor shall submit electronic copies of the updated overall project and reports/three-week project schedules in two-week increments commencing from notice to proceed in conformance with the following:

(A) The Construction Manager shall determine if the detailed network diagram and/or report requires revision in whole or in part and shall so inform the Contractor of noncompliance with contract schedule.

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(B) In addition to the overall project schedule, the Contractor shall prepare a look ahead schedule to show the activities or portion of activities that are expected to be completed over the upcoming three weeks with anticipated start and finish dates. The contractor shall prepare a 3-week schedule for the project every week for review and approval by the city.

(C) The overall project report shall state the percentage of revenue actually earned as of the report date.

(D) The overall project report shall be accompanied by a narrative description of job progress, problem areas, current and anticipated delaying factors and their anticipated effect, and any corrective actions proposed or taken. This report shall identify departures from earlier schedules and changes in logical sequence or logicalties.

(E) The report shall include a summary of all activities scheduled to begin in the next 3-week period that are critical path, those activities whose float has changed and those activities with less than ten-day float. The activities shall be sequenced by critical path activities, by least total float and by greatest float, respectively.

Acceptance of the Contractor's schedules by the Construction Manager is not to be construed as:

- Relieving the Contractor of his obligation to complete the contract work within the contract time
- Granting or rejecting Contractor requests for adjustments to the contractcompletion date
- Acceptance of claims for additional compensation.

Any time extension requests shall be processed in strict compliance with other relevant provisions of the contract.

No direct measurement or direct payment will be made of Contractor for costs relating to preparation and submission of schedules and reports and revisions thereto.

210 BORROW AREAS AND DISPOSAL OF EXCESS MATERIALS

General: Add the following:

It shall be the responsibility of the Contractor to import any necessary borrow material, and to dispose of excess excavated and unsuitable materials from the site per MAG Specification 210 as supplemented herein.

Where excess material is taken from or is placed on land not specifically designated for the purpose, the Contractor shall furnish the city with a copy of the landholder's written consent (Also see Part B (5) – Permits). Trash, asphalt, concrete and non-soil materials shall be disposed of at County-designated public refuse disposal sites. All excess material shall be removed from the job site each day.

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There shall be no separate payment for borrow or excess material.

PART C: MEASUREMENT AND PAYMENT

General: The section includes measurement and payment criteria applicable to the Work. The bid item will match the values listed on the bid schedule. Deviations to the measurement or payment methods listed will not be accepted without written approval from the city.

Quantities and measurements indicated in the Design Drawings and Contract Bid Documents are for bidding and contract purposes only. Quantities and measurements supplied or placed in the Work and verified by the city or Engineer shall determine payment.

If the actual Work requires more or fewer quantities than those quantities indicated, the Contractor shall provide the required quantities at the unit prices contracted. When quantities exceed those quantities indicated, the additional work must be approved by the city before it is executed.

The Contractor will perform and confirm all quantity measurements and compute quantities accordingly.

Contractor shall only apply the contingenices and/or allowances listed on the bid schedule with written approval from the city.

Measurement of Quantities:

Measurement Devices:

- Weigh Scales: Inspected, tested and certified by the applicable state Weights and Measures department within the past year.
- Platform Scales: Of sufficient size and capacity to accommodate the conveying vehicle.
- Metering Devices: Inspected, tested, and certified by the applicable State department within the past year.
- Measurement by Weight: Rolled or formed steel or other metal shapes shall be measured by handbook weight.
- Measurement by Volume: Measured by cubic dimensions using mean length, width, and height or thickness.
- Measurement by Area: Measured by square dimensions using mean length and width.
- Linear Measurement: Measurement by linear dimension, at the item centerline or mean chord.
- Lump Sum: Measure on a percent of complete basis.

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Payment: Shall include full compensation for all required labor, materials, tools, equipment, transportation, services, and any other work described within these technical specifications.

Final payment for Work governed by unit prices will be made based on the actual measurements and quantities accepted by the city or Engineer multiplied by the unit price for Work, which is incorporated in or made necessary by the Work.

PART D: TECHNICAL SPECIFICATIONS

The following specifications are included to explain details of work not covered by applicable Standard Specifications.

ITEM 104101 PROJECT SIGNS

General: Contractor shall provide four (4) project signs in accordance with the General Conditions. The signs shall be installed at a location selected by the city Construction Manager.

Measurement and Payment: Payment for the project signs will be made at the unit price per each, as shown on the Schedule of Bid Items, and shall be considered full compensation for all material, equipment, labor, and appurtenances to complete the work as described and specified herein.

ITEM 105801 CONSTRUCTION SURVEYING

MAG Section 105.8, Construction Stakes, Lines and Grades is deleted and the following inserted:

General: The Contractor shall furnish all materials, personnel, and equipment necessary to perform all surveying, staking, laying out of control lines and verifications of the accuracy of all existing control points which are delineated in the Contract Documents. The work shall be done under the direction of a Registered Land Surveyor licensed to practice in the State of Arizona. Centerlines, right of way, property lines, public utility easements indicated on the drawings were provided by the city based on its GISmaps.

Staking Outline: Prior to beginning any survey operations, the Contractor shall furnish to the city Construction Manager for approval, a written outline detailing the method of staking, interval of stakes, marking of stakes, grade control for various courses of materials, referencing, structure control, and any other procedures and controls necessary for survey completion. A part of this outline shall be a schedule which shows the sequencing of the survey and layout work, throughout the course of the contract, and a listing of percentage of completion for each month.

Field Books: The Contractor shall furnish field books to be used for recording survey data and field notes. These books shall be available for inspection by the city at any time

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and they shall become the property of the city upon completion of the work. In lieu of field books, the Contractor may submit a raw data file in a format acceptable to the city.

Survey Control Verification:

(A) Control Points (horizontal and vertical) - The existence and location of all survey monuments, benchmarks and control points shall be verified prior to demolition or construction activity. Immediately notify the city Construction Manager when location discrepancies greater than five-hundredths (0.05) foot horizontal or two-hundredth (0.02) foot vertical are found. All datum shall be accepted by the city.

(B) Control Lines - Construction control lines with grade breaks, transition points, horizontal and vertical curves, etc., shall be established and referenced by the Contractor prior to construction.

(C) Temporary Benchmarks - Temporary benchmarks shall be established and referenced by the Contractor prior to construction.

Pre-Construction Location Survey: All existing features which are located prior to construction shall be referenced to survey monuments along control lines by stationing in accordance with the construction documents and by offset distance from the control lines. All features shall be relocatable after construction. Distances measured shall be within one-hundredth (0.01) foot.

(A) Survey monuments - All survey monuments that lie within the construction area that may be disturbed shall be referenced to a specific point on at least four (4) stable objects by distance measurement. Reference objects shall be located no greater than three hundred (300) feet from the survey monument referenced.

(B) Utility appurtenances - Utility line tie-in points and crossings shall be located and compared to the location shown on the Contractor's approved construction documents prior to installation. Deviations shall be noted on Contractor's As-Built set and relayed to Engineer and Construction Manager prior to any installation.

(C) Match Points and Removals - Verify the location (horizontal and vertical) of existing improvements to which the project will connect or demolish including pavement, curb and gutter, valley gutters, sidewalks, and aprons along the trench.

Construction Stakes: The Contractor shall set construction stakes and marks establishing line and grade for road work, curbs, gutters, structures, centerlines for utilities, and necessary appurtenances and other work as indicated in the Contract Documents and shall be responsible for their conformance with the plans and specifications.

The stakes shall be established in accordance with the following guidelines which represent the minimum standard and the Contractor shall provide additional stakes and controls necessary to perform the work. The Contractor shall be held responsible for the preservation of all stakes and marks and will replace, at no additional cost to the city, any

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construction stakes or marks which have been destroyed by any party. All stakes shall include stationing markings or labels.

(A) Curb and Gutter:

(1) Finish grade stakes shall be set to curb grade at twenty-five (25) feet intervals, at grade brakes, angle points, transitions, returns, driveways, alley entrances, sidewalk ramps, and other curb control points. The stakes shall be placed for line on a two (2) foot offset to the back of curb.
(2) Face of curb forms shall be checked for grade at flow line prior to placing concrete where longitudinal grades are one- tenth (0.10) percent or less.
(3) Face of curb forms shall match existing grade.

(B) Water:

All cuts will be to the invert of the pipe, given to the nearest one-hundredth (0.01) of a foot. On portions of the project in which the waterline must be realigned from the proposed grades, it must maintain a constant slope to a desired high point, the Contractor shall determine the high point invert based on existing topography and minimum cover. The Contractor will also determine pipe inverts and verify minimum cover is available along the segment of defined slope.

(1) Stakes for water will be driven flush with the existing ground, set on an offset at twenty-five (25) feet intervals and specified grade breaks. Stakes will be marked with the offset and indicated cut.
(2) Fittings or other critical points such as tees will be marked with two stakes. Each stake will include an offset and cut.
(3) Fire hydrants will be located with two (2) stakes per hydrant set parallel with the roadway five (5) feet from the centerline of the hydrant. The stakes will be marked with the offset to the hydrant and indicated cut to the top of curb at the centerline of the hydrant. The invert of the hydrant must be level or higher than its tee.
(4) Water meters will be located with two (2) stakes per meter box set parallel with the roadway five (5) feet from the centerline of the meter. The stakes will be marked with the offset to the meter and indicated cut to the existing grade based on the elevation recorded prior to its demolition or modification.
(5) Cut sheets shall be supplied by the Contractor to the city Inspector.

When items to be staked out are in existing paving, nails driven into the pavement will replace the aforementioned stakes. Offset and cut information may be marked on the existing paving if the pavement will be sealed after construction. The Contractor’s surveyor shall refresh or remark any information that becomes illegible prior to installation.

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Inspection and Acceptance of Work: The city reserves the right to make inspections and random checks of any portion of the staking and layout work. If, in the city's opinion, the work is not being performed in a manner that will assure proper control and accuracy of the work, the city will order any or all the staking and layout work redone at no additional cost.

Measurement and Payment: Construction surveying will be measured as a single complete item of work and paid at the lump sum price indicated on the Schedule of Bid Items, which shall be considered full compensation for the work as described herein and required to provide all necessary survey stakes and control. The approved schedule showing the sequencing and percentage of the survey and layout work shall be the basis on which monthly progress payments shall be made. This schedule shall be subject to periodic review, at the request of either party, if the survey and layout work lags or accelerates. If necessary, the schedule will be revised to reflect changes in survey and layout progress. When approved by the Construction Manager, the revised schedule will become the basis for payment. If the contract time is extended, the extension will not revise the lump sum price in the bid.

ITEM 105802 CONSTRUCTION WORKING DRAWINGS AND GIS DATA

General: The Contractor shall be responsible for providing the project's working construction drawings to the Engineer for use in preparing the project's as-builts. Contractor's approved licensed land surveyor shall certify on the project working drawings that the field information collected and added to the working drawings is true and accurate. The Contractor shall also collect and provide GIS/GPS data as required per Exhibit D of the city's contract documents. Measurements and documentation shall be coordinated with the Engineer.

The Contractor is responsible for including information for all fittings, valves, deflections (horizontal and vertical), and appurtenances on the as-builts. This shall include northing, easting, elevation, type, material, and size.

A full-size set of drawings shall be kept on-site and updated on a weekly basis with a red pencil or red ink to reflect any field adjustments, changes, omissions, additions, etc. as they occur on the project. The city Inspector will check the drawings and GIS data on a weekly basis to ensure all modified project elements have been properly recorded on the field plan set and GIS information has been collected on the installed improvements. The GIS/GPS data and redlines shall be submitted to the city's GIS Department and Engineer of Record monthly for incorporation into the city's GIS system and record drawings. The GIS/GPS data shall be provided in an ESRI file geodatabase format. The Contractor shall include a progress PDF of the working drawings, which includes survey as-built points and information from his or her Surveyor, with each pay application submitted to the city. The survey points will be provided in ground and grid formats for review.

The Contractor will be responsible for printing out the original bond plan sheets for use in preparing the working drawings. Information shall be shown on these sheets in **red opaque**

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ink, depicting the constructed dimensions, elevations, grades, and materials including locations of existing underground utilities found during construction.

The Contractor shall exercise extreme care in handling the originals. The Contractor's Surveyor shall seal the working drawings and return them to the city and Engineer in like condition. In the event the originals are damaged or determined by the city to be unacceptable, the Contractor shall replace the originals and have new drawings produced. All costs incurred as the result of replacing the originals shall be borne by the Contractor. The city will be the sole judge in determining whether the drawings are acceptable.

All work included in the contract documents as well as changes to the contract shall be noted as correct or modified by either checking off the information if it is correct, or by drawing a neat line through the original data and writing in the correct information in red opaque ink if the information is incorrect. Unless noted otherwise below in the minimum working drawing requirement section, station/offset measurements will be from construction centerline/monument line both parallel and transverse to roadway; added items or location changes shall be physically drawn at revised or new locations on the drawings; and all measurements and stations should match the level of accuracy shown on the original design documents. If a value was not provided on the original design documents for the measurement in question, horizontal data shall be shown to the nearest tenth of a foot and vertical data shall be shown to the nearest hundredth of a foot.

The minimum requirements for working drawing acceptance is as follows:

(1) Project Drawing Quantity Notations: Any project drawing or quantity summary sheet that shows a quantity on it that is incorrect shall be corrected by drawing a neat line through the original quantity and writing in the correct information. When space on the drawing does not allow room to indicate the corrections, a separate table may be drawn on a separate sheet with reference on both plan sheets to the plan sheet that the table refers to or to the sheet where the table is located.

(2) Existing/New Utilities: All underground infrastructure utilities, whether depicted on the project plans or not, shall be verified, corrected or added to the drawings noting the beginning and ending station/offset location and elevation of utility relative to finished roadway grade or other identifiable ground or permanent roadway/project feature. Any electrical installation work for street lighting or power connection shall be located relative to construction centerline/monument line or relative to back of curb and gutter (whichever is closer) including the depth of the facility.

(3) Removals: Dimensions and/or other volumetric descriptions and station/offset location of all removed items.

(4) Curb/Gutter/Valley Gutter: Beginning and ending station/offset location of straight curb/gutter/valley gutter runs relative to construction centerline/monument line; flow line elevation; and station/offset location of PC's and PT's.

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(5) Driveway/Alley Entrances: Beginning and ending station/offset including driveway wings.

(6) Roadway Pavement: Beginning/ending station and measured width of actual sawcut removal/tie-in to existing pavement locations.

(7) Pipelines: All stations, offsets, inverts, and dimensions shown on the plans will be located in the field before the new pipeline is backfilled and the field verified values will be shown on the drawings. When pipeline parallels the construction centerline/monument line, verify, or correct the perpendicular distance between the two. When pipeline angles relative to the construction centerline/monument line or is in a curved roadway section, measured straight pipe run distances, angle points, changes in size, fitting/tee locations tied-in with practical known construction centerline/monument line location or other easily verifiable permanent point. Distances between fittings are from fitting centerline. Fire hydrant branch lines are to be located including bends. All project drawing pipeline cross-sections and profiles are to be corrected to reflect modified pipeline locations/alignments.

(8) Facilities Abandoned in Place: All waterlines, water valves, curb stops, and appurtenances abandoned in place, whether depicted on the project plans or not, shall be verified, corrected or added to the working drawings noting the beginning and ending station/offset location of waterline of each plan sheet.

The working drawings shall be certified by an Arizona Registered Land Surveyor hired by the Contractor. In addition to the monthly progress updates discussed above, the full and complete working drawings and an ESRI geodatabase file containing the Surveyor's shots shall be delivered to the city Construction Manager within thirty (30) calendar days from the date of final inspection and acceptance by the city of the work completed under this contract for each project area. Work under this bid item includes transfer of all information noted by the Contractor during the Construction Surveying section, to the on-site working drawing set. Final payment will be made only after submitted drawings are accepted by the city (see "Measurement and Payment" section of these technical specifications).

GIS/GPS Requirements: The Contractor shall also collect data as required to locate all proposed improvements, including buried fittings and deflections, and provide updated GIS/GPS data monthly as required per Exhibit D of the city's contract documents. Monthly updates will accompany the Contractor's pay applications.

Measurement and Payment: Construction working drawings and GIS/GPS data will be measured as a single complete item of work and paid at the lump sum price indicated on the Schedule of Bid Items, which shall be considered full compensation for the work as described herein and required to clearly collect and indicate all specific installation information.

ITEM 107210 EROSION CONTROL (SWPPP PREPARATION, INSTALLATION, MAINTENANCE, AND REMOVAL)

Description: The work under this item will consist of obtaining furnishing all materials,

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labor, and equipment necessary to prepare the SWPPP plan, furnish, install, maintain and remove (if applicable) erosion control best management practices as specified in the Project Plans and directed by City Representatives.

(A) General Requirements

The Contractor shall finalize the SWPPP before submitting a Notice of Intent (NOI) to ADEQ. Except for the NOI, all signatures required of the Contractor by the AZPDES Construction General Permit (CGP), including those required for the NOT, SWPPP, and inspection reports, shall be provided by a duly authorized representative of the Contractor, as defined in Part VIII.J.2 of said permit. Signature of the NOI shall be by a responsible corporate officer, as defined in Part VIII.J.1 of the CGP.

Even if the area of disturbance for this project does not warrant an official SWPPP, the Contractor shall prepare a sediment and erosion control plan in accordance with the SWPPP requirements in MAG, city, and Project documents.

The Contractor shall finalize the SWPPP before submitting to Construction Manager. All signatures required of the Contractor by the AZPDES Construction General Permit (CGP), including those required for the SWPPP, and inspection reports, shall be provided by a duly authorized representative of the Contractor, as defined in Part VIII.J.2 of said permit.

(B) Submittals:

The Contractor shall prepare and submit two copies of the SWPPP, including all information specified herein, to the city's Construction Manager at the pre-construction conference for approval. The SWPPP shall contain an executed letter of delegation which delegates the responsibilities for compliance with the Arizona Construction General Permit and Site Stormwater Pollution Prevention Plan to the Contractor.

Submission of the Contractor's NOI shall certify that the Contractor and its subcontractors have read and will comply with all provisions of the project specific SWPPP and the (current) ADEQ Arizona Pollutant Discharge Elimination System Construction General Permit (CGP).

The Contractor will include any additional revisions directed by the city's Construction Manager. The finalized SWPPP shall meet the terms and conditions of the CGP and be compatible with construction. Upon approval of the SWPPP, the Contractor shall file an NOI.

The Construction Manager may withhold the Notice to Proceed until an Authorization to Discharge from ADEQ has been issued to the Contractor, and a copy has been provided to the Construction Manager.

(C) Contractor's Responsibilities

The Contractor shall review the existing conditions and project documents, evaluate all requirements for adequacy in addressing pollution prevention during construction, and

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prepare a SWPPP.

The Contractor shall designate the erosion control coordinator as an authorized representative of the Contractor in accordance with Part VIII.J.2 of the CGP. The erosion control coordinator shall be responsible for finalization and implementation of the SWPPP as well as all other applicable requirements of the CGP.

The SWPPP shall include all information required in the CGP, including, but not limited to, a site map; identification of receiving waters and wetlands impacted by the project; a list of potential pollutant sources; inspection schedule; inspection form; any onsite or off-site material storage sites; additional or modified storm water, erosion, and sediment controls; procedures for maintaining temporary and permanent erosion control measures; a list of the Contractor's "good housekeeping practices"; and other permit requirements as stipulated in the CGP as well as other applicable state or local programs.

The Contractor shall install erosion control measures as soon as possible in the construction sequencing of the project.

The SWPPP shall identify and address erosion and pollution control at on-site fueling operations, waste piles, material storage sites, concrete washout areas, off-site dedicated asphalt and concrete plants, Contractor-use areas, storage areas, and support activity locations which are used solely for the project and are covered by the CGP. The SWPPP shall accommodate all requirements for the Contractor's "good housekeeping" procedures. In addition, the SWPPP shall specifically identify the erosion control measures proposed by the Contractor during any vegetation removal and salvaging phases ofthe project.

The SWPPP shall specify the mechanism whereby revisions may be proposed throughout the project and incorporated into the plan, including review and approval procedure. The city's Construction Manager and Contractor shall jointly approve and sign each revision to the SWPPP before implementation. Any subsequent submittals required by the Contractor to revise or update the SWPPP may require at least 48 hours for review.

Contractors and subcontractors responsible for implementing all or portions of the SWPPP shall be identified, with contact information, in the SWPPP, along with the measures for which they are responsible.

No clearing, grubbing, earthwork, or other work elements affected by the erosion control requirements in the SWPPP, shall be started until the SWPPP has been approved, the NOI completed and filed, copies of the NOI and Authorization to Discharge from ADEQ provided to the Construction Manager, and the SWPPP implemented. The Contractor shall post the ADEQ Authorization Number in a conspicuous location, near the construction entrance or construction yard, whichever is more visible to the public.

The Contractor shall give attention to the effect of the Contractor's operations upon the landscape and shall take care to maintain natural surroundings undamaged and keep all operations within the project limits as defined on the plans.

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The Contractor shall maintain all related erosion control elements in proper working order throughout the project. Work under this section also includes inspections, record-keeping, and implementation of "good housekeeping". If existing erosion and sediment control measures (BMPs) need to be repaired, modified or increased, implementation shall be completed within 7 calendar days or before the next rain event (whichever is sooner).

The approved SWPPP shall be updated whenever a change in design, construction method, operation, maintenance procedure, or other activity may cause a significant effect on the discharge of pollutants to surface waters, or when a change is proposed to the personnel responsible for implementing any portion of the SWPPP. The SWPPP shall also be amended if inspections indicate that the SWPPP is ineffective in eliminating or significantly reducing pollutants in the discharges from the construction site. All necessary modifications to the SWPPP shall be made within seven calendar days following the inspection that revealed the deficiency.

The Contractor's erosion control coordinator shall maintain two copies of the SWPPP, in two separate binders, including amendments, completed inspection records, and all data used to complete the NOI, Notice of Termination (NOT) and any other AZPDES records in a three-ring binder. The SWPPP shall remain at the job site, or at the location identified in the SWPPP, from the time construction begins until completion of the project. The SWPPP shall be available for public inspection and for use by city staff.

Upon acceptance of the project, and after the Contractor has filed their NOT, the Contractor shall submit one complete copy of the SWPPP binder along with the as-built plans to the city's Construction Manager and retain its own records for a period of at least three years from the filing of the Contractor's NOT.

No condition of the CGP or the SWPPP shall release the Contractor from any responsibilities or requirements under other environmental statutes or regulations.

Measurement and Payment: Erosion Control (SWPPP Preparation, Installation, Maintenance, and Removal) will be measured as a single complete unit of work and paid at the Agreement lump sum price, which price will be full compensation for the work described herein and complete in place. No payment will be made for rejected best management practices, for maintenance after a storm event, or for the repair of storm damage.

ITEM 324000 PORTLANT CEMENT CONCRETE PAVEMENT

General: Comply with MAG and COC Sections 324, 336, and 340 except as modified herein.

The Contractor shall verify and match the thickness, dimensions, color, finish, joint spacing, rebar, and transitions in the existing driveway for replacement work. The new and existing concrete pavement shall be separated by a sealed flexible construction joint. The Contractor shall submit a joint layout for any concrete pavement for approval by the City prior to its installation. In addition, Contractor shall furnish all labor, equipment, and material necessary to remove the existing concrete improvements.

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Remove existing improvements to the nearest joint unless a full replacement is required on the plans. Removal of existing concrete materials shall be performed with saw cutting methods.

Contractor shall prepare color and finish mock-up for approval if color and/or finish of existing concrete feature is anything other than natural concrete with a smooth or broom finished concrete. If the mock-up cannot be incorporated into the permanent installation, the Contractor will be responsible for its demolition and disposal.

The Contractor shall be responsible to replace, at their cost, all damaged pavement outside the pay limits, due to their activities on the project. This includes, but is not limited to, the replacement of newly cracked pavement, the replacement of existing cracked pavement were the cracks have been widened, and the replacement of any chipped missing pieces of pavement.

Measurement and Payment:
Measurement of concrete pavement shall be made per square yard. Measurement of item shall include the total slab thickness required. Payment shall be made per square yard removed and installed and shall include materials, finishing, excavation, transport, equipment, labor and all other work or items necessary or incidental for completion of the item. Replacement due to Contractor damage shall not be included in the measurement for Payment.

ITEM 332200 SLURRY SEAL

Description: Contractor shall furnish all materials, equipment, tools, labor, etc. as necessary to provide Residential Slurry Seal and Arterial Slurry Seal, Type II. Project areas will be determined by the city's Streets Project Manager/designee. Contractor shall provide a weekly schedule to the Contract Administrator/designee no later than the Wednesday prior to the work being performed the following week.

Contractor shall roll with pneumatic roller all sealed streets to establish a secure bond between aggregates and emulsions and reduce traffic tire scaring.

The Contractor shall submit to the city's Streets Project Manager/designee for approval the Type II Slurry Seal mix proportions and source prior to beginning the work. Slurry Seal shall consist of mixing asphalt emulsion, aggregate, and water and spreading the mixture on a surface or pavement as specified. All starting and stopping points of the slurry process shall have a minimum thickness of 1/8". Start and stop points not meeting the minimum 1/8" will be rejected.

This specification covers the materials, equipment and construction procedures for rut filling and/or resurfacing of existing paved surfaces. The arterial slurry surface shall be a mixture of cationic polymer modified asphalt emulsion, mineral aggregates, mineral filler, water and other additives, properly proportioned, mixed and spread on the pavement surface in accordance with this guideline and as directed by the Contract Administrator/designee.

1. **Composition of slurry seal mixtures.** A job mixture shall conform to the specification limits, and that is suitable for the traffic, climatic conditions, curing

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conditions, and final use. All materials shall be pre-tested for their suitability in the slurry seal mixture. The mixture shall attain initial set in not less than 5 minutes nor more than one hour. The setting time may be regulated by the addition of mineral fillers or chemical agents. The mixture shall be one of three types whose combined aggregates conform to the gradation requirements listed in Table 3. The mixture shall be sufficiently free flowing to fill cracks in the pavement. The mixture shall not segregate during or after lay-down. The mixture shall produce a skid-resistant surface.

2. **Determination of Job Mix.** All materials shall be pre-tested in a qualified laboratory to determine their suitability for use in the slurry seal and to insure they meet the specifications set forth herein. Tests will be used for design purposes to establish the percent of residual asphalt, water and accelerator to be used in the specified slurry seal.

Materials:

1. **Asphalt Emulsion.** The polymerized catatonic emulsion is herein classified as CSS-IH, quick setting, cationic type emulsion for mixing applications and seal coat. Shall be a homogeneous brown color throughout and show no separation after thorough mixing, shall break and set on the aggregate within five (5) minutes and shall be ready for cross-traffic within fifteen (15) to forty-five (45) minutes. The amount of polymer shall be based on weight of polymer and asphalt (total weight) and be certified by the supplier. The polymer asphalt emulsion, upon standing undisturbed for a period of twenty- four (24) hours, shall show no white or milky colored substance on its surface and conform to the requirements in Table 1.

Table 1

TESTING DESCRIPTION	TEST METHOD	SPECIFICATION LIMITS
Test on Emulsion		
Viscosity, Saybolt Furol seconds @ 25 °C (77 °F)	AASHTO T-59	15 - 100
Sieve test, retained on 850 µm (No. 20), %	AASHTO T-59	0.1 Max [2]
Storage Stability, 24 hours, %	AASHTO T-59	1.0 Max
Particle Charge	AASHTO T-59	Positive
Evaporation Residue, %	Arizona 512	57 Min
Test on Residue by Evaporation	Arizona 504	
Kinematic Viscosity @ 275 °F, cst	AASHTO T-201	650 Min
Penetration, 25 °C (77 °F), 100 grams, 5 seconds, dmm	AASHTO T-49	40 - 90
Ductility, 25 °C (77 °F), 5 cm/minute	AASHTO T-51	40 Min
Elastic Recovery by means of Ductilometer, 25 °C (77 °F), %	AASHTO T-301	55 Min
Test Evaporation Residue after RTFO		
Softening Point, °F	AASHTO T-53	130 Min
Kinematic Viscosity @ 275 °F, cst, aging ratio	AASHTO T-201	3.0 Max

i. A minimum of 3% SBS polymer solids, by total weight of SBS polymer

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and asphalt residue, shall be added prior to emulsification.

ii. The maximum of 0.1 percent applies to the preapproval of emulsions sampled from the supplier tank. A maximum of 0.3 percent is allowed for emulsions that are sampled at the project site.

2. **Modifier Type and Content.** The modifier shall be solid. The asphalt cement shall contain a minimum of 4% solid polymer by weight of asphalt residue, sheared into the asphalt prior to emulsification. Plant verification (by City forces) and certification of polymer type and content (by supplier) will be required throughout the duration of the contract. Each tank of emulsion produced shall be certified to meet these specifications. Each load of emulsion delivered to the project will be accompanied by a certificate of analysis. These certificates of compliance and analysis will be given to city as the material is made and/or delivered.

3. **Aggregate.** The min-aggregate shall consist of sound, durable crushed stone or crushed gravel and approved mineral filler. The material shall be free from vegetable matter and other deleterious substances. Aggregates shall be 100% crushed with no rounded particles. No natural sand will be allowed.

   The percentage composition by weight of the aggregate shall conform to the nominated gradation selected from the following Table 2.

   **All Roadway Sections must meet a minimum 3/8" Aggregate Sieve, Residential Roadways Sections with prior CITY STREETS PROJECT MANAGER APPROVAL may utilize ½" Aggregate Sieve.*

Table 2

Percentage Passing	
Sieve Sizes	**Type II**
½"	100
3/8"	100
No. 4	85-100
No. 8	65-90
No. 16	45-70
No. 30	30-50
No. 50	18-30
No. 100	10-21
No. 200	5-15
Theoretical asphalt content, % based on dry aggregate	7.5-13.5
Approximate application rate (Pounds/Square Yard)	11-15*

a) Average minimum required application rate of 12-13lbs/SY

b) The mineral aggregate and mineral filler shall have equivalency value not less than 50 (ASTM D 2419) and be non-plastic.

4. **Mineral Filler.** Mineral filler, required by the mix design, shall be any recognized

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brand of non-air entrained Type I normal Portland cement that is free of lumps and clods, with a minimum of 85% passing the #200 sieve added by weight of aggregate as specified by the mix design.

5. **Polymer.** Styrene Butadiene Rubber latex polymer shall be added to the water/soap phase by injection prior to the mill manufacture of the asphalt emulsion by the emulsion producer. The polymer shall be BASF NX 1118 or approved equal. The amount of polymer solids shall be between 3 and 4 percent of the asphalt residual content and shall be certified by the emulsion producer on each load of emulsion delivered to the job site. No post or field addition of polymer will be allowed. Samples of polymer shall be provided and shall conform to the following requirements:

Table 3

Test	Requirement
Total Solids, min %	60
Bound Styrene %	24-60
PH at 25 Degrees C	4.2-5.2
Brookfield Viscosity RVT	1000-4000
Residual Monomer %	0.08 ax.

6. **Water.** Contractor shall state the source of water at time of tendering. Water shall be potable and be compatible with the slurry ingredients used. Contractor shall be required to obtain a fire hydrant meter from the city if he intends on using city water. A deposit is required to obtain the meter and all water used will be charged to Contractor.

7. **Additives.** Additives may be used to accelerate or retard the breaking point and set times of the arterial slurry surface mix, or improve the resulting finished surface. The use of additives in the arterial slurry surface mix shall be supplied in quantities by the laboratory mix design.

8. **Proportioning.** The arterial slurry surface mixture shall be proportioned in accordance with the mix design. Calibrated sign flow meters shall be provided to measure both the addition of water and additives shall be provided to measure both the additions of water and additives to the pug mill. Emulsion and cement flow shall be tied directly to aggregate flow. All additive flows shall be calibrated.

   Asphalt emulsion shall be added at a rate determined by the mix design and in the range of the table above. A job mix design shall be submitted by the Contractor for approval by the City that conforms to the specification limits and that is will include recommended application rate of slurry to suite the job conditions.

   The Slurry Seal mixture shall be proportioned by the operation of a single start/stop switch or lever, which automatically sequences the introduction of aggregate, emulsified asphalt, admixtures, if used, and water to the pug mill. Calibrated flow meters shall be provided to measure both the addition of water and liquid additives to the pug mill. If necessary for workability, a retarding agent, that will not adversely affect the seal, may be used.

   Water, and retarder if used, shall be added to ensure proper workability and (a)

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permit uncontrolled traffic on the slurry seal no more than three (3) hours after placement without the occurrence of bleeding, raveling, separation or other distress; and (b) prevent development of bleeding, raveling, separation of other distress within fifteen (15) days after placing the slurry seal.

The arterial slurry surface mixture shall be proportioned per the mix design to ensure:

a) Traffic-ability - with a relative humidity at not more than 50% and ambient air temperature of at least 77 degrees F, the material will permit uncontrolled traffic without damage to the surface within one (1) hour.

b) Prevent development of bleeding, raveling, separation or other distress for (7) seven days after placing the arterial slurry surface.

9. **Mix Design Formula:** Contractor shall provide a job mix formula from an approved laboratory and present certified test results for the Contract Administrator/designee's approval. Compatibility of the aggregate and polymer modified asphalt emulsion shall be certified by the emulsion manufacturer. All the materials used in the job mix formula shall be representative of the material proposed by Contractor for use in the project.

10. **Specifications.** Contractor shall obtain written approval from the Contract Administrator/designee of the mix design prior to use. The specification limits are as follows:

Table 4

Residual Asphalt	6% - 11.5% by dry weight of agg.
Mineral Filler	.1% - 1% by dry weight of agg.
Polymer Content/Type	4% min. (see section 5.)
Additive	As required for mix properties
Water	As required for mix properties
Aggregate Grading	Type as specified meeting sec. 6
Consistency	2.5 to 3.0 cm
Traffic Time	See section 10.1
Abrasion Loss	50 g/S.F. max.
Adhesion	90% minimum
Loaded Wheel Sand Adhesion	See section Table

*The laboratory that performed the tests and mix design and shall show the results of the tests on individual materials, comparing the test results to those required by the specifications, shall sign the laboratory report. The report shall clearly show the proportions of aggregate, filler as determined from the tests, minimum and maximum), water (minimum and maximum), asphalt solids content based on the dry weight of aggregate and set-control agent usage. Previous laboratory reports covering the same materials may be accepted provided they are made during the same calendar year. **No work shall begin until the City has reviewed and approved the laboratory reports and mix design for the proposed work.**

11. **Modified Cohesion Test.** Contractor shall furnish laboratory test data showing

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design to be trafficable one (1) hour after application at 77ºF conforming to the following criteria in accordance with test methods described in Appendix III & IV (ADOT Standards).

Table 5

Set Time Test	30 minutes 12 kg - cm minimum
Early Rolling Traffic Time	60 minutes 20 kg - cm minimum

12. **Loaded Wheel Sand Adhesion Test.** Contractor shall furnish laboratory test data showing the mix design conforming to the following criteria in accordance with test methods described in Appendix III. (ADOT Standards)

Table 6

Vehicles/day	Maximum Sand Adhesion
0-30	70 g/ft
250-1500	60 g/ft
1500-3000	55 g/ft
greater than 3000	50 g/ft

Contractor shall report the laboratory report the quantitative effects of moisture content in the unit weight of the aggregate (bulking affect). The report must clearly show the theoretical recommended proportion of aggregate, mineral filler (min & max.), water (min & max.), additive(s), and asphalt and how the proportion are based (dry aggregate weight, total mix. etc.).

Construction Requirements:

1. **Trial Applications**. Contractor shall place a test strip of 60 square yards in the area designated by the Contract Administrator/designee. The test sections shall be placed using the same equipment and methods as will be used on the job. Slurry mixtures placed in test strips shall conform to the design mix as determined by the tests with minor variations to obtain crack filling, set time, pavement bond and a skid resistant texture. If the materials do not meet the requirements for fluidity, non-segregation, or surface texture, a new job mix shall be formulated and tested. Work shall not proceed before approval of design mix and acceptance following the placing of a test strip.

2. **Testing the Arterial Slurry Surface.** Contractor shall take samples throughout the project for testing by the approved laboratory per ISSA TB101. Testing shall be at the expense of the contractor, for the following:
   a. Asphalt content
   b. Aggregate gradation
   c. % Polymer content and type

3. **Mixing Equipment.** The machine shall be specifically designed and manufactured to lay a 4% polymer modified slurry seal. The material shall be mixed by an automatic sequenced, self-propelled slurry surfacing mixing machine which shall be a continuous flow mixing unit, able to accurately deliver and proportion the aggregate, emulsified asphalt, mineral filler, control setting additive and water to a revolving multi-blade double shafted mixer and discharge the mixed product on a continuous

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flow basis. The machine shall have sufficient storage capacity for aggregate, emulsified asphalt, mineral filler, control additive and water to maintain an adequate supply to the proportioning controls. On arterial streets and collectors the machine will be a self-loading machine capable of loading materials while continuing to lay slurry surfacing, thereby minimizing construction joints. The self-lading machine shall be equipped to allow the operator to have full control of the forward and reverse speed during application of the slurry surfacing material and be equipped with opposite side driver stations to assist in alignment. The self-loading device, opposite side driver stations, and forward and reverse speed controls shall be original equipment manufacturer design.

4. **Calibration.** Contractor shall calibrate each mixing unit to be used in the performance of the work prior to construction. Calibration data, if done within the calendar year, using the same material, may be used, providing a verification of the aggregate feed agrees.

    i. **Weight Control.** Contractor shall provide Individual volume or weight control for proportioning each material to be added to the mix, and shall make these accessible to the Contract Administrator/designee. Contractor shall calibrate and document each material control device prior to work, for inspection by the Contract Administrator/designee.

    ii. **Aggregate Feed.** The aggregate feed to the mixer shall be equipped with a revolution counter or similar device so the amount of aggregate used may be determined at any time.

    iii. **Emulsion Pump.** The emulsion pump shall be the positive displacement type with a jacketed housing for uniform heating. A revolution counter or similar device shall be fitted so that the amount of emulsion used may be determined at any time.

    iv. **Fines Feeder.** Contractor shall supply an approved fines feeder that will provide a uniform, positive, accurately metered range of 0-1 percent by dry aggregate weight. The fines feeder has to have a counter so the amount of mineral filler can be determined at any time.

    v. **Liquid Additive.** The mixing machine shall be equipped with a liquid additive system that provides a pre-determined amount of additive to the mixing chamber. This additive system must be equipped with a counter that can determine the amount used at any time.

    vi. **Water System.** The mixing machine shall be equipped with water system that provides a pre-determined amount of water to the mixing chamber. This water system must be equipped with a counter that can determine the amount used at any time.

5. **Operator Controls.** Contractor shall provide controls that will allow the operator to

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sequence and proportion the material per mix design.

i. **Spray Bars.** The mixing machine shall be equipped with a water pressure system that provides a water spray immediately ahead of and outside the spreader box.

ii. **Spread Equipment.** The paving mixture shall be spread uniformly by means of mechanical type lay-down box attached to the mixer, equipped with agitation, to spread the materials throughout the box without any dead zones. These paddles shall be designed and operated so all the fresh mix will be agitated. Flexible seals, front and rear, shall be in contact with the road surface to prevent loss of mixture from the box. The spreader box shall be equipped with hydraulic cylinders for controlling the thickness of the spread mixture.

The rut filling spreader box shall have 6 to 8 foot skids to provide for leveling and filling uneven depressed areas. The rut filling spreader box will require two adjustable steel strike-off plates. The rear flexible seal shall act as a final strike-off and shall be adjustable. The steel strike-offs shall be controlled by hydraulic cylinders placed at the rear of the spreader box.

The spreading equipment shall be maintained free from buildup of the mixture on the paddles of sidewalls. Any skips, lumps, or tears in the finished product will not be allowed.

6. **Traffic Control.** Contractor shall adhere to all city, state and federal traffic and Safety guidance, City of Chandler Engineering & Design Standards manual for Public Works Construction Chapter 7 – Traffic Barricade Design, City of Chandler Municipal code 46-2.7.E construction sign requirements and the Manual on Uniform Traffic Control Devices (MUTCD). Contractor shall submit all traffic control plans for approval to the City of Chandler Transportation and Development Department before any work may progress. Traffic control shall include uniformed Chandler Police Officer and squad car as required.

7. **Striping.** Contractor shall provide city with striping as-builds before start of project. All striping shall follow the latest version of the city Standard Details and Specifications Manual. No striping shall begin until approved by city Traffic Engineering Division and Contract Administrator/designee. Temporary striping is required where thermo striping is to be applied at a later time. Street intersections which require striping shall not remain un-striped for more than three consecutive days.

8. **Survey Monuments.** This work will consist of adjusting survey monuments and brass caps. Survey markers shall be adjusted according to MAG Standard Detail 120. Frames and covers shall be adjusted according to MAG Standard Detail 270. Survey markers shall be re-established and referenced by a Registered Land Surveyor

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(RLS). The RLS shall reset and punch the survey markers. Any and all new survey coordinates shall be recorded and described in detail to the City of Chandler and governing authorities by the RLS.

9. Application:

i. **General.** The arterial slurry seal surface shall be of the desired consistency when deposited in the spreading box and nothing more shall be added to it. The mixing time shall be sufficient to produce a complete and uniform coating of the aggregate and the mixture shall be chuted into the moving spreader box at a sufficient rate to maintain an ample supply across the full width of the strike-off squeegee at all times.

ii. **Weather.** The arterial slurry seal surfacing shall be placed when the temperature is at least 45 ºF and rising, and is not raining. The surface temperature shall be 50ºF or higher when the mixture is applied.

The arterial slurry seal surface shall not be applied unless the pavement temperature is at least 45ºF and rising. The mixture shall not be applied during unsuitable weather.

iii. **Protection of Existing Services.** Contractor shall take all necessary precautions to prevent arterial slurry seal or other material used on the work from entering or adhering to grating, hydrants or valve boxes, manhole covers, bridge or culvert decks and other road fixtures. Immediately after surfacing the contractor shall clean off any such material and leave any such grating, manholes, etc., in a satisfactory condition.

iv. **Preparation of The Surface.** Immediately before applying the bituminous material, Contractor shall clean the area to be surfaced of dirt, loose material, and other objectionable material. In urban areas, the surface shall be cleaned with a self-propelled pick-up sweeper. In rural areas power brooms may be used. When necessary, cleaning shall be supplemented by hand brooms. This also includes the removal of grass or weeds, which are growing in the joint between the street and concrete gutter.

Contractor shall not apply the bituminous material until an inspection of the surface has been made by the Contract Administrator/designee and he/she has determined that it is suitable.

v. **Fogging Pavement.** The surface will be pre-wetted by fogging ahead of the spreader box. The rate should be adjusted as dictated by the pavement temperatures, surface texture, humidity and dryness of existing pavement.

vi. **Mix Stability.** The modified mix shall possess sufficient stability so that

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premature breaking of material in the spreader box should not occur. The mixture shall be homogeneous during the following mixing and spreading, it shall be free of excess water or emulsion and free of segregation of the emulsion and aggregate fines from the courser aggregate.

vii. **Application Rate.** The application rate, square yards per cubic yard of mix specified are average rates, the surface texture variation throughout the work will dictate the actual spreading rates. The strike-off squeegee shall be adjusted to provide an arterial slurry surface thickness, which will completely fill the surface voids and provide an additional thickness not exceeding one and one half times the largest top-size stone. This requirement of 1 1/2 stone depth does not apply to rut filling operations as these depths vary greatly according to the surface irregularities.

viii. **Joints.** No excessive buildup or unsightly appearance shall be permitted on longitudinal or transverse joints. A maximum of 4.0" overlay will be permitted on longitudinal joints. The contractor shall provide suitable width spreading equipment to produce a minimum number of longitudinal joints throughout the work. Half passes and an odd width passes will be used only in minimum amounts. If half passes are used, they cannot be the last pass of any paved area. Care shall be taken to ensure straight lines along curb and shoulders. No runoff on these areas will be permitted.

Construction joints shall be neat in appearance and shall be tapered or feathered to conform to the existing surfacing. All excess material shall be removed from the surface upon completion of each run.

ix. **Hand Work.** Approved squeegees and lutes shall be used to spread the mixture in areas inaccessible to the spreader box and other areas where hand spreading may be required. Adequate methods such as barricades, flagmen, pilot cars, etc., shall be used to protect the uncured slurry surface from all types of traffic. City barricade manual shall be the approved method of providing traffic control.

x. **Protection of Slurry Seal Surface.** Contractor shall provide adequate means to protect the uncured product. Any damage done to the product shall be repaired at Contractor's expense.

Adequate methods such as barricades, flagmen, pilot cars, etc., shall be used to protect the uncured slurry surface from all types of traffic. city barricade manual shall be the approved method of providing traffic control.

xi. **Damage to Slurry Seal Surface.** Contractor's responsibility to replace

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arterial slurry surface damage by unexpected rain after spreading shall be limited to the period within four (4) hours of placement of the arterial slurry surface.

The Contractor will apply slurry seal as shown on the construction plans in a manner that allows a minimum of 10 feet of vehicular access at all times. The application rate shall be per the manufacturer's recommendations. The surface treatment shall be rolled per the manufacturer's recommendations.

Cleaning and Notification: The Contractor shall be responsible for providing the street cleaning, "No Parking" posting, and traffic control. Contractor shall place signs as directed by the Engineer to notify residents of any scheduled street closures. Signs shall be constructed per plans. The Contractor shall place temporary no parking signs on scheduled collector and residential roadways to be slurry sealed 48 hours in advance of the application. There will be a minimum of ten per block per side or enough to provide clear and concise information to ensure no residential parking on scheduled roadways.

The Contractor shall notify all emergency services residents, apartment managers, post offices, schools, and businesses by handbill 48 hours in advance of any street restriction that will affect access to their property. The Contractor shall present the handbill to the city Construction Manager or designee for approval, prior to its distribution to the public. The handbill will include the month (non-numeric) and dates expected for the restrictions. For Monday work, the handbill shall be distributed the preceding Thursday. For Tuesday work, the handbill shall be distributed the preceding Friday. Should work not occur or be completed on the specified day, a new handbill will be distributed by the Contractor. The cost shall be incidental to the project. Re-notification shall be a minimum of 24 hours in advance. For rain days, the Contractor may "pre-notify" the public of potential non-work in lieu of re-notification.

The Contractor shall be responsible for all cleanup of the work areas and staging areas. The Contractor shall be responsible for covering and uncovering all structure covers, such as manholes, valve, and monument covers. All street (full width and gutters) shall be swept by self-propelled pick-up sweeper no sooner than 24 hrs after slurry seal placement is complete. All areas will be swept to the satisfaction of the inspector.

Area Omissions: All areas temporarily omitted by the Contractor during normal operations shall be logged and a list of the missed areas (addresses or intersections) given the inspector before the start of the next day's work.

Repair of Early Distress: If bleeding, raveling, delamination, rutting, or wash boarding occurs within 60 days after placing the slurry seal, the Contractor shall diligently pursue repairs by a method proposed by the Contractor and approved by the Engineer. The Contractor shall not be relieved from maintenance until repairs have been completed.

Patching: Areas that require patching shall be full lane width or as directed by the inspector. Patching will be limited to one side of the street at a time.

Measurement and Payment: Slurry Seal will be measured by the square yard and will

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be paid for at the Agreement unit price per square yard, which price will be full compensation for the item, complete in place.

No additional measurement or payment will be made for asphalt emulsion and aggregate, the cost being considered incidental to this item.

ITEM 337000 FILL AND SEAL PAVEMENT CRACKS

General: Conform to MAG Section 337 and all other applicable sections except as modified herein.

The work covered by this specification will consist of furnishing all labor, equipment, and materials necessary to repair all existing cracks in the roadway and the joints between new and existing pavement prior to sealing the roadway.

The Contractor shall repair cracks that are ¼" – 1" wide with hot rubber sealant or cold pour sealant. Submit sealant for approval. Cracks that are 1" and wider shall be patched with hot mix asphalt instead of sealant. Submit mix for approval. Fill and seal a sample section of street 100' long for approval by the city Inspector before proceeding with the rest of the project.

Measurement and Payment: Filling and sealing pavement cracks will be measured as a single complete item of work and paid at the price per linear foot as indicated on the Schedule of Bid Items regardless of crack width, which shall be considered full compensation for the work as described herein.

ITEMS 340001 THROUGH 340401 CURB AND GUTTER, SIDEWALKS, AND VALLEY GUTTERS & APRONS

General: Comply with MAG and COC Section 340 except as modified herein.

The Contractor shall verify and match the thickness, dimensions, color, finish, joint spacing, rebar, and transitions of the existing curb, curb and gutter, sidewalk, valley gutter, apron, and driveway on either side of the removal. The minimum new concrete sidewalk and driveway thickness shall be 4 and 8 inches, respectively. The new and existing concrete pavement shall be separated by a sealed flexible construction joint. The Contractor shall submit a joint layout for any concrete pavement for approval by the city prior to its installation. In addition, Contractor shall furnish all labor, equipment, and material necessary to remove the existing concrete improvements. Remove existing improvements to the nearest joint unless a full replacement is required on the plans.

Contractor shall submit color and finish samples to the city Construction Manager for approval if color and/or finish of existing concrete feature is anything other than smooth or broom finished concrete.

The Contractor shall match existing pavers or other driveway material removed to match the existing driveway in kind. When replacing pavers, the existing stone will be stored, protected and reused. The replacement asphalt pavement shall be a minimum

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of 3-inches thick or match the thickness of the existing drive if greater.

Measurement and Payment for Item 340001 Curb and Gutter, MAG Std. Det. 220 Type "A": Measurement of curb and gutter shall be made per lineal foot. Payment shall be made per lineal foot removed and installed and shall include materials, forms, finishing, excavation, transport, equipment, labor and all other work or items necessary or incidental for completion of the item.

Measurement shall be based on quantities actually removed and replaced. Payment shall be at the contract unit rate as shown in the Schedule of Bid Items. The construction progress of this item shall be monitored based on the Contractor's quantity take offs established during the development of the Schedule of Bid Items.

Replacement due to Contractor damage shall not be included in the measurement for Payment. Curb and gutter quantities are not shown on the plans for water services. When curb and gutter is damaged due to water service installation, the cost of that replacement will be included in the water service cost.

Measurement and Payment for Item 340041 Roll Curb and Gutter, MAG Std. Det. 220 Type "C": Measurement of roll curb and gutter shall be made per lineal foot. Payment shall be made per lineal foot removed and installed and shall include materials, forms, finishing, excavation, transport, equipment, labor and all other work or items necessary or incidental for completion of the item.

Measurement shall be based on quantities actually removed and replaced. Payment shall be at the contract unit rate as shown in the Schedule of Bid Items. The construction progress of this item shall be monitored based on the Contractor's quantity take offs established during the development of the Schedule of Bid Items.

Replacement due to Contractor damage shall not be included in the measurement for Payment. Roll curb and gutter quantities are not shown on the plans for water services. When roll curb and gutter is damaged due to water service installation, the cost of that replacement will be included in the water service cost.

Measurement and Payment for Item 340200 Sidewalks: Removal and replacement of sidewalks shall be measured in square footage of concrete to the nearest joint. Cost will include modifications to standard details as required to match existing conditions. This item will include removing and replacing existing access ramps in kind. Payment shall be made for each square foot of sidewalk removed and installed and shall include materials, forms, finishing, excavation, transport, equipment, labor and all other work or items necessary or incidental for completion of the item.

Measurement shall be based on quantities actually removed and replaced. Payment shall be at the contract unit rate as shown in the Schedule of Bid Items. The construction progress of this item shall be monitored based on the Contractor's quantity take offs established during the development of the Schedule of Bid Items.

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Replacement due to Contractor damage shall not be included in the measurement for Payment. Sidewalk quantities are not shown on the plans for water services. Sidewalk is damaged due to water service installation, the cost of that replacement will be included in the water service cost.

Measurement and Payment for Item 340400 Valley Gutter and Concrete Aprons: Each replacement of concrete valley gutter and its aprons shall be measured per square foot and replaced to their original dimensions. Payment shall be made at the contract unit price for each square foot of valley gutter and aprons removed and installed and shall include materials, forms, finishing, excavation, transport, equipment, labor and all other work or items necessary or incidental for completion of the item.

Measurement and Payment for Item 340401 Concrete Ramp, Curb, and Detectable Warning Strip: Each replacement of a concrete ramp, curb, and detectable warning strip assembly shall be measured per each assembly removed and replaced to their original dimensions. Payment shall be made at the contract unit price for each assembly removed and installed and shall include materials, forms, finishing, excavation, transport, equipment, labor and all other work or items necessary or incidental for completion of the item.

ITEM 340900 SPEED HUMPS

General: Comply with MAG and COC Section 321 except as modified herein.

The Contractor shall saw cut and remove of the entire existing speed hump and its underlying paving prior to the waterline installation. After replacing the paving to match the adjacent road, the Contractor shall mill the new pavement before placing the new hump.

Measurement and Payment: Measurement shall be per each speed hump removed and replaced regardless of the total hump length and width, which will match city standard detail C-234. Payment shall be made at the contract unit price for each speed hump replaced and shall include sawcut, milling, materials, markings, excavation, transport, equipment, labor and all other work or items necessary or incidental for completion of the item.

ITEMS 350000 THROUGH 350230 ABANDONMENT OF EXISTING WATERLINES AND APPURTENANCES

General: The abandonment of pipe shall be performed in accordance with MAG Standard Specifications Section 350 except as modified herein.

MAG Subsection 350.2.1 Utilities is modified to REPLACE the second paragraph with the following:

“The Contractor shall furnish all materials, labor, supervision, and equipment required for the orderly abandonment of existing waterline piping, fittings, and other appurtenances as shown on the drawings and described herein.

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Abandonment shall be accomplished in a neat and careful manner so as not to damage adjacent improvements or unnecessarily interfere with existing operations.

The Contractor will confirm existing waterline materials during his potholing activities. Abandoned waterlines located under roadway pavement shall be pumped full of an approved grout mixture. The locations of these waterlines are shown in the construction drawings. The waterlines shall be completely filled, leaving no voids or air spaces. Grout shall be injected in an upslope manner to remove trapped air. The Contractor shall provide additional portals as required by the city for proper venting or verification of the abandonment. Portals shall be a minimum of six inches in diameter. Abandonment shall be limited to 500 feet in length and only increased in 100-foot increments with the city Inspector's prior approval. Grout shall be pumped to an open discharge point or pipe end that is the same diameter as the piping being abandoned. Pumping pressures shall not exceed 50 psi and shall be constantly monitored for the entire duration of the abandonment. Should the pumping pressure exceed 50 psi, the abandonment length will be reduced to maintain acceptable pressures. The Contractor shall accurately as built the materials used and limits of the abandonment. Abandoned pipe shall be capped per details on the plans after the section is filled.

Flowable fill grout for abandoned waterlines shall be 1/2 sack cement, 3 sack ash with Darafill sand slurry. Grout mix shall be the following or approved equivalent:

Rock/Sand 0/100

	UNIT	WEIGHT	VOLUME	S.G.
Cement ASTM-C150 Type I/II/V	lbs/yd^3	47.00	0.24	3.15
Micro Silica Fume	lbs/yd^3	282.00	2.12	2.13
Concrete Sand	lbs/yd^3	2250.00	14.03	2.57
1" Concrete Rock	lbs/yd^3	0.00	0.00	2.66
1/2" Concrete Rock	lbs/yd^3	0.00	0.00	2.66
3/8" Concrete Rock	lbs/yd^3	0.00	0.00	2.60
Fine Sand	lbs/yd^3	120.00	0.74	2.60
Water Added In Mix	lbs/yd^3	333.00	5.34	
Darafill (17% Air)	ozs/yd^3	3	4.59	
TOTALS		3032.00	27.05	

Slump: 8" +/- 1"

Sand used in the mixture shall be composed only of hard, strong, durable, uncoated grains of quartz and shall be free from extraneous substances.

Measurement and Payment for Item 350000 Abandonment of Waterline in Place: Measurement for the abandonment of the existing piping that is in the right-of-way but not under the roadway will be on a lump sum basis. This piping will not be grouted. Its abandonment will include abandoning existing valves and existing air valves along the existing pipe in accordance with the construction plans and the hardscape, landscape, and irrigation removals and repairs required for that abandonment. Payment shall include

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materials, labor, supervision, and equipment required for the abandonment of existing waterline piping, shut off valves, air valves, fittings, and other appurtenances as shown on the drawings and described herein.

Measurement and Payment for Item 350001 Abandonment of Existing Valve in Place within Existing Sidewalks or Ramps: Measurement for the abandonment of existing valves located in sidewalks and ramps when the valve box is called out to remain in place shall be made on an each basis and include filling the existing valve box with CLSM and concrete after City staff set the valve in its final position. Payment shall include materials, labor, supervision, and equipment required for the abandonment of the existing shut off valves, CLSM placement, concrete placement, and other efforts as shown on the drawings and described herein.

Measurement and Payment for Item 350100 Abandonment of Existing Waterline with Grout: Measurement for the grouting of pipe under existing roadways shall be made on a lineal foot basis and include filling the existing piping shown with grout. Payment shall include materials, labor, supervision, and equipment required for the abandonment of existing waterline piping, shut off valves, air valves, fittings, grout injection, and other appurtenances as shown on the drawings and described herein. This item will include the hardscape, landscape, and irrigation removals and repairs required for the required abandonment.

Measurement and Payment for Item 350230 Removal and Disposal of Existing Meter and Meter Box: Measurement for the removal and disposal of the existing meter and meter box shall be made on an each basis and include backfilling the remaining voids with compacted ABC in driveways and sidewalks and native material in yards. Payment shall include materials, labor, supervision, and equipment required for the removal and disposal of existing meters and meter boxes, and also for backfilling the remaining voids as shown on the drawings and described herein.

ITEM 350300 DEMOLITION OF EXISTING CONCRETE WATER VAULT

General: Demolition of the existing concrete water vault shall conform to MAG Standard Specifications Sections 350. This Bid Item includes all labor, materials, equipment and incidentals required for the demolition, removal and disposal of the existing concrete vault and its contents as shown on the plans.

Coordination: Prior to beginning demolition, the Contractor shall notify City of Chandler Water Distribution in accordance with these special provisions and perform any required coordination with the property owner. Once the notification and coordination process is complete, the Contractor shall rope off the area’s limits of disturbance and salvage or protect any protected native plants and unprotected plants that may be impacted by the demolition.

Demolition of Vault: Break up and remove all walls, foundations, slabs, floors, and vault in its entirety. Demolish concrete and all materials in small sections. Demolished items shall not be used in backfill. The Contractor shall import ABC to fill the void created by the

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removal of the existing vault.

Following the demolition of the existing improvements, the Contractor shall grade the disturbed area to match and drain with the topography of the surrounding property and revegetate the area's in accordance with these special provisions. All native plants and plants within the limits of disturbance shall be protected or salvaged during demolition activities and replanted in their original location once work is complete. The use of explosives, blasting materials, or expansion compounds is prohibited on this project.

Mechanical and Piping Improvements: Demolish into small assemblies and remove the entire contents of the existing vault including piping, fittings, valves, meter, supports, hatches, ladders, and all appurtenances. Remove all piping, valves, meters, and fittings within the vault and cut and cap the existing piping leading to and from it.

Pollution Controls: Use water application to limit the amount of dust and dirt rising and scattering in the air. Comply with governing regulations pertaining to environmental protection. Clean adjacent structures, facilities, and improvements of dust, dirt, and debris caused by demolition operations.

Material Removal: All demolished materials, equipment, and debris shall become the property of the Contractor and shall be removed from the site daily. The Contractor shall dispose of all demolished materials, equipment, and debris in conformance with all existing applicable laws and regulations at an approved landfill. The Contractor shall provide a landfill manifest if requested.

Measurement and Payment: Demolition and removal of the existing vault and its contents shall be made on the lump sum basis. Payment shall be made at the contract unit price per lump sum for all equipment removed and shall include; materials, labor, excavation, landfill disposal fees, transport, equipment, native plant and plant salvage and relocation, utility coordination and fees, and all other work or items necessary or incidental for completion of the item.

ITEM 350700 REMOVE FIRE HYDRANT AND PIPING TO GATE VALVE

General: Comply with MAG Section 350 except as modified herein.

If there is a period between the commissioning of the new fire hydrants and the demolition of the existing hydrants, the Contractor shall fit the existing hydrants with "Out of Service" signs in accordance with COC Standard Detail C-303.

The existing hydrants shall be removed before the adjacent roads are repaved, sealed, and slurry sealed. The Contractor shall remove the existing hydrant marker in the roadway and seal any voids caused by the removal.

Measurement and Payment: Measurement shall be per each fire hydrant assembly removed regardless of the length of the piping and number of fittings between hydrant and its shut off valve. Payment shall be made at the contract unit price for each removal

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and shall include removal of the hydrant and piping between it and its shut off valve, abandonment of the shut off valve, disposal of removed hydrants and piping, labor and all other work or items necessary or incidental for completion of the item.

ITEM 401000 TRAFFIC CONTROL

General: Conform to MAG Section 401, City of Chandler Section 401, City of Chandler Engineering & Design Standards Manual for Public Works Construction Chapter 7 - Traffic Barricade Design and the Manual of Uniform Traffic Control Devices, as supplemented herein.

Description: Delete text in MAG Section 401.1 and insert the following:

This bid item is for all barricades, message boards, signs, flagmen, off-duty police officers, etc. needed to keep traffic moving through the worksite and to provide the following:

- Vehicular access to a minimum of one driveway per property at all times.
- At least one lane shall always remain open on local streets.

All traffic control signing, haul routes and barricading plans will be submitted to the city and Inspector for approval prior to starting the work and all Contractor changes to the plans will be approved by the city prior to implementation.

The Construction Manager and the city's Traffic Department must approve any noncompliance with these requirements in writing. The Contractor shall not disturb traffic outside normal working hours. The Contactor shall not leave any trenches or excavation open outside normal working hours. Only with the Construction Manager's approval will this be allowed. Open trenches shall be covered with recessed plates in a manner acceptable to the Construction Manager.

The Contractor shall notify the Inspector seven days in advance of the time work will be started in areas requiring the rerouting of traffic, traffic lane striping, and removal of street signs. The foregoing shall apply to progressive modifications of traffic routing within an area in which work is in progress.

City of Chandler uniformed off-duty law enforcement officers shall be provided by the Contractor when construction activities occur along a school frontage or within 300 feet of a signalized intersection or school entrance. When the use of an off-duty police officer is required and approved by the city, the Contractor shall attempt to schedule a Chandler officer through the following website:

https://chandlerazpd.gov/extra-duty

If a Chandler officer is not available, an officer from another jurisdiction may be used.

Any plans to use an off-duty officer must be submitted to the city Inspector for approval prior to starting the work. All Contractor changes to the plans will be approved by the city

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prior to implementation. The Construction Manager and the city's Traffic Department must approve any noncompliance with these requirements in writing.

The Contractor shall notify the Inspector seven days in advance of the time work will be started in areas requiring an off-duty officer.

Measurement and Payment: Measurement of all traffic control work as described herein and as required for the project will be measured on a lump sum basis. Payment for all traffic control work including the use of off duty uniformed police officers as described in the technical specifications will be paid for at the lump sum amount indicated on the Schedule of Bid Items, which payment will be considered full compensation for the work complete as described herein and on the plans, and as modified or instructed on-site by City staff. Adjustments to approved traffic control plans, barricading or signing to accommodate specific on-site needs at the sole discretion of the City is included in the lump sum bid item payment.

ITEM 402000 RE-STRIPE ROADWAY PAVEMENT

General: The work covered by this specification will consist of furnishing all labor, equipment, and materials necessary to replace existing roadway striping, markings, and symbols in kind after the application of slurry seal.

Replacement striping, markings, and symbols shall be thermoplastic and be installed per city requirements, ADOT Standards, and MUTCD. Prior to beginning construction, the Contractor shall photo document and measure all existing striping, markings, and symbols. Copies of this documentation shall be delivered to the city before work starts.

Measurement and Payment: This work will include the replacement of any striping or pavement markings damaged or covered with slurry during construction. It will be measured as a single complete item of work regardless on striping width, length, and coating system. It will be paid at the lump sum price indicated on the Schedule of Bid Items, which shall be considered full compensation for the work as described herein and illustrated on the plans. The construction progress of this item shall be monitored based on the Contractor's quantity take-offs established during the development of the Schedule of Bid Items.

ITEM 430000 LANDSCAPE AND IRRIGATION SYSTEM

General: Conform to MAG Section 430 and 440 except as modified herein.

The removal, replacement, and repair of private or public landscaping and landscape irrigation. This work includes the restoration of hardscape, landscaping, irrigation improvements required by water service connections, the installation and removal of fire hydrants, and the waterline construction. This work shall also include coordination with the city and property owners to identify and coordinate modifications to keep the existing irrigation system layouts operational and to restore them to properly operational systems. The Contractor shall notify the city and property owners of any impact or damage to their

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landscaping irrigation system that occurs during construction. The irrigation system shall not be out of order for more than 24 hours. After a private landscaping and/or irrigation system has been restored the Contractor shall operate the system successfully in the presence of the city Inspector and Homeowner.

Any landscaping features, landscaping or native plants, and irrigation equipment damaged or removed during construction, within the city Right of Way, private Right of Way, or private property during construction shall be restored. The Contractor shall replace any existing landscape and/or irrigation improvements in kind per MAG and COC specifications and these technical specifications. Should two or more of these guidelines conflict, the more stringent specification will apply as directed by the city.

Landscape features shall include but not be limited to grading, decomposed granite, lawns, ground coverings, plants, trees, cacti, lighting, mailboxes, boulders, private signs, decorative curb, patios, railroad ties, landscape walls, hardscape, private pavement, concrete, flood irrigation berms, plastic weed barriers, and other structures. All features not defined by these technical specifications and its referenced specifications shall be replaced in kind to the satisfaction of the city and Owner. When replacing improvements in kind, the Contractor shall give the Property Owner the opportunity to approve the plants or materials before they are installed.

If there are any landscape features in the location of a proposed meter or backflow prevention assembly, the Contractor shall relocate the landscape features. The new location of the landscape features shall be approved by the Construction Manager, Inspector, and the Property Owner.

The Contractor shall always maintain driveway access to homes.

Section 430.2 shall be appended as follows:

Landscaped areas shall be smooth graded to match pre-construction conditions. Imported soil shall conform to MAG section 795.2.

Decomposed Granite Area:

Decomposed granite shall match the existing materials. The Contractor shall confirm that a sufficient quantity is available so that the entire area will be of the same composition and appearance. The Contractor shall furnish a sample to the city Inspector for approval of color and appearance.

Tree, Shrub, and Ground Cover Planting: The Contractor shall comply with MAG Section 430.

Native Plants: Any protected native species shall be protected in place or relocated per the city and State provisions. The Contractor will be required to contact the Arizona Department of Agriculture, Plant Services Division.

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Plant Establishment Period: Section 430.13 shall be modified as follows:

A Plant Establishment Period shall not apply to this project. Any correction of defective work of plants, lawns or trees planted as part of this project shall be covered by the workmanship warranty established in the General Conditions.

Irrigation Pipe Installation: Modify Section 440.6 as follows:

Class or schedule of irrigation piping shall be equivalent to the existing material damaged or removed during construction.

Valves, Valve Boxes, and Special Equipment Installation: Append Section 440.4 as follows:

All remote-control valves, gate valves, or globe valves unless otherwise indicated shall be installed in suitable plastic or other type valve access box of proper size as required for easy access to the valve. Access boxes shall be complete and constructed of plastic or other approved type material. Valve boxes shall be AMETEX or equal approved by the city inspector. All valve boxes shall be installed with a six (6) inch minimum pea gravel sump.

Sprinkler Head Installation and Adjustment: Modify Section 440.5 as follows:

Bubbler heads as referred to in the MAG Specifications shall also mean emitter heads, whichever is damaged or removed during construction. All bubbler and/or emitter heads shall be equivalent to the existing equipment damaged or removed during construction.

Flushing and Testing: Append Section 440.10 with the following:

The Contractor shall test the irrigation system and any backflow prevention systems in the presence of the city Inspector. Contractor shall notify Inspector of the testing schedule three working days prior to testing.

Arborist: The Contractor shall enlist the services of a certified arborist to evaluate the impacts of trenching or boring beneath the canopy of existing trees. Prior to construction, the Contractor, the Contractor's Certified Arborist, and the city Inspector, will walk along the proposed service alignment and agree on the pruning limits required during installation and the areas that root protection will be required. Tree branches to be trimmed shall be flagged. Areas where root protection is required will be flagged off.

Trees with canopies which conflict with the service installation shall be trimmed only to the extent needed to install the new line. Trimming shall be done with a hand saw and to a lateral branch. Stub cutting is not permitted. Trimming shall be monitored by the Arborist.

In areas where roots may be present, excavation shall be done by hand or in a non-

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destructive manner approved by the city. The proposed service will be tunneled under all large roots. The Contractor shall contact the city Inspector and Arborist 24 hours prior to exposing roots to arrange for a site visit to review field and exposed root conditions prior to placement of the service. The Contractor's Arborist shall photograph each crossing and make additional recommendations according to the situation. The Contractor shall wrap exposed large roots in wet burlap to avoid dehydration. The burlap will be kept wet as long as the roots are exposed. Smaller roots may be trimmed with Arborist approval by hand using clean cuts that are wetted until backfilled. Trenches shall be backfilled with native soils as soon as possible to protect roots. Trenches containing roots shall not be left open longer than 24 hours.

Should the irrigation system serving trees be rendering inoperable during construction, the Contractor shall provide temporary irrigation as directed by the Arborist.

Measurement and Payment: The Contractor shall provide landscape and irrigation restoration for all work under the lump sum amount indicated on the Schedule of Bid Items, which payment will be considered full compensation for the work complete as described herein and, on the plans, regardless of the type or size of removals and replacements.

ITEMS 4400058 THROUGH 440600 BACKFLOW PREVENTER ASSEMBLY

General: Conform to City of Chandler Standard Details No. C-311 and C-315 except as modified herein.

Piping, fittings, valves, concrete pads and supports shall be installed in accordance with city standards. All models and manufacturers for the proposed equipment are to be pre-approved by the city prior to being ordered.

The above ground portions of the backflow prevention assemblies 4-inches and larger shall be painted "Desert Tan". The prime coat shall be Tnemec Series N69 Hi-Build Epoxoline II per manufacturer's instructions. The finish coat shall be Tnemec Series 1095 Endura-Shield per manufacturer's instructions.

The Contractor shall provide locks for the backflow prevention assemblies, as specified by the city. The lock key shall be turned over to the Property Owner.

Contractor shall prepare shop drawings of all piping and fittings associated with the backflow prevention assemblies that illustrate that the proposed assembly fits in its enclosure and/or proposed location for the Engineer to review prior to ordering.

Before the start of work, the Contractor shall verify the sizing of all backflow prevention assemblies called out on the plans. All assemblies shall match or be one diameter larger than their upstream meter.

The Contractor will hire a certified and city approved testing company to test and provide passing test results for city documentation. Test results shall be provided to the city and Property Owner.

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Measurement and Payment for Items 440058 through 440400: Payment for all backflow prevention assemblies and their enclosures will be based on a unit cost per each unit installed. This unit cost shall include all piping, fittings, valves, pads, enclosures, supports, locks, and tests required for a functional assembly.

Measurement and Payment for Item 440500 Demolish Existing Backflow Assembly: Measurement for the demolition of a complete existing backflow assembly shall be made on an each basis. Payment shall be made at the contract unit price per each existing backflow assembly demolition and shall include material, labor, removal, disposal, excavation, compaction, and all other work or items necessary or incidental for completion of the item as shown on the drawings and described herein. The demolition will include the complete removal of all above grade improvements including piping, valves, concrete pads, pipe supports, metal enclosures, and locks. Cut and cap all piping 2' below existing grade. Dispose of all demolished materials properly at a landfill. Provide a landfill manifest if requested. Following the demolition of the existing improvements, the Contractor shall grade the disturbed area to match and drain with the topography of the surrounding property.

Measurement and Payment for Item 440600 Relocate and Test Existing Backflow Prevention Assembly: Measurement for the relocation and testing of the existing backflow assembly shall be made on an each basis. Payment shall be made at the contract unit price per each backflow prevention assembly and shall include materials, labor, excavation, compaction, pads, enclosures, supports, locks, testing, and all other work or items necessary or incidental for completion of the item as shown on the drawings and described herein. This item will include relocating the existing assembly and installing new improvements such as piping, concrete pads, steel enclosures, and locks as required to meet City Standard Detail C-311.

ITEM 505600 INSTALL REINFORCED THRUST COLLAR

Description: This specification covers the installation of reinforced thrust collars at the locations indicated on the plans. Thrust Collars shall be per the detail provided in the plans. Collar forms, rebar, and megalug or ring placement must be inspected and approved by the city before concrete is ordered.

Before installing the new piping where a collar is required, the Contractor will confirm that there is sufficient pipe length/space for the collar installation between the proposed tie-in point and new features such as fittings or valves. The Contractor shall submit an RFI for any desired adjustment in advance of the work in that area. Contractor shall provide concrete cure time required for concrete to reach the design minimum compressive strength prior to pressurizing the waterline.

Measurement and Payment: Measurement of reinforced thrust collars shall be made on each basis with the number as identified in the plans regardless of the size of collar installed. Payment shall be made at the contract unit price per each thrust collar installed and shall include material, excavation, compaction, formwork, placement of

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reinforcement, concrete, restraints, labor and all other work or items necessary or incidental for completion of the item.

ITEMS 610131 THROUGH 610135 SERVICE LINE CONNECTIONS

General: This item applies to the new service line between the water main tap and the new water meter. Conform to MAG and City of Chandler Standard Detail C-301 and Section 610 except as modified herein.

Meter Service Connections: Delete text of MAG Section 610.13 and insert the following:

Taps on new water mains will be made by the Contractor prior to testing and disinfection of the new line. Service piping will be extended from the tap and connected to the new meter. Meter service piping shall be type K soft copper or blue PEX-A tubing and will be installed by mechanical/pneumatic underground boring or open cut construction. All service tubing shall have a pressure rating equal to or greater than 200 psi. All service tubing shall be continuous in length when possible. If the length required on the plans is too long to be continuous, restrained joints approved by the Construction Manager shall be used. All copper pipe, tubing, and fittings shall conform to MAG 754. Deflections in copper and PEX tubing shall not exceed the maximum angle recommended by the tubing's manufacturer. If a deflection that exceeds the manufacturer's recommendations is required, additional deflections will be used to obtain the required angle.

PEX tubing shall meet the requirements of AWWA C904. All fitting and valves on tubing shall be brass, NSF certified, and meet the requirements of AWWA C800. PEX-B, PEX-C, PEX-D and PE-RT tubing are not allowed on this project. PEX tubing shall not be exposed to UV light prior to being installed in trenches and backfilled. All trenches must be backfilled or plate covered at the end of each workday. Allow 1/8" of slack per linear foot of PEX tubing. Connect PEX tubing to other piping or tubing materials using Sharkbite universal brass push-on fittings or approved equivalent. Wrap fittings in silicone wrap prior to burial. Tape 1" on each side of fitting and provide a ½" overlap with each wrap around the fitting.

PEX tubing connections shall include stainless steel inserts that are approved in writing by the tubing manufacturer.

All tubing shall be installed with tracer wire per MAG Specification Section 632 and Details 399 1-6. Tracer wire shall be independently stake grounded where mainline tracer wire does not exist. Tracer wire will not stop at valve boxes. All ground rods must be set in undisturbed soil.

Contractor shall conduct a mandatory 2-hour vendor provided training session on tracer wire installation. All tracer wire must be tested by the contractor after the initial backfill, and again before paving occurs. The second test will be performed by a third party hired by the contractor with City staff present.

The Contractor shall coordinate the shutdown of existing services with the Construction

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Manager, Inspector, and the Property Owner.

All areas behind the curb or edge of pavement shall be hand dug or excavated using a walk-along trencher unless otherwise agreed upon by the city and Property Owner. The trench width shall be limited to 8 inches and the total disturbance width shall be limited to 3 feet. All trenches will be backfilled or barricaded at the end of each day. All disturbances to existing structures and landscape features as defined per the Landscape and Irrigation System Modification section shall be repaired or replaced to the Property Owner's satisfaction at the expense of the Contractor.

The Contractor shall always maintain driveway access to homes. Trenches shall be covered with recessed plates as soon as they are cut across a driveway. No trenches will be excavated outside normal working hours.

Any pavement, concrete, curb, curb and gutter, sidewalk, driveway, walls, fences, and/or pads damaged during the installation of a service, meter, backflow prevention assembly, or meter box must be replaced in kind to the satisfaction of the city in accordance with applicable sections of these specifications. The cost for installing water services shall be inclusive of all removal and restoration of pavement, curb and gutter, and sidewalk.

The Contractor may choose to install a water service pipe under the pavement, curb, gutter, sidewalk, and other features using slurry boring to minimize the restoration requirements. Trenchless installations are shown for some services on the plans but the Contractor may install additional services using a trenchless technology with prior city approval. Trenchless installation approvals may vary from area to area and/or lot to lot and are not guaranteed. The Contractor shall prepare a boring plan and profile for each trenchless service installation per COC Std. Det. C-112 and COC Specification Section 450 for review and approval. All existing utilities that cross the service must be potholed prior to the preparation of the bore profile.

All new water services will include a new meter and box. The meter will be supplied by the city and installed by the Contractor and the existing meter will be salvaged back to the city. The meter box and its lid will be polymer concrete and supplied and installed by the Contractor. The construction plans indicate when a meter must be relocated and when a traffic rated meter box is required. For each service, the Contractor will:

- Coordinate the final meter box location with the home or business owner when a relocation is called out on the plans.
- Locate the existing water service alignment.
- Install type K copper or PEX-A tubing from the new meter location to the existing private service tubing/piping at the original meter unless noted otherwise on the construction plans. When a meter and box are installed in the same location as the existing assembly, the Contractor shall maintain a 1' offset between the existing water service alignment and the new water service alignment.
- Pressure test the new tubing and its connections hydrostatically or pneumatically per the International Plumbing Code.

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- Flush all new public and private service tubing for 2 minutes. Flushing shall be performed such that water is flushed away from existing building connections.
- Remove the existing meter and box
- Install the new meter and box
- Make the required compression fitting connections between the new meter, the new water service, and the existing downstream private water service.
- Restore the surface to match its surroundings

The Contractor shall provide all fitting, couplings, and bushings required to connect to existing private piping.

New meter boxes and covers shall be set to match the surrounding grades. Existing meters and meter boxes to be removed shall be removed in their entirety and disposed of in a landfill. The Contractor shall deliver all existing meters to the city within seven days of their removal with completed city supplied paperwork and forms that include meter number and final reading.

New services in which the water meter and box are relocated shall maintain a 6-foot separation from existing sewer services. The Contractor shall locate sewer services prior to the installation of water service lines. If it the proposed meter and box location does not satisfy the 6’ requirement, the Contractor shall propose a new location for review and approval by the city and Engineer.

When a meter and box are installed in a different location than the existing assembly, the Contractor shall run new continuous Type K copper or PEX-A tubing between the new and existing locations. After the existing meter box is removed and disposed, the opening shall be backfilled with compacted ABC. The surface shall match the existing surrounding surface type and grade.

Measurement and Payment: New water service connections shall be made at the price for each service type as indicated on the Schedule of Bid Items which shall be considered full compensation for all materials and services necessary to complete the work as shown on the plans. This cost will include materials, piping, service saddles, corporation stops, service lines, meter installation, boxes, covers, appurtenant fittings, trenching, backfill, compaction, installation, landscaping, labor and all other work or items necessary or incidental for completion of the item. Keynotes on the project drawings indicate the service size and if a new meter and meter box will be installed in the existing location or a new location.

Pavement, curb and gutter, and sidewalk quantities are not shown on the plans for water services. These quantities shall be included in the unit water service cost.

ITEM 610140 THROUGH 610141 PRIVATE SERVICES (CUSTOMER SIDE)

General: This item specifically applies to locations on the project in which an existing meter and box location is changed, and new private service piping must be installed to

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connect the new meter to the existing private service. Conform to the International Plumbing Code, unless otherwise modified by the construction documents. This item includes the following work:

- Installation of the proposed service between the new meter and connection point
- Removal of the existing meter and box
- A new backflow prevention assembly or pressure vacuum breaker when noted on the plans
- A new sleeve for private services running under pavement, hardscape or turf when noted on the plans
- Any required adaptions, reducers or couplings
- Connection to the house feed or existing service

Before starting the installation of the new service, the existing public and private services shall be exposed near the existing meter and building connection and measured. Notify the Engineer of the field measurements a minimum of five working days prior to installation for size and pipe material verification. All new public and private services shall be 1-inch in diameter or shall match the existing service size if greater than 1-inch.

All private piping to be abandoned shall be cut and capped 2 feet below grade at the existing meter and proposed tie-in location shown on the plans. Existing water meter boxes shall be removed in its entirety and disposed at a landfill. The remaining opening shall be backfilled with compacted ABC. The surface shall match the existing surrounding surface type and grade.

All private service line shall be type K copper or PEX-A tubing that shall be continuous in length. All copper pipe, tubing, and fittings shall conform to MAG 754. Deflections in type K copper tubing shall not exceed the maximum angle recommended by the tubing's manufacturer. If a deflection that exceeds the manufacturer's recommendations is required, additional deflections will be used to obtain the required angle. PEX tubing shall meet the requirements of AWWA C904. All exposed tubing shall be type K copper. All fitting and valves on private tubing shall be brass, NSF certified, and meet the requirements of AWWA C800. PEX-B, PEX-C, PEX-D and PE-RT tubing are not allowed on this project. The pressure rating of all tubing shall be 200 psi or greater. The minimum service depth in the right-of-way shall be 30 inches and the minimum service depth within private property shall be 24 inches. The new service must slope upward from the new meter to the proposed tie-in point.

The plans may call out to connect the proposed private service to the existing tubing at a specific point to minimize disruptions to a property. Prior to making this connection, the Contractor shall verify that the existing private service tubing material is acceptable to the city. If it is not a city approved pipe material, the Contractor shall notify the Construction Manager and Inspector immediately to determine the next steps.

The Contractor shall budget three (3) visits and their required coordination for each property that will receive a private service. The first visit will be used to schedule the work with the homeowner. The Contractor will also determine the service's required diameter

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based on the size of the existing service and its fire sprinkler system requirements (if applicable). The second visit will be used for the installation of the new service. Due to the schedule of the main line installations, a third visit may be required to connect the private service at the new meter in the right of way and at the tie-in point. The third visit would also be used to remove the existing meter and box and cutoff the abandoned service piping.

All private services shall be hand dug or excavated using a walk-along trencher unless otherwise agreed upon by the city and Property Owner. The maximum trench width shall be 8 inches and the total surface disturbance width shall be limited to 3 feet. All trenches will be backfilled or barricaded at the end of each day.

The Contractor may install service piping by open trench excavation and boring as needed to avoid existing improvements. When called out on the plans, the Contractor shall protect existing curb, hardscape, and driveways by boring under them per Item 610141. All installations under private paving, hardscape, structures, and walls will be installed by boring unless noted otherwise on the plans and approved by the city. The Contractor shall prepare a boring plan and profile for each trenchless service installation per COC Std. Det. C-112 and COC Specification Section 608 for review and approval. All existing utilities that cross the service must be potholed prior to the preparation of the bore profile. Should the existing surface improvement crack during boring, it shall be removed and replaced between the nearest joints.

The Contractor shall coordinate the shutdown of existing services with the city and the Property Owner. The existing water service shall be shut down a maximum of two hours at a time. If a shutdown is necessary, the Contractor shall notify the affected customers in writing seven days in advance. The Contract Administrator shall approve of the shutdown schedule and the notification letter prior to it being sent out. A second notice shall be delivered to the affected customers 48 hours in advance. If the existing water service is shutdown longer than the allowable time, a $500.00 penalty will be assigned for each 15 minutes of additional time or portion thereof that the water service is shut down.

All newly installed services shall be pressure tested at 100 psi and flushed for three minutes before they are connected. Flushing shall be performed such that water is flushed away from existing building connections.

Existing services that are to be intersected by new services or waterline shall remain in service until the Contractor is prepared to make the proposed connection. The Contractor shall provide and install any necessary reducers, expansions, or couplings necessary to connect to the existing plumbing. Prior to connecting to the existing service, the new service shall be pneumatically pressure tested per the International Plumbing code. Should the existing plumbing fail during the connection, the Contractor shall repair the failure at no additional cost.

All work performed shall be warrantied for a minimum of 1 year from final acceptance. Any repair or replacement work required during the 1-year warranty period shall be handled by the Contractor at no additional cost to the city or Property

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Owner. The Contractor's cost under this item shall include coordination with Property Owners on warranty issues.

Measurement and Payment for Item 610140: Private Service Line Connection: Private service connections shall be paid per lineal foot as indicated on the Schedule of Bid Items which amount shall be considered full compensation for all materials and services necessary to complete the work as shown on the plans. This item includes the installation of connections, tubing, removals, salvage, replacements, restorations, and appurtenant fittings.

Measurement and Payment for Item 610141: Bore Under Existing Feature: Boring under existing features shall be made on an each basis as indicated on the Schedule of Bid Items which amount shall be considered full compensation for all materials and services necessary to complete the work as shown on the plans. Payment shall include the installation of connections, tubing, removals, salvage, replacements, restoration, and appurtenant fittings.

ITEMS 610304 THROUGH 610308 WATERLINE CONSTRUCTION

General: Waterline construction shall conform to MAG and COC Sections 610 and 611, MAG Section 750, and AWWA C900 as supplemented herein. Gate valves and combination air/vacuum valves shall conform to MAG and COC Section 630 as supplemented herein.

Materials: Delete text of Section 610.3 and insert the following.

Water distribution lines shall be constructed of 4, 6, and 8-inch Ductile Iron Pipe (DIP). All ductile iron pipes shall have bell and spigot joints unless otherwise noted on the construction plans. All proposed waterline joints shall be restrained as required by the construction plans. Refer to the City of Chandler List of Approved Products, latest edition for approved pipe materials and joint-restraining materials. Connections to existing waterlines shall include the required fittings or adapters needed to connect to piping made of different materials, different diameters, and/or out of round pipe.

Section 610.6.1 shall be appended as follows:

The installation of all DIP will include the application of blue polyethylene protection wrap (polywrap) per AWWA C105. Thrust blocks are not allowed on this installation. Piping shall be restrained with joint restraints based on the restraint lengths called out on the plans in accordance with the City of Chandler List of Approved Products, latest edition.

Proposed waterlines shall be installed in 20' straight pipe segments with joint deflections less than manufacturer's recommendations in curved alignments unless otherwise noted on the plans. Joint deflection shall always be less than 4 degrees.

The minimum pressure class of all waterlines shall be Class 350 and fittings shall be

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Class 250.

All proposed waterlines shall be installed at the depths shown on the plans. The minimum cover shall not be less than 36 inches for 6” and 8” pipe, unless specifically noted otherwise on the plans or as required to avoid existing utilities. Depths less than those called out in the project profiles or the minimum cover must be approved in writing by the city prior to installation. The Contractor shall lower the proposed waterline up to 1’ at no additional cost to avoid existing improvements when required by field conditions.

Construction Methods: Modify Section 610.4 as follows:

Trenching, backfilling, and compaction shall be in accordance with this Section and the detail provided in the project drawings.

All compaction efforts within public right-of-way will be Type I per Table 601.2 unless otherwise noted. Compaction testing will be as required by the city Inspector or his authorized representative. Backfill in 4-inch loose lifts and mechanically compact. Contractor will be responsible for all testing on the project, including compaction testing. Contractor will be responsible for correcting any compaction deficiencies and Contractor shall pay for any subsequent compaction testing required by the city to correct deficiencies.

Connections to existing ductile iron piping shall include long body sleeves with Megalug connections on each side of the sleeve. Connections to existing asbestos cement and cast-iron piping shall be made with a pre-approved Romac or Hymax coupling that is only restrained on the new piping or ductile iron side of the coupling and is accompanied by a thrust collar.

Polyethylene protection wrap (polywrap) shall not be placed on piping until immediately before placing pipe in the trench.

No excavated or backfill material shall be stockpiled in the right of way. Roadway shall be cleaned and swept at the end of each day to the satisfaction of the city Inspector.

All piping shall be installed with tracer wire per MAG Specification Section 632 and Details 399 1-6. Tracer wire shall be independently stake grounded where mainline tracer wire does not exist. Contractor shall conduct a mandatory 2-hour vendor provided training session on tracer wire installation. All tracer wire must be tested by the contractor after the initial backfill, and again before paving occurs. The second test will be performed by a third party hired by the contractor with City staff present. The second test will include all wire above waterlines, service lines, and fire hydrants.

Connections to Existing Mains: Append MAG Section 610.11 with the following:

The existing waterlines affected by this project shall be shut down a maximum of six (6) hours at a time. If a shutdown is necessary, the Contractor shall notify the affected customers in writing seven days in advance. The Construction Manager shall approve

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of the shutdown schedule and the notification letter prior to it being sent out. A second notice shall be delivered to the affected customers 48 hours in advance. Shutdowns may be scheduled at night to reduce the effect on customers at the city's request. The Contractor shall be responsible for payment for all overtime and off-hours inspection, testing services, and labor burden that occur outside the normal and excepted working hours indicated herein. The Contractor will not be allowed to shut down a water main when a tapping sleeve and valve connection is called out on the plans.

For water service connection taps, see the applicable technical specification.

The city does not guarantee all shutdowns will be completely dry. The Contractor shall schedule a trial shutdown with city staff before the actual shutdown. The city requires a 72 hour notice for trial and actual shutdowns. The Contractor shall have adequate pumping equipment to keep trenches free of water during all shutdowns.

Pavement Removal and Replacement : The piping cost the Contractor's bid shall include pavement removal and replacement as required for the pipe installation. The Contractor shall replace any remnant pavement section less than 48 inches in width.

Conform to MAG and COC Section 336 except as modified herein.

This section is specifically related, but not limited to the replacement of asphalt paving removed or damaged by the proposed improvements discussed in these specifications and the construction plans. It also includes the saw cut and removal of the existing asphalt concrete and its base along the proposed waterline alignments. The sawcut and removal of the asphalt concrete shall comply with MAG Sections 336 and 350 and as modified by the city's latest revisions thereof. The Contractor shall sawcut the existing paving to accommodate the configurations defined in MAG Standard Detail 200 as modified on the plans.

Contractor shall provide the initial pavement sawcut or milling for trenching and then provide separate sawcuts for the T-top during pavement replacement. Prior to the installation of the new pavement, a tack coat shall be applied per MAG Specification Section 321. Tack coats shall also be provided between pavement lifts. Crack sealant shall be applied to the joint between the new and the old pavement prior to the application of the slurry pavement sealant.

The Contractor will be responsible to replace, at their cost, any and all damaged pavement outside the pay limits, due to their activities on the project. This includes, but is not limited to, the replacement of newly cracked pavement, the replacement of existing cracked pavement where the cracks have been widened, the replacement of any chipped or missing pieces of pavement, and the replacement of any deformed pavement. The pavement will be saw cut at right angles to the roadway, to encompass the replacement areas or at the direction of the city Inspector.

Set recessed steel plates over any open trenches in pavement including those for services and hydrants until final paving is completed.

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All asphalt mixes shall be in accordance with the Chandler List of Approved Products, which includes city approved mixes from the East Valley Asphalt Committee (EVAC). Erie Street will be treated as an Arterial when selecting mixes.

Measurement and Payment: Measurement for payment shall be in linear foot of pipe. This item shall be inclusive of the new pipe, fittings, restraints, locator wire, trenching, bedding, backfill and pavement removal and replacement, and testing.

ITEM 610600 CUT AND CAP EXISTING PIPING

General: Conform to MAG and COC Sections 610 as supplemented herein.

This item shall incorporate all cuts, caps, plugs, and blind flanges called out by location on the plans.

The installation of pipe plugs/caps/blind flanges shall include cutting and removing any piping required to install the proposed plugs. Buried plugs shall include capping the end of pipe in accordance with MAG Standard Detail 427. Any plugs that will be exposed to pressure shall include a thrust block in accordance with MAG Standard Detail 380. Any caps at existing valves shall include a blind flange with the same pressure rating as the existing valve. All materials between cuts shall be removed and disposed of in accordance with Federal, State, and Local Government requirements. This work shall include removal of asbestos cement pipe (ACP) at locations where it is exposed.

The Contractor shall furnish all permits, labor, equipment, and material necessary to remove and dispose of the existing piping including ACP water main. When the existing piping is ACP, the Contractor shall obtain and comply with the National Emission Standard for Hazardous Air Pollutants (NESHAP) permit as administered by Maricopa County. The Contractor shall be licensed to handle ACP pipe and dispose of hazardous waste. Documentation that the ACP was delivered to a landfill and that the landfill is allowed to accept ACP shall be provided.

Measurement and Payment: The cost for all materials, cutting pipe, removing pipe, and any other costs described above are to be included under the cost of each cut and cap as indicated on the Schedule of Bid Items regardless of pipe size and material.

ITEM 610700 WATER AND SEWER PROTECTION

General: Conform to MAG and COC Sections 610 as supplemented herein.

The Contractor shall verify the minimum vertical and horizontal separation is present when the proposed water crosses and an existing sewer service or sewer line. When the clearance is not available, the Contractor shall notify the city and recommend an encasement or vertical realignment for review and approval. When an encasement is required or called out on the plans, it will be installed in accordance with MAG Standard

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Detail 404. The encasement forms and reinforcing must be inspected and approved before it is poured.

Measurement and Payment: Measurement for payment shall be in linear foot of concrete encasement per MAG 404. This item shall be inclusive of the locating and exposing existing piping, concrete, reinforcement, forms, finishing, transport, equipment, labor and all other work or items necessary or incidental for completion of the item.

ITEM 610900 FIRE HYDRANT

General: Conform to MAG and COC Sections 610 except as modified herein.

The Contractor's surveyor shall stake out all the project's hydrants in advance of trenching activities. Based on this staked location, the Contractor shall verify that the proposed hydrant location satisfies the city's required hydrant clearances. If it does not, the Contractor will propose an alternative location. The city Inspector will then review all the proposed and alternative hydrant locations and final adjustments will be made based on the city's input.

The installation of a new fire hydrant shall include its roadway marker.

Measurement and Payment: Measurement shall be per each number of hydrants installed. Payment will be at the unit price for the installation of each hydrant complete in place and in operating condition. The unit price of each hydrant shall include staking, reviewing, and adjusting the hydrant locations, postings, the installation of restrained piping from the water main tee to the hydrant, the shut off valve, and the hydrant pavement marker.

ITEM 619904 WATER METER ASSEMBLY (4") AND CONCRETE METER VAULT

General: The 4" water meter assembly and concrete meter vault shall conform to MAG and COC Standard Specifications Sections 610 and 725, and COC Standard Detail C-316, except as modified by the construction plans and details. Water meter assemblies will be provided by the city and installed by the Contractor. This item shall incorporate the vault, footing, crushed rock floor, seals, lids, hatches, and vents.

The Contractor shall prepare shop drawings of the proposed vault and its contents for approval prior to ordering it. These drawings will be based on the existing meter assemblies provided by the city and the fittings and piping the Contractor intends on installing within them to verify their interior dimensions. The penetration locations within the vault walls shall be based on potholing data collected by the Contractor. The joints between the valves' hatches, lids, and vertical sections shall include mastic seals.

Measurement and Payment: Measurement for and payment for these items will be based on unit cost per each water meter assembly and vault installed and shall include the installation of the provided water meter assembly, piping, fittings, restraints, piping supports, and valves within the meter vault; forms, finishing, excavation, transport,

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equipment, labor and all other work or items necessary or incidental for completion of the item. The Contractor shall pick up the meter assembly at a location specified by the city and deliver them to the project site.

ITEMS 630306 THROUGH 630308 VALVES

Valve boxes shall comply with City of Chandler Section 630, Chandler Standard Detail C-307, and MAG Standard Detail 391 for cast-iron valve boxes. The boxes shall include a top section, and adjustable extension of length required for depth of burial of valve, a locking lid with the lettering “water”, a bottom section with a base of an appropriate size to fit over valve, and an approximately 5-inch-diameter barrel.

Measurement and Payment: Measurement of shut off valves shall be made on an “each” basis with the number and size as identified in the plans. Payment shall be made at the contract unit price per each valve installed and shall include material, excavation, concrete supports, restraints, box and cover, concrete ring, extension of locator wire within valve boxes, labor and all other work or items necessary or incidental for completion of the item.

ITEM 630401 TAPPING SLEEVE & VALVE

Tapping sleeve and valve installations shall be in accordance with MAG Standard Detail 340. All sleeves shall be 360-degree, full circle sleeves that are made of 14-gauge 304 stainless steel. The sleeve’s gasket will be a minimum of ¼ thick and permanently attached. All hardware will also be stainless steel. The Contractor shall level and compact the soils under the footprint of the tapping machine and verify the weight of the machine does not hang on the TS&V during installation.

Measurement and Payment: Measurement of tapping sleeves and valves shall be made on an “each” basis with the number and size as identified in the plans. Payment shall be made at the contract unit price per each sleeve and valve installed and shall include material, excavation, tapping, concrete supports, restraints, sleeve, valve, box and cover, concrete ring, labor and all other work or items necessary or incidental for completion of the item.

ITEM 800000 MOBILIZATION/DEMOBILIZATION

General: The city shall compensate the Contractor for a one-time, round-trip mobilization/demobilization of the contractor’s personnel equipment, supplies and incidentals, safety supplies, small tools, establishment of offices, buildings, and other facilities required for the performance of the work on the project, including preparatory work and operations prior to the commencement of the work on the project site.

Measurement and Payment: Payment for mobilization/demobilization will be by lump sum as a single complete unit of work. Payment shall be made in equal one-third portions. The first payment will be paid with the Contractor’s initial billing. The second payment will be made when the total payments to the Contractor for the pay items, exclusive of payments for mobilization/demobilization, equal greater than one-half of the

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initial contracted amount, exclusive of mobilization/demobilization. The remaining one-third will be paid as part of the final payment due to the Contractor upon final acceptance of the project.

ITEM 9000000 OWNER'S ALLOWANCE

General: This allowance will cover work not described above and as directed by the Owner. The Contractor will be required to receive city approval prior to using the allowance. A detailed proposal including the cost, implementation plan, materials, labor, subcontractors, and schedule shall be submitted to the city for review and approval.

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APPENDIX A

GEOTECHNICAL EVALUATION

NOTE: The borings included in this report that are east of Alma School Road are not applicable to this project.

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Geotechnical Evaluation
Chandler Water Main Replacement 2022
Various Locations
Chandler, Arizona

GHD
4747 North 22nd, Suite 200 | Phoenix, Arizona 85016

April 28, 2023 | Project No. 607398001

Geotechnical | Environmental | Construction Inspection & Testing | Forensic Engineering & Expert Witness

Geophysics | Engineering Geology | Laboratory Testing | Industrial Hygiene | Occupational Safety | Air Quality | GIS

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

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Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

35+ YEARS

April 28, 2023
Project No. 607398001

Mr. Bill Roberts, PE
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4747 North 22nd Street, Suite 200
Phoenix, Arizona 85016

Subject: Geotechnical Evaluation
Chandler Water Main Replacement 2022
Various Locations
Chandler, Arizona

Dear Mr. Roberts:

In accordance with our proposal dated March 10, 2022, and your authorization, Ninyo & Moore has performed a geotechnical evaluation for the above-referenced site. The attached report presents our methodology, findings, conclusions, and recommendations regarding the geotechnical conditions at the project site.

Ninyo & Moore appreciates the opportunity to be of service to you on this project.

Respectfully submitted,
NINYO & MOORE

Registered Professional Engineer (Civil) CERTIFICATE NO. 62212 KENNETH RUSH III Date Signed 4/28/2023 ARIZONA U.S.A.

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Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

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1 INTRODUCTION

In accordance with our proposal dated March 10, 2022, and your authorization, we have performed a geotechnical evaluation for the proposed Chandler Water Main Replacement 2022 Projects to be located in Chandler, Arizona. The purpose of our evaluation was to assess the subsurface conditions at the project sites in order to provide geotechnical recommendations for design and construction. This report presents the results of our evaluation, and our geotechnical considerations and recommendations regarding the proposed construction.

2 SCOPE OF SERVICES

The scope of our services for this project generally included:

- Reviewing readily available geotechnical data, aerial photographs, and published geologic literature, including maps and reports pertaining to the project site and vicinity.
- Obtaining City of Chandler (COC) permission to conduct the field work.
- Conducting a geologic reconnaissance of the site.
- Marking out the boring locations at the project site and notifying Arizona 811 of the boring locations prior to drilling.
- Arranging for a private utility locator to evaluate underground utilities at our boring locations east of Alma School Road due to unknown location of private irrigation line.
- Arranging for appropriate traffic control services to be implemented during our field work activities.
- Drilling, logging, and sampling 21 exploratory borings to depths ranging from approximately 9 to 15 feet below ground surface (bgs). The boring logs are presented in Appendix A.
- Collecting soil samples in the borings at approximately 2.5 and 5.0-foot intervals using ASTM International (ASTM) Methods D1586 (Standard Penetration Test with split-spoon barrel sampling of soils) and D3550 (ring-lined barrel sampling of soils) for laboratory testing and analysis.
- Performing laboratory tests on selected samples obtained from the borings to evaluate in-situ moisture content and dry density, gradation, Atterberg limits, maximum density, consolidation, and corrosivity characteristics (including pH, minimum electrical resistivity, and soluble sulfate and chloride contents). The in-situ moisture content and dry density results are presented on the boring logs in Appendix A. The remainder of the laboratory test results are presented in Appendix B.
- Preparing this report presenting our findings, conclusions, and recommendations regarding the design and construction of the project.

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Our scope of services did not include environmental consulting services such as hazardous waste sampling or analytical testing at the site. A detailed scope of services and estimated fee for such services can be provided upon request.

3 SITE DESCRIPTION

The project sites are located within the Arrowhead Meadows, Tyson Manor, and Sunset Manor subdivisions in Chandler, Arizona (Figure 1). Arrowhead Meadows is located southwest of Erie Street and Alma School Road; Tyson Manor is located northwest of Erie Street and Alma School Road; and the Sunset Manor site is located northwest of Chandler Boulevard and Hartford Road. At the time of our evaluation, the sites consisted of residential properties with collector streets, except Alma School Road and Chandler Boulevard, bordered by residential and commercial properties.

According to the Chandler, Arizona 7.5-Minute United States Geological Survey Topographic Quadrangle Map (2021), the Arrowhead Meadows site is at an average elevation of roughly 1,201 feet relative to mean sea level (MSL), the Tyson Manor site is at an average elevation of 1,204 feet relative to MSL, and the Sunset Manor site is at an average elevation of 1,207 feet relative to MSL. Based on information from this topographic quadrangle map, the ground surface at the site vicinity gently slopes from the east to the west.

4 AERIAL PHOTOGRAPH REVIEW

Aerial photographs dated 1937 through 2022 from the Maricopa County website, Google Earth and Historic Aerials website were reviewed for this project. A summary of the observations noted for each aerial photograph is presented in Table 1:

Table 1 – Summary of Aerial Photograph Review

Photograph Date(s)	Site	Adjacent Properties	
1937, 1949, 1953	All three subdivisions depicted as agricultural land. Alma School Road, Galveston Street, Hartford Street and Chandler Boulevard alignments. Scattered residential properties.	North:	Agricultural land.
		South:	Agricultural land.
		East:	Agricultural land and residential development.
		West:	Agricultural land.

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Table – Summary of Aerial Photograph Review			
Photograph Date(s)	**Site**	**Adjacent Properties**	
1959, 1961, 1962, 1967, 1970-1982, 1984	Tyson Manor, and Sunset Manor depicted as partially developed. Arrowhead Meadows remains agricultural land until 1961. Arrowhead Meadows Park.	North:	Commercial and residential properties. Scattered agricultural parcels.
		South:	Commercial and residential properties. Scattered agricultural parcels.
		East:	Commercial and residential properties. Scattered agricultural parcels.
		West:	Agricultural land.
1986, 1993, 1996, 1998, 2000-2022	All three subdivisions depicted as similar to current conditions.	North:	Commercial and residential properties.
		South:	Commercial and residential properties.
		East:	Commercial and residential properties.
		West:	Commercial and residential properties.

5 PROPOSED CONSTRUCTION

The project includes the design and construction of new water mains in Chandler, Arizona within the three subdivisions previously described. We understand the new construction will service the surrounding residential and commercial properties in the area. The new water mains are assumed to have invert elevations on the order of 10 feet bgs, or less. Traditional cut-and-cost construction techniques are assumed to be used over much of the alignments; however, trenchless (jack-and-bore) methods may be implemented at larger intersections or key project locations.

Arrowhead Meadows will have 6,900 linear feet of water main replacement. Water main replacements will generally occur within Erie Street, Comanche Drive, Apache Drive, and Chippewa Place. The main line along Chandler Boulevard will remain; however, new service will be connected to this existing line.

Tyson Manor will have 6,585 linear feet of water main replacement. Water main replacements will generally occur within Erie Street, Flint Street, Tyson Street, Oakland Street, Tulsa Street, Galveston Street, Pleasant Drive and Alma School Road. The main line along Jay Street will remain; however, new service will be connected to this existing line.

Sunset Manor will have 5,461 linear feet of water main replacement. Water main replacements will generally occur within Erie Street, Flint Street, Detroit Street, Toledo Street, Chandler Boulevard Frontage Road, and Vine Street. The main lines along Sunset Drive, Evergreen Street, Chandler Boulevard and Hartford Road with remain; however, new service with be connected to these existing lines.

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6 FIELD EXPLORATION AND LABORATORY TESTING

The following report sections describe our field and laboratory activities.

6.1 Current Explorations

On March 14, 15 and 16, 2023, Ninyo & Moore conducted a subsurface exploration at the sites in order to evaluate the subsurface conditions and to collect soil samples for laboratory testing. Our evaluation consisted of drilling, logging, and sampling 21 small-diameter borings using a CME-75 truck-mounted drill rig equipped with hollow-stem augers. The borings, denoted as B-1 through B-21, extended to depths ranging from approximately 9 to 15 feet bgs (Figure 2). Bulk and relatively undisturbed soil samples were collected at selected intervals. Descriptions of the soils encountered are presented in the boring logs in Appendix A. Table 2 presents the general location and depth of each boring at the site.

Table 2 – Boring Summary

Subdivision	Borings	Approximate Depth (ft)
Arrowhead Meadows	B-1 through B-7	10
Tyson Manor	B-8 through B-14	9 to 10
Sunset Manor	B-15 through B-21	10 to 15

6.2 Previous Explorations

A previous Ninyo & Moore geotechnical exploration from 2020 was performed for the Westwood Manor water main replacement project along lines that will connect to the Sunset Manor area prior to this design effort and was utilized in our evaluation for this design effort. The approximate locations of these 2020 explorations are shown on Figure 2C and boring logs for these borings are included in Appendix C.

6.3 Laboratory Testing

The soil samples collected from our drilling activities were transported to the Ninyo & Moore laboratory in Phoenix, Arizona. In addition, Ninyo & Moore performed laboratory tests on selected samples obtained from the borings to evaluate the in-situ moisture content and dry density, gradation, Atterberg limits, maximum density, consolidation, corrosivity characteristics (including pH, minimum electrical resistivity, and soluble sulfate and chloride contents).

The in-situ moisture content and dry density results are presented on the boring logs in Appendix A. A description of the laboratory testing as well as the remainder of the laboratory test results are presented in Appendix B.

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7 GEOLOGY AND SUBSURFACE CONDITIONS

The geology and subsurface conditions at the site are described in the following sections.

7.1 Geologic Setting

The project site is located in the Sonoran Desert Section of the Basin and Range physiographic province, which is typified by broad alluvial valleys separated by steep, discontinuous, subparallel mountain ranges. The mountain ranges generally trend north-south and northwest-southeast. The basin floors consist of alluvium with thickness extending to several thousands of feet.

The basins and surrounding mountains were formed approximately 10 to 18 million years ago during the Mid- to Late-Tertiary. Extensional tectonics resulted in the formation of horsts (mountains) and grabens (basins) with vertical displacement along high-angle normal faults. Intermittent volcanic activity also occurred during this time. The surrounding basins filled with alluvium from the erosion of the surrounding mountains as well as from deposition from rivers. Coarser-grained alluvial material was deposited at the margins of the basins near the mountains.

The surficial geology of the three sites is described as Late and Middle Pleistocene (10,000 to 750,000 years) age fine-grained basin-floor deposits. The United States Department of Agriculture Web Soil Survey described the site as generally consisting of Contine clay, Mohall Sandy, and Mohall Loam.

Loam is an agriculture soil classification that refers to a soil comprised of a mixture of clay, silt, and sand. The loam in this region has historically comprised of lean clays, fat clays, clayey sands, and silty sands in the upper five feet of material.

7.2 Subsurface Conditions

Our knowledge of the subsurface conditions at the project site is based on the results of our exploratory borings and our understanding of the general geology of the area. The boring logs contains our field test results, as well as our interpretation of the conditions likely to exist between actual samples retrieved. Therefore, the boring logs contains both factual and interpretive information. Lines delineating subsurface strata on the boring logs are intended to group soils having similar engineering properties and characteristics. They should be considered approximate, as the actual transition between soil types may be gradual. Detailed stratigraphic information as well as a key to the soil symbols and terms used on the boring logs are provided in Appendix A.

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7.2.1 Asphalt Concrete and Aggregate Base

Asphalt concrete (AC) was encountered at the surface of each of our borings and ranged in thickness from approximately 2 to 5 inches. Aggregate base (AB) was observed underlying the AC, and ranged in thickness from approximately 3 to 5½ inches in our borings.

7.2.2 Fill

Undocumented fill soils were encountered beneath the AB in boring B-3, to a depth of approximately 3 feet. The fill generally consisted of loose clayey sand (SC) in our boring.

7.2.3 Alluvium

Native alluvial soils were encountered beneath the AB in our borings, and beneath the AB and fill soils in boring B-3 as described above, and extended to the boring termination depths. In our borings, the alluvium generally consisted of stiff to hard lean clays (CL) and loose to very dense clayey sands (SC), silty sands (SM), and poorly graded sands (SP). Varying quantities of gravel and scattered caliche nodules with moderate degrees of cementation were also observed in our borings.

7.2.4 Groundwater

Groundwater was not encountered in our borings. Based on well data from the Arizona Department of Water Resources, the depth to groundwater has been estimated to be about 130 feet bgs. Groundwater levels can fluctuate due to seasonal variations, irrigation, groundwater withdrawal or injection, and other factors.

8 GEOLOGIC HAZARDS

The following sections describe regional geologic hazards, including land subsidence, earth fissures, and faults, and collapsible soils.

8.1 Land Subsidence and Earth Fissures

Groundwater depletion, due to groundwater pumping, has caused land subsidence and earth fissures in numerous alluvial basins in Arizona. It has been estimated that subsidence has affected more than 3,000 square miles and has caused damage to a variety of engineered structures and agricultural land. From 1948 to 1983, excessive groundwater withdrawal has been documented in several alluvial valleys where groundwater levels have been reportedly lowered by up to 500 feet. With such large depletions of groundwater, the alluvium has undergone consolidation resulting in large areas of land subsidence (Schumann and Genualdi, 1986).

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In Arizona, earth fissures are generally associated with land subsidence and pose an ongoing geologic hazard. Earth fissures generally form near the margins of geomorphic basins where significant amounts of groundwater depletion have occurred. Earth fissures form due to tensional stress caused by differential subsidence of the unconsolidated alluvial materials over buried bedrock ridges and irregular bedrock surfaces.

Based on our field reconnaissance and review of the referenced material, there are no known or exposed earth-fissures present at the subject site. The closest documented earth fissure to these sites is approximately 8¼ miles to the southeast of the site (AZGS, 2017). Continued groundwater withdrawal in the area may result in subsidence of the valley and the formation of new fissures or the extension of existing fissures. In general, land subsidence and earth fissures are not considered to be a constraint to development on this project site.

8.2 Faulting

The site lies within the Sonoran zone, which is a relatively stable tectonic region located in southwestern Arizona, southeastern California, southern Nevada, and northern Mexico (Euge et al., 1992). This zone is characterized by sparse seismicity and few Quaternary faults. Based on our field observations, review of pertinent geologic data, and analysis of aerial photographs, Quaternary faults are not located on or adjacent to the property.

The closest documented Quaternary fault to the site is the Carefree Fault Zone, located approximately 31 miles to the north of the sites. The Carefree Fault Zone is a series of northwest striking discontinuous normal faults that dip to the southwest. Recent movement along this fault was approximately 750,000 years ago during the Middle Pleistocene epoch. The slip-rate category of this fault is less than 0.2 millimeters per year (Pearthree, 1998).

8.3 Expansive Soils

Expansive soils typically contain significant clay fractions, and the expansive characteristics of these clay fractions depend upon a number of factors, which include clay mineralogy, degree of compaction (density) for reworked soils, moisture content, etc. Very low to low expansive potential soils are defined as having an Expansion Index (by ASTM D4829) of 50 or less. In addition, expansive soils tend to have a more adverse effect on lightly loaded construction elements (e.g., exterior flatwork, floor slabs, etc.) than on more heavily loaded foundations. The presence of expensive soils at this site is considered low to moderate.

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8.4 Collapsible Soils

Collapsible soils generally consist of loose soils that exhibit a sudden decrease in volume upon inundation with water or excessive loading. The “collapse” of the soils is attributed to clay or cemented bonds between individual particles losing strength or dissolving when in contact with water resulting in filling of voids. Collapsible soils can have an adverse effect on foundations, floor slabs, pavements, and walls due to the response in the settlement. The presence of collapsible soils at this site is considered low.

9 GEOTECHNICAL CONSIDERATIONS

Based on the results of our subsurface evaluation, laboratory testing, and data analysis, it is our opinion that the proposed construction is feasible from a geotechnical standpoint, provided that the recommendations of this report are incorporated into the design and construction of the proposed project, as appropriate. Geotechnical considerations include the following:

- An initial condition survey should be performed prior to construction to document existing conditions of nearby and adjacent settlement-sensitive features.
- The soils along the project alignment generally consist of interlayered deposits of cohesive and cohesionless soils. Some of these soils were classified as loose.
- Groundwater was not observed in our borings. Based on published well data by ADWR groundwater has been encountered historically at 130 feet bgs at the site vicinity. In general, groundwater is not anticipated to be a constraint to the construction of the project.
- No known or reported geologic hazards are present underlying, or immediately adjacent to, the project alignment.
- Due to the widely spaced nature of our borings, soil conditions that differ from what was encountered in our borings may be encountered during construction.
- Conventional heavy-duty earthmoving construction equipment may be used to excavate the waterline alignments. However, very dense sands, hard clays, gravels, and moderate levels of caliche cementation were encountered in our borings at various depths, which could be more difficult to excavate during construction.
- Due to the heterogeneity of the soil conditions at the site and the loose soils encountered, sloughing of soils during construction could occur; specifically, where the excavation abuts other fill soils from adjacent utilities. In addition, vibrations caused by the influence of vibrations from nearby traffic may cause sloughing into excavations.
- Due to the presence of loose and/or cohesionless soils along the alignments, care should be taken during excavation. Shoring or the use of trench boxes may be needed during construction.

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- Imported soils and soils generated from on-site excavation activities that exhibit a very low to low expansion potential can generally be used as engineered fill, provided the oversized or heavily cemented materials are either broken down or wasted. On the basis of our evaluation, some of the on-site soils will not be suitable for re-use as engineered fill.

- Due to the presence of gravels and caliche nodules with varying degrees of cementation, using jack-and-bore pipe instillation methods may be difficult to perform.

- The subgrade soils at the sites are corrosive to ferrous metals and the sulfate content of the soils presents a negligible sulfate exposure to concrete.

10 RECOMMENDATIONS

The following sections present our geotechnical recommendations and were developed based on our understanding of the proposed construction (Section 5), the observed subsurface conditions (Section 7.1), and our experience. In general, the recommendations and guidelines outlined in the Maricopa Association of Governments (MAG) Standard Specifications and Details and/or any COC amendments should be used unless recommended differently herein.

The recommendations in this report pertain to the locations where our borings were drilled at. If the proposed construction is changed from that discussed herein or subsurface conditions other than those shown on the boring logs (Appendix A) are observed at the time of construction, Ninyo & Moore should be retained to conduct a review of the new information and to evaluate the need for additional recommendations.

10.1 Instrumentation and Documentation

Given the proximity of the planned excavations to existing settlement sensitive features, consideration should be given to implementing documentation and instrumentation programs to evaluate design assumptions, existing conditions, and to monitor movements, levels, and deformations prior to and during construction. The monitoring programs may include the use of inclinometers, convergence points, and/or an array of surface control points. The resulting data should be reviewed and evaluated during construction. These programs should be in-place or conducted prior to the start of construction.

10.1.1 Documentation of Existing Conditions

We recommend that a pre-construction survey be performed prior to construction on pavements, residences, and structures within 50 feet of the proposed trench excavations. The pre-construction survey should consist of photographic documentation of the pavement condition, exterior portions of the buildings, including distress features, such as cracks and/or separations that may be present. Consideration may be given to videotaping the

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survey. In addition, interviews with owners should be conducted to provide knowledge of the age and type of the buildings as well as maintenance history and utility problems.

10.1.2 Lateral Movement of Shoring Support System

We recommend that inclinometers and/or survey points be established behind excavations located in areas where structures are located above a 1:1 (horizontal to vertical [H:V]) plane projected from the bottom of the proposed excavations. The inclinometers or survey points should be monitored and evaluated daily during excavation activities to provide an advanced warning system of potential problems.

10.1.3 Ground Surface Settlement

An array of ground survey points should be installed along the pipeline alignment to monitor settlement. The survey points should be installed as close as practical to the pipeline alignment and incrementally away from the alignment. The contractor should be responsible for maintaining the total settlement to less than ½-inch. If settlements reach ¼-inch, we recommend that a review of the contractor's methods be performed and appropriate changes be made, if needed.

Consideration should be given to placing survey monitoring points on nearby structures to monitor the performance of the structures. In this way, a record of the performance of the structures will be maintained and available. This information, in conjunction with pre-construction surveys, may help in reducing potential claims and expediting and limiting settlement of legitimate claims.

10.2 Earthwork

The following sections present our earthwork recommendations for this project. In general, MAG and any COC construction standards and specifications are expected to apply, unless otherwise noted.

10.2.1 Excavations

Our evaluation of the excavation characteristics of the on-site materials is based on the results of our exploratory borings, site observations, and experience with similar materials. In our opinion, many of the surface soils may be excavated or ripped using conventional heavy-duty earthmoving or excavation equipment; however, due to the widely spaced nature of our borings, soil conditions encountered during construction may differ from what were encountered in our borings. Various quantities of very dense sands, hard clays, gravel

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and caliche nodules with varying degrees of cementation were observed in our borings which will be more difficult to excavate and will slow the rate of excavation.

Equipment and procedures should be used that do not cause significant disturbance to the excavation bottoms. If the subgrade becomes disturbed, it should be compacted before placing the backfill material.

The bottoms of trench excavations should expose competent soils and should be dry and free of loose, soft, or disturbed soil. Any soft, wet, weak, or deleterious materials should be over-excavated to expose competent soils.

10.2.2 Temporary Slopes

Excavations for this project should be designed in accordance with current applicable, state, and federal trenching guidelines, including the Occupational Safety and Health Administration (OSHA) requirements for excavations presented in 29 CFR Part 1926 (Revised July 1992), Subpart P, Excavations.

For planning purposes, and according to OSHA soil classifications, a "Type C" soil should be considered for this project due to the loose and cohesionless (e.g., sandy and gravelly) nature of the fill and alluvial soils. In general, temporary slopes excavations in competent “Type C” soil should be inclined no steeper than 1.5:1 (H:V), however flatter slopes or shoring may be needed.

Details for open-cut slopes and shoring based on soil type and groundwater conditions are provided in the latest amended OSHA regulations. These details apply to temporary open-trench excavations up to 20 feet deep. Trenches more than 20 feet deep, or in areas where seepage is encountered should be designed by the contractor’s engineer based on alignment-specific geotechnical analyses. Upon excavation, soil classifications and excavation performance should be evaluated in the field by the geotechnical consultant in accordance with the OSHA regulations.

Temporary excavations that encounter very loose to loose soil and/or groundwater seepage or surface runoff may need shoring or dewatering. Flatter slopes or bracing should be used if excessive sloughing or raveling is observed. If material is stored or equipment is operated near an excavation, stronger shoring should be used to resist the extra pressure due to superimposed loads.

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10.2.3 Temporary Shoring and Trench Boxes

Due to the presence of loose soil conditions, the proposed depths of the excavations, and presence of existing utilities and structures (e.g., roadways, utilities, and buildings), it may be preferable to temporarily shore or brace the trenches rather than using open cuts to the base of the excavations. Temporary earth retaining systems will be subjected to lateral loads resulting from earth pressures. Shored and braced trench excavations may be designed using the parameters on Figure 3.

10.2.4 Bottom Stability

Bottom of the excavations should be stable for the purpose of the planned construction. However, if excavations are open during a heavy rain event, the bottom of the trench may become saturated and unstable. Dewatering as discussed in Section 10.2.5 below may be anticipated in such events.

10.2.5 Construction Dewatering

Excavations that encounter seepage or surface run-off could be dewatered by pumping the water out and away from the excavation. Such zones may call for more aggressive means of dewatering and consultation with a qualified expert. Discharge of water from the excavations to natural drainage channels, if needed, may entail securing a special permit.

10.2.6 Fill Material

The following sections provide our fill material recommendations for this project. The recommendations below are provided for the finished and raw water pipelines.

10.2.6.1 Reuse of On-site Soils

On-site and imported soils that exhibit relatively low to low-moderate plasticity indices are generally suitable for re-use as engineered fill for this project. Relatively low to low-moderate plasticity indices are defined as a plasticity index ([PI] ASTM D4318) value of 15 or less. The Atterberg limits tests performed on selected samples indicated that the samples tested ranged in PI values from 0 (Non-plastic, NP) to 31. Based on our test results, some of the on-site soils are not considered suitable for re-use as engineered fill, if supporting settlement-sensitive features for this project. Higher PI value soils (up to a PI value of 25) can be placed as trench backfill, provided these soils are situated deeper than 3 feet below a new pavement or slab surface and 1 or more foot above the top of the pipe. Additional field sampling and laboratory testing

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should be conducted by the contractor during construction to better screen for any unsuitable materials.

Suitable engineered fill should also not include organic material, construction debris, or other non-soil fill materials. Rock particles and clay lumps should not be larger than 3 inches in dimension. Unsuitable fill material should be disposed of offsite or in non-structural areas.

Generated excavation materials that contain oversize fraction shall not be used as engineered fill unless the material meets the criteria given above and/or the oversize fraction has been processed and removed from the material. Imported backfill material, if utilized, should meet the criteria for imported fill as presented in this report. An earthwork (shrinkage) factor of 5 to 15 percent for the on-site soils is estimated.

10.2.6.2 Imported Fill Material

Imported fill, if utilized, should consist of granular material with a very low or low expansion potential as discussed in this report. Import material in contact with ferrous metals should preferably have low corrosion potential (minimum electrical resistivity more than 2,000 ohm-cm, chloride content less than 25 parts per million [ppm]). In lieu of this, corrosion protection techniques (e.g., cathodic protection, pipe wrapping, etc.) can be implemented. Imported material in contact with concrete should have a soluble sulfate content of less than 0.1 percent. The geotechnical consultant should evaluate such materials and details of their placement prior to importation. A corrosion specialist should be consulted for recommendations.

10.3 Pipe Bedding and Modulus of Soil Reaction (E')

We recommend the pipeline being installed using cut-and-cover techniques be supported on 4 inches or 1/12 the outside diameter of the pipe of granular bedding material such as sand and gravel, or crushed rock meeting the MAG Section 702 Standard Specifications (Figure 4). Pea gravel and/or crushed chips are not acceptable for this project. This bedding/pipe-zone backfill should extend 1 foot above the pipe crown. Care should be taken not to allow voids to form beneath the pipe (i.e., the pipe haunches should be continuously supported) to avoid damaging the pipeline. This may involve fill placement by hand or small compaction equipment. The pipe bedding should be moisture-conditioned and compacted as discussed in Section 10.4.

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The modulus of soil reaction (E´) is used to characterize the stiffness of soil backfill placed on the sides of buried pipelines for the purpose of evaluating deflection caused by the weight of the backfill over the pipe. For granular backfill soils for pipes, we recommend using an E´ value of 1,500 pounds per square inch (psi).E' for native materials will vary with material type and stiffness of the trench sidewalls. Approximate values of E' for the materials encountered in our borings based on US Bureau of Reclamation (2013) are presented in Table 3 below.

Table 3 – Modulus of Soil Reaction (E') for Native Soils

Trench Wall Soil Classification (USCS)	Approximate E' (psi)		
	Loose / Firm	Medium Dense / Stiff	Dense – Very Dense / Very Stiff-Hard
Sandy Silt/Clay (ML, CL)	200	500	1500
Silty/Clayey Sand and Gravel (SM, SC, SC/SM, GC)	400	700	2500
Sand (SP, GP)	700	1000	4000

10.4 Fill Placement and Compaction

In the bedding/pipe-zone, care should be taken not to allow voids to form beneath the pipe (i.e., the pipe haunches should be supported) to avoid damaging the pipeline. This may involve fill placement by hand or small compaction equipment. Pipe bedding guidelines are presented on Figure 4. Prior to the placement of any new fill or other construction, the exposed soil surface should be carefully evaluated by the geotechnical consultant for the presence of soft, loose, or wet native soils. Based on this evaluation, additional remediation may be needed. This additional remediation, if needed, should be addressed by the geotechnical consultant during the earthwork operations. This could include scarification of the exposed surface, drying or overexcavation of some materials may be appropriate.

In other areas where reuse of on-site soil as backfill is allowed, compaction of the clayey and fine-grained soils may be difficult since the lift thickness may need to be less than 8 inches (4 to 8 inches) and increased number of passes with compaction equipment may be needed to meet compaction requirements. Special care should be exercised to avoid damaging the pipe or other structures during the compaction of the backfill. Compaction should be accomplished in a manner that inhibits surface water infiltration as well as conveyance of subsurface moisture due to the intersection of natural drainages along the alignment.

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New engineered fill, including pipe zone material and final backfill material should be placed in horizontal lifts approximately 8 inches in loose thickness when compacted by mechanical methods. If non-conventional, hand operated, compaction equipment is employed horizontal lifts shall not exceed 4 inches in loose thickness. It is recommended that soil be compacted by appropriate mechanical methods at moisture content as outlined in Table 4.

Table 4 – Summary of Compaction Recommendations

Description	Percent Relative Compaction per ASTM D698	Moisture Content
Pipe Bedding	95 percent	±2 percent of optimum
Granular Trench Backfill – Within 2 feet below pavement	100 percent	
Non-Granular Trench Backfill – Within 2 feet below pavement	95 percent	
Trench Backfill –Deeper than 2 feet below pavement	95 percent	

Engineered fill used to raise grade will settle a portion of its height due to its own weight prior to construction of the foundation systems. The magnitude of this settlement will depend on the type of fill used. In general, the engineered fill recommended in this report is expected to settle about 1 percent of its height.

We recommend that new pavements and exterior flatwork, if any, located outside the new pipeline footprint be supported on an engineered fill. This zone of engineered fill should be measured from the bottom of the AB layer and should extend to a depth of 12 inches. The zone should be backfilled with engineered fill that is moisture-conditioned to moisture content slightly above optimum, and compacted to 95 percent (ASTM D698).

Prior to the placement of new engineered fill (as described above), the geotechnical consultant should carefully evaluate the resulting exposed surface. Backfilling should be accomplished by mechanical methods; compaction by flooding or jetting should not be permitted. In addition, particle sizes should not exceed 3 inches in diameter.

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10.5 Controlled Low Strength Material (CLSM)

It is our opinion that the backfill zone may be filled with CLSM. CLSM consists of a fluid, workable mixture of aggregate, Portland cement, and water. The use of CLSM has some advantages:

- A narrower backfill zone can be used, thereby minimizing the quantity of soil to be excavated and possibly reducing disturbance to the near-by traffic;
- Relatively higher E' values may be used (E'= 3,000 psi);
- The support given to the connecting pipes is generally better;
- Because little compaction is needed to place CLSM, there is less risk of damaging the connecting pipes; and
- CLSM can be batched to flow into irregularities in the trench bottom and walls.

The CLSM design mix should be in accordance with current MAG or Standard Specifications for Public Works Construction standards. Additional mix design information can be provided upon request. The 28-day strength of the material should be no less than 50 psi and no more than 120 psi.

Buoyant or uplift forces on the piping should be considered when using CLSM and prudent construction techniques may result in multiple pours to avoid inducing excessive uplift forces. Sufficient time should be provided to allow the CLSM to cure before placing additional lifts of CLSM or trench backfill.

10.6 Trenchless Installation

As indicated earlier, trenchless installation methods (i.e., jack-and-bore or micro-tunneling operations) may be implemented at larger intersections or key project locations. However, as previously described in Section 7.2, the presence of gravels and caliche nodules with varying degrees of cementation were observed in our borings which will be more difficult to excavate and will slow the rate of construction during construction.

Please note that drilling between the anticipated launching (jacking) and receiving pits was not performed during the field exploration. However, based on our knowledge of the site, caving of the pipe shaft may occur, particularly if relatively very loose to loose or wet surface soils are present. For stability and safety purposes, and to reduce ground movement, a perimeter shaft support system (carrier casing) should be installed as the excavation progresses.

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Following the installation of the utility inside the carrier casing, the annulus space should be in-filled with fine gravel or sand that is blown in with air from the ends or CLSM. A portion of the gravel or sand could be blown in first (so as to fill under the haunches of the utility) to reduce the potential for future movement of the pipe.

We recommend the contractor be responsible for the design of access shaft shapes, dimensions and ground support systems for the launching and receiving pit excavations so that such design can be compatible with their construction equipment and methods. Soldier piles with lagging or other types of shored excavations may serve as a suitable system for this project. Driven sheeting may be difficult to install because of hard ground conditions and the possibility of encountering buried gravel, cobbles, and or boulders. In addition, driven sheeting may cause real and perceived damage by vibrations to nearby structures.

Jacking reaction force is developed by passive soil pressure resistance to the jacking operation against the surface of the opposite wall of the jacking pit. For the case of a jacking pit geometry, which consists of a vertical face extending at a 1.5:1 (H:V) plane to the horizontal ground surface, an ultimate passive resistance of 600 pounds per square foot per foot of depth may be used (Figure 5). This value assumes no groundwater conditions. For different jacking pit geometry, we should be contacted for supplemental recommendations. A factor of safety of 2.0 should be used to calculate the allowable jacking pit resistance.

Surface subsidence associated with these operations was not evaluated as part of our analysis. Nevertheless, the contractor should implement a monitoring program during these operations to observe any ground movement above and adjacent to the pipe being installed. If signs of subsidence or disturbance are noted, construction operations should be stopped to address the ground movement. The integrity of nearby utilities, roadways and canal lining will need to be protected during these operations.

Excavations using trenchless construction techniques may encounter soils of little to no cohesion, as described previously in this report. If granular and/or cohesionless material occurs near the crown, the possibility exists for a “run-in” which could result in voids above the tunnel or a sinkhole at the ground surface. When granular materials are encountered at the invert, the possibility exists for bottom instability and difficulty in maintaining vertical alignment of the tunnel. Granular materials containing appreciable amounts of silt or clay behave more favorably to tunneling techniques than clean sands, although not as well as cohesive soils. The contractor should be made aware of the potential for the difficult tunneling conditions described above, and plan for them accordingly.

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In addition to the installation techniques described above, we also recommend that the installation of the pipe be continued with as little interruptions as possible. A delay in the advancement of pipe sections within the tunnel can allow for set-up of the surrounding soils in contact with the pipe, causing increased frictional resistance along the surface of the pipe.

10.7 T-Top Pavement Replacement

In AC paved areas over trench excavations, we recommend the use of MAG "T-Top" Type Trench Backfill (MAG detail 200-1) with respect to the AC and AB replacement at the surface of the trench excavations, in order to reduce the potential for distress due to differential settlement and water infiltration into the subsurface. This includes the removal of AC and AB to 1 foot or more laterally beyond the extent of each side of the installation trench and extending to a depth of 1 foot or more below the bottom of the asphalt layer.

In the T-Top, the thickness of AB should be 12 inches or match either the existing or design thickness, whichever is more. We recommend a seal be placed at the saw cut joint between the patch and the existing AC. Periodic maintenance of the pavement should be performed. The AC thickness should be in accordance with any COC design standards, or match the existing thickness, whichever is thicker.

10.8 Corrosion

The corrosion potential of the on-site materials across the three subdivisions was tested to evaluate its potential effect on the ferrous metals used along the project alignments. Our corrosion evaluation of the on-site soils is based on the results of our field and laboratory testing done for this project. A corrosion specialist should perform their own analysis.

Laboratory testing consisted of pH, minimum electrical resistivity, and chloride and soluble sulfate contents. The pH and minimum electrical resistivity tests were performed in general accordance with Arizona Test 236c, while sulfate and chloride tests were performed in accordance with Arizona Test 733 and 736, respectively. The results of these corrosivity tests are presented in Appendix B. A summary of the corrosivity tests are presented below in Table 5.

Table 5 – Summary of Corrosivity Testing Results

Project Alignments	pH	Resistivity (Ohm-cm)	Sulfate Content (%)	Chloride Content (ppm)
Arrowhead Meadows	7.3 to 7.8	2,211 to 3,015	0.0002 to 0.0010	8 to 16
Tyson Manor	7.4 to 7.6	2,010 to 2,613	0.0004 to 0.0007	10 to 13
Sunset Manor	6.9 to 7.7	2,144 to 2,546	0.0003 to 0.0011	13 to 31

The results of the laboratory testing indicate that the on-site are corrosive to ferrous materials. To reduce the corrosion potential of buried metallic utilities, we recommend that topsoil, organic soils, soils, and mixtures of sand and clay not be placed adjacent to buried metallic utilities. Rather, we suggest that sand or gravel be placed around buried metal piping. Also, buried utilities of different metallic construction or operating temperatures should be electrically isolated from each other to minimize galvanic corrosion problems. In addition, new piping should be electrically isolated from old piping, if any, so that the old metal will not increase the corrosion rate of the new metal. A corrosion specialist should be consulted for further recommendations.

10.9 Concrete

Laboratory chemical tests performed on an on-site soil samples indicated a sulfate content ranged between 0.0002 to 0.0011 percent by weight, which represents a negligible sulfate exposure for concrete. Based on the following American Concrete Institute (ACI) table (Table 6), the on-site soils should be considered to have negligible sulfate exposure to concrete. Based on the sulfate test results, and based on our experience with similar soil conditions, the specific use of the facility, and nearby practice, we however recommend the use of sulfate resistant cement (Type II or similar) for construction of concrete structures at this site. Due to potential uncertainties as to the use of reclaimed irrigation water, or topsoil that may contain higher sulfate contents, pozzolan or admixtures designed to increase sulfate resistance may be considered.

Table 6 – ACI Requirements for Concrete Exposed to Sulfate-Containing Soil

Sulfate Exposure	Water-Soluble Sulfate (SO_4) in Soil, Percentage by Weight	Cement Type	Water-Cementitious Materials Ratio, by Weight, Normal-Weight Aggregate Concrete[1]	f'c, Normal-Weight and Lightweight Aggregate Concrete, psi x 0.00689 for MPa
Negligible	0.00 - 0.10	--	--	--
Moderate[2]	0.10 - 0.20	II, IP(MS), IS (MS)	0.50 or less	4,000 or more
Severe	0.20 - 2.00	V	0.45 or less	4,500 or more
Very severe	Over 2.00	V plus pozzolan[3]	0.45 or less	4,500 or more

Notes:

[1] A lower water-cementitious materials ratio or higher strength may be needed for low permeability or for protection against corrosion of embedded items or freezing and thawing (ACI Table 4.2.2).

[2] Seawater.

[3] Pozzolan that has been evaluated by test or service record to improve sulfate resistance when used in concrete containing Type V cement.

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We recommend that the structural concrete have a water-cementitious materials ratio no more than 0.50 by weight for normal weight aggregate concrete. The structural engineer should ultimately select the concrete design strength based on the project specific loading conditions. Higher strength concrete may be selected for increased durability and resistance to slab curling and shrinkage cracking.

10.10 Site Drainage

Positive surface drainage should be provided to divert water away from the trench zone and pavements. Surface water should not be permitted to pond over the trench zone or on pavement surfaces after construction. Water that is pumped out of the trench should be done so in an area that drains the water away from the trench.

10.11 Pre-Construction Conference

We recommend that a pre-construction conference be held. Representatives of the owner, civil engineer, the geotechnical consultant, and the contractor should be in attendance to discuss the project plans and schedule. Our office should be notified if the project description included herein is incorrect, or if the project characteristics are significantly changed.

10.12 Construction Observation and Testing

During construction operations, we recommend that a qualified geotechnical consultant perform observation and testing services for the project. These services should be performed to evaluate exposed subgrade conditions, including the extent and depth of overexcavation, to evaluate the suitability of the on-site materials for use as fill and to observe placement and test compaction of fill soils. If another geotechnical consultant is selected to perform observation and testing services for the project, we request that the selected consultant provide a letter to the owner, with a copy to Ninyo & Moore, indicating that they fully understand our recommendations and they are in full agreement with the recommendations contained in this report. Qualified subcontractors utilizing appropriate techniques and construction materials should perform construction of the proposed improvements.

11 LIMITATIONS

The field evaluation, laboratory testing, and geotechnical analyses presented in this geotechnical report have been conducted in general accordance with current practice and the standard of care exercised by geotechnical consultants performing similar tasks in the project area. No warranty, expressed or implied, is made regarding the conclusions, recommendations, and opinions presented in this report. There is no evaluation detailed enough to reveal every

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subsurface condition. Variations may exist and conditions not observed or described in this report may be encountered during construction. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface evaluation will be performed upon request. Please also note that our evaluation was limited to assessment of the geotechnical aspects of the project, and did not include evaluation of structural issues, environmental concerns, or the presence of hazardous materials.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document.

This report is intended for design purposes only. It does not provide sufficient data to prepare an accurate bid by contractors. It is suggested that the bidders and their geotechnical consultant perform an independent evaluation of the subsurface conditions in the project areas. The independent evaluations may include, but not be limited to, review of other geotechnical reports prepared for the adjacent areas, site reconnaissance, and additional exploration and laboratory testing.

Our conclusions, recommendations, and opinions are based on an analysis of the observed site conditions. If geotechnical conditions different from those described in this report are encountered, our office should be notified and additional recommendations, if warranted, will be provided upon request. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control.

This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

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12 REFERENCES

American Concrete Institute (ACI), 1991a, Guidelines for Concrete Floor and Slab Construction (ACI 302.1R).

American Concrete Institute (ACI), 2005, Building Code Requirements for Structural Concrete (ACI 318-05) and Commentary (ACI 318R-05).

Arizona Department of Water Resources (ADWR), "GWSI Groundwater Maps" https://gisweb.azwater.gov/waterresourcedata/.

ASTM International (ASTM), Annual Book of ASTM Standards.

Euge, K.M., Schell, B.A., and Lam, I.P., 1992, Development of Seismic Acceleration Contour Maps for Arizona: Arizona Department of Transportation Report No. AZ 92-344: dated September.

International Code Council (ICC), 2018, International Building Code (IBC).

Maricopa Association of Governments (MAG), 2018, Uniform Standard Specifications and Details for Public Works Construction.

Ninyo & Moore, In-house proprietary information.

Occupational Safety and Health Administration (OSHA), Title 29 of the Code of Federal Regulations (CFR), Part No. 1926 - Safety and Health Regulations for Construction, Subpart P - Excavations.

Pearthree, 1996, Geologic Map of Quaternary and Upper Tertiary Alluvium in the Phoenix South 30' X 60' Quadrangle, AZ: Arizona Geological Survey, Open-File Report Series OFR 96-23: scale 1:100,000.

Pearthree, P.A., 1998, Quaternary Fault Data and Map for Arizona: Arizona Geological Survey, Open-File Report 98-24.

Schumann, H.H. and Genualdi, R., 1986, Land Subsidence, Earth Fissures, and Water-level Changes in Southern Arizona: Arizona Geological Survey OFR 86-14: scale 1:500,000.

United States Bureau of Reclamation, 2013, Method for Prediction of Flexible Pipe Deflection (M-25 2nd Edition): dated December 18.

United States Department of Agriculture (USDA), Soil Survey website. http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx.

United States Geological Survey (USGS), 2021, Chandler, Arizona, 7.5-Minute Series (Topographic): scale 1 = 24,000.

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FIGURES

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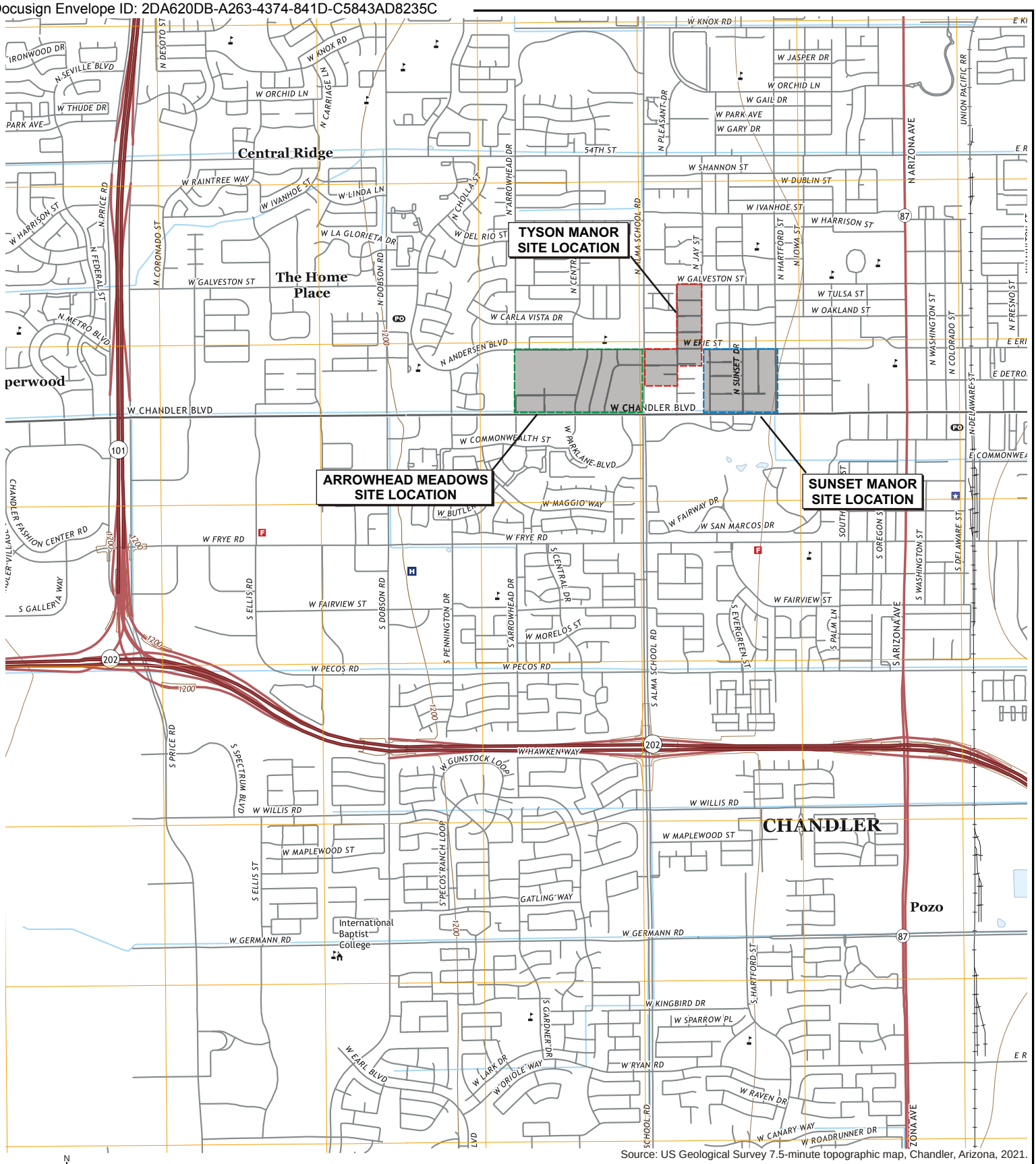

Source: US Geological Survey 7.5-minute topographic map, Chandler, Arizona, 2021.

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NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

FIGURE 1

SITE LOCATIONS

CHANDLER WATER MAIN REPLACEMENT 2022
CHANDLER, ARIZONA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

607398001 | 4/23

bsm file no: 7398vmap0423

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Source: NAVTEQ, 03/22.

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NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

FIGURE 2A

BORING LOCATIONS - ARROWHEAD MEADOWS

CHANDLER WATER MAIN REPLACEMENT 2022
CHANDLER, ARIZONA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

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Source: NAVTEQ, 03/22.

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

FIGURE 2B

BORING LOCATIONS - TYSON MANOR

CHANDLER WATER MAIN REPLACEMENT 2022
CHANDLER, ARIZONA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

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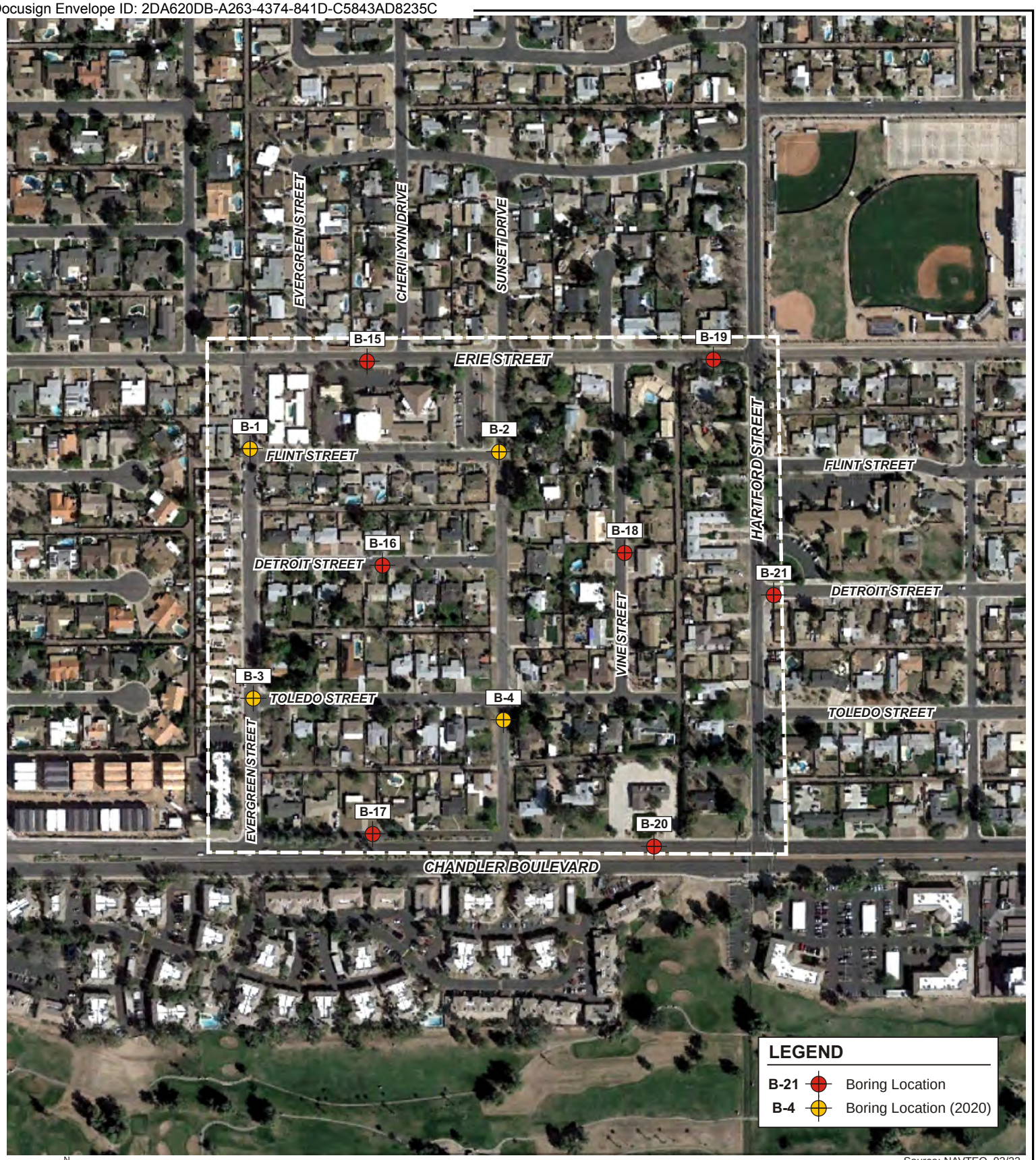

Source: NAVTEQ, 03/22.

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NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

FIGURE 2C

BORING LOCATIONS - SUNSET MANOR

CHANDLER WATER MAIN REPLACEMENT 2022
CHANDLER, ARIZONA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

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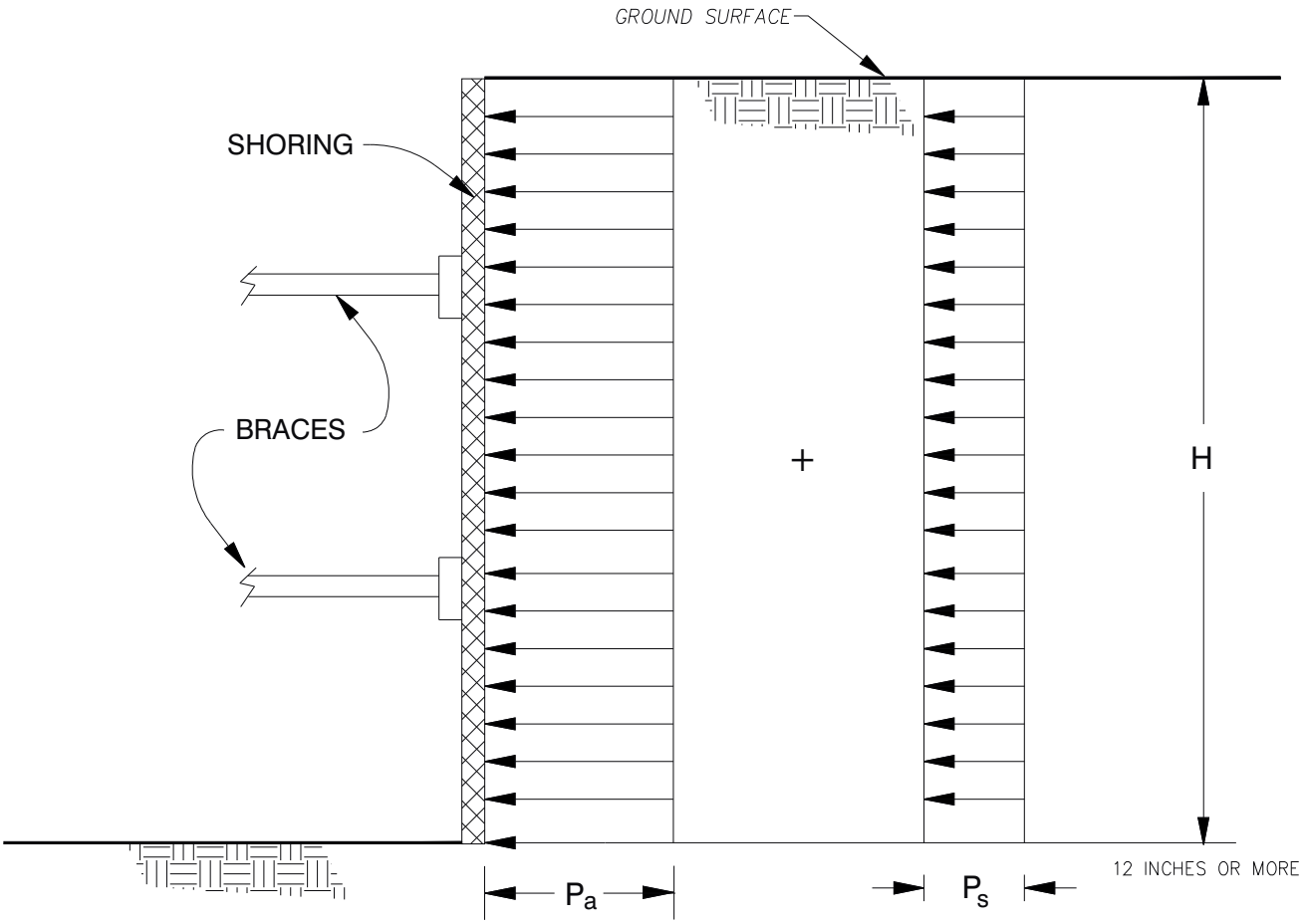

NOTES:

1. APPARENT LATERAL EARTH PRESSURE, P_a
   P_a = 29H psf
2. CONSTRUCTION TRAFFIC INDUCED SURCHARGE PRESSURE, P_s
   P_s = 120 psf
3. ASSUMES GROUNDWATER IS NOT PRESENT
4. SURCHARGES FROM EXCAVATED SOIL OR CONSTRUCTION MATERIALS ARE NOT INCLUDED
5. H IS IN FEET

FIGURE 3

LATERAL EARTH PRESSURES FOR BRACED EXCAVATION

CHANDLER WATER MAIN REPLACEMENT 2022
CHANDLER, ARIZONA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

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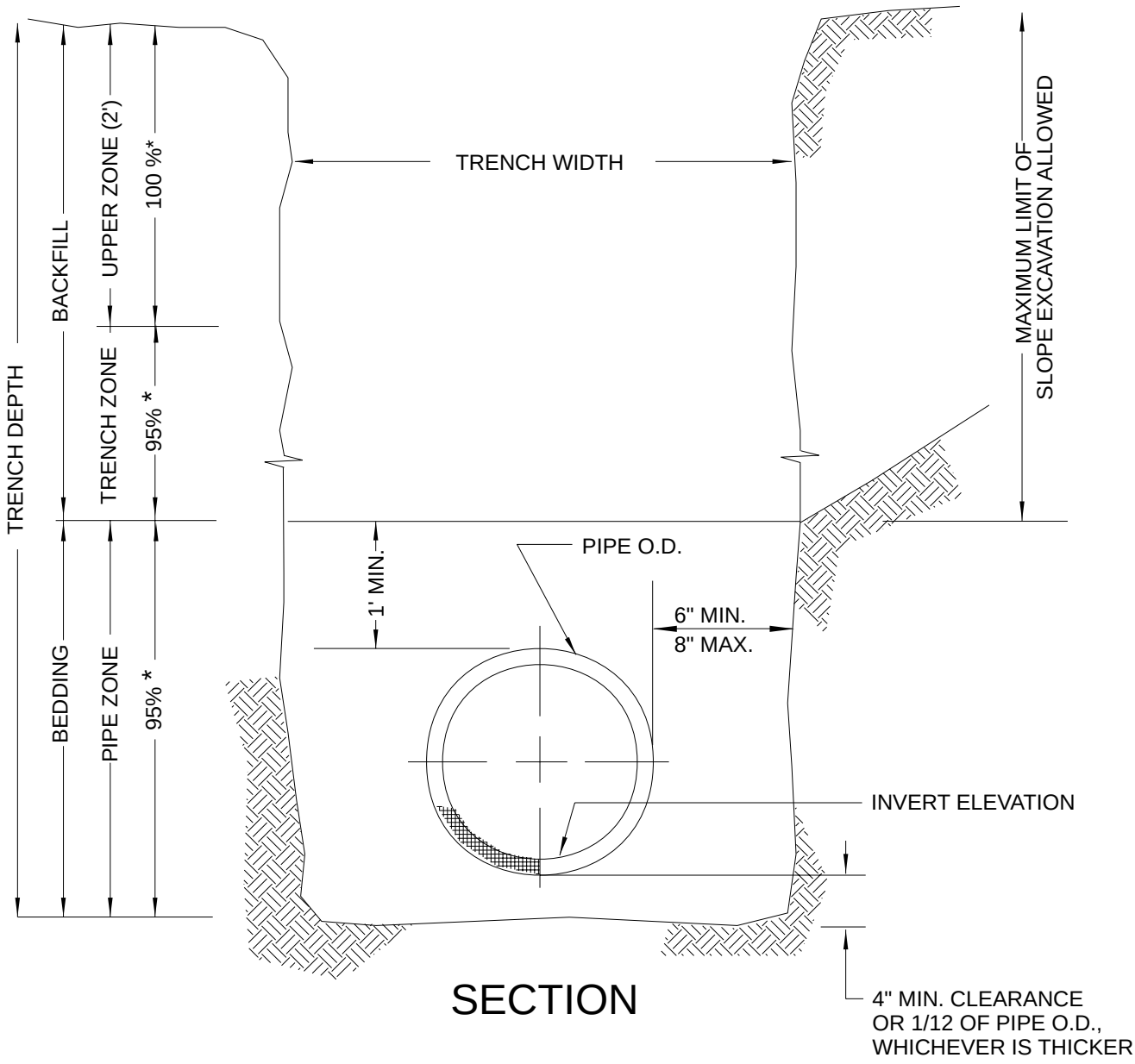

SECTION

NOTES

* Indicates minimum relative compaction (see report for details).

Upper zone required for pavement areas only.

Diagram not drawn to scale.

NOT TO SCALE

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

FIGURE 4

PIPE BEDDING GUIDELINES

CHANDLER WATER MAIN REPLACEMENT 2022
CHANDLER, ARIZONA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

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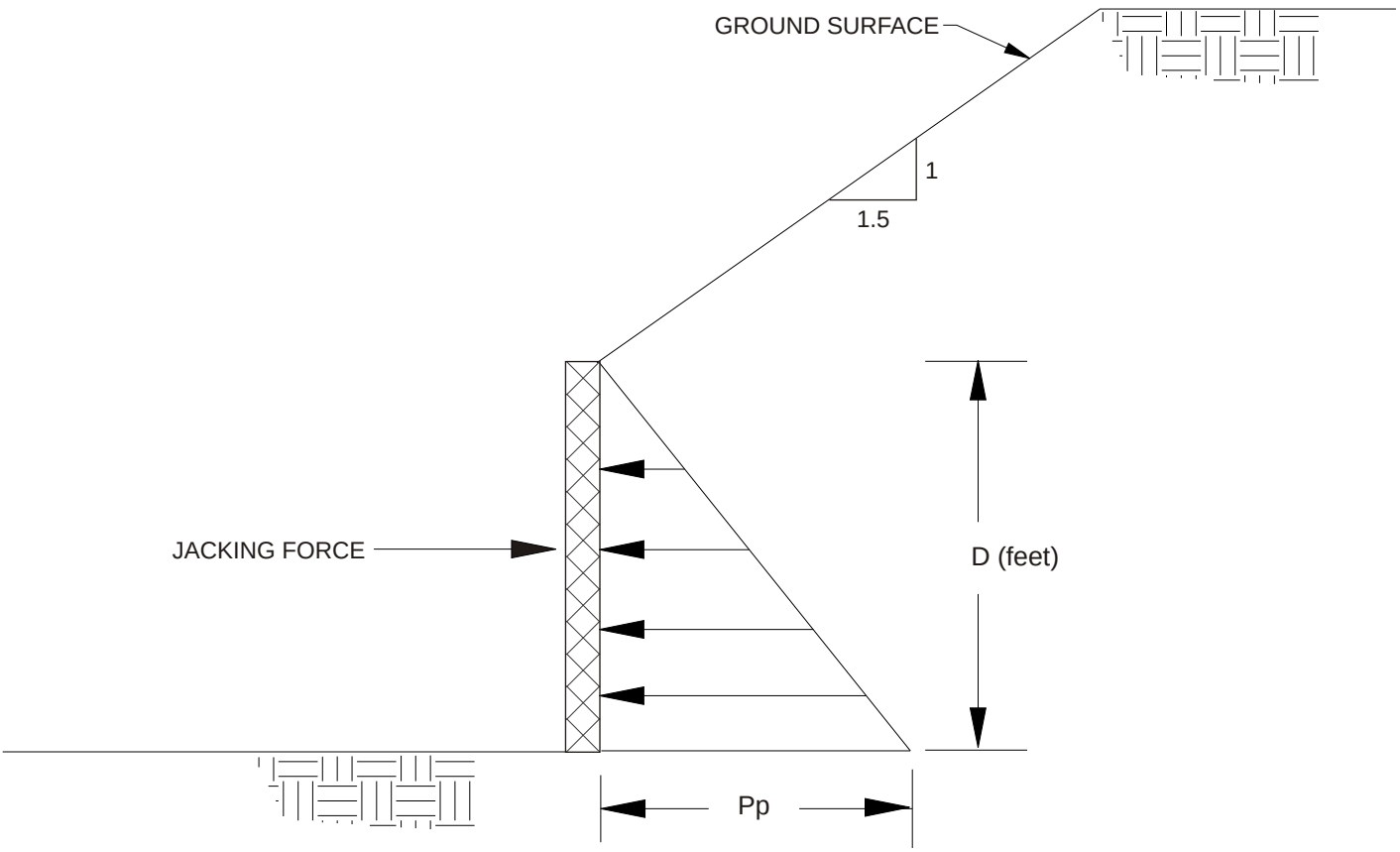

ASSUMPTIONS AND NOTES

1. NO GROUNDWATER
2. JACKING PIT GEOMETRY AS SHOWN
3. Pp = 600D psf

NOT TO SCALE

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

FIGURE 5

JACKING FORCE RESISTANCE DIAGRAM

CHANDLER WATER MAIN REPLACEMENT 2022
CHANDLER, ARIZONA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

bsm file no: 7398dtl0423

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APPENDIX A

Boring Logs

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APPENDIX A

BORING LOGS

Field Procedure for the Collection of Disturbed Samples
Disturbed soil samples were obtained in the field using the following methods.

Bulk Samples
Bulk samples of representative earth materials were obtained from the exploratory borings. The samples were bagged and transported to the laboratory for testing.

The Standard Penetration Test (SPT) Sampler
Disturbed drive samples of earth materials were obtained by means of a SPT sampler. The sampler is composed of a split barrel with an external diameter of 2 inches and an unlined internal diameter of 1-3/8 inches. The sampler was driven up to 18 inches into the ground with a 140-pound hammer falling freely from a height of 30 inches in general accordance with ASTM D1586. The blow counts were recorded for every 6 inches of penetration; the blow counts reported on the logs are those for the last 12 inches of penetration. Soil samples were observed and removed from the sampler, bagged, sealed, and transported to the laboratory for testing.

Field Procedure for the Collection of Relatively Undisturbed Samples
Relatively undisturbed soil samples were obtained in the field using the following method.

The Modified Split-Barrel Drive Sampler
The sampler, with an external diameter of 3.0 inches, was lined with 1-inch long, thin brass rings with inside diameters of approximately 2.4 inches. The sample barrel was driven into the ground with a 140-pound hammer falling freely from a height of 30 inches in general accordance with ASTM D3550. The approximate length of the fall, the weight of the hammer or bar, and the number of blows per foot of driving are presented on the boring logs as an index to the relative resistance of the materials sampled. The samples were removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.

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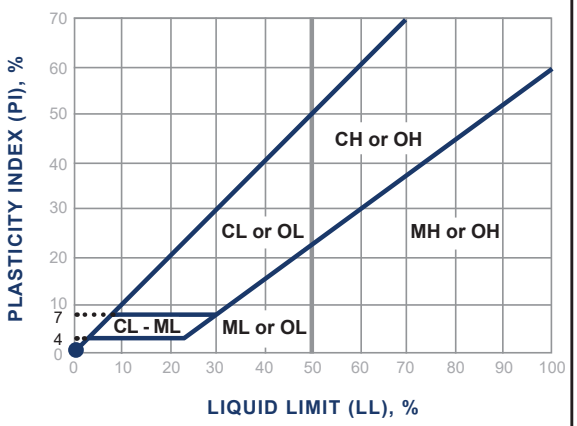
Soil Classification Chart Per ASTM D 2488

Primary Divisions			Secondary Divisions	
			Group Symbol	Group Name
COARSE-GRAINED SOILS more than 50% retained on No. 4 sieve	**GRAVEL** more than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVEL less than 5% fines	GW	well-graded GRAVEL
			GP	poorly graded GRAVEL
		GRAVEL with DUAL CLASSIFICATIONS 5% to 12% fines	GW-GM	well-graded GRAVEL with silt
			GP-GM	poorly graded GRAVEL with silt
			GW-GC	well-graded GRAVEL with clay
			GP-GC	poorly graded GRAVEL with
		GRAVEL with FINES more than 12% fines	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	SAND 50% or more of coarse fraction passes No. 4 sieve	CLEAN SAND less than 5% fines	SW	well-graded SAND
			SP	poorly graded SAND
		SAND with DUAL CLASSIFICATIONS 5% to 12% fines	SW-SM	well-graded SAND with silt
			SP-SM	poorly graded SAND with silt
			SW-SC	well-graded SAND with clay
			SP-SC	poorly graded SAND with clay
		SAND with FINES more than 12% fines	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
FINE-GRAINED SOILS 50% or more passes No. 200 sieve	**SILT and CLAY** liquid limit less than 50%	INORGANIC	CL	lean CLAY
			ML	SILT
			CL-ML	silty CLAY
		ORGANIC	OL (PI > 4)	organic CLAY
			OL (PI < 4)	organic SILT
	SILT and CLAY liquid limit 50% or more	INORGANIC	CH	fat CLAY
			MH	elastic SILT
		ORGANIC	OH (plots on or above "A"-line)	organic CLAY
			OH (plots below "A"-line)	organic SILT
	Highly Organic Soils		PT	Peat

Grain Size

Description		Sieve Size	Grain Size	Approximate Size
Boulders		> 12"	> 12"	Larger than basketball-sized
Cobbles		3 - 12"	3 - 12"	Fist-sized to basketball-sized
Gravel	Coarse	3/4 - 3"	3/4 - 3"	Thumb-sized to fist-sized
	Fine	#4 - 3/4"	0.19 - 0.75"	Pea-sized to thumb-sized
Sand	Coarse	#10 - #4	0.079 - 0.19"	Rock-salt-sized to pea-sized
	Medium	#40 - #10	0.017 - 0.079"	Sugar-sized to rock-salt-sized
	Fine	#200 - #40	0.0029 - 0.017"	Flour-sized to sugar-sized
Fines		Passing #200	< 0.0029"	Flour-sized and smaller

Plasticity Chart



Apparent Density - Coarse-Grained Soil

Apparent Density	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Loose	≤ 4	≤ 8	≤ 3	≤ 5
Loose	5 - 10	9 - 21	4 - 7	6 - 14
Medium Dense	11 - 30	22 - 63	8 - 20	15 - 42
Dense	31 - 50	64 - 105	21 - 33	43 - 70
Very Dense	> 50	> 105	> 33	> 70

Consistency - Fine-Grained Soil

Consis-tency	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Soft	< 2	< 3	< 1	< 2
Soft	2 - 4	3 - 5	1 - 3	2 - 3
Firm	5 - 8	6 - 10	4 - 5	4 - 6
Stiff	9 - 15	11 - 20	6 - 10	7 - 13
Very Stiff	16 - 30	21 - 39	11 - 20	14 - 26
Hard	> 30	> 39	> 20	> 26

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USCS METHOD OF SOIL CLASSIFICATION

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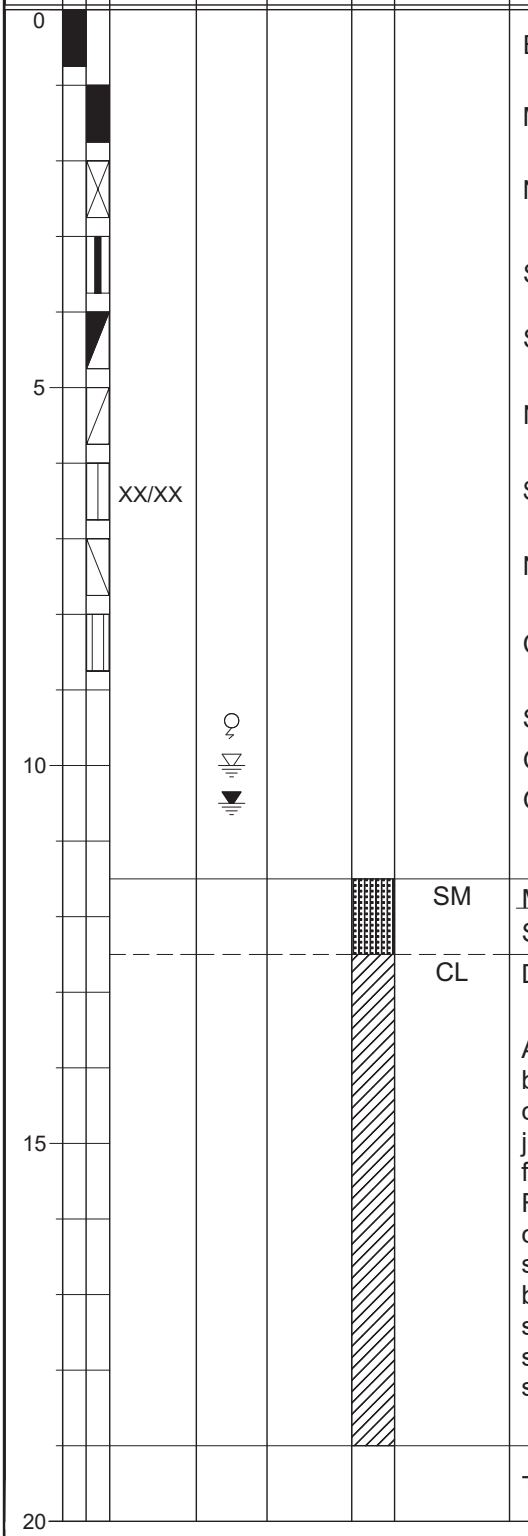
BORING LOG EXPLANATION SHEET



Bulk sample.

Modified split-barrel drive sampler.

No recovery with modified split-barrel drive sampler.

Sample retained by others.

Standard Penetration Test (SPT).

No recovery with a SPT.

Shelby tube sample. Distance pushed in inches/length of sample recovered in inches.

No recovery with Shelby tube sampler.

Continuous Push Sample.

Seepage.

Groundwater encountered during drilling.

Groundwater measured after drilling.

MAJOR MATERIAL TYPE (SOIL):

Solid line denotes unit change.

Dashed line denotes material change.

Attitudes: Strike/Dip
b: Bedding
c: Contact
j: Joint
f: Fracture
F: Fault
cs: Clay Seam
s: Shear
bss: Basal Slide Surface
sf: Shear Fracture
sz: Shear Zone
sbs: Shear Bedding Surface

The total depth line is a solid line that is drawn at the bottom of the boring.

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

DATE DRILLED 3/14/23 BORING NO. B-1

GROUND ELEVATION 1,197' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (GSI)

DRIVE WEIGHT 140 lbs. (Automatic Trip Hammer) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY SDN

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 2 inches thick.
							AGGREGATE BASE: Approximately 4 inches thick.
						CL	ALLUVIUM: Brown, dry, very stiff, lean CLAY with sand.
		14	9.4	118.2			
		21					Hard; scattered caliche nodules.
5							
		26	9.1	110.2			Very stiff.
						SM	Brown, dry, medium dense, silty SAND; few fine gravel.
						CL	Brown, dry to moist, hard, lean CLAY with sand; scattered caliche nodules.
		34					
10							Total Depth = 10 feet.
							Groundwater not encountered during drilling.
							Backfilled and asphalt concrete patched on 3/14/23 shortly after completion of drilling.
							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
15							
20							

FIGURE A- 1

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CHANDLER WATER MAIN REPLACEMENT 2022
CHANDLER, ARIZONA

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

DATE DRILLED 3/14/23 BORING NO. B-2

GROUND ELEVATION 1,199' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (GSI)

DRIVE WEIGHT 140 lbs. (Automatic Trip Hammer) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY SDN

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 4 inches thick.
							AGGREGATE BASE: Approximately 3 inches thick.
						CL	ALLUVIUM: Brown, moist, very stiff, lean CLAY with sand; scattered caliche nodules.
		17					
		38	15.2	110.7			Hard.
5		43					
		58					
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 3/14/23 shortly after completion of drilling.
15							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
20							

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

DATE DRILLED 3/14/23 BORING NO. B-3

GROUND ELEVATION 1,202' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (GSI)

DRIVE WEIGHT 140 lbs. (Automatic Trip Hammer) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY SDN

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 2 inches thick.
							AGGREGATE BASE: Approximately 4 inches thick.
		12	11.4	107.6		SC	FILL: Brown, dry to moist, loose, clayey SAND.
		11				SC	ALLUVIUM: Brown, dry, medium dense, clayey SAND; scattered caliche nodules.
5		45	6.0	112.0			Dense.
						SM	Brown, dry, dense, silty SAND.
		22				SP	Brown, dry, dense, poorly graded SAND; trace clay.
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 3/14/23 shortly after completion of drilling.
15							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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FIGURE A- 3

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Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

DATE DRILLED 3/16/23 BORING NO. B-4

GROUND ELEVATION 1,201' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (GSI)

DRIVE WEIGHT 140 lbs. (Automatic Trip Hammer) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY SDN

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 4 inches thick.
							AGGREGATE BASE: Approximately 3 inches thick.
						SC	ALLUVIUM: Brown, dry, medium dense, clayey SAND; scattered caliche nodules.
		14					
		28	14.3	105.4			
5							
		18					Few fine gravel.
		20					
10						SM	Brown, dry, medium dense, silty SAND.
							Total Depth = 10 feet.
							Groundwater not encountered during drilling.
							Backfilled and asphalt concrete patched on 3/16/23 shortly after completion of drilling.
15							
20							

Notes:
Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

DATE DRILLED 3/14/23 BORING NO. B-5

GROUND ELEVATION 1,201' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (GSI)

DRIVE WEIGHT 140 lbs. (Automatic Trip Hammer) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY SDN

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 2 inches thick.
							AGGREGATE BASE: Approximately 4 inches thick.
						CL	ALLUVIUM: Brown, moist to dry, very stiff, lean CLAY with sand; scattered caliche nodules.
		23	18.8	105.9			
		18					
5		50/5"	10.9	108.0			Hard.
		27				SM	Brown, dry, dense, silty SAND; trace clay; scattered caliche nodules.
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 3/14/23 shortly after completion of drilling.
15							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
20							

FIGURE A- 5

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DATE DRILLED 3/14/23 BORING NO. B-6

GROUND ELEVATION 1,203' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (GSI)

DRIVE WEIGHT 140 lbs. (Automatic Trip Hammer) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY SDN

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 2 inches thick.
							AGGREGATE BASE: Approximately 4 inches thick.
						SC	ALLUVIUM: Brown, moist, medium dense, clayey SAND.
		8					
		24	12.3	109.7			
5							
		9				SM	Brown, dry, medium dense, silty SAND.
		68/11"					Very dense.
						SC	Brown, dry, very dense, clayey SAND; scattered caliche nodules.
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 3/14/23 shortly after completion of drilling.
							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
15							
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FIGURE A- 6

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DATE DRILLED 3/16/23 BORING NO. B-7

GROUND ELEVATION 1,202' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (GSI)

DRIVE WEIGHT 140 lbs. (Automatic Trip Hammer) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY SDN

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 2 inches thick.
							AGGREGATE BASE: Approximately 4 inches thick.
						SC	ALLUVIUM: Brown, dry, medium dense, clayey SAND.
		17	10.5	109.1			
		7					Loose.
5							
		22	9.2	112.8			Medium dense.
		11					
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 3/16/23 shortly after completion of drilling.
							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
15							
20							

FIGURE A- 7

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CHANDLER WATER MAIN REPLACEMENT 2022
CHANDLER, ARIZONA

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DATE DRILLED 3/16/23 BORING NO. B-8

GROUND ELEVATION 1,204' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (GSI)

DRIVE WEIGHT 140 lbs. (Automatic Trip Hammer) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY SDN

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 5 inches thick.
							AGGREGATE BASE: Approximately 3 inches thick.
						SC	ALLUVIUM: Brown, moist, medium dense, clayey SAND.
		11					
		32	15.2	110.9			
5							
						CL	Brown, dry, hard, sandy lean CLAY; scattered caliche nodules.
		22					
		28					
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 3/16/23 shortly after completion of drilling.
							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
15							
20							

FIGURE A- 8

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DATE DRILLED 3/15/23 BORING NO. B-9

GROUND ELEVATION 1,203' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (GSI)

DRIVE WEIGHT 140 lbs. (Automatic Trip Hammer) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY SDN

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 4 inches thick.
							AGGREGATE BASE: Approximately 5 inches thick.
						CL	ALLUVIUM: Brown, dry, hard, sandy lean CLAY; scattered caliche nodules.
		34	17.6	104.3			
		14					Very stiff.
5							
		45	6.6	113.1			Hard.
						SM	Brown, dry, dense, silty SAND; few fine gravel.
		20					
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 3/15/23 shortly after completion of drilling.
15							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
20							

FIGURE A- 9

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CHANDLER WATER MAIN REPLACEMENT 2022
CHANDLER, ARIZONA

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

DATE DRILLED 3/15/23 BORING NO. B-10

GROUND ELEVATION 1,204' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (GSI)

DRIVE WEIGHT 140 lbs. (Automatic Trip Hammer) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY SDN

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 3 inches thick.
							AGGREGATE BASE: Approximately 4 inches thick.
						CL	ALLUVIUM: Brown, dry to moist, very stiff, sandy lean CLAY; scattered caliche nodules.
		13					
		36	17.8	104.1			Hard.
5							
		24					
		20				SM	Brown,dry, medium dense, silty SAND; trace clay; scattered caliche nodules.
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 3/15/23 shortly after completion of drilling.
							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
15							
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FIGURE A- 10

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CHANDLER WATER MAIN REPLACEMENT 2022
CHANDLER, ARIZONA

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

DATE DRILLED 3/15/23 BORING NO. B-11

GROUND ELEVATION 1,204' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (GSI)

DRIVE WEIGHT 140 lbs. (Automatic Trip Hammer) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY SDN

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 3 inches thick.
							AGGREGATE BASE: Approximately 5 1/2 inches thick.
						SC	ALLUVIUM: Brown, dry to moist, loose, clayey SAND.
		12	10.2	113.8			
		10					Medium dense.
5							
		73	16.2	95.6			Very dense; scattered caliche nodules.
		30					Dense.
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 3/15/23 shortly after completion of drilling.
							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
15							
20							

FIGURE A- 11

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CHANDLER WATER MAIN REPLACEMENT 2022
CHANDLER, ARIZONA

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

DATE DRILLED 3/15/23 BORING NO. B-12

GROUND ELEVATION 1,204' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (GSI)

DRIVE WEIGHT 140 lbs. (Automatic Trip Hammer) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY SDN

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 3 inches thick.
							AGGREGATE BASE: Approximately 3 inches thick.
						SC	ALLUVIUM: Brown, dry to moist, medium dense, clayey SAND.
		14					
		36	14.2	109.7			
5		49					Very dense; scattered caliche nodules.
		50/3"					Dry.
							Total Depth = 9.3 feet. Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 3/15/23 shortly after completion of drilling.
10							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
15							
20							

FIGURE A- 12

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CHANDLER WATER MAIN REPLACEMENT 2022
CHANDLER, ARIZONA

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

DATE DRILLED 3/15/23 BORING NO. B-13

GROUND ELEVATION 1,205' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (GSI)

DRIVE WEIGHT 140 lbs. (Automatic Trip Hammer) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY SDN

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 3 inches thick.
							AGGREGATE BASE: Approximately 3 inches thick.
						SC	ALLUVIUM: Brown, moist to dry, medium dense, clayey SAND.
		30	15.6	113.9			
		23					Dense; scattered caliche nodules.
5							
		77/10"	13.3	104.5			Very dense.
		88/11"					
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 3/15/23 shortly after completion of drilling.
15							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
20							

FIGURE A- 13

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CHANDLER, ARIZONA

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

DATE DRILLED 3/15/23 BORING NO. B-14

GROUND ELEVATION 1,205' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (GSI)

DRIVE WEIGHT 140 lbs. (Automatic Trip Hammer) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY SDN

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 4 1/2 inches thick.
							AGGREGATE BASE: Approximately 3 inches thick.
						CL	ALLUVIUM: Brown, moist to dry, very stiff, sandy lean CLAY; scattered caliche nodules.
		18					
		30	14.6	107.3			Hard.
5							
		30					
		63					
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 3/15/23 shortly after completion of drilling.
							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
15							
20							

FIGURE A- 14

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CHANDLER WATER MAIN REPLACEMENT 2022
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Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

DATE DRILLED 3/16/23 BORING NO. B-15

GROUND ELEVATION 1,205' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (GSI)

DRIVE WEIGHT 140 lbs. (Automatic Trip Hammer) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY SDN

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 4 inches thick.
							AGGREGATE BASE: Approximately 4 inches thick.
						SC	ALLUVIUM: Brown, dry to moist, medium dense, clayey SAND.
		21	15.5	110.2			
		14					
5							
		21				SP	Brown, dry, medium dense, poorly graded SAND.
						SM	Brown, dry, medium dense, silty SAND; trace coarse gravel.
		17					
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 3/16/23 shortly after completion of drilling.
							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
15							
20							

FIGURE A- 15

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CHANDLER WATER MAIN REPLACEMENT 2022
CHANDLER, ARIZONA

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

DATE DRILLED 3/15/23 BORING NO. B-16

GROUND ELEVATION 1,206' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (GSI)

DRIVE WEIGHT 140 lbs. (Automatic Trip Hammer) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY SDN

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 2 inches thick.
							AGGREGATE BASE: Approximately 4 inches thick.
						CL	ALLUVIUM: Brown, dry, very stiff, sandy lean CLAY; scattered caliche nodules.
		15					
		19	18.2	103.5			
5							
		26					Hard.
		26					Very stiff.
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 3/15/23 shortly after completion of drilling.
							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
15							
20							

FIGURE A- 16

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CHANDLER WATER MAIN REPLACEMENT 2022
CHANDLER, ARIZONA

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

DATE DRILLED 3/15/23 BORING NO. B-17

GROUND ELEVATION 1,208' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (GSI)

DRIVE WEIGHT 140 lbs. (Automatic Trip Hammer) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY SDN

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 3 inches thick.
							AGGREGATE BASE: Approximately 4 inches thick.
						SC	ALLUVIUM: Brown, dry to moist, medium dense, clayey SAND.
		9					No recovery; coarse gravel.
		19	15.6	98.4			
5						SM	Brown, dry, medium dense, silty SAND; trace fine gravel.
		11					
		26				SC	Brown, moist, medium dense, clayey SAND.
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 3/15/23 shortly after completion of drilling.
15							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
20							

FIGURE A- 17

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CHANDLER WATER MAIN REPLACEMENT 2022
CHANDLER, ARIZONA

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

DATE DRILLED 3/15/23 BORING NO. B-18

GROUND ELEVATION 1,207' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (GSI)

DRIVE WEIGHT 140 lbs. (Automatic Trip Hammer) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY SDN

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 3 1/2 inches thick.
							AGGREGATE BASE: Approximately 4 inches thick.
						CL	ALLUVIUM: Brown, moist, very stiff, lean CLAY with sand; scattered caliche nodules.
		21	15.5	110.7			
		19					
5							
		32	16.5	106.9			Hard.
		10					Stiff.
						SM	Brown, dry, medium dense, silty SAND.
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 3/15/23 shortly after completion of drilling.
							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
15							
20							

FIGURE A- 18

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CHANDLER WATER MAIN REPLACEMENT 2022
CHANDLER, ARIZONA

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

DATE DRILLED 3/16/23 BORING NO. B-19

GROUND ELEVATION 1,207' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (GSI)

DRIVE WEIGHT 140 lbs. (Automatic Trip Hammer) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY SDN

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 4 inches thick.
							AGGREGATE BASE: Approximately 4 inches thick.
						CL	ALLUVIUM: Brown, moist to dry, very stiff, sandy lean CLAY; scattered caliche nodules.
		25	18.8	103.9			
		19					
5							
		20	13.1	99.6		SM	Brown, dry, medium dense, silty SAND.
		7					Loose.
10							
						SC	Brown, dry, very dense, clayey SAND; scattered caliche nodules.
		39					
15							Total Depth = 15 feet. Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 3/16/23 shortly after completion of drilling.
							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
20							

FIGURE A- 19

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CHANDLER WATER MAIN REPLACEMENT 2022
CHANDLER, ARIZONA

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

DATE DRILLED 3/16/23 BORING NO. B-20

GROUND ELEVATION 1,211' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (GSI)

DRIVE WEIGHT 140 lbs. (Automatic Trip Hammer) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY SDN

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 3 inches thick.
							AGGREGATE BASE: Approximately 4 inches thick.
						SC	ALLUVIUM: Brown, dry, medium dense, clayey SAND.
		16					
		22	9.6	105.3			
5							
						CL	Brown, dry, very stiff, sandy lean CLAY; scattered caliche nodules.
		12					
		45					Hard.
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 3/16/23 shortly after completion of drilling.
							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
15							
20							

FIGURE A- 20

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CHANDLER WATER MAIN REPLACEMENT 2022
CHANDLER, ARIZONA

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

DATE DRILLED 3/16/23 BORING NO. B-21

GROUND ELEVATION 1,208' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (GSI)

DRIVE WEIGHT 140 lbs. (Automatic Trip Hammer) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY SDN

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 3 inches thick.
							AGGREGATE BASE: Approximately 3 inches thick.
						CL	ALLUVIUM: Brown, moist, stiff, sandy lean CLAY.
		12	16.4	110.1			
		20					Very stiff.
5							
		25	11.4	115.5		SM	Brown, dry to moist, medium dense, silty SAND.
						CL	Brown, dry to moist, hard, sandy lean CLAY; scattered caliche nodules.
		21					
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 3/16/23 shortly after completion of drilling.
							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
15							
20							

FIGURE A- 21

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CHANDLER WATER MAIN REPLACEMENT 2022
CHANDLER, ARIZONA

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APPENDIX B

Laboratory Testing

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

APPENDIX B

LABORATORY TESTING

Classification
Soils were visually and texturally classified in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D2488. Soil classifications are indicated on the logs of the exploratory borings in Appendix A.

In-Place Moisture and Density Tests
The moisture content and dry density of relatively undisturbed samples obtained from the exploratory borings were evaluated in general accordance with ASTM D2937. The test results are presented on the logs of the exploratory borings in Appendix A.

Gradation Analysis
Gradation analysis tests were performed on selected representative soil samples in general accordance with ASTM D422. The grain-size distribution curves are shown on Figures B-1 through B-10. These test results were utilized in evaluating the soil classifications in accordance with the USCS.

Atterberg Limits
Atterberg Limits Tests were performed on selected representative fine-grained soil samples to evaluate the liquid limit, plastic limit, and plasticity index in general accordance with ASTM D4318. These test results were utilized to evaluate the soil classification in accordance with the USCS. The test results and classifications are shown on Figures B-11 and B-12.

Proctor Density Tests
The maximum dry density and optimum moisture content of selected representative soil samples were evaluated using the Standard Proctor method in general accordance with ASTM D698. The results of these tests are summarized on Figures B-13 and B-14.

Consolidation Tests
Consolidation tests were performed on selected relatively undisturbed soil samples in general accordance with ASTM D2435. The samples were inundated during testing to represent adverse field conditions. The percent of consolidation for each load cycle was recorded as a ratio of the amount of vertical compression to the original height of the sample. The results of the tests are summarized on Figures B-15 and B-16.

Soil Corrosivity Tests
Soil pH and minimum resistivity tests were performed on a representative sample in general accordance with Arizona test method, ARIZ 236c. The chloride content of the selected sample was evaluated in general accordance with ARIZ 736. The sulfate content of the selected sample was evaluated in general accordance with ARIZ 733. The test results are shown on Figures B-17 and B-18.

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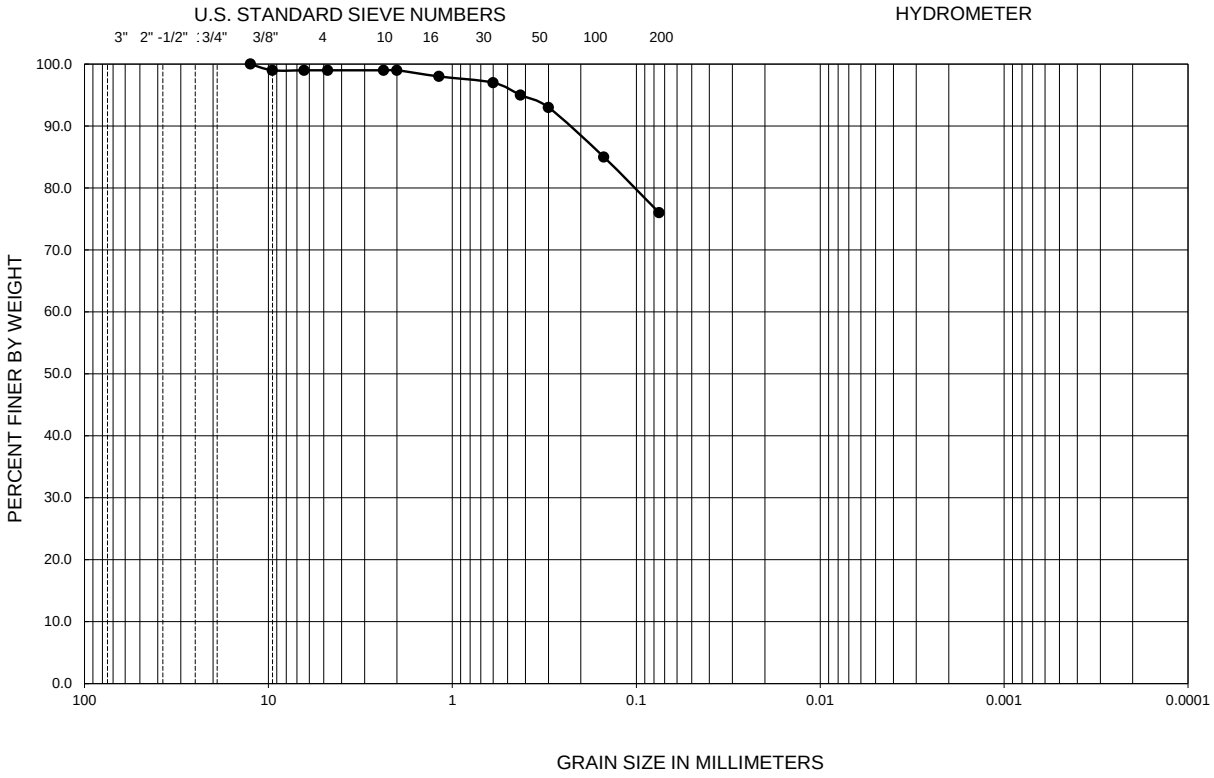
GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-1	3.5-5.0	44	19	25	--	--	--	--	--	76.0	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM C136 / D422

FIGURE B-1

GRADATION TEST RESULTS

CHANDLER WATER MAIN REPLACEMENT 2022

CHANDLER, ARIZONA

Ninyo & Moore
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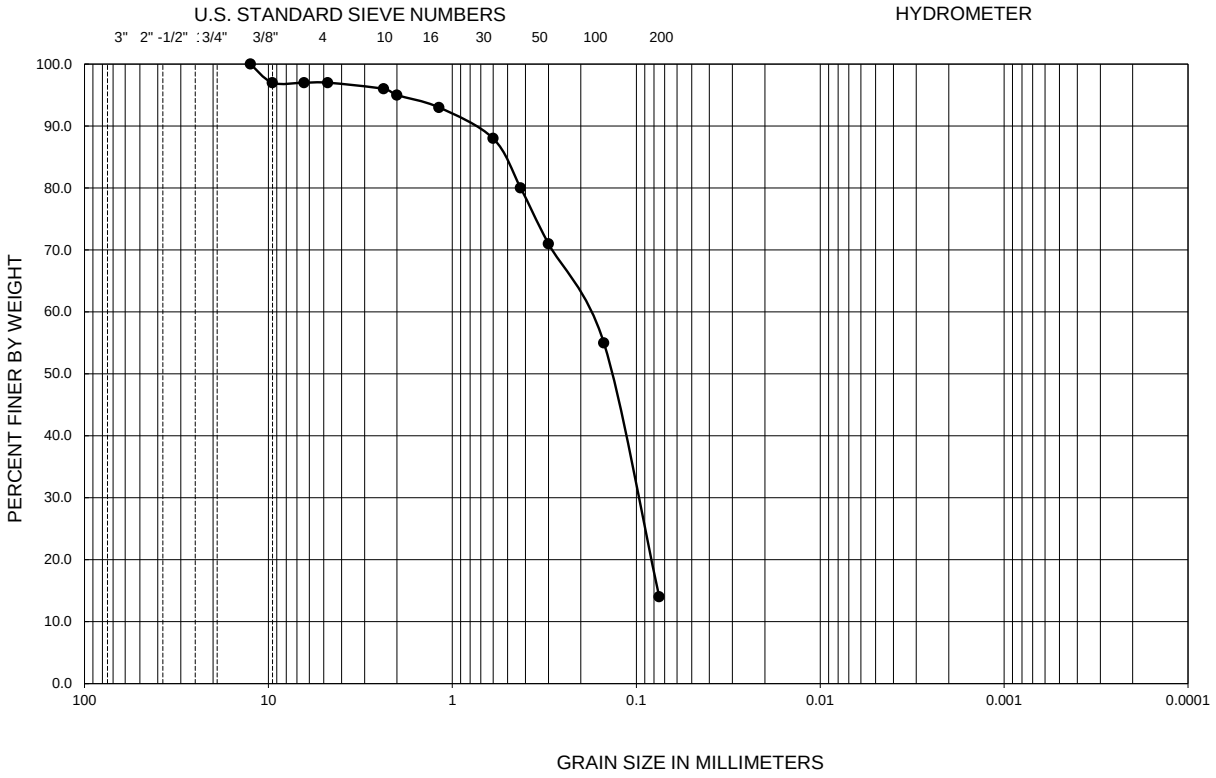
GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-4	1.0-2.5	52	21	31	--	0.097	0.19	--	--	14.0	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM C136 / D422

FIGURE B-2

GRADATION TEST RESULTS

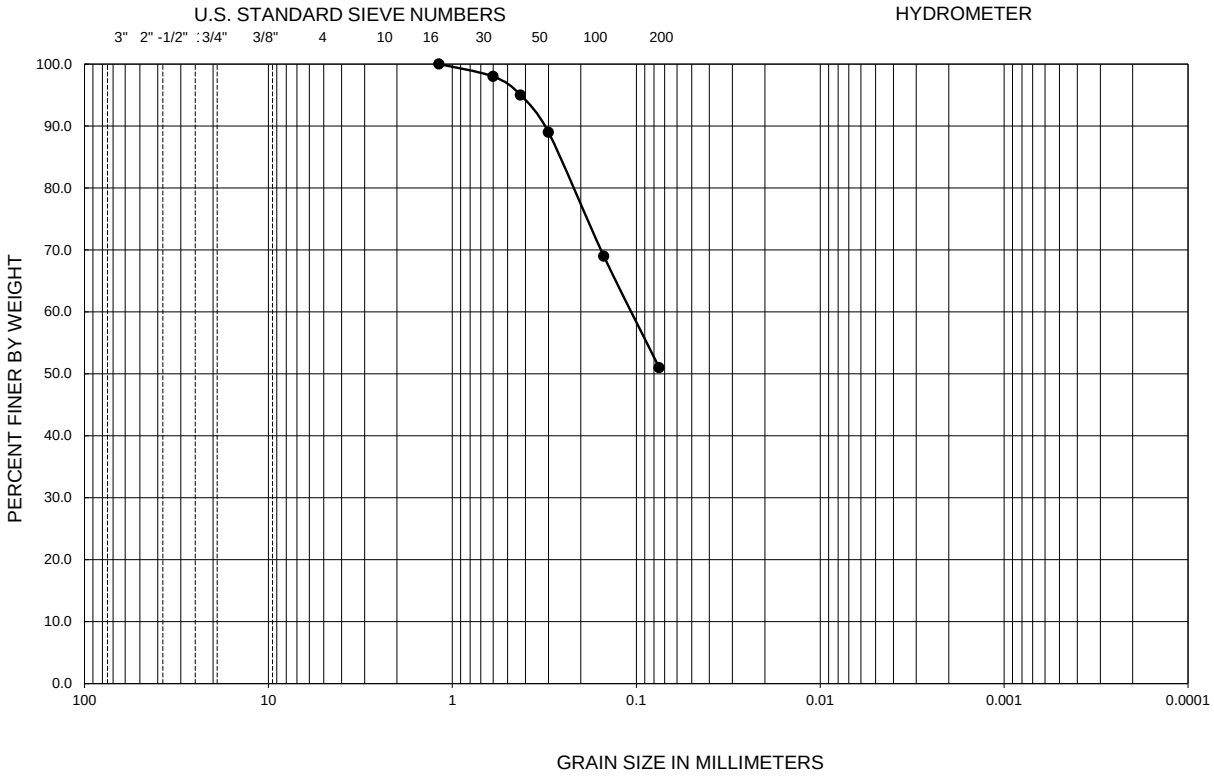
CHANDLER WATER MAIN REPLACEMENT 2022

CHANDLER, ARIZONA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-5	3.5-5.0	39	17	22	--	--	0.11	--	--	51.0	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM C136 / D422

FIGURE B-3

GRADATION TEST RESULTS

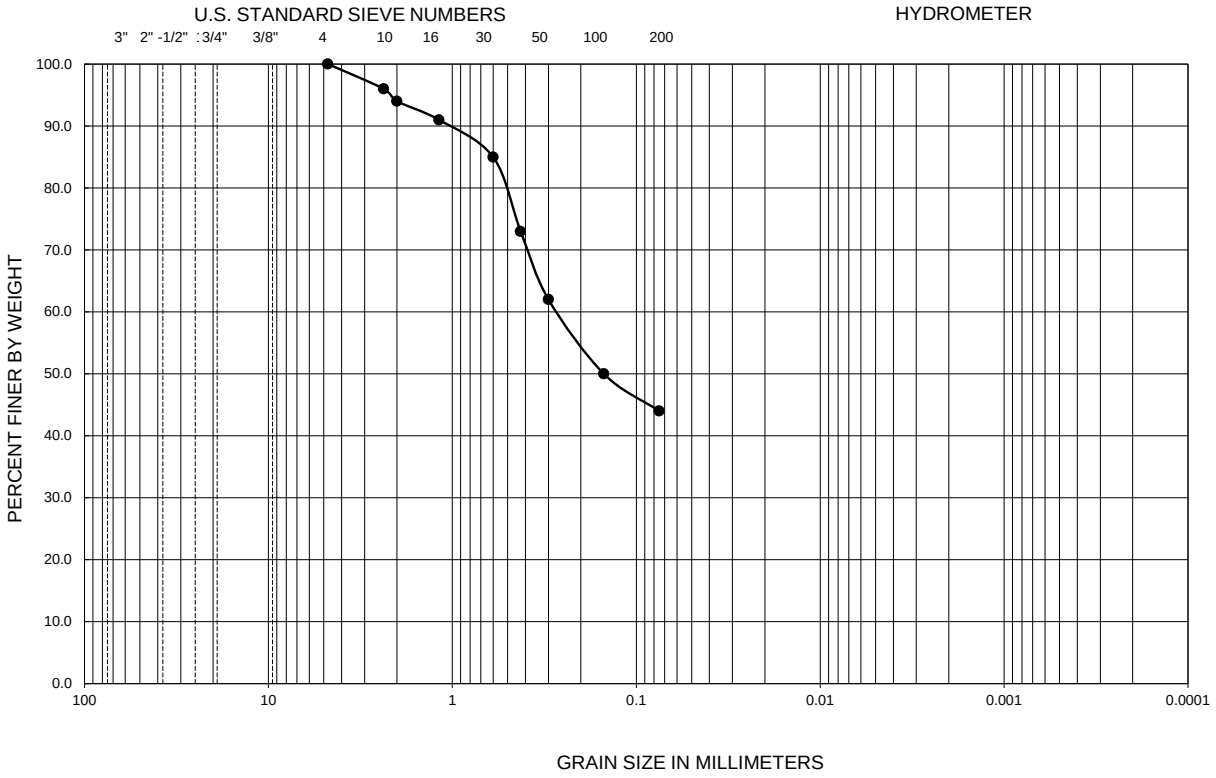
CHANDLER WATER MAIN REPLACEMENT 2022

CHANDLER, ARIZONA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-7	3.5-5.0	38	20	18	--	--	0.27	--	--	44.0	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM C136 / D422

FIGURE B-4

GRADATION TEST RESULTS

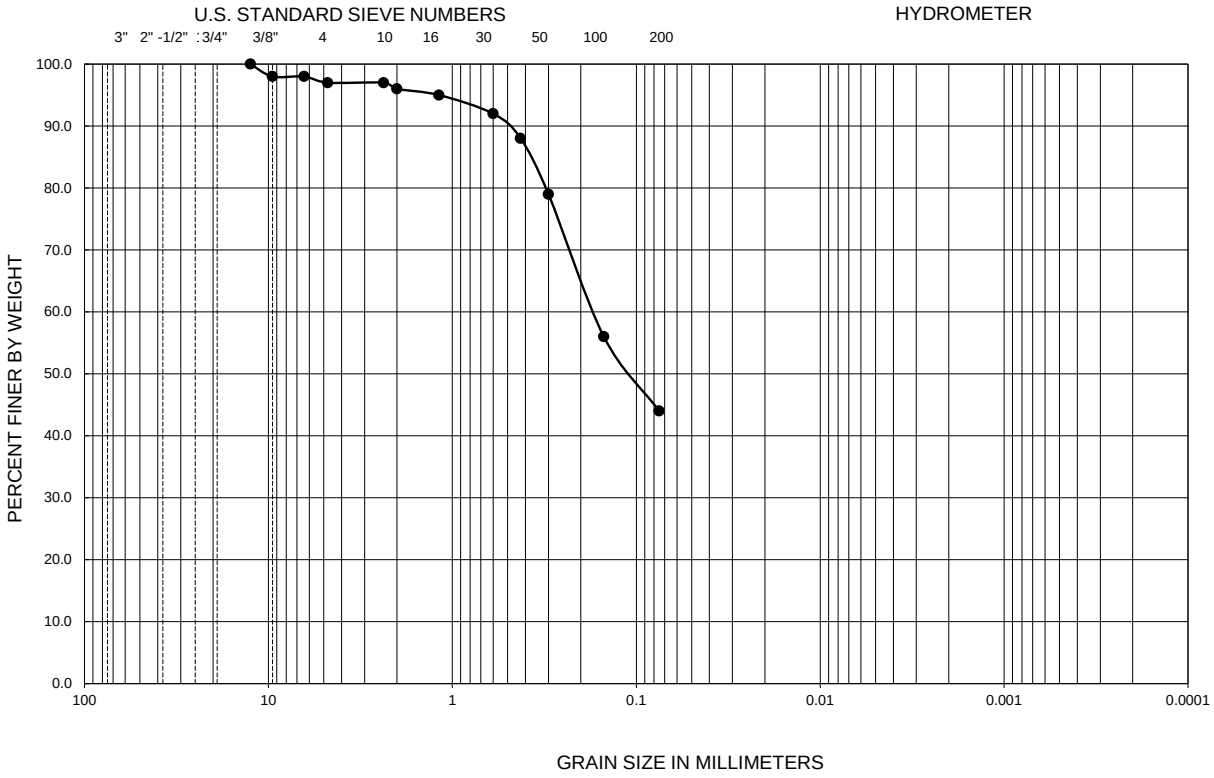
CHANDLER WATER MAIN REPLACEMENT 2022

CHANDLER, ARIZONA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-8	1.0-2.5	37	14	23	--	--	0.17	--	--	44.0	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM C136 / D422

FIGURE B-5

GRADATION TEST RESULTS

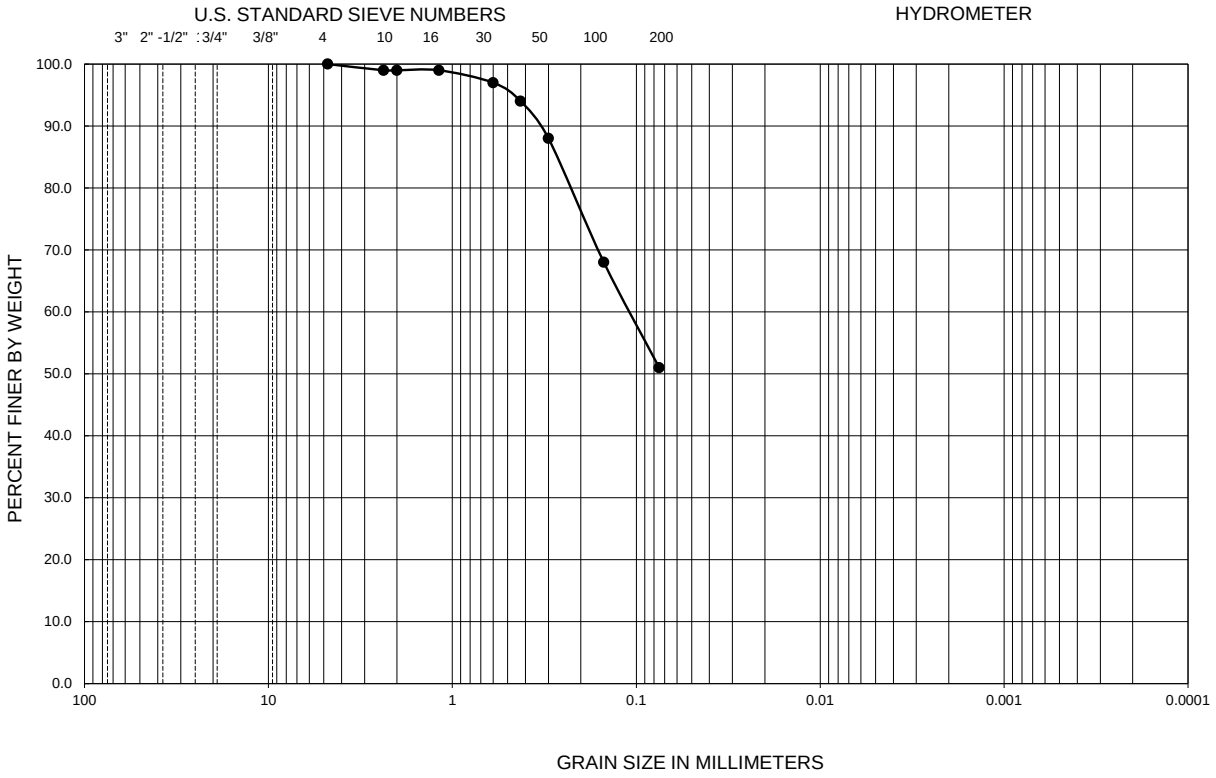
CHANDLER WATER MAIN REPLACEMENT 2022

CHANDLER, ARIZONA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-9	3.5-5.0	42	15	27	--	--	0.11	--	--	51.0	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM C136 / D422

FIGURE B-6

GRADATION TEST RESULTS

CHANDLER WATER MAIN REPLACEMENT 2022

CHANDLER, ARIZONA

Ninyo & Moore
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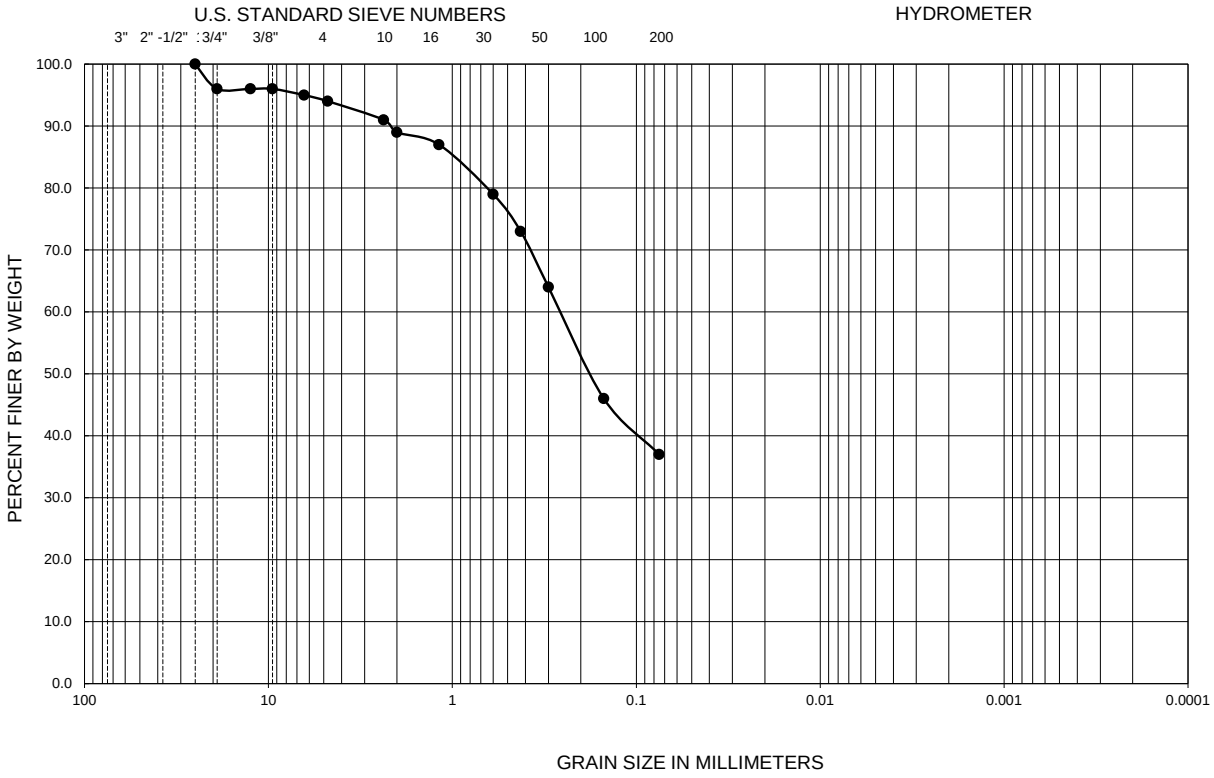
Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-13	3.5-5.0	39	15	24	--	--	0.26	--	--	37.0	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM C136 / D422

FIGURE B-7

GRADATION TEST RESULTS

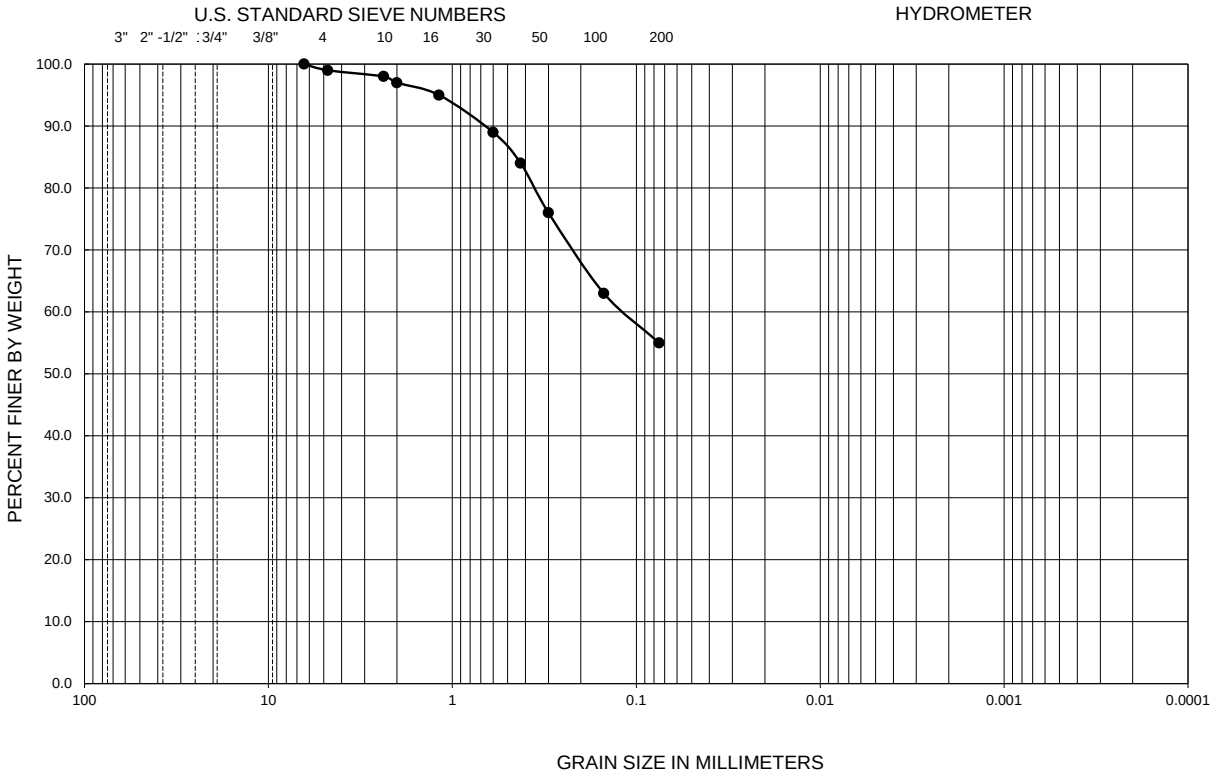
CHANDLER WATER MAIN REPLACEMENT 2022

CHANDLER, ARIZONA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-14	1.0-2.5	41	16	25	--	--	0.12	--	--	55.0	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM C136 / D422

FIGURE B-8

GRADATION TEST RESULTS

CHANDLER WATER MAIN REPLACEMENT 2022

CHANDLER, ARIZONA

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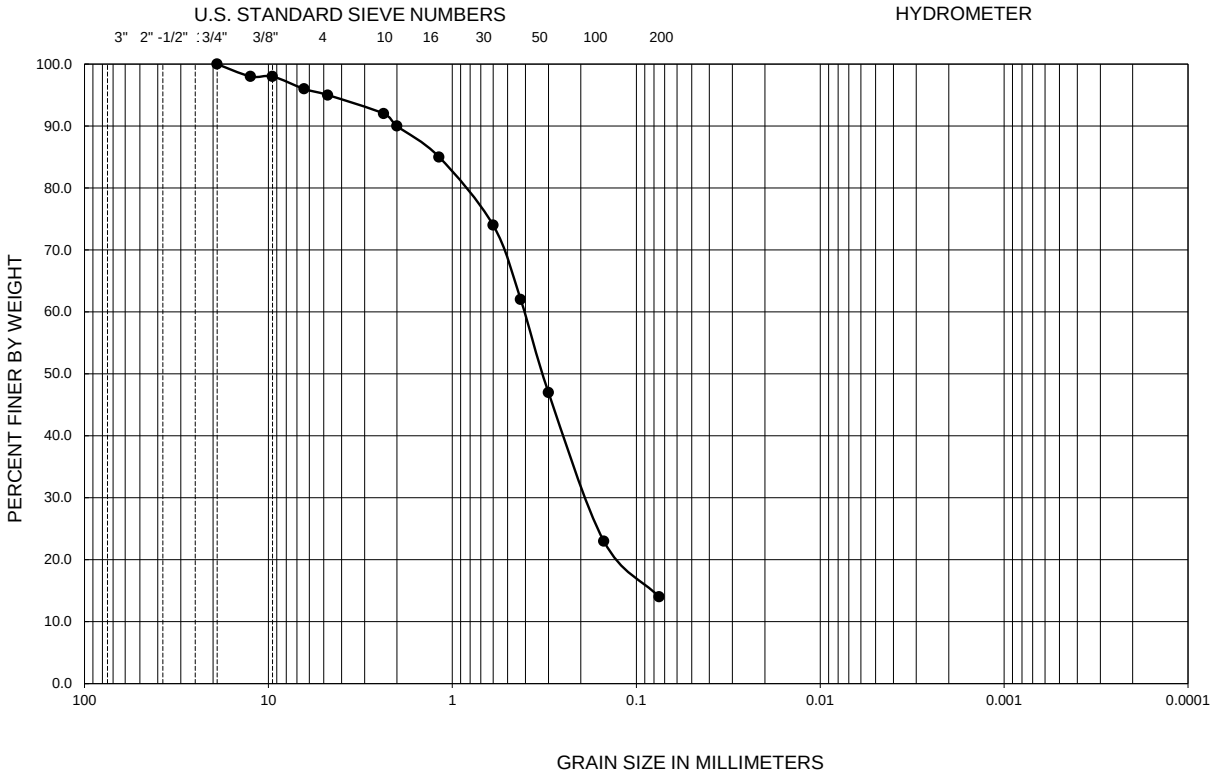
Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-17	6.0-7.5	--	--	NP	--	0.184	0.41	--	--	14.0	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM C136 / D422

FIGURE B-9

GRADATION TEST RESULTS

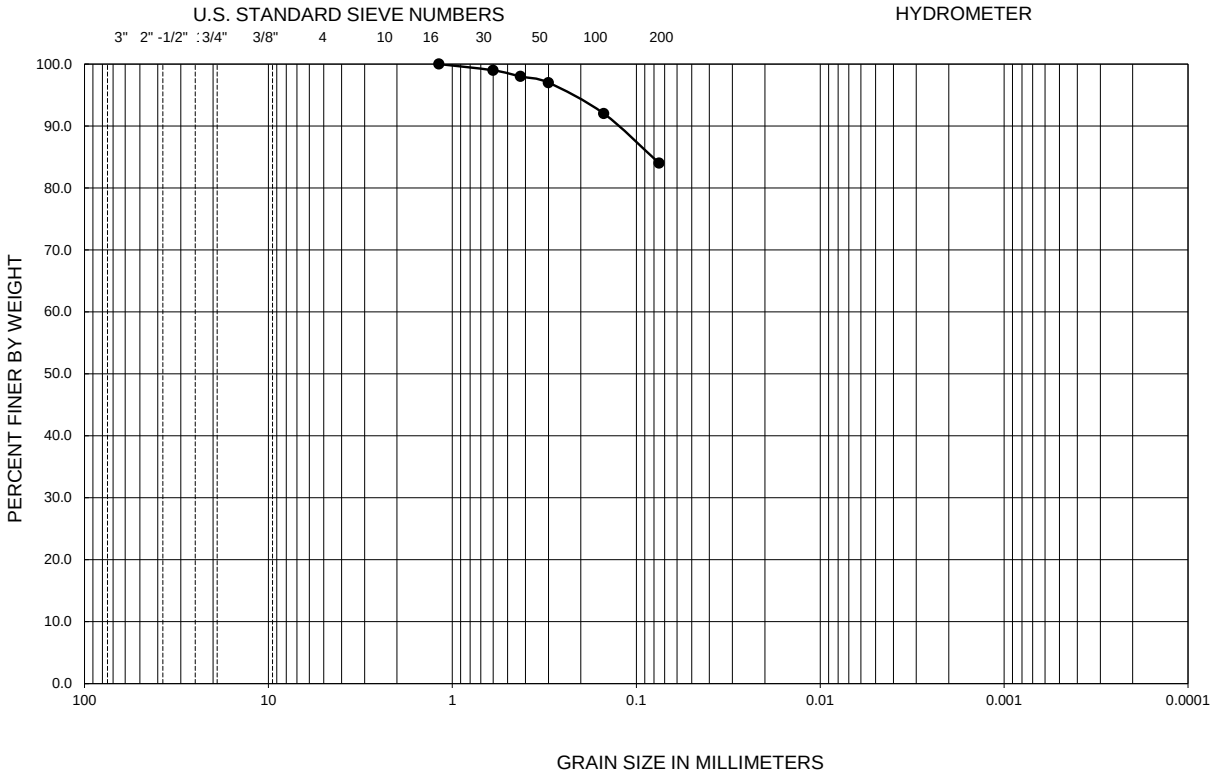
CHANDLER WATER MAIN REPLACEMENT 2022

CHANDLER, ARIZONA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-18	3.5-5.0	43	16	27	--	--	--	--	--	84.0	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM C136 / D422

FIGURE B-10

GRADATION TEST RESULTS

CHANDLER WATER MAIN REPLACEMENT 2022

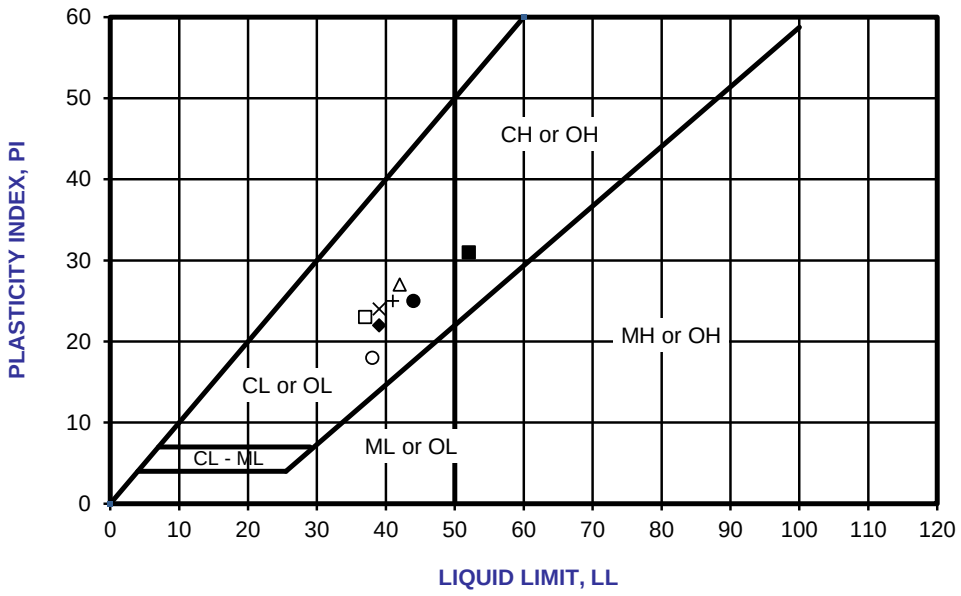
CHANDLER, ARIZONA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

SYMBOL	LOCATION	DEPTH (ft)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	USCS CLASSIFICATION (Fraction Finer Than No. 40 Sieve)	USCS
●	B-1	3.5-5.0	44	19	25	CL	CL
■	B-4	1.0-2.5	52	21	31	CH	SC
◆	B-5	3.5-5.0	39	17	22	CL	CL
○	B-7	3.5-5.0	38	20	18	CL	SC
□	B-8	1.0-2.5	37	14	23	CL	SC
△	B-9	3.5-5.0	42	15	27	CL	CL
X	B-13	3.5-5.0	39	15	24	CL	SC
+	B-14	1.0-2.5	41	16	25	CL	CL

NP - INDICATES NON-PLASTIC



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4318

FIGURE B-11

ATTERBERG TEST RESULTS

CHANDLER WATER MAIN REPLACEMENT 2022

CHANDLER, ARIZONA

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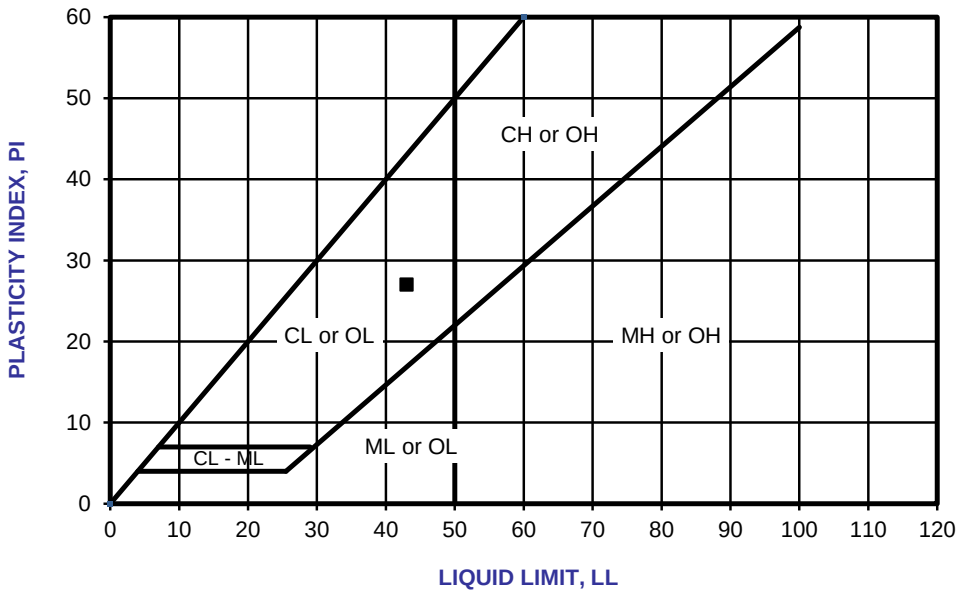
SYMBOL	LOCATION	DEPTH (ft)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	USCS CLASSIFICATION (Fraction Finer Than No. 40 Sieve)	USCS
●	B-17	6.0-7.5	--	--	NP	ML	SM
■	B-18	3.5-5.0	43	16	27	CL	CL

NP - INDICATES NON-PLASTIC



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4318

FIGURE B-12

ATTERBERG TEST RESULTS

CHANDLER WATER MAIN REPLACEMENT 2022

CHANDLER, ARIZONA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

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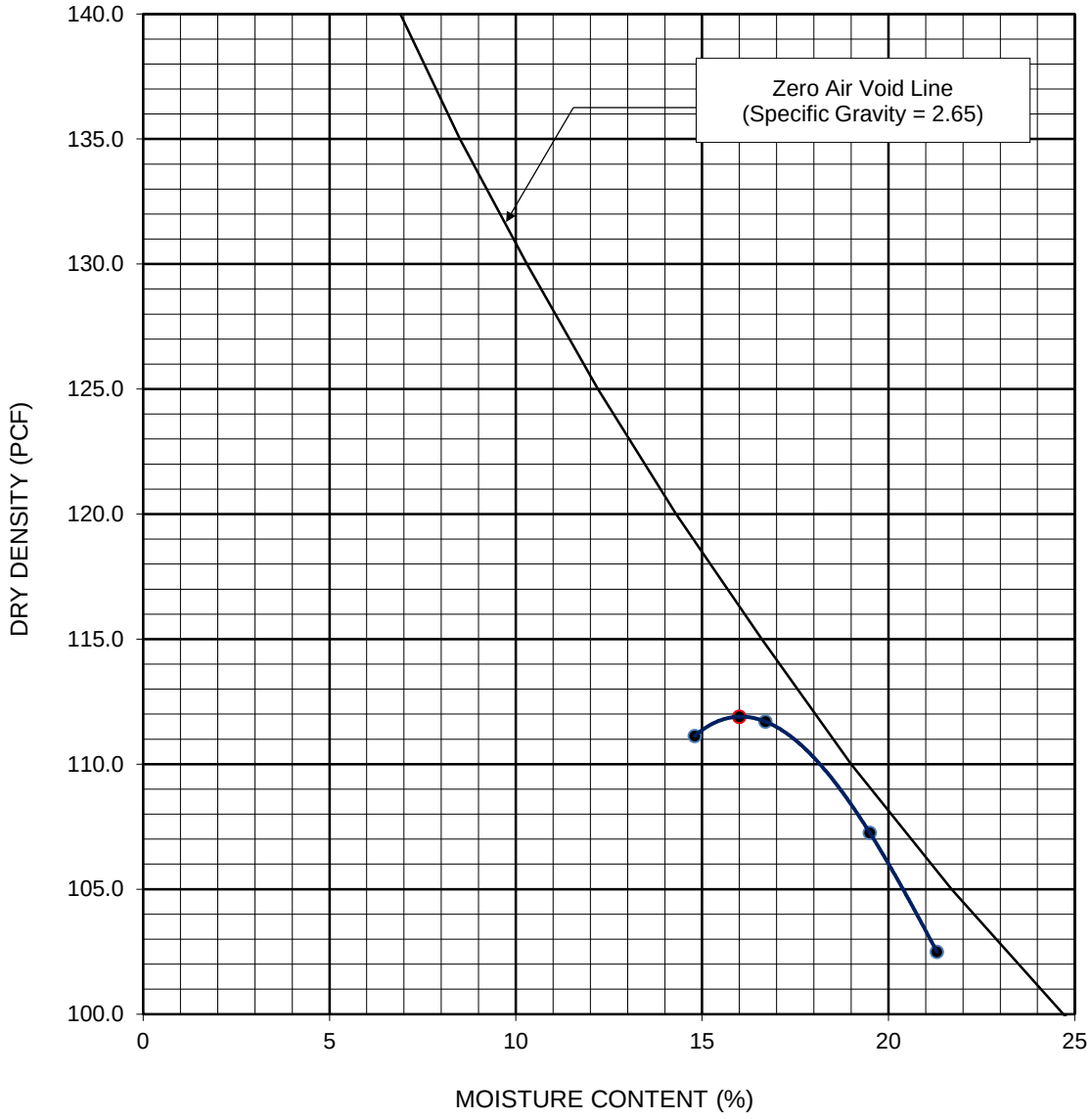
Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C



Sample Location	Depth (ft)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture Content (percent)
B-4	1.0-5.0	SC	111.9	16.0
Dry Density and Moisture Content Values Corrected for Oversize (ASTM D 4718)			114	15

PERFORMED IN GENERAL ACCORDANCE WITH ☐ ASTM D 1557 ☑ ASTM D 698 METHOD ☑ A ☐ B ☐ C

FIGURE B-13

MAXIMUM DENSITY RESULTS

CHANDLER WATER MAIN REPLACEMENT 2022

CHANDLER, ARIZONA

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Geotechnical & Environmental Sciences Consultants

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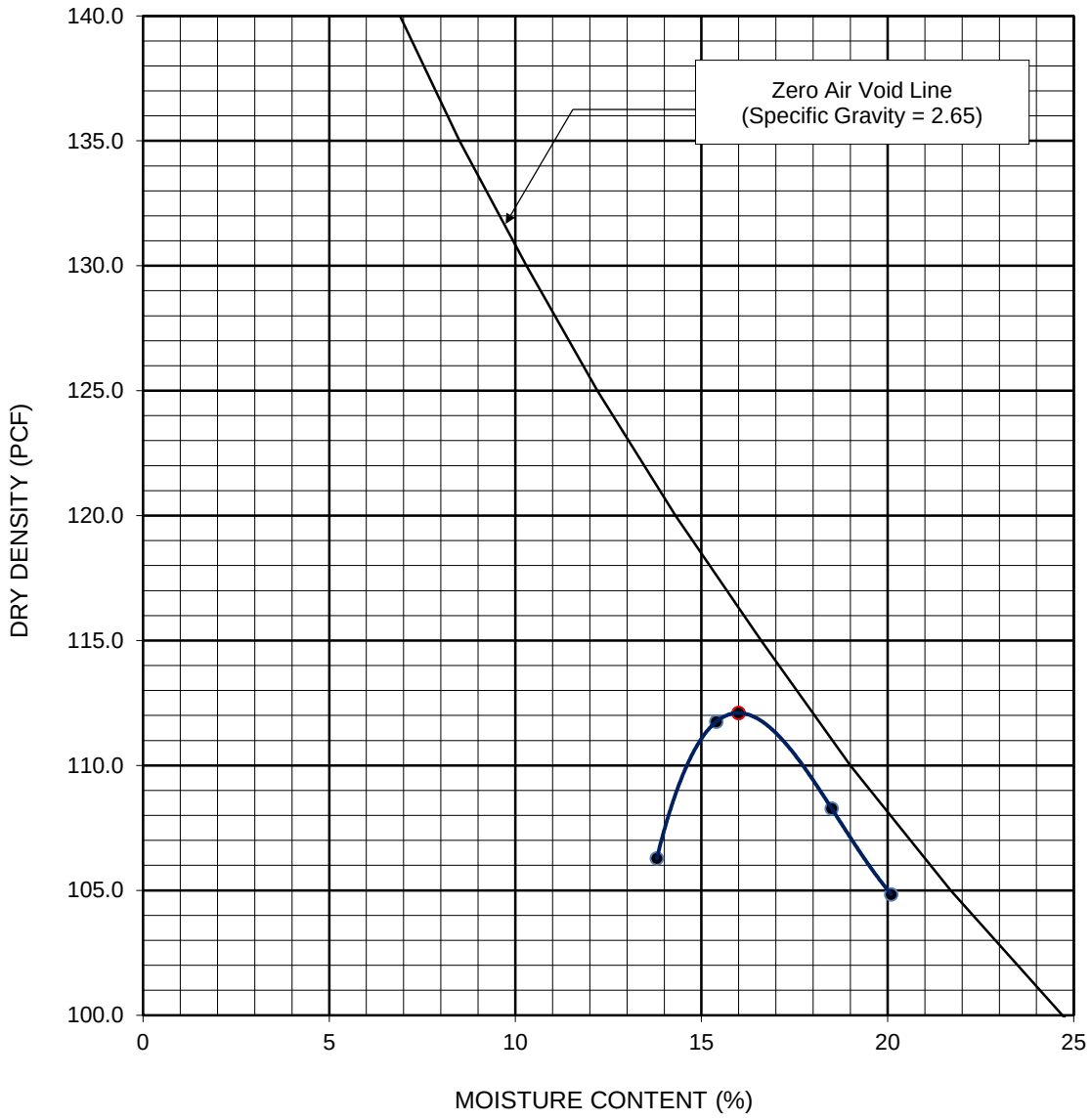
Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C



Sample Location	Depth (ft)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture Content (percent)
B-14	1.0-5.0	CL	112.1	16.0
Dry Density and Moisture Content Values Corrected for Oversize (ASTM D 4718)			114	15

PERFORMED IN GENERAL ACCORDANCE WITH ☐ ASTM D 1557 ☑ ASTM D 698 METHOD ☑ A ☐ B ☐ C

FIGURE B-14

MAXIMUM DENSITY RESULTS

CHANDLER WATER MAIN REPLACEMENT 2022

CHANDLER, ARIZONA

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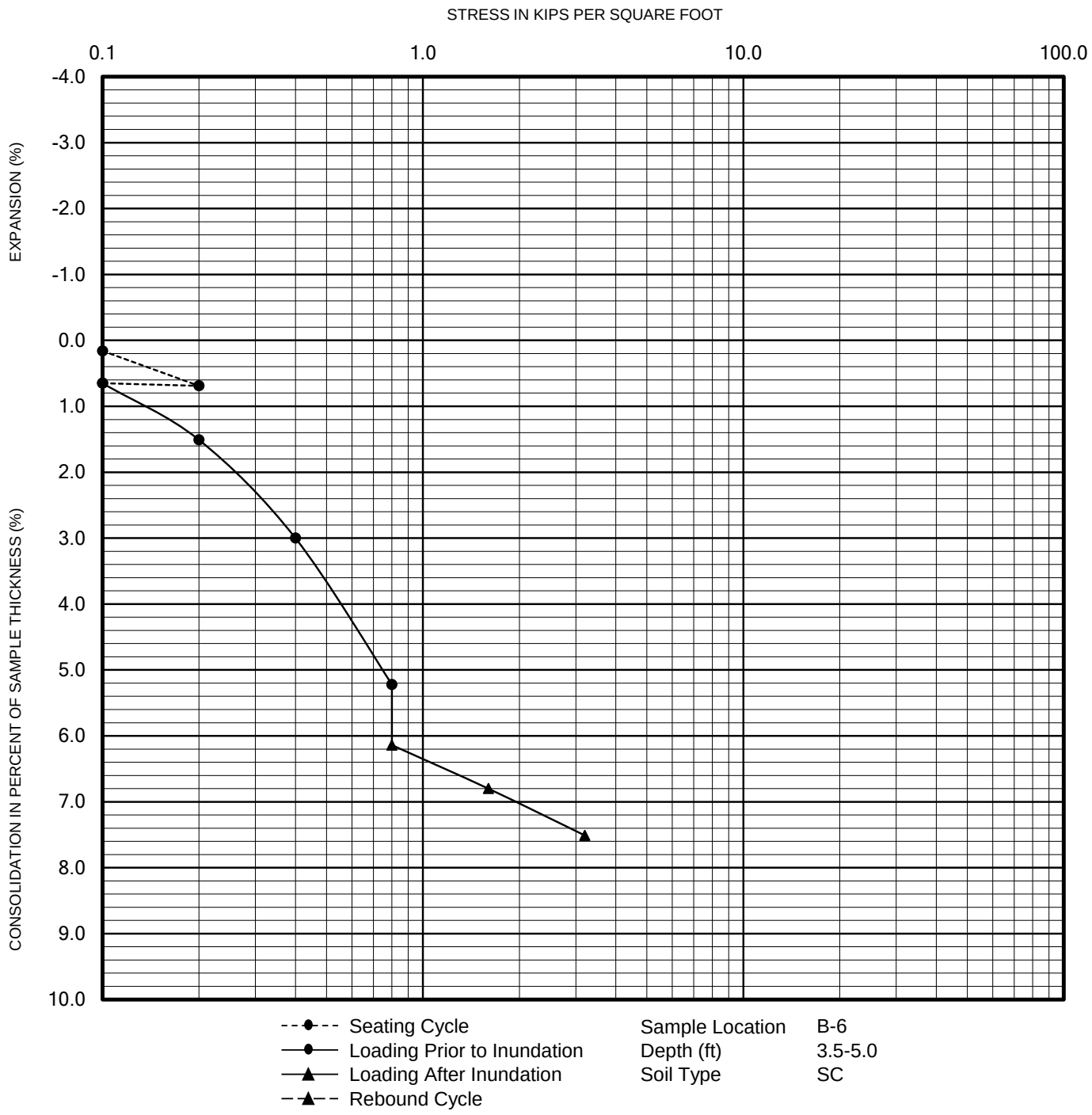
Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

FIGURE B-15

CONSOLIDATION TEST RESULTS

CHANDLER WATER MAIN REPLACEMENT 2022

CHANDLER, ARIZONA

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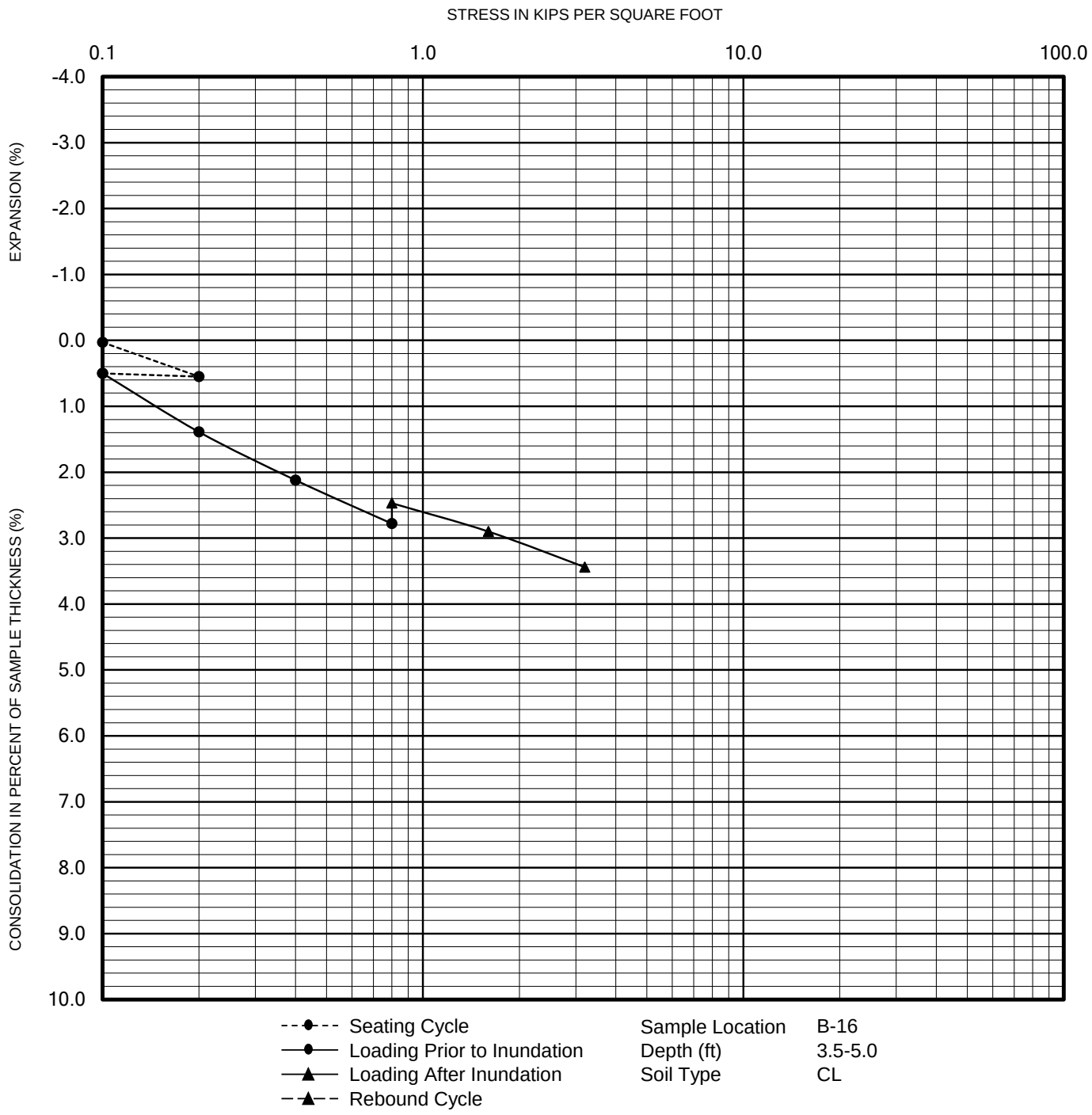
Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

FIGURE B-16

CONSOLIDATION TEST RESULTS

CHANDLER WATER MAIN REPLACEMENT 2022

CHANDLER, ARIZONA

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Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

SAMPLE LOCATION	SAMPLE DEPTH (ft)	pH [1]	RESISTIVITY [1] (Ohm-cm)	SULFATE CONTENT [2] (ppm)	(%)	CHLORIDE CONTENT [3] (ppm)
B-1	1.0-5.0	7.8	2,211	2	0.0002	12
B-6	1.0-5.0	7.7	3,015	4	0.0004	8
B-7	1.0-5.0	7.3	3,015	10	0.0010	16
B-8	1.0-5.0	7.5	2,479	6	0.0006	11
B-9	1.0-5.0	7.6	2,010	4	0.0004	10
B-11	1.0-5.0	7.4	2,613	7	0.0007	13
B-15	1.0-5.0	7.7	2,211	8	0.0008	13
B-17	1.0-5.0	7.3	2,546	11	0.0011	31

[1] PERFORMED IN GENERAL ACCORDANCE WITH ARIZONA TEST METHOD 236c
[2] PERFORMED IN GENERAL ACCORDANCE WITH ARIZONA TEST METHOD 733
[3] PERFORMED IN GENERAL ACCORDANCE WITH ARIZONA TEST METHOD 736

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

SAMPLE LOCATION	SAMPLE DEPTH (ft)	pH [1]	RESISTIVITY [1] (Ohm-cm)	SULFATE CONTENT [2] (ppm)	(%)	CHLORIDE CONTENT [3] (ppm)
B-21	1.0-5.0	6.9	2,144	3	0.0003	14

[1] PERFORMED IN GENERAL ACCORDANCE WITH ARIZONA TEST METHOD 236c
[2] PERFORMED IN GENERAL ACCORDANCE WITH ARIZONA TEST METHOD 733
[3] PERFORMED IN GENERAL ACCORDANCE WITH ARIZONA TEST METHOD 736

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

APPENDIX C

Ninyo & Moore Boring Logs - 2020

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

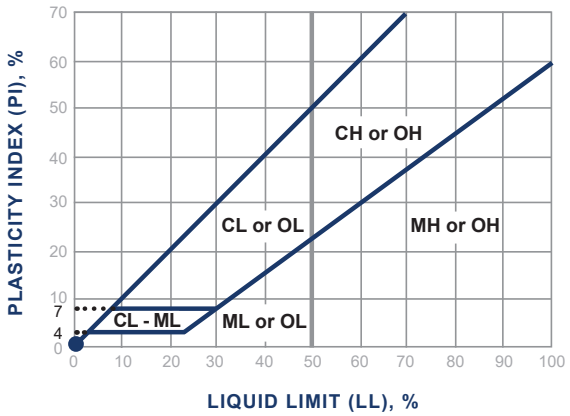
Soil Classification Chart Per ASTM D 2488

Primary Divisions			Secondary Divisions	
			Group Symbol	Group Name
COARSE-GRAINED SOILS more than 50% retained on No. 4 sieve	**GRAVEL** more than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVEL less than 5% fines	GW	well-graded GRAVEL
			GP	poorly graded GRAVEL
		GRAVEL with DUAL CLASSIFICATIONS 5% to 12% fines	GW-GM	well-graded GRAVEL with silt
			GP-GM	poorly graded GRAVEL with silt
			GW-GC	well-graded GRAVEL with clay
			GP-GC	poorly graded GRAVEL with
		GRAVEL with FINES more than 12% fines	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	SAND 50% or more of coarse fraction passes No. 4 sieve	CLEAN SAND less than 5% fines	SW	well-graded SAND
			SP	poorly graded SAND
		SAND with DUAL CLASSIFICATIONS 5% to 12% fines	SW-SM	well-graded SAND with silt
			SP-SM	poorly graded SAND with silt
			SW-SC	well-graded SAND with clay
			SP-SC	poorly graded SAND with clay
		SAND with FINES more than 12% fines	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
FINE-GRAINED SOILS 50% or more passes No. 200 sieve	**SILT and CLAY** liquid limit less than 50%	INORGANIC	CL	lean CLAY
			ML	SILT
			CL-ML	silty CLAY
		ORGANIC	OL (PI > 4)	organic CLAY
			OL (PI < 4)	organic SILT
	SILT and CLAY liquid limit 50% or more	INORGANIC	CH	fat CLAY
			MH	elastic SILT
		ORGANIC	OH (plots on or above "A"-line)	organic CLAY
			OH (plots below "A"-line)	organic SILT
	Highly Organic Soils		PT	Peat

Grain Size

Description		Sieve Size	Grain Size	Approximate Size
Boulders		> 12"	> 12"	Larger than basketball-sized
Cobbles		3 - 12"	3 - 12"	Fist-sized to basketball-sized
Gravel	Coarse	3/4 - 3"	3/4 - 3"	Thumb-sized to fist-sized
	Fine	#4 - 3/4"	0.19 - 0.75"	Pea-sized to thumb-sized
Sand	Coarse	#10 - #4	0.079 - 0.19"	Rock-salt-sized to pea-sized
	Medium	#40 - #10	0.017 - 0.079"	Sugar-sized to rock-salt-sized
	Fine	#200 - #40	0.0029 - 0.017"	Flour-sized to sugar-sized
Fines		Passing #200	< 0.0029"	Flour-sized and smaller

Plasticity Chart



Apparent Density - Coarse-Grained Soil

Apparent Density	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Loose	≤ 4	≤ 8	≤ 3	≤ 5
Loose	5 - 10	9 - 21	4 - 7	6 - 14
Medium Dense	11 - 30	22 - 63	8 - 20	15 - 42
Dense	31 - 50	64 - 105	21 - 33	43 - 70
Very Dense	> 50	> 105	> 33	> 70

Consistency - Fine-Grained Soil

Consis-tency	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Soft	< 2	< 3	< 1	< 2
Soft	2 - 4	3 - 5	1 - 3	2 - 3
Firm	5 - 8	6 - 10	4 - 5	4 - 6
Stiff	9 - 15	11 - 20	6 - 10	7 - 13
Very Stiff	16 - 30	21 - 39	11 - 20	14 - 26
Hard	> 30	> 39	> 20	> 26

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USCS METHOD OF SOIL CLASSIFICATION

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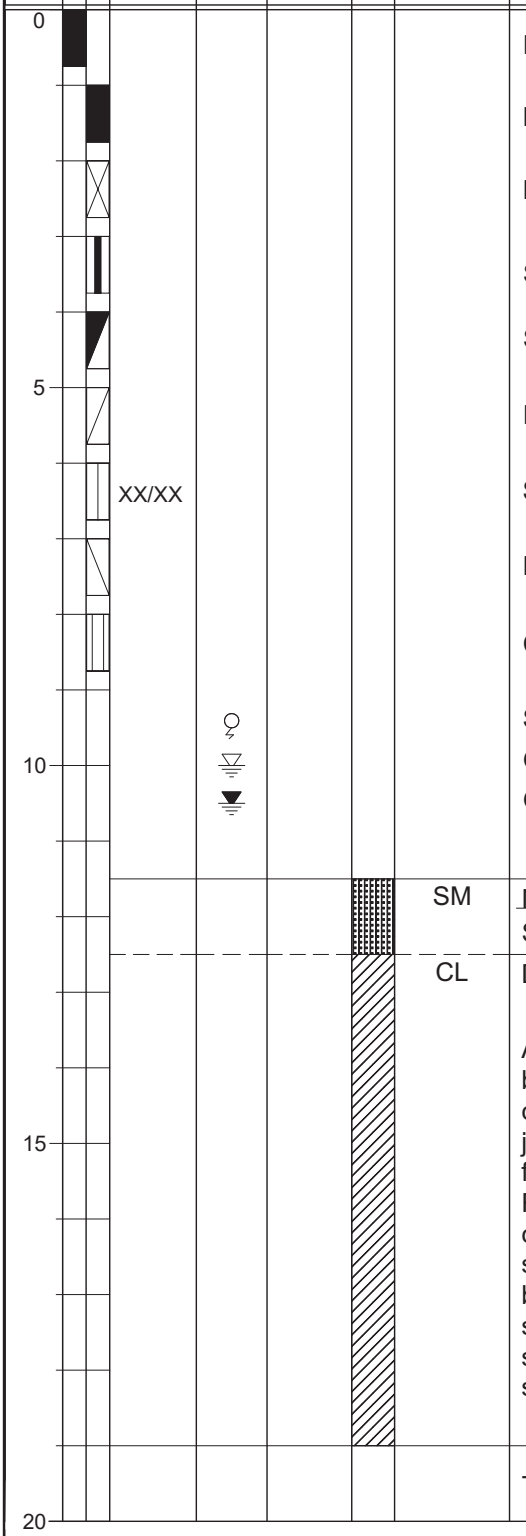
BORING LOG EXPLANATION SHEET



Bulk sample.

Modified split-barrel drive sampler.

No recovery with modified split-barrel drive sampler.

Sample retained by others.

Standard Penetration Test (SPT).

No recovery with a SPT.

Shelby tube sample. Distance pushed in inches/length of sample recovered in inches.

No recovery with Shelby tube sampler.

Continuous Push Sample.

Seepage.

Groundwater encountered during drilling.

Groundwater measured after drilling.

MAJOR MATERIAL TYPE (SOIL):

Solid line denotes unit change.

Dashed line denotes material change.

Attitudes: Strike/Dip
b: Bedding
c: Contact
j: Joint
f: Fracture
F: Fault
cs: Clay Seam
s: Shear
bss: Basal Slide Surface
sf: Shear Fracture
sz: Shear Zone
sbs: Shear Bedding Surface

The total depth line is a solid line that is drawn at the bottom of the boring.

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

DATE DRILLED 3/9/20 BORING NO. B-1

GROUND ELEVATION 1,208' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (Wildcat)

DRIVE WEIGHT 140 lbs. (Automatic Trip Hammer) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY JSR

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 5 inches thick.
							AGGREGATE BASE: Approximately 5 inches thick.
		27	13.4	112.3		SC	ALLUVIUM: Brown, dry, medium dense, clayey SAND; scattered caliche filaments and nodules.
		14					
5		43	14.9	104.7			Dense.
		20					Medium dense.
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 3/9/20 shortly after completion of drilling. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
15							
20							

FIGURE A- 1

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CHANDLER WATER MAIN REPLACEMENT
CHANDLER, ARIZONA

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

DATE DRILLED 3/9/20 BORING NO. B-2

GROUND ELEVATION 1,208' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (Wildcat)

DRIVE WEIGHT 140 lbs. (Automatic Trip Hammer) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY JSR

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 3 inches thick.
							AGGREGATE BASE: Approximately 5 inches thick.
						CL	ALLUVIUM: Brown, dry, very stiff, lean CLAY with sand; trace gravel; scattered caliche nodules.
		19					
		83/11"	11.0	98.3			Hard.
5						SC	Brown, moist, very dense, clayey SAND.
		50					
		50/5"	8.4	95.3			
10							Total Depth = 9.4 feet. Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 3/9/20 shortly after completion of drilling.
15							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
20							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

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DATE DRILLED 3/9/20 BORING NO. B-3

GROUND ELEVATION 1,208' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (Wildcat)

DRIVE WEIGHT 140 lbs. (Automatic Trip Hammer) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY JSR

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 2 1/2 inches thick.
							AGGREGATE BASE: Approximately 5 inches thick.
		23	13.3	104.4		SC	FILL: Brown, dry, medium dense, clayey SAND; scattered caliche nodules.
5		19				SC	ALLUVIUM: Brown, dry, medium dense, clayey SAND; few gravel.
		64	10.3	87.1			Very dense.
10		19					Medium dense; scattered caliche nodules.
							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 3/9/20 shortly after completion of drilling.
15							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
20							

FIGURE A- 3

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CHANDLER WATER MAIN REPLACEMENT
CHANDLER, ARIZONA
606283001 | 4/20

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

DATE DRILLED 3/9/20 BORING NO. B-4

GROUND ELEVATION 1,208' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING CME-75, 8" Diameter Hollow-Stem Auger (Wildcat)

DRIVE WEIGHT 140 lbs. (Automatic Trip Hammer) DROP 30"

SAMPLED BY DM LOGGED BY DM REVIEWED BY JSR

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 6 inches thick.
							AGGREGATE BASE: Approximately 5 inches thick.
		8				SC	FILL: Brown, dry, medium dense, clayey SAND.
		18	10.0	103.7			
5		18				SC	ALLUVIUM: Brown, dry, medium dense, clayey SAND.
		66	11.7	107.4			Dense.
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 3/9/20 shortly after completion of drilling.
15							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
20							

FIGURE A- 4

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CHANDLER WATER MAIN REPLACEMENT
CHANDLER, ARIZONA
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3202 East Harbour Drive | Phoenix, Arizona 85034 | p. 602.243.1600

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APPENDIX B

POTHOLE RESULTS

NOTE: The potholes included in this report that are east of Alma School Road are not applicable to this project.

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

SAFE SITE UTILITY SERVICES, LLC
The Professional Choice

Test Hole Summary Report

Report Prepared for: GHD
Address: Chandler, AZ
Date of Report: 1/8/2024
Description of Project: Chandler WMR 2022
Cust Job #: PO 380-001735
Safe Site Project #: 22-08-3204

Test Hole #	Utility Owner	Utility Type	Quantity	Pipe Size(s)	Material / Structure	Direction	Soil Type	Surface Cut	Northing & Easting		Ground Elevation	Depth to Top of Facility (Feet)	Depth to Bottom of Facility (Feet)	Top Elevation	Bottom Elevation	Pipe OD or Structure Height (inches)	Date Verified	Comments
PH 1	City of Chandler	Water	1	3/4"	Copper	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	841498.38	718379.42	1204.03	3.45	3.51	1200.58	1200.52	0.75	9/25/2023	
PH 1-1	UNKNOWN	Unknown	1	1" cable exiting 2" conduit	PVC	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	841498.35	718378.04	1204.06	1.15	1.35	1202.91	1202.71	2.38	9/25/2023	Cable turns and runs East and West
PH 2	CenturyLink	Comm	2	2"	PVC	NORTH & SOUTH	Native Backfill	None Off-Road	841496.02	718342.44	1204.62	2.11	2.31	1202.51	1202.31	2.38	9/25/2023	
PH 3	City of Chandler	Water	No Utility Found (See Comments)				Native Backfill	None Off-Road	841504.87	718340.45	1204.63		7.60	#VALUE!	1197.03		9/25/2023	Looking for a water main. We located it to the East (PH1) but could not trace it West. We potholed down to 7.6' and slotted 2' on either side of the bluestake but did not find the waterline. We clamped the line directly and could not get a signal from it.
PH 4	City of Chandler	Water	1	6"	ACP	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	841679.18	718434.83	1204.18	3.72	4.33	1200.46	1199.85	7.26	9/25/2023	
PH 5	City of Chandler	Water	1	12"	ACP	EAST & WEST	Native Backfill	None Off-Road	841641.88	718326.07	1204.34	3.99	5.16	1200.35	1199.18	14.03	9/25/2023	
PH 6	City of Chandler	Storm Drain	1	12"	RCP	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	841655.83	718387.30	1204.28	2.07	3.45	1202.21	1200.84	16.50	9/25/2023	
PH 7	City of Chandler	Storm Drain			Concrete Cap or Encasement	NORTH & SOUTH			841329.33	718385.14	1203.64	0.74		1202.90			9/25/2023	Ran into concrete and could not dig any further
PH 8	City of Chandler	Storm Drain	No Utility Found (See Comments)				Native Backfill	Jackhammer & Coldpatch	841007.46	718382.82	1203.38		5.55		1197.83		9/25/2023	Dry hole looking for Storm Drain. Moved to West side of concrete apron to try to get the storm drain but it is to far to tunnel under and get an accurate measurement.
PH 9	City of Chandler	Storm Drain	1		Encased - See Comments	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	841008.44	718386.91	1203.43	0.87	2.52	1202.56	1200.91	19.80	9/25/2023	
PH 10	CenturyLink	Comm	1	1"	Direct Buried Cable	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	841044.19	718377.69	1203.69	2.89	2.99	1200.80	1200.70	1.25	9/25/2023	
PH 11	City of Chandler	Water	1	6"	ACP	NE & SW	Native Backfill	Jackhammer & Coldpatch	841152.64	718358.06	1203.99	3.78	4.39	1200.21	1199.60	7.26	9/25/2023	
PH 12	City of Chandler	Storm Drain	1	18"	RCP	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840967.11	718376.14	1203.64	3.13	5.05	1200.51	1198.60	23.00	9/25/2023	
PH 13	SW Gas	Gas	1	2"	PE	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840852.17	718378.42	1203.79	2.82	3.02	1200.97	1200.77	2.38	9/27/2023	
PH 13-1	SW Gas	Gas	1	2"	PE	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840855.72	718378.23	1203.67	3.05	3.25	1200.62	1200.42	2.38	9/27/2023	Abandoned gas
PH 14	SRP	Electric	1		Encased - See Comments	SE & NW	Native Backfill	Cut & Patch	840674.37	718380.58	1203.89	0.6	2.98	1203.29	1200.91	28.56	9/27/2023	Encasement
PH 15	City of Chandler	Storm Drain	1	30"	RCP	NORTH & SOUTH	Native Backfill	Cut & Patch	840715.74	718372.72	1203.93	4.64	7.72	1199.29	1196.20	37.00	9/27/2023	
PH 16	CenturyLink	Comm	1	2"	PVC	EAST & WEST	Native Backfill	Cut & Patch	840383.15	718382.86	1204.27	2.41	2.61	1201.86	1201.66	2.38	9/27/2023	
PH 16-1	CenturyLink	Comm	1	2"	PVC	EAST & WEST	Native Backfill	Cut & Patch	840385.74	718384.15	1204.20	3.16	3.36	1201.04	1200.84	2.38	9/27/2023	
PH 17	CenturyLink	F/O	3	1.50"	Bundle	EAST & WEST	Native Backfill	Cut & Patch	840374.74	718378.77	1204.25	3.46	3.79	1200.79	1200.46	3.92	9/27/2023	
PH 18	AT&T	Comm	1	2"	PVC	EAST & WEST	Native Backfill	Cut & Patch	840369.19	718380.55	1204.15	5.32	5.52	1198.83	1198.63	2.38	9/27/2023	
PH 19	SW Gas	Gas	1	4"	PVC	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840311.66	718378.81	1204.20	3.61	4.01	1200.59	1200.19	4.80	9/27/2023	

Horizontal and vertical locations of utilities obtained by actual exposure and subsequent measurement of subsurface utilities at a specific point. Diameters shown are estimated visually and may not be exact.

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SAFE SITE UTILITY SERVICES, LLC
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Test Hole Summary Report

Report Prepared for: GHD
Address: Chandler, AZ
Date of Report: 1/8/2024
Description of Project: Chandler WMR 2022
Cust Job #: PO 380-001735
Safe Site Project #: 22-08-3204

Test Hole #	Utility Owner	Utility Type	Quantity	Pipe Size(s)	Material / Structure	Direction	Soil Type	Surface Cut	Northing & Easting		Ground Elevation	Depth to Top of Facility (Feet)	Depth to Bottom of Facility (Feet)	Top Elevation	Bottom Elevation	Pipe OD or Structure Height (inches)	Date Verified	Comments
PH 20	SRP	Electric	3	2"	PVC	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840307.66	718376.53	1204.20	5.34	5.54	1198.86	1198.67	2.38	9/27/2023	
PH 21	SW Gas	Gas	1	2"	PE	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840019.41	718386.07	1203.38	3.22	3.42	1200.16	1199.96	2.38	9/27/2023	
PH 22	Other (See Comments)		No Utility Found (See Comments)				Native Backfill	Jackhammer & Coldpatch	840670.97	718379.76	1203.93		7.16		1196.77		9/27/2023	Dry hole looking for Power/Comm. Map shows 2 electric lines but bluestake marked a comm we cleared down to 7.16' deep and slotted 2 feet each direction. No utility found.
PH 23	SW Gas	Gas	1	1/2"	PE	SE & NW	Native Backfill	Jackhammer & Coldpatch	840188.46	718380.77	1203.80	2.60	2.66	1201.20	1201.14	0.75	9/27/2023	
PH 23-1	UNKNOWN	Unknown	1	6"	Steel	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840188.09	718378.55	1204.00	2.72	3.27	1201.28	1200.72	6.63	9/27/2023	
PH 24	SRP	Electric	No Utility Found (See Comments)				Native Backfill	Jackhammer & Coldpatch	839990.56	718380.08	1203.33		6.72		1196.61		9/27/2023	Cleared Hole looking for Power for the street light. Utility not marked by 811 and we could not recreate what was shown on the map. Cleared down to 6.72' and slotted 2' each direction. No Utility Found
PH 25	SW Gas	Gas	1	3/4"	PE	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	839943.02	720032.72	1207.22	2.41	2.49	1204.81	1204.72	1.00	9/28/2023	
PH 26	SW Gas	Gas	1	1"	PE	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	839457.29	720031.01	1207.99	2.90	3.01	1205.09	1204.98	1.32	9/28/2023	
PH 27	City of Chandler	Storm Drain	1	30"	RCP	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840078.21	719040.97	1205.52	4.40	7.48	1201.12	1198.04	37.00	9/28/2023	
PH 28	SRP	Electric	1	2"	PVC	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	839791.99	719075.35	1205.18	2.35	2.55	1202.83	1202.63	2.38	9/28/2023	
PH 29	CenturyLink	Comm	1	1 1/2"	PVC	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	839793.52	719076.58	1205.21	3.52	3.68	1201.69	1201.53	1.90	9/28/2023	
PH 30	MCI	Comm	1	4"	PVC	NORTH & SOUTH	Native Backfill	None Off-Road	839794.09	719063.99	1205.24	5.04	5.44	1200.20	1199.80	4.80	9/28/2023	
PH 31	City of Chandler	Irrigation	1	18"	RCP	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	839799.22	719693.67	1207.01	.96	2.88	1206.05	1204.13	23.00	9/28/2023	
PH 32	SW Gas	Gas	1	1/2"	PE	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840623.09	718377.88	1204.17	2.19	2.25	1201.98	1201.92	0.75	9/28/2023	
PH 33	Cox	F/O	3	1.5"	PE	EAST & WEST	Native Backfill	None Off-Road	840376.51	718879.38	1204.74	4.32	4.65	1200.42	1200.08	4.00	9/28/2023	
PH 33-1	Cox	F/O	1	2"	PVC	EAST & WEST	Native Backfill	None Off-Road	840372.19	718879.02	1204.92	5.05	5.25	1199.87	1199.68	2.38	9/28/2023	
PH 34	City of Chandler	Storm Drain	1	30"	RCP	EAST & WEST	Screened Backfill	Cut & Patch	841690.91	718874.78	1204.80	1.02	4.10	1203.78	1200.69	37.00	9/29/2023	Unable to accurately verify pipe size because it was right under the subgrade. We could only expose half of the storm drain at 18"
PH 35	CenturyLink	Comm	2	3/4"/ 1.5"	Direct Buried Cable	EAST & WEST	Screened Backfill	Cut & Patch	841694.74	718875.04	1204.94	3.30	4.28	1201.64	1200.65	11.80	9/29/2023	
PH 36	City of Chandler	Water	1	6"	ACP	NORTH & SOUTH	Screened Backfill	Cut & Patch	841719.06	718868.40	1205.07	5.35	5.96	1199.72	1199.11	7.26	9/29/2023	
PH 37	SW Gas	Gas	1	2"	PE	NORTH & SOUTH	Screened Backfill	Cut & Patch	841658.11	718857.15	1204.24	2.65	2.85	1201.59	1201.39	2.38	9/29/2023	
PH 38	City of Chandler	Storm Drain	1	18"	RCP	NORTH & SOUTH	Slurry	Cut & Patch	841657.68	718841.28	1204.79	0.83	2.75	1203.96	1202.04	23.00	9/29/2023	Hit concrete under asphalt. Opened up manhole for storm drain and got pipe size
PH 39	City of Chandler	Water	1	6"	ACP	NORTH & SOUTH	Screened Backfill	Cut & Patch	841013.26	718894.62	1204.89	3.10	3.71	1201.79	1201.18	7.26	9/29/2023	

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Date of Report: 1/8/2024
Description of Project: Chandler WMR 2022
Cust Job #: PO 380-001735
Safe Site Project #: 22-08-3204

Test Hole #	Utility Owner	Utility Type	Quantity	Pipe Size(s)	Material / Structure	Direction	Soil Type	Surface Cut	Northing & Easting		Ground Elevation	Depth to Top of Facility (Feet)	Depth to Bottom of Facility (Feet)	Top Elevation	Bottom Elevation	Pipe OD or Structure Height (inches)	Date Verified	Comments
PH 40	SW Gas	Gas	1	3"	PE	SE & NW	Native Backfill	Jackhammer & Coldpatch	840029.68	717184.41	1201.99	5.69	5.98	1196.30	1196.01	3.50	9/29/2023	
PH 41	SRP	Electric	1	2.5 "	PE	EAST & WEST	Native Backfill	None Off-Road	839264.64	716277.76	1199.86	5.15	5.39	1194.71	1194.47	2.88	9/29/2023	
PH 42	CenturyLink	Comm	1	3/4"	Direct Buried Cable	EAST & WEST	Native Backfill	None Off-Road	839234.73	716292.34	1199.81	2.14	2.22	1197.67	1197.59	1.00	9/29/2023	
PH 43	MCI	Comm	1	2"	HDPE	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	839081.66	719065.27	1207.82	3.66	3.86	1204.16	1203.97	2.38	9/29/2023	
PH 44	SRP	Irrigation	1	24"	RCP	NORTH & SOUTH	Screened Backfill	Cut & Patch	839082.30	719698.85	1208.60	1.84	4.34	1206.76	1204.26	30.00	9/29/2023	
PH 45	City of Chandler	Water	1	8"	Steel	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840305.54	716807.16	1200.42	2.92	3.64	1197.50	1196.78	8.63	9/29/2023	
PH 46	Cox	Comm	1	2"	PVC	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840293.85	716516.94	1199.88	2.59	2.79	1197.29	1197.09	2.38	9/29/2023	
PH 47	SRP	Electric	1	2"- pvc	Encased - See Comments	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840314.64	716514.48	1199.57	3.45	5.11	1196.12	1194.46	19.92	9/29/2023	We were only able to expose one of the conduits in the encasement. Measurements are from top and bottom of encasement
PH 48	AT&T	Comm	2	1 1/2"	PVC	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840341.60	717665.48	1203.18	5.64	5.97	1197.54	1197.21	4.00	10/2/2023	
PH 49	SRP	Electric	1	4"	PVC	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840340.67	717661.48	1203.06	3.72	4.12	1199.34	1198.94	4.80	10/2/2023	
PH 50	SRP	Electric	1	2"	PVC	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840340.45	717654.94	1202.96	2.08	2.28	1200.88	1200.69	2.38	10/2/2023	
PH 51	SRP	Irrigation	1	24"	RCP	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840340.25	717648.86	1202.82	2.11	4.61	1200.71	1198.21	30.00	10/3/2023	
PH 52	Cox	Comm		2-2" pvc/2-1.5" pe	PVC	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840340.26	717643.50	1202.73	7.77	8.20	1194.96	1194.53	5.20	10/2/2023	
PH 53	SRP	Electric	1	2"	PVC	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840340.74	717638.40	1202.69	2.55	2.75	1200.14	1199.95	2.38	10/2/2023	
PH 54	Cox	Comm			Encased - See Comments	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840342.26	717733.88	1202.91	2.94	4.59	1199.97	1198.32	19.80	10/2/2023	
PH 55	City of Chandler	Electric	1	2"	PVC	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840340.92	717736.69	1202.86	2.21	2.41	1200.65	1200.45	2.38	10/2/2023	Traffic signal
PH 56	City of Chandler	Comm	1	2"	PVC	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840341.87	717740.08	1202.85	4.19	4.39	1198.66	1198.46	2.38	10/2/2023	Traffic signal
PH 57	Zayo	Comm	2	1 1/2"	PE	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840340.82	717769.58	1203.02	4.40	4.72	1198.62	1198.30	3.80	10/2/2023	
PH 58	SRP	Irrigation	No Utility Found (See Comments)				Concrete	Jackhammer & Coldpatch	840354.29	717724.99	1202.98		0.59	#VALUE!	1202.39		10/3/2023	Dry hole looking for irrigation. Hit concrete directly below asphalt. There is a patch on the NE corner of the intersection and all the holes we did within that patch had concrete directly below the asphalt
PH 59	City of Chandler	Water	1	12"	ACP	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840366.23	717719.31	1203.16	5.05	6.22	1198.11	1196.94	14.03	10/3/2023	

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Description of Project: Chandler WMR 2022
Cust Job #: PO 380-001735
Safe Site Project #: 22-08-3204

Test Hole #	Utility Owner	Utility Type	Quantity	Pipe Size(s)	Material / Structure	Direction	Soil Type	Surface Cut	Northing & Easting		Ground Elevation	Depth to Top of Facility (Feet)	Depth to Bottom of Facility (Feet)	Top Elevation	Bottom Elevation	Pipe OD or Structure Height (inches)	Date Verified	Comments
PH 60	Zayo	Comm	3	1.5"	PE	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840366.66	717720.77	1203.16	8.36	8.94	1194.80	1194.22	6.90	10/3/2023	
PH 61	CenturyLink	Comm	Duct Bank	4"	PVC	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840365.94	717722.05	1203.08	6.41	7.25	1196.67	1195.83	10.04	10/3/2023	
PH 62	City of Chandler	Water	1	12"	ACP	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840377.59	717719.93	1203.16	5.31	6.48	1197.85	1196.68	14.03	10/3/2023	Waterline 45's down to go below storm drain
PH 63	City of Chandler	Storm Drain	1	30"	RCP	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840383.44	717720.54	1203.10	4.55	7.63	1198.55	1195.47	37.00	10/3/2023	
PH 64	City of Chandler	Water	No Utility Found (See Comments)				Concrete	Jackhammer & Coldpatch	840341.26	717720.77	1203.16		0.70	#VALUE!	1202.46		10/4/2023	Looking for water line and came down on concrete. There is a patch on the NE corner of the intersection and all the holes we did within that patch had concrete directly below the asphalt
PH 65	SW Gas	Gas	No Utility Found (See Comments)				Concrete	Jackhammer & Coldpatch	840341.14	717716.40	1203.32		1.46	#VALUE!	1201.86		10/4/2023	Looking for gas line. There is a patch on the NE corner of the intersection and all the holes we did within that patch had concrete directly below the asphalt
PH 66	Zayo	Comm	2	2"	PE	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840317.89	717671.02	1203.29	6.20	6.60	1197.09	1196.69	4.76		
PH 67	City of Chandler	Water	1	8"	Steel	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840310.76	717671.52	1203.29	4.10	4.82	1199.19	1198.47	8.63	10/4/2023	
PH 68	City of Chandler	Comm	2	2"	PVC	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840302.83	717674.86	1203.41	2.74	2.94	1200.67	1200.47	2.38	10/4/2023	Traffic signal
PH 69	SW Gas	Gas	1	6"	PVC	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840305.28	717674.12	1203.34	6.04	6.62	1197.30	1196.73	6.90	10/4/2023	
PH 70	SW Gas	Gas	1	4"	PE	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840185.77	717126.24	1201.50	2.50	2.90	1199.00	1198.60	4.80	10/4/2023	
PH 71	Zayo	Comm	3	1.5"	PE	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840351.81	715352.20	1196.83	5.01	5.33	1191.82	1191.50	3.80	10/4/2023	
PH 72	City of Chandler	Comm	1	4"	PVC	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840355.82	715351.22	1196.92	4.01	4.41	1192.91	1192.51	4.80	10/4/2023	
PH 73	City of Chandler	Comm	1	4"	PVC	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840342.03	715385.13	1197.18	3.76	4.16	1193.42	1193.02	4.80	10/5/2023	
PH 74	City of Chandler	Storm Drain	1	24"	RCP	NE & SW	Native Backfill	Jackhammer & Coldpatch	840340.80	715232.57	1196.75	2.52	5.02	1194.23	1191.73	30.00	10/5/2023	
PH 75	CenturyLink	Comm	1	1/5"	Direct Buried Cable	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840341.96	715196.29	1196.61	2.05	2.09	1194.56	1194.51	0.50	10/5/2023	
PH 76	SRP	Electric	1	3"	PVC	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840342.82	715187.33	1196.58	2.56	2.85	1194.02	1193.72	3.50	10/5/2023	
PH 77	SW Gas	Gas	1	4"	PE	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840342.04	715089.27	1197.34	3.25	3.65	1194.09	1193.69	4.80	10/5/2023	
PH 78	SRP	Electric	Duct Bank	3"	PE	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840346.58	716371.88	1199.63	4.54	5.15	1195.09	1194.49	7.30	10/5/2023	
PH 79	SW Gas	Gas	1	2"	PE	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840161.08	716805.28	1200.61	2.23	2.43	1198.38	1198.18	2.38	10/5/2023	
PH 80	SRP	Electric	1	1/2"	Direct Buried Cable	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840301.40	716806.59	1200.40	2.86	2.90	1197.54	1197.50	0.50	10/5/2023	
PH 81	City of Chandler	Storm Drain	1	30"	RCP	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840345.61	718373.53	1204.31	5.46	8.54	1198.85	1195.76	37.00	10/6/2023	

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PH 82	CenturyLink	Comm	1	1.5"	Direct Buried Cable	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840346.44	718340.37	1204.17	3.01	3.17	1201.16	1201.00	1.90	10/6/2023	
PH 83	Cox	Comm	1	2"	PVC	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840346.41	718333.96	1204.16	1.91	2.11	1202.25	1202.05	2.38	10/6/2023	
PH 84	City of Chandler	Storm Drain	1	15"	RCP	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840346.34	718319.80	1204.11	3.54	5.19	1200.57	1198.93	19.75	10/6/2023	
PH 85	Cox	Comm	Duct Bank	2"	PVC	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840016.56	717740.02	1203.10	3.53	4.08	1199.57	1199.02	6.62	10/6/2023	
PH 86	City of Chandler	Electric	1	2"	PVC	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840015.80	717737.25	1203.08	2.25	2.45	1200.83	1200.63	2.38	10/6/2023	
PH 87	City of Chandler	Comm	1	3"	PVC	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840015.69	717735.31	1203.06	2.35	2.64	1200.71	1200.42	3.50	10/6/2023	T/S fiber
PH 88	CenturyLink	Comm	6	4"	PVC	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840014.90	717729.62	1202.98	7.15	7.97	1195.83	1195.02	9.82	10/6/2023	
PH 89	SRP	Electric			Encased - See Comments	SE & NW	Native Backfill	Jackhammer & Coldpatch	840349.48	716637.71	1200.05	3.58	4.11	1196.47	1195.94	6.32	10/9/2023	Concrete cap or encasement
PH 90	SW Gas	Gas	1	2"	PE	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840348.23	716693.23	1200.21	3.16	3.36	1197.05	1196.85	2.38	10/9/2023	
PH 91	City of Chandler	Storm Drain	1	48"	RCP	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840328.14	716804.92	1200.62	7.47	12.43	1193.15	1188.19	59.50	10/9/2023	
PH 92	City of Chandler	Storm Drain	1	48"	RCP	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840330.71	717125.10	1201.55	7.98	12.94	1193.57	1188.61	59.50	10/9/2023	
PH 93	CenturyLink	Comm	1	1/2"	Direct Buried Cable	EAST & WEST	Native Backfill	None Off-Road	840029.49	717933.64	1203.57	3.72	3.76	1199.85	1199.81	0.50	10/9/2023	
PH 94	SRP	Electric	No Utility Found (See Comments)			EAST & WEST	Slurry	Jackhammer & Coldpatch	840313.36	716111.72	1198.45		0.56		1197.89		10/9/2023	Dry hole looking for electric. Ran into concrete/ slurry unable to dig through. E/M depth is 4' 5"
PH 95	SRP	Electric	1	2.5"	PE	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840345.20	716120.91	1198.69	3.79	4.03	1194.90	1194.66	2.88	10/9/2023	
PH 96	SW Gas	Gas	1	2"	PE	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840349.98	716286.04	1198.96	3.83	4.03	1195.13	1194.93	2.38	10/10/2023	
PH 97	SW Gas	Gas	1	2"	PE	NORTH & SOUTH	Slurry	Jackhammer & Coldpatch	840347.24	716309.84	1199.13	3.11	3.31	1196.02	1195.82	2.38	10/10/2023	Looking for electric. Found unmarked gas line. Tried to locate the electric and kept bleeding off on all the different utilities. Unable to find electric.
PH 98	City of Chandler	Storm Drain	1	48"	RCP	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840326.98	716516.75	1199.81	7.98	12.94	1191.83	1186.87	59.50	10/10/2023	
PH 99	City of Chandler	Storm Drain	1	48"	RCP	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840324.64	715630.55	1197.97	9.10	14.06	1188.87	1183.91	59.50	10/10/2023	
PH 100	City of Chandler	Storm Drain	1	48"	RCP	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840325.64	716113.89	1198.90	8.61	13.57	1190.29	1185.33	59.50	10/10/2023	
PH 101	City of Chandler	Sewer	1	4"	VCP	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840345.38	716164.54	1198.76	4.48	4.90	1194.28	1193.86	5.00	10/10/2023	
PH 102	City of Chandler	Storm Drain	1	18"	RCP	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840347.28	718789.30	1204.94	3.81	5.73	1201.13	1199.21	23.00	10/11/2023	
PH 103	SW Gas	Gas	1	2"	Steel	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840348.21	719017.25	1205.20	3.38	3.58	1201.82	1201.63	2.38	10/11/2023	

Horizontal and vertical locations of utilities obtained by actual exposure and subsequent measurement of subsurface utilities at a specific point. Diameters shown are estimated visually and may not be exact.

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SAFE SITE UTILITY SERVICES, LLC
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Test Hole Summary Report

Report Prepared for: GHD
Address: Chandler, AZ
Date of Report: 1/8/2024
Description of Project: Chandler WMR 2022
Cust Job #: PO 380-001735
Safe Site Project #: 22-08-3204

Test Hole #	Utility Owner	Utility Type	Quantity	Pipe Size(s)	Material / Structure	Direction	Soil Type	Surface Cut	Northing & Easting		Ground Elevation	Depth to Top of Facility (Feet)	Depth to Bottom of Facility (Feet)	Top Elevation	Bottom Elevation	Pipe OD or Structure Height (inches)	Date Verified	Comments
PH 104	Zayo	Comm	2	2"	PE	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840349.63	719055.75	1205.32	3.38	3.58	1201.94	1201.74	2.38	10/11/2023	
PH 105	City of Chandler	Storm Drain	1	18"	RCP	NORTH & SOUTH	Native Backfill		840349.49	719141.10	1205.30	3.40	5.32	1201.90	1199.98	23.00	10/11/2023	
PH 106	City of Chandler	Storm Drain	1	18"	RCP	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840353.46	719363.49	1205.42	3.02	4.94	1202.40	1200.48	23.00	10/11/2023	
PH 107	City of Chandler	Storm Drain	1	18"	RCP	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840352.22	719451.30	1205.69	5.97	7.89	1199.72	1197.80	23.00	10/11/2023	
PH 108	City of Chandler	Storm Drain	1	18"	RCP	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840353.31	719661.60	1206.00	4.00	5.92	1202.00	1200.09	23.00	10/11/2023	
PH 109	SW Gas	Gas	1	2"	Steel	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840356.19	720020.12	1206.72	2.92	3.12	1203.80	1203.60	2.38	10/11/2023	
PH 110	City of Chandler	Storm Drain	1	48"	RCP	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840351.41	720028.63	1206.74	5.50	10.46	1201.24	1196.28	59.50	10/11/2023	
PH 111	CenturyLink	Comm	1	1.5"	Direct Buried Cable	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840357.27	720183.23	1206.97	1.93	2.06	1205.04	1204.92	1.50	10/11/2023	
PH 112	City of Chandler	Water	1	6"	DIP	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840357.41	720199.83	1207.03	3.35	3.93	1203.68	1203.10	6.90	10/11/2023	
PH 113	City of Chandler	Water	1	8"	DIP	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840362.27	720392.01	1207.61	2.84	3.59	1204.77	1204.01	9.05	10/11/2023	Exposed at Tee
PH 114	City of Chandler	Storm Drain	1	18"	RCP	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840358.91	720348.58	1207.36	4.61	6.53	1202.75	1200.84	23.00	10/11/2023	
PH 115	Zayo	Comm	2	1-4"/1-2"pe	PVC	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840033.05	717664.63	1202.80	3.14	3.69	1199.66	1199.11	6.62	10/11/2023	
PH 116	SRP	Irrigation	1	24"	RCP	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840032.88	717647.98	1202.74	1.68	4.18	1201.06	1198.56	30.00	10/11/2023	
PH 117	SW Gas	Gas	1	3"	PE	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840031.04	717646.28	1202.73	3.45	3.74	1199.28	1198.99	3.50	10/12/2023	
PH 118	City of Chandler	Water	1	8"	Steel	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840030.21	717640.63	1202.67	3.61	4.33	1199.06	1198.35	8.63	10/12/2023	
PH 119	AT&T	Comm	3	1.5"	PE	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840031.85	717660.18	1202.84	4.16	4.48	1198.68	1198.36	3.80	10/12/2023	
PH 120	CenturyLink	Comm	1	1/2"	Direct Buried Cable	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840032.93	717667.40	1202.72	2.22	2.26	1200.50	1200.46	0.50	10/12/2023	
PH 121	SRP	Electric			Encased - See Comments	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840032.56	717654.47	1202.85	4.13	4.80	1198.72	1198.05	8.00	10/12/2023	Joint trench with Cox Comm
PH 122	SW Gas	Gas	1	2"	PE	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840337.02	720028.36	1206.31	2.92	3.61	1203.39	1202.70	8.25	10/12/2023	
PH 123	SRP	Electric	5	2"	PVC	SE & NW	Native Backfill	None Off-Road	839835.46	717746.38	1202.93	5.28	5.48	1197.65	1197.45	2.38	10/12/2023	
PH 124	Cox	Comm	1	1"	PVC	NE & SW	Native Backfill	None Off-Road	839838.90	717748.38	1202.95	0.58	0.69	1202.37	1202.26	1.32	10/19/2023	
PH 125	Cox	Comm	3	2-2" 1- 1/2"	PVC	NORTH & SOUTH	Native Backfill	None Off-Road	839835.59	717742.07	1203.25	2.85	3.37	1200.40	1199.88	6.20	10/19/2023	
PH 126	Cox	Comm	1	4"	PVC	NORTH & SOUTH	Native Backfill	None Off-Road	839835.17	717740.90	1203.42	3.02	3.42	1200.40	1200.00	4.80	10/19/2023	

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Description of Project: Chandler WMR 2022
Cust Job #: PO 380-001735
Safe Site Project #: 22-08-3204

Test Hole #	Utility Owner	Utility Type	Quantity	Pipe Size(s)	Material / Structure	Direction	Soil Type	Surface Cut	Northing & Easting		Ground Elevation	Depth to Top of Facility (Feet)	Depth to Bottom of Facility (Feet)	Top Elevation	Bottom Elevation	Pipe OD or Structure Height (inches)	Date Verified	Comments
PH 127	SRP	Electric	1	3"	PVC	NORTH & SOUTH	Native Backfill	None Off-Road	839835.17	717740.17	1203.39	4.40	4.69	1198.99	1198.69	3.50	10/19/2023	
PH 128	Cox	Comm	2	4"	PVC	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	839835.23	717737.53	1203.33	5.63	6.03	1197.70	1197.30	4.80	10/19/2023	Had to undercut sidewalk
PH 129	City of Chandler	Water	1	6"	ACP	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	839834.22	717733.36	1203.02	4.46	5.07	1198.56	1197.95	7.26	10/19/2023	
PH 130	SW Gas	Gas High Pressure	1	8"	Steel	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	839834.77	717728.53	1203.03	3.32	4.04	1199.71	1198.99	8.63	10/19/2023	
PH 131	City of Chandler	Water	1	6"	ACP	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	839836.12	717721.53	1203.23	4.95	5.56	1198.28	1197.67	7.26	10/19/2023	Exposed at T joint. Covered in concrete
PH 132	City of Chandler	Water	1	12"	ACP	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840016.35	717720.95	1203.14	4.65	5.82	1198.49	1197.32	14.03	10/19/2023	
PH 133	SW Gas	Gas High Pressure	1	8"	Steel	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840016.38	717716.27	1203.33	4.80	5.52	1198.53	1197.81	8.63	10/19/2023	
PH 134	City of Chandler	Storm Drain	1	12"	RCP				839962.98	717673.47	1202.95	3.97	5.35	1198.98	1197.60	16.50	10/19/2023	
PH 135	City of Chandler	Sewer	1	6"	VCP	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	839876.36	717674.17	1203.07	11.46	12.13	1191.61	1190.94	8.00	10/19/2023	
PH 136	City of Chandler	Water	1	12"	DIP	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	839848.26	717676.19	1203.13	4.82	5.92	1198.31	1197.21	13.20	10/20/2023	
PH 137	City of Chandler	Water	1		Encased - See Comments	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	839827.21	717676.14	1203.10	1.57	3.74	1201.53	1199.36	26.04	10/20/2023	Possible thrust block on stub. Unable to get clear visual of bottom depth of encasement due to another line being in the way
PH 137-1	Unknown	Unknown	1	1 1/2"	Direct Buried Cable	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	839826.00	717674.04	1203.06	3.78	3.91	1199.28	1199.16	1.50	10/20/2023	Looking for waterline, came across unknown
PH 138	City of Chandler	Sewer	1	4"	VCP	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840344.43	715609.28	1197.50	5.44	5.87	1192.06	1191.63	5.10	12/29/2023	
PH 139	City of Chandler	Sewer	1	8"	VCP	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840171.01	716510.61	1199.69	4.28	5.11	1195.41	1194.58	10.00	12/29/2023	
PH 140	City of Chandler	Sewer	1	6"	VCP	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840016.05	717806.53	1203.28	5.57	6.24	1197.71	1197.04	8.00	12/29/2023	
PH 141	City of Chandler	Sewer	1	4"	VCP	NORTH & SOUTH	Native Backfill	Jackhammer & Coldpatch	840019.02	717924.13	1203.27	6.04	6.47	1197.23	1196.81	5.10	12/29/2023	
PH 142	City of Chandler	Sewer	1	4"	VCP	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	841332.96	718888.40	1204.70	5.45	5.88	1199.25	1198.83	5.10	12/29/2023	
PH 143	City of Chandler	Sewer	1	4"	VCP	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840497.75	720001.80	1206.93	4.76	5.19	1202.17	1201.74	5.10	12/29/2023	
PH 144	SW Gas	Gas	1	3/4"	Steel	EAST & WEST	Native Backfill	Jackhammer & Coldpatch	840450.25	720002.25	1206.89	2.13	2.19	1204.76	1204.70	0.75	12/29/2023	

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Cust Job #: PO 380-001735
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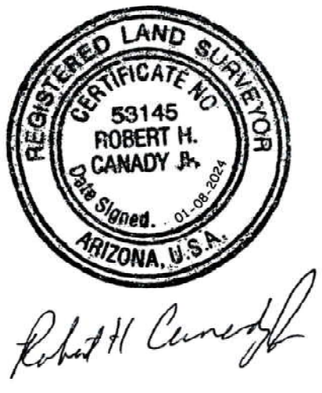
Test Hole #	Utility Owner	Utility Type	Quantity	Pipe Size(s)	Material / Structure	Direction	Soil Type	Surface Cut	Northing & Easting	Ground Elevation	Depth to Top of Facility (Feet)	Depth to Bottom of Facility (Feet)	Top Elevation	Bottom Elevation	Pipe OD or Structure Height (inches)	Date Verified	Comments

Horizontal Control as provided by Client				
PT	***NORTHING***	***EASTING***	***ELEVATION***	***DESCRIPTION***
305	840342.72	718370.55	1204.25	BCFL
300	840327.17	715059.04	1197.75	BCFL
312	840357.53	720390.97	1206.86	BCHH
333	841664.24	718363.99	1203.54	BCHH
343	839036.20	720401.77	1210.72	BCFL
318	839009.09	716280.47	1201.41	BCFL

Vertical Control as provided by Client				
PT	***NORTHING***	***EASTING***	***ELEVATION***	***DESCRIPTION***
305	840342.72	718370.55	1204.25	BCFL

I HEREBY CERTIFY THAT THE MEASUREMENTS AS SHOWN HEREIN WERE MADE UNDER MY DIRECT SUPERVISION OR AS NOTED AND ARE CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.



MANHOLES	NORTHING	EASTING	RIM ELEVATION	RIM-INVERT MEASUREMENT	INVERT ELEVATION	DIRECTION	NOTES
MH01	839789.61	719068.42	1205.04	4.40	1200.64	NORTH & SOUTH	Storm Drain. 4" PVC
MH02	839962.82	717705.80	1203.48	6.58	1196.90	NORTH & SOUTH	City of Chandler. Sewer.
IRR01	840372.76	717653.63	1205.12	5.62	1199.50	NORTH & SOUTH	City of Chandler. Irrigation. RCP.
IRR01	840369.24	717651.47	1205.00	6.75	1198.25	NORTH & SOUTH	City of Chandler. Irrigation. RCP.
IRR01	840371.87	717650.77	1205.15	7.37	1197.78	EAST & WEST	City of Chandler. Irrigation. RCP.
MH03	840485.80	717680.01	1203.45	11.32	1192.13	NORTH & SOUTH	City of Chandler. Sewer. VCP.
MH03	840489.11	717680.19	1203.43	11.24	1192.19	NORTH & SOUTH	City of Chandler. Sewer. VCP.
MH04	840350.58	717687.44	1203.71	11.67	1192.04	NORTH & SOUTH	City of Chandler. Sewer. VCP.
MH04	840346.33	717687.02	1203.71	11.95	1191.76	NORTH & SOUTH	City of Chandler. Sewer. VCP.
MH04	840347.43	717688.92	1203.73	11.74	1191.99	EAST & WEST	City of Chandler. Sewer. VCP.
MH05	840193.85	717687.55	1203.64	11.96	1191.68	NORTH & SOUTH	City of Chandler. Sewer. VCP.
MH05	840192.22	717685.87	1203.55	11.61	1191.94	EAST & WEST	City of Chandler. Sewer. VCP.
MH05	840190.27	717687.42	1203.58	11.86	1191.72	NORTH & SOUTH	City of Chandler. Sewer. VCP.
MH06	840298.73	717704.41	1203.50	7.50	1196.00		City of Chandler. Storm Drain. RCP.
MH06	840300.11	717706.11	1203.58	7.02	1196.56		City of Chandler. Storm Drain. RCP.
MH06	840302.68	717704.80	1203.61	7.62	1195.99	NORTH & SOUTH	City of Chandler. Storm Drain. RCP.
MH07	840332.02	717704.22	1203.64	9.58	1194.06	EAST & WEST	City of Chandler. Storm Drain. RCP.
MH07	840329.19	717707.16	1203.55	7.96	1195.59	NORTH & SOUTH	City of Chandler. Storm Drain. RCP.
MH07	840332.30	717708.63	1203.57	9.38	1194.19	EAST & WEST	City of Chandler. Storm Drain. RCP.
MH08	840380.42	717711.47	1203.52	7.62	1195.90	NORTH & SOUTH	City of Chandler. Storm Drain. RCP.
MH08	840384.37	717711.86	1203.45	7.44	1196.01	NORTH & SOUTH	City of Chandler. Storm Drain. RCP.
MH08	840383.24	717713.62	1203.35	7.67	1195.68	EAST & WEST	City of Chandler. Storm Drain. RCP.
MH09	840331.30	717213.49	1201.70	12.28	1189.42	EAST & WEST	City of Chandler. Storm Drain. RCP.
MH09	840331.12	717217.63	1201.73	12.39	1189.34	EAST & WEST	City of Chandler. Storm Drain. RCP.
MH10	840351.15	718204.43	1203.62	10.93	1192.69	EAST & WEST	City of Chandler. Sewer. VCP.
MH10	840351.22	718200.89	1203.60	10.90	1192.70	EAST & WEST	City of Chandler. Sewer. VCP.

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Description of Project: Chandler WMR 2022

Cust Job #: PO 380-001735

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									Water Vault Measurements	840324.59	719395.03	1205.97	3.27	1202.70	EAST		City of Chandler. Water. 6" DIP.	
									Water Vault Measurements	840324.59	719395.03	1205.97	3.50	1202.47	WEST			
									M.H Invert 5 Sewer (North)	840171.47	716527.00	1199.71	5.06	1194.65	NORTH & SOUTH		City of Chandler. Sewer. VCP.	
									M.H Invert 5-1 Sewer(South)	840171.47	716527.00	1199.71	4.96	1194.75	NORTH & SOUTH		City of Chandler. Sewer. VCP.	
									M.H Invert 6	839247.81	716292.97	1200.10	3.24	1196.86	NORTH & SOUTH		City of Chandler. Sewer. VCP.	

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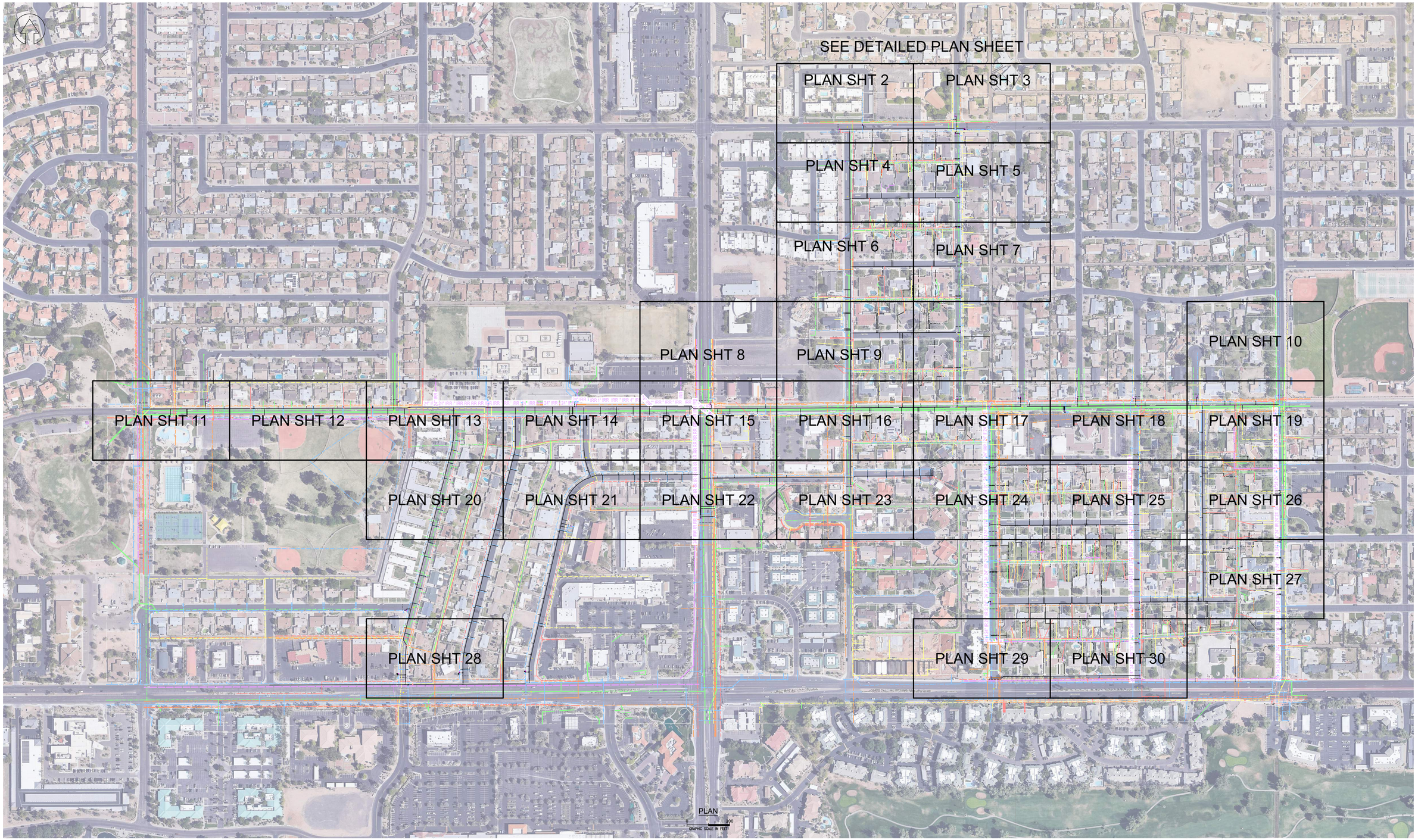

NOTES:

ALL UTILITY LOCATIONS SHOWN ON THIS MAP ARE QUALITY LEVEL B UNLESS NOTED WISE. UTILITY LOCATION QUALITY DESIGNATIONS ARE AS FOLLOWS:

- QUALITY LEVEL A (QL-A) - PRECISE LOCATION CONFIRMED BY EXPOSING THE UTILITY (I.E. POTHOLING).
- QUALITY LEVEL B (QL-B) - APPROXIMATE HORIZONTAL LOCATION DETERMINED USING SURFACE GEOPHYSICAL LOCATING TECHNIQUES (I.E. ELECTROMAGNETIC LOCATING EQUIPMENT).
- QUALITY LEVEL C (QL-C) - LOCATION ESTIMATED THROUGH USE OF UTILITY RECORD INFORMATION AND VISIBLE ABOVE-GROUND SIGNS. POTHOLING IS RECOMMENDED TO DETERMINE EXACT LOCATION.

THIS MAP IS PROVIDED FOR INFORMATION PURPOSES ONLY. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES PRIOR TO COMMENCING SITE WORK. SAFE SITE DISCLAIMS ALL LIABILITIES FOR DAMAGE CAUSED BY THE EXECUTION OF SITE WORK.

LEGEND

- COMM — COMMUNICATION
- OT — OVERHEAD TELEPHONE
- T — UNDERGROUND TELEPHONE
- TV — UNDERGROUND CABLE TV
- FOT — FIBER OPTIC TELEPHONE
- FOTV — FIBER OPTIC TV
- SPL — SPECIAL SYSTEM
- S — SANITARY SEWER
- SD — STORM SEWER
- IR — IRRIGATION
- IC — IRRIGATION CONTROL
- OP — OVERHEAD POWER
- P — UNDERGROUND POWER
- GND — GROUND
- GPR — UTILITY LOCATED BY GPR
- UNK — UNKNOWN UTILITY
- MT — EMPTY CONDUIT
- G — GAS
- W — WATER
- CW — CHILLED WATER
- DW — DOMESTIC WATER
- FW — FIRE WATER
- POTHOLE
- PROPOSED POTHOLE
- JUNCTION BOX
- METER
- PEDESTAL
- MANHOLE
- HANDHOLE
- VAULT
- VALVE
- END OF MAIN
- RISER
- STORM DRAIN
- CLEANOUT
- POLE
- TRANSFORMER
- SWITCH
- LIGHT
- RECEPTACLE
- HYDRANT
- FIRE DEPT CONNECTION

EM NOTE:
EM DEPTHS ARE DERIVED ELECTROMAGNETICALLY AND ARE APPROXIMATE.
EM DEPTHS TO BE FIELD VERIFIED BEFORE CONSTRUCTION.

EM - ELECTROMAGNETIC DEPTH (FT)
DOC - POTHOLE DEPTH OF COVER (FT)
MOC - MATERIAL OF CONSTRUCTION
EIC - ENCASED IN CONCRETE
X - POTHOLE SIZE (IN)

SAFE SITE UTILITY SERVICES, LLC
PHOENIX, AZ (602)606-8882

CHANDLER WMR 2022

DWN CDC | CHK JNS
PROJECT NO 22-08-3204
FILENAME

REVISION 6
UTILITY LOCATION PLAN

SCALE 1" = 200' | DATE 1-8-2024 | SHEET 1 OF 30

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LEGEND

COMM COMMUNICATION	IR IRRIGATION	W WATER	MANHOLE	POLE
OT OVERHEAD TELEPHONE	IC IRRIGATION CONTROL	CW CHILLED WATER	HANDHOLE	TRANSFORMER
T UNDERGROUND TELEPHONE	OP OVERHEAD POWER	DW DOMESTIC WATER	VAULT	SWITCH
TV UNDERGROUND CABLE TV	P UNDERGROUND POWER	FW FIRE WATER	VALVE	LIGHT
FOT FIBER OPTIC TELEPHONE	GND GROUND	POTHOLE	END OF MAIN	RECEPTACLE
FOTV FIBER OPTIC TV	GPR UTILITY LOCATED BY GPR	PROPOSED POTHOLE	RISER	HYDRANT
SPL SPECIAL SYSTEM	UNK UNKNOWN UTILITY	JUNCTION BOX	STORM DRAIN	FIRE DEPT CONNECTION
S SANITARY SEWER	MT EMPTY CONDUIT	METER	CLEANOUT	
SD STORM SEWER	G GAS	PEDESTAL		

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MOC - MATERIAL OF CONSTRUCTION
EIC - ENCASED IN CONCRETE
X - POTHOLE SIZE (IN)

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PHOENIX, AZ (602)606-8882

CHANDLER WMR 2022

DWN CDC | CHK JNS
PROJECT NO. 22-08-3204
FILENAME

REVISION 6
UTILITY LOCATION PLAN

SCALE 1" = 20' | DATE 1-8-2024 | SHEET 2 OF 30

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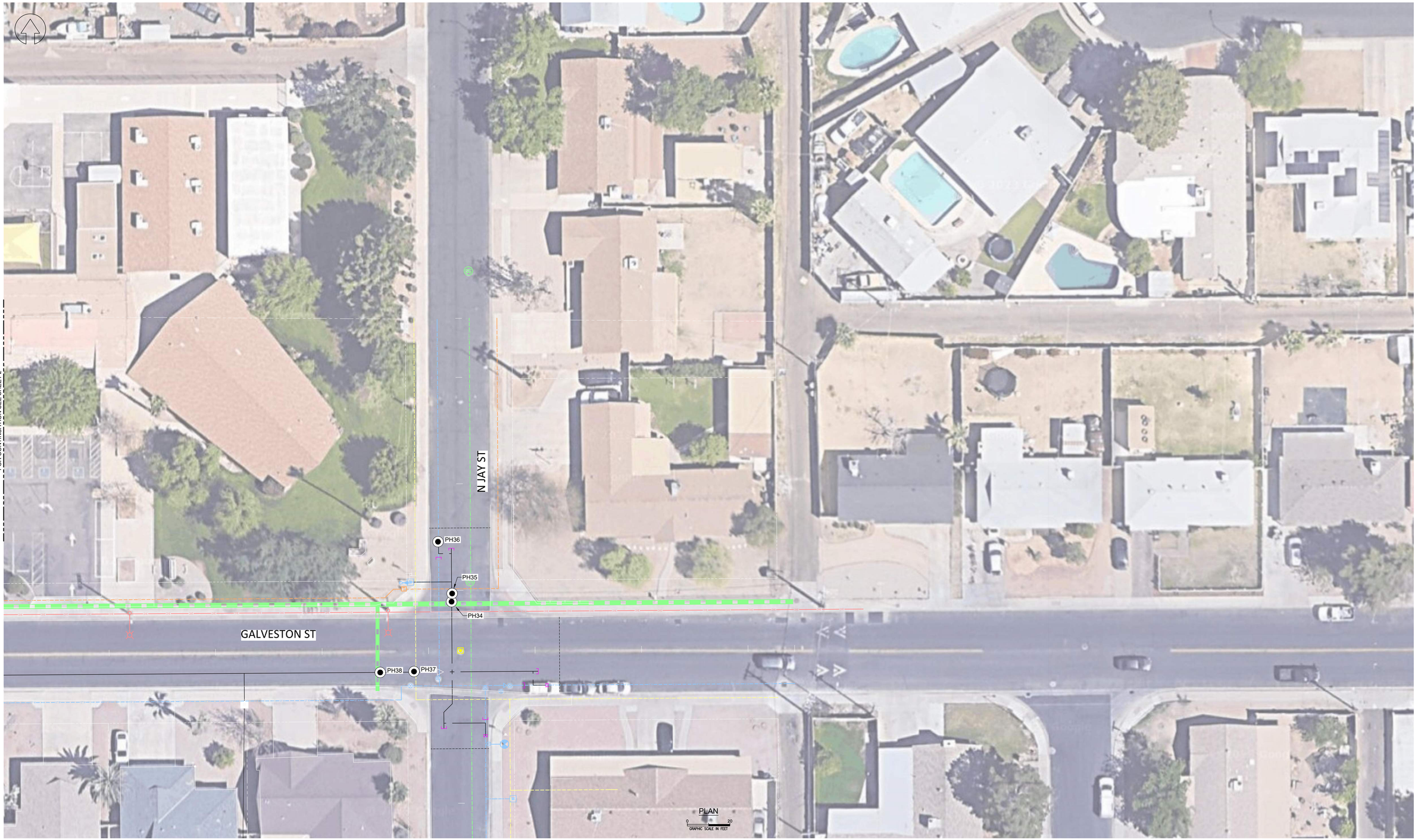

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COMM	COMMUNICATION	IR	IRRIGATION	W	WATER	MANHOLE	POLE
OT	OVERHEAD TELEPHONE	IC	IRRIGATION CONTROL	CW	CHILLED WATER	HANDHOLE	TRANSFORMER
T	UNDERGROUND TELEPHONE	OP	OVERHEAD POWER	DW	DOMESTIC WATER	VAULT	SWITCH
TV	UNDERGROUND CABLE TV	P	UNDERGROUND POWER	FW	FIRE WATER	VALVE	LIGHT
FOT	FIBER OPTIC TELEPHONE	GND	GROUND		POTHOLE	END OF MAIN	RECEPTACLE
FOTV	FIBER OPTIC TV	GPR	UTILITY LOCATED BY GPR		PROPOSED POTHOLE	RISER	HYDRANT
SPL	SPECIAL SYSTEM	UNK	UNKNOWN UTILITY		JUNCTION BOX	STORM DRAIN	FIRE DEPT CONNECTION
S	SANITARY SEWER	MT	EMPTY CONDUIT		METER	CLEANOUT	
SD	STORM SEWER	G	GAS		PEDESTAL		

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DWN	CHK
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REVISION 6
UTILITY LOCATION PLAN

SCALE 1" = 20' | DATE 1-8-2024 | SHEET 3 OF 30

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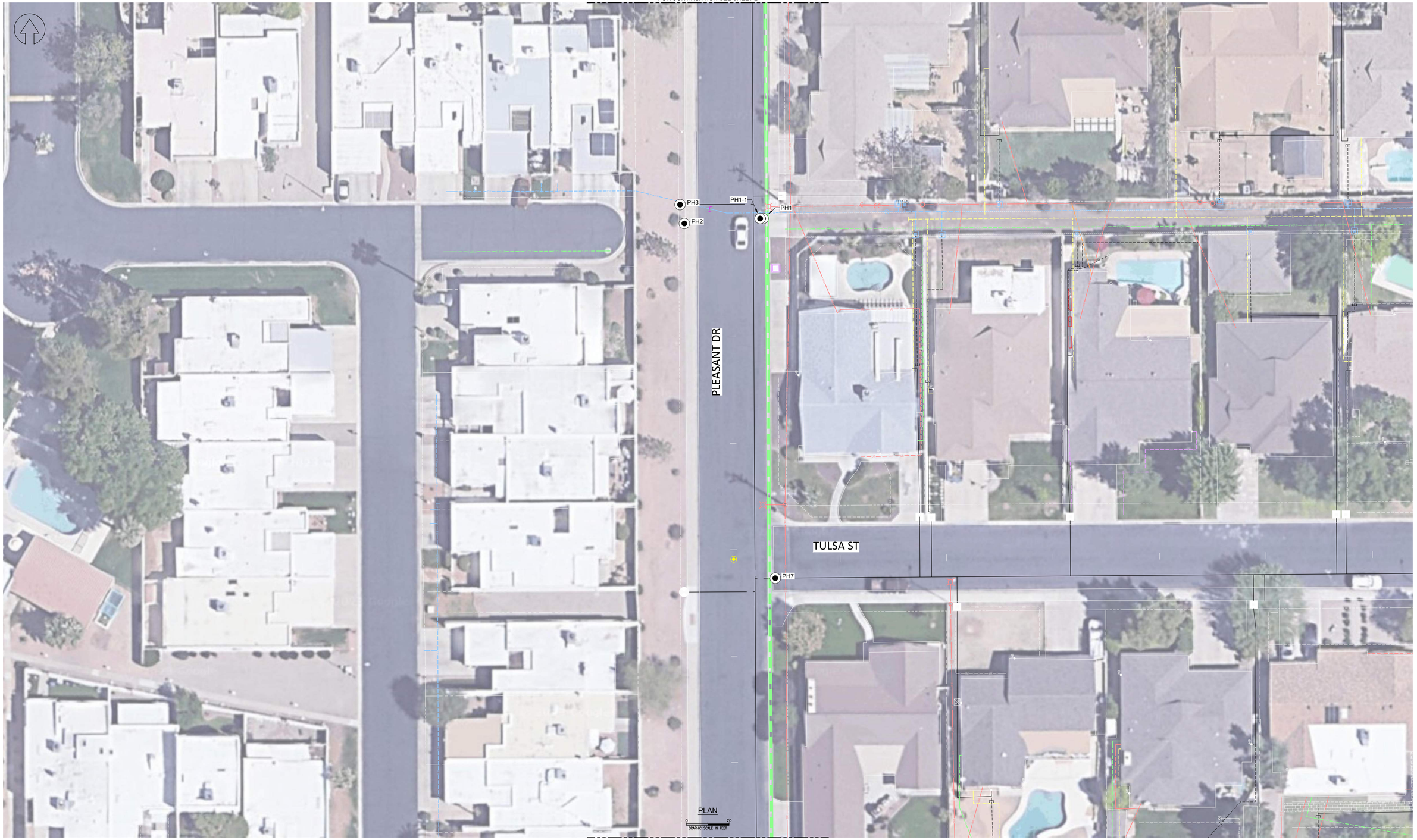

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LEGEND

COMM	COMMUNICATION	IR	IRRIGATION	W	WATER
OT	OVERHEAD TELEPHONE	IC	IRRIGATION CONTROL	CW	CHILLED WATER
T	UNDERGROUND TELEPHONE	OP	OVERHEAD POWER	DW	DOMESTIC WATER
TV	UNDERGROUND CABLE TV	P	UNDERGROUND POWER	FW	FIRE WATER
FOT	FIBER OPTIC TELEPHONE	GND	GROUND		POTHOLE
FOTV	FIBER OPTIC TV	GPR	UTILITY LOCATED BY GPR		PROPOSED POTHOLE
SPL	SPECIAL SYSTEM	UNK	UNKNOWN UTILITY		JUNCTION BOX
S	SANITARY SEWER	MT	EMPTY CONDUIT		METER
SD	STORM SEWER	G	GAS		PEDESTAL

	MANHOLE		POLE
	HANDHOLE		TRANSFORMER
V	VAULT		SWITCH
	VALVE		LIGHT
	END OF MAIN		RECEPTACLE
	RISER		HYDRANT
	STORM DRAIN		FIRE DEPT CONNECTION
	CLEANOUT		

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REVISION 6
UTILITY LOCATION PLAN

SCALE 1" = 20' | DATE 1-8-2024 | SHEET 4 OF 30

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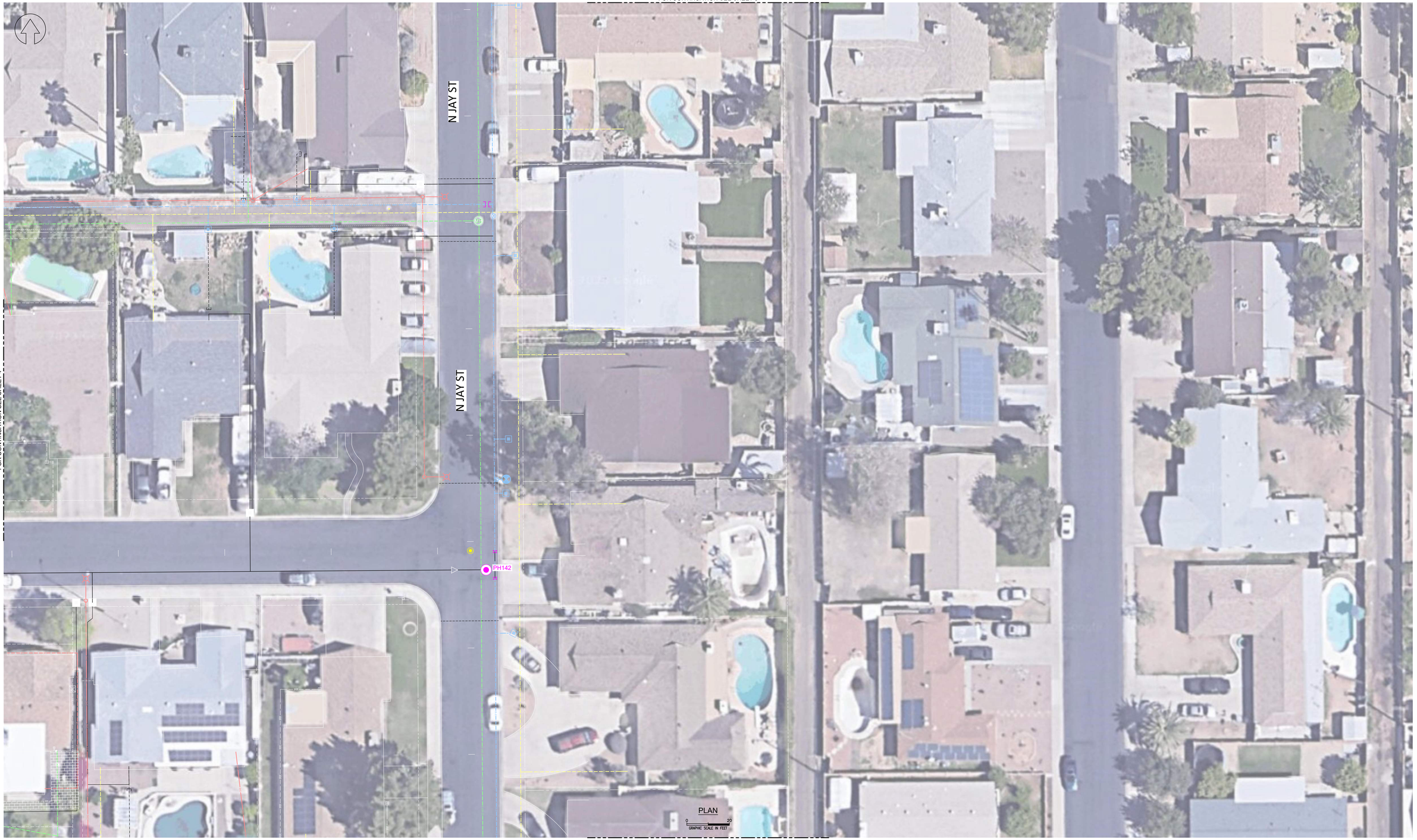

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LEGEND

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OT	OVERHEAD TELEPHONE	IC	IRRIGATION CONTROL	CW	CHILLED WATER	HANDHOLE	TRANSFORMER
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FOTV	FIBER OPTIC TV	GPR	UTILITY LOCATED BY GPR		PROPOSED POTHOLE	RISER	HYDRANT
SPL	SPECIAL SYSTEM	UNK	UNKNOWN UTILITY		JUNCTION BOX	STORM DRAIN	FIRE DEPT CONNECTION
S	SANITARY SEWER	MT	EMPTY CONDUIT		METER	CLEANOUT	
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REVISION 6
UTILITY LOCATION PLAN

SCALE 1" = 20' | DATE 1-8-2024 | SHEET 5 OF 30

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FOR CONTINUATION SEE SHEET 9

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LEGEND

COMM	COMMUNICATION	IR	IRRIGATION	W	WATER	MH	MANHOLE
OT	OVERHEAD TELEPHONE	IC	IRRIGATION CONTROL	CW	CHILLED WATER	HH	HANDHOLE
T	UNDERGROUND TELEPHONE	OP	OVERHEAD POWER	DW	DOMESTIC WATER	V	VAULT
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SD	STORM SEWER	G	GAS		PEDESTAL		

P	POLE	
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					METER
					PEDESTAL

	MANHOLE
	HANDHOLE
V	VAULT
	VALVE
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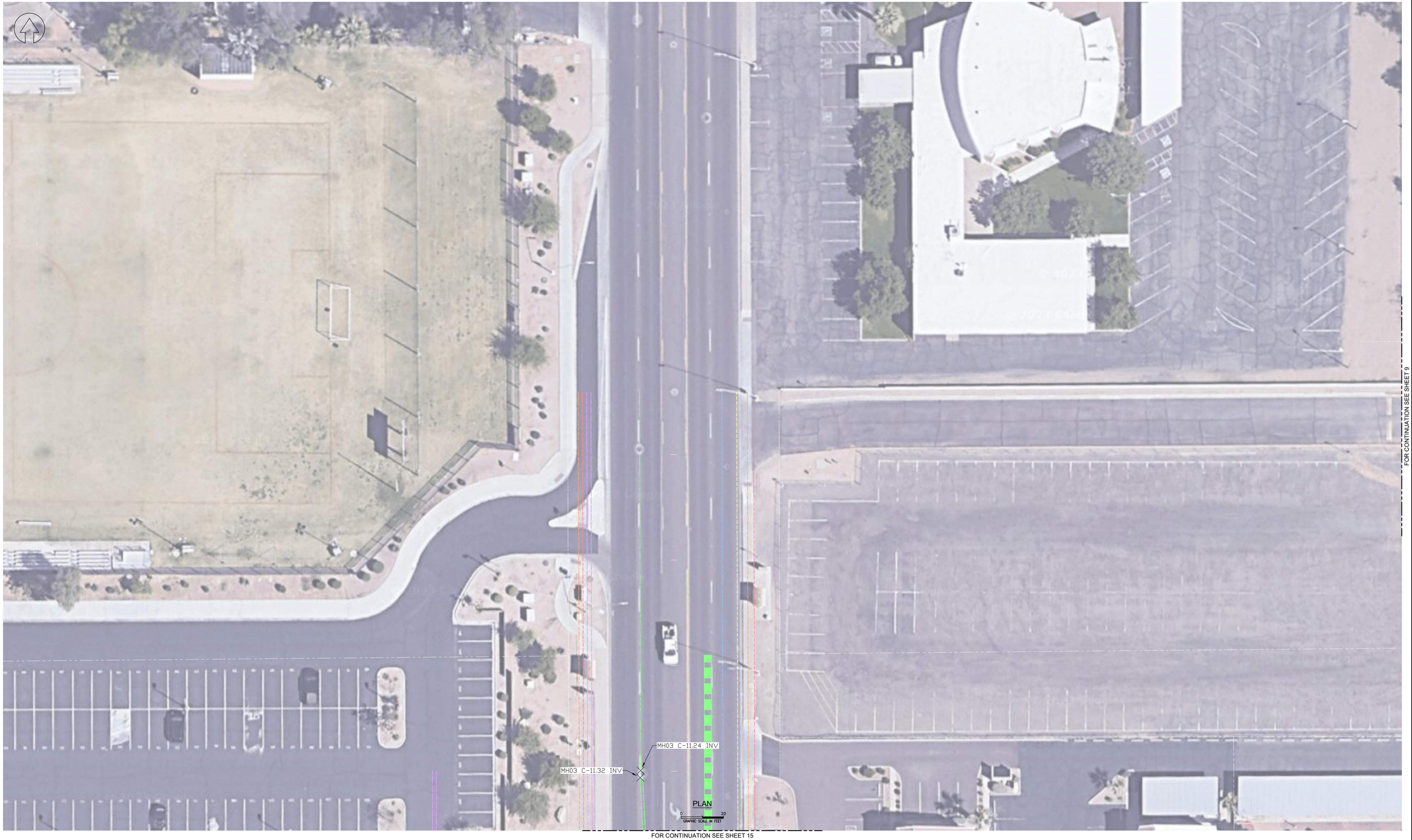

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REVISION 6
UTILITY LOCATION PLAN

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SCALE 1" = 20' | DATE 1-8-2024 | SHEET 8 OF 30

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FOR CONTINUATION SEE SHEET 6

FOR CONTINUATION SEE SHEET 8

PLAN

GRAPHIC SCALE IN FEET 0 20

FOR CONTINUATION SEE SHEET 16

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SCALE 1" = 20' DATE 1-8-2024 SHEET 9 OF 30

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UTILITY LOCATION PLAN

SCALE	DATE	SHEET	OF
1" = 20'	1-8-2024	10	30

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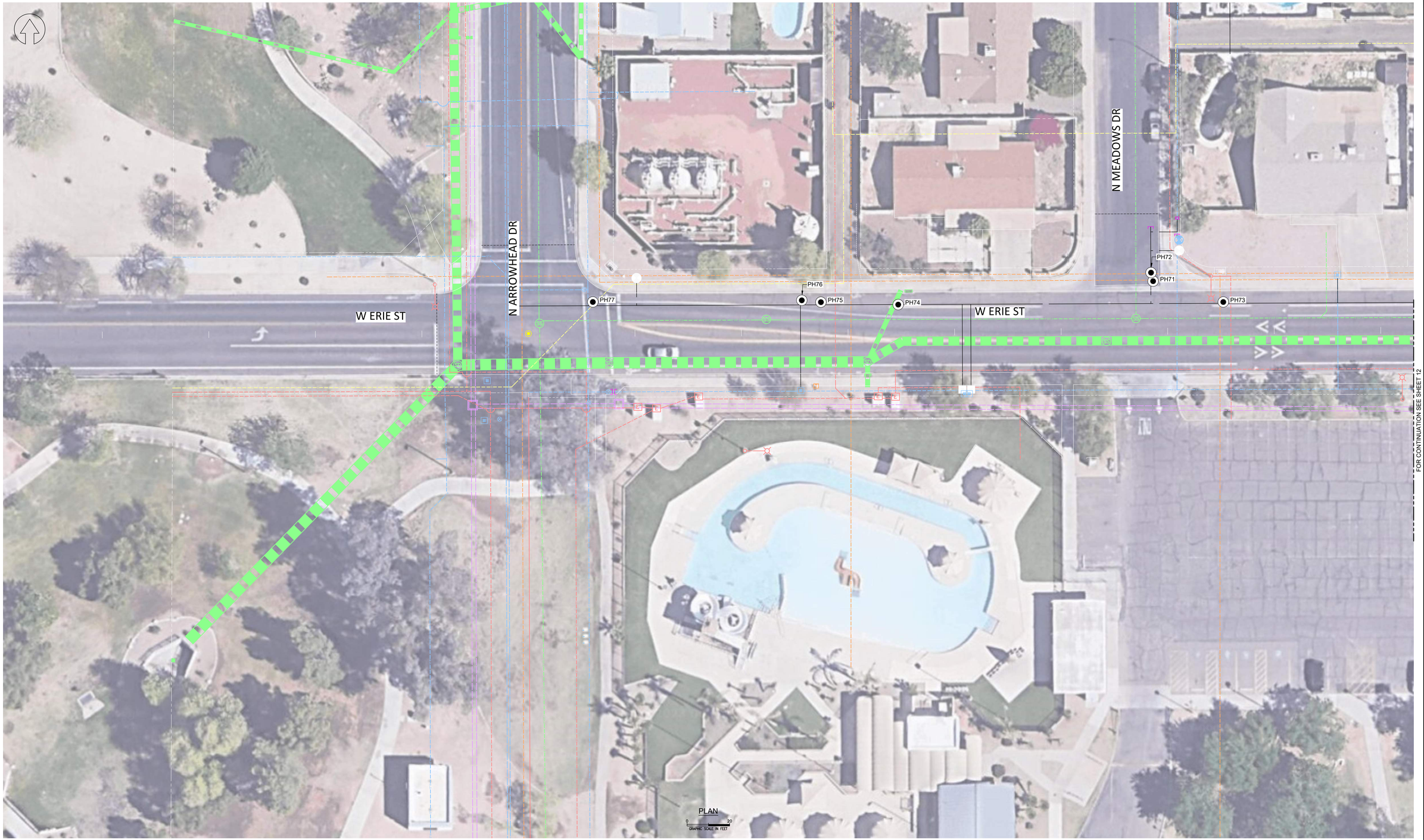

NOTES:

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LEGEND

COMM	COMMUNICATION	IR	IRRIGATION	W	WATER	MANHOLE	POLE
OT	OVERHEAD TELEPHONE	IC	IRRIGATION CONTROL	CW	CHILLED WATER	HANDHOLE	TRANSFORMER
T	UNDERGROUND TELEPHONE	OP	OVERHEAD POWER	DW	DOMESTIC WATER	VAULT	SWITCH
TV	UNDERGROUND CABLE TV	P	UNDERGROUND POWER	FW	FIRE WATER	VALVE	LIGHT
FOT	FIBER OPTIC TELEPHONE	GND	GROUND		POTHOLE	END OF MAIN	RECEPTACLE
FOTV	FIBER OPTIC TV	GPR	UTILITY LOCATED BY GPR		PROPOSED POTHOLE	RISER	HYDRANT
SPL	SPECIAL SYSTEM	UNK	UNKNOWN UTILITY		JUNCTION BOX	STORM DRAIN	FIRE DEPT CONNECTION
S	SANITARY SEWER	MT	EMPTY CONDUIT		METER	CLEANOUT	
SD	STORM SEWER	G	GAS		PEDESTAL		

EM NOTE:
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DOC - POTHOLE DEPTH OF COVER (FT)
MOC - MATERIAL OF CONSTRUCTION
EIC - ENCASED IN CONCRETE
X - POTHOLE SIZE (IN)

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CHANDLER WMR 2022

DWN CDC | CHK JNS
PROJECT NO. 22-08-3204
FILENAME

REVISION 6
UTILITY LOCATION PLAN

SCALE 1" = 20' | DATE 1-8-2024 | SHEET 11 OF 30

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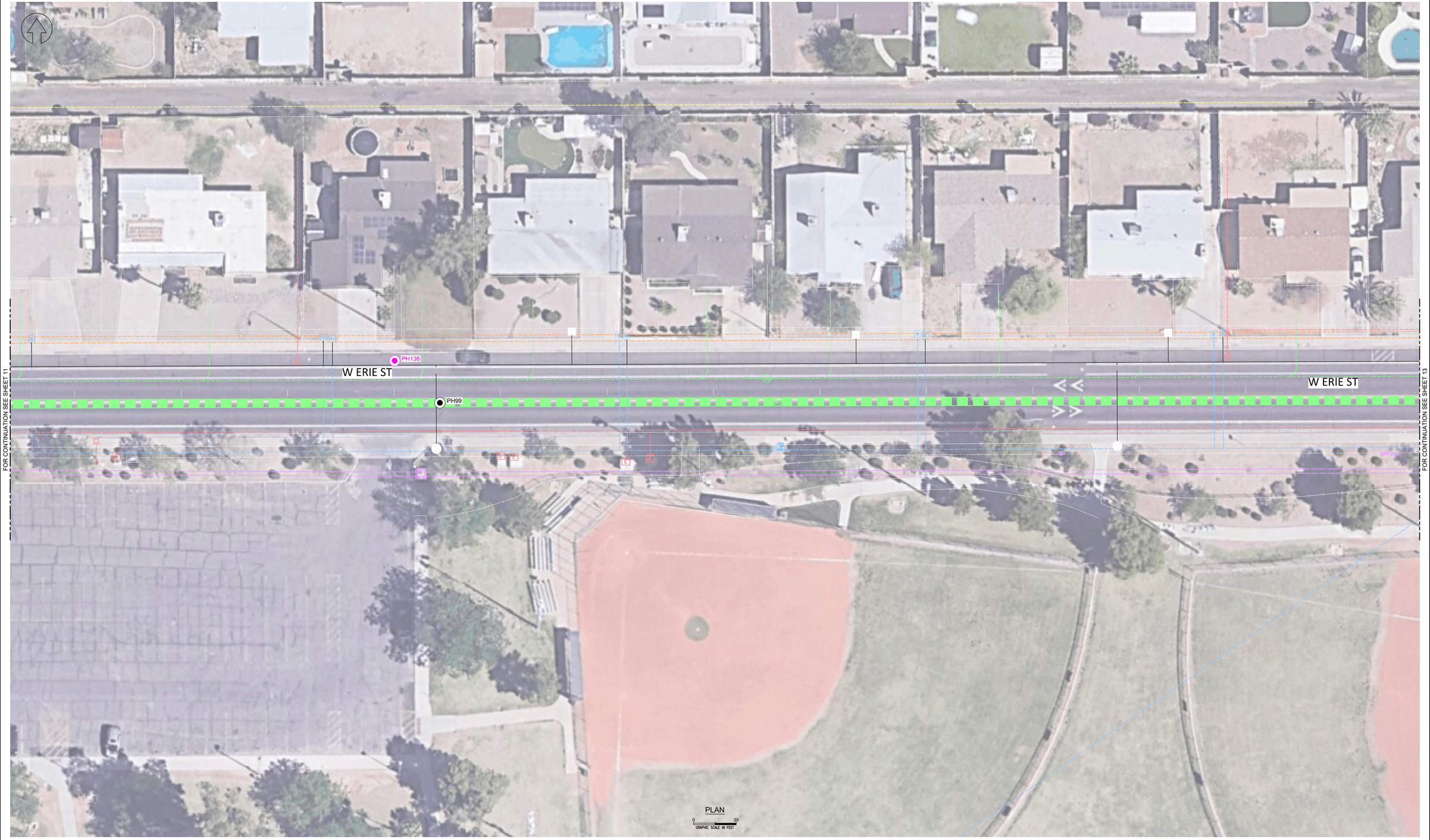

PLAN

GRAPHIC SCALE IN FEET 0 20

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LEGEND

COMM	COMMUNICATION	IR	IRRIGATION	W	WATER	MANHOLE	POLE
OT	OVERHEAD TELEPHONE	IC	IRRIGATION CONTROL	CW	CHILLED WATER	HANDHOLE	TRANSFORMER
T	UNDERGROUND TELEPHONE	OP	OVERHEAD POWER	DW	DOMESTIC WATER	VAULT	SWITCH
TV	UNDERGROUND CABLE TV	P	UNDERGROUND POWER	FW	FIRE WATER	VALVE	LIGHT
FOT	FIBER OPTIC TELEPHONE	GND	GROUND		POTHOLE	END OF MAIN	RECEPTACLE
FOTV	FIBER OPTIC TV	GPR	UTILITY LOCATED BY GPR		PROPOSED POTHOLE	RISER	HYDRANT
SPL	SPECIAL SYSTEM	UNK	UNKNOWN UTILITY		JUNCTION BOX	STORM DRAIN	FIRE DEPT CONNECTION
S	SANITARY SEWER	MT	EMPTY CONDUIT		METER	CLEANOUT	
SD	STORM SEWER	G	GAS		PEDESTAL		

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EIC - ENCASED IN CONCRETE
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CHANDLER WMR 2022

DWN CDC CHK JNS
PROJECT NO. 22-08-3204
FILENAME

REVISION 6
UTILITY LOCATION PLAN

SCALE 1" = 20' | DATE 1-8-2024 | SHEET 12 OF 30

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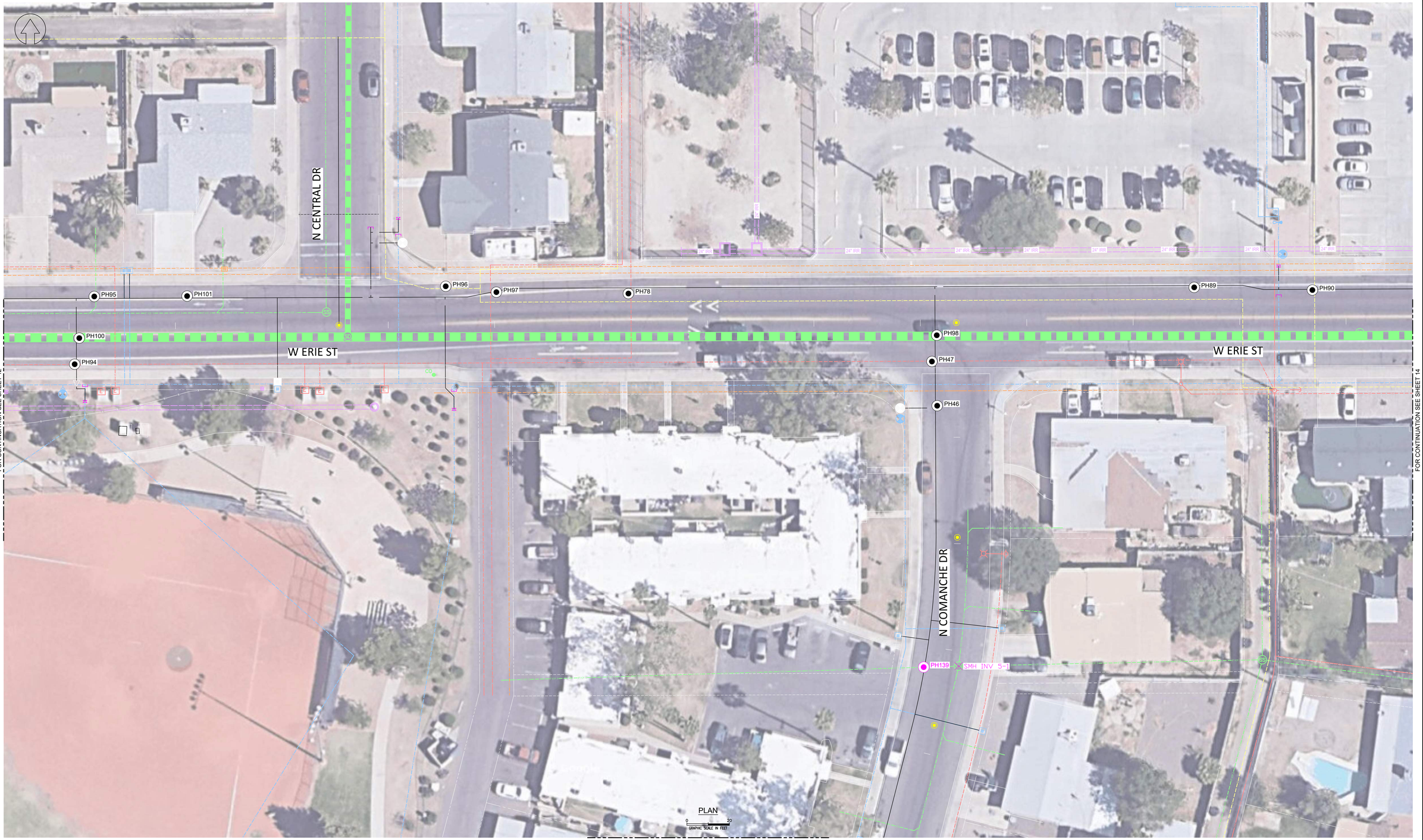

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LEGEND

COMM	COMMUNICATION	IR	IRRIGATION	W	WATER	MANHOLE	POLE
OT	OVERHEAD TELEPHONE	IC	IRRIGATION CONTROL	CW	CHILLED WATER	HANDHOLE	TRANSFORMER
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FOT	FIBER OPTIC TELEPHONE	GND	GROUND		POTHOLE	END OF MAIN	RECEPTACLE
FOTV	FIBER OPTIC TV	GPR	UTILITY LOCATED BY GPR		PROPOSED POTHOLE	RISER	HYDRANT
SPL	SPECIAL SYSTEM	UNK	UNKNOWN UTILITY		JUNCTION BOX	STORM DRAIN	FIRE DEPT CONNECTION
S	SANITARY SEWER	MT	EMPTY CONDUIT		METER	CLEANOUT	
SD	STORM SEWER	G	GAS		PEDESTAL		

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DWN CDC | CHK JNS
PROJECT NO. 22-08-3204
FILENAME

REVISION 6
UTILITY LOCATION PLAN

SCALE 1" = 20' | DATE 1-8-2024 | SHEET 13 OF 30

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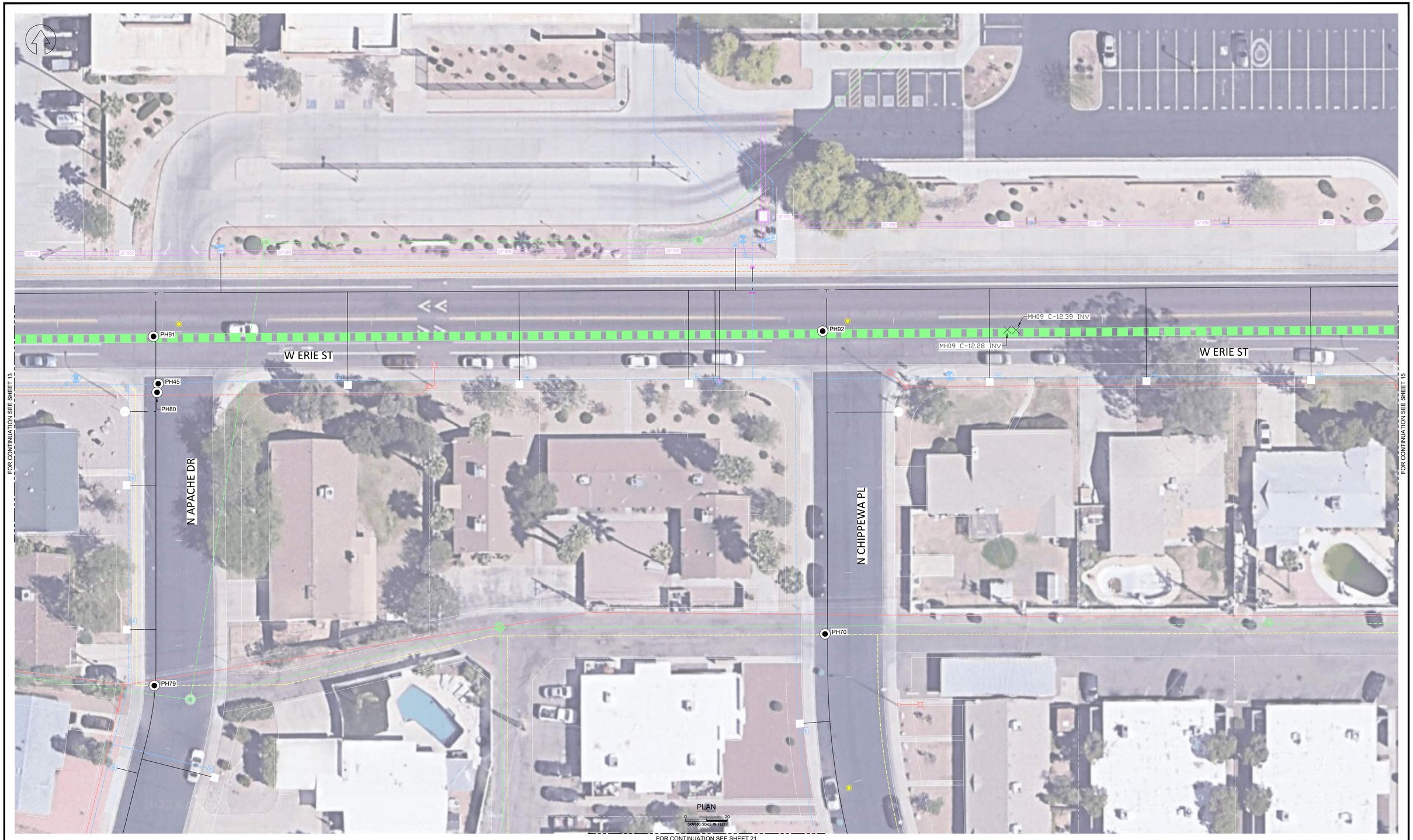

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LEGEND

COMM	COMMUNICATION	IR	IRRIGATION	W	WATER
OT	OVERHEAD TELEPHONE	IC	IRRIGATION CONTROL	CW	CHILLED WATER
T	UNDERGROUND TELEPHONE	OP	OVERHEAD POWER	DW	DOMESTIC WATER
TV	UNDERGROUND CABLE TV	P	UNDERGROUND POWER	FW	FIRE WATER
FOT	FIBER OPTIC TELEPHONE	GND	GROUND		POTHOLE
FOTV	FIBER OPTIC TV	GPR	UTILITY LOCATED BY GPR		PROPOSED POTHOLE
SPL	SPECIAL SYSTEM	UNK	UNKNOWN UTILITY		JUNCTION BOX
S	SANITARY SEWER	MT	EMPTY CONDUIT		METER
SD	STORM SEWER	G	GAS		PEDESTAL

MANHOLE	POLE		
HANDHOLE	TRANSFORMER		
VAULT	SWITCH		
VALVE	LIGHT		
END OF MAIN	RECEPTACLE		
RISER	HYDRANT		
STORM DRAIN	FIRE DEPT CONNECTION		
CLEANOUT			

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CHANDLER WMR 2022

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CDC	JNS

PROJECT NO.
22-08-3204

FILENAME

REVISION 6
UTILITY LOCATION PLAN

SCALE	DATE	SHEET	OF
1" = 20'	1-8-2024	14	30

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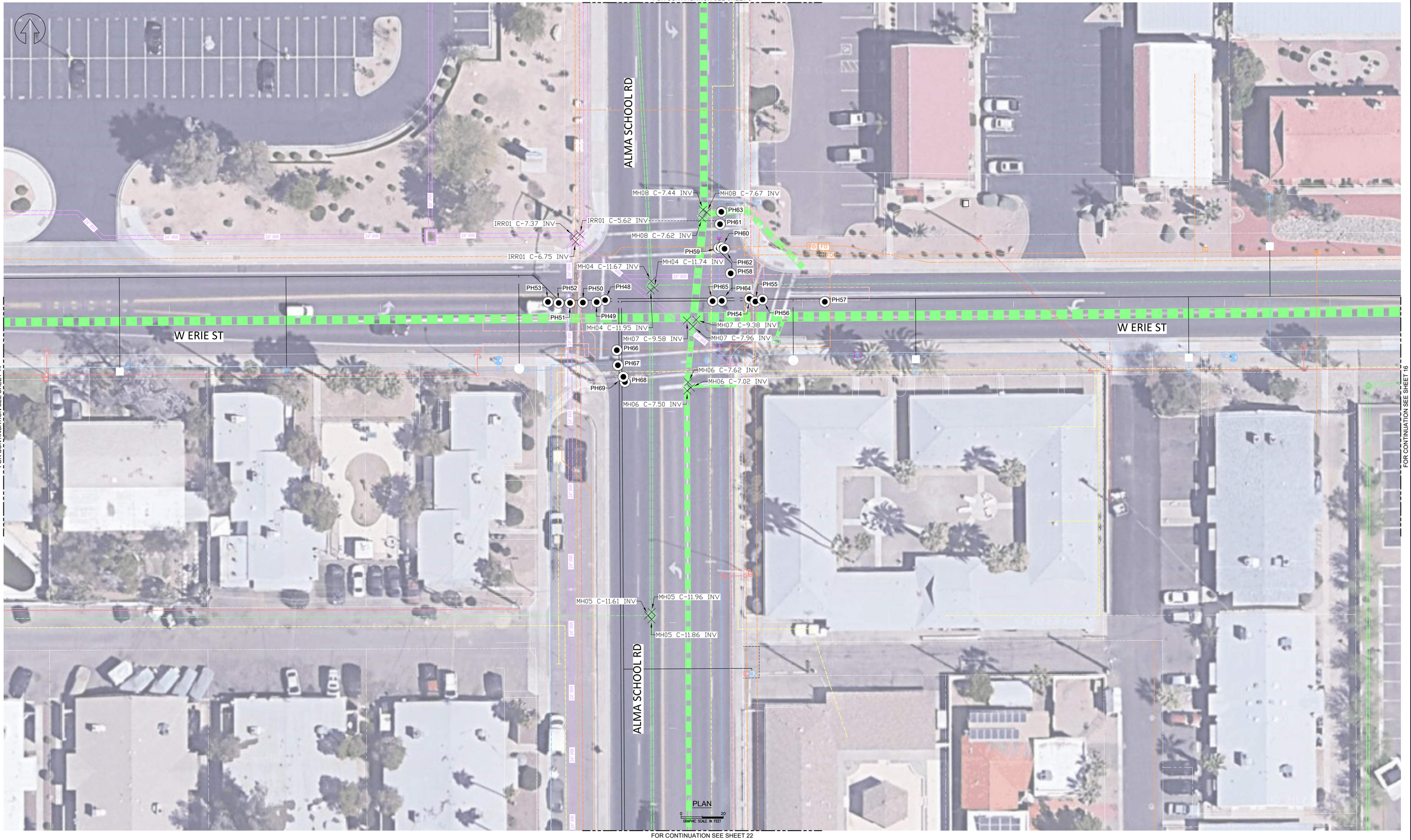
FOR CONTINUATION SEE SHEET 8

FOR CONTINUATION SEE SHEET 14

FOR CONTINUATION SEE SHEET 16



FOR CONTINUATION SEE SHEET 22

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LEGEND

COMM — COMMUNICATION	IR — IRRIGATION	W — WATER	MANHOLE	POLE
OT — OVERHEAD TELEPHONE	IC — IRRIGATION CONTROL	CW — CHILLED WATER	HANDHOLE	TRANSFORMER
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CHANDLER WMR 2022

DWN CDC CHK JNS
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REVISION 6
UTILITY LOCATION PLAN

SCALE 1" = 20' DATE 1-8-2024 SHEET 15 OF 30

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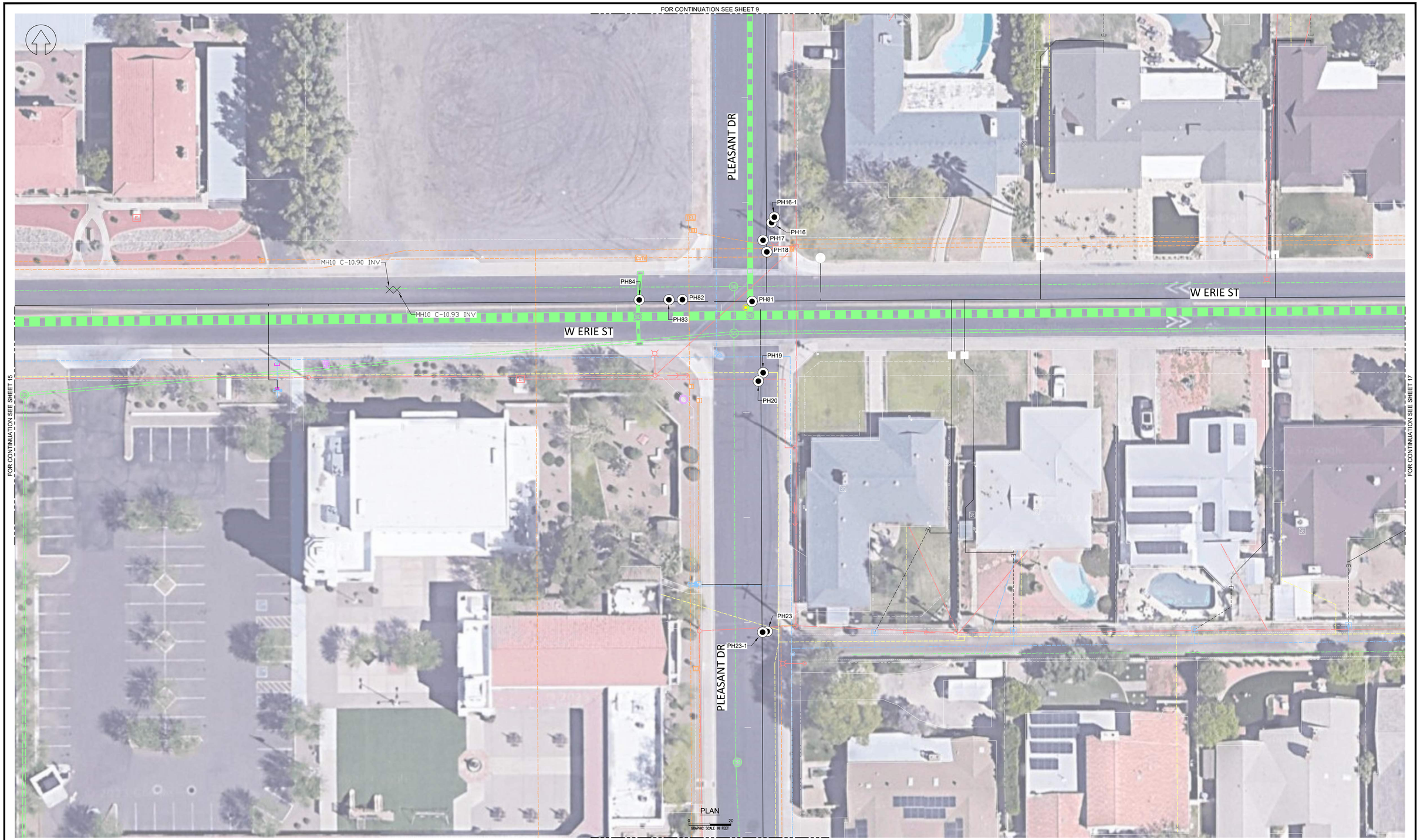
FOR CONTINUATION SEE SHEET 9



FOR CONTINUATION SEE SHEET 15

FOR CONTINUATION SEE SHEET 17

FOR CONTINUATION SEE SHEET 23

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COMU — COMMUNICATION	IR — IRRIGATION	W — WATER	MANHOLE
OT — OVERHEAD TELEPHONE	IC — IRRIGATION CONTROL	CW — CHILLED WATER	HANDHOLE
T — UNDERGROUND TELEPHONE	OP — OVERHEAD POWER	DW — DOMESTIC WATER	VAULT
TV — UNDERGROUND CABLE TV	P — UNDERGROUND POWER	FW — FIRE WATER	VALVE
FOT — FIBER OPTIC TELEPHONE	GND — GROUND	POTHOLE	END OF MAIN
FOTV — FIBER OPTIC TV	GPR — UTILITY LOCATED BY GPR	PROPOSED POTHOLE	RISER
SPL — SPECIAL SYSTEM	UNK — UNKNOWN UTILITY	JUNCTION BOX	STORM DRAIN
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LEGEND

POLE		
TRANSFORMER		
SWITCH		
LIGHT		
RECEPTACLE		
HYDRANT		
FIRE DEPT CONNECTION		

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CHANDLER WMR 2022

DWN	CHK
CDC	JNS

PROJECT NO. 22-08-3204
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REVISION 6
UTILITY LOCATION PLAN

SCALE 1" = 20' | DATE 1-8-2024 | SHEET 16 OF 30

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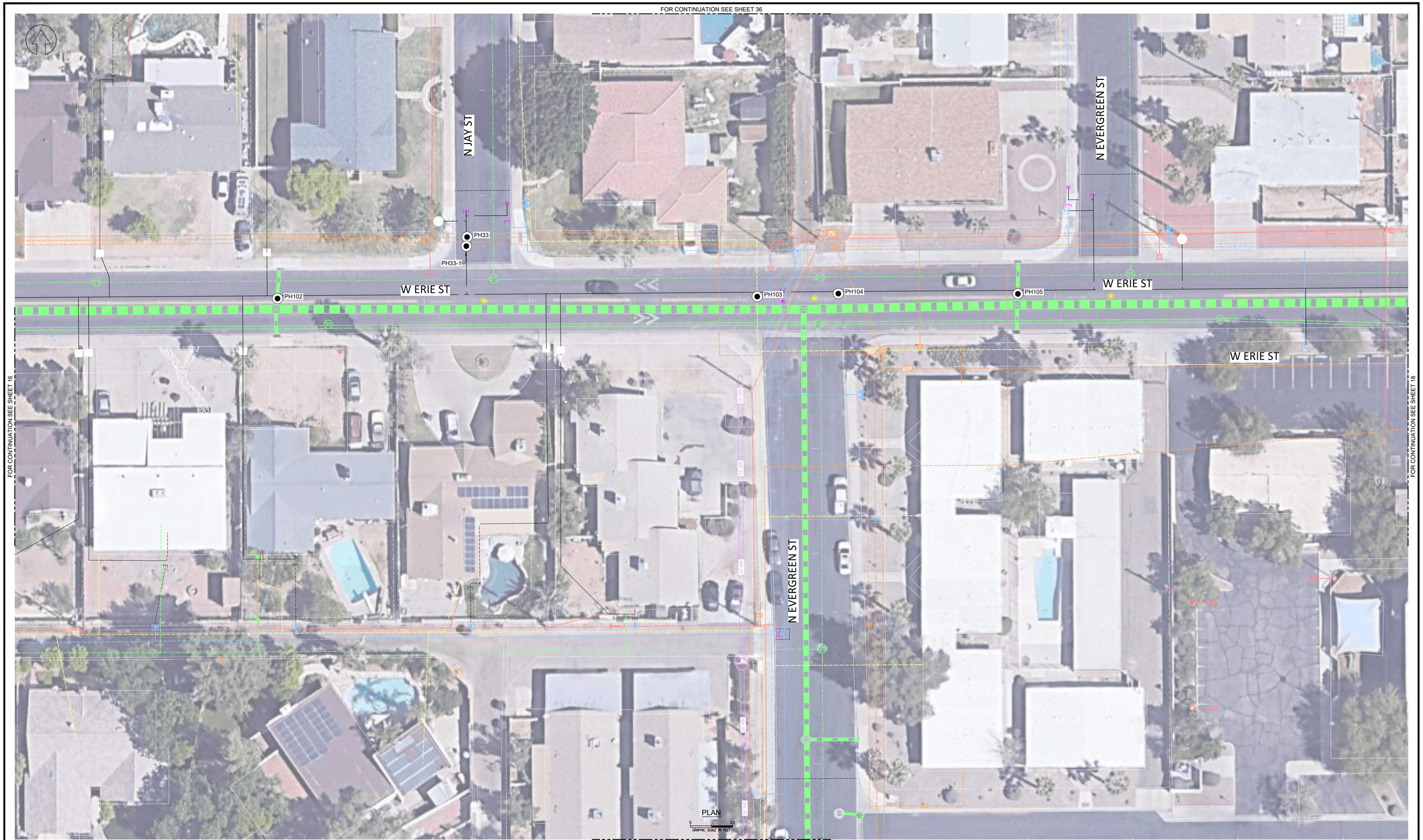

FOR CONTINUATION SEE SHEET 16

FOR CONTINUATION SEE SHEET 18

FOR CONTINUATION SEE SHEET 24

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LEGEND

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CHANDLER WMR 2022

DWN CDC | CHK JNS
PROJECT NO. 22-08-3204
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REVISION 6
UTILITY LOCATION PLAN

SCALE 1" = 20' | DATE 1-8-2024 | SHEET 17 OF 30

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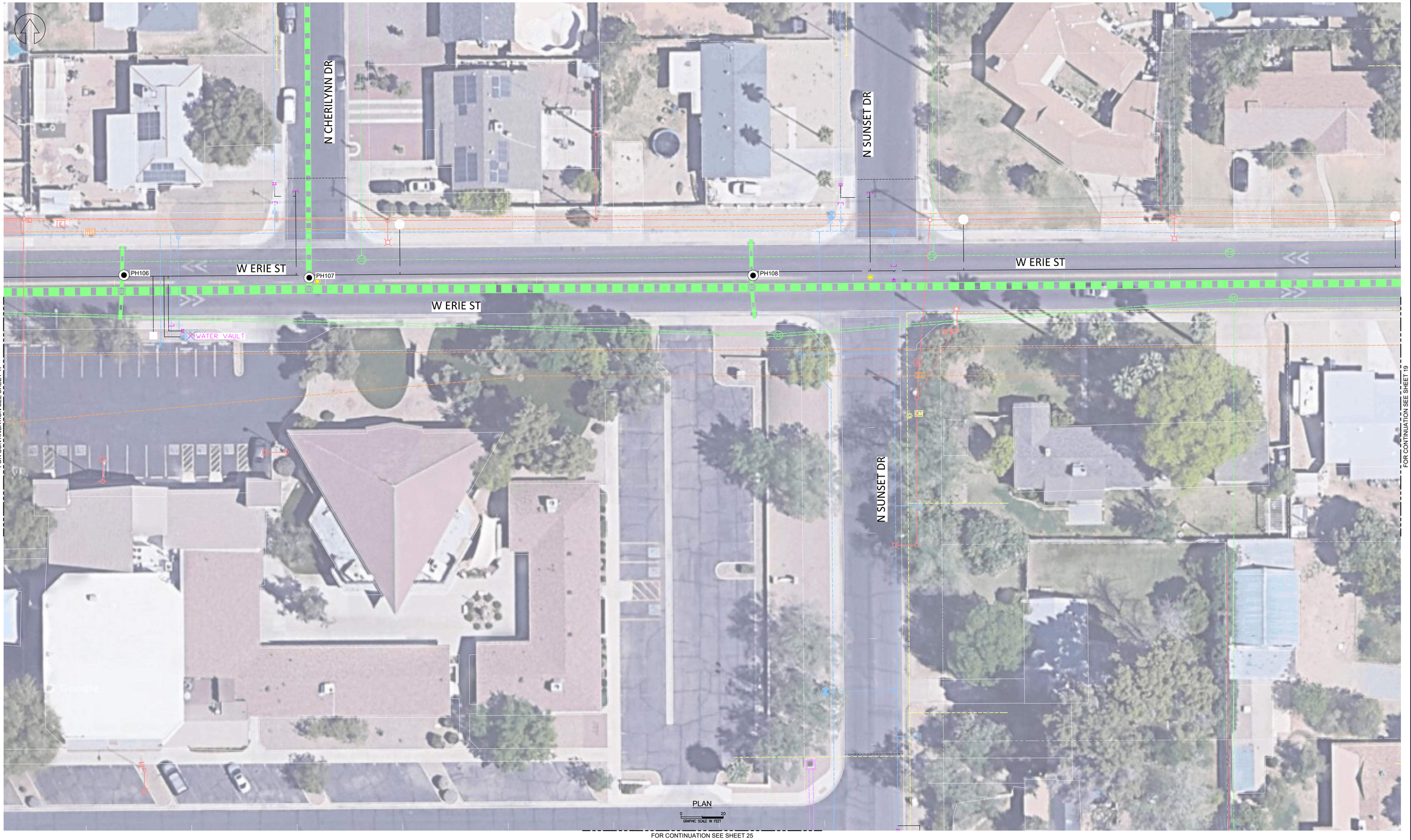

FOR CONTINUATION SEE SHEET 25

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LEGEND

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SPL	SPECIAL SYSTEM	UNK	UNKNOWN UTILITY		JUNCTION BOX
S	SANITARY SEWER	MT	EMPTY CONDUIT		METER
SD	STORM SEWER	G	GAS		PEDESTAL

	MANHOLE		POLE
	HANDHOLE	T	TRANSFORMER
V	VAULT		SWITCH
	VALVE		LIGHT
J	END OF MAIN		RECEPTACLE
	RISER		HYDRANT
	STORM DRAIN		FIRE DEPT CONNECTION
	CLEANOUT		

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REVISION 6
UTILITY LOCATION PLAN

SCALE 1" = 20' | DATE 1-8-2024 | SHEET 18 OF 30

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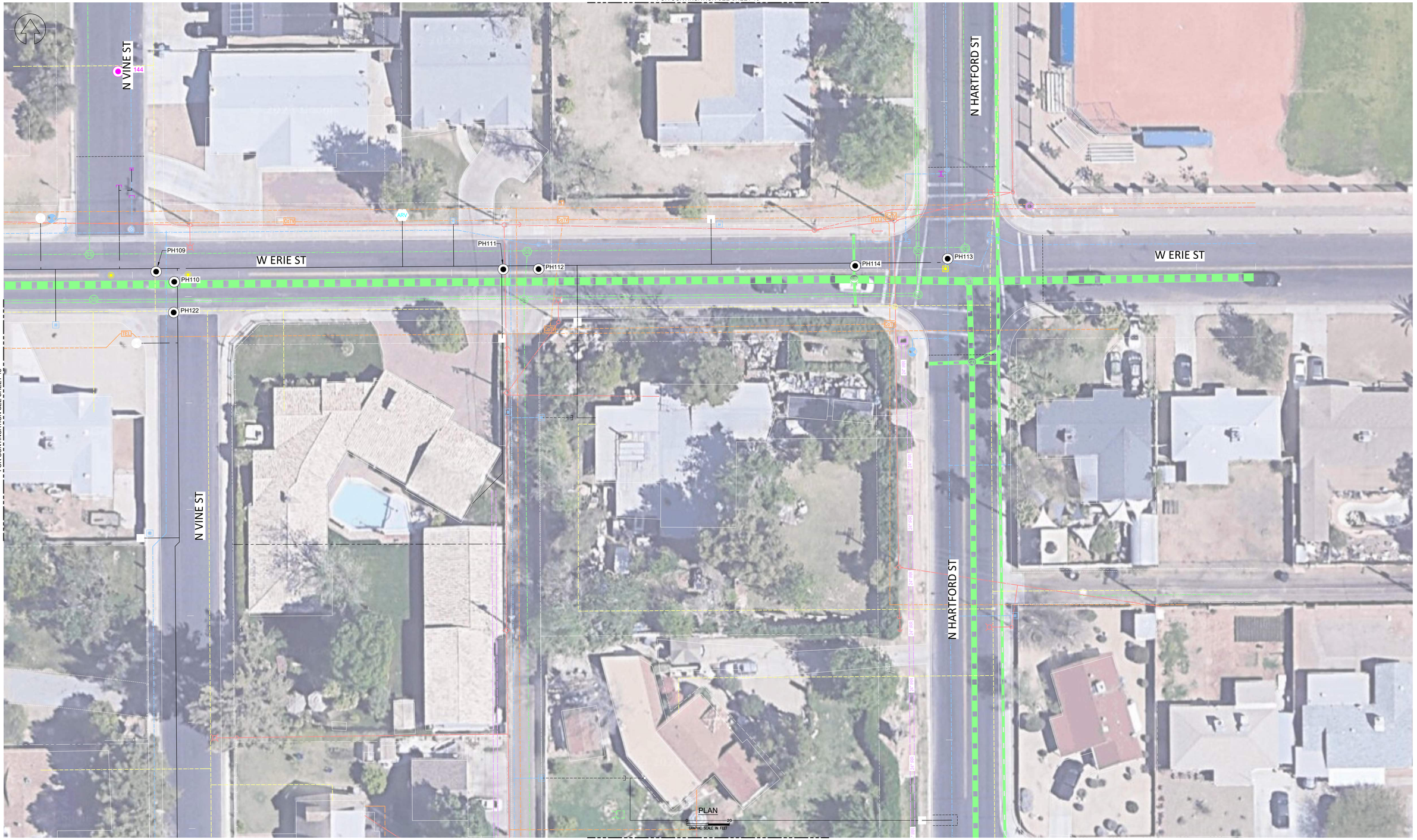

FOR CONTINUATION SEE SHEET 18

FOR CONTINUATION SEE SHEET 26

NOTES:

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LEGEND

COMM	COMMUNICATION	IR	IRRIGATION	W	WATER	MANHOLE	POLE
OT	OVERHEAD TELEPHONE	IC	IRRIGATION CONTROL	CW	CHILLED WATER	HANDHOLE	TRANSFORMER
T	UNDERGROUND TELEPHONE	OP	OVERHEAD POWER	DW	DOMESTIC WATER	VAULT	SWITCH
TV	UNDERGROUND CABLE TV	P	UNDERGROUND POWER	FW	FIRE WATER	VALVE	LIGHT
FOT	FIBER OPTIC TELEPHONE	GND	GROUND		POTHOLE	END OF MAIN	RECEPTACLE
FOTV	FIBER OPTIC TV	GPR	UTILITY LOCATED BY GPR		PROPOSED POTHOLE	RISER	HYDRANT
SPL	SPECIAL SYSTEM	UNK	UNKNOWN UTILITY		JUNCTION BOX	STORM DRAIN	FIRE DEPT CONNECTION
S	SANITARY SEWER	MT	EMPTY CONDUIT		METER	CLEANOUT	
SD	STORM SEWER	G	GAS		PEDESTAL		

EM NOTE:
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EM - ELECTROMAGNETIC DEPTH (FT)
DOC - POTHOLE DEPTH OF COVER (FT)
MOC - MATERIAL OF CONSTRUCTION
EIC - ENCASED IN CONCRETE
X - POTHOLE SIZE (IN)

SAFE SITE UTILITY SERVICES, LLC
PHOENIX, AZ (602)606-8882

CHANDLER WMR 2022

DWN CDC | CHK JNS
PROJECT NO. 22-08-3204
FILENAME

REVISION 6
UTILITY LOCATION PLAN

SCALE 1" = 20' | DATE 1-8-2024 | SHEET 19 OF 30

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FOR CONTINUATION SEE SHEET 13

FOR CONTINUATION SEE SHEET 21

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LEGEND

- COMU — COMMUNICATION
- OT — OVERHEAD TELEPHONE
- T — UNDERGROUND TELEPHONE
- TV — UNDERGROUND CABLE TV
- FOT — FIBER OPTIC TELEPHONE
- FOTV — FIBER OPTIC TV
- SPL — SPECIAL SYSTEM
- S — SANITARY SEWER
- SD — STORM SEWER
- IR — IRRIGATION
- IC — IRRIGATION CONTROL
- OP — OVERHEAD POWER
- P — UNDERGROUND POWER
- GND — GROUND
- GPR — UTILITY LOCATED BY GPR
- UNK — UNKNOWN UTILITY
- MT — EMPTY CONDUIT
- G — GAS
- W — WATER
- CW — CHILLED WATER
- DW — DOMESTIC WATER
- FW — FIRE WATER
- POTHOLE
- PROPOSED POTHOLE
- JUNCTION BOX
- METER
- PEDESTAL
- MANHOLE
- HANDHOLE
- VAULT
- VALVE
- END OF MAIN
- RISER
- STORM DRAIN
- CLEANOUT
- POLE
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- SWITCH
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REVISION 6
UTILITY LOCATION PLAN

SCALE 1" = 20'
DATE 1-8-2024
SHEET 20 OF 30

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

FOR CONTINUATION SEE SHEET 14

FOR CONTINUATION SEE SHEET 20

FOR CONTINUATION SEE SHEET 22

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LEGEND

COMM — COMMUNICATION	IR — IRRIGATION	W — WATER	MANHOLE	POLE
OT — OVERHEAD TELEPHONE	IC — IRRIGATION CONTROL	CW — CHILLED WATER	HANDHOLE	TRANSFORMER
T — UNDERGROUND TELEPHONE	OP — OVERHEAD POWER	DW — DOMESTIC WATER	VAULT	SWITCH
TV — UNDERGROUND CABLE TV	P — UNDERGROUND POWER	FW — FIRE WATER	VALVE	LIGHT
FOT — FIBER OPTIC TELEPHONE	GND — GROUND	POTHOLE	END OF MAIN	RECEPTACLE
FOTV — FIBER OPTIC TV	GPR — UTILITY LOCATED BY GPR	PROPOSED POTHOLE	RISER	HYDRANT
SPL — SPECIAL SYSTEM	UNK — UNKNOWN UTILITY	JUNCTION BOX	STORM DRAIN	FIRE DEPT CONNECTION
S — SANITARY SEWER	MT — EMPTY CONDUIT	METER	CLEANOUT	
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REVISION 6
UTILITY LOCATION PLAN

SCALE 1" = 20' | DATE 1-8-2024 | SHEET 21 OF 30

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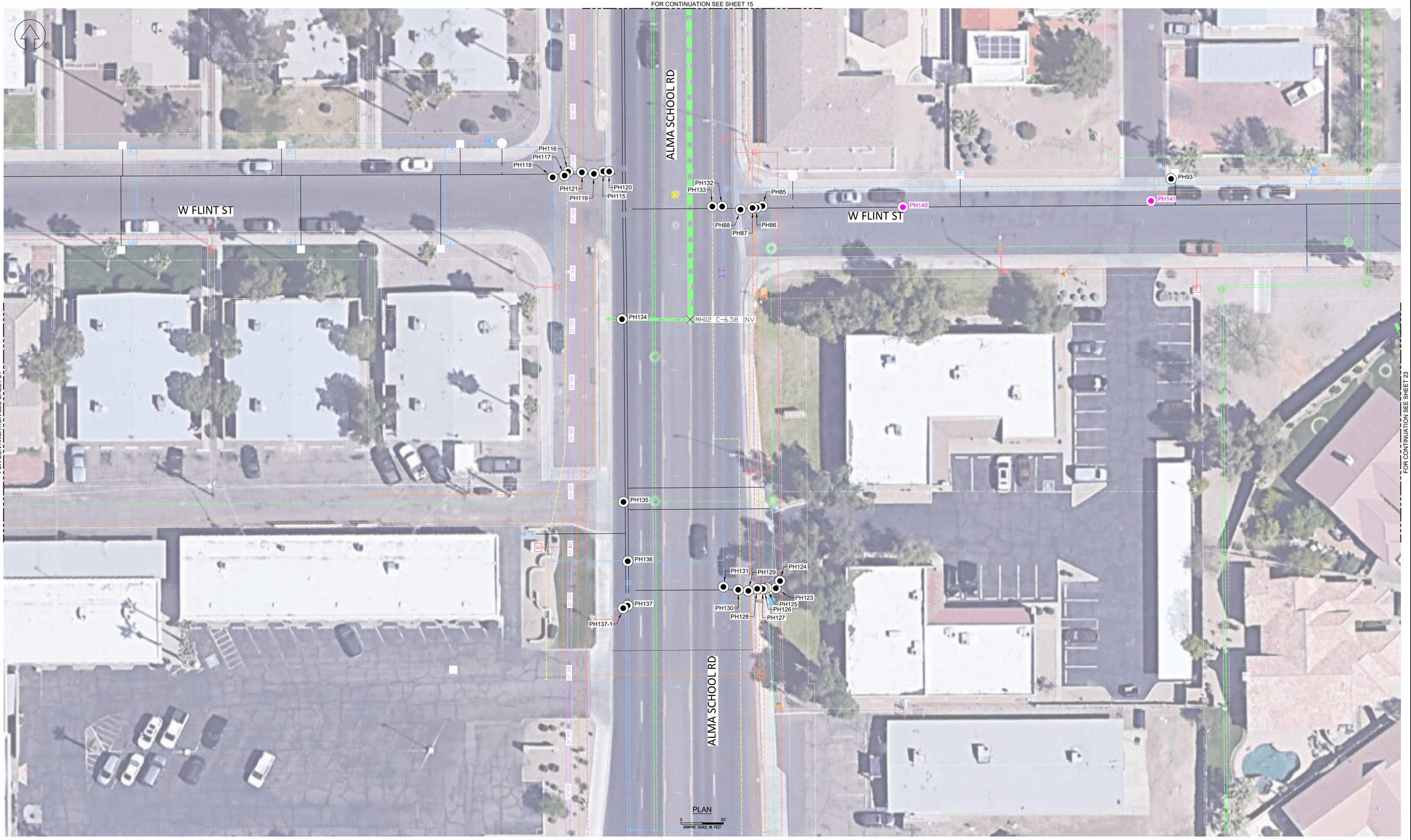
FOR CONTINUATION SEE SHEET 15

FOR CONTINUATION SEE SHEET 21

FOR CONTINUATION SEE SHEET 23



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- G — GAS

LEGEND

- W — WATER
- CW — CHILLED WATER
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- POTHOLE
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REVISION 6
UTILITY LOCATION PLAN

SCALE 1" = 20'
DATE 1-8-2024
SHEET 22 OF 30

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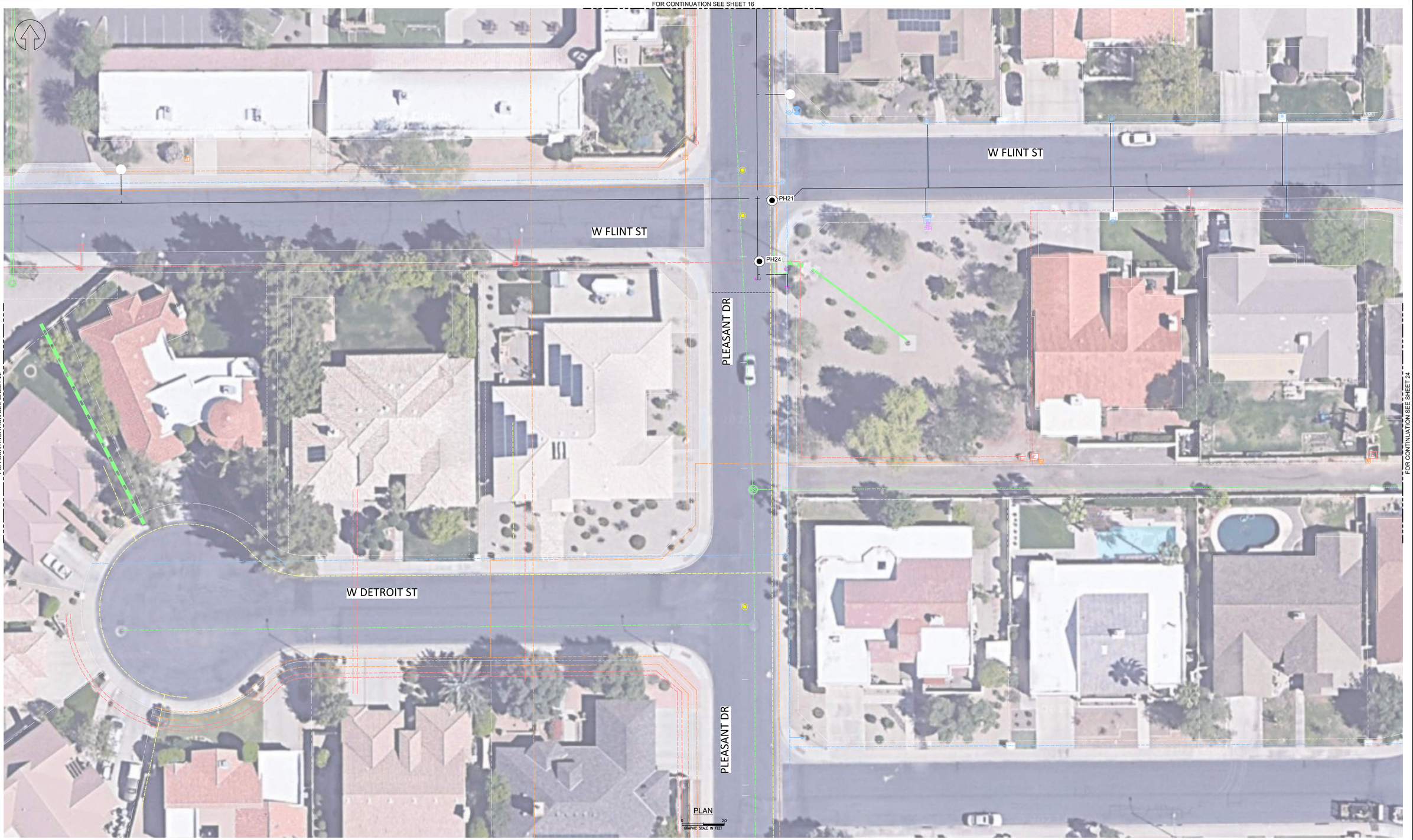
FOR CONTINUATION SEE SHEET 16

FOR CONTINUATION SEE SHEET 22

FOR CONTINUATION SEE SHEET 24



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LEGEND

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REVISION 6
UTILITY LOCATION PLAN

SCALE 1" = 20' DATE 1-8-2024 SHEET 23 OF 30

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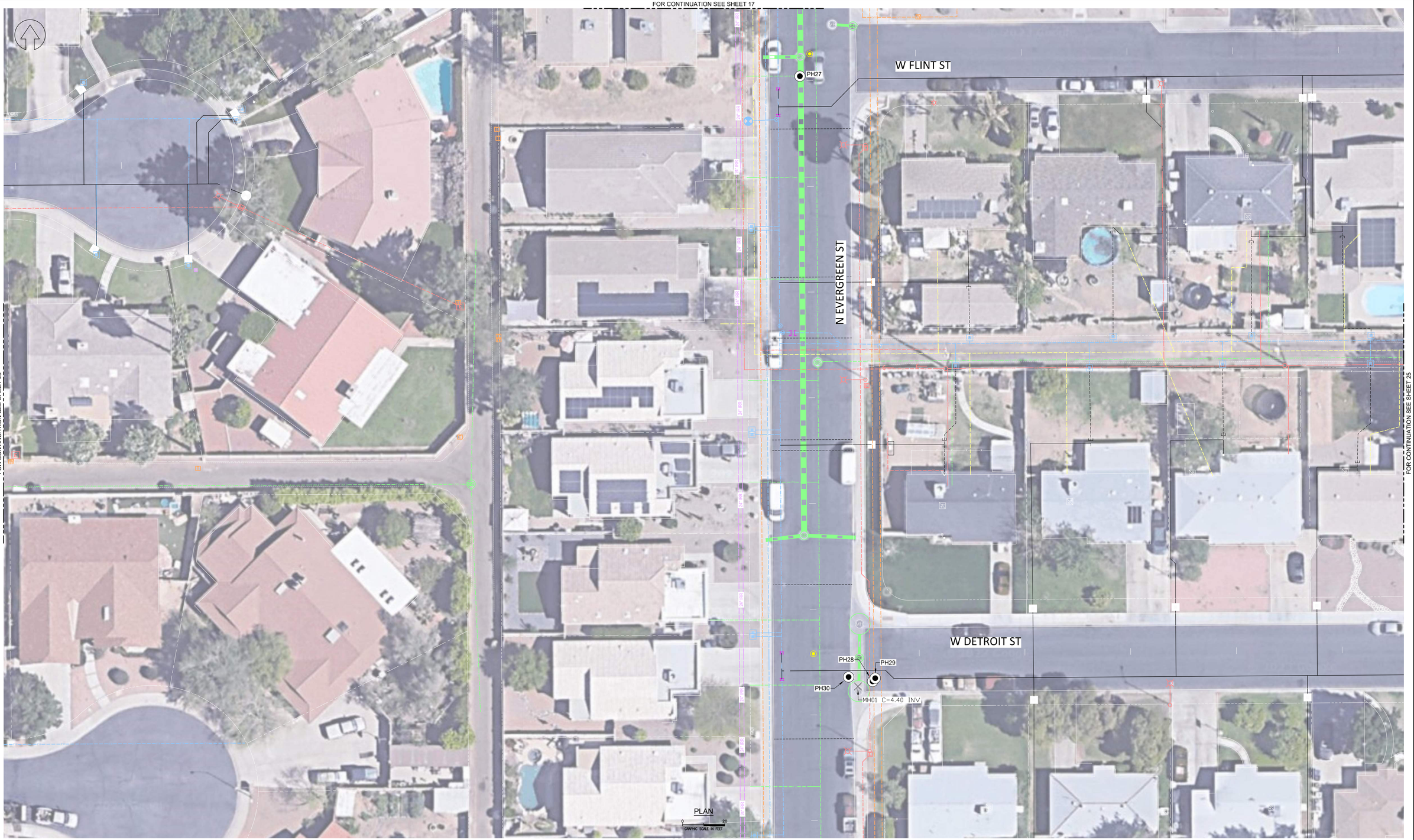
FOR CONTINUATION SEE SHEET 17

FOR CONTINUATION SEE SHEET 23

FOR CONTINUATION SEE SHEET 25



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LEGEND

COMM — COMMUNICATION	IR — IRRIGATION	W — WATER	MANHOLE	POLE
OT — OVERHEAD TELEPHONE	IC — IRRIGATION CONTROL	CW — CHILLED WATER	HANDHOLE	TRANSFORMER
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FOT — FIBER OPTIC TELEPHONE	GND — GROUND	POTHOLE	END OF MAIN	RECEPTACLE
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SPL — SPECIAL SYSTEM	UNK — UNKNOWN UTILITY	JUNCTION BOX	STORM DRAIN	FIRE DEPT CONNECTION
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CHANDLER WMR 2022

DWN CDC | CHK JNS
PROJECT NO. 22-08-3204
FILENAME

REVISION 6
UTILITY LOCATION PLAN

SCALE 1" = 20' | DATE 1-8-2024 | SHEET 24 OF 30

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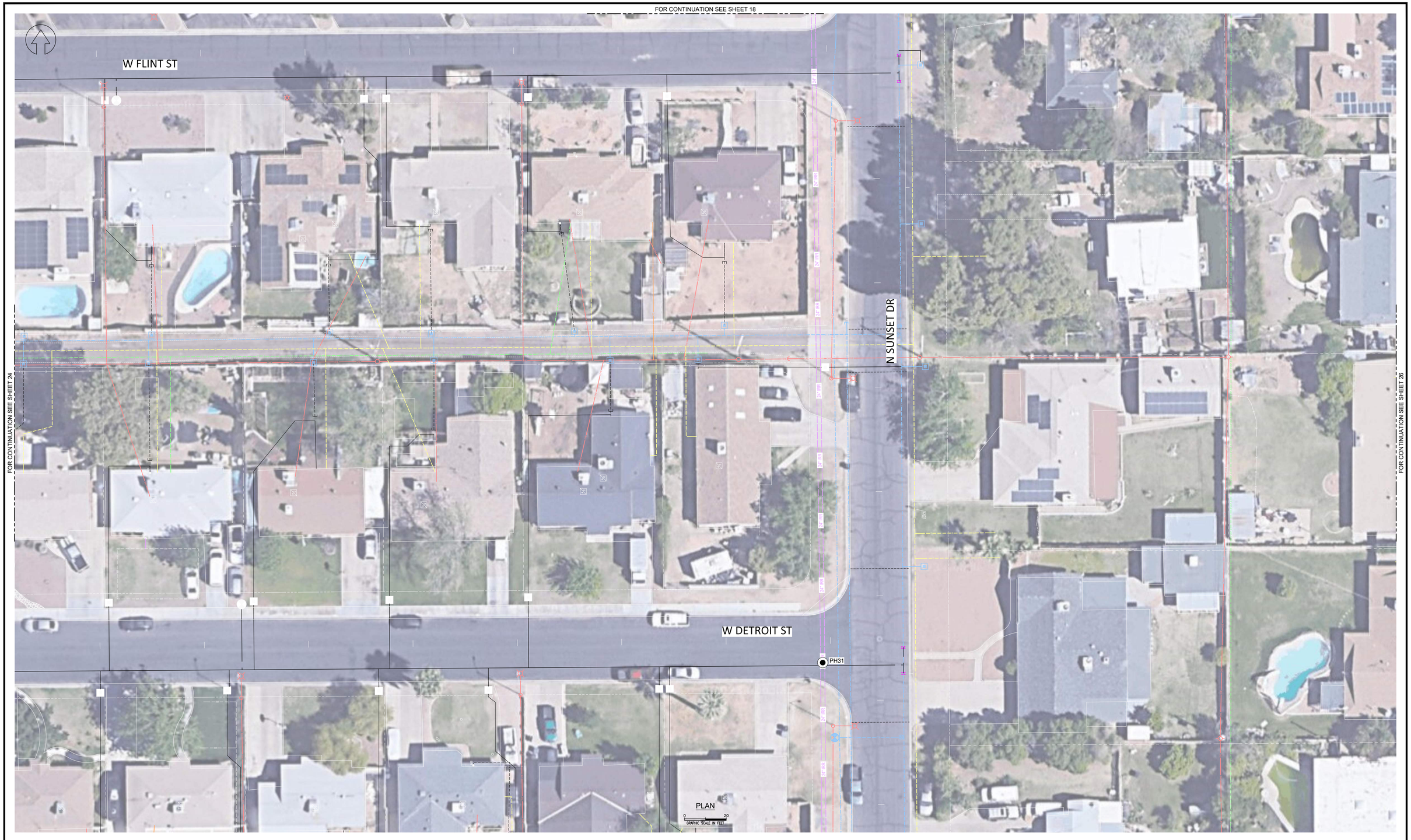
FOR CONTINUATION SEE SHEET 18



FOR CONTINUATION SEE SHEET 24

FOR CONTINUATION SEE SHEET 26

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LEGEND

COMM	COMMUNICATION	IR	IRRIGATION	W	WATER
OT	OVERHEAD TELEPHONE	IC	IRRIGATION CONTROL	CW	CHILLED WATER
T	UNDERGROUND TELEPHONE	OP	OVERHEAD POWER	DW	DOMESTIC WATER
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	MANHOLE		POLE
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	VAULT		SWITCH
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CHANDLER WMR 2022

DWN CDC CHK JNS
PROJECT NO. 22-08-3204
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REVISION 6
UTILITY LOCATION PLAN

SCALE 1" = 20' DATE 1-8-2024 SHEET 25 OF 30

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FOR CONTINUATION SEE SHEET 19

FOR CONTINUATION SEE SHEET 25

N VINE ST

N HARTFORD ST

W FLINT ST

W DETROIT ST

PH25

PLAN

0 20
GRAPHIC SCALE IN FEET

FOR CONTINUATION SEE SHEET 27

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REVISION 6
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SCALE 1" = 20'
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SHEET 26 OF 30

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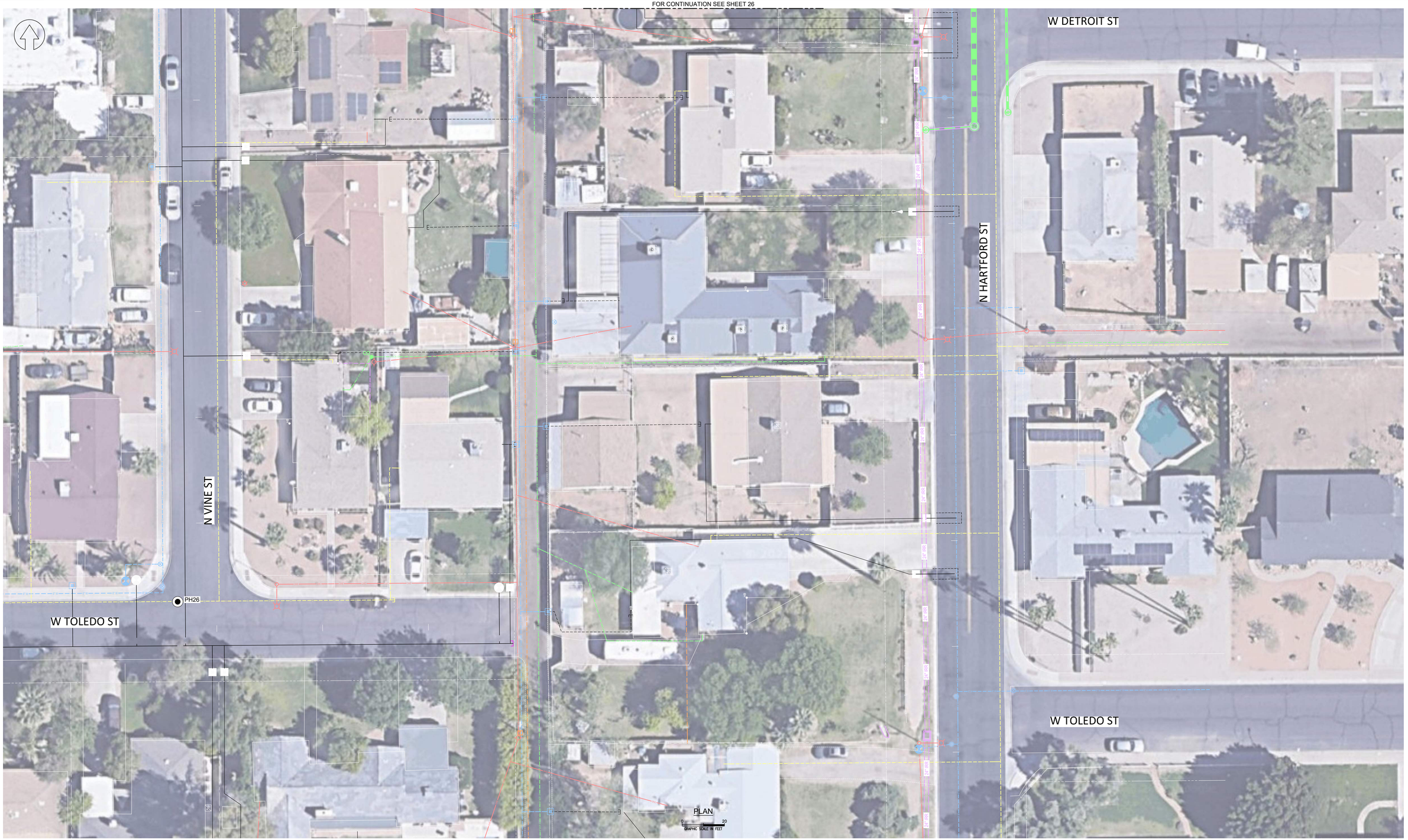
FOR CONTINUATION SEE SHEET 26



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T	UNDERGROUND TELEPHONE	OP	OVERHEAD POWER	DW	DOMESTIC WATER	VAULT	SWITCH
TV	UNDERGROUND CABLE TV	P	UNDERGROUND POWER	FW	FIRE WATER	VALVE	LIGHT
FOT	FIBER OPTIC TELEPHONE	GND	GROUND		POTHOLE	END OF MAIN	RECEPTACLE
FOTV	FIBER OPTIC TV	GPR	UTILITY LOCATED BY GPR		PROPOSED POTHOLE	RISER	HYDRANT
SPL	SPECIAL SYSTEM	UNK	UNKNOWN UTILITY		JUNCTION BOX	STORM DRAIN	FIRE DEPT CONNECTION
S	SANITARY SEWER	MT	EMPTY CONDUIT		METER	CLEANOUT	
SD	STORM SEWER	G	GAS		PEDESTAL		

EM NOTE:
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DOC - POTHOLE DEPTH OF COVER (FT)
MOC - MATERIAL OF CONSTRUCTION
EIC - ENCASED IN CONCRETE
X - POTHOLE SIZE (IN)

SAFE SITE UTILITY SERVICES, LLC
PHOENIX, AZ (602)606-8882

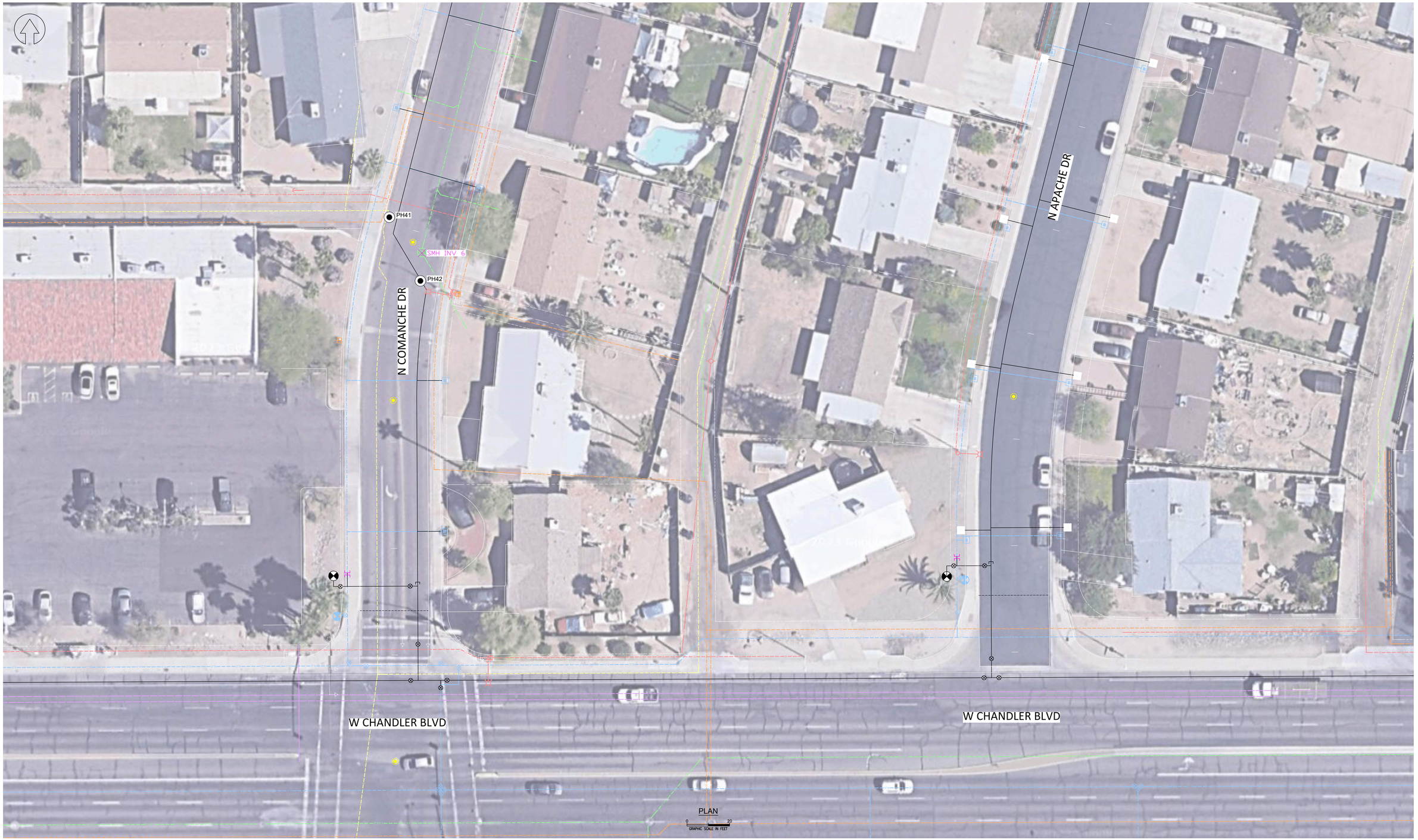
CHANDLER WMR 2022

DWN CDC | CHK JNS
PROJECT NO. 22-08-3204
FILENAME

REVISION 6
UTILITY LOCATION PLAN

SCALE 1" = 20' | DATE 1-8-2024 | SHEET 27 OF 30

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C



NOTES:

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- QUALITY LEVEL A (QL-A) - PRECISE LOCATION CONFIRMED BY EXPOSING THE UTILITY (I.E. POTHOLING).
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LEGEND

COMM	COMMUNICATION	IR	IRRIGATION	W	WATER	MANHOLE	POLE
OT	OVERHEAD TELEPHONE	IC	IRRIGATION CONTROL	CW	CHILLED WATER	HANDHOLE	TRANSFORMER
T	UNDERGROUND TELEPHONE	OP	OVERHEAD POWER	DW	DOMESTIC WATER	VAULT	SWITCH
TV	UNDERGROUND CABLE TV	P	UNDERGROUND POWER	FW	FIRE WATER	VALVE	LIGHT
FOT	FIBER OPTIC TELEPHONE	GND	GROUND		POTHOLE	END OF MAIN	RECEPTACLE
FOTV	FIBER OPTIC TV	GPR	UTILITY LOCATED BY GPR		PROPOSED POTHOLE	RISER	HYDRANT
SPL	SPECIAL SYSTEM	UNK	UNKNOWN UTILITY		JUNCTION BOX	STORM DRAIN	FIRE DEPT CONNECTION
S	SANITARY SEWER	MT	EMPTY CONDUIT		METER	CLEANOUT	
SD	STORM SEWER	G	GAS		PEDESTAL		

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DWN	CHK
CDC	JNS

PROJECT NO. 22-08-3204
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REVISION 6
UTILITY LOCATION PLAN

SCALE 1" = 20' | DATE 1-8-2024 | SHEET 28 OF 30

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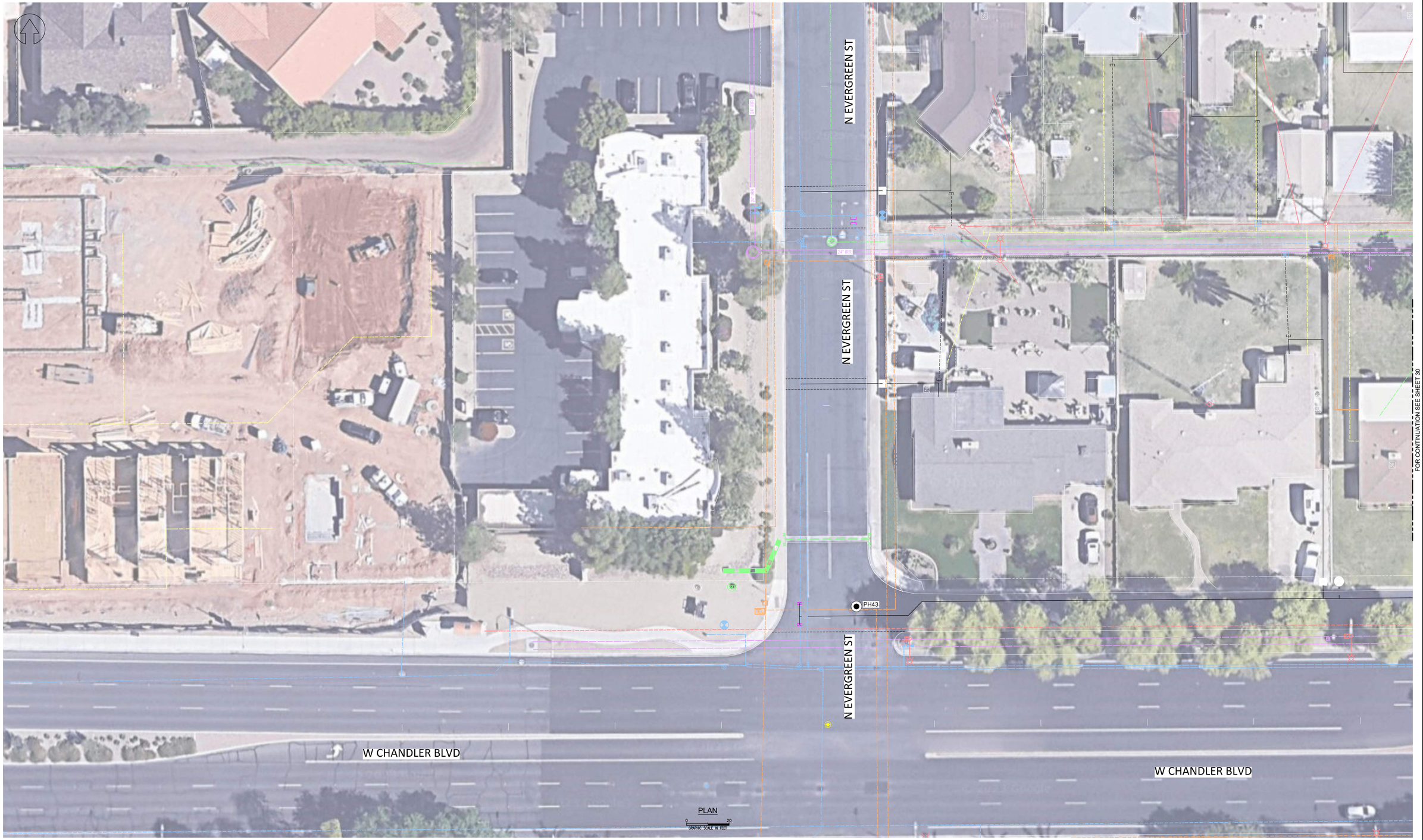

PLAN

0 20
GRAPHIC SCALE IN FEET

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LEGEND

COMM	COMMUNICATION	IR	IRRIGATION	W	WATER
OT	OVERHEAD TELEPHONE	IC	IRRIGATION CONTROL	CW	CHILLED WATER
T	UNDERGROUND TELEPHONE	OP	OVERHEAD POWER	DW	DOMESTIC WATER
TV	UNDERGROUND CABLE TV	P	UNDERGROUND POWER	FW	FIRE WATER
FOT	FIBER OPTIC TELEPHONE	GND	GROUND		POTHOLE
FOTV	FIBER OPTIC TV	GPR	UTILITY LOCATED BY GPR		PROPOSED POTHOLE
SPL	SPECIAL SYSTEM	UNK	UNKNOWN UTILITY		JUNCTION BOX
S	SANITARY SEWER	MT	EMPTY CONDUIT		METER
SD	STORM SEWER	G	GAS		PEDESTAL

MANHOLE	POLE		
HANDHOLE	TRANSFORMER		
VAULT	SWITCH		
VALVE	LIGHT		
END OF MAIN	RECEPTACLE		
RISER	HYDRANT		
STORM DRAIN	FIRE DEPT CONNECTION		
CLEANOUT			

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CHANDLER WMR 2022

DWN CDC CHK JNS
PROJECT NO. 22-08-3204
FILENAME

REVISION 6
UTILITY LOCATION PLAN

SCALE 1" = 20' | DATE 1-8-2024 | SHEET 29 OF 30

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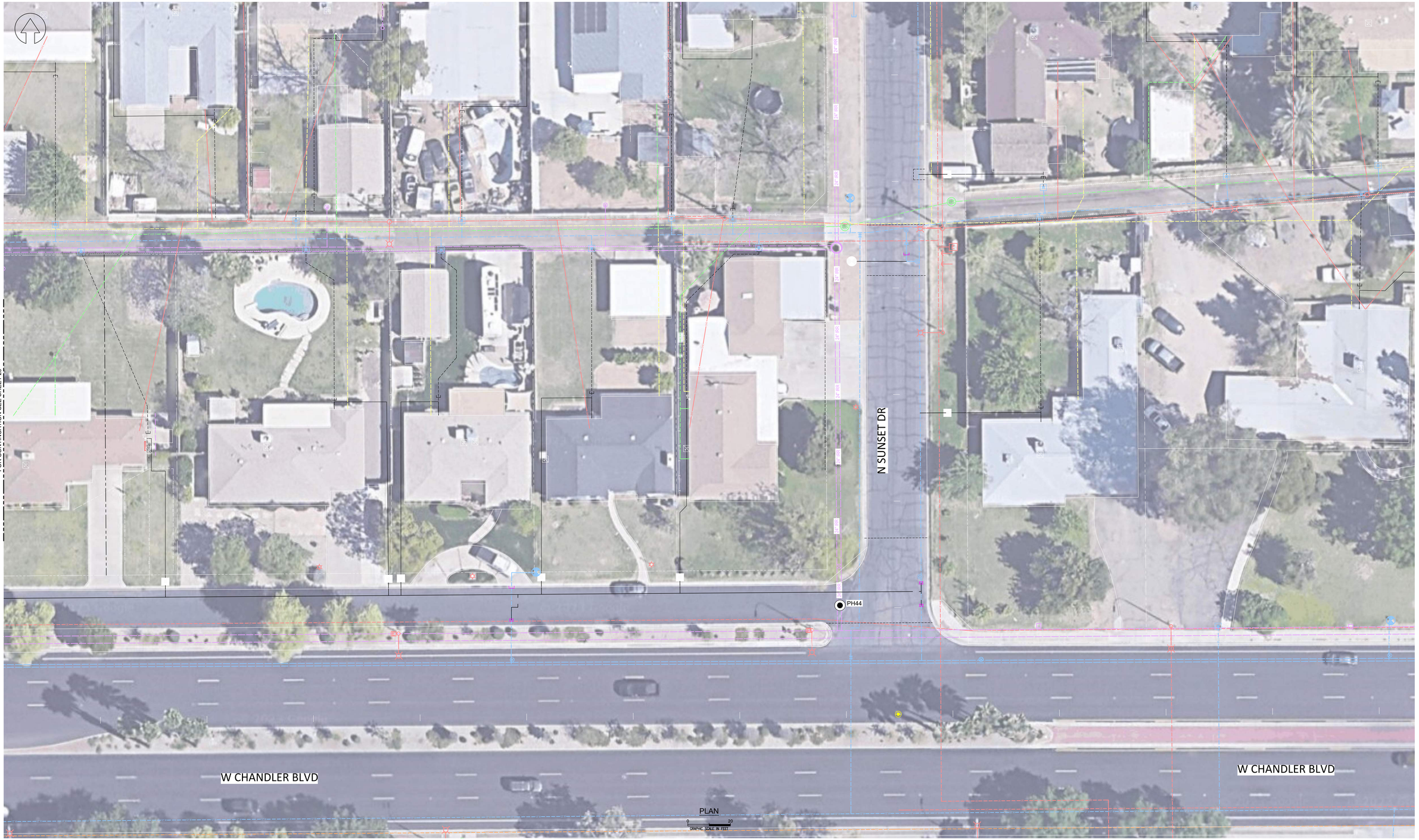

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CHANDLER WMR 2022

DWN CDC | CHK JNS
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REVISION 6
UTILITY LOCATION PLAN

SCALE 1" = 20' | DATE 1-8-2024 | SHEET 30 OF 30

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

EXHIBIT D

GIS / GPS DATA DELIVERY REQUIREMENTS

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

GIS / GPS Data Delivery Requirements

Contractor shall provide survey grade GPS / GIS data, meeting the following requirements for all facilities to be owned and/or operated by the City of Chandler.

a) ESRI File Geodatabase format:

All GPS point data, along with corresponding GIS Attribute data, must be submitted in ESRI File Geodatabase format. The City of Chandler will provide a copy of the File Geodatabase in ESRI ArcGIS format. Please submit your request through the Project Manager.

b) Data dictionary and Attribute data:

Attribute data should be provided for each of the GPS'd Utility Features listed in Section 'd' below. All Attribute data should conform to the ESRI File Geodatabase format, provided by the City. A copy of the data dictionary is also attached here for reference.

c) Coordinate System:

Horizontal Datum: Arizona State Plane Coordinates, Central Zone NAD83 (HARN)
Vertical Datum: NAVD88

d) Point Data for GPS:

1) Water System Features:
- Water main location (top of pipe), size and material (one (1) coordinate provided every 100 feet minimum) and at fittings.
- Water fitting location (top of feature), size, material and type including: Bend (22.5, 45, or 90), Tee, Tapping Sleeve, Cross, Coupling, End Cap, Line Stop, Reducer, Saddle, Other.
- Water valve location (center of valve box cover), size and type.
- Fire hydrant location (top of hydrant), manufacturer and year.
- Water service line location (at connection to main, any bends, and termination at meter box or meter vault or at the edge of easement or ROW), size and material.
- Water blow-off and air release valve location (center of cover), size, type and manufacturer.
- Water manhole or vault location (center of cover), size and type.

2) Waste Water System Features:
- Sewer manhole and cleanout location (center of cover), size, material, and cover type.
- Sewer gravity main location (invert of pipe), size, material and flow direction (from) at all manholes, cleanouts and structures.
- Sewer service line location, size and material (at connection to main, and termination at cleanout, or stub out at edge of the easement or ROW).
- Sewer force main location (top of pipe), size, and material (one (1) coordinate provided every 100 feet minimum) and at fittings.

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

- Sewer force main (and gravity) fitting location (top of feature), size, material and type including: Bend (22.5, 45, or 90), Tee, Tapping Sleeve, Cross, Coupling, End Cap, Linestop, Reducer, Saddle, Wye, Other
- Sewer force main valve location (center of valve box cover), size and type.
- Sewer force main air release valve location (center of cover), size, type and manufacturer.
- Sewer force main manhole or vault location (center of cover), size and material.
- Sewer structure (center of structure), type (diversion, junction box).

3) Reclaimed Water System Features:
   - Reclaimed main location (top of pipe), size, and material (one (1) coordinate provided every 100 feet minimum) and at fittings.
   - Reclaimed fitting location (top of feature), size, material and type including: Bend (22.5, 45, or 90), Tee, Tapping Sleeve, Cross, Coupling, End Cap, Linestop, Reducer, Saddle, Other.
   - Reclaimed valve location (center of valve box cover), size and type.
   - Reclaimed service line location (at connection to main, any bends, and termination at meter box or meter vault or at the edge of easement or ROW), size and material.
   - Reclaimed blow-off and air release valve location (center of cover), size, type and manufacturer.
   - Reclaimed manhole or vault location (center of cover), size and type.

4) Storm Water System Features:
   - Storm manhole and cleanout location (center of cover), size, material, and cover type.
   - Storm gravity main location (invert of pipe), size, material, and flow direction (from) at all manholes, cleanouts and structures.
   - Storm structure location (center of structure), type and category including: Drywell, Catch Basin, Scupper, Bubbler Box, and Collection Vault.

5) Streetlight Feature:
   - Streetlights

6) Standard GPS Metadata on all points collected: Date, Time, Horizontal Accuracy, Vertical Accuracy, Latitude, Longitude, Altitude, Surveyor, and Comments.

7) Electronic Data Submittal: Each submittal must consist of
   - ESRI – ArcGIS Geodatabase with cumulative data and attributes
   - Construction plans with collected utilities clearly redlined and changes marked

   The frequency of data submittals will be every two weeks after water, sewer, reclaim or storm assets go into the ground. Please email submittals to: GIS@chandleraz.gov

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

DATA DICTIONARY: WATER

WATER_BACKFLOW				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	GIS_BACKFLOW_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	GIS_BACKFLOW_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	GIS_BACKFLOW_SPATIALSOURCE
SIZE	SIZE	Double		
TYPE	TYPE	Text	25	GIS_BACKFLOW_TYPE
MANUFACTURER	MANUFACTURER	Text	25	GIS_BACKFLOW_MANUFACTURER
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	15	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

WATER_FITTING				
Field Name	**Alias Name**	**Data Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	20	WS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	20	WS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	WS_SPATIALSOURCE_STD
MATERIAL	MATERIAL	Text	20	WS_FITTING_MATERIAL
DIAMETER1	DIAMETER1	Text	8	RWS_FITTING_DIAMETER
DIAMETER2	DIAMETER2	Text	8	RWS_FITTING_DIAMETER
TYPE	TYPE	Text	30	WS_FITTING_TYPE
BEND	BEND	Text	20	WS_FITTING_BEND
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

WATER_HYDRANT				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	Feature Owner	Text	25	WS_FEATUREOWNER
LIFECYCLESTATUS	Lifecycle Status	Text	25	WS_LIFECYCLESTATUS
SPATIALSOURCE	Spatial Source	Text	25	WS_SPATIALSOURCE_STD
BARRELDIAMETER	Barrel Diameter	Double		
LARGENOZZLEDIAMETER	Large Nozzle Diameter	Double		
SMALLNOZZLEDIAMETER	Small Nozzle Diameter	Double		
OUTLETCONFIGURATION	Outlet Configuration	Double		
SEATDIAMETER	Seat Diameter	Double		
MANUFACTURER	Manufacturer	Text	25	WS_HYD_MANUFACTURER
YEARMANUFACTURED	Manufacture Year	Text	25	
HASLOCK	Has Lock ?	Text	25	GIS_BOOLEAN_YES_NO
COLOR	Color	Text	25	WS_HYD_COLOR
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	25	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

WATER_MANHOLE				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	20	WS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	20	WS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	WS_SPATIALSOURCE_STD
ACCESSDIAMETER	ACCESSDIAMETER	Text	8	
ACCESSTYPE	ACCESSTYPE	Text	20	
GROUNDTYPE	GROUNDTYPE	Text	20	WS_SYSVAL_GROUNDTYPE
COVERMATERIAL	COVERMATERIAL	Text	10	
COVERTYPE	COVERTYPE	Text	8	
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

WATER_METER				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	Feature Owner	Text	20	GBA_WMSL_FEATUREOWNER
LIFECYCLESTATUS	Lifecycle Status	Text	25	GBA_WMSL_LIFECYCLESTATUS
SPATIALSOURCE	Spatial Source	Text	25	GBA_STATIC_SPATIALSOURCE
DIAMETER	DIAMETER	Double		WS_METER_DIAM
MANUFACTURER	Manufacturer	Text	25	WS_METER_MANUFACTURER
METERTYPE	Meter Type	Text	25	WS_METER_TYPE
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	15	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

WATER_SYSTEM_VALVE				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATURE OWNER	Text	20	WS_SYSVAL_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLE STATUS	Text	20	WS_SYSVAL_LIFECYCLESTATUS
SPATIALSOURCE	SPATIAL SOURCE	Text	20	WS_SYSVAL_SPATIALSOURCE
TYPE	TYPE	Text	25	WS_SYSVAL_TYPE
VALVETYPE	VALVE TYPE	Text	10	WS_SYSVAL_VALVETYPE
FUNCTION	FUNCTION	Text	25	WS_SYSVAL_FUNCTION
GROUNDTYPE	GROUNDTYPE	Text	25	WS_SYSVAL_GROUNDTYPE
DIAMETER	Diameter	Text	8	WS_SYSVAL_DIAM
GPS_DATE	GPS DATE	Date		
GPS_TIME	GPS TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS COMMENT	Text	30	

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

Water Domains:

Domain name	WS_LIFECYCLESTATUS
ABANDONED	ABANDONED
ACTIVE	ACTIVE
FUTURE	FUTURE
INACTIVE	INACTIVE
REMOVED	REMOVED
UNKNOWN	UNKNOWN

Domain name	WS_SYSVAL_SPATIALSOURCE
APPROVED PLANS	APPROVED PLANS
ASBUILT	ASBUILT
DESIGN	DESIGN
GPS	GPS
HYDRMAINT	HYDRMAINT
ORTHOPHOTO	ORTHOPHOTO
TM7	TM7
UNKNOWN	UNKNOWN

Domain name	WS_HYD_MANUFACTURER
AMERICANDARLING	AMERICANDARLING
AVK	AVK
CLOW	CLOW
DRESSER	DRESSER
GREENBERG	GREENBERG
KENNEDY	KENNEDY
MUELLER	MUELLER
PACIFIC	PACIFIC
UNKNOWN	UNKNOWN
WATEROUS	WATEROUS

Domain name	WS_FEATUREOWNER
COC	Chandler
COG	Gilbert
COM	Mesa
COP	Phoenix
COT	Tempe
COUNTY	Maricopa County
GOULD	Gould
GRIC	GRIC
INTEL	Intel
MICROCHIP	Microchip
MOTOROLA	Motorola
PRIVATE	Private
SRP	SRP
SRVWUA	SRVWUA
UNKNOWN	UNKNOWN

Domain name	WS_SYSVAL_LIFECYCLESTATUS
FUTURE	FUTURE
UNKNOWN	UNKNOWN
INACTIVE	INACTIVE
ACTIVE	ACTIVE
REMOVED	REMOVED
ABANDONED	ABANDONED

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

Domain name	WS_FITTING_BEND
HORIZONTAL	HORIZONTAL
VERTICAL	VERTICAL

Domain name	WS_SYSVAL_DIAM
2	2
3	3
4	4
6	6
8	8
10	10
12	12
16	16
20	20
24	24
30	30
36	36
42	42
48	48
54	54

Domain name	WS_HYD_COLOR
0	YELLOW
1	BLACK/YELLOW
2	RED
3	UNKNOWN

Domain name	WS_FITTING_TYPE
11B	11B
22B	22B
45B	45B
90B	90B
COUPLING	COUPLING
CROSS	CROSS
ENDCAP	ENDCAP
LINESTOP	LINESTOP
OTHER	OTHER
REDUCER	REDUCER
SADDLE	SADDLE
TAPPING SLEEVE	TAPPING SLEEVE
TEE	TEE
UNKNOWN	UNKNOWN
WYE	WYE

Domain name	WS_SYSVAL_GROUNDTYPE
CONCRETE	CONCRETE
ASPHALT	ASPHALT
LANDSCAPE	LANDSCAPE
UNKNOWN	UNKNOWN

Domain name	WS_SPATIALSOURCE_STD
ASBUILT	ASBUILT
DESIGN	DESIGN
FIELD	FIELD
GPS	GPS
ORTHOPHOTO	ORTHOPHOTO
UNKNOWN	UNKNOWN

Docusign Envelope ID: 2DA620DB-A263-4374-841D-C5843AD8235C

Domain name	WS_METER_DIAM
0.63	.63
0.75	.75
1	1
1.5	1.5
2	2
2.5	2.5
3	3
4	4
6	6
8	8
10	10

Domain name	WS_METER_MANUFACTURER
BADGER METERS	BADTER METERS
NEPTUNE METERS	NEPTUNE METERS
PRECISION METERS	PRECISION METERS
BADGER-NEPTUNE	BADGER-NEPTUNE
SENSUS	SENSUS

Domain name	WS_METER_TYPE
BYPASS	BYPASS
COMBO	COMBO
CMPND	CMPND
DISC	DISC
MAG	MAG
FDTEC	FDTEC
MLTJET	MLTJET
TURBIN	TURBIN
Ultrasonic	Ultrasonic

S

Domain name	WS_SYSVAL_FEATUREOWNER
COC	COC
PRIVATE	PRIVATE
COM	COM
MOTOROLA	MOTOROLA
INTEL	INTEL
UNKNOWN	UNKNOWN
TOG	TOG

Domain name	WS_FITTING_MATERIAL
DI	DI
PVC	PVC
BRASS	BRASS
STL	STL
COPPER	COPPER
AC	AC
CC	CC
CI	CI

Domain name	WS_SYSVAL_TYPE
STANDARD	STANDARD
BLOWOFF	BLOWOFF
ARV	ARV
AIR VACUUM	AIR VACUUM
PERMASEAL	PERMASEAL

Domain name	GBA_WMSI_LIFECYCLESTATUS
Operational	Operational
Empty	Empty
Out of Service	Out of Service
Abandoned	Abandoned

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Domain name	WS_SYSVAL_FUNCTION
INLINE	INLINE
HYDRANT	HYDRANT
STUBOUT	STUBOUT
UNKNOWN	UNKNOWN
SERVICE	SERVICE
BYPASS	BYPASS
WPF	WPF
FDC	FDC
VAULT	VAULT
BACKFLOW	BACKFLOW
PUMPOUT	PUMPOUT
PUMPSTATION	PUMPSTATION
FIRELINE	FIRELINE
ARV	ARV
ZONE_SPLIT_VALVES	ZONE_SPLIT_VALVES

Domain name	GIS_BACKFLOW_FEATUREOWNER
COC	COC
PRIVATE	PRIVATE
CONTRACTOR	CONTRACTOR
INTEL	INTEL
OCA	OCA
OMG	OMG
TOG	TOG
UNKNOWN	UNKNOWN

Domain name	WS_SYSVAL_VALVETYPE
GATE	GATE
BUTTERFLY	BUTTERFLY
BALL	BALL
PLUG	PLUG
PIV	PIV
UNKNOWN	UNKNOWN
INSERTA	INSERTA

Domain name	GIS_BACKFLOW_MANUFACTURER
FEBCO	FEBCO
WATTS	WATTS
WILKINS	WILKINS
AMES	AMES
CONBRACO	SERVICE
HERSEY	HERSEY
RAIN BIRD	RAIN BIRD
APOLLO VALVES	APOLLO VALVES
METRON	METRON
OTHER	OTHER

Domain name	GIS_BACKFLOW_TYPE
Air Gap	Air Gap
Unknown	Unknown
Double Check Detector	Double Check Detector
Pressure Vacuum Breaker	Pressure Vacuum Breaker
Double Check	Double Check
Reduced Pressure Detector	Reduced Pressure Detector
Atmoshpheric Vacuum Breaker	Atmoshpheric Vacuum Breaker

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DATA DICTIONARY: SEWER

SEWER CLEANOUT				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	20	WW_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	20	WW_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	WW_SPATIALSOURCE
RIM_ELEV	RIM_ELEV	Double		
INV_ELEV	INV_ELEV	Double		
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

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SEWER CONTROL VALVE				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	20	WW_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	20	WW_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	WW_SPATIALSOURCE
TYPE	TYPE	Text	25	WW_CONTROL_VALVE_TYPE
DIAMETER	DIAMETER	Text	8	
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

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SEWER_FITTING				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	20	WW_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	20	WW_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	WW_SPATIALSOURCE
MATERIAL	MATERIAL	Text	20	WW_FITTING_MATERIAL
TYPE	TYPE	Text	30	WW_FITTING_TYPE
BEND	BEND	Text	20	WW_FITTING_BEND
SIZE	SIZE	Text	20	
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

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SEWER_MANHOLE				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	WW_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	WW_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	WW_SPATIALSOURCE
TYPE	TYPE	Text	20	WW_MH_TYPE
COVER_MATERIAL	COVER_MATERIAL	Text	25	WW_MH_COVER_MATERIAL
COVER_HOLE	COVER_HOLE	Text	25	WW_MH_COVER_HOLE
COVER_SIZE	COVER_SIZE	Text	20	WW_MH_COVER_SIZE
RIM_ELEV	RIM_ELEV	Double		
INV_ELEV	INV_ELEV	Double		
LINING	LINING	Text	255	WW_MH_LINER
WALL_MATERIAL	WALL_MATERIAL	Text	255	WW_MH_WALL_MATERIAL
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

Sewer Domains:

Domain name	WW_FEATUREOWNER
COC	COC
PRIVATE	PRIVATE
TOG	TOG
UNKNOWN	UNKNOWN

Domain name	WW_SPATIALSOURCE
GPS	GPS
ASBUILT	ASBUILT
UNKNOWN	UNKNOWN

Domain name	WW_MH_COVER_HOLE
UNKNOWN	UNKNOWN
SEALED	SEALED

Domain name	WW_MH_LINER
CAST-IN-PLACE	CAST-IN-PLACE
CEMENTITIOUS	CEMENTITIOUS
COMPOSITE	COMPOSITE
CURED-IN-PLACE	CURED-IN-PLACE
EPOXY	EPOXY
FR PLASTIC INSERT	FR PLASTIC INSERT
FR POLYMER INSERT	FR POLYMER INSERT
INSERT	INSERT
UNKNOWN	UNKNOWN

Domain name	WW_LIFECYCLESTATUS
ABANDONED	ABANDONED
ACTIVE	ACTIVE
INACTIVE	INACTIVE
PULLED	PULLED
UNKNOWN	UNKNOWN

Domain name	WW_MH_COVER_MATERIAL
ALUMINUM	ALUMINUM
CASTIRON	CASTIRON
HDPE COMPOSITE - CAP	HDPE COMPOSITE - CAP
HDPE COMPOSITE - EJ	HDPE COMPOSITE - EJ
HDPE COMPOSITE - HD20	HDPE COMPOSITE - HD20
STEEL	STEEL
UNKNOWN	UNKNOWN

Domain name	WW_MH_COVER_SIZE
0	Unknown
4	4
6	6
8	8
22	22
24	24
26	26
28	28
30	30
32	32
38	38
48	48
60	60

Domain name	WW_MH_WALL_MATERIAL
NONE	NONE
COMPOSITE	COMPOSITE
UNKNOWN	UNKNOWN
CONCRETE	CONCRETE
POURED	POURED
TLOCK	TLOCK
PRECAST	PRECAST
BRICK	BRICK

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Domain name	WW_FITTING_MATERIAL
PVC	PVC
DIP	DIP
HDPE	HDPE
RCP	RCP
ACP	ACP
ABS	ABS
RUBBER	RUBBER
CONCRETE	CONCRETE
CLAY	CLAY
STEEL ENCASED VCP	STEEL ENCASED VCP
TLOCK LINE	TLOCK LINE
LINED RCP	LINED RCP
PVC LINED RCP	PVC LINED RCP
PVC LINED DIP	PVC LINED RCP

Domain name	WW_FITTING_BEND
HORIZONTAL	HORIZONTAL
VERTICAL	VERTICAL
NONE	NONE

Domain name	WW_MH_TYPE
0	UNKNOWN
1	SANITARY SEWER
2	ARV

Domain name	WW_FITTING_TYPE
TEE	TEE
WYE	WYE
90 BEND	90 BEND
45 BEND	45 BEND
22 BEND	22 BEND
11 BEND	11 BEND
ENCAP	ENCAP
PLUG	PLUG
REDUCER	REDUCER
ARV	ARV
FLOW METER	FLOW METER
NO FLOW POINT	NO FLOW POINT
OWNERSHIP CHANGE	OWNERSHIP CHANGE
OTHER	OTHER
UNKNOWN	UNKNOWN
COUPLING	COUPLING

Domain name	WW_CONTROL_VALVE_TYPE
AIRRELEASE	AIRRELEASE
AIRVACUUMRELEASE	AIRVACUUMRELEASE
PRESSURERELIEF	PRESSURERELIEF
VACUUMRELEASE	VACUUMRELEASE
UNKNOWN	UNKNOWN
N/A	N/A

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DATA DICTIONARY: RECLAIM

RECLAIM_WATER_BACKFLOW				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	GIS_BACKFLOW_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	GIS_BACKFLOW_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	GIS_BACKFLOW_SPATIALSOURCE
SIZE	SIZE	Double		
TYPE	TYPE	Text	25	GIS_BACKFLOW_TYPE
MANUFACTURER	MANUFACTURER	Text	25	GIS_BACKFLOW_MANUFACTURER
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	15	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

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RECLAIM_WATER_FITTING				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	20	RWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	20	RWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	RWS_SPATIALSOURCE
MATERIAL	MATERIAL	Text	20	RWS_MAIN_OR_SERVICE_MATERIAL
DIAMETER1	DIAMETER1	Text	8	RWS_FITTING_DIAMETER
DIAMETER2	DIAMETER2	Text	8	RWS_FITTING_DIAMETER
TYPE	TYPE	Text	30	RWS_FITTING_TYPE
BEND	BEND	Text	20	RWS_FITTING_BEND
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double	8	
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double	8	
GPS_COMMENT	GPS_COMMENT	Text	30	

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RECLAIM_WATER_MANHOLE				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	20	RWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	20	RWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	RWS_SPATIALSOURCE
ACCESSDIAMETER	ACCESSDIAMETER	Text	8	
ACCESSTYPE	ACCESSTYPE	Text	20	
GROUNDTYPE	GROUNDTYPE	Text	20	RWS_GROUNDTYPE
COVERMATERIAL	COVERMATERIAL	Text	10	RWS_COVER_MATERIAL
COVERTYPE	COVERTYPE	Text	8	RWS_COVER_TYPE
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

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RECLAIM_WATER_METER				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	Feature Owner	Text	20	GBA_WMSL_FEATUREOWNER
LIFECYCLESTATUS	Lifecycle Status	Text	25	GBA_WMSL_LIFECYCLESTATUS
SPATIALSOURCE	Spatial Source	Text	25	GBA_STATIC_SPATIALSOURCE
DIAMETER	DIAMETER	Double		RWS_METER_DIAM
MANUFACTURER	Manufacturer	Text	25	RWS_METER_MANUFACTURER
METERTYPE	Meter Type	Text	25	RWS_METERTYPE
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	15	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

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RECLAIM WATER SYSTEM VALVE				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATURE OWNER	Text	20	RWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLE STATUS	Text	20	RWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIAL SOURCE	Text	20	RWS_SPATIALSOURCE
TYPE	TYPE	Text	25	RWS_SYSVAL_TYPE
VALVETYPE	VALVE TYPE	Text	10	RWS_SYSVAL_VALVETYPE
FUNCTION	FUNCTION	Text	25	RWS_SYSVAL_FUNCTION
GROUNDTYPE	GROUNDTYPE	Text	25	RWS_SYSVAL_GROUNDTYPE
DIAMETER	DIAMETER	Double		RWS_SYSVAL_DIAM
GPS_DATE	GPS DATE	Date	8	
GPS_TIME	GPS TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS COMMENT	Text	30	

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Reclaim Water Domains:

Domain name	RWS_SYSVAL_VALVETYPE
BALL	BALL
BUTTERFLY	BUTTERFLY
GATE	GATE
INSERTA	INSERTA
PIV	PIV
PLUG	PLUG
UNKNOWN	UNKNOWN

Domain name	RWS_SYSVAL_FUNCTION
ARV	ARV
INLINE	INLINE
PUMPOUT	PUMPOUT
PUMPSTATION	PUMPSTATION
SERVICE	SERVICE
STUBOUT	STUBOUT
UNKNOWN	UNKNOWN
VAULT	VAULT

Domain name	RWS_SYSVAL_TYPE
ARV	ARV
AIR VACUUM	AIR VACUUM
BLOWOFF	BLOWOFF
PERMASEAL	PERMASEAL
STANDARD	STANDARD

Domain name	RWS_FITTING_BEND
HORIZONTAL	HORIZONTAL
VERTICAL	VERTICAL

Domain name	RWS_MAIN_OR_SERVICE_MATERIAL
AC	AC
CC	CC
CI	CI
CU	COPPER
DI	DI
PVC	PVC
UNKNOWN	UNKNOWN
AC	AC
CC	CC

Domain name	RWS_FITTING_TYPE
11B	11B
22B	22B
45B	45B
90B	90B
COUPLING	COUPLING
CROSS	CROSS
ENDCAP	ENDCAP
LINESTOP	LINESTOP
MECHANICAL JOINT	MECHANICAL JOINT
OTHER	OTHER
RECHARGE WELL	RECHARGE WELL
REDUCER	REDUCER
SADDLE	SADDLE
TAPPING SLEEVE	TAPPING SLEEVE
TEE	TEE
UNKNOWN	UNKNOWN
WYE	WYE

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Domain name	RWS_SPATIALSOURCE
ASBUILT	ASBUILT
FIELD	FIELD
GPS	GPS
ORTHOPHOTO	ORTHOPHOTO
UNKNOWN	UNKNOWN

Domain name	RWS_LIFECYCLESTATUS
ABANDONED	ABANDONED
ACTIVE	ACTIVE
INACTIVE	INACTIVE
REMOVED	REMOVED
UNKNOWN	UNKNOWN

Domain name	RWS_SYSVAL_DIAM
1.5	1.5
2	2
3	3
4	4
6	6
8	8
10	10
12	12
16	16
20	20
24	24
30	30
36	36
42	42
48	48
9999	UNKNOWN

Domain name	RWS_GROUNDTYPE
ASPHALT	ASPHALT
CONCRETE	CONCRETE
DIRT	DIRT
UNKNOWN	UNKNOWN

Domain name	RWS_SYSVAL_GROUNDTYPE
ASPHALT	ASPHALT
CONCRETE	CONCRETE
LANDSCAPE	LANDSCAPE
UNKNOWN	UNKNOWN

Domain name	RWS_FITTING_DIAMETER
0.63	0.63
0.75	0.75
1	1
1.25	1.25
1.5	1.5
2	2
2.5	2.5
3	3
4	4
6	6
8	8
10	10
12	12
15	15
16	16
18	18
20	20
24	24
30	30

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Domain name	RWS_COVER_MATERIAL
CAST IRON	CAST IRON
ALUMINUM	ALUMINUM
UNKNOWN	UNKNOWN

Domain name	RWS_COVER_TYPE
SEALED	SEALED
VENTED	VENTED
BOLTED	BOLTED
UNKNOWN	UNKNOWN

Domain name	RWS_METER_MANUFACTURER
BADGER METERS	BADGER METERS
NEPTUNE METERS	NEPTUNE METERS
PRECISION METERS	PRECISION METERS
BADGER-NEPTUNE	BADGER-NEPTUNE
SENSUS	SENSUS

Domain name	RWS_METERTYPE
BYPASS	BYPASS
COMBO	COMBO
CMPND	CMPND
DISC	DISC
MAG	MAG
FDTEC	FDTEC
MLTJET	MLTJET
TURBIN	TURBIN

Domain name	RWS_METER_DIAM
0.63	.63
0.75	.75
1	1
1.5	1.5
2	2
2.5	2.5
3	3
4	4
6	6
8	8
10	10

Domain name	RWS_FEATUREOWNER
COC	CHANDLER
COM	MESA
INTEL	INTEL
OCA	OCA
OMG	OMG
PRIVATE	PRIVATE
SRP	SRP
TOG	GILBERT
UNKNOWN	UNKNOWN

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DATA DICTIONARY: STORM

STORM_BUBBLER_BOX				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	SWS_SPATIALSOURCE
GRATE_OPENINGS_NUM	GRATE_OPENINGS_NUM	Short		SWS_GRATE_OPENINGS
GRATE_LENGTH	GRATE_LENGTH	Double	8	SWS_GRATE_LENGTH
GRATE_WIDTH	GRATE_WIDTH	Double	8	SWS_GRATE_WIDTH
DRYWELL_ASSOC	DRYWELL_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

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STORM_CATCHBASIN				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	SWS_SPATIALSOURCE
STRUCTURE_TYPE	STRUCTURE_TYPE	Short		SWS_STRUCTURE_TYPE
CATCHBASIN_TYPE	CATCHBASIN_TYPE	Text	25	SWS_CB_TYPE
CITY_EMBLEM	CITY_EMBLEM	Text	5	GIS_BOOLEAN_YES_NO
ACCESS_OPENING_TYPE	ACCESS_OPENING_TYPE	Text	25	SWS_CB_ACCESS_OPENING_TYPE
GRATE_LENGTH	GRATE_LENGTH	Double		SWS_GRATE_LENGTH
GRATE_WIDTH	GRATE_WIDTH	Double		SWS_GRATE_WIDTH
LID	LID	Text	5	GIS_BOOLEAN_YES_NO
LID_TYPE	LID_TYPE	Text	25	SWS_CB_LID_TYPE
DRYWELL_CONN	DRYWELL_CONN	Text	5	GIS_BOOLEAN_YES_NO
OUTLET_CONN	OUTLET_CONN	Text	5	GIS_BOOLEAN_YES_NO
BUBBLERBOX_CONN	BUBBLERBOX_CONN	Text	5	GIS_BOOLEAN_YES_NO
BUBBLERBOX_DRYWELL_ASSOC	BUBBLERBOX_DRYWELL_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
LAKE_DRAIN	LAKE_DRAIN	Text	5	GIS_BOOLEAN_YES_NO
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

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STORM_COLLECTION_VAULT				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	20	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	20	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	SWS_SPATIALSOURCE
INLET_NUM	INLET_NUM	Short		SWS_CV_NUMB_INLETS
INLET_DIAM	INLET_DIAM	Short		SWS_CV_PIPE_SIZE
INLET_PIPE_TYPE	INLET_PIPE_TYPE	Text	30	SWS_CV_PIPE_TYPE
NUISANCE_LINE_ASSOC	NUISANCE_LINE_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
DRYWELL_ASSOC	DRYWELL_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
LID_GRATE	LID_GRATE	Text	5	SWS_LID_GRATE
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

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STORM_DRAIN_MANHOLE				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	SWS_SPATIALSOURCE
STRUCTURE_TYPE	STRUCTURE_TYPE	Short	2	SWS_STRUCTURE_TYPE
CHANDLER_NAME	CHANDLER_NAME_ON_LID	Text	5	GIS_BOOLEAN_YES_NO
DIAMETER	DIAMETER	Short	2	SWS_SDMH_SIZE
VENT_HOLE	VENT_HOLE	Text	30	GIS_BOOLEAN_YES_NO
ACCESS_OPENING_TYPE	ACCESS_OPENING_TYPE	Text	25	SWS_SDMH_ACCESS_OPENING_TYPE
LID_TYPE	LID_TYPE	Text	30	SWS_SDMH_TYPE
LID_TEXT	LID_TEXT	Text	30	SWS_SDMH_LID_TEXT
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

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STORM_DRYWELL				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	SWS_SPATIALSOURCE
FIELD_LOC	FIELD_LOC	Text	100	SWS_DW_LOCATION
INSTALLER	INSTALLER	Text	30	SWS_DW_INSTALLER
CHAMBER_TYPE	CHAMBER_TYPE	Text	30	SWS_DW_CHAMBER_TYPE
LID_SIZE	LID_SIZE	Short		SWS_DW_LID_SIZE
LID_TYPE	LID_TYPE	Text	25	SWS_DW_LID_TYPE
NUISANCE_LINE_ASSOC	NUISANCE_LINE_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
CONCRETE_PAD	CONCRETE_PAD	Text	5	GIS_BOOLEAN_YES_NO
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

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STORM_INLET				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	SWS_SPATIALSOURCE
CATCHBASIN_TYPE	CATCHBASIN_TYPE	Text	25	SWS_CB_TYPE
FIELD_LOC	FIELD_LOC	Text	100	SWS_FIELD_LOC
GRATE_ASSOC	GRATE_ASSOC	Text	25	GIS_BOOLEAN_YES_NO
GRATE_LENGTH	GRATE_LENGTH	Double		SWS_GRATE_LENGTH
GRATE_WIDTH	GRATE_WIDTH	Double		SWS_GRATE_WIDTH
INLET_PIPE_DIAM	INLET_PIPE_DIAM	Short		SWS_INLET_PIPE_DIAM
INLET_NUMBER	NUMBER_OF_INLETS	Short		SWS_INLET_NUMBER
TRASHRACK_ASSOC	TRASHRACK_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
TRASH_LENGTH	TRASH_LENGTH	Double		
TRASH_WIDTH	TRASH_WIDTH	Double		
NUISANCE_LINE_ASSOC	NUISANCE_LINE_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
BUBBLER_BOX_DRYWELL_ASSOC	BUBBLER_BOX_DRYWELL_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
HEADWALLASSOC	HEADWALLASSOC	Text	5	GIS_BOOLEAN_YES_NO
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

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STORM_OUTLET				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	SWS_SPATIALSOURCE
GRATE_ASSOC	GRATE_ASSOC	Text	25	GIS_BOOLEAN_YES_NO
GRATE_LENGTH	GRATE_LENGTH	Double		SWS_GRATE_LENGTH
GRATE_WIDTH	GRATE_WIDTH	Double		SWS_GRATE_WIDTH
INLET_PIPE_DIAM	INLET_PIPE_DIAM	Short		SWS_INLET_PIPE_DIAM
INLET_NUMBER	NUMBER_OF_INLETS	Short		SWS_INLET_NUMBER
TRASHRACK_ASSOC	TRASHRACK_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
TRASH_LENGTH	TRASH_LENGTH	Double		
TRASH_WIDTH	TRASH_WIDTH	Double		
NUISANCE_LINE_ASSOC	NUISANCE_LINE_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
BUBBLER_BOX_DRYWELL_ASSOC	BUBBLER_BOX_DRYWELL_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
HEADWALLASSOC	HEADWALLASSOC	Text	5	GIS_BOOLEAN_YES_NO
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

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STORM_SCUPPER				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	SWS_SPATIALSOURCE
CITY_EMBLEM	CITY_EMBLEM	Text	5	GIS_BOOLEAN_YES_NO
NUMBER_OPENINGS	NUMBER_OPENINGS	Short		
WIDTH	WIDTH	Double		
SPILLWAY_ASSOC	SPILLWAY_ASSOC	Text	25	GIS_BOOLEAN_YES_NO
HEADWALL_ASSOC	HEADWALL_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
NUISANCE_LINE_ASSOC	NUISANCE_LINE_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
BUBBLERBOX_ASSOC	BUBBLERBOX_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
BUBBLER_BOX_DRYWELL_ASSOC	BUBBLER_BOX_DRYWELL_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
LAKE_DRAIN	LAKE_DRAIN	Text	5	GIS_BOOLEAN_YES_NO
RIPRAP	RIPRAP	Text	25	GIS_BOOLEAN_YES_NO
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

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Storm Domains:

Domain name	SWS_DW_LOCATION
AIRPORT	AIRPORT
CITYRETENTION	CITY RETENTION
PARK	PARK
PARKING_LOT	PARKING LOT
PRIVATERETENTION	PRIVATE RETENTION
STREET	STREET
WELL_SITE	WELL SITE

Domain name	SWS_GRATE_LENGTH
12	12
24	24
28	28
30	30
36	36
38	38
40	40
50	50
60	60
76	76

Domain name	SWS_CB_LID_TYPE
STEEL	STEEL
CONCRETE	CONCRETE

Domain name	SWS_DW_CHAMBER_TYPE
DOUBLE	DOUBLE
SINGLE	SINGLE
TRIPLE	TRIPLE

Domain name	SWS_LIFECYCLESTATUS
ACTIVE	ACTIVE
REMOVED	REMOVED
ABANDONED	ABANDONED
INACTIVE	INACTIVE
FUTURE	FUTURE

Domain name	SWS_GRATE_OPENINGS
1	1
2	2
3	3
4	4
5	5
6	6

Domain name	SWS_SPATIALSOURCE
APPROVED_PLANS	APPROVED_PLANS
ASBUILT	ASBUILT
DESIGN	DESIGN
FIELD	FIELD
GPS	GPS
ORTHOPHOTO	ORTHOPHOTO
UNKNOWN	UNKNOWN

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Domain name	SWS_SDMH_SIZE
22	22
24	24
26	26
28	28
30	30
32	32
38	38

Domain name	SWS_DW_LID_SIZE
22	22
24	24
25	25
26	26
32	32
38	38

Domain name	SWS_STRUCTURE_TYPE
1	CATCH BASIN
2	SCUPPER
3	DRYWELL
4	MANHOLE
5	OUTLET
6	INLET
7	BUBBLERBOX
8	SPILLWAY
9	SEPARATOR

Domain name	SWS_SDMH_LID_TEXT
CHANDLER_SANITATION_SEWER	CHANDLER SANITATION SEWER
CHANDLER_STORM/SEWER	CHANDLER STORM/SEWER
NONE	NONE
OTHER	OTHER
STORM SEWER	STORM SEWER

Domain name	SWS_DW_INSTALLER
McGUCKINDRILLING	McGUCKIN DRILLING
TORRENTRESOURCES	TORRENT RESOURCES
WACODRILLING	WACO DRILLING
OTHER	OTHER

Domain name	SWS_CB_ACCESS_OPENING_TYPE
NONE	NONE
RECTANGULAR	RECTANGULAR
ROUND	ROUND
SQUARE	SQUARE

Domain name	SWS_FEATUREOWNER
ADOT	ADOT
CITY_OF_CHANDLER	CITY_OF_CHANDLER
HOA	HOA
OTHER	OTHER

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Domain name	SWS_GRATE_WIDTH
6	6
12	12
16	16
18	18
24	24
28	28
30	30
36	36
38	38
44	44
72	72

Domain name	SWS_SDMH_ACCESS_OPENING_TYPE
NONE	NONE
RECTANGULAR	RECTANGULAR
ROUND	ROUND
SQUARE	SQUARE

Domain name	SWS_FIELD_LOC
PARK	PARK
WELLSI	WELL_SITE
PRKLOT	PARKING_LOT
STREET	STREET
AIRPOR	AIRPORT
CTYRTN	CITYRETENTION
PVRET	PRIVATERETENTION

Domain name	SWS_SDMH_TYPE
PRESSURIZED	PRESSURIZED
NON-PRESSURIZED	NON-PRESSURIZED

Domain name	SWS_DW_LID_TYPE
STEEL	STEEL
GRANITE	GRANITE
CONCRETE_SEALED	CONCRETE_SEALED
GRATE	GRATE

Domain name	SWS_INLET_PIPE_DIAM
12	12
13	13
14	14
15	15
16	16
18	18
24	24
26	26
30	30
36	36
42	42
46	46
60	60
72	72

Domain name	SWS_INLET_NUMBER
1	1
2	2
3	3
4	4

Domain name	SWS_CB_TYPE
TYPE_A	TYPE_A
TYPE_B	TYPE_B
TYPE_C	TYPE_C
TYPE_D	TYPE_D
TYPE_E	TYPE_E
TYPE_F	TYPE_F
TYPE_G	TYPE_G
TYPE_H	TYPE_H
TYPE_Q	TYPE_Q
NONE	NONE

Domain name	SWS_LID_GRATE
LID	LID
GRATE	GRATE

Domain name	SWS_CV_PIPE_TYPE
CONCRETE	CONCRETE
OTHER	OTHER
METAL	METAL

Domain name	SWS_CV_PIPE_SIZE
12	12
14	14
16	16
18	18
20	20
24	24
30	30
36	36

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DATA DICTIONARY: MISCELLANEOUS POINTS

MISCELLANEOUS POINT				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
SIZE	SIZE	Double		
MATERIAL	MATERIAL	Text	30	
UTILITY_TYPE	UTILITY_TYPE	Text	30	PW_UTILITY_TYPE
NOTES	NOTES	Text	150	
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

Domains:

Domain name	PW_UTILITY_TYPE
WATER	WATER
WASTEWATER	WASTEWATER
RECLAIM	RECLAIM
STORM	STORM
OTHER	OTHER

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DATA DICTIONARY: STREETLIGHTS

STREETLIGHTS				
Field Name	**Alias Name**	**Type**	**Length**	**Domain**
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	POLE_OWNER	Text	10	ST_STLITINV_FEATUREOWNER
SPATIALSOURCE	SPATIALSOURCE	Text	25	GBA_STATIC_SPATIALSOURCE
POLENUMBER	POLENUMBER	Text	10	
POLE_HEIGHT	POLE_HEIGHT	Short		
POLE_TYPE	POLE_TYPE	Text	30	TE_STLITINV_POLE_TYPE
POLE_COAT	POLE_COAT	Text	30	TE_STLITINV_POLE_COAT
FOUNDATION	FOUNDATION	Text	30	GIS_BOOLEAN_YES_NO
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	255	

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Streetlights Domains:

Domain name	ST_STLITINV_FEATUREOWNER
COC	CITY OF CHANDLER
PRIVATE	PRIVATE
SRP	SRP
AP	APS

Domain name	GBA_STATIC_SPATIALSOURCE
GPS	GPS
ORTHOPHOTO	ORTHOPHOTO
APPROVED_PLANS	APPROVED_PLANS
GEOCODED	GEOCODED
UNKNOWN	UNKNOWN

Domain name	TE_STLITINV_POLE_TYPE
SL 1	SL 1
SL 6	SL 6
SL 8	SL 8
SL 10	SL 10
SL 16	SL 16
SL 17	SL 17
CURVED	CURVED
CUSTOM	CUSTOM
STERNBERG	STERNBERG
SIGNAL POLE	SIGNAL POLE
POWER POLE	POWER POLE

Domain name	TE_STLITINV_POLE_COAT
GALVANIZED	GALVANIZED
PAINTED	PAINTED
POWDER COATED	POWDER COATED

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EXHIBIT E

FEDERAL PROVISIONS

N/A