



CITY OF CHANDLER, ARIZONA

CHANDLER HEIGHTS ROAD UTILITY RELOCATIONS - GMP 1

CITY PROJECT NO. WW2111.401

CONSTRUCTION SERVICES CONTRACT (CONSTRUCTION MANAGER AT RISK)

**Andrew Goh, P.E.
CIP City Engineer**

CITY OF CHANDLER, ARIZONA

**CHANDLER HEIGHTS ROAD UTILITY RELOCATIONS - GMP 1
CITY PROJECT NO.: WW2111.401**

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**CONSTRUCTION MANAGER AT RISK
CONSTRUCTION SERVICES CONTRACT
PROJECT NO.: WW2111.401**

THIS CONTRACT is made and entered into on the ____ day of _____, 2021, ("Effective Date") by and between City of Chandler, an Arizona municipal corporation, hereinafter called "City" and the "Construction Manager at Risk" or "CM@Risk" designated below (City and CM@Risk may individually be referred to as "Party" and collectively referred to as "Parties").

City and CM@Risk agree as follows:

ARTICLE 1 - PARTICIPANTS AND PROJECT

CITY: **CIP City Engineer:**
 Andrew Goh, P.E.
 Public Works & Utilities Department
 P.O. Box 4008, Mail Stop 407
 Chandler, AZ 85244-4008
 Phone: 480-782-3343
 Email: andrew.goh@chandleraz.gov

CITY: **Construction Project Manager:**
 Paul Ahlas
 Public Works & Utilities Department
 P.O. Box 4008, Mail Stop 407
 Chandler, AZ 85244-4008
 Phone: 480-782-3328
 Email: paul.ahlas@chandleraz.gov

CM@RISK: **Achen-Gardner Construction, LLC**
 555 S. 79th St. Chandler AZ 85226
 Arizona ROC No.: 261745 A, 261746 B1, 261747 B4
 Federal Tax ID No.: 27-1394157
 Business Organization: limited liability company
 State Where Organized: Arizona
 Statutory Agent Name: CT Corporation
 Statutory Agent Mailing Address: 3800 N Central Ave. #460 Phoenix AZ
 85012
 CM@Risk's Authorized Project Representative:
 Name: Dan Broderick
 Title: Project Manager
 Phone: 480-940-1300 / 602-376-9434
 Email: dbroderick@achen.com

PROJECT DESCRIPTION:

Relocation of sanitary sewer and potable water utilities for an SRP 230kV transmission system.

PROJECT LOCATION:

Chaparral Way from Dobson Road to Lake Drive

ARTICLE 2 - CONTRACT DOCUMENTS

2.1 CONTRACT DOCUMENTS

The Contract between City and CM@Risk will consist of the following Contract Documents:

1. This Construction Services Contract 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. Accepted GMP/Price Proposal as set forth in **Exhibit D**, incorporated by reference.

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

2.3 DEFINITIONS

The definitions in Sections 2 and 15 of the General Conditions apply to all the Contract Documents, including this Agreement.

ARTICLE 3 - PRE-CONSTRUCTION SERVICES

Although CM@Risk has performed Pre-Construction Services pursuant to a separate Contract between City and CM@Risk, the completion, quality and accuracy of those services and the deliverables provided by City thereunder directly impact CM@Risk's performance of its obligations under this Contract. Therefore, all of CM@Risk's obligations, duties, and warranties in relation to Pre-Construction Services and deliverables survive completion of the Pre-Construction Services Contract and are incorporated herein. Any breach of any of CM@Risk's duties, obligations, or warranties under the Pre-Construction Services Contract will likewise be considered a breach of this Contract.

ARTICLE 4 - CONSTRUCTION SERVICES

4.1 GENERAL

4.1.1 CM@Risk agrees at its own cost and expense, to do all work necessary and required to fully, timely and properly complete the construction of the Project in strict accordance with the Contract 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, and within the schedule, stated in attached **Exhibit A**.

- 4.1.2 CM@Risk 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.
- 4.1.3 This is a contract for complete construction services in accordance with the Construction Manager at Risk method of delivery of construction services. CM@RISK has participated in the design process and been an active member of the Project Design Team and is fully aware of any issues and constraints involved in this Construction Project.
- 4.1.4 CM@RISK is the CITY's fiduciary responsible for undertaking all necessary action contemplated under the contract documents to construct the Project and ensure timely and quality completion of the Project at a cost within the Guaranteed Maximum Price (GMP).
- 4.1.5 At all times relevant to this Contract and performance of the Work, the CM@Risk must fully comply with all Laws, Regulations, or Legal Requirements applicable to City, the Project and the Contract, including, without limitation, those set forth on attached **Exhibit A**.
- 4.1.6 CM@Risk must perform the Work under this Contract using only those firms, team members and individuals designated by CM@Risk consistent with the Statement of Qualifications dated August 11, 2021, the GMP Proposal, or otherwise approved by City pursuant to the General Conditions. No other entities or individuals may be used without prior approval of the Project Manager
- 4.1.7 CM@Risk will comply with all terms and conditions of the General Conditions.
- 4.1.8 In the event of a conflict between this Contract and the General Conditions or an exhibit hereto or appendix thereto, the terms of this Contract will control.
- 4.1.9 Ownership of Work Product. Notwithstanding anything to the contrary in this Contract, all Work Product prepared or otherwise created in connection with the performance of this Contract, 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, CM@Risk hereby transfers and assigns ownership of the copyright in such Work to City. The rights in this Section are exclusive to City in perpetuity.

4.2 **CM@RISK'S PRE-CONTRACT AND PRE-WORK DELIVERABLES**

- 4.2.1 The CM@Risk must provide the Deliverables in accordance with Section 4.2 of the General Conditions.
- 4.3 **PRE-CONSTRUCTION CONFERENCE**
Refer to Section 4.3 of the General Conditions.
- 4.4 **PERFORMANCE OF THE WORK (INCLUDING FIELD MEASUREMENTS, SUBCONTRACTORS, AND SUPPLIERS)**
Refer to Section 4.4 of the General Conditions.
- 4.5 **CONTROL OF THE PROJECT SITE**
Refer to Section 4.5 of the General Conditions.
- 4.6 **PROJECT SAFETY**
Refer to Section 4.6 of the General Conditions.
- 4.7 **MATERIALS QUALITY, SUBSTITUTIONS AND SHOP DRAWINGS**
Refer to Section 4.7 of the General Conditions.
- 4.8 **PROJECT RECORD DOCUMENTS**
Refer to Section 4.8 of the General Conditions.
- 4.9 **WARRANTY AND CORRECTION OF DEFECTIVE WORK**
Refer to Section 4.9 of the General Conditions.

ARTICLE 5 - CITY RESPONSIBILITIES

- 5.1 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 6 - CONTRACT TIME

6.1 GENERAL

- 6.1.1 The Contract Duration is **90** Calendar Days.
- 6.1.2 The Contract Time will start with the Notice to Proceed (NTP) and end with Final Acceptance, as set forth in Article 6.4 below. The Notice to Proceed cannot be issued until approval and acceptance by City of the GMP or Fixed Price.

6.1.3 The Contract Time will be as set forth in the Project Schedule. CM@Risk agrees that it will commence performance of the Work and complete the Project through Final Acceptance within the Contract Time.

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

6.2 PROJECT SCHEDULE

6.2.1 The Project Schedule approved as part of the GMP Proposal and incorporated herein as part of the attached **Exhibit D** must be updated and maintained throughout CM@Risk's performance under this Contract in accordance with Section 6.2 of the General Conditions.

6.2.2 Failure on the part of CM@Risk to adhere to the approved Project Schedule will be deemed a material breach and sufficient grounds for termination of this Contract by City.

6.2.3 Work must be completed to meet the following milestones after the Notice to Proceed:

<u>Milestone</u>	<u>Time</u>	<u>Liquidated damages for delay</u>
1. [REDACTED]	within [REDACTED] days	\$ [REDACTED] per calendar day

6.3 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.

6.4 FINAL ACCEPTANCE

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

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

6.5 LIQUIDATED DAMAGES

6.5.1 Substantial Completion Liquidated Damages. CM@Risk acknowledges and agrees that if CM@Risk fails to obtain Substantial Completion of the Work within the Contract 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 CM@Risk agree that if CM@Risk fails to achieve Substantial Completion of the Work within the Contract Time, City will be entitled to retain or recover from CM@Risk, as

liquidated damages and not as a penalty, the sum per calendar day as indicated in MAG § 108.9.

6.5.2 Final Acceptance Liquidated Damages. For the same reasons set forth in Article 6.5.1 above, City and CM@Risk further agree that if CM@Risk fails to achieve Final Acceptance of the Work within the Contract Time, City will be entitled to retain or recover from CM@Risk, 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 Contract.

6.5.3 MAG Liquidated Damages. If no liquidated damages are specified in Articles 6.5.1 or 6.5.2 above, then the liquidated damages provisions in MAG § 108.9 will apply.

6.5.4 City may deduct liquidated damages described in this Article 6.5 from any unpaid amounts then or thereafter due CM@Risk under this Agreement. Any liquidated damages not so deducted from any unpaid amounts due CM@Risk 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 CM@Risk.

6.6 **MUTUAL WAIVER OF CONSEQUENTIAL DAMAGES ONLY**

6.6.1 CM@Risk and City waive claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes:

6.6.1.1 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

6.6.1.2 Damages incurred by CM@Risk 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.

6.6.2 This mutual waiver is applicable, without limitation, to all consequential damages due to either Party's termination of this Contract. Nothing contained in this Article 6.6 will be deemed to preclude an award of liquidated damages, when applicable, in accordance with Article 6.5 above.

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

ARTICLE 7 - CONTRACT PRICE

7.1 CONTRACT PRICE

- 7.1.1 In exchange for CM@Risk's full, timely, and acceptable performances and construction of the Work under this Contract, and subject to all of the terms of this Contract, City will pay CM@Risk the "Contract Price," which:

The sum of the CM@Risk's Fee and reimbursable Cost of the Work, as defined in Section 15 of the General Conditions, which the CM@Risk guarantees will not exceed the GMP set forth in **Exhibit D** in the amount of **\$1,371,579.28**. Costs which would cause the GMP to be exceeded must be paid by CM@Risk without reimbursement from City.

- 7.1.2 The Contract Price is all-inclusive and specifically includes all fees, cost, insurance and bond premiums, allowances, construction contingency, owner's contingency, and taxes of any type necessary to fully, properly and timely perform and construct Work.

7.2 COSTS

For any portion of the Work which, either through this Contract, Change Order or otherwise, is performed and paid for on a cost, or time and materials basis, the costs which may be reimbursed to CM@Risk and chargeable against the Contract Price will be determined as set forth in MAG § 109.5.

SIGNATURE PAGE TO FOLLOW

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

"CITY"

CITY OF CHANDLER

MAYOR Date

Recommended By:

Andrew Goh, P.E. Date
CIP City Engineer

APPROVED AS TO FORM:

City Attorney
ATTEST: *TMB*

City Clerk Seal

"CM@RISK"

Achen-Gardner Construction, LLC

[Signature] 1-28-2022

Signature Date
Daniel J. Spitza

Name

President

Title

dspitza@achen.com

Signer Email Address

ATTEST: If Corporation

Secretary

STATE OF ARIZONA)
County of Maricopa) ss.

SUBSCRIBED AND SWORN TO before me, the undersigned notary public, by Daniel Spitza who was identified as the President of Achen-Gardner Construction LLC on this 28th day of January, 20 22

My commission expires:

6.05.2022

[Signature]

Notary Public

City of Chandler Construction Manager at Risk Construction Services
Public Works & Utilities Department, Capital Projects Division
Project Name: CHANDLER HEIGHTS ROAD UTILITY RELOCATIONS - GMP 1
Project No.: WW2111.401
Rev. 7/16/2021



EXHIBIT A

**PROJECT SPECIFIC
SPECIAL PROVISIONS**

N/A

EXHIBIT B

GENERAL CONDITIONS



GENERAL CONDITIONS

Approved date: October 19, 2021

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Appendix 10 Landscape Establishment Period

SECTION 1 - SCOPE OF THESE GENERAL CONDITIONS

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

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 Contract 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 Contract 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 Contract Price, the extent of the adjustment to the Contract Time, or modifications of other contract terms. The Contract Price and the Contract 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 Contract and for whom the Work or Services are to be provided pursuant to the Contract(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.

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

Contract Documents: The documents which together form the Contract between City and Contractor, as identified in Article 2 of the Contract, or are otherwise incorporated into the Contract, including the Contract, 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 Contract.

Contract 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 Contract.

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

to Proceed (NTP) and ends with Final Acceptance. The Contract Time is set forth in the Contract 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 Contract 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 Contract by this reference. All amendments and modifications to the Construction Documents must be approved in writing by City prior to incorporation into the Contract.

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 Contract Documents.

Design Professional: The qualified, licensed person, firm or corporation who furnishes design and construction administration services required under the Contract 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 contract 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 Contract 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

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 contract requirements. Final Acceptance results in a Letter of Acceptance (LOA).

Fixed Price: A fixed price or amount for a Contract Price, Scope of Work, materials, or other item under a Contract, 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 Contract 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 Contract.

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

Project Manager: The Project Manager designated in Article 1 of the Contract, or any successor thereto designated by City. The Project Manager has the authority to act on behalf of City, as delineated and

limited by the Contract 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 Contract.

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 Contract 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 Contract, and to be completed or corrected by Contractor after Substantial Completion and before Final Acceptance in accordance with the Contract 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 Contract Documents.

Quality Control (QC) Testing: Testing performed to assure that the materials installed comply with the requirements in the Contract 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 Contract. 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 Contract Price into pay items, such that the sum of all pay items equals the Contract Price for the construction phase Work, or for any portion of the Work having a separate specified Contract Price.

Scope of Work: The scope of work agreed to or required by City and incorporated into the Contract 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 Contract 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 Construction as furnished by the Maricopa Association of Governments, as amended by City.

Subconsultant: A person, firm or corporation having a Contract 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 Contract with Contractor or any other individual or firm having a Contract 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 Contract Documents, if any.

Substantial Completion: The date when the City determines that the Work (or separable units of Phases as provided in the Contract Documents) is essentially and satisfactorily complete in accordance with the Contract 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 Contract 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 Contract 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 Contract 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 in the downloaded from City's website at <http://www.chandleraz.gov>.
- 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 Contract 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 Contract Documents and as outlined in Exhibit A of the Contract 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 Contract 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 insure 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.
- 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 Contract 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 Contract 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 Contract Documents;
 - b. Design Professional construction phase services rendered on the project during the time the project remains incomplete after the Contract date of final completion will be charged to Contractor at a rate previously negotiated City; and
 - c. All retesting required due to the failure of Contractor's Work to meet the

requirements of the Contract 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-CONTRACT AND PRE-WORK DELIVERABLES**

4.2.1 Prior to award of the Contract, Contractor must execute Contract and deliver to City. Failure to do so may delay Contract 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 Contract, Contract must be fully executed by City.

4.2.3 After Contract 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 Contract 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 Contract 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 Contract 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 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 Contract 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.

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 shut downs 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 Contract 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 Contract 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 Contract 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 under this Contract is taking place. Contractor's Superintendent or designee must be present at the Site at all times any other Work under this Contract 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 Contract 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 Contract 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 Contract 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 Contract 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.

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 Contract 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 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 Contract 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 Contract 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 Contract Documents.

- 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 Contract 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 Contract 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 Contract Price are required to furnish performance and payment bonds to Contractor, unless otherwise

approved in writing by City.

- 4.4.23 Contractor must comply with MAG Specification § 108.2 (E) unless otherwise specified in Contract 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 is 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 a Contract 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

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 Contract.

- 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 Contract 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.

- 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, underpinning, and trench support will be included in the appropriate items listed in the Contract 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 Contract 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

- 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

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 contract 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 Contract 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.

- 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 Contract 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 Contract and work under other Contracts.
 - 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 Contract Documents.
 - j. Contractor's stamp, initialed or signed, dated and certifying the review of submittal, certification of field measurements and compliance with Contract.
 - 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 timetable 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.
- 4.7.3.8 If the Shop Drawings show departures from the Contract 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 Contract. 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 Contract 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 Contract 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 Contract 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.

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 Contract 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 Contract 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 Contract. 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 Contract. 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 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 Contract 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 Contract Documents and a reduction in the Contract 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 Contract 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, 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 Contract Documents, or by any specific provision of the Contract 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 Contract 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 Contract 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 Contract Documents, including appropriate reduction in the Contract 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.

- 4.9.9 Contractor's warranty obligation must be in accordance with MAG Specifications.
- 4.9.10 Nothing in the warranties contained in the Contract Documents are intended to limit any manufacturer's warranty which provides City with greater warranty rights than set forth in this Section or the Contract 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 Contract Documents during the warranty periods set forth in this Section, or during any longer periods to the extent required by the Contract 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 Contract 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 Contract 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 Contract 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 Contract Documents.
- 4.9.14 Without limiting the foregoing or anything in these General Conditions or the Contract 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 Contract Documents.

- 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 Contract 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 Contract, 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 Contract 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 Contract 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 Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request,

at the cost of reproduction.

SECTION 6 - CONTRACT TIME

6.1 CONTRACT TIME

- 6.1.1 The Contract 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 Contract. 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 contract insurance, bonds, and schedules are submitted to and accepted by the City.
- 6.1.3 The Contract 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 Contract Time.
- 6.1.4 Time is of the essence of this Contract, 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 Contract Documents within the time periods specified herein, will constitute a material breach of this Contract entitling City to terminate the Contract unless Contractor applies for and receives an extension of time, in accordance with the procedures set forth in the Contract 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 Contract 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 Contract 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 Contract 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.

- 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 Contract 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 Contract Documents and completion of the Project within the Contract 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 Contract Time remains the obligation of Contractor. City’s review does not relieve Contractor from compliance with the requirements of the Contract 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 Contract Time, as adjusted in accordance with the Contract Documents. No modification to the Contract Documents or the Contract 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 Contract 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 Contract Time.

- 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 Contract, 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 contract Milestones and

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, etc. No time extensions will be granted nor delay damages paid until a delay occurs which extends the Work beyond the Contract 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 Contract, 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 Contract 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 Contract 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 Contract 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

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 Contract 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 Contract 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 Contract Documents) is essentially and satisfactorily complete in accordance with the Contract 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

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 Contract 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 contracts) after the date of Substantial Completion. Failure to timely obtain Final Acceptance will be a material breach of the Contract.

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 Contract Documents, law or equity.

6.6.2 Furthermore, the timely completion of the Work being of the utmost importance under this Contract, notwithstanding the existence of one or more disputes between the parties concerning the scope of the Work, the Project Schedule, Contract 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 Contract 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 - CONTRACT PRICE

7.1 UNIT PRICE CONTRACTS

- 7.1.1 The Contract Price for all Unit Price Contracts will be the amount set forth in the Contract or Change Order multiplied by the verified quantity provided.
- 7.1.2 Measurements of quantities to determine the total Contract 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 Contract 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. No adjustments in any Unit Prices will be allowed. Sections 109.4.1(A) and (B) and 109.4.2(A) are deleted in their entirety.

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 Contract 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

by Contractor, covering the Work completed as of the date of the Request and accompanied by such supporting documentation as is required by the Contract 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 contract, the Contracting Agency will retain 10 percent of all estimates as a guarantee for complete performance of the Contract 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 Contract.
- 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 Contract 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 contracts, and notices of its provision must be given to all persons furnishing materials for the Work when no formal contract is entered into for such materials.

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 Contract, 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 Contract 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.

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 Contract Price;
- e. Damage to City or another Contractor;
- f. Reasonable evidence that the Work will not be completed within the Contract 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 Contract Documents; or
- h. Contractor is in default of any of its other obligations under the Contract 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 contracts, 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 Contract 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, 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 Contract, 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 Contracts 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 Contract 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 Contract 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 Contract requirements for deliverables;
- b. Compliance with approved Plans and Specifications;
- c. Compliance with § 14.9 below;
- d. Compliance with Contract 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 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 Contract Agreement between Contractor and payee. Contractor will ensure that all payees (including those entering into lump sum contracts) have the same right to audit provisions contained in this contract included in their contracts 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 contract 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 CONTRACT

9.1 FIELD ORDERS

City may authorize minor changes in the Work not involving an adjustment in the Contract Price or the Contract Times, which are consistent with the overall intent of the Contract 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 Contract Price or Contract 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 Contract 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 Contract 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 Contract 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 Contract 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 Contract 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 Contract Documents;
- c. When the City determines that a Unit Price Book Job Order associated with a Job Order Contract 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 Contract, 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 Contract 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 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 Contract (including Change Orders) will be approved in writing by the Project Manager. Once properly executed by both parties, these modifications to the Contract will have the same effect as if they had been included in the original Contract.

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 or other modification of the Contract 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 Contract Price adjustments under the Contract. 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 Contract 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 Contract period and up to three years after final payment is made on the Contract) 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 Contract regarding pricing of Change Orders, an appropriate Contract Price adjustment will be made. Such post-approval Contract 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.

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 Contract Price or Contract 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 Contract 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 Contract 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 Contract 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 Contract 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 Contract.

10.2.2 City may also terminate the Contract 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;
- 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 Contract Documents or any other contract between City and Contractor.

10.2.3 When any of the above reasons exist, City may terminate the Contract, 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 Contract 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 Contract 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 Contract 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 Contract.

10.3 **TERMINATION BY CITY FOR CONVENIENCE**

City may also terminate the Contract 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 Contract, no further payments will be due from City to Contractor.

10.4 **A.R.S. § 38-511**

The Contract 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 Contract 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 Contract are satisfied, the insurances set forth below.

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

11.1.4 The City in no way warrants that the minimum insurance limits contained in this Contract are sufficient to protect Contractor from liabilities that might arise out of the performance

of the Contract services under this Contract 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 Contract 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 Contract.

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 Contract. The Contractor is responsible for executing the Contract 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 Contract. 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 Contract 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 contract price and all subsequent modifications. The Contractor's Builders' 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 Contract/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 Contract/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.

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 Contract.

- 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 against 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 Contract 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 Contract 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 indemnification provisions of this Contract.

- 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 Contract 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 Contract 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 Contract.
- 11.3.9 Insurance Cancellation During Contract Term.
- 11.3.9.1 If any of the required policies expire during the life of this Contract, 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 Contract 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 Contract.
- 11.4 **BONDS AND OTHER PERFORMANCE SECURITY**
- 11.4.1 After Contract award, Contractor must provide a Performance Bond and a Payment Bond, each in an amount equal to the full amount of the Contract Price.
- 11.4.2 Each such bond must be executed by a surety company or companies holding a Certificate of Authority to transact surety business in the State of Arizona, issued by the Director of the 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 Contract 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 "Indemnitor") must indemnify, save, and hold harmless the City and its officers, officials, agents, and employees (collectively "Indemnatee") 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 Indemnatee from and against any and all Claims, except those arising solely from Indemnatee'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 Indemnatee 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

- 13.1 All disputes arising out of or relating to the Contract, 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 Contract until such dispute is resolved.

13.3 Notwithstanding any other provision in this Contract, 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 Contract, to obtain specific performance of any provision of the Contract, to advance the completion of the Project, or to protect health, welfare and safety.

SECTION 14 - MISCELLANEOUS PROVISIONS

14.1 CONTRACT DOCUMENTS

14.1.1 The Contract Documents are intended to permit the parties to complete the Work and all obligations required by the Contract Documents within the Contract Times for the Contract Price. The Contract 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 Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result must be provided by Contractor whether or not specifically called for at no additional cost to City.

14.1.3 The Contract Documents establish the rights and obligations of the parties and include the Contract, Addenda (which pertain to the Contract Documents), Contractor's Bid or Proposal (including documentation accompanying the Bid and any post-Bid documentation submitted prior to Contract award) when attached as an exhibit to the Contract, 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, Contract Drawings, as the same may be more specifically identified in the Contract, 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 Contract. Approved Shop Drawings and the reports and drawings of subsurface and physical conditions are not Contract Documents.

14.1.4 In the event of any inconsistency, conflict, or ambiguity between or among the Contract Documents, the Contract Documents will take precedence as follows from highest to lowest: Change Orders, Addenda, Contract, 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 Contract, Federal Provisions prevail.

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 Contract Documents will be issued by the Design Professional through the City.
- 14.1.7 The headings used in this Agreement or any other Contract 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 Contract 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 Contract Documents.
- 14.1.9 The Contract 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 Contract if there were no Bids), except as may be otherwise specifically stated in the Contract 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 Contract 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 Contract 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 Contract and subject to penalties up to and including termination of this Contract.

14.3.3 The City retains the legal right to inspect the papers of any Contractor or Subcontractor employee who works on this Contract 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 contract the Contractor enters into with any and all of its subcontractors who provide services under this Contract 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 Contract 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 Contract. 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**

Contractor agrees to provide City such other duly executed documents as may be reasonably requested by City to implement the intent of the Contract 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 Contract Documents, any such assignment will be void, will transfer no rights to the purported assignee, and would be a material breach of the Contract.

14.7 **SUCCESSORS**

Contractor and City intend that the provisions of the Contract 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 a contract 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 contract 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 Contract, Contractor certifies under A.R.S. § 35-393.01 that Contractor is not currently engaged in and for the duration of this Contract will not engage in a boycott of Israel.

14.10 **NO THIRD PARTY BENEFICIARY**

Nothing under the Contract Documents will be construed to give any rights or benefits in the Contract Documents to anyone other than City and Contractor, and all duties and responsibilities undertaken pursuant to the Contract 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 Contract Documents.

14.11 **GOVERNING LAW AND VENUE**

The Agreement and all Contract 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 Contract 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 Contract 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 Contract 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 Contract 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 Contract, including, without limitation, those set

forth on Exhibit C of the Contract.

14.14 **PARTIAL INVALIDITY**

If any provision of the Contract 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 Contract bring an action to enforce any provision of the Contract, 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 Contract. 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 Contract. If Contractor gains financial or economic interest in the Project during the course of this Contract, this may be grounds for terminating this Contract. Any decision to terminate the Contract must be at the sole discretion of City.

14.16.2 Contractor will not engage the services on this Contract 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 Contract Modifications for this Contract.

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 Contract.

14.17 **INDEPENDENT CONTRACTOR**

Contractor is and must be an independent contractor. Any provisions in the Contract 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.

14.20 **DATA CONFIDENTIALITY**

- 14.20.1 As used in the Contract, “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 Contract.
- 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 Contract is confidential and proprietary information belonging to City.
- 14.20.3 Except as specifically provided in this Contract, 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 Contract. 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 Contract 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 Contract 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 contract 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 Contract.
- 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 Contract

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 Contract without liability or at its discretion to deduct from the Contract 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 Contract 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 Contract 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 Contract 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 Contract. 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 Contract or the Scope of Work, or effectuate any change that requires a written Change Order.

14.25.3 When any provisions of the Contract 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 Contract Article 1, incorporated by reference.

14.25.4 When any provisions of the Contract 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 Contract 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 Contract Documents or such substitute address which Contractor designates in writing, or to the business address known to the giver of notice.

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 Contract. Specifically, all employees of Contractor who are working under a Contract 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 Contract and possible debarment from bidding on future City projects.

SECTION 15 - PROVISIONS APPLICABLE SOLELY TO GMP AND COST-BASED CONTRACTS, CHANGE ORDERS, AND JOB ORDERS

15.1 **ADDITIONAL DEFINITIONS**

The definitions set forth in Section 2 apply to GMP and Cost-Based Contracts, 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 Contract with City. In these General Conditions, the term "Contractor" includes CM@Risk under both Pre-Construction and Construction Services Contracts.

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.

Contract Documents –

Where compensation under the Contract is based upon a GMP accepted by City, the term "Contract Documents" also includes the accepted GMP Proposal.

Contract Price –

Where compensation under the Contract based upon a GMP accepted by City, the term "Contract Price" refers to the GMP.

Cost-Based Contract, Change Order, or Job Order –

A Contract, Change Order, or Job Order where the Contract Price is based upon the actual cost of performing the Work, subject to the terms of the Contract 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 General Conditions.

Deliverables –

The work products prepared by Contractor in performing the scope of work described in the Contract. 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 Contract or required by the Project Team.

Pre-Construction Services Contract –

The Contract 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 Contract is entered into between City and CM@Risk, the duties, obligations and warranties of the CM@Risk under the Pre-Construction Services Contract survive and are incorporated into the resulting Construction Contract.

Pre-Construction Services –

The services to be provided under the Pre-Construction Services Contract, 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 Contract, Change Order, or Job Order if applicable.

15.2 CONTRACT PRICE

- 15.2.1 The Contract Price for all Contracts, 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 Contract, Change Order, or Job Order, all Cost Based pricing will be subject to and limited to GMP.
- 15.2.2 The Contract Price may only be changed as set forth in Section 9 above.
- 15.2.3 Only costs specifically designated as reimbursable costs are eligible for payment by City or may be charged against the Contract Price. All other costs will not be paid by City and will

not be chargeable against the Contract Price.

- 15.2.4 Cost-Based Contracts. For Contracts, 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 Contract Price all Allowances stated in the Contract 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 Contract 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 Contract Sum and not in the Allowance; and

- 15.3.2.3 Whenever the cost is more or less than the Allowance, the Contract 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) contract 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 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 Contract 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 Contract.

15.6 **FINAL PAYMENT**

If the Contract 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 Contract, 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 or granted by City to the extent such actual, documented costs are justified.

SECTION 16 - PROVISIONS APPLICABLE SOLELY TO JOB ORDER CONTRACTS (JOC)

16.1 **ADDITIONAL DEFINITIONS**

The definitions set forth in Sections 2 and below will apply to all Job Order Contracts and Job Orders. In addition, the definitions set forth in Section 15.1 above will apply to all Cost-Based Job Orders.

Contract –

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.

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 on 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 of Job Orders under the Contract 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 Contract 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 experienced Design Professionals in complete accordance with all of the duties imposed on a Design Professional under the Contract 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 Contracts, 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 with the performance of this Contract, 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 Contract 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 Contract 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 Contract 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 Contract 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 award future Job Orders or Option periods based on performance will be at the sole discretion of City.

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 Contracts.

17.2 **GENERAL**

17.2.1 CM@Risk must perform the Services required by, and in accordance with the Contract Documents and as outlined in Exhibit A of the Contract 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 Contract 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 Contract 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.

17.2.6 Ownership of Work Product. All Work Product prepared or otherwise created in connection with the performance of this Contract, 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 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, 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 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 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.
- 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 Contract 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: 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 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 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 from 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 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 Contract Price until acceptance of ALL Pre-Construction Services and award of the final approved Construction Services Contract for the entire Project by City Council. If CM@Risk does not prepare a 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 Contract 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 Contract. 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 CONTRACT, DUTIES, OBLIGATIONS AND WARRANTIES**

If the GMP Proposal is accepted by City and a Construction Contract is entered into between City and CM@Risk, the duties, obligations and warranties of CM@Risk under the Pre- Construction Services Contract survive and are incorporated into the resulting Construction Contract.

General Conditions Appendices

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 Contracts
- 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

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 Contractor Documents, and will be the Contract 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 Contract 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 Contract Completion Time set forth in the Contract Document will be considered for issues relating to Contract 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. Contract 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 Contract 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 Contract at or prior to the time of execution of the Contract. Since the Contractor presumably has no control over the events causing the delay, he may be entitled to both contract 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 Contract; 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 Contract Submittals in accordance with the Contract; 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.

B. Excusable/Non-compensable:

These are delays over which neither the City nor the Contractor had control. Since both parties to the Contract 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 Contract Specifications. Again, this list is not necessarily all inclusive.

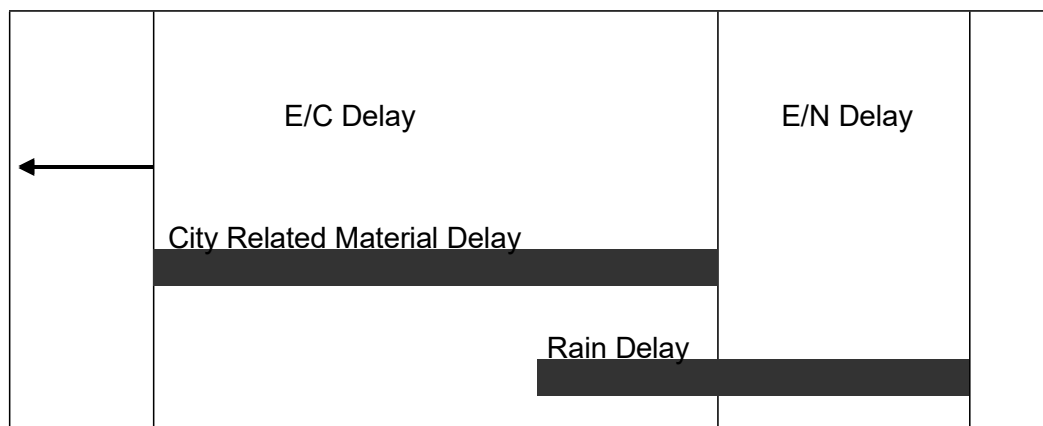
D. Concurrent:

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 contract completion time are considered as delays. The concurrent delay is considered an additional delay only to the extent it prolongs the delay to the Contract 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 Contract Completion Time by two days. The same method of analysis is 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 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 Contract 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 Contract 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-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 Contract. 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.
- 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 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.
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 claim for delay or impact damages be considered after submission by the Contractor of the Final Payment Request.

COST REDUCTION INCENTIVE PROPOSALS FOR DESIGN BID BUILD CONTRACTS

The Contractor may submit to the Engineer proposals for modifying the Plans, Specifications, or other requirements of the Contract 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 Contract 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 Contract 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 Contract and under the proposed changes, including the cost of developing and implementing the changes.
6. The Contract 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.

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.

General Conditions

Appendix 2

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 Contract.

If the Contractor's Proposal is accepted in whole or in part, the necessary Contract Modifications and Contract 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 Contract 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 Contract 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 Contract 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 Contract 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 Contract prices. Contract 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 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

General Conditions Appendix 2

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.

COST REDUCTION INCENTIVE PROPOSAL FORM

TO: CIP City Engineer

FROM:

PROJECT NAME: CHANDLER HEIGHTS ROAD UTILITY RELOCATIONS

CITY PROJECT NUMBER: WW2111.401

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 Contract Price (C+D-E-F) x 50%:	\$	_____

Date by which a Change Order must be issued so as to obtain maximum cost reduction:

**CITY OF CHANDLER, ARIZONA
PUBLIC WORKS & UTILITIES DEPARTMENT**

CONTRACTOR'S AFFIDAVIT REGARDING SETTLEMENT OF CLAIMS

_____, Arizona
Date _____

Project Name: CHANDLER HEIGHTS ROAD UTILITY RELOCATIONS
City Project No.: WW2111.401

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 contract, 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

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 Contract 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 contract with the Obligee, dated the _____ day of _____, 20__ for construction of **CHANDLER HEIGHTS ROAD UTILITY RELOCATIONS, WW2111.401** which contract 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, conditions and agreements of the contract during the original term of the contract and any extension of the contract, with or without notice of the Surety, and during the life of any guaranty required under the contract, and also performs and fulfills all the undertakings, covenants, terms, conditions, and agreements of all duly authorized modifications of the contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, the above obligation is void. Otherwise it remains in full force and effect.

PROVIDED, HOWEVER that this bond is executed pursuant to the provisions of Title 34, Chapter 2, Article 2, Arizona Revised Statutes, and all liabilities on this bond 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 Contract.

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__.

AGENT OF RECORD

PRINCIPAL SEAL

By _____

SURETY SEAL

AGENT ADDRESS

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 Contract amount)

KNOW ALL MEN BY THESE PRESENTS THAT:_____

(hereinafter "Principal"), as Principal, and _____(hereinafter "Surety"), a corporation organized and existing under the laws of the State of _____ with its principal office in the City of _____, holding a certificate of authority to transact surety business in Arizona issued by the Director of the Department of Insurance pursuant to Title 20, Chapter 2, Article 1, as Surety, are held and firmly bound unto _____ (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 contract with the Obligee, dated the _____ day of _____, 20__ for construction of **CHANDLER HEIGHTS ROAD UTILITY RELOCATIONS, WW2111.401** which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF 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 contract, this obligation is void. Otherwise it remains in full force and effect.

PROVIDED, HOWEVER that this bond is executed pursuant to the provisions of Title 34, Chapter 2, Article 2 Arizona Revised Statutes, and all liabilities on this bond 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 Contract.

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

DISPUTE RESOLUTION

A. INFORMAL DISPUTE RESOLUTION

The parties to the Contract agree that time is of the essence in relation to performance of the Contract and completion of the Project, therefore any and all disputes in relation to the Contract 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 Contract 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 contract provisions in the Contract 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 Contract 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.

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 Contract Documents, the Contract 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 Contract 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

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 Contract, except Claims relating to aesthetic effect and except those claims waived as provided for in the Contract Documents, must be resolved through litigation in the Maricopa County, Arizona Superior Court.



**CITY OF CHANDLER, ARIZONA
PUBLIC WORKS & UTILITIES DEPARTMENT**

CERTIFICATE OF COMPLETION

PROJECT NAME:	CHANDLER HEIGHTS ROAD UTILITY RELOCATIONS		
CITY PROJECT NO.:	WW2111.401		
<i>If Federally Funded:</i>			
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 CONTRACT DOCUMENTS AND BID SPECIFICATIONS AND ALL ACTIVITIES REQUIRED BY THE CONTRACTOR UNDER THE CONTRACT HAVE BEEN COMPLETED AS OF THE COMPLETION DATE LISTED HERE:

<u>FINAL ACCEPTANCE DATE:</u>	

PRIME CONTRACTOR:

FIRM NAME:			
PRINCIPAL:			
TITLE:			
SIGNATURE:		DATE:	

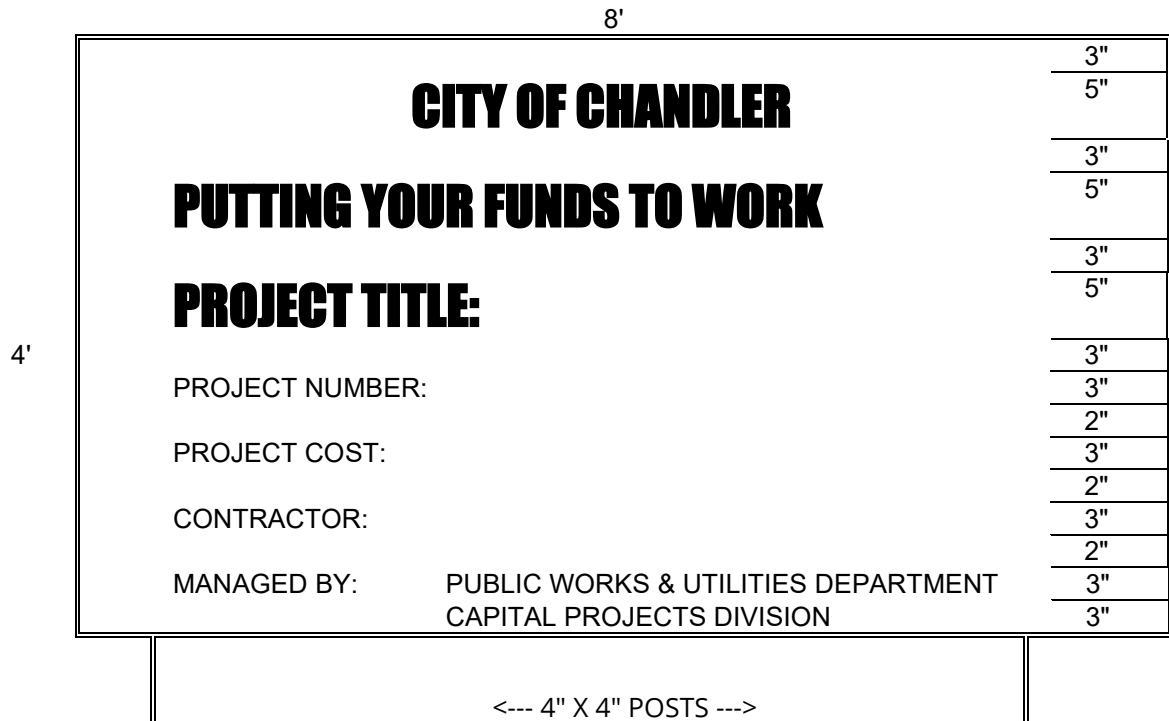
CERTIFIED BY [INSERT NAME AND TITLE OF PARTY THAT OVERSEES CONSTRUCTION]:

FIRM NAME:			
SIGNATURE:		DATE:	

PROJECT ACCEPTED BY CITY OF CHANDLER:

NAME:			
SIGNATURE:		DATE:	

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.

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.

- 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 Contract 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 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 contract 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 owing 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 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 Contract 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 Contract.

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.
- 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 contract 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 Contract. The City will reimburse Contractor for contractually required bond at time of first pay application for GMP and Cost-Based contracts upon receipt of proof of payment from the Contractor. If the Contractor completes Work for less than the Contract 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 Contract 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 Contract 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 contracts. 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 contracts 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.
- 1.6.3 Fees and assessments for the building permit and for other permits, licenses and inspections for which Contractor is required by the Contract Documents to pay.
- 1.6.4 Fees of laboratories for tests required by the Contract 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 Contract Documents; the cost of defending suites or claims for infringement of patent rights arising from such requirement of the Contract 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 Contract 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 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.
- 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 Contract 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 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 Contract Price or on a lump/stipulate sum basis as set forth in the Contract. 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.

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 Granite 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.

- 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:

<u>Original Size</u>	<u>Replacement Size</u>
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:

<u>Existing Plant Material Sizes</u>	<u>Replacement Size</u>
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.

EXHIBIT C
TECHNICAL SPECIFICATIONS



CITY OF CHANDLER

PUBLIC WORKS AND UTILITIES DEPARTMENT

CHANDLER HEIGHTS ROAD UTILITY RELOCATIONS CHAARRAL WAY: DOBSON ROAD TO LAKE DRIVE

PROJECT NO. WW2111.401

AGENCY REVIEW SET

TECHNICAL SPECIFICATIONS

DECEMBER 2021

**MAYOR
KEVIN HARTKE**

CITY COUNCIL

**Council Member Christine Ellis
Council Member OD Harris
Council Member Matt Orlando**

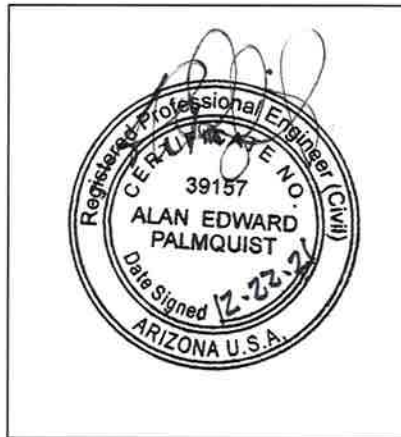
**Council Member Rene Lopez
Council Member Terry Roe**

**CITY MANAGER
JOSHUA WRIGHT**

**PUBLIC WORKS & UTILITIES DIRECTOR
JOHN KNUDSON, PE**

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**TECHNICAL SPECIFICATIONS
FOR
CITY OF CHANDLER
CHANDLER HEIGHTS ROAD UTILITY RELOCATIONS CHAARRAL WAY:
DOBSON ROAD TO LAKE DRIVE**



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01710	CLEANING

DIVISION 2 SITE WORK

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02200	EARTHWORK
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02532	MANHOLE FRP INSERT

DIVISION 11 EQUIPMENT

11295 HYDRAULIC VALVES

DIVISION 15 MECHANICAL

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15051 BURIED PIPING INSTALLATION
15061 DUCTILE IRON PIPE
15064 COPPER PIPE
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SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY

- A. The work covered under this Contract will be performed within the City of Chandler in the following general locations:
1. Chaparral Way – Lake Drive to Dobson Road

1.2 DESCRIPTION OF OWNER'S PROJECT

- A. The overall scope project will consist of the following installation:
1. Relocation of approximately 72 linear feet of 8-inch potable water line
 2. Relocation of approximately 72 linear feet of 12-inch potable water line
 3. Relocation of approximately 125 linear feet of 16-inch potable water line
 4. Relocation of approximately 70 linear feet of 15-inch sanitary sewer
 5. Addition of a new sanitary sewer manhole.
 6. Complete all testing and disinfection on new and relocated waterlines prior to connecting to existing water distribution system. Contractor to coordinate and plan construction activities with existing operational needs of the City.
 7. Complete all testing on new sewer lines prior to connecting to existing sewer system. Contractor to coordinate and plan construction activities with existing operational needs of the City.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01050

FIELD ENGINEERING/SURVEYING

PART 1 - GENERAL

1.1 SUMMARY

- A. The CONTRACTOR shall hire a surveyor licensed in the State of Arizona to perform all surveying responsibilities. It is also the CONTRACTOR'S responsibility to notify the ENGINEER, in writing, of any discrepancy found between the topographic survey provided and the baseline conditions provided in the Contract Documents within 14 days of the Notice to Proceed. The CONTRACTOR further takes the responsibility to correct any discrepancies not reported to the ENGINEER within the specified construction schedule as part of the finished grading required as part of this Project at no cost to the OWNER.
- B. The CONTRACTOR shall provide competent, qualified personnel and materials required to perform all construction layout staking and re-staking (as necessary) of the Work and will protect and preserve the established reference points and will make no change or relocations without the prior written approval of the OWNER.
- C. The CONTRACTOR will report to the OWNER whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations. The CONTRACTOR will replace and accurately relocate all reference points so lost, destroyed, or moved at no additional cost to the OWNER.
- D. Field surveying shall include GIS location and data of all new construction as required by the City of Chandler. The CONTRACTOR shall provide the GIS location and data at each application of payment to verify content. If data is missing or does not meet City of Chandler requirements, portions of the new construction shall be exposed to obtain the data at no additional cost to the OWNER. The City of Chandler requirements are identified below:
 - 1. 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:
 - 1) All GPS point data, along with corresponding GIS Attribute data, must be submitted in ESRI File Geodatabase format.
 - 2) The City of Chandler will provide a copy of the File Geodatabase in ESRI ArcGIS format, upon submitting a data request form attached herewith. Please submit the data request form to Kristy.Noelson@Chandleraz.gov
 - b. Data dictionary and Attribute data:

- 1) Attribute data should be provided for each of the GPS'd Utility Feature 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 will be made available to the CONTRACTOR.
- c. Coordinate System:
 - 1) Horizontal Datum: Arizona State Plane Coordinates, Central Zone NAD83 (HARN) Vertical Datum: NAVD88
- d. Point Data for GPS:
 - 1) Water System Features:
 - a) Water main location (top of pipe), size and material (one (1) coordinate provided every 100 feet minimum) and at fittings.
 - b) 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.
 - c) Water valve location (center of valve box cover), size and type.
 - d) Fire hydrant location (top of hydrant), manufacturer and year.
 - e) 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.
 - f) Water blow-off and air release valve location (center of cover), size, type and manufacturer.
 - g) Water manhole or vault location (center of cover), size and type.
 - 2) Waste Water System features:
 - a) Sewer manhole and cleanout location (center of cover), size, material, and cover type.
 - b) Sewer gravity main location (invert of pipe), size, material and flow direction (from) at all manholes, cleanouts and structures.
 - c) 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).
 - d) Sewer force main location (top of pipe), size, and material (one (1) coordinate provided every 100 feet minimum) and at fittings.
 - e) 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
 - f) Sewer force main valve location (center of valve box cover), size and type.
 - g) Sewer force main air release valve location (center of cover), size, type and manufacturer.
 - h) Sewer force main manhole or vault location (center of cover), size and material.

- i) Sewer structure (center of structure), type (diversion, junction box)
 - 3) Standard GPS Metadata on all points collected: Date, Time, Height, Horiz_Precision, Vert_Precision, Northing, Easting, Surveyor, Datafile, and Comments
2. Refer to the included information, following this specification, from the City of Chandler. Contractor shall meet all requirements.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

DATA DICTIONARY:
WATER

FeatureClassName FITTING_PNT
DatasetType FeatureClass

FieldName	Type	Length	AliasName	DomainName	DefaultValue
FEATUREOWNER	String	20	FEATUREOWNER	WS_FEATUREOWNER	null
LIFECYCLESTATUS	String	20	LIFECYCLESTATUS	WS_LIFECYCLESTATUS	null
SPATIALSOURCE	String	20	SPATIALSOURCE	WS_SPATIALSOURCE_STD	GPS
MATERIAL	String	20	MATERIAL	WS_MATERIAL	null
DIAMETER1	String	8	DIAMETER1	null	null
DIAMETER2	String	8	DIAMETER2	null	null
TYPE	String	30	TYPE	WS_FITTING_TYPE	null
BEND	String	20	BEND	WS_FITTING_BEND	null
GPS_COMMENT	String	30	GPS_COMMENT	null	null
GPS_DATE	Date	8	GPS_DATE	null	null

FeatureClassName SYSTEM_VALVE_PNT
DatasetType FeatureClass

FieldName	Type	Length	AliasName	DomainName	DefaultValue
FEATUREOWNER	String	20	FEATURE OWNER	WS_FEATUREOWNER	null
LIFECYCLESTATUS	String	20	LIFECYCLE STATUS	WS_LIFECYCLESTATUS	null
SPATIALSOURCE	String	20	SPATIAL SOURCE	WS_SPATIALSOURCE	GPS
DIAMETER	String	8	Diameter	WS_SYSVAL_DIAM	null
TYPE	String	25	TYPE	WS_SYSVAL_TYPE	null
VALVETYPE	String	10	VALVE TYPE	WS_SYSVAL_VALVETYPE	null
FUNCTION	String	25	FUNCTION	WS_SYSVAL_FUNCTION	null
GROUNDTYPE	String	25	GROUNDTYPE	WS_SYSVAL_GROUNDTYPE	null
WO_CAT_CODE	String	10	WO CAT CODE	null	1310A06
WO_CAT	String	25	WO CAT	null	System Valves
WATERTYPE	String	25	WATERTYPE	null	POTABLE
GPS_DATE	Date	8	GPS DATE	null	null
GPS_COMMENT	String	30	GPS COMMENT	null	null

FeatureClassName HYDRANT_PNT
DatasetType FeatureClass

FieldName	Type	Length	AliasName	DomainName	DefaultValue
HYDRANT_ID	String	25	HYDRANT_ID	null	HYD-VERIFY
FEATUREOWNER	String	25	Feature Owner	WS.FEATUREOWNER	null
LIFECYCLESTATUS	String	25	Lifecycle Status	WS_LIFECYCLESTATUS	null
SPATIALSOURCE	String	25	Spatial Source	WS_SPATIALSOURCE_STD	GPS
BARRELDIAMETER	Double	8	Barrel Diameter	null	6
LARGENOZZLEDIAMETER	Double	8	Large Nozzle Diameter	null	4.5
SMALLNOZZLEDIAMETER	Double	8	Small Nozzle Diameter	null	2.5
OUTLETCONFIGURATION	Double	8	Outlet Configuration	null	3
SEATDIAMETER	Double	8	Seat Diameter	null	6
MANUFACTURER	String	25	Manufacturer	WS_HYD_MANUFACTURER	null
YEARMANUFACTURED	String	25	Manufacture Year	null	null
COLOR	String	25	Color	WS_HYD_COLOR	null
GPS_DATE	Date	8	GPS_DATE	null	null
GPS_COMMENT	String	50	GPS_COMMENT	null	null

FeatureClassName WATER_MANHOLE_PNT
DatasetType FeatureClass

FieldName	Type	Length	AliasName	DomainName	DefaultValue
FEATUREOWNER	String	20	FEATUREOWNER	WS_FEATUREOWNER	null
LIFECYCLESTATUS	String	20	LIFECYCLESTATUS	WS_LIFECYCLESTATUS	null
SPATIALSOURCE	String	20	SPATIALSOURCE	WS_SPATIALSOURCE_STD	GPS
SUBTYPE	String	25	SUBTYPE	WS_SUBTYPE	null
ACCESSDIAMETER	String	8	ACCESSDIAMETER	WS_ACCESSDIAMETER	32
GROUNDTYPE	String	20	GROUNDTYPE	WS_GROUNDTYPE	null
COVERMATERIAL	String	10	COVERMATERIAL	WS_COVERMATERIAL	null
COVERTYPE	String	8	COVERTYPE	WS_COVERTYPE	null
GPS_DATE	Date	8	GPS_DATE	null	null
GPS_COMMENT	String	30	GPS_COMMENT	null	null

FeatureClassName WATER_VAULT_PNT
DatasetType FeatureClass

FieldName	Type	Length	AliasName	DomainName	DefaultValue
SUBTYPE	String	20	SUBTYPE	null	null
FEATUREOWNER	String	20	FEATUREOWNER	WS_FEATUREOWNER	null
LIFECYCLESTATUS	String	20	LIFECYCLESTATUS	WS_LIFECYCLESTATUS	null
SPATIALSOURCE	String	20	SPATIALSOURCE	WS_SPATIALSOURCE_STD	GPS
SUB_TYPE	String	20	SUB_TYPE	WS_VAULT_SUB_TYPE	null
ADDRESS	String	50	ADDRESS	null	null
GPS_DATE	Date	8	GPS_DATE	null	null
GPS_COMMENT	String	50	GPS_COMMENT	null	null

Domain:

WS_FEATUREOWNER

Description: TYPE OF SERVICE

Code	Name
COC	Chandler
GRIC	Gila River Indian Community
COG	Gilbert
GOULD	Gould
INTEL	Intel
COUNTY	Maricopa County
COM	Mesa
MICROCHIP	Microchip
MOTOROLA	Motorola
COP	Phoenix
PRIVATE	Private
SRP	SRP
SRVWUA	SRVWUA
COT	Tempe
UNKNOWN	UNKNOWN

Domain:

WS_SPATIALSOURCE_STD

Description: SPATIAL SOURCE

Code	Name
GPS	GPS

Domain:

WS_FITTING_TYPE

Description: FITTING TYPE

Code	Name
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:

WS_FITTING_BEND

Description: FITTING BEND

Code	Name
HORIZONTAL	HORIZONTAL
NONE	NONE
VERTICAL	VERTICAL

Domain:

WS_LIFECYCLESTATUS

Description: SYSTEM VALVE LIFECYCLE STATUS

Code	Name
ABANDONED	ABANDONED
ACTIVE	ACTIVE
FUTURE	FUTURE
INACTIVE	INACTIVE
REMOVED	REMOVED
UNKNOWN	UNKNOWN

Domain:

WS_SYSVAL_DIAM

Description: SYSTEM VALVE DIAMETER

Code	Name
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

Domain:

WS_SYSVAL_TYPE

Description: SYSTEM TYPE

Code	Name
ARV	ARV
BLOWOFF	BLOWOFF
STANDARD	STANDARD

Domain:

WS_SYSVAL_VALVETYPE

Description: SYSTEM VALVE TYPE

Code	Name
BALL	BALL
BUTTERFLY	BUTTERFLY
GATE	GATE
INSERTA	INSERTA
PIV	PIV
PLUG	PLUG
UNKNOWN	UNKNOWN

Domain:

WS_SYSVAL_FUNCTION

Description: SYSTEM VALVE FUNCTION

Code	Name

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

Domain:

WS_SYSVAL_GROUNDTYPE

Description: SYSTEM VALVE FUNCTION

Code	Name
ASPHALT	ASPHALT
CONCRETE	CONCRETE
LANDSCAPE	LANDSCAPE
UNKNOWN	UNKNOWN

Domain:

WS_HYD_MANUFACTURER

Description: HYDRANT MANUFACTURER

Code	Name
AMERICANDARLING	AMERICANDARLING
AVK	AVK
CLOW	CLOW
DRESSER	DRESSER
GREENBERG	GREENBERG
KENNEDY	KENNEDY
MUELLER	MUELLER
PACIFIC	PACIFIC
UNKNOWN	UNKNOWN

WATEROUS	WATEROUS

Domain:

WS_MATERIAL

Description: MATERIAL

Code	Name
ABS	ABS
ACP	ACP
BRASS	BRASS
CIP	CIP
DIP	DIP
PCPP	PCPP
PE	PE
PVC	PVC
RCP	RCP
RPM	RPM
RTR	RTR
STL	STL
TRUSS	TRUSS
VCP	VCP

Domain:

WS_YES_NO

Description: YES OR NO

Code	Name
YES	YES
NO	NO

Domain:

WS_HYD_COLOR

Description: COLOR OF HYDRANT

Code	Name
BLACK/ALUMINUM	BLACK/ALUMINUM
BLACK/YELLOW	BLACK/YELLOW

GREEN	GREEN
RED	RED
RED/YELLOW	RED/YELLOW
UNKNOWN	UNKNOWN
WHITE	WHITE
YELLOW	YELLOW

Domain:

WS_SUBTYPE

Description: SUBTYPE OF MANHOLE

Code	Name
PUMPOUT STATION	PUMPOUT STATION
UNKNOWN	UNKNOWN
VALVE ACCESS	VALVE ACCESS

Domain:

WS_ACCESSDIAMETER

Description: ACCESS DIAMTER

Code	Name
22	22
24	24
26	26
28	28
30	30
32	32
38	38

Domain:

WS_GROUNDTYPE

Description: GROUND TYPE

Code	Name
ASPHALT	ASPHALT
CONCRETE	CONCRETE

DIRT	DIRT
UNKNOWN	UNKNOWN

Domain:

WS_COVERMATERIAL

Description: COVERMATERIAL

Code	Name
ALUMINUM	ALUMINUM
CASTIRON	CASTIRON
UNKNOWN	UNKNOWN

Domain:

WS_COVERTYPE

Description: COVER TYPE

Code	Name
BOLTED	BOLTED
SEALED	SEALED
UNKNOWN	UNKNOWN
VENTED	VENTED

Domain:

WS_VAULT_SUB_TYPE

Description: SUBTYPE OF VAULT

Code	Name
FIRELINE	FIRELINE
METER	METER
UNKNOWN	UNKNOWN
VALVE	VALVE

DATA DICTIONARY:
SEWER

FeatureClassName SEWER_MANHOLE_PNT
DatasetType FeatureClass

FieldName	Type	Length	AliasName	DomainName	DefaultValue
FEATUREOWNER	String	20	FEATUREOWNER	WW_FEATUREOWNER	null
LIFECYCLESTATUS	String	20	LIFECYCLESTATUS	WW_LIFECYCLESTATUS	null
SPATIALSOURCE	String	20	SPATIALSOURCE	WW_SPATIALSOURCE	GPS
LID	String	20	LID	WW_MANHOLE_LID	null
TYPE	String	20	TYPE	null	null
COVER_MATERIAL	String	20	COVER_MATERIAL	null	null
COVER_HOLE	String	20	COVER_HOLE	null	null
COVER_SIZE	String	20	COVER_SIZE	null	null
GPS_DATE	Date	8	GPS_DATE	null	null
GPS_COMMENT	String	30	GPS_COMMENT	null	null

FeatureClassName SEWER_CLEANOUT_PNT
DatasetType FeatureClass

FieldName	Type	Length	AliasName	DomainName	DefaultValue
FEATUREOWNER	String	20	FEATUREOWNER	WW_FEATUREOWNER	null
LIFECYCLESTATUS	String	20	LIFECYCLESTATUS	WW_LIFECYCLESTATUS	null
LOCATIONDESCRIPTION	String	100	LOCATIONDESCRIPTION	null	null
SPATIALSOURCE	String	20	SPATIALSOURCE	WW_SPATIALSOURCE	null
LID	String	20	LID	WW_SEWER_LID	null
GPS_DATE	Date	8	GPS_DATE	null	null
GPS_COMMENT	String	30	GPS_COMMENT	null	null

FeatureClassName SEWER_FITTING_PNT
DatasetType FeatureClass

FieldName	Type	Length	AliasName	DomainName	DefaultValue
FEATUREOWNER	String	20	FEATUREOWNER	WW_FEATUREOWNER	null
LIFECYCLESTATUS	String	20	LIFECYCLESTATUS	WW_LIFECYCLESTATUS	null
SPATIALSOURCE	String	20	SPATIALSOURCE	WW_SPATIALSOURCE	null
SIZE_	String	20	SIZE_	null	null
MATERIAL	String	20	MATERIAL	WW_MATERIAL	null
TYPE	String	30	TYPE	WW_FITTING_TYPE	null
BEND	String	20	BEND	WW_BEND	null
LOCATIONDESCRIPTION	String	100	LOCATIONDESCRIPTION	null	null
GPS_DATE	Date	8	GPS_DATE	null	null
GPS_COMMENT	String	30	GPS_COMMENT	null	null

FeatureClassName SEWER_CONTROL_VALVE_PNT
DatasetType FeatureClass

FieldName	Type	Length	AliasName	DomainName	DefaultValue
TYPE	String	25	TYPE	null	null
FEATUREOWNER	String	20	FEATUREOWNER	null	null
LIFECYCLESTATUS	String	20	LIFECYCLESTATUS	WW_LIFECYCLESTATUS	null
SPATIALSOURCE	String	20	SPATIALSOURCE	WW_SPATIALSOURCE	GPS
LOCATIONDESCRIPTION	String	100	LOCATIONDESCRIPTION	null	null
DIAMETER	String	8	DIAMETER	null	null
GPS_DATE	Date	8	GPS_DATE	null	null
GPS_COMMENT	String	30	GPS_COMMENT	null	null

FeatureClassName SEWER_MISC_STRUCT_PNT
DatasetType FeatureClass

FieldName	Type	Length	AliasName	DomainName	DefaultValue
TYPE	String	25	TYPE	WW_TYPE	null
FEATUREOWNER	String	20	FEATUREOWNER	WW_FEATUREOWNER	null
LIFECYCLESTATUS	String	20	LIFECYCLESTATUS	WW_LIFECYCLESTATUS	null
SPATIALSOURCE	String	20	SPATIALSOURCE	WW_SPATIALSOURCE	GPS
LOCATIONDESCRIPTION	String	100	LOCATIONDESCRIPTION	null	null
GPS_DATE	Date	8	GPS_DATE	null	null
GPS_COMMENT	String	30	GPS_COMMENT	null	null

Domain: WW_FEATUREOWNER

Description: WASTEWATER FEATURE OWNER

Code	Name
COC	COC
PRIVATE	PRIVATE
CONTRACTOR	CONTRACTOR
TOG	TOG
UNKNOWN	UNKNOWN

Domain: WW_LIFECYCLESTATUS

Description: WASTEWATER FEATURE LIFECYCLESTATUS

Code	Name
ACTIVE	ACTIVE
FUTURE	FUTURE
PULLED	PULLED
INACTIVE	INACTIVE
UNKNOWN	UNKNOWN
ABANDONED	ABANDONED

Domain: WW_SPATIALSOURCE

Description: WASTEWATER FEATURE SPATIAL SOURCE

Code	Name
GPS	GPS

Domain: WW_TYPE

Description: WASTEWATER TYPE

Code	Name
DIVERSION	DIVERSION
JUNCTION	JUNCTION

Domain: WW_SEWER_LID

Description: WASTEWATER LID

Code	Name
OLD	OLD
NEW	NEW

Domain: WW_BEND

Description: WASTEWATER BEND

Code	Name
HORIZONTAL	HORIZONTAL
VERTICAL	VERTICAL
NONE	NONE

Domain: WW_MATERIAL

Description: WASTEWATER MATERIAL

Code	Name
ACP	ACP
CONCRETE	CONCRETE
DIP	DIP
HDPE	HDPE
MJDIP	MJDIP
PVC	PVC
PVC LINED VCP	PVC LINED VCP
RCP ABS	RCP ABS
STEEL ENCASED VCP	STEEL ENCASED VCP
TLOCKLINE LINE RCP	TLOCKLINE LINE RCP
UNKNOWN	UNKNOWN
VCP	VCP

Domain: WW_FITTING_TYPE

Description: WASTEWATER FITTING_TYPE

Code	Name
ARV	ARV
FLOW METER	FLOW METER
NO_FLOW_POINT	NO_FLOW_POINT
OTHER	OTHER
OWNERSHIP_CHANGE	OWNERSHIP_CHANGE
PLUG	PLUG
REDUCER	REDUCER
UNKNOWN	UNKNOWN

SECTION 01090

REFERENCE STANDARDS/ABBREVIATIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section lists many of the construction industry organizations, professional and technical associations, societies and institutes, and government agencies issuing, promoting, or enforcing standards to which references may be made in the Contract Document, along with the abbreviations commonly used for those references. Also included are certain general requirements for the use of industry standards specified and for application of the standards in quality control.

1.2 USE OF REFERENCE STANDARDS

- A. Work specified by reference to the published standard or specification of a government agency, technical association, trade association, professional society or institute, testing agency, or other organization shall conform to, or surpass the minimum standards of quality for materials and workmanship established by the designated standard or specification.
- B. Where so specified, products or workmanship shall also conform to the additional prescriptive or performance requirements included within the Contract Documents to establish a higher or more stringent standard of quality than that required by the referenced standard.
- C. Where the specific date or issue of the standard is not included with the reference to the standard, the edition, including all amendments published and available on the first published date of the Invitation to Bid, shall apply.
- D. Where two or more standards are specified to establish quality, the product, and workmanship shall conform to or surpass the requirements of both.
- E. In case of conflict between referenced standards, the more stringent shall apply.
- F. Where both a standard and a brand name are specified for a product in the Contract Document, the proprietary product named shall conform to or surpass the requirements of the specified reference standard. The listing of a trade name in a Contract Document shall not be construed a warranting that such product conforms to the respective reference standard.
- G. Copies of Standards:
 - 1. Copies of applicable referenced standards have not been bound in this Contract Document.

2. Where copies of standards are needed by the CONTRACTOR for superintendence and quality control of the Work, obtain a copy or copies directly from the publication source and maintain in an orderly manner at the job site, available to the CONTRACTOR'S personnel, subcontractors, OWNER, and ENGINEER.
3. Submittals: Submit for approval the requests to use products conforming to printed standards or publications with a different publication date from that effective under the Contract. Clearly indicate the changes in product or workmanship quality involved in the proposed change, if any, and reasons for the request.

1.3 ABBREVIATIONS

- A. Abbreviations for trade organizations and government agencies. The following is a list of construction industry organizations and government agencies to which references may be made in the Contract Document, with abbreviations used.

AA	Aluminum Association
AAMA	American Architectural Manufacturers Association
AAMA	Architectural Aluminum Manufacturers' Association
AASHTO	American Association of State Highway and Transportation Officials
ABPA	Acoustical and Board Products Association
ACI	American Concrete Institute
ADA	Americans With Disabilities Act
ADEQ	Arizona Department of Environmental Quality
ADHS	Arizona Department of Health Services
AFBMA	Anti-Friction Bearing Manufacturers' Association
AGA	American Gas Association
AGC	Associated General Contractors
AGMA	American Gear Manufacturers' Association
AHC	Architectural Hardware Consultant
AI	Asphalt Institute
AIA	American Institute of Architects
AIA	American Insurance Association
AIEE	American Institute of Electrical Engineers
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ALS	American Lumber Standards
AMCA	Air Moving and Conditioning Association
AMG	Arizona Masonry Guild
ANSI	American National Standards Institute
APA	American Plywood Association
API	American Petroleum Institute
AREA	American Railway Engineering Association
ARI	Air Conditioning and Refrigeration Institute

ARMA	Asphalt Roofing Manufacturers Association
ASAE	American Society of Agricultural Engineers
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc.
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWI	Architectural Woodwork Institute
AWPA	American Wood Preservers' Association
AWPB	American Wood Preservers Bureau
AWPI	American Wood Preservers' Institute
AWS	American Welding Society
AWSC	American Welding Society Code
AWI	Architectural Woodwork Institute
AWWA	American Water Works Association
BHMA	Builders Hardware Manufacturers' Association
BIA	Brick Institute of America
CBMA	Certified Ballast Manufacturers' Association
CDA	Copper Development Association
CGA	Compressed Gas Association
CISPI	Cast Iron Soil Pipe Institute
CLFMI	Chain Link Fence Manufacturer's Institute
CMAA	Crane Manufacturers' Association of America
CRA	California Redwood Association
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standards
CSI	Construction Specifications Institute
CTI	Cooling Tower Institute
FGMA	Flat Glass Manufacturer's Association
FIA	Factory Insurance Association
FM	Factory Mutual
FS	Federal Specification
FTI	Facing Tile Institute
GA	Gypsum Association
HI	Hydraulic Institute
HMI	Hoist Manufacturers' Institute
ICBO	International Conference of Building Officials
ICEA	Insulated Cable Engineers' Association
IEEE	Institute of Electrical and Electronics Engineers, Inc.
IES	Illuminating Engineering Society

ISA	Instrument Society of America
JIC	Joint Industry Conferences of Hydraulic Manufacturers
LIA	Lead Industries Association
MAG	Maricopa Association of Governments
MIA	Marble Institute of America
MIA	Masonry Institute of America
MLMA	Metal Lath Manufacturers Association
MS	Military Specifications
MMA	Monorail Manufacturers' Association
NAAMM	National Association of Architectural Metal Manufacturers
NBFU	National Board of Fire Underwriters
NBHA	National Builders' Hardware Association
NBS	National Bureau of Standards
NCMA	National Concrete Masonry Association
NEC	National Electrical Code
NEMA	National Electrical Manufacturers' Association
NESC	National Electric Safety Code
NFPA	National Fire Protection Association
NFPA	National Forest Products Association
NGA	National Glass Association
NHLA	National Hardwood Lumber Association
NKCA	National Kitchen Cabinet Association
NLMA	National Lumber Manufacturers' Association
NMWIA	National Mineral Wool Insulation Association
NTMA	National Terrazzo and Mosaic Association
NWMA	National Woodwork Manufacturers' Association
OEI	Overhead Electrical Crane Institute
OSHA	Occupational Safety and Health Administration (both Federal and State)
PCA	Portland Cement Association
PCI	Pre-cast Concrete Institute
PDI	Plumbing Drainage Institute
PEI	Porcelain Enamel Institute
PS	Product Standards Section - U.S. Department of Commerce
RLM	RLM Standards Institute, Inc.
RMA	Rubber Manufacturers' Association
SAE	Society of Automotive Engineers
SDI	Steel Deck Institute

SDI	Steel Door Institute
SIGMA	Sealed Insulating Glass Manufacturing Association
SJI	Steel Joist Institute
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SSPC	Steel Structures Painting Council
SWI	Steel Window Institute
TEMA	Tubular Exchanger Manufacturers' Association
TCA	Tile Council of America
TIMA	Thermal Insulation Manufacturers Association
TPI	Truss Plate Institute
UBC	Uniform Building Code
UFC	Uniform Fire Code
UL	Underwriters' Laboratories, Inc.
USDA	United States Department of Agriculture
USPS	United States Postal Service
VI	Vermiculite Institute
WCLA	West Coast Lumberman's Association
WCLB	West Coast Lumber Bureau
WCLIB	West Coast Lumber Inspection Bureau
WIA	Woodwork Institute of Arizona
WPOA	Western Plumbing Officials Association
WWPA	Western Wood Products Association

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01143

COORDINATION WITH OWNER'S OPERATIONS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The intent of this Section is to provide CONTRACTOR a sequence to perform the Work in such a manner that continuous, uninterrupted access to the businesses is maintained operational throughout the construction period.
- B. The sequences of Work and Schedule of Completion are specified under Section 01010, Summary of Work.
- C. Except for the construction hours specified in this Section, CONTRACTOR'S means and methods shall be implemented such that the traffic lanes shall remain in continuous satisfactory operation during the entire construction period. Work shall be so scheduled and conducted by CONTRACTOR such that it shall not impede any hindrances to the public and businesses. In performing the Work shown and specified, CONTRACTOR shall plan and schedule the Work to meet both the constraints outlined in this Section and City of Chandler traffic control standards.
- D. Work not specifically covered in Section 01010, Summary of Work, or in the following paragraphs may, in general, subject to the operating requirements outlined in this Section.

1.2 OVERTIME

- A. All overtime work by CONTRACTOR necessary to conform to the requirements of this Section shall be performed by CONTRACTOR at no additional cost to the OWNER and shall be performed in accordance with the General Conditions. CONTRACTOR shall make no claims for extra compensation as a result thereof.
- B. PRODUCTS (NOT USED)

PART 2 - EXECUTION

2.1 COORDINATION DESCRIPTION

- A. No more than two (2) lanes shall be closed to traffic at any one time between 8:30 AM and 4:30 PM. No more than one (1) traffic lane shall be closed during peak hours. Contractor shall submit a construction schedule for approval by the OWNER.

B. Potable Piping Tie-In:

1. The CONTRACTOR shall prepare a plan with scheduling, means and methods, disinfection, and the proposed connections at each tie-in. The tie-in plans shall be approved by the OWNER 30 days prior to starting the first water lateral tie-in.
2. Work may occur at night or during the weekend to ensure minimal disruption to businesses.

C. Sewer Piping Tie-In:

1. CONTRACTOR shall coordinate all sewer bypass pumping operations with the City of Chandler per Section 02145, Diversion of Sewage Flow and Dewatering. The CONTRACTOR shall notify the OWNER 72 hours prior to bypassing the pipeline.

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 - GENERAL

1.1 SUMMARY

- A. The CONTRACTOR shall include a completed transmittal form for all submittals. Transmittal forms will be furnished to CONTRACTOR by ENGINEER. Submittals shall be sent to the ENGINEER.

1.2 SECTION INCLUDES

- A. Shop Drawings.
- B. Material and Equipment Record.
- C. Samples.
- D. Daily reports.
- E. Testing results.
- F. Construction photographs.
- G. Record Drawings.

1.3 DATA REFERENCE SYMBOLS AND DESCRIPTIONS

- A. The submittal data required for Shop Drawings and operations manuals shall contain, but not necessarily be limited to, that data and material as defined by the coded legend set forth below. The submittal data required shall be as indicated and specified under various headings of the specifications.

LEGEND

DATA REFERENCE SYMBOLS AND DESCRIPTIONS

Symbol

Description

A	Letters of Certification of Compliance on materials, equipment, etc.
B	Samples.

<u>Symbol</u>	<u>Description</u>
C	Final certified drawings showing outline dimensions, foundation layout or mounting information, and other pertinent dimensions.
D	Field erection instructions, assembly drawings and/or diagrams, detailed reference drawing lists, and lists of erection details.
E	Shop detail drawings showing individual sub-assemblies and fabricated pieces with material specifications and other applicable data.
F	Installation instructions, operating and/or service manuals, and all other data pertinent to operating or servicing the complete apparatus. Preventative maintenance instructions and recommended frequency.
G	General bulletins and catalog cuts describing complete apparatus including operating principles and fundamentals.
H	Service data sheets showing design performance, utility requirements, etc., as applicable to the specific duty for which the equipment is furnished.
I	Head capacity curves for pumps. Impeller size furnished and maximum size available shall be noted on these data sheets.
K	Curves and/or data for overall range of operation from minimum to maximum capacity or load, showing capacity or load, utilities motive medium required, total or incremental differential head, and other pertinent information applicable to the equipment or its component assemblies.
L	Materials of construction of all components.
M	Renewal parts list with diagrammatic or cross-section drawings showing part identification. Material analysis or trades designation for each significant part is to be noted on parts lists or on a separate sheet.
N	Stuffing box sizes; packing sizes; specifications and arrangement; and mechanical seal details, specifications, etc., if furnished in equipment.
O	Bearing manufacturer's standard identification and/or interchangeable number for all anti-friction bearings in the equipment proper and its accessory items.
P	Material gradation, design mix, job mix formula, and/or material analysis.

1.4 SHOP DRAWINGS

- A. The CONTRACTOR shall submit Shop Drawings for the equipment and materials specified herein. CONTRACTOR shall submit the shop drawings online via “Newforma”. The shop drawings shall be addressed to (Brandy.Nixon@wilson-engineers.com). Text shall be in electronic ASCII format. Drawings and figures shall be in AutoCAD “.dwg”, or bitmap “.bmp,” tiff “.tiff,” jpeg “.jpg,” gif “.gif,” or pdf “.pdf” format.
- B. ENGINEER shall return electronic Shop Drawings to CONTRACTOR within 14 calendar days of receipt by ENGINEER.
- C. The CONTRACTOR may request submittals be reviewed up to two times for each equipment or construction material item, regardless of manufacturer or supplier, by the ENGINEER.
- D. Each Shop Drawing submittal shall include an electronic copy of the relevant Specification Section. Each and every paragraph of the Specification Section shall be clearly marked to indicate whether the requirements for equipment and/or services in the Specification Section are met. If clarifications are needed to any of the paragraphs in the Specification Section, they shall be addressed next to the paragraph or in an attached letter as such and explained further with any additional information necessary. If any exceptions and/or deviations are proposed to any of the Specifications, they shall be clearly noted as such in the submittal, and an explanation of any deviation and/or exception shall be provided. The CONTRACTOR shall furnish equipment and/or services as specified if an exception and/or deviation is rejected.
- E. The CONTRACTOR will be held responsible for any delay in progress of the Work due to resubmittal of Shop Drawings. Time for completion of the Contract will not be extended due to CONTRACTOR’s failure to promptly submit complete and acceptable Shop Drawings, product data and samples.
- F. Do not execute Work required by Shop Drawings until accepted Shop Drawings are received from ENGINEER.
- G. Before submitting Shop Drawings for review, CONTRACTOR shall check Shop Drawings for accuracy, ascertain that all Work contiguous with and having bearing on other Work shown on Shop Drawings is accurately drawn, and that Work shown is in conformity with Contract requirements. The CONTRACTOR is responsible for all submittals from subcontractors and suppliers.

- H. All such Drawings and details, when submitted, must bear the stamp of approval of CONTRACTOR, bearing checked data, as evidence that such Drawings and details have been checked by the CONTRACTOR. Said "stamp" shall clearly state that the CONTRACTOR has checked the Drawings by providing signature certification. Any Drawings submitted without such executed stamp of approval, or whenever it is evident (despite the stamp) that the Drawings have not been checked, they will be returned to the CONTRACTOR for resubmission and will not be considered. In such event, it will be deemed that CONTRACTOR has not complied with this provision and the CONTRACTOR shall bear risk of all delays to the same extent as if no Drawings or details had been submitted.
- I. The CONTRACTOR shall prepare composite Drawings and installation layouts, when required to solve tight field conditions. Such Drawings shall consist of dimensioned plans and elevations, and must give complete information particularly as to size and location of sleeves, inserts, attachments, openings, conduits, ducts, boxes, structural interferences, etc. These composite drawings and installation layouts shall be coordinated in the field by the CONTRACTOR and his subcontractors for proper relationship to the Work of other trades, based on field conditions, and shall be checked and approved by them before submission to the ENGINEER for his final review. The CONTRACTOR shall have competent technical personnel readily available for such coordinating and checking, as well as for supervision of field installation of Work as per the Drawings and installation layouts, which have been previously determined by him to be correct and carry the ENGINEER'S review stamp.
- J. Submission of Shop Drawings (in either original submission or when resubmitted with corrections) constitute evidence that the CONTRACTOR has checked all information thereon, and that he accepts and is willing to perform the Work as shown in a workmanlike manner and in accordance with best standard practice.
- K. Cost of any changes in construction due to improper checking and coordination by the CONTRACTOR shall be paid for by the CONTRACTOR, and the CONTRACTOR shall be responsible for all additional costs, including coordination.
- L. Shop Drawings shall clearly delineate the following information:
 - 1. ENGINEER'S name and Project number, Project name and address.
 - 2. Drawing title, number, date, and scale.
 - 3. Names of CONTRACTOR, subcontractor, and fabricator.
 - 4. Letters of Certification of Compliance
 - 5. Working and erection dimensions.
 - 6. Arrangements and sectional views.
 - 7. Necessary details, including complete information for making connections with other Work.
 - 8. Kinds of materials and finishes.

- 9. Show descriptive names of materials and equipment, classified item numbers, and locations at which materials or equipment are to be installed in the Work. Use same reference identification as shown on Contract Drawings.
- M. The ENGINEER shall provide the CONTRACTOR with a form to accompany the Shop Drawings.
- N. If Shop Drawings show variations from Contract Documents because of standard shop practice or other reasons, make specific mention of such variations in the transmittal form.
- O. Shop Drawings review will be general. It shall not relieve the CONTRACTOR of responsibility for accuracy of such Shop Drawings, nor proper fitting, construction of Work, furnishing of materials, or Work required by Contract Documents and not indicated on Shop Drawings. Shop Drawings review shall not be construed as approving departures from Contract Documents.
- P. Review of Shop Drawings and schedules shall not relieve the CONTRACTOR from responsibility for any violation indicated on such Drawings or schedules of local, County, State, or Federal laws, rules, ordinances, or rules and regulations of commissions, boards or other authorities or utilities having jurisdiction.
- Q. When product data, consisting of manufacturer's printed literature, is required to be submitted to ENGINEER, it shall be submitted in original form. Any fading type of reproduction will not be accepted.

1.5 CONSTRUCTION PHOTOGRAPHS

- A. Per City of Chandler Contract Requirements.

1.6 TESTING RESULTS

- A. CONTRACTOR shall furnish to ENGINEER copies of all testing results for all tests required in the Specifications.

1.7 RECORD DRAWINGS

- A. Per Section 01700, Contract Closeout. CONTRACTOR shall update Record Drawings whenever a change occurs and shall be made available for review by ENGINEER with the pay application. Failure of CONTRACTOR to maintain updated Record Drawings shall be justification for refusal of Pay Application.

1.8 ALL ADDITIONAL SUBMITTALS

- A. As required by the Contract Documents.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01400
QUALITY CONTROL

PART 1 - GENERAL

1.1 RELATED SECTIONS

- A. Section 01300, Submittals.

1.2 QUALIFICATIONS

- A. Installation of materials and equipment shall be performed in a workman like manner by mechanics skilled in their particular trade.

1.3 REGULATORY REQUIREMENTS

- A. Unless indicated or specified otherwise, all materials and workmanship for the mechanical trades shall conform to the editions of the various standards, codes, manuals, and Specifications in effect on the date of advertisement for bids.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01700
CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 SUMMARY

- A. Tasks listed under this Section shall be completed prior to Contract closeout and approval of the CONTRACTOR'S final pay request.

1.2 RELATED SECTIONS

- A. Section 01300, Submittals.

1.3 CONTRACT CLOSEOUT SUBMITTALS

- A. The following documents are to be submitted as specified to the ENGINEER prior to approval of the CONTRACTOR'S final pay request:
 - 1. Record Drawings shall be furnished by the CONTRACTOR. One set of bluelines annotated to show all changes shall be delivered by the CONTRACTOR to the ENGINEER. The Record Drawings shall reflect all changes made by Change Order, addenda, field order, Work directive, and any other changes made and approved during the course of the Work.
 - 2. Certification of Final Completion.
 - 3. Evidence of Payment and Release of Labor and Material Liens as outlined in the Conditions of the Contract. Affidavit of Settlement of Claims shall be furnished by the CONTRACTOR and all subcontractors.
 - 4. Release of claims as outlined in the conditions of the Contract.
 - 5. Evidence of Compliance with Requirements of Governing Authorities, including Certificate of Occupancy and Certificates of Inspection.

1.4 SITE CONDITIONS

- A. Prior to approval of the CONTRACTOR'S final pay request, and after Work has been completed, the CONTRACTOR shall dispose of all waste material and conduct final cleaning of completed work as specified in Section 01710, Cleaning.
- B. All areas shall be restored to a condition equal to or better than the original.
- C. Site grading shall be performed to the lines and grades as shown or conforming to adjacent contours.

1.5 MAINTENANCE AND GUARANTEE

- A. The CONTRACTOR shall comply with the maintenance and guarantee requirements contained in the General Conditions.
- B. Replacement of earth fill or backfill, where it has settled below the required finish elevations, shall be considered as a part of such required repair Work, and any repair or resurfacing constructed by the CONTRACTOR which becomes necessary by reason of such settlement shall likewise be considered as a part of such required repair Work, unless the CONTRACTOR shall have obtained a statement in writing from the affected private owner or public agency releasing the CONTRACTOR from further responsibility in connection with such repair or resurfacing.
- C. The CONTRACTOR shall make all repairs and replacements promptly upon receipt of written order from the OWNER. If the CONTRACTOR fails to make such repairs or replacements promptly, the OWNER reserves the right to do the Work and the CONTRACTOR and his surety shall be liable to the OWNER for the cost thereof.

1.6 BOND

- A. The CONTRACTOR shall provide a bond to guarantee performance of the provisions contained in Paragraph 1.5, above, and the General Conditions.

1.7 RE-INSPECTION FEES

- A. Should CONTRACTOR fail to complete and correct punch list items such that additional inspections are required by ENGINEER, CONTRACTOR shall pay ENGINEER'S standard rates per person per hour for ENGINEER'S additional services. If CONTRACTOR has any questions with regard to any items on punch list, he shall request clarification before final inspection.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01710

CLEANING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section outlines requirements for cleaning of the Project Work. This Section is complementary to the General Conditions and nothing herein shall be considered to waive any requirements of the General Conditions.

1.2 REQUIREMENTS OF REGULATORY AGENCIES

- A. Safety and Insurance Standards: Maintain Project in accordance with the following safety and insurance standards:
 - 1. State Industrial Commission of Arizona (OSHA).
- B. Fire Protection: Store volatile waste in covered metal containers and remove from premises daily.
- C. Pollution Control: Conduct cleanup and disposal operations to comply with local ordinances and anti-pollution laws. Burning or burying of rubbish and waste material on the Project site is not permitted. Disposal of volatile fluid waste (such as mineral spirits, oil, or paint thinner) in storm or sanitary sewer systems or into streams or waterways is not permitted.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 DURING CONSTRUCTION

- A. During the construction period, the material to be used in the Work shall be kept in an orderly manner, neatly stacked or piled.
- B. Clean up frequently (at least weekly) all refuse, rubbish, scrap materials, and debris caused by operations, to the end that at all times the site of the Work shall present a neat, orderly, and workmanlike appearance. Sprinkle dusty debris with water.
- C. Provide for the disposal of all waste products, trash, debris, etc., and make necessary arrangement for legal disposal of same off the site. Never throw

- rubbish from windows or other parts of building. Lower waste materials in a controlled manner with as few handling as possible.
- D. Remove all surplus material, false-work, temporary structures, including foundations thereof, plant of any description and debris of every nature resulting from operations and put the site in a neat, orderly condition.
 - E. Remove carpentry nails, pieces of rebar, pieces of cut metal, metal strapping, and pieces of wood. Wire (bare or insulated), shall also be recovered from the ground at the end of each day.
 - F. General contractor shall provide trash gondolas or containers for use by all trades.

3.2 FINAL CLEANING

- A. Use experienced workmen or professional cleaners for final cleaning. Provide adequate ventilation during use of volatile or noxious substances.
- B. All existing improvements, inside or outside the property that are disturbed, damaged, or destroyed by the Work under the Contract, shall be restored to the condition in which they originally were, or to the satisfaction of the OWNER.
- C. CONTRACTOR shall clean all sidewalks by power washing to remove tire trend marks.

END OF SECTION

SECTION 02100
SITE PREPARATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Prepare the construction site for new construction.

1.2 SECTION INCLUDES

- A. Protection of certain existing trees and vegetation.
- B. Clearing and grubbing.
- C. Removing below grade improvements (including stumps).
- D. Installing and maintaining barricades and warning signs.
- E. All other miscellaneous items of Work required to complete the site preparation.

1.3 RELATED SECTIONS

- A. Section 02200, Earthwork.

1.4 PROJECT CONDITIONS

- A. Traffic: Conduct site-clearing operations to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close or obstruct streets, walks, or other occupied or used facilities without permission from authorities having jurisdiction.
- B. Protection of Existing Improvements: Provide protection as necessary to prevent damage to existing improvements indicated to remain in place.
 - 1. Protect improvements on adjoining properties and OWNER'S property.
 - 2. Restore damaged improvements to their original or better condition, as acceptable to OWNER.
- C. Protection of Existing Trees and Vegetation:
 - 1. Existing vegetation in the field not scheduled for removal shall be undisturbed by the CONTRACTOR. The CONTRACTOR shall NOT remove from the site any plants unless specifically approved by the ENGINEER.
 - 2. Protect existing trees and vegetation indicated to remain against unnecessary cutting, breaking or skinning of roots, skinning or bruising of bark, smothering of trees by stockpiling construction materials or excavated

materials within drip line, excess foot or vehicular traffic or parking of vehicles within the drip line. Prior to initiating site clearing activities, the CONTRACTOR shall mark the limits of the disturbance areas either by placing lime, flags, or survey stakes at the limits shown on the Plans.

3. Do not destroy vegetation which may be naturally located in the periphery of proposed disturbed areas (within a zone $\pm$ 5 feet from the limits of construction). The ENGINEER shall be notified if existing plants are located within the fringes of the construction limits. The ENGINEER shall issue instructions at that time.
 4. Adjustments may be made in the limits of construction to protect the affected plants based on a field review of the staked limits. The adjusted construction limits shall be considered the permanent construction limits for the duration of the Project. If the ENGINEER recommends that construction limits be adjusted to preserve existing plants, the CONTRACTOR, at his own option, may elect to clear the subject vegetation and revegetate with like-kind size and species as required herein and by Landscape Drawings at no additional cost to the OWNER. The CONTRACTOR shall be entirely responsible for removal, storage, and replanting of such vegetation in accordance with City's Landscape Design of Right-of-Way, medians, and retention basin Technical Design Manual no. 8.
 5. During the course of the Work the CONTRACTOR shall:
 - a. Water trees, shrubs, and other vegetation to remain within limits of Contract Work as required to maintain their health during the course of construction operations at no additional cost to the OWNER.
 - b. Provide protection for roots over 1-1/2-inches in diameter that are cut during construction operations. Temporarily cover exposed roots with wet burlap to prevent the roots from drying out; cover with earth as soon as possible.
 - c. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations in a manner acceptable to the ENGINEER.
 - d. Trees to be protected in place shall not be pruned unless limbs are damaged, or at the direction of the ENGINEER. Employ a licensed arborist to repair damaged trees and shrubs. Replace trees that cannot be repaired and restored to full growth status, as determined by the arborist.
 - e. Trees may be pruned for routing maintenance during construction with ENGINEER'S approval at no additional cost to the OWNER.
- D. Provide a temporary construction fence/barrier to protect trees and vegetation at the limits reviewed and approved by the ENGINEER. The barrier shall be installed and remain in place for the duration of the Project or as directed by the ENGINEER.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Fencing: Any fencing removed as obstructions shall be restored to match existing with property OWNER's approval/acceptance.
- B. Barricades, warning signs, and related equipment shall be placed as required.
- C. Tree Protection Fence/Barrier: Shall be a commercially available product acceptable to the ENGINEER for its intended purpose. The barrier shall be similar to a nylon woven material or woven wire fence such as TENAX Nordic Snow Fence, or approved equal, with approved stakes approximately 36-inches in height. Submit material sample and Shop Drawings for barrier installation to the ENGINEER for approval prior to use.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Site Clearing
 - 1. General: Remove trees, shrubs, grass and other vegetation, improvements or obstructions, as required, to permit installation of new construction. Remove similar items elsewhere on site or premises as specifically indicated. Removal includes digging out and off-site disposal of stumps and roots.
 - a. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
 - 2. Clearing and Grubbing: Within the limits of Work, clear site of trees, shrubs and other material, except for those indicated to be left standing.
 - a. Completely remove stumps, roots, and other debris protruding through the ground surface. Stump removal and backfilling of holes is required for trees indicated on the Plans to be removed.
 - b. Use only hand methods for grubbing inside drip line of trees indicated to remain.
 - c. Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated.
 - d. Place fill material in horizontal layers not exceeding 6-inches loose depth, and thoroughly compact each layer to a density equal to adjacent original ground.
 - 3. Disposal of Waste Material:
 - a. Burning on OWNER'S Property: Burning is not permitted on OWNER'S property.
 - b. Removal from OWNER'S Property: Remove waste materials from OWNER'S property at no additional cost to the Project.

4. All miscellaneous items not specifically mentioned or designated on the Drawings as removal items, but required for the completion of the Work, shall be removed. All such items removed shall be hauled from the site.
- B. Barricades and Warning Signs:
1. Construction sites shall be properly barricaded with appropriate warning signs affixed to prevent unauthorized access to the construction site.

END OF SECTION

SECTION 02145

DIVERSION OF SEWAGE FLOW AND DEWATERING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope:

1. This Section provides minimum requirements for temporary bypass pump station and dewatering of sewers as required to completing work and prior to acceptance.

B. Requirements:

1. CONTRACTOR shall provide all labor, materials, equipment, and supervision to temporarily bypass pump sewage flow around the CONTRACTOR'S Work and to dewater the pipeline for removal. The bypass strategy shall maintain flow to prevent wastewater backup into the City's sewage collection system or discharge to the environment.
2. The actual design of the bypass arrangement shall be prepared by the CONTRACTOR, and shall be submitted to the OWNER and ENGINEER for review. Means and methods of accomplishing the bypassing shall be the responsibility of the CONTRACTOR.
3. The CONTRACTOR shall have the entire bypassing system in place and tested before bypassing any sewage.
4. The CONTRACTOR shall notify the OWNER 72 hours prior to bypassing the pipeline. The wastewater levels shall be continuously monitored by the CONTRACTOR.
5. CONTRACTOR is responsible for immediate and proper cleanup should any spill occur, regardless of amount.
6. CONTRACTOR shall connect bypass piping to the existing collection system and utilize temporary pumps and control equipment.
7. CONTRACTOR shall utilize a pumping system with 100% back-up capability. In the event a pump shall fail, an alternate equally sized pump shall be ready to be utilized immediately. This requires the alternate pump(s) to be connected to the forcemain system.
8. The forcemain system shall include a 100% redundant pipeline for use should the primary forcemain fail during operation. The redundant pipeline shall be equally sized to accommodate 100% of the pumped flow. The redundant pipeline shall be connected to the forcemain system and include a number of valves to be actuated to allow it to operate immediately. The forcemains shall be sized with a velocity of less than 5 feet per second.
9. CONTRACTOR shall coordinate operation of temporary bypass pump station with authorized City of Chandler personnel. CONTRACTOR shall

not operate any equipment in or about temporary bypass pump station without prior written consent from OWNER and copied to ENGINEER.

10. Bypass pump operation shall include a lighting system at the bypass pump operation and the forcemain discharge. The lighting system shall be gas operated.
11. CONTRACTOR shall provide qualified personnel, at a minimum two (2), on-site 24 hours per day to maintain the bypass pumps and pipeline.
12. CONTRACTOR shall continuously monitor hydrogen sulfide concentrations at the suction side of the bypass pump operation and the forcemain discharge. CONTRACTOR shall provide temporary covering at each location to minimize hydrogen sulfide releases. This may include providing and installing a temporary odor control system as determined by the OWNER.
13. CONTRACTOR shall provide, install, and maintain safety signs as determined by the OWNER. CONTRACTOR shall plan for at least 20 signs measuring 14-inches by 10-inches. Signs shall be installed prior to testing the bypass pumping system.

C. Experience:

1. CONTRACTOR shall utilize staff and/or a subcontractor that has been directly responsible for the bypass pumping of sewage flows during the completion of a similar pipeline project.

1.2 SUBMITTALS

A. Provide a detailed plan for the bypass pump operation. The plan shall include the following items:

1. Detailed layout of the temporary pumping system. Include layouts of the pump station and forcemain. The layout shall include all redundant pumps and forcemains.
2. Pump suction piping size and layout.
3. Pump equipment data sheets. Data sheets shall include a system head curve along with a pump curve to verify its operating point. The system head curve calculations shall be developed by the CONTRACTOR and be included within the submittal for review.
4. Forcemain diameter and material data sheets.
5. Forcemain sizing calculations.
6. Detailed list of personnel to be utilized for the bypass pump operation. The list shall also include the local supplier of the by-pass pumps and forcemains.
7. Detailed list of additional parts and equipment to be placed at the site should the system not operate as intended.
8. Additional temporary measures that are planned to be supplied to ensure safe and reliable bypass pump operation.
9. Detailed list of items and methods utilized to repair or replace items damaged or modified due to the by-pass pump operation.

- B. The plan shall include a detailed daily schedule and a list of daily activities that will be completed before, during, and after the bypass operation. Include all personnel that are planned to work on the pipeline and the bypass pump operation.
- C. Provide an emergency contact list for all of the personnel to be at the site. Include all of the OWNER's and ENGINEER's personnel. Once the emergency contact list is finalized, three (3) copies shall be printed, laminated, and placed at locations along the bypass pump operation as determined by the OWNER.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. CONTRACTOR shall provide temporary piping, fittings, conduits, and all other equipment to bypass sewer flow around the CONTRACTOR'S Work as required. CONTRACTOR shall furnish all necessary labor supervision to set up and operate the pumping system. Equipment shall be equipped with sound attenuation devices to keep noise level within limits specified in the City of Chandler Codes or stated in the Contract Documents. Bypass shall be of adequate capacity and size to handle the required flows.
- B. Bypass piping shall be polyethylene pipe with Standard PE Code Designation PE3408 as defined in AWWA C906, have a minimum Cell Classification of PE 334434C as defined in ASTM D3350, and designed using Hydrostatic Design Basis of 1,600 psi as specified in ASTM D2837. The physical properties of the polyethylene pipe shall have minimum test values as specified in ASTM D3350. Properties shall be substantiated with test data.
- C. The polyethylene shall be designed by CONTRACTOR in accordance with the procedures of AWWA Design Manual M55, applicable MAG standards and these Specifications. All material properties used in design calculations shall be long-term (time-corrected) values. CONTRACTOR shall be familiarized with site conditions when preparing the pipe design.
- D. CONTRACTOR shall calculate the required minimum wall thickness using the following parameters:
 - 1. Modulus of Soil Reaction: $E's = 500$ psi (fully deteriorated).
 - 2. Unit Weight of Soil: $w = 140$ pcf.
 - 3. Vacuum Pressure: $PV = 14.7$ psi.
 - 4. Ground Water Depth Above Invert: $h = 4$ feet.
 - 5. Live Loads: AASHTO H-20.
 - 6. Safety Factor: $N = 2.0$.
 - 7. Internal Operating Temperature (Design): $T_n = 24^{\circ} C$ to $33^{\circ} C$.
 - 8. Minimum Depth of Cover: $d = 2$ feet.
 - 9. Maximum Depth of Cover: $d = 10$ feet.

10. Poisson's Ratio for Long Term Loading: $m = 0.45$.
 11. Bedding Constant: $K = 0.1$.
 12. Time Lag Factor: $TL = 1.5$.
 13. Long Term Apparent Modulus of Elasticity: $E = 23,000$ psi.
 14. Working Pressure: $P = 110$ psi.
 15. Test Pressure: $P = 150$ psi.
 16. Ovality Compensation Factor: $f_0 = 0.5$.
 17. Recurrent Surge Velocity: $DVRS = 2.9$ ft./sec.
 18. Occasional Surge Velocity: $DVOS = 6.2$ ft./sec.
 19. Bulk Modulus of Water: $K = 300,000$ psi.
 20. Effective Modulus of Pipe Material: $E_d = 150,000$ psi.
 21. Design Factor for use in AWWA M55 eq 4-1: $DF = 0.5$.
 22. Allowable Deflection: As described in AWWA M55, Table 5-11.
- E. CONTRACTOR shall maintain on-site sufficient equipment and materials to ensure continuous and successful operation of the bypass and dewatering systems. The CONTRACTOR shall maintain on-site a sufficient number of valves, tees, elbows, connections, tools, sewer plugs, piping, and other parts or system hardware to ensure immediate repair or modification of any part of the system as necessary.
- F. All equipment shall be placed on a new plastic tarp, adequately sized, and bermed to protect against gasoline, oil, and hydraulic fluid spills.

PART 3 - EXECUTION

3.1 PROTECTION

- A. In areas where flows are bypassed, all bypass flow shall be discharged to a downstream sanitary sewer manhole following a bypass plan approved by the OWNER and ENGINEER. No bypassing to ground surface receiving waters, canals, storm drains, or bypassing which results in groundwater contamination or potential health hazards shall be permitted in accordance with the General Conditions.

3.2 DAMAGES

- A. The CONTRACTOR shall repair, without cost to OWNER, any damage that may result from his negligence, inadequate or improper mechanical or electrical failures.

END OF SECTION

SECTION 02200

EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. This Section covers excavating, trenching, backfilling, and grading as indicated on the Project Drawings, together with all incidental Work in connection therewith, including subgrade preparation and restoration, legally disposing of surplus and waste materials, and final site grading. Areas disturbed by construction shall be graded and excavated or filled in such a manner that completed items will conform to lines, grades, and elevations of surrounding area. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Subbase course for walks and pavements.
 - 2. Excavating and backfilling trenches within building lines.
 - 3. Excavating and backfilling for underground mechanical and electrical utilities and appurtenances.
 - 4. Placing on-site fill material.
- B. Related Section: The following Section contains requirements that relate to this Section.
 - 1. Section 02100, Site Preparation.

1.3 DEFINITIONS

- A. Excavation consists of the removal of material encountered to subgrade elevations and the reuse or disposal of materials removed.
- B. Subgrade: The uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- C. Borrow: Soil material obtained off site when sufficient approved soil material is not available from excavations.
- D. Subbase Course: The layer placed between the subgrade and base course in a paving system or the layer placed between the subgrade and surface of a pavement or walk.

- E. Base Course: The layer placed between the subbase and surface pavement in a paving system.
- F. Capillary Water Barrier: Course of clean sand or washed granular material placed above a water barrier sheet supporting interior concrete slab-on-grade placed to cut off upward capillary flow of pore water.
- G. Unauthorized excavation consists of removing materials beyond indicated subgrade elevations or dimensions without direction by the ENGINEER. Unauthorized excavation, as well as remedial Work directed by the ENGINEER, shall be at the CONTRACTOR'S expense.
- H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below ground surface.
- I. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within building lines.

1.4 SUBMITTALS

- A. General: Submit the following according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Samples of the following:
 - 1. 60 lb. representative samples of each proposed fill and backfill soil material from on-site or borrow sources.
- C. Test Reports: In addition to test reports required under field quality control, submit the following:
 - 1. Laboratory analysis of each soil material proposed for fill and backfill from on-site and borrow sources.
 - 2. One optimum moisture-maximum density curve for each soil material.
- D. Each Shop Drawing submittal shall include a copy of the relevant Specification Section. Each and every paragraph of the Specification Section shall be clearly marked to indicate whether the requirements for equipment and/or services in the Specification Section are met. If clarifications are needed to any of the paragraphs in the Specification Section, they shall be addressed next to the paragraph or in an attached letter as such and explained further with any additional information necessary. If any exceptions and/or deviations are proposed to any of the Specifications, they shall be clearly noted as such in the submittal, and an explanation of any deviation and/or exception shall be provided. The CONTRACTOR shall furnish equipment and/or services as specified if an exception and/or deviation is rejected.

1.5 QUALITY ASSURANCE

- A. Codes and Standards: Perform earthwork complying with requirements of authorities having jurisdiction.
- B. Pre-installation Conference: Before commencing earthwork, meet with representatives of the governing authorities, OWNER, ENGINEER, consultants, Geotechnical Engineer, independent testing agency, and other concerned entities. Review earthwork procedures and responsibilities including testing and inspection procedures and requirements. Notify participants at least three working days prior to convening conference. Record discussions and agreements and furnish a copy to each participant.
- C. Soils Testing Service: CONTRACTOR shall employ, at his own expense, an independent testing agency, certified in the State of Arizona, to perform all testing services as specified herein. Selection of a testing agency is subject to ENGINEER'S approval. Submit a written description of proposed soils testing agency giving qualifications of personnel, equipment, and other information which may be requested by ENGINEER.

1.6 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt existing utilities serving facilities occupied by the OWNER or others except when permitted in writing by the ENGINEER and then only after acceptable temporary utility services have been provided.
 - 1. Provide a minimum 48 hours' notice to the ENGINEER and receive written notice to proceed before interrupting any utility.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide approved borrow soil materials from offsite when sufficient approved soil materials are not available from excavations.
- B. Site Soils: The granular site soils may be used as fill in all areas of the site. The clayey site soils shall not be used as subsurface wall or retaining wall backfill. The clayey sand site soils may be used in all other areas provided these soils are placed and compacted at moisture contents at or above optimum in exterior slab and facility areas. All materials shall be free of organics, debris, and rubble.
- C. Imported Soils: Additional fill required shall be imported soils meeting the following requirements:
 - 1. Maximum Particle Size: 3-inches.

2. Maximum Swell Potential: 1.5% based on a sample which is remolded to 95% of the ASTM D698 maximum dry density at a moisture content of 2% below optimum placed under a surcharge of 100 psf and wetted.
 3. Maximum Percent Passing No. 200 Sieve: 40.
 4. Corrosion Potential: Sulfate Content (ARIZ 733) = 1,000 ppm (max), Chloride Content (ARIZ 733) = 500 ppm (max).
- D. Backfill and Fill Materials: As shown in the Drawings.
- E. Subbase and Base Material: Maricopa Association of Governments (MAG) Specification Section 702 for Select (Subbase) Type A or B and aggregate base (Base).
- F. Engineered Fill: Site soils as describe above subbase or base materials or aggregate base course (ABC) according to MAG Standard Specification Section 702.
- G. Bedding Material: Subbase or base materials with 100% passing a 1-inch sieve and not more than 8% passing a No. 200 sieve.
1. If on-site material can be used as bedding material, the CONTRACTOR shall take necessary steps to separate the suitable bedding material from the sandy clay and sandy silt found on site. The bedding material must meet all requirements of this Specifications Document and MAG Standard Specification Section 601.
 2. If on-site material does not meet the bedding material requirements, the CONTRACTOR shall supply the specified bedding material at no additional cost to the OWNER.
- H. Capillary Water Barrier:
1. Washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, ASTM D448, coarse aggregate Grading Size 57, with 100% passing a 1-1/2-inch sieve and not more than 5% passing a No. 8 sieve.
 2. Clean, washed natural or manufactured, non-plastic sand.
 3. Either of the above soil materials.
- I. Filtering Material: Evenly graded mixture of natural or crushed gravel or crushed stone and natural sand, with 100% passing a 1-1/2-inch sieve and 0% to 5% passing a No. 50 sieve.
- J. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

2.2 ACCESSORIES

- A. Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6-inches wide and 4 mils thick, continuously inscribed with a description of the utility.

1. Tape Colors: Provide tape colors to utilities as follows:
 - a. Red: Electric.
 - b. Yellow: Gas, oil, steam, and dangerous materials.
 - c. Orange: Telephone and other communications.
 - d. Blue: Water systems.
 - e. Green: Sewer systems.
 - f. Purple: Reclaimed Water

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.
- B. Provide erosion control measures following the most current City of Chandler Standards to prevent erosion or displacement of soils and discharge of soil-bearing water runoff per the National Discharge Elimination System (NPDES) or airborne dust to adjacent properties and walkways.
- C. Tree protection as specified on the Drawings.

3.2 DEWATERING

- A. Prevent surface water and subsurface or groundwater from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.

3.3 EXCAVATION

- A. Explosives: Do not use explosives.
- B. Unclassified Excavation: Excavation is unclassified and includes excavation to required subgrade elevations regardless of the character of materials and obstructions encountered.
- C. Classified Excavation: Excavation is classified and includes excavation to required subgrade elevations. Excavation will be classified as earth excavation or rock excavation as follows:
 1. Earth excavation includes excavation of obstructions visible on surface; underground structures, utilities, and other items not indicated that we are required to be demolished and removed; together with soil and other

materials encountered that are not classified as rock or unauthorized excavation.

- a. Intermittent drilling, blasting, or ripping to increase production and not necessary to permit excavation of material encountered will be classified as earth excavation.

3.4 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated cross sections, elevations, and grades.
- B. Pavement excavation, backfilling and compaction shall be as specified in MAG Section 205.

3.5 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated slopes, lines, depths, and invert elevations.
- B. Trench excavation, backfilling and compaction shall be as specified in MAG Section 601.

3.6 APPROVAL OF SUBGRADE

- A. Notify the ENGINEER when excavations have reached required subgrade.
- B. When the ENGINEER determines that unforeseen unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
 1. Unforeseen additional excavation and replacement material will be paid according to the Contract provisions for changes in Work.
- C. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by the ENGINEER.

3.7 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending indicated bottom elevation of concrete foundation or footing to excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position when acceptable to the ENGINEER.
 1. Fill unauthorized excavations under other construction as directed by the ENGINEER.
- B. Where indicated widths of utility trenches are exceeded, provide stronger pipe which may require higher strength pipe than specified or different pipe material depending on the limits of unauthorized excavation. Special installation procedures maybe required by the ENGINEER.

3.8 STORAGE OF SOIL MATERIALS

- A. Stockpile excavated materials acceptable for backfill and fill soil materials, including acceptable borrow materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.9 BACKFILL

- A. Backfill excavations promptly, but not before completing the following:
 - 1. Acceptance of construction below finish grade including, where applicable, damp proofing, waterproofing, and perimeter insulation.
 - 2. Surveying locations of underground utilities for Record Documents.
 - 3. Testing, inspecting, and approval of underground utilities.
 - 4. Concrete formwork removal.
 - 5. Removal of trash and debris from excavation.
 - 6. Removal of temporary shoring and bracing, and sheeting.
 - 7. Installing permanent or temporary horizontal bracing on horizontally supported walls.
- B. Structural Backfill:
 - 1. General Structural Fill: Backfill with on-site material and compact to a uniform minimum density of 95% of the maximum density as determined by ASTM D698. Additional backfill material shall be added if required. Fill material should be free from vegetation, debris, and deleterious material, and should contain no particles larger than 6-inches in dimension. The plasticity index shall not exceed 18 as determined by ASTM D4318. Fill shall be placed in lifts no more than 8-inches and compacted to a minimum of 95% of maximum dry density as determined by ASTM D698. Moisture content during compaction shall be maintained within $\pm 2\%$ of the optimum moisture content, as determined by ASTM D698.
 - 2. CONTRACTOR may utilize $\frac{1}{2}$ sack CLSM for backfill per MAG Section 604.

3.10 UTILITY TRENCH BACKFILL

- A. Place and compact bedding course on rock and other unyielding bearing surfaces and to fill unauthorized excavations. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- B. Concrete backfill trenches that carry below or pass under footings and that are excavated within 18-inches of footings. Place concrete to level of bottom of footings.

- C. Provide 4-inch thick concrete base slab support for piping or conduit less than 2 feet 6-inches below surface of roadways. After installation and testing, completely encase piping or conduit in a minimum of 4-inch of concrete before backfilling or placing roadway sub-base.
- D. Place and compact initial backfill of satisfactory soil material or sub-base material, free of particles larger than 1-inch, to a height of 12-inches over the utility pipe or conduit.
 - 1. Carefully compact material under pipe haunches and bring backfill evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of utility system.
- E. Coordinate backfilling with utilities testing.
- F. Fill voids with approved backfill materials as shoring and bracing, and sheeting is removed.
- G. Place and compact final backfill of satisfactory soil material to final subgrade.
- H. Install warning tape directly above utilities, 12-inches below finished grade, except 6-inches below subgrade under pavements and slabs.

3.11 SUBSURFACE DRAINAGE BACKFILL

- A. Subsurface Drain: Place a layer of filter fabric around perimeter of drainage trench or at footing, as indicated. Place a 6-inch compacted course of filtering material on filter fabric to support drainage pipe. After installing and testing, encase drainage pipe in a minimum of 6-inches of compacted filtering material and wrap in filter fabric, overlapping edges at least 6-inches.
- B. Drainage Backfill: Place and compact drainage backfill of filtering material over subsurface drain, in width indicated, to within 12-inches of final subgrade. Overlay drainage backfill with one layer of filter fabric, overlapping edges at least 6-inches.
- C. Impervious Fill: Place and compact impervious fill material over drainage backfill to final subgrade.

3.12 FILL

- A. The following apply to the areas within and extending 5 feet beyond the footprint of the facilities and exterior slabs.
 - 1. Clear and grub the site by removing and disposing of all vegetation, debris, rubble, and remnants of former developments.
 - 2. Strip the area of all stockpiled fill zones, loose backfill zones, and unstable soils. During stripping observe the surface for evidence of buried debris, vegetation or disturbed materials that shall require additional removal. If

encountered, these materials should be removed. Areas steeper than 5H to 1V shall be benched and any depressions widened to accommodate compaction equipment.

3. Prepare the ground surface in fill areas and in areas cut to grade by scarifying, moisture conditioning and compacting the exposed surface soils to a depth of 8-inches.
 4. Moisture condition and place all fill and backfill materials to achieve specified grades. Fill materials shall be moisture conditioned, placed, and compacted in horizontal lifts.
- B. Place fill material in layers to required elevations for each location listed below.
1. Under grass, use satisfactory excavated or borrow soil material.
 2. Under walks and pavements, use sub-base or base material, or satisfactory excavated or borrow soil material.
 3. Under steps and ramps, use sub-base material.
 4. Under building slabs, use drainage fill material.
 5. Under footings and foundations, use engineered fill.

3.13 MOISTURE CONTROL

- A. The moisture content of soil and base materials at the time of compaction shall be:

TYPE	AREA OF USE	MOISTURE CONTENT
On-site Granular	Structure, Exterior Slab	Optimum $\pm$ 3%
On-site Clayey Soils	Structure, Exterior Slab	Optimum to Optimum +3%
On-site Soils	Pavement	2% Below Optimum or Lower
Imported Soils	Structure, Exterior Slab, Pavement	Optimum $\pm$ 3%
Base Material	Structure, Pavement	Optimum $\pm$ 3%

3.14 COMPACTION

- A. Place backfill and fill materials in layers not more than 8-inches in loose depth for material compacted by heavy compaction equipment, and not more than 4-inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill materials evenly on all sides of structures to required elevations. Place backfill and fill uniformly along the full length of each structure.
- C. Compact subgrade, fill, backfill, sub-base fill or base material to the following minimum percent compaction of the ASTM D698 maximum dry density in each lift:

MATERIAL	MINIMUM COMPACTION
Soil:	
Below foundations and pavement sections (fill thickness less than 5 feet).	95%
Below foundations (fill thickness greater than 5 feet).	100%
Below concrete floor slabs (above footings).	90%
Subsurface wall backfill.	95%
Base Material (Subbase and Base Courses):	
Below concrete floor slabs.	95%
Below pavement surfacing.	100%
Backfill (not adjacent to structures and beyond exterior slab areas):	90%

3.15 GRADING

- A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 - 1. Provide a smooth transition between existing adjacent grades and new grades.
 - 2. Cut out soft spots, fill low spots, and trim high spots to conform to required surface tolerances.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
 - 1. Lawn or Unpaved Areas: ± 0.10 feet.
 - 2. Walks: ± 0.10 feet.
 - 3. Pavements: $\pm 1/2$ -inch.

3.16 SUBBASE AND BASE COURSES

- A. Under pavements and walks, place sub-base course material on prepared subgrades. Place base course material over sub-bases to pavements.
 - 1. Shape sub-base and base to required crown elevations and cross-slope grades.
 - 2. When thickness of compacted sub-base or base course is 6-inches or less, place materials in a single layer.
 - 3. When thickness of compacted sub-base or base course exceeds 6-inches, place materials in equal layers with no layer more than 6-inches thick or less than 3-inches thick when compacted.

- B. Pavement Shoulders: Place shoulders along edges of sub-base and base course to prevent lateral movement. Construct shoulders at least 12-inches wide of acceptable soil materials and compact simultaneously with each sub-base and base layer.

3.17 FIELD QUALITY CONTROL

- A. Testing Agency Services: Allow testing agency to inspect and test each subgrade and each fill or backfill layer. Do not proceed until test results for previously completed Work verify compliance with requirements.
 - 1. Perform field in-place density tests according to ASTM D1556 (sand cone method), ASTM D2167 (rubber balloon method), or ASTM D2937 (drive cylinder method), as applicable.
 - a. Field in-place density tests may also be performed by the nuclear method according to ASTM D2922, provided that calibration curves are periodically checked and adjusted to correlate to tests performed using ASTM D1556. With each density calibration check, check the calibration curves furnished with the moisture gages according to ASTM D3017.
 - b. When field in-place density tests are performed using nuclear methods, make calibration checks of both density and moisture gages at beginning of Work, on each different type of material encountered, and at intervals as directed by the ENGINEER.
 - 2. Trench Backfill: In each compacted initial and final backfill layer, perform at least one field in-place density test for each 150 feet or less of trench, but no fewer than two tests.
- B. When testing agency reports that subgrades, fills, or backfills are below specified density, scarify and moisten or aerate, or remove and replace soil to the depth required, recompact, and retest until required density is obtained.
- C. Minimum number of in-place density test are as follows:

TEST LOCATION	FREQUENCY OF TEST
Utility Trench Bedding, Shading and Backfill	1 Test every 300 L.F. of Trench 12” compacted lift
Manhole Backfill	1 Test every other 12” compacted lift – Alternating sides of manhole
Structural Backfill or Retaining Wall Backfill	1 test every 200 L.F. 12” compacted lift
Finished subgrade beneath On-Site Pavements	1 test every 300 L.F. of Pavement or Fraction thereof
ABC beneath On-Site Pavements	1 test every 300 L.F. of Pavement or Fraction thereof

3.18 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and re-establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or lose compaction due to subsequent construction operations or weather conditions.
 - 1. Scarify or remove and replace material to depth directed by the ENGINEER; reshape and recompact at optimum moisture content to the required density.
- C. Settling: Where settling occurs during the Project correction period, remove finished surfacing, backfill with additional approved material, compact, and reconstruct surfacing.
 - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

3.19 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off the OWNER'S property.

END OF SECTION

SECTION 02530

MANHOLES

PART 1 - GENERAL

1.1 SUMMARY

- A. Furnish and install all polymer concrete manholes and accessories for sanitary manholes as indicated on the Plans and as specified herein.

1.2 SECTION INCLUDES

- A. Polymer Concrete Manholes.

1.3 RELATED SECTIONS

- A. Section 01300, Submittals.
- B. Section 02532, Manhole FRP Inserts
- C. Section 15051, Buried Piping.
- D. Section 15067, VCP Pipe.
- E. Section 15120, Pipe Specialties and Accessories.

1.4 REFERENCES

- A. ASTM C 478 (most current) Standard Specification for Precast Reinforced Concrete Manhole Sections.
- B. ASTM C 579 (most current) Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic, Surfacing, and Polymer Concretes.
- C. ASTM C 443 (most current) Standard Specification for Joints for Concrete Pipe and Manholes Using Rubber Gaskets.
- D. ASTM C 580 (most current) Standard Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
- E. ASTM C 857 (most current) Standard Practice for Minimum Structural Design Loading for Underground Utility Structures.

- F. ACI 350-06 Code Requirements for Environmental Engineering Concrete Structures & Commentary.
- G. ACI 440.1R-15 Guide for the Design and Construction of Structural Concrete Reinforced with Fiber-Reinforced Polymer (FRP) Bars.
- H. ACI 548.6R-96 Polymer Concrete-Structural Applications State-of-the-Art Report.
- I. ASTM D 648 (most current) Test Method for Deflection Temperature of Plastics Under Flexural Load in Edgewise Position.
- J. ASTM D 6783 (most current) Standard Specification for Polymer Concrete Pipe.
- K. ASTM D 2584 (most current) Test Method for Ignition Loss of Cured Reinforced Resins.
- L. ASTM C 923 (most current) Standard Specifications for Resilient Connectors between Concrete Manholes Structures and Pipe.
- M. ASTM C 990 (most current) Standard Specification for Joints for Concrete Pipe, Manholes and Precast Box Sections using Preformed Flexible Joint Sealants.
- N. ASTM C 497 (most current) Test Methods for Concrete Pipe, Manhole Sections, or Tile.
- O. All other applicable ASTM and ANSI Standards.

1.5 SUBMITTALS

- A. Descriptive submittals shall be made in accordance with the Data Reference Symbols defined in Section 01300, Submittals.

<u>Item</u>	<u>Shop Drawings</u>	<u>O&M Manuals</u>
All Manholes	C,D,E,F,H,I,L, M,N,O	C,D,E,F,H,I,L, M,N,O

- B. Each Shop Drawing submittal shall include a hard copy of the relevant Specification Section. Each and every paragraph of the Specification Section shall be clearly marked to indicate whether the requirements for equipment and/or services in the Specification Section are met. If clarifications are needed to any of the paragraphs in the Specification Section, they shall be addressed next to the paragraph or in an attached letter as such and explained further with any additional information necessary. If any exceptions and/or deviations are proposed to any of the Specifications, they shall be clearly noted as such in the submittal, and an explanation of any deviation and/or exception shall be provided. The CONTRACTOR shall furnish equipment and/or services as specified if an exception and/or deviation is rejected.

PART 2 - PRODUCTS

2.1 MANHOLES

- A. Provide polymer concrete manhole sections, monolithic base sections and related components referencing to ASTM C 478. ASTM C 478 material and manufacturing is allowed compositional and dimensional differences required by a polymer concrete product.
- B. Provide base riser section with monolithic floors, unless shown otherwise.
- C. Provide riser sections joined with bell and spigot / ship-lap design seamed with butyl mastic and or rubber gaskets (ASTM C 990) so that on assembly, manhole base, riser and top section make a continuous and uniform manhole structure.
- D. Construct riser sections for polymer concrete manholes from standard polymer concrete manhole sections of the diameter indicated on drawings. Use various lengths of polymer concrete manhole sections in combination to provide correct height with the fewest joints.
- E. Design wall sections for depth and loading conditions with wall thickness as designed by polymer concrete manufacturer.
- F. Provide tops to support AASHTO HS-20 or HL-93 or vehicle loading or loads as required and receiving cast iron frame covers or hatches, as indicated on drawings.

2.2 DESIGN CRITERIA:

- A. Polymer Concrete Manhole risers, cones, flat lids, grade rings and manhole base sections shall be designed by manufacturer to meet the intent of ASTM C 478 with allowable compositional and sizing differences as designed by the polymer concrete manufacturer.
 - 1. AASHTO HS-20 or HL-93 design or as required loading applied to manhole cover and transition and base slabs.
 - 2. Polymer manholes will be designed based upon live and dead load criteria in ASTM C 857 and ACI 350-06.
 - 3. Unit soil weight of 120 pcf located above portions of manhole, including base slab projections.
 - 4. Internal liquid pressure based on unit weight of 63 pcf.
 - 5. Dead load of manhole sections fully supported by polymer concrete manhole base.

2.3 DESIGN:

- A. Polymer Concrete Manhole risers, cones, flat lids, grade rings and manhole base sections shall be designed by manufacturer to meet loading requirements of

ASTM C 478, ASTM C 857 and ACI 350-06 as modified for polymer concrete manhole design as follows:

1. Polymer Concrete Mix Design shall consist of thermosetting resin, sand, and aggregate. No Portland cement shall be allowed as part of the mix design matrix. All sand and aggregate shall be inert in an acidic Environment.
2. Reinforcement – Shall use acid resistant reinforcement (FRP Bar) in accordance with ACI 440.1R-06 as applicable for polymer concrete design.
3. The wall thickness of polymer concrete structures shall not be less than that prescribed by the manufacturer's design by less than 95% of stated design thickness.
4. Thermosetting Resin - The resin shall have a minimum deflection temperature of 158° F when tested at 264 psi (1.820 mPa) following Test Method D 648. The resin content shall not be less than 7% of the weight of the sample as determined by test method D 2584. Resin selection shall be suitable for applications in the corrosive conditions to which the polymer concrete manhole structures will be exposed.
5. Each polymer concrete manhole component shall be free of all defects, including indentations, cracks, foreign inclusions and resin starved areas that, due to their nature and degree or extent, detrimentally affect the strength and serviceability of the component part. Cosmetic defect shall not be cause for rejection. The nominal internal diameter of manhole components shall not vary more than 2%. Variations in height of two opposite sides of risers and cones shall not be more the 5/8 inch. The under run in height of a riser or cone shall not be more than ¼ in/ft of height with a maximum of ½ inch in any one section.
6. Marking and Identification - Each manhole shall be marked with the following information –
 - a. Manufacturer's name or trademark,
 - b. Manufacturer's location
 - c. and Production Date.
7. Manhole joints shall be assembled with a bell/spigot or shiplap butyl mastic and/or gasketed joint so that on assembly, manhole base, riser and top section make a continuous and uniform manhole. Joint sealing surfaces shall be free of dents, gouges and other surface irregularities that would affect joint integrity.
8. Minimum clearance between wall penetrations and joints shall be per manufacturer's design.
9. Construct invert channels to provide smooth flow transition with minimal disruption of flow at pipe-manhole connections. Invert slope through manhole is as indicated on drawings. All precast base sections to be cast monolithically. Polymer bench and channel are to be constructed with all polymer concrete material. Extended ballast slab requirements for buoyancy concerns can be addressed with cementitious concrete material.
10. Provide resilient connectors conforming to requirements of ASTM C 923 or other options as available. All connectors are to be water tight. Install

approved resilient connectors at each pipe entering and exiting manholes in accordance with manufacturer's instructions.

2.4 QUALITY CONTROL

- A. Facility Quality Control should be maintained by adhering to ISO 9001:2008 for manufacturing. All fabricators will be ISO 9001:2008 Certified. All fabrication will take place in an all polymer concrete fabrication facility. At no time will the polymer concrete fabrication facility share the facility with a cementitious precast product production facility. Fabricator is also to provide references of 5 previous projects in the last 5 years performed with both OWNER and CONTRACTOR for reference and review by owner. Polymer concrete shall be cast in a polymer only facility and shall not be manufactured in a cementitious concrete facility.

2.5 GROUTING

- A. All materials needed for grouting and patching will be a polyester mortar compound provided by the manufacturer or an approved equal by the manufacturer.

2.6 MANHOLE RINGS

- A. All manhole rings shall be molded from high density polyethylene as defined in ASTM specification D-4976.

2.7 MANHOLE COVERS

- A. Manhole cover shall be made of non-metallic composite materials capable of withstanding traffic loading requirements that meet or exceed HS-20 rating. The cover shall be inert to corrosion and have a built-in rubber gasket seal to reduce the escape of toxic gases and odors.

2.8 MANUFACTURER

- A. Polymer Concrete Manholes:
 - 1. Armorock LLC, Boulder City, Nevada.
 - 2. Approved equal.
- B. Manhole Rings:
 - 1. Ladtech Inc, Buffalo, MN.
 - 2. Approved equal.
- C. Manhole Covers:
 - 1. Composite Access Products, McAllen, TX.
 - 2. Approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. All manholes shall be constructed in accordance with MAG Standard Detail 420.
- B. Workmanship shall be of the highest grade throughout and in accordance with the best standard practice for this type of equipment.

END OF SECTION

SECTION 02532

MANHOLE FRP INSERTS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope:

1. Provide all labor, materials, equipment and incidentals as shown on the Drawings, to furnish and install manhole Fiber Reinforced Polyester (FRP) inserts.

B. General:

1. Manholes shall conform in shape, size, dimensions, material, and other respects to the details shown on the Drawings or as directed by ENGINEER.
2. HDPE rings and covers shall be the standard frame and grate or cover, unless otherwise shown on the Drawings, and shall be as specified in the Uniform Standard Specifications for Public Works Construction by the Maricopa Association of Governments (MAG).
3. All proposed manholes shall not have access steps of any kind.

1.2 QUALITY ASSURANCE

A. Standard Specifications and Details:

1. Conform to all applicable requirements of Section 625 and all applicable requirements of Part No. 600 and 700 of the Uniform Standard Specifications for Public Works Construction by MAG as supplemented by the City of Chandler. If there is a conflict between MAG Standard Specifications and these Specifications, the provision of these Specifications shall govern.

B. Reference Standards: Comply with the applicable provisions and recommendations of the following, unless otherwise shown or specified.

1. MAG Section 625, as supplemented by the City of Chandler.
2. International Counsel Code:
 - a. IBC - International Building Code - 2006.
3. ASTM D-3753, Standard Specification for Glass-Fiber Reinforced Polyester Manholes.
4. ASTM C-581, Practice for Determining Chemical Resistance of Chemical Thermosetting Resins Used in Glass-Fiber Reinforced Structures Intended for Liquid Service.
5. ASTM D-2412, Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel Plate Loading.
6. ASTM D-695, Test Methods for Compressive Properties of Rigid Plastics.

7. ASTM D-2584, Test Method for Ignition Loss of Cured Reinforced Resins.
8. ASTM D-790, Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and electrical Insulating Materials.
9. ASTM D-2583, Test Method for Indentation Hardness of Rigid Plastics by means of a Barcol Impressor.
10. AASHTO H-20, Axle Loading.

1.3 SUBMITTALS

- A. Shop Drawings: Submit for approval the following:
 1. Drawings showing design and construction details of FRP insert, including cutout locations, and installation procedures.

PART 2 - PRODUCTS

2.1 MANHOLE FRP INSERTS

- A. Resin: The resins used shall be unsaturated, supplier certified, commercial grade polyester resins. Mixing lots of resin from different manufacturers, or “odd-lotting” of resins shall not be permitted. Quality-assurance records on the resin shall be maintained. Non-pigmented resin is required to allow for light or “sand” color of manhole surface in order to facilitate easy from grade interior inspection. UV inhibitors shall be added directly to resins to prevent photodegradation.
- B. Reinforcing Materials: The reinforcing materials shall be commercial grade “E” type glass in the form of mat, continuous roving, chopped roving, roving fabric, or both, having a coupling agent that will provide a suitable bond between the glass reinforcement and the resin.
- C. Surfacing Material: If reinforcing material is used on the surface exposed to the contained substance, it shall be a commercial grade chemical-resistant glass or organic surfacing mat having a coupling agent that will provide a suitable bond with the resin.
- D. Fillers and Additives: Fillers, when used, shall be inert to the environment and manhole construction. Additives, such as thixotropic agents, catalysts, promoters, etc., may be added as required by the specific manufacturing process to be used to meet the requirements of this standard. However, calcium carbonate mixed by the fabricator shall not be permitted. The resulting reinforced plastic material must meet the requirement of this specification.
- E. Laminate: The laminate shall consist of multiple layers of glass matting and resin. The surface exposed to the sewer/chemical environment shall be resin rich and shall have no exposed fibers.

2.2 DESIGN CRITERIA

A. HDPE frames, covers, and similar required items shall be provided as specified in Specification 02530 Manholes.

B. Design and Fabrication:

1. Exterior Surface: The exterior surface shall be relatively smooth with no sharp projections. Hand-work finish is acceptable if enough resin is present to eliminate fiber show. The exterior surface shall be free of blisters larger than 0.5" in diameter, delamination and fiber show. Gel-coat or paint or other coatings are not allowed.
2. Interior Surface: The interior surfaces shall be resin rich with no exposed fibers. Interior surface shall be smooth for improved corrosion resistance and reduced sludge build-up. The surface shall be free of crazing, delamination, blisters larger than 0.5" in diameter, and wrinkles of 0.125" or greater in depth. Surface pits shall be permitted up to 6/ft² if they are less than 0.75" in diameter and less than 0.0625" deep. Voids that cannot be broken with finger pressure and that are entirely below the resin surface shall be permitted up to 4/ft² if they are less than 0.5" in diameter and less than 0.0625" thick. Gel-coat or paint or other coatings are not allowed.
3. Repairs: Any manhole repair is required to meet all requirements of this specification.
4. Manhole Lengths: Manhole lengths shall be in whole or 1/2-foot increments +/- 2".
5. Load Rating: The complete manhole shall have a minimum dynamic load rating of 16,000 lbs. when tested in accordance with ASTM 3753, 8.4 (note 1). To establish this rating the complete manhole shall not leak, crack, or suffer other damage when load tested to 40,000 lbs. and shall not deflect vertically downward more than 0.25" at the point of load application when loaded to 24,000 lb
6. Stiffness: The cylindrical portion of the manhole is to be tested in accordance with ASTM Method D 2412. The manhole cylinder shall have the minimum pipe-stiffness values shown in the table below, when tested in accordance with ASTM 3753, Section 8.5, (note 1).

Manhole Length (ft)	PSI
3 - 6	0.72
7 - 12	1.26
3 - 20	2.01
21 - 25	3.02
26 - 35	5.24

7. Soundness: In order to determine soundness, an air or water test is to be applied to the manhole test sample. While holding the pressure between 3-5 psi, the entire manhole must be inspected for leaks. Any leakage through the laminate is cause for failure of the test. Refer to ASTM 3753, Sec. 8.6.

8. Chemical Resistance: Per ASTM C 581; (see ASTM 3753, Section 8.7), Flexural strength, flexural modulus, and barcol hardness are plotted versus time on log-log coordinates. The line defined by these points is extrapolated to 100,000 hours. The minimum extrapolation retention allowed for any of these properties is 50%. Test samples used are actual pieces of manhole or samples manufactured in a manner consistent in every way with the manhole component construction.
9. Physical Properties:
 - Flexural Strength (cone): Hoop: 15.4 x 103 psi
Axial: 17.2 x 103 psi
 - Flexural Strength (pipe) Hoop: 22.5 x 103 psi
Axial: 14.3 x 103 psi
 - Compressive Strength: 8.9 x 103 psi

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: The manhole installation should strictly follow the manufacturers recommended installation procedures.
 1. To Install the Fiberglass Manhole: Fiberglass manholes must be installed according to Containment Solution's Fiberglass Manhole Installation Instructions. In addition to these instructions, local codes may apply and should be consulted as applicable in manhole installation. Correct manhole installation requires proper concrete foundation, good backfill and proper handling to prevent manhole damage and insure long-term corrosion resistant service.
- B. General Installation Outline: Containment Solution's complete Manhole installation instructions must be consulted before actual installation is performed.
 1. Prepare Excavation/Make Manhole Pipe Cut-Outs for stubout connections: Prepare excavation in a normal manner. Excavation at manhole location should be at least wide enough to accommodate the slab specified and to provide working room around manhole. Insure the depth of manhole is sufficient to allow at least one course of brick or one concrete ring for adjustment of ring and cover at top of final grade. Pipe cut-outs at the flowline are made in manhole prior to setting manhole in place over pipe in trench. Quarter marks have been provided on barrel to facilitate alignment of cut-outs.
 2. Pour Concrete Base: Concrete slab base should be a minimum of 6" thick for up to 48" diameter manholes (8" for larger diameter manholes). Concrete slab should extend a minimum of 12" beyond manhole outside wall for manholes up to 20' in depth (24" up to 35' in depth).
 3. Set Manhole: To lift manhole, insert an appropriately sized timber or steel beam, 8" longer than the cone top opening, crosswise inside the manhole to the underside of the collar with a rope or chain attached to backhoe or other lifting

device. Lower manhole into wet concrete base to a minimum depth of 4". Minimum 2" thick concrete bearing surface beneath bottom edge of the manhole is required. Plumb manhole using standard bubble level and by moving manhole with hands. Work concrete around manhole base and 6 inch minimum over incoming lines. Inverts and laterals are made following standard procedures.

4. Backfill: Backfilling is done just as soon as the concrete base has hardened enough to provide sufficient support for manhole and fill. Native soil (or sand, in unstable areas), free of large stones, debris, or concrete chunks may be used for backfill. Backfill should be place evenly around manhole in 12" maximum lifts and should thoroughly tamped to 90% standard proctor density before the next layer is installed. Backfill material shall be subject to approval by the engineer.
5. Bring to Grade: Construct chimney on flat shoulder of manhole using precast concrete rings

3.2 GRADING RINGS

- A. Grading rings shall be used for all precast manholes, where required. Grade rings shall be a maximum of 12-inches in height, constructed on the roof slab or cone section on which the manhole frame and cover shall be placed. The height of the grade rings shall be such as is necessary to bring the manhole frame to the proper grade.

3.3 GRADING AT MANHOLES

- A. All manholes in unpaved areas shall be built, as shown on the Drawings or directed by the ENGINEER, to an elevation higher than the original ground. The ground surface shall be graded to drain away from the manhole. Fill shall be placed around manholes to the level of the upper rim of the manhole frame, and the surface evenly graded on a 1 to 5 slope to the existing surrounding ground, unless otherwise shown on the Drawings or directed by the ENGINEER. The slope shall be covered with 4-inches of top soil, seeded and maintained until a satisfactory growth of grass is obtained.
- B. Manholes in paved areas and areas receiving gravel shall be constructed to meet the final surface grade as shown on the Drawings.
- C. Sole responsibility for the proper height of all manholes necessary to reach the final grade at all locations belongs to CONTRACTOR. Caution: ENGINEER'S review of Shop Drawings for manhole components will be general in nature, provide an adequate supply of random length precast manhole riser sections to adjust any manhole to meet field conditions for final grading.

3.4 MANHOLE WATERTIGHTNESS

- A. All manholes shall be free of visible leakage. Each manhole shall be tested for leaks and inspected, and all leaks shall be repaired in a manner subject to ENGINEER'S approval. Manhole testing shall conform to the requirements of Section 15051, Buried Piping Installation.

3.5 FLEXIBLE PIPE JOINT AT MANHOLE BASE

- A. An approved flexible joint shall be provided between each pipe entering and exiting the manhole. This may be accomplished by the installation in the manhole base of the bell end of a pipe or by other means subject to approval of ENGINEER. Joints shall be similar to the approved pipe joints. The joint into the manhole base shall be completely watertight.

3.6 MANHOLE COVER AND FRAME INSTALLATION

- A. Follow manufacturer's printed instructions and approved Shop Drawings.
- B. Manhole lids shall be non-locking.
- C. Set castings accurately to required location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Brace temporarily or anchor temporarily in formwork.
- D. Protection from Dissimilar Materials:
 - 1. Coat all aluminum surfaces in contact with dissimilar materials such as concrete, masonry, steel and other metals as specified in Section 09900, Painting.

3.7 INSPECTION

- A. The quality of all materials, the process of manufacture, and the finished sections shall be subject to inspection and approval by the Engineer, or other representative of the owner. Such inspections shall be made at the place of manufacture, or at site of delivery, and the sections shall be subject to rejection on account of failure to meet any of the specification requirements. Sections rejected after delivery to the job site shall be marked for identification and shall be removed from the job at once. All sections which have been damaged after delivery will be rejected, and if already installed shall be acceptable if repaired or removed and replaced at the contractor's expense.
- B. At the time of inspection the material will be examined for compliance with the requirements of this specification and the approved drawings.

3.8 MEASUREMENT

- A. This item will be measured will be measured by each type of individual structure completed. The depth will be measured from the flow line to the top of the rim. The size shall be nominal inside diameter. This item includes, but is not limited to the following:
1. Structural excavation.
 2. Loading, hauling, and disposing of all excess material.
 3. Furnishing all labor and materials including fiberglass, concrete, mortar, bricks, drop pipe and fittings, manhole rings and covers.
 4. Placing and compacting all backfill.
 5. Final Grading.

END OF SECTION

SECTION 11295
HYDRAULIC VALVES

PART 1 - GENERAL

1.1 SUMMARY

- A. Furnish and install all valves and valve accessories for water as indicated on the Plans and as specified herein, including all appurtenances required for a complete and operational installation.

1.2 SECTION INCLUDES

- A. Gate valves.
- B. In-line valves.
- C. Valve appurtenances.

1.3 RELATED SECTIONS

- A. Section 01300, Submittals.

1.4 REFERENCES

- A. ANSI/AWWA C500 - Gate Valves.
- B. ANSI/AWWA C509 - Resilient-Seated Gate Valves.
- C. ANSI B16.1.
- D. ANSI B46.1.
- E. ASTM A126.
- F. ASTM A269.
- G. ASTM A48.
- H. ASTM A536.
- I. ASTM A582.
- J. ASTM B271.
- K. ASTM D429.

- L. ASTM D1784.
- M. ASTM D2000.
- N. ASTM F439.
- O. All other applicable ASTM and ANSI Standards.

1.5 SUBMITTALS

- A. Descriptive submittals shall be made in accordance with the Data Reference Symbols defined in Section 01300, Submittals.

<u>Item</u>	<u>Shop Drawings</u>	<u>O&M Manuals</u>
All Valves	C,D,E,F,H,I,L, M,N,O	C,D,E,F,H,I,L, M,N,O

- B. Each Shop Drawing submittal shall include a copy of the relevant Specification Section. Each and every paragraph of the Specification Section shall be clearly marked to indicate whether the requirements for equipment and/or services in the Specification Section are met. If clarifications are needed to any of the paragraphs in the Specification Section, they shall be addressed next to the paragraph or in an attached letter as such and explained further with any additional information necessary. If any exceptions and/or deviations are proposed to any of the Specifications, they shall be clearly noted as such in the submittal, and an explanation of any deviation and/or exception shall be provided. The CONTRACTOR shall furnish equipment and/or services as specified if an exception and/or deviation is rejected.

PART 2 - PRODUCTS

2.1 GENERAL

- A. All buried valves shall be provided with a valve box and cover.

2.2 GATE VALVES

- A. Cast Iron Gate Valves:
 1. Gate valves shall conform to AWWA C509, 200 psi working pressure, resilient seated, iron body, bronze mounted, non-rising stem. All valves shall have an opening direction of counter-clockwise. All gate valves shall be as manufactured by Clow Valve Co, Mueller Company, Kennedy Valve Co, or American Flow Control.
 2. All aboveground gate valves shall have handwheel/lever/t-handle geared operators or electric actuators as specified in the Valve Schedule and as shown on the Drawings. All buried valves shall be equipped with valve box and cover per City of Chandler standard details and either a handwheel and pedestal or

with operating nut as specified and as shown on the Drawings. Valves specified with an operating nut shall be installed with a ground level valve position indicator.

2.3 INSERTION VALVES

A. Ductile Iron Valves:

1. Gate valves shall conform to AWWA C509, 200 psi working pressure, resilient seated, ductile iron body, non-rising stem. All valves shall have an opening direction of counter-clockwise. All insertion valves shall be as manufactured by Mueller Co or approved equal.
2. All aboveground gate valves shall have handwheel/lever/t-handle geared operators or electric actuators as specified in the Valve Schedule and as shown on the Drawings. All buried valves shall be equipped with valve box and extension stem per City of Chandler standard details and either a handwheel and pedestal or with operating nut as specified and as shown on the Drawings. Valves specified with an operating nut shall be installed with a ground level valve position indicator.

2.4 COMBINATION AIR/VACUUM ASSEMBLIES

- A. The combination air/vacuum assembly shall automatically vent small pockets of air as they accumulate in the system while the system is operating and pressurized, or discharge large volumes of air during the filling or draining of a pipeline or piping system.
- B. The main valve parts shall consist of a body and cover, float, seat, and internal lever pins and retaining screws.
- C. The valves shall be manufactured by
 1. Dorot DAV-P-2-NPT-KA,
 2. A.R.I. D-40.
 3. Approved equal.

2.5 VALVE APPURTENANCES

- A. Valve Boxes: Provide each buried valve with a valve box as follows:
 1. Made of heavy pattern cast iron, two-piece adjustable telescoping type.
 2. Lower section shall enclose operating nut and stuffing box and rest on bonnet.
 3. Inside diameter shall be at least 4-1/2-inches.
 4. Provide extension stem and operating nut.
 5. Cover shall be heavy-duty cast iron with direction to open arrow cast in.
 6. Provide ground level valve position indicator for all buried valves.

2.6 SHOP PAINTING

- A. The manufacturer shall paint all valves, floor boxes, and valve boxes as follows:

1. Clean and remove oil, grease, dirt, loose mill scale, and other foreign substances from un-galvanized ferrous-metal surfaces.
 2. Solvent scrub with stiff bristle brush followed by brush-off abrasive blast cleaning to a minimum surface profile depth of 1.5 mils.
 3. Valves, floor boxes, and valve boxes to be installed in exterior or buried conditions shall have prime coat Series 69-1255 (beige) H.B. Epoxoline II; one coat, 3-5 mils dry film thickness (DFT).
 4. Valves and floor boxes to be installed in interior exposure conditions shall have prime coat Series 135 Chembuild; one coat, 3-5 mils DFT.
- B. CONTRACTOR shall determine the quantity of each type of valve to the manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Valves of the various types and pattern shall be installed at the respective locations as shown on the Drawings, listed in the valve schedule, and specified herein. All appurtenances required for operation and control of the valves shall be included. Joints and connections shall be made in accordance with applicable requirements for pipeline or pipe joints. Valve stems shall be plumb and vertical unless otherwise specifically shown. Each valve shall be adjusted for smooth and easy operation and shall be watertight when placed in operation under maximum working pressure.

END OF SECTION

SECTION 15050

PIPING SYSTEMS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope: This Section specifies systems of process piping and general requirements for piping systems. Detailed Specifications for the components listed on the Piping System Specification Sheets are found in other Sections of Division 15, Mechanical. This Section shall be used in conjunction with those Sections.
- B. Related Sections:
 - 1. Section 02200, Earthwork.
 - 2. Section 15051, Buried Piping Installation.

1.2 QUALITY ASSURANCE

- A. This Section contains references to the following documents. They are a part of this Section as specified and modified. In case of conflict between the requirements of this Section and those of the listed documents, the requirements of this Section shall prevail.
- B. Unless otherwise specified, references to documents shall mean the documents in effect at the time of Advertisement for Bids or Invitation to Bid (or on the effective date of the Agreement if there were no Bids). If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued. Where document dates are given in the following listing, references to those documents shall mean the specific document version associated with that date, whether or not the document has been superseded by a version with a later date, discontinued, or replaced.
 - 1. AASHTO M36/M36M - Metallic (Zinc or Aluminum) Coated Corrugated Steel Culverts and Underdrains.
 - 2. ANSI A13.1 - Scheme for the Identification of Piping Systems.
 - 3. ANSI B1.20.1 - Pipe Threads, General Purpose (Inch).
 - 4. ANSI B16.1 - Cast Iron Pipe Flanges and Flanged Fittings Class 25, 125, 250, and 800.
 - 5. ANSI B16.3 - Malleable Iron Threaded Fittings Class 150 and 300.
 - 6. ANSI B16.5 - Pipe Flanges and Flanged Fittings.
 - 7. ANSI B16. - Factory Made Wrought Steel Buttwelding Fittings.
 - 8. ANSI B16.11 - Forged Steel Fittings, Socket Welding and Threaded.
 - 9. ANSI B16.12 - Cast Iron Threaded Drainage Fittings.

10. ANSI B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
11. ANSI B16.26 - Cast Copper Alloy Fittings for Flared Copper Tubes.
12. ANSI B31.1 - Power Piping.
13. ANSI B31.3 - Chemical Plant and Petroleum Refinery Piping.
14. ASME Section IX - Boiler and Pressure Vessel Code; Welding and Brazing Qualifications.
15. ASTM A47 - Malleable Iron Castings.
16. ASTM A74 - Cast Iron Soil Pipe and Fittings.
17. ASTM A105/A105M - Forgings, Carbon Steel, for Piping Components.
18. ASTM A106 - Seamless Carbon Steel Pipe for High Temperature Service.
19. ASTM A126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
20. ASTM A197 - Cupola Malleable Iron.
21. ASTM A234/A234M - Pipe Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures.
22. ASTM A312/A312M - Seamless and Welded Austenitic Stainless Steel Pipe.
23. ASTM A403/A403M - Wrought Austenitic Stainless Steel Piping Fittings.
24. ASTM A536 - Ductile Iron Castings.
25. ASTM A570/A570M - Hot Rolled Carbon Steel Sheet and Strip, Structural Quality.
26. ASTM B88 - Seamless Copper Water Tube.
27. ASTM C76 - Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
28. ASTM C443-REV A - Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.
29. ASTM C564 - Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
30. ASTM D1248 - Polyethylene Plastics Molding and Extrusion Materials.
31. ASTM D1784 - Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
32. ASTM D1785 - Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
33. ASTM D2241 - Poly (Vinyl Chloride) (PVC) Plastic Pipe (SDR-PR).
34. ASTM D2513 - Thermoplastic Gas Pressure Pipe, Tubing, and Fittings.
35. ASTM D2665 - Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings.
36. ASTM D2996 - Filament Wound Reinforced Thermosetting Resin Pipe.
37. ASTM D3034 - Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
38. ASTM D3261 - Butt Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.
39. ASTM D4174 - Cleaning, Flushing, and Purification of Petroleum Fluid Hydraulic Systems.
40. ASTM D4101 - Propylene Plastic Injection and Extrusion Materials.
41. ASTM F441 - Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe, Schedules 40 and 80.

42. AWWA C105 - Polyethylene Encasement for Ductile-Iron Piping for Water and Other Liquids.
43. AWWA C110 - Ductile Iron and Gray Iron Fittings, 3" Through 48", for Water and Other Liquids.
44. AWWA C111 - Rubber Gasket Joints for Ductile Iron and Gray Iron Pressure Pipe and Fittings.
45. AWWA C115 - Flanged Ductile Iron and Gray Iron Pipe with Threaded Flanges.
46. AWWA C151 - Ductile Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids.
47. AWWA C200 - Steel Water Pipe 6" and Larger.
48. AWWA C205 - Cement Mortar Protective Lining and Coating for Steel Water Pipe - 4" and Larger - Shop Applied.
49. AWWA C206 - Field Welding of Steel Water Pipe.
50. AWWA C207 - Steel Pipe Flanges for Waterworks Services - Sizes 4" Through 144".
51. AWWA C208 - Dimensions for Fabricated Steel Water Pipe Fittings.
52. AWWA C209 - Cold Applied Tape Coating for Special Sections, Connections, and Fittings for Steel Water Pipelines.
53. AWWA C210 - Liquid Epoxy Coating Systems for the Interior and Exterior of Steel Water Pipe.
54. AWWA C214 - Tape Coating Systems for the Exterior of Steel Water Pipelines.
55. AWWA 301 - Pre-stressed Concrete Pressure Pipe, Steel Cylinder Type, for Water and Other Liquids.
56. AWWA C303 - Reinforced Concrete Pressure Pipe, Steel Cylinder Type, Pre-tensioned, for Water and Other Liquids.
57. AWWA C600 - Installation of Ductile Iron Water Mains and Their Appurtenances.
58. AWWA C651 - Disinfecting Water Mains.
59. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe, 4" Through 12", for Water.
60. AWWA M11 - Steel Pipe - A Guide for Design and Installation.
61. CISPI 301 - Specification Data for Hubless Cast Iron Sanitary System with No-Hub Pipe and Fittings.
62. FEDSPEC L-C-530B(1) - Coating, Pipe, Thermoplastic Resin, or Thermosetting Epoxy.
63. MIL-H-13528B - Hydrochloric Acid, Inhibited, Rust Removing.
64. MIL-STD-810C - Environmental Test Methods.
65. SAE J1227 - Assessing Cleanliness of Hydraulic Fluid Power Components and Systems.
66. UPC - Uniform Plumbing Code.

C. Fittings and Coupling Compatibility:

1. To assure uniformity and compatibility of piping components, fittings and couplings for grooved end piping systems shall be furnished by the same manufacturers.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

- A. Unless otherwise specified, piping materials including pipe, gaskets, fittings, connection and joint assemblies, linings, and coatings shall be selected from those listed on the Piping System Specification Sheets.
- B. Piping materials shall conform to detailed specifications for each type of pipe and piping appurtenance specified in other Sections of Division 15, Mechanical.
- C. All piping shall be compatible with the fluid to which it is exposed.
- D. All piping and valves to be used for the air release valve connections shall be copper or brass material.
- E. All piping which comes in contact with potable water shall have NSF 61 certification.

2.2 PIPING IDENTIFICATION

- A. Plastic Tracer Tape:
 - 1. Tracer tape shall be per MAG Section 610, colored the same as the background colors, as specified in Table A, Paragraph 3.5 of this Section.
 - 2. Tape shall be capable of stretching to twice its original length and shall be as manufactured by Allen Systems, W. H. Brady Co., Seton Name Plate Corporation, Marking Services, Inc., or approved equal.
 - 3. The message shall read "CAUTION _____ PIPE BURIED BELOW," with bold letters approximately 2-inches high. The blank shall be filled with the particular system fluid, such as chlorine, potable water line, or storm sewer line. All lines shall have tracer tape.

2.3 VALVES

- A. Valves of the same size and service shall be provided by a single valve manufacturer. Packing shall be non-asbestos material. Actual length of valves shall be within 1/16-inch ($\pm$) of the manufacturer's specified length. Flanges shall meet the requirement of ANSI B16.5. Push-on and mechanical joints shall meet the requirements of AWWA C111.

2.4 SUBMITTALS

- A. Descriptive submittals shall be made in accordance with the Data Reference Symbols defined in Section 01300, Submittals.
 - 1.

<u>Item</u>	<u>Shop Drawings</u>	<u>O&M Manuals</u>
All Piping	A,C,D,E	A,C,D,E

- B. All additional submittal information shall be included with this submittal information as noted in the Division 15, Mechanical, Pipe Material Specifications.
- C. Each Shop Drawing submittal shall include a copy of the relevant Specification Section. Each and every paragraph of the Specification Section shall be clearly marked to indicate whether the requirements for equipment and/or services in the Specification Section are met. If clarifications are needed to any of the paragraphs in the Specification Section, they shall be addressed next to the paragraph or in an attached letter as such and explained further with any additional information necessary. If any exceptions and/or deviations are proposed to any of the Specifications, they shall be clearly noted as such in the submittal, and an explanation of any deviation and/or exception shall be provided. The CONTRACTOR shall furnish equipment and/or services as specified if an exception and/or deviation is rejected.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Location:
 - 1. Piping shall be provided as specified, except for adjustments, to avoid architectural and structural features.
- B. Piping Sizes:
 - 1. Where the size of piping is not specified, the CONTRACTOR shall provide piping of the sizes required by UPC. Unless specified otherwise, small piping (less than 1-inch in diameter) required for services not described by UPC shall be 1/2-inch.
- C. Anchorage for Buried Piping:
 - 1. All plugs, caps, tees, and bends in buried pressure piping systems shall be anchored by means of restrained joints as specified.
- D. Bedding and Backfill:
 - 1. All 4-inch diameter and larger piping, the bedding and backfill shall be as shown on the Contract Drawings.
 - 2. All pipe smaller than 4-inches in diameter shall conform to Section 02200, Earthwork.

3.2 PIPING IDENTIFICATION

- A. Pipe Coding:
 - 1. Pipe identification per Specifications Section 15051, Buried Piping Installation.
- B. Plastic Tracer Tape:

1. A single line of tape, as specified in Paragraph 2.2.A of this Section, shall be provided 2-1/2 feet above the centerline of buried pipe.
2. For pipelines buried 8 feet or greater below finished grade, CONTRACTOR shall provide a second line of tape 12-inches below finished grade, above and parallel to each buried pipe.
3. Tape shall be spread flat with message side up before backfilling.

C. Locator Tape:

1. Detectable pipe locating tape, as specified in Section 2.2.B of this Section, shall be installed per MAG Section 616.5.

3.3 TESTING

A. General:

1. Upon completion of piping, but prior to application of insulation on exposed piping, the CONTRACTOR shall test the piping systems in accordance with the appropriate MAG and City of Chandler Specifications. Pressures, media, and test durations shall be as specified in the PIPESPEC. Equipment which may be damaged by the specified test conditions shall be isolated. Testing shall be performed using calibrated test gages and calibrated volumetric measuring equipment to determine leakage rates. Each test gage shall be selected so that the specified test pressure falls within the upper half of the gage's range. Unless otherwise specified, the CONTRACTOR shall notify the ENGINEER 24 hours prior to each test.
2. Unless otherwise specified, testing, as specified herein, shall include existing piping systems that connect with new pipe systems. Existing pipe shall be tested to the nearest existing valve. Any piping that fails the test shall be repaired. Repair of existing piping will be considered and paid for as extra Work.
3. All blow off assemblies shall be removed after successful testing of the new pipes as specified in the Drawings.

B. Liquid Systems:

1. Pressure and leakage testing for water systems shall be in accordance with MAG Section 610. Unless otherwise specified, leakage from other buried liquid piping systems shall be less than 0.02 gallons per hour per inch diameter per 100 feet of buried piping.
2. Potable Water Systems Additional Requirements:
 - a. The CONTRACTOR shall provide all vents, piping, plugs, bulkheads, valves, bracing, blocking, pump, including measuring device and all other equipment necessary for making the tests, except pressure gages.
 - b. The pipe shall be tested between each valve or between a valve and the closed end of the pipe.
 - c. Pipe test section shall be limited to 1/2 linear mile, or less, unless otherwise approved in writing by the Engineer. Testing cannot be done against an existing valve. The new pipeline must be separated from any potable system in such a way to prevent any potential for cross-

contamination between the existing potable water system and the new pipeline.

- d. The test shall be made after the backfilling is completed or compacted, regardless of the compaction method.
- e. All connections, blow-offs, hydrants and valves shall be tested with the main, where practical.
- f. The test section shall be slowly filled with potable water and all air shall be vented from the line. The rate of filling shall be as approved by the ENGINEER, with at least 24-hour notice required before filling is scheduled.

C. Drains:

- 1. Drain systems, other than pumped drain systems, shall be tested in accordance with UPC.

3.4 CLEANING AND FLUSHING

A. General:

- 1. Piping systems shall be cleaned following completion of testing and prior to connection to operating, control, regulating, or instrumentation equipment.
- 2. The CONTRACTOR may, at his option, clean and test sections of buried piping systems. Use of this procedure, however, will not waive the requirement for a full pressure test of the completed system.
- 3. Unless specified otherwise, piping 24-inches in diameter and smaller shall first be cleaned by pulling a tightly fitting cleaning ball or swab through the system.
- 4. Piping larger than 24-inches in diameter may be cleaned manually or with a cleaning ball or swab.

B. Liquid Systems:

- 1. After completion of cleaning, liquid systems, unless otherwise specified, shall be flushed with clean water.

C. Water Systems:

- 1. For non-potable water systems, final flushing and microbiological testing, as specified in MAG Section 611.15, is not required.

3.5 PIPING SPECIFICATION SHEETS (PIPESPEC)

- A. Piping and valves for groupings of similar plant processes or types of service lines are specified on individual piping specification sheets (PIPESPECS). Piping services are grouped according to the chemical and physical properties of the fluid conveyed and/or by the temperature or pressure requirements. Piping services specified in the PIPESPECS and on the Drawings are alphabetically arranged by designated service symbols.

TABLE A - PIPING SERVICES			
Symbol	Service	Fluid Category	Pipe Marker Background Color
W	Potable Water	Liquid	Blue
SS	Sanitary Sewer	Liquid	Green

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PIPING SYMBOL/SERVICE

SS / SANITARY SEWER

Refer to section 15067, Vitrified Clay Pipe.

PIPING SYMBOL/SERVICE

POT / POTABLE WATER

Medium:

Water.

Pressure:

As shown on buried and exposed piping schedules. All requirements of COC.

Duration:

2 hours.

Gasket Requirements:

Flange:

Red Rubber Gasket Material (SBR) conforming to ASTM D1330.

Push-on/Mech. Cpl:

Nitrile or Neoprene. Areas within 35 foot SRP easement shall be fitted with Fluoroelastomer Fluorel Viton suitable for water service of up to 212°F.

Buried and Encased Pipes:

(See Drawings for pipe sizes and materials.)

2" and Smaller\

Copper Tube; ASTM B88, Type K, drawn. Ref. Spec. Section 15064, Copper Pipe.

Copper Conn; Solder type with threaded adapters.

Copper Ftgs; Wrought copper or bronze, ANSI B16.22.

Copper Interior Lining; None.

Copper Exterior Coating; None.

4" and Larger

Ductile Iron; AWWA C151
with cement mortar lining. Ref.
Spec. Section 15061

Ductile Iron Conn; Restrained
push-on rubber gasket
joint. Flanged adapters
for valves and ends.

Ductile Iron Ftgs; Ductile iron
per Spec. Section
15061.

Ductile Iron Exterior Coating;
Bituminous Coated,
Polyethylene Wrap

Remarks:

1. Potable water lines shall be disinfected in accordance with AWWA C651-92.
2. All piping, fittings, valves, and any other material that comes in contact with drinking water shall comply with NSF Standards 60 and 61.

PIPING SCHEDULE TABLES

1. Potable water lines shall be disinfected in accordance with AWWA C651-92.
2. All piping, fittings, valves, and any other material that comes in contact with drinking water shall comply with NSF Standards 60 and 61.

BURIED PIPE

SERVICE DESCRIPTION	PIPE SYMBOL	PIPE MATERIAL	SPECIFICATION	CLASS/ TYPE	INTERIOR LINING	EXTERIOR COATING	JOINT TYPE	TEST PRESSURE
POTABLE WATER 4-INCHES AND LARGER	W	DIP	15061	350	CM	BC/PE	MJ	PER 15051
POTABLE WATER 3-INCHES AND SMALLER	W	COP	15064	K	NONE	P	BZ	PER 15051
SANITARY SEWER	SS	VCP	15067	Extra Strength	N/A	N/A	CJ	PER 15051

END OF SECTION

SECTION 15051

BURIED PIPING INSTALLATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to install and test all buried piping, fittings, and specials. The Work includes, but is not limited to, the following:
 - a. All types and sizes of buried piping, except those specified under other Sections.
 - b. Supports, restraints, and thrust blocks.
 - c. Pipe encasements.
 - d. Work on or affecting existing piping.
 - e. Testing.
 - f. Cleaning.
 - g. Installation of all jointing and gasketing materials, specials, flexible couplings, mechanical couplings, harnessed and flanged adapters, sleeves, tie rods, and all other Work required to completing the buried piping installation.
 - h. Incorporation of valves, meters and special items shown or specified into the piping systems as required and as specified in the appropriate Division 15, Mechanical Sections.
 - i. Unless otherwise specifically shown, specified, or included under other Sections, all buried piping work required begins at the outside face of structures or structure foundations and extending away from structure.

B. Coordination:

1. Review installation procedures under other Sections and coordinate with the Work that is related to this Section.
2. Section 15051, Buried Pipe Installation, specifies the installation of all buried piping materials specified in Sections of Division 15, Mechanical. Coordinate with these Sections.

C. Related Work Specified Elsewhere:

1. Section 02200, Earthwork.
2. Section 11295, Hydraulic Valves.
3. Section 15050, Piping Systems.
4. Section 15061, Ductile Iron Pipe.
5. Section 15064, Copper Pipe.
6. Section 15067, VCP Pipe.
7. Section 15020, Piping Specialties and Accessories.

1.2 QUALITY ASSURANCE

- A. CONTRACTOR shall conform to all applicable requirements of Parts 600 and 700 of the Uniform Standard Specifications for Public Work Construction by the Maricopa Association of Governments (MAG). If there is a conflict between MAG Standard Specifications and these Specifications, the provisions of these Specifications shall govern.
- B. Requirements of Regulatory Agencies:
 - 1. Comply with requirements of UL, FM, and other jurisdictional authorities, where applicable.
 - 2. Refer to the General and Supplementary Conditions regarding permit requirements for this Work.
- C. Reference Standards: Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.
 - 1. ASTM D2321 - Practice for Underground Installation of Flexible Thermoplastic Pipe.
 - 2. ASTM D2774 - Practice for Underground Installation of Thermoplastic Pressure Piping.
 - 3. AWWA C105 - Polyethylene Encasement for Ductile Iron Piping for Water and Other Liquids.
 - 4. AWWA C111 - Rubber Gasket Joints for Ductile Iron Pressure Pipe and Fittings.
 - 5. AWWA C200 - Steel Water Pipe.
 - 6. AWWA C205 - Cement Mortar Protective Lining and Coating for Steel Water Pipe.
 - 7. AWWA C206 - Field Welding of Steel Water Pipe.
 - 8. AWWA C207 - Steel Pipe Flanges for Waterworks Service.
 - 9. AWWA C208 - Dimensions for Fabricated Steel Water Pipe Fittings.
 - 10. AWWA C600 - Installation of Ductile Iron Water Mains and Their Appurtenances.
 - 11. AWWA C606 - Grooved and Shouldered Joints.
 - 12. AWWA C651 - Disinfecting Water Mains.
 - 13. AWWA M11 - Steel Pipe - A Guide for Design and Installation.
 - 14. AWWA M23 - PVC - Design and Installation.
 - 15. AWWA M41 - Ductile Iron Pipe and Fittings.
 - 16. ASCE MOP No. 37 - Design and Construction of Sanitary and Storm Sewers
 - 17. Concrete Pipe Handbook - American Concrete Pipe Association.

1.3 SUBMITTALS

- A. Shall be in accordance with Section 15050, Piping Systems, submittal information.
- B. Each Shop Drawing submittal shall include a copy of the relevant Specification Section. Each and every paragraph of the Specification Section shall be clearly marked to indicate whether the requirements for equipment and/or services in the

Specification Section are met. If clarifications are needed to any of the paragraphs in the Specification Section, they shall be addressed next to the paragraph or in an attached letter as such and explained further with any additional information necessary. If any exceptions and/or deviations are proposed to any of the Specifications, they shall be clearly noted as such in the submittal, and an explanation of any deviation and/or exception shall be provided. The CONTRACTOR shall furnish equipment and/or services as specified if an exception and/or deviation is rejected.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the site to ensure uninterrupted progress of the Work.
- B. Handle all pipe, fittings, specials, and accessories carefully with approved handling devices. Do not drop or roll material off trucks. Do not otherwise drop, roll, or skid piping.
- C. Store pipes and fittings on heavy wood blocking or platforms so they are not in contact with the ground.
- D. Unload pipe, fittings, and specials opposite to or as close to the place where they are to be installed as is practical to avoid unnecessary handling. Keep pipe interiors completely free from dirt and foreign matter.
- E. Inspect delivered pipe for cracked, gouged, chipped, dented, or other damaged material and immediately remove defective pipe from site.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Required pipe materials are listed in the Piping Schedule. Refer to applicable Sections for Material Specifications.
- B. General:
 - 1. Marking Piping:
 - a. Clearly mark each piece of pipe or fitting with a designation conforming to those shown on the laying schedule and/or Shop Drawings.
 - b. Cast or paint material, type, and pressure designation on each piece of pipe or fitting 4-inches in diameter and larger. Each piece of steel pipe shall be clearly marked with the thickness of the steel in the pipe wall.
 - c. Pipe and fittings smaller than 4-inches in diameter shall be clearly marked by manufacturer as to material, type, and rating.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General:

1. Installation of all pipe, fittings, valves, specials, and appurtenances shall be subject to the review and/or approval of the ENGINEER.
2. Install piping as shown, specified, and as recommended by the manufacturer and in conformance with referenced standards, and approved Shop Drawings.
3. Request instructions from ENGINEER before proceeding if there is a conflict between the manufacturer's recommendations and the Contract Documents.
4. All piping shall be inspected by the ENGINEER prior to installation. ENGINEER'S inspection will not relieve CONTRACTOR or manufacturer from responsibility for damaged products.
5. All piping shall be carefully examined for cracks, damage, or other defects before installation. Any piping that is defective, including but not limited to, cracked, damaged, in poor condition, or with damaged linings or improper markings shall be rejected unless the product can be repaired in a manner acceptable to the manufacturer and ENGINEER. Any piping found to be broken or defective after it has been installed shall be removed, replaced, or repaired at the CONTRACTOR'S expense.
6. Minimum earth cover over the piping shall be as shown on the Drawings, specified or directed by the ENGINEER, but in no case shall the earth cover be less than 4 feet for all piping.
7. Required earthwork shall be as specified in applicable Sections of Division 2, Site Work.
8. Present all conflicts between piping systems and equipment, structures or facilities to ENGINEER for determination of corrective measures before proceeding.
9. Take field measurements, where required, prior to installation to ensure proper fitting of Work. The CONTRACTOR shall uncover the existing pipelines sufficiently in advance of the proposed Work in order that the type and location of the existing pipes and joints and other information required to fabricate the proposed piping can be determined. It shall be the responsibility of the CONTRACTOR to obtain whatever information is required to complete the connections of the proposed pipelines to the existing pipelines. Refer to Paragraph 3.3 of this Section, as applicable.
10. Interior of all piping and mating surfaces shall be inspected and all dirt, gravel, sand, debris or other foreign material shall be completely removed from the interior and mating surfaces before installation. Measures shall be taken to maintain the interior of all piping clean until acceptance of the completed Work. Care shall be taken to prevent foreign matter from entering joint space. Bell and spigot mating surfaces shall be wiped clean immediately before piping is laid. For ductile iron pipe, the bell and spigot mating surfaces shall be thoroughly cleaned with a wire brush.

11. Install piping accurately to line and grade shown, specified or directed, unless otherwise approved by the ENGINEER. Accurate means of determining and checking the alignment and grade shall be used, which shall be subject to the approval of the ENGINEER. Any modifications to the Contract Documents to suit the pipe manufacturer's standard shall be approved by the ENGINEER. Remove and relay piping that is incorrectly installed, at CONTRACTOR'S expense.
12. Do not lay piping in water, unless otherwise specified in these Specifications or approved by the ENGINEER. Ensure that the water level in the trench is at least 6-inches below the bottom of piping. Maintain a dry trench until jointing and backfilling are complete, unless otherwise specified in these Specifications or approved by the ENGINEER.
13. Where unforeseen conditions will not permit the installation of piping as shown or specified, no piping shall be installed without approval of the ENGINEER. Do not modify structures or facilities without approval of the ENGINEER.
14. Start laying piping at lowest point and proceed toward the higher elevations, unless otherwise approved by the ENGINEER. Slope piping uniformly between elevations shown on the Drawings or as otherwise directed by the ENGINEER.
15. Place bell and spigot piping so that the bells face the direction of laying, unless otherwise approved by the ENGINEER.
16. Piping shall be installed so that the barrel of the piping, and not the joints, receives the bearing pressure from the trench bottom or other bedding condition.
17. No piping shall be brought into position until the preceding length, valve, fitting, or special has been bedded and secured in place.
18. Whenever pipe laying is not actively in progress, the open ends of the piping shall be closed by a temporary plug or cap to prevent soil, water, and other foreign matter from entering the piping.
19. Field cutting of metallic piping, where required for inserting valves, fitting, specials, and closures, shall be made with a machine specially designed for cutting piping and in accordance with the manufacturer's instructions. Cuts shall be carefully done, without damage to piping, so as to leave a smooth end at right angles to the axis of the piping. Cut end shall be tapered and sharp edges filed off smooth. Flame cutting shall not be permitted. Piping damaged by the CONTRACTOR by improper or careless methods of cutting shall be replaced or repaired at his expense.
20. Blocking under piping shall not be permitted, unless specifically approved by ENGINEER for special conditions.
21. Protective linings and coatings shall be touched up prior to installation, where required.
22. Except where bends, wyes or similar fittings are used, changes in alignment and grade of the piping shall be made by deflecting joints or with beveled pipe. Permissible joint deflection shall not exceed 75% of the amount allowed by the manufacturer.

23. All joints shall be made in the presence of the ENGINEER, or his duly authorized representative, except as otherwise approved.
 24. Special care shall be taken to ensure that each section of piping abuts against the next in such a manner that there will be not shoulder or unevenness of any kind along the piping invert.
 25. Piping shall be rotated as required to place outlets in proper position.
 26. Blind flanges and cleanouts shall be provided at locations shown on the Drawings, specified, or required. Cleanouts on buried piping shall include all pipes, fittings, and appurtenances required to bring cleanout to finished grade and terminate in a flange and blind flange or suitably capped piping as shown. Cleanout piping shall be same as that specified for the main run.
 27. All gravity lines shall pitch uniformly at the grade shown or as specified or approved.
 28. Short pipe stubs, maximum 4 feet in length, shall be used at all manholes and other wall faces, except as otherwise specified.
 29. Field painting shall be accomplished after joints are made.
 30. All piping shall be plugged watertight with a suitable cap or plug securely fastened to the end of the piping at all contact interfaces.
 31. CONTRACTOR shall notify ENGINEER in advance of backfilling operations.
 32. On steep slopes, take measures acceptable to ENGINEER to prevent movement of the pipe during installation.
 33. Thrust Restraint: During the installation of the pipe, thrust blocks, tied joints, or proprietary restrained joint systems shall be provided wherever required for thrust restraint. Thrust restraint shall conform to the applicable requirements of Paragraph 3.2 of this Section.
 34. Exercise care to avoid flotation when installing pipe in cast-in-place concrete.
- B. Manufacturer's Installation Specialist:
1. Provide the services of a competent installation specialist of the pipe manufacturer when pipe laying begins if the CONTRACTOR is not experienced in laying and jointing a particular type of pipe.
 2. Retain installation specialist at the site for a minimum of two days or until competency of the pipe laying crew has been satisfactorily demonstrated.
- C. Separation of Sewers and Potable Water Pipe Lines:
1. Conform to the requirements of all applicable requirements of the Uniform Standard Specifications for Public Work Construction by the Maricopa Association of Governments (MAG).
- D. Plugs:
1. Temporarily plug installed pipe at the end of each day's Work or other interruption to the installation of any pipe line. Plugging shall prevent the entry of animals, liquids, or persons into the pipe or the entrance or insertion of deleterious materials.
 2. Install standard plugs into all bells at dead ends, tees or crosses. Cap all spigot ends.

3. Fully secure and block all plugs and caps installed for pressure testing to withstand the specified test pressure.
 4. Where plugging is required for phasing of the Work or for subsequent connection of piping, install watertight, permanent type plugs.
- E. Bedding Pipe: Bed pipe as specified below and in accordance with the details shown.
1. Trench excavation and backfill and bedding materials shall conform to the requirements of Section 02200, Earthwork, as applicable.
 2. Excavate trenches below the pipe bottom by an amount specified. Remove all loose and unsuitable material from the trench bottom.
 3. Carefully and thoroughly compact all pipe bedding with hand held pneumatic compactors.
 4. Do not lay pipe until the ENGINEER approves the bedding condition. If a conflict exists, obtain clarification from ENGINEER before proceeding.
 5. No pipe shall be brought into position until the preceding length has been bedded and secured in its final position.
- F. Laying Pipe:
1. Conform to manufacturer's instructions and requirements of the standards listed below, where applicable:
 - a. Ductile Iron Pipe: AWWA C600, AWWA C105.
 - b. ASCE Manual of Practice No. 37.
- G. Polyethylene Encasement:
1. Provide polyethylene encasement for ductile iron piping to prevent contact between the pipe and surrounding bedding material and backfill.
 2. Polyethylene may be supplied in tubes or in sheet material.
 3. Polyethylene encasement materials and installation shall be in accordance with the requirements of MAG Section 610.5.
- H. Jointing Pipe:
1. Ductile Iron Mechanical Joint Pipe:
 - a. Wipe clean the socket, plain end and adjacent areas immediately before making joint. Make certain that cut ends are tapered and sharp edges are filed off smooth.
 - b. Lubricate the plain ends and gasket with soapy water or an approved pipe lubricant, in accordance with AWWA C111, just prior to slipping the gasket onto the plain end of the joint assembly.
 - c. Place the gland on the plain end with the lip extension toward the plain end, followed by the gasket with the narrow edge of the gasket toward the plain end.
 - d. Insert the pipe into the socket and press the gasket firmly and evenly into the gasket recess. Keep the joint straight during assembly.
 - e. Push gland toward socket and center it around pipe with the gland lip against the gasket.
 - f. Insert bolts and hand tighten nuts.

- g. Make deflection after joint assembly, if required, but prior to tightening bolts. Alternately tighten bolts 180 degrees apart to seat the gasket evenly. The bolt torque shall be as follows:

Pipe Size (inches)	Bolt Size (inches)	Range of Torque (ft-lbs)
3	5/8	45-60
4-24	3/4	75-90
30-36	1	100-120
42-48	1-1/4	120-150

- h. All bolts and nuts shall be heavily coated with two 10 mil minimum coats of coal-tar epoxy coating as manufactured by Koppers, Tnemec, or equal.
 - i. Restrained mechanical joints shall be in accordance with Section 15061, Ductile Iron Pipe.
2. Ductile Iron Push-On Joint Pipe:
- a. Prior to assembling the joints, the last 8-inches of the exterior surface of the spigot and the interior surface of the bell shall be thoroughly cleaned with a wire brush, except where joints are lined or coated with a special protective lining or coating.
 - b. Rubber gaskets shall be wiped clean and flexed until resilient. Refer to manufacturer's instructions for procedures to ensure gasket resiliency when assembling joints in cold weather.
 - c. Insert gasket into joint recess and smooth out the entire circumference of the gasket to remove bulges and to prevent interference with the proper entry of the spigot of the entering pipe.
 - d. Immediately prior to joint assembly, apply a thin film of approved lubricant to the surface of the gasket which will come in contact with the entering spigot end of pipe. CONTRACTOR may, at his option, apply a thin film of lubricant to the outside of the spigot of the entering pipe.
 - e. For assembly, center spigot in the pipe bell and push pipe forward until it just makes contact with the rubber gasket. After gasket is compressed and before pipe is pushed or pulled all the way home, carefully check the gasket for proper position around the full circumference of the joint. Final assembly shall be made by forcing the spigot end of the entering pipe past the rubber gasket until it makes contact with the base of the bell. When more than a reasonable amount of force is required to assemble the joint, the spigot end of the pipe shall be removed to verify the proper positioning of the rubber gasket. Gaskets which have been scoured, or otherwise damaged, shall not be used.
 - f. Maintain an adequate supply of gaskets and joint lubricant at the site at all times when pipe jointing operations are in progress.
3. Proprietary Joints:
- a. Pipe which utilizes proprietary joints such as Fastite, by American Cast Iron Pipe Company, Tyton by U.S. Pipe Incorporated, restrained joints

described under Paragraph 3.2 of this Section, or other such joints shall be installed in strict accordance with the manufacturer's instructions.

4. Mechanical Coupling Joints:

- a. Prior to the installation and assembly of mechanical couplings, the joint ends shall be cleaned thoroughly with a wire brush to remove foreign matter. Following this cleaning, lubricant shall be applied to the rubber gasket or inside of the coupling housing and to the joint ends. After lubrication, the gasket shall be installed around the joint end of the previously installed piece and the joint end of the subsequent piece shall be mated to the installed piece. The gasket shall be positioned and the coupling housing placed around the gasket and over the grooved or shouldered joint ends. The bolts shall be inserted and the nuts screwed up tightly by hand. The bolts shall then be tightened uniformly in order to produce an equal pressure on all parts of the housing. When the housing clamps meet metal to metal, the joint is complete and further tightening is not required.

I. Backfilling:

1. Conform to the applicable requirements of Section 02200, Earthwork.
2. Place backfill as construction progresses. Backfill by hand and use power tampers until pipe is covered by at least 1 foot of fill.

J. Connections to Valves:

1. Install valves as shown.
2. Provide suitable adapters when valves and piping have different joint types.
3. Provide thrust restraint at all valves at pipeline terminations.

K. Transitions from One Type of Pipe to Another:

1. Provide all necessary adapters, specials and connection pieces required when connecting different types and sizes of pipe or connecting pipe made by different manufacturers.

L. Closures:

1. Provide all closure pieces shown or required to complete the Work.

3.2 THRUST RESTRAINT

- A. Provide thrust restraint on all pressure piping systems and where otherwise shown and specified. Pipe joints shall be restrained as specified in Paragraph 3.2.C of this Section.

- B. Thrust restraint shall be accomplished by means of restrained pipe joints. Concrete thrust blocks shall be used only when specifically shown on the Drawings or as directed by the ENGINEER. Thrust restraints shall be designed for the axial thrust exerted by the test pressure given in the Buried Piping Schedule.

C. Restrained Pipe Joints:

1. Pipe joints shall be restrained by means suitable to the type of pipe being installed.
 - a. Ductile iron push-on joints and mechanical joints shall be restrained utilizing a proprietary restrained joint system such as American Fast-Grip and American Flex-Ring Joint, MEGALUG Ductile Iron Pipe Restraints as manufactured by EBAA Iron Inc., TR Flex Gripper Ring and TR Flex Joints,, , and tie rods, or other system approved by ENGINEER.
 - b. Pipe thrust restraint shall be in accordance with the Schedule of Restrained Pipe Lengths and as noted on the Project Drawings.
 2. Schedule of Restrained Pipe Lengths: Restrained pipe lengths shall conform to the requirements of AWWA M41 for ductile iron pipe. Restrained pipe lengths shall be as shown on the Construction Plans. For pipe not specifically illustrated on the Plans, CONTRACTOR shall submit a lay schedule identifying restrained lengths complying with AWWA M41.
- D. Concrete Thrust Blocks:
1. Thrust blocks shall be constructed of Class “B” concrete, conforming to the requirements of MAG.
 2. Blocks shall be placed against undisturbed soil as shown on Drawings or as directed by the ENGINEER. Concrete shall be placed so that pipe joints and fitting joints will be accessible for repair.
 3. Size of the concrete thrust blocks shall be per MAG details or as directed by the ENGINEER.
 4. Concrete thrust blocks shall not be used for pipe restraint except where specifically shown on the Drawings, or as approved by the ENGINEER.

3.3 WORK AFFECTING EXISTING PIPING

- A. Location of Existing Piping:
1. Locations of existing piping shown should be considered approximate.
 2. CONTRACTOR shall determine the true locations of existing piping to which Work is to be performed, and locations of other facilities which could be disturbed during earthwork operations, or which may be affected by CONTRACTOR'S Work already installed.
- B. Taking Existing Pipelines Out of Service:
1. Do not take pipelines out of services, unless specifically provided for under this Project or approved by ENGINEER.
 2. Notify ENGINEER at least 48 hours prior to taking pipeline out of service.
- C. Work on Existing Pipelines:
1. Cut or tap pipes as shown or required with machines specifically designed for this Work.
 2. Install temporary plugs to prevent entry of mud, dirt, water, and debris.
 3. Provide all necessary adapters, fittings, pipe, and appurtenances required to complete the Work.

4. Existing pipelines that are cut and abandoned shall be adequately capped or filled with grout.

3.4 TESTING OF PIPING

A. General:

1. Test all piping except as otherwise authorized by ENGINEER.
2. Notify ENGINEER 48 hours in advance of testing.
3. Provide all testing apparatus, including pumps, hoses, gauges, and fittings.
4. Unless otherwise noted, pipelines shall hold specified test pressure for two hours.
5. Repair and retest pipelines that fail to hold specified test pressure or which exceed the allowable leakage rate.
6. Unless otherwise specified, test pressures required are at the lowest elevation of the pipeline section being tested.
7. Conduct all tests in the presence of ENGINEER.
8. Advise local authorities having jurisdiction if their presence is required during testing.
9. All testing shall conform to the MAG Standard Specifications. In case of contradiction with these Specifications the CONTRACTOR shall notify the ENGINEER before proceeding with the testing.

B. Schedule of Pipeline Tests:

1. Test piping at the test pressures listed in the Buried Piping Schedule and respective pipe material specification.
2. All piping shall be water tested after installation, except as otherwise specified or directed by ENGINEER.
3. For piping not included in the Schedule, the ENGINEER will notify CONTRACTOR in writing of the test pressure to be used.

C. Pressure Test Procedure:

1. Complete backfill and compaction at least to the pipe centerline before testing, unless otherwise required or approved by ENGINEER.
2. Allow concrete for thrust blocks to reach design strength before testing.
3. Fill section to be tested slowly with water and expel all air. Install corporation cocks, if necessary, to remove all air.
4. Test only one section of pipe at a time.
5. Apply specified test pressure for two hours and observe pressure gage. Check carefully for leaks while test pressure is being maintained.

D. Leakage Testing:

1. Conduct leakage test for all liquid piping after satisfactory completion of pressure test.
2. Allow concrete pipe to stand full of water at least 12 hours prior to starting leakage test.

3. Maintain test pressure constantly for the minimum test period and accurately measure the amount of water which must be added to maintain the test pressure.
4. Allowable Leakage Rates (in gallons per hour per 1,000 feet per inch diameter):
 - a. DIP Push-On or Mechanical Joints: 0.075.
 - b. Copper, Steel, and Thermoplastic: None.
5. Leakage Test Procedure:
 - a. Examine exposed pipe, joints, fittings, and valves. Repair visible leakage or replace the defective pipe, fitting, or valve.
 - b. Refill the line under test to reach the required test pressure.
 - c. Provide a test container filled with a known quantity of water at the start of the test. Attach the test pump suction to the test container.
 - d. Pump water from the test container into the line with the test pump to hold the specified test pressure for the test period. Water remaining in the container shall be measured and the amount used during the test shall be recorded on the test report.
 - e. Perform all repair, replacement, and retesting required because of failure to meet testing requirements.
 - f. Leakage shall be less than rate specified above.

3.5 DISPOSAL OF WATER

- A. CONTRACTOR shall provide suitable means for disposal of test and flushing water so that no damage results to facilities or waterways.
- B. Means of disposal of test and flushing water shall be subject to the approval of ENGINEER, local governing authorities, and regulatory agencies.
- C. CONTRACTOR shall be responsible for any damage caused by his water disposal operations.

3.6 CLEANING

- A. Cleaning:
 1. Thoroughly clean all piping and flush prior to placing in service in a manner approved by ENGINEER.
 2. Piping 24-inches in diameter and larger shall be inspected from inside and all debris, dirt and foreign matter removed.
 3. If piping that requires disinfection has not been kept clean during storage or installation, CONTRACTOR shall swab each section individually before installation with a 5% hypochlorite solution, to ensure clean piping.

3.7 PIPING SCHEDULE

- A. The following abbreviations are used in the Buried Piping Schedule:
 1. Service Abbreviations:
 - a. Potable Water: W.

- b. Reclaimed Water: RW.
- 2. Material Abbreviations:
 - a. Asbestos Concrete Pipe: ACP
 - b. Chlorinated Polyvinyl Chloride: CPVC
 - c. Copper Pipe: COP
 - d. Ductile Iron Pipe: DIP
 - e. Glass-Lined Ductile Iron Pipe: GDIP
 - f. Galvanized Steel: GST
 - g. Polyethylene: PE
 - h. Polyvinyl Chloride: PVC
 - i. Stainless Steel Pipe: SST
 - j. Vitrified Clay Pipe: VCP
- 3. Lining/Coating Abbreviations:
 - a. Bituminous Coated: BC
 - b. Cement Mortar Lined: CM
 - c. Galvanized: GALV
 - d. Glass Lined: GL
 - e. Polyethylene Wrap: PE
 - f. Protecto 401 Ceramic Epoxy: CE
 - g. T-Lock: TL
 - h. Painting: P (Painted per Section 09900)
- 4. Joint Abbreviations:
 - a. Bell and Spigot: BS
 - b. Butt Wrapped: BW
 - c. Flanged: FL
 - d. Mechanical Joint: MJ
 - e. Soldered: SD
 - f. Solvent Welded: SW
 - g. Welded: W

BURIED PIPING SCHEDULE

Service	Material	Interior Lining	Exterior Coating	Pressure Class	Joint	Test Pressure (psig)
Potable Water (Up to 12-inch Diameter)	DIP	CML	BC,PE	350	MJ/BS	200
Potable Water (Less than 2-inch Diameter)	COP	N/A	PE	350	SD	200
Sanitary Sewer	ASTM C700 VCP	N/A	N/A	Extra Strength	BS	3.5

END OF SECTION

SECTION 15061
DUCTILE IRON PIPE

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope:
 - 1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install ductile iron pipe and fittings.
 - 2. The extent of ductile iron pipe to be furnished is shown on the Drawings and in the schedules included in Section 15051, Buried Piping Installation.
- B. Definition: Where cast iron pipe is specified, the term and symbol shall mean ductile iron pipe.
- C. Related Work Specified Elsewhere:
 - 1. Section 02200, Earthwork.
 - 2. Section 11295, Hydraulic Valves.
 - 3. Section 15050, Piping Systems.
 - 4. Section 15051, Buried Piping Installation.

1.2 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer shall have a minimum of five years of experience in the production of ductile iron pipe and fittings and shall show evidence of satisfactory service in at least five installations.
- B. Unless otherwise specified, references to documents shall mean the documents in effect at the time of Advertisement for Bids or Invitation to Bid (or on the effective date of the Agreement if there were no Bids). If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued. Where document dates are given in the following listing, references to those documents shall mean the specific document version associated with that date, whether or not the document has been superseded by a version with a later date, discontinued, or replaced.
 - 1. ANSI B16.1 - Cast Iron Pipe Flanges and Flanged Fittings Class 25, 125, 250, and 800.
 - 2. ANSI B16.5 - Pipe Flanges and Flanged Fittings.
 - 3. ASTM C150 - Portland Cement.
 - 4. AWWA C104 (ANSI A21.4) - Cement Mortar Lining for Ductile Iron and Gray Iron Pipe and Fittings for Water.

5. AWWA C105 (ANSI A21.5) - Polyethylene Encasement for Ductile Iron Piping for Water and Other Liquids.
6. AWWA C110 (ANSI A21.10) - Ductile Iron and Gray Iron Fittings, 3" Through 48", for Water and Other Liquids.
7. AWWA C111 (ANSI A21.11) - Rubber Gasket Joints for Ductile Iron and Gray Iron Pressure Pipe and Fittings.
8. AWWA C115 (ANSI A21.15) - Flanged Ductile Iron and Gray Iron Pipe with Threaded Flanges.
9. AWWA C150 (ANSI A21.50) - Thickness Design of Ductile Iron Pipe.
10. AWWA C151 (ANSI A21.51) - Ductile Iron Pipe, Centrifugally Cast, in Metal Molds or Sand-Lined Molds, for Water or Other Liquids.
11. AWWA C153 (ANSI A21.53) - Ductile Iron Compact Fittings, 3" Through 12" for Water and Other Liquids.
12. AWWA C600 - Installation of Ductile Iron Water Mains and Their Appurtenances.
13. AWWA C606 - Grooved and Shouldered Type Joints.
14. MAG - Uniform Standard Specifications and Details for Public Work Construction.
15. City of Chandler Unified Standard Specifications.

1.3 SUBMITTALS

- A. Shall be in accordance with Section 15050, Piping Systems, submittal information.
- B. Each Shop Drawing submittal shall include a copy of the relevant Specification Section. Each and every paragraph of the Specification Section shall be clearly marked to indicate whether the requirements for equipment and/or services in the Specification Section are met. If clarifications are needed to any of the paragraphs in the Specification Section, they shall be addressed next to the paragraph or in an attached letter as such and explained further with any additional information necessary. If any exceptions and/or deviations are proposed to any of the Specifications, they shall be clearly noted as such in the submittal, and an explanation of any deviation and/or exception shall be provided. The CONTRACTOR shall furnish equipment and/or services as specified if an exception and/or deviation is rejected.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Pipe design, materials, and manufacturer shall comply with the following documents:

ITEM	DOCUMENT
Thickness Design	AWWA C150
Manufacturing Requirements: Water or Other Liquid	AWWA C151
Gravity Service Pipe	ASTM A716
Joints: Rubber Gasket Threaded Flange	AWWA C111 AWWA C115
Fittings: Water or Other Liquid	AWWA C110/AWWA C153
Cement Mortar Lining	AWWA C104
Polyethylene Encasement	AWWA C105

2.2 PIPE

- A. Unless otherwise specified, ductile iron pipe shall be Pressure Class 350 for below ground installations and Special Thickness Class 53 for above ground.
- B. For grooved end pipe or flanged end, wall thickness shall be minimum Class 53, except where the specified pressure requires heavier pipe.
- C. All ductile iron pipes shall conform to the requirements of MAG Standard Specification Section 750 "Iron Water Pipe and Fittings."
- D. All ductile iron pipes shall be as manufactured by American Cast Iron Pipe Company, U.S. Pipe, Griffin Pipe Products Company, or approved equal.

2.3 GASKETS

- A. Unless otherwise specified, gasket stock shall be a synthetic rubber compound in which the elastomer is nitrile or neoprene.
- B. The compound shall contain not less than 50% by volume nitrile or neoprene and shall be free from factice, reclaimed rubber, and other deleterious substances.
- C. Gaskets shall comply with AWWA C111 for push-on and mechanical joints, and with AWWA C606 for grooved end joints.
- D. For high temperature gaskets refer to section 15050, Piping Systems.

2.4 FITTINGS

- A. Parent pipe and branch outlets shall be centrifugally cast ductile iron pipe designed in accordance with ANSI/AWWA C150/A21.50 and manufactured in accordance with ANSI/AWWA C151/A21.51. Minimum class shall be Thickness Class 53.

- B. Ends shall be flanged, restrained mechanical joint, or restrained push-on to suit the condition specified, except for transmission mains where indicated otherwise on the Drawings.
- C. The AWWA C153 compact ductile iron fittings in sizes 3-inches through 12-inches are an acceptable substitute for standard fittings, unless otherwise specified.
- D. Long radius elbows shall be provided where specified.
- E. Welded-on outlets shall be limited to branch outlets having a nominal diameter less than 70% of the nominal diameter of the main line pipe (maximum size of 30-inches). Welded-on outlets may be provided for tees, tangential outlets, or lateral outlets fabricated at a specific angle to the main line pipe as shown on the Drawings. Welded-on outlets shall be fabricated by the pipe manufacturer at the same facility where the pipe is produced. The pipe cement mortar lining shall only be applied or repaired after the outlet has been welded on at the manufacturing facilities where the pipe is produced. The pipe manufacturer shall have a minimum of five years experience in the fabrication and testing of outlets of similar size and configuration as shown on the Drawings or specified herein.
- F. Weldment for welded-on outlets shall be based on the method described in Section VII of the ASME Unified Pressure Vessel Code. Reinforcing welds shall be placed using Ni-Rod FC 55 cored wire or Ni-Rod 55 electrodes manufactured by INCO Alloys (or an electrode with equivalent performance properties). Carbon steel electrodes are not acceptable.
- G. All ductile iron pipe fittings shall be as manufactured by the same manufacturer as the ductile iron pipe.

2.5 JOINTS

- A. Push-On Joints:
 - 1. Push-on joints shall be the rubber ring compression type suitable for buried service. Unrestrained push-on joints shall be Fastite Joint as manufactured by American Cast Iron Pipe Company, the Tyton Joint as manufactured by U.S. Pipe, or equal. This joint is not permitted on fittings or specials, unless otherwise specified. Push-on joints shall have an allowable deflection of up to 5 degrees at specified pressures. Joint assembly and field cuts shall be made in strict conformance with AWWA C600 and pipe manufacturer's recommendations.
- B. Flange Assemblies:
 - 1. Unless otherwise specified, flanges shall be ductile iron and shall be threaded-on flanges conforming to ANSI/AWWA A21.15/C115 or cast-on flanges conforming ANSI/AWWA A21.10/C110.
 - 2. Flanges shall be adequate for 250 psi working pressure.
 - 3. Bolt circle and bolt holes shall match those of ANSI B16.1, Class 125 flanges and ANSI B16.5, Class 150 flanges.

4. Where specified, flanges shall be threaded-on or cast-on flanges conforming to ANSI B16.1, Class 250.
 5. Unless otherwise specified, bolts and nuts for flange assemblies shall conform with the requirements of Section 15120, Piping Specialties and Accessories. Gaskets shall be as specified with the requirements of Section 15120, Piping Specialties and Accessories.
- C. Mechanical Joints:
1. Where specified, restrained mechanical joints shall be the positive restraint type. Mechanical joints with retainer glands are not acceptable.
 2. Locked mechanical hydrant tees, bends, and adapters are an acceptable substitute for anchoring fire hydrants and valves to the pipe main.
- D. Restrained Joints:
1. Unless otherwise specified, restrained joints shall be flanged or grooved end for exposed service and push-on or grooved end for buried service. Restrained pipe shall be applied the entire length of pipe as shown on the Construction Drawings.
 2. Restrained joints for pipe shall be:
 - a. TR Flex Gripper Ring and TR Flex joint products with exact specifications as manufactured by US Pipe
 - b. American Fast Grip and Flex-Ring joint as manufactured by American Cast Iron Pipe Company
 - c. MEGALUG Ductile Iron Pipe Restraints as manufactured by EBAA Iron Inc.
 - d. Or equal.
 3. Restrained joints for fittings shall be:
 - a. Series 1100 megalug restraint produced by EBAA Iron, Inc.
 - b. Series 3000-30000S Stargrip by Star Pipe Products
 - c. Sigma DIP One Lok SLDE Series
 - d. Tyler Union Tuf Grip Restraint
 4. Restrained joints shall be capable of being deflected after full assembly.
 5. Joint assembly shall be in strict conformance with AWWA C600 and manufacturer's recommendations.
 6. No field cuts of restrained pipe are permitted without prior approval of the Construction Manager.
- E. Bolts and Nuts:
1. Corrosion-resistant bolts and nuts for use with ductile iron joints shall be high-strength, low-alloy steel as specified in ANSI/AWWA C111/A21.11.
 2. Below grade installations require type 316 stainless steel.

2.6 PIPE COATING

- A. Unless otherwise specified, pipe and fittings shall be coated with asphaltic material as specified in AWWA C151.

- B. Polyethylene Encasement:
 - 1. All buried ductile iron pipe and fittings shall be wrapped with polyethylene film in tube form as specified in AWWA C105 and MAG Section 610.

2.7 PIPE LINING

- A. Cement mortar lining.
- B. Unless otherwise specified, interior surfaces of pipe and fittings shall be cement mortar lined in accordance with AWWA C104.
- C. Cement shall be ASTM C150, Type II or V, low alkali, containing less than 0.60% alkalies.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General:
 - 1. Piping runs specified on the Drawings shall be followed as closely as possible. Proposed deviations shall be submitted in accordance with Section 01300, Submittals.
 - 2. Pipe shall be installed in accordance with AWWA C600 and MAG Section 610.
- B. Insulating Sections:
 - 1. Where a metallic non-ferrous pipe or appurtenance is connected to ferrous pipe or appurtenance, an insulating section shall be provide.
- C. Anchorage:
 - 1. Anchorage shall be provided as specified. Calculations and Drawings for proposed alternative anchorage shall be submitted in accordance with Section 01300, Submittals.

3.2 ACCEPTANCE TESTING

- A. Hydrostatic pressure tests shall be conducted in accordance with Section 4 of AWWA C600, except that test pressures and allowable leakage shall be as listed in Section 15050, Piping Systems.
- B. The CONTRACTOR shall conduct the tests in the presence of the ENGINEER and/or OWNER.
- C. All welded-on outlets shall be rated for a working pressure of 250 psi and must have a minimum safety factor of 2.0 based on proof of design hydrostatic test results.

- D. Prior to the application of any coating or lining in the outlet area all weldments for branch outlets to be supplied on this project shall be subject to an air pressure test of at least 15 psi. Air leakage is not acceptable. Any leakage shall be detected by applying an appropriate soapy water solution to the entire exterior surface of the weldment and adjoining pipe edges or by immersing the entire area in a vessel of water and visually inspecting the weld surface for the presence of air bubbles. Any weldment that shows signs of visible leakage shall be repaired and retested in accordance with the manufacturer's written procedures.

3.3 POLYETHYLENE TUBE

- A. Polyethylene encasement shall be used on all buried ductile iron pipe, unless otherwise specified. Installation of polyethylene shall be as specified in MAG Section 610 and these Specifications. Pipe, fittings, valves, and couplings shall be wrapped. Fittings that require concrete backing shall be wrapped prior to placing the concrete.
- B. The polyethylene tube seams and overlaps shall be wrapped and held in place by means of a 2-inch wide plastic backed adhesive tape. The tape shall be Polyken No. 900 (polyethylene), Scotchwrap No. 50 (polyvinyl), or equal. The tape shall be such that the adhesive shall bond securely to both metal surfaces and polyethylene film. Bedding and initial backfill for polyethylene wrapped pipe shall be a well-graded granular material which will not cut or damage the polyethylene tube during placement and backfilling. Sharp angular material over 0.5-inches shall not be used with polyethylene encasement.

END OF SECTION

SECTION 15064

COPPER PIPE

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment and incidentals, as shown, specified, and required to furnish and install copper pipe and fittings.
2. The extent of copper pipe is shown and specified in the schedules included in Sections 15051, Buried Piping Installation.
3. All jointing materials, end caps, and other appurtenances and accessories shall be provided.
4. It is the intent of the Contract Documents to provide complete and workable piping systems. Any supplementary fittings and appurtenances required for proper completion of the Work shall be considered as having been included under this Section.

B. Related Sections:

1. Section 02200, Earthwork.
2. Section 15051, Buried Piping Installation.

1.2 QUALITY ASSURANCE

A. Manufacturer's Qualifications:

1. Manufacturer shall have a minimum of five years of experience in the production of copper pipe and fittings, and shall show evidence of satisfactory service in at least five installations.
2. Each type of pipe and fitting shall be obtained from no more than one manufacturer.

B. Requirements of Regulatory Agencies: Comply with the applicable provisions of the following regulatory agencies, where applicable:

1. Underwriters' Laboratories, Inc.
2. National Fire Protection Association.
3. ASME, Boiler and Pressure Vessel Code.
4. State and Local Building Codes and Ordinances.
5. Uniform Plumbing Code.

C. Reference Standards: Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.

1. ANSI B16.22, Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.

2. ANSI B16.26, Cast Copper Alloy Fittings for Flared Copper Tubes.
 3. ASTM B32, Specification for Solder Metal.
 4. ASTM B42, Specification for Standard Size Seamless Copper Pipe.
 5. ASTM B68, Specification for Bright Annealed Seamless Copper Tube.
 6. ASTM B75, Specification for Seamless Copper Tube.
 7. ASTM B88, Specification for Seamless Copper Water Tube.
 8. ASTM B280, Specification for Seamless Copper Tube for Air-Conditioning and Refrigeration Field Service.
 9. ASTM B302, Specification for Threadless Copper Pipe.
 10. ASTM B306, Specification for Copper Drainage Tube (DWV).
- D. Inspection: The quality of all materials provided and adequacy of installation shall be subject to the review and approval of the ENGINEER.

1.3 SUBMITTALS

- A. Shop Drawings: Submit for approval the following:
1. Detailed drawings and data on pipe fittings and appurtenances. Submit these with Shop Drawings required under Section 15051, Buried Piping Installation.
- B. Certificates: Where specified or otherwise required by the ENGINEER, submit test certificates. Submit Certificates of Compliance with referenced standards.
- C. Each Shop Drawing submittal shall include a hard copy of the relevant Specification Section. Each and every paragraph of the Specification Section shall be clearly marked to indicate whether the requirements for equipment and/or services in the Specification Section are met. If clarifications are needed to any of the paragraphs in the Specification Section, they shall be addressed next to the paragraph or in an attached letter as such and explained further with any additional information necessary. If any exceptions and/or deviations are proposed to any of the Specifications, they shall be clearly noted as such in the submittal, and an explanation of any deviation and/or exception shall be provided. The CONTRACTOR shall furnish equipment and/or services as specified if an exception and/or deviation is rejected.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Refer to Section 15051, Buried Piping Installation.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Threadless Copper Pipe: Pipe shall be assembled with brazing-joint pipe fittings. Material shall conform to ASTM B302.

- B. Couplings and Fittings for Copper Tubing:
 - 1. Unless otherwise specified, couplings for copper tubing 2-inch and smaller nominal diameter shall be compression type, bronze or brass, capable of holding the full bursting strength of the tubing and shall meet the requirements of ANSI B16.26.
 - 2. Product and Manufacturer: Provide fittings and couplings for copper tubing by one of the following:
 - a. Swagelok.
 - b. Gyrolok.
 - c. Or equal.
- C. No galvanized pipe or fittings shall be used for this installation.

2.2 JOINTING

- A. Reclaimed water piping shall be assembled with soldered type joints. Fittings shall conform to ANSI B 16.22, Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
- B. Soldered joints shall be 95-5 tin-antimony solder, conforming to ASTM B32.
- C. All joints shall conform to manufacturer's recommendations and shall be made by skilled workmen.
- D. Joints shall develop full strength and shall be greater than the pipe joined.

2.3 MARKING

- A. All items shall be marked or labeled with the following information:
 - 1. Metal or alloy designation.
 - 2. Temper.
 - 3. Size and schedule.
 - 4. ASTM specification number.
 - 5. Name and location of supplier.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Refer to Section 15051, Buried Piping Installation, for installation, testing and cleaning.
- B. Dielectric Protection: Copper tubing or fittings shall not be permitted to come in contact with steel piping, reinforcing steel, or other steel at any location. Electrical checks shall be made to ensure no contact is made between copper tubing and steel elements. Wherever electrical contact is demonstrated by such

test, CONTRACTOR shall provide dielectric protection as specified in Section 15120, Piping Specialties and Accessories.

- C. All copper piping being buried shall be provided with a protective covering or wrapping such as polyethylene wrap as specified in MAG Section 610.6 – Polyethylene Corrosion Protection.

END OF SECTION

SECTION 15067

VITRIFIED CLAY PIPE

PART 1 - GENERAL

1.1 SUMMARY

- A. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as shown on the plans, specified and required to furnish and install vitrified clay pipe, fittings and appurtenances.
- B. The CONTRACTOR shall replace all existing roadway pavement, utility services, ditches, monuments and other existing structures to their original condition.
- C. Any pipe, which does not meet specifications or has been rejected, shall be removed from the job site at no cost to the owner.
- D. The extent of vitrified clay pipe is shown within the Drawings and in the schedules included in Section 15051, Buried Piping Installation.

1.2 SECTION INCLUDES

- A. Vitrified Clay Pipe (VCP).

1.3 RELATED SECTIONS

- A. Section 02200, Earthwork.
- B. Section 15050, Piping Systems.
- C. Section 15051, Buried Piping Installation.

1.4 REFERENCES

- A. National Clay Pipe Institute (NCPI) Engineering Manual
- B. ASTM C12 – Standard Practice for Installing Vitrified Clay Pipe
- C. ASTM C301 – Test Methods for Vitrified Clay Pipe
- D. ASTM C425 – Compression Joints for Vitrified Clay Pipe and Fittings
- E. ASTM C700 – Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated
- F. ASTM C828 – Test Method for Low-Pressure Air Test of Vitrified Clay Pipe Lines

- G. ASTM C896 – Terminology Relating to Clay Products
- H. ASTM C1091 – Test Method for Hydrostatic Infiltration Testing of Vitrified Clay Pipe Lines

1.5 SUBMITTAL

- A. Shop Drawings: Submit for approval the following:
 - 1. Detailed drawings and data on pipe, fittings, gaskets, and appurtenances. Submit these with Shop Drawings required under Section 15051, Buried Piping Installation.
- B. The manufacturer shall submit design calculations to the ENGINEER. The design calculations shall be signed and sealed by a Registered Professional Engineer licensed in the State of Arizona. The design calculations shall indicate that the pipe wall thickness will be satisfactory for all conditions of external pressure and earth loadings, special physical loadings, and internal pressure.
- C. Certificates: Submit certificates of compliance with referenced standards.
- D. Also shall be in accordance with Section 15050, Piping Systems submittal information.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Refer to Section 15051, Buried Piping Installation.
- B. Refer to Manufacturer's recommendations.

PART 2 - PRODUCTS

2.1 SERVICE CONDITIONS

- A. General:
 - 1. Pipe shall be designed for an external live loading, including impact, equal to AASHTO, H-20 truck loading with earth cover as shown on the Drawings. The external loading shall be calculated in accordance with the National Clay Pipe Institute (NCPI) Engineering Manual and as modified in accordance with the City of Chandler Standard Specifications.
- B. Service Conditions:
 - 1. Liquid Service: (Refer to Section 15051, Buried Piping).
 - 2. Pipe overburden and trench bedding condition: Refer to Drawings.
 - 3. Pipe should be able to attain the full design life of the pipe when surrounding earth is at a continuous temperature of up to 90°C.

2.2 MATERIALS

- A. All materials used in the manufacturing of the piping and its components shall be new and of the best quality used for the purpose of commercial practice.

2.3 VITRIFIED CLAY PIPE (VCP) AND FITTINGS

- A. General:
 - 1. All VCP and fittings shall be suitable for use as a gravity sewer conduit. VCP shall be Extra Strength Vitrified Clay Pipe conforming to all the requirements of ASTM C700 and MAG Specifications Section 743.
 - 2. Fittings shall be made to such dimensions as will accommodate the joint system specified. Wye and Tee branch fittings shall be furnished with spurs securely fastened by the manufacturer to the barrel of the fitting. There shall be no projection on the inner surface of the barrel.
 - 3. Joints for vitrified clay pipe and fittings shall be factory applied, mechanical, flexible-compression type and shall conform to ASTM C425 – Compression Joints for Vitrified Clay Pipe and Fittings. Clay pipe joint material must be polyurethane. The polyurethane joint must be a standard joint for the pipe manufacturer furnishing pipe on this project for a minimum of five years for all pipe sizes specified. The polyurethane joint must meet all requirements of ASTM C425.
 - a. Rubber couplings used for mainline connections or reconnecting services shall be a stainless steel shielded rubber coupling. Gasket to meet ASTM C-425-91 Table 2. Shear ring to be Series 300 stainless steel with a minimum thickness of .012". Tightening bands shall be Series 316 stainless steel with stainless steel nut and bolt tightening clamps. Shear ring and clamps to meet all requirements of ASTM A-240-94A.
 - 4. All pipe load tested shall be loaded to the ultimate limit. The load test is destructive and any pipe section tested shall be rejected from installation.

PART 3 - EXECUTION

3.1 TRENCHING, BACKFILLING, AND SUBGRADE PREPARATION

- A. Trenching, backfilling, and sub-grade preparation shall conform to MAG Specifications Section 601 and 615, and the City of Chandler Wastewater Technical Design Manual. Bury depth shall be as shown in the Plans.
- B. Sheet, shore, and brace trenches, as necessary, to prevent caving or sliding of trench walls, to provide protection for workmen and the pipe, and to protect adjacent structures and facilities.

- C. Where solid timber sheeting is driven to a level below the top of pipe, it should not be removed after the pipe has been installed. The sheeting may be cut off at the level of the top of the pipe.
- D. If a movable shield is used, it is imperative that pipe already laid be securely blocked or braced to prevent opening of pipe joints when the shield is advanced in the trench.
- E. The bedding shall be placed on a flat undisturbed or restored trench bottom with a minimum thickness beneath the pipe barrel of 6 inches or one eighth of the outside diameter of the pipe, whichever is greater. "Carefully placed material" shall be sliced in the haunches of the pipe with a flattened shovel or other suitable tool.
- F. Pipe barrel shall be placed so that it is true to line and grade and to provide uniform and continuous support.
- G. Crushed stone and/or gravel shall have at least one fractured face on each stone. Other suitable materials may be approved by the Engineer.
- H. A foundation may be required if soft, spongy, unstable, or other similar material is encountered upon which bedding material or pipe is to be placed. Unstable material shall be removed to a depth ordered by the Engineer and replaced with foundation material suitably densified.

3.2 TESTING

- A. The CONTRACTOR shall be responsible for testing all pipelines. All testing shall be performed in the presence of the ENGINEER and conform to the following paragraphs.
- B. After installation, backfilling, compaction, cleaning and before paving, acceptance testing shall be performed by low pressure air testing.
- C. Air Testing
 - a. Testing shall be performed by the low pressure air test method conforming to ASTM C828 - Standard Test Method for Low Pressure Air Test of Vitrified Clay Pipe.
 - b. Each section between manholes or structures will be plugged. Air will be introduced into the plugged system. The system passes the test if the rate of air loss, as measured by the pressure drop from 3.5 psi to 2.5 psi, does not exceed the following table.

Table 1
Minimum Test Time for Various Pipe Sizes

Nominal Pipe Size, in.	T (time) min/100 ft	Nominal Pipe Size, in.	T (time) min/100 ft
4	0.3	24	3.6
6	0.7	27	4.2
8	1.2	30	4.8
10	1.5	33	5.4
12	1.8	36	6.0
15	2.1	39	6.6
18	2.4	42	7.3
21	3.0		

Lines which fail any testing will be evaluated, repaired/replaced and retested for compliance with these specifications and the cost of any re-testing shall be borne by the contractor.

D. Pressure testing for Gravity Pipe:

1. Shall be in accordance with Section 15050, Piping Systems.

END OF SECTION

SECTION 15120

PIPING SPECIALTIES AND ACCESSORIES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope:
 - 1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install all piping specialties and accessories. Included, but not limited to, are flexible couplings, mechanical couplings, flanged adapters, expansion joints, saddle taps.
- B. Related Work Specified Elsewhere:
 - 1. Division 15, Mechanical, Sections on piping and piping systems.

1.2 QUALITY ASSURANCE

- A. Manufacturer's Qualifications:
 - 1. Manufacturer shall have a minimum of five years of experience in the production of substantially similar types of piping specialties specified and shall show evidence of satisfactory service in at least five installations.
 - 2. Each type of piping specialty and accessory shall be the product of one manufacturer.

1.3 SUBMITTALS

- A. Descriptive submittals shall be made in accordance with Section 01300, Submittals.
- B. Coordinate these with Shop Drawings required for the piping systems.
- C. Each Shop Drawing submittal shall include a copy of the relevant Specification Section. Each and every paragraph of the Specification Section shall be clearly marked to indicate whether the requirements for equipment and/or services in the Specification Section are met. If clarifications are needed to any of the paragraphs in the Specification Section, they shall be addressed next to the paragraph or in an attached letter as such and explained further with any additional information necessary. If any exceptions and/or deviations are proposed to any of the Specifications, they shall be clearly noted as such in the submittal, and an explanation of any deviation and/or exception shall be provided. The CONTRACTOR shall furnish equipment and/or services as specified if an exception and/or deviation is rejected.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Refer to Division 15, Mechanical, Sections on piping and piping systems.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Couplings: Unless otherwise specified, piping 2-inches in diameter and larger passing from concrete to earth shall be provided with two pipe couplings or flexible joints as specified within 2 feet or one pipe diameter of the structure, whichever is greater.
 - 1. Below-Grade Restrained Type Coupling:
 - a. Pressure and Service: Same as connected piping.
 - b. Material: ASTM A536 Ductile Iron.
 - c. Gasket: Suitable for water service and specification 15050.
 - d. Bolts and Nuts: Type 316 stainless steel bolts and nuts.
 - e. Product and Manufacturer:
 - 1) Series 3800, as manufactured by Ebac Iron Inc.
 - 2) No approved equal.
 - 2. Sleeve Type, Couplings:
 - a. Pressure and Service: Same as connected piping.
 - b. Material: Carbon steel for carbon steel and exposed ductile iron piping systems, or stainless steel for stainless steel and buried or submerged ductile iron piping systems.
 - c. Gasket: Suitable for water service – NSF 61 Certified and specification 15050.
 - d. Bolts and Nuts: Alloy steel, corrosion-resistant, prime coated. Buried couplings shall have Type 316 stainless steel bolts and nuts.
 - e. Harnessing:
 - 1) Harness couplings to restrain pressure piping. Test pressures for pressure pipelines shall conform to the requirements of Section 15050, Piping Systems.
 - 2) Adjacent flanges shall be tied with bolts of corrosion resistant alloy steel. Provide flange mounted stretcher bolt plates as shown on the Drawings and to be designed by manufacturer, unless otherwise approved by the ENGINEER.
 - 3) Conform to dimensions, size, spacing and materials for lugs, bolts, washers and nuts as recommended by manufacturer and approved by ENGINEER for the pipe size, wall thickness and test pressure required. However, the following minimum bolting shall be provided, unless otherwise approved by the ENGINEER.

<u>Pipe Diameter (Inches)</u>	<u>Number of Bolts</u>	<u>Bolt Diameter (Inches)</u>	<u>At (Degrees)</u>
4	2	5/8	180
6-8	2	3/4	180
10-12	2	7/8	180 or 250
14-20	4	1	190
24-48	4	1	90
54	4	1	250
60	4	1-1/4	90

- f. Remove pipe stop, unless otherwise shown on the Drawings or specified.
- g. Product and Manufacturer: Provide one of the following:
 - 1) Type 501, Romac Industries.
 - 2) Or equal.
3. Flanged Adapters:
 - a. Description: One end of adapter shall be flanged and the other end shall have a sleeve type flexible coupling.
 - b. Pressure and Service: Same as connected piping.
 - c. Material: Cast iron or steel.
 - d. Gasket: Suitable for water service, and specification 15050.
 - e. Bolts and Nuts: Type 316 stainless steel.
 - f. Harnessing:
 - 1) Harness adapters to restrain pressure piping. Test pressures for pressure pipe lines are included in the piping schedules in Section 15051, Buried Piping Installation.
 - 2) For adapters 12-inch diameter and less, provide 1/2-inch minimum stainless steel anchor studs installed in a pressure tight anchor boss. Provide number of studs required to restrain test pressure and service conditions. Harness shall be as designed and recommended by manufacturer; however, the following minimum anchor studs shall be provided, unless otherwise approved by ENGINEER.
 - a) 6-inch Diameter and Less: Two.
 - b) 8-inch Diameter and Less: Four.
 - c) 10-inch Diameter and Less: Six.
 - d) 12-inch Diameter and Less: Eight.
 - 3) For adapters larger than 12-inch diameter, provide split-ring harness clamps with a minimum of four Type 316 stainless steel bolts. Harness assembly shall be as designed and recommended by manufacturer. Dimensions, sizes, spacing, and materials shall be suitable for service and conditions encountered and shall be approved by ENGINEER.
 - 4) Harness couplings to restrain pressure piping.
 - 5) Test pressures for pressure pipe lines are included in Section 15051, Buried Piping Installation.

- 6) Harnessing shall conform to the details shown on the Drawings.
- g. Product and Manufacturer: Provide one of the following:
 - 1) Style FCA501, as manufactured by Romac Industries.
 - 2) Style 128, as manufactured by Dresser.
 - 3) Or approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install piping specialties and accessories in accordance with manufacturer's instructions.
- B. Make adjustments to expansion joints as required to ensure that they will be fully extended when the ambient temperature is at minimum operating temperature and fully compressed at maximum operating temperature for the system in which they are installed.

END OF SECTION

EXHIBIT D

ACCEPTED GMP/PRICE PROPOSAL



EXHIBIT D: GMP PROPOSAL FOR CITY OF CHANDLER - CHANDLER HEIGHTS ROAD UTILITY
RELOCATIONS. CHAPARRAL WAY: DOBSON TO LAKE DRIVE CMAR PROJECT

JANUARY 26, 2022

City of Chandler
Mr. Paul Young, P.E.
215 E. Buffalo Street
Chandler, Arizona 85224

City of Chandler Project No.: WW2111.401
Achen-Gardner Construction, LLC Project No.: 3938101

Dear Mr. Young:

Attached please find Achen-Gardner Construction, LLC's ("Achen-Gardner") GMP Proposal ("Proposal") including Schedule of Values (SOV) for installation of 8", 12" & 16" water lines and 15" sewer.

This GMP Proposal is for the amount not to exceed **\$1,371,579.28**. Achen-Gardner does not guarantee the Owner Allowance amount.

Should you have any questions and/or comments, please feel free to contact me at (480) 403-9399 or e-mail dbroderick@achen.com.

Sincerely,
ACHEN-GARDNER CONSTRUCTION, LLC

Dan Broderick, Sr. Project Manager

Attachments

INDEX OF EXHIBITS

JANUARY 26, 2022

CITY OF CHANDLER – CHANDLER HEIGHTS ROAD UTILITY RELOCATIONS

GMP PROPOSAL FOR CHAPARRAL WAY: DOBSON TO LAKE DRIVE

PROJECT NO: WW2111.401

Exhibit D1:	Scope of Work
Exhibit D2:	Cost Model Form
Exhibit D3:	Schedule of Values
Exhibit D4:	List of GMP Documents
Exhibit D5	Clarifications and Assumptions
Exhibit D6:	Subcontractor and Supplier Solicitation Documentation, Award Recommendations and Quotes
Exhibit D7:	Baseline Project Schedule

EXHIBIT D1: SCOPE OF WORK

JANUARY 26, 2022

**CITY OF CHANDLER – CHANDLER HEIGHTS ROAD UTILITY RELOCATIONS
GMP PROPOSAL FOR CHAPARRAL WAY: DOBSON TO LAKE DRIVE
PROJECT NO: WW2111.401**

The overall project scope includes the relocation of existing City- owned wastewater, reclaimed water and potable water pipes to clear an alignment for a proposed SRP undergrounding of a 230-Kilowatt transmission system. These relocations will occur on Chaparral Way (Dobson Road to Lake Drive) - Package no. 1, on Lake Drive (Chaparral to Alma School) - Package no. 2, on Alma School Road (Lake Drive to Chandler Heights Road) and Chandler Heights (Alma School Road to the Union Pacific Railroad) - Package 3, then work on Chandler Heights east of the Union Pacific Railroad - Package 4.

The Package 1 GMP project scope on Chaparral Way includes the installations of approximately: 70 LF of 8" waterline with valves and fittings, 70 LF of 12" waterline with valves and fittings, 260 LF of 16" waterline with valves and fittings, and 70 LF of 15" sewer with two new Polymer manholes. The replacement of existing concrete and asphalt surfaces due to the construction are included.

EXHIBIT D2: COST MODEL FORM

JANUARY 26, 2022

**CITY OF CHANDLER – CHANDLER HEIGHTS ROAD UTILITY RELOCATIONS
GMP PROPOSAL FOR CHAPARRAL WAY: DOBSON TO LAKE DRIVE
PROJECT NO: WW2111.401**

Page 1 of 2

EXHIBIT D2	
CM@RISK GMP SUMMARY	
Date:	26-Jan-22
Project Name:	Chandler Heights Road Utility Relocations
Project Location:	Chaparral Way - Dobson to Lake
City of Chandler Project No.:	WW2111.401
	Amount
A. Cost of Work	
A1 Cost of Work (self-performed, subcontractors, suppliers no mark-up)	\$777,529.46
A2 Cost of Work (subcontractors, suppliers, materialmen)	
TOTAL COST OF WORK:	\$777,529.46
B. General Conditions	\$128,715.68
SUBTOTAL 1 (Cost of Work) (A + B):	\$906,245.14
C. CM@Risk's Fee	\$81,562.06
SUBTOTAL 2 (A + B + C):	\$987,807.20
D. Bonds and Insurance (on Subtotal 1)	
D1 Bonds (Payment and Performance)	\$7,249.96
D2 Insurance	\$17,671.78
TOTAL BONDS & INSURANCE:	\$24,921.74
SUBTOTAL 3 (SUBTOTAL 2 + BONDS & INS):	\$1,012,728.94
E. Sales Tax	
E1 Sales Tax	\$51,345.36
E2 Tax Exempt Material Adjustment	-\$4,393.36
TOTAL SALES TAX:	\$46,952.00
F. Approved Allowances	
F1 Allowances	\$25,784.49
F2 Owner Allowance	\$286,113.85
TOTAL ALLOWANCES:	\$311,898.34

EXHIBIT D2: COST MODEL FORM

JANUARY 26, 2022

CITY OF CHANDLER – CHANDLER HEIGHTS ROAD UTILITY RELOCATIONS

GMP PROPOSAL FOR CHAPARRAL WAY: DOBSON TO LAKE DRIVE

PROJECT NO: WW2111.401

Page 2 of 2

G. Contingencies							
G1	Construction Contingency						\$0.00
G2							\$0.00
						TOTAL CONTINGENCIES:	\$0.00
						TOTAL GMP PROPOSAL:	\$1,371,579.28
<u>Establishment of Values:</u>							
a. Cost of Work (A) and Allowances (F) to be submitted with GMP Proposal.							
b. General Conditions Cost (B) to be established in Baseline Cost Model.							
c. CM@Risk Fee as set forth in Section 3.7.3 of this Contract							

EXHIBIT D3: SCHEDULE OF VALUES

JANUARY 26, 2022

CITY OF CHANDLER – CHANDLER HEIGHTS ROAD UTILITY RELOCATIONS

GMP PROPOSAL FOR CHAPARRAL WAY: DOBSON TO LAKE DRIVE

PROJECT NO: WW2111.401

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CITY OF CHANDLER CHANDLER HEIGHTS ROAD UTILITY RELOCATIONS CMAR PROJECT
PROJECT NO.: WW2111.401

1/26/22

90% GMP FOR CHAPARRAL WAY: DOBSON TO LAKE
ACHEN-GARDNER CONSTRUCTION PROJECT NO. 3938101

EXHIBIT D3 - SCHEDULE OF VALUES 90% GMP

ACHEN-GARDNER CONSTRUCTION, LLC
550 S. 79th STREET
CHANDLER, AZ 85226



DESIGN DOCUMENT STAGE: 90% WILSON

PAY ITEM	DESCRIPTION	UM	QUANTITY	UNIT PRICE	TOTAL
1	MOBILIZATION/DEMOBILIZATION	LS	1.000	\$57,936.86	\$ 57,936.86
2	SURVEY	LS	1.000	\$4,000.00	\$ 4,000.00
3	INSTALL 8" DIP CL 350 WATERLINE & FITTINGS	LF	70.000	\$691.59	\$ 48,411.30
4	INSTALL 24" STEEL CASING (8" DIP)	LF	35.000	\$671.45	\$ 23,500.75
5	INSTALL 8" GATE VALVE	EA	2.000	\$3,240.96	\$ 6,481.92
6	INSTALL 12" DIP CL 350 WATERLINE & FITTINGS	LF	70.000	\$752.33	\$ 52,663.10
7	INSTALL 36" STEEL CASING (12" DIP)	LF	35.000	\$923.62	\$ 32,326.70
8	INSTALL 12" GATE VALVE	EA	2.000	\$4,383.11	\$ 8,766.22
9	INSTALL 16" DIP CL 350 WATERLINE & FITTINGS	LF	260.000	\$538.53	\$ 140,017.80
10	INSTALL 36" STEEL CASING (16" DIP)	LF	35.000	\$751.62	\$ 26,306.70
11	INSTALL 16" GATE VALVE	EA	2.000	\$8,189.28	\$ 16,378.56
12	INSTALL 1" COMBO AIR VAC VALVE	EA	2.000	\$8,037.58	\$ 16,075.16
13	REMOVE 15" PVC SEWER LINE	LF	70.000	\$181.56	\$ 12,709.20
14	REMOVE EXISTING MANHOLE	EA	1.000	\$8,719.23	\$ 8,719.23
15	INSTALL 15" VCP SEWER LINE	LF	70.000	\$535.34	\$ 37,473.80
16	INSTALL 60" POLYMER MANHOLE	EA	2.000	\$28,934.40	\$ 57,868.80
17	ASPHALT REMOVAL & REPLACEMENT	SY	310.000	\$210.26	\$ 65,180.60
18	SIDEWALK REMOVAL & REPLACEMENT	SF	660.000	\$14.95	\$ 9,867.00
19	CURB & GUTTER REMOVAL & REPLACEMENT	LF	100.000	\$43.56	\$ 4,356.00
20	VALLEY GUTTER REMOVAL & REPLACEMENT	LF	20.000	\$181.00	\$ 3,620.00
21	LANDSCAPING RESTORATION	LS	1.000	\$7,100.00	\$ 7,100.00
22	TRAFFIC CONTROL	LS	1.000	\$69,899.00	\$ 69,899.00
23	SWPPP	LS	1.000	\$6,157.50	\$ 6,157.50
24	BYPASS PUMPING	LS	1.000	\$61,713.26	\$ 61,713.26
	SUBTOTAL - DIRECT COST OF THE WORK (A1)				\$ 777,529.46

25	GENERAL CONDITIONS (B)	MO	2.0	\$ 64,357.84	\$ 128,715.68
RUNNING TOTAL NO. 1 - DIRECT COST OF THE WORK INCLUDING GCs					\$ 906,245.14
10100	OVERHEAD AND FEE (7.5% OH, 1.5% FEE)		9.00%		\$ 81,562.06
SUBTOTAL - OVERHEAD AND FEE					\$ 81,562.06
RUNNING TOTAL NO. 2 - DIRECT COST OF THE WORK + OH & FEE					\$ 987,807.20
10200	INSURANCE (INCL. BUILDERS RISK & POLLUTION LIABILITY) (D2)		1.95%	(Calc on RT #1)	\$ 17,671.78
10300	BONDS (PAYMENT & PERFORMANCE) (D1)		0.80%	(Calc on RT #1)	\$ 7,249.96
SUBTOTAL - INSURANCE AND BONDS					\$ 24,921.74
RUNNING TOTAL NO. 3 - DIRECT COST OF THE WORK + OH & FEE + INS & BOND					\$ 1,012,728.94
10400	SALES TAXES (5.07% or 7.8% of 65% of Running Total No. 3 (E1)		5.070%		\$ 51,345.36
10450	ESTIMATED TAX EXEMPT MATERIAL ADJUSTMENT (ALLOWANCE)(E2)		5.070%	\$ 86,654.00	\$ (4,393.36)
SUBTOTAL - SALES TAXES					\$ 46,952.00
RUNNING TOTAL NO. 4 - DIRECT COST OF THE WORK, + OH & FEE + INS & BOND + SALES TAXES)					\$ 1,059,680.94
26	ALLOWANCES (F1)	AL	1.0	\$ 25,784.49	\$ 25,784.49
10700	OWNER'S ALLOWANCE(AMOUNT INLC. MARK-UPS (F2)		27.0%		\$ 286,113.85
SUBTOTAL - ALLOWANCES AND CONTINGENCY (INCL MUs)					\$ 311,898.34
TOTAL GMP PROPOSAL					\$ 1,371,579.28

CITY OF CHANDLER CHANDLER HEIGHTS ROAD UTILITY RELOCATIONS CMAR PROJECT					1/26/22	
PROJECT NO.: WW2111.401					ACHEN GARDNER	
90% GMP FOR CHAPARRAL WAY: DOBSON TO LAKE						
ACHEN-GARDNER CONSTRUCTION PROJECT NO. 3938101						
PAY ITEM 25 - GENERAL CONDITIONS DETAIL						
ACHEN-GARDNER CONSTRUCTION, LLC						
550 S. 79th STREET						
CHANDLER, AZ 85226					DESIGN DOCUMENT STAGE: 90%	
					WILSON	
PAY ITEM	DESCRIPTION	QUANTITY	UM	UNIT PRICE	TOTAL	
25.1	PROJECT SUPERINTENDENT	352.00	HR	109.41	38,511.40	
25.2	SPECIALTY SUPERINTENDENT	176.00	HR	104.01	18,306.00	
25.3	PROJECT MANAGER	176.00	HR	109.41	19,255.70	
25.4	PROJECT ENGINEER	352.00	HR	93.81	33,020.58	
25.5	ICE AND WATER	2.00	MO	220.00	440.00	
25.6	BUY CONSTRUCTION WATER	2.00	MO	1,750.00	3,500.00	
25.7	TEMPORARY FACILITIES	2.00	MO	7,841.00	15,682.00	
	GENERAL CONDITIONS (DIRECT COSTS)				128,715.68	
25	MONTHLY GENERAL CONDITIONS		2	MO	64,357.84	
NOTE	See Main Schedule of Values Pay Item 25 for GCs					

CITY OF CHANDLER CHANDLER HEIGHTS ROAD UTILITY RELOCATIONS CMAR PROJECT
PROJECT NO.: WW2111.401

1/26/22

90% GMP FOR CHAPARRAL WAY: DOBSON TO LAKE
ACHEN-GARDNER CONSTRUCTION PROJECT NO. 3938101

PAY ITEM 26 - SCHEDULE OF ALLOWANCES

ACHEN-GARDNER CONSTRUCTION, LLC
550 S. 79th STREET
CHANDLER, AZ 85226



DESIGN DOCUMENT STAGE: 90% WILSON

PAY ITEM	DESCRIPTION	UM	QUANTITY	UNIT PRICE	TOTAL
26.1	OFF-DUTY OFFICER (ALLOWANCE)	LS	1.0	\$ 14,960.00	\$ 14,960.00
26.2	PUBLIC RELATIONS (ALLOWANCE)	MO	2.0	\$ 3,500.00	\$ 7,000.00
	SUBTOTAL - DIRECT COST OF THE ALLOWANCES				\$ 21,960.00
10100	OVERHEAD AND FEE (7.5% OH, 1.5% FEE)		9.00%		\$ 1,976.40
	SUBTOTAL - OVERHEAD AND FEE @				\$ 1,976.40
	RUNNING TOTAL NO. 1 - DIRECT COST + OH & FEE				\$ 23,936.40
10200	INSURANCE (INCL. BUILDERS RISK & POLLUTION LIABILITY)		1.95%	(Calc on RT #1)	\$ 428.22
10300	BONDS (PAYMENT & PERFORMANCE)		0.80%	(Calc on RT #1)	\$ 175.68
	SUBTOTAL - INSURANCE AND BONDS				\$ 603.90
	RUNNING TOTAL NO. 2 - DIRECT COST + OH & FEE + INS & BOND				\$ 24,540.30
10400	SALES TAXES (5.07% or 7.8% of 65% of Running Total No. 3)		5.070%		\$ 1,244.19
10450	ESTIMATED TAX EXEMPT MATERIAL ADJUSTMENT (ALLOWANCE)				
	SUBTOTAL - SALES TAXES				\$ 1,244.19
	TOTAL ALLOWANCES (SEE MAIN SCHEDULE OF VALUES PAY ITEM 26)				\$ 25,784.49
NOTE	ALLOWANCES ARE ESTIMATES				

EXHIBIT D4: LIST OF GMP DOCUMENTS

JANUARY 26, 2022

**CITY OF CHANDLER – CHANDLER HEIGHTS ROAD UTILITY RELOCATIONS
GMP PROPOSAL FOR CHAPARRAL WAY: DOBSON TO LAKE DRIVE
PROJECT NO: WW2111.401**

- Wilson Engineers City of Chandler - Chandler Heights Road Utility Relocations, Chaparral Way: Dobson to Lake Drive 90% plan set (pages 1 to 10), Project No. WW2111.401 dated December 2021.
- Wilson Engineers Technical Specifications Submittal for City of Chandler – Chandler Heights Road Utility Relocations, Chaparral Way: Dobson to Lake Drive, City Project No. WW2111.401, dated December 2021 (Agency Review set, pages 1 to 123).
- Executed (12-16-21) Pre-construction Services Contract with Achen-Gardner Construction, LLC and the City of Chandler for the Chandler Heights Road Utility Relocations CMAR Project; City of Chandler Project No. WW2111.251.

EXHIBIT D5: CLARIFICATIONS AND ASSUMPTIONS

JANUARY 26, 2022

**CITY OF CHANDLER – CHANDLER HEIGHTS ROAD UTILITY RELOCATIONS
GMP PROPOSAL FOR CHAPARRAL WAY: DOBSON TO LAKE DRIVE
PROJECT NO: WW2111.401**

NOTE: This GMP is based on the following clarifications and assumptions.

1. *Fee Exclusions:* GMP excludes all costs associated with City and/or ADOT permit and plan review fees, Quality Assurance (QA) (i.e. City/ADOT inspection and testing) costs, impact fees, and utility company fees, water meters/meter installations except for construction water, and/or any other fees not specifically identified herein.
2. *Unit Price Contract Administration:* This GMP will be administered as a Measured Quantity/Unit Price, Guaranteed Not-to-Exceed Contract. The Schedules of Values (Re: Exhibit D3) is defined by the individual work/pay items plus fee structure, and markups (re: Exhibit D3, Items 10100 through 10450). Final contract price/payout will be based on field measured, final completed quantities at the approved unit prices, approved allowance and/or contingency utilization, and approved change orders. It is understood that these City approved prices including mark-ups are the “Cost of the Work”. The mark-up structure on the Schedule of Values (Exhibit D3) will apply to Change Orders and/or Extra Work, allowances, and contingencies. The mark-ups for MAG section 109.5 do not apply for this contract. Pay Item under-runs and/or unused items shall fall to Owner’s Allowance for the duration of the project. Quantity over-runs shall be paid at the unit price established in the Schedule of Values for the pay item and shall be paid from Owner’s Allowance or Change Orders.
3. *Aerial Construction Photography:* Achen-Gardner shall provide a pre-construction video/photographs and progress photographs/videos periodically. Aerial videos shall only be provided if FAA and local approval is provided to fly a drone camera. Drone videos if allowed, shall be standard drone footage.
4. *Mobilization/Demobilization* – includes the following monthly items as defined in the Specifications: the field office fencing, work area fencing for three work sites, field offices, temporary utilities, material testing, and toilets for the two-month project duration. Therefore, the Mobilization/Demobilization Pay Item shall be invoiced monthly based on the two (2) month project duration.
5. *Utility Relocations / Unknown Buried Conflicts:* This GMP excludes all costs associated with removing, replacing and/or relocating any existing buried or overhead dry utilities and/or unknown buried conflicts.
6. *Final, For-construction Plans and Technical Provisions:* Funds required for revisions made between the 90% and final design documents shall come from Owners Allowance.

FEE SCHEDULE ITEM CLARIFICATIONS

ITEM NO.	DESCRIPTION	CLARIFICATION / ASSUMPTION
DIRECT COSTS		
1	Mobilization	• Mobilization & Demobilization • Pre-Construction Video & Progress Photos • Project Clean-Up • Known utility potholing • Small Tools & Consumables • Dust Permit • Project Sign • Quality Control based on MAG testing requirements for frequency and type. • Measured and paid on lump sum basis
2	Survey	• Survey, Staking, Registered Land Surveyor Certified As-Builts • Construction Redlines • GIS point collection and submission per City's GIS Mapping specifications • Registered Land Surveyor Certification of as-builts • Measured and paid on lump sum basis
3-12	Potable Water	• Includes all installation work associated; dig/lay/bedding/shading/backfill per MAG specs and as noted on drawings (ABC full depth where required), spoil/debris haul off, slurry backfill to full depth in transverse trenches, connections to existing waterlines/service connections (tees), installation of valves, and testing (bac tee & chlorination) • Includes 8", 12" and 16" waterline as noted on the plans. • Includes 24" & 36" steel casings where laterals are noted on plans; all lateral crossings to be placed under SRP duct banks. Each casing installation is based on all 35' at one time. • Work excludes cathodic protection for all DIP related components • Material pricing good for 30 days • Measured and paid for as noted on Exhibit D3 unit rates summary
13-16	Sewer	• Includes all installation work associated; dig/lay/bedding/shading/backfill, spoil/debris haul off, slurry backfill to full depth in transverse trenches, manhole connections, manhole installation/rehab as noted on plans, applicable sewer encasements, testing, and CCTV. • Includes 15" sewer as noted on the plans • Includes new polymer manholes 60" diameter as noted on the plans • Includes removal of existing manholes as noted on plans • Material pricing good for 30 days • Measured and paid for as noted on Exhibit D3 unit rates summary
17	Asphalt Removal & Replacement	• Includes all work associated with the construction including saw cutting, spoil/debris haul off, subgrade preparation, and installation of ABC, AC, tack coat, and slurry seal • Asphalt thickness to be replaced at 5" Asphalt Concrete (AC) on 12" ABC on Dobson and 3" Asphalt Concrete on 6" ABC as noted on the plans • Includes thermoplastic striping • Material pricing good for 30 days • Measured and paid for by the Square Yard
18-20	Concrete	• Includes all work associated; concrete removal, saw cutting, haul off, disposal, subgrade preparation, and replacement of concrete with like kind to match existing color and textured surfaces. Curb & Gutter replacements per mag 220, Sidewalk replacements per MAG 230 and valley gutter/apron replacements per MAG 240 • Material pricing good for 30 days • Measured and paid for as noted on Exhibit D3 unit rates summary

ITEM NO.	DESCRIPTION	CLARIFICATION / ASSUMPTION
21	Landscaping	- Includes all work associated including granite removal, spoil/debris haul off, subgrade preparation, replacement of decomposed granite and restoration of existing irrigation system - This price includes plant establishment & maintenance in accordance with City standards for period of 3 months - Measured and paid for as noted on Exhibit D3 unit rates summary
22	Traffic Control	- Traffic Control assumed to leave access of one lane in each direction except for installations of casings. Excludes any use of jersey barriers - Message Boards - Variable Message Boards will set up 2 weeks prior to construction and then removed after 2 weeks after the start of construction. Includes 4 variable message boards - Traffic Control Plans - Includes preparation, submission, and updates of Traffic Control Plans (TCP) - Setup & Takedown - Includes installation, maintenance, and removal of barricades and signage in accordance with approved TCP - Includes daily maintenance of barricades in accordance with approved TCP (assumes 6 hours per day) - Barricades and no plating. - Measured and paid on lump sum basis
23	SWPPP – Design, Implementation, & Maintenance	- Includes SWPPP plan, implementation of plan, inspections, and removal at the completion of the project. - Sweeping - Track Out Pad - Measured and paid on lump sum basis
24	Bypass Pumping	Includes installation and 2 week operation of bypass for 15” sewer line. Assumes that bypass line will need to be buried at Intel entrance and 2 locations on Dobson Rd. Includes asphalt removal and replacement at these locations.
25	General Conditions	- Includes cost of Project Management – Project Supt., Specialty Supt. Project Manager, Project Engineer and vehicles. - Ice/drinking water and construction water. - Temporary Facilities (two months) – trailer, fencing, electrical service, yard rental, toilets, and trailer furnishings. - Measured and paid on a weekly basis for Project Management and monthly for ice and water.
ALLOWANCES		
26.1	Off Duty Police Officer w/ vehicle (Allowance)	- Chandler Off-Duty Police Office and Vehicle - Hourly rate may be adjusted to match actual costs incurred (<i>City rates could be subject to change during the duration of the project</i>) - Measured and paid on an hourly basis
26.2	Public Relations (Allowance)	Public outreach including business/residential notification, job walks and door hangers.
10700	Owner’s Allowance	- For City requested upgrades and changes per Construction Contract Article 15.4.2 Owner’s Contingency - Measured and paid for on a cost-plus basis unless unit prices can be utilized where applicable
CMAR FEE		
10100	CMAR Construction Fee	Measured and paid on calculation of 9.0% of subtotal direct costs, contingencies, allowances, and job overhead
BONDS AND INSURANCE		
10200	Insurance	Measured and paid on calculation of 1.95% of subtotal for direct costs.
10300	Performance and Payment	Measured and paid on calculation of .8% of subtotal for direct costs.

ITEM NO.	DESCRIPTION	CLARIFICATION / ASSUMPTION
	Bonds	
SALES TAX		
10400	Gross Receipts Tax	• Calculated based on 65% of 7.8% City of Chandler Sales Tax rate • Calculation may be adjusted to match actual sales tax incurred (City rates could be subject to change during the duration of the project) • Measured and paid on calculation of 5.07% of subtotal direct costs, contingencies, allowances, job overhead, CMAR fee, bonds and insurance
10450	Tax Exempt Material Adjustment	• Tax Exempt material adjustment for water line materials per Title 42 of the Arizona Revised Statutes (also reference AZDOR code 535 Pipes or Valves, 4" diameter or large used to transport oil, natural/artificial gas, water, coal slurry) • Measured and paid on lump sum basis

*** Allowance options with values are referenced above; allowance items can be reallocated to the base bid as requested.*

EXHIBIT D6: SUBCONTRACTOR AND SUPPLIER SOLICITATION DOCUMENTATION, AWARD RECOMMENDATIONS, AND QUOTES

JANUARY 26, 2022
CITY OF CHANDLER – CHANDLER HEIGHTS ROAD UTILITY RELOCATIONS
GMP PROPOSAL FOR CHAPARRAL WAY: DOBSON TO LAKE DRIVE
PROJECT NO: WW2111.401

See following subcontractor and supplier award recommendations spreadsheet with quotes.

- 1) This Proposal is based on recommended awarded subcontractor and supplier resource values and related proposals/quote clarifications, inclusions, exclusions, escalation clauses, and qualifications. **These proposals/quotes follow this summary sheet.**
- 2) This summary reflects competitive bids with a specific scope/Schedule of Values provided to all subcontractors and suppliers at the time of solicitation. Actual quantities and extended totals reflected in the SOV may be different based on final quantity and cost adjustments due to ongoing revisions.

EXHIBIT D8: SUBCONTRACTOR SOLICITATION SUMMARY AND RECOMMENDATIONS Januray 26, 2022					
Scope of Work/Material	Subcontractor/Supplier Name	Bid/No Bid	Bid Amount	Selection Notes	Recommendations
ABC	Cemex	B	5,491.00	Lowest Qualified Bidder	Recommended
ABC	Buesing	B	5,945.00		
ABC	Vulcan	B	8,058.00		
Asphalt	Vulcan	B	9,769.00	Lowest Qualified Bidder	Recommended
Asphalt	Fisher Sand & Rock	NB	0.00		
Bypass	Rain for Rent	B	36,248.00	Lowest Qualified Bidder	Recommended
Bypass	Capital Pump	B	36,340.00		
Steel Casing	Trinity	B	25,584.00	Lowest Qualified Bidder	Recommended
Steel Casing	Dana Kepner	B	29,736.00		
Pipe Package	Core & Main	B	93,001.00	Lowest Qualified Bidder	Recommended
Pipe Package	Dana Kepner	B	100,580.00		
Pipe Package	Ferguson	NB	0.00		
Polymer Manhole Material	Armorock	B	18,034.00	Specialized	Recommended
Construct Manhole Base	Preach	B	6,650.00	Specialized	Recommended
Quality Control	Quality Testing	B	10,732.00	Lowest Qualified Bidder	Recommended
Quality Control	Ninyo Moore	B	22,489.00		
Quality Control	Alt AZ	NB	0.00		
Redimix	AZ Materials	B	82,213.00	Lowest Qualified Bidder	Recommended
Redimix	Desert Redimix	B	83,200.00		
Redimix	Calportland	B	92,854.00		
Survey	Survey Innovation Group-Rick	B	4,000.00	Lowest Qualified Bidder	Recommended
Survey	Bench Mark	NB	0.00		
Survey	Atwell	NB	0.00		
Traffic Control	Trafficade	B	69,899.00	Qualification Based - performance	Recommended

Quote Analysis Report

Achen-Gardner Construction, LLC 71 Mark McLafferty
39381001 CHANDLER HEIGHTS RD DOBSON/CHAPPARAL

Page 1 of 1
1/13/2022 9:29 AM

AGGREGATES AGGREGATES

Vendor Code							CEMEXINC	BUESINGCORP	VULCANMATERI
Vendor Name							Cemex Inc	Buesing Corp	Vulcan Materials
Vendor Phone							7606377179	6022333339	6025288961
Bid	Activity	Resource	Desc	Quan	Unit	Plug Price	Unit Price	Unit Price	Unit Price
		2AGABC	ABC MAG	395.00	TN	15.0000	13.9000	15.0500	20.4000
Quoted Amount							5,491	5,945	8,058
Plugged Amount							0	0	0
Bond							0	0	0
Mobilization							0	0	0
% Adjustment							0	0	0
\$ Adjustment							0	0	0
Total Adjustment							0	0	0
Totals						5,925	5,491	5,945	8,058
Diff From Plug							-435	20	2,133
Total Minority							0	0	0

A 'P' beside a price indicates a plug price.
Green background indicates that the vendor is selected.

GENERAL INFORMATION

Account:	ACHEN-GARDNER CONSTRUCTION LLC	Project:	D - CHANDLER HEIGHTS RD UTILITY RELACATIONS
Account number:	3033003	Project Address:	4758 South Dobson Road Chandler, Arizona 85248
Contact:	Mark McLafferty		
E-mail:	mmclafferty@achen.com		
Phone:	480-940-1300	Doc. Expiration Date:	1/31/2022
		Price Valid from:	12/30/2021
		Price Valid to:	3/31/2022
Customer Service:	602-416-2658		
Sales Office Address:	5555 E. Van Buren Street, Suite 155, Phoenix, AZ 85008		

MATERIAL PRICING:

Material Number	Description	Plant	Quantity	UoM	Delivered Price	Truck Type	Notes
1307799	SPEC BASE COARSE	2108-8985-Agg Trading - Sacaton (SO-3233)	400.00	TON	\$13.50	16 WHEELER	DELIVERED IN SUPERS

ADDITIONAL CLAUSES

Category	Item	Value	UoM	Comments
Pricing Escalation	The prices are subject to an escalation of	x.xx	USD/ton	Effective , and each months thereafter
Surcharges and Fees	Variable Fuel surcharge	xx.xx	USD/Load	
	Environmental compliance fee	\$5.00	USD/Load	Charged on all loads
	Full freight recovery	xx.xx	USD/ton	Based on full freight for a load of 22 Tons
	Plant Opening fee for non business hours on weekdays, weekends	\$1,000.00	USD per Each	Subject to notification
	Saturday haul premium	Bid upon request	USD/ton	Aggregates account manager for pricing
	Standby charge	xx.xx	USD/min	Subject to notification
	Re-handling fee	\$40.00	USD/Load	Unsuitable material dumped at landfill, to be reloaded

Pricing Conditions

All Sales are subject to CEMEX Standard terms and conditions. Pricing quoted is per short ton and does not include sales tax. Applicable Sales Tax will apply unless Sales Tax exemption certificate is on file at CEMEX prior to pick up or delivery.

Delivered Pricing: Pricing is based on delivery during regular aggregate plant hours.

FOB Pricing: Material prices are FOB CEMEX facility at the designated location loaded onto buyer's trucks. Ownership of materials transfers from CEMEX to customer at gate.

Payment terms

Payment Terms are standard as follows: Net 10th Prox. (10th of the month following delivery or pick up)

Delayed portion of payment will attract a Finance charge of the lessor of 1.5% per month, 18% per annum or maximum permitted under applicable laws

Material Availability

All Materials are subject to availability by plant inventory, production schedules, shipping schedules, plant failure and / or equipment breakdown. CEMEX is not liable for lack of material, equipment, drivers, disruptions in transportation, and any other shortage.

Delivery Availability

All shipments are subject to truck availability.

Product Performance

All material is per engineer approval and is considered acceptable when tested and sampled per acceptable sampling standards at our plant.

Respectfully,

CEMEX Con Mat South,LLC

Donald Peters

Phone: 0

Email: donald.peters@cemex.com

Accepted by:

ACHEN-GARDNER CONSTRUCTION LLC



BUESING CORP.
Highway / Heavy Construction
AZ Lic. # A-ROC200645

"Simply the Best"

Date: 1/3/2022

To: Achen Gardner Construction
Attn: Mark McLafferty
Phone: -
Fax:

Bid Date: January 3, 2022
Project No:

Project: Chandler Heights Road Utilities
Location: Dobson Road & Chaparral Way
City: Chandler, Az

We are pleased to submit the following cost estimate:

Pricing Good Through 08/31/2022 (See Standard Provisions)

QUANTITY	UNIT	DESCRIPTION	PRICE / UNIT	TOTAL
385	TON	NON LIMED MAG ABC DELIVERED IN SUPERS	\$ 15.05	\$ 5,794.25
			\$	\$

Standard Provisions

SUFFICIENT QUANTITIES PER DELIVERY TO INSURE 4 HOUR MINIMUM PER TRUCK

Prices do not include weekend, holiday, off hour, or overtime shipments. Additional charges may apply if any of these conditions occur. Unless otherwise stated, dirt haul prices exclude permits, loading, dust control & sweeping.

ALL PRICES ASSUME THAT BUESING CORP'S STANDARD INSURANCE IS ACCEPTABLE

Payment due on or before the 25th day of the month for work completed or materials delivered in the month prior. No retention withheld.

**ALL PRICING WILL BE HONORED THROUGH THE DATE SPECIFIED ABOVE
PROVIDED THAT WE RECEIVE A P.O., P.A., OR LETTER OF INTENT WITHIN 30 DAYS. If
JOB AWARD IS LONGER THAN 30 DAYS PLEASE NOTIFY US WITHIN THE 30 DAYS,
AND WE WILL NEGOTIATE WITH MATERIAL SUPPLIERS TO ALLOW THE PRICE TO BE HONORED**

Special Provisions

AGGREGATE PRICING INCLUDES AN ALLOWANCE OF 7 MINUTES FOR SUPERS TO GET FROM PROJECT ENTRANCE TO THE DUMPSITE, UNLOADED & BACK TO THE PROJECT ENTRANCE.

BUESING WILL MAKE EVERY REASONABLE EFFORT TO HONOR THIS QUOTE & MEET CUSTOMER PRODUCTION EXPECTATIONS. HOWEVER, MATERIAL & TRUCK AVAILABILITY ARE BEYOND OUR CONTROL. ACCEPTANCE OF THIS QUOTE SHALL NOT SERVE AS A GUARANTEE THAT MATERIALS AND/OR TRUCKS WILL BE AVAILABLE WHEN REQUESTED.

If These Terms And Conditions Are Acceptable Please Sign This Form And Fax It Back To The Number Below

ACCEPTANCE OF PROPOSAL

The above prices, specifications and conditions are satisfactory and are hereby accepted. You are authorized to do the work as specified, provided there is an understanding between parties that the prime and / or subcontractor must receive an official award. If an official award, contract or subcontract is not consummated this proposal shall become null and void.

Company Name: Achen Gardner Construction

Authorized Person's Signature: _____

Date: _____

Thank you

and GOOD LUCK !!!

Respectfully Submitted: Cecil Wallace



3045 S 7th Street
(602) 845-3133

Phoenix, Arizona 85040
Cell: (602) 799-5702

Quotation

Attn: Mark McLafferty

Quote Name: CHANDLER HEIGHTS RD UTILITY RELOCATI
Quote #: 507376

ACHEN-GARDNER CONSTRUCTION LLC
550 SOUTH 79TH STREET
CHANDLER, AZ 85226
Acct#: 213235

N DOBSON RD & E CHAPPARAL RD / SCOTT
AZ057705
SCOTTSDALE, AZ 85256

Date:	Wednesday, December 29, 2021	Sales Rep :	Brian Kochert
Quote Created:	Wednesday, December 29, 2021		2526 E University Drive
Effective From:	Wednesday, December 29, 2021	Phone:	PHOENIX, AZ 85034
Quote Expiration:	Friday, January 28, 2022	Fax :	480-536-0576
Price Expiration:	Thursday, June 30, 2022	Email:	kochertb@vmcmail.com

Special Instructions:

Material quoted based on no specs reviewed. If any changes or different material is required, material is subject to price adjustment

Prices quoted are for delivery during normal business hours - Monday thru Friday 6AM to 5PM. Plant Premium for Monday - Friday night production (per 8 hour shifts) will be charged \$2,000.00 per shift. Plant Premium for Friday night into Saturday morning production (per 8 hour shifts) will be charged \$2,000.00 per shift. Plant Premium for Saturday production (per 8 hour shifts) will be charged \$1,000.00 per shift. Plant Premium for Sunday production (per 8 hour shifts) will be charged \$2,000.00 per shift. Any overtime will be charged at \$350.00 per hour. Truck stand by will be charged on site after the first 20 minutes at the rate of \$93 per hour or \$1.55 per minute. All night work will be subject to an 8 hour minimum hourly haul charge. All weekend work will be subject to a 4 hour minimum hourly haul charge.

Plant	Product Name	Product #	Qty	U/M	Delivered Price Per Unit
LITCHFIELD RESALE	MAG SPEC ABC P105	1627P105	385	Tons	\$20.40
		Truck Type	STD FRT RATE		

Prices quoted above do not include any state or local sales and use tax, if any applies for this project.

Prices quoted are for shipments during normal daytime working hours unless other shipping hours are mutually agreed upon in writing by both parties.

Prices are FOB your jobsite as stated above. Terms are Net 15 prox. Please note standard terms and conditions apply. (Subject to credit approval)

This quote is limited to acceptance within 30 days from the date of this quotation after which time quotation is subject to review/revision. Please contact Sales prior to placing the order.

Accepted by: _____

Date: _____

Sales Representative: _____

Date: _____

We appreciate the opportunity to provide you this quote and trust that Vulcan will have the pleasure of serving your needs for this and future projects.

GENERAL TERMS AND CONDITIONS

PRICES AND TERMS

Prices are based on the terms and conditions set forth on page 1 of this Quotation, of which these General Terms and Conditions form a part, the terms and conditions stated in Customer's Application for Business Credit, and, if applicable, any terms and conditions relating to the delivery or shipment of materials by truck, barge, vessel, rail or other means which are provided by Vulcan to Customer in addition to this Quotation (each, a "Vulcan Sales Document", and collectively, the "Vulcan Sales Documents"). Prices are available only to the customer specifically named therein, and are only for the quantities mentioned in such Quotation or Sales Order plus or minus 10% of such quantities. A charge of 1.5% per month, (18% annum), will accrue on a daily basis from the date of invoice and will continue to accrue on a daily basis on any unpaid balance, both before and after judgment, until the date the balance is paid in full, or at the maximum amount permitted by law in which the sale occurred, whichever is less. **However, the assessment of a finance charge on invoices paid in full by the payment due date will be waived.** Quotation is offered for furnishing the total aggregate requirements for the project only. Customer's contract with Vulcan regarding the sale by Vulcan to Customer of the materials listed in this Quotation is subject to the terms and conditions set forth in the Vulcan Sales Documents. Prices reflect Customer's acceptance of materials at the quoted plant based upon gradation analysis performed and reported by Vulcan's certified plant quality control personnel. Any penalties that result from in place sampling shall be the full responsibility of Customer.

THE TERMS AND CONDITIONS OF THE VULCAN SALES DOCUMENTS GOVERN THE RIGHTS AND OBLIGATIONS OF THE PARTIES

If Customer has issued a purchase order for the materials quoted by Vulcan in this Quotation, this Quotation is not an acceptance of said purchase order, or any of its terms or conditions, which are hereby rejected. Any sale by Vulcan to Customer of the materials listed in this Quotation shall be subject to the terms and conditions set forth in the Vulcan Sales Documents, and Customer's receipt or acceptance of said materials shall constitute acceptance of the offer that this Quotation constitutes. Any terms or conditions of a subsequent purchase order issued by Customer that are inconsistent with the terms and conditions of the Vulcan Sales Documents shall be null and void.

SHIPMENT AND DELIVERY

Unless a "delivered" price is quoted by Vulcan in the Vulcan Sales Documents, all prices are F.O.B. point of shipment from the locations designated. All taxes applicable to the sale or delivery of materials that are not paid directly by Customer will be added to the sales price, invoiced to and paid by Customer, unless Customer provides Vulcan with satisfactory evidence of exemption from same. Shipment will be in accordance with Customer's reasonable instructions or, if none, then by whatever means Vulcan shall deem practicable. The quantities of material delivered to Customer shall be conclusively presumed to be the quantities shown on the tickets produced from a certified weigh scale at Vulcan's quarry or sales yard.

CREDIT AND DEFAULT

Vulcan shall have no obligation to ship or deliver except upon its determination prior to each shipment or delivery that Customer is worthy of the credit to be extended and is not in default upon any obligation to Vulcan. Upon default, Customer agrees to pay all of Vulcan's collection expenses, including attorneys' fees.

INSURANCE

A Memorandum of Insurance containing current information regarding Vulcan's insurance program is available at
<https://marshdigital.marsh.com/marshconnect/viewMOI.action?clientId=632529479>.

EXCULPATORY PROVISIONS

Vulcan shall have no liability for delay or failure to make shipments, or delivery, as a result of strikes, labor problems, severe weather conditions, casualty, mechanical breakdown or other conditions beyond Vulcan's reasonable control. In no event shall Vulcan be liable for any incidental or consequential damages. Vulcan's liability and Customer's exclusive remedy for any cause of action arising out of the provision of material quoted herein shall be the replacement of, or payment of the purchase price for, the materials which are the subject of this Quotation.

CHANGE OF TERMS

Vulcan may change the price and/or quantity upon 30 days' notice to Customer. Vulcan shall also have right to change, modify or amend any other terms and conditions upon written notice of such change to customer. The effect of the change shall be as stated in the written notice and accepted by Customer upon placing of orders with seller following receipt of such notice.

APPLICABLE LAW

All orders are subject to acceptance by Vulcan at the headquarters of its Mountain West Division in Phoenix, Arizona, and the laws of the state in which the materials was shipped from shall apply to the sale of all materials subject hereto. In the event material is imported into the U.S., the law in the state in which the material was sold to the customer will prevail. All disputes regarding finance charges shall be governed by Alabama law.

LIMITED WARRANTY AND WARRANTY DISCLAIMER

Vulcan warrants for a period of one (1) year from date of delivery only that the material sold hereunder substantially complies with Vulcan's specifications for said material or the specifications set forth in Vulcan's quotation. **VULCAN HEREBY EXCLUDES ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR ANY PURPOSE, AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, OF THE MATERIAL SOLD HEREUNDER, OTHER THAN THE EXPRESS WARRANTY STATED ABOVE.** In addition, except to the extent otherwise set forth in the specifications described above, Vulcan makes no warranty whatsoever with respect to specific gravity, absorption, whether the material is innocuous, non-deleterious, or non-reactive, or whether the material is in conformance with any plans, other specifications, regulations, ordinances, statutes, or other standards applicable to Customer's job or to said material as used by Customer. **VULCAN SHALL IN NO EVENT BE RESPONSIBLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGE CAUSED BY NON-COMPLIANCE OF THE MATERIAL WITH SPECIFICATIONS, OR FOR ANY DEFECTS IN THE MATERIAL SOLD HEREUNDER.**

ASPHALT ASPHALT

Vendor Code							FISHERSANDAN	VULCANMATERI
Vendor Name							Fisher Sand and	Vulcan Material
Vendor Phone							4807301033	6025288961
Bid	Activity	Resource	Desc	Quan	Unit	Plug Price	Unit Price	Unit Price
		2AC12EVAC	REPLACE ASPHALT	98.00	TN	0.0000	0.0000	90.4500
		2AC12EVAC	BYPASS PUMPING	10.00	TN	0.0000	0.0000	90.4500
Quoted Amount							0	9,769
Plugged Amount							0	0
Bond							0	0
Mobilization							0	0
% Adjustment							0	0
\$ Adjustment							0	0
Total Adjustment							0	0
Totals						0	0	9,769
Diff From Plug							0	9,769
Total Minority							0	0

A 'P' beside a price indicates a plug price.

Green background indicates that the vendor is selected.

Quotation

Attn: Mark McLafferty

Quote Name: CHANDLER HEIGHTS RD UTILITY RELOCATI
Quote #: 507376

ACHEN-GARDNER CONSTRUCTION LLC
550 SOUTH 79TH STREET
CHANDLER, AZ 85226
Acct#: 213235

N DOBSON RD & E CHAPPARAL RD / SCOTT
AZ057705
SCOTTSDALE, AZ 85256

Date:	Tuesday, January 4, 2022	Sales Rep :	Brian Kochert
Quote Created:	Wednesday, December 29, 2021		2526 E University Drive
Effective From:	Tuesday, January 4, 2022		PHOENIX, AZ 85034
Quote Expiration:	Thursday, February 3, 2022	Phone:	480-536-0576
Price Expiration:	Thursday, June 30, 2022	Fax :	
		Email:	kochertb@vmcmail.com

Special Instructions:

PMTR price is contingent on the plant already running a terminal blend mix.

This Hot-Mix Asphalt quote is based on a published average selling price from Poten & Partners for liquid binder of \$515/per ton. Any increase in price of \$25.00 or greater will be billed to the customer at \$1.50 per ton for every \$25.00 increase. In the above example, if the published rack rate for liquid binder hits \$540/ton during the lifecycle of the project, an increase of \$1.50/ton will be added to each invoice for that month. If the rack rate climbs to \$565/ton, a second \$1.50 Binder Surcharge will go into effect. If pricing drops back down to the initial published rate, we'll adjust the price back to the original quoted per ton price.

Material quoted based on no specs reviewed. If any changes or different material is required, material is subject to price adjustment

Prices quoted are for delivery during normal business hours - Monday thru Friday 6AM to 5PM. Plant Premium for Monday - Friday night production (per 8 hour shifts) will be charged \$2,000.00 per shift. Plant Premium for Friday night into Saturday morning production (per 8 hour shifts) will be charged \$2,000.00 per shift. Plant Premium for Saturday production (per 8 hour shifts) will be charged \$1,000.00 per shift. Plant Premium for Sunday production (per 8 hour shifts) will be charged \$2,000.00 per shift. Any overtime will be charged at \$350.00 per hour. Truck stand by will be charged on site after the first 20 minutes at the rate of \$93 per hour or \$1.55 per minute. All night work will be subject to an 8 hour minimum hourly haul charge. All weekend work will be subject to a 4 hour minimum hourly haul charge.

Plant	Product Name	Product #	Qty	U/M	Delivered Price Per Unit
LITCHFIELD RESALE	MAG SPEC ABC P105	1627P105	385	Tons	\$20.40
		Truck Type STD FRT RATE			

ASPHALT

Plant	Product Name	Product #	Qty	U/M	Delivered Price Per Unit
GOMEZ HMA	3/4" EVAC - PG70-10	231511G	72	Tons	\$90.45
		Truck Type STD FRT RATE			
19TH AVE HMA	3/4" EVAC PG70-10	231511H	1	Tons	\$90.10
		Truck Type STD FRT RATE			
19TH AVE HMA	3/4" EVAC PG76-22TR+	236411H	1	Tons	\$113.10
		Truck Type STD FRT RATE			
19TH AVE HMA	3/4" EVAC PG70-16TR	236611H	1	Tons	\$105.10
		Truck Type STD FRT RATE			

Other Charges

Environmental Fee -Agg & Asphalt at \$4.00 / Load

Prices quoted above do not include any state or local sales and use tax, if any applies for this project.

Prices quoted are for shipments during normal daytime working hours unless other shipping hours are mutually agreed upon in writing by both parties.

Prices are FOB your jobsite as stated above. Terms are Net 15 prox. Please note standard terms and conditions apply. (Subject to credit approval)

This quote is limited to acceptance within 30 days from the date of this quotation after which time quotation is subject to review/revision. Please contact Sales prior to placing the order.

Accepted by: _____

Date: _____

Sales Representative: _____

Date: _____

We appreciate the opportunity to provide you this quote and trust that Vulcan will have the pleasure of serving your needs for this and future projects.

GENERAL TERMS AND CONDITIONS

PRICES AND TERMS

Prices are based on the terms and conditions set forth on page 1 of this Quotation, of which these General Terms and Conditions form a part, the terms and conditions stated in Customer's Application for Business Credit, and, if applicable, any terms and conditions relating to the delivery or shipment of materials by truck, barge, vessel, rail or other means which are provided by Vulcan to Customer in addition to this Quotation (each, a "Vulcan Sales Document", and collectively, the "Vulcan Sales Documents"). Prices are available only to the customer specifically named therein, and are only for the quantities mentioned in such Quotation or Sales Order plus or minus 10% of such quantities. A charge of 1.5% per month, (18% annum), will accrue on a daily basis from the date of invoice and will continue to accrue on a daily basis on any unpaid balance, both before and after judgment, until the date the balance is paid in full, or at the maximum amount permitted by law in which the sale occurred, whichever is less. **However, the assessment of a finance charge on invoices paid in full by the payment due date will be waived.** Quotation is offered for furnishing the total aggregate requirements for the project only. Customer's contract with Vulcan regarding the sale by Vulcan to Customer of the materials listed in this Quotation is subject to the terms and conditions set forth in the Vulcan Sales Documents. Prices reflect Customer's acceptance of materials at the quoted plant based upon gradation analysis performed and reported by Vulcan's certified plant quality control personnel. Any penalties that result from in place sampling shall be the full responsibility of Customer.

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SHIPMENT AND DELIVERY

Unless a "delivered" price is quoted by Vulcan in the Vulcan Sales Documents, all prices are F.O.B. point of shipment from the locations designated. All taxes applicable to the sale or delivery of materials that are not paid directly by Customer will be added to the sales price, invoiced to and paid by Customer, unless Customer provides Vulcan with satisfactory evidence of exemption from same. Shipment will be in accordance with Customer's reasonable instructions or, if none, then by whatever means Vulcan shall deem practicable. The quantities of material delivered to Customer shall be conclusively presumed to be the quantities shown on the tickets produced from a certified weigh scale at Vulcan's quarry or sales yard.

CREDIT AND DEFAULT

Vulcan shall have no obligation to ship or deliver except upon its determination prior to each shipment or delivery that Customer is worthy of the credit to be extended and is not in default upon any obligation to Vulcan. Upon default, Customer agrees to pay all of Vulcan's collection expenses, including attorneys' fees.

INSURANCE

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EXCULPATORY PROVISIONS

Vulcan shall have no liability for delay or failure to make shipments, or delivery, as a result of strikes, labor problems, severe weather conditions, casualty, mechanical breakdown or other conditions beyond Vulcan's reasonable control. In no event shall Vulcan be liable for any incidental or consequential damages. Vulcan's liability and Customer's exclusive remedy for any cause of action arising out of the provision of material quoted herein shall be the replacement of, or payment of the purchase price for, the materials which are the subject of this Quotation.

CHANGE OF TERMS

Vulcan may change the price and/or quantity upon 30 days' notice to Customer. Vulcan shall also have right to change, modify or amend any other terms and conditions upon written notice of such change to customer. The effect of the change shall be as stated in the written notice and accepted by Customer upon placing of orders with seller following receipt of such notice.

APPLICABLE LAW

All orders are subject to acceptance by Vulcan at the headquarters of its Mountain West Division in Phoenix, Arizona, and the laws of the state in which the materials was shipped from shall apply to the sale of all materials subject hereto. In the event material is imported into the U.S., the law in the state in which the material was sold to the customer will prevail. All disputes regarding finance charges shall be governed by Alabama law.

LIMITED WARRANTY AND WARRANTY DISCLAIMER

Vulcan warrants for a period of one (1) year from date of delivery only that the material sold hereunder substantially complies with Vulcan's specifications for said material or the specifications set forth in Vulcan's quotation. **VULCAN HEREBY EXCLUDES ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR ANY PURPOSE, AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, OF THE MATERIAL SOLD HEREUNDER, OTHER THAN THE EXPRESS WARRANTY STATED ABOVE.** In addition, except to the extent otherwise set forth in the specifications described above, Vulcan makes no warranty whatsoever with respect to specific gravity, absorption, whether the material is innocuous, non-deleterious, or non-reactive, or whether the material is in conformance with any plans, other specifications, regulations, ordinances, statutes, or other standards applicable to Customer's job or to said material as used by Customer. **VULCAN SHALL IN NO EVENT BE RESPONSIBLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGE CAUSED BY NON-COMPLIANCE OF THE MATERIAL WITH SPECIFICATIONS, OR FOR ANY DEFECTS IN THE MATERIAL SOLD HEREUNDER.**

BYPASS**BYPASS**

Vendor Code							RAINFORRENT	CAPITALPUMPE	
Vendor Name							Rain For Rent	Capital Pump &	
Vendor Phone							4808959225	4806265257	
Bid	Activity	Resource	Desc	Quan	Unit	Plug Price	Unit Price		Unit Price
145	2051090	4BYPASSPUMP	BYPASS PUMPING	1.00	LS	0.0000	36,247.5400		36,340.4500
Quoted Amount							36,248		36,340
Plugged Amount							0		0
Bond							0		0
Mobilization							0		0
% Adjustment							0		0
\$ Adjustment							0		0
Total Adjustment							0		0
Totals						0	36,248		36,340
Diff From Plug							36,248		36,340
Total Minority							0		0

A 'P' beside a price indicates a plug price.

Green background indicates that the vendor is selected.



Rain For Rent
26001 S Arizona Ave
Chandler, AZ, 85248
480-895-9225
rainforrent.com
JWILSON@rainforrent.com

Achen-Gardner Construction, LLC
Account: 120490
550 S 79TH ST
CHANDLER, AZ, 85226
Mark McLafferty
480-940-1300
mmclafferty@achen.com

Dear Mark McLafferty,

Thank you for your inquiry. As requested, please find attached our proposal 1092-IND-2003666 for Chaparral/Dobson Sewer . We value this opportunity to provide a solution for your liquid handling need and we are committed to partnering with you to ensure your project's safe execution and completion.

To convert this proposal into a confirmed order WITHOUT ANY CHANGES, please click the "Start Signing" button to begin the electronic signature process.

If you would like to CHANGE anything in this proposal or discuss anything further, please call Jon Wilson at 480-895-9225.

Thank you, and I look forward to working with you.

Regards,

Jon Wilson
JWILSON@rainforrent.com
Mobile: 602-725-7839
Branch: 480-895-9225
26001 S Arizona Ave
Chandler, AZ, 85248



Proposal #	1092-IND-2003666	Project Name	Chaparral/Dobson Sewer
Date Prepared	1/5/2022	Est. Delivery Date	1/24/2022
Prevailing Wage	No	Est. Completion Date	2/12/2022

Project Location
550 South 79th Street Chandler, AZ, 85226
Project Summary
Sewer bypass Dobson at Chaparral

STATEMENT OF WORK

RFR Responsibilities & Scope of Work

Rain for Rent (RFR) will provide the following:
Delivery, installation, operation, removal, pickup of all quoted materials/equipment

Reference Materials

Project is quoted based on applicable/customer provided reference materials noted below:
Plans
Job Walk
Verbal / Written Request

Operating Parameters

Customer requests 4" DV100C pump for Primary and Standby.

Customer Responsibilities

It is the customer's responsibility to inform RFR about prevailing wage at time of proposal. If RFR is informed after the quote is issued that certified payroll is required, quote will be subject to additional charges.

Jobsite:

Customer is responsible for:

1. Informing RFR of any jobsite or general requirement(s) to perform work on location.
2. Securing permits, fees, bonding, right of ways, vehicular/pedestrian traffic control, and security.
3. Providing safe, secure access and egress to an adequate staging area throughout the job which could include brush clearing, grading, and removal or replacement of any landscape or hardscape in the temporary right of way for the equipment.
4. Any damage to the environment including trees, vegetation, stream banks, or any other part of the site caused by the installation, removal, construction, pulling or dragging of equipment, or operation of the equipment that would require site restoration or environmental countermeasures.
5. Any excavation, saw cutting, trench plating for the purpose of road crossings, backfilling, restoration, modification, or alteration of any permanent structure or site element including changes to pump pad preparation, suction, or discharge chambers during duration of job (including installation and removal).
6. Traffic control including permits and barricades to limit traffic exposure to job site.

System:

1. RFR will provide dedicated equipment with operator and fuel to perform all needed unloading, testing, operations, maintenance, relocating, cleaning, and reloading of provided equipment/system.
2. Customer will provide fueling.
3. RFR will provide preventative maintenance as recommended by manufacturer or per the Rental Agreement. <https://rainforrentcorp.box.com/v/pumpmaintenance>
4. Customer will supply all needed water for the commissioning, startup, and system testing. Project specific criteria for hydrotesting can be provided at an additional charge.



5. Customer shall provide all water for flushing and sanitation.
6. RFR shall provide labor for flushing and sanitation.
7. By accepting this quotation, the customer has acknowledged that the equipment proposed herein is suitable for its intended application and accepts all liabilities associated with its use. Customer is responsible for compliance with appropriate liquid/material quality standards, regulations, and testing protocols to meet all federal, state, local and job location specific requirements. Customer is responsible for all waste materials associated with this equipment/system.

Customer is responsible for:

1. Any work in confined spaces.
2. Protecting system from damage including any freeze protection necessary to safeguard equipment from damage. Should equipment become frozen and damaged, customer is responsible for repair of equipment. RFR can provide necessary freeze protection at an additional charge per executed change order. Equipment stays on rent until it can be returned.
3. Using equipment in a safe and proper manner in accordance with manufacturers' recommendations, regulatory standards, and industry best practices. Improper usage may cause equipment/system failure, damage, possible incidents, injuries, and spills.
4. Customer is responsible for identifying at-risk service laterals to evaluate and mitigate the potential for sewage backups. Customer must communicate the risk of flooding and other potential issues to affected property owners. This may require customer to install additional sewer plugs or backflow preventers.
5. Customer will provide sewer plugs and any associated installation, monitoring, and removal of sewer plugs.
6. Customer is responsible for any residual fluids in system once project is concluded to remove and properly dispose of.

Rental Release:

Contact the RFR office at 480-895-9225 to schedule rental release and equipment pickup when equipment/system is cleaned and ready to be released. **Flushing and cleaning of equipment must be performed to RFR's standards prior to being called off rent.** RFR personnel will perform a visual inspection. It is recommended to have a customer representative on-site during inspection. Equipment found not to be in "delivered condition" will not be picked up.

Project Scheduling & Billing

This quote is valid for 30 days. For the quoted items, RFR requires a signed quote prior to scheduling, subject to crew and equipment availability.

Customer acknowledges that availability of equipment/system and/or media will be confirmed at time of order. Additional freight charges may apply subject to mutually agreed upon change order.

Billing

1. Delivery and first week's labor will be billed at the end of the first week of installation, supported by signed daily work tickets. Any additional labor will be billed weekly supported by signed day tickets.
2. Delivery and labor for this project will be billed upon completion of the installation.

Safety

Each employee is expected to adhere to the RFR Environmental, Health and Safety programs, which will protect the environment, the health and safety of the customer, employees, and others. RFR asks for your full cooperation to succeed in this expected outcome.



Rain For Rent
Sales Rep: Jon Wilson

Achen-Gardner Construction, LLC
Account: 120490
Proposal: 1092-IND-2003666

Achen-Gardner requests sewer bypass to support construction work.
Pricing is for 2 weeks with Pump Operation.

Equipment Rental = \$4,193.60 (2 weeks)
Services: Delivery/Return hauling, Install, 2 weeks x 24 hour Pump Operation, Removal= \$31,760.00.
Misc Fees are shown.

Details in Statement of Work.



Rain For Rent
Sales Rep: Jon Wilson

Achen-Gardner Construction, LLC
Account: 120490
Proposal: 1092-IND-2003666

PROJECT COSTS		
Estimated Rental Total		\$4,193.60
Estimated Environmental Recovery Fees		\$125.80
Total Estimated Recurring Charges		\$4,319.40
MOBILIZATION & DE-MOB COSTS		
Estimated Delivery		\$170.67
Estimated Installation		\$1,330.26
Estimated Removal		\$1,136.54
Estimated Pickup		\$170.67
Estimated Services		\$29,120.00
GRAND TOTAL		\$36,247.54

-Estimated costs do not include taxes

-Recurring rental project costs will be on a cycle/week/day basis+ tax

Customer Name

Customer Signature

Date

Proposal Acknowledgement

By signing this proposal, customer represents that he/she has read and agreed to both the Statement of Work and Quote Agreement sections, and is also agreeing to the grand total amount listed above, plus any recommended optional items if accepted and initialed. If customer requires a Purchase Order number to process and submit payment, it must be supplied to Rain for Rent at the time of acceptance of this proposal.

PO Number:

Rental Protection Plan

I have received and reviewed the Rental Protection Plan Agreement incorporated as the last page of this estimate. By initialing this paragraph, I understand that I am agreeing to enter into and be bound by the terms of the Rental Protection Plan Program Agreement and that I am authorized to enter into this Agreement on behalf of Customer. FOR ALL RENTALS OF EQUIPMENT, EXCEPT THOSE SPECIFICALLY EXCLUDED, YOU MAY EITHER SHOW PROOF OF PROPERTY INSURANCE IN ACCORDANCE WITH INSURANCE REQUIREMENTS AND RENTAL AGREEMENT OR PURCHASE THE RENTAL PROTECTION. THE PURCHASE OF THE RENTAL PROTECTION PLAN FOR RENTALS OF EQUIPMENT IS NOT MANDATORY AND MAY BE DECLINED IF YOU HAVE PROOF OF ALL RISK PROPERTY INSURANCE AS REQUIRED BY CONTRACT.

RPP	\$587.10	

Created Date: 1/5/2022



Quote Agreement

If Customer has entered into a Master Service Agreement with Rain for Rent and there is a conflict between these terms and conditions of this Quotation Agreement and the Customer's Master Service Agreement, then the terms and conditions in the Customer's Master Service Agreement signed by Rain for Rent will prevail. Availability of products and services is subject to change without notice. Payment terms are net 30 days from invoice date. Interest at the rate of 18% per year shall be charged on any past due invoice. A Fuel Surcharge will be calculated and invoiced based on the diesel fuel price as published by the Department of Energy on <https://www.eia.gov/petroleum/gasdiesel>. An Environmental Recovery Fee shall apply to all rental charges invoiced for the duration of the rental pursuant to this quote/Estimate to help offset direct and indirect costs associated with regulatory compliance, obtaining permits, and obtaining licenses. California Air Quality Fee will be added to the cost of diesel pumps used in California only. This is a State mandated fee. Customer is prohibited from deducting retention from Rain for Rent invoices and charging Rain for Rent liquidated damages. Customer is responsible for flushing and cleaning tanks, roll off boxes, pipelines, pumps, filters and other Rain for Rent equipment prior to return unless specifically agreed to by both parties in writing. The Terms and Conditions of the Rain For Rent Rental and Hazardous Material and/or Non-Hazardous Waste Agreement, Credit Application/Master Rental & Sales Agreement, Invoice and this Quotation (also known as the Rain for Rent Rental/Sale Estimate as may be referenced in any Master Service Agreement, Blanket Purchase Order, or any other contractual document executed between the parties) contain the complete and final agreement between Rain for Rent and Customer and no other agreement in any way modifying or adding to any of said Terms and Conditions will be binding upon Rain for Rent unless made in writing and signed by a Rain for Rent Corporate Officer or Rain for Rent authorized representative. The Customer cannot alter the equipment without Rain for Rent's prior written approval. Customer is responsible for equipment, repairs, maintenance and damage, excluding normal wear and tear or damage caused by Rain for Rent. All returned equipment is subject to inspection by Rain for Rent personnel. Damages and accrued rent will be invoiced to Customer while equipment is out of service for repairs. The Customer is responsible for damage caused by reactive, corrosive or abrasive material; including, but not limited to sand, sodium hydroxide, chlorine, and acids. Customer must notify Rain for Rent immediately of any spill so that any necessary repairs to the system can be made and to minimize service interruption. The Customer assumes all risks of loss due to operation and use of the equipment. Customer will provide "all risk" property insurance for rented equipment. Customer shall pay Rain for Rent additional expenses caused by unforeseen or changing conditions, including, but not limited to, soil, underground conditions, rock formations, environmental conditions, weather events, regulations or restrictions, hard pan, boulders, cesspools, gas lines, waterlines, drain pipes, underground electrical conduits or other above ground or underground obstructions. All equipment rented or used products sold are provided "AS IS, WHERE IS" in their present condition. Rain for Rent makes no warranties, expressed or implied of any kind whatsoever with respect to the equipment or products. Sold equipment is not to be rented. Customer agrees that customer is renting equipment or purchasing used products based on their judgment and evaluation, without reliance upon any statements of representations by Rain for Rent, and that Rain for Rent is not responsible for any defects in their operation or for any repairs, parts or services, unless otherwise noted. All new products sold are provided without warranty beyond the terms of such warranty offered by the manufacturer, if any. Customer must comply with all original manufacturer's terms and conditions for any warranty claims that may arise. Neither Rain for Rent nor the manufacturer warranties the product if it has failed due to corrosion, misuse or damage; (2) it has been altered, repaired or modified in any way that would adversely affect its operation; or (3) it was installed or operated other than in accordance with manufacturer's operating instructions. Products supplied by Rain for Rent are warranted to be free from any defect in workmanship and material under conditions of normal use and service. Rain for Rent's obligation under this warranty is limited to replacing or repairing at the designated manufacturer's or Rain for Rent facility any part or parts returned to it with transportation charges prepaid, which Rain for Rent determines in its sole discretion to be defective. This Quotation excludes any additional costs to Rain for Rent associated with Owner Controlled Insurance (OCIP) or WRAP insurance programs that will be added to Rain for Rent's prices. De-watering, Roll-off, Vacuum boxes and similar equipment are not liquid tight. Rentee accepts full responsibility for all losses, damages and costs caused by or arising out of spills, leakage or discharge from this equipment. Rain for Rent will not be held liable for any structural or soils subsidence. This Quotation is valid for 30 days and is subject to credit approval. Rain for Rent will take every effort to protect our customers and employees. Due to the current pandemic, all quoted equipment and services are subject to delay, change, or unilateral cancellation by Rain for Rent. Please be assured every effort will be made to execute the quote as written. The customer is responsible to inform Rain for Rent of any jobsite hazards, precautions, or entry requirements relating to the Corona Virus prior to Rain for Rent personnel going onsite to perform work or deliver equipment. This includes informing Rain for Rent if anyone at the jobsite has tested positive and provide a list of actions taken to protect Rain for Rent personnel.

Rental Protection Plan Program Agreement

If you elect to maintain All Risk Property Insurance coverage, and the certificate of insurance You provide to Rain for Rent to evidence Your insurance coverage expires or is cancelled for any reason, You agree Rain for Rent may charge RPP for Your rentals until such time as You provide an acceptable and valid certificate of insurance to Rain for Rent. This Rental Protection Plan Program Agreement (this "RPP Agreement") is entered into between the undersigned Rentor and Rentee in relation to the Master Rental and Sales Agreement (MRSA) between Rentor and Rentee. If Rentee has checked or initialed, as applicable, the Rental Protection Plan Program (the "RPP Program") box on the quote, then Rentee has opted-in to the RPP Program and this RPP Agreement shall supplement the MRSA whether or not executed by Rentee. Rentee understands and agrees that the RPP Program is not insurance and that the RPP Program provides only limited coverage, as described below. 1. Cost; Deductible; Maximum Coverage; Rentee shall pay a fee equal to 14 percent (14%) of the rental charge for each covered item, which fee shall be listed on each invoice during which period Rentee has opted to participate in the RPP Program. In the event of a Covered Occurrence, as defined below, Rentee shall further be responsible for the lesser of \$500 or 10 percent (10%) of the total loss, as a deductible. The maximum coverage available under the RPP Program is \$150,000 per Covered Occurrence, whether or not there is more than one piece of equipment involved in the occurrence. 2. Coverage; The RPP Program provides coverage only for losses involving Covered Equipment, as defined below, in the following instances: fire that was not caused by Rentee's gross negligence or willful misconduct; theft for which a police report was filed, and that occurred despite Rentee's reasonable precautions to protect and secure the covered equipment; and vandalism for which a police report was filed (individually, "Covered Occurrence," and collectively, "Covered Occurrence"). The RPP Program provides coverage only for the following types of equipment: pumps, electric submersible pumps, tanks, generators, light towers, filtration, boxes, heaters, spillguards, safety products, sprinklers, hoses, pipe, valves and fittings ("Covered Equipment"). Coverage does not extend to any equipment not owned by Rentor such as re-rented equipment. 3. Exclusions; The RPP program does not cover any equipment or event of loss that is not specifically described in Section 2. Without limiting the foregoing, the RPP Program does not provide coverage for the following: misuse of equipment; willful abuse of equipment; failure to maintain equipment; failure to secure items from theft (including but not limited to failing to store items in a fenced, locked area or failing to maintain personnel on site); damage or theft while in transit to or from a jobsite; corrosion from any source; any damage caused by named storm events; any instance that occurs while the account is not in good standing, such as a default as defined in the MRSA or upon written notice of non-payment; and any occurrence not reported to Rentor within 24 hours after the occurrence. The RPP program does not provide coverage for: electronic equipment (controls, instrumentation, and wiring), flow meters, water meters, wheel wash systems & accessories, Freezesentry items, or tires. 4. Claims; All claims must be submitted within 24 hours of the Covered Occurrence. Rentor's mechanic will inspect the equipment following any claim. The mechanic's findings as to the cause of the damage and cost of repair will be final. In the event of a theft or vandalism, Rentee must also provide supporting evidence that the site was secured at the time of loss.



Capital Pump & Equipment

9229 S Hardy Drive Tempe, AZ 85284
Phone: 480-626-5257 Email: Sales@cpepumps.com

Quote #: CP21-2887

Job Name: 18" Sewer Bypass

Customer: Achen Gardner
550 S 79th Street
Chandler AZ

Location: Dobson & Chaparral
Chandler, AZ

Contact: Mark McLafferty
Phone: 602-877-9392
Email: MMcLaffertyt@achen.com

Rental Equipment				RATES			
Qty	Unit	Rental Period	Description	Day	Week	4 Week	Total
2	ea.	Week	4" Silenced Pumps		\$ 884.00	\$ 2,652.00	\$ 1,768.00
2	ea.	Week	10' x 12' x 12" Spill Berms		\$ 50.00	\$ 150.00	\$ 100.00
1	ea.	Week	18" to 24" Multi size Plug		\$ 375.00	\$ 1,125.00	\$ 375.00
2	ea.	Week	6" X 20' Suction Stingers		\$ 75.00	\$ 225.00	\$ 150.00
650	ft	Week	6" DR17 HDPE Pipe		\$ 0.24	\$ 0.72	\$ 156.00
1	ea.	Week	Misc. Elbows Pipe & Fittings		\$ 158.33	\$ 475.00	\$ 158.33
			24/7 Pump Watch				
14		Day	1 person days 24/7 @ \$65.00 per Hr.	\$ 1,560.00			\$ 21,840.00
14		Day	Est. Fuel Burn 40 Gal Per day@\$4.25Gal	\$ 170.00			\$ 2,380.00
1		Sale	PE Stamped Bypass Plan	\$950.00			\$ 950.00

QUANTITIES ARE ESTIMATES

2 Week Rental Total

\$30,584.67

QUANTITIES USED WILL BE BILLED

	Delivery	\$375.00
	Pick-up	\$375.00
	Estimated Install Labor	\$3,125.00
	Estimated Removal Labor	\$1,800.00
	Estimated Sale Tax	\$ 80.78

ESTIMATE TOTAL -

\$36,340.45

Prepared by: Jerry Sheatz

Accepted by:

Date: Wednesday, December 15, 2021

Date:

Subject to Terms and Conditions on Page 2

Estimate valid for 30 days from issuance date



9229 S Hardy Drive Tempe, AZ 85284
Phone: 480-626-5257 Email: Sales@cpepumps.com

Terms, Conditions & Specifications

1. Customer agrees to abide by the terms and conditions on the purchase or rental contract.
2. Quantities are estimates and system is designed with information supplied by the customer. Any additional requirements will incur additional charges.
3. Customer responsible for all permits, traffic control, road crossings, etc.
4. Customer responsible for all FUEL & PM SERVICE during pump rentals.
5. Pump rate is based on **8 hour day, 48 hour week, 192 hour 4 week.** **N/A**
6. Overtime Charges, if applicable, are Computed: $(\text{Monthly Rate} / 192) \times .5 = \text{O/T Charge Per Hour}$ **N/A**
7. Labor rate is for normal working hours. Weekend or nighttime will incur additional charges.
8. Rental begins when equipment leaves CPE branch. Pumping systems are on rent during installation.
9. If Water Bridges are rented, they are placed under customer's direction. Customer accepts sole responsibility for placement, ongoing maintenance, and suitability for use in each specific traffic location.

JOB SPECIFIC TERMS, CONDITIONS & SPECIFICATIONS

CASING**STEEL CASING**

Vendor Code							TRIINITY	DANAKEPNERCO
Vendor Name							Trinity Product	Dana Kepner Co
Vendor Phone							6368879683	6022550234
Bid	Activity	Resource	Desc	Quan	Unit	Plug Price	Unit Price	Unit Price
		2CAS24	24" STEEL CASING	35.00	LF	0.0000	190.2100	177.1500
		2CAS36	36" STEEL CASING	70.00	LF	0.0000	270.3800	336.2300
Quoted Amount							25,584	29,736
Plugged Amount							0	0
Bond							0	0
Mobilization							0	0
% Adjustment							0	0
\$ Adjustment							0	0
Total Adjustment							0	0
Totals						0	25,584	29,736
Diff From Plug							25,584	29,736
Total Minority							0	0

A 'P' beside a price indicates a plug price.

Green background indicates that the vendor is selected.

Any claim(s) for damaged or incorrect must be made in writing within five (5) days of receipt of material to be considered valid. Due to the volatility of the steel and fuel markets, all quotations will be subject to surcharges at time of order and/or shipment. These surcharges will be monitored monthly and adjusted accordingly. Any recommendations are for educational purposes only, not for commercial work. All products are subject to prior sale. Trinity Products, LLC is not responsible for delivery problems, delays or costs incurred due to shipping or trucking problems. IMPORTANT: Regarding All Coated Materials: Damage to the coating from shipping and handling should be expected. Customer is responsible for all coating repairs. Also included in this agreement is the final pages, titled "Terms and Conditions of Sale of Goods" which is a part of this order.

TERMS & CONDITIONS OF THE SALE OF GOODS

- 1. Buyer shall indemnify, defend and hold Seller harmless from and against any and all claims whatsoever, demands, liabilities, causes of action, losses, damages, costs and expenses, including, without limitation, attorneys' fees and claims for breach of contract, bodily injury (including death) or property damage, arising out of or relating to Seller furnishing goods hereunder in accordance with shop drawings that were approved, approved as noted, or with respect to which no exceptions were taken, or in accordance with plans, specifications or other design documents furnished by Buyer to Seller. A shop drawing shall be deemed approved for all purposes and deemed consistent with plans, specifications and other design documents unless Buyer notifies Seller in writing of a specific objection having merit within 14 days of receipt of the shop drawing**
2. All materials and their attachments remain the property of Trinity Products, Inc. until all payments have been made in full.
3. Trinity Products LLC's sales price is exclusive of any applicable sales tax, use tax, and any other transaction taxes that may be imposed by any governmental entity or agent thereof whether state, county, municipal, city or otherwise ("Governmental Entity"). The Customer shall be exclusively responsible for the complete payment of any sales, use or other transaction taxes and shall pay all invoiced sales, use or other transaction taxes upon its receipt of materials from Trinity Products, LLC unless it provides Trinity Products, LLC with a valid sales tax exemption certificate. In the event that any Governmental Entity at any time deems the Customer's sales tax exemption certificate to be invalid or inapplicable or otherwise determines that the transaction is subject to a sales tax, use tax, or other transaction taxes the Customer shall immediately upon demand provide Trinity Products, LLC and/or any of its successors and/or affiliates with monetary funds to cover all applicable sales tax, use tax, and any other transaction taxes that may have been assessed, including any applicable interest and penalties as well as any costs whatsoever incurred by Trinity Products, LLC, including, but not limited to, any attorney's fees and accountant's fees.
4. Seller accepts Buyer's order only upon the terms and conditions on the face side hereof and as set forth herein (collectively the "TERMS"), The TERMS form the entire agreement between the parties. All other terms, proposals, negotiations, representations, recommendations, statements or agreements, whether made or issued contemporaneously or previously, are excluded from and are not a part of this agreement, and have no binding or enforceable effect. This agreement shall be binding on the parties and their respective successors and assigns. An e-mail or facsimile transmission by Seller to Buyer at Buyer's last known e-mail address or to Buyer's last known facsimile number shall be deemed delivered to Buyer upon Seller's transmission thereof, regardless of whether Buyer later claims non-receipt.
5. Buyer's failure to object to any terms as proposed by Seller within ten (10) days after receipt of this Agreement shall be deemed to be Buyer's acceptance of those terms. In order for any change or amendment to this order to be binding upon Seller it must be accepted in writing by Seller.
6. Unless Seller and Buyer otherwise agree in writing, Buyer shall pay Seller's invoice within thirty (30) days of the invoice date. Interest shall accrue on each late payment at the lesser of: (a) the highest rate permitted by law, and (b) one and one-half percent per month compounded monthly. Should Seller choose to hire an attorney to collect monies claimed due hereunder from Buyer to Seller, Buyer shall pay to Seller, in addition to all other sums due to Seller, the reasonable attorneys' fees, expert fees, costs and other expenses Seller incurs to pursue collection from the Buyer.
7. Should Seller learn of any information that causes Seller concern about Buyer's ability to perform any of its obligations owing to Seller under this sale, Seller has the right to request Buyer to provide Seller adequate assurance of due performance on such terms as are deemed reasonable by Seller when acting in good faith, including the right to await full or partial payment from Buyer as demanded by Seller. In such an instance, Seller may suspend its performance pending Buyer's receipt of adequate assurance of due performance in a manner found acceptable by Seller.
8. Acceptance of contracts is at all times subject to the Seller's credit approval and the Seller reserves the right to require full or partial payment in advance if, in the Seller's opinion, the financial condition of the Buyer does not justify shipment of material. If at any time, in the Seller's judgment, reasonable doubt exists as to the Buyer's financial responsibility, or if Buyer is past due in payment of any amount owing to Seller under this or any other contract, Seller reserves the right, without liability and without prejudice to any other remedies to suspend performance, decline to ship, or stop any material in transit, until Seller receives payment of all amounts owing to Seller whether or not due, or adequate assurance of such payment.
9. Although title to the materials does not transfer from the Buyer to the Seller until the materials have been received at the subject construction site, and payments have been made by the Buyer to the Seller, all prices are F.O.B. Seller's warehouse in Missouri. Buyer shall arrange for all insurance. Risk of loss to each item sold hereunder passes to Buyer immediately before that item is shipped from Seller's warehouse. Title, ownership, and risk of loss of products and materials provided by Trinity Products, LLC to the Customer is transferred from Trinity Products, LLC to the Customer (1) at the site of the construction project after fabrication is complete and where the materials supplied by Trinity Products, LLC will actually be used and/or installed upon final written acceptance by the Customer if payment in full has been made by the Customer to Trinity Products, LLC, or (2) five (5) days after the aforementioned materials are delivered to the project site where they will be used and/or installed and payment in full has been made by the Customer to Trinity Products, LLC, whichever occurs first. Actual and constructive possession is not transferred at any other time with the SOLE EXCEPTION of the event of "Customer pickup" at any of the business locations of Trinity Products, LLC and/or its affiliate locations in the State of Missouri, in which case title, ownership, and risk of loss are transferred from Trinity Products, LLC to the Customer in the State of Missouri once payment in full has been made by the Customer to Trinity Products, LLC and the Customer will be invoiced and will pay all applicable Missouri sales/use taxes (including local tax). The Customer shall at all times remain exclusively responsible for payment to Trinity Products, LLC of any and all sales tax, use tax and any other transaction taxes that may be determined to be applicable by any Governmental Entity that emanate from this transaction(s) and shall also be responsible for any other costs incurred by Trinity Products, LLC as set forth in term #3 above.

10. It is agreed that no retainage is allowed on this sale for labor or materials and invoices will be paid in full within the thirty day period specified. Any legal fees or other collection costs shall be borne by Buyer.

11. Seller shall not be responsible for any inability to perform under the TERMS or for any loss or damage due to delays or disruptions resulting directly or indirectly from, or contributed to by, any act of God, action or omission of Buyer, act of civil or military authorities, fire, strike or other labor dispute, accident, flood, war, riot, terrorism, transportation delay, inability to obtain material or fuel supplies, or any other circumstances beyond Seller's reasonable control, whether similar or dissimilar to any of the foregoing.

12. Even if Seller has shop drawings prepared or Seller performs, or directs the performance, of other services in connection with this sale, this sale and the interpretation of the TERMS are nevertheless governed by Missouri law, including Article 2 of Missouri's Uniform Commercial Code.

13. Except for items sold "AS IS", Buyer shall inspect the goods sold hereunder upon their delivery and shall, to preserve a claim against Seller, notify Seller in writing within five (5) days thereafter of any defect or deficiency believed to be Seller's responsibility. Should any such item contain a defect, deficiency or non-conformity for which Seller is responsible, Seller shall repair or replace the item, at Seller's option, or Seller shall instruct Buyer in writing to return that item with shipping instructions in which case Seller's sole responsibility will be to return to Buyer the price paid therefor plus the cost for the return shipping if paid by the Buyer. Buyer's failure to furnish Seller timely notice of a defect, deficiency or non-conformity shall constitute unequivocal acceptance of the item(s). Except for the express warranties forming a part of the TERMS, **Seller disclaims all express and implied warranties, including implied warranties of merchantability and fitness for a particular purpose. Seller's liability to Buyer, whether in contract, warranty, tort or otherwise, is limited to that permitted under the "terms", and shall in no event exceed the purchase price hereunder. Notwithstanding anything seemingly to the contrary, Seller shall not be liable to Buyer for any special, incidental, indirect, liquidated or consequential damages, including without limitation damages for loss of use, lost time, delay, disruption, interference, loss of productivity, inconvenience, lost income, or lost profits.** Seller shall have no obligation to repair, replace, or accept the return of any item sold "AS IS". If Buyer inspects any of the goods prior to the delivery contemplated hereunder, the five (5) day notice period for those goods shall run from that pre-delivery inspection date.

14. Seller warrants that the material sold hereunder will conform to the description stated herein (subject to tolerances and variations consistent with current trade practices and practical testing and inspection methods); that Seller will convey good title thereto (except for any liens or encumbrances that may be caused by Buyer); and that Seller will repair or replace any defective or nonconforming material or repay the purchase price, as Seller may elect, if notified thereof in writing within one (1) year from the date of delivery. This is Seller's sole warranty with respect to the material. Seller makes no other warranty of any kind whatever express or implied and all implied warranties of merchantability and fitness for a particular purpose which exceed the aforesaid obligation are hereby disclaimed by Seller and excluded from this transaction.

15. Should Buyer wish to cancel this order, Buyer may do so only if Seller agrees in writing and material falls under standard material. In the event of any such cancellation of standard material, the purchase price shall become the sum of: (a) all costs and expenses, direct and indirect, incurred by Seller in producing the order up to the date Seller agreed in writing to the cancellation, plus (b) Seller's reasonable cancellation costs, which shall include a restocking charge of thirty-five percent (35) percent of the items not delivered to Buyer or returned by Buyer, plus (c) a reasonable markup for Seller's home office overhead and profit. Non-standard material is non-returnable and order may not be canceled. Materials deemed non-standard are available from Seller upon request.

16. Any offer made by Seller as part of this Part of this Agreement may be revoked by Seller prior to the acceptance of this Agreement in its entirety by Buyer. In any event, this offer shall only remain valid for thirty (30) days.

17. Buyer acknowledges that the "terms" form the contract and are deemed made in Missouri, and that Buyer, in relation to this sale, is deemed to be transacting business in Missouri. Any legal action concerning a claim or dispute involving Buyer and Seller, whether in contract, tort or otherwise, shall be brought in a state or federal court for the county or district in which Seller's office is located, and Buyer consents to the jurisdiction of that court in Missouri. notwithstanding the foregoing, any claim or dispute arising out of or relating to this contract, or to the goods or services supplied by Seller to Buyer, or to monies claimed due from Buyer to Seller, whether in contract, in tort, or otherwise, shall be decided by binding arbitration before a single arbitrator. If Buyer's address on this order is located in the United States, the arbitration shall be conducted under the construction industry arbitration rules of the American Arbitration Association. If Buyer's address on this order is located outside the United States, the arbitration shall be conducted under the international arbitration rules of the International Centre for dispute resolution. The arbitration award shall be enforceable in the state or federal court mentioned above. The arbitration locale shall be St. Louis, Missouri. Nothing herein shall be construed as preventing Seller from enforcing any claim or right to a mechanic's lien or any claim or right against a bond regardless of where such a claim must be filed or enforced.

18. Pricing is based on a continuous manufacturing schedule. Should this process be interrupted through no fault of the Seller. Seller shall be entitled to additional compensation. Any cost associated with such delays shall be identified by Seller and agreed to by Buyer prior to continuation with manufacturing.

19. Buyer will proceed with changes in the work herein specified only upon receipt of a written order from Buyer specifying the requested change and containing an agreed price and schedule adjustment.

20. Buyer's exclusive remedy against Seller for any damages suffered by Buyer in connection with the material and arising out of this transaction shall be for breach of contract, and Sellers' liability in this regard shall be limited to repair or replacement of defective or nonconforming material or repayment of the purchase price paid therefore by Buyer, as Seller may in its sole discretion elect. Because the sales price herein makes no provision for such risk, Seller shall in no event be liable to Buyer for any special or consequential damages including, but not limited to, erection costs, lost profits, good will, loss of time, unabsorbed overhead, inconvenience or commercial loss. Any action for breach of this contract must be commenced within one (1) year after the cause of action shall occur, and no such action may be maintained which is not commenced within such period.

21. If any provision of this Purchase Order, or portion of any provision, is declared or found to be unenforceable, the balance of this Purchase Order or such provision shall be interpreted and enforced to the greatest extent possible as if the unenforceable provision or portion had never been a part hereof. In particular, if any interest rate provided for herein is higher than that permitted by applicable law, it shall automatically be amended to the highest legal rate.



CHANDLER HEIGHTS UTILITY RELOCATIONS -CMAR

DOBSON / CHAPPARAL

Bid Date:

Project Location: CHANDLER

PLEASE BE AWARE! THE PROPOSED CHINA TARIFF (SECTION 301, LIST 3) MAY AFFECT PRODUCTS OFFERED IN THIS QUOTATION. IF THE TARIFF IS IMPLEMENTED, THE ACTUAL INCREASE IN PRICING WILL BE PASSED ON.

Approximate Projected Lead Time for Delivery of Materials Listed on this Quotation is 90+ Days for Water & Sewer Projects and 180+ Days for Water Meters and/or Radios

Quote: BO122921B

TakeOff Name: ACHEN GARDNER LIST

Customer: ACHEN GARDNER CONST - PHOENIX

Sales Rep: Lex Cassiere

Phone: 602.369.2443

eMail: lCassiere@danakepner.com

Phoenix

2401 South 19th Avenue

Phoenix, AZ 85009

Standard Hours: 6:00a to 4:00p Monday through Friday

Phone: 602.255.0234

On Call: 602.757.7991

Assumptions

Chandler specifications will prevail in this proposal.

Terms and Conditions

Due to the extreme volatility of raw material, energy, and transportation costs, the prices shown in this quotation are only valid for 30 days, with the exception of PVC Pipe prices. PVC prices will be subject to the Manufacturers price in effect at the time of shipment. Order releases and shipments delivered 60 days beyond the order date, or as stipulated, will be subject to the price in effect at the time of shipment.

Totals are for estimating purposes only. Unit prices prevail.

Dana Kepner Company, Inc. is not responsible for manufacturers ability to ship material or hold prices.

Due to volatility in the copper commodity market, copper tubing pricing will be determined at time of shipment.

Quoted totals do not include taxes.

PVC and HDPE pricing is based on manufacturer's ability to direct ship to the jobsite.

This quote is for the supply of material only.

The materials specifications, sizes, and quantities listed are the interpretations of Dana Kepner Company, Inc. and are believed to be correct, but are not guaranteed.

Connecting hardware for Non-DK supplied material is not included in bid, unless otherwise noted.

PVC Sewer Pipe may come in 13', 14', 20', & 22' lengths, based on availability. Regardless of product description in this proposal.

Clay Pipe and Fittings are Non-Returnable.

PVC and HDPE material are considered Freight-On-Board from the manufacturer.

Terms are net 30, and Quote is based on award of complete project.

All returns must be approved by management and will have a minimum 15% restock charge. Nonstocks are not returnable, and are shaded gray within this quote.

Manufacturer standard warranty applies.

Thank you for the opportunity to bid this project.

Quote Summary

WATER	8" DIP WATERLINE	\$7,395.88
	24" STEEL CASING (8" WATERLINE)	\$6,200.27
	8" GATE VALVE	\$4,221.06
	12" DIP WATERLINE	\$12,734.23
	36" STEEL CASING (12" WATERLINE)	\$11,703.62
	12" GATE VALVE	\$6,655.54
	16" DIP WATERLINE	\$49,759.31
	36" STEEL CASING (16" WATERLINE)	\$11,832.28
	16" GATE VALVE	\$13,677.26
	1" COMBO AIR VAC VALVE	\$2,675.65
	WATER Total:	\$126,855.10
SEWER	15" VCP SEWER	\$3,457.87
	SEWER Total:	\$3,457.87
Total Quote before Taxes:		\$130,312.97

8" DIP WATERLINE

****QUOTED TJ NON RESTRAINED DI PIPE & THE FIELD LOK GASKET QTY CALLED ON THE CUSTOMERS RFQ. CUSTOMER TO VERIFY WHAT TYPE OF RESTRAINED JOINT DI PIPE IS NEEDED****

**** QUOTE EPDM GASKET. CUSTOMER TO SPECIFY THE TEMPERATURE THE GASKETS NEED TO BE RATED AT. QUOTE MAY NEED TO BE REVISED ****

Qty	Unit	Description	Price	Total Price
1	108.0 FT	8"X18'1-1/2" PC350 DI PI PE TYTON JOINT, CMNT LIN DUCTILE IRON PIPE-ANSI A21.51	\$28.63	\$3,092.04
2	4.0 HNDRD	20"X400' BLACK POLY TUBE PERFORATED EVERY 20'	\$43.73	\$174.92
3	1.0 ROLL	3"X1000' DETECTABLE TAPE - WATER - BLUE	\$30.77	\$30.77
4	3.0 EA	2"X100' POLY TAPE, PRINTED CORROSION	\$6.48	\$19.44
5	500.0 FT	14 GAUGE TRACER WIRE, BL UE, 30-MIL, HI-STR 250#	\$0.16	\$80.00
6	2.0 EA	8" FIELD LOK GASKET	\$117.64	\$235.28
7	2.0 EA	8" FIELD LOK 350 GASKET (EPDM)(I)	\$180.59	\$361.18
8	5.0 EA	8" MJ 90 BEND, CL, SSB, DI, LESS ACCS	\$187.20	\$936.00
9	17.0 EA	8" DI PIPE MECHANICAL RESTRAINT FOR DUCTILE IRON PIPE (COLOR CODED BLACK)	\$45.65	\$776.05
10	17.0 EA	8" MJ BOLT & GASKET PAK W/6-3/4X4.0" COR-TEN T-HEAD BOLTS/NUTS & MJ GASKET	\$28.80	\$489.60
11	1.0 EA	8" LP MJ SOLID SLEEVE, SSB, DI, LESS ACCS	\$189.00	\$189.00
12	1.0 EA	16X8" MJ TEE, CL, SSB, DI, LESS ACCS	\$838.80	\$838.80
13	2.0 EA	8" MJ CAP, SSB, DI, LESS ACCS	\$86.40	\$172.80
				\$7,395.88

Total Units: 100.0

Average Cost per FT: \$73.96

24" STEEL CASING (8" WATERLINE)

Qty	Unit	Description	Price	Total Price
1	1.0 EA	24"X 35' LONG STEEL CASING PIPE, .375 WALL	\$5,133.33	\$5,133.33
2	4.0 EA	CSS8-0824-SS-CR STAINLESS STEEL CASING SPACER 2X2 PATTERN8" WIDE	\$224.27	\$897.08
3	2.0 EA	ESW0824 END SEAL WRAP	\$84.93	\$169.86
				\$6,200.27

Total Units: 35.0

Average Cost per FT: \$177.15

8" GATE VALVE

Qty	Unit	Description	Price	Total Price
1	2.0 EA	8" MJ RW DI OL VALVE, LESS ACCS	\$1,122.76	\$2,245.52
2	2.0 EA	TYPE C 564 VALVE BOX W/NYLON WATER LID	\$242.93	\$485.86
3	10.0 FT	5" X 5' CAST IRON SH SOIL PIPE	\$49.93	\$499.30
4	2.0 EA	OES 8' VALVE STEM EXTENSION , GRAY	\$264.50	\$529.00
5	2.0 EA	SMALL DIRT RING	\$81.79	\$163.58
6	4.0 EA	8" DI PIPE MECHANICAL RESTRAINT FOR DUCTILE IRON PIPE (COLOR CODED BLACK)	\$45.65	\$182.60
7	4.0 EA	8" MJ BOLT & GASKET PAK W/6-3/4X4.0" COR-TEN T-HEAD BOLTS/NUTS & MJ GASKET	\$28.80	\$115.20
				\$4,221.06

Total Units: 2.0

Average Cost per Each: \$2,110.53

12" DIP WATERLINE

****QUOTED TJ NON RESTRAINED DI PIPE & THE FIELD LOK GASKET QTY CALLED ON THE CUSTOMERS RFQ. CUSTOMER TO VERIFY WHAT TYPE OF RESTRAINED JOINT DI PIPE IS NEEDED****

**** QUOTE EPDM GASKET. CUSTOMER TO SPECIFY THE TEMPERATURE THE GASKETS NEED TO BE RATED AT. QUOTE MAY NEED TO BE REVISED ****

**** CAN USE THE REMAINDER OF THE DETECTABLE MARKING TAPE & TRACER WIRE FROM THE 8" SUBSECTION ****

Qty	Unit	Description	Price	Total Price
1	108.0 FT	12"X18' 1-1/2" PC350 DI PIPE TYTON JOINT, CMNT L DUCTILE IRON PIPE-ANSI A21.51	\$43.87	\$4,737.96
2	2.0 HNDRD	30"X200' BLACK POLY TUBE PERFORATED EVERY 20'	\$63.64	\$127.28
3	3.0 EA	2"X100' POLY TAPE, PRINTED CORROSION	\$6.48	\$19.44
4	2.0 EA	12" FIELD LOK GASKET	\$170.85	\$341.70
5	2.0 EA	12" FIELD LOK 350 GASKET (EPDM)(I)	\$266.82	\$533.64
6	17.0 EA	12" DI PIPE MECHANICAL RESTRAINT FOR DUCTILE IRON PIPE (COLOR CODED BLACK)	\$98.57	\$1,675.69
7	17.0 EA	12" MJ BOLT & GASKET PAK W/8-3/4X4.5" COR-TEN T-HEAD BOLTS/NUTS & MJ GASKET	\$38.41	\$652.97
8	6.0 EA	12" MJ 90 BEND, CL, SSB, DI, LESS ACCS	\$399.00	\$2,394.00
9	2.0 EA	12" MJ CAP, CL, SSB, DI, LESS ACCS	\$161.40	\$322.80
10	1.0 EA	12" LP MJ SOLID SLEEVE, SSB, DI, LESS ACCS	\$304.20	\$304.20
11	1.0 EA	16X12" MJ TEE, CL, SSB, DI, LESS ACCS	\$1,624.55	\$1,624.55
				\$12,734.23

Total Units: 100.0

Average Cost per FT: \$127.34

36" STEEL CASING (12" WATERLINE)

Qty	Unit	Description	Price	Total Price
1	40.0 FT	36"X 40' R/L (RANDOM LENGTH) STEEL CASING PIPE .375 WALL	\$246.67	\$9,866.80
2	4.0 EA	CSS8-1236-SS-CR STAINLESSS STEEL CASING SPACER 2X2 PATTERN8" WIDE	\$366.67	\$1,466.68
3	2.0 EA	ESW1236 END SEAL WRAP	\$185.07	\$370.14
				\$11,703.62

Total Units: 35.0

Average Cost per FT: \$334.39

12" GATE VALVE

**** QUOTED 2 GATE VALVES. CUSTOMER TO VERIFY WHAT IS NEEDED ****

Qty	Unit	Description	Price	Total Price
1	2.0 EA	12" MJ RW DI OL VALVE, LESS ACCS	\$2,214.94	\$4,429.88
2	2.0 EA	TYPE C 564 VALVE BOX W/NYLON WATER LID	\$242.93	\$485.86
3	10.0 FT	5" X 5' CAST IRON SH SOIL PIPE	\$49.93	\$499.30
4	2.0 EA	OES 8' VALVE STEM EXTENSION , GRAY	\$264.50	\$529.00
5	2.0 EA	SMALL DIRT RING	\$81.79	\$163.58
6	4.0 EA	12" DI PIPE MECHANICAL RESTRAINT FOR DUCTILE IRON PIPE (COLOR CODED BLACK)	\$98.57	\$394.28
7	4.0 EA	12" MJ BOLT & GASKET PAK W/8-3/4X4.5" COR-TEN T-HEAD BOLTS/NUTS & MJ GASKET	\$38.41	\$153.64
				\$6,655.54

Total Units: 2.0

Average Cost per Each: \$3,327.77

16" DIP WATERLINE

****QUOTED TJ NON RESTRAINED DI PIPE & THE FIELD LOK GASKET QTY CALLED ON THE CUSTOMERS RFQ. CUSTOMER TO VERIFY WHAT TYPE OF RESTRAINED JOINT DI PIPE IS NEEDED****

**** QUOTE EPDM GASKET. CUSTOMER TO SPECIFY THE TEMPERATURE THE GASKETS NEED TO BE RATED AT. QUOTE MAY NEED TO BE REVISED ****

**** CAN USE THE REMAINDER OF THE DETECTABLE MARKING TAPE & TRACER WIRE FROM THE 8" SUBSECTION ****

Qty	Unit	Description	Price	Total Price
1	270.0 FT	16"X18'1-1/2" PC350 DI PIPE TYTON JOINT, CMNT L DUCTILE IRON PIPE-ANSI A21.51	\$70.20	\$18,954.00
2	6.0 EA	2"X100' POLY TAPE, PRINTED CORROSION	\$6.48	\$38.88
3	3.1 HNDRD	34"X308' BLACK POLY TUBE (14-16") 8 MIL	\$66.72	\$205.50
4	7.0 EA	16" FIELD-LOK GASKET	\$396.13	\$2,772.91
5	2.0 EA	16" FIELD LOK 350 GASKET (EPDM)(I)	\$621.35	\$1,242.70
6	4.0 EA	16" MJ 90 BEND, CL, SSB, DI, LESS ACCS	\$903.00	\$3,612.00
7	44.0 EA	16" DI PIPE MECHANICAL RESTRAINT FOR DUCTILE IRON PIPE (COLOR CODED BLACK)	\$186.75	\$8,217.00
8	44.0 EA	16" MJ P R GASKET	\$23.54	\$1,035.76
9	528.0 EA	3/4X5" COR-TEN TEE HEAD BOLT, WITH NUT	\$3.63	\$1,916.64
10	4.0 EA	16" MJ 45 BEND, CL, SSB, DI, LESS ACCS	\$645.60	\$2,582.40
11	8.0 EA	16" L P MJ SOLID SLEEVE, SSB, DI, LESS ACCS	\$581.40	\$4,651.20
12	1.0 EA	16" FLANGED CROSS C110, CL, TC	\$2,627.12	\$2,627.12
13	2.0 EA	16" MJXFLG ADAPTOR, CL, SSB, DI, LESS ACCS	\$627.60	\$1,255.20
14	2.0 EA	16" MJ CAP, SSB, DI, LESS ACCS	\$324.00	\$648.00
				\$49,759.31

Total Units: 260.0

Average Cost per FT: \$191.38

36" STEEL CASING (16" WATERLINE)

Qty	Unit	Description	Price	Total Price
1	40.0 FT	36"X 40' R/L (RANDOM LENGTH) STEEL CASING PIPE .375 WALL	\$246.67	\$9,866.80
2	4.0 EA	CSS8-1636-SS-CR STAINLESSS STEEL CASING SPACER 2X3 PATTERN8" WIDE	\$406.07	\$1,624.28
3	2.0 EA	ESW1636 END SEAL WRAP	\$170.60	\$341.20
				\$11,832.28

Total Units: 35.0

Average Cost per FT: \$338.07

16" GATE VALVE

Qty	Unit	Description	Price	Total Price
1	2.0 EA	16" MJ X FLG RW DI OL VALVE, LESS ACCS	\$5,999.76	\$11,999.52
2	2.0 EA	TYPE C 564 VALVE BOX W/NYLON WATER LID	\$242.93	\$485.86
3	10.0 FT	5" X 5' CAST IRON SH SOIL PIPE	\$49.93	\$499.30
4	2.0 EA	OES 8' VALVE STEM EXTENSION , GRAY	\$264.50	\$529.00
5	2.0 EA	SMALL DIRT RING	\$81.79	\$163.58
				\$13,677.26

Total Units: 2.0

Average Cost per Each: \$6,838.63

1" COMBO AIR VAC VALVE

**** QUOTED PER THE CUSTOMERS RFQ. CUSTOMER TO VERIFY THAT ALL MATERIAL MEETS CHANDLER SPECS ****

**** CUSTOMER TO VERIFY ALL MATERIAL NEEDED ****

Qty	Unit	Description	Price	Total Price
1	1.0 EA	202B-1438 X 1" IP FORD BRASS SADDLE DOUBLE STRAP TO FIT13.20 TO 14.38 OD PIPE	\$251.71	\$251.71
2	1.0 EA	202B-962X1"IP FORD BRASS SADDLE DOUBLE STRAP TO FIT9.05 TO 9.62 OD PIPE	\$173.62	\$173.62
3	60.0 FT	1"X20' K HARD COPPER TUBE	\$8.81	\$528.60
4	8.0 EA	1" SOLDER JOINT 90 BEND	\$3.37	\$26.96
5	2.0 EA	NL 1" FB1100 FORD CORP STOP (BALL CORP)	\$86.21	\$172.42
6	2.0 EA	NL 1" L84-44 FORD PJ ELL 1\ MALE IRON PIPE THREAD TO 1\ PACK JOINTFOR COPPER OR PLASTIC TUBING (CTS)	\$37.01	\$74.02
7	2.0 EA	NL B11-444 1" FORD BALL VALVE WITH FEMALE IRON PIPE THREAD BOTH ENDS	\$108.38	\$216.76
8	2.0 EA	NL 1 X 6" BRASS NIPPLE	\$13.21	\$26.42
9	2.0 EA	1" 90 ELL, THREADED, NO LEAD BRASS	\$8.50	\$17.00
10	2.0 EA	1" ARI D-040-1" NYLON BASE AIR VAC	\$258.41	\$516.82
11	4.0 EA	NO 4 CONCRETE METER BOX, 22X33"	\$89.17	\$356.68
12	2.0 EA	POLYMER CONCRETE MAG #4 SOLID COVER, "WATER"	\$157.32	\$314.64
				\$2,675.65

Total Units: 2.0

Average Cost per Each: \$1,337.83

15" VCP SEWER

	Qty	Unit	Description	Price	Total Price
1	75.0	FT	15"X 7.5' CLAY PIPE, JCP	\$42.17	\$3,162.75
2	1.0	ROLL	ADEKA SWELL SEAL X 33' (4"-24")	\$127.26	\$127.26
3	2.0	EA	15" CLAY COUPLING	\$70.93	\$141.86
4	1.0	EA	GALLON CLAY PIPE LUBE	\$26.00	\$26.00
					\$3,457.87

Total Units: 72.0

Average Cost per FT: \$48.03

Material List

Prod ID	Description	Unit	Qty	Unit Price	Total Price
0308350	8"X18'1-1/2" PC350 DI PI PE TYTON JOINT, CMNT LIN DUCTILE IRON PIPE-ANSI A21.51	FT	108.0	\$28.63	\$3,092.04
0312350	12"X18' 1-1/2" PC350 DI PIPE TYTON JOINT, CMNT L DUCTILE IRON PIPE-ANSI A21.51	FT	108.0	\$43.87	\$4,737.96
0316350	16"X18'1-1/2" PC350 DI PIPE TYTON JOINT, CMNT L DUCTILE IRON PIPE-ANSI A21.51	FT	270.0	\$70.20	\$18,954.00
03GFL06EPDMNS	16" FIELD LOK 350 GASKET (EPDM)(I)	EA	2.0	\$621.35	\$1,242.70
03GFL08	8" FIELD LOK GASKET	EA	2.0	\$117.64	\$235.28
03GFL08EPDMNS	8" FIELD LOK 350 GASKET (EPDM)(I)	EA	2.0	\$180.59	\$361.18
03GFL12	12" FIELD LOK GASKET	EA	2.0	\$170.85	\$341.70
03GFL12EPDMNS	12" FIELD LOK 350 GASKET (EPDM)(I)	EA	2.0	\$266.82	\$533.64
03GFL16	16" FIELD-LOK GASKET	EA	7.0	\$396.13	\$2,772.91
09120H	1"X20' K HARD COPPER TUBE	FT	60.0	\$8.81	\$528.60
17C1575JCPNS	15"X 7.5' CLAY PIPE, JCP	FT	75.0	\$42.17	\$3,162.75
17CLUBE	GALLON CLAY PIPE LUBE	EA	1.0	\$26.00	\$26.00
18BG0840	8" MJ BOLT & GASKET PAK W/6-3/4X4.0" COR-TEN T-HEAD BOLTS/NUTS & MJ GASKET	EA	21.0	\$28.80	\$604.80
18BG1245	12" MJ BOLT & GASKET PAK W/8-3/4X4.5" COR-TEN T-HEAD BOLTS/NUTS & MJ GASKET	EA	21.0	\$38.41	\$806.61
18L0890	8" MJ 90 BEND, CL, SSB, DI, LESS ACCS	EA	5.0	\$187.20	\$936.00
18L08C	8" MJ CAP, SSB, DI, LESS ACCS	EA	2.0	\$86.40	\$172.80
18L08SL	8" LP MJ SOLID SLEEVE, SSB, DI, LESS ACCS	EA	1.0	\$189.00	\$189.00
18L1290	12" MJ 90 BEND, CL, SSB, DI, LESS ACCS	EA	6.0	\$399.00	\$2,394.00
18L12C	12" MJ CAP, CL, SSB, DI, LESS ACCS	EA	2.0	\$161.40	\$322.80
18L12SL	12" LP MJ SOLID SLEEVE, SSB, DI, LESS ACCS	EA	1.0	\$304.20	\$304.20
19G16	16" MJ P R GASKET	EA	44.0	\$23.54	\$1,035.76
19L1608T	16X8" MJ TEE, CL, SSB, DI, LESS ACCS	EA	1.0	\$838.80	\$838.80
19L1612T	16X12" MJ TEE, CL, SSB, DI, LESS ACCS	EA	1.0	\$1,624.55	\$1,624.55
19L1645	16" MJ 45 BEND, CL, SSB, DI, LESS ACCS	EA	4.0	\$645.60	\$2,582.40
19L1690	16" MJ 90 BEND, CL, SSB, DI, LESS ACCS	EA	4.0	\$903.00	\$3,612.00
19L16AMF	16" MJXFLG ADAPTOR, CL, SSB, DI, LESS ACCS	EA	2.0	\$627.60	\$1,255.20
19L16C	16" MJ CAP, SSB, DI, LESS ACCS	EA	2.0	\$324.00	\$648.00
19L16SL	16" L P MJ SOLID SLEEVE, SSB, DI, LESS ACCS	EA	8.0	\$581.40	\$4,651.20
20B5	3/4X5" COR-TEN TEE HEAD BOLT, WITH NUT	EA	528.0	\$3.63	\$1,916.64
30FXD1616NS	16" FLANGED CROSS C110, CL, TC	EA	1.0	\$2,627.12	\$2,627.12
311108	8" DI PIPE MECHANICAL RESTRAINT FOR DUCTILE IRON PIPE (COLOR CODED BLACK)	EA	21.0	\$45.65	\$958.65
311112	12" DI PIPE MECHANICAL RESTRAINT FOR DUCTILE IRON PIPE (COLOR CODED BLACK)	EA	21.0	\$98.57	\$2,069.97
311116	16" DI PIPE MECHANICAL RESTRAINT FOR DUCTILE IRON PIPE (COLOR CODED BLACK)	EA	44.0	\$186.75	\$8,217.00
33106NL	NL 1 X 6" BRASS NIPPLE	EA	2.0	\$13.21	\$26.42

Prod ID	Description	Unit	Qty	Unit Price	Total Price
34190NL	1" 90 ELL, THREADED, NO LEAD BRASS	EA	2.0	\$8.50	\$17.00
41ARID041	1" ARI D-040-1" NYLON BASE AIR VAC	EA	2.0	\$258.41	\$516.82
43DL08ML	8" MJ RW DI OL VALVE, LESS ACCS	EA	2.0	\$1,122.76	\$2,245.52
43DL12ML	12" MJ RW DI OL VALVE, LESS ACCS	EA	2.0	\$2,214.94	\$4,429.88
43DL16FML	16" MJ X FLG RW DI OL VALVE, LESS ACCS	EA	2.0	\$5,999.76	\$11,999.52
51564IN	TYPE C 564 VALVE BOX W/NYLON WATER LID	EA	6.0	\$242.93	\$1,457.58
64202B09624I	202B-962X1"IP FORD BRASS SADDLE DOUBLE STRAP TO FIT9.05 TO 9.62 OD PIPE	EA	1.0	\$173.62	\$173.62
64202B14384I	202B-1438 X 1" IP FORD BRASS SADDLE DOUBLE STRAP TO FIT13.20 TO 14.38 OD PIPE	EA	1.0	\$251.71	\$251.71
67B11444NL	NL B11-444 1" FORD BALL VALVE WITH FEMALE IRON PIPE THREAD BOTH ENDS	EA	2.0	\$108.38	\$216.76
67FB11004NL	NL 1" FB1100 FORD CORP STOP (BALL CORP)	EA	2.0	\$86.21	\$172.42
67L8444NL	NL 1" L84-44 FORD PJ ELL 1\ MALE IRON PIPE THREAD TO 1\ PACK JOINTFOR COPPER OR PLASTIC TUBING (CTS)	EA	2.0	\$37.01	\$74.02
68S190	1" SOLDER JOINT 90 BEND	EA	8.0	\$3.37	\$26.96
82CMB4	NO 4 CONCRETE METER BOX, 22X33"	EA	4.0	\$89.17	\$356.68
82PCL4	POLYMER CONCRETE MAG #4 SOLID COVER, "WATER"	EA	2.0	\$157.32	\$314.64
8820400BLK	20"X400' BLACK POLY TUBE PERFORATED EVERY 20'	HNDRD	4.0	\$43.73	\$174.92
8830200BLK	30"X200' BLACK POLY TUBE PERFORATED EVERY 20'	HNDRD	2.0	\$63.64	\$127.28
8834308BLK	34"X308' BLACK POLY TUBE (14-16") 8 MIL	HNDRD	3.1	\$66.72	\$205.50
88TAPEPR	2"X100' POLY TAPE, PRINTED CORROSION	EA	12.0	\$6.48	\$77.76
94AMC2005T	ADEKA SWELL SEAL X 33' (4"-24")	ROLL	1.0	\$127.26	\$127.26
94C011515	15" CLAY COUPLING	EA	2.0	\$70.93	\$141.86
94SP055SH	5" X 5' CAST IRON SH SOIL PIPE	FT	30.0	\$49.93	\$1,497.90
952437535NS	24"X 35' LONG STEEL CASING PIPE, .375 WALL	EA	1.0	\$5,133.33	\$5,133.33
953637540RLNS	36"X 40' R/L (RANDOM LENGTH) STEEL CASING PIPE .375 WALL	FT	80.0	\$246.67	\$19,733.60
95CSS80824SSCRNS	CSS8-0824-SS-CR STAINLESS STEEL CASING SPACER 2X2 PATTERN8" WIDE	EA	4.0	\$224.27	\$897.08
95CSS8123SSCRNS	CSS8-1236-SS-CR STAINLESSS STEEL CASING SPACER 2X2 PATTERN8" WIDE	EA	4.0	\$366.67	\$1,466.68
95CSS81636SSCRNS	CSS8-1636-SS-CR STAINLESSS STEEL CASING SPACER 2X3 PATTERN8" WIDE	EA	4.0	\$406.07	\$1,624.28
95ESW0824NS	ESW0824 END SEAL WRAP	EA	2.0	\$84.93	\$169.86
95ESW1236NS	ESW1236 END SEAL WRAP	EA	2.0	\$185.07	\$370.14
95ESW1636NS	ESW1636 END SEAL WRAP	EA	2.0	\$170.60	\$341.20
95TDWB3	3"X1000' DETECTABLE TAPE - WATER - BLUE	ROLL	1.0	\$30.77	\$30.77
95WT1430BLUHS	14 GAUGE TRACER WIRE, BL UE, 30-MIL, HI-STR 250#	FT	500.0	\$0.16	\$80.00
97SDR	SMALL DIRT RING	EA	6.0	\$81.79	\$490.74
97VSE8NS	OES 8' VALVE STEM EXTENSION , GRAY	EA	6.0	\$264.50	\$1,587.00
Total before Taxes:				\$130,312.97	

PIPEPK

PIPE PACAKGE

Vendor Code							FERGUSONWATE	COREMAIN	DANAKEPNERCO
Vendor Name							Ferguson Water	Core&Main	Dana Kepner Co
Vendor Phone							6024958420	4809267003	6022550234
Bid	Activity	Resource	Desc	Quan	Unit	Plug Price	Unit Price	Unit Price	Unit Price
		2CAV1	1" COMBO AIR VAC	2.00	EA	0.0000	0.0000	1,171.5400	1,337.8300
		2DIP12	12" DIP WATERLINE	70.00	LF	0.0000	0.0000	165.1500	181.9200
		2DIP16	16" DIP WATERLINE	260.00	LF	0.0000	0.0000	173.2100	191.3900
		2DIP8	8" DIP WATERLINE	70.00	LF	0.0000	0.0000	102.2300	105.6600
		2GV12	12" GATE VALVE	2.00	EA	0.0000	0.0000	3,051.9500	3,327.7700
		2GV16	16" GATE VALVE	2.00	EA	0.0000	0.0000	6,858.1200	6,838.6300
		2GV8	8" GATE VALVE	2.00	EA	0.0000	0.0000	1,909.8000	2,110.5300
		2VCP15	15" VCP	70.00	LF	0.0000	0.0000	46.6700	49.4000
Quoted Amount							0	93,001	100,580
Plugged Amount							0	0	0
Bond							0	0	0
Mobilization							0	0	0
% Adjustment							0	0	0
\$ Adjustment							0	0	0
Total Adjustment							0	0	0
Totals							0	93,001	100,580
Diff From Plug							0	93,001	100,580
Total Minority							0	0	0

A 'P' beside a price indicates a plug price.

Green background indicates that the vendor is selected.



Bid Proposal for Chandler Heights Utility Relocates Dobson / Chapparal

CUSTOMER	ACHEN GARDNER CONSTRUCTION LLC 550 S 79TH STREET CHANDLER, AZ 85226 Contact: Mark McLafferty (T) (480) 940-1300 mmclafferty@achen.com	Job Chandler Heights Utility Relocates Dobson / Chapparal Chandler, AZ Maricopa County Bid Date: 12/29/2021 Bid #: 2129460
	Sales Representative Vernon Pattan (T) 480-926-7003 (F) 480-926-7050 Vern.Pattan@coreandmain.com	Core & Main 1410 W Harvard Ave Gilbert, AZ 85233 (T) 480-926-7003
CONTACT		
NOTES		



Bid Proposal for Chandler Heights Utility Relocates Dobson / Chapparral

ACHEN GARDNER CONSTRUCTION LLC
Job Location: Chandler, AZ

Bid Date: 12/29/2021

Core & Main 2129460

Core & Main

1410 W Harvard Ave

Gilbert, AZ 85233

Phone: 480-926-7003

Fax: 480-926-7050

Seq#	Qty	Description	Units	Price	Ext Price
DUE TO CURRENT SUPPLY CHAIN DISRUPTIONS, MATERIALS ARE SUBJECT TO PRICING AT TIME OF SHIPMENT. MATERIAL AVAILABILITY AND TIMELINESS OF SHIPMENTS CANNOT BE GUARANTEED. THIS TERM SUPERSEDES ALL OTHER CONTRACTUAL PROVISIONS.					
10		8" DIP WATERLINE			
20	108	8 TJ PR350 DI PIPE	FT	26.48	2,859.84
30	2	8 TJ FIELD LOK 350 GASKET SBR	EA	123.52	247.04
50	1	8 SURE STOP LOCKING GASKET EPDM HEAT RATED	EA	160.15	160.15
80	5	8 MJ 90 C153 IMP	EA	174.14	870.70
90	17	8 TUFGRIP DI TLD-8 L/ACC (I)	EA	43.70	742.90
100	17	8 MJ REGULAR ACC SET L/GLAND	EA	25.80	438.60
110	1	8 MJ L/P SLV C153 IMP	EA	175.81	175.81
120	1	16X8 MJ TEE C153 IMP	EA	780.28	780.28
130	2	8 MJ CAP C153 IMP	EA	80.37	160.74
140	2	16 TUFGRIP DI TLD-16 L/ACC (I)	EA	136.87	273.74
150	2	16 MJ REGULAR ACC SET L/GLAND	EA	56.19	112.38
170	340	20"X340' POLYWRAP BLK F/6"-8" BS (W/20'PERF)	FT	0.59	200.60
180	2	T-10-2 UPC 10 MIL TAPE 2"X100'	EA	8.00	16.00
190	500	WIRE 14/1 X 500 UF BLUE SOLID FEED 500' ROLL	FT	0.13	65.00
200	1	3X1000' DET TAPE WATER BLUE	RL	52.03	52.03
				SUBTOTAL	7,155.81
220		8" GATE VALVE			
230	2	8 F6100 MJ RW GV OL ON L/ACC CLOW GATE VALVE EPOXY COATED W/STAINLESS STEEL BOLTS & NUTS	EA	1,118.23	2,236.46
240	4	8 TUFGRIP DI TLD-8 L/ACC (I)	EA	43.70	174.80
250	4	8 MJ REGULAR ACC SET L/GLAND	EA	25.80	103.20
260	4	36 564-A BOTTOM ONLY IMP	EA	66.88	267.52
270	2	24 562-A BOTTOM ONLY IMP	EA	47.75	95.50
280	2	16 562-A TOP ONLY IMP	EA	47.03	94.06
290	2	SWSERVICE NPR600-WA 562A POLYM	EA	42.31	84.62
300	2	DC457 DEBRIS CAP-BLUE	EA	57.69	115.38
310	2	8'0" MAG EXT STEM ONLY	EA	253.66	507.32
320	2	VLV STEM EXT SMALL DIRT RING	EA	70.45	140.90
				SUBTOTAL	3,819.76
340		12" DIP WATERLINE			
350	108	12 TJ PR350 DI PIPE	FT	40.56	4,380.48



Bid Proposal for Chandler Heights Utility Relocates Dobson / Chapparral

Bid #: 2129460

Seq#	Qty	Description	Units	Price	Ext Price
360	2	12 TJ FIELD LOK 350 GASKET SBR	EA	179.39	358.78
380	2	12 SURE STOP LOCKING GASKET EPDM HEAT RATED	EA	241.65	483.30
410	17	12 TUFGRIP DI TLD-12 L/ACC (I)	EA	94.36	1,604.12
420	17	12 MJ REGULAR ACC SET L/GLAND	EA	35.55	604.35
430	6	12 MJ 90 C153 IMP	EA	371.16	2,226.96
440	2	12 MJ CAP C153 IMP	EA	150.14	300.28
450	1	12 MJ L/P SLV C153 IMP	EA	282.98	282.98
460	1	16X12 MJ TEE C153 IMP	EA	932.65	932.65
470	2	16 TUFGRIP DI TLD-16 L/ACC (I)	EA	136.87	273.74
480	2	16 MJ REGULAR ACC SET L/GLAND	EA	56.19	112.38
				SUBTOTAL	11,560.02
500		12" GATE VALVE			
510	2	12 F6100 MJ RW GV OL ON L/ACC CLOW GATE VALVE EPOXY COATED W/STAINLESS STEEL BOLTS & NUTS	EA	2,206.36	4,412.72
520	4	12 TUFGRIP DI TLD-12 L/ACC (I)	EA	94.36	377.44
530	4	12 MJ REGULAR ACC SET L/GLAND	EA	35.55	142.20
540	2	36 564-A BOTTOM ONLY IMP	EA	66.88	133.76
550	2	24 562-A BOTTOM ONLY IMP	EA	47.75	95.50
560	2	16 562-A TOP ONLY IMP	EA	47.03	94.06
570	2	SWSERVICE NPR600-WA 562A POLYM	EA	42.31	84.62
580	2	DC457 DEBRIS CAP-BLUE	EA	57.69	115.38
590	2	8'0" MAG EXT STEM ONLY	EA	253.66	507.32
600	2	VLV STEM EXT SMALL DIRT RING	EA	70.45	140.90
				SUBTOTAL	6,103.90
620		16" DIP WATERLINE			
630	270	16 TJ CL50 PR350 DI PIPE	FT	65.64	17,722.80
640	7	16 TJ FIELD LOK 350 GASKET SBR	EA	415.95	2,911.65
660	2	16 SURE STOP LOCKING GASKET EPDM HEAT RATED	EA	540.24	1,080.48
690	4	16 MJ 90 C153 IMP	EA	840.00	3,360.00
700	44	16 TUFGRIP DI TLD-16 L/ACC (I)	EA	136.87	6,022.28
710	44	16 MJ REGULAR ACC SET L/GLAND	EA	56.19	2,472.36
720	4	16 MJ 45 C153 IMP	EA	600.56	2,402.24
730	8	16 MJ L/P SLV C153 IMP	EA	540.84	4,326.72
740	1	16 FLG CROSS C110 IMP	EA	2,489.30	2,489.30
750	2	16 MJXFLG ADPT C153 IMP	EA	583.81	1,167.62
760	2	16 MJ CAP C153 IMP	EA	301.40	602.80
770	6	16 MAG HDG BOLT&NUT KIT L/GSKT A307A HOT DIP GALV	EA	57.81	346.86
780	6	16X1/8 FF CLOTH IN RUBBER GSKT	EA	21.48	128.88
				SUBTOTAL	45,033.99
800		16" GATE VALVE			
810	2	16 F6106 MJXFLG RW GV OL L/ACC ON CLOW GATE VALVE EPOXY COATED W/STAINLESS STEEL BOLTS & NUTS	EA	6,000.00	12,000.00



Bid Proposal for Chandler Heights Utility Relocates Dobson / Chapparral

Bid #: 2129460

Seq#	Qty	Description	Units	Price	Ext Price
820	2	16 TUFGRIP DI TLD-16 L/ACC (I)	EA	136.87	273.74
830	2	16 MJ REGULAR ACC SET L/GLAND	EA	56.19	112.38
840	2	16 MAG HDG BOLT&NUT KIT L/GSKT A307A HOT DIP GALV	EA	57.81	115.62
850	2	16X1/8 FF CLOTH IN RUBBER GSKT	EA	21.48	42.96
860	2	36 564-A BOTTOM ONLY IMP	EA	66.88	133.76
870	2	24 562-A BOTTOM ONLY IMP	EA	47.75	95.50
880	2	16 562-A TOP ONLY IMP	EA	47.03	94.06
890	2	SWSERVICE NPR600-WA 562A POLYM	EA	42.31	84.62
900	2	DC457 DEBRIS CAP-BLUE	EA	57.69	115.38
910	2	8'0" MAG EXT STEM ONLY	EA	253.66	507.32
920	2	VLV STEM EXT SMALL DIRT RING	EA	70.45	140.90
				SUBTOTAL	13,716.24
940		1" COMBO AIR VAC VALVE			
950		PER DTL 106 / COC DTL C-319			
960	1	BR2B1314IP100 SAD 12X1IP 13.14-14.58 DBL STRAP BRNZ SAD	EA	242.57	242.57
970	1	BR2B0899IP100 SAD 8X1IP 8.99-9.67 DBL STRAP BRNZ SAD	EA	167.27	167.27
980	2	B25025N 1 BALL CORP MIPXCF AWWA IP X COP FLARE NO LEAD	EA	75.32	150.64
990	60	1 HARD K COPPER TUBE 20'	FT	8.17	490.20
1000	8	1 WROT COPPER 90 BEND CXC	EA	2.73	21.84
1010	2	P25172N 1 BALL CURB PJCTSXFIP PACK JT CTS X FIP NO LEAD	EA	115.43	230.86
1020	2	1X6 BRASS NIPPLE NO LEAD (I)	EA	11.73	23.46
1030	2	1 BRASS 90 NO LEAD (I)	EA	7.48	14.96
1040	2	1" ARI D040 AIR RELEASE VALVE	EA	257.56	515.12
1050	2	#4 CONC MB EXT/STACK BOX PHOE- NIX	EA	66.73	133.46
1060	2	#4 CONC METER BOX BODY PHOENIX	EA	66.73	133.46
1070	2	#4 MAG POLY LID W/AMR WATER A6001852-H9	EA	109.62	219.24
				SUBTOTAL	2,343.08
1090		15" VCP SEWER			
1100	75	BUILDPROD 15" CLAY PIPE	FT	39.95	2,996.25
1120	4	102800 15 PVC MH STOP RING	EA	39.26	157.04
1130	2	1001-1515 15 CLAYXCLAY CPLG	EA	56.57	113.14
				SUBTOTAL	3,266.43
				Sub Total	92,999.23
				Tax	0.00
				Total	92,999.23

UNLESS OTHERWISE SPECIFIED HEREIN, PRICES QUOTED ARE VALID IF ACCEPTED BY CUSTOMER AND PRODUCTS ARE RELEASED BY CUSTOMER FOR MANUFACTURE WITHIN THIRTY (30) CALENDAR DAYS FROM THE DATE OF THIS QUOTATION. CORE & MAIN LP RESERVES THE RIGHT TO INCREASE PRICES TO ADDRESS FACTORS, INCLUDING BUT NOT LIMITED TO, GOVERNMENT REGULATIONS, TARIFFS, TRANSPORTATION, FUEL AND RAW MATERIAL COSTS. DELIVERY WILL COMMENCE BASED UPON MANUFACTURER LEAD TIMES. ANY MATERIAL DELIVERIES DELAYED BEYOND MANUFACTURER LEAD TIMES MAY BE SUBJECT TO PRICE INCREASES AND/OR APPLICABLE STORAGE FEES. THIS BID PROPOSAL IS CONTINGENT UPON BUYER'S ACCEPTANCE OF SELLER'S TERMS AND CONDITIONS OF SALE, AS MODIFIED FROM TIME TO TIME, WHICH CAN BE FOUND AT:

<https://coreandmain.com/TandC/>



CHANDLER HEIGHTS UTILITY RELOCATIONS -CMAR

DOBSON / CHAPPARAL

Bid Date:

Project Location: CHANDLER

PLEASE BE AWARE! THE PROPOSED CHINA TARIFF (SECTION 301, LIST 3) MAY AFFECT PRODUCTS OFFERED IN THIS QUOTATION. IF THE TARIFF IS IMPLEMENTED, THE ACTUAL INCREASE IN PRICING WILL BE PASSED ON.

Approximate Projected Lead Time for Delivery of Materials Listed on this Quotation is 90+ Days for Water & Sewer Projects and 180+ Days for Water Meters and/or Radios

Quote: BO122921B

TakeOff Name: ACHEN GARDNER LIST

Customer: ACHEN GARDNER CONST - PHOENIX

Sales Rep: Lex Cassiere

Phone: 602.369.2443

eMail: lCassiere@danakepner.com

Phoenix

2401 South 19th Avenue

Phoenix, AZ 85009

Standard Hours: 6:00a to 4:00p Monday through Friday

Phone: 602.255.0234

On Call: 602.757.7991

Assumptions

Chandler specifications will prevail in this proposal.

Terms and Conditions

Due to the extreme volatility of raw material, energy, and transportation costs, the prices shown in this quotation are only valid for 30 days, with the exception of PVC Pipe prices. PVC prices will be subject to the Manufacturers price in effect at the time of shipment. Order releases and shipments delivered 60 days beyond the order date, or as stipulated, will be subject to the price in effect at the time of shipment.

Totals are for estimating purposes only. Unit prices prevail.

Dana Kepner Company, Inc. is not responsible for manufacturers ability to ship material or hold prices.

Due to volatility in the copper commodity market, copper tubing pricing will be determined at time of shipment.

Quoted totals do not include taxes.

PVC and HDPE pricing is based on manufacturer's ability to direct ship to the jobsite.

This quote is for the supply of material only.

The materials specifications, sizes, and quantities listed are the interpretations of Dana Kepner Company, Inc. and are believed to be correct, but are not guaranteed.

Connecting hardware for Non-DK supplied material is not included in bid, unless otherwise noted.

PVC Sewer Pipe may come in 13', 14', 20', & 22' lengths, based on availability. Regardless of product description in this proposal.

Clay Pipe and Fittings are Non-Returnable.

PVC and HDPE material are considered Freight-On-Board from the manufacturer.

Terms are net 30, and Quote is based on award of complete project.

All returns must be approved by management and will have a minimum 15% restock charge. Nonstocks are not returnable, and are shaded gray within this quote.

Manufacturer standard warranty applies.

Thank you for the opportunity to bid this project.

Quote Summary

WATER	8" DIP WATERLINE	\$7,395.88
	24" STEEL CASING (8" WATERLINE)	\$6,200.27
	8" GATE VALVE	\$4,221.06
	12" DIP WATERLINE	\$12,734.23
	36" STEEL CASING (12" WATERLINE)	\$11,703.62
	12" GATE VALVE	\$6,655.54
	16" DIP WATERLINE	\$49,759.31
	36" STEEL CASING (16" WATERLINE)	\$11,832.28
	16" GATE VALVE	\$13,677.26
	1" COMBO AIR VAC VALVE	\$2,675.65
	WATER Total:	\$126,855.10
SEWER	15" VCP SEWER	\$3,457.87
	SEWER Total:	\$3,457.87
Total Quote before Taxes:		\$130,312.97

8" DIP WATERLINE

****QUOTED TJ NON RESTRAINED DI PIPE & THE FIELD LOK GASKET QTY CALLED ON THE CUSTOMERS RFQ. CUSTOMER TO VERIFY WHAT TYPE OF RESTRAINED JOINT DI PIPE IS NEEDED****

**** QUOTE EPDM GASKET. CUSTOMER TO SPECIFY THE TEMPERATURE THE GASKETS NEED TO BE RATED AT. QUOTE MAY NEED TO BE REVISED ****

Qty	Unit	Description	Price	Total Price
1	108.0 FT	8"X18'1-1/2" PC350 DI PI PE TYTON JOINT, CMNT LIN DUCTILE IRON PIPE-ANSI A21.51	\$28.63	\$3,092.04
2	4.0 HNDRD	20"X400' BLACK POLY TUBE PERFORATED EVERY 20'	\$43.73	\$174.92
3	1.0 ROLL	3"X1000' DETECTABLE TAPE - WATER - BLUE	\$30.77	\$30.77
4	3.0 EA	2"X100' POLY TAPE, PRINTED CORROSION	\$6.48	\$19.44
5	500.0 FT	14 GAUGE TRACER WIRE, BL UE, 30-MIL, HI-STR 250#	\$0.16	\$80.00
6	2.0 EA	8" FIELD LOK GASKET	\$117.64	\$235.28
7	2.0 EA	8" FIELD LOK 350 GASKET (EPDM)(I)	\$180.59	\$361.18
8	5.0 EA	8" MJ 90 BEND, CL, SSB, DI, LESS ACCS	\$187.20	\$936.00
9	17.0 EA	8" DI PIPE MECHANICAL RESTRAINT FOR DUCTILE IRON PIPE (COLOR CODED BLACK)	\$45.65	\$776.05
10	17.0 EA	8" MJ BOLT & GASKET PAK W/6-3/4X4.0" COR-TEN T-HEAD BOLTS/NUTS & MJ GASKET	\$28.80	\$489.60
11	1.0 EA	8" LP MJ SOLID SLEEVE, SSB, DI, LESS ACCS	\$189.00	\$189.00
12	1.0 EA	16X8" MJ TEE, CL, SSB, DI, LESS ACCS	\$838.80	\$838.80
13	2.0 EA	8" MJ CAP, SSB, DI, LESS ACCS	\$86.40	\$172.80
				\$7,395.88

Total Units: 100.0

Average Cost per FT: \$73.96

24" STEEL CASING (8" WATERLINE)

Qty	Unit	Description	Price	Total Price
1	1.0 EA	24"X 35' LONG STEEL CASING PIPE, .375 WALL	\$5,133.33	\$5,133.33
2	4.0 EA	CSS8-0824-SS-CR STAINLESS STEEL CASING SPACER 2X2 PATTERN8" WIDE	\$224.27	\$897.08
3	2.0 EA	ESW0824 END SEAL WRAP	\$84.93	\$169.86
				\$6,200.27

Total Units: 35.0

Average Cost per FT: \$177.15

8" GATE VALVE

Qty	Unit	Description	Price	Total Price
1	2.0 EA	8" MJ RW DI OL VALVE, LESS ACCS	\$1,122.76	\$2,245.52
2	2.0 EA	TYPE C 564 VALVE BOX W/NYLON WATER LID	\$242.93	\$485.86
3	10.0 FT	5" X 5' CAST IRON SH SOIL PIPE	\$49.93	\$499.30
4	2.0 EA	OES 8' VALVE STEM EXTENSION , GRAY	\$264.50	\$529.00
5	2.0 EA	SMALL DIRT RING	\$81.79	\$163.58
6	4.0 EA	8" DI PIPE MECHANICAL RESTRAINT FOR DUCTILE IRON PIPE (COLOR CODED BLACK)	\$45.65	\$182.60
7	4.0 EA	8" MJ BOLT & GASKET PAK W/6-3/4X4.0" COR-TEN T-HEAD BOLTS/NUTS & MJ GASKET	\$28.80	\$115.20
				\$4,221.06

Total Units: 2.0

Average Cost per Each: \$2,110.53

12" DIP WATERLINE

****QUOTED TJ NON RESTRAINED DI PIPE & THE FIELD LOK GASKET QTY CALLED ON THE CUSTOMERS RFQ. CUSTOMER TO VERIFY WHAT TYPE OF RESTRAINED JOINT DI PIPE IS NEEDED****

**** QUOTE EPDM GASKET. CUSTOMER TO SPECIFY THE TEMPERATURE THE GASKETS NEED TO BE RATED AT. QUOTE MAY NEED TO BE REVISED ****

**** CAN USE THE REMAINDER OF THE DETECTABLE MARKING TAPE & TRACER WIRE FROM THE 8" SUBSECTION ****

Qty	Unit	Description	Price	Total Price
1	108.0 FT	12"X18' 1-1/2" PC350 DI PIPE TYTON JOINT, CMNT L DUCTILE IRON PIPE-ANSI A21.51	\$43.87	\$4,737.96
2	2.0 HNDRD	30"X200' BLACK POLY TUBE PERFORATED EVERY 20'	\$63.64	\$127.28
3	3.0 EA	2"X100' POLY TAPE, PRINTED CORROSION	\$6.48	\$19.44
4	2.0 EA	12" FIELD LOK GASKET	\$170.85	\$341.70
5	2.0 EA	12" FIELD LOK 350 GASKET (EPDM)(I)	\$266.82	\$533.64
6	17.0 EA	12" DI PIPE MECHANICAL RESTRAINT FOR DUCTILE IRON PIPE (COLOR CODED BLACK)	\$98.57	\$1,675.69
7	17.0 EA	12" MJ BOLT & GASKET PAK W/8-3/4X4.5" COR-TEN T-HEAD BOLTS/NUTS & MJ GASKET	\$38.41	\$652.97
8	6.0 EA	12" MJ 90 BEND, CL, SSB, DI, LESS ACCS	\$399.00	\$2,394.00
9	2.0 EA	12" MJ CAP, CL, SSB, DI, LESS ACCS	\$161.40	\$322.80
10	1.0 EA	12" LP MJ SOLID SLEEVE, SSB, DI, LESS ACCS	\$304.20	\$304.20
11	1.0 EA	16X12" MJ TEE, CL, SSB, DI, LESS ACCS	\$1,624.55	\$1,624.55
				\$12,734.23

Total Units: 100.0

Average Cost per FT: \$127.34

36" STEEL CASING (12" WATERLINE)

Qty	Unit	Description	Price	Total Price
1	40.0 FT	36"X 40' R/L (RANDOM LENGTH) STEEL CASING PIPE .375 WALL	\$246.67	\$9,866.80
2	4.0 EA	CSS8-1236-SS-CR STAINLESSS STEEL CASING SPACER 2X2 PATTERN8" WIDE	\$366.67	\$1,466.68
3	2.0 EA	ESW1236 END SEAL WRAP	\$185.07	\$370.14
				\$11,703.62

Total Units: 35.0

Average Cost per FT: \$334.39

12" GATE VALVE

**** QUOTED 2 GATE VALVES. CUSTOMER TO VERIFY WHAT IS NEEDED ****

Qty	Unit	Description	Price	Total Price
1	2.0 EA	12" MJ RW DI OL VALVE, LESS ACCS	\$2,214.94	\$4,429.88
2	2.0 EA	TYPE C 564 VALVE BOX W/NYLON WATER LID	\$242.93	\$485.86
3	10.0 FT	5" X 5' CAST IRON SH SOIL PIPE	\$49.93	\$499.30
4	2.0 EA	OES 8' VALVE STEM EXTENSION , GRAY	\$264.50	\$529.00
5	2.0 EA	SMALL DIRT RING	\$81.79	\$163.58
6	4.0 EA	12" DI PIPE MECHANICAL RESTRAINT FOR DUCTILE IRON PIPE (COLOR CODED BLACK)	\$98.57	\$394.28
7	4.0 EA	12" MJ BOLT & GASKET PAK W/8-3/4X4.5" COR-TEN T-HEAD BOLTS/NUTS & MJ GASKET	\$38.41	\$153.64
				\$6,655.54

Total Units: 2.0

Average Cost per Each: \$3,327.77

16" DIP WATERLINE

****QUOTED TJ NON RESTRAINED DI PIPE & THE FIELD LOK GASKET QTY CALLED ON THE CUSTOMERS RFQ. CUSTOMER TO VERIFY WHAT TYPE OF RESTRAINED JOINT DI PIPE IS NEEDED****

**** QUOTE EPDM GASKET. CUSTOMER TO SPECIFY THE TEMPERATURE THE GASKETS NEED TO BE RATED AT. QUOTE MAY NEED TO BE REVISED ****

**** CAN USE THE REMAINDER OF THE DETECTABLE MARKING TAPE & TRACER WIRE FROM THE 8" SUBSECTION ****

Qty	Unit	Description	Price	Total Price
1	270.0 FT	16"X18'1-1/2" PC350 DI PIPE TYTON JOINT, CMNT L DUCTILE IRON PIPE-ANSI A21.51	\$70.20	\$18,954.00
2	6.0 EA	2"X100' POLY TAPE, PRINTED CORROSION	\$6.48	\$38.88
3	3.1 HNDRD	34"X308' BLACK POLY TUBE (14-16") 8 MIL	\$66.72	\$205.50
4	7.0 EA	16" FIELD-LOK GASKET	\$396.13	\$2,772.91
5	2.0 EA	16" FIELD LOK 350 GASKET (EPDM)(I)	\$621.35	\$1,242.70
6	4.0 EA	16" MJ 90 BEND, CL, SSB, DI, LESS ACCS	\$903.00	\$3,612.00
7	44.0 EA	16" DI PIPE MECHANICAL RESTRAINT FOR DUCTILE IRON PIPE (COLOR CODED BLACK)	\$186.75	\$8,217.00
8	44.0 EA	16" MJ P R GASKET	\$23.54	\$1,035.76
9	528.0 EA	3/4X5" COR-TEN TEE HEAD BOLT, WITH NUT	\$3.63	\$1,916.64
10	4.0 EA	16" MJ 45 BEND, CL, SSB, DI, LESS ACCS	\$645.60	\$2,582.40
11	8.0 EA	16" L P MJ SOLID SLEEVE, SSB, DI, LESS ACCS	\$581.40	\$4,651.20
12	1.0 EA	16" FLANGED CROSS C110, CL, TC	\$2,627.12	\$2,627.12
13	2.0 EA	16" MJXFLG ADAPTOR, CL, SSB, DI, LESS ACCS	\$627.60	\$1,255.20
14	2.0 EA	16" MJ CAP, SSB, DI, LESS ACCS	\$324.00	\$648.00
				\$49,759.31

Total Units: 260.0

Average Cost per FT: \$191.38

36" STEEL CASING (16" WATERLINE)

Qty	Unit	Description	Price	Total Price
1	40.0 FT	36"X 40' R/L (RANDOM LENGTH) STEEL CASING PIPE .375 WALL	\$246.67	\$9,866.80
2	4.0 EA	CSS8-1636-SS-CR STAINLESSS STEEL CASING SPACER 2X3 PATTERN8" WIDE	\$406.07	\$1,624.28
3	2.0 EA	ESW1636 END SEAL WRAP	\$170.60	\$341.20
				\$11,832.28

Total Units: 35.0

Average Cost per FT: \$338.07

16" GATE VALVE

Qty	Unit	Description	Price	Total Price
1	2.0 EA	16" MJ X FLG RW DI OL VALVE, LESS ACCS	\$5,999.76	\$11,999.52
2	2.0 EA	TYPE C 564 VALVE BOX W/NYLON WATER LID	\$242.93	\$485.86
3	10.0 FT	5" X 5' CAST IRON SH SOIL PIPE	\$49.93	\$499.30
4	2.0 EA	OES 8' VALVE STEM EXTENSION , GRAY	\$264.50	\$529.00
5	2.0 EA	SMALL DIRT RING	\$81.79	\$163.58
				\$13,677.26

Total Units: 2.0

Average Cost per Each: \$6,838.63

1" COMBO AIR VAC VALVE

**** QUOTED PER THE CUSTOMERS RFQ. CUSTOMER TO VERIFY THAT ALL MATERIAL MEETS CHANDLER SPECS ****

**** CUSTOMER TO VERIFY ALL MATERIAL NEEDED ****

Qty	Unit	Description	Price	Total Price
1	1.0 EA	202B-1438 X 1" IP FORD BRASS SADDLE DOUBLE STRAP TO FIT13.20 TO 14.38 OD PIPE	\$251.71	\$251.71
2	1.0 EA	202B-962X1"IP FORD BRASS SADDLE DOUBLE STRAP TO FIT9.05 TO 9.62 OD PIPE	\$173.62	\$173.62
3	60.0 FT	1"X20' K HARD COPPER TUBE	\$8.81	\$528.60
4	8.0 EA	1" SOLDER JOINT 90 BEND	\$3.37	\$26.96
5	2.0 EA	NL 1" FB1100 FORD CORP STOP (BALL CORP)	\$86.21	\$172.42
6	2.0 EA	NL 1" L84-44 FORD PJ ELL 1\ MALE IRON PIPE THREAD TO 1\ PACK JOINTFOR COPPER OR PLASTIC TUBING (CTS)	\$37.01	\$74.02
7	2.0 EA	NL B11-444 1" FORD BALL VALVE WITH FEMALE IRON PIPE THREAD BOTH ENDS	\$108.38	\$216.76
8	2.0 EA	NL 1 X 6" BRASS NIPPLE	\$13.21	\$26.42
9	2.0 EA	1" 90 ELL, THREADED, NO LEAD BRASS	\$8.50	\$17.00
10	2.0 EA	1" ARI D-040-1" NYLON BASE AIR VAC	\$258.41	\$516.82
11	4.0 EA	NO 4 CONCRETE METER BOX, 22X33"	\$89.17	\$356.68
12	2.0 EA	POLYMER CONCRETE MAG #4 SOLID COVER, "WATER"	\$157.32	\$314.64
				\$2,675.65

Total Units: 2.0

Average Cost per Each: \$1,337.83

15" VCP SEWER

	Qty	Unit	Description	Price	Total Price
1	75.0	FT	15"X 7.5' CLAY PIPE, JCP	\$42.17	\$3,162.75
2	1.0	ROLL	ADEKA SWELL SEAL X 33' (4"-24")	\$127.26	\$127.26
3	2.0	EA	15" CLAY COUPLING	\$70.93	\$141.86
4	1.0	EA	GALLON CLAY PIPE LUBE	\$26.00	\$26.00
					\$3,457.87

Total Units: 72.0 Average Cost per FT: \$48.03

Material List

Prod ID	Description	Unit	Qty	Unit Price	Total Price
0308350	8"X18'1-1/2" PC350 DI PI PE TYTON JOINT, CMNT LIN DUCTILE IRON PIPE-ANSI A21.51	FT	108.0	\$28.63	\$3,092.04
0312350	12"X18' 1-1/2" PC350 DI PIPE TYTON JOINT, CMNT L DUCTILE IRON PIPE-ANSI A21.51	FT	108.0	\$43.87	\$4,737.96
0316350	16"X18'1-1/2" PC350 DI PIPE TYTON JOINT, CMNT L DUCTILE IRON PIPE-ANSI A21.51	FT	270.0	\$70.20	\$18,954.00
03GFL06EPDMNS	16" FIELD LOK 350 GASKET (EPDM)(I)	EA	2.0	\$621.35	\$1,242.70
03GFL08	8" FIELD LOK GASKET	EA	2.0	\$117.64	\$235.28
03GFL08EPDMNS	8" FIELD LOK 350 GASKET (EPDM)(I)	EA	2.0	\$180.59	\$361.18
03GFL12	12" FIELD LOK GASKET	EA	2.0	\$170.85	\$341.70
03GFL12EPDMNS	12" FIELD LOK 350 GASKET (EPDM)(I)	EA	2.0	\$266.82	\$533.64
03GFL16	16" FIELD-LOK GASKET	EA	7.0	\$396.13	\$2,772.91
09120H	1"X20' K HARD COPPER TUBE	FT	60.0	\$8.81	\$528.60
17C1575JCPNS	15"X 7.5' CLAY PIPE, JCP	FT	75.0	\$42.17	\$3,162.75
17CLUBE	GALLON CLAY PIPE LUBE	EA	1.0	\$26.00	\$26.00
18BG0840	8" MJ BOLT & GASKET PAK W/6-3/4X4.0" COR-TEN T-HEAD BOLTS/NUTS & MJ GASKET	EA	21.0	\$28.80	\$604.80
18BG1245	12" MJ BOLT & GASKET PAK W/8-3/4X4.5" COR-TEN T-HEAD BOLTS/NUTS & MJ GASKET	EA	21.0	\$38.41	\$806.61
18L0890	8" MJ 90 BEND, CL, SSB, DI, LESS ACCS	EA	5.0	\$187.20	\$936.00
18L08C	8" MJ CAP, SSB, DI, LESS ACCS	EA	2.0	\$86.40	\$172.80
18L08SL	8" LP MJ SOLID SLEEVE, SSB, DI, LESS ACCS	EA	1.0	\$189.00	\$189.00
18L1290	12" MJ 90 BEND, CL, SSB, DI, LESS ACCS	EA	6.0	\$399.00	\$2,394.00
18L12C	12" MJ CAP, CL, SSB, DI, LESS ACCS	EA	2.0	\$161.40	\$322.80
18L12SL	12" LP MJ SOLID SLEEVE, SSB, DI, LESS ACCS	EA	1.0	\$304.20	\$304.20
19G16	16" MJ P R GASKET	EA	44.0	\$23.54	\$1,035.76
19L1608T	16X8" MJ TEE, CL, SSB, DI, LESS ACCS	EA	1.0	\$838.80	\$838.80
19L1612T	16X12" MJ TEE, CL, SSB, DI, LESS ACCS	EA	1.0	\$1,624.55	\$1,624.55
19L1645	16" MJ 45 BEND, CL, SSB, DI, LESS ACCS	EA	4.0	\$645.60	\$2,582.40
19L1690	16" MJ 90 BEND, CL, SSB, DI, LESS ACCS	EA	4.0	\$903.00	\$3,612.00
19L16AMF	16" MJXFLG ADAPTOR, CL, SSB, DI, LESS ACCS	EA	2.0	\$627.60	\$1,255.20
19L16C	16" MJ CAP, SSB, DI, LESS ACCS	EA	2.0	\$324.00	\$648.00
19L16SL	16" L P MJ SOLID SLEEVE, SSB, DI, LESS ACCS	EA	8.0	\$581.40	\$4,651.20
20B5	3/4X5" COR-TEN TEE HEAD BOLT, WITH NUT	EA	528.0	\$3.63	\$1,916.64
30FXD1616NS	16" FLANGED CROSS C110, CL, TC	EA	1.0	\$2,627.12	\$2,627.12
311108	8" DI PIPE MECHANICAL RESTRAINT FOR DUCTILE IRON PIPE (COLOR CODED BLACK)	EA	21.0	\$45.65	\$958.65
311112	12" DI PIPE MECHANICAL RESTRAINT FOR DUCTILE IRON PIPE (COLOR CODED BLACK)	EA	21.0	\$98.57	\$2,069.97
311116	16" DI PIPE MECHANICAL RESTRAINT FOR DUCTILE IRON PIPE (COLOR CODED BLACK)	EA	44.0	\$186.75	\$8,217.00
33106NL	NL 1 X 6" BRASS NIPPLE	EA	2.0	\$13.21	\$26.42

Prod ID	Description	Unit	Qty	Unit Price	Total Price
34190NL	1" 90 ELL, THREADED, NO LEAD BRASS	EA	2.0	\$8.50	\$17.00
41ARID041	1" ARI D-040-1" NYLON BASE AIR VAC	EA	2.0	\$258.41	\$516.82
43DL08ML	8" MJ RW DI OL VALVE, LESS ACCS	EA	2.0	\$1,122.76	\$2,245.52
43DL12ML	12" MJ RW DI OL VALVE, LESS ACCS	EA	2.0	\$2,214.94	\$4,429.88
43DL16FML	16" MJ X FLG RW DI OL VALVE, LESS ACCS	EA	2.0	\$5,999.76	\$11,999.52
51564IN	TYPE C 564 VALVE BOX W/NYLON WATER LID	EA	6.0	\$242.93	\$1,457.58
64202B09624I	202B-962X1"IP FORD BRASS SADDLE DOUBLE STRAP TO FIT9.05 TO 9.62 OD PIPE	EA	1.0	\$173.62	\$173.62
64202B14384I	202B-1438 X 1" IP FORD BRASS SADDLE DOUBLE STRAP TO FIT13.20 TO 14.38 OD PIPE	EA	1.0	\$251.71	\$251.71
67B11444NL	NL B11-444 1" FORD BALL VALVE WITH FEMALE IRON PIPE THREAD BOTH ENDS	EA	2.0	\$108.38	\$216.76
67FB11004NL	NL 1" FB1100 FORD CORP STOP (BALL CORP)	EA	2.0	\$86.21	\$172.42
67L8444NL	NL 1" L84-44 FORD PJ ELL 1\ MALE IRON PIPE THREAD TO 1\ PACK JOINTFOR COPPER OR PLASTIC TUBING (CTS)	EA	2.0	\$37.01	\$74.02
68S190	1" SOLDER JOINT 90 BEND	EA	8.0	\$3.37	\$26.96
82CMB4	NO 4 CONCRETE METER BOX, 22X33"	EA	4.0	\$89.17	\$356.68
82PCL4	POLYMER CONCRETE MAG #4 SOLID COVER, "WATER"	EA	2.0	\$157.32	\$314.64
8820400BLK	20"X400' BLACK POLY TUBE PERFORATED EVERY 20'	HNDRD	4.0	\$43.73	\$174.92
8830200BLK	30"X200' BLACK POLY TUBE PERFORATED EVERY 20'	HNDRD	2.0	\$63.64	\$127.28
8834308BLK	34"X308' BLACK POLY TUBE (14-16") 8 MIL	HNDRD	3.1	\$66.72	\$205.50
88TAPEPR	2"X100' POLY TAPE, PRINTED CORROSION	EA	12.0	\$6.48	\$77.76
94AMC2005T	ADEKA SWELL SEAL X 33' (4"-24")	ROLL	1.0	\$127.26	\$127.26
94C011515	15" CLAY COUPLING	EA	2.0	\$70.93	\$141.86
94SP055SH	5" X 5' CAST IRON SH SOIL PIPE	FT	30.0	\$49.93	\$1,497.90
952437535NS	24"X 35' LONG STEEL CASING PIPE, .375 WALL	EA	1.0	\$5,133.33	\$5,133.33
953637540RLNS	36"X 40' R/L (RANDOM LENGTH) STEEL CASING PIPE .375 WALL	FT	80.0	\$246.67	\$19,733.60
95CSS80824SSCRNS	CSS8-0824-SS-CR STAINLESS STEEL CASING SPACER 2X2 PATTERN8" WIDE	EA	4.0	\$224.27	\$897.08
95CSS8123SSCRNS	CSS8-1236-SS-CR STAINLESSS STEEL CASING SPACER 2X2 PATTERN8" WIDE	EA	4.0	\$366.67	\$1,466.68
95CSS81636SSCRNS	CSS8-1636-SS-CR STAINLESSS STEEL CASING SPACER 2X3 PATTERN8" WIDE	EA	4.0	\$406.07	\$1,624.28
95ESW0824NS	ESW0824 END SEAL WRAP	EA	2.0	\$84.93	\$169.86
95ESW1236NS	ESW1236 END SEAL WRAP	EA	2.0	\$185.07	\$370.14
95ESW1636NS	ESW1636 END SEAL WRAP	EA	2.0	\$170.60	\$341.20
95TDWB3	3"X1000' DETECTABLE TAPE - WATER - BLUE	ROLL	1.0	\$30.77	\$30.77
95WT1430BLUHS	14 GAUGE TRACER WIRE, BL UE, 30-MIL, HI-STR 250#	FT	500.0	\$0.16	\$80.00
97SDR	SMALL DIRT RING	EA	6.0	\$81.79	\$490.74
97VSE8NS	OES 8' VALVE STEM EXTENSION , GRAY	EA	6.0	\$264.50	\$1,587.00
Total before Taxes:				\$130,312.97	

Quote Analysis Report

Achen-Gardner Construction, LLC 71 Mark McLafferty
39381001 CHANDLER HEIGHTS RD DOBSON/CHAPPARAL

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1/13/2022 8:36 AM

POLYMH POLYMER MANHOLE

Vendor Code							ARMOROCK
Vendor Name							Armorock
Vendor Phone							7028249702
Bid	Activity	Resource	Desc	Quan	Unit	Plug Price	Unit Price
		2POLYMH	5' POLYMER MANHOLE	2.00	EA	0.0000	9,017.0000
Quoted Amount							18,034
Plugged Amount							0
Bond							0
Mobilization							0
% Adjustment							0
\$ Adjustment							0
Total Adjustment							0
Totals						0	18,034
Diff From Plug							18,034
Total Minority							0

A 'P' beside a price indicates a plug price.
Green background indicates that the vendor is selected.



14555 Spring Canyon Road
Boulder City, NV 89006

207 Heritage Court
Sulphur Springs, TX 75482

702-824-9702
www.armorock.com

Quote Date: 12/28/2021

To:

Ref: Chandler Heights Road Utility Relocations Chaparra
Chandler, AZ

Q U O T A T I O N

Notes:

1. Quote is subject to our standard terms, conditions, and shipping policies.
2. Payment is due at Net 30. Late Payment service charge for over 30 days will be charged at 18% APR
3. Quote is valid for 60 days from issue date to receipt of PO after 60 days quote is subject to change based off market value of materials.
4. All applicable taxes are to be paid by purchaser
5. If owner requires items to be grouted in field contractor is responsible for materials and labor costs incurred.
6. All loads will be billed at \$1475 for each truck. Total of one(1) needed for job. Customer will only be billed for trucks used. Additional trucks will be billed at market rate.
7. Freight requested under 3 days notice may be subject to increased freight rates
8. Products will be billed at unit pricing per quotation
9. Rush orders will be priced accordingly.
10. Contractor shall be responsible for joint sealing and performance.
11. Miscellaneous items such as grout, epoxy, and hardware are not included with the structures unless a specific line item is shown on this quote. Additional charges will apply for any extra items that are not shown on this quote.
12. Final lead time is determined at date of approved submittal.

From:



14555 Spring Canyon Road
Boulder City, NV 89006

207 Heritage Court
Sulphur Springs, TX 75482

702-824-9702
www.armorock.com

For:

Ref: Chandler Heights Road Utility Relocations Chaparra
Chandler, AZ

Quote Date: 12/28/2021

Structure	Description	Height	Weight	Price
MH 1	60"-30" Polymer Manhole	10.06'	4,573	\$7,382
1	30" CITY OF CHANDLER SEWER A-1700 R&C	2	PR30X6FL	30 IN X 6 IN FLAT PRO-RING
1	50530-C	1	50536-S	60 IN X 3 FT ECC POLYMER CONE 30 IN
1	50512-SNB	4	JM1.25	60 IN X 1 FT POLYMER MH SECTION NO BELL
1	PEPOXY			1.25 IN X 14 FT JOINT MASTIC ROLL
	EPOXY KIT FOR CIP BASE			
MH 2	60"-30" Polymer Manhole	10.30'	4,529	\$7,327
1	30" CITY OF CHANDLER SEWER A-1700 R&C	1	PR30X1FL	30 IN X 1 IN FLAT PRO-RING
1	PR30X2FL	1	50530-C	30 IN X 2 IN FLAT PRO-RING
1	50548-S	1	50512-SNB	60 IN X 3 FT ECC POLYMER CONE 30 IN
				60 IN X 1 FT POLYMER MH SECTION NO BELL
4	JM1.25	1	PEPOXY	1.25 IN X 14 FT JOINT MASTIC ROLL
	EPOXY KIT FOR CIP BASE			
Spreader Bar		0.00'	0	\$1,850
1	SPREADER BAR AND RIGGING FOR LIFTING			
Sub-Total				\$16,559
Freight/Delivery				\$1,475
Total Price for Chandler Heights Road Utility Relocations Chaparra				\$18,034

PRECAST PRECAST

Vendor Code							OLSONPRECAST	PREACHMASON
Vendor Name							Olson Precast	Preach Masonry
Vendor Phone							6022696219	6022422007
Bid	Activity	Resource	Desc	Quan	Unit	Plug Price	Unit Price	Unit Price
90	2051010	4MANHOLE	INSTALL 60" POLYMER MAN	2.00	EA	0.0000	0.0000	3,325.0000
Quoted Amount							0	6,650
Plugged Amount							0	0
Bond							0	0
Mobilization							0	0
% Adjustment							0	0
\$ Adjustment							0	0
Total Adjustment							0	0
Totals						0	0	6,650
Diff From Plug							0	6,650
Total Minority							0	0

A 'P' beside a price indicates a plug price.

Green background indicates that the vendor is selected.



PROPOSAL

Attention: Mark

Job Name: Chandler Hts. Rd Utility Relocation

Date: 1-11-2022

Preach Incorporated proposes to supply and install precast manholes on the following:

[illegible]

INCLUDES: Labor, Concrete, Forming, Applying Of Epoxy To Top Of Base Only, Spark Testing & Insecta Coating. **Installation Per City Of Chandler Spec's.**

EXCLUDES: Excavation, Backfilling, Shoring, Barricades, Final Adjustments, Concrete Collar Around Frame & Cover, Drop Connections, Pouring of Drop Encasements, Flow Through Plugs For Live Sewer Lines, Dewatering, Pipe Gaskets, 3rd Party Inspections Of All Required Testing, Concrete Pump Crane For Manholes Beyond The Standard Reach, Weekend or Night Work, Davis Bacon Wages, Taxes, Bonds & Permits. **Supplying & Setting of Polymer MH Material, Supplying & Setting of Frame & Covers. Vacuum Testing Of MH's.**

Office: (602) 242-2007 Fax: (602) 997-9644
ROC # 82366 & 118937

Quote Analysis Report

Achen-Gardner Construction, LLC 5
393810011

Andy Mortensen
CHANDLER HEIGHTS RD PCK 1 GMP 2 FINAL

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1/26/22 2:48 PM

QC QUALITY CONTROL

Vendor Code						QUALITYTESTI	NINYOMOORE
Vendor Name						Quality Testing L	Ninyo & Moore
Vendor Phone						4804962000	6022431600
Bid	Activity	Resource	Desc	Quan	Unit	Unit Price	Unit Price
10	2102500	4QC	MATERIALS TESTING (MAG 106.	1.00	LS	10,731.8500	22,489.0000
Quoted Amount						10,732	22,489
Plugged Amount						0	0
Bond						0	0
Mobilization						0	0
% Adjustment						0	0
\$ Adjustment						0	0
Total Adjustment						0	0
Totals						10,732	22,489
Diff From Plug						732	12,489
Total Minority						0	0

A 'P' beside a price indicates a plug price.
Green background indicates that the vendor is selected.



PROPOSAL SUMMARY

PROJECT NAME : **Chandler Hts Utility Relocation: Chaparral - Dobson to Lake**

SCOPE OF SERVICES: **Quality Control Testing**

LABOR FEES

CLASSIFICATION	LABOR TYPE	REG HOURS	REGULAR RATE	ASS'D % OT	OVERTIME HOURS	OVERTIME RATE ⁽¹⁾	EXTENDED LABOR COST
Project Manager	Direct	9	\$ 122.50			\$ 122.50	\$ 1,102.50
Reporting Technician	Direct	1	\$ 50.00			\$ 75.00	\$ 50.00
Field Technician	Direct	92	\$ 59.50			\$ 89.25	\$ 5,474.00
			\$ -				
Lab Trechnician	Indirect	34	\$ -				
(1) Regular Rate X Overtime Premium of 1.5							
SUBTOTAL DIRECT LABOR							\$ 6,626.50

VEHILE AND PER-DIEM CHARGES

DESCRIPTION	NO. UNITS	UNITS	UNIT PRICE	EXTENDED VEHICLE AND PER-DIEM
Trip Charge	25	EA	\$ 38.00	\$ 950.00
SUBTOTAL VEHICLE AND PER-DIEM CHARGES				\$ 950.00

OTHER PROJECT DIRECT CHARGES

DESCRIPTION	NO. UNITS	UNITS	UNIT PRICE	EXTENDED OTHER PROJECT CHARGES
				\$ -
				\$ -
				\$ -
				\$ -
SUBTOTAL OTHER PROJECT DIRECT CHARGES				\$ -

LAB TESTING FEES

DESCRIPTION	NO. UNITS	UNITS	UNIT PRICE	EXTENDED LABORATORY FEES
301 - Concrete Compressive Strength Cylinders	60	EA	\$ 16.00	\$ 960.00
416 - Sieve Analysis	2	EA	\$ 75.00	\$ 150.00
301 - Plasticity Index	2	EA	\$ 85.00	\$ 170.00
2	2	EA	\$ 120.00	\$ 240.00
504 - Ignition Furnace Calibration		EA	\$ 250.00	\$ -
505 - AC Content w/ Gradation (Ignition Method)	3	EA	\$ 200.00	\$ 600 -
510 - AC Gyratory Bulk Density (Set of 2)	3	EA	\$ 190.00	\$ 570 -
509 - AC Maximum Specific Gravity (Rice) (Set of 3)	3	EA	\$ 155.00	\$ 465 -
501 - AC Core Density/Thickness		EA	\$ 25.00	\$ -
503 - Drill & Extract AC Core		EA	\$ 35.00	\$ -
305 - Masonry Grout Prisms	24	EA	\$ 22.00	\$ 528.00
				\$ -
TOTAL LABORATORY TESTING FEES				\$ 2,048.00

TOTAL ESTIMATE OF ALL FEES

\$ ~~9,624.50~~

\$ 10731.85

Jaye Richardson, Sr. Project Manager

Estimator

January 6, 2022

Date



SCHEDULED PROJECTED MAN-HOURS

PROJECT NAME : Chandler Hts Utility Relocation: Chaparral - Dobson to Lake

CONSULTANT : QT

DATE: January 6, 2022

ESTIMATED FTEs IN THE MONTH																													
PROJECT PERSONNEL / SUB CONSULTANT MAN-HOURS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	SUBTOTAL REGULAR HOURS	% OT	SUBTOTAL O/T	TOTAL	
MAR 2022 through FEB 2024	M-22 23	A-22 21	M-22 21	J-22 22	J-22 20	A-22 23	S-22 21	O-22 21	N-22 20	D-22 22	J-23 21	F-23 19	M-23 23	A-23 20	M-23 22	J-23 22	J-23 20	A-23 23	S-23 20	O-23 22	N-23 21	D-23 20	J-24 21	F-24 20					
Project Manager	0.03	0.03																							9 m-h	0%	m-h	9 m-h	
Reporting Technician		0.01																							1 m-h	0%	m-h	1 m-h	
Field Technician	0.26	0.26																							92 m-h	0%	m-h	92 m-h	
																									m-h	0%	m-h	m-h	
Lab Trechnician	0.09	0.10																							34 m-h	0%	m-h	34 m-h	
ABOVE PERIOD - MONTHLY FULL TIME EQUIV. (FTEs)																													
TOTAL FTEs (DIRECT LABOR ONLY)	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10 m-h	0%	m-h	10 m-h	
TOTAL FTEs (DIRECT LABOR & VEHICLE)	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	92 m-h	0%	m-h	92 m-h	
TOTAL FTEs (INDIRECT LABOR ONLY)	0.09	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34 m-h	0%	m-h	34 m-h	
TOTAL FTEs (SUBCONTRACTED LABOR)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	m-h	0%	m-h	m-h	
TOTAL FTEs (ALL LABOR CLASSES)	0.38	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	136 m-h	0%	m-h	136 m-h	
TOTAL ACTUAL POSITIONS	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				7	
TOTAL VEHICLES	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				2	



SCHEDULED PROJECTED MAN-HOURS

PROJECT NAME : Chandler Hts Utility Relocation: Chaparral - Dobson to Lake CONSULTANT : QT DATE: January 6, 2022

ESTIMATED FTEs IN THE MONTH																													
PROJECT PERSONNEL / SUB CONSULTANT MAN-HOURS	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	SUBTOTAL REGULAR HOURS	% OT	SUBTOTAL OT HOURS	TOTAL HOURS	
MAR 2024 through FEB 2026	M-24	A-24	M-24	J-24	J-24	A-24	S-24	O-24	N-24	D-24	J-25	F-25	M-25	A-25	M-25	J-25	J-25	A-25	S-25	O-25	N-25	D-25	J-26	F-26					
	21	22	22	20	22	22	20	23	19	21	21	19	21	22	21	21	22	21	21	23	18	22	20	19		m-h	0%	m-h	m-h
																									m-h	0%	m-h	m-h	
																									m-h	0%	m-h	m-h	
																									m-h	0%	m-h	m-h	
																									m-h	0%	m-h	m-h	
ABOVE PERIOD - MONTHLY FULL TIME EQUIV. (FTEs)																													
TOTAL FTEs (DIRECT LABOR ONLY)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	m-h	0%	m-h	m-h	
TOTAL FTEs (DIRECT LABOR & VEHICLE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	m-h	0%	m-h	m-h	
TOTAL FTEs (INDIRECT LABOR ONLY)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	m-h	0%	m-h	m-h	
TOTAL FTEs (SUBCONTRACTED LABOR)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	m-h	0%	m-h	m-h	
TOTAL FTEs (ALL LABOR CLASSES)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	m-h	0%	m-h	m-h	
TOTAL ACTUAL POSITIONS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0	
TOTAL VEHICLES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0	



COST ESTIMATE SUMMARY

SUB CONSULTANT : QT

PROJECT NAME : Chandler Hts Utility Relocation: Chaparral - Dobson to Lake

PROJECT OWNER: City of Chandler

PROJECT NUMBER: WW2111.401

GENERAL INFORMATION / ASSUMPTIONS

BASIS OF ESTIMATE

- 1 **ESTIMATE Amount Based on Defined Scope:** This cost proposal is considered an **initial** Time & Materials cost estimate, subject to the GENERAL INFORMATION/ASSUMPTIONS as defined herein. For the estimate amount, QT will perform the requested Materials sampling and testing, both field and lab, that is specifically identified this cost estimate.

Assumptions of Production:

We have assumed total of up to **25 trips (or 92 hours) for materials testing services on this project.** This is proposed as an assumed on-call time and materials basis. Any work or site visits that are outside those specified in the cost breakdown is beyond the scope of this project and subject to additional charges based on the referenced hourly or unit rates.

Work Outside of Defined Scope: If sampling and testing work is requested by the client that is not already defined in proposal, such work will be accommodated; however, compensation for such services shall be in addition to the Estimate amount. QT encourages client project management to inform job level project staff that requests for services outside the originally defined scope will result in additional costs. Once identified, QT management will send client project management a Supplemental Agreement (SA) form, defining the scope, cost, and description of any requested additional work. Preferably, the requested additional work will not be performed until after the SA form is signed and returned by client management. However, because requests are often the result of unplanned events, and in order to not impact the construction schedule, some work may be performed prior to the SA form being generated and returned. Regardless, by requesting the additional services, and then allowing them to be performed on the project, the client is accepting the responsibility to pay for requested services.

Schedule: The estimate amount was developed prior to bid and without the benefit of a detailed project schedule. In order to properly plan resource utilization after the bid, the client shall provide QT with a detailed base schedule prior to construction. Using this detailed base schedule, QT will redistribute the pre-bid designated manpower and testing resources in accordance with the actual planned sequence and duration of scheduled construction activities. This redistribution of resources will be provided to client management for comment and to further clarify the scope of planned services. Significant deviation from the base schedule that results in extra field presence, or extra samples, may be considered extra work.

References that Define Materials Testing Requirements: This cost proposal is based upon the QT's interpretation of sampling and testing requirements from the supplied plans and specifications. If these interpretations are in error, if they change, or if the client elects to alter the sampling criteria, QT reserves the right to revise the scope and fee to fit these changes to the assumptions.

- 2 **Periodic Materials Testing Report Summaries:** Reports will be provided on a weekly basis, although test results will be conveyed in real time as requested by the Client. Weekly Reports will be submitted to the designated client representative by the week following the timeframe in which the work was performed. Reports shall show the sampling and testing activities performed by QT during the reporting period. Reports from non-QT entities (i.e. suppliers, other firms, etc.) will be included if provided by the client. QT utilizes a sophisticated materials testing information system for managing and reporting on project test information. Reports from this system will be provided in pdf format for use by client.
- 3 **Invoicing:** Invoicing will occur on a 4 week cycle. Each invoice shall include original scope charges that represent an appropriate, and defined, fraction of the original scope estimate amount. In the event that extra work is requested and provided during the invoicing period, such services shall be identified separately from the original scope charges on invoices. Additional work shall be calculated based on the unit prices defined in this cost proposal, or as otherwise superseded in specific Supplemental Agreements.
- 4 **Laboratory Facility:** This estimate is based upon all laboratory testing being conducted in QT's AASHTO Accredited testing facility. The QT facility is a full service production laboratory that services numerous project's simultaneously. Efforts are always made to prioritize samples in accordance with project needs.



COST ESTIMATE SUMMARY

SUB CONSULTANT : QT

PROJECT NAME : Chandler Hts Utility Relocation: Chaparral - Dobson to Lake

PROJECT OWNER: City of Chandler

PROJECT NUMBER: WW2111.401

GENERAL INFORMATION / ASSUMPTIONS

LABOR POSITIONS

- 5 **Materials PM/Supervisor** - This person will begin immediately upon notice to proceed and will be involved during the entire contract. This person will be dedicated to managing the day to day field and lab materials testing efforts. Initially, this person will work with the client QC Manager to develop the Materials Testing Plan for the project. Then, this person will ensure that testing frequencies are being satisfied, that non-conformance issues are being properly addressed and rectified, that both field and lab test data is being properly reflected in the QT Materials Information Database, that project specific Periodic Materials Testing Reports are being prepared, transmitted and supported in a timely and accurate manner, and that both physical and personnel resources are provided to the job as scheduled and appropriate. This person will also attend and participate in project meetings when requested and will be the focal point for communication and coordination of materials testing activities between QT and the Client.
- 6 **Field Technician(s)** - In general, field technician(s) shall be assigned to the project in accordance with the SCHEDULED PROJECT MAN-HOURS sheet of this cost proposal, or as modified by a post-bid schedule evaluation. The technician(s) will cover the requested materials sampling and field testing requirements on the project per the scope of the originally defined estimate amount. For most efficiency and familiarity, use of the consistent personnel pool is always the objective, but cannot be guaranteed. Technician time is charged on a portal to portal basis and related vehicle charges will apply.
- 7 **Reporting Technician** - A reporting technician will accumulate and draft weekly reports for Materials Supervisor to review, evaluate, finalize, and transmit to the Client in a timely fashion. This allows the Materials Supervisor to focus on report content in lieu of data input.
- 8 **Lab Technician** - Lab Technician Indirect hours have been shown on the SCHEDULED PROJECT MAN-HOURS sheet of this cost proposal for information only. A reasonable, approximate estimate of lab testing quantities is reflected in this cost proposal.

QT CONTINGENCY SERVICES

- 9 The hours estimated herein do not include Materials Testing/Inspection activities at fabrication yards or supplier production sites located off of the project. In addition, non-compliance items and the associated travel, time, and retesting are out of scope and not accounted for in this estimate. If requested, these services may require additional funding for the associated efforts.
- 10 QT's intent is to satisfy the project materials testing needs within the regular labor assumptions defined in this cost proposal. Based on past similarly staffed projects, overtime is typically not intended, but often incurred due to the contractor work schedule. Overtime often results from long work days, uncontrollable field delays, weekend and night work, schedule intensity increases, owner agency mandates, etc.. This cost proposal assumes zero (0) overtime. QT will attempt to accommodate short term changes, weekend work, night work, shift irregularity, and other unforeseen labor demands within this assumption. However, testing activities may go beyond the capacity of the herein stated manpower and testing assumptions. QT will work closely with the client to minimize the additional funding needed by prioritizing the testing, and adjusting technician schedules in an ongoing, Time & Materials, basis.
- 11 All of the QT positions discussed in the QT SERVICES above are based on an assumption of 0% overtime (i.e. 40 regular hours plus 0 overtime hours per week). Time will be billed as actually worked. Overtime will be considered time in excess of 40 hours in a week, or on weekends, or in excess of 8 hours in a day, or night shifts.
- 12 **Scheduling Cancellation:**
For any unforeseen circumstances where a site visit is cancelled upon arrival onsite for scheduled activities, the client will be responsible for all charges associated with travel from portal to portal. This is considered services outside the originally defined materials testing scope and will result in additional costs.

Jaye Richardson, Sr. Project Manager

1/6/2022

Name

Date

Signature

October 21, 2021
Proposal No. 12PHX02-04162

Mr. Mark McLafferty
Achen-Gardner Construction
550 South 79th Street
Tucson, Arizona 85705

Subject: Proposal to Provide Special Inspection
and Materials Testing Services
Wales Ranches Sewer Lift Station
North of the Intersection of Combs Road and Kenworthy Road
Pinal County, Arizona

Dear Mr. Mc Lafferty:

We are pleased to present this proposal to provide special inspection and materials testing services at the subject site. In preparation of this proposal, we have reviewed the plans prepared by Coe and Van Loo II, LLC dated August 11, 2021. We understand that the project will include the construction of a new lift station and approximately 3,250 linear feet of sewer main. Additional improvements will include concrete flatwork, underground utilities, and asphalt concrete pavements. This proposal was prepared without the benefit of a construction schedule and is based on our assumptions as to the needed special inspections and materials testing.

SCOPE OF SERVICES

Our scope of services will include the following:

- Review of available geotechnical reports prepared for the site.
- Observation, testing, and sampling during the placement of soil, aggregate, concrete, masonry and asphalt.
- Laboratory testing of soil, aggregate, concrete, masonry and asphalt materials.
- Special inspection services for the observation and inspection of concrete and masonry reinforcement and structural steel.
- Data analysis and compilation.

ASSUMPTIONS

We have made the following assumptions:

- Our services will be scheduled and coordinated by the Project Inspector or Construction Manager on an as-needed basis.
- The sewer main can be backfilled and tested at a rate of 200 feet per day.
- Four trips are included for the placement of asphalt concrete pavements along the sewer trench alignment.
- Environmental sampling and testing of the subsurface soils is not included within the scope of this proposal.

ESTIMATED FEE

We propose to provide our services on a time-and-materials basis in accordance with the attached Schedule of Fees. We estimate the fee for our services to be approximately \$22,489 (Twenty-Two Thousand Four Hundred Eighty-Nine Dollars). A breakdown of our fees is presented in the attached Table 1. To authorize our services, please sign and return the attached Work Authorization and Agreement.

We look forward to working with you.

Respectfully submitted,
NINYO & MOORE



Sean C. Jacquemin, PE
Senior Engineer



Craig Rees
Principal/Construction Services

SCJ/ECR/tlp

Attachments: Table 1 – Breakdown of Estimated Fee
Schedule of Fees
Work Authorization and Agreement

Table 1 - Breakdown of Estimated Fee**Earthwork**

Field Technician	140 hours	@	\$	50.00 /hour	\$	7,000.00
Vehicle/Equipment Usage	140 hours	@	\$	10.00 /hour	\$	1,400.00
Subtotal					\$	8,400.00

Concrete

Field Technician	50 hours	@	\$	50.00 /hour	\$	2,500.00
Vehicle/Equipment Usage	50 hours	@	\$	10.00 /hour	\$	500.00
Subtotal					\$	3,000.00

Masonry

Special Inspector - Structural Masonry	10 hours	@	\$	68.00 /hour	\$	680.00
Vehicle/Equipment Usage	10 hours	@	\$	10.00 /hour	\$	100.00
Subtotal					\$	780.00

Special Inspections

Concrete	12 hours	@	\$	68.00 /hour	\$	816.00
Structural Steel Special Inspection	16 hours	@	\$	68.00 /hour	\$	1,088.00
Vehicle/Equipment Usage	28 hours	@	\$	10.00 /hour	\$	280.00
Subtotal					\$	2,184.00

Asphalt Paving

Field Technician	30 hours	@	\$	50.00 /hour	\$	1,500.00
Vehicle/Equipment Usage	30 hours	@	\$	10.00 /hour	\$	300.00
Subtotal					\$	1,800.00

Laboratory Testing

Proctor Density	3 tests	@	\$	125.00 /test	\$	375.00
Gradation	3 tests	@	\$	110.00 /test	\$	330.00
Atterberg Limit	3 tests	@	\$	90.00 /test	\$	270.00
Asphalt Marshall Bulk Density	4 tests	@	\$	125.00 /test	\$	500.00
Maximum Theoretical Specific Gravity (Rice)	4 tests	@	\$	125.00 /test	\$	500.00
Asphalt Extraction/Gradation	4 tests	@	\$	200.00 /test	\$	800.00
Grout Compressive Strength	8 tests	@	\$	20.00 /test	\$	160.00
Concrete Cylinders Compressive Strength	60 tests	@	\$	15.00 /test	\$	900.00
Subtotal					\$	3,835.00

Project Management and Data Processing

Project Engineer/Manager	20 hours	@	\$	96.00 /hour	\$	1,920.00
Data Processor	15 hours	@	\$	38.00 /hour	\$	570.00
Subtotal					\$	2,490.00

TOTAL ESTIMATED FEE**\$ 22,489.00**

Schedule of Fees

Hourly Charges for Personnel

Professional Staff

Principal Engineer/Geologist/Environmental Scientist/Certified Industrial Hygienist	\$ 136
Senior Engineer/Geologist/Environmental Scientist	\$ 115
Senior Project Engineer/Geologist/Environmental Scientist	\$ 102
Project Engineer/Geologist/Environmental Scientist	\$ 96
Senior Staff Engineer/Geologist/Environmental Scientist	\$ 90
Staff Engineer/Geologist/Environmental Scientist	\$ 80
GIS Analyst	\$ 84
Technical Illustrator/CAD Operator	\$ 48

Field Staff

Certified Asbestos/Lead Technician	\$ 102
Field Operations Manager	\$ 74
Nondestructive Examination Technician (UT, MT, LP)	\$ 79
Supervisory Technician	\$ 68
Special Inspector (Concrete, Masonry, Structural Steel, Welding, and Fireproofing)	\$ 68
Senior Technician	\$ 54
Technician	\$ 50

Administrative Staff

Geotechnical/Environmental/Laboratory Assistant	\$ 43
Information Specialist	\$ 43
Data Processor	\$ 38

Other Charges

Concrete Coring Equipment (includes technician)	\$ 190/hr
Anchor Load Test Equipment (includes technician)	\$ 190/hr
GPR Equipment	\$ 180/hr
Inclinometer	\$ 100/hr
Hand Auger Equipment	\$ 80/hr
Rebar Locator (Pachometer)	\$ 25/hr
Vapor Emission Kit	\$ 65/kit
X-Ray Fluorescence	\$ 70/hr
PID/FID	\$ 25/hr
Air Sampling Pump	\$ 10/hr
Field Vehicle	\$ 10/hr
Expert Witness Testimony	\$ 400/hr
Direct Expenses	Cost plus 15 %
Special equipment charges will be provided upon request.	

Notes

For field and laboratory technicians and special inspectors, overtime rates at 1.5 times the regular rates will be charged for work performed in excess of 8 hours in one day Monday through Friday and all day on Saturday and Sunday. Rates at twice the regular rates will be charged for all work in excess of 12 hours in one day and on holidays.

Field technician and special inspection hours are charged at a 4-hour minimum, and 8-hour minimum for hours exceeding 4 hours.

Invoices are payable upon receipt. A service charge of 1.5 percent per month may be charged on accounts not paid within 30 days.

The terms and conditions are included in Ninyo & Moore's Work Authorization and Agreement form.

Schedule of Fees for Laboratory Testing

SOILS

Atterberg Limits, D 4318, T 89, T90	\$ 90
California Bearing Ratio (CBR), D 1883	\$ 450
Chloride and Sulfate Content, ARIZ 733, 736	\$ 100
Clay Expansion, FHA Swell	\$ 110
Consolidation, D 2435, T 216-94	\$ 250
Crumb Test Dispersion Test, D 4647	\$ 60
Direct Shear, D 3080, T236	\$ 350
Expansion Index, D 4829, UBC 18-2	\$ 120
Expansion Potential (Method A), D 4546	\$ 110
Hydraulic Conductivity, D 5084	\$ 300
Hydrometer Analysis, D 7928, T 88-93	\$ 200
Double Hydrometer Analysis, D 4221, T 88	\$ 400
Lime Determination, pH Method, D 62765	\$ 210
Standard Proctor Density, D 698	\$ 125
Standard Proctor Density Treated Soils, D 698	\$ 195
Modified Proctor Density Treated Soils, D 1557, T 180-93, T 99-94	\$ 205
Miller Box Resistivity	\$ 60
Moisture, Ash, & Organic Matter of Peat/Organic Soils	\$ 90
Moisture Only, D 2216, T 265	\$ 25
Moisture and Density, D 2937	\$ 35
Permeability, CH, D 2434, T 215	\$ 220
pH and Resistivity, ARIZ 236 c	\$ 100
Pinhole Dispersion Test, D 4647	\$ 245
R-value, D 2844, T 190	\$ 250
Sand Equivalent, D 2419, T 176	\$ 90
Sieve Analysis, D 422	\$ 55
Sieve Analysis, C-136 (includes 200 wash), D 422, D 1140	\$ 110
Solubility	\$ 80
Specific Gravity, D 854, T 100-93	\$ 85
Sulfate & Chloride Content	\$ 90
Swell Test, D 4546	\$ 290
Thermal Resistivity (ASTM 5334, IEEE 442)	\$ 800
Triaxial Shear, U.U., D 2850 per point	\$ 160
Triaxial Shear, C.U., w/pore pressure, D 4767, T 2297 per pt	\$ 315
Triaxial Shear, C.D, D 4767, T 297 per pt	\$ 375
Unconfined Compression, D 2166, T 208	\$ 175

MASONRY

Brick Absorption, C 67	\$ 65
Brick Compression, C 67	\$ 30
Brick Moisture, C 67	\$ 30
CMU Block Compression Test, 8x8x16, C 140	\$ 75
CMU Block Moisture Content, C 140	\$ 70
Core Compression	\$ 35
Concrete Block Linear Shrinkage, C 426	\$ 150
Grout Prisms Compressive Strength, C 1019	\$ 40
Masonry Grout, 4x4x8 prism compression, UBC 21-18	\$ 20
Masonry Mortar, 2x4 cylinder compression, UBC 21-16	\$ 20
Masonry Prism, half size, compression, UBC 21-17	\$ 120
Mortar Cubes Compressive Strength, C 109	\$ 20

REINFORCING AND STRUCTURAL STEEL

Chemical Analysis, A-36, A615	\$ 125
Fireproofing Density Test, UBC 7-6	\$ 50
Hardness Test, Rockwell, A-370	\$ 40
High Strength Bolt, Nut & Washer Conformance, set, A-325	\$ 150
Mechanically Spliced Reinforcing Tensile Test, ACI	\$ 80
Pre-Stress Strand (7 wire), A 416	\$ 150
Reinforcing Tensile or Bend up to No. 11, A 615 & A 706	\$ 85
Structural Steel Tensile Test: Up to 200,000 lbs., A 370	\$ 100
Welded Reinforcing Tensile Test: Up to No. 11 bars, ACI	\$ 80

CONCRETE

Concrete Core Absorption ASTM C 497 Method A	\$ 85
Concrete Core Compressive Strength, C 42, T 24-93	\$ 90
Concrete Coring Minimum Charge	\$ 300
Concrete Laboratory Mix Verification, excluding cylinders	\$ 300
Concrete Mix Design	\$ 2,000
Compression Tests, 6x12 Cylinder, C 39, T 22-92	\$ 15
Drying Shrinkage, C 157	\$ 300
Flexural Test, C 78	\$ 80
Gunit/Shotcrete, Panels, 3 cut cores per panel and test, ACI	\$ 190
Lightweight Concrete Fill Compression, C 495	\$ 40
Measurement of Concrete Cores, ASTM C 174	\$ 20
Rapid Chloride Permeability, C 1202	\$ 425
Splitting Tensile Strength, C 496	\$ 95
Time of Setting of Cement by Vicat Needle, C 191	\$ 250

ASPHALT

Asphalt Mix Design Review	\$ 400
Asphalt Mix Design, 5 points, Tex	\$ 1,500
Asphalt Content/Gradation (Ignition Oven), T 308, D 6307	\$ 200
Bulk Density Lab Molded Samples, Tex 207F (per set)	\$ 50
Bulk Specific Gravity per specimen (non-absorptive), D 2726	\$ 25
Bulk Specific Gravity per specimen (coated), D 1188	\$ 45
Compressive Strength of Hot Mix Asphalt, T 167	\$ 275
Extraction, % Asphalt, including Gradation, D 2172, T 164-94	
T 30-93, Tex 210F	\$ 225
Hveem Stability and Unit Weight CTM or ASTM, CT 366	\$ 200
Hveem Stability, Tex 208F (per set)	\$ 90
Marshall Mix Design, Flow and Unit Weight, (set of 3) T 245-94	\$ 125
Marshall Mix Design	\$ 3,500
Maximum Theoretical Unit Weight, D 2041, CT 309, Tex 227F	\$ 125
Molding Specimens, Tex 206F (per set)	\$ 55
Tensile Strength Ratio D 4867, T283	\$ 350
SuperPave Mix Design	\$ 4,000

AGGREGATES

Absorption, Coarse, C 127	\$ 50
Absorption, Fine, C 128	\$ 75
Alkali Reactivity, C 1260	\$ 750
Alkali-Silica Reactivity, C 1567	\$ 750
Clay Lumps and Friable Particles, C 142	\$ 95
Fractured Faces, NDOT, T 2303, ARIZ 212e	\$ 140
Los Angeles Abrasion, C 131 or C 535	\$ 180
Moisture, C 566, T 255-92	\$ 25
Mortar make properties of fine aggregate, C 87	\$ 300
Organic Impurities, C 40	\$ 50
Sand Equivalent, D 2419, T 176	\$ 85
Sieve Analysis, Coarse Aggregate, C 136	\$ 110
Sieve Analysis, Fine Aggregate (included wash), C 136	\$ 110
Sodium Sulfate Soundness (per size fraction), C 88	\$ 240
Specific Gravity, Coarse, C 127	\$ 125
Specific Gravity, Fine, C 128	\$ 125
Unit Weight C 29, T 19	\$ 50

Special preparation of standard test specimens will be charged at the technician's hourly rate.
Ninyo & Moore is accredited to perform the AASHTO equivalent of many ASTM test procedures.

WORK AUTHORIZATION AND AGREEMENT

Please Sign and Return One Copy to:

NINYO & MOORE
3202 East Harbour Drive
Phoenix, Arizona 85034

PROPOSAL NO. **12PHX02-04162**

1. PROJECT ADDRESS: **North of the Intersection of Combs Rd. & Kenworthy Rd., Pinal County, Arizona**
2. PROJECT DESCRIPTION: **Special Inspection and Materials Testing Services**
3. SCOPE OF STUDY: **Please refer to proposal dated October 21, 2021.**
4. FEE: **\$22,489 (Twenty-Two Thousand Four Hundred Eighty-Nine Dollars – Time and Materials)**
5. PORTION OF FEE IN ADVANCE OF WORK: **None**
6. CLIENT: **Achen-Gardner Construction** PHONE: **(480) 940-1300**
550 South 79th Street
Tucson, Arizona 85705
- CONTACT: **Mark McLafferty** PHONE: **(480) 940-1300**
7. STATEMENT TO BE SENT TO: **Client**

CONDITIONS OF AGREEMENT BETWEEN CLIENT AND NINYO & MOORE

This AGREEMENT is made by and between: NINYO & MOORE GEOTECHNICAL AND ENVIRONMENTAL SCIENCES CONSULTANTS, hereinafter referred to as CONSULTANT, and **Achen-Gardner Construction**, hereinafter referred to as CLIENT. This AGREEMENT between the parties consists of these TERMS, the attached Proposal identified as No. **12PHX02-04162** dated **October 21, 2021**, and any exhibits or attachments noted in the Proposal. Together, these elements will constitute the entire AGREEMENT superseding any and all prior negotiations, correspondence, or agreements either written or oral. Any changes to this AGREEMENT must be mutually agreed to in writing.

STANDARD OF CARE

CLIENT recognizes that subsurface conditions may vary from those observed at locations where borings, surveys, or explorations are made, and that site conditions may change with time. Data, interpretations, and recommendations by CONSULTANT will be based solely on information available to CONSULTANT. CONSULTANT is responsible for those data, interpretations, and recommendations, but will not be responsible for other parties' interpretations or use of the information developed.

Services performed by CONSULTANT under this AGREEMENT are expected by CLIENT to be conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the geotechnical engineering profession practicing contemporaneously under similar conditions in the locality of the project. Under no circumstance is any warranty, expressed or implied, made in connection with the providing of geotechnical consulting services.

SITE ACCESS AND SITE CONDITIONS

CLIENT will grant or obtain free access to the site for all equipment and personnel necessary for CONSULTANT to perform the work set forth in this agreement. CLIENT will notify any and all possessors of the project site that CLIENT has granted CONSULTANT free access to the site. Client will protect all property, inside and out, including all plants and landscaping. CONSULTANT will take reasonable precautions to reduce the potential for damage to the site, but it is understood by CLIENT that, in the normal course of work, some damage may occur and the correction of such damage or alteration is not part of this AGREEMENT unless so specified in the Proposal.

CLIENT is responsible for accurately delineating the locations of all subterranean structures and utilities. CONSULTANT will take reasonable precautions to avoid known subterranean structures, and CLIENT waives any claim against CONSULTANT, and agrees to defend, indemnify and hold CONSULTANT harmless from any claim or liability for injury or loss, including costs of defense, arising from damage done to subterranean structures and utilities not identified or accurately located. In addition, CLIENT agrees to compensate CONSULTANT for any time spent or expenses incurred by

CONSULTANT in defense of any such claim, with compensation to be based upon CONSULTANT's prevailing fee schedule and expense reimbursement policy.

SAMPLE DISPOSAL

CONSULTANT will dispose of remaining soil, rock, and water samples approximately thirty (30) days after submission of the report covering those samples. Further storage or transfer of samples can be made at CLIENT's expense upon CLIENT's prior written request.

MONITORING

If CONSULTANT is retained by CLIENT to provide a site representative for the purpose of monitoring specific portions of construction work or other field activities as set forth in the Proposal, then this phrase applies. For the specified assignment, CONSULTANT will report observations and professional opinions to CLIENT or CLIENT's agent. No action of CONSULTANT or CONSULTANT's site representative can be construed as altering any AGREEMENT between the CLIENT and others. CONSULTANT will report to CLIENT or CLIENT's agent any observed geotechnically related work which, in CONSULTANT's professional opinion, does not conform with plans and specifications. The CONSULTANT has no right to reject or stop work of any agent or subcontractor of CLIENT; such rights are reserved solely for CLIENT. Furthermore, CONSULTANT's presence on the site does not in any way guarantee the completion or quality of the performance of the work of any party retained by CLIENT to provide field or construction-related services.

If CONSULTANT is not retained by Client for the purpose of monitoring construction work or field activities, CONSULTANT will expressly not be held liable or responsible for such activities or for the geotechnical performance of the completed project. Monitoring of construction work or field activities and the geotechnical performance of the completed project is and will remain the sole and express responsibility of the CLIENT or other party designated by the CLIENT. CLIENT hereby agrees to indemnify and hold harmless CONSULTANT from and against any loss or judgment, suffered by the CONSULTANT as a result of a claim or lawsuit resulting from CLIENT's failure to monitor construction work or field activities for which CONSULTANT has not been retained.

CONSULTANT will not be responsible for and will not have control or charge of specific means, methods, techniques, sequences or procedures of construction or other field activities selected by any agent or agreement of CLIENT. It is mutually understood and agreed by CLIENT and CONSULTANT that CONSULTANT has no control or enforcement ability over any persons or parties who are not employees of CONSULTANT. CONSULTANT does not purport to be, nor is CONSULTANT responsible for, any safety precautions nor programs incident thereto for such non-employees of CONSULTANT.

OWNERSHIP AND MAINTENANCE OF DOCUMENTS

Unless otherwise specified in this Agreement or in an Addendum, and provided that CONSULTANT has been fully paid for the Services, CLIENT shall have the right to use the documents, maps, photographs, drawings and specifications resulting from CONSULTANT's efforts on the project, for purposes reasonably contemplated by the parties. CONSULTANT shall have the right, but shall not be obligated, to retain copies of all such materials and shall have the right to use the same for any purpose, unless such use would be expected to cause harm to CLIENT. CLIENT shall specify in advance, in writing, and be charged for all arrangements for special or extended-period maintenance of such materials by CONSULTANT. CONSULTANT retains the right of ownership with respect to any patentable concepts or copyrightable materials arising from its Services.

Reuse of any material described by CLIENT, including publication to third parties, on extension of this project or on any other project without CONSULTANT's written authorization, shall be at CLIENT's risk, and CLIENT agrees to indemnify, defend, and hold harmless CONSULTANT from all claims, damages, and expenses, including attorney's fees, arising out of such unauthorized reuse.

BILLING AND PAYMENT

CLIENT will pay CONSULTANT in accordance with the procedures indicated in the Proposal and its attachments. Invoices will be submitted to CLIENT by CONSULTANT, and will be due and payable upon presentation. If CLIENT objects to all or any portion of any invoice, CLIENT will so notify CONSULTANT in writing within fourteen (14) calendar days of the invoice date, identify the cause of disagreement, and pay when due that portion of the invoice not in dispute. The parties will immediately make every effort to settle the disputed portion of the invoice. In the absence of written notification described above, the balance as stated on the invoice will be paid.

Invoices are delinquent if payment has not been received within thirty (30) days from date of invoice. CLIENT will pay an additional charge of three quarters of a percent (.75) per month (or the maximum percentage allowed by law, whichever is lower) on any delinquent amount, excepting any portion of the invoiced amount in dispute and resolved in favor of CLIENT. Payment thereafter will first be applied to accrued interest and then to the principal unpaid amount. All time spent and expenses incurred (including any attorney's fees) in connection with collection of any delinquent amount will be paid by CLIENT to CONSULTANT per CONSULTANT's current fee schedules. In the event CLIENT fails to pay CONSULTANT within sixty (60) days after invoices are rendered, CLIENT agrees that CONSULTANT will have the right to consider the failure to pay the CONSULTANT's invoice as a breach of this AGREEMENT and CONSULTANT may cease work on the project. At CONSULTANT's option, CONSULTANT may waive said major breach upon payment by CLIENT of all arrearages and outstanding invoices.

TERMINATION

This AGREEMENT may be terminated by either party seven (7) days after written notice in the event of any breach of any provision of this AGREEMENT or in the event of substantial failure of performance by either party, or if CLIENT suspends the work for more than three (3) months. In the event of termination, CONSULTANT will be paid for services performed prior to the date of termination plus reasonable termination expenses, including, but not limited to, the cost of completing analyses, records, and reports necessary to document job status at the time of termination.

RISK ALLOCATION

Many risks potentially affect CONSULTANT by virtue of entering into this AGREEMENT to perform professional consulting services on behalf of CLIENT. The principal risk is the potential for human error by CONSULTANT. For CLIENT to obtain the benefit of a fee which includes a nominal allowance for dealing with CONSULTANT's liability, CLIENT agrees to limit CONSULTANT's liability to CLIENT and to all other parties for claims arising out of CONSULTANT's performance of the services described in this AGREEMENT. The aggregate liability of CONSULTANT will not exceed \$50,000 for negligent professional acts, errors, or omissions, including attorney's fees and costs which may be awarded to the prevailing party, and CLIENT agrees to indemnify and hold harmless CONSULTANT from and against all liabilities in excess of the monetary limit established above.

Limitations on liability and indemnities in this AGREEMENT are business understandings between the parties voluntarily and knowingly entered into, and shall apply to all theories of recovery including, but not limited to, breach of contract, warranty, tort (including negligence), strict or statutory liability, or any other cause of action, except for willful misconduct or gross negligence. The parties also agree that CLIENT will not seek damages in excess of the limitations indirectly through suits with other parties who may join CONSULTANT as a third-party nor by an award of attorney's fees and costs to the prevailing party in excess of the aggregate liability agreed upon herein by the parties. Parties means CLIENT and CONSULTANT and their officers, employees, agents, affiliates, and subcontractors.

Both CLIENT and CONSULTANT agree that they will not be liable to each other, under any circumstances, for special, indirect, consequential, or punitive damages arising out of or related to this AGREEMENT.

INDEMNIFICATION

If any claim is brought against CONSULTANT, its employees, agents and subcontractors and/or CLIENT by a third party, relating in any way to the Services, the contribution and indemnification rights and obligations of CONSULTANT and Client, subject to the paragraph titled "Risk Allocation" above, such claim shall be determined as follows:

1. If any negligence, breach of contract, or willful misconduct of CONSULTANT caused any damage, injury, or loss claimed by the third party, then CONSULTANT and CLIENT shall each indemnify the other against any loss or judgement on a comparative negligence basis (CLIENT responsibility to include that of its agents, employees, and other contractors); and
2. Unless CONSULTANT was liable for negligence, breach of contract, or willful misconduct which in whole or in part, caused the damage, injury, or loss asserted in the third party claim, CLIENT shall indemnify CONSULTANT against the claim, liability, loss, legal fees, consulting fees, and other costs of defense reasonably incurred.

DISCOVERY OF UNANTICIPATED HAZARDOUS MATERIALS

CLIENT represents that CLIENT has made a reasonable effort to evaluate if hazardous materials are on or near the project site, and that CLIENT has informed CONSULTANT of CLIENT's findings relative to the possible presence of such materials.

Hazardous materials may exist at a site where there is no reason to believe they could or should be present. CONSULTANT and CLIENT agree that the discovery of unanticipated hazardous materials constitutes a changed condition mandating a renegotiation of the scope of work or termination of services. CONSULTANT and CLIENT also agree that the discovery of unanticipated hazardous materials may make it necessary for CONSULTANT to take immediate measures to protect health and safety. CLIENT agrees to compensate CONSULTANT for any equipment decontamination or other costs incident to the discovery of unanticipated hazardous materials.

CONSULTANT agrees to notify CLIENT when unanticipated hazardous materials or suspected hazardous materials are encountered. CLIENT agrees to make any disclosures required by law to the appropriate governing agencies. CLIENT also agrees to hold CONSULTANT harmless for any and all consequences of disclosures made by CONSULTANT which are required by governing law. In the event the project site is not owned by CLIENT, CLIENT recognizes that it is CLIENT's responsibility to inform the property owner of the discovery of unanticipated hazardous materials or suspected hazardous materials.

Notwithstanding any other provision of the AGREEMENT, CLIENT waives any claim against CONSULTANT and, to the maximum extent permitted by law, agrees to defend, indemnify, and save CONSULTANT harmless from any claim, liability, and/or defense costs for injury or loss arising from CONSULTANT's discovery of unanticipated hazardous materials or suspected hazardous materials, including, but not limited to, any costs created by delay of the project and any cost associated with possible reduction of the property's value.

CLIENT will be responsible for ultimate disposal of any samples secured by CONSULTANT which are found to be contaminated.

DISPUTE RESOLUTION

If a dispute at law arises from matters related to the services provided under this AGREEMENT and that dispute requires litigation, then:

1. The claim will be brought and tried in judicial jurisdiction of the court of the county where CONSULTANT's principal place of business is located and CLIENT waives the right to remove the action to any other county or judicial jurisdiction, and;
2. The prevailing party will be entitled to recovery of all reasonable costs incurred, including staff time, court costs, attorneys' and expert witness fees, and other claim-related expenses.

GOVERNING LAW AND SURVIVAL

If any of the provisions contained in this AGREEMENT are held illegal, invalid, or unenforceable, the enforceability of the remaining provisions will not be impaired. Risk allocation and indemnities will survive termination or failure of this AGREEMENT for any cause.

The parties have read, or had the opportunity to read, the foregoing, including all attachments, addendums, and exhibits hereto, have had an opportunity to discuss the same, understand completely the terms, and willingly enter into this AGREEMENT which will become effective on the date signed below by CLIENT.

Printed Name of Client or Authorized Agent

Signature of Client or Authorized Agent

Date

Craig Rees, Principal/Construction Services

Date

PM: SCJ

REDIMIX REDI MIX

Vendor Code							ARIZONAMATER	DESERETREDIM	CALPORTLAND
Vendor Name							Arizona Materia	Desert Redi Mix	Calportland
Vendor Phone							6022787777	4804282280	6028176945
Bid	Activity	Resource	Desc	Quan	Unit	Plug Price	Unit Price	Unit Price	Unit Price
		2CRMAG1/2SK	1/2 SACK CLSM	878.00	CY	60.0000	86.0000	88.2500	98.0000
		2CRMAGB	MAG B CONCRETE	15.00	CY	0.0000	123.0000	122.2500	130.0000
		2CRMAGC	MAG C CONCRETE	10.00	CY	78.0000	119.0000	118.2500	128.0000
		2CRSL1-2	SHORT LOAD CHARGE 1<2 C	2.40	EA	175.0000	200.0000	0.0000	200.0000
		2CRSL4-6	SHORT LOAD CHARGE 4<6 C	2.00	EA	125.0000	200.0000	0.0000	200.0000
		2CRTHCLSM	SRP THERMAL CLSM	18.00	CY	150.0000	155.0000	150.0000	150.0000 P
Quoted Amount							82,213	80,500	90,154
Plugged Amount							0	2,700	2,700
Bond							0	0	0
Mobilization							0	0	0
% Adjustment							0	0	0
\$ Adjustment							0	0	0
Total Adjustment							0	0	0
Totals						56,830	82,213	83,200	92,854
Diff From Plug							25,383	26,370	36,024
Total Minority							0	0	0

A 'P' beside a price indicates a plug price.

Green background indicates that the vendor is selected.



Customer Service: 602-278-7777

Fax: 602-278-3077

3636 S 43rd Ave

Phoenix, AZ 85009

PROJECT QUOTATION

CUSTOMER:	Achen Gardner Construction, LLC	PROJECT:	City Of Chandler
Contact:	Mark McLafferty	Address:	Dobson Rd & Chapparral Rd
Phone:	602-877-9329	City,State,Zip:	Chandler , AZ ,
Fax:		Quote ID:	3200 (21)
Email:	mmclafferty@achen.com	Total Qty:	655 CYD (Estimated)

Concrete Products

Qty	Description	Mix Id	Price	Comments
612	1/2 Sack ABC Slurry (COP)	PHCLSM	\$82.00	
15	MAG-B 2500 PSI 1" Rock	12504	\$119.00	
10	2000 PSI MAG C	12004	\$116.00	
18	9 Sack Sand Grout	10574	\$155.00	
	Environmental (Per Each)		\$25.00	
	Fuel Surcharges (Per Each)		\$15.00	
	SHORTLOAD CHARGES (Per Each)		\$200.00	
	Chilled Water (Per Per Yard)		\$1.00	
	Hot Water (Per Per Yard)		\$1.00	

Add-On Products

Price Increase and Quote Expiration

Concrete pricing subject to change in the event of cement / fly ash allocations and / or unanticipated cement / fly ash price increases.	Price Increase #1 : Add \$8.00/CYD on 04/01/2022 All prices expire on quoted expiration date. 09/30/2022

Charges and Fees

Arizona Materials accepts no responsibility for any damage to curb and beyond curb line. It will be Buyers responsibility to contact Arizona Materials Quality Control Department with any concrete issue/concerns within 48 hours after placement. Buyer is responsible to provide safe access to point of delivery. All materials are produced in conformance with ACI / ASTM standards. Mixes quoted below, unless otherwise stated, conform to no specific water cement ratio, minimum sack content, shrinkage, temperature requirement, or the plans and specifications of this project.

All colored concrete loads have a 3 yard minimum.

Arizona Materials cannot guarantee compressive strengths of 5000 PSI or below for loads less than 3 yards.

5000 PSI or above must be 5 yards or more to guarantee compressive strength.

Payment is due and payable on or before the 15th day of the month following to receive 2% discount. Account must be current in full to be eligible to apply discount. A service charge not to exceed the maximum allowed by law applies on unpaid invoice amounts beginning the 1st day of the month following due date and daily thereafter until paid in full. Should litigation be commenced to enforce payment, the prevailing party is entitled to reimbursement of reasonable attorney fees and court costs.

Buyer has 30 days to validate quote with P.O. , signing issued quote, or written verification.

Prepared and Submitted By:	Acceptance (void if not accepted before 02/02/2022)
Name: Charity Medlock	Signature _____ Date _____
Date: 01/03/2022	Print Name _____
Phone: 6026200364	Title _____
Fax:	Company _____
Email: CMEDLOCK@AZMATL.COM	



Corporate Offices:
3636 S. 43rd Avenue
Phoenix, AZ 85009
Phone: 602-278-7777
Fax: 602-442-6905
www.arizonamaterials.net

Terms and Conditions of Sale

Additives

Hot / Chilled Water - \$1.00 per cubic yard
Nitrogen Cooling - \$9.50 per cubic yard
Non-Chloride Accelerator - \$1.50 per unit
Recover - \$2.00 per 1/2 Hour

Fiber

Micro Fiber - \$7.50 per pound
Macro Fiber (Structural) - Priced as Quoted

Color

Standard Liquid Color - See mix detail for per yard pricing
Color Washout - \$25.00 per load

Delivery

Fuel Surcharge - \$15.00 per load
Wash Out System Buckets - \$25.00 per load (requested at time of order)
Standby Charges - \$1.50 per minute beyond 6 minutes per cubic yard
Short Load Charges - 6 yards or less \$200.00 per load
Environmental Fee - \$25.00 per load

Weekend Delivery - \$50.00 per load
Plant Opening Charge - \$500.00/hr, 4 hour minimum
Sunday / Holiday Opening - \$750.00/hr, 4 hour minimum

All order backs/split loads under 11 yds on one order are subject to Short Load Charges.

Concrete Pricing subject to change in the event of cement / fly ash allocations and/or unanticipated cement / fly ash price increases.

All materials are produced in conformance with ACI / ASTM Standards.

Contractor is responsible to provide safe access to the point of delivery.

Arizona Materials accepts no responsibility for damages to any curb and beyond the curb line.

It is Contractors responsibility to contact Arizona Materials Quality Control Department with any concrete issues/concerns no later than 48 Hours after placement.



Price Expiration:
04/01/2022
See acceptance clause below

Customer Name ACHEN GARDNER CONSTRUCTION LLC Attention _____
Project Name CHANDLER HEIGHTS RD UTILITY RELOCATIONS - COC City CHANDLER
Project Address DOBSON RD & CHAPPARAL RD C/St _____
Office Phone _____ Fax _____ Email _____

Date 12/29/2021 Sales MARK REINER Cell # (480) 620-4673 Email mreiner@calportland.com Quote # 124951
Customer # 1016934 Job Start 12/29/2021 Job End 04/01/2022

Volume	Product Number	Description	Unit Price	UOM	Comments
612.00	PHCLSM	0.5 SK ABC SLURRY (PHCLSM 1/2)	\$98.00	CY	
10.00	P2025C01	2000PSI #57 MAG C	\$124.00	CY	
15.00	P2525B01	MAG B 2500PSI #57 ASH	\$126.00	CY	
637	Total Volume		\$20.00	LOAD	Environmental Fee
			\$20.00	LOAD	Fuel Surcharge

Fly ash and lightweight mixes subject to daily availability / All aggregates meet ASTM C 33.

Comments : **PRICE INCREASE 4-1-22 \$10.00 CYD EXPIRING 10-1-22**

Subject to availability. CalPortland warrants that the concrete as delivered to this project will meet or exceed the design strength specified on the delivery ticket when evaluated in accordance with applicable ACI and ASTM standards. CalPortland does not provide Contractor Quality Control. CalPortland guarantees ticketed mix designs of less than 5,000psi for load of three yards or more. Mix strength for loads less than three yards is not guaranteed. Ticketed mix designs of 5,000psi or greater require a four-yard minimum. Three-yard minimum for all colored concrete. Concrete is a natural product. Seller cannot be responsible for variations in color, surface discoloration, popouts or variations in the finished product caused by finishing techniques or job site conditions. Due to potential reactive aggregates in Arizona, CalPortland recommends the use of a Class F Fly Ash to mitigate Alkali Silica Reactivity (ASR). Purchaser shall assume the liability for the use of a cement-only mix.

CalPortland reserves the right to postpone or cancel any quotes, current jobs or accepted deliveries if unable to perform due to raw material shortages, allocations or government regulations. Prices subject to change due to drastic cost changes of the major components of concrete or surcharges.

Concrete is batched and delivered at current ambient temperatures. Buyer is responsible for temperature controlled concrete (Ice/Tempered Water). Prices for temperature controlled concrete are available upon request.

Contractor is responsible for providing safe access to the point of delivery. CalPortland accepts no responsibility for damages to the premises beyond the curb line.

Customer shall provide and assume responsibility for an area or container for clean out of the concrete truck chutes. Additional color added by Buyer on-site subject to wash out fees.

All products quoted per Buyers request. Additional products or services ordered are subject to applicable charges.

Standard Operating hours: Loads batched outside Standard Operating Hours subject to applicable charges.
Summer: 3:00AM – 2:00PM
Winter: 5:00AM – 3:00PM
Saturday: 5:00AM – 12:00PM
Standing Time: \$2.00 per minute beyond 5 minutes per CY.
Minimum Load Charges: One Minimum Load Charge waived on orders of 1 full load or more.
Under 6 CY = \$200.00
Excessive Trucking Fee: Split Loads or multiple Order Backs subject to Excessive Trucking Fees.
Fuel Surcharge: Variable Fuel Surcharge based on U.S. Energy Information Administration On-Highway Diesel Fuel Price Index and is adjusted weekly.
<https://www.eia.gov/petroleum/gasdiesel/>

Terms: All pricing is net 30 days with a valid credit application on file. All applicable sales taxes will be added to price.
Financing: All invoices are due and payable within 30 days of the original billing date. A Finance Charge of 1.5% per month on a pro-rated portion thereof (12% Annual Percentage Rate) will be charged upon all balances not paid within 30 days or first appearance on a Statement.
We impose a surcharge of 2.25% on the transaction amount on all credit card products, which is not greater than our cost of processing. We do not surcharge debit cards.

General Terms & Conditions of Sale: CalPortland Co. Terms and Conditions are applicable and included as page two of this quote. If you did not receive a copy, please contact CalPortland Sales Department at (602) 817-6950.

Acceptance: For this job quotation to be effective, written acceptance must be received no later than 30 days after quote date.

Buyer Acceptance: _____
Name / Title: _____
Date: _____



Ready Mix Terms and Conditions

Customer #	1016934	Customer Name	ACHEN GARDNER CONSTRUCTION LLC
Quote #	124951	Project Title	CHANDLER HEIGHTS RD UTILITY RELOCATIONS - COC

Tempered Water:	Heated Water \$2.00 per cubic yard.
Ice:	\$0.50 per pound (Requires 3 – 5 business days notice).
Non-Chloride Accelerator:	\$0.09 per ounce.
Recover Set Delay Admixture:	\$0.20 per ounce.
Micro Fiber:	\$6.50 per pound.
Macro Fiber:	(Structural) Priced individually
	Please see manufacturer recommendation / specifications for suggested dosage rate.
Standard Liquid Color:	See mix detail for per yard pricing. Actual color of concrete may vary due to differences in cement, aggregates, job site conditions and finishing methods. Three-yard minimum load required.
Color Washouts:	\$25.00 per load
Standby Charges:	\$2.00 per minute beyond 5 minutes per cubic yard.
Minimum Load:	Under 6 CY = \$200.00
Excessive Trucking:	One Excessive Trucking Fee of \$200 will be assessed for each additional load required due to load sizes or multiple Order Backs.
Saturday Service:	\$5.00 per cubic yard Saturday operating hours 5:00am – 12:00pm Loads delivered outside of operating hours subject to additional charges
Split Load Charges:	\$250.00 per load.
Cancellation Charges:	\$10.00 per cubic yard - All orders greater than 80 cubic yards cancelled within 24 hours of scheduled delivery \$10.00 per cubic yard (with a minimum of \$250.00) - All orders with scheduled delivery between the hours of 6:00pm – 4:00am cancelled within 24 hours of scheduled delivery

Special Provisions:





DESERT READY MIX

READY MIX CONCRETE SALES AND SERVICE

4011 PRESIDIO STREET

MESA, AZ 85215

OFFICE: 480-428-2280 FAX: 480-985-4248

Begin Date: December 29, 2021

Quote # : 14798

Expiration Date: April 30, 2022

MAP/GRID 184-19

Customer: **ACHEN GARDNER CONSTRUCTION, LLC**

Customer Code: ACHE001

Address:

CHANDLER, AZ 85226

Contact: MARK MCLAFFERTY (ESTIMATOR)

Phone: 480-940-1300

Fax:

Project: **CHANDLER HEIGHTS RD UTILITY RELOCATION**

Job Address: CHANDLER HEIGHTS DOBSON TO CHAPPARAL RD

Terms Description: **2% 10TH NET 30**

"This quote does not guarantee product or service availability"

Item Code	Item Description	Est. Qty	Price
S500501	PHCLSM.5 (1/2 SACK SLURRY COP)	612 Yards	\$85.00
SRP104	1/2 SACK MAG CLSM (SRP MIX)	Per Yard	\$85.00
A202001	MAG C 2000 PSI	10 Yards	\$115.00
A202501	MAG B 2500 PSI	15 Yards	\$119.00
TC	TEMPERATURE CONTROL	Per Yard	\$1.00

Additional Fees

Fee ID *	UOM	Price
E01	Per Yard	\$3.25

Minimum Load Fee

Less than or equal to	UOM	Price
2 Yards	Load	\$0.00
3.5 Yards	Load	\$0.00
5.5 Yards	Load	\$0.00

- Normal operating hours are Mon-Fri, Sat, Sun or Holidays are subject to surcharges.
- Color added at no expressed guarantee.
- Drivers do not except cash or make change.
- Desert Ready Mix reserves the right to increase prices due to RAW Material cost increases such as Cement, Fly Ash, Aggregates or unexpected Fuel increases.
- All specialized aggregates are based on availability.
- Deliveries less than 6 Cubic yards are subject to our minimum load charges.
- This quote does not guarantee product or service availability

Quoted By:

BRUCE A. TABET

SURVEY SURVEY

Vendor Code							ATWELLLLC	BENCHMARKSUR	SURVEYINNOVA
Vendor Name							Atwell, LLC	Benchmark Surv	Survey Innovati
Vendor Phone							4805862104	4803136788	4809220780
Bid	Activity	Resource	Desc	Quan	Unit	Plug Price	Unit Price	Unit Price	Unit Price
20	3021490	4SURVEY	SURVEY	1.00	LS	10,000.0000	0.0000	0.0000	4,000.0000
Quoted Amount							0	0	4,000
Plugged Amount							0	0	0
Bond							0	0	0
Mobilization							0	0	0
% Adjustment							0	0	0
\$ Adjustment							0	0	0
Total Adjustment							0	0	0
Totals						10,000	0	0	4,000
Diff From Plug							-10,000	-10,000	-6,000
Total Minority							0	0	0

A 'P' beside a price indicates a plug price.

Green background indicates that the vendor is selected.



January 7th, 2022

Mark McLafferty
Achen-Gardner Construction
550 South 79th Street
Chandler, AZ 85226
480-403-9426

SUBJECT: Chandler Heights Rd Utility Relocations

Dear Mark:

Rick Engineering Company is pleased to submit this proposal to provide professional survey services on the above referenced project. We look forward to working with you on this project.

SCOPE OF WORK:

Control

- Verify existing horizontal and vertical control and establish new control for site staking.

Subtotal: \$510.00

Domestic/Fireline Water Services

- Provide one stake at requested offset on 50-foot intervals for line only.
- Provide two stakes at requested offset including grades to adjacent top of curb elevation for fire hydrants, water meter vaults and back flow preventers.

Subtotal: \$1,530.00

Sanitary Sewer

- Provide one stake at requested offset on 25-foot intervals for line including grade to invert.
- Provide one offset stake at requested offset for cleanout locations.
- Provide two offset stakes per manhole at requested offset with grades to rim and invert elevation.

Subtotal: \$340.00

Asbuilts

- Collect field data for use in preparing final asbuilts.
 1. Water
 - Provide centerline stations on fire hydrants, valves, fittings, meters and taps.
 - Contractor to notify surveyor if vertical dip locations are required to be located.
 2. Sewer
 - Provide centerline stations for manholes, cleanouts and fittings.
 - Provide rim and invert elevations for manholes

Note: The contractor will note any changes made during the construction phase and provide dimensions to the surveyor before completion of final asbuilts are submitted. Should the following be required by the governing municipality, the contractor shall notify the project surveyor before back-filling water, fire line, sewer, storm drain facilities or other underground pipelines and utilities in order that the surveyor may verify the asbuilt location and elevation of said utilities.

Subtotal: \$850.00

Calculations, Coordination and Project Management

- Onsite preconstruction meetings to coordinate field staking for synergistic operation with construction subcontractors (not to exceed one meeting). Additional meetings will be conducted on a time and materials basis per Fee Schedule.
- Point staking calculation for items contained in this proposal.
- Drafting services to complete contract asbuilts per governing agency.
- Correspondence to client and subcontractors (i.e. cutsheets, staking progress memorandums, etc).

Subtotal: \$770.00

FEE:

Rick Engineering will provide the above services for a TOTAL FEE of \$4,000.00. The attached Provisions of Agreement between Achen-Gardner Construction (CLIENT) and RICK are incorporated hereunto and made a part of this proposal. Any printing is extra and not a part of this agreement.

EXCLUSIONS:

The following items are specifically excluded from the Scope of Work and budget and, if required, will either be prepared by others or will be covered by separate agreement between Rick Engineering Company and CLIENT.

- a) Boundary Discrepancies
- b) Soils Reports
- c) Staking for Finish Landscaping or Hardscape
- d) Any items not listed in the "Scope of Work"

If the above meets with your approval, please execute where indicated below, and return to our office for our files. If there are any questions or concerns, please feel free to contact our office.

Sincerely,
RICK ENGINEERING COMPANY



A handwritten signature in black ink, appearing to read "R R Hager".

Randall R. Hager, RLS
Associate – Construction Survey Manager

ACCEPTED THIS _____ DAY OF _____, 2022

BY: _____
CLIENT

Invoices for this project to be mailed to:

Company: _____

Address: _____

City/State/Zip: _____

Telephone: _____ Email: _____

Contact person: _____

Please complete, sign and return a copy to RICK ENGINEERING COMPANY

STANDARD PROVISIONS: ARIZONA 2022

The Client and Consultant agree that the following provisions shall be a part of their Agreement:

1. This Agreement shall be binding upon the heirs, partners, successors, executors, administrators and assigns of the Client and Consultant.
2. In the event of any increase of costs due to the granting of wage increases and/or other employee benefits to field or office employees due to the terms of any labor agreement, rise in the cost of living, or increase in any applicable prevailing wage during the lifetime of this Agreement, such increase shall be applied to all remaining compensation. For services provided on a time and materials or hourly rate basis, increases in the applicable rates will be reflected in the billing statement or invoice for the month following the increase.
3. Should litigation at law or equity arising out of this Agreement, including but not limited to an action for declaratory relief, be brought to enforce or interpret any term or provision of this Agreement, or to collect any portion of the amount payable under this Agreement or litigation commenced either directly or by way of a cross-complaint whether arising out of contract or tort, including a cross-complaint for indemnity, for failure or alleged failure to perform or for errors, omissions, or negligence, the prevailing party shall be entitled, in addition to any other award, to all litigation and collection expenses, any and all costs of defense, including attorney's fees, expert witness fees, witness fees and court costs and any and all other expenses incurred.
4. Neither the Client nor Consultant shall assign his interest in this Agreement without the written consent of the other.
5. This Agreement shall be governed by and construed in accordance with the laws of the State of Arizona. This Agreement contains the entire agreement between Client and Consultant relating to the project and the provision of services by Consultant to the project. Any agreements, promises, negotiations or representations not expressly set forth herein, are of no force or effect. Subsequent modifications to this Agreement shall be in writing and signed by both Client and Consultant.
6. Conditions or representations, alterations, detractions from or to the terms hereof, including delineations hereon, shall not be valid unless they are in writing and signed by both Client and Consultant.
7. Client agrees that the Consultant is not responsible for damages arising directly or indirectly from any delays for causes beyond the Consultant's control. For purposes of this Agreement, such causes include, but are not limited to, strikes or other labor disputes; severe weather disruptions or other natural disasters; fires, riots, war or other emergencies or acts of God; failure of any government agency to act in timely manner; failure of performance by the Client or the Client's contractors or consultants; issuance of regulations, orders or other governmental actions that limit, restrict or delay the ability of Consultant or Consultant's workforce to perform; or discovery of any hazardous substances or differing site conditions. In addition, if the delays resulting from any such causes increase the cost or time required by the Consultant to perform its services in an orderly and efficient manner, the Consultant shall be entitled to an equitable adjustment in schedule and/or compensation.
8. In the event litigation is instituted under the terms and conditions of this Agreement, such litigation is to be brought and tried in the appropriate court in the state and county in which the project is located and the parties waive the right to have brought, tried in, or removed to any other county or judicial jurisdiction.
9. Client acknowledges that Consultant is not responsible for the performance of work by third parties, including, but not limited to, the construction contractor(s), subcontractors, governmental agencies, construction managers, architects, or other consultants.
10. Consultant shall only act as an advisor in all governmental relations. Consultant shall not be liable for damages resulting from the actions or inactions of governmental agencies including, but not limited to, permit processing, environmental impact reports, dedications, general plans and amendments thereto, zoning matters, annexations or consolidations, use or conditional use permits, project or plan approvals and building permits.
11. Consultant makes no warranty, either express or implied, as to the findings, recommendations, plans, specifications, or professional advice. Consultant shall perform in accordance with generally accepted engineering and/or surveying practices or standards in effect at the time of performance in the locale where the services are rendered.
12. Consultant makes no representation, guarantee, warranty, express or implied concerning estimated cost figures made in connection with maps, plans, specifications, or drawings, other than that all such figures are estimates only. Consultant shall not be responsible for fluctuations in cost factors.
13. Consultant makes no representations concerning estimates of areas. Estimates of areas are estimates only and are not to be considered precise unless Consultant specifically agrees to provide the precise determination of such areas.
14. Client and Consultant agree to cooperate in any and every way or manner on project.
15. Consultant makes no representation, either express or implied, concerning soils or geological surveys or subsurface soil tests or general soils testing and reporting.
16. Upon written request, each of the parties hereto shall execute and deliver, or cause to be executed and delivered, such additional instruments and documents which may be necessary and proper to carry out the terms of this Agreement.
17. The terms and provisions of this Agreement shall not be construed to alter, waive, or affect any lien or stop notice rights which the Consultant may have for the performance of services under this Agreement.

18. One or more waivers of any term, condition or covenant by a party shall not be construed as a waiver of subsequent breach of the same or any other term, condition, or covenant.

19. In the event Client fails to pay Consultant promptly or within sixty (60) days after invoices are rendered, then Client agrees that Consultant shall have the right to consider said default a total breach of this Agreement and, upon written notice, the duties, obligations and responsibilities of the Consultant under this Agreement are terminated. In such event, Client shall then promptly pay the Consultant for all the fees, charges, and services performed to date by Consultant.

20. In the event any term, condition, covenant or provision of this Agreement shall be held to be invalid, void or unenforceable, the remaining terms, conditions, covenants and provisions of this Agreement shall be valid and binding on the parties hereto.

21. The Client agrees it will require that the Contractor hold harmless, indemnify and defend the Client, the Architect, the Consultant and its subconsultants, and each of their officers, directors, principals, employees and agents, from any and all liability claims, losses or damages arising or alleged to arise from the performance of the work described herein, but not including the sole negligence or willful misconduct of the Client, the Architect or the Consultant or their respective subconsultants, officers directors, principals, employees and agents.

22. The Client shall indemnify and hold Consultant harmless with regard to all liability or claims of any kind, including all investigation and defense costs, connected directly or indirectly with this project, which liabilities or claims do not result from the sole negligence or willful misconduct of the Consultant.

23. Consultant has a right to complete all services agreed to be rendered pursuant to this Agreement. In the event this Agreement is terminated before the completion of all services, unless Consultant is responsible for such early termination, Client agrees to release Consultant from all liability for services performed.

24. In the event work prepared or partially prepared by the Consultant be suspended, abandoned, or terminated, the Client shall pay the Consultant for all work, fees, deposits, charges and services provided, not to exceed any maximum amount specified herein. Client acknowledges if project work is suspended and restarts, there may be additional charges due to suspension which shall be paid by Client as extra work.

25. Client agrees that if Client requests services not specified pursuant to the scope of services described within this Agreement, Client agrees to pay all such additional services as extra work if authorized in writing.

26. Consultant shall be entitled to immediately, and without notice, suspend the performance of any and all of its obligations pursuant to this Agreement if Client files a voluntary petition seeking relief under the United States Bankruptcy Code or if there is an involuntary bankruptcy petition filed against Client in the United States Bankruptcy Court, and that petition is not dismissed fifteen (15) days after its filing. Any suspension of services made pursuant to the provisions of this Paragraph shall continue until such time as this Agreement has been fully and properly assumed or adequate assurance provided in accordance with the applicable provisions of the United States Bankruptcy Court and in compliance with the final order or judgments issued by the Bankruptcy Court.

27. If payment for Consultant's services is to be made on behalf of Client by a third party, Client agrees that Consultant shall not be required to indemnify the third party, in the form of an endorsement or otherwise, as a condition of receiving payment for services.

28. Client agrees to purchase and maintain, during construction, builder's liability special peril or other similar insurance which will name Consultant as an additional insured. Client also agrees to require the contractor or contractors to purchase and maintain liability insurance, including broad form general liability coverage, comprehensive bodily injury, broad form property damage, independent contractors insurance, completed operations and contractual liability coverage, and the exclusions for explosion, collapse or underground coverage shall be deleted; automobile including bodily injury, property damage, owned, non-owned and hired vehicles; and worker's compensation insurance including employers liability coverage, all of which shall name the Client and Consultant as additional insureds. Certificates of such insurance shall be provided to Consultant and the certificate(s) shall include provisions that the above policies are primary and non-contributory with Consultant's insurance and that coverage will not be canceled unless at least thirty days prior written notice has been given to Consultant.

29. In the event that the plans, specifications, and/or field work covered by this Agreement are those required by various governmental agencies and one or more such governmental agency changes its policies, ordinances, procedures or requirements after the date of this Agreement, any additional office or field work required, shall be paid by Client as extra work.

30. Services provided within the Agreement are for the exclusive use of the Client. Nothing contained in this Agreement shall be construed to be for the benefit of any person not a party to this Agreement and no third-party beneficiary rights are created.

31. All original papers, drawings, notes, documents and other work product of Consultant, and copies thereof, produced as a result of the Agreement represent professional services, shall remain the property of the Consultant, and Consultant shall retain all copyright and other ownership interests. Client shall have a nonexclusive license to use Consultant's work product and any items in which Consultant maintains ownership and/or copyright interest so long as all fees to be paid under this Agreement have been paid. Any nonexclusive license Client obtains under this Agreement terminates upon the termination of this Agreement. Consultants work product may be used by Consultant without consent of the Client.

32. In the event that any changes are made in the plans and/or specifications by the Client or persons other than the Consultant, and such changes are not consented to in writing by Consultant, Client acknowledges that the changes and their effects are not the responsibility of Consultant and

Client agrees to release Consultant from all liability arising from the use of such changes and agrees to defend, indemnify and hold Consultant, its officers, directors, principals, agents and employees harmless from and against all claims, demands, damages or costs arising from the changes.

33. Client agrees not to use or permit any other person to use plans, drawings or other work product prepared by Consultant, which plans, drawings or other work product are not signed and stamped or sealed by Consultant and/or are not final. Client agrees to be liable and responsible for any use of non-final plans, drawings or work product or plans, drawings or work product not signed, and stamped or sealed by Consultant and waives liability against Consultant for their use. Client further agrees that final plans, drawings, and other work products are for the exclusive use of Client and may be used by Client only for the project described in this Agreement.

34. In the event that any staking is destroyed, damaged, or disturbed by an act of God or parties other than Consultant, the cost of re-staking shall be paid for by the Client as extra work. If the scope of services provided for pursuant to this Agreement does not include construction staking by Consultant, Client acknowledges that changes, clarifications, adjustments, and modifications may be necessary because of changed field or other conditions. Client will indemnify and defend Consultant for construction staking by others and from claims arising from changes, clarifications, adjustments and modifications which may be necessary to reflect changed field or other conditions, except claims caused by the sole negligence or willful misconduct of Consultant.

35. Questions concerning location or changes in construction stakes or questions concerning information on plans and specifications must be called to the attention of the Consultant upon discovery and before corrective remedy.

36. The Consultant shall be notified 24 hours in advance, so that he may check forms, for grade and alignment only, prior to the pouring of concrete for cast-in-place concrete structures, thrust blocks, electrical boxes, bridge abutments or piers, or any similar structures staked by Consultant. Consultant can assure compliance to proper grade and alignment only when it has been advised to check in advance.

37.(a) If the scope of services to be provided by Consultant pursuant to the terms of this Agreement include the preparation of engineering drawings but exclude construction staking services, Client acknowledges that such services normally include coordinating civil engineering services and the preparation of as-built drawings pursuant to Uniform Building Code Chapter 70 and/or other statutes, ordinances or laws, and Client will be required to retain such services from another consultant or pay Consultant pursuant to this Agreement for such services as extra work.

(b) If the scope of services to be provided by Consultant pursuant to the terms of the Agreement, include construction staking services, but exclude the preparation of the engineering drawings to be used for construction and construction staking, Client acknowledges the coordination of civil engineering services and the preparation of as-built drawings as required by statute, ordinance or law may require the retention by Client of another consultant or the original consultant responsible for the design, or pay Consultant pursuant to this Agreement for such services as extra work. Client acknowledges that if Consultant is retained to prepare as-built drawings of plans prepared by others, Client will indemnify, defend and hold Consultant harmless from any and all liability in connection with the plans and specifications prepared by others, and the performance of work by Consultant on this project as set forth in Paragraph 44.

38. In the event Client discovers or becomes aware of apparent errors or omissions, field conditions or discrepancies during the construction phase of the project, which apparent errors or omissions, field conditions or discrepancies are resolvable by Consultant, Client agrees to notify Consultant and engage Consultant to resolve the problem before construction activities commence or further construction activity proceeds. Further, Client agrees to have a provision in its construction contracts for the project which require the contractor to notify Client of any such apparent errors or omissions, field conditions or discrepancies so that Client may, in turn, notify Consultant pursuant to the provisions of this Paragraph.

39. Client shall pay the costs of checking and inspection fees, zoning and annexation application fees, assessment fees, soils engineering fees, soil testing fees, aerial topography fees, and other fees and deposits, permits, bond premiums, title company charges, blueprints and reproductions, and all other charges not specifically covered by the terms of this Agreement.

40. All fees and other charges will be billed monthly as the work progresses and the net amount shall be due at the time of billing.

41. A late payment CHARGE will be computed by the Consultant at the periodic rate of 1.5% per month, not to exceed the maximum legal rate, which will be applied to any unpaid balance commencing thirty (30) days after the date of the original billing.

42. Client agrees that the balance as stated on the billings from Consultant to Client are correct, conclusive and binding on the Client unless Client within forty-five (45) days from the date of receipt of such billing, notifies Consultant in writing of the particular items that are alleged to be incorrect.

43. In consideration of the Consultant's fee for services, the Client agrees that the Consultant will perform no onsite construction review, construction management, supervision of construction of engineering structures or other construction supervision for this project unless specifically contracted for; that such services will be provided by others; and that the Client shall defend, indemnify and hold the Consultant, its officers, directors, principals, agents and employees harmless from any and all liability, real or alleged, arising or resulting from the performance of construction review, construction management, supervision of construction of engineering structures or supervision by others. Further, Client acknowledges that Consultant will be unable to correct errors or omissions in the plans which customarily become apparent and resolvable during construction review.

44. Client agrees that, in accordance with generally accepted construction practices, the construction contractor will be required to assume sole and complete responsibility for job site conditions during the course of construction of the project, including safety of all persons and property; that this requirement shall be made to apply continuously and not be limited to normal working hours. The Client further agrees to defend,

indemnify, and hold the Consultant harmless from any and all liability in connection with the performance of work on this project, excepting liability arising from the sole negligence or willful misconduct of the Consultant.

45. Client agrees to limit the liability of Consultant, its principals and employees to the Client, all contractors and subcontractors on the project, due to professional negligent acts, errors or omissions of the Consultant, breach of contract or any other cause of action however pled to the sum of \$50,000 or the Consultant's fee, whichever is greater; except that if the contract amount, including any addenda or other contracts pertaining to or covering services related to the project, exceeds \$150,000, the liability of Consultant shall not exceed \$150,000. Client further agrees to notify any contractor and subcontractor who may perform work in connection with any design, report or study prepared by Consultant of such limitation of liability, and to require as a condition precedent to their performing their work, a like indemnity of liability on their part as against the Consultant.

46. The Client hereby agrees to bring no claim for negligence, breach of contract, indemnity or otherwise against the Consultant, its principals, employees and agents if such claim, in any way, would involve the Consultant's services for the investigation, detection, abatement, replacement, use or specification, or removal of products, materials or processes containing asbestos, asbestos cement pipe, and/or hazardous materials (as defined by state, federal and/or local laws or ordinances). Client further agrees to defend, indemnify and hold harmless Consultant, its officers, directors, principals, employees and agents from any asbestos, asbestos cement pipe, and/or hazardous waste material related claims that may be brought by third parties as a result of the services provided by the Consultant pursuant to this Agreement except claims caused by the sole negligence or willful misconduct of the Consultant.

47. Client acknowledges that Consultant's scope of services for this project does not include any services related, in any way, to asbestos and/or hazardous waste. Should Consultant or any other party encounter such materials on the job site, or should it in any way become known that such materials are present or may be present on the job site or any adjacent or nearby areas which may affect Consultant's services, Consultant may, at its option, terminate work on the project until such time as Client retains a specialist contractor to abate and/or remove the asbestos and/or hazardous waste materials and warrant that the job site is free from any hazard which may result from the existence of such materials.

48. Digital data files shall be provided to Client only if such delivery has been specified in the scope of services set forth in this Agreement. If the scope of services does not specify that digital data files shall be delivered, all costs associated with delivery of digital data files shall be paid by Client. Client agrees that all digital data files delivered by Consultant are to be used exclusively to fulfill the scope of this Agreement. Client agrees to hold Consultant harmless for any use by client of this data outside or beyond the scope of this Agreement.

49. Consultant makes the following representations as to the compatibility of digital data files:

- (a) All data files are to be used with compatible hardware and software versions as used by Consultant at the time file copies were created.
- (b) Consultant makes no representation as to the compatibility of any data files other than for the hardware and software versions used by Consultant to create the data files.
- (c) Client agrees to hold Consultant harmless for any use of data files on any hardware or software versions other than those which were used by Consultant to create them.
- (d) If Client requires or requests any special or specific file structure, format or software that is different from those used by Consultant at the time Consultant is performing the services set forth in this Agreement, unless otherwise specified in this Agreement, all costs associated with creating the file structure or format, and/or acquiring necessary software and/or hardware, shall be the responsibility of Client.

50. After the time final data files have been delivered per terms of this Agreement, Consultant will not be held responsible for maintaining copies of any digital data related to this Agreement.

51. Client agrees that if formats for deliverables of digital files are not specified in this Agreement, they will be delivered using the standards and versions of Consultant at the time of creation.

52. Client agrees not to use any digital files (drawing or data file), in whole or in part, for any purpose or project other than the project which is the subject of this Agreement. Client waives any and all claims against Consultant resulting in any way from any changes not authorized and/or authored by Consultant and/or reuse of the drawings or data for any other project without the express written consent by Consultant. The transfer of drawings or data in electronic media or format shall not be deemed a sale, and Consultant makes no warranties, either express or implied, of merchantability or fitness for a particular purpose.

53. Because data stored on electronic media can deteriorate undetected or be modified without the Consultant's knowledge, the Client agrees that it will accept responsibility for the completeness, correctness, or readability of the electronic media after an acceptance period of 30 days after delivery of the electronic files, and that upon the expiration of this acceptance period, client will indemnify and save harmless the Consultant for any and all claims, losses, costs, damages, awards or judgments arising from use of the electronic media files or output generated from them. The Consultant agrees that it is responsible for the accuracy of the sealed drawings that accompany the submittal, and that such accuracy is defined as the care and skill ordinarily used by members of the Consultants profession practicing under similar conditions at the same time and in the same locality. Consultant makes no warranties, express or implied, under this Agreement or otherwise, in connection with the Consultant's services.

54. Prior to the commencement of any legal action, in an effort to resolve any conflicts that arise during the design or construction of the project which is the subject of this Agreement, or following completion of the project, Client and Consultant agree that all disputes between them arising out of or relating to this Agreement, the services performed pursuant to this Agreement, or relating in any way to the project, shall be submitted to nonbinding mediation unless the parties mutually agree otherwise. Each party shall be represented at the mediation by a person or persons with

the authority to bind the party to any agreement, obligation or resolution resulting from the mediation. Each of the parties agrees to include a similar mediation provision in all agreements with any other contractors and consultants retained for the project and to require such contractors and consultants to include a similar provision in all agreements with subcontractors, sub-consultants, suppliers or fabricators, thereby providing mediation as the primary method for dispute resolution between the parties to those agreements.

HOURLY RATES-PHOENIX OFFICE

January 1, 2022-December 31, 2022

Principal Consultant (Special Projects).....	\$ 300.00	Survey Manager	\$ 155.00
Principal	230.00	Assistant Survey Manager.....	140.00
Associate Principal.....	210.00	One-person Survey Party.....	130.00
Senior Project Manager.....	205.00	Two-person Survey Party.....	170.00
Associate/Manager.....	195.00	Three-person Survey Party.....	210.00
Principal Project Engineer/Manager.....	165.00	Principal Survey Analyst.....	130.00
Associate Project Engineer/Manager.....	150.00	Associate Survey Analyst.....	120.00
Assistant Project Engineer/Manager.....	135.00	Assistant Survey Analyst.....	110.00
Principal Engineering Designer.....	125.00		
Associate Engineering Designer.....	115.00	3-D Laser Scanning (One-Person Crew).....	\$ 190.00
Assistant Engineering Designer.....	105.00	3-D Laser Scanning (Two-Person Crew).....	230.00
Principal Engineering Drafter.....	95.00	Principal 3-D Laser Scanning Project Manager.....	165.00
Associate Engineering Drafter.....	85.00	Associate 3-D Laser Scanning Project Manager.....	150.00
Assistant Engineering Drafter.....	75.00	Assistant 3-D Laser Scanning Project Manager.....	135.00
		Principal 3-D Laser Scanning Specialist.....	125.00
Public Works Manager.....	\$ 230.00	Associate 3-D Laser Scanning Specialist.....	115.00
Public Works Senior Project Manager.....	205.00	Assistant 3-D Laser Scanning Specialist.....	105.00
Traffic Engineer/Transportation Planner.....	170.00	Principal 3-D Laser Scanning Technician.....	95.00
Principal Transportation/Traffic Designer.....	125.00	Associate 3-D Laser Scanning Technician.....	85.00
Associate Transportation/Traffic Designer.....	100.00	Assistant 3-D Laser Scanning Technician.....	75.00
Assistant Transportation/Traffic Designer.....	90.00	Drone (One-Person Crew).....	195.00
		Principal Drone Project Manager.....	155.00
Principal Project Planner.....	\$ 155.00	Assistant Drone Project Manager.....	140.00
Senior Associate Planner.....	135.00	Principal Drone Specialist.....	130.00
Senior Planner.....	120.00	Associate Drone Specialist.....	115.00
Associate Planner.....	110.00	Assistant Drone Specialist.....	110.00
Assistant Planner.....	100.00		
		Expert Witness	\$ 425.00
Principal Water Resources Designer.....	\$ 120.00	Court Appearance per half day or part.....	1,840.00
Associate Water Resources Designer.....	110.00		
Assistant Water Resources Designer.....	100.00		
		Entitlements Coordinator	\$ 110.00
Principal Landscape Architect.....	\$ 215.00	Associate Project Administrator.....	60.00
Principal Project Landscape Architect.....	155.00	Assistant Project Administrator.....	55.00
Associate Landscape Architect/Manager.....	140.00	Administrative Assistant.....	50.00
Assistant Landscape Architect/Manager.....	125.00		
Principal Landscape/Urban Designer.....	115.00		
Associate Landscape/Urban Designer.....	105.00		
Assistant Landscape/Urban Designer.....	95.00		

Quote Analysis Report

Achen-Gardner Construction, LLC 71
39381001

Mark McLafferty
CHANDLER HEIGHTS RD DOBSON/CHAPPARAL

Page 1 of 1
1/13/2022 9:25 AM

TRAFFIC TRAFFIC CONTROL

Vendor Code							TRAFFICADETR
Vendor Name							Trafficade Traf
Vendor Phone							6024310911
Bid	Activity	Resource	Desc	Quan	Unit	Plug Price	Unit Price
135	2101900	4TRACCL	TRAFFIC CONTROL	4.00	DA	40.0000	40.0000
135	2101900	4TRACCLSD	TRAFFIC CONTROL	2.00	EA	125.0000	125.0000
135	2101900	4TRACFL	TRAFFIC CONTROL	19.00	DA	45.0000	45.0000
135	2101900	4TRACFLSD	TRAFFIC CONTROL	19.00	EA	150.0000	150.0000
135	2101900	4TRAFLDN	TRAFFIC CONTROL	18.00	DA	80.0000	80.0000
135	2101900	4TRAFLDNBS	TRAFFIC CONTROL	30.00	EA	450.0000	450.0000
135	2101900	4TRAFLDS	TRAFFIC CONTROL	24.00	DA	100.0000	100.0000
135	2101900	4TRAFLDSS	TRAFFIC CONTROL	38.00	EA	750.0000	750.0000
135	2101900	4TRAFLH	TRAFFIC CONTROL	136.00	HR	104.0000	104.0000
135	2101900	4TRAMB	TRAFFIC CONTROL	120.00	DA	40.0000	40.0000
135	2101900	4TRAMBLPU	TRAFFIC CONTROL	8.00	EA	125.0000	125.0000
Quoted Amount							69,899
Plugged Amount							0
Bond							0
Mobilization							0
% Adjustment							0
\$ Adjustment							0
Total Adjustment							0
Totals						69,899	69,899
Diff From Plug							0
Total Minority							0

A 'P' beside a price indicates a plug price.
Green background indicates that the vendor is selected.



WE PROVIDE:

BARRICADES

TRAFFIC CONTROL

TRAFFIC PLANS

PLATES & SHORING

PAVEMENT MILLING

SAWING & CORING

BARRIER WALL

SAFETY SUPPLIES

CUSTOM SIGNS

SIGN INSTALLATIONS

ASPHALT PAVING

Locations:

Phoenix

2533 W. Holly St.
Phoenix, AZ 85009

Chandler

17046 S. Weber Dr.
Chandler, AZ 85226

Tucson

2802 N. Flowing Wells
Tucson, AZ 85705

Prescott

11580 E. Santa Fe Loop
Dewey, AZ 86327

Flagstaff

5301 E. Commerce Ave.
Flagstaff, AZ 86004

Yuma

3178 33rd Place, Ste. A
Yuma, AZ 86365

Holbrook:

405 W. Vista Dr.
Holbrook, AZ 86025

Kingman:

2700 Airway Ave.

Kingman, AZ 86409

Achen Gardner Construction.

Atte: Mark McLafferty (602) 877-9329

Chandler Heights Utility relocates (CMAR)

Dobson Rd & Chaparral Way. Chandler AZ.

Bid Date: 1-05-2022

401D

TRAFFIC CONTROL DAILY ESTIMATE

DOBSON RD SOUTH BOUND FULL CHANNEL. MAINTAIN 1 THRU LANE IN EACH DIRECTION ON THE E/S OF THE MEDIAN FROM CANYON WAY TO 800 FT S/O CHAPARRAL WAY. 24 HRS SET UP.

- Estimated cost for equipment rental daily is \$100.00*.
- Estimated labor cost for set up OR pick up is \$750.00* per occurrence.

DOBSON RD NORTH BOUND FULL CHANNEL. MAINTAIN 1 THRU LANE IN EACH DIRECTION ON THE W/S OF THE MEDIAN FROM CANYON WAY TO CHAPARRAL WAY. DAY TIME SET UP.

- Estimated cost for equipment rental daily is \$80.00*.
- Estimated labor cost for set up, take down, reset OR pick up is \$450.00* per occurrence.

CHAPARRAL WAY, 2-WAY FLAGMAN STATION USING AFAD UNITS- WORK AREA: 200 FT @ BLUE RIDGE WAY OR CRESCENT WAY. DAY TIME SET UP.

- Estimated cost for equipment rental daily is \$45.00*.
- Estimated labor cost for set up, take down, reset OR pick up is \$150.00* per occurrence.
- The above estimated labor cost does not include labor for stand-by, flaggers or AFAD units. 2 Flaggerade AFADs are \$104.00* per hour.
- 2 Certified flagger are \$86.00* per hour.

ADDITIONAL EQUIPMENT FOR CHAPARRAL WAY HARD CLOSURE @ BLUE RIDGE WAY. ALLOW LOCAL TRAFFIC ACCESS EAST AND WEST OF THE INTERSECTION. DAY TIME SET UP.

- Estimated cost for equipment rental daily is \$40.00*.
- Estimated labor cost for set up, take down, reset OR pick up is \$125.00* per occurrence.

MESSAGE BOARD RENTAL (AS NEEDED).

- 1 – VMS Boards with protection equipment is \$40.00* per day.
- Estimated cost for delivery OR pick up of each unit is \$125.00* per occurrence.

EXCLUSIONS:

Message Boards, Temporary No Parking Signs, Municipal Plan Review Fees, Permit Fees, Shadow Truck, Project Specialty Signs, Concrete or Water Filled Barrier Wall, Flagman, Police Officers, Standby Time and ADA Compliance.

TERMS / CONDITIONS:

1. Invoices will be based off the actual ticketed equipment and / or labor delivered to the job.
2. Sales tax is not included and will be added to all billings. Tax rate subject to change if the prevailing rate changes.
3. This quote is valid for 60 days. If work starts after 60 days, then Trafficade reserves the right to nullify this quote and re-quote at its own discretion.
4. 0% Retention.

Trafficade Estimator: Abel Duenez 602-431-0911

EXHIBIT D7: BASELINE PROJECT SCHEDULE

JANUARY 26, 2022

CITY OF CHANDLER – CHANDLER HEIGHTS ROAD UTILITY RELOCATIONS

GMP PROPOSAL FOR CHAPARRAL WAY: DOBSON TO LAKE DRIVE

PROJECT NO: WW2111.401

See Following Baseline Project Schedule

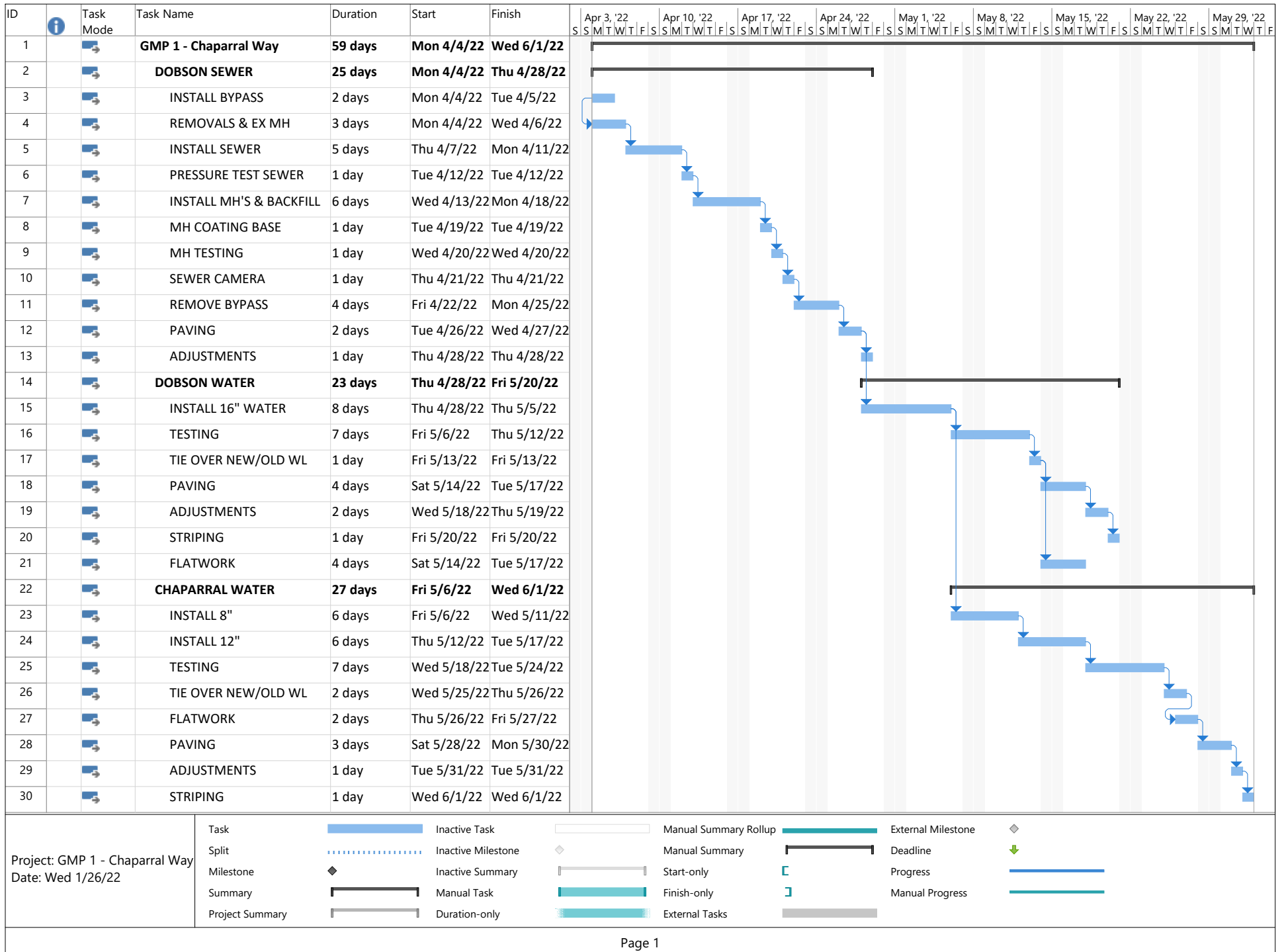


EXHIBIT E



CHANDLER HEIGHTS ROAD UTILITY RELOCATIONS - GMP 1 Project No. WW2111.401

SUBCONTRACTOR'S LIST FORM

If CM@Risk intends to subcontract any portion of this contract, the CM@Risk must submit the name, address, and contractor's license number (if applicable) of each subcontractor, including the work component of such subcontracting. Include the form with the bid submittal documents. CM@Risk may make multiple copies of this form as needed.

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

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

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

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

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

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

EXHIBIT F

GIS / GPS DATA DELIVERY REQUIREMENTS

GIS / GPS Data Delivery Requirements

Contractor must 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 Feature 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.

- 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) Standard GPS Metadata on all points collected: Date, Time, Height, Horiz_Precision, Vert_Precision, Northing, Easting, Surveyor, Datafile, and Comments

e) Electronic Data Submittal:

Each submittal must consist of

- 1) ESRI – ArcGIS Geodatabase with cumulative data and attributes, and
- 2) Construction plans with collected utilities clearly redlined and changes marked

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

DATA DICTIONARY
FOR
WATER, SEWER, RECLAIM & STORM

DATA DICTIONARY:

WATER

Water Fitting				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID	4	
SHAPE	SHAPE	Geometry	0	
FEATUREOWNER	FEATUREOWNER	String	20	WS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	String	20	WS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	String	20	WS_SPATIALSOURCE_STD
MATERIAL	MATERIAL	String	20	
DIAMETER1	DIAMETER1	String	8	RWS_FITTING_DIAMETER
DIAMETER2	DIAMETER2	String	8	
ROTATION	ROTATION	Double	8	
GPSOID	GPSOID	Integer	4	
GPS_DATE	GPS_DATE	Date	8	
GPS_TIME	GPS_TIME	String	10	
GPS_HEIGHT	GPS_HEIGHT	Double	8	
HORZ_PREC	HORZ_PREC	Double	8	
VERT_PREC	VERT_PREC	Double	8	
NORTHING	NORTHING	Double	8	
EASTING	EASTING	Double	8	
GPS_COMMENT	GPS_COMMENT	String	30	
TYPE	TYPE	String	30	WS_FITTING_TYPE
BEND	BEND	String	20	WS_FITTING_BEND

Water Hydrant				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID	4	
SHAPE	SHAPE	Geometry	0	
FEATUREOWNER	Feature Owner	String	25	WS_FEATUREOWNER
LIFECYCLESTATUS	Lifecycle Status	String	25	WS_LIFECYCLESTATUS
SPATIALSOURCE	Spatial Source	String	25	WS_SPATIALSOURCE_STD
BARRELDIAMETER	Barrel Diameter	Double	8	
LARGENOZZLEDIAMETER	Large Nozzle Diameter	Double	8	
SMALLNOZZLEDIAMETER	Small Nozzle Diameter	Double	8	
OUTLETCONFIGURATION	Outlet Configuration	Double	8	
SEATDIAMETER	Seat Diameter	Double	8	
MANUFACTURER	Manufacturer	String	25	WS_HYD_MANUFACTURER
YEARMANUFACTURED	Manufacture Year	String	25	
HASLOCK	Has Lock ?	String	25	GIS_BOOLEAN_YES_NO
COLOR	Color	String	25	
ROTATION	Symbol Rotation	Double	8	
GPSOID	GPS ObjectID	Integer	4	
GPS_DATE	GPS_DATE	Date	8	
GPS_TIME	GPS_TIME	String	25	
GPS_HEIGHT	GPS_HEIGHT	Double	8	
HORZ_PREC	HORZ_PREC	String	25	
VERT_PREC	VERT_PREC	String	25	
NORTHING	NORTHING	String	25	
EASTING	EASTING	String	25	
DATAFILE	DATAFILE	String	25	
GPS_COMMENT	GPS_COMMENT	String	50	

WATER VALVE				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID	4	
SHAPE	SHAPE	Geometry	0	
FEATUREOWNER	FEATURE OWNER	String	20	RWS_SYSVAL_FUNCTION
LIFECYCLESTATUS	LIFECYCLE STATUS	String	20	WS_SYSVAL_LIFECYCLESTATUS
SPATIALSOURCE	SPATIAL SOURCE	String	20	WS_SYSVAL_SPATIALSOURCE
TYPE	TYPE	String	25	RWS_SYSVAL_TYPE
VALVETYPE	VALVE TYPE	String	10	RWS_SYSVAL_VALVETYPE
GROUNDTYPE	GROUNDTYPE	String	25	WS_SYSVAL_GROUNDTYPE
DIAMETER	Diameter	String	8	WS_SYSVAL_DIAM
GPSOID	GPS OBJECTID	Integer	4	
GPS_DATE	GPS DATE	Date	8	
GPS_TIME	GPS TIME	String	10	
GPS_HEIGHT	GPS HEIGHT	Double	8	
HORZ_PREC	HORZ PREC	Double	8	
VERT_PREC	VERT PREC	Double	8	
NORTHING	NORTHING	Double	8	
EASTING	EASTING	Double	8	
DATAFILE	DATAFILE	String	20	
GPS_COMMENT	GPS COMMENT	String	30	
WO_CAT_CODE	WO CAT CODE	String	10	
WO_CAT	WO CAT	String	25	

WATER MANHOLE				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID	4	
SHAPE	SHAPE	Geometry	0	
FEATUREOWNER	FEATUREOWNER	String	20	WS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	String	20	WS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	String	20	WS_SPATIALSOURCE_STD
ACCESSDIAMETER	ACCESSDIAMETER	String	8	
ACCESSTYPE	ACCESSTYPE	String	20	
GROUNDTYPE	GROUNDTYPE	String	20	WS_SYSVAL_GROUNDTYPE
COVERMATERIAL	COVERMATERIAL	String	10	
COVERTYPE	COVERTYPE	String	8	
GPSOID	GPSOID	Integer	4	
GPS_DATE	GPS_DATE	Date	8	
GPS_TIME	GPS_TIME	String	10	
GPS_HEIGHT	GPS_HEIGHT	Double	8	
HORZ_PREC	HORZ_PREC	Double	8	
VERT_PREC	VERT_PREC	Double	8	
NORTHING	NORTHING	Double	8	
EASTING	EASTING	Double	8	
DATAFILE	DATAFILE	String	20	
GPS_COMMENT	GPS_COMMENT	String	30	

WATER MISC PNT		This feature is used for any miscellaneous information		
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID	4	
SHAPE	SHAPE	Geometry	0	
GPSOID	GPSOID	Integer	4	
GPS_DATE	GPS_DATE	Date	8	
GPS_TIME	GPS_TIME	String	10	
GPS_HEIGHT	GPS_HEIGHT	Double	8	
HORZ_PREC	HORZ_PREC	Double	8	
VERT_PREC	VERT_PREC	Double	8	
NORTHING	NORTHING	Double	8	
EASTING	EASTING	Double	8	
DATAFILE	DATAFILE	String	20	
GPS_COMMENT	GPS_COMMENT	String	50	
NOTES	NOTES	String	150	
SIZE	SIZE	Double	8	

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

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_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

DATA DICTIONARY:

SEWER

SEWER CLEANOUT				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID	4	
SHAPE	SHAPE	Geometry	0	
FEATUREOWNER	FEATUREOWNER	String	20	WW_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	String	20	WW_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	String	20	WW_SPATIALSOURCE
RIM_ELEV	RIM_ELEV	Double	8	
INV_ELEV	INV_ELEV	Double	8	
GPSOID	GPSOID	Integer	4	
GPS_DATE	GPS_DATE	Date	8	
GPS_TIME	GPS_TIME	String	10	
GPS_HEIGHT	GPS_HEIGHT	Double	8	
HORZ_PREC	HORZ_PREC	Double	8	
VERT_PREC	VERT_PREC	Double	8	
NORTHING	NORTHING	Double	8	
EASTING	EASTING	Double	8	
DATAFILE	DATAFILE	String	20	
GPS_COMMENT	GPS_COMMENT	String	30	

SEWER CONTROL VALVE				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID	4	
SHAPE	SHAPE	Geometry	0	
TYPE	TYPE	String	25	
FEATUREOWNER	FEATUREOWNER	String	20	WW_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	String	20	WW_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	String	20	WW_SPATIALSOURCE
DIAMETER	DIAMETER	String	8	
GPSOID	GPSOID	Integer	4	
GPS_DATE	GPS_DATE	Date	8	
GPS_TIME	GPS_TIME	String	10	
GPS_HEIGHT	GPS_HEIGHT	Double	8	
HORZ_PREC	HORZ_PREC	Double	8	
VERT_PREC	VERT_PREC	Double	8	
NORTHING	NORTHING	Double	8	
EASTING	EASTING	Double	8	
DATAFILE	DATAFILE	String	20	
GPS_COMMENT	GPS_COMMENT	String	30	

SEWER_FITTING				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID	4	
SHAPE	SHAPE	Geometry	0	
FEATUREOWNER	FEATUREOWNER	String	20	WW_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	String	20	WW_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	String	20	WW_SPATIALSOURCE
MATERIAL	MATERIAL TYPE	String	20	
TYPE	TYPE	String	30	
BEND	BEND	String	20	
GPSOID	GPSOID	Integer	4	
GPS_DATE	GPS_DATE	Date	8	
GPS_TIME	GPS_TIME	String	10	
GPS_HEIGHT	GPS_HEIGHT	Double	8	
HORZ_PREC	HORZ_PREC	Double	8	
VERT_PREC	VERT_PREC	Double	8	
NORTHING	NORTHING	Double	8	
EASTING	EASTING	Double	8	
DATAFILE	DATAFILE	String	20	
GPS_COMMENT	GPS_COMMENT	String	30	
SIZE_	SIZE OF FITTING	String	20	

SEWER_MANHOLE				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID	4	
SHAPE	SHAPE	Geometry	0	
FEATUREOWNER	FEATUREOWNER	String	25	WW_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	String	25	WW_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	String	20	WW_SPATIALSOURCE
LID	LID TYPE	String	20	
TYPE	TYPE	String	20	WW_MH_TYPE
COVER_MATERIAL	COVER_MATERIAL	String	25	WW_MH_COVER_MATERIAL
COVER_HOLE	COVER_HOLE	String	25	WW_MH_COVER_HOLE
COVER_SIZE	COVER_SIZE	String	20	WW_MH_COVER_SIZE
RIM_ELEV	RIM_ELEV	Double	8	
INV_ELEV	INV_ELEV	Double	8	
GPSOID	GPSOID	Integer	4	
GPS_DATE	GPS_DATE	Date	8	
GPS_TIME	GPS_TIME	String	10	
GPS_HEIGHT	GPS_HEIGHT	Double	8	
HORZ_PREC	HORZ_PREC	Double	8	
VERT_PREC	VERT_PREC	Double	8	
NORTHING	NORTHING	Double	8	
EASTING	EASTING	Double	8	
DATAFILE	DATAFILE	String	20	
GPS_COMMENT	GPS_COMMENT	String	30	
LINER	LINER	String	50	WW_MH_LINER
WALL_MATERIAL	WALL_MATERIAL	String	50	WW_MH_WALL_MATERIAL

SEWER_MISC		For any Miscellaneous features		
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID	4	
SHAPE	SHAPE	Geometry	0	
SPATIALSOURCE	SPATIALSOURCE	String	20	
MATERIAL	MATERIAL	String	20	
TYPE	TYPE	String	30	
BEND	BEND	String	20	
NOTES	NOTES	String	255	
GPSOID	GPSOID	Integer	4	
GPS_DATE	GPS_DATE	Date	8	
GPS_TIME	GPS_TIME	String	10	
GPS_HEIGHT	GPS_HEIGHT	Double	8	
HORZ_PREC	HORZ_PREC	Double	8	
VERT_PREC	VERT_PREC	Double	8	
NORTHING	NORTHING	Double	8	
EASTING	EASTING	Double	8	
DATAFILE	DATAFILE	String	20	
GPS_COMMENT	GPS_COMMENT	String	30	
SIZE_	SIZE_	String	20	

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

Domain name	WW_MH_TYPE
0	UNKNOWN
1	SANITARY SEWER
2	ARV

DATA DICTIONARY: RECLAIM

RECLAIM_FITTING				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID	4	
SHAPE	SHAPE	Geometry	0	
FEATUREOWNER	FEATUREOWNER	String	20	RWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	String	20	RWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	String	20	RWS_SPATIALSOURCE
MATERIAL	MATERIAL	String	20	RWS_MAIN_OR_SERVICE_MATERIAL
DIAMETER1	DIAMETER1	String	8	RWS_FITTING_DIAMETER
DIAMETER2	DIAMETER2	String	8	RWS_FITTING_DIAMETER
TYPE	TYPE	String	30	RWS_FITTING_TYPE
BEND	BEND	String	20	RWS_FITTING_BEND
GPSOID	GPSOID	Integer	4	
GPS_DATE	GPS_DATE	Date	8	
GPS_TIME	GPS_TIME	String	10	
GPS_HEIGHT	GPS_HEIGHT	Double	8	
HORZ_PREC	HORZ_PREC	Double	8	
VERT_PREC	VERT_PREC	Double	8	
NORTHING	NORTHING	Double	8	
EASTING	EASTING	Double	8	
GPS_COMMENT	GPS_COMMENT	String	30	

RECLAIM_MISC_STRUCT				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID	4	
SHAPE	SHAPE	Geometry	0	
TYPE	SUBTYPE	String	20	
GPSOID	GPSOID	Integer	4	
GPS_DATE	GPS_DATE	Date	8	
GPS_TIME	GPS_TIME	String	10	
GPS_HEIGHT	GPS_HEIGHT	Double	8	
HORZ_PREC	HORZ_PREC	Double	8	
VERT_PREC	VERT_PREC	Double	8	
NORTHING	NORTHING	Double	8	
EASTING	EASTING	Double	8	
GPS_COMMENT	GPS_COMMENT	String	50	
NOTES	Notes	String	150	

RECLAIM_MANHOLE				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID	4	
SHAPE	SHAPE	Geometry	0	
FEATUREOWNER	FEATUREOWNER	String	20	RWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	String	20	RWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	String	20	RWS_SPATIALSOURCE
ACCESSDIAMETER	ACCESSDIAMETER	String	8	RWS_GROUNDTYPE
GROUNDTYPE	GROUNDTYPE	String	20	
COVERMATERIAL	COVERMATERIAL	String	10	
COVERTYPE	COVERTYPE	String	8	
GPSOID	GPSOID	Integer	4	
GPS_DATE	GPS_DATE	Date	8	
GPS_TIME	GPS_TIME	String	10	
GPS_HEIGHT	GPS_HEIGHT	Double	8	
HORZ_PREC	HORZ_PREC	Double	8	
VERT_PREC	VERT_PREC	Double	8	
NORTHING	NORTHING	Double	8	
EASTING	EASTING	Double	8	
GPS_COMMENT	GPS_COMMENT	String	30	

RECLAIM SYSTEM VALVE				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID	4	
SHAPE	SHAPE	Geometry	0	
FEATUREOWNER	FEATURE OWNER	String	20	RWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLE STATUS	String	20	RWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIAL SOURCE	String	20	RWS_SPATIALSOURCE
TYPE	TYPE	String	25	RWS_SYSVAL_TYPE
VALVETYPE	VALVE TYPE	String	10	RWS_SYSVAL_VALVETYPE
FUNCTION	FUNCTION	String	25	RWS_SYSVAL_FUNCTION
GROUNDTYPE	GROUNDTYPE	String	25	RWS_SYSVAL_GROUNDTYPE
GPSOID	GPS OBJECTID	Integer	4	
GPS_DATE	GPS DATE	Date	8	
GPS_TIME	GPS TIME	String	10	
GPS_HEIGHT	GPS HEIGHT	Double	8	
HORZ_PREC	HORZ PREC	Double	8	
VERT_PREC	VERT PREC	Double	8	
NORTHING	NORTHING	Double	8	
EASTING	EASTING	Double	8	
GPS_COMMENT	GPS COMMENT	String	30	
WO_ZONE	WO ZONE	Double	8	
DIAMETER	DIAMETER	Double	8	RWS_SYSVAL_DIAM
WO_CAT_CODE	WO_CAT_CODE	String	10	

Reclaim Domains:

Domain name	RWS_SYSVAL_VALVETYPE
BALL	BALL
BUTTERFLY	BUTTERFLY
GATE	GATE
INSERTA	INSERTA
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
BLOWOFF	BLOWOFF
STANDARD	STANDARD
Domain name	RWS_FEATUREOWNER
COC	CHANDLER
COM	MESA
INTEL	INTEL
OCA	OCA
OMG	OMG
PRIVATE	PRIVATE
SRP	SRP
TOG	GILBERT
UNKNOWN	UNKNOWN

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
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

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
36	36
42	42
48	48

DATA DICTIONARY:

STORM

SWS_DRAIN_MANHOLE				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID	4	
SHAPE	SHAPE	Geometry	0	
FEATUREOWNER	FEATUREOWNER	String	25	SWS_FEATUREOWNER_1
LIFECYCLESTATUS	LIFECYCLESTATUS	String	25	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	String	25	SWS_SPATIALSOURCE
STRUCTURE_TYPE	STRUCTURE_TYPE	SmallInteger	2	SWS_STRUCTURE_TYPE
CHANDLER_NAME	CHANDLER_NAME_ON_LID	String	5	GIS_BOOLEAN_YES_NO
DIAMETER	DIAMETER	SmallInteger	2	SWS_SDMH_SIZE
VENT_HOLE	VENT_HOLE	String	30	GIS_BOOLEAN_YES_NO
ACCESS_OPENING_TYPE	ACCESS_OPENING_TYPE	String	25	SWS_SDMH_ACCESS_OPENING_TYPE
LID_TYPE	LID_TYPE	String	30	SWS_SDMH_TYPE
LID_TEXT	LID_TEXT	String	30	SWS_SDMH_LID_TEXT
COMMENTS	COMMENTS	String	255	
COLLECTED_DATE	COLLECTED_DATE	Date	8	

SWS_BUBBLER_BOX				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID	4	
SHAPE	SHAPE	Geometry	0	
FEATUREOWNER	FEATUREOWNER	String	25	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	String	25	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	String	25	SWS_SPATIALSOURCE
GRATE_OPENINGS_NUM	GRATE_OPENINGS_NUM	SmallInteger	2	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	String	5	GIS_BOOLEAN_YES_NO
GPSX	GPSX	Double	8	
GPSY	GPSY	Double	8	
COMMENTS	COMMENTS	String	255	
COLLECTED_DATE	COLLECTED_DATE	Date	8	
NOTES	NOTES	String	50	

SWS_CATCHBASIN				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID	4	
SHAPE	SHAPE	Geometry	0	
FEATUREOWNER	FEATUREOWNER	String	25	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	String	25	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	String	25	SWS_LIFECYCLESTATUS
STRUCTURE_TYPE	STRUCTURE_TYPE	SmallInteger	2	SWS_STRUCTURE_TYPE
CATCHBASIN_TYPE	CATCHBASIN_TYPE	String	25	SWS_CB_TYPE
LOCATION	LOCATION	String	100	
CITY_EMBLEM	CITY_EMBLEM	String	5	GIS_BOOLEAN_YES_NO
ACCESS_OPENING_TYPE	ACCESS_OPENING_TYPE	String	25	SWS_CB_ACCESS_OPENING_TYPE
GRATE_LENGTH	GRATE_LENGTH	Double	8	SWS_GRATE_LENGTH
GRATE_WIDTH	GRATE_WIDTH	Double	8	SWS_GRATE_WIDTH
LID	LID	String	5	GIS_BOOLEAN_YES_NO
LID_TYPE	LID_TYPE	String	25	SWS_CB_LID_TYPE
DRYWELL_CONN	DRYWELL_CONN	String	5	GIS_BOOLEAN_YES_NO
OUTLET_CONN	OUTLET_CONN	String	5	GIS_BOOLEAN_YES_NO
BUBBLERBOX_CONN	BUBBLERBOX_CONN	String	5	GIS_BOOLEAN_YES_NO
BUBBLERBOX_DRYWELL_ASSOC	BUBBLERBOX_DRYWELL_ASSOC	String	5	GIS_BOOLEAN_YES_NO
LAKE_DRAIN	LAKE_DRAIN	String	5	GIS_BOOLEAN_YES_NO
GPSX	GPSX	Double	8	
GPSY	GPSY	Double	8	
COMMENTS	COMMENTS	String	255	
COLLECTED_DATE	COLLECTED_DATE	Date	8	
NOTES	NOTES	String	50	

SWS_DRYWELL_PNT				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID	4	
Shape	Shape	Geometry	0	
FEATUREOWNER	FEATUREOWNER	String	25	SWS_FEATUREOWNER_1
LIFECYCLESTATUS	LIFECYCLESTATUS	String	25	SWS_LIFECYCLESTATUS_1
SPATIALSOURCE	SPATIALSOURCE	String	25	SWS_SPATIALSOURCE_1
FIELD_LOC	FIELD_LOC	String	100	SWS_DW_LOCATION
INSTALLER	INSTALLER	String	30	SWS_DW_INSTALLER
CHAMBER_TYPE	CHAMBER_TYPE	String	30	SWS_DW_CHAMBER_TYPE
LID_SIZE	LID_SIZE	SmallInteger	2	SWS_DW_LID_SIZE
LID_TYPE	LID_TYPE	String	25	SWS_DW_LID_TYPE
NUISANCE_LINE_ASSOC	NUISANCE_LINE_ASSOC	String	5	GIS_BOOLEAN_YES_NO
CONCRETE_PAD	CONCRETE_PAD	String	5	GIS_BOOLEAN_YES_NO
COMMENTS	COMMENTS	String	255	
COLLECTED_DATE	COLLECTED_DATE	Date	8	

SWS_INLET_PNT				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID	4	
Shape	Shape	Geometry	0	
CATCHBASIN_TYPE	CATCHBASIN_TYPE	String	25	SWS_CB_TYPE
FEATUREOWNER	FEATUREOWNER	String	25	SWS_FEATUREOWNER_1
LIFECYCLESTATUS	LIFECYCLESTATUS	String	25	SWS_LIFECYCLESTATUS_1
SPATIALSOURCE	SPATIALSOURCE	String	25	SWS_SPATIALSOURCE_1
FIELD_LOC	FIELD_LOC	String	100	SWS_FIELD_LOC
GRATE_ASSOC	GRATE_ASSOC	String	25	GIS_BOOLEAN_YES_NO
GRATE_LENGTH	GRATE_LENGTH	Double	8	SWS_GRATE_LENGTH
GRATE_WIDTH	GRATE_WIDTH	Double	8	SWS_GRATE_WIDTH
INLET_PIPE_DIAM	INLET_PIPE_DIAM	SmallInteger	2	SWS_INLET_PIPE_DIAM
INLET_NUMBER	NUMBER_OF_INLETS	SmallInteger	2	
TRASHRACK_ASSOC	TRASHRACK_ASSOC	String	5	GIS_BOOLEAN_YES_NO
TRASH_LENGTH	TRASH_LENGTH	Double	8	
TRASH_WIDTH	TRASH_WIDTH	Double	8	
NUISANCE_LINE_ASSOC	NUISANCE_LINE_ASSOC	String	5	GIS_BOOLEAN_YES_NO
BUBBLER_BOX_DRYWELL_ASSOC	BUBBLER_BOX_DRYWELL_ASSOC	String	5	GIS_BOOLEAN_YES_NO
HEADWALLASSOC	HEADWALLASSOC	String	5	GIS_BOOLEAN_YES_NO
COMMENTS	COMMENTS	String	255	
COLLECTED_DATE	COLLECTED_DATE	Date	8	

SWS_OUTLET_PNT				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID	4	
SHAPE	SHAPE	Geometry	0	
FEATUREOWNER	FEATUREOWNER	String	25	SWS_FEATUREOWNER_1
LIFECYCLESTATUS	LIFECYCLESTATUS	String	25	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	String	25	SWS_SPATIALSOURCE_1
GRATE_ASSOC	GRATE_ASSOC	String	25	GIS_BOOLEAN_YES_NO
GRATE_LENGTH	GRATE_LENGTH	Double	8	SWS_GRATE_LENGTH
GRATE_WIDTH	GRATE_WIDTH	Double	8	SWS_GRATE_WIDTH
INLET_PIPE_DIAM	INLET_PIPE_DIAM	SmallInteger	2	SWS_INLET_PIPE_DIAM
INLET_NUMBER	NUMBER_OF_INLETS	SmallInteger	2	
TRASHRACK_ASSOC	TRASHRACK_ASSOC	String	5	GIS_BOOLEAN_YES_NO
TRASH_LENGTH	TRASH_LENGTH	Double	8	
TRASH_WIDTH	TRASH_WIDTH	Double	8	
NUISANCE_LINE_ASSOC	NUISANCE_LINE_ASSOC	String	5	GIS_BOOLEAN_YES_NO
BUBBLER_BOX_DRYWELL_ASSOC	BUBBLER_BOX_DRYWELL_ASSOC	String	5	GIS_BOOLEAN_YES_NO
HEADWALLASSOC	HEADWALLASSOC	String	5	GIS_BOOLEAN_YES_NO
COMMENTS	COMMENTS	String	255	
COLLECTED_DATE	COLLECTED_DATE	Date	8	

SWS_SCUPPER_PNT				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID	4	
SHAPE	SHAPE	Geometry	0	
FEATUREOWNER	FEATUREOWNER	String	25	SWS_FEATUREOWNER_1
LIFECYCLESTATUS	LIFECYCLESTATUS	String	25	SWS_LIFECYCLESTATUS_1
SPATIALSOURCE	SPATIALSOURCE	String	25	
CITY_EMBLEM	CITY_EMBLEM	String	5	GIS_BOOLEAN_YES_NO
NUMBER_OPENINGS	NUMBER_OPENINGS	SmallInteger	2	
WIDTH	WIDTH	Double	8	
SPILLWAY_ASSOC	SPILLWAY_ASSOC	String	25	GIS_BOOLEAN_YES_NO
HEADWALL_ASSOC	HEADWALL_ASSOC	String	5	GIS_BOOLEAN_YES_NO
NUISANCE_LINE_ASSOC	NUISANCE_LINE_ASSOC	String	5	GIS_BOOLEAN_YES_NO
BUBBLERBOX_ASSOC	BUBBLERBOX_ASSOC	String	5	GIS_BOOLEAN_YES_NO
BUBBLER_BOX_DRYWELL_ASSOC	BUBBLER_BOX_DRYWELL_ASSOC	String	5	GIS_BOOLEAN_YES_NO
LAKE_DRAIN	LAKE_DRAIN	String	5	GIS_BOOLEAN_YES_NO
RIPRAP	RIPRAP	String	25	GIS_BOOLEAN_YES_NO
COMMENTS	COMMENTS	String	255	
COLLECTED_DATE	COLLECTED_DATE	Date	8	

Sewer 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_1

ABANDONED	ABANDONED
ACTIVE	ACTIVE
INACTIVE	INACTIVE
REMOVED	REMOVED
Domain name	SWS_GRATE_OPENINGS
1	1
2	2
3	3
4	4
5	5
6	6
Domain name	SWS_SPATIALSOURCE_1
FIELD	FIELD
GPS	GPS
Domain name	SWS_SPATIALSOURCE
APPROVED_PLANS	APPROVED_PLANS
ASBUILT	ASBUILT
DESIGN	DESIGN
FIELD	FIELD
GPS	GPS
ORTHOPHOTO	ORTHOPHOTO
UNKNOWN	UNKNOWN

Domain name	SWS_SDMH_SIZE

22	22
24	24
26	26
28	28
30	30
32	32
38	38
Domain name	GIS_BOOLEAN_YES_NO
YES	YES
NO	NO
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

	SWS_CB_ACCESS_OPENING_TYPE
NONE	NONE
RECTANGULAR	RECTANGULAR
ROUND	ROUND
SQUARE	SQUARE
Domain name	SWS_FEATUREOWNER_1
ADOT	ADOT
CITY_OF_CHANDLER	CITY_OF_CHANDLER
HOA	HOA
PRIVATE	PRIVATE
Domain name	SWS_LIFECYCLESTATUS
ACTIVE	ACTIVE
FUTURE	FUTURE
REMOVED	REMOVED
INACTIVE	INACTIVE
ABANDONED	ABANDONED
Domain name	SWS_FEATUREOWNER
ADOT	ADOT
CITY_OF_CHANDLER	CITY_OF_CHANDLER
HOA	HOA
OTHER	OTHER

Domain name	

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
OTHER	OTHER
TORRENTRESOURCES	TORRENT RESOURCES
WACODRILLING	WACO DRILLING
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
AIRPOR	AIRPORT
CTYRTN	CITYRETENTION
Domain name	SWS_CB_TYPE
NONE	NONE
PARK	PARK
PRKLOT	PARKING_LOT
PVRET	PRIVATERETENTION
STREET	STREET
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
WELLSI	WELL_SITE
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_SDMH_TYPE
PRESSURIZED	PRESSURIZED
NON-PRESSURIZED	NON-PRESSURIZED
Domain name	SWS_DW_LID_TYPE
STEEL	STEEL
GRANITE	GRANITE
CONCRETE_SEALED	CONCRETE_SEALED
GRATE	GRATE