

**CITY OF PHOENIX, ARIZONA
OFFICE OF THE CITY ENGINEER
DESIGN AND CONSTRUCTION PROCUREMENT**



PROJECT SPECIFICATIONS AND CONTRACT DOCUMENTS

**WATER SERVICES DEPARTMENT
VOLUME 1 OF 3**

2017 PVC LINED CONCRETE SANITARY SEWER REHABILITATION

PROJECT NO. WS90500272

**PROCUREPHX PRODUCT CATEGORY CODE 912000000
RFx 6000001584**

AGREEMENT _____



Michael Logan

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CALL FOR BIDS

CITY OF PHOENIX 2017 PVC LINED CONCRETE SANITARY SEWER REHABILITATION DESIGN-BID-BUILD

PROJECT NO. WS90500272

PROCUREPHX PRODUCT CATEGORY CODE 91200000
RFx 6000001584

BIDS WILL BE DUE: TUESDAY, APRIL 23, 2024 AT 2:00 P.M.
SUBMITTED INTO THE DESIGN AND CONSTRUCTION PROCUREMENT BID BOX
LOCATED ON THE 1ST FLOOR LOBBY OF THE PHOENIX CITY HALL BUILDING,
200 W. WASHINGTON STREET, PHOENIX, ARIZONA, 85003

BIDS WILL BE READ: TUESDAY, APRIL 23, 2024, 2024 AT 2:00 P.M.
ON 5TH FLOOR, ROOM 5 WEST
PHOENIX CITY HALL
200 W. WASHINGTON STREET
PHOENIX, AZ 85003-1611
***All times are local Phoenix time**

AND

VIA TEAMS VIDEO / PHONE ACCESS
***All times are local Phoenix time**

SCOPE OF WORK

The City of Phoenix is seeking a qualified contractor to provide construction services for the project listed below.

This project includes rehabilitation large diameter PVC-lined sanitary sewer pipe, access manholes, and structures throughout the City. Work includes cleaning debris removal; pre and post CCTV, CIPP lining installation; manhole coating repair, odor mitigation, providing bypass diversion and/or control of sanitary sewage flows and dewatering.

A Small Business Enterprise goal of 3% has been established for this project.

PRE-BID MEETING

A pre-bid meeting will be held on Thursday, April 4, 2024, at 11:00 a.m., at 200 W. Washington Street, City Hall Conference Room 5 West and via Teams. At this meeting, staff will discuss the scope of work, general contract issues and respond to questions from the attendees. As City staff will not be available to respond to individual inquiries regarding the project scope outside of this pre-bid meeting, it is strongly recommended that interested firms send a representative to the pre-bid meeting.

Pre-Bid Teams Meeting Information

Meeting ID: 276 307 351 035

Passcode: i2bMwe

CITY OF PHOENIX: Water Services Department
PROJECT NAME: 2017 PVC Lined Concrete Sanitary Sewer Rehabilitation
PROJECT NUMBER: WS90500272 INSTRUCTIONS TO BIDDERS

REQUEST FOR BID PACKET

On Thursday, March 28, 2024, the bid packet may be downloaded from the City of Phoenix's eProcurement site at:

<https://eprocurement.phoenix.gov/irj/portal>

(OR)

the City of Phoenix's "Solicitations" web page as. The web address is:

<https://solicitations.phoenix.gov>

Firms receiving a copy of the bid packet through any other means are strongly encouraged to download the bid packet from the City webpage.

Firms must be registered in eProcurement <https://www.phoenix.gov/finance/vendorsreg> as a vendor.

GENERAL INFORMATION

The City reserves the right to award the contract to the lowest responsible responsive bidder or all bids will be rejected, as soon as practicable after the date of opening bids.

The City of Phoenix will provide reasonable accommodations for alternate formats of the bid packet by calling Julie B. Smith at (602) 534-2418 or calling TTY 711. Requests will only be honored if made within the first week of the advertising period. Please allow a minimum of seven calendar days for production.

Questions pertaining to process or contract issues should be directed to Julie B. Smith at (602) 534-2418 or julie.b.smith@phoenix.gov (preferred).

Jeffrey Barton
City Manager

Eric J. Froberg, PE
City Engineer

Published: Arizona Business Gazette
Date: March 28, 2024
Date: April 4, 2024
District: Citywide

SECTION 00100 – INSTRUCTIONS TO BIDDERS

1. Defined Terms

1.1. Terms used in these Instructions to Bidders which are defined in the General Conditions of the Construction Contract Section 00700 have the meanings assigned to them in the General Conditions. Certain additional terms used in these Instructions to Bidders have the meanings indicated below which are applicable to both the singular and plural thereof.

1.1.1. Owner - the City of Phoenix, Water Services Department.

1.1.2. Bidder - one who submits a proposal directly to Owner, as distinct from a sub-bidder who submits a Proposal directly to a Bidder.

1.1.3. Successful Bidder - the lowest, qualified, responsible and responsive Bidder to whom Owner (on the basis of Owner's evaluation as hereinafter provided) makes an award.

1.1.4. Bid Documents - the proposed Contract Documents as advertised, and all Addenda issued before Bid opening.

2. Copies of Bid Documents

2.1. Project information is available online at:

<https://solicitations.phoenix.gov>

2.2. Complete sets of Bid Documents shall be used in preparing Bids; neither Owner nor Design Professional assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bid Documents.

2.3. Owner and Design Professional, in making copies of Bid Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not confer a license or privilege for any other use.

3. Qualifications of Bidders

3.1. The Bidder awarded the Contract shall comply with ARS Title 34 and all licensing requirements imposed by Owner and any other Political Subdivision with jurisdiction. Failure to provide this information with the Bidders Questionnaire may be just cause for Owner declaring the Bidder's Bid nonresponsive

3.2. Bidders shall have the necessary equipment therefore and shall possess sufficient capital to properly execute the Work within the time allowed.

3.3. All Bidders wishing to remain in contention for award of the contract must submit completed contract documents listed below. The documents must be submitted to Design and Construction Procurement Section, 5th Floor, or can be sent by email to julie.b.smith@phoenix.gov.

4. Examination of Bid Documents and Site

4.1. It is the responsibility of each Bidder before submitting a Bid:

4.1.1. To examine thoroughly the Bid Documents and other related data identified in the Bid Documents (including "technical data" referred to below);

4.1.2. To visit the site to become familiar with and satisfy Bidder as to the general, local and site conditions that may affect cost, progress, performance or furnishings of the Work;

4.1.3. To consider federal, state and local Laws and Regulations that may affect cost, progress, performance or furnishings of the Work;

4.1.4. To study and carefully correlate Bidder's knowledge and observations with the Bid Documents and such other related data; and

4.1.5. To promptly notify Julie B. Smith, Contracts Specialist, 200 W. Washington Street, 5th Floor, Phoenix, AZ 85003-1611; Phone 602-534-2418; email julie.b.smith@phoenix.gov of all conflicts, errors, ambiguities or discrepancies which the Bidder has discovered in or between the Bid Documents and such other related documents. **All questions regarding the plans and specifications must be received in writing at a minimum seven calendar days prior to bid opening. Questions received after that time may not be given any consideration.**

4.2. Reference is made to the Supplementary Conditions for identification of:

4.2.1. Those reports of explorations and tests of subsurface conditions at or contiguous to the site which have been utilized by Design Professional in preparation of the Bid Documents. Bidder may rely upon the general accuracy of the "technical data" contained in such reports but not upon other data, interpretations, opinions or information contained in such reports or otherwise relating to the subsurface conditions at the site, nor upon the completeness thereof for the purpose of bidding or construction.

4.2.2. Those drawings of physical conditions in or relating to existing surface and subsurface structures (except underground facilities) which are at or contiguous to the site that have been utilized by Design Professional in preparation of the Bid Documents. Bidder may rely upon the general accuracy of the "technical data" contained in such drawings but not upon other data, interpretations, opinions or information shown or indicated in such drawings or otherwise relating to such structures, nor upon the completeness thereof for the purposes of bidding or construction.

4.2.3. Copies of such reports and drawings will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Bid Documents, but the "technical data" contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.02 of the General Conditions has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion drawn from any "technical data" or any such data, interpretations, opinions or information.

4.3. Information and data shown or indicated in the Bid Documents with respect to existing underground facilities at or contiguous to the site is based upon information and data furnished to Owner and Design Professional by owners of such underground facilities or others, and Owner and Design Professional do not assume responsibility for the accuracy or completeness thereof unless it is expressly provided otherwise in the Supplementary Conditions.

4.4. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions and underground facilities, and possible changes in the Bid Documents due to differing or unanticipated conditions appear in Paragraphs 4.02 and 4.03 of the General Conditions.

4.5. Before submitting a Bid each Bidder will be responsible to obtain such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and underground facilities) at or contiguous to the site or otherwise, which may affect cost, progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences or procedures of construction to be employed by Bidder and safety precautions and programs incident thereto or which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price and other terms and conditions of the Bid Documents.

4.6. Reference is made to the General Requirements for the identification of the general nature of Work that is to be performed at the site by Owner or others (such as utilities and other prime contractors) that relates to the Work for which a Bid is to be submitted. On request, Owner will provide to each Bidder for examination access to Contract Documents (other than portions thereof related to price) for such Work.

4.7. The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with each and every requirement of this Paragraph 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Bid Documents and applying the specific means, methods, techniques, sequences or procedures of construction (if any) shown or

indicated or expressly required by the Bid Documents; that Bidder has given Design Professional written notice of all conflicts, errors, ambiguities and discrepancies that Bidder has discovered in the Bid Documents and the written resolutions thereof by Design Professional is acceptable to Bidder, and that the Bid Documents are sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

4.8. The provisions of the above Paragraphs 4.1 through 4.8, inclusive, do not apply to Asbestos, Polychlorinated biphenyls (PCBs), Petroleum, Hazardous Waste or Radioactive Material covered by Paragraph 4.08 of the General Conditions.

5. Interpretations and Addenda

5.1. **Acknowledge all addenda; a bid will be deemed non-responsive if all issued addenda for this project are not acknowledged in writing on Page 1 of Section 300 - Bid Form.** The City of Phoenix shall not be responsible for any oral responses or instructions made by any employees or officers of the City of Phoenix in regard to the bidding instructions, plans, drawings, specifications, or contract documents. A verbal reply to an inquiry does not constitute a modification of the Invitation for Bids. Any changes to the plans, drawings and specifications will be in the form of an addendum.

5.2. It shall be the responsibility of the prospective bidder to determine, prior to the submittal of its bid, if any addenda to the project have been issued by The City of Phoenix, Design and Construction Procurement Section. Any changes to the plans and specifications will be in the form of an addendum. All addenda will be posted online within the bid folder at the following website:

<https://solicitations.phoenix.gov>

Prospective bidders are responsible for ensuring they have all addenda for all projects they are submitting on. Prospective bidders are strongly encouraged to check the Solicitations website in order to ascertain if any addenda have been issued for this project.

5.3. All technical questions relating to this Work should be directed to the City representative identified in Paragraph 4.1.5.

5.4. For additional information prior to bid submission please contact:

NAME: Julie B. Smith, Design and Construction Procurement
ADDRESS: 200 W. Washington St., 5th Floor, Phoenix AZ 85003-1611
PHONE: 602-534-2418 EMAIL: julie.b.smith@phoenix.gov

SBE Utilization
Equal Opportunity Department: 602-262-6790

6. Bid Security

6.1. No Bid will be read unless accompanied by a proposal guarantee certified check, cashier's check, or surety bond using the form in Section 00310 of the Bid Documents, for an amount not less than ten percent (10%) of the total bid amount included in the proposal as a guarantee that the Bidder will enter into a contract to perform the proposal in accordance with the Bid Documents. Surety bonds submitted for this project shall be provided by a company which has been rated "A- or better for the prior four quarters" by the A.M. Best Company. **A bid will be deemed non-responsive if not accompanied by this guarantee.**

6.2. The surety bond shall be executed solely 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 Department of Insurance pursuant to Title 20, Chapter 2, Article 1. The surety bond shall not be executed by an individual surety or sureties even if the requirements of Section 7-101 are satisfied. The Owner will return the certified check, cashier's check, or surety bond to Bidders which are not the apparent low Bidder and do not want to remain in contention for the award, and to the Bidder awarded the contract upon execution of the contract.

6.3. Bids without adequate Bid security, including compliance with Paragraph 6.1 above, shall be considered as nonconforming in a material respect with the requirements of the Bid Documents and justifies Owner's refusal to read the Bid.

6.4. The Bid security of the apparent Successful Bidder and the security of any other Bidder remaining in contention for award of contract will be retained by Owner until the end of the period specified in Paragraph 14 below, during which Bids will remain open, or seven (7) days after Owner executes the Agreement, whichever occurs last.

6.5. When providing a surety bond, failure to provide an "A- or Better for the prior four quarters" bond will result in bid rejection.

7. Construction Time

7.1. The number of calendar days within which, or the dates by which, the Work is to be Substantially Completed and also Completed and ready for final payment are set forth in the Agreement and may be supplemented as set forth in the agreement.

7.2. If a Bidder believes that any of the Construction Times specified are insufficient or excessive, that Bidder shall advise Owner in accordance with the requirements of Paragraph 5 above.

7.3. Liquidated Damages are specified in the Agreement and may be supplemented as provided in the Agreement.

8. Pre-Approved Equal and Or-Equal Items

8.1. The Contract, if awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Specifications unless Bidder requests consideration of a proposed material and/or equipment as a "pre-approved equal" as defined in General Conditions Paragraph 6.05.B. Design Professional will only consider application for acceptance as a "pre-approved equal" during the bidding phase. Such application must be received by Design Professional at least twelve **(12) calendar days** prior to the established bid date. The Bidder, at his own expense, shall complete the Pre-Approved Equal Application Form labeled as Attachment A at the end of this Section, and provide the additional information requested on the form. The completed form with required attachments shall be submitted to Design and Construction Procurement, Attn: Julie B. Smith, Contracts Specialist, Phoenix City Hall 5th Floor, 200 W. Washington St., Phoenix AZ 85003 or send via email to julie.b.smith@phoenix.gov. It is the Bidder's responsibility to provide the necessary data to validate that the physical and operational performance and qualities of the proposed material and/or equipment is equivalent to the material and/or equipment named in the Drawings or Specifications. If, in the opinion of the Design Professional, the proposed material and/or equipment is equivalent, a "pre-approved equal" status will be granted by Design Professional through a written Addendum to the Contract Documents no fewer than seven calendar days prior to the established bid date (A.R.S. 34-104).

If in the opinion of the Design Professional the pre-approved equal application is incomplete and lacks sufficient information to judge the quality and conformance of the proposed pre-approved equal, the Bidder will be notified in writing and the application will be returned without further consideration.

8.2. The Contract, if awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Specifications, without consideration of "or equal" items as defined in General Conditions Paragraph 6.05.A. Whenever it is indicated in the Drawings or specified in the Specifications that an "or equal" item of material or equipment may be furnished or used by Contractor if acceptable to Design Professional, application for such acceptance will be considered by Design Professional only after the Notice to Proceed Date. General Conditions 6.05, describe the procedures for the approval of "or equal" items.

9. Subcontractors, Manufacturers, Suppliers, Persons, Firms and Corporations

9.1. Bidder shall submit to Owner the forms found in Sections 00330, 00331 and 00340 of the Bid Documents, listing all Subcontractors, Manufacturers, Suppliers, persons, firms and corporations proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and

other evidence of qualification for each such Subcontractor, Manufacturer, Supplier, person, firm or corporation if requested by Owner. An Owner or Design Professional who after due investigation has reasonable objection to any proposed Subcontractor, Manufacturer, Supplier, person, firm or corporation, may before the Notice of Award is given request apparent Successful Bidder to submit an acceptable substitute, without an increase in Bid price.

9.2. If apparent Successful Bidder declines to make any such substitution, Owner may award the contract to the next lowest responsive and responsible Bidder that proposes to use acceptable Subcontractors, Manufacturers, Suppliers, persons, firms and corporations. The declining to make requested substitutions will not constitute grounds for sacrificing the Bid security of any Bidder. Any Subcontractor, Manufacturer, Supplier, person, firm or corporation listed to whom Owner or Design Professional does not make written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Design Professional subject to revocation of such acceptance after the Effective Date of the Agreement as provided in Paragraph 6.06.B of the General Conditions.

10. SBE Utilization

SEE SECTION 350 - SMALL BUSINESS ENTERPRISE GOAL MEMO, CLAUSE AND FORMS

11. Bid Form and Bid Form Attachments

11.1. The Bid Documents due at time of bid include:

- Bid Form (Section 00300)
- Acknowledge all addenda (Section 00300, Paragraph 1.3.1)
- Bid Bond (Section 00310), including evidence of Power of Attorney (rated A- or better for the prior four quarters)
- List of Major Subcontractors and Suppliers (Section 00330)
- Statement of Proposed SBE Utilization Form (Section 00350-1) or a fully documented waiver packet
- Letters of Intent to Perform as a Subcontractor/Supplier (Section 351)

The Bid Documents due post-bid include:

- Completed Bidder's Questionnaire – Section 00320
- Completed List of All Subcontractors and Suppliers Form – Section 00331
- Schedule of Manufacturers and Suppliers – Section 00340
- Completed Bidder's Disclosure Statement – Section 00360
- Affidavit of Identity, If Sole Proprietor – Section 00370

PRIOR TO CONTRACT EXECUTION

- Verification of Experience Modifications Rate (EMR) – the awarded company will be required to provide an EMR verification letter from the insurance company prior to contract execution – Section 00320

These checklists are included solely to aid the Bidder in submitting a Bid. They shall not be relied on to include all items necessary to ensure a complete Bid. The Bidder is solely responsible for including all items as required by the Bid Documents, including any items required by Addenda, which may not be listed in the checklist.

If the Bid Form or any of the Bid Form Attachments are modified by Addendum, revised forms will be reissued in which case Bids shall be submitted on the latest revision of the form issued.

11.2. All blanks on the Bid Form and Bid Form Attachments must be completed by printing in ink or typewriter.

11.3. Bids by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and attested by the secretary or an assistant secretary. The corporate address and state of incorporation must be shown below the signature.

11.4. Bids by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature and the official address of the partnership must be shown below the signature.

11.5. Bids by Joint Ventures must be executed in the manner of each individual, partnership and corporation that is a party of the Joint Venture indicated herein.

11.6. All names must be typed or printed in ink below the signature.

11.7. The address and telephone number for communications regarding the Bid must be shown.

11.8. Evidence of authority to conduct business as an out-of-state corporation in Arizona shall be provided in accordance with Paragraph 3 above. State contractor license number must also be shown.

12. Submission of Bids

12.1. Prior to bidding on this Project the Bidder must possess the correct license to perform the Work described in the plans and specifications, as deemed appropriate by the Arizona Registrar of Contractors.

12.2. The properly completed bid documents along with the ten (10) percent bid guarantee shall be submitted in a sealed envelope. The outside of the envelope shall be marked as follows:

Bid of: **[Firm's Name, Address, and Phone Number]**
For: **2017 PVC LINED CONCRETE SANITARY
SEWER REHABILITATION**
City of Phoenix **WS90500272**
Project Number:

12.3. Sealed bids shall be submitted to the bid box located by the Street Transportation Department Reception Desk on the 5th Floor of the Phoenix City Hall building, 200 W. Washington St., Phoenix AZ 85003 prior to the time and date specified for the bid opening.

13. Withdrawal of Bids

13.1. No bidder may withdraw or revise a proposal after it has been deposited with the City, except as provided in Phoenix City Code Chapter 2, Section 190.2. Proposals, read or unread, will not be returned to the bidders until after determination of award has been made.

14. Protest Procedures

A bidder wishing to file a protest for the subject project shall comply with Phoenix City Code Chapter 2, Section 188.

15. Opening of Bids, Objection to Award

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

15.2. Only Bids submitted with the following forms will be read aloud publicly: Bid Form (Section 00300), Acknowledgment of Addenda (Section 00300, Paragraph 1.3.1), Bid Bond (Section 00310), Statement of Proposed SBE Utilization Form (Section 00350-1) and associated Letters of Intent to Perform as a

Subcontractor/Supplier (Section 00351-1) or a fully documented waiver packet, and List of Major Subcontractors and Suppliers (Section 00330).

16. Other Bid Items

16.1. List of Major Subcontractors and Suppliers

16.1.1. **A bid will be deemed non-responsive if not accompanied by a properly completed and signed “List of Major Subcontractors and Suppliers” form.**

16.1.2. To assist in eliminating the practice of bid shopping on City construction projects, the Bidder shall list all Major Subcontractors and Suppliers (including SBE) to whom the Bidder intends to contract with that are equal to or greater than 5% of the base bid. The list of major subcontractors and suppliers shall be provided on the “List of Major Subcontractors and Suppliers” form. **Failure to properly complete and sign this form will result in bid rejection.** This form is due with the bid.

16.1.3. If substantial evidence exists that bid shopping occurred on this Project, the Bidder will be ineligible to bid on City construction projects for a period of one year.

16.1.4. The list of All Subcontractors and Suppliers shall be provided on the “List of All Subcontractors and Suppliers” form. This form is due three calendar days after bid opening by 5:00 p.m. All bidders will be required to submit the List of Major Subcontractors and Suppliers form. The three lowest bidders will be required to submit the List of All Subcontractors and Suppliers form. If the List of All Subcontractors and Suppliers form is not submitted by the post-bid deadline, the Bidder will still be required to submit the document prior to award. If the Bidder fails to submit the required List of All Subcontractors and Suppliers form by the post-bid deadline, the Bidder’s bid bond may be placed in jeopardy because the City may make a claim against the Bidder’s bid bond for the cost difference between the lowest responsive and responsible Bidder’s bid and the next lowest bid (and any additional costs involved in awarding the contract to the next lowest responsive and responsible bidder).

16.1.5. Verification of the Bidders Experience Modifications Rate (EMR) from their respective insurer on the insurance company’s letterhead must be submitted.

17. Bids to Remain Subject to Acceptance

17.1. All Bids will remain subject to acceptance for 50 calendar days after the day of the Bid opening, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to that date.

17.2. Extensions of the period during which Bids shall remain open may only be made by agreement between Owner, the apparent Successful Bidder and any other Bidder wishing to remain in contention for the award. Any such agreement shall be based on no increase in the Base Bid of the Bidders involved or any Construction Time stated in days. If the apparent Successful Bidder or any other Bidder wishing to remain in contention for the award fails to agree to any such extension, as conditioned in this paragraph, that Bidder shall be disqualified from further consideration for the award. However, that Bidder’s failure to agree to any such extension will not constitute grounds for forfeiting that Bidder’s Bid security.

17.3. Cancellation of Contract for Conflict of Interest

17.3.1. All parties hereto acknowledge that this Agreement is subject to cancellation by the City of Phoenix pursuant to the provisions of Section 38-511, Arizona Revised Statute.

18. Award of Contract

18.1. It shall be the Bidder’s responsibility, liability and risk to verify and confirm with the Arizona Registrar of Contracts that the Bidder possesses the correct license for this Project. Prior to the submission of a Bid on this Project, the Bidder shall possess the correct license to perform the Work described in the Plans and Specifications. Consistent with Arizona Revised Statute Section 32-1123 (West Supp. 2002), as amended from time to time, and enforced by the Arizona Registrar of Contractors; the license requirement set forth above may not apply if this Project is: (i) funded in whole

or in part by the United States Department of Transportation, (ii) a Department of Transportation Project, or (iii) a Project subject to Federal Acquisition Regulations, Title 48 Code of Federal Regulations, including Department of Defense Federal Acquisition Regulations.

Prior to Award of the Contract, the successful Bidder shall provide to the City of Phoenix the successful Bidder's Contractor License Classification and number, City of Phoenix Privilege License Number, and Federal Tax Identification Number.

18.2. Owner reserves the right to reject any and all Bids, including without limitation the rights to reject any or all nonconforming, nonresponsive, unbalanced or conditional Bids and to reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder, whether the Bid is not responsive or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criterion established by Owner. Owner also reserves the right to reject any or all Bids, to waive any non-conformance, to readvertise for Bids, to withhold the award for any reason the Owner determines.

18.2.1. The proposal total will be obtained by adding the extension amount or lump sum indicated for the individual pay items. If there is a conflict between words and figures, the words shall apply. If there is a conflict between the unit bid price and the extension for a particular pay item, the unit bid price shall govern. In either case, the Contracting Agency shall correct the discrepancy in accordance with the above procedure and the corrected proposal total will apply.

18.3. In evaluating Bids, Owner will consider the qualification of the Bidders, whether or not the Bids comply with the prescribed requirements, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.

18.4. Owner will consider the qualifications and experience of Subcontractors, Manufacturers, Suppliers, persons, firms and corporations proposed for those portions of the Work as to which the identity of Subcontractors, Manufacturers, Suppliers, persons, firms and corporations must be submitted as provided herein. Owner also may consider the operating costs, maintenance requirements, performance data, and guarantees or major items of materials and equipment proposed for incorporation in the Work when such data is required to be submitted prior to the Notice of Award.

18.5. Owner may conduct such investigations as Owner deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of Bidders, proposed Subcontractors, Manufacturers, Suppliers, persons, firms and corporations to perform and furnish the Work in accordance with the Bid Documents to Owner's satisfaction within the prescribed time.

18.6. If the Contract is to be awarded, it will be awarded to a responsive and responsible Bidder based on the low total base bid (Items 1 through 36 on the BID FORM). If unit pricing is required in the proposal, the extensions and additions will be verified to assure correctness. Award will be based on the revised total if any errors are found. Additionally, the Contractor shall meet the minimum SBE subcontracting goal set for this Project or have been granted a full or partial waiver of the goal.

Any bidder that currently contracts with the City must be in good standing for its proposal to be considered responsive. For the purpose of this Invitation to Bid, good standing means compliance with all contractual provisions, including payment of financial obligations.

18.7. If the contract is to be awarded, Owner will give the Successful Bidder a Notice to Proceed within sixty (60) days after the date of the Bid opening.

18.8. The Owner expressly reserves the right to cancel this award without recourse or prejudice to contractor until all parties have executed the agreement in full.

19. Contract Security

19.1. Article 5 of the General Conditions set forth the Owner's requirements as to Performance and Payment Bonds. When the Successful Bidder delivers the executed Agreement to Owner, it must be accompanied by the required Performance and Payment Bonds issued by surety company or companies holding a certificate of authority to transact surety business in the State of Arizona issued by the Director of the Department of Insurance pursuant to Title 20, Chapter 2, Article 1. The bonds

shall not be executed by an individual surety or sureties even if the requirements of Section 7-101 are satisfied. Failure to comply with these provisions will be cause for rejection of the Bidders Bid.

20. Insurance Requirements

20.1. Article 5 of the General Conditions and set forth the Owner's requirements as to insurance requirements. When the Successful Bidder delivers the executed Agreement to the Owner, it must be accompanied by the Certificate of Insurance on a standard insurance industry ACORD form. The ACORD form shall be issued by an insurance company authorized to transact business in the State of Arizona, or one that is named to the List of Qualified Unauthorized Insurers maintained by the Arizona Department of Insurance.

21. Signing Agreement

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

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

22. Sequence of Work

22.1. The Work under this Contract must be accomplished while the existing facility is in operation, unless otherwise allowed in the General Requirements. Work must be performed so that operation of the facility will not be jeopardized or reduced in efficiency. Bidders are referred to the General Requirements for requirements concerning sequencing of the Work.

23. Compliance with Other Regulations

23.1. ADA and ANSI Access of Premises During Construction

23.1.1. Contractor shall maintain ADA and ANSI accessibility requirements during construction activities in an occupied building or facility. ADA and ANSI accessibility requirements shall include, but not be limited to, parking, building access, entrances, exits, restrooms, areas of refuge, and emergency exit paths of travel. Contractor shall be responsible for the coordination of all Work to minimize disruption to building occupants and facilities.

23.2. Immigration Reform and Control Act

23.2.1. Compliance with Federal Laws Required. Contractor understands and acknowledges the applicability of the Immigration Reform and Control Act of 1986 and the Drug Free Workplace Act. Contractor agrees to comply with these Federal Laws in performing under this Agreement and to permit City inspection of personnel records to verify such compliance.

24. Confidentiality of Plans and Specifications

24.1. Any plans generated for this project must include the following statement in the Title Block on every page: "Per City of Phoenix City Code Chapter 2, Article 2-28, these plans are for official use only and may not be shared with others except as required to fulfill the obligations of the Design Professional's contract with the City of Phoenix."

25. Leadership in Energy and Environmental Design (LEED)

25.1. The contractor shall provide an easily accessible area to serve the construction site that is dedicated to the separation, collection and storage of materials for recycling including (at a minimum) paper, glass, plastics, metals and designate an area specifically for construction and demolition waste recycling. The Contractor must provide documentation that the materials have been taken to a Maricopa County approved recycling facility.

26. Legal Worker Requirements

26.1. The City of Phoenix is prohibited by A.R.S. § 41-4401 from awarding a contract to any Consultant/Architect/Engineer/Contractor who fails, or whose Subconsultants/subcontractors fail, to comply with A.R.S. § 23-214(A). Therefore, Contractor agrees that:

26.1.1. Contractor and each subcontractor it uses warrants their compliance with all federal immigration laws and regulations that relate to their employees and their compliance with § 23-214, subsection A.

26.1.2. A breach of a warranty under paragraph 1 shall be deemed a material breach of the contract that is subject to penalties up to and including termination of the contract.

26.1.3. The City of Phoenix retains the legal right to inspect the papers of any Contractor or subcontractor employee who works on the contract to ensure that the Contractor or subcontractor is complying with the warranty under paragraph 1.

27. Contractor and Subcontractor Worker Background Screening

Contractor agrees that all Contractor's and subcontractors' workers (collectively "Contract Worker(s)") pursuant to this Agreement will be subject to background and security checks and screening (collectively "Background Screening") at Contractor's sole cost and expense, unless otherwise provided for in the scope of work. Contractor's background screening will comply with all applicable laws, rules and regulations. Contractor further agrees that the background screening is necessary to preserve and protect the public health, safety and welfare. The City requires a completed Contract Worker Badge/Key/Intrusion Detection Responsibilities Agreement for each Contract Worker who requires a badge or key.

Background Screening Risk Level: The City has established two levels of risk: Standard and Maximum risk. The current risk level and background screening required is **MAXIMUM LEVEL**. If the scope of work changes, the City may amend the level of risk, which could require the Contractor to incur additional contract costs to obtain background screens or badges.

Terms of This Section Applicable to all Contractor's Contracts and Subcontracts: Contractor will include Contract Worker background screening in all contracts and subcontracts for services furnished under this agreement.

Materiality of Background Screening Requirements; Indemnity: The background screening requirements are material to City's entry into this agreement and any breach of these provisions will be deemed a material breach of this contract. In addition to the indemnity provisions set forth in this agreement, Contractor will defend, indemnify and hold harmless the City for all claims arising out of this background screening section including, but not limited to, the disqualifications of a Contract Worker by Contractor. The background screening requirements are the minimum requirements for the Agreement. The City in no way warrants that these minimum requirements are sufficient to protect Contractor from any liabilities that may arise out of the Contractor's services under this Agreement or Contractor's failure to comply with this section. Therefore, Contractor and its Contract Workers will take any reasonable, prudent and necessary measures to preserve and protect public health, safety and welfare when providing services under this Agreement.

Continuing Duty; Audit: Contractor's obligations and requirements will continue throughout the entire term of this Agreement. Contractor will maintain all records and documents related to all background screenings and the City reserves the right to audit Contractor's records.

Contractor's Default; Liquidated Damages; Reservation of Remedies for Material Breach: If Contractor is required to access any City facilities without an escort, City badging is required. Contractor's default under this section will include, but is not limited to, the following:

- Contract Worker gains access to a City facility(s) without the proper badge or key;
- Contract Worker uses a badge or key of another to gain access to a City facility;

- Contract Worker commences services under this agreement without the proper badge, key or background screening;
- Contract Worker or Contractor submits false information or negligently submits wrong information to the City to obtain a badge, key or applicable background screening; or
- Contractor fails to collect and timely return Contract Worker's badge or key upon termination of Contract Worker's employment, reassignment of Contract Worker to another City facility or upon the expiration, cancellation or termination of this Agreement.
- Contractor acknowledges and agrees that the access control, badge and key requirements in this section are necessary to preserve and protect the public health, safety and welfare. Accordingly, Contractor agrees to properly cure any default under this section within three business days (excluding weekends and City holidays) from the date notice of default is sent by the City. The parties agree that Contractor's failure to properly cure any default under this section will constitute a breach of this section. In addition to any other remedy available to the City at law or in equity, the Contractor will be liable for and pay to the City the sum of \$1,000.00 for each breach by Contractor in this section. The parties further agree that the sum fixed above is reasonable and approximates the actual or anticipated loss to the City at the time and making of this agreement if Contractor breaches this section. Further, the parties expressly acknowledge and agree to the fixed sum set forth above because of the difficulty of proving the City's actual damages if Contractor breaches this section. The parties further agree that three breaches by Contractor in this section arising out of any default within a consecutive period of three months or three breaches by Contractor in this section arising out of the same default within a period of 12 consecutive months will constitute a material breach of this agreement by Contractor and the City expressly reserves all of its rights, remedies and interests under this agreement, at law and in equity including, but not limited to, termination of this agreement.

Employee Identification and Access: Contract Workers are forbidden access to designated restricted areas. Access to each building will be as directed by the authorized Phoenix authorized representative. Contract Workers are not authorized access other than during scheduled hours. Access to the building will be directed by the City's authorized representative.

Only authorized Contract Workers are allowed on the premises of the City facilities/buildings. Contract Workers are not to be accompanied in the work area by acquaintances, family members, assistants or any other person unless said person is an authorized Contract Worker.

Unless otherwise provided for in the scope of work:

- Contract Workers must **always** have city issued badges and some form of verifiable company identification (badge, uniform, employee id).
- Contractor will supply a list of the names and titles of all employees requiring access to the buildings. It is the Contractor's responsibility to provide updates and changes of personnel as necessary.

Key Access Procedures: If the Contractor Worker's services require keyed access to enter a City facility(ies), a separate key issue/return form must be completed and submitted by the Contractor for each key issued. Contractor must submit the completed key issue/return form to the appropriate badging office.

Stolen or Lost Badges or Keys: Contractor must immediately report lost or stolen badges or keys to the City's appropriate badging office. If the badge/key was stolen, Contract Worker's must report the theft to their local police department. Prior to issuance of a new badge or key, a new badge application or key issue form must be completed, submittal of a police department report for stolen badges, and applicable payment of the fee(s) listed herein.

Return of Badge or Key: All badges and keys are the property of the City and must be returned to the City at the badging office within one business day (excluding weekends and City holidays) of when the

Contract Worker's access to a City facility is no longer required to furnish the services under this agreement. Contractor will collect a Contract Worker's badge and key(s) upon the termination of the Contract Worker's employment; when the Contractor Worker's services are no longer required at a City facility(s); or upon termination, cancellation or expiration of this agreement.

Badge and Key Fees: The following constitute the badge and key fees under this agreement. The City reserves the right to amend these fees upon a 30-day prior written notice to Contractor.

Replacement Badge Fee:	\$55.00 per badge
Lost/Stolen Badge Fee:	\$55.00 per badge
Replacement Key Fee:	\$55.00 per key
Replacement Locks:	\$55.00 per lock

BACKGROUND SCREENING – MAXIMUM RISK:

The current risk level and background screening required is **MAXIMUM RISK**.

A maximum risk background screening will be performed every five years when the Contract Worker's work assignment will:

- work directly with vulnerable adults or children, (under age 18); or
- any responsibility for the receipt of payment of City funds or control of inventories, assets, or records that are at risk of misappropriation; or
- unescorted access to:
 - City data centers, money rooms, high-value equipment rooms; or
 - unescorted access to private residences; or
 - access to critical infrastructure sites/facilities; or
- direct or remote access to Criminal Justice Information Systems (CJIS) infrastructure.

Requirements: The background screening for maximum risk level will include a background check for real identity/legal name and will include felony and misdemeanor records from any county in the United States, the State of Arizona, plus any other jurisdiction where the Contractor worker has lived at any time in the preceding seven years from the Contract Worker's proposed date of hire. In addition, Maximum screening levels may require additional checks as included herein, depending on the scope of work, and may be amended if the scope of work changes.

Contractor Certification; City Approval of Maximum Risk Background Screening: Unless otherwise provided for in the Scope of Work, Contractor will be responsible for:

- determining whether Contract Worker(s) are disqualified from performing work for the City for maximum risk level background checks; and,
- submitting pass/fail results to the City for approval; and,
- reviewing the results of the background check every three to five years, dependent on scope; and,
- to engage in whatever due diligence is necessary to make the decision on whether to disqualify a Contract Worker; and,
- Submitting the list of qualified Contract Workers to the contracting department; and,
- If, upon review of the background information, the City will advise the Contractor if it believes a Contract Worker should be disqualified. The Contractor will evaluate the Contract Worker and if the Contractor believes that there are extenuating circumstances that suggest that the person should not be disqualified, the Contractor will discuss those circumstances with the contracting department. The contracting department decision on disqualification of a Contract Worker is final.
- For sole proprietors, the Contractor must comply with the background check for himself and any business partners, or members or employees who will assist on the contract and for whom the requirements of the Agreement apply.
- By executing this agreement, Contractor certifies and warrants that Contractor has read the background screening requirements and criteria in this section, and that all background screening information furnished to the City is accurate and current.

- The City final documented decision will be an “approve” or “deny” for identified Contract Workers.
- The City will not keep records related to background checks once they are confirmed. Information to verify the results will be returned to the Contractor, or any contracted agency that assists with review, after the City’s completed review.
- By executing this agreement, Contractor further certifies and warrants that Contractor has satisfied all such background screening requirements for the maximum risk background screening, and verified legal worker status, as required.
- Contract Workers will not apply for the appropriate City of Phoenix identification and access badge or keys until Contractor has received the City’s written acceptance of Contract Worker’s maximum risk background screening. The City may, in its sole discretion, accept or reject any or all the Contract Workers proposed by Contractor for performing work under this Agreement. A Contract Worker rejected for work at a maximum risk level under this agreement will not be proposed to perform work under other city contracts or engagements without city’s prior written approval.

The background checks will be conducted prior to any employee entering to work and will be based upon information provided to the Police Department including, but not limited to: name, address, date and place of birth, social security number, INS number if applicable, and a copy of a valid photo identification. The information will be provided to the Water Service Department at least five business days (excluding weekends and holidays) in advance of the need for access. The form will be provided by Water Service Department. A designated Water Service Department representative will conduct the security check.

The City may, at any time, in its sole discretion, refuse to allow an employee access to an area for any of the following reasons, but not limited to:

- Conviction of a felony.
- Conviction of a misdemeanor (not including traffic or parking violation).
- Any outstanding warrants (including traffic and parking violations).
- A person currently on parole or probation.
- A person currently involved in an investigation.

CONFIDENTIALITY AND DATA SECURITY: All data, regardless of form, including originals, images and reproductions, prepared by, obtained by, or transmitted to Contractor in connection with this Agreement is confidential, proprietary information owned by the City, unless otherwise agreed upon within this Agreement. Except as specifically provided in this Agreement, the Contractor shall not disclose data generated in the performance of the service to any third person without the prior written consent of the City Manager or his/her designee.

Contractor agrees to abide by all current applicable legal and industry data security and privacy requirements and to notify the City immediately if the scope of work changes or personal identifying information or information subject to Payment Card Industry Standards becomes part of the Agreement.

Contractor agrees to comply with all City information security and technology policies, standards, and procedures when accessing City networks and computerized systems whether onsite or remotely.

A violation of this Section may result in immediate termination of this Agreement without notice. The obligations of Contractor under this Section shall survive the termination of this Agreement.

SECURITY INQUIRIES: Contractor acknowledges that all of the employees that it provides pursuant to this Contract shall, at Contractor’s expense, be subject to background and security checks and screening at the request of the City. Contractor shall perform all such security inquiries and shall make the results available to the City for all employees considered for performing work (including supervision and oversight) under this Contract. City may make

further security inquiries. Whether or not further security inquiries are made by the City, City may, at its sole, absolute and unfettered discretion, accept or reject any or all the employees proposed by the Contractor for performing work under this Contract. Employees rejected by the City for performing services under this Contract may still be engaged by Contractor for other work not involving the City. An employee rejected for work under this Contract shall not be proposed to perform work under other City contracts or engagements without the City's prior approval.

The City, in its sole discretion, reserves the right, but not the obligation to:

- require an employee/prospective employee of the Contractor to provide fingerprints and execute such other documentation as may be necessary to obtain criminal justice information pursuant to A.R.S. 41-1750 (G) (4);
- act on newly acquired information whether or not such information should have been previously discovered;
- unilaterally change its standards and criteria relative to the acceptability of Contractor's employees and/or prospective employees; and
- object, at any time and for any reason, to an employee of Contractor performing work (including supervision and oversight) under this Agreement. Contractor will bear the costs of all inquiries requested by the City.

28. Business and Operation Licenses, Permits and Certifications Required

28.1. On or before the submission of a bid for this project, bidder must possess all federal, state, county and City licenses, permits, certifications and any other legal authorizations required by law to transact business and to perform the services set forth in this Agreement (collectively "Business Licenses"). Bidder shall submit a completed Bidder's Disclosure Statement as set forth in Section 00360, and provide the following Business License information with its bid:

- 28.1.1. proper State of Arizona contractors license classification and number;
- 28.1.2. City of Phoenix transaction privilege license number;
- 28.1.3. federal tax identification number; and
- 28.1.4. any special use or other zoning permits required for Bidder's operation and performance of the services under this Agreement.

Unless provided otherwise in this solicitation, **Bidder will be deemed non-responsive, and the bid rejected if Bidder fails to possess the proper Business Licenses at the time of bid or fails to submit a substantially completed Bidder's Disclosure Statement** as specified in this paragraph.

29. Tax Liabilities; Disclosure of Convictions and Breach(s) of Contract

On or before the award of the contract for this project, the successful bidder will: (i) file all applicable tax returns and will make payment for all applicable State of Arizona and Maricopa County Transaction Taxes (ARS Sec. 41-1305) and City of Phoenix Privilege License Taxes (Phoenix City Code Sec.14-415); (ii) disclose any civil fines, penalties or any criminal convictions, other than for traffic related offenses, for violation of federal, state, county or city laws, rules or regulations including, but not limited to, environmental, OSHA, or labor compliance laws (collectively "Laws") by Bidder, Bidder's directors, managing members, responsible corporate officers or party who will be responsible for overseeing and administering this project (collectively "Bidder"); and (iii) disclose any material breach(s) of an agreement with the City of Phoenix, any termination for cause or any litigation involving the City of Phoenix occurring within the past three calendar years. Unless provided otherwise in this solicitation, the successful bidder will be deemed non-responsible and the bid rejected for any of the following: (i) Bidder's civil or criminal conviction, other than for traffic related offenses, for a violation of Laws within the past three calendar years; (ii) liability or culpability resulting in payment of fines or penalties in the cumulative total amount of \$100,000 or greater for a violation of "Laws" within the past three calendar years; (iii) material breach of a City of Phoenix agreement, termination for cause or litigation with the City of Phoenix within the past three calendar years; and (iv) Bidder's failure to disclose the information

as required by this provision. Further, after award of contract, in addition to any other remedy, Bidder's failure to remit proper taxes to the City of Phoenix may result in the City withholding payment pursuant to Phoenix City Charter Chapter XVIII, Section 14 until all delinquent taxes, interest, and penalties have been paid.

State and Local Transaction Privilege Taxes:

In accordance with applicable state and local law, transaction privilege taxes may be applicable to this transaction. The state and local transaction privilege (sales) tax burden is on the person who is conducting business in Arizona and the City of Phoenix. The legal liability to remit the tax is on the person conducting business in Arizona. Any failure by the Contractor to collect applicable taxes from the City will not relieve the Contractor from its obligation to remit taxes.

It is the responsibility of the Contractor to determine any applicable taxes. The City will review the price or offer submitted and will not deduct, add or alter pricing based on taxes.

If you have questions regarding tax liability, seek advice from a tax professional prior to submitting a bid. Once the bid is submitted, the Offer is valid for the time specified in this Solicitation, regardless of mistake or omission of tax liability.

If the City finds over payment of a project due to tax consideration that was not due, the Contractor will be liable to the City for that amount, and by contracting with the City agrees to remit any overpayments back to the City for miscalculations on taxes included in a bid price.

For purposes of A.R.S. 42-5075(P), this contract is subject to A.R.S. Title 34.

Tax Indemnification:

Contractor will, and require the same of all subcontractors, pay all federal, state and local taxes applicable to its operation and any persons employed by the Contractor. Contractor will, and require the same of all subcontractors, hold the City harmless from any responsibility for taxes, damages and interest, if applicable, contributions required under federal, and/or state and local laws and regulations and any other costs including transaction privilege taxes, unemployment compensation insurance, Social Security and Worker's Compensation.

Tax Responsibility Qualification:

Contractor may be required to establish, to the satisfaction of City, that all fees and taxes due to the City or the State of Arizona for any License or Transaction Privilege taxes, Use Taxes or similar excise taxes, are currently paid (except for matters under legal protest).

Contractor agrees to a waiver of the confidentiality provisions contained in the City Finance Code and any similar confidentiality provisions contained in Arizona statutes relative to State Transaction Privilege Taxes or Use Taxes.

Contractor agrees to provide written authorization to the City Finance Department and to the Arizona State Department of Revenue to release tax information relative to Arizona Transaction Privilege Taxes or Arizona Use Taxes to assist the Department in evaluating Contractor's qualifications for and compliance with contract for duration of the term of contract.

30. Lawful Presence Requirement

30.1. Pursuant to A.R.S. §§ 1-501 and 1-502, the City of Phoenix 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 that 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.

31. City of Phoenix Equal Employment Opportunity Requirement

1. In order to do business with the City, Contractor must comply with Phoenix City Code, 1969, Chapter 18, Article V, as amended, Equal Employment Opportunity Requirements. Contractor will direct any questions in regard to these requirements to the Equal Opportunity Department, (602) 262-6790.

2. Any Contractor in performing under this contract shall not discriminate against any worker, employee or applicant, or any member of the public, because of race, color, religion, sex, national origin, age, or disability nor otherwise commit an unfair employment practice. The Contractor will ensure that applicants are employed, and employees are dealt with during employment without regard to their race, color, religion, sex, national origin, age, or disability, and will adhere to a policy to pay equal compensation to men and women who perform jobs that require substantially equal skill, effort, and responsibility, and that are performed within the same establishment under similar working conditions. Such action shall include but not be limited to the following: Employment, promotion, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training; including apprenticeship. The Contractor further agrees that this clause will be incorporated in all subcontracts with all labor organizations furnishing skilled, unskilled and union labor, or who may perform any such labor or services in connection with this contract.

If the Contractor employs more than thirty-five employees, the following language shall apply as the last paragraph to the clause above:

The Contractor further agrees not to discriminate against any worker, employee or applicant, or any member of the public, because of sexual orientation or gender identity or expression and shall ensure that applicants are employed, and employees are dealt with during employment without regard to their sexual orientation or gender identity or expression.

3. *Documentation.* Contractor may be required to provide additional documentation to the Equal Opportunity Department affirming that a nondiscriminatory policy is being utilized.

4. *Monitoring.* The Equal Opportunity Department shall monitor the employment policies and practices of suppliers and lessees subject to this article as deemed necessary. The Equal Opportunity Department is authorized to conduct on-site compliance reviews of selected firms, which may include an audit of personnel and payroll records, if necessary.

32. Fair Treatment of Workers

32.1. The Contractor shall keep fully informed of all Federal and State laws, County and City ordinances, regulations, codes and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any way affect the conduct of the work. He shall at all times observe and comply with all such laws, ordinances, regulations, codes, orders and decrees; this includes, but is not limited to laws and regulations ensuring fair and equal treatment for all employees and against unfair employment practices, including OSHA and the Fair Labor Standards Act (FLSA). The contractor shall protect and indemnify the Contracting Agency and its representatives against any claim or liability arising from or based on the violation of such, whether by himself or his employees.

33. Record Drawings

33.1. The Contractor shall maintain a record set of plans at the job site. These shall be kept legible and current and shall show all changes or work added in a contrasting, reproducible color. When the project is substantially complete, the Contractor shall submit these plans to the Engineer for approval. When landscaping is included, the Contractor shall submit, prior to final inspection, corrected landscape drawings showing the location of all utility services, controller, pipe, valves, and wiring. The Engineer

shall be the sole judge as to the acceptability of the record plans and receipt of an acceptable set is a pre-requisite for final payment.

34. Compliance with Laws

34.1 Contractor must comply with all existing and subsequently enacted federal, state and local laws, ordinances and codes, all applicable ADA requirements, and regulations that are, or become applicable to this Agreement. If a subsequently enacted law imposes substantial additional costs on Contractor, a request for an amendment may be submitted pursuant to this Agreement. Contractor is also required to certify its compliance with all applicable laws and Contractor must pass along these requirements to its Subcontractors. If any of Contractor's certifications is found to be false, the City may terminate this Agreement or impose other remedies due to the false certification

Attachment A: Pre-Approved Equal Application Form

Project Name:

Project Number:

The Bidder, _____, requests “pre-approved equal” status be granted to the following material and/or equipment:

This item(s) is proposed as an “equal” to the similar item specified (or named): _____ in Section _____, Page _____, Paragraph/Line _____, of the Specifications.

Attach the following documentation to verify compliance with the Contract Documents:

1. Complete product description consisting of detailed dimensioned shop drawings, photographs, performance and test data, model number(s), materials of construction finishes, options, etcetera.
2. A copy of the referenced specification section, and all other applicable specification sections, with each paragraph check marked to indicate material and/or equipment compliance. Check marks (☐) shall denote full compliance with a paragraph as a whole. Deviations from the specifications shall be underlined and shall be listed and identified below.
3. A list of existing installations including the names and phone numbers of references at those installations.

The Bidder will submit dimensioned drawings necessary to prove to Design Professional that the proposed equipment will fit the installation shown on the Drawings without any modification to the building or structure housing the equipment, piping system, and electrical/control system; without modification to or compromising the process the equipment is a part of; and without modification of other associated equipment and components.

If the Bidder knows that modifications are required to the building or structure housing the equipment, the process, or other associated equipment and components, the submittal must list all such modifications required, and the Bidder must submit a signed statement agreeing to pay for the design changes, engineering costs, and drawing changes, which will be made by Design Professional.

The Bidder will identify all deviations from the Contract Documents. If there are differences between proposed substitution and specified item, please list them below.

Specified	Proposed Substitution

What effect does the substitution, or pre-approved equal have on other trades?

Does manufacturer’s warranty of proposed substitution, or pre-approved equal, differ from that specified?

Yes No If YES, explain:

Will substitution, or pre-approved equal, affect progress schedule?

Yes No If YES, explain:

Will substitution, or pre-approved equal, require more license fees or royalties than specified product?

Yes No If YES, explain:

Will maintenance and service parts be locally available for substitution or pre-approved equal? The Bidder will give the address of the nearest source of factory certified maintenance parts.

Yes No If YES, explain:

Submitted By:

Signature: _____ Title: _____ Date: _____

Firm: _____

Address: _____

Phone: _____

Fax: _____

For Design Professional's Use Only:

Pre-approved Equal status is:

- Granted
- Denied
- Granted with special requirements attached
- Denied because of late submittal
- Not Reviewed because of incomplete submittal

By: _____

Date: _____

Remarks: _____

END OF ATTACHMENT "B" TO SECTION 00100

SECTION 00300 – BID FORM AND BID FORM ATTACHMENTS

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SECTION 00300 - BID FORM

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

(Print or type contractor name)

1. Bid Submission

- 1.1 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an agreement with Owner in the form included in the Bid Documents to perform and furnish all Work as specified or indicated in the Bid Documents for the Bid Price and within the Bid Times indicated in this Bid and in accordance with the other terms and conditions of the Bid Documents.
- 1.2 Bidder accepts all of the terms and conditions of the Call for Bids and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 50 calendar days after the day of Bid opening. Bidder will sign and deliver the required number of counterparts of the Agreement with the bonds and other documents required by the Bid Requirements within ten (10) days after the date of Owner's Notice of Award.
- 1.3 In submitting this Bid, Bidder represents, as more fully set forth in the Agreement, that:
 - 1.3.1 Bidder has examined and carefully studied the Bidding Documents and the following Addenda receipt of all which hereby is acknowledged: (List Addenda by Addendum Number)

<u>Addenda #</u>	<u>Date of Addenda</u>	<u>Addenda #</u>	<u>Date of Addenda</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

- 1.3.2 Bidder has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance and furnishing of the Work.
- 1.3.3 Bidder is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.
- 1.3.4 Bidder has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in Article 4 of the General Conditions. Bidder accepts the determination set forth in Article 4 of the General Conditions of the extent of the "technical data" contained in such reports and drawings upon which Bidder is entitled to rely. Bidder acknowledges that such reports and drawings are not Bid Documents and may not be complete for Bidder's purposes. Bidder acknowledges that Owner and Design Professional do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Bid Documents with respect to Underground Facilities at or contiguous to the site. Bidder has obtained and carefully studied (or assumes responsibility for having done so) all such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise

which may affect cost, progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by Bidder and safety precautions and programs incident thereto. Bidder does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the determination of this Bid for performance and furnishing of the Work in accordance with the times, price and other terms and conditions of the Bid Documents.

- 1.3.5 Bidder is aware of the general nature of Work to be performed by Owner and others at the site that relates to Work for which this Bid is submitted as indicated in the Bid Documents.
- 1.3.6 Bidder has correlated the information known to Bidder, information and observations obtained from visits to the site, reports and drawings identified in the Bid Documents and all additional examinations, investigations, explorations, tests, studies and data with the Bid Documents.
- 1.3.7 Bidder has given Design Professional written notice of all conflicts, errors, ambiguities or discrepancies that Bidder has discovered in the Bid Documents and the written resolution thereof by Design Professional is acceptable to Bidder, and the Bid Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Bid is submitted.
- 1.3.8 This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited any person, firm or corporation to refrain from bidding; and Bidder has not sought collusion to obtain for itself any advantage over any other Bidder or over Owner.

(THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK)

1.4 Bid Schedule

1.4.1 Bidder will complete the Work in accordance with the Bid Documents and accept in full payment for the Work items listed below, the following Unit Prices and/or Bid Prices, as applicable:

Bid Item No.	Description	Unit	Quantity	Unit Price	Bid Price
1	Construction Layout & As-Builts	LS	1		
2	Mobilization/Decmobalization	LS	1		
3	Remove Manholes Steps	EA	21		
4	Permanent Pavement Replacement, (COP Std Det P1200, Type A)	SY	337		
5	Permanent Pavement Replacement, (COP Std Det P1200, Type B)	SY	1,170		
6	ADOT Channel Access Road Restoration	LS	1		
7	Micro-Seal Asphalt	SY	18,795		
8	Remove & Replace Curb & Gutter, to the Nearest Joint	LF	280		
9	Remove & Replace Sidewalk	SF	650		
10	Remove & Replace Concrete Ramp, to the Nearest Joint	SF	160		
11	Remove & Replace Manhole Cone for Bypass or CIPP Liner Installation	EA	9		
12	Landscape Restore in Kind	LS	1		
13	Sewer Bypass Pumping	LS	1		
14	Pipe Cleaning (2 Passes)	LF	6,164		
15	CCTV (2 Passes)	LF	6,164		
16	Detached Liner Removal (Manned Entry)	DAY	5		

Bid Item No.	Description	Unit	Quantity	Unit Price	Bid Price
17	30" CIPP Liner	LF	662		
18	33" CIPP Liner	LF	1,981		
19	36" CIPP Liner	LF	439		
20	Epoxy Coat Manhole Channel, Throat, Bench, Wall, Cone & Chimney	EA	12		
21	Epoxy Coat Manhole Channel & Bench	EA	6		
22	Epoxy Coat Manhole Channel	EA	2		
23	Epoxy Coat Manhole Chimney	EA	1		
24	Manhole Repair	EA	3		
25	Replace Manhole Frame & Cover	EA	25		
26	Cut and Reinstale Coupon for Bypass Suction Pit	EA	1		
27	Allowance – Additional Repairs & Rehabilitation	ALLOW	1		
28	Allowance – Traffic Control	ALLOW	1		
29	Allowance – Permits	ALLOW	1		
30	Allowance – Stormwater Pollution Prevention Best Management Practice (BMPs)	ALLOW	1		
31	Allowance – Uniformed, Off-Duty Law Enforcement Officer	ALLOW	1		
32	Allowance – Owner’s Contingency	ALLOW	1		

Base Bid (The sum of the computed totals for Bid Items 1 through 32 only):

_____ Dollars and _____ Cents
 (Written words)

\$ _____
 (Figures)

THE BIDDER ACKNOWLEDGES AND AGREES THAT DETERMINATION OF THE LOWEST BIDDER SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF PARAGRAPH 17.6 OF THE INSTRUCTIONS TO BIDDERS.

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

2. Time of Completion

- 2.1 Bidder agrees that the Work will be substantially complete within 210 calendar days after the date when the Construction Times commence to run as provided in Article 2 of the General Conditions and completed and ready for final payment in accordance with Article 14 of the General Conditions within thirty (30) calendar days after the actual date when pursuant to paragraph 14.04 of Section 00700, General Conditions, Substantial Completion of the Work has been achieved.
- 2.2 Bidder accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the times specified in the Agreement.
- 2.3 In addition, Bidder agrees to meet the specified interim Milestones as defined in the General Requirements.

(THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK)

3. Bid Terms

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

Submitted on _____, 20____.

3.2 If Bidder is an Individual:

Name of Individual: _____

Name & Title of Person
Authorized to sign: _____

Signature: _____

Doing business as: _____

Business Address: _____

Phone Number: _____ FAX Number: _____

3.3 If Bidder is a Corporation:

By: _____
(CORPORATION NAME)

Signature: _____

Name and Title: _____

Attest: _____

Name and Title: _____

Business Address: _____

Phone Number: _____ FAX Number: _____

State of Incorporation: _____

(THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK)

3.4 If Bidder is a Joint Venture (Partnership):

By: _____ By: _____
(NAME OF PARTNERSHIP) (NAME OF PARTNERSHIP)

Signature: _____ Signature: _____

Name & Title: _____ Name & Title: _____

Business Address: _____ Business Address: _____

Phone Number: _____ Phone Number: _____

FAX Number: _____ FAX Number: _____

3.5 If Bidder is a Joint Venture (Corporation):

By: _____ By: _____
(CORPORATION NAME) (CORPORATION NAME)

Signature: _____ Signature: _____

Name and Title: _____ Name and Title: _____

Attest: _____ Attest: _____

Name and Title: _____ Name and Title: _____

Business Address: _____ Business Address: _____

Phone Number: _____ Phone Number: _____

FAX Number: _____ FAX Number: _____

State of Incorporation: _____ State of Incorporation: _____

3.6 Phone and Address for receipt of official communications: _____

That we, _____,
as Principal, (hereinafter called the Principal) and the _____, a corporation duly
organized under the laws of the State of _____, as Surety, (hereinafter called the Surety)
are held and firmly bound unto the City of Phoenix as Obligee, in the sum of ten (10) percent of the total
amount of the bid of Principal, submitted by him to the City of Phoenix for the work described below, for the
payment of which sum, well and truly to be made, the said Principal and the said Surety, bind ourselves,
our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents
and in conformance with A.R.S. #34-201.

WHEREAS, the said Principal is herewith submitting its proposal for 2017 PVC Lined Concrete Sanitary
Sewer Rehabilitation WS90500272

NOW, THEREFORE, if the City of Phoenix shall accept the proposal of the Principal and the Principal shall
enter into a contract with the City of Phoenix in accordance with the terms of such proposal and give such
Bonds and Certificates of Insurance as specified in the Standard Specifications with good and sufficient
Surety for the faithful performance of such contract and for the prompt payment of labor and material
furnished in the prosecution thereof, or in the event of the failure of the Principal to enter into such contract
and give such Bonds and Certificates of Insurance, if the Principal shall pay to the City of Phoenix the
difference not to exceed the penalty of the bond between the amount specified in the proposal and such
larger amount for which the Obligee may in good faith contract with another party to perform the work
covered by the proposal, then this obligation shall be null and void, otherwise to remain in full force and
effect.

Signed and sealed this _____ day of _____ A.D., 2023

Principal

Title

Mailing Address

Surety

WITNESS:

A.M. BEST RATING:

SECTION 00320 - BIDDER'S QUESTIONNAIRE

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

This form is due no later than 5:00pm on the 3rd day after the Bid.

1. Organization

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

1.2 Date and state of organization/incorporation: _____ (IRS) EIN: _____

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

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

Attachment _____, consisting of _____ pages.

2. Licensing

2.1 For each Arizona Contractor's license required to perform the Work identified in the Bid Documents, attach a copy of the "identification card" issued by the Registrar of Contractors. Also attach a copy of any privilege license issued to your organization by the City of Phoenix, the State, and any other Political Subdivision with jurisdiction over the Work. Information concerning the City of Phoenix Privilege License may be obtained from the City of Phoenix Finance Department, Tax and License Division, 251 West Washington Street, 3rd Floor, Phoenix, Arizona, 85003, Attention: License Services, telephone (602) 262-6785, FAX (602) 495-5605.

Attachment _____, consisting of _____ pages.

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

Attachment _____, consisting of _____ pages.

3. Experience

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

3.2 (A) How many years of experience has your organization had as a General Contractor and as a Subcontractor involving work similar in character and scope to the Work described by the Bid Documents? _____

(B) How many years of experience has your subcontractors listed in Section 00330 - List of Subcontractors and Suppliers had as a General Contractor and as a Subcontractor involving Work similar in character and scope to the Work described by the Bid Documents? _____

3.3 (A) Attach a list of all public contracts and subcontracts that your organization has performed within the last five years over \$4,000,000 involving Work similar in character and scope to the Work described by the Bid Documents (using the forms in the "References Attachment" provided with this Questionnaire). If the contract or subcontract referenced is not substantially completed, furnish the percent complete for that contract or subcontract.

Attachment _____, consisting of _____ pages.

(B) Attach a list of all public contracts and subcontracts that your major subcontractors listed in Section 00330 - List of Subcontractors and Suppliers have performed within the last five years over \$150,000 involving Work similar in character and scope to the Work described by the Bid Documents (using the forms in the "References Attachment" provided with this Questionnaire). If the contract or subcontract referenced is not substantially completed, furnish the percent complete for that contract or subcontract.

Attachment _____, consisting of _____ pages.

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

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

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

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

Attachment _____, consisting of _____ pages.

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

Attachment _____, consisting of _____ pages.

3.9 Bidder shall have an Experience Modifications Rate (EMR) of less than or equal to 1.20 as determined by insurance industry standards. Failure to submit verification of their Experience Modifications Rate (EMR) from their respective insurer on the insurance company's letterhead, within the specified period, justifies the disqualification of the Bidder for consideration for the award.

Attachment _____, consisting of _____ pages.

4. Additional Eligibility Data Under ARS Section 34-255

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

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

Attachment _____, consisting of _____ pages.

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

Attachment _____, consisting of _____ pages.

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

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

Attachment _____, consisting of _____ pages.

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

Attachment _____, consisting of _____ pages.

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

- 4.7 Credit available? _____ Amount: \$

- 4.8 Will your organization, i.e., the Bidder named in the Authorized Signature Article on the Bid Form, be the only named Principal in the Performance Bond and Payment Bond? _____

If not, please identify the organization who will be named as Principal or Co-Principal on the Performance Bond and Payment Bond _____.

Also, state how such organization relates to the Bidder _____.

(NOTE: If another organization is identified, the Bidder shall submit to the Owner or Design Professional a separate Questionnaire filled out by that organization as part of the Qualification Submittal required under Paragraph 3 of the Instructions to Bidders.)

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5. References

5.1 Trade references of work similar in character and scope to the Work described by the Bid Documents. (Minimum of three):

5.2 Bank references:

5.3 Insurance:

6. Certificate of Submittal

By: _____
(name of individual, partnership, corporation or joint venture)

Signed By: _____

Name and Title: _____

on this _____ day of _____, 20____.

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REFERENCES ATTACHMENT TO BIDDER'S QUESTIONNAIRE

REFERENCE

Public Owner: _____
Project/Contract Name: _____
Location of Project: _____
Contract Price: _____
Project Started: _____ Completed: _____
Owner's Representative (Name & Phone): _____
Bidder's Representative (Name & Phone): _____
Scope of Project: _____

REFERENCE

Public Owner: _____
Project/Contract Name: _____
Location of Project: _____
Contract Price: _____
Project Started: _____ Completed: _____
Owner's Representative (Name & Phone): _____
Bidder's Representative (Name & Phone): _____
Scope of Project: _____

REFERENCE

Public Owner: _____
Project/Contract Name: _____
Location of Project: _____
Contract Price: _____
Project Started: _____ Completed: _____
Owner's Representative (Name & Phone): _____
Bidder's Representative (Name & Phone): _____
Scope of Project: _____

REFERENCES ATTACHMENT TO BIDDER'S QUESTIONNAIRE (continued):

REFERENCE

Public Owner: _____
Project/Contract Name: _____
Location of Project: _____
Contract Price: _____
Project Started: _____ Completed: _____
Owner's Representative (Name & Phone): _____
Bidder's Representative (Name & Phone): _____
Scope of Project: _____

REFERENCE

Public Owner: _____
Project/Contract Name: _____
Location of Project: _____
Contract Price: _____
Project Started: _____ Completed: _____
Owner's Representative (Name & Phone): _____
Bidder's Representative (Name & Phone): _____
Scope of Project: _____

REFERENCE

Public Owner: _____
Project/Contract Name: _____
Location of Project: _____
Contract Price: _____
Project Started: _____ Completed: _____
Owner's Representative (Name & Phone): _____
Bidder's Representative (Name & Phone): _____
Scope of Project: _____

CITY OF PHOENIX: Water Services Department
 PROJECT NAME: 2017 PVC Lined Concrete Sanitary Sewer Rehabilitation
 PROJECT NUMBER: WS90500272

SECTION 00330- LIST OF MAJOR SUBCONTRACTORS/SUPPLIERS

DESCRIPTION OF WORK OR MATERIALS (CONTRACTOR TO ENTER TRADE/SUPPLIER AREAS)	SELF-PERFORMED BY PRIME CONTRACTOR	SUBCONTRACTOR/SUPPLIER COMPANY NAME (IF NOT SELF-PERFORMED)	CONTACT PERSON	PHONE NUMBER	DOLLAR VALUE OF WORK OR MATERIALS IN BID
	<input type="checkbox"/> YES <input type="checkbox"/> NO				
	<input type="checkbox"/> YES <input type="checkbox"/> NO				
	<input type="checkbox"/> YES <input type="checkbox"/> NO				
	<input type="checkbox"/> YES <input type="checkbox"/> NO				
	<input type="checkbox"/> YES <input type="checkbox"/> NO				
	<input type="checkbox"/> YES <input type="checkbox"/> NO				

I hereby certify by signing below that the above listed companies will be utilized to perform work on this project for an amount **equal to or greater than 5% of the base bid**. These companies shall not be removed or replaced without prior written approval by the City of Phoenix Project Manager. The City requires, as in Paragraph D – List of Major Subcontractors and Suppliers in the Information for Bidders that ALL vendors are listed, or you will be disqualified. If you are self-performing the work, you must still list any suppliers for materials, or list any contractors that will assist you in any form.

COMPANY NAME _____ SIGNATURE _____
 NAME & TITLE _____ PHONE NUMBER _____ DATE _____
 EMAIL ADDRESS _____

CITY OF PHOENIX: Water Services Department
 PROJECT NAME: 2017 PVC Lined Concrete Sanitary Sewer Rehabilitation
 PROJECT NUMBER: WS90500272

SECTION 00331 - LIST OF ALL SUBCONTRACTORS/SUPPLIERS

DESCRIPTION OF WORK OR MATERIALS (CONTRACTOR TO ENTER TRADE/SUPPLIER AREAS)	SELF-PERFORMED BY PRIME CONTRACTOR	SUBCONTRACTOR/SUPPLIER COMPANY NAME (IF NOT SELF-PERFORMED)	CONTACT PERSON	PHONE NUMBER	DOLLAR VALUE OF WORK OR MATERIALS IN BID
	<input type="checkbox"/> YES <input type="checkbox"/> NO				
	<input type="checkbox"/> YES <input type="checkbox"/> NO				
	<input type="checkbox"/> YES <input type="checkbox"/> NO				
	<input type="checkbox"/> YES <input type="checkbox"/> NO				
	<input type="checkbox"/> YES <input type="checkbox"/> NO				
	<input type="checkbox"/> YES <input type="checkbox"/> NO				

I hereby certify by signing below that the above listed companies will be utilized to perform work on this project. These companies shall not be removed or replaced on the project without prior written approval by the City of Phoenix Project Manager. The City requires, as in Paragraph D - List of All Subcontractors and Suppliers in the Information for Bidders that ALL vendors are listed, or you will be disqualified. If you are self-performing the work, you must still list any suppliers for materials, or list any contractor's that will assist you in any form.

COMPANY NAME _____ SIGNATURE _____
 NAME & TITLE _____ PHONE NUMBER _____ DATE _____
 EMAIL ADDRESS _____

CITY OF PHOENIX: Water Services Department
 PROJECT NAME: 2017 PVC Lined Concrete Sanitary Sewer Rehabilitation
 PROJECT NUMBER: WS90500272 SECTION 00340 -SCHEDULE OF MANUFACTURERS AND SUPPLIERS OF MAJOR EQUIPMENT AND MATERIALS ITEMS

As provided in the Instructions to Bidders, the Bidder proposes that the items of major equipment or materials named herein will be supplied by the Manufacturers and Suppliers set forth below as written by the Bidder, unless changes are specifically authorized by the Owner. Preliminary acceptance of equipment or materials listed by the Manufacturer's name shall not in any way constitute a waiver of the specifications; final acceptance will be based on full conformity with the specifications covering the equipment and/or materials. Failure to provide this information will be just cause for Owner declaring the Bidder's Bid nonresponsive. **This form is due no later than 5:00pm on the 3rd day after the Bid.**

<u>LISTING OF MAJOR EQUIPMENT</u>		
<u>SECTION</u>	<u>TITLE/DESCRIPTION</u>	<u>MANUFACTURER</u>

<u>MATERIAL</u>		
<u>SECTION</u>	<u>TITLE/DESCRIPTION</u>	<u>MANUFACTURER</u>

Submitted By: _____
 (name of individual, partnership, corporation or joint venture)

Signed By: _____

Name and Title: _____



City of Phoenix

To: Simon Amavisca
Project Manager
Aviation Department

Date: 12/7/2023

From: Amy Thomas, Co-Chair
Tiana Madrid, Co-Chair *TM*
SBE Goal Setting Committee

Subject: SBE GOALS FOR 2017 PVC-LINED CONCRETE SANITARY SEWER
REHABILITATION
PROJECT: WS90500272 (DBB)

Attendees: Eric Froberg Amy Thomas, Tiana Madrid, Karina Matthiessen, Simon Amavisca,

A Small Business Enterprise (SBE) goal of 3% was established for the above referenced project in accordance with Chapter 18 of the City's Ordinance, A.R. 1.89.

The goal was derived from the current availability of certified SBE firm(s) in the following specified scope(s) of work:

• Manhole Rehab	• Traffic Control	• Pipeline
• Bypass	• Asphalt Paving	• Concrete
• Landscape Material Irrigation	• Surveying	• Painting

Only SBE subcontractors certified by the City of Phoenix under Chapter 18, Article VII of the Phoenix City Code are eligible to fulfill the participation goals as stated. A firm's certification must be current and in force at the date and time of the bid. The most current electronic listing of all certified firms can be accessed through the Internet at: www.phoenix.diversitycompliance.com/

If you have any questions or concerns regarding the goal for this project, please contact us at Small.Business.Enterprise@Phoenix.Gov.

Thank you for your continued support of the City's SBE Program.

c: Eric J. Froberg, City Engineer
Patty Kennedy, Water Services Director
Equal Opportunity Division Office
Design and Construction Procurement Section Office



City of Phoenix

Small Business Enterprise Program

SBE – DESIGN BID BUILD (DBB) CONTRACT CLAUSE

PROJECT #: WS90500272

CONTRACT #: TBD

PROJECT TITLE: 2017 PVC-Lined Concrete Sanitary Sewer Rehabilitation

The City of Phoenix Small Business Enterprise Program (SBE) is managed and administered by the Equal Opportunity Department, Contract Compliance Division. Phoenix is one of the fastest growing, multicultural cities in the country and has shown a historical commitment to business diversity. The City strives to advance the economic growth of businesses through its Small Business Enterprise (SBE) Program.

Through a coordinated effort among several city departments, the SBE Program provides SBE certification, procurement opportunities, construction subcontracting utilization, small business management and technical assistance and educational services and networking opportunities.

The Small Business Enterprise (SBE) participation goal for this project is as follows:

SBE Required Goal = 3%

An annual SBE subcontracting participation goal has been established under this Contract. The Prime Contractor is required to demonstrate good faith efforts to utilize certified SBE firms to achieve this goal during the life of this contract.

For purposes of determining the Contractor's actual SBE utilization during and at the end of the project, the Contractor shall meet or exceed their **Proposed SBE Goal Percentage (as indicated on the Submitter's received SBE Utilization Form with their bid submittal)** for the contract, for ALL work performed on the project, including any amount paid for contingencies and allowances, and selected alternates. **The Proposed Goal shall meet/or exceed the Required Goal.**

For purposes of calculating the Contractor's "Proposed SBE Goal Percentage" on the Contractor's Statement of Proposed SBE Utilization form, bidders must not propose SBE subcontractors from areas identified on the bid form as contingencies and allowances or proposed alternates. Any SBE participation proposed from these areas will be not counted towards meeting the SBE goal requirement necessary for contract award.

The "Total Bid" shall be defined as the total of all the unit prices, or the lump sum total, including alternates and contingencies and allowances. The "Base Bid" shall be defined as the "Total Bid" minus "all proposed alternates" as determined by the project manager. Any additional dollars paid under this contract, including any selected alternate(s), shall be subject to the **Proposed SBE Goal Percentage** listed on the Contractor's Statement of Proposed SBE Utilization form.



City of Phoenix

Small Business Enterprise Program

SBE PROGRAM DEFINITIONS

Broker, Packager, Manufacturers' Representative, or Jobber means a firm that is not a manufacturer or regular dealer as defined herein.

Commercially Useful Function (CUF) means that a SBE firm is responsible for execution of the work of the contract and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. A SBE must perform at least 75% of the total cost of its contract with its own work force in order to be determined to be performing a CUF on the contract.

Contract is a written agreement obligating the seller or business enterprise to furnish goods or services as submitted and the Purchaser or Buyer to pay for such goods or services.

Contractor is an individual, partnership, joint venture, corporation or firm that executes a contract with the City to perform services requested by a solicitation or procurement. The Contractor may be direct or through an authorized representative.

Joint Venture (JV) is an association between two or more persons, partnerships, corporations, or any combination thereof, formed to carry on a single business activity. The JV is limited in scope and duration to this contract. The resources, assets and labor of the participants must be combined in an effort to accrue profit.

Manufacturer means a firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the contract.

Purchaser for purposes of this contract means the City.

Regular Dealer or Supplier means a business that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. The firm must be an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question.

Small Business Enterprise (SBE) means a small business that has been determined to meet the requirements for SBE certification with the City of Phoenix and whose certification is in force at the time of the award of business by the City. A directory of currently certified SBE firm is located at <https://phoenix.diversitycompliance.com>.

Subcontract a contract at any tier below the prime contract, including purchase orders.

Subcontractor is an individual, partnership, joint venture, corporation or firm that holds a contract at any tier below the prime contract, including purchase orders.

Successful Submitter is a Submitter who has been selected to perform services requested by a solicitation or procurement.



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SECTION I. SBE CERTIFIED FIRMS

Only firms certified by the City of Phoenix under Chapter 18, Article VIII of the Phoenix city code are eligible to fulfill the participation goal stated above. A firm's ***certification must be in the trade areas listed on the proposed utilization form and current and in force at the date and time of the bid opening deadline.***

The most current electronic directory of all certified **SBE** firms can be accessed at:

<https://phoenix.diversitycompliance.com>

If you need to verify certification status, please contact the Equal Opportunity Department at (602) 262-6790 and identify yourself as a prime contractor bidding on this project. Prime contractors should verify that the certifications of the SBE firms are current prior to bid opening. ***If a firm's certification expires and is not renewed prior to the bid-opening deadline, that firm will be ineligible to satisfy the goal.***

SECTION II. SBE BID PROCEDURES

The bid envelope shall contain all information and documents related to the SBE requirements of this section. ***Failure to properly complete the "Contractor's Statement of Proposed SBE Utilization" and "Letter of Intent to Perform as a Subcontractor/Supplier" forms, or submit a fully documented waiver request as described below, will result in bid rejection.*** The required documentation includes:

1. **A Contractor's Statement of Proposed SBE Utilization** - The form shall document the name of each SBE firm that will be awarded a subcontract; services to be performed by each subcontractor; dollar amount to be paid for those services; and the total dollar amount that is being proposed in SBE participation.
2. **A Letter of Intent to Perform as a SBE Subcontractor/Supplier** (required for each SBE subcontractor/supplier proposed) The form shall be completed by the SBE firm that will be awarded the subcontract. The form documents services to be performed by the subcontractor/supplier and the total dollar amount of the subcontract that will be awarded to the SBE. Only the services performed in the area(s) described by the SBE's certification description can be counted towards the SBE goal requirement.

The bidder's proposed utilization of SBE firms to fulfill the participation goal must be submitted on the "Contractor's Statement of Proposed SBE Utilization" form included in the specification packet. Additionally, each of the **SBE** subcontractors/suppliers the bidder is proposing to use to meet the goal requirement on this contract must complete the "Letter of Intent to Perform as an SBE Subcontractor/Supplier" (LOI) form. Both forms must be completed and submitted as part of the bid packet by the bid-opening deadline.

Failure to submit a completed "Contractor's Statement of Proposed SBE Utilization" and signed "Letter of Intent to Perform as an SBE Subcontractor/Supplier" form for each of the proposed SBE firms will result in a bidder being declared non-responsive to the requirements of these specifications and the bid will not be considered. The forms must contain the following:

1. The Certified SBE firm name and the certified trade or services to be performed.
2. The dollar amount of the proposed subcontract to be awarded to each SBE firm.
3. The total dollar amount of all SBE proposed subcontracts.

In instances where an exact dollar amount to be subcontracted with a SBE firm cannot be determined, the bidder shall indicate on Columns 3 and 4 of Part B Section 1 of the "Letter of Intent To Perform as a SBE Subcontractor/Supplier" form the minimum guaranteed hours/units and dollar amount that will be paid to the SBE firm. This situation applies only when a Contractor proposes to utilize a SBE firm that engages in work



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related to a broker, supplier or; a bid that is based on a per hour charge as in hauling/trucking or construction site security. Please note that this exception does not permit the Prime contractor to complete or modify any other part of the LOI document. Both, the SBE and the bidder must sign the LOI document prior to bid submittal. By signing the document, the bidder affirms that it has not altered or modified the document in any way other than, if applicable, entering the Unit/Hours and Total Quote Amount in Part B SECTION 1.

If a bidder proposes to utilize a firm not certified by the City of Phoenix and/or not certified in the proposed scope of work at the time of bid, the proposed utilization amount for that firm will be deducted from the total proposed SBE utilization amount used for determining if the bidder is responsive to the requirements of this section. Bidder shall not include any amount the SBE firm has indicated in the LOI document as work it will sublet or is not covered in their certification description in the Contractor's Statement of Proposed SBE Utilization form. Only amounts associated with the work to be performed by the SBE, and indicated in the SBE's certification description, may be counted towards the SBE participation goal requirement of this section.

If the reduced proposed SBE utilization is insufficient to meet the established participation goal required for this contract, and no waiver documentation has been submitted, the bidder shall be determined to be **non-responsive** to the requirements of this section and the bid will not be considered.

A certified SBE firm bidding as a Prime Contractor cannot count the work it will self-perform towards meeting the required SBE subcontracting goal.

A "Letter of Intent to Perform as a Subcontractor/Supplier" will be used in determining compliance with the requirements of this section. **The proposed subcontract dollar amount listed for each SBE firm on the "Contractor's Statement of Proposed SBE Utilization" must match the SBE dollar amount indicated in the boxed areas in Parts C, D or E of the signed "Letter of Intent to Perform as a Subcontractor/Supplier."** Failure to submit a completed LOI document with the SBE's and bidder's signatures shall be determined to be **non-responsive** to the requirements of this section and the bid will not be considered.

SECTION III. IF THE BIDDER IS UNABLE TO MEET THE GOAL

A fully documented waiver request detailing why the bidder has been unable to meet the SBE utilization goal in whole, or in part, and the "good faith" effort of the bidder to obtain SBE participation. In order to be viewed as good faith efforts, a bidder's activities must be consistent with all activities that could reasonably be expected from a bidder who was actively and aggressively seeking to meet the SBE goal. To show proof of having exercised good faith efforts in trying to obtain bids from SBE firms to meet the utilization goals. The following factors are illustrative of those matters that shall be considered when judging whether the bidder made "good faith efforts".

1. A cover letter addressed to the Street Transportation Procurement Section clearly indicating whether a full or partial waiver is being requested, the percentage to be waived, and the reasons the waiver is being sought.
2. If a partial waiver is being requested, a Bidder's Statement of Proposed Utilization listing firms that will satisfy the portion of the goal that will be met must be included with the bid proposal. Additionally, a Letter of Intent to Perform as a Subcontractor/Supplier from each SBE firm that is proposed to be utilized must be included with the bid proposal.
3. Proof of contact with SBE firms, including but not limited to, fax logs, telephone logs, mail receipts, etc, including documentation of the number of times that firms were contacted, the dates of contact, and the name, phone number, fax number, and address of the contact person associated with each SBE firm. Solicitation of SBE subcontractors must be consistent with the solicitation of all subcontractors and must clearly demonstrate that SBE firms had sufficient time to submit an effective response.
4. Copies of the documents submitted to all subcontractors requesting their bid. This should include the scope of work to be bid and performed on the project.



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5. Copies of bid responses/quotes from all subcontractors who bid to perform work on the project in the areas that SBE firms were also bidding on, including information as to why SBE bids were not considered.
6. Documentation that shows efforts made to provide assistance to SBE firms in the areas of bonding, insurance, or other contracting requirements.
7. Documentation of attendance at the pre-bid conference held for the project.
8. Documentation of contact made with City personnel seeking assistance in identifying eligible SBE firms for contracting opportunities on the project.

SECTION IV. SBE WAIVER PROCEDURES

Requests for a partial or full waiver of the SBE goal for the project including all Good Faith Documentation shall be submitted as part of the bid packet. The request will be reviewed to ensure compliance with the requirements of this section. If the request is determined to meet the requirements, a waiver hearing will be scheduled and the bidder notified of the date, time, and place of the hearing. All waiver hearings are open to the public. However, only the designated representative for the contractor and City staff may participate in the proceedings.

The contractor requesting the waiver may appear at the hearing to present their request and answer questions from the Waiver Review Committee regarding their submittal. The Committee will consider the information and documentation that was submitted at the time of bid. The bidder may not present additional or new information at the hearing. At the conclusion of the hearing process the Committee will make independent recommendations on the request for waiver. The presiding officer, on behalf of the Committee, will provide a written summary of the Committee's recommendations to the City Manager's designee, the City Engineer. The City Engineer will make the final decision to grant or deny the waiver request. The City Engineer's decisions shall be final. The City will notify the contractor regarding the final decision of the City Engineer.

If a partial or full waiver of the SBE goal is granted to a bidder, the bidder shall be considered to have met the project goals and their bid will be considered responsive to the requirements of this section. If a waiver is denied, the bidder is deemed non-compliant and non-responsive to the requirements of this section and their bid will not be considered.

Failure to submit the Contractor's Statement of Proposed SBE Utilization form and a LOI from each SBE firm proposed OR a fully documented waiver request at the time of bid will be cause to determine the bidder non-responsive to the requirements of this section.

SECTION V. LIMITATION OF THE USE OF SUPPLIERS AND BROKERS TO FULFILL THE SBE GOAL

Proposed expenditures to brokers and suppliers can be used to meet the utilization goal, provided that the combined applicable expenditures do not exceed 25 percent (25%) of the total SBE goal requirement. Contractors may count one hundred percent (100%) of the dollars proposed to be paid to a SBE supplier, and all costs associated with fees and commission to be paid to a SBE broker, up to the 25% limitation.

Supplier (or Wholesaler) is defined as firm that does not directly manufacture the product being supplied and has an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question. A supplier is a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business.



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EXAMPLE: An SBE goal of 5% has been established on a project where the contractor has submitted a base bid of \$1,000,000. This results in a dollar goal of \$50,000 to be subcontracted to SBE's. The contractor proposes to contract with a SBE supplier for \$100,000. Only \$12,500, or 25 percent (25%), may be counted

towards achievement of the SBE goal for this project. The remaining \$37,500 must be achieved through the use of firms that are not suppliers or brokers.

Broker is defined as firm that arranges or expedites services or transactions through the use of individuals not directly employed by the company. Brokers are not regular suppliers. Only costs associated with the fees and commission paid to the certified firm for providing such services may be applied towards the SBE contract goal.

The following defines the expenditures to SBE firms that are NOT subject to the 25% limitation. The following expenditures may be counted in their entirety towards fulfilling 100% of the utilization goal:

1. Expenditures to certified SBE firms that operate and maintain an establishment or factory to produce, on the premises, the materials or supplies purchased for the contract.
2. Expenditures to a certified SBE fabricator that operates and maintains a factory to substantially alter materials or supplies before resale.
3. Expenditures, including fees and commissions, charged to provide bona fide technical and professional personnel recruitment for the contract. The total cost paid that shall be comparable to the industry standards customarily charged for the same or similar services.
4. Expenditures, including fees and commissions, charged for providing bonds and insurance specifically required for the performance of the contract. The total cost shall be comparable to the industry standards charged for the same or similar services.

All SBE firms proposed to participate on this contract opportunity must be SBE certified by the City of Phoenix prior to the date and time of the bid.

Participation on the contract will be calculated based on that portion (dollar value) of the contract that the SBE actually performs with its own forces. This includes the cost of supplies and materials obtained by the SBE for the work on the contract, **except** in cases when; it has been determined by the City *not* to be part of the firm's certification description; the SBE is certified as a "placer", "finisher", or "installer" of those materials only, or when the supplies and/or equipment it uses to perform its work is purchased or leased from the Contractor or its affiliate.

Special emphasis and care should be taken to ensure that the following types of participation are handled properly when preparing your bid packet, as failure to correctly calculate the allowable SBE participation in the following areas shall result in your bid being declared non-responsive if the SBE goal requirement is not met:

Fees & Commissions: SBE firms that supply a bona fide service for a fee or commission may be counted only to the extent of the fees or commissions charged by the SBE. This includes, but is not limited to, providing professional, technical, consultant, or managerial services, and bonds or insurance specifically required for the performance of a contract. Fees must be reasonable, not excessive, compared to fees customary for similar services.

EXAMPLE: A SBE firm that supplies uniformed officers for security or traffic control may count only the amounts charged as a commission. The hourly amount paid to the officers may not be counted. If the "per hour" bid amount to the prime contractor is \$35, and \$25 per hour will be paid to the officers, only \$10 per hour can be counted towards achieving the SBE goal. If the firm or bidder estimates that there will be 200 hours of work bid at a rate of \$35 per hour, only \$2,000 of the total \$7,000 bid could be counted.



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Trucking & Hauling: The amount of a trucking/hauling subcontract that may be counted towards the utilization requirements may be limited. An SBE must itself own and operate at least one fully licensed,

insured, and operational truck that will be used on the contract. In addition, trucks the SBE leases without drivers under a long-term leasing agreement may be considered part of the trucking firm's workforce and

counted in full, provided the leasing agreement(s) is/are for a period of not less than 6 months and; **the leased vehicles have been recorded with the City's Equal Opportunity Department's Certification Office prior to the submittal of the LOI document.**

***EXAMPLE:** A SBE trucking firm uses seven trucks on a job; two are owned by the SBE and five are leased from other firms. If two of the five trucks are leased without drivers and the remaining three are leased with drivers from another firm, then the amount paid to the SBE for the services provided by the trucks it owns and the two it leases without drivers and operates with its own employees can be counted in full towards meeting the SBE requirements. The Contractor may not count any portion of the amount the SBE receives for the two trucks it leases with drivers towards the SBE utilization goal.*

SECTION VI. POST AWARD SBE COMPLIANCE INFORMATION - DBB

Submittal of a bid to the City of Phoenix shall constitute an agreement by the bidder to comply with the SBE utilization requirements of this section should the bidder be awarded a contract. This includes, but is not limited to, the following compliance activities:

1. The contractor shall contract, or attempt to contract, in good faith with all SBE firms listed on the Bidder's Statement of Proposed SBE Utilization form submitted with their bid. The subcontract shall be for an amount that is equal to, or greater than, the total proposed dollar amount listed on the form, with the exception of instances where the City changes a scope of work in the contract that would reduce the available work in the subcontractor's area of performance.
2. The contractor shall not reduce any of the proposed SBE scopes of work or amounts indicated on the Bidder's Statement of Proposed SBE Utilization form without first submitting a Request for Exemption and receiving approval in writing from the City's Equal Opportunity Department (EOD), Contract Compliance Division.
3. The contractor shall notify the City of Phoenix Equal Opportunity Department immediately if any firm listed on the Bidder's Statement of Proposed SBE Utilization form refuses to enter into a subcontract or fails to perform according to the requirements of the subcontract.
4. Any reduction of retention by the City to the contractor shall result in a corresponding reduction to subcontractors or suppliers who have performed satisfactory work. The contractor has 14 days from the date their retention reduction takes effect to reduce retention to the subcontractors.
5. The contractor shall return all retention monies to subcontractors at such time as the work originally proposed by the subcontractor, and expressed in the original subcontract agreement, is complete and the purchaser (City) has accepted the work and paid the prime for the work performed by the subcontractor. Retention shall be paid no later than 30 days after such payment is made by the City.
6. The contractor shall act in good faith to meet the contract SBE utilization goal and provide all necessary documentation to show proof of those efforts as requested by the City.

If for any reason the SBE firm is decertified prior to the execution of a subcontract agreement, the bidder shall find additional SBE participation in the amount equivalent to or greater than that which was originally proposed for the SBE firm. Bidder shall make every good faith effort possible in finding a SBE replacement in the proposed trade area first, before considering SBE participation in other trade areas.



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SECTION VII. Subcontract Assurances

Each contract signed by the Agency and the Successful Bidder and each subcontract signed by the Successful Bidder with a Subcontractor, including Subcontractors with lower tier Subcontractors must include the following assurances verbatim:

Prompt Payment of Subcontractors *The Contractor and Subcontractor shall promptly pay its lower tier subcontractors, sub consultants, or suppliers upon receipt of payment from the City of Phoenix (Agency).*

Progress Payments: In accordance with the Arizona Revised Statutes (ARS), Section 34-221(G), the Contractor(s) shall promptly pay its subcontractors, sub consultants, or suppliers within seven (7) calendar days of receipt of each progress payment from the Agency. Any diversion by the Contractor(s) of payments received for work performed on the contract, or failure to reasonably account for the application or use of such payments, constitutes grounds for a declaration of breach of the contract with the Agency.

Retention Payments: If the Agency reduces the Contractor's retention, the Contractor shall correspondingly, within 14 days, reduce the retentions held against the Subcontractors and suppliers that have performed satisfactory work.

Release of Retention: The Contractor(s) shall ensure prompt and full payment of retentions to Subcontractors and suppliers when their work is complete, the Agency has accepted the work, and the Agency has paid the Contractor for the work. The Contractor shall pay each Subcontractor's and supplier's retention no later than 30 days after the Agency pays Contractor for the completed scope of work.

Changes to Subcontracts and Values *The City of Phoenix prohibits Contractor(s) from altering the Contractor's Statement of Proposed SBE Utilization form without receiving prior, written consent from the City. The Equal Opportunity Department must be informed, in writing, and in advance of the following:*

- *Reduction to the scope of work performed by subcontractors working on the contract*
- *Changes in any of the subcontract values resulting in a reduced dollar amount*
- *Replacement and/or release of any subcontractor after contract award*

Contractor(s) and Subcontractor(s) are required to complete a Request for Exemption Form and have the written approval of the Contract Compliance Office prior to taking action on any of the above listed matters related to SBE subcontractors.

In the event that any provision of this subcontract varies from the provisions of the contract or subcontract, the provisions for SBE contract compliance as contained in Administrative Regulation 1.89, Section IX, shall provide definitive guidance.

Disclaimer: *Nothing in this section prevents the Contractor or Subcontractor from enforcing its subcontract with a lower tier Subcontractor or supplier for defective work, late performance, and other claims arising under the Subcontract.*



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SECTION VIII. RECORDS and REPORTING REQUIREMENTS

1. Records

During performance of the Contract, the Successful Submitter shall keep all records necessary to document the participation of all subcontractors and suppliers. The Successful Submitter shall provide the records to the Agency within 72 hours of the Agency's request and at final completion of the Contract. The Agency will prescribe the form, manner, and content of reports. The required records may include but not limited to:

- a) A complete listing of all Subcontractors and suppliers on the project;
- b) Each Subcontractor's and supplier's scope performed;
- c) The dollar value of all subcontracting work, services, and procurement;
- d) Copies of all executed Subcontracts, purchase orders, and invoices; and
- e) Copies of all payment documentation.

2. Reports

- a. The contractor shall participate in all compliance reviews determined necessary by the City. This includes, but is not limited to participating in on-site reviews, providing monthly utilization reports of SBE activity, providing signed copies of subcontracts and/or purchase orders with each SBE listed on the Bidder's Statement of Proposed SBE Utilization form, and complying with any and all requests for information the City deems appropriate for effectively monitoring this contract for compliance with the SBE Program requirements.
- b. The contractor shall provide regular, monthly report/audit information that will assist us in effectively monitoring your compliance with the SBE Program requirements. This shall include listing all subcontractors working on the contract and reporting payments into the Certification and Compliance System <https://phoenix.diversitycompliance.com>. Reporting audits shall include all payments received from the City and payments you have issued to all subcontractors and suppliers. **Copies of the first 2 pages of the Pay Request submittal are required with each report. All Monthly audit reports are to be completed online by the 15th of every month. (<https://phoenix.diversitycompliance.com>).**
 - i. The total of all payments received from the City during the previous month.
 - ii. The first two pages of each payment application submitted for those payments.
 - iii. All payments made to Subcontractors during the previous month.

Before the Agency processes the Successful Submitter's final payment and/or outstanding retention held against the Successful Submitter, the Successful Submitter shall submit to the Agency a final certification of full and final payment to each Subcontractor in the form prescribed by the Agency. The form must be completed and certified by the Successful Submitter's and each Subcontractor's duly authorized agents.

SECTION IX. PERFORMANCE OF A COMMERCIALY USEFUL FUNCTION

The prime contractor may count only expenditures to SBE subcontractors that perform a commercially useful function in the work of the contract, as defined in Chapter 18 Article VI of the City Code. A "commercially useful function" constitutes performing real and actual services related to the contract.

SBE subcontractors may enter into second-tier subcontracts consistent with normal industry practices. If an SBE subcontracts greater than twenty-five (25) percent of the work of their contract, the SBE subcontractor shall be presumed not to be performing a commercially useful function. In this event, the prime contractor will not be allowed to claim any expenditure to the SBE subcontractor.



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SECTION X. FAILURE TO COMPLY WITH THE SBE PROGRAM REQUIREMENTS

If the Equal Opportunity Department determines that the contractor will fail, or has failed, to meet the SBE subcontracting goals, and/or has failed to act in good faith to ensure compliance with the SBE conditions of its contract; it shall deem the contractor “noncompliant” and not in good standing. A noncompliant status shall result in the rejection of all future contract bids or offers for all projects or other procurements with the City until such time that the contractor has cured its breaches and demonstrates that it has faithfully performed its approved SBE utilization plan and all other provisions of this article required to be deemed in good standing. In addition to this action, the City may also exercise its option to impose any or all of the following remedies:

1. Withholding from the contractor ten percent (10%) of all future payments on the involved eligible project until it is determined that the contractor is in compliance;
2. Withholding from the contractor all future payments on the involved project until it is determined that the contractor is in compliance

Failure to cure a non-compliance status within the time frame provided by the City may result in further action, including but not limited to imposing any or all of the following sanctions:

1. Rejection of all future bids or offers from the contractor for any eligible project with the City or any of its departments or divisions for a period of (1) year after substantial completion of the contract.
2. Cancellation of the contract.



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CONTRACTOR'S STATEMENT OF PROPOSED SBE UTILIZATION (DBB)

PROJECT NUMBER/TITLE: 2017 PVC-Lined Concrete Sanitary Sewer Rehabilitation

Required SBE Goal: 3%

SBE FIRMS	COMPANY NAME	SERVICES TO BE PROVIDED	SUPPLIER- (YES or NO) May not satisfy more than 25% of the Goal	SBE \$ AMOUNT from LOI Tables - Sections C, D, or E	Countable SBE \$ Amount (towards proposed goal)	

(\$ _____) - (\$ _____) - (\$ _____) = (\$ _____)
Total Bid - **Allowances & Contingencies** - **Alternates** = **Base Bid**

(\$ _____) ÷ \$ _____) X 100 = _____ % (NO ROUNDING)
Total Proposed SBE Dollars ÷ **Base Bid** X 100 = **Proposed SBE %**

Proposed SBE Percentage must equal or exceed the Required SBE Goal Percentage.
Do **NOT** propose SBE dollars in scopes related to Alternates, Allowances, or Contingencies as part of meeting the required SBE %.
All additional contract dollars, including selected alternates, contingencies, and allowances paid after award of contract, will be subject to the SBE contract goal %.

Total Proposed SBE Dollars

\$ _____

I hereby certify by signing below the foregoing SBE firms shall be contracted to work on the trades identified above and/or supply material/equipment for this project.

*The information shown above is a **true reflection of the proposed subcontracts.***

COMPANY NAME: _____ EMAIL: _____ PHONE: _____

NAME : _____ TITLE: _____

SIGNATURE: _____ DATE: _____



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Letter of Intent (LOI) To Perform as an SBE Subcontractor

(THIS FORM MUST BE COMPLETED BY THE SBE SUBCONTRACTOR – BOTH SBE SUBCONTRACTOR & PRIME SIGNATURE ARE REQUIRED)

Project Number: WS90500272
Contract #: TBD

Project Description: 2017 PVC-Lined Concrete Sanitary Sewer Rehabilitation

TO: (Insert Name of Prime Contractor)

FROM: (Insert Name of SBE Firm)

A. The undersigned declares that the firm bidding to perform the work described herein, has been granted certification by the City of Phoenix (COP) as a Small Business Enterprise (SBE) in the area(s) of:

(COP) Certification Description:

B. The undersigned is bidding to perform the following scope(s) of work on the above referenced project:

SECTION 1 - COMPLETE THIS PORTION IF THE SCOPE OF WORK IS BEING BID BY UNIT PRICE OR HOURLY RATE SUPPLIER, BROKER, TRUCKING, HAULING, UNIFORMED OFFICERS MUST USE THIS SECTION

Table with 4 columns: Scope of Work, Unit/Hourly Rate, # of Units/Hours, Total Quote Amount

SECTION 2 - GENERAL OR SPECIALTY CONSTRUCTION TRADE AREAS MUST USE THIS SECTION

Table with 2 columns: Scope of Work, Total Quote Amount

C. Of the Total Quote Amount reflected in Part B-SECTION 2, the following scope(s) of work with the given amount will not be performed by the SBE or is/are not covered under the SBE's certification description:

Scope(s) of Work Amount \$

Subtract Amount in Part C above from the Total Quote Amount in Part B-Section 2 = * \$
* Only this amount shall be reflected on the Bidder's Statement of Proposed Utilization.

D. If trucking services are included in Part B - SECTION 1 above, SBE MUST complete the following:

Of the Total Quote Amount noted in part B-Section 1, the SBE affirms that the amount of * \$ shall be performed by drivers the firm employs, and trucks the SBE owns and leases without drivers.
(The amount referenced above is transferred from Step 9 of the Worksheet (L.O.I.W.-1). *Only this amount shall be on the Statement of Proposed Utilization)

E. All subcontractors providing Broker or Traffic Control/Security Services indicated in Part B-SECTION 1 above MUST Complete the Following:

Rate of the SBE's fees/commissions %; for a Total Amount in fees/commissions of: \$
The Percentage and Total Amount referenced above is transferred from Steps 2 and 3 of the Worksheet (page L.O.I. W.-1).
Only the Total Amt in fee/commissions shall be reflected on the Bidders Statement of Proposed Utilization.

Should the prime contractor receiving this form be selected for award of the contract, the undersigned affirms that he/she will enter into an agreement to perform the work bid herein.

(SBE Subcontractor Authorized Signature)

(Date)

(Print Name and Title)

(Phone Number)

By signing this LOI document, the Prime Contractor affirms that it has not altered or modified this document in any way other than, if applicable, entering the Unit/Hours and Total Quote Amount in Part B SECTION 1.

(Prime Contractor Authorized Signature)

(Date)

(Print Name and Title)

(Phone Number)



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**LETTER OF INTENT TO PERFORM AS A SUBCONTRACTOR/SUPPLIER
INSTRUCTIONS AND WORKSHEET - L.O.I. W.-1**

A Letter of Intent to Perform as a SBE Subcontractor/Supplier (required for each SBE subcontractor/supplier proposed). The form documents services to be performed by the subcontractor/supplier and the total dollar amount of the subcontract that will be awarded to the SBE. Only the services performed in the area(s) described by the SBE's certification description can be counted towards the SBE goal requirement.

Part I. Trucking and Hauling: SBEs should indicate on Part B-Section 1 and Part D, of the LOI form, the information regarding trucks to be used in executing the contract. The City allows the counting of all payments for services provided by trucks which the SBE owns. Trucks which the SBE leases on a long-term basis and are operated with drivers the SBE employs may also be counted in full. The payments for short-term leased trucks, with or without SBE employed drivers cannot be counted.

Only trucks for which leasing agreements have been submitted and approved by EOD as part of the SBE firm's current certification file shall be considered eligible for counting towards the goal.

STEP ONE	STEP TWO	STEP THREE
Value of work expected to be performed by trucks owned by the SBE (2 Trucks)	Value of work expected to be performed by trucks leased (with drivers) by the SBE on a long-term basis (2 Trucks)	Combined value of work expected to be performed by other trucking firms and/or trucks leased (without drivers) by the SBE (3 Trucks)
\$20,000	\$20,000	\$33,000
STEP FOUR	STEP FIVE	STEP SIX
Estimated value for services provided by all trucks the SBE will use on the contract. (Add Steps One, Two, and Three)	Expected value of work performed by trucks not eligible for counting as SBE participation (Value in Step Three)	Total estimated value that can be counted for SBE participation (Subtract Step Five from Step Four)
\$73,000	\$33,000	\$73,000 - \$33,000 =\$40,000

Part II. Fees and Commissions: Insert the information from below under Step Three-Commission/Fees Percentage and the Countable Amount for SBE Participation into Part E of the LOI form. This part is applicable for the use of uniformed officers to provide traffic control and security and other services provided at an hourly rate by non-employees of the SBE contractor.

(The following information is provided as a sample only)

STEP ONE			
Total Number of Hours	Per Hour Bid Amount	Calculation Formula: Total Gross Bid Amount	
200	\$35	200 × \$35 = \$7,000	
STEP TWO			
Per Hour Bid Amount	Officers Hourly Rate	SBE Firm Commission/Fee	Calculation Formula: Fees/Commissions Percentage
\$35	\$25	\$10	(10 / 35) * 100 = 28.57%
STEP THREE			
Gross Bid Amount (from Step One)	Commission/Fee % (from Step Two)	Calculation Formula: Amount Countable for SBE Participation	
\$7,000	28.57%	\$7,000 × .2857 = \$2,000	

Part III. Construction Trade Areas: SBE must indicate in the Scope of Work of Part B-Section 2 of the LOI form, **all** scope(s) of work associated with the Total Quote Amount. The SBE must complete Part C of the LOI form by entering the Scope of Work and amount not expected to be performed by the SBE or which is not covered under the SBE's certification description. Subtracting this amount from the Total Quote Amount in Part B-Sect. 2 will result in the portion of work that can be counted as SBE participation.

Authorized Contact for this Disclosure Statement

Name: _____
Title: _____
E-mail: _____
Phone number: _____
FAX number: _____

List any other DBA, trade name, other identity, or EIN used in the last five (5) years, the state or country where filed, and the status (active or inactive):
(if applicable):

Business Characteristics:

Business entity type – Please check appropriate box and provide additional information:

- | | | |
|--|-----------------------------|-------|
| <input type="checkbox"/> Corporation | Date of incorporation: | _____ |
| <input type="checkbox"/> Limited Liability Company | Date organized: | _____ |
| <input type="checkbox"/> Limited Liability Partnership | Date of registration: | _____ |
| <input type="checkbox"/> Limited Partnership | Date established: | _____ |
| <input type="checkbox"/> General Partnership | Date established: | _____ |
| <input type="checkbox"/> Sole Proprietor | How many years in business? | _____ |
| <input type="checkbox"/> Other (explain) | Date established: | _____ |

Was the business entity formed in the State of Arizona? Yes No

If no, indicate jurisdiction where Business Entity was formed: _____

Is the Business Entity currently registered to do business in Arizona with the Arizona Corporation Commission? Yes No Not required _____
(if sole proprietor or general partnership)

Does the Business Entity have a City of Phoenix business privilege license? Yes N If “no” explain and provide detail such as “not required” or “application in progress” or other reason.

Is the Business Entity publicly traded? Yes No

Is the responding Business Entity a Joint Venture? Yes No Note: If the Submitting Business entity is a Joint Venture, also submit a questionnaire for each Business Entity comprising the Joint Venture.

Is the Business Entity's Principal Place of Business/Executive office in Phoenix? Yes No

If "no" does the Business Entity maintain an office in Phoenix? Yes No

Provide the address and phone number for the Phoenix office.

Is the business certified by Phoenix as a Small Business Enterprise? Yes No

Identify Business Entity Officials and principal Owners:

Name(s) _____ Title _____

Percentage ownership ___%(Enter 0% if not applicable).

Name(s) _____ Title _____

Percentage ownership ___%(Enter 0% if not applicable).

Name(s) _____ Title _____

Percentage ownership ___%(Enter 0% if not applicable).

Name(s) _____ Title _____

Percentage ownership ___%(Enter 0% if not applicable).

Affiliates and Joint Venture Relationships

Does the Business entity have any Affiliates? Yes No Attach additional pages if necessary.

Affiliate name: _____

Affiliate EIN (if available): _____

Affiliate's primary Business Activity: _____

Explain relationship with Affiliate and indicate percent ownership, if applicable. _____

Are there any Business Entity Officials or Principal Owners that the Business Entity has uncommon with this Affiliate? Yes No

Individual's Name: _____

Position/Title with Affiliate: _____

Has the Business Entity participated in any joint Ventures within the past three years? Yes No

(Attach additional pages if necessary)

Joint Venture Name: _____

Joint venture EIN (if applicable): _____

Identify parties to the Joint Venture:

Contract History

Has the Business Entity held any contracts with the City of Phoenix in the last three (3) years?

Yes No If “yes” attach a list.

Integrity – Contract Bidding

Within the past three (3) years:

Has the Business Entity or any Affiliate been suspended or debarred from any government contracting process or been disqualified on any government procurement? Yes No

Been subject to a denial or revocation of a government prequalification? Yes No

Been denied a contract award or had a bid rejected based upon a finding of a non-responsibility by a government entity? Yes No

Agreed to a voluntary exclusion from bidding/contracting with a government entity? Yes No

Initiated a request to withdraw a bid submitted to a government entity or made any claim of an error on a bid submitted to a government entity? Yes No

Initiated a request to withdraw a bid submitted to a government entity or made any claim of an error on a bid submitted to a government entity? Yes No

For each “Yes” answer above, provide an explanation of the issues.

Integrity – Contract Award

Within the past three (3) years has the Business Entity or any Affiliate been suspended, cancelled, or terminated for cause on any government contract?

Yes No

Been subject to an administrative proceeding or civil action seeking specific performance or restitution in connection with any government contract? Yes No

For each “yes” answer, provide an explanation. (Attach explanation on a separate sheet of paper).

Certifications/Licenses

Within the past three (3) years, has the Business Entity or Affiliate had a revocation, suspension, or disbarment of any business or professional permit and/or license? Yes No

If “yes” provide an explanation of the issue(s), the Business Entity involved, the relationship to the submitting Business Entity, relevant dates, the government entity involved, and any remedial or corrective action(s) taken and the current status of the issues.

Legal Proceedings

Within the past three (3) years, has the Business Entity of any Affiliate:

Been the subject of an investigation, whether open or closed, by any government entity for a civil or criminal violation? Yes No

Been the subject of an indictment, grant of immunity, judgment or conviction, (including entering into a plea bargain for conduct constituting a crime)?
 Yes No

Received any OSHA citation and Notification of Penalty containing a violation classified as serious or willful? Yes No

Had a government entity find a willful prevailing wage or supplemental payment violation?
 Yes No

Been involved in litigation as either a plaintiff or a defendant involving a copyright or patent infringement violation or an anti-trust violation? Yes No

Other than previously disclosed, for the past three (3) years:

Been subject to the imposition of a fine or penalty in excess of \$1000 imposed by any government as a result of the issuance of citation, summons or notice of violation, or pursuant to any administrative, regulatory, or judicial determination? Yes No

Been charged or convicted of a criminal offense pursuant to any administrative and/or regulatory action taken by any government entity? Yes No

If “yes” provide an explanation of the issue(s), the Business Entity involved, the relationship to the submitting Business Entity, relevant dates, the government entity involved, and any remedial or corrective action(s) taken and the current status of the issues.

Leadership Integrity

If the Business Entity is a joint Venture Entity, answer “N/A – Not Applicable” to questions below:

Within the past three (3) years has any individual previously identified, or any other Business Entity Leader not previously identified, or any individual having the authority to sign, execute, or approve bids, proposals, contracts or supporting documentation with the city of Phoenix been subject to:

A sanction imposed relative to any business or professional permit and/or license? Yes No

N/A

An investigation, whether open or closed, by any government entity for a civil or criminal violation for any business-related conduct? Yes No N/A



City of Phoenix
AFFIDAVIT OF IDENTITY

Your completion of this form is required by Arizona state law. A.R.S. §§ 1-501 and -50 only if you are a sole proprietor.

I, _____ (print full name exactly as on document), hereby affirm, upon penalty of perjury, that I presented the document marked below to the City of Phoenix, that I am lawfully present in the United States, and that I am the person stated on the document. (*select one category only*)

- Arizona driver license issued after 1996.
 Print first four numbers/letters from license:

--	--	--	--
- Arizona non-operating identification license.
 Print first four numbers/letters from license:

--	--	--	--
- Birth certificate or delayed birth certificate issued in any state, territory or possession of the U.S.
 Year of birth: _____ Place of birth: _____
- United States Certificate of birth abroad
 Year of birth: _____ Place of birth: _____
- United States Passport
 Print first four number/letters on Passport:

--	--	--	--
- Foreign Passport with United States Visa
 Print first four number/letters on Passport:

--	--	--	--

 Print first four number/letters on Visa:

--	--	--	--
- I-94 Form with a photograph
 Print first four numbers on I-94

--	--	--	--
- USCIS Employment Authorization Document (EAD)
 Print first four numbers on EAD

--	--	--	--

 or Perm. Resident Card (acceptable alternative):

--	--	--	--
- Refugee Travel Document
 Date of issuance: _____ Refugee Country: _____
- U.S. Certificate of Naturalization
 Print first four digits of CIS Reg. No.

--	--	--	--
- U.S. Certificate of Citizenship
 Date of issuance: _____ Place of issuance: _____
- Tribal Certificate of Indian Blood
 Date of issuance: _____ Name of Tribe: _____
- Tribal or Bureau of Indian Affairs Affidavit of Birth
 Year of birth: _____ Place of birth: _____

Signed: _____ Dated: _____

SECTION 00500 - AGREEMENT

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SECTION 00500 - AGREEMENT

THIS AGREEMENT made and entered into as of the date of the Clerk's attestation below by and between the City of Phoenix, Arizona, an Arizona municipal corporation organized and existing under and by virtue of the laws of the State of Arizona (hereinafter called Owner) and «**Company**», «**LegalEntity**» (hereinafter called Contractor). Owner and Contractor, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1 - WORK

This project includes rehabilitation large diameter PVC-lined sanitary sewer pipe, access manholes, and structures throughout the city. Work includes cleaning debris removal; pre and post CCTV, CIPP lining installation; manhole coating repair, odor mitigation, providing bypass diversion and/or control of sanitary sewage flows and dewatering. Refer to Volumes 2 and 3 for more detail.

ARTICLE 2 - DESIGN PROFESSIONAL

The Owner has retained Dibble, who is hereinafter called the Design Professional and who is to act as Owner's representative, assume all duties and responsibilities of and have the rights and authority assigned to the Design Professional in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

ARTICLE 3 - CONTRACT TIMES

The periods allowed for completion of the Work are as follows:

The entire Work shall be Substantially Complete in accordance with the requirements of the Contract Documents within 210 calendar days from the date when the Contract Times commence to run.

All Work shall be complete and ready for final acceptance as specified in the Contract Documents within 240 calendar days from the actual date when pursuant to Section 00700, General Conditions, Substantial Completion of the Work has been achieved.

Liquidated Damages. Owner and Contractor recognize that time is of the essence of this Agreement and that Owner will suffer financial loss if the Work is not completed within the times specified above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty) Contractor shall pay Owner one thousand and seventy dollars and no cents (\$1,070.00) for each day that expires after the time specified above for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse or fail to complete the remaining Work within the time specified above for completion and readiness for final payment or any proper extension thereof granted by Owner, Contractor shall pay one thousand and seventy dollars and no cents (\$1,070.00) for each day that expires after the time specified above for completion and readiness for final payment.

All time limits stated in the Contract Documents are of the essence of the Agreement.

ARTICLE 4 - CONTRACT PRICE

Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the amount determined pursuant to below:

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

_____ DOLLARS AND _____ CENTS
(written words)

\$ _____
(figures)

All specific cash allowances are included in the above price and have been computed in accordance with paragraph 11.02 of the General Conditions.

ARTICLE 5 - PAYMENT PROCEDURES

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

Owner may deduct from each progress payment and final payment an amount equal to Owner's estimate of the liquidated damages then due or that would become due based on Owner's estimate of late completion of the Work, provided Contractor fails to submit and implement a written schedule recovery plan describing the cause of schedule slippage or delayed progress and the actions proposed and taken to recover schedule.

ARTICLE 6 - INTEREST

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

ARTICLE 7 - CONTRACTOR'S REPRESENTATIONS

In order to induce Owner to enter into this Agreement, Contractor makes the following representations:

Contractor has examined and carefully studied the Contract Documents (including the Addenda listed in paragraph 8) and the other related data identified in the Bidding Documents including "technical data."

Contractor has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance or furnishing of the Work.

Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.

Contractor has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in paragraph 4.02 of the General Conditions. Contractor accepts the determination set forth in Article 4 of the General Conditions of the extent of the "technical data" contained in such reports and drawings upon which Contractor is entitled to rely. Contractor acknowledges that such reports and drawings are not Contract Documents and may not be complete for Contractor's purposes. Contractor acknowledges that Owner and Design Professional do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Contract Documents with respect to Underground Facilities at or contiguous to the site. Contractor has obtained and carefully studied

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

Contractor is aware of the general nature of Work to be performed by Owner and others at the site that relates to the Work as indicated in the Contract Documents.

Contractor has correlated the information known to Contractor, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.

Contractor has given Design Professional written notice of all conflicts, errors, ambiguities or discrepancies that Contractor has discovered in the Contract Documents and the written resolution thereof by Design Professional is acceptable to Contractor, and the Contract Documents are sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

ARTICLE 8 - CONTRACT DOCUMENTS

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

- This Agreement (pages 00500-1 to 00500-5, inclusive), fully executed by Owner and Contractor.
- Addenda numbers ___ to ___, inclusive.
- Performance Bond (page 00610-1) and Payment Bond (page 00620-1).
- Notice to Proceed.
- Change orders.
- Contractor's Bid Package (Sections 00300 thru 00370).
- Supplementary Conditions (pages 00800-1, inclusive).
- General Conditions (pages 00700-1 to 00700-51, inclusive).
- Specifications bearing the following general title and consisting of Divisions 1 through 13 and pages listed in table of contents therein:
- 2017 PVC-Lined Concrete Sanitary Sewer Rehabilitation, Volume 2 of 3.
- Drawings bearing the following general title and consisting of a cover sheet and sheets listed in the Index of Drawings therein.

- 2017 PVC-Lined Concrete Sanitary Sewer Rehabilitation, Volume 3 of 3.
- Insurance Policies

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

- All Written Amendments and other documents amending, modifying or supplementing the Contract Documents pursuant to paragraphs 3.06 of the General Conditions.
- The documents listed in paragraphs 8.2 et seq. above are attached to this Agreement (except as expressly noted otherwise above).

There are no Contract Documents other than those listed above in this Article 8. The Contract Documents may only be amended, modified or supplemented as provided in paragraphs 3.06 of the General Conditions.

ARTICLE 9 - MISCELLANEOUS

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

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

Owner and Contractor each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.

Any provision or part of the Contract Documents held to be void or unenforceable under any Law of Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

ARTICLE 10 - CITY OF PHOENIX EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENT

1.1 See Section 00100-14 - Instructions to Bidders

ARTICLE 11 - SBE UTILIZATION GOAL

See Section 350-1 – Small Business Enterprise Goal Clause and Forms

IN WITNESS WHEREOF, this Agreement has been duly executed by the parties herein named, on the date and year first above written.

The Contractor agrees that this Contract, as awarded, is for the stated work and understands that payment for the total work will be made on the basis of the indicated amount(s), as bid in the Proposal.

**2017 PVC Lined Concrete Sanitary Sewer Rehabilitation
WS90500272**

**BASE BID
TOTAL CONTRACT AMOUNT**

**\$«BaseBidAmount»
\$«ContractAmountInFigures»**

CITY OF PHOENIX,
an Arizona municipal corporation
Jeffrey Barton, City Manager

FIRM NAME,
a/an [enter State] [Enter Business Type]

By: _____
Eric J. Froberg, PE, City Engineer

By: _____
Name of Signatory, Title

ATTEST:

City Clerk

APPROVED AS TO FORM;
JULIE M. KRIEGH, City Attorney

By: _____

BOND NO. _____

PREMIUM: \$ _____

SECTION 00600 – BOND FORMS

<u>Subject</u>	<u>Page</u>
Performance Bond	00610-1
Payment Bond	00620-1

BOND NO. _____

PREMIUM: \$ _____

**STATUTORY PERFORMANCE BOND
PURSUANT TO TITLE 34, CHAPTER 6
OF THE ARIZONA REVISED STATUTES**

(Penalty of this bond must be 100% of the Contract Amount)

KNOW ALL MEN BY THESE PRESENT, that, _____, (hereinafter called the Principal), as Principal, and _____, a corporation organized and existing under the laws of the State of _____, with its principal office in the City of _____, (hereinafter called the Surety), as Surety, are held and firmly bound unto the City of Phoenix in the County of Maricopa, State of Arizona, (hereinafter called the Obligee), in the amount of _____ **DOLLARS, (\$ _____)**, for the payment thereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these present.

WHEREAS, the Principal has entered into a certain written contract with the Obligee, dated the «**City Clerk Date WSuffix**» day of «**CouncilActionDateMonth**», «**CouncilActionDateYear**», for **2017 PVC Lined Concrete Sanitary Sewer Rehabilitation WS90500272**, for 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 said Principal shall faithfully perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said Contract during the original term of said Contract any extension thereof, with or without notice to the Surety, and during the life of any guaranty required under the Contract, and shall also perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any all duly authorized modifications of said Contract that may hereafter be made, notice of which modifications to the Surety being hereby waived; then the above obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Title 34, Chapter 6, of the Arizona Revised Statutes, and all liabilities on this Bond shall be determined in accordance with the provisions of said Title, Chapter, and Article, to the extent as if it were copied at length herein.

THE prevailing party in a suit on this Bond shall be entitled to such reasonable attorney's fees as may be fixed by a judge of the Court.

WITNESS our hands this _____ day of _____, 20____

PRINCIPAL

SEAL

AGENT OF RECORD

By: _____

AGENT ADDRESS

SURETY

SEAL

TELEPHONE NUMBER

A.M. BEST RATING:

By: _____

ATTORNEY-IN-FACT

By: _____

AGENT

BOND NO. _____

PREMIUM: \$ _____

**LABOR AND MATERIALS BOND
STATUTORY PAYMENT BOND PURSUANT TO
TITLE 34, CHAPTER 6, OF THE ARIZONA REVISED STATUTES
(Penalty of this Bond must be 100% of the Contract Amount)**

KNOW ALL MEN BY THESE PRESENT, that, _____, (hereinafter called the Principal), as Principal, and _____, a corporation organized and existing under the laws of the State of _____, with its principal office in the City of _____, (hereinafter called the Surety), as Surety, are held and firmly bound unto the City of Phoenix in the County of Maricopa, State of Arizona, (hereinafter called the Obligee), in the amount of _____ **DOLLARS, (\$_____)**, for the payment thereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these present.

WHEREAS, the Principal has entered into a certain written contract with the Obligee, dated the «**City Clerk Date WSuffix**» day of «**CouncilActionDateMonth**», «**CouncilActionDateYear**», for **2017 PVC Lined Concrete Sanitary Sewer Rehabilitation WS90500272**, for 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 said Principal shall promptly pay all moneys due to all persons supplying labor or materials to him or his subcontractors in the prosecution of the work provided for in said contract, then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Title 34, Chapter 6, of the Arizona Revised Statutes, and all liabilities on this Bond shall be determined in accordance with the provisions of said Title, Chapter, and Article, to the extent as if it were copied at length herein.

THE prevailing party in a suit on this Bond shall be entitled to such reasonable attorney's fees as may be fixed by a judge of the Court.

WITNESS our hands this _____ day of _____, 20____

PRINCIPAL SEAL

AGENT OF RECORD

By: _____

AGENT ADDRESS

SURETY SEAL

TELEPHONE NUMBER

A.M. BEST RATING:

By: _____
ATTORNEY-IN-FACT

By: _____
AGENT

SECTION 00700 - GENERAL CONDITIONS

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ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

1.01.A Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1.01.A.1 Addenda - Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

1.01.A.2 Agreement - The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.

1.01.A.3 Application for Payment - The form acceptable to Design Professional which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

1.01.A.4 Asbestos - Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

1.01.A.5 Bid - The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

1.01.A.6 Bidder - The individual or entity who submits a proposal directly to Owner.

1.01.A.7 Bidding Documents - The Bidding Requirements and the proposed Contract Documents (including all Addenda).

1.01.A.8 Bidding Requirements - The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.

1.01.A.9 Bonds - Performance and Payment bonds and other instruments of security.

1.01.A.10 Change Order - A document recommended by Design Professional which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

1.01.A.11 Claim - An assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, and other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

1.01.A.12 Contract - The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

1.01.A.13 Contract Documents - Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

1.01.A.14 Contract Price - The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).

1.01.A.15 Contract Times - The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any, (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Design Professional's written recommendation of final payment.

1.01.A.16 Contractor - The individual or entity with whom Owner has entered into the Agreement.

1.01.A.17 Contractor's Contingency - means a fund to cover cost growth during the Project used at the discretion of the Contractor usually for costs that result from Project circumstances. The amount of the Contractor's Contingency is negotiated as a separate line item in each JOA proposal.

1.01.A.18 Cost of the Work - See Paragraph 11.01 for definition. Cost of the Work does not equal Contract Price or adjusted Contract Price.

GENERAL CONDITIONS

1.01.A.19 Design Professional – The individual or entity named as such in the Agreement

1.01.A.20 Design Professional's Consultant - An individual or entity having a contract with Design Professional to furnish services as Design Professional's independent professional associate or consultant with respect to the Project and who is identified as such in the Supplementary Conditions.

1.01.A.21 Drawings - That part of the Contract Documents prepared or approved by Design Professional which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

1.01.A.22 Effective Date of the Agreement - The date indicated in the Agreement on which it becomes effective.

1.01.A.23 Engineer - May be used interchangeably with Design Professional

1.01.A.24 Field Order - A written order issued by Design Professional which requires minor changes in the Work, but which does not involve a change in the Contract Price or the Contract Times.

1.01.A.25 General Conditions Costs – Includes, but not limited to, the following types of costs for the Contractor during the construction phase: payroll costs for project manager or construction manager but not both 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.), 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 the Contractor or Subcontractors, taxes on the Work and for which the Contractor is liable, fees for permits and licenses. Certain limitations and exclusions related to Changes are described in the General Conditions for the construction phase.

1.01.A.26 General Requirements - Sections of Division 1 of the Specifications.

1.01.A.27 Hazardous Environmental Condition - The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Substance, or

Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.

1.01.A.28 Hazardous Substance - any material, whether solid, semi - solid, liquid or gas, which, if not stored and/or used properly, may cause harm or injury to persons through inhalation, ingestion, absorption or injection, or which may negatively impact the environment through the use or discharge of the material on the ground, in the water (including groundwater), or to the air.

1.01.A.29 Hazardous Waste - The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

1.01.A.30 Laws and Regulations; Laws or Regulations - Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

1.01.A.31 Milestone - A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

1.01.A.32 Notice of Award - The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the condition's precedent listed therein, Owner will sign and deliver the Agreement.

1.01.A.33 Notice to Proceed - A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.

1.01.A.34 Owner - The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.

1.01.A.35 Owner's Contingency - means a fund to cover cost growth during the Project used at the discretion of the City usually for costs that result from City directed changes or differing/unforeseen site conditions. Owner's Contingency applies to conditions that are unanticipated and may be referred to as "unknown unknowns". The amount of the Owner's Contingency is set by the City and is in the Contract Price.

1.01.A.36 PCBs - Polychlorinated biphenyls.

1.01.A.37 Petroleum - Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure

CITY OF PHOENIX: Water Services Department
PROJECT NAME: 2017 PVC Lined Concrete Sanitary Sewer Rehabilitation
PROJECT NUMBER: WS90500272

GENERAL CONDITIONS

(60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

1.01.A.38 Progress Schedule - A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

1.01.A.39 Project - The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

1.01.A.40 Radioactive Material - Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

1.01.A.41 Related Entity - An officer, director, partner, employee, agent, consultant, or Subcontractor.

1.01.A.42 Resident Project Representative - The authorized representative of Design Professional who may be assigned to the Site or any part thereof.

1.01.A.43 Samples - Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work, and which establish the standards by which such portion of the Work will be judged.

1.01.A.44 Schedule of Submittals - A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.

1.01.A.45 Schedule of Values - A schedule, prepared and maintained by Contractor, which divides the Contract Price into pay items, such that the sum of all pay items equals the Contract Price for the Work, or for any portion of the Work having a separate specified Contract Price.

1.01.A.46 Shop Drawings - All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

1.01.A.47 Site - Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights - of - way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.

1.01.A.48 Specifications - That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.

1.01.A.49 Subcontractor - An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

1.01.A.50 Substantial Completion - The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Design Professional, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

1.01.A.51 Successful Bidder - The Bidder submitting a responsive Bid to whom Owner makes an award.

1.01.A.52 Supplementary Conditions - That part of the Contract Documents which amends or supplements these General Conditions.

1.01.A.53 Supplier - A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or Subcontractor.

1.01.A.54 Total Float - Number of calendar days by which the Work or any part of the Work may be delayed without necessarily extending a pertinent Contract Time.

1.01.A.55 Underground Facilities - All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

1.01.A.56 Unit Price Work - Work to be paid for on the basis of unit prices.

1.01.A.57 Warranty Period – Period for which Contractor is responsible for correction of defective Work as defined in Paragraph 13.07.

1.01.A.58 Work - The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

1.01.A.59 Work Change Directive - A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Design Professional ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.01.A.60 Written Amendment - A written amendment of the Contract Documents, signed by Owner and Contractor on or after the Effective Date of the Agreement and normally dealing with the non-engineering or nontechnical rather than strictly construction related aspects of the Contract Documents.

1.02 Terminology

1.02.A The words and terms discussed in Paragraph 1.02B through G are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

1.02.B Intent of Certain Terms or Adjectives:

1.02.B.1 The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Design Professional. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Design Professional as to the Work. It is intended that such exercise of professional judgment, action

or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Design Professional any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

1.02.C Day:

1.02.C.1 The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

1.02.D Defective:

1.02.D.1 The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:

1.02.D.1.a does not conform to the Contract Documents; or

1.02.D.1.b does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

1.02.D.1.c has been damaged prior to Design Professional’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

1.02.E Furnish, Install, Perform, Provide:

1.02.E.1 The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

1.02.E.2 The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

1.02.E.3 The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

1.02.E.4 When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.

1.02.F Unless stated otherwise in the Contract Documents, words or phrases that have a well - known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

1.02.G Shall, Will

1.02.G.1 The words “shall” and “will” are used interchangeably to express what is mandatory.

ARTICLE 2 - PRELIMINARY MATTERS

2.01 Delivery of Bonds and Evidence of Insurance

2.01.A When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

2.01.B Evidence of Insurance: Before any Work at the Site is started, Contractor shall deliver to Owner, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance which Contractor is required to purchase and maintain in accordance with Article 5.

2.02 Copies of Documents

2.02.A Owner shall furnish to Contractor one reproducible copy of the Drawings and Specifications. Additional copies will be furnished upon request at the cost of reproduction.

2.03 Commencement of Contract Times; Notice to Proceed

2.03.A The Contract Times will commence to run on the day indicated in the Notice To Proceed. A Notice To Proceed may be given at any time within ninety (90) days after the Effective Date of the Agreement.

2.04 Starting the Work

2.04.A Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 Before Starting Construction

2.05.A Preconstruction Conference: A conference attended by Contractor, Design Professional, Owner and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in the General Requirements, procedures for handling Shop Drawings and other submittals, processing Applications for Payment and maintaining required records.

2.05.B Designation of Authorized Representatives: At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.06 Dust Control and Prevention

2.06.A To facilitate and encourage strict compliance with the Maricopa County Air Pollution Control Regulations pertaining to fugitive dust control, Contractor shall submit the following documentation to the Project Manager at the pre-construction conference prior to conducting any earth moving or dust generating activities under the Contract.

2.06.A.1 Copy of a valid Maricopa County Earth Moving (Dust Control) Permit applicable to the Work or services under the Contract.

2.06.A.2 Copy of the Dust Control Plan applicable to the Work or services under the Contract.

2.06.A.3 Documentation that all of Contractor's on-site project managers have received the Comprehensive or Basic dust control training as required by Maricopa County Rule 310 based on project disturbed acres.

2.06.B For construction sites where:

2.06.B.1 5-acres or more are disturbed, Contractor shall designate and identify to the City an individual who has completed the dust control training set forth in Section 2 above as the site Dust Control Coordinator. The Dust Control Coordinator shall be present on-site all times that earth moving or dust generating activities are occurring and until all ground surfaces at the site have been stabilized.

2.06.B.2 less than 1-acre is disturbed, the Contractor shall designate an individual who has completed Basic Training to be on site at all times

that earth moving or dust generating activities are occurring.

2.06.C Contractor shall notify the Project manager within twenty-four (24) hours of any inspection, Notice of Violation, or other contact by the Maricopa County Air Quality Department with it or any of its subcontractors regarding the Work or services under the Contract. A copy of any written communications, notices or citations issued to Contractor or any of its subcontractors regarding the work or services under the Contract shall likewise be transmitted to the Project Manger within twenty-four (24) hours.

2.06.D The Contractor shall prevent any dust nuisance due to construction operations in accordance with MAG Specifications, Section 104.1.3, Cleanup and Dust Control. The Contractor shall use a power pick-up broom as part of the dust control effort. No separate measurement or payment will be made for cleanup or dust control, or for providing a power pick-up broom on the job.

2.06.E The Contractor may be instructed by the Design Professional to provide additional pavement cleaning (in parking lots, or other locations) above and beyond the normal expected cleanup and dust control required by MAG Section 104.1.3. If requested by the Design Professional, Contractor shall clean the requested areas with a power pick-up broom.

2.06.F Use of the power pick-up broom in the special requested areas only, shall be measured and paid for on an hourly basis under the bid item, "Power Broom". The number of hours listed in the bid proposal is only an estimate. Actual hours requested for this project may vary.

2.06.G Contractor agrees to indemnify and reimburse Owner for any fine, penalty, fee or monetary sanction imposed on Owner by Maricopa County arising out of or caused by the performance of Work or services under the Contract. Contractor shall remit payment of the reimbursable sum to the City within thirty (30) days of being presented with a demand for Payment from Owner.

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

3.01 Intent

3.01.A The Contract Documents are complementary; what is required by one is as binding as if required by all.

3.01.B 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 reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for at no additional cost to Owner.

3.01.C Clarifications and interpretations of the Contract Documents shall be issued by Design Professional as provided in Article 9.

3.02 Reference Standards

3.02.A Standards, Specifications, Codes, Laws, and Regulations

3.02.A.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, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

3.02.A.2 No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or responsibilities of Owner, Contractor, or Design Professional, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, or Design Professional, or any of their Related Entities, 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.

3.03 Reporting and Resolving Discrepancies

3.03.A Reporting Discrepancies

3.03.A.1 Contractor's Review of Contract Documents Before Starting Work: Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Design Professional any conflict, error, ambiguity, or discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from Design Professional before proceeding with any Work affected thereby.

3.03.A.2 Contractor's Review of Contract Documents During Performance of Work: If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) any standard, specification, manual, or code, or (c) any instruction of any Supplier, then Contractor shall promptly report it to Design Professional in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.06.

3.03.A.3 Contractor shall not be liable to Owner or Design Professional for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor knew or reasonably should have known thereof.

3.03.B Resolving Discrepancies

3.03.B.1 Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

3.03.B.1.a the provisions of any standard, specification, manual, or code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

3.03.B.1.b the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

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

3.05 References made on the Plans and in the Specifications to Maricopa Association of Governments (MAG) Standards Details and Specifications are for information only. Any references made to the MAG General Provisions by these details and specifications are not applicable to this Project. The General Conditions and Supplementary Conditions as described in the Contract Documents are applicable.

3.06 Amending and Supplementing Contract Documents

3.06.A The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by:

3.06.A.1 a formal Written Amendment,

3.06.A.2 a Change Order, or

3.06.A.3 a Work Change Directive.

3.06.B The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

3.06.B.1 A Field Order;

3.06.B.2 Design Professional's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17); or

3.06.B.3 Design Professional's written interpretation or clarification.

3.07 Reuse of Documents

3.07.A Contractor and any Subcontractor or Supplier or other individual or entity performing or furnishing all of the Work under a direct or indirect contract with Contractor, shall not:

3.07.A.1 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 Design Professional or its consultants, including electronic media editions; or

3.07.A.2 reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Design Professional and specific written verification or adaptation by Design Professional.

3.07.B The prohibitions of this Paragraph 3.07 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor

from retaining copies of the Contract Documents for record purposes.

3.08 Electronic Data

3.08.A Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Design Professional to Contractor or by Contractor to Owner or Design Professional, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

3.08.B Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60 - day acceptance period will be corrected by the transferring party.

3.08.C When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

3.09 Data Confidentiality

3.09.A "Data" means all information, whether written or verbal, including plans, 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 Contractor or its subcontractors in the performance of this Contract.

3.09.B The parties agree that all data, regardless of form, including originals, images, and reproductions, prepared by, obtained by, or transmitted to the Contractor or its subcontractors in connection with the Contractor's or its subcontractor's performance of this Contract is confidential and proprietary information belonging to the City.

3.09.C Except as specifically provided in this Contract, the Contractor or its subcontractors shall not divulge data to any third party without prior written consent of the City. The Contractor or its subcontractors shall not use the data for any purposes except to perform the services required under this Contract. These prohibitions shall not apply to the following data provided the Contractor or its subcontractors have first given the required notice to the City:

3.09.C.1 Data which was known to the Contractor or its subcontractors prior to its performance under this Contract unless such data was acquired in connection with work performed for the City;

3.09.C.2 Data which was acquired by the Contractor or its subcontractors in its performance under this Contract and which was disclosed to the Contractor or its subcontractors by a third party, who to the best of the Contractor's or its subcontractor's knowledge and belief, had the legal right to make such disclosure and the Contractor or its subcontractors are not otherwise required to hold such data in confidence; or

3.09.C.3 Data which is required to be disclosed by virtue of law, regulation, or court order, to which the Contractor or its subcontractors are subject.

3.09.D 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 the City, the Contractor shall first notify the City as set forth in this section of the request or demand for the data. The Contractor or its subcontractors shall give the City sufficient facts so that the City can be given an opportunity to first give its consent or take such action that the City may deem appropriate to protect such data or other information from disclosure.

3.09.E The Contractor, unless prohibited by law, within ten calendar days after completion of services for a third party on real or personal property owned or leased by the City, the Contractor or its subcontractors shall promptly deliver, as set forth in this section, a copy of all data to the City. All data shall continue to be subject to the confidentiality agreements of this Contract.

3.09.F The Contractor or its subcontractors assume all liability for maintaining the confidentiality of the data in its possession and agrees to compensate the City if any of the provisions of this

section are violated by the Contractor, its employees, agents or subcontractors. Solely for the purposes of seeking injunctive relief, it is agreed that a breach of this section shall be deemed to cause irreparable harm that justifies injunctive relief in court. Contractor agrees that the requirements of this Section shall be incorporated into all subcontracts entered into by Contractor. A violation of this Section may result in immediate termination of this Contract without notice.

3.10 Personal Identifying Information - Data Security

3.10.A Personal identifying information, financial account information, or restricted City information, whether electronic format or hard copy, must be secured and protected at all times. At a minimum, Contractor must encrypt and/or password protect electronic files. This includes data saved to laptop computers, computerized devices or removable storage devices.

3.10.B When personal identifying information, financial account information, or restricted City information, regardless of its format, is no longer necessary, the information must be redacted or destroyed through appropriate and secure methods that ensure the information cannot be viewed, accessed, or reconstructed.

3.10.C In the event that data collected or obtained by Contractor or its subcontractors in connection with this Contract is believed to have been compromised, Contractor or its subcontractors shall immediately notify the Project Manager and City Engineer. Contractor agrees to reimburse the City for any costs incurred by the City to investigate potential breaches of this data and, where applicable, the cost of notifying individuals who may be impacted by the breach.

3.10.D Contractor agrees that the requirements of these Paragraphs 3.09 and 3.10 shall be incorporated into all subcontracts entered into by Contractor. It is further agreed that a violation of this Section shall be deemed to cause irreparable harm that justifies injunctive relief in court. A violation of this Section may result in immediate termination of this Contract without notice.

3.10.E Contractor shall indemnify, defend, save and hold harmless the City and its officers, officials, agents, and employees from and against any and all claims, actions, liabilities, damages, losses, or expenses (including court costs, attorneys' fees, and cost of claims processing, investigation and litigation) for any loss caused, or alleged to be caused, in whole or in part, by Contractor or any of

its owners', officers', directors', agents' or employees' failure to comply with the requirements of this Section. This indemnity includes any claim arising out of the failure of Contractor to conform to any federal, state or local law, statute, ordinance, rule, regulation or court decree.

3.10.F The obligations of Contractor or its subcontractors under these Paragraphs 3.09 and 3.10 shall survive the termination of this Contract.

ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 Availability of Lands

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

4.01.B Contractor shall obtain, at no increase in Contract Price or Contract Time, any additional lands, rights - of - way and easements that Contractor, in its sole discretion, requires for temporary facilities, ingress and egress, storage, disposal of spoil or waste material or any other purpose. Contractor shall obtain

4.01.B.1 all required permits from the U.S. Government, the State and any Political Subdivision or public utility with jurisdiction, and

4.01.B.2 permission by written agreement if private property. Contractor shall submit copies of all permits and written agreements to Owner.

4.02 Subsurface and Physical Conditions

4.02.A Reports and Drawings: The Supplementary Conditions identify:

4.02.A.1 those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and

4.02.A.2 those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

4.02.B Limited Reliance by Contractor on Technical Data Authorized: Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such

“technical data” is identified in the Supplementary Conditions. Except for such reliance on such “technical data,” Contractor may not rely upon or make any claim against Owner or Design Professional, or any of their Related Entities with respect to:

4.02.B.1 the completeness of such reports and drawings for Contractor’s purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or

4.02.B.2 other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

4.02.B.3 any Contractor interpretation of or conclusion drawn from any “technical data” or any such other data, interpretations, opinions, or information.

4.03 Differing Subsurface or Physical Conditions

4.03.A Notice: If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:

4.03.A.1 is of such a nature as to establish that any “technical data” on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or

4.03.A.2 is of such a nature as to require a change in the Contract Documents; or

4.03.A.3 differs materially from that shown or indicated in the Contract Documents; or

4.03.A.4 is of an unusual nature and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents; then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Design Professional in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

4.03.B Design Professional’s Review: After receipt of written notice as required by Paragraph 4.03.A, Design Professional will promptly review the pertinent condition, determine the necessity of

Owner’s obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Design Professional’s findings and conclusions.

4.03.C Possible Price and Times Adjustments

4.03.C.1 In accordance with Articles 11 and 12 of the General Conditions, an adjustment in the Contract Price or in the Contract Times, or both, will be allowed to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor’s cost of, or time required for performance of, the Work subject, however, to the following:

4.03.C.1.a such condition must meet any one or more of the categories described in Paragraph 4.03.A; and

4.03.C.1.b with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.

4.03.C.2 Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:

4.03.C.2.a Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or

4.03.C.2.b the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor’s making such final commitment; or

4.03.C.2.c Contractor failed to give the written notice as required by Paragraph 4.03.A.

4.03.C.3 If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner nor Design Professional, nor and any of their Related Entities shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or other dispute resolution costs) sustained by Contractor on or in

connection with any other project or anticipated project.

4.04 Archaeological Deposits:

4.04.A Archaeological monitoring may be required within the limits of the project during construction. The Contractor must coordinate all ground disturbing work with the archaeologist(s) and provide a current work schedule to facilitate the archaeologist's investigation and monitoring of all ground disturbing work within the area(s) of interest. When archaeological materials are discovered, the Contractor must stop work immediately within a 10-meter zone of the discovery, secure the area, and immediately notify the on-site archaeologist(s) who must then contact the City Archaeology Office (602-495-0901) or the Street Transportation Environmental Section at 602-534-3747, who will coordinate with the City Archaeology Office. The Contractor must not recommence work in the area of discovery until directed in writing by the City Archaeology Office.

4.04.B If suspected archaeological materials are discovered during construction without an archaeologist present, the Contractor must stop work immediately within a 10-meter zone of the discovery, secure the area, and immediately notify the City Archaeology Office (602-495-0901). The Contractor must not recommence work in the area of discovery until directed in writing by the City Archaeology Office.

4.04.C In 1990, the Arizona legislature amended two state laws (Arizona Antiquities Act & State Historic Preservation Act) that protect human burials and associated artifacts on both private and state land. As specified in these laws and rephrased below:

4.04.C.1 A person shall not knowingly excavate in or upon any historic or prehistoric archaeological site, except when acting as a duly authorized agent of an institution or corporation organized for scientific, research or land use planning purposes. [Arizona Revised Statute §41-841(A) - Archaeological Discoveries] Any person, institution or corporation violating any provision of this article is guilty of a class 2 misdemeanor. [A.R.S. §41-846 - Violation].

4.04.C.2 A person who knowingly excavates in violation of A.R.S. §41-841 is guilty of a class 5 felony pursuant to Arizona Criminal Code- Title 13. A second or subsequent violation under this subsection is a class 3 felony. [A.R.S. 17 .OJ - Excavating Certain Sites].

4.04.D A class 5 felony carries potential penalties of up to two years in prison. If a City of Phoenix (City) project may impact historic or pre-historic archaeological resources, the guidelines described above must be adhered to. Therefore, no subsurface disturbance activities related to this without having an archaeological consultant on-site prior to and during this project's ground disturbance activities.

4.04.E The City of Phoenix Office of the City Engineer is requesting that the Project Archaeological Requirements Acknowledgment Form is completed for all City sponsored or managed projects involving ground subsurface disturbance activities in areas that may include archaeological resources, as determined by the City of Phoenix Archaeology Office (CAO). If archaeological monitoring is required on a project, a City Archaeological Monitoring Acknowledgment form will be provided for your review and signature. The guidelines and the provisions in the Terms and Conditions of the Archaeological Monitoring Form must be followed as prescribed on the form and referenced above in this section. Penalties for non-compliance are detailed on the Archaeological Monitoring Form. Failure to comply with the requirements of this acknowledgment form and the City contract may constitute a breach of contract.

4.04.F If Contractor discovers archaeological sites or objects, Contractor may be allowed an adjustment of Contract Time(s) pursuant to Article 12. If Owner, with the advice of Design Professional, concludes that the Contract Documents require changes due to archaeological features, Owner shall, pursuant to Article 10 of the General Conditions, order any changes in the Work and corresponding adjustments in Contract Price required solely because of the archaeological features encountered.

4.05 Underground Facilities

4.05.A Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Design Professional by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

4.05.A.1 Owner and Design Professional shall not be responsible for the accuracy or completeness of any such information or data provided by others; and

4.05.A.2 the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

4.05.A.2.a reviewing and checking all such information and data;

4.05.A.2.b locating all Underground Facilities shown or indicated in the Contract Documents;

4.05.A.2.c coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and

4.05.A.2.d the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

4.05.B Not Shown or Indicated:

4.05.B.1 If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Design Professional. Design Professional will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

4.05.B.2 If Design Professional concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.06 Compliance with A.R.S. 40-360.21

4.06.A Owner shall comply in all respects with A.R.S. 40 - 360.21 et seq. as amended.

4.07 Reference Points

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

4.08 Hazardous Environmental Condition at Site

4.08.A Reports and Drawings: The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.

4.08.B Limited Reliance by Contractor on Technical Data Authorized: Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Design Professional, or any of their Related Entities with respect to:

4.08.B.1 the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or

4.08.B.2 other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

4.08.B.3 any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

4.08.C Contractor, Subcontractors, Manufacturers and Suppliers shall use, store, process, transfer, transport, dispose of and otherwise handle Hazardous Substances in accordance with applicable Rules and Regulations.

4.08.D Except as otherwise provided in the Technical Specifications, if Contractor encounters Hazardous Substances on-site (including, but not limited to Asbestos, polychlorinated biphenyls (PCBs), Petroleum products, radioactive products or materials used in the normal course of construction as paint thinners, solvents, gasoline, oil, etc.) which were neither shown in nor inferable from Contract Documents (or otherwise identified as part of the Work) and which may present substantial danger, Contractor shall immediately (a) stop all affected Work, (b) give verbal and written notice to Owner of the conditions, and (c) take appropriate health and safety precautions. Upon receipt of the notice, Owner will investigate the conditions. If the material is a Hazardous Substance which may present substantial danger, Owner shall stop the affected Work in writing. Except as otherwise provided in Paragraph 4.08.F, Owner shall arrange for removal or other appropriate handling of the Hazardous Substance by negotiating a change in the Work with Contractor, by separate contract with other contractors, or as Owner may otherwise deem expedient; in the alternative, Owner may terminate the Agreement or affected Work with Contractor for Owner's convenience.

4.08.E Once the Hazardous Substance has been removed or rendered harmless in accordance with Paragraph 4.08.D, the affected Work may be resumed as directed by Owner. Pursuant to A.R.S. Section 32.1129.03, and subject to Contractor's compliance with that Section and Paragraph 12.03.A, Contractor may be entitled to damages and time for delay attributable to the discovery of Hazardous Substances which interrupt the Work.

4.08.F Requirements for the Contractor's management of Hazardous Substances (materials) brought onto the construction site by Contractor are addressed in the General Requirements. If contamination occurs on-site due to (a) Contractor's violation(s) of Rules, Regulations or Contract Documents covering the use, storage, processing, transfer, transport, disposal or otherwise handling of any Hazardous Substances, or (b) any other cause within the control attributable to the fault or negligence of the Contractor, such as the spillage of chemicals, Contractor shall be responsible for all costs and time required to clean

up the Site and render harmless the Hazardous Substances to the satisfaction of Owner, the State and any political subdivision with jurisdiction. Immediately upon contamination of the Site, Contractor shall notify Owner's representative or designee. If Contractor fails to proceed with due diligence or act appropriately, Owner, in its sole discretion, shall have the right to act, and if it does so, Contractor shall defend, indemnify and hold Owner harmless from and against all claims, as provided in Paragraph 6.20.A arising out of or in any way resulting from Owner's action under this provision. If the Owner is cited and fined by any political subdivision with jurisdiction for the herein described actions of the Contractor, Contractor shall immediately reimburse Owner for the cost of such fines.

4.09 Materials Containing Asbestos

4.09.A Materials containing asbestos and/or lead in any form are unacceptable to incorporate into the Project unless formally accepted in writing by the Owner. This written approval shall take place prior to the material being incorporated into the project and/or brought to the site.

4.09.B Repair kits or touch-up materials, materials that include asbestos and/or lead introduced into the product at the factory or applied at the assembly plant are all unacceptable. Any and all field-applied products that are comprised of asbestos and/or lead containing materials are also unacceptable.

4.09.C If asbestos and/or lead are installed without written approval by Owner, Contractor will remove these materials at his expense and dispose of these materials in accordance with all State and Federal laws and pay for the supervision and reporting costs in addition to the cost to properly remove them.

ARTICLE 5 – BONDS AND INSURANCE

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

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therein, or (c) Contractor's continuing obligations under the Contract Documents. Failure to comply with these provisions will be cause for rejection of the bidder's proposal.

5.01.A Bonds shall be executed by surety company or companies holding a Certificate of Authority to transact surety business in the State of Arizona, issued by the Director of the Department of Insurance. A copy of the Certificate of Authority shall accompany the bonds. The certificate shall be made payable and acceptable to the City of Phoenix. The bonds shall 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, and the bonds shall have attached thereto a certified copy of Power of Attorney of the signing official. Personal or individual bonds are not acceptable.

5.01.B All bonds submitted for this project shall be provided by a company which has been rated "A- or better for the prior four quarters" by the A.M. Best Company.

5.02 If the surety on any Bond furnished by Contractor is declared a bankrupt or becomes insolvent or its right to do business is terminated in the State of Arizona or it ceases to meet the requirements of paragraph 5.01, Contractor shall within ten days thereafter substitute another Bond and surety, both of which must be acceptable to Owner.

5.03 Contractor's Insurance

5.03.A Contractor and subcontractors must procure insurance against claims that may arise from or relate to performance of the work hereunder by Contractor and its agents, representatives, employees and subconsultants. Contractor and subcontractors must maintain that insurance until all their obligations have been discharged, including any warranty periods under this Contract.

5.04 The Owner in no way warrants that the limits stated in this section are sufficient to protect the Contractor from liabilities that might arise out of the performance of the work under this Contract by the Contractor, its agents, representatives, employees, or subcontractors and Contractor may purchase additional insurance as they determine necessary.

5.05 Scope and Limits of Insurance

5.05.A Contractor must provide coverage with limits of liability not less than those stated below. An excess liability policy or umbrella liability policy may

be used to meet the liability limits provided that (1) the coverage is written on a "following form" basis, and (2) all terms under each line of coverage below are met.

5.05.A.1 **Commercial General Liability -**

General Aggregate	\$2,000,000
Products - Completed	\$1,000,000
Operations Aggregate	
Personal & Advertising Injury	\$1,000,000
Each Occurrence	\$1,000,000

5.05.A.1.a The policy must name the City of Phoenix as an additional insured with respect to liability for bodily injury, property damage and personal and advertising injury with respect to premises, ongoing operations, products and completed operations, and liability assumed under an insured contract arising out of the activities performed by, or on behalf of the Contractor, related to this Contract.

5.05.A.1.b Coverage must include XCU coverage.

5.05.A.1.c There shall be no endorsement or modification which limits the scope of coverage or the policy limits available to the City of Phoenix as an additional insured.

5.05.A.1.d City of Phoenix is an additional insured to the full limits of liability purchased by the Contractor.

5.05.A.1.e The Contractor's insurance coverage must be primary and non-contributory with respect to any insurance or self-insurance carried by the City.

5.05.A.1.f Contractor's policies must be endorsed to provide an extension of the completed operations coverage for a period of nine years.

5.05.A.2 **Automobile Liability -** Bodily injury and property damage for any owned, hired, and non-owned vehicles used in the performance of this Contract

Combined Single Limit (CSL)	\$1,000,000
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5.05.A.2.a The policy must be endorsed to include The City of Phoenix as an additional insured with respect to liability arising out of the activities performed by, or on behalf of the Contractor, related to this Contract

5.05.A.2.b City of Phoenix is an additional insured to the full limits of liability purchased by the Contractor

5.05.A.2.c The Contractor's insurance coverage must be primary and non-contributory with respect to any insurance or self-insurance carried by the City.

5.05.A.3 Workers' Compensation and Employers' Liability -

Workers' Compensation	Statutory
Employers' Liability	
Each Accident	\$100,000
Disease – Each Employee	\$100,000
Disease – Policy Limit	\$500,000

5.05.A.3.a Policy must contain a waiver of subrogation against the City of Phoenix.

5.05.A.3.b This requirement does not apply when a Contractor or Subcontractor is exempt under A.R.S. §23-902(E), **AND** when such contractor or subcontractor executes the appropriate sole proprietor waiver form.

5.05.A.4 (IF APPLICABLE) Builders' Risk Insurance - Policy must be in an amount equal to the initial Contract Amount plus additional coverage equal to Contract amount for all subsequent Change Orders.

5.05.A.4.a The City of Phoenix, the Contractor and Subcontractors, must be named Insureds on the policy.

5.05.A.4.b Special Causes of Loss coverage must be written on a replacement cost basis and must include coverage for soft costs, flood and earth movement.

5.05.A.4.c Coverage must be written on an all risk,

5.05.A.4.d Policy must be maintained until whichever of the following must first occur: (1) final payment has been made; or, (2) until no person or entity, other than the Owner, has an insurable interest in the property required to be covered.

5.05.A.4.e Policy must be endorsed such that the insurance must not be cancelled or lapse because of any partial use or occupancy by the Owner.

5.05.A.4.f Policy must provide coverage from the time any covered property becomes the responsibility of the Contractor, and continue without interruption during construction, renovation, or installation, including any time during which the covered property is being transported to the construction installation site, or awaiting installation, whether on or off site.

5.05.A.4.g Policy must contain a waiver of subrogation against the Owner.

5.05.A.4.h Contractor is responsible for the payment of all policy deductibles.

5.05.B Notice of Cancellation

5.05.B.1 For each insurance policy required by the insurance provisions of this Contract, the Contractor must provide to the City, within five business days of receipt, a notice if a policy is suspended, voided or cancelled for any reason. Such notice must be sent directly to the Owner's Project Manager listed in the Supplementary Conditions.

5.05.C Acceptability of Insurers

5.05.C.1 Insurance is to be placed with insurers duly licensed or authorized to do business in the State of Arizona and with an "A.M. Best" rating of not less than B+ VI. The Owner in no way warrants that the required minimum insurer rating is sufficient to protect the Contractor from potential insurer insolvency.

5.05.D Verification of Coverage

5.05.D.1 Contractor must furnish the Owner with certificates of insurance (ACORD form or equivalent approved by the Owner) as required by this Contract. The certificates for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf.

5.05.D.2 All certificates and any required endorsements are to be received and approved by the Owner before work commences. Each insurance policy required by this Contract must be in effect at or prior to commencement of work under this Contract and remain in effect for the duration of the Project. Failure to maintain the insurance policies as required by this Contract or to provide evidence of renewal is a material breach of the Contract.

5.05.D.3 All certificates required by this Contract must be sent directly to Design and Construction Procurement, 200 W. Washington Street, 5th Floor, Phoenix, AZ 85003. **The Contract Number, Project Number, and Project title must be noted on the certificate of insurance.** The Owner reserves the right to require complete, certified copies of all insurance policies required by this Contract, at any time. **DO NOT SEND CERTIFICATES OF INSURANCE TO THE OWNER'S RISK MANAGEMENT DIVISION.**

5.05.E Subcontractors

5.05.E.1 Contractor's certificates shall include all subcontractors as additional insureds under its policies **OR** Contractor shall be

responsible for ensuring and verifying that all subcontractors have valid and collectable insurance. At any time throughout the life of the contract, the City of Phoenix reserves the right to require proof from the Contractor that its subcontractors have insurance coverage. All subcontractors providing services included under this Contract's Scope of Services are subject to the insurance coverages identified above and must include the City of Phoenix as an additional insured. In certain circumstances, the Contractor may, on behalf of its subcontractors, waive a specific type of coverage or limit of liability where appropriate to the type of work being performed under the subcontract. Contractor assumes liability for all subcontractors with respect to this Contract.

5.05.F Approval

5.05.F.1 Any modification or variation from the insurance requirements and conditions must be documented by an executed contract amendment.

ARTICLE 6 – CONTRACTOR'S RESPONSIBILITIES

6.01 Supervision and Superintendence

6.01.A Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Design Professional in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.

6.01.B At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Design Professional except under extraordinary circumstances.

6.01.C All communications given to or received from the contractor's representative, designated pursuant to Paragraph 2.05.B, shall be binding on Contractor.

6.02 Labor; Working Hours

6.02.A Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by

the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

6.02.B Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Design Professional.

6.02.B.1 Regular working hours, unless specifically disallowed by Laws or Regulations, shall be between 6:00 a.m. and 7:00 p.m. from May 1st through September 30th and between 7:00 a.m. and 7:00 p.m. from October 1st through April 30th, not exceeding forty-five (45) hours per week. Contractor shall reimburse Owner for all additional costs resulting from Work performed outside regular working hours, which shall include (a) premium time charges of Design Professional and Owner, and (b) added costs assessed against or incurred by Owner which Contractor could reasonably foresee.

6.02.C The combined premium time charges of Design Professional and Owner shall be as defined in the Supplementary Conditions.

6.03 Services, Materials, and Equipment

6.03.A Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work.

6.03.B All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Design Professional, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

6.03.C All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in

accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 Progress Schedule

6.04.A Contractor shall adhere to the Progress Schedule developed and maintained by Contractor in accordance with the General Requirements.

6.04.B Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order or Written Amendment.

6.05 Substitutes and “Or-Equals”

6.05.A Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. If the specification or description contains or is followed by the words “or-equal”, other items of material or equipment or other Suppliers may be accepted by the Design Professional under circumstances stated in Paragraph 6.05.A.1 below. Requests for acceptance of “or-equal” items will be received by the Design Professional after Notice to Proceed has been issued.

6.05.A.1 “Or Equal” Items: If in Design Professional’s sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Design Professional as an “or equal” item, in which case review and approval of the proposed item may, in Design Professional’s sole discretion, be accomplished without compliance with some or all of the requirements for acceptance of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

6.05.A.1.a in the exercise of reasonable judgment Design Professional determines that:

6.05.A.1.a.1it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

6.05.A.1.a.2it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole; and

6.05.A.1.a.3it has a proven record of performance and availability of responsive service.

6.05.A.1.b Contractor certifies that, if approved and incorporated into the Work:

6.05.A.1.b.1there will be no increase in cost to the Owner or increase in Contract Times; and

6.05.A.1.b.2it will conform substantially to the detailed requirements of the item named in the Contract Documents.

6.05.B If the specification, description, list of acceptable equipment and/or Suppliers is not followed by the words “or-equal”, other equivalent equipment or Suppliers proposed by the Contractor will be reviewed as a “pre-approved equal” by the Design Professional only prior to the Bid date. The Instructions to Bidders describes the time schedule, procedure, and other requirements for application for “pre-approved equal” acceptance. Proposed “pre-approved equal” and “or-equal” items must be determined by the Design Professional to be equivalent as prescribed in Paragraph 6.05.A.1.

6.05.C If the Contractor proposes to use equipment, Supplier(s) or materials not equivalent to what is specified, Contractor must make an application to the Design Professional for approval of a substitute in accordance with Paragraph 6.05.C.3. Requests by the Contractor to use substitute items must be submitted to the Design Professional after the Notice to Proceed has been issued. Generally, a substitute will not be approved without a cost credit to the Owner. A substitute will be approved only through a Change Order.

6.05.C.1 Substitute Items: If in Design Professional’s sole discretion an item of material or equipment proposed by Contractor does not qualify as an “or equal” item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.

6.05.C.2 Contractor shall submit sufficient information as provided below to allow Design Professional to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Design Professional from anyone other than Contractor.

6.05.C.3 Contractor shall make written application to Design Professional for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

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6.05.C.3.a shall certify that the proposed substitute item will:

6.05.C.3.a.1 perform adequately the functions and achieve the results called for by the general design,

6.05.C.3.a.2 be similar in substance to that specified, and

6.05.C.3.a.3 be suited to the same use as that specified;

6.05.C.3.b will state:

6.05.C.3.b.1 the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time;

6.05.C.3.b.2 whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

6.05.C.3.b.3 whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;

6.05.C.3.c will identify:

6.05.C.3.c.1 all variations of the proposed substitute item from that specified, and

6.05.C.3.c.2 available engineering, sales, maintenance, repair, and replacement services; and

6.05.C.3.d shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.

6.05.D Substitute Construction Methods or Procedures: If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Design Professional. Contractor shall submit sufficient information to allow Design Professional, in Design Professional's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Design Professional will be similar to those provided in Paragraph 6.05.C.3.

6.05.E Design Professional's Evaluation: Design Professional will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.C. Design Professional may require Contractor to furnish additional data about the proposed substitute item. Design Professional will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Design Professional's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Design Professional will advise Contractor in writing of any negative determination.

6.05.E.1 The Design Professional will not accept any substitute item unless it yields a net savings to Owner and does not extend Contract Time(s), and seventy-five percent (75%) of the savings in Contract Price and reduction in Contract Time(s) are credited to Owner. The remaining twenty five percent (25%) of the net savings in Contract Price and/or reduction in Contract Time will be credited to Contractor. If, in Design Professional's judgment, acceptance of a substitute item will result in increased future costs to Owner for operation, maintenance, or replacement, the portion of the net savings in Contract Price which is to be credited to Contractor will be reduced by an amount equal to twenty five percent (25%) of the estimated present worth of such increased future costs to Owner.

6.05.F Special Guarantee: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

6.05.G Design Professional's Cost Reimbursement: Design Professional will record Design Professional's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A and 6.05.C Whether or not Design Professional approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the charges of Design Professional for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the charges of Design Professional for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

6.05.H Contractor's Expense: Contractor shall provide all data in support of any proposed substitute or "or equal" at Contractor's expense.

6.06 Concerning Subcontractors, Suppliers, and Others

6.06.A Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

6.06.B The identity of certain Subcontractors, Manufacturers, Suppliers, individuals or entities (including those who are to furnish the principal items of materials or equipment) are required to be submitted as specified in the Bid Documents for acceptance by Owner, and if Bidder has submitted a list thereof in accordance with Section 00330 (List of Major Subcontractors and Suppliers), Section 00331 (List of All Subcontractors and Suppliers) and Section 00340 (Schedule of Manufacturers and Suppliers of Major Equipment and Material Items), Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bid Documents or the Contract Documents) of any Subcontractor, Manufacturer, Supplier, individual or entity so identified may be revoked on the basis of reasonable objection after due investigation, in which case Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Design Professional to reject work.

6.06.C Contractor shall be fully responsible to Owner for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:

6.06.C.1 shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Design Professional and any such Subcontractor, Supplier or other individual or entity, nor

6.06.C.2 shall create any obligation on the part of Owner or Design Professional to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

6.06.D Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.

6.06.E Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Design Professional through Contractor.

6.06.F The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

6.06.G All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Design Professional. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in Article 5, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, Design Professional, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 Payments to Subcontractors and Suppliers

6.07.A Contractor Payment to Subcontractor or Supplier. Contractor shall pay its Subcontractors or Suppliers within seven (7) calendar days of receipt of each progress payment from the Owner. The Contractor shall pay for the amount of work performed or materials supplied by each Subcontractor or Supplier as accepted and approved by the Owner with each progress payment. In addition, any reduction of retention by the Owner to the Contractor shall result in a corresponding reduction to Subcontractors or Suppliers who have performed satisfactory work. Contractor shall pay Subcontractors or Suppliers the reduced retention within fourteen (14) calendar days of the payment of the reduction of the retention to the Contractor. No Contract between Contractor and its Subcontractors and Suppliers may materially alter the rights of any Subcontractor or Supplier to receive prompt payment and retention reduction as provided herein.

6.07.B **Prompt Payment:** If the Contractor fails to make payments in accordance with these provisions, the Owner may take any one or more of the following actions and Contractor agrees that the Owner may take such actions:

6.07.B.1 to hold the Contractor in default under this Agreement;

6.07.B.2 withhold future payments including retention until proper payment has been made to Subcontractors or Suppliers in accordance with these provisions;

6.07.B.3 reject all future Bids from the Contractor for a period not to exceed one year from Substantial Completion date of this Project; or

6.07.B.4 terminate Agreement.

6.07.C Alternative Dispute Resolution Between Contractor and Subcontractor or Supplier.

6.07.C.1 If Contractor's payment to a Subcontractor or Supplier is in dispute, Contractor and Subcontractor or Supplier agree to submit the dispute to any of one of the following dispute resolution processes within fourteen (14) calendar days from the date of any party gives notice to the others:

6.07.C.1.a binding arbitration;

6.07.C.1.b a form of alternative dispute resolution (ADR) agreeable to all parties or

6.07.C.1.c a City of Phoenix facilitated mediation.

6.07.C.2 When disputed claim is resolved through ADR or otherwise, the Contractor and

Subcontractor or Supplier agrees to implement the resolution within seven (7) calendar days from the resolution date.

6.07.D **Inspection and Audit.** Contractor, its subcontractors and suppliers shall comply with A.R.S. 35-214 and the Owner shall have all rights and remedies to inspect and audit the records and files of Contractor, subcontractor or supplier, as afforded the State of Arizona, in accordance with the provisions of A.R.S. Section 35-214.

6.07.D.1 Records of the Contractor's direct personnel payroll, bond expenses, and reimbursable expenses pertaining to this Project and records of accounts between the City and the Contractor must be kept on the basis of generally accepted accounting principles and must be made available to the City and its auditors for up to five years following Final Acceptance of the Project.

6.07.D.2 The City, its authorized representative, and/or any federal agency, reserves the right to audit the Contractor's records to verify the accuracy and appropriateness of all cost and pricing data, including data used to negotiate the Contract Documents and any Change Orders.

6.07.D.3 The City reserves the right to decrease the Contract Price and/or payments made on this Agreement and/or request reimbursement from the Contractor following final contract payment on this Agreement if, upon audit of the Contractor's records, the audit discloses the Contractor has provided false, misleading, or inaccurate cost and pricing data.

6.07.D.4 The Contractor shall include a similar provision in all of its contracts with Subcontractors and Suppliers providing services or supplying materials under the Contract Documents to ensure that the City, its authorized representative, and/or the appropriate federal agency has access to the Subcontractors and Suppliers records to verify the accuracy of all cost and pricing data.

6.07.D.5 The City reserves the right to decrease the Contract Price and/or payments made on this Agreement and/or request reimbursement from the Contractor following final contract payment on this Agreement if the above provision is not included in Subcontractors and Suppliers contracts, and one or more Subcontractors or Suppliers refuse to allow the City to audit their records to verify the accuracy and appropriateness of cost and pricing data.

6.07.D.6 If, following an audit of this Agreement, the audit discloses the Contractor has provided false, misleading, or inaccurate cost and pricing data, and the cost discrepancies exceed 1% of the total Agreement billings, the Contractor shall be liable for reimbursement of the reasonable, actual cost of the audit.

6.07.E **Non-Waiver.** Should the Owner fail or delay in exercising or enforcing any right, power, privilege, or remedy under this Section, such failure or delay shall not be deemed a waiver, release, or modification of the requirements of this Section or of any of the terms or provisions thereof.

6.07.F **Inclusion of Provisions in Subcontracts.** Contractor shall include these prompt payment provisions in every subcontract, including procurement of materials and leases of equipment for the Agreement.

6.07.G **No Third-Party Benefits or Rights.** Nothing contained in the Agreement is intended to benefit or confer any rights on any person or entity not a party to the Agreement, and no such person or entity, including but not limited to other Contractors, Subcontractors or Suppliers, may assert any claim, cause of action, or remedy against the Owner hereunder.

6.08 Patent Fees and Royalties

6.08.A Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of Owner or Design Professional its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

6.08.B To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Design Professional, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of

the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.09 Permits

6.09.A Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.10 Laws and Regulations

6.10.A Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Design Professional shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

6.10.B If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

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

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of explosives, including but not limited to all costs, delay and delay costs.

6.10.D Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10.E Fair Treatment of Workers

6.10.E.1 The Contractor shall keep fully informed of all Federal and State laws, County and City ordinances, regulations, codes and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any way affect the conduct of the work. He shall at all times observe and comply with all such laws, ordinances, regulations, codes, orders and decrees; this includes, but is not limited to Laws and Regulations ensuring fair and equal treatment for all employees and against unfair employment practices, including OSHA and Fair Labor Standards Act (FLSA). The Contractor shall protect and indemnify the Contracting Agency and its representatives against any claim or liability arising from or based on the violation of such, whether by himself or his employees.

6.10.F No Israel Boycott

6.10.F.1 By entering into this contract, the Engineer/Contractor certifies that they are not currently engaged in and agrees for the duration of the Contract to not engage in, a boycott of Israel.

6.10.G No Forced Labor of Ethnic Uyghurs

6.10.G.1 If this Contract requires Contractor (a company engaging in for-profit activity and having ten or more full-time employees) to acquire or dispose of services, supplies, information technology, goods, or construction, then pursuant to Title 35, Chapter 2, Article 10 of the Arizona Revised Statutes Contractor must certify and agree that it and any contractors, subcontractors, or suppliers it utilizes do not and will not use the forced labor of ethnic Uyghurs in the People's Republic of China or any goods or services produced by such forced labor. Provided these statutory requirements are applicable, Contractor, by entering this Contract, now certifies it is not currently engaged in, and agrees for the duration of the Contract to not engage in, (a) the use of forced labor of ethnic

Uyghurs in the People's Republic of China; (b) the use of any goods or services produced by the forced labor of ethnic Uyghurs in the People's Republic of China; or (c) the use of any contractors, subcontractors, or suppliers that use the forced labor or any goods or services produced by the forced labor of ethnic Uyghurs in the People's Republic of China.

6.11 Use of Site and Other Areas

6.11.A Limitation on Use of Site and Other Areas

6.11.A.1 Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and as directed in the General Requirements. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

6.11.A.2 Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by other dispute resolution proceeding or at law.

6.11.A.3 To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Design Professional, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Design Professional, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

6.11.B Removal of Debris During Performance of the Work: During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

6.11.C Cleaning: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At

the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

6.11.D Loading Structures: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 Record Documents

6.12.A Contractor shall maintain record documents as indicated in the General Requirements.

6.13 Safety and Protection

6.13.A Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

6.13.A.1 all persons on the Site or who may be affected by the Work;

6.13.A.2 all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

6.13.A.3 other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

6.13.B Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

6.13.C Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

6.13.D Contractor shall inform Owner and Design Professional of the specific requirements of Contractor's safety program with which Owner's and Design Professional's employees and representatives must comply while at the site.

6.13.E All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Design Professional, or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

6.13.F Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Design Professional has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.D that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 Safety Representative

6.14.A Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.14.B The safety representative will also be qualified to manage the hazardous materials management requirements described in the General Requirements.

6.15 Hazard Communication Programs

6.15.A Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations. This also

applies to the hazardous materials management requirements described in the General Requirements.

6.15.B Contractor shall contact the Owner's Environmental Health and Safety (EHS) Specialist at the Site where Work is to be performed to obtain information regarding the EHS policies and participate in any required training. Contractor shall comply with all EHS policies in effect during the performance of its Work.

6.16 Emergencies

6.16.A In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Design Professional prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Design Professional determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 Shop Drawings and Samples

6.17.A Unless otherwise indicated in the General Requirements, Contractor shall submit Shop Drawings and Samples to Design Professional, for review and approval. Procedures for submittal, review, approval and resubmittal of Shop Drawings, Samples and other submittals are detailed in the General Requirements.

6.17.B Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Design Professional's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

6.17.B.1 Technical submittal(s) consisting of drawings and specifications involving architecture, professional engineering, land surveying or landscape architecture, as defined in A.R.S. Title 32, shall be prepared by or under the direct supervision of a registrant within the specific category involved.

6.17.B.2 Submittal(s) are not Contract Documents. Technical submittal(s) are intended to demonstrate how Contractor intends to conform with the design concept of the Project and the information given in the Contract Documents.

6.17.C Design Professional's Review

6.17.C.1 Design Professional's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

6.18 Continuing the Work

6.18.A Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 Contractor's General Warranty and Guarantee

6.19.A Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Design Professional and its Related Entities shall be entitled to rely on representation of Contractor's warranty and guarantee.

6.19.B Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

6.19.B.1 abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

6.19.B.2 normal wear and tear under normal usage.

6.19.C Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

6.19.C.1 observations by Design Professional;

6.19.C.2 recommendation by Design Professional or payment by Owner of any progress or final payment;

6.19.C.3 the issuance of a certificate of Substantial Completion by Design Professional or any payment related thereto by Owner;

6.19.C.4 use or occupancy of the Work or any part thereof by Owner;

6.19.C.5 any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Design Professional;

6.19.C.6 any inspection, test, or approval by others; or

6.19.C.7 any correction of defective Work by Owner.

6.19.C.8 expiration of the correction period pursuant to Paragraph 13.07.

6.20 Defense and Indemnification

6.20.A To the maximum extent allowed by law, including Title 34 A.R.S., Contractor ("Indemnitor") agrees to defend, indemnify, and hold harmless the City of Phoenix and its officers, officials (elected or appointed), agents and employees (and any jurisdiction or agency issuing permits for any work included in the project, and its officers, agents and employees) ("Indemnitee") from any and all claims, actions, liabilities, damages, losses or expenses, (including but not limited to court costs, attorney fees, expert fees, and costs of claim processing, investigation and litigation) of any nature or kind whatsoever ("Losses") caused or alleged to be caused, in whole or in part, by the wrongful, negligent or willful acts, or errors or omissions of Indemnitor or any of its owners, officers, directors, members, managers, agents, employees, or subcontractors (Indemnitor's Agents") arising out of or in connection with this Contract. This defense and indemnity obligation includes holding Indemnitee harmless for any Losses or other amount arising out of or recovered under any state's workers' compensation law or arising out of the failure of Indemnitor or Indemnitor's Agents to conform to any federal, state or local law, statute, ordinance, rule, regulation, or court decree. Indemnitor's duty to defend Indemnitee accrues immediately at the time a claim is threatened or a claim is made against Indemnitee, whichever is first. Indemnitor's duty to defend exists regardless of whether Indemnitor is ultimately found liable. Indemnitor must indemnify Indemnitee from and against any and all Losses, except where it is proven that those Losses are solely as a result of Indemnitee's own negligent or willful acts or omissions. Indemnitor is responsible for primary loss investigation, defense and judgment costs

where this indemnification applies. In consideration of the City's award of this Contract, Indemnitor agrees to waive all rights of subrogation against Indemnitee for losses arising from or related to any work performed by Indemnitor or Indemnitor's Agents for the City of Phoenix under this Contract. The obligations of Indemnitor under this provision survive the termination or expiration of this Contract.

6.20.B Delegation of Professional Design Services

6.20.C Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.

6.20.D If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Design Professional will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Design Professional.

6.20.E Owner and Design Professional shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Design Professional have specified to Contractor all performance and design criteria that such services must satisfy.

6.20.F Pursuant to this Paragraph 6.21, Design Professional's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Design Professional's review and approval of Shop Drawings and other submittals (except design calculations and design drawings)

will be only for the purpose stated in Paragraph 6.17.

6.20.G Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

6.21 Quality Control

6.21.A Contractor shall establish a quality control program:

6.21.A.1 to insure sufficient supervision, examination, inspection and testing of all items of Work at appropriate intervals, including those of Subcontractors and Suppliers; and

6.21.A.2 to control conformance to the applicable Specifications and Drawings with respect to identified products, workmanship, construction, maintenance while idle, finish and functional performance. At minimum Contractor's quality control program shall include checking, approval and coordination of submittal and oversight of all specified tests; and it shall specifically assign to responsible Contractor personnel the obligation to verify and inspect when complete all items of Work which cannot be later located or inspected without uncovering Work. Contractor shall accurately annotate data on the thus obtained record documents.

6.22. Off Duty Police Office Requirements

6.22.A. Off-duty police officers are required for construction projects as defined in the most recent edition of the City of Phoenix Traffic Barricade Manual and TRACS permit. The Contractor must competitively procure off-duty police with vendors who are Authorized Traffic Coordinators with the City of Phoenix Police Department or Phoenix Police Department off-duty detail. The following requirements must be included in the procurement:

6.22.A.2.a Hourly fees charged

6.22.A.2.b Administrative fees (administrative fees to be charged as a part of the hourly rate, not billed separately)

6.22.A.2.c Pay applications requesting reimbursement for Off Duty Police hours worked will be accompanied with itemized documentation indicating officer name, date worked, hours worked, time of day worked and location.

6.22.A.2.d For audit purposes, contractor's files will contain documentation from the successful off duty vendor that the above items are accounted for in the vendor's price proposal.

ARTICLE 7 - OTHER WORK AT THE SITE

7.01 Related Work at Site

7.01.A Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

7.01.A.1 written notice thereof will be given to Contractor prior to starting any such other work; and

7.01.A.2 if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.

7.01.B Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' Work with the written consent of Design Professional and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

7.01.C If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Design Professional in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 Coordination

7.02.A If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

7.02.A.1 the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

7.02.A.2 the specific matters to be covered by such authority and responsibility will be itemized; and

7.02.A.3 the extent of such authority and responsibilities will be provided.

7.02.B Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 Legal Relationships

7.03.A Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.

7.03.B Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's actions or inactions.

7.04 Mutual Duties and Responsibilities

7.04.A If Contractor causes damage to the Work or property of others, Contractor shall promptly attempt to settle with that party or otherwise resolve the claim. Contractor shall defend, indemnify and hold harmless Owner and Design Professional from and against all claims, as provided in Paragraph 6.20.A, arising out of or resulting from damage by Contractor to the Work or property of others or from Contractor's performance of the Work.

7.04.B If another party causes damage to the Work or property of Contractor, Contractor shall promptly attempt to settle with that party or otherwise resolve the claim. Contractor shall not begin any action against Owner or Design Professional, their consultants, agents or any of their directors, officers, shareholders, agents or employees, or permit any action against them to be maintained in Contractor's name or for Contractor's benefit in any court or tribunal, which action seeks to impose liability or recover damages from Owner or Design Professional for such claim.

7.04.C If Contractor becomes involved in settling or otherwise resolving claims with other persons

performing work under the circumstances covered in Paragraphs 7.04.A or 7.04.B, or because of any other similar controversy, including damage to the Work or other work or a dispute about responsibility for clean-up or any other issue, neither Owner, Design Professional, nor any of their respective consultants, directors, officers, stockholders, employees or agents will be involved in any way in such actions (unless subpoenaed). If Owner incurs costs contrary to the provisions of this Article, Contractor shall reimburse Owner for those costs.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.01 Communications to Contractor

8.01.A Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Design Professional.

8.02 Replacement of Individual or Entity

8.02.A In case of termination of the employment of Design Professional, Owner shall appoint a design professional to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Design Professional.

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

8.03 Furnish Data

8.03.A Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.04 Pay When Due

8.04.A Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.B and 14.07.E.1.

8.05 Lands and Easements; Reports and Tests

8.05.A Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.07. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and

tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

8.06 Change Orders

8.06.A **Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.**

8.07 Inspections, Tests, and Approvals

8.07.A Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.08 Limitations on Owner's Responsibilities

8.08.A The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.08.B Neither (a) Owner's authority to review Contractor's Progress Schedules (as set forth in Article 6), nor (b) Owner's decision to raise or not raise objections about Progress schedule submittal, shall create or impose any duty or responsibility on Owner to exercise any such authority or decision for the benefit of Contractor, any Subcontractor or Supplier or any other person.

8.08.C Neither (a) Owner's authority to review the required certificates and policies of insurance, nor (b) Owner's decision to object or not to object to the certificates or policies, shall create or impose any duty or responsibility on Owner to exercise any such authority or decision for the benefit of Contractor, any Subcontractor or Supplier or any other person.

8.09 Undisclosed Hazardous Environmental Condition

8.09.A Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.08.

8.10 Compliance with Safety Program

8.10.A While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed pursuant to Paragraph 6.13.D.

ARTICLE 9 - DESIGN PROFESSIONAL'S STATUS DURING CONSTRUCTION

9.01 Owner's Representative

9.01.A Design Professional will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Design Professional as Owner's representative during construction are set forth in the Contract Documents and will not be changed without written consent of Owner.

9.02 Visits to Site

9.02.A Design Professional will make visits to the Site at intervals appropriate to the various stages of construction as Design Professional deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Design Professional, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Design Professional will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Design Professional's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Design Professional will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

9.02.B Design Professional's visits and observations are subject to all the limitations on Design Professional's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Design Professional's visits or observations of Contractor's Work, Design Professional will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 Project Representative

9.03.A If Owner and Design Professional agree, Design Professional will furnish a Resident Project Representative to assist Design Professional in providing more extensive observation of the Work.

If Owner designates another representative or agent to represent Owner at the Site who is not Design Professional's consultant, agent or employee, they will be identified, and the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 Authorized Variations in Work

9.04.A Design Professional may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 Rejecting Defective Work

9.05.A Design Professional will have authority to reject Work which Design Professional believes to be defective, or that Design Professional believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Design Professional will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 Shop Drawings, Change Orders and Payments

9.06.A In connection with Design Professional's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

9.06.B In connection with Design Professional's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.

9.06.C In connection with Design Professional's authority as to Change Orders, see Articles 10, 11, and 12.

9.06.D In connection with Design Professional's authority as to Applications for Payment, see Article 14.

9.07 Determinations for Unit Price Work

9.07.A Design Professional will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Design Professional will review with Contractor the Design Professional's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Design Professional's written decision thereon will be final and binding (except as modified by Design Professional to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 Decisions on Requirements of Contract Documents and Acceptability of Work

9.08.A Design Professional will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Design Professional will issue such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as Design Professional may determine necessary, which shall be consistent with the intent of and reasonably inferable from Contract Documents. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Design Professional in writing within 30 days of the event giving rise to the question.

9.08.B Design Professional will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Design Professional's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.

9.08.C Design Professional's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08.D When functioning as interpreter and judge under this Paragraph 9.08, Design Professional will

not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 Limitations on Design Professional's Authority and Responsibilities

9.09.A Neither Design Professional's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Design Professional in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Design Professional shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Design Professional to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

9.09.B Design Professional will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Design Professional will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.09.C Design Professional will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

9.09.D Design Professional's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.C will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with the Contract Documents.

9.09.E The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to, the Resident Project Representative, if any, and assistants, if any.

9.10 Compliance with Safety Program

9.10.A While at the Site, Design Professional's employees and representatives shall comply with

the specific applicable requirements of Contractor's safety programs of which Design Professional has been informed pursuant to Paragraph 6.13.D

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

10.01 Authorized Changes in the Work

10.01.A Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, a Written Amendment, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

10.01.A.1 Contractor may propose modifications to the Work for the purpose of reducing the total cost of construction. Such a proposal shall be identified as an Alternatives Evaluation Proposal and shall be submitted in accordance with Article 6.7 of these General Conditions, "Substitutes and Or-Equal Items."

10.01.A.2 Owner may in its sole discretion accept or reject an Alternatives Evaluation Proposal. The Contract Price is not to be based on the anticipated approval of an Alternatives Evaluation Proposal.

10.01.A.3 If Owner determines that an Alternatives Evaluation Proposal is to be accepted, Contractor will be credited with 25% of the net savings in Contract Price, less certain costs as further defined in Article 6.7 of these General Conditions.

10.01.B If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.01.C No proposal or Claim by Contractor based on changes in the Work, differing site conditions, quantity variations or any other matter shall be allowed if made after final payment.

10.02 Unauthorized Changes in the Work

10.02.A Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an

emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.B.

10.03 Execution of Change Orders

10.03.A Owner and Contractor shall execute appropriate Change Orders recommended by Design Professional covering:

10.03.A.1 changes in the Work which are:

10.03.A.1.a ordered by Owner pursuant to Paragraph 10.01.A,

10.03.A.1.b required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or

10.03.A.1.c agreed to by the parties;

10.03.A.2 changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

10.03.A.3 changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Design Professional pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.03.B A Change Order duly signed by Owner and Contractor, without Contractor's reservation of the right to Claim additional adjustments in Contract Price or Contract Time, constitutes an all-inclusive settlement for all related changes and for all related direct, indirect, supplemental, consequential and cumulative costs and delays; Contractor's signature also constitutes a release and waiver of any and all rights to file a Claim based on the changes covered by the Change Order.

10.03.C A Change Order duly signed by Owner and Contractor, with Contractor's reservation of the right to Claim additional adjustments, shall become final and binding on Contractor, without consideration of the reservation, unless Contractor delivers to Owner written notice of Claim within thirty (30) days after Contractor signs that Change Order.

10.04 Notification to Surety

10.04.A If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 Claims

10.05.A Design Professional's Decision Required: All Claims, except those waived pursuant to Paragraph 14.08, shall be referred to the Design Professional for decision. A decision by Design Professional shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.

10.05.B Notice: Written notice stating the general nature of each Claim, shall be delivered by the claimant to Design Professional and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Design Professional and the other party to the Contract within 60 days after the start of such event (unless Design Professional allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Design Professional and the claimant within 30 days after receipt of the claimant's last submittal (unless Design Professional allows additional time).

10.05.C Design Professional's Action: Design Professional will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:

10.05.C.1 deny the Claim in whole or in part;

10.05.C.2 approve the Claim; or

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10.05.C.3 notify the parties that the Design Professional is unable to resolve the Claim if, in the Design Professional's sole discretion, it would be inappropriate for the Design Professional to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.

10.05.D In the event that Design Professional does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

10.05.E Design Professional's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.

10.05.F No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

10.06 Owner's Right to Audit

10.06.A Owner reserves the right to decrease adjustments made in any Change Order if, upon audit of Contractor's records, the audit discloses Contractor provided false or inaccurate cost and pricing data in negotiating the Change Order. In enforcing this provision, the parties shall follow the procedures provided in Paragraph 10.07.

10.07 Audit Procedure

10.07.A Unless exempted from this clause by meeting one of the following conditions:

- 10.07.A.1 the pricing is based on adequate competition;
- 10.07.A.2 prices are set by law;
- 10.07.A.3 a commercial item is being acquired;
- 10.07.A.4 a waiver has been granted;

10.07.B A change in the approved cost for a change order may be required due to inaccuracies in the pricing where the value of the change order, including profit, exceeds \$550,000 and the change increased the contract value by a significant amount. A reduction in the contract amount shall be issued if one of the following conditions applies:

- 10.07.B.1 the furnished pricing was incomplete, inaccurate or not current,
- 10.07.B.2 a subcontractor furnished pricing that was incomplete, inaccurate or not current,

10.07.B.3 any party furnished any data that is not accurate.

10.07.B.4 the contractor did not submit a Certificate of Current Cost or Pricing Data.

10.07.C Any resulting reduction due to data from a subcontractor who was not awarded the work will be in the amount only by which the actual cost was less than the prospective subcontractor.

10.07.D If a reduction is required, the contractor may not raise the following as a defense:

10.07.D.1 the contractor or subcontractor was a sole source supplier or otherwise in a superior bargaining position and thus would not have modified the contract even if accurate pricing had been submitted.

10.07.D.2 the Owner should have known the pricing was inaccurate

10.07.D.3 the contract was based on a total cost and no agreement was made regarding the cost of individual items.

10.07.E The reduction may be offset if

10.07.E.1 the contractor certifies that it is entitled to the offset, and

10.07.E.2 the contractor can prove that the price was available before the date of the change but was not submitted by that date

10.07.F An offset will not be allowed if:

10.07.F.1 the contractor knew the data was incorrect

10.07.F.2 the owner demonstrates that the price would not have increased by the amount to be offset even if data were available.

10.07.G If any reduction is for work already paid to contractor, contractor shall be liable to and shall pay to owner at the time such overpayment is repaid:

10.07.G.1 simple interest on the amount of the repayment computed from the date of the overpayment to the date of repayment at a rate of the current federal short-term rate plus 3%, and

10.07.G.2 A penalty equal to the amount of the overpayment, if the contractor knowingly submitted incorrect data.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 Cost of the Work

11.01.A Costs Included: The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:

11.01.A.1 Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

11.01.A.2 Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

11.01.A.3 Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive Bids from Subcontractors acceptable to Owner and Contractor and shall

deliver such Bids to Owner, who will then determine, with the advice of Design Professional, which Bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

11.01.A.4 Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

11.01.A.5 Supplemental costs including the following:

11.01.A.5.a The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

11.01.A.5.b Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

11.01.A.5.c Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements, competitive in the local Phoenix metropolitan area, approved by Owner with the advice of Design Professional, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

11.01.A.5.d Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

11.01.A.5.e Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

11.01.A.5.f Losses and damages (and related expenses) caused by damage to the Work, not

compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Article 5), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

11.01.A.5.g The cost of utilities, fuel, and sanitary facilities at the Site.

11.01.A.5.h Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, express and courier services, and similar petty cash items in connection with the Work.

11.01.A.5.i The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

11.01.B Costs Excluded: The term Cost of the Work shall not include any of the following items:

11.01.B.1 Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.

11.01.B.2 Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

11.01.B.3 Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

11.01.B.4 Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not

limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

11.01.B.5 Acceleration costs to overcome suspension of Work or other delays which warrant extensions in Contract Time but exclude increases in Contract Price; escalation costs for any part of the Work not delayed beyond the late dates in the Progress Schedule; or delay costs not expressly allowed in this Article.

11.01.B.6 Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.

11.01.C Contractor's Fee: When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in Paragraph 12.01.C unless otherwise set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

11.02 Allowances

11.02.A It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Design Professional.

11.02.B Cash Allowances

11.02.B.1 Contractor agrees that the allowances include all costs to the Contractor of materials, equipment, taxes, unloading, handling on the Site, labor, installation costs, overhead, profit, and other expenses required to furnish and install the Work described by the allowances.

11.02.C Contingency Allowance

11.02.C.1 Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

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

11.03 Unit Price Work

11.03.A Where the Contract Documents provide that all or part of the Work is to be Unit Price Work,

initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

11.03.B The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Design Professional subject to the provisions of Paragraph 9.07.

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

11.03.D Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:

11.03.D.1 the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

11.03.D.2 there is no corresponding adjustment with respect to any other item of Work; and

11.03.D.3 Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 Change of Contract Price

12.01.A The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Design Professional and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

12.01.B The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

12.01.B.1 where the Work involved is covered by unit prices contained in the Contract

Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or

12.01.B.2 where the Work is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum, itemized and supported by substantiating data, (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2);

12.01.B.3 where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

12.01.C Contractor's Fee: The Contractor's fee for overhead and profit shall be determined as follows:

12.01.C.1 a mutually acceptable fixed fee; or

12.01.C.2 if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

12.01.C.2.a for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;

12.01.C.2.b for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;

12.01.C.2.c where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

12.01.C.2.d no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

12.01.C.2.e the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

12.01.C.2.f when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.01.D Contractor will establish and maintain records related to the cost of any change in accordance with generally accepted accounting practices and submit in a form acceptable to Design Professional an itemized cost breakdown together with supporting data.

12.02 Change of Contract Times

12.02.A The Contract Times may only be changed by a Change Order or Written Amendment. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Design Professional and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

12.02.B Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 Delays

12.03.A Notwithstanding anything to the contrary in the Contract Documents, Contractor assumes all risks of delays, disruptions and hindrances, and Contractor shall not make any Claim for adjustment in Contract Price or for damages (or any other kind of compensation) for any delays, disruptions or hindrances from any cause whatsoever, including acts and omissions of Owner or Design Professional, except as provided in Paragraphs 12.03.A.1 and 12.03.A.2

12.03.A.1 Owner and Contractor shall negotiate for the recovery of damages related to expenses incurred by Contractor for delay if, but only if, (a) Owner is responsible for the delay; and (b) the delay is unreasonable under the circumstances; and (c) the delay was not within the contemplation of Owner and Contractor; and (d) Contractor gives Owner notice and submits a Claim in the manner and within the times specified in Article 10. Contractor shall make every effort to avoid the consequences and mitigate damages from any delay.

12.03.A.2 No delay resulting from the negotiations or resolution of changes in the Work, differing site conditions or variation in quantities shall be unreasonable under the circumstances unless the delay exceeds two days plus the time

required by Contractor to deliver a related proposal. Such delays are contemplated by Contractor and Owner.

12.03.B Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. An extension in Contract Time will not be justified unless Contractor, demonstrates delay in completing all or a specified part of the Work arising from unforeseeable causes beyond the control and without the fault or negligence of Contractor, and the delay is unreasonable under the circumstances. Examples of events which may justify an extension of Contract Time, subject to the requirements of the Contract Documents, include: acts of God, the public enemy, or acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7; acts of the U.S. Government, the State or another Political Subdivision; fires, floods, epidemics, quarantine restrictions; strikes, freight embargoes abnormal weather, including storms, tornados, etc. (abnormal in the sense of expectation, frequency or severity compared with the prior 5 year average); unusually severe shortages of construction materials, considering all feasible sources of supply; newly discovered Underground Utilities; objection, for Owner's convenience, to a nominated Subcontractor; an emergency; incidents with archaeological features suspension of Work; changes in the Work, differing site conditions or variation in quantities of Unit Price Work. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

12.03.C If Contractor is prevented from completing any part of the Work within the Contract Times (or Milestones) for unforeseeable causes beyond the control of both Owner and Contractor, an extension of the Contract Times (or Milestones) in an amount equal to the time lost due to such delay shall be Contractor's sole and exclusive remedy for the delay. In no event shall Owner be liable to Contractor, any Subcontractor, any Manufacturer, any Supplier, any person, any firm, any corporation, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from (a) delays caused by or within the control of Contractor, or (b) delays beyond the control of both parties as specified in Paragraph 12.03.B.

12.03.D No delay in completing the Work, or any specified part of the Work, for which the Owner is responsible, shall be unreasonable under the circumstances or justify an increase in Contract Time or Contract Price, unless, and then only to the extent that, the delay extends completion of the Work, or specified part of the Work, beyond the corresponding Contract Time. Notwithstanding the first sentence of this Paragraph 12.03.D, if the Progress Schedule depicts Total Float whether expressly disclosed or implied by the use of float suppression techniques, the Total Float is owned jointly by Contractor and Owner.

12.03.E Owner, Design Professional and the Related Entities of each of them shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

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

13.01 Notice of Defects

13.01.A Prompt notice of all defective Work of which Owner or Design Professional has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 Access to Work

13.02.A Owner, Design Professional, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

13.03 Tests and Inspections

13.03.A Contractor shall give Design Professional timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

13.03.B Owner shall employ and pay for the services of an independent testing laboratory to

perform all inspections, tests, or approvals required by the Contract Documents except:

13.03.B.1 for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below; or

13.03.B.2 that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and

13.03.B.3 as otherwise specifically provided in the Contract Documents.

13.03.C If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Design Professional the required certificates of inspection or approval.

13.03.D Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Design Professional's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Design Professional.

13.03.E If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Design Professional, Contractor shall, if requested by Design Professional uncover such Work for observation.

13.03.F Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Design Professional timely notice of Contractor's intention to cover the same and Design Professional has not acted with reasonable promptness in response to such notice.

13.04 Uncovering Work

13.04.A If any Work is covered contrary to the written request of Design Professional, it must, if requested by Design Professional, be uncovered for Design Professional's observation and replaced at Contractor's expense.

13.04.B If Design Professional considers it necessary or advisable that covered Work be observed by Design Professional or inspected or tested by others, Contractor, at Design Professional's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Design Professional may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

13.04.C If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.

13.04.D If, the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 Owner May Stop Work

13.05.A If Work is defective, or Contractor fails to provide sufficient, skilled workers or suitable materials or equipment, or otherwise fails to perform Work in compliance with the Contract Documents, Owner may order Contractor to stop all or part of the Work until any problem is corrected. Contractor shall (a) remain responsible for recovering schedule, (b) not be entitled to any increase in Contract Time or Contract Price, and reimburse Owner for all direct, indirect or consequential costs incurred by Owner resulting from any such stop Work order. Owner's authority to stop all or part of the Work shall not create or impose any duty or responsibility on Owner to exercise any such authority for the benefit of Contractor or any other person.

13.06 Correction or Removal of Defective Work

13.06.A Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Design Professional, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

13.06.B When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 Correction Period

13.07.A If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed 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, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

13.07.A.1 repair such defective land or areas; or

13.07.A.2 correct such defective Work; or

13.07.A.3 if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and

13.07.A.4 satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.

13.07.B If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or other dispute resolution costs) arising

out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

13.07.C In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so, provided in the Specifications or by Written Amendment.

13.07.D Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

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

13.08 Acceptance of Defective Work

13.08.A If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Design Professional's recommendation of final payment, Design Professional) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Design Professional as to reasonableness) and for diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Design Professional's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after

such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 Owner May Correct Defective Work

13.09.A If Contractor fails within a reasonable time after written notice from Design Professional to correct defective Work or to remove and replace rejected Work as required by Design Professional in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

13.09.B In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Design Professional and Design Professional's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.

13.09.C All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

13.09.D Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to

the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 Schedule of Values

14.01.A The Schedule of Values established as provided in the General Requirements will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Design Professional. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.01.B Whenever the Bid Schedule on the Bid Form lists an item of Work entitled "Mobilization Pay Item", such mobilization pay item shall be intended to cover, in part at least

14.01.B.1 reasonable costs of establishing those temporary offices specified in the Technical Specifications;

14.01.B.2 reasonable cost of transporting to the site and the unloading and assembly of construction equipment that arrives on site promptly after the Date of Commencement of the Contract Time;

14.01.B.3 fees for permits required to commence the Work;

14.01.B.4 premiums for Performance Bond, Payment Bond and any other performance Bonds required by the Contract Documents;

14.01.B.5 premiums for policies of insurance purchased by the Contractor to comply with the requirements of the Contract Documents;

14.01.B.6 and reasonable costs of demobilization including vacating and clearing the site.

14.01.C Except when seeking progress payment under the mobilization pay item for payroll or other similar costs, the basis of measurement for payment shall be proof of actual payment. Payment shall be based on the requirements of the Contract Documents governing progress payments, subject to the following:

14.01.C.1 Up to forty percent (40%) of the payment earned under this item may be requested for payment with the Application for Payment following receipt by the Owner of a sufficiently responsive initial Progress Schedule (meaning sufficiently responsive based on the requirements of the Contract Documents and the Technical Specifications).

14.01.C.2 Up to eighty percent (80%) of the payment earned under this item may be requested for payment with the Application for Payment following return to the Contractor of the revision of the initial Progress Schedule Submittal marked "Resubmittal Not Required".

14.01.C.3 The balance of the payment earned under the "Mobilization Pay Item" may be requested for payment with the final Application for Payment. Such payment is intended to cover demobilization costs.

14.02 Progress Payments

14.02.A Applications for Payments

14.02.A.1 At least 21 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Design Professional for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.

14.02.A.2 with each Application for Payment, Contractor shall submit written consent of the Surety for payment of the amount requested in the Application for Payment.

14.02.A.3 Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

14.02.A.4 SBE Goal Compliance

14.02.A.4.a In addition, with each Application for Payment, Contractor shall submit (in a format acceptable to the Owner) the required information demonstrating its compliance with the SBE goals for this Agreement.

14.02.A.5 Stored Materials and Equipment

14.02.A.5.a If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other

arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

14.02.A.6 Retainage

14.02.A.6.a The amount of retainage with respect to progress payments will be as stipulated below:

14.02.A.6.b Until the aggregate value of the duly certified and approved Applications for Payment equals fifty percent (50%) of the Contract Price (i.e. 50% completion), Owner will make payments in an amount equal to 90% of Work completed (i.e. Owner will retain 10% of each estimate as additional guarantee for complete performance of the Work), less the aggregate of payments previously made and less such deductions as Design Professional or Owner determines are appropriate to cover claims requiring a greater sum to be retained (as provided in Paragraph 14.02.C and elsewhere in the Contract Documents);

14.02.A.6.c Upon fifty percent (50%) completion, one-half of the amounts retained under the 10% retainage provision shall be paid to Contractor, provided Contractor is making satisfactory progress on the Work and there is no specific cause or claim requiring a greater amount to be retained. After fifty percent (50%) completion, Owner will retain five percent (5%) providing Contractor is making satisfactory progress, coupled with such deductions as Design Professional or Owner determines are appropriate to cover claims requiring a greater sum to be retained.

14.02.A.6.d Prior to reduction in or partial release of retainage, Contractor shall submit AIA Document G707A (Consent of Surety to Reduction in or Partial Release of Retainage) certifying the Surety agrees that such reduction in or partial release of retainage shall not relieve the Surety of any of its obligations under the Performance and Payment Bonds.

14.02.A.6.e If at any time Owner, with the advice of Design Professional, determines satisfactory progress is not being made, ten percent (10%) retainage shall be reinstated for all subsequent payments, in accordance with ARS, Title 34 Chapter 2.

14.02.A.6.f Except as qualified in Paragraph 14.04.A.6.C, upon final completion and acceptance of the Work on which separate final completion and acceptance and Contract Price are specified and upon compliance with all other terms and conditions of the Contract Documents, payment may be made in full, including retainage withheld, less such deductions as Design Professional may recommend or Owner may withhold to cover claims

requiring a greater sum to be retained and liquidated damages.

14.02.A.6.g In lieu of retention, the Contractor may provide as a substitute, an assignment of money market accounts, demand deposit accounts, or time certificates of deposit (CDs) from a bank licensed by Arizona, securities guaranteed by the United States, securities of the United States, the State of Arizona, Arizona counties, Arizona municipalities, Arizona school districts, or shares of savings and loan institutions authorized to transact business in Arizona. These securities are referred to as "Qualified Securities."

14.02.A.6.h Qualified Securities deposited in lieu of retention must be deposited into a separate account with a bank having a branch located in the City of Phoenix and be assigned exclusively for the benefit of the City of Phoenix pursuant to the City's form of escrow and/or deposit agreement.

14.02.A.6.i Escrow Agreement and Deposit Agreement forms may be obtained from the Contracts Specialist assigned to the project.

14.02.B Review of Applications

14.02.B.1 Design Professional will, within seven (7) days after receipt of each Application for Payment, either certify, approve and present the Application to Owner, or return the Application to Contractor indicating in writing Design Professional's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application. Fourteen (14) days after presentation of the Application for Payment to Owner, the amount recommended will, subject to the provisions of Paragraph 14.02.B.6 of the General Conditions, become due and when due will be paid by Owner to Contractor.

14.02.B.2 All payments will be available to the Contractor at the Finance Department, Accounts Division, Customer Service-Accounts Payable Section, on the fourteenth (14th) day, unless Contractor arranges with the Finance Department to mail payments. Mailed payments shall be deemed paid on the date deposited in the mail as established by the U.S. Postal Service postmark. If payment is not made when due, simple interest, as provided in ARS Title 34 Chapter 2 as amended, shall be paid by Owner to Contractor (excluding any Fee to Contractor)

14.02.B.3 Design Professional's recommendation of any payment requested in an Application for Payment will constitute a

representation by Design Professional to Owner, based on Design Professional's observations on the Site of the executed Work as an experienced and qualified design professional and on Design Professional's review of the Application for Payment and the accompanying data and schedules, that to the best of Design Professional's knowledge, information and belief:

14.02.B.3.a the Work has progressed to the point indicated;

14.02.B.3.b the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and to any other qualifications stated in the recommendation); and

14.02.B.3.c the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Design Professional's responsibility to observe the Work.

14.02.B.3.d the Record Drawings have been redlined by the Contractor to the same limit as the finished Work claimed on the Application for Payment.

14.02.B.4 By recommending any such payment Design Professional will not thereby be deemed to have represented that:

14.02.B.4.a inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Design Professional in the Contract Documents; or

14.02.B.4.b that there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

14.02.B.5 Neither Design Professional's review of Contractor's Work for the purposes of recommending payments nor Design Professional's recommendation of any payment, including final payment, will impose responsibility on Design Professional:

14.02.B.5.a to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or

14.02.B.5.b to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

14.02.B.6 Design Professional may refuse to recommend the whole or any part of any payment if, in Design Professional's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.1. Design Professional may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Design Professional's opinion to protect Owner from loss because:

14.02.B.6.a the Work is defective, or completed Work has been damaged, requiring correction or replacement;

14.02.B.6.b the Contract Price has been reduced by Written Amendment or Change Order.

14.02.B.6.c Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or

14.02.B.6.d Design Professional has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

14.02.B.6.e the Record Drawings have not been redlined by the Contractor to the same limit as the finished Work claimed on the Application for Payment.

14.02.C Reduction in Payment

14.02.C.1 Owner may refuse to make payment of the full amount recommended by Design Professional because:

14.02.C.1.a claims have been made against Owner on account of Contractor's performance or furnishing of the Work;

14.02.C.1.b Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;

14.02.C.1.c there are other items entitling Owner to a set off against the amount recommended; or

14.02.C.1.d Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.6.a through 14.02.B.6.c or Paragraph 15.02.A.

14.02.C.1.e Either the Contractor has failed to submit the SBE Utilization Report with any

Application for Payment or has failed to meet the SBE utilization goals as established in the Agreement (Section 00500, Article 11).

14.02.C.1.f Owner may deduct from each progress payment and final payment an amount equal to Owner's estimate of the liquidated damages then due or that would become due based on Owner's estimate of late completion of the Work, provided Contractor fails to submit and implement a recovery schedule as detailed in the General Requirements.

14.02.C.2 If Owner refuses to make payment of the full amount recommended by Design Professional, Owner will give Contractor immediate written notice (with a copy to Design Professional) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor corrects to Owner's satisfaction the reasons for such action.

14.02.C.3 If it is subsequently determined that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1.

14.03 Contractor's Warranty of Title

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

14.04 Substantial Completion

14.04.A When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Design Professional in writing that the entire Work is substantially complete, in accordance with the General Requirements, (except for items specifically listed by Contractor as incomplete) and request that Design Professional issue a certificate of Substantial Completion.

14.04.B Within a reasonable time thereafter, Owner, Contractor and Design Professional shall make an inspection of the Work to determine the status of completion. If Design Professional does not consider the Work substantially complete, Design Professional will notify Contractor in writing giving the reasons therefor.

14.04.C If Design Professional considers the Work substantially complete, including all applicable ADA

requirements, Design Professional will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be, attached to the certificate, a tentative list of items (typically referred to as a "punch list") to be completed or corrected before final payment. The punch list will be prepared and issued by the Design Professional. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Design Professional as to any provisions of the certificate or attached punch list. If, after considering such objections, Design Professional concludes that the Work is not substantially complete, Design Professional will within 14 days after submission of the tentative certificate to Owner notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Design Professional considers the Work substantially complete, Design Professional will within said 14 days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Design Professional believes justified after consideration of any objections from Owner. The Contractor shall have seven days after receipt of the tentative certificate to prepare and submit to the Design Professional a punch list schedule showing orderly completion of punch list items occurring prior to final acceptance date.

14.04.D At the time of delivery of the tentative certificate of Substantial Completion, Design Professional will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Design Professional in writing prior to Design Professional's issuing the definitive certificate of Substantial Completion, Design Professional's aforesaid recommendation will be binding on Owner and Contractor until final payment.

14.04.E Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to complete or correct items on the tentative list.

14.04.F The Owner and Design Professional have thirty (30) days from the date of substantial

completion to add incorrect or incomplete items to the punch list. The Contractor is required to complete all of these items prior to final acceptance. After the expiration of the thirty (30) day period, the Owner may continue to add items to the punch list, but the Contractor must only endeavor to complete them by the final acceptance date. Any such items added after the 30-day period that is not completed prior to final acceptance must be completed during the warranty period.

14.05 Partial Utilization

14.05.A Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Design Professional, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions.

14.05.A.1 Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor will certify to Owner and Design Professional that such part of the Work is substantially complete and request Design Professional to issue a certificate of Substantial Completion for that part of the Work.

14.05.A.2 Contractor at any time may notify Owner and Design Professional in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Design Professional to issue a certificate of Substantial Completion for that part of the Work.

14.05.A.3 Within a reasonable time after either such request, Owner, Contractor, and Design Professional shall make an inspection of that part of the Work to determine its status of completion. If Design Professional does not consider that part of the Work to be substantially complete, Design Professional will notify Owner and Contractor in writing giving the reasons therefor. If Design Professional considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

14.05.A.4 No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Article 5 regarding property insurance.

14.06 Final Inspection

14.06.A Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Design Professional will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 Final Payment

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

14.07.B Contractor may apply for final payment and acceptance

14.07.B.1 after completing correction of the deficiencies to satisfaction of Design Professional and delivering all maintenance and operation instructions, warranties and guarantees, certificates of inspection, revised record documents (reflecting revisions made after Substantial Completion), required Bonds and all other required documents, and

14.07.B.2 after Design Professional has consented to review the Work for final acceptance.

14.07.C The final Application for Payment and acceptance shall enclose

14.07.C.1 evidence of insurance (including, but not limited to completed operations insurance) and an affidavit certifying that the insurance coverage will not be canceled, adversely changed or renewal refused except as provided under Article 5,

14.07.C.2 AIA Document G707 (Consent of Surety to Final Payment) certifying the Surety agrees that final payment shall not relieve the

Surety of any of its obligations under the Performance and Payments Bonds,

14.07.C.3 a "Contractor's Affidavit Regarding Settlement of Claims" (available from Owner) and complete and legally effective releases or waivers acceptable to Owner in the full amount of the Contract Price, or if any Subcontractor or Supplier refuses or fails to furnish such release or waiver, a Bond or other security acceptable to Owner to indemnify Owner against any payment claim, and

14.07.C.4 a list of all pending property damage and personal injury or death insurance claims arising out of or resulting from the Work, identifying the claimant and the nature of the claim.

14.07.D If based on Design Professional's observation of the Work, final inspection, and review of the final Application for Payment and acceptance,

14.07.D.1 Design Professional is satisfied that the Work, or a part of the Work for which separate final acceptance is specified in the Contract Documents, has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Design Professional will, within thirty (30) days after receipt of the final Application, furnish to Owner and Contractor the Design Professional's recommendation of final payment and acceptance.

14.07.D.2 If Design Professional is not satisfied, Design Professional will return that final Application for Payment to Contractor, indicating in writing the reasons for not recommending final payment and acceptance, in which case Contractor shall make the necessary corrections and resubmit the Application.

14.07.E Owner's Acceptance of Application:

14.07.E.1 If Owner concurs with Design Professional's recommendation of final payment and acceptance, Owner will, within fifteen (15) days, file a written notice of completion and acceptance of the Work, or separable part of the Work for which final acceptance is specified, and notify Contractor and Design Professional of Owner's acceptance. Within sixty (60) days of receipt of Design Professional's recommendation of final payment, Owner shall pay to Contractor the balance of the Contract Price, subject to any withholdings and those other provisions governing final payment specified in the Agreement.

14.07.E.2 If Owner does not concur with Design Professional's determination, Owner will return the Application to Contractor, through Design

Professional, indicating in writing the reasons for refusing final payment and acceptance. Contractor shall promptly make the necessary corrections and resubmit the Application to Design Professional. Owner's written determination shall bind Contractor, unless Contractor delivers to Owner, through Design Professional, written notice of a Claim as provided in Paragraph 10.05, after receipt of that determination.

14.07.E.3 If recommended by Design Professional, Owner may, upon receipt of Contractor's final Application for Payment and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted, if final completion of the Work is significantly delayed through no fault of Contractor. If the balance to be held by Owner for Work not fully completed or corrected is less than the retainage on that Work, the affidavits specified in Paragraph 14.07.C and the release or waiver, or Bonds, shall be furnished as required and submitted by Contractor. Payment of the balance due shall be made under the provisions for final payment but shall not constitute a waiver of Claims.

14.07.F Owner shall pay with reasonable promptness any amounts deducted from the final payment, upon resolution of the Claims for which the amounts were withheld.

14.08 Waiver of Claims

14.08.A Final payment does not constitute a waiver by Owner of any rights relating to Contractor's continuing obligations under the Contract Documents, nor does it constitute a waiver of any Claims by Owner against Contractor arising from unaudited payments, defective Work appearing after final inspection or failure by Contractor to comply with the Contract Documents or the terms of any special warranties or guarantees provided by the Contract Documents or by Laws or Regulations.

14.08.B Final payment constitutes a waiver of all Claims by Contractor against Owner other than those Claims previously filed in writing with Owner on a timely basis and still unsettled.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 Owner May Suspend Work

15.01.A At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Design Professional which will fix the date on which Work

will be resumed. Contractor shall resume the Work on the date so fixed.

15.01.B Contractor shall be allowed an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes an approved Claim therefor as provided in Paragraph 10.05, except that Contractor shall not be entitled to recover profit for suspensions of Work. No adjustment in Contract Price will be made for delays in Work which would have been deferred, stopped, slowed, suspended, interrupted or extended due to any other cause.

15.02 Owner May Terminate for Cause

15.02.A The occurrence of any one or more of the following events will justify termination for cause:

15.02.A.1 Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule);

15.02.A.2 Contractor's disregard of Laws or Regulations of any public body having jurisdiction;

15.02.A.3 Contractor's disregard of the authority of Design Professional;

15.02.A.4 Contractor's violation in any substantial way of any provisions of the Contract Documents;

15.02.A.5 if the Contractor fails to meet the SBE utilization goals as set forth in the Agreement (Section 00500, Article 11).

15.02.B Unless superceded by the termination procedures of the performance bond obtained in accordance with Article 5, if one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

15.02.B.1 exclude Contractor from the Site, and take possession of the Work,

15.02.B.2 incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and

15.02.B.3 complete the Work as Owner may deem expedient.

15.02.C If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled

to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Design Professional as to their reasonableness and, when so approved by Design Professional, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph Owner shall not be required to obtain the lowest price for the Work performed.

15.02.D Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

15.02.E Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

15.03 Owner May Terminate For Convenience

15.03.A Upon seven days written notice to Contractor and Design Professional, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

15.03.A.1 completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

15.03.A.2 expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

15.03.A.3 all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and

other professionals and all court or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

15.03.A.4 reasonable expenses directly attributable to termination.

15.03.A.5 If it is determined, after notice of termination of the services of Contractor for any of the causes listed in Paragraph 15.02 of the General Conditions that Contractor was not in default, the termination shall be deemed to have been for the convenience of Owner. In such event Contractor may recover payment in accordance with Paragraph 15.03 of the General Conditions.

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

15.04 Contractor May Stop Work or Terminate

15.04.A If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Design Professional fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Design Professional, and provided Owner or Design Professional do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

15.04.B In lieu of terminating the Contract and without prejudice to any other right or remedy, if Design Professional has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Design Professional, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 - DISPUTE RESOLUTION

16.01 Methods and Procedures

16.01.A Either Owner or Contractor may request mediation of any Claim submitted to Design Professional for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

16.01.B Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.

16.01.C If the Claim is not resolved by mediation, Design Professional's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

16.01.C.1 elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions, or

16.01.C.2 agrees with the other party to submit the Claim to another dispute resolution process, or

16.01.C.3 gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

16.02 Certification of Contractor Claims

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

16.03 Venue: Service of Process

16.03.A Contractor consents and submits to jurisdiction and venue of, and will not commence any proceeding elsewhere than, the Superior Court of Arizona in and for Maricopa County only, regardless of residence or domicile, for any action at law or suit in equity arising out of or relating to the bidding, award, performance or completion of the Work; payment for Work performed; termination; or any other claim based on the Contract Documents. Contractor consents and submits to service of process at the address specified in the Agreement.

16.03.B Paragraph 16.03.A shall apply to all Subagreements and all agreements between Contractor and Contractor's sureties and insurers, altering that Paragraph only to identify properly the contracting parties.

ARTICLE 17 - MISCELLANEOUS

17.01 Giving Notice

17.01.A Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

17.01.A.1 delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or

17.01.A.2 delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 Computation of Times

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

17.03 Cumulative Remedies

17.03.A The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 Survival of Obligations

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

17.05 Controlling Law

17.05.A This Contract is to be governed by the law of the State of Arizona.

17.06 Headings

17.06.A Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

17.07 Professional Fees and Court Costs Included:

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

17.08 Project Staffing

17.08A **Key Personnel:** Before starting work, Contractor must submit detailed résumés of key personnel involved in that work for City's approval (which City will not unreasonably withhold). If Contractor later desires to change key personnel involved in that work, Contractor must submit detailed résumés of the new personnel for City's approval (which City will not unreasonably withhold).

17.08B **Qualified Staff:** Contractor must maintain an adequate and competent staff of qualified persons—as City may determine in its sole discretion—during performance of this Master Agreement. If City in its sole discretion determines that any of Contractor's staff is objectionable, Contractor must take prompt corrective action or replace that staff with new personnel, subject to City's approval.

17.08C **Third-Party Employment Brokers:** Contractor and Subcontractors will not utilize a third-party labor broker for any construction worker under this Agreement. The Contractor and Subcontractors must be the employers of record for its construction staff under this Agreement.

---END OF SECTION 00700---

SECTION 00800 - SUPPLEMENTARY CONDITIONS

Add the following new paragraphs to the General Conditions identifying the additional insured:

--- END OF SECTION 00800---

SC-2.01.B.1. Additional insured to be named in the insurance policies to be provided by the Contractor are identified:

SC-2.01.B.1.a. City of Phoenix

Amend the last sentence of Paragraph 5.05.C.1 of the General Conditions to read as follows:

“Such notice shall be sent directly to the Water Services Department’s Project Manager at the address indicated below via certified mail, return receipt requested:

City of Phoenix
200 W. Washington St, 8th Floor
Phoenix, AZ 85003

Amend the last sentence of Paragraph 5.05.E3. of the General Conditions to read as follows:

“All certificates required by this Contract shall be sent directly to the Water Services Department’s Project Manager at the address indicated below:

City of Phoenix
200 W. Washington St, 8th Floor
Phoenix, AZ 85003

Amend Paragraph 6.02.C of the General Conditions to read as follows:

SC-6.02.C The combined premium time charges of Design Professional and Owner shall be defined as \$300 per hour for each hour exceeding a 10-hour workday or a 50-hour work week.

Add a new paragraphs immediately after Paragraph 6.13.C. of the General Conditions, which is to read as follows:

SC-6.13.C.1 Following are those Owner’s safety programs or requirements:

SC-6.13.C.1.a. Confined Space Entry



**CITY OF PHOENIX
WATER SERVICES DEPARTMENT**

**2017 PVC-LINED CONCRETE
SANITARY SEWER
REHABILITATION**

PROJECT NO. WS90500272

Revised: January 2024

TECHNICAL SPECIFICATIONS
Volume 2 of 3

MAYOR

Kate Gallego

CITY COUNCIL

District 1 – Ann O’Brian	District 5 - Betty Guardado
District 2 – Jim Waring	District 6 – Kevin Robinson
District 3 – Debra Stark	District 7 – Yassamin Ansari
District 4 – Laura Pastor	District 8 – Kesha Hodge Washington

CITY MANAGER

Jeff Barton

CITY ENGINEER

Eric J. Froberg, PE

WSD DIRECTOR

Troy Hayes, PE



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SECTION 01010

PROJECT SUMMARY

PART 1 - GENERAL

The City of Phoenix (City) or (Owner) is rehabilitating portions of the large diameter PVC-lined sanitary sewer pipe, access manholes, and structures throughout the City. For purposes within this document, the reference to Owner and City are used interchangeably and is intended to mean one and the same.

1.01 SCOPE OF WORK

- A. Contractor shall provide all materials, equipment, and labor necessary to rehabilitate existing PVC lined sanitary sewer pipe including flow control, cleaning, and repair, utilizing CIPP lining installation repair techniques. Work also includes installation of rehabilitation of existing access manholes including cleaning, coating application, or any combination of these techniques as directed by the Owner.

- B. Major work to be performed under these Technical Specifications includes the following:
 - 1) General:
 - a) Work for sanitary sewer pipe and access manhole rehabilitation includes, but is not limited to providing all traffic control on streets, maintaining access to alleys and driveways, during construction as necessary; cleaning; debris removal; pre and post pipe CCTV (e.g. IBAK Panorama®); CIPP lining installation; manhole coating repair; and odor mitigation. The infrastructure to be rehabilitated or repaired is located within Phoenix right-of-way or easements and may traverse through several jurisdictional authorities including, but not necessarily limited to Arizona Department of Transportation (ADOT). Traffic control plans must be submitted to and approved by the City of Phoenix Water Services Department and any other applicable City or agency with jurisdictional control of the right-of-way where construction occurs prior to beginning work. Contractor shall be responsible for obtaining ADOT encroachment permit.

 - b) Provide diversion and/or control of sanitary sewage flows and dewatering. This shall include, but is not limited to: sewer flow measurements, water level monitoring, installation and removal of flow monitoring equipment, bypass pumping/piping and/or diversion, operational monitoring, excavation, backfill, power, noise and odor control, accidental spill protection containment, pipe

SECTION 01010
PROJECT SUMMARY

repair, surface repair back to original condition, materials, labor, and equipment as necessary to divert existing sanitary sewage flows around the rehabilitation work area and dewater the pipe(s) to be rehabilitated. Contractor shall maintain uninterrupted sanitary sewer service to prevent sanitary sewer overflow (SSO).

- c) Contractor shall maintain access for emergency vehicles, public transit, public works accessibility, pedestrians, and driveways during the work or make alternate accommodations as approved by the Owner.
- d) Perform high-pressure hydro blast, grit blasting, or other means of cleaning of the interior of sanitary sewer pipes and manholes, and wash to neutralize surface acidity, to remove all loose material, grease, scale, roots, debris, foreign protrusions and/or previously applied coatings (if necessary) prior to rehabilitation. Drying and man entry physical sweeping and removal of grit, debris or larger obstructions by hand methods may be necessary to complete the cleaning process at no additional cost to the Owner.
- e) Perform pre and post CCTV video of sanitary sewer pipes rehabilitated. Perform pre and post pipe CCTV video of all areas where bypass pump ports were cut into the existing pipe.
- f) Provide daily coordination with a Public Information (PI) Firm provided by the Owner's Representative for notification of construction activities and work schedule to the public.
- g) Attendance at construction coordination meetings by the Contractor's Construction Representative empowered to make financial, manpower, and scheduling decisions on behalf of the Contractor along with the on-site Construction Superintendent at a location and time designated by the Owner.
- h) Restore areas disturbed by Contractor's construction activities back to pre-existing conditions.
- i) Remove and replace manhole cone as necessary for suction or discharge pipe access used for bypass pumping systems and repair any damaged manhole protective coating.
- j) Adjust manhole frame and cover to grade and install concrete collar if disturbed during rehabilitation.

2) Pipe Rehabilitation (CIPP Lining):

- a) Remove all loose, hanging, or detached PVC-lining material, and deteriorated underlayment that may impede the liner installation or effect the interior profile dimension of the new CIPP lining.
- b) Repair any deteriorated concrete of the existing pipe wall back to original dimensions.
- c) Install a CIPP liner into the interior of the pipe with sufficient thickness to restore structural integrity of the pipe.

3) Manhole Rehabilitation (Coating)

- a) Remove previously applied coating(s), deteriorated concrete, and reinforcement within the interior of existing manholes and junction structures to be rehabilitated. Repair back to original configuration, dimensions, and reinforcement.
- b) Install protective epoxy coating as identified in the project Contract Documents or as directed by the Owner.

4) Manhole Rehabilitation (PVC Lining)

- a) Remove all loose, hanging, defective applied PVC lining, deteriorated concrete, and reinforcement within the interior of existing manholes and junction structures.
- b) Repair any deteriorated concrete on the manhole wall back to original dimensions, reinforcement, and strength.
- c) Install a new P-1 Joint (Modified) over all existing PVC lining joint locations.
- d) Repair/patch defects in the existing PVC lining of the manhole and/or structure.

1.02 EXISTING UTILITIES

- A. The Contractor shall field verify the location of all underground pipes, conduits, and utilities; and any overhead utility cables prior to conducting excavation work. The Contractor shall be responsible for all damages resulting from failure to accurately locate utilities.
- B. The Contractor shall contact Arizona 811 at least two (2) working days prior

to the start of any excavation at each site.

- C. Quarter Section maps of the City's sanitary sewer collection system may be available upon request from the City. The Contractor shall obtain required security clearances and pay all fees associated with obtaining copies of these maps.

1.03 FLOW CHARACTERISTICS

- A. The project sewer pipes receive wastewater from residential, commercial, and industrial facilities. The Contractor shall bypass flows around the work as necessary to complete the work specified.
- B. Estimated flow data is available from the Owner and provided in Technical Specification Section 02145 - DIVERSION OF SEWAGE FLOW AND DEWATERING. The Contractor shall be responsible for any/all monitoring of flows as necessary to size the bypass system to ensure against SSO or detrimental surcharging of upstream sewers. Contractor shall be responsible for determining available capacity in any proposed discharge to adjacent sewers and monitoring water levels within the system to accommodate the additional flows to ensure against SSO.
- C. The Contractor shall be responsible for maintaining uninterrupted sanitary sewer services in sewer mains, discharge force main pipes, and lateral pipes flowing into the pipe(s) and/or manholes being rehabilitated; and bypass pump flows (as necessary) to ensure against SSO or detrimental surcharging.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

**** END OF SECTION ****

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SECTION 01014 WORK SEQUENCE

PART 1 - GENERAL

1.01 CONTINUITY OF FACILITY OPERATIONS

Work under this Project shall be planned, scheduled, and performed to minimize disruption to the operation of existing facilities, residences, and businesses. The Contractor shall provide all equipment and appurtenances including bypass pumps, piping, noise control, odor mitigation, plugs and standby power/equipment necessary to maintain uninterrupted flow through and/or around existing facilities per Technical Specification Section 02145 – DIVERSION OF SEWAGE FLOW AND DEWATERING.

1.02 PROJECT COMPLETION

The project shall be completed within the contract time as outlined in the Contractor's Agreement.

1.03 REFERENCES

- A. Technical Specification Section 01310 – PROGRESS SCHEDULE
- B. Technical Specification Section 02100 – TRAFFIC CONTROL
- C. Technical Specification Section 02145 – DIVERSION OF SEWAGE FLOW AND DEWATERING
- D. Technical Specification Section 02760 - SEWER PIPE AND SEWER STRUCTURE CLEANING

1.04 PROJECT CONSTRUCTION COORDINATION

- A. At the preconstruction conference, the Contractor shall have in attendance an authorized Company Representative along with the Field Representative who will be on-site during on-going construction activities. The Contractor's Field Representative shall be available 24 hours a day by mobile telephone, home telephone, or other means acceptable to the Owner. The Field Representative shall be the contact person representing the Contractor and shall be capable of giving direct field orders as the need arises. Official job communication shall be conducted between the Contractor's Field Representative and the Owner's Representative.
- B. The Contractor shall obtain approval from the Owner 72 hours in advance

SECTION 01014
WORK SEQUENCE

- of any change in the Contractor's daily work schedule. Work performed at times other than the approved schedule must first be approved by the Owner.
- C. The Contractor's Field Representative shall conduct and attend a weekly construction progress meeting. Location of meeting shall be determined by the Owner. The Contractor shall prepare, present, and distribute copies of the look-ahead schedule at the meeting. The look-ahead schedule shall show two weeks minimum.
 - D. Contractor shall be responsible for coordination of the construction schedule. It shall be the responsibility of the Contractor to resolve conflicts with adjacent construction and schedule work accordingly. The Owner will not entertain Contractor claims for additional compensation arising out of construction delays caused by adjacent construction work. The Owner may at its sole discretion grant an extension of contract time due to unforeseen delays caused by adjacent construction activity conflicts.

1.05 SCHEDULING AND SEQUENCING CONSTRAINTS

- A. The Contractor shall rehabilitate pipes and manholes identified in the Contract Documents or as directed by the Owner. Once construction activities commence within a project area, the Contractor shall continue uninterrupted until all pipes and manhole rehabilitation are complete, unless otherwise allowed in writing by the Owner.
- B. No construction activities shall begin on-site until all required submittals are submitted to the Owner's Representative and returned stamped with "No Exceptions Taken" or "Make Corrections Noted".
- C. The Contractor shall receive written approval from the property owner of any equipment storage sites. Maps depicting locations of the equipment storage sites and copies of signed agreements shall be submitted to the Owner's Representative prior to occupancy.
- D. Traffic control shall remain in effect as dictated by the approved Traffic Control Plan and Permit until all work is completed and inspected. Contractor shall maintain access to all private properties along the project area on a 24-hour basis unless written approval is otherwise obtained from property owner(s) for reduced access. Copies of all written approvals shall be provided to the Owner's Representative prior to commencement of work activities. Reference Technical Specification Section 02100 - TRAFFIC CONTROL.
- E. Contractor required to obtain Arizona Department of Transportation (ADOT) encroachment permit. Contractor shall meet with ADOT a minimum of sixty (60) days prior to work occurring within ADOT right-of-way jurisdiction to

- notify them of the work schedule and coordinate construction procedures and obtain additional Contractor requirements (if any).
- F. Bypassing sanitary sewer flow and containment as required for rehabilitation of all pipes and manholes is part of this contract. Refer to Technical Specification Section 02145 – DIVERSION OF SEWAGE FLOWS AND DEWATERING for the bypass pumping requirements and restrictions.
 - G. Odor control shall be provided at all times during the rehabilitation of the pipes and manholes. The odor control plan shall be submitted to the Owner's Representative at the project coordination construction meeting prior to commencement of work within the individual work area.
 - H. Cleaning is required for all pipes and manholes and/or structures to be rehabilitated. Refer to Technical Specification Section 02760 - SEWER PIPE AND SEWER STRUCTURE CLEANING
 - I. The Contractor shall provide sufficient time after each pipe is taken out of service, dewatered, and cleaned for the Owner's Representative to inspect the pipe interior to verify design recommendations and identify any additional repair work that was previously out of sight below the water level. The Contractor shall notify the Owner's Representative at least 48 hours prior to completion of the cleaning operation.
 - J. The Contractor shall perform a detailed inspection of the work to confirm completion of all work items for conformance to the project Technical Specifications. After receipt of the Contractor's written notice of work completion, the Owner's Representative will perform a detailed inspection and will create a punch list of omissions and defects observed. Punch list items shall be promptly corrected by the Contractor. The Contractor shall then schedule a time for re-inspection by the Owner's Representative upon satisfactory completion of the punch list items. All costs associated with re-inspection, including but not limited to all bypass pumping costs, the Owner's Representative time, and re-inspection costs, shall be the responsibility of the Contractor. Once all repairs and punch list items are complete and accepted, the Contractor shall perform the final post CCTV video documenting the repairs.

1.06 HOLIDAY SEASON CONSTRUCTION MORATORIUM

Construction activities are not permitted near shopping center areas per Technical Specification Section 01310 – PROGRESS SCHEDULE.

1.07 CONTRACTOR WORK HOURS

Contractor may be required to work at night to minimize disruption to area residents or businesses per Technical Specification Section 01310 – PROGRESS SCHEDULE.

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1.08 WORK NEAR SPECIAL EVENT VENUES

Construction activities are not permitted within proximity to high profile venues during special events per Technical Specification Section 01310 – PROGRESS SCHEDULE.

1.09 WORK NEAR SCHOOL

Contractor shall coordinate with Trevor G. Browne High School and the City for traffic control, access, and schedule requirements for work within the vicinity of the high school.

1.10 INSPECTION AND TESTING OF MATERIALS

- A. The Contractor shall secure a Quality Control lab that is assigned to the project. The Quality Control lab will perform all quality control testing for the project.
- B. The Owner or Owner's Representative will be responsible for Quality Assurance.
- C. All workmanship and materials shall be subject to inspection by the Owner or Owner's Representative, who may select samples of materials in such a number and quantities deemed necessary to determine their qualities, as herein specified. The Contractor shall assist the Owner or Owner's Representative by providing safe access to the location where the work is in progress. The Owner will accept or reject the materials in accordance with the provisions of these Technical Specifications. All rejected materials shall be promptly replaced to the satisfaction of the Owner. The Contractor shall replace rejected work and materials and bear all costs for doing so.
- D. Non-rejection or non-inspection of materials does not constitute acceptance by the Owner.
- E. Inspection will be provided whenever on-site construction is underway on a 10-hour per day, 5-day per week basis, excluding weekends and holidays. The Contractor shall not schedule any overtime work which requires inspection, survey, or material testing without written permission from the Owner two (2) working days before the proposed overtime work. The Owner shall have the right to deny the requested overtime. If an overtime request is denied, the Contractor may request an extension of the contract time at no additional cost to the Owner.
- F. The Owner reserves the right to charge the Contractor for any re-inspection of defective repair work at the Owner's Representative rate up to \$130 per hour that will be deducted from the Contractor's request for payment.

1.11 REPAIR INSPECTION DOCUMENTATION

- A. The Contractor shall escort Owner or Owner's on-site representative to each repair location within the pipe or manhole to perform independent testing of the concrete repair. Contractor shall write inspection date, pipe stationing, clock position in National Association of Sewer Service Companies (NASSCO) format, repair size, results of tests along with signature of Contractor and Owner's technician documenting the inspection.
- B. The Contractor shall provide written log along with post CCTV video following repair testing. Owner shall provide concurrence of acceptance of repairs and quantities prior to payment of work. Failure to follow inspection identification procedures shall be grounds for rejection of work and non-payment of repair.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

**** END OF SECTION ****

SECTION 01014
WORK SEQUENCE

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SECTION 01015 CONTRACTOR'S USE OF PREMISES

PART 1 - GENERAL

1.01 OWNER'S RESPONSIBILITIES

The Owner's staff is responsible for operating the existing sewers and facilities throughout the execution of this Project.

1.02 CONTRACTOR'S RESPONSIBILITIES

Except where the Contractor is bypassing or diverting flows, sewers shall remain in operation throughout the duration of this Project. All coordination between the Owner's operations personnel and the Contractor on all matters shall be through the Owner's Project Manager.

1.03 USE AND OPERATION OF EXISTING FACILITIES

- A. The Contractor shall become familiar with the operation schedule of lift station pump systems within proximity to the work area. The Owner's staff is responsible for operating existing sanitary sewer lift stations. Contractor shall coordinate construction activities and/or install accommodations that maintain adequate lift station operation throughout the execution of this Project.
- B. Contractor shall protect all existing structures and property from damage. Anticipated upstream water elevation within the sewers due to bypass pumping operations shall be determined and monitored by the Contractor. Any upstream equipment such as, but not limited to flow monitoring equipment, shall be protected or removed to prevent damage if water levels are determined to raise sufficiently to cause damage or impact normal flow readings.

Contractor shall coordinate flow meter and/or odor logging equipment removal and replacement with the Owner a minimum of thirty (30) days prior to construction occurring within a manhole and/or structure containing flow meter and/or odor logging equipment.

- C. The Contractor shall not interfere with the operation of existing sanitary sewer pipes, except to bypass or divert flows as necessary to perform the work. The Contractor shall be responsible to barricade open excavations and secure the site for public safety and to prevent the entry of materials that may block the flow of sewage. The Contractor shall exercise every precaution to ensure that debris and material from its operation does not

SECTION 01015
CONTRACTOR'S USE OF PREMISES

enter the sewer. Any debris or blockage entering the sewer as a result of the Contractor's work shall be immediately removed by the Contractor at no additional cost to the Owner. Any damages caused by or as a result of debris entering the sewer shall be the responsibility of the Contractor and repaired and/or cleaned up at no additional cost to the Owner.

- D. All costs, coordination, permits, and fees associated with the location of staging areas, material, equipment storage, and site trailer location (if applicable) shall be the responsibility of the Contractor. The Contractor shall submit copies of individual landowner agreements to the Owner's Representative prior to occupancy. All disturbed areas shall comply with the dust control permit required by Maricopa County Air Quality Department as specified in Technical Specification Section 01062 - PERMITS AND EASEMENTS.

1.04 TRAFFIC:

The Contractor shall comply with Technical Specification Section 02100 - TRAFFIC CONTROL.

1.05 DAMAGE TO EXISTING PROPERTY

- A. Contractor shall be responsible for any damage to existing structures, piping, work, materials, or equipment because of its operations, and shall repair or replace any damaged structures, piping, work, materials or equipment to the satisfaction of, and at no additional cost to the Owner.
- B. Contractor shall be responsible for all damage to streets, roads, curbs, sidewalks, driveways, ditches, embankments, landscaping, or other public or private property, which may be caused by transporting equipment, materials, or workers to or from the work or as a result of Contractor's construction activities. Contractor shall make satisfactory and acceptable arrangements with the agency having jurisdiction over the damaged property concerning its repair or replacement and/or as specified in these Technical Specifications.
- C. Contractor shall be responsible for any and all damage to private or public property as caused by the Contractor's operations or inability to adequately bypass volume of flow present including but not limited to sewage spills and/or sewage backups.
- D. Contractor shall be responsible to identify, locate and control all contributory flows, either mainline, lateral, or force main discharge that may detrimentally impact the proper rehabilitation of the pipes or manholes/structures.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

**** END OF SECTION ****

SECTION 01015
CONTRACTOR'S USE OF PREMISES

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SECTION 01025 MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

Measurement and payment for Work performed shall be in accordance with the unit price, unless work is defined as an allowance item.

1.02 AUTHORITY

- A. The Owner's Representative will take all measurements and compute quantities accordingly.
- B. The Contractor shall provide assistance by providing necessary equipment, workers, and survey personnel as required.

1.03 UNIT QUANTITIES SPECIFIED

- A. Quantities and measurements indicated are for bidding and contract purposes only. Quantities and measurements supplied or placed in the Work and verified by the Owner's Representative shall determine payment.
- B. If the actual Work requires more or fewer quantities than those quantities indicated, the Contractor shall provide the required quantities at the unit sum/prices contracted.

1.04 MEASUREMENT OF QUANTITIES

- A. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.
- B. Measurement by Area: Measured by square dimension using mean length and width or radius.
- C. Thickness Measurement: Measured perpendicular to surface of liner or coating.
- D. Linear Measurement: Measured by linear dimension at the item centerline or mean chord.
- E. Lump Sum: Measured on a percent of complete basis.

1.05 PAYMENT

- A. Payment Includes: Full compensation for all required labor, products, tools, equipment, transportation, application or installation of an item of the

SECTION 01025
MEASUREMENT AND PAYMENT

- Work; overhead and profit, insurance, bonding, taxes, and all incidentals necessary to complete the construction.
- B. Payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities accepted by the Owner's Representative multiplied by the unit sum/price for Work which is incorporated in or made necessary by the Work.
- C. Payment for allowance items will be made on approved invoices with no additional markup by the Contractor.

PART 2 - PRODUCTS

(NOT USED)

PART 3 - EXECUTION

General Conditions

Bid Item 1: Construction Layout & As-Builts

This item includes full compensation to the Contractor for all construction survey, layout, labor, materials, equipment, and coordination for complete construction in accordance with the Plans and Specifications including final, sealed as-builts. The Contractor shall have a Registered Land Surveyor, registered in the State of Arizona, perform this work, or under their supervision. As-builts shall be in accordance with Specification Section 01782 and be sealed by a registered surveyor in the state of Arizona.

Construction layout & as-builts will be measured for payment by LUMP SUM. Payment will be paid to the Contractor in three equal payments. The first payment will be paid with Contractor's initial billing. The second payment will be made when the total payments to Contractor for the bid items equals one-half of the total bid by Contractor, exclusive of mobilization and demobilization. The remaining one-third will be paid as part of the final payment due Contractor.

Bid Item 2: Mobilization/Demobilization

This item includes full compensation to the Contractor for all mobilization and demobilization to the project area of Contractor's personnel, equipment, supplies and incidentals, including establishment of offices and other facilities required for the performance of the work on the project, as well as preparatory work and operations prior to the commencement of the work on the project site. Mobilization and demobilization shall be on an authorized basis by the Owner prior to mobilization/demobilization.

Mobilization and demobilization will be measured for payment by LUMP SUM.

Payment will be paid to the Contractor in two equal payments. First payment to be paid with the initial pay application and the second to be paid with final payment.

Removals & Restorations

Bid Item 3: Remove Manhole Steps

This item includes full compensation to the Contractor for all costs associated with the removal of manhole steps as indicated in the design drawings and Technical Specification Section 02760 – Sewer Pipe and Sewer Structure Cleaning. This item includes all labor, materials, and required equipment to remove manhole steps and fill voids, proper disposal of removed materials and any dump fees associated with legal disposal of materials removed. This item also includes all confined space safety and support systems required to complete work along with safety equipment for the City's inspection staff, as described in the Design Drawings and Technical Specifications, along with any incidentals necessary to complete the work. Measurement for payment shall be made on a per EACH basis. Payment shall be paid based on manhole step removed and resurfaced accepted in place.

Bid Item 4: Permanent Pavement Replacement, (COP Std Det P1200, Type A)

This item includes full compensation to the Contractor for all costs associated with the removal and replacement of Asphalt Concrete pavement for pipe and manhole rehabilitation areas as indicated in the design drawings and in COP Standard Detail P1200, Type A. This bid item shall be full compensation for all labor, materials, and equipment, including sawcut and removal of existing asphalt concrete pavement, hauling offsite, legal disposal, subgrade preparation, aggregate base course, asphalt concrete pavement placement, tack coat, crack filler, adjustment of impacted frames and collars, and any required testing. This item also includes all costs associated with labor, materials, equipment, for removal and temporary and permanent replacement of all obliterated pavement markings and traffic signal loops according to City of Phoenix paving requirements. Measurement for payment will be per SQUARE YARD of asphalt concrete pavement installed complete and accepted in-place.

Bid Item 5: Permanent Pavement Replacement, (COP Std Det P1200, Type B)

This item includes full compensation to the Contractor for all costs associated with the removal and replacement of Asphalt Concrete pavement for pipe and manhole rehabilitation areas as indicated in the design drawings COP Standard Detail P1200, Type B. This bid item shall be full compensation for all labor, materials, and equipment, including sawcut and removal of existing asphalt concrete pavement, hauling offsite, legal disposal, subgrade preparation, aggregate base course, asphalt concrete pavement placement, tack coat, crack filler, adjustment of impacted frames

SECTION 01025

MEASUREMENT AND PAYMENT

and collars, and any required testing. This item also includes all costs associated with labor, materials, equipment, for removal and temporary and permanent replacement of all obliterated pavement markings and traffic signal loops according to City of Phoenix paving requirements. Measurement for payment will be per SQUARE YARD of asphalt concrete pavement installed complete and accepted in-place.

Bid Item 6: Permanent Pavement Replacement, (COP Std Det P1200, Type B T-Top)

This item includes full compensation to the Contractor for all costs associated with the removal and replacement of Asphalt Concrete pavement for pipe and manhole rehabilitation areas as indicated in the design drawings COP Standard Detail P1200, Type B T-Top. This bid item shall be full compensation for all labor, materials, and equipment, including sawcut and removal of existing asphalt concrete pavement, hauling offsite, legal disposal, subgrade preparation, aggregate base course, asphalt concrete pavement placement, tack coat, crack filler, adjustment of impacted frames and collars, and any required testing. This item also includes all costs associated with labor, materials, equipment, for removal and temporary and permanent replacement of all obliterated pavement markings and traffic signal loops according to City of Phoenix paving requirements. Measurement for payment will be per SQUARE YARD of asphalt concrete pavement installed complete and accepted in-place.

Bid Item 7: ADOT Channel Access Road Restoration

This item includes full compensation to the Contractor for all costs associated with the restoration of ADOT channel access road to pre-construction conditions as indicated in the design drawings. This bid item shall be full compensation for all labor, materials, and equipment, including removal of existing access road material, subgrade preparation, backfill, compaction, channel access road restoration, and any required testing. ADOT channel access road restoration will be measured for payment by LUMP SUM. Payment will be paid to the Contractor as a percentage of the complete item.

Bid Item 8: Micro-Seal Asphalt

This item includes full compensation to the Contractor for all costs associated with the application of micro seal in accordance with the City of Phoenix Street Pavement Cut Policy. This bid item shall be full compensation for all labor, materials, and equipment, preparation, micro-seal application and any required testing. Measurement for payment will be per SQUARE YARD of micro-seal applied complete and accepted in-place.

Bid Item 9: Remove & Replace Curb & Gutter, to the Nearest Joint

This item includes full compensation to the Contractor for all costs associated with the removal and replacement of curb & gutter for pipe and manhole rehabilitation

areas as indicated in the design drawings. This item includes all costs associated with, saw cutting, excavation, removal, proper disposal of removed materials, backfill, compaction, curb & gutter placement, and any required testing. Payment shall be considered full compensation to complete required work in accordance with the Contract Documents and accepted in place. Measurement for payment shall be made per LINEAR FOOT.

Bid Item 10: Remove & Replace Sidewalk

This item includes full compensation to the Contractor for all costs associated with the removal and replacement of sidewalk for pipe and manhole rehabilitation areas as indicated in the design drawings. This item includes all costs associated with, saw cutting, excavation, removal, proper disposal of removed materials, backfill, compaction, sidewalk placement, and any required testing. Payment shall be considered full compensation to complete required work in accordance with the Contract Documents and accepted in place. Measurement for payment shall be made on a SQUARE FOOT basis.

Bid Item 11: Remove & Replace Concrete Ramp

This item includes full compensation to the Contractor for all costs associated with the removal and replacement of concrete ramp to the nearest joint for pipe and manhole rehabilitation areas as indicated in the design drawings. This item includes all costs associated with, saw cutting, excavation, removal, proper disposal of removed materials, backfill, compaction, concrete ramp placement, and any required testing. Payment shall be considered full compensation to complete required work in accordance with the Contract Documents and accepted in place. Measurement for payment shall be made on a SQUARE FOOT basis.

Bid Item 12: Remove & Replace Manhole Cone for Bypass

This item includes full compensation to the Contractor for all costs associated with the removal and replacement of manhole cone for bypass as indicated in the design drawings. This item includes all costs associated with removal of existing manhole cone, hauling offsite, legal disposal, new manhole cone installation, and any required testing. Manhole frame and cover replacement is included under a separate bid item.

Payment shall be considered full compensation to complete required work in accordance with the Contract Documents and accepted in place. Measurement for payment shall be made on a per EACH basis.

Bid Item 13: Landscape Restore in Kind

This item includes full compensation to the Contractor for all costs associated with the removal and replacement of landscaping in kind as indicated in the design drawings. This item includes all costs associated with removal and replacement of

SECTION 01025
MEASUREMENT AND PAYMENT

trees, plants, shrubs, decomposed granite and any irrigation systems damaged. Payment shall be considered full compensation to complete required work in accordance with the Contract Documents and accepted in place. Landscape restoration will be measured for payment by LUMP SUM. Payment will be paid to the Contractor as a percentage of the complete item.

Pipe & Manhole Rehabilitation

Bid Item 14: Sewer Bypass Pumping

This item includes full compensation to the Contractor for all labor, materials, and required equipment to divert sanitary sewer flow around the project work site and discharge back into the existing sanitary sewer system as specified in Technical Specification Section 02145 – Diversion of Sewage Flow and Dewatering. Also included in this bid item are standby pumps available and ready on-site in case of excess flow conditions or mechanical failures. This item shall also include installation, maintenance, sewage spill containment around pumps, fuel spill containment system, by-pass pipes and valving, pneumatic plugs, pressure testing, odor control covers, noise suppression, air release/vacuum valves, and burp tanks. This item also includes flushing and removal of pumps and pipes after bypass completion, and any landscape restoration. Measurement for payment shall be made on a LUMP SUM basis and paid as a percentage of bypass operations completed.

Bid Item 15: Pipe Cleaning (2 Passes)

This item includes full compensation to the Contractor for hydro-blast cleaning as indicated on design drawings and specified in the Technical Specifications Section 02760 – Sewer Pipe and Sewer Structure Cleaning of existing sanitary sewer pipes. This item includes all costs associated with cleaning of pipes to be rehabilitated with legal off-site disposal of sediments and debris according to all applicable state and federal regulations. This item also includes removal of obstructions as indicated in the design drawings, removal of obstructions that may hinder installation of CIPP liner, water, discharge, and all necessary safety and support systems, labor, equipment and materials required to perform the work. Payment shall be considered full compensation to complete required work in accordance with the Contract Documents and accepted in place. Measurement for payment shall be made on a LINEAR FOOT basis of sewer pipe cleaned, measured from center of upstream manhole to center of downstream manhole, of pipe cleaned and accepted.

Bid Item 16: CCTV (2 Passes)

This item includes full compensation to the Contractor for CCTV video inspection as specified in the Technical Specifications Section 02761 - Remote CCTV Inspection of Existing and Rehabilitated Sewers of existing 30-inch, 33-inch, and 36-inch diameter sanitary sewer pipes. This item includes all costs associated with CCTV inspection for pre-liner installation (after cleaning) and a second CCTV inspection at post-liner installation (after liner installation). This includes all necessary safety and support

systems, miscellaneous labor, water, discharge, materials, and equipment required to perform the work. Payment shall be made on a LINEAR FOOT basis of sewer pipe CCTV inspected, measured from center of upstream manhole to center of downstream manhole.

Bid Item 17: Detached Liner Removal (Manned Entry)

This item includes full compensation to the Contractor to rehabilitate spot locations in the interior of the sanitary sewer pipe prior to CIPP lining as indicated on the design drawings. This item includes all labor, materials, and required equipment to perform manned entry, remove deteriorated or detached PVC liner, and apply substrate resurfacer to restore and smooth surface to interior dimension prior to CIPP lining as indicated in the design drawings. This item also includes all required sampling and testing as specified in Technical Specification Section 02148 - CIPP Lining System. Measurement for payment shall be made on a per EACH basis. Payment shall be paid based on the number of pipe defects repaired and accepted in place.

Bid Item 18: 30" CIPP Liner

This item includes full compensation to the Contractor to install 30-inch diameter Cured-In-Place-Pipe (CIPP) liner including all labor, materials, and required equipment. This item includes terminating and sealing CIPP liner within the access manhole, reinstating factory tap service laterals, reinstating drop connection, and all required sampling and testing as specified in Technical Specification Section 02148 - CIPP Lining of Existing Sewers. This item also includes re-cleaning of pipes to be rehabilitated as required by the CIPP liner manufacturer requirements prior to pre-pipe rehabilitation CCTV inspection. Pre-CCTV (prior to liner installation), and post-CCTV (after liner installation) are included under separate bid item.

This work will be measured for payment after installation of the liner is accepted in place and complete. Measurement for length will be along the centerline of the pipe from center of upstream manhole cover to center of downstream manhole cover. No proportional payment shall be made for liner on-site, but not yet installed. Measurement for payment shall be per LINEAR FOOT.

Bid Item 19: 33" CIPP Liner

This item includes full compensation to the Contractor to install 33-inch diameter Cured-In-Place-Pipe (CIPP) liner including all labor, materials, and required equipment. This item includes terminating and sealing CIPP liner within the access manhole, reinstating factory tap service laterals, reinstating drop connection, and all required sampling and testing as specified in Technical Specification Section 02148 - CIPP Lining of Existing Sewers. This item also includes re-cleaning of pipes to be rehabilitated as required by the CIPP liner manufacturer requirements prior to pre-pipe rehabilitation CCTV inspection. Pre-CCTV (prior to liner installation), and post-CCTV (after liner installation) are included under separate bid item.

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This work will be measured for payment after installation of the liner is accepted in-place and complete. Measurement for length will be along the centerline of the pipe from center of upstream manhole cover to center of downstream manhole cover. No proportional payment shall be made for liner on-site, but not yet installed. Measurement for payment shall be per LINEAR FOOT.

Bid Item 20: 36" CIPP Liner

This item includes full compensation to the Contractor to install 36-inch diameter Cured-In-Place-Pipe (CIPP) liner including all labor, materials, and required equipment. This item includes terminating and sealing CIPP liner within the access manhole, reinstating factory tap service laterals, reinstating drop connection, and all required sampling and testing as specified in Technical Specification Section 02148 - CIPP Lining of Existing Sewers. This item also includes re-cleaning of pipes to be rehabilitated as required by the CIPP liner manufacturer requirements prior to pre-pipe rehabilitation CCTV inspection. Pre-CCTV (prior to liner installation), and post-CCTV (after liner installation) are included under separate bid item.

This work will be measured for payment after installation of the liner is accepted in-place and complete. Measurement for length will be along the centerline of the pipe from center of upstream manhole cover to center of downstream manhole cover. No proportional payment shall be made for liner on-site, but not yet installed. Measurement for payment shall be per LINEAR FOOT.

Bid Item 21: Epoxy Coat Manhole Channel, Throat, Bench, Wall, Cone & Chimney

This item includes full compensation to the Contractor for manhole surface preparation and application of an epoxy coating on the interior of existing sanitary sewer access manholes (channel, throat, bench, wall, cone and chimney) as indicated in the Design Drawings and specified in the Technical Specification Section - 09710 - Concrete and Masonry Coatings. This item includes all labor, materials, and required equipment to prepare the surface including grit and hydro blast clean manholes to remove all loose or deteriorated materials down to sound concrete, fill voids, proper disposal of removed materials and any dump fees associated with legal disposal of materials removed, scarify and restore benches and inverts, wash interior surfaces to neutralize pH, install product compatible underlayment to restore interior dimensions back to original dimensions, furnish and install a protective epoxy coating system to channel, throat, bench, wall, cone and chimney, perform and report spark testing, and perform and report pull adhesion testing. This item also includes all confined space safety and support systems required to complete work along with safety equipment for the City's inspection staff, as described in the Design Drawings and Technical Specifications, along with any incidentals necessary to complete the work. Payment shall be made on a per EACH basis, complete, and accepted in place.

Bid Item 22: Epoxy Coat Manhole Channel & Bench

This item includes full compensation to the Contractor for all costs associated with grit and hydro blast cleaning the manhole channel and bench and application of an epoxy protective coating as indicated in the design drawings. This item includes all labor, material, and equipment required to grit and hydro blast clean, proper disposal of removed materials and any dump fees associated with legal disposal of materials removed, building bench and channel to original dimensions, application of epoxy coating, and any required testing according to Technical Specification Section 09710-Concrete and Masonry Coating. This item also includes all confined space safety and support systems required to complete work along with safety equipment for the City's inspection staff, as described in the Design Drawings and Technical Specifications, along with any incidentals necessary to complete the work. Measurement for payment shall be made on a per EACH basis. Payment shall be paid based on bench and channel coating installed, tested, and accepted in place.

Bid Item 23: Epoxy Coat Manhole Channel

This item includes full compensation to the Contractor for all costs associated with grit and hydro blast cleaning the manhole channel and application of an epoxy protective coating as indicated in the design drawings. This item includes all labor, material, and equipment required to grit and hydro blast clean, proper disposal of removed materials and any dump fees associated with legal disposal of materials removed, building channel to original dimensions, application of epoxy coating, and any required testing according to Technical Specification Section 09710-Concrete and Masonry Coating. This item also includes all confined space safety and support systems required to complete work along with safety equipment for the City's inspection staff, as described in the Design Drawings and Technical Specifications, along with any incidentals necessary to complete the work. Measurement for payment shall be made on a per EACH basis. Payment shall be paid based on channel coating installed, tested, and accepted in place.

Bid Item 24: Epoxy Coat Manhole Chimney

This item includes full compensation to the Contractor for all costs associated with grit and hydro blast cleaning the manhole chimney and application of an epoxy protective coating as indicated in the design drawings. This item includes all labor, material, and equipment required to grit and hydro blast clean, proper disposal of removed materials and any dump fees associated with legal disposal of materials removed, building bench and channel to original dimensions, application of epoxy coating, and any required testing according to Technical Specification Section 09710-Concrete and Masonry Coating. This item also includes all confined space safety and support systems required to complete work along with safety equipment for the City's inspection staff, as described in the Design Drawings and Technical Specifications, along with any incidentals necessary to complete the work. Measurement for payment shall be made on a per EACH basis. Payment shall be paid based on chimney coating installed, tested,

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and accepted in place.

Bid Item 25: Manhole Repair

This item includes full compensation to the Contractor for all costs associated with manhole repairs as indicated in the design drawings in accordance with Technical Specification Section 09710 – Concrete and Masonry Coating. This bid item shall be full compensation for all labor, materials, and equipment required to complete the work, and any required testing. Manhole repairs may include, but are not limited to, the repair of cracks, fractures, and surface aggregate visible or projecting into the manhole. Measurement for payment shall be made on an EACH basis. Payment shall be paid based on the number of manhole repairs completed and accepted in place.

Bid Item 26: Replace Manhole Frame & Cover

This item includes full compensation to the Contractor for all costs associated with the removal and replacement of sewer access manhole concrete collar, frame and cover as indicated in the design drawings per COP Standard Detail P1424 and MAG Standard Detail 423-2. This bid item shall be full compensation for all labor, materials, concrete adjustment rings, frame and cover, concrete collar and equipment required to complete the work. Measurement for payment shall be made on an EACH basis. Payment shall be paid based on the number of frame and covers installed and accepted in place.

Bit Item 27: Cut and Reinstate Coupon for Bypass Suction Pit

This item includes full compensation to the Contractor for all costs associated with cutting and reinstating coupon for bypass suction pit as indicated in the design drawings. This includes excavation, sawcutting, pavement removal, cutting and removing the pipe coupon, trench boxes, lining the pit with shotcrete, reinstating the coupon per the plans, the concrete cap, backfill, and CCTV post-backfill to verify repair. Pavement replacement is included under a separate bid item.

This bid item shall be full compensation for all labor, materials, and equipment required to complete the work, and any required testing. Measurement for payment shall be made on an EACH basis. Payment shall be paid based on the number of reinstated coupons completed and accepted in place.

Allowances

Bid Item 28: Allowance - Repair Additional Pipe Defect (Manned Entry)

This item includes full compensation to the Contractor to rehabilitate additional spot locations in the interior of the sanitary sewer pipe prior to CIPP lining (if needed). Required spot repair locations shall be identified from pre-CCTV footage. If a defect is identified that is larger than can be bridged by the CIPP liner, then a spot repair

shall be performed on the existing sanitary sewer pipe prior to CIPP lining. This item includes all labor, materials, and required equipment to perform manned entry, remove deteriorated or detached PVC liner, and apply substrate resurfacer to restore and smooth surface to interior dimension prior to CIPP lining as indicated in the design drawings. This item also includes all required sampling and testing as specified in Technical Specification Section 02148 - CIPP Lining System. Measurement for payment shall be made on a per EACH basis with a maximum of (12). Payment shall be paid based on the number of pipe defects repaired and accepted in place. Use of this bid item shall be authorized by the Owner prior to performing the work.

Bid Item 29: Allowance - Additional Manhole Repairs / Rehabilitation

This item includes full compensation to the Contractor to perform additional manhole repairs or coatings (if needed). Required manhole repair or rehabilitation locations shall be identified from pre-CCTV footage. This bid item shall be full compensation for all labor, materials, and equipment required to complete the work, and any required testing. Measurement for payment shall be made on a per EACH basis with a maximum of (25). Payment shall be paid based on the number of manhole repairs completed and accepted in place. Use of this bid item shall be authorized by the Owner prior to performing the work.

Bid Item 30: Allowance - PVC-Lined Manhole Repair

This item includes full compensation to the Contractor to perform PVC-lined manhole repairs (if needed). Some of the manholes identified for rehabilitation in the design drawings have unknown lining conditions (indicated in the design drawings). If an existing manhole is identified as PVC-lined during construction, then the manhole shall be repaired as indicated in Technical Specification Section 13000 – Special Protective Materials Installation and PVC Lining Details included in the design drawings. Required manhole repair locations shall be identified from pre-CCTV footage. This bid item shall be full compensation for all labor, materials, and equipment required to complete the work, and any required testing. Measurement for payment shall be made on a per EACH basis with a maximum of (12). Payment shall be paid based on the number of PVC-lined manhole repairs completed and accepted in place. Use of this bid item shall be authorized by the Owner prior to performing the work.

Bid Item 31: Allowance - Traffic Control

This item includes full compensation for all costs associated with providing and maintaining all traffic control necessary for pipeline and manhole rehabilitation and bypass pumping operations to complete the work according to City of Phoenix requirements. Work shall include all labor, materials, and equipment, signs, and barricades required to plan, permit, mobilize, provide and maintain traffic control measures meeting applicable regulatory requirements associated with the project. This item also includes labor, materials, and equipment necessary to provide and

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remove temporary pedestrian pathways affected by construction activities. A written traffic control plan in accordance with Technical Specification Section 02100 – Traffic Control shall be submitted by the Contractor to City for approval. Also included in this item is reinstatement of all permanent traffic control devices, sensors, and appurtenances impacted by construction activities, including sensor wires, connections, temporary road surface maintenance, cleaning and striping to restore traffic control facilities back to their original operating conditions. Payment shall be made from this ALLOWANCE on approved invoices.

Bid Item 32: Allowance - Permits

This item includes full compensation to the Contractor for all permits outlined in Technical Specification Section 01062 – Permits and Easements. Permits will be measured for payment by LUMP SUM. Payment will be paid to the Contractor as a percentage of the complete item.

Bid Item 33: Allowance - Potholing

This item includes full compensation for all costs associated with potholing existing utilities within the project area. Measurement for payment shall be made on a per EACH basis for each pothole completed. Payment shall include all costs associated with excavation, equipment, surveying, proper disposal of removed materials and fees associated with legal disposal of materials removed. If potholes are required outside of the area of pavement replacement, payment for permanent pavement replacement shall be included.

Bid Item 34: Allowance - Stormwater Pollution Prevention Best Management Practice (BMPs)

This bid item includes full compensation for all costs associated with best management practices for erosion and dust control. Payment shall include filter barrier, silt fence, sandbag berms and temporary materials installed during completion of construction activities.

Permits will be measured for payment by LUMP SUM. Payment will be paid to the Contractor as a percentage of the complete item.

Bid Item 35: Allowance - Uniformed, Off-duty Law Enforcement Officer

This item includes full compensation for all costs associated with providing an off-duty law enforcement officer as directed by the City of Phoenix. Payment for this item includes all costs associated with providing an officer at signalized intersections when traffic is restricted as described in the 2020 City of Phoenix Traffic Barricade Manual. When construction activities do not restrict traffic through the intersections, law enforcement officer's hours may be reduced or suspended at the direction of the City. Payment for work completed under this bid item shall be made from this ALLOWANCE

based on approved invoiced hourly rates and hours expended.

Bid Item 36: Allowance - Extended Services

This item includes full compensation to the Contractor for additional services in connection with the project, including services normally furnished by City and services not otherwise provided for in this scope of services.

The City and the Contractor agree that there may be certain addition or extended services required to be performed by the Contractor during the contract period that cannot be defined sufficiently at the time of execution of this contract. Such services shall be authorized in writing in accordance with applicable contract provisions.

**** END OF SECTION ****

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MEASUREMENT AND PAYMENT

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SECTION 01060 SAFETY AND HEALTH

PART 1 - GENERAL

1.01 SAFETY AND HEALTH REGULATIONS

- A. The Contractor shall exercise precaution at all times for the protection of persons (including employees) and property. The Contractor shall comply with the provisions of all applicable laws, pertaining to such protection including all federal, state, and local occupational safety and health acts, codes, standards, and regulations promulgated thereunder. Contractor shall have copies of permits on-site and available for review any time work activities are commencing.
- B. The Contractor shall provide and maintain in a neat, sanitary condition such accommodations for the use of the employees as may be necessary to comply with the requirements and regulations of the Arizona Department of Health Services and/or as specified by the Maricopa County Public Health Department, Sanitary Code.
- C. The Contractor shall provide all safeguards, safety devices, and protective equipment. The Contractor shall take any other needed actions necessary to protect the life and health of employees on the job, the safety of the public, and to protect property in connection with the performance of the work covered by this contract.

1.02 SPECIAL CONSIDERATIONS

This section describes certain minimum precautions the Contractor shall consider in developing its Safety and Health Program. The Safety and Health Program supplements the regulatory requirements stated herein and/or in the General Conditions. Sewers and appurtenant structures are considered confined spaces and are subject to federal, state, and local regulations governing confined space entry and safety procedures.

A. INFECTIOUS DISEASES:

The Contractor shall anticipate that a wide spectrum of disease-producing organisms will be present in sanitary sewers. In addition to the requirements set forth in the regulations described in Subsection 1.01, the Contractor shall provide the following as a minimum:

1. Instruction in appropriate disease-prevention mechanisms and personal sanitation practices for all workers and supervisors.

2. An option of a preventative inoculation program (tetanus/diphtheria, hepatitis, etc.) to all workers and supervisors.
3. Clothing to protect against infection, including, but not limited to: rubber boots with full sole and heel steel insert-liners, safety glasses or goggles, and gloves to all workers and supervisors.

B. DANGEROUS GASES AND OXYGEN DEFICIENCY

The sanitary sewer pipes, manholes and/or structures are Occupational Safety and Health Administration (OSHA) regulated confined spaces, which means they have a limited means of egress and are subject to the accumulation of dangerous gases or oxygen deficiency. Volatile petroleum products and common household hazardous materials may be discharged into the sanitary sewer. Explosive gases, such as methane generated from decomposing organic material, may be present and accumulated. Toxic gases, such as hydrogen sulfide, may be present in life-threatening concentrations. Significant oxygen depletion may occur. In addition, construction may occur adjacent to traffic travel lanes. Construction procedures may require combustion engine machinery to be located in or near the work site. Therefore, gaseous combustion by-products, such as carbon monoxide, may be present.

1. In addition to the requirement set forth in the regulations described in Subsection 1.01, the Contractor shall provide the following as a minimum: Portable atmospheric monitors that measure levels of oxygen, explosive gas (methane), carbon monoxide, and toxic gas (hydrogen sulfide). Monitors shall be properly calibrated and carefully maintained throughout the construction period. Monitors shall be used continuously while personnel are in the confined space.

C. TOXIC CHEMICALS

Toxic chemicals may be part of the construction process. The Contractor shall abide by all handling procedures recommended by the manufacturer when dealing with toxic chemicals. Safety Data Sheets (SDS) sheets shall be available on-site at all times that construction is occurring and where chemicals are stored.

1.03 SUBMITTALS

The Contractor shall submit a Safety and Health Plan, Lock-Out/Tag-Out (Hazardous Energy Control) program/policies, and Confined Space program/policies according to Technical Specification Section 01300 – SUBMITTALS. These documents shall be submitted for information only and will not be reviewed by the Owner's Representative.

PART 2 - PRODUCTS

2.01 SAFETY AND HEALTH PLAN

A. GENERAL

The Contractor shall develop and maintain for the duration of the Contract, three copies of a Safety and Health Plan that will effectively incorporate and implement all required health and safety precautions. At least one copy shall be located on the Contractor's work site.

B. COMPLIANCE

The Contractor shall appoint an on-site employee who is qualified, trained, and authorized to supervise and enforce compliance with the Safety and Health Plan. The Contractor is responsible for ensuring that necessary gas monitoring, protective clothing, other supplies, and equipment as specified are available to implement this plan.

C. REVISIONS

In the event that regulatory agencies or jurisdictions determine the Safety and Health Plan to be inadequate to protect employees and the public:

1. The Contractor shall stop the work in progress at no additional cost to the Owner until adequate safety measures are implemented.
2. The Contractor shall modify the plan to meet the requirements of said regulatory agencies, jurisdictions, and the Owner.
3. The Contractor shall provide the Owner with the revisions to the Plan within two (2) days of the notice of deficiency.

D. MINIMUM CONSIDERATIONS

The Safety and Health Plan shall, as a minimum, include the following considerations:

1. Objective.
2. Key personnel and responsibilities.
3. Hazard analysis and identification of the work environment and construction activities.

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4. Training requirements, including, but not limited to: authorized personnel and qualifications for work in confined spaces, work site conditions and the environment in which the project is located.
5. List of Personal Protective Equipment (PPE).
6. Confined space entry procedures, including atmospheric gas monitoring program and ventilation of work areas and confined spaces.
7. Site access control measures.
8. Work practices, decontamination procedures, and work limitations.
9. Emergency procedures, including evacuation plan from the sanitary sewer work environment including but not limited to confined space area, location of first aid, fire extinguishers, eyewash, drinking water, map showing route to nearest medical facility and emergency response or fire station, list of on-site key personnel who are currently certified in first aid/CPR.
10. Job site cleanup, and spill containment and cleanup procedures.
11. Telephone numbers:
 - a. 24-hour number to contact Contractor's Representative.
 - b. Emergency services.
 - c. Owner's Project Manager.
 - d. Other (as provided by the Owner)
12. Documentation including but not limited to vaccination records, specialty training, confined space training and certification, injury or illness, respirator fit tests, hazards notification log, etc.

PART 3 - EXECUTION

NOT USED

**** END OF SECTION ****

SECTION 01062 PERMITS AND EASEMENTS

PART 1 - GENERAL

1.01 EASEMENTS

- A. All sanitary sewer pipe and access manholes are located within the City of Phoenix right-of-way, utility easements, or license agreement.

1.02 PERMITS TO BE OBTAINED BY THE CONTRACTOR

- A. The Contractor shall obtain permits and agreements required for the work and shall pay all costs and fees thereof, including but not limited to agency review fees, permit fees, and inspections fees. The Contractor shall comply with all applicable terms and conditions therein.

The following permits shall be obtained by the Contractor if applicable, but not necessarily limited to the following to complete the work:

1. Traffic Barricade Manual:
 - a. Chapter II – Temporary Restrictions and Closure System (TRACS) Permits.
 - b. Chapter III – Street/Sidewalk Closure Permit.
2. City of Phoenix:
 - a. Extended Hours Work Approval (if applicable).
3. Arizona Department of Transportation (ADOT):
 - a. Encroachment Permit.
4. Maricopa County Air Quality Department:
 - a. Dust Control Permit.
5. Arizona Department of Environmental Quality (ADEQ):
 - a. General Permit.
 - b. DeMinimus Discharge Permit.
6. Occupational Safety and Health Administration (OSHA):
 - a. Confined Space Entry Permit(s).

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PERMITS AND EASEMENTS

7. Salt River Project (SRP):
 - a. Encroachment Permit (obtained by the City).
 - i. Work under or around overhead or underground power lines.
 - ii. License to work within irrigation facility right-of-way.
 - iii. Contractor to notify SRP inspector 72 hours prior to beginning construction in the vicinity of SRP facilities.
8. Others as applicable

1.03 PERMIT FEE

Contractor shall be responsible for coordinating, obtaining, and paying all permit fees. Depending upon the duration of the Contractor's work schedule, the Contractor may also have to pay additional fees to extend the permit(s) if the work is not scheduled before expiration at no additional cost to the Owner.

1.04 SUBMITTALS

The Contractor shall submit the following according to Technical Specification Section 01300 – SUBMITTALS:

1. All permits and temporary easements per paragraph 1.02 shall be submitted to the Owner's Representative prior to work commencing.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 POSTING

Permits and temporary easements shall be posted (or available for review) at the site of the work at all times work is commencing.

**** END OF SECTION ****

SECTION 01102 CONTRACTOR'S HAZARDOUS MATERIALS MANAGEMENT PROGRAM

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Contractor shall comply with all local, state, and federal rules and regulations related to environmental protection and environmental safety regulations and requirements including but not limited to the following:
1. Title 29 Code of Federal Regulations Parts 1910, Occupational Safety and Health Standards
 2. Title 40 Code of Federal Regulations, Protection of Environment
 3. Title 49 Code of Federal Regulations, Transportation
 4. State Occupational Safety and Health Administration (OSHA)
 5. Arizona Department of Environmental Quality (ADEQ)
 6. Arizona Department of Water Resources (ADWR)
 7. Maricopa County Air Quality Department Regulations
- B. In order to ensure the Owner that the Contractor is complying with the intent of the regulations stated in subsection "A" above, as they relate to the use of hazardous materials, hazardous wastes, and other similarly defined (in those regulations) substances used on the site, the Contractor shall develop and maintain a Hazardous Materials Management Program (HMMP). The HMMP shall include at a minimum but is not limited to the requirements specified herein. The interests of the Owner are that accidental spills, site contamination, and injury of personnel on the site are avoided.
- C. The Owner will not enforce suspected violations of the rules and regulations referenced in Subsection "A" above, however the Owner will notify the Contractor of suspected violations. If in the opinion of the Owner, the Contractor fails to address the suspected violations in a timely and appropriate manner, the Owner will notify federal, state, and/or local regulatory agencies, report the suspected violations to them, and request that they inspect the Contractor's operations. Any fines that may be levied against the Owner for violations committed on the site by the Contractor or Sub-Contractors as well as any costs or fines to the Owner associated with cleanup of materials shall be reimbursed immediately by the Contractor. All documents required by the program shall be made available to the Owner immediately upon request.

SECTION 01102
CONTRACTOR'S HAZARDOUS MATERIALS
MANAGEMENT PROGRAM

D. Any hazardous waste, as defined in any of the above listed regulations, generated by the Contractor shall be the responsibility of the Contractor. If the Contractor is utilizing a substance that qualifies as a hazardous waste, Contractor shall obtain a provisional United States Environmental Protection Agency (EPA) identification number, listing the Contractor's name and construction site address as the generator of the hazardous waste. The Contractor shall be responsible for the identification, analysis, profiling, transport, and disposal of hazardous wastes generated. The identification number can be obtained from ADEQ.

1.02 HAZARDOUS MATERIALS PROGRAM REQUIREMENTS

- A. Within the regulations listed in Subpart 1.01. A., terms such as hazardous material, hazardous wastes, and similar terms have varying definitions. To dispel confusion regarding what materials fall under the Program Requirements and for the purposes of this Subpart 1.02, Hazardous Material is defined as "any material, whether solid, semi-solid, liquid, or gas, which, if not stored and/or used properly, may cause harm or injury to persons through inhalation, ingestion, absorption or injection, or which may negatively impact the environment through the use or discharge of the material on the ground, in the water (including groundwater), or to the air."
- B. The Contractor shall develop and provide to the Owner's Representative a complete inventory of products containing hazardous materials in concentrations greater than 0.1% for carcinogens (as defined in 29CFR Part 1910.1200D4) and 1.0% for all others that are being stored and/or used on site. The inventory shall be updated immediately when new materials are delivered to or taken from the site. The inventory shall include the name of the product, manufacturer, vendor, container size(s), number of containers and the minimum and maximum volume of material intended to be stored on site.
- C. The Contractor shall develop and keep updated a list of hazardous materials that meet any of the following criteria:
1. Has a flash point of less than 140 degrees F.
 2. Has a pH less than 2 or greater than 12.5.
 3. Contains any chemical listed in Title 40 CFR Part 260 – 269 regardless of quantity.
 4. Contains any chemical listed in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) lists regardless of quantity.

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CONTRACTOR'S HAZARDOUS MATERIALS
MANAGEMENT PROGRAM

- D. The Contractor shall maintain on the site two (2) notebook containing current (dated within the past two (2) years) Safety Data Sheets (SDS) for all materials being used on site, whether or not they are defined as a Hazardous Material in Subsection 1.02A. One (1) notebook shall be kept on-site with the Contractors Superintendent and the other shall be kept in the Wastewater Treatment Facility Administration building(s) serving the area of rehabilitation or as directed by the Owner. The notebook must be kept up to date as materials are brought onto and removed from the site.
- E. Contractor shall develop an emergency/spill response plan, for each hazardous material or class/group of materials. As a minimum, the response plan must address the following:
1. Provide a description of equipment on site available to contain and/or respond to an emergency/spill of the material.
 2. Notification procedures.
 3. Response coordination procedures between the Contractor, Owner, and Owner's Representative and the City of Phoenix emergency response team.
 4. Provide a site plan showing the location of stored hazardous materials and location spill containment/response equipment.
 5. Provide a description of the hazardous material handling and spill response training provided to Contractor's employees.
- F. The Contractor shall, to the satisfaction of the Owner, properly and safely store all hazardous materials, which shall include as a minimum, the following:
1. Have a designated storage site for hazardous material, which includes secondary containment. The site must include barriers to prevent vehicles from colliding with the storage containers.
 2. Provide signage approved by the Owner clearly identifying the hazardous materials storage site.
 3. All hazardous materials containers must bear the applicable Hazard Diamonds.
- G. The Contractor shall properly label all containers of consumable materials, whether or not they are classified as Hazardous Materials under this Section. The name of the Contractor or Subcontractor shall be stenciled on any container containing a hazardous material and on any container over

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CONTRACTOR'S HAZARDOUS MATERIALS
MANAGEMENT PROGRAM

5-gallon capacity containing a non-hazardous material. Any container must have a label clearly identifying the contents. If any such unlabeled containers are discovered on the site, the Owner shall notify the Contractor, and the Contractor will within one (1) hour properly label the container or remove it from the site. Any containers that are filled from larger containers must also be properly labeled.

H. The Owner encourages storage of hazardous materials off site until the materials are needed on site.

I. The Contractor shall make all documentation required herein to be made available immediately upon request of the Owner.

1.03 SUBMITTALS

Contractor shall submit according to Technical Specification Section 01300 - SUBMITTALS the following:

1. The Contractor shall submit a copy of the HMMP.
2. The Contractor shall submit a copy of the emergency/spill response plan.
3. Copies of all permits obtained from jurisdictional or regulatory agencies.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

**** END OF SECTION ****

SECTION 01214 STORM WATER PROTECTION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. If applicable, comply with the terms and conditions of Arizona Department of Environmental Quality (ADEQ) requirements under the Arizona Pollutant Discharge Elimination System (AZPDES) Construction Activity General Permit (CGP) for stormwater. Under provisions of that permit, the Contractor shall be designated as permittee and responsible for providing necessary material and for taking appropriate measures to minimize pollutants in stormwater runoff from the Project.
- B. The Contractor shall obtain a De Minimus General Permit (DMGP) from ADEQ for certain types of non-stormwater discharges to surface waters of the United States and comply with the requirements of the permit.
- C. If construction activities disturbing less than one (1) acre of land, the Contractor shall comply with the requirements in the City of Phoenix Municipal Code Section 32C for Stormwater Quality Protection. The Contract Price shall include all material, labor and other permits and incidental costs related to:
 - 1. Preparing, updating and revising the Stormwater Management Plan (SWMP).
 - 2. Installing and maintaining all structural and non-structural items chosen by the Contractor to comply with the SWMP.
 - 3. Clean-up and disposal costs associated with clean-up and repair following storm events or Contractor caused spills on the project.
 - 4. Implementing and maintaining best management practices to comply with the Owner's stormwater code.
 - 5. Obtain and comply with DMGP, if such permit is required.
- D. If construction activities disturbing greater than one (1) acre of land, the Contract Price shall include all material, labor and other permits and incidental costs related to:

SECTION 01214
STORM WATER PROTECTION

1. Preparing, updating, and revising the Stormwater Management Plan (SWMP).
 2. Installing and maintaining all structural and non-structural items chosen by the Contractor to comply with the SWMP.
 3. Clean-up and disposal costs associated with clean-up and repair following storm events or Contractor caused spills on the project.
 4. Implementing and maintaining best management practices to comply with ADEQ SWMP checklist.
 5. Preparing the Notice of Intent (NOI) and Notice of Termination (NOT) shall be covered by the AZPDES CGP for Arizona.
 6. Obtain and comply with DMGP, if such permit is required.
- E. All necessary SWMP controls and practices must be implemented prior to commencement of any construction, excavation or backfill activity.

1.02 SUBMITTALS

The Contractor shall submit according to Technical Specification Section 01300 – SUBMITTALS the following:

- A. If construction activities disturb less than one (1) acre of land, submit SWMP.
- B. If construction activities disturb more than one (1) acre of land, submit an online application using myDEQ account no later than two (2) weeks before the start of construction:
 1. NOI to be covered by the AZPDES CGP for Arizona, including certifications of signature.
 2. SWPPP shall include the Contractor's proposed temporary means for stormwater control during all phases of construction and include stormwater pumping/retention plans. This submittal shall be coordinated with Contractor's Excavation Plan submittal.
 3. Submit the NOT of coverage under AZPDES CGP upon project completion.
- C. As part of the SWMP, submit a construction site inspection report that includes the following:

1. Inspection scope.
 2. Inspector qualifications.
 3. Observations of SWMP non-compliance and corrective steps taken.
 4. Certificate of Compliance with SWMP and the AZPDES CGP for Stormwater Discharge in the event of no incidents. Reports shall be submitted each quarter, at a minimum, throughout the Contract duration.
- D. Submit for a DMGP from ADEQ if required.

PART 2 – PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

**** END OF SECTION ****

SECTION 01214
STORM WATER PROTECTION

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SECTION 01300 SUBMITTALS

PART 1- GENERAL

1.01 GENERAL

Submittals covered by these requirements include manufacturers' information, shop drawings, test procedures, test results, samples, requests for substitutions, and miscellaneous work-related submittals. The Contractor shall furnish all descriptive data, certificates, samples, tests, methods, schedules, and manufacturer's installation and other instructions as specifically required in the Contract Documents to demonstrate fully that the materials to be furnished and the methods of work comply with the provisions and intent of the Contract Documents.

1.02 CONTRACTOR'S RESPONSIBILITIES

- A. The Contractor shall be responsible for the accuracy and completeness of the information contained in each submittal and shall assure that the material, equipment, or method of work shall be as described in the submittal. The Contractor shall verify that all features of all products conform to the specified requirements. Submittal documents shall be clearly edited to indicate only those items which are being submitted for review. All extraneous materials shall be crossed out or otherwise obliterated. The Contractor shall ensure that there is no conflict with other submittals and notify the Owner in each case where a submittal may affect the work of another contractor or the Owner. The Contractor shall coordinate submittals among their subcontractors and suppliers.
- B. The Contractor shall coordinate submittals so that work will not be delayed. The Contractor shall coordinate and schedule different categories of submittals, so that one will not be delayed for lack of coordination with another. No extension of time will be allowed because of failure to properly schedule submittals. The Contractor shall not proceed with work related to a submittal until the submittal process is complete. This requires that submittals for review and comment shall be returned to the Contractor stamped "No Exceptions Taken" or "Make Corrections Noted."
- C. The Contractor shall certify on each submittal document that the submittal has been reviewed, field conditions verified, and complied with the Contract Documents.

The Contractor may authorize in writing a material or equipment supplier to deal directly with the Owner or Owner's Representative with regards to

SECTION 01300
SUBMITTALS

a submittal. These dealings shall be limited to contract interpretations to clarify and expedite the work.

1.03 CATEGORIES OF SUBMITTALS

A. GENERAL:

Submittals fall into two general categories; submittals for review and comment, and submittals which are primarily for information only. Submittals, which are for information only, are generally specified as PRODUCT DATA in Part 2 of applicable Technical Specification sections.

1. SUBMITTALS FOR REVIEW AND COMMENT:

All submittals except where specified to be submitted as product data for information only shall be submitted by the Contractor to the Owner's Representative for review and comment.

2. SUBMITTALS (PRODUCT DATA) FOR INFORMATION ONLY:

Where specified, the Contractor shall furnish submittals (product data) to the Owner for Information only.

1.04 TRANSMITTAL PROCEDURE

A. GENERAL:

The Owner or Owner's Representative shall furnish the Contractor a list of numbers for anticipated submittals as specified in the Contract Documents. Two separate lists will be provided: Submittals for review and comment and product data (submittals) for information only. The list is not intended to be an all-inclusive list of submittals required. The Contractor shall coordinate additional submittals and corresponding submittal numbers with the Owner's Representative.

Unless otherwise specified, submittals regarding material and equipment shall be accompanied by a form similar to the Transmittal Form 01999-A specified in Technical Specification Section 01999 – REFERENCE FORMS. A separate form shall be used for each specific item, class of material, and items specified in separate, discrete sections, for which the submittal is required.

A unique number, sequentially assigned, shall be noted on the transmittal form accompanying each item submitted. Original submittal numbers shall have the following format: "XXX"; where "XXX" is the sequential number assigned by the Owner's Representative. Re-submittals shall have the following format: "XXX-Y"; where "XXX" is the originally assigned submittal

number and "Y" is a sequential letter assigned for re-submittals, i.e., A, B, or C being the 1st, 2nd, and 3rd re-submittals, respectively. Submittal 25B, for example, is the second re-submittal of submittal 25.

B. DEVIATION FROM TECHNICAL SPECIFICATIONS

1. The Contractor shall submit a copy of the Technical Specification section, with addendum updates included, and all referenced and applicable sections with addendum updates included, with each paragraph check-marked as follows:
 - a. Marked to indicate Technical Specification compliance. Check marks (✓) shall denote full compliance with a paragraph as a whole.
 - b. Marked to indicate requested deviations from Technical Specification requirements. If deviations from the Technical Specifications are indicated, and therefore requested by the Contractor, each deviation shall be underlined and denoted by a number in the margin to the right of the identified paragraph, referenced to a detailed written explanation of the reasons for requesting the deviation. The Owner shall be the final authority for determining acceptability of requested deviations. The remaining portions of the paragraph not underlined will signify compliance on the part of the Contractor with the Technical Specifications. Failure to include a copy of the marked-up Technical Specification sections, along with justification(s) for any requested deviations to the requirements, with the submittal shall be sufficient cause for rejection of the entire submittal with no further consideration.
2. If the Contractor proposes to provide material, equipment, or method of work, which deviates from the Contract Documents, the Contractor shall indicate so under "deviations" on the transmittal form accompanying the submittal copies.

C. SUBMITTAL COMPLETENESS:

Submittals, which do not have all the information required to be submitted, including deviations, are not acceptable and will be returned without review. The Contractor will be charged an additional cost if a submittal requires three (3) or more reviews. (See subsection 1.07 THIRD AND SUBSEQUENT SUBMITTALS)

1.05 REVIEW PROCEDURE

A. GENERAL:

Submittals are specified for those features and characteristics of materials,

SECTION 01300
SUBMITTALS

and methods of operation, which can be selected, based on the Contractor's judgment of their conformance to the specified requirements. Other features and characteristics are specified in a manner, which enable the Contractor to determine acceptable options without submittals. The review procedure is based on the Contractor's guarantee that all features and characteristics not requiring submittals conform as specified. Review shall not extend to means, methods, techniques, sequences, or procedures of construction, or to verifying quantities, dimensions, weights or gages, or fabrication processes (except where specifically indicated or required by the Contract Documents) or to safety precautions or programs incident thereto. Review of a separate item, as such, will not indicate approval of the assembly in which the item functions.

When the Contract Documents require a submittal, the Contractor shall submit the specified information as follows:

1. One (1) electronic copy of all submitted information in digital (.pdf) format via email or other electronic transfer device for review and comment. The digital submittal shall be of sufficient quality that is legible and readable.
2. One (1) electronic copy of all submitted information in digital (.pdf) format shall be transmitted with submittals (Product Data) for information only.

B. SUBMITTALS FOR REVIEW AND COMMENT:

Unless otherwise specified, within ten (10) business days after receipt of a submittal for review and comment, the Owner's Representative shall review the submittal and return one (1) electronic color copy. The returned submittal shall indicate one of the following actions:

1. If the review indicates that the material, equipment, or work method complies with the contract documents, submittal copies will be marked "NO EXCEPTIONS TAKEN." In this event, the Contractor may begin to implement the work method or incorporate the material or equipment covered by the submittal.
2. If the review indicates limited corrections are required, copies will be marked "MAKE CORRECTIONS NOTED." The Contractor may begin implementing the work method or incorporating the material and equipment covered by the submittal in accordance with the noted corrections.
3. If the review reveals that the submittal is insufficient or contains incorrect data, copies will be marked "AMEND AND RESUBMIT." Except at his own risk, the Contractor shall not undertake work covered by this

submittal until it has been revised, resubmitted and returned marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED."

4. If the review indicates that the material or work method does not comply with the Contract Documents, copies of the submittal will be marked "REJECTED - SEE REMARKS." Submittals with deviations, which have not been identified, clearly may be rejected. Except at his own risk, the Contractor shall not undertake the work covered by such submittals until a new submittal is made and returned marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED."

C. SUBMITTALS (PRODUCT DATA) FOR INFORMATION ONLY:

Such information is not subject to submittal review procedures and shall be provided as part of the work under this contract and its acceptability determined under normal inspection procedures.

1.06 EFFECT OF REVIEW OF CONTRACTOR'S SUBMITTALS

Review methods of work or information regarding materials the Contractor proposes to provide, shall not relieve the Contractor of his responsibility for errors therein and shall not be regarded as an assumption of risks or liability by the Owner, or by any officer or employee thereof, and the Contractor shall have no claim under the contract on account of the failure, or partial failure, of the method of work, material, or equipment so reviewed. A mark of "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED" shall mean that the Owner or Owner's Representative has no objection to the Contractor, upon his own responsibility, using the plan or method of work proposed, or providing the materials proposed, subject to the corrections noted.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

**** END OF SECTION ****

SECTION 01300
SUBMITTALS

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SECTION 01310 PROGRESS SCHEDULE

PART 1 - GENERAL

1.01 DESCRIPTION

This section specifies requirements and procedures for the Contractor in preparing Schedules. The purpose of the Schedule shall be to ensure adequate planning and execution of the work by the Contractor, to establish the standard against which satisfactory completion of the project shall be judged, to assist the Owner in monitoring progress and for the assessment of the impact of change orders on the Schedule.

1.02 SUBMITTAL PROCEDURES

The Contractor shall submit a project schedule to the Owner and Owner's Representative within ten (10) calendar days of receiving Notice to Proceed identifying the duration of mobilization, anticipated time when work is to be performed, bypass pumping operation set-up, operation and disassembly, cleaning, pre-inspection and post CCTV video, rehabilitation duration holidays and non-working days, and date of project completion. Schedule shall be transmitted to the Owner's Representative per Technical Specification Section 01300 - SUBMITTALS.

1.03 HOLIDAY SEASON CONSTRUCTION MORATORIUM

Construction activities are not permitted per City of Phoenix Traffic Barricade Manual without prior approval in writing by the right-of-way management office (602-262-6235) or the Owner. Construction moratorium is as follows:

1. Holidays: Near shopping centers between the day after Thanksgiving and January 1 of each year.

1.04 CONTRACTOR WORK HOURS

Normal work hours within the City of Phoenix right of way, on any day of the week are as follows:

- October 1 through April 30 – 7:00 am to 7:00 pm
- May 1 through September 30 – 6:00 am to 7:00 pm

Contractor may be required to work at night and weekends to minimize disruption to area residents or businesses and bypass pumping costs. It shall be the responsibility of the Contractor to notify the Owner 72 hours prior to

SECTION 01310
PROGRESS SCHEDULE

working at night and obtain an "After Hours Work Approval". The Contractor shall adjust the work schedule to accommodate residents or business operation at no additional cost to the Owner. The Contractor shall provide the Owner and Owner's Representative seven (7) days' notice of anticipated work schedules. Work hours shall be presented at the regularly scheduled progress meetings for approval by the Owner.

1.05 WORK NEAR SPECIAL EVENT VENUES

Construction activities are not permitted within close proximity to high profile venues during events.

Contractor shall schedule work around special events that disrupt traffic flow three (3) working days prior to and three (3) working days following the event. Contractor shall coordinate construction to avoid activities and have all traffic control measures removed from the roadway during special events. Contractor shall develop a project work schedule that identifies special events and submit to the Owner's Representative according to Technical Specification Section 01300 – SUBMITTALS for review and approval. The Owner will not entertain Contractor's claims of delay as a result of scheduling construction around event(s).

1.06 WORK NEAR SCHOOLS

Contractor shall coordinate with Trevor G. Browne High School and the City for traffic control, access, and schedule requirements for work within the vicinity of the high school. Contractor shall install sewer bypass when school is not in session. The 2024 scheduled breaks for Trevor G. Browne High School are as follows:

- Spring Break: March 11 – March 15
- Summer Break: May 27 – August 2
- Fall Break: October 7 – October 11
- Veteran's Day: November 8

1.07 PUBLIC AWARENESS

The Public Information Representative will assemble a Highlighted Awareness Summary for each project area of local events, suspected special needs, and potential construction constraints as identified through business walks, resident interviews, and project site visits. This information will be conveyed to the Contractor at project progress meetings for use in construction schedule development. The Contractor shall not consider this summary report to be all inclusive of events or comprehensive of construction constraints or required accommodations that may be present or necessary at the time construction is scheduled to occur. It shall be the Contractor's responsibility to identify construction constraints and accommodations necessary to develop a

construction schedule and perform of the work.

PART 2 - PRODUCTS

2.01 PROGRESS SCHEDULES

- A. The Contractor shall provide a minimum two-week look-ahead schedule to the Owner's Representative. Schedule shall be updated weekly with anticipated sewer pipes and/or structures to be rehabilitated.
- B. Schedule shall be prepared on computer software that facilitates schedule updates and email.
- C. Special considerations, coordination requirements, etc., as encountered for certain sewer pipes and/or structures shall be noted on schedule.
- D. Time for completion for each separate work area shall be shown on the schedule. At a minimum, schedule shall include the following work areas:
 - 1. Pipe Repairs – by Project Location.
 - 2. Manhole Repairs - by Project Location.
- E. The schedule duration of each activity shall be based on the work being performed during the normal work week with allowances made for legal holidays. The schedule shall include a critical path for each separate area of work within the project.
- F. Dates imposed on the schedule by the Contractor shall not be binding on the Owner.
- G. Failure to include elements of work required for the performance of this project shall not excuse the Contractor from completing the work as described in the Contract Documents.
- H. Provide a list of the holidays and non-workdays applicable to the schedule.
- I. Provide an updated overall project Construction Schedule with each pay application. Failure of the Contractor to comply with the requirements of this Section may delay the review and acceptance of the progress payment requests.

PART 3 - EXECUTION

3.01 GENERAL

The Contractor and the Contractor's Field Superintendent shall attend regularly scheduled project meetings with the Owner and others invited by the Owner.

3.02 UPDATES

- A. Requests for extensions in time resulting from changes issued by the Owner shall be provided in writing to the Owner explaining the impacts and costs associated with the extension.
- B. If actual progress on the critical path items is observed to deviate from the Construction Schedule by one (1) week behind, update and submit a revised Construction Schedule. In the case of the work being behind schedule, submit, along with the revised Construction Schedule, a written plan for completing the work within the milestone and contract times.

**** END OF SECTION ****

SECTION 01380

PHOTOGRAPHS AND VIDEO RECORDINGS

PART 1 - GENERAL

1.01 DESCRIPTION

This section specifies digital color photographs and digital video recordings to be taken at the ground surface level by the Contractor before and after construction commences for the rehabilitation of the sewer pipes and manholes/structures. Contractor has the option of collecting aerial photography, however it shall be in conjunction with ground level photography but shall not be in lieu of. These recordings shall clearly document site conditions prior to construction activities commencing and again following the completion of construction activities.

1.02 PAYMENT

The Contractor shall pay costs for specified photography, video recording, and prints. Parties requiring additional photography, video recordings or prints shall invoice and pay photographer directly.

1.03 SUBMITTALS

- A. The Contractor shall submit the following information for review per Technical Specification Section 01300 – SUBMITTALS:
1. An example of the videographer's work consisting of one video recording of site examination and recording with audio commentary.
 2. An example of photographs used for site examination.
 3. Site condition photography taken prior to construction.
 4. Post-construction site photography.

PART 2 - PRODUCTS

2.01 GENERAL

- A. The color photographs and audio-video recordings are intended for use as indisputable evidence in ascertaining the extent of any damage which may have occurred as a result of the Contractor's operations and are for the protection of the Contractor and the Owner, and may, at the Owner's

SECTION 01380
PHOTOGRAPHS AND VIDEO RECORDING

discretion, be a means of determining whether and to what extent damage, resulting from the Contractor's operations, occurred during the Contract work.

B. RECORDING FORMAT

The Contractor shall submit video data in .mpeg and photographic images in .mpeg format only.

C. PHOTOGRAPHS:

Photographs shall be digital color (high resolution) format stored on DVD media or external storage drive and shall indicate on the front of each jewel protection case or external storage drive, the date, name of Project, Owner's project number where the photographs were taken. One copy of each DVD or external storage drive shall be delivered to the Owner's Representative.

D. VIDEO RECORDINGS:

Video shall be digital color stored on DVD media or external storage drive and shall indicate on the front of each jewel protection case or external storage drive, the date, name of Project, Owner's project number where the video was taken. One copy of each DVD or external storage drive shall be delivered to the Owner's Representative.

PART 3 - EXECUTION

3.01 VIDEO / DVD

- A. The Contractor shall perform video recordings of all areas where the Contractor anticipates construction activities to occur, including all staging, storing, working, parking and excavation areas. Owner easements and areas outside of paved roadways are of particular interest.
- B. After completion of construction and restoration, video recordings shall be taken from the same points, in the same direction as the preconstruction examination recording.

3.02 CONSTRUCTION PHOTOGRAPHY

Photographs shall be provided of items of special interest and/or special conditions during construction.

****END OF SECTION ****

SECTION 01400 PUBLIC AWARENESS

PART 1 - GENERAL

1.01 DESCRIPTION

The Contractor is responsible for coordination and communication of the work and schedule under this item with a Public Information (PI) firm hired by the Owner's Representative. The PI firm will be responsible for informing adjacent property owners regarding the Contractor's construction activities and schedule of construction work. The Contractor shall attend public information meeting(s) as requested by the Owner to answer questions from the general public pertaining to construction activities.

1.02 CONSTRUCTION NOTICES AND DOOR HANGERS

The Contractor shall become familiar with and retain copies of the following materials so that consistent information is disseminated to the public:

1. Written Notification to be distributed a minimum of fourteen (14) days prior to work activities commencing that potentially impact adjacent properties by construction activities. (Format: English & Spanish).

1.03 WORK PROGRESS INTERRUPTION

The Contractor shall notify the Owner and the Owner's Representative if the construction work must be postponed, and Construction Notice has already been distributed to the public.

1.04 NOTICE OF DISRUPTION

The Contractor shall notify the Owner and the Owner's Representative if sewer service will be disrupted due to the rehabilitation operations or potential impact from construction activities.

1.05 24-HOUR TELEPHONE HOTLINE

- A. The Contractor shall advise all project personnel that a project hotline telephone service is available to reply to resident's construction concerns, damage claims, resident's complaints etc. The project hotline will be established and monitored by the PI firm. The Contractor shall coordinate with the PI firm and assist in addressing hotline comments, complaints or concerns received from the public.

B. A log of telephone or on-site contacts for public complaints will be maintained by the PI firm. Complaints may be forwarded to the Contractor for resolution. The Contractor shall maintain a log of complaints received from the PI firm and the procedures undertaken towards resolution. The Contractor shall immediately communicate to the Owner and the Owner's Representative any public issues concerning damage to private property, health concerns, nuisances and general comments or complaints. The Contractor shall immediately address the issues. A Log shall contain at the minimum the following:

- 1) Date of Communication
- 2) Time of Communication
- 3) Name of Person Receiving the Complaint
- 4) Contact Name
- 5) Contact Address
- 6) Contact Return Telephone Number
- 7) Description of Complaint or Concern
- 8) Description of Discussions
- 9) Description of Proposed Resolution

C. A summary of all public contact log entries shall be submitted to the Owner and the Owner's Representative bi-weekly, or at regularly scheduled progress meetings.

1.06 ATTENDANCE AT PUBLIC INFORMATION MEETING

The Contractor shall attend public meeting(s) as requested by the Owner prior to the start of the project or as Scheduled by the Owner.

1.07 WORK IN EASEMENTS

A. Work may take place in streets, alleys, or easements. Access and working space may be limited when working in easements. Careful attention to access and private property protection is required when work occurs in easements.

B. The Contractor shall take surface feature pre-construction videos of the project area(s) or areas potentially impacted by construction activities according to Technical Specification Section 01380 – PHOTOGRAPHS AND VIDEO RECORDING before work activities commence.

1.08 ON-SITE SUPERINTENDENT

The Contractor shall have a Field Superintendent familiar with the work on-site during project work hours and shall be available to answer questions from the public or assist the public with access needs within the active work area. The

Contractor shall provide a letter to the Owner that the on-site Field Superintendent is duly authorized to act on behalf of the Contractor during public relation activities and/or construction problem resolution.

PART 2 – MATERIALS

NOT USED

PART 3 – EXECUTION

NOT USED

**** END OF SECTION ****

SECTION 01400
PUBLIC AWARENESS

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SECTION 01550 CONTRACTOR'S UTILITIES

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This section specifies the facilities, utilities, and security the Contractor is required to furnish and maintain during construction.
- B. Copies of the Contract Documents shall be kept at the work site and available for use at all times.

1.02 SUBMITTALS

The Contractor shall submit the following according to Technical Specification Section 01300 – SUBMITTALS:

- 1. Copies of water reimbursement agreement if water system Owner is an entity other than the City of Phoenix per subsection 2.04
- 2. Written letter of acceptance of debris disposal per subsection 2.05.

PART 2 - PRODUCTS

2.01 POWER

The Contractor shall use battery, pneumatic, or hydraulic power for all interior sewer pipe and manhole work. This limitation is not necessary for work on the surface.

- A. The Contractor shall be responsible to provide power at all work sites, if necessary, to complete surface work and pay all associated fees. The Contractor shall be responsible for coordination with the electrical utility for power takeoff points, voltage and phasing requirements, transformer, and metering, and shall pay all costs and fees arising therefrom. In supplying power to the work site, the Contractor shall comply with all applicable construction and safety regulations and codes.
- B. If portable power generation units using liquid fuels are utilized, double containment of fuels shall be provided at all times. In supplying fuel to the work site, the Contractor shall comply with all applicable construction and safety regulations and codes.

2.02 LIGHTING AND ILLUMINATION

As necessary, the Contractor shall provide low voltage lighting and illumination in the sewer pipe interior, in accordance with the guidelines published in the latest edition of the Practice for Industrial Lighting, ANSI/IES RP7.

Lighting used by the Contractor on the surface shall be placed and directed to avoid nuisance to traffic or local residences. Light shields may be required to limit light pollution into adjacent residences or businesses.

2.03 TELEPHONE

The Contractor shall provide and maintain telephone service at the construction site and the telephone shall be manned by the Contractor or a Contractor's Representative 24 hours per day. The Contractor or the Contractor's Representative manning the telephone service shall be fluent in English as well as Spanish languages. Cellular telephone service is acceptable as a substitute for telephone service. These telephone and labor costs shall be paid by the Contractor.

2.04 WATER

All water for testing, flushing, cleaning, and construction activities shall be furnished and paid for by the Contractor. Water may be available from the Owner upon request for connection to the City of Phoenix water distribution system. Connection may be approved by the Owner with appropriate backflow and metering devices installed by the Contractor according to Owner requirements. Authorization to receive water may be rescinded by the Owner upon written notice to the Contractor at any time and for any reasons.

The Owner reserves the right to charge the Contractor for water used in performing the above functions in accordance with the City of Phoenix's established rate schedule. A City inspected and approved backflow prevention device, meeting the requirements of City of Phoenix Water Services Department - Design Standards Manual for Water and Wastewater Systems, shall be installed in each and every connection to the City of Phoenix water supply. The Contractor shall meter all water used.

Authorization must be obtained by the Contractor in writing if water is supplied from a system other than the City of Phoenix water distribution system. The Contractor shall submit an agreement with documentation of a reimbursement plan for the water used, if any, according to Technical Specification Section 01300 – SUBMITTALS prior to use.

2.05 DEBRIS DISPOSAL

The Contractor shall make provisions and pay all fees associated with transport and legal, off-site debris disposal. Contractor shall be responsible to obtain and submit to the Owner a written letter of acceptance, signed by an authorized representative of the agency and/or authorized party accepting the debris according to Technical Specification Section 01300 – SUBMITTALS. Disposal of debris shall not occur until Owner has reviewed and accepted the disposal site. The Contractor shall pay all fees and charges for debris disposal.

The Contractor shall be responsible for all permits and fees according to Technical Specification Section 01062 – PERMITS AND EASEMENTS, subsection 1.02. Permits are to be obtained by the Contractor for transport to the disposal site. Copies of all permits shall be submitted to the Owner according to Technical Specification Section 01300 – SUBMITTALS.

2.06 SANITARY FACILITIES

The Contractor shall provide toilet, sanitary washing station, and decontamination facilities, if necessary, for its work force, Owner and/or the Owner's Representative at the work site. Facilities shall comply with applicable laws, ordinances, and regulation pertaining to public health and sanitation code.

2.07 CONTRACTOR'S SECURITY

The Contractor shall be responsible for the security of its materials and equipment on the site and in the Contractor's storage and parking areas. The Contractor shall provide a security fence with appropriate locking mechanism around its storage area.

PART 3 - EXECUTION

NOT USED

****END OF SECTION****

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SECTION 01560 ENVIRONMENTAL CONTROLS

PART 1 - GENERAL

1.01 DESCRIPTION

The Contractor shall be responsible to provide and maintain methods, equipment, and temporary construction, as necessary to provide controls over environmental conditions at the construction site and adjacent areas. The Contractor shall remove physical evidence of temporary facilities at completion of work and replace the area back to original condition.

1.02 SUBMITTALS

The Contractor shall submit the following according to Technical Specification Section 01300 – SUBMITTALS:

1. Emergency Spill Response Plan
2. Odor Control Plan

1.03 SEWAGE SPILL CONTROL

- A. A spill is defined as any release of raw sewage outside of the intended conduit. Raw sewage releases shall not be allowed to occur and are not permitted. The Contractor shall be responsible for all consequences and damages caused by the release, overflow, backup, or spill due to the Contractor's work activities.
- B. The Contractor shall give both verbal and written notification to the Owner and Owner's Representative immediately in the event of any sewage release, overflow, backup, or spill.
- C. The Contractor shall complete and submit to the Owner's Representative the Confidential Spill Report form found in Technical Specification Section 01999 – REFERENCE FORMS within 24 hours of the occurrence of any spill.
- D. The Contractor shall have a written Stormwater Management Plan (SWMP) as indicated in Technical Specification Section 01214 – STORM WATER PROTECTION.

SECTION 01560
ENVIRONMENTAL CONTROLS

1.04 EMERGENCY SPILL RESPONSE PLAN

- A. The Contractor shall be responsible to develop and follow an Emergency Spill Response Plan. Plan shall be well communicated to all personnel in the event an emergency should occur, it can be handled in the safest and most efficient manner possible.
- B. The primary responsibility for all Contractor personnel is to respond to sewer spills as quickly as possible. In the event of any spill, City of Phoenix Environmental Services Division shall be notified by the Contractor immediately for response. Response of City of Phoenix crews shall not relieve the Contractor for project responsibilities or liabilities.
- C. An emergency telephone list shall be a part of the response procedure and shall be kept up to date at all times. The Contractors Emergency Spill Response Phone List shall contain, but not be limited to the following:

Submit list to the Owner and the Owner's Representative according to Technical Specification Section 01300 - SUBMITTALS.

(name) _____ (Contractors Field Superintendent) (____) __ - _____

(name) _____ (Contractors Project Manager) (____) __ - _____

(name) _____ (Owner's Representative) (____) __ - _____

- D. The Contractor shall follow a standard procedure list unless unique site conditions dictate otherwise that enhances public safety and protects property.

1.05 SANITARY SEWAGE SPILL/BACKUP

If a sanitary sewage backup occurs into a lateral and a citizen or business sustains property damage, the following minimum procedures are to be adhered to by the Contractor:

- A. The initial responsibility of the Contractor is to locate and eliminate the cause of the backup as soon as possible. As part of cleaning the backup, Contractor crews are to determine the cause and source (if possible) of the backup. The Contractor shall obtain an emergency clean-up service and relocate the residents to temporary housing, if necessary, to minimize health risks. The Contractor shall be responsible for all costs and coordination efforts associated with the sewer backup and cleanup including but not limited to:
 - 1. Relocation of residents
 - 2. Temporary housing of displaced residents

3. Clean-up and sanitizing costs
 4. Replacement of damaged personal items
 5. Relocation of residents back into the residence
- B. Emergency clean-up service shall determine and document the extent of the property damage (photographs are recommended). A report (Incident Report), with the photos shall be provided to the Contractor or Contractor's designated Safety Officer with a copy to the Owner's Representative. The Contractor's Safety Officer may forward the information to the Contractor's corporate liability insurance carrier. Information compiled should include but not limited to:
1. Time call/notification was received
 2. Time the crew arrived at the site
 3. Time cleanup/restoration work was started and completed
 4. Cause of stoppage/source of backup sewage (if possible) and location of stoppage causing the backup
 5. Name of property owner/tenant and address of affected property
 6. Extent of damage
 7. Action(s) taken
- C. The Contractor/authorized personnel will assist and pay all costs for obtaining and coordinating a subcontractor to perform restoration work and will work with the selected subcontractor to equitably restore the premises to its pre-loss condition.
- D. The Contractor's Field Superintendent shall notify and keep City of Phoenix Water Services Department informed of the stoppage in the sanitary sewer pipe and status of the spill and clean-up.
- E. City of Phoenix Water Services Department will be responsible for notification of the Owner's Environmental Services Division (ESD). ESD will be responsible for notification of the Arizona Department of Environmental Quality (ADEQ) as it pertains to Arizona State Law Requirements.

1.06 SURCHARGING OF FLOW MONITORING STATIONS

- A. The Contractor shall be responsible for coordinating with the Owner thirty (30) days prior to initiating any work that may impact the normal operation of any sanitary sewer flow monitoring station(s).
- B. Upon notification or discovery that a detrimental surcharge condition exists, crews shall respond immediately to the area with proper equipment and manpower to reduce the surcharge. If the surcharge cannot be reduced, any overflow of sanitary sewer that occurs shall be the responsibility of the Contractor and shall be properly cleaned and disinfected at no additional

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cost to the Owner. Waste products are to be disposed of in accordance with state and federal laws.

- C. The Contractor shall be responsible for coordinating with the Owner to obtain any known areas or sections of sanitary sewer pipes that are subject to surcharging capacity situations (if present). These areas or sections of concern are to be monitored by the Contractor throughout the bypass operations.
- D. A Confidential Spill Reporting Form must be completed by the Contractor and distributed, preferably by electronic mail, to the required parties according to subsection 1.03.

1.07 ODOR CONTROL

The Contractor shall be responsible for all odor control measures during the Contractor's work. Contractor shall submit an Odor Control Plan that indicates proposed equipment and its availability, delivery time to the project site, duration of commissioning of equipment required to be operational along with anticipated duration of operation. Contractor is responsible to obtain and pay all fees (as applicable) for all permits and approvals from City's the odor control equipment is placed in.

Owner's contact person for odor control coordination is:

City of Phoenix

Rojellio Estrella
Water Services Superintendent
Wastewater Collection
Office: 602-262-1864
Rojelio.estrella@phoenix.gov

The Contractor's Odor Control Plan shall include any necessary modification to Traffic Control Plans (if/as necessary).

1.08 INCRA RESULTS

A. 404/Biology

- A survey for burrowing owls by a certified burrowing owl surveyor is required approximately two (2) weeks prior to construction at various locations, including Contractor staging area(s).
- The Burrowing Owl construction flyer is included in Section 3.13. If burrowing owls or potentially active burrows (natural or manmade holes 3-inch in diameter or larger) are observed during construction, work shall cease within 100 feet and Andrea Love (602)495-6718

(andrea.love@phoenix.gov) shall be contacted to make appropriate arrangements.

- The Migratory Bird Treaty Act flyer is included in paragraph 3.14. If impact to vegetation occurs between the months of February and August, work shall cease before disturbance occurs and Andrea Love (602)495-6718 (andrea.love@phoenix.gov) shall be contacted to make appropriate arrangements (a survey by a qualified biologist for active nests protected by the Migratory Bird Treaty Act may be required).
- The Sonoran Desert Tortious flyer is included in paragraph 3.15. Guidelines for handling Sonoran Desert Tortoises encountered on projects is regulated by the Arizona Game and Fish Department (Department) as revised September 22, 2014.

1.09 ARCHAEOLOGICAL MONTORING

The Contractor shall coordinate work with the Owner for archeological monitoring. The Owner may have an archaeological representative on-site during construction excavation to monitor for the presence of artifact(s). If artifacts are observed or unearthed, the Contractor shall cease work in that area and notify the Owner's Representative and Owner. Work can proceed in that area once an evaluation of the artifact(s) is complete.

If any archaeological materials are encountered during construction, all ground-disturbing activities must cease within 10 meters of the discovery and the Owner's Archaeology Office must be notified immediately and allowed time to properly assess the materials. Contractor shall continue work uninterrupted in other area(s) of the project with no additional cost to the Owner.

No photographs shall be taken of any potential archaeological artifact or features. Contractor shall not speak to the media about an archaeological investigation.

1.10 HISTORIC PRESERVATION

The Contractor shall contact the City of Phoenix Environmental Quality Specialist Greta Halle (602-534-6030) shall be contacted to evaluate potential impacts.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 STANDARD REPORTING PROCEDURES

A. HANDLING EMERGENCIES

Medical emergency, fire or explosion, call **911** immediately. **Do not call 911 to report a wastewater spill.**

B. OBSERVATION

The Contractor shall without endangering themselves, obtain enough information to make an initial assessment of the situation.

C. PROTOCOL FOR NOTIFICATION OF SEWER SPILL

1. Contractor's Field Superintendent:

The Contractor's field personnel shall verbally notify the Contractor's Field Superintendent. The Contractor's Field Superintendent shall promptly notify the Contractor's Project Manager and City of Phoenix Environmental Services Division immediately, always less than one (1) hour from the time of being made aware of the spill. Document all calls and conversations.

2. Contractor's Project Manager:

Contractor's Project Manager shall verbally notify the Owner's Representative and Owner within one (1) hour from the time of being made aware of the spill. Document all calls and conversations.

3. Owner's Representative:

Owner's Representative shall verbally obtain a spill status update from the Contractor's Project Manager, within one (1) hour from the time of being made aware of the spill. Document all calls and conversations.

D. REPORT

As soon as possible, but no later than 24 hours following discovery of the spill, the Contractor shall complete the Confidential Spill Reporting Form, included in reference Technical Specification Section 01999 – REFERENCE FORMS. The Contractor shall take photographs at all stages of the incident to include in the report. Submit copies of all documentation to the Owner's Representative per Technical Specification Section 01300 – SUBMITTALS except as herein modified. Spill reports shall be emailed to Owner's Representative as soon as complete.

E. SUBMITTAL

The Contractor shall verify that the Owner's Representative has received a copy of the report and supporting documentation and submitted a copy of said report to the Owner in a timely manner. Contractor will compare all reports and report discrepancies to the Owner's Representative and retain one (1) copy in the Project File located at the Contractor's office.

3.02 SITE MAINTENANCE

- A. The Contractor shall keep the work site, staging area(s), storage, and parking area(s) clean and free from rubbish and debris. Materials and equipment shall be promptly removed from the site when no longer necessary. Upon completion of the work and before final acceptance, the work site shall be cleared of equipment, unused materials, and rubbish to present a clean and neat appearance in conformance with the preconstruction condition of the site.
- B. The Contractor shall not store equipment or materials anywhere other than locations approved by the Owner. Property surrounding the work site shall be free of all debris and rubbish at all times.

3.03 CLEAN-UP:

- A. Waste material of any kind will not be permitted to remain on the site of the work or on adjacent streets. Upon such materials becoming unfit for use in the work, they shall be immediately collected, transported off the site and legally disposed of by the Contractor. The Contractor shall be responsible for obtaining necessary permits or approval for the Contractor's disposal site.
- B. The Contractor shall keep all buildings and areas occupied by the Contractor clear of all refuse, rubbish and debris that may accumulate from any source and shall keep them in a neat condition to the satisfaction of the Owner.
- C. In the event that waste material, refuse, debris and/or rubbish are not so removed from the work area by the Contractor, the Owner reserves the right to have the waste material, refuse, debris and/or rubbish removed, and the expense of the removal and disposal charged to the Contractor.
- D. Paints, solvents, fuels, or oils and other construction materials shall be handled with care to prevent entry of contaminants into storm drains, surface waters, or soils.

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ENVIRONMENTAL CONTROLS

3.04 BARRIERS:

A barrier shall be provided around all unattended excavations and open structures. The barrier shall enclose the area and prevent unauthorized access or unintentional vehicular entry.

3.05 STREET CLEANING:

- A. The Contractor shall be responsible for preventing dirt, dust, and sediments from escaping from trucks departing the project site, by covering dusty loads, washing truck tires before leaving the site, or other reasonable methods.
- B. When working trucks and/or other equipment on paved streets and roadways, the Contractor will be required to clean said streets as soon as possible, but no later than at the conclusion of each day's operations or 24-hour period and at such interim periods as required by the Owner.
- C. All streets in the construction area used by the Contractor's trucks or any other equipment hauling material to and from the area, whether within the Contract limits or adjacent thereto, shall be kept clean by the Contractor and shall be continuously serviced by the Contractor's use of water trucks to control dust.
- D. Cleaning and dust control shall be as specified in MAG Section 104.1.4 "Cleanup and Dust Control" and shall be at the Contractor's expense.
- E. Any violation of the requirements shall be sufficient grounds for the Owner to order the streets in question cleaned by others and the cost to be paid by the Contractor.
- F. No solid materials or soils may be flushed into storm drains or in the sanitary sewers or wastewater facilities.
- G. The Contractor shall use a wet power pick-up broom as part of the dust control effort.

3.06 AIR POLLUTION CONTROL

A. GENERAL:

The Contractor shall not discharge smoke, dust, and other contaminants into the atmosphere that violate the regulations of any legally constituted authority. The Contractor shall maintain construction vehicles and equipment in good repair. Equipment exhaust emissions that are determined to be excessive by the Owner shall cause the equipment to be

repaired or replaced.

- B. The Contractor shall also minimize dust nuisance by cleaning, sweeping, and sprinkling with water, or other means. The use of water, in amounts which result in mud on public streets, is not acceptable as a substitute for sweeping or other methods. Equipment for this operation shall be on the job site or available at all times.

3.07 ODOR CONTROL MEASURES:

The Contractor is to employ methods, equipment, and procedures that mitigate the generation and/or discharge of objectionable odors to the surface environment at all times. Odor control measures may be one or a combination of, but not limited to the following:

A. Odor Control: Excavation Covers

The Contractor shall supply and install covers over excavations when subjected to open sanitary sewer to minimize the expulsion of nuisance odors. Cost of providing, maintaining, and disposing of excavation covers is considered incidental to the cost of bypass pumping operations.

B. Additional Odor Control:

If nuisance odors continue to exceed Owner acceptable levels after excavation covers have been installed, the Contractor may be requested to employ additional odor control measures such as, but not necessarily limited to activated carbon canisters or upstream chemical dosing of the sanitary sewer on a temporary basis.

The Contractor shall be responsible for sizing the unit(s) or chemicals and corresponding dosage rates according to location, conditions and gas concentrations present at the time of construction. The Contractor shall be responsible to provide, coordinate and pay for all power and maintenance of the system(s), along with any ancillary equipment required to operate the proposed system(s).

The Contractor shall be responsible to locate and position the odor control system(s) such that it conforms to an approved traffic control plan requirements and constraints as presented in Technical Specification Section 02100 – TRAFFIC CONTROL. Costs for traffic control accommodation of odor control systems shall be itemized and included in the cost of providing odor control.

The Contractor shall deliver, install, operate, and maintain the odor control system(s) at various locations and durations and then demobilize when pipe

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rehabilitation operations are complete. The odor control mitigation noise shall be limited to levels presented in Subsection 3.08.

C. Payment for Additional Odor Control Measures

Method and costs for alternate odor control shall be as negotiated and mutually agreed upon by the Contractor and Owner prior to implementation. Owner shall provide compensation to the Contractor as a changed condition to the contract and reimbursed as an additional expense.

3.08 NOISE CONTROL

- A. The Contractor shall perform all work in compliance with OSHA standards and in no case will noise levels be permitted that exceed City of Phoenix noise ordinance.
- B. If pumping operations and/or power generation occur after normal work hours as stated in the Technical Specification Section 02145 – DIVERSION OF SEWAGE FLOW AND DEWATERING. The Contractor shall utilize sound attenuated bypass pumps and power generators and equipment with a maximum decibel rating of 70 db @ 50 feet.
- C. Each internal combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer for residential use. No internal combustion engine shall be operated on the project without said muffler.
- D. Noisy portable equipment, such as generators or compressors, shall be located as far away from sensitive noise receptor areas as practical. Sensitive noise receptors are defined as occupied buildings with windows or doors facing the site. Noise barriers shall be constructed around noisy stationary construction equipment such as compressors or generators that have to be utilized at locations near (within 100 feet) of sensitive noise receptors as defined above.
- E. Idling equipment not actively utilized for extended periods of time shall be shut off.

3.09 TREE AND PLANT PROTECTION

- A. If a tree or any vegetation is damaged or destroyed by construction, or any action of the Contractor, the Contractor shall replace the damaged tree or plant with a healthy one of the same species. The replacement tree or plant shall be of the similar size as the damaged tree or plant and will be placed at the existing grade. The Contractor shall bear all expenses required to establish the replacement tree or plant. The replacement tree or plant shall

be guaranteed healthy for one (1) year after the end of construction date. The Contractor shall be responsible for any tree or plant that the Contractor replaced that is deemed unhealthy during that one (1) year period.

- B. All landscaped areas and other surface improvements which are damaged by actions of the Contractor shall be restored to their original condition at no additional cost to the Owner.

3.10 SURFACE WATER CONTROL

- A. The Contractor shall conform to the regulations and requirements of legally authorized surface water management agencies. The Contractor is responsible to provide and maintain any temporary pumping, drainage structures, or other means to manage or control nuisance surface water as indicated in Technical Specification Section 01214 - STORM WATER PROTECTION.
- B. The Contractor shall be responsible for keeping any open excavations and other areas free from water as required to permit continuous progress of, or to prevent damage to, its own work or work of others. The Contractor shall cover exposed excavated areas and spoil piles when runoff from rain is or would be likely to cause turbid waters to enter local waterways. The Contractor shall suspend work in the rain if such work cannot be performed without causing turbid runoff.

3.11 STORM SEWER

The Contractor shall not discharge any wastewater, potable water used for testing, or cleaning, or any chemical or waste materials from the construction operation into the storm sewer system.

3.12 SANITARY SEWER

The Contractor shall not dispose of chemical or any waste materials from the construction operations into the sanitary sewer system.

3.13 SONORAN DESERT TORTOISE

The Sonoran Desert tortoise inhabits regions South and East of the Colorado River within Arizona. Tortoises encountered in the open shall be moved out of harms way to adjacent appropriate habitat. If an occupied burrow is determined to be in jeopardy of destruction, the tortoise shall be relocated to the nearest appropriate alternate burrow or other appropriate shelter, as determined by a qualified biologist. Tortoises shall be moved less than 48 hours in advance of the habitat disturbance, so they do not return to the area of construction in the interim. Tortoises shall be moved quickly, kept in an

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upright position parallel to the ground at all times, and placed in the shade. Separate disposable gloves shall be worn for each tortoise handled to avoid potential transfer of disease between tortoises. Tortoises must not be moved when the ambient air temperatures exceed 105-degrees Fahrenheit unless an alternate burrow is available, or the tortoise is in imminent danger.

A tortoise may be moved up to one-half mile, but not further than necessary from its original location. If a release site or alternate burrow is unavailable within this distance, and ambient air temperature exceeds 105-degree Fahrenheit, contact the Department for guidance. Tortoises salvaged from projects which result in substantial permanent habitat loss, or those requiring removal during long-term (longer than one week) construction projects, may be placed in the Department's tortoise adoption program. Contractor likely to affect desert tortoises shall obtain a scientific collecting license from the Department to facilitate handling or temporary possession of tortoises. Likewise, if large number of tortoises (greater than 5) are expected to be displaced by the project, the Contractor shall contract the Department for guidance and/or assistance.

- Contractor shall use the Department's Environmental On-Line Review Tool during the planning stages of the project that may affect desert tortoise habitat.
- Unless specifically authorized by the Department, or as noted above, Contractor shall avoid disturbing any tortoise.
- The taking of desert tortoise is prohibited by state law.
- These guidelines do not apply to Mojave Desert tortoises (North and West of the Colorado River) within Arizona. Mojave Desert tortoises are listed as threatened under the Endangered Species Act, administered by the U.S. Fish and Wildlife Service.
- These guidelines are subject to revision at the discretion of the Department so the Contractor shall refer to the guidelines in place at the time construction occurs.

3.13 WESTERN BURROWING OWL FLYER



City of Phoenix
STREET TRANSPORTATION DEPARTMENT

Western Burrowing Owl
(Athene cunicularia)

The purpose of this flyer is to provide City of Phoenix employees and contractors working on City projects with basic knowledge to reduce the risk of impacting western burrowing owls.

Legal Status:

The western burrowing owl is protected under the Migratory Bird Treaty Act of 1918, as amended. All migratory birds and their parts (including eggs, feathers, and nests) are fully protected. They are also protected under Arizona State Law, Title 17-101, Title 17-235, and Title 17-236.

Species Description:

- Small, ground-dwelling owl (mass of approx. 5 oz.)
- Length: 7.6-9.9 inches, with long legs
- Wingspan: approx. 23 inches
- Round head, lacks ear tufts
- Distinct oval facial ruff, framed by a broad, puffy white eyebrow
- Bright yellow iris

Where are they found?

- Dry, open, short grass, treeless plains
- Human dominated landscapes such as:
 - Golf courses, airports
 - Agricultural fields, vacant lots
- Depends on other animals to construct burrows

Identifying an active burrow

- Western burrowing owls use burrows constructed by ground squirrels, badgers, coyotes, tortoises, etc, or may use pipes, culverts, and ditches.
- They may “decorate” the entrance to a burrow with cow, horse, or dog manure, feathers, vegetation, and trash items
- An active burrow may (not always) have owl excrement (“whitewash”) and/or pellets near the entrance

How to avoid impacting western burrowing owls:

- Scan ahead as you work
- **If western burrowing owls or potentially active burrows observed, STOP WORK and MOVE at least 100 feet away from the owl or occupied burrow before resuming work**
 - Do not harass or “shoo” the owl away
- If the project cannot avoid or stay outside 100 feet of the owl or active burrow, call contact listed below


Questions? Need to work within 100 feet of a western burrowing owl or active burrow? Contact a City of Phoenix Street Transportation Department Environmental Quality Specialist:


Ed Checkley (602) 534-3366, (602) 377-8943 (cell), ed.checkley@phoenix.gov
Greta Halle (602) 534-6030, (602) 628-7607 (cell), greta.halle@phoenix.gov

Sources: Arizona Department of Transportation Environmental Planning Group Western Burrowing Owl Awareness Flyer
Arizona Game and Fish Department Animal Abstract: Western Burrowing Owl. Heritage Data Management System

Updated March 2, 2016

3.14 MIGRATORY BIRD TREATY FLYER





City of Phoenix
STREET TRANSPORTATION DEPARTMENT

Migratory Bird Treaty Act

(Applies to many birds in Phoenix)

Credit: DesertUSA.com/animals/cliff-swallow.html

The purpose of this flyer is to provide City of Phoenix employees and contractors with basic knowledge to reduce the risk of impacting species protected by the Migratory Bird Treaty Act.

Migratory Bird Treaty Act (MBTA)

Under the Migratory Bird Treaty Act of 1918, as amended, listed birds and their parts (including eggs, feathers, and nests) are fully protected. They are also protected under Arizona State Law, Title 17-101, Title 17-235, and Title 17-236. The MBTA states that it is illegal to:

- Pursue, hunt, take, capture, kill, possess, sell, purchase, barter, import, export, or transport any migratory bird, or any part, nest, or egg of any such bird.
 - 'Take' is defined as to "pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect."

More information regarding the MBTA can be found at:

- <http://www.fws.gov/birds/policies-and-regulations/laws-legislations/migratory-bird-treaty-act.php>
- <https://www.fws.gov/laws/lawsdigest/migtrea.html>

Where/When are they active?

- The nests of birds protected by the MBTA can be found in many places, including trees, shrubs, cacti, cattails, on the ground, in holes in the ground and on man-made structures including culverts, bridges, buildings, etc.
- The breeding cycle of most birds in Phoenix occurs between March 1 and September 30, although there are a few species that may nest outside that period. Some birds may be present year-round and others migrate, often during the late summer/early autumn period.

How to avoid impacting birds protected by the MBTA:

- If your project might impact active bird nests/burrows, work with one of the contacts below during the design process to make appropriate arrangements before the project activity begins. Necessary actions may include active nest surveys, seasonal restrictions, or obtaining a project-specific relocation permit from the U.S. Fish and Wildlife Service.
- When actively working, be aware of your surroundings. If you see a nest that appears active (chirping, aggressive or distracting adult bird behavior, eggs present, etc.) **STOP WORK** within 100 feet of the area and call one of the contacts below.

Questions? Work may impact birds protected by the MBTA? Contact a City of Phoenix Street Transportation Department Environmental Quality Specialist:

Ed Checkley (602-534-3366, (602) 377-8943 (cell)), ed.checkley@phoenix.gov
Greta Halle (602) 534-6030, (602) 628-7607 (cell) greta.halle@phoenix.gov

Updated March 2, 2016

3.15 SONORAN DESERT TORTOISE FLYER



Credit: AGFD



City of Phoenix
OFFICE OF ENVIRONMENTAL PROGRAMS

Sonoran Desert Tortoise (*Gopherus morafkai*)

The purpose of this flyer is to provide City of Phoenix employees and contractors working on City projects with basic knowledge to reduce the risk of impacting Sonoran Desert tortoise.

Legal Status:

The Sonoran Desert tortoise is a Tier 1A Species of Greatest Conservation Need in the State of Arizona, as defined by the Arizona Game and Fish Department (AGFD).

Species Description:

- Length: 8-15 inches
- Bottom shell yellowish and not hinged
- Hind limbs stocky and elephantine
- High-domed, brownish shell with a pattern and prominent growth lines
- Flattened forelimbs for digging, covered with conical scales

Where are they found?

- Rocky, steep slopes and lower mountain slopes
- Native desert scrubland
- Between 904 and 4,198 feet in elevation
- Washes and valley bottoms may be used in dispersal

Where are they active?

- Sonoran Desert tortoise spend the bulk of time in burrows, which provide protection from heat and cold
- Emerge from burrows on rocky slopes, desertscrub or grassland to feed, bask and breed, mostly during the monsoon season

How to avoid impacting Sonoran Desert tortoise:

- Scan ahead as you work
- ***If Sonoran Desert tortoise observed, STOP WORK, call the contact below and allow the tortoise to leave under its own power***
- Do NOT pick up or handle the Sonoran Desert tortoise unless the tortoise is in imminent danger. Improper handling can result in tortoise death. If a tortoise must be moved, strictly adhere to the following AGFD guidelines (rev. 9/22/2014): <https://s3.amazonaws.com/azgfd-portal-wordpress/Portallimages/files/wildlife/2014%20Tortoise%20handling%20guidelines.pdf>.
- When working in Sonoran Desert tortoise habitat, check for tortoises under parked vehicles before driving

Questions? Concerns? Think your project will impact Sonoran Desert tortoise? Contact the City of Phoenix Office of Environmental Programs, Environmental Programs Coordinator, Tricia Balluff at (602) 534-1775 or tricia.balluff@phoenix.gov.

Sources: US Fish & Wildlife Service-Arizona Ecological Services Field Office, Sonoran Desert Tortoise, Document Library-Documents by Species
<http://www.fws.gov/southwest/es/arizona/Documents/Redbook/Sonoran%20Tortoise%20RB.pdf>

Updated March 15, 2022

**** END OF SECTION ****

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SECTION 01700 RESTORATION OF IMPROVEMENTS

PART 1 - GENERAL

1.01 GENERAL

This section specifies restoration of improvements of the Contractor's work area, staging area, storage area, and parking area.

1.02 STRUCTURES

The Contractor shall remove such existing structures as may be necessary for the performance of the work and shall rebuild the structures thus removed, with the specified requirements, in as good a condition as found. The Contractor shall also repair existing structures that workers damage as a result of the work being performed as part of this Contract, at no additional cost to the Owner.

1.03 ROADS AND STREETS

Unless otherwise specified in the Contract Documents, roads, and streets in which the surface is removed, broken, or damaged, or in which the ground has caved or settled during or as a result of the work under this Project, shall be resurfaced and brought back to the original grade and section at no additional cost to the Owner. The Contractor shall record on a video the entire road or street area to be used for the work and parking area(s) as specified in Technical Specification Section 01380 - PHOTOGRAPHS AND VIDEO RECORDINGS. Copies of the DVD shall be submitted to the Owner's Representative prior to starting the work. Once construction starts, Contractor assumes responsibility for road condition and repair.

Roadways used by the Contractor shall be cleaned and repaired. Before resurfacing material is placed, edges of pavements shall be trimmed back far enough to provide clean, solid, vertical faces, and shall be free of loose material. Any facilities or improvements impacted by construction activities shall be replaced or repaired in accordance with current respective Owner and/or MAG requirements.

All street pavement cuts require asphalt resurfacing treatment based on the age of the pavement. See Street Pavement Cut policy (per City Code, Chapter 31, Article III, Section 31-49.1) for further details.

SECTION 01700
RESTORATION OF IMPROVEMENTS

1.04 CULTIVATED AREAS AND OTHER SURFACE IMPROVEMENTS

- A. Cultivated or planted areas, other unpaved and or rocked areas, and other surface improvements which are damaged by actions of the Contractor shall be restored to their original condition, at no additional cost to the Owner. The Contractor shall record on a video the entire area to be used as the work area, staging area, storage area, and parking area as specified in Technical Specification Section 01380 – PHOTOGRAPHS AND VIDEO RECORDINGS. Copies of the DVD shall be submitted to the Owner’s Representative prior to starting the work. Once construction starts, Contractor assumes responsibility for road condition and repair.
- B. Existing guard posts, barricades, and fences shall be protected and replaced if damaged, at no additional cost to the Owner.

1.05 PROTECTION OF EXISTING INSTALLATIONS

The Contractor shall protect all existing operating facilities and structures from damage. However, if damage occurs, the Contractor shall immediately correct or replace existing equipment, materials, or systems that are damaged as a result of its operations to the satisfaction of the Owner, and at no additional cost to the Owner.

1.06 PAVEMENT MARKING AND STRIPING

The Contractor shall notify the Owner or the Owner’s Representative and the City of Phoenix Street Transportation Department, Traffic Services Division, (602) 262-4684 or agency having jurisdiction over the area, at least six weeks prior to desired completion of final roadway surfacing repairs. This notification period will allow adequate time for Owner crews to schedule and complete the marking, signing and lane striping task on-time.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 RESTORATION ACCEPTANCE

- A. The Contractor shall restore the area to existing condition of the Contractor’s work area, staging area, storage area, and parking area as

documented in the photographs and video recordings.

- B. The Owner shall determine if and when restoration of the site is acceptable following review of the pre-construction and post-construction recordings as specified in Technical Specification Section 01380 - PHOTOGRAPHS AND VIDEO RECORDINGS.

**** END OF SECTION ****

SECTION 01700
RESTORATION OF IMPROVEMENTS

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SECTION 01782 RECORD DOCUMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

Maintain and provide the Owner with Record Documents as specified below, except where otherwise specified.

1.02 DEFINITIONS

A. Documents are as defined hereafter:

1. **Contract Documents:** The Contract Documents include the Engineer of Record Sealed Drawings, Technical Specifications, and Addenda developed and furnished to the Contractor at the beginning of construction.
2. **As-built Drawings:** As-built Drawings are an annotated set of Design Drawings prepared by the Contractor. The As-built Drawings show in red, as-constructed changes to the original Contract Documents that have been made during construction. The As-built Drawings may include supplemental drawings to provide the necessary detail of work completed, compliance with project standards or where annotation would otherwise be impractical.
3. **Project Record Documents:** Record Documents are prepared by a Professional Engineer and reflect as-constructed changes that the Contractor annotated, detailed, or sketched in the As-built Drawings. The Record Documents include As-Built Drawings, Technical Specifications, Addenda, approved shop drawings, samples, photographs, change orders, other modifications to the Contract Documents, test records, survey data, field orders, request for information, submittals, and all other documents pertinent to the Contractor's work.

1.03 MAINTENANCE OF DOCUMENTS

- A. One (1) set of black line Contract Documents shall be furnished to the Contractor by the Owner.
- B. The Contractor shall maintain at the Contractor's office in clean, dry, legible condition, complete sets of the following: Design Drawings, Technical

SECTION 01782
RECORD DOCUMENTS

Specifications, Addenda, approved Shop Drawings, Samples, Photographs, Change Orders, sketches, details, or other annotated notes made to the Contract Documents, test records, asset location data, Field Orders, and all other documents pertinent to Contractor's work.

- C. Make documents available at all times for inspection by the Owner or Owner's Representative.
- D. Any contractually required testing provided by others shall be thoroughly documented by the Contractor and maintained with the project As-built Records. All testing results shall be maintained in their own separate log for the project, which are kept current weekly, and made readily available for viewing at any time.

1.04 MARKING SYSTEM

Changes, revisions, additions, and deletions to the record set of As-built Drawings shall be marked in "red" color. Changes, revisions, additions and/or deletions to the Project As-builts that are intended to be incorporated in the Records Documents shall be annotated with a "cloud" marked around the change.

1.05 AS-BUILT DRAWINGS

- A. The Contractor shall keep the As-built Drawings current. The Contractor's refusal, failure, or neglect to maintain current As-built Drawings shall constitute sufficient basis for the Owner to withhold some or all of any payment due.
- B. As-Built Drawings shall not be used for any other purpose and shall not be removed from the Contractor's office without the Owner's approval.
- C. Do not permanently conceal any Work until required information has been recorded. Asset location data shall be recorded before assets are covered.
- D. Legibly mark to record actual construction including:
 - 1. Depths of various elements in relation to the project datum.
 - 2. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
 - 3. Location of utilities and appurtenances constructed and referenced to visible and accessible features of structure.
 - 4. Field changes of dimensions and Design Drawing details.

5. Changes made by Change Order or Field Order.
 6. Details not shown in original Design Drawings.
- E. Technical Specifications and Addenda: Legibly mark up each Technical Specification Section to record:
1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
 2. Changes made by Change Order or Field Order.

1.06 SUBMITTALS

The Contractor shall submit the following according to Technical Specification Section 01300 – SUBMITTALS:

1. Acceptance of the Contractor's monthly application for payment shall be dependent on the Owner's acceptance and agreement that the Contractor's As-built Drawings and weekly submittals are complete, thorough, and acceptable in showing all Work up through and including such work as the Contractor is claiming for completion and payment on the Contractor's application for payment. Any items which do not appear on the As-built Drawings in complete and acceptable form shall not be paid for in the Contractor's monthly payment.
2. Examination by the Owner of the Contractor's As-built Drawings may be made on a weekly basis to determine completion for consideration of monthly pay application. Also, make available all As-built Drawings at all times to the Owner or the Owner's Representative for examination.
3. Prior to Completion of the Work, deliver final As-built Drawings to Owner. Substantial completion will not be made until satisfactory final As-built Drawings are received by the Owner.
4. The following information shall be included with the As-built Drawings and Project Record Documents submittals accompanied by a Transmittal Letter containing:
 - a. Date.
 - b. Project title and number.
 - c. Contractor's name and address.
 - d. Title and number of each As-built Drawings.
 - e. Certification that each document as submitted is complete and accurate.
 - f. Signature of Contractor, or his authorized representative.
5. The GPS asset location coordinates.

1.07 MEASUREMENT AND PAYMENT

The cost to the Contractor for maintaining As-built Drawings for use in the development of project Record Documents shall be considered incidental to the work. Contractor's costs for maintaining as-built records shall be incorporated into the costs of other items of the work.

PART 2 - PRODUCTS

2.01 LOCATING EQUIPMENT

Equipment used for asset location shall utilize Global Positioning System (GPS) equipment or other Owner approved techniques capable of locating points within a maximum 12-inch horizontal accuracy.

PART 3 - EXECUTION

3.01 ISOLATION PLUG REMOVAL

The Contractor shall not remove flow isolation plugs previously installed to dewater the sanitary sewer pipe until all required As-built Drawing information of repair location(s) within the sanitary sewer pipe have been recorded and reviewed by the Owner or Owner's Representative.

3.02 AS-BUILT DRAWINGS

- A. The As-built Drawings shall be prepared for all the Work included in the Contract. Update as-built drawings at a minimum on a weekly basis. As-built Drawings shall be available for review at the request of the Owner. Furnish to the Owner, a full-size annotated copy of the As-built Drawings that include changes from the previous As-built Drawing submittal if requested.
- B. The redlined As-built Drawings shall show the actual in-place installation of the items installed under this Contract. The redlined As-built Drawings shall show the work in plan and sections as required for clarity with reference distance from the upstream manhole wall/pipe interface, repair dimensions and clock position according to National Association of Sewer Service Companies (NASSCO) standards that will be used to develop complete project Record Documents of newly installed repairs.

3.03 RECORDINGS

The Contractor shall submit As-built Drawings and make a record of the locations of all work completed as part of this project. The repair locations shall be referenced to project stationing and dimensions as shown in the Contract Documents.

- A. Pipe Repairs: The As-built Drawings shall indicate the installed repairs within all pipes repaired as measured from the upstream manhole wall / pipe interface. Location of repair in the pipe circumference shall be depicted according to NASSCO standards using a clock position as referenced towards the downstream direction with the crown of the pipe being 12 o'clock.
- B. Manhole Repairs: The As-built Drawings shall indicate the installed repairs within all manholes repaired as measured distance down from the top of the manhole ring. Repair location(s) circumferentially within a manhole shall be recorded as a clock position according to NASSCO standards with the outlet pipe referenced as the 6 o'clock position.
- C. New Manholes: The As-Built Drawings shall include information per City of Phoenix Water Services Department Engineering Policy P-85 – Information to be Furnished on Record Drawings of Capital Improvement Projects.

3.04 GLOBAL POSITIONING SYSTEM (GPS) RECORDING

- A. The following GPS coordinate systems shall be utilized by the Contractor:
 - 1. Coordinate System: US State Plane 1983.
 - 2. Zone: Arizona Central 0202 (Grid).
 - 3. Datum: NAD 1983 (2011).
 - 4. Elevation: NGVD 29.
 - 5. Altitude Units: feet.
 - 6. Coordinate Unit: International feet.
 - 7. Coordinate Order: North/East.
 - 8. Projection: Transverse Mercator.
- B. The Contractor shall provide the GPS coordinates for all newly installed or rehabilitated assets.
 - 1. Horizontal Location (Northing/Easting).
 - 2. Vertical Location (Elevation).
 - 3. Station Materials.
 - 4. Installing Contractor.
 - 5. Date of Installation.

3.05 ASSET RECORDING

A. The Contractor shall submit the following asset location data in a spreadsheet format according to Technical Specification Section 01300 – SUBMITTALS to the Owner. Spreadsheet format shall be provided by the Owner or the Owner’s Representative:

1. Rehabilitated Pipes: Diameter, Pipe and Liner Material, Contractor, Sub-Contractor (if applicable), Date of Rehabilitation, Warrantee Expiration Date.
2. Rehabilitated Manholes: Diameter, Type of Interior Coating/Insert System, Contractor, Sub-Contractor (if applicable), Date of Rehabilitation, Warrantee Expiration Date.

**** END OF SECTION ****

SECTION 01999 REFERENCE FORMS

PART 1 - GENERAL

1.01 REQUIRED FORMS

The forms listed below and included in this section are referenced from other sections of the contract documents:

Form No. Title

Technical Specification Section 01999-A: Submittal Transmittal Form

Technical Specification Section 01999-B: Request for Information Form

Technical Specification Section 01999-C: Confidential Spill Reporting Form

Technical Specification Section 01999-D: CITY CODE 32C – Construction Stormwater Management Plan (SWMP)

1.02 SCOPE

The Contractor shall be responsible for the documentation forms for tests and evaluations required of the contract that do not have specific forms identified. Contractor generated forms shall follow the format established herein.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

These forms are provided for reference only. Similar forms produced by the Contractor may be used.

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01999-A: SUBMITTAL TRANSMITTAL FORM

SUBMITTAL TRANSMITTAL

Submittal Description: _____ Submittal No: _____

Spec Section: _____

	Routing	Sent	Received
OWNER:	Contractor		
PROJECT:	Engineer		
	Contractor		
CONTRACTOR:			

We are sending you: Attached Under separate cover via _____
 Submittals for review and comment
 Product data for information only

Remarks: _____

Item	Copies	Date	Section No.	Description	Review action ^a	Reviewer initials	Review comments attached

^aNote: NET = No Exceptions Taken; MCN = Make Corrections Noted; A&R = Amend and Resubmit; R = Rejected; FIO = for information only
 Attach additional sheets if necessary.

Contractor: Certify either A or B:

- A. We have verified that the material or equipment contained in this submittal meets all the requirements, including coordination with all related work specified (no exceptions).
- B. We have verified that the material or equipment contained in this submittal meets all the requirements specified except for the attached deviations.

No.

Deviation

Certified by: _____
 Contractor's Signature

[END OF FORM]

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01999-B: REQUEST FOR INFORMATION FORM

REQUEST FOR INFORMATION

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

INFORMATION NEEDED:

Date _____ Signature _____

REPLY:

Date _____ Signature _____

[END OF FORM]

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CONFIDENTIAL SPILL REPORTING FORM

INSTRUCTIONS: The Contractor shall ensure appropriate on-site personnel complete this form. The form shall be completed immediately upon discovery of a sanitary sewer spill or release by the individual who first made the discovery.

First at the Scene (name):

1. Facility name and address/location/intersection (or major cross streets):
2. Is/was there a fire or explosion or other release (except for sewage release) outside the facility?

Yes No

If yes, immediately contact the Fire Department (911) for assistance, initiate appropriate facility response procedures, and then continue with this form.

3. Personal injuries and extent, if any:
4. Date and time of initial call or complaint: _____
5. Date and time of spill found or confirmed: _____
6. Date spill reporting completed: _____
7. Date and time spill occurred or started, if known: _____
8. What was spilled? Describe completely. List chemical names/wastewater if known.

SECTION 01999
REFERENCE FORMS

9. How much was spilled? Use units such as gallons or pounds, etc. _____

10. Where and how did the spill occur? Include a description of the container or vessel from which the spill occurred. Attach diagram or map, if available.

11. Where did the spilled material go? Check all that apply.

- | | | | |
|---|--|--|--|
| <input type="checkbox"/> drywell | <input type="checkbox"/> dry wash | <input type="checkbox"/> canal | <input type="checkbox"/> riverbed |
| <input type="checkbox"/> private property | <input type="checkbox"/> retention basin | <input type="checkbox"/> sanitary sewer | <input type="checkbox"/> secondary containment |
| <input type="checkbox"/> storm drain | <input type="checkbox"/> city street | <input type="checkbox"/> Air (vapors or odors) | <input type="checkbox"/> other (specify below) |

12. How far did the spill travel? Describe the path the spill took to its final destination.

13. Was the spill stopped or contained? Describe how and by whom.

14. How long did the spill last? _____

15. Who found the spill? Use the back of this form if necessary.

Name _____ Title _____ Phone _____

a.

b.

16. Who was notified of the spill? List names and identify how notification was made (phone call, fax, etc. Use the back of this form if necessary).

Name	Department/Division/Agency	Date/Time Notified	Method of Notification
------	----------------------------	--------------------	------------------------

a.

b.

c.

d.

Printed name and signature of person who completed this form:

Printed Name _____ Title _____ Phone _____

Signature _____ Date _____

[END OF FORM]

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CONSTRUCTION STORMWATER MANAGEMENT PLAN (SWMP)

NOTE: This form is to be used for construction projects that are not required to submit a Notice of Intent (NOI) and prepare a Stormwater Pollution Prevent Plan (SWPPP) in accordance with the AZPDES Construction General Permit for Stormwater Management.

Project Name:
Project Address:
WSD Project Manager:
WS #:
JOC # (if applicable):
JOA # (if applicable):
SWMP Responsibility:
On-Site Point of Contact:

Project Start Date: _____

Approximate Project End Date: _____

Project Description (brief statement of the project goal):

Total Acres (including parking/laydown/staging areas)

Potential Contaminants:

Litter <input type="checkbox"/>	Significant Materials <input type="checkbox"/>	Pesticides <input type="checkbox"/>	Herbicides <input type="checkbox"/>	Release Velocity Features <input type="checkbox"/>
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Significant Materials (refer to Definitions City Code 32C)

List: _____

Release Velocity Features (refer to City Code 32C-104.F)

List: _____

BMP's and Maintenance Plans:

Litter: _____

Pesticides (Use, Storage, Treatment, Disposal): _____

Herbicides (Use, Storage, Treatment, Disposal): _____

Retention/Detention Basins: _____

Release Velocity: _____

Maintenance and cleaning of parking lots: _____

Significant Materials (Use, Storage, Treatment, Disposal): _____

Washes:

Employee and Contractor Training:

Final Stabilization:

MAP:

(Include a map of the entire project)

[END OF FORM]

SECTION 02100 TRAFFIC CONTROL

PART 1 - GENERAL

1.01 DESCRIPTION

Traffic control during construction shall be provided in accordance with the requirements of the 2015 City of Phoenix Supplement to the MAG Uniform Standard Specifications Section 401 - Traffic Control, 2020 City of Phoenix - Traffic Barricade Manual (TBM), and Manual on Uniform Traffic Control Devices (MUTCD), and the Arizona Supplement to the MUTCD.

- A. All streets, traffic ways, and sidewalks shall be kept open in a safe manner for the passage of traffic and pedestrians during the construction period unless otherwise approved by the Owner.
- B. When required to cross, obstruct, or close a street, traffic way, or sidewalk for a short duration that is approved by the Owner, the Contractor shall provide and maintain suitable bridges, detours, or other approved temporary means for the accommodation of vehicular and pedestrian traffic. Closings shall be for the shortest time practical, and passage shall be restored immediately after completion of construction.
- C. The Contractor shall give the Owner 48 hours advance notice of proposed operations within any public rights-of-way and temporary roadway restrictions. All proposed roadway restrictions shall be submitted for a Temporary Restriction and Closure System (TRACS) permit per the TBM, for approved prior to commencement of operations.
- D. The Contractor shall provide signs, signals, barricades, flares, lights and all other equipment, service and personnel required to regulate and protect all traffic and warn of hazards in accordance with the TBM. All such work shall conform to requirements of the Owner or authority having jurisdiction. Remove temporary equipment and facilities when no longer required and restore grounds to original condition.
- E. As specified in subsection 1.05, the Contractor shall provide a Traffic Control Plan and implement traffic control around all work as part of the contract.
- F. Qualified and suitably equipped flaggers shall be used to assist all construction equipment and vehicles access to and from the construction site.

1.02 SUBMITTALS

The Contractor shall submit the following according to Technical Specification Section 01300 – SUBMITTALS:

1. Traffic Control Plan for each area of work.
2. TRACS permit application.

1.03 SEQUENCE OF CONSTRUCTION

The sequence of construction shall conform to the requirements of the Special Traffic Regulations as stated in the 2015 City of Phoenix Supplement to the MAG Uniform Standard Specifications, Subsection 401.5 GENERAL TRAFFIC REGULATION.

The project shall follow a phasing plan approved by the Owner. All travel lanes shall always be maintained on a paved surface during construction. This may be accomplished by using existing, new, or temporary asphalt pavement. Trenches shall be completely backfilled and either paved with temporary asphalt pavement or covered with plating as necessary to comply with this requirement and the "Special Traffic Regulations".

Night work will be allowed upon written request to the Owner for approval prior to commencement of work.

The right to direct the sequence of construction is a function vested solely with the Contractor. Prior to commencement of the work in each area, the Contractor shall prepare and submit to the Owner a written phasing plan and work schedule for the project work area.

When approved, the phasing plan and work schedule shall not be changed without the written consent of the Owner. Orderly procedure of all work to be performed under this contract shall be the full responsibility of the Contractor. The work schedule shall include the hours per day and the days per week that the Contractor plans to work on each project site.

1.04 HOLIDAY SEASON CONSTRUCTION MORATORIUM

The Traffic Control Plan shall accommodate the holiday season construction moratorium in accordance with Technical Specification Section 01310 – PROGRESS SCHEDULE.

1.05 TRAFFIC REGULATIONS

All traffic and/or traffic control devices on this project shall be provided, maintained and/or controlled by the Contractor as specified in the TBM and

addendums thereof.

- A. The Traffic Control Plan and TRACS permit application shall be submitted to the Owner's Representative for review. The Owner's Representative will submit the documents to City Right-of-Way (ROW) Management representative for all work or construction activities within Owner right-of-way impacted by construction operations.
- B. Permission to restrict Owner streets, sidewalks, and alleys shall be requested as specified in Chapter 2 – TRACS Permits, TBM, and addendums thereof.
- C. Unless otherwise provided for in the following "Special Traffic Regulations", all traffic on this project shall be regulated as specified in the TBM.
- D. No deviation to the "Special Traffic Regulations will be allowed or implemented unless submitted to the Owner and the Owner's Representative for review and approval two (2) weeks prior to proposed work.
- E. Only Owner certified contractors can set, move, or remove temporary traffic control devices (signs, barricades, etc.). This annual certification can be scheduled by calling 602-262-6235.
- F. Civil sanctions for temporary traffic control violations shall be per the 2015 City of Phoenix Supplements to the MAG Uniform Standard Specification Subsection 401.9.2 VIOLATIONS OF TRAFFIC BARRICADE MANUAL, CIVIL SANCTIONS.
- G. Parking Meter Fees: To take a parking meter out of service a TRACS permit needs to be submitted a minimum of 48 hours in advance and requires a fee to hood meters at \$35 per City block and an additional \$10 per meter per day.
- H. The Owner has the authority to remove and store temporary traffic control devices in emergency situations or as a last resort if the barricade owner will not remove them. The Owner may assess removal and storage fees accordingly.

1.06 TRANSPORTATION ROUTES

The Contractor shall select transportation routes for hauling materials, equipment, or imported products based on the existing condition of the pipes and impacts on local traffic. Because there may be several different work sites with varying access routes, the transportation routes shall be documented in a traffic control plan on a case-by-case basis.

1.07 TRAFFIC CONTROL / ACCESS

- A. The Contractor shall be responsible to present traffic control plans at the regularly scheduled project progress meeting(s) for review. Uninterrupted access to commercial businesses and residences shall be maintained at all times as outlined in Technical Specification Section 01014 – WORK SEQUENCE, subsection 1.05 D. The Contractor shall be responsible to adjust work schedule to minimize disruption to normal operation of businesses.
- B. The Contractor shall be responsible to coordinate traffic control plans and inform the project's public information (PI) firm of any potential impacts to commercial businesses or residents per Technical Specification Section 01400 – PUBLIC AWARENESS. The Contractor shall adjust work activities and schedules to minimize disruptions to the Owner, businesses, residents, and traveling public. Owner reserve the right to request the Contractor move its operations or modify work plans and schedules to minimize disruptions to commercial business or residents at no cost to the Owner.

1.08 TRAFFIC CONTROL PLAN DISTRIBUTION

- A. A copy of the approved Traffic Control Plan shall be submitted to the Owner's Representative prior to start of work.
- B. A copy of the approved Traffic Control Plan shall be on-site and available for review at all times work activities are commencing. Failure to have approved Traffic Control Plan on-site while work is commencing will be grounds for rejection and non-payment of work being performed.

1.09 PORTABLE VARIABLE MESSAGE BOARDS

Portable Variable Message Boards (VMB) shall be provided on this project in advance of each direction of travel affected by the restriction, 24 hours per day, from at least 5 days prior to any; roadway CLOSURES, restrictions setup on a 24-hour basis, restriction of a left turn lane at signalized intersection, single lane restrictions through a signalized intersection as directed by the Owner. The VMB shall remain in place until the roadway traffic restriction is removed or on approval from the area ROW Management representative.

1.10 VMB Reimbursement

Costs for VMB shall be reimbursed by the Owner according to submitted supplier approved invoices.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 POLICE OFFICER REQUIREMENTS

The Contractor shall provide one off-duty police officer when construction activities inordinately restrict traffic through a signalized intersection or conditions are observed by the ROW Management representative in the field to warrant it. Additional police officer hours may be requested at the direction of the Owner or Owner's Representative.

The Contractor shall also provide one off-duty police officer, as defined in the TBM, at signalized intersections affected from 6:00 a.m. to 6:30 p.m. weekdays, and during working hours, nights, and weekends when traffic is restricted per the TBM.

When construction activities do not restrict traffic through the intersections, police officer hours may be reduced or suspended at the direction of the Owner.

3.02 SIGNALIZED INTERSECTION REQUIREMENTS

When left turns are prohibited at signalized intersections with left-turn arrow indications or when working in vicinity of a signalized intersection, the Contractor shall notify the City of Phoenix Street Transportation Department, Traffic Signal Shop at (602) 262-6021 or by email at phxtmc@phoenix.gov at a minimum of 72 hours in advance to make arrangements for arrow indications to be turned off or to coordinated signals being affected by the construction.

The Contractor shall provide the Traffic Signal Shop a written schedule indicating days, times and specific locations where left turns will be prohibited or where signals will be interrupted. When the work has been completed the Contractor shall immediately notify the Traffic Signal Shop so they can reactivate the left-turn arrow or signals.

3.03 TRAFFIC SIGNAL HEAD VISIBILITY REQUIREMENTS

The Contractor shall maintain traffic signal visibility per the TBM, Chapter 5, Section II TRAFFIC SIGNALS.

3.04 LOCAL ACCESS REQUIREMENTS

The Contractor shall maintain local access to all side streets, access roads driveways, alleys, and parking lots at all times and shall notify residents 72

hours in advance of any restrictions which will affect their access. The Contractor shall restore the access as soon as possible. If the primary access cannot be restored in a timely manner, the Contractor shall provide an alternative which shall be pre-determined with the residents prior to imposing any restrictions. Any local street restrictions imposed shall be such that local area traffic circulation is maintained.

3.05 BUSINESS ACCESS REQUIREMENTS

Access shall be maintained to adjacent businesses at all times during their hours of operation. Access may be maintained by such measures as constructing driveways in half sections or by providing bridging over new concrete or excavated trenches. Properties with multiple driveway access shall not have more than one driveway access restricted at any given time. While the one driveway is restricted, access to the other adjacent driveways shall be maintained and unrestricted. Each individual driveway access restriction shall be no more than fourteen (14) calendar days. Any business restrictions shall be coordinated with the affected business in writing at least 14 days prior to imposing restrictions.

3.06 PEDESTRIAN ACCESS REQUIREMENTS

The Contractor shall ensure that all sidewalks on this project remain open in a safe, usable condition as detailed in Chapter 3 of the TBM, and/or in the 2010 Americans with Disabilities Act (ADA) Standards for Accessible Design. ROW Management representative(s) may also request an ADA/Pedestrian plan for any proposed sidewalk restrictions or closures.

3.07 FRONTAGE ROAD ACCESS REQUIREMENTS

Local access shall be maintained at all times on frontage roads. Frontage roads shall not be used for through traffic, equipment parking, material storage, or spoil stockpile area. Frontage road closures shall follow the same special provisions as described in "Local Access Requirements".

3.08 SCHOOL ACCESS REQUIREMENTS

The Contractor shall provide clean and safe school zones, crosswalks, and walkways for students attending nearby schools during all hours of school use.

This may require backfilling trenches, temporary pavement, shoring, plating, or pedestrian bridges with handrails across open trenches.

In addition to school zones and crosswalks, the Contractor shall maintain accessibility to all school bus routes during all hours of school use. The Contractor shall provide information to the PI firm to notify the school

Principal(s) and the school Transportation Director at least 14 days prior to any restrictions and shall restore access as soon as possible.

3.09 CHURCH ACCESS REQUIREMENTS

The Contractor shall maintain a high level of access to churches during all hours of church use. The Contractor shall coordinate any access restrictions with the PI firm to notify the clergy at least 14 days prior to any restrictions and shall restore access as soon as possible.

3.10 CEMETERY ACCESS REQUIREMENTS

The Contractor shall maintain a high level of access to cemeteries during all hours. The Contractor shall coordinate any access restrictions with the PI firm to notify the cemetery at least 14 days prior to any restrictions and shall restore access as soon as possible.

3.11 FIRE STATION AND POLICE STATION ACCESS REQUIREMENTS

The Contractor shall maintain paved emergency vehicle access to and from all fire stations and police stations at all times. The Contractor shall coordinate with the PI firm to notify the Fire Station and/or Police Station Commander at least 14 calendar days prior to any restrictions, and again at least 72 hours prior to any restrictions, and shall restore full access as soon as possible.

3.12 HOSPITAL ACCESS REQUIREMENTS

The Contractor shall maintain the Emergency entrance to nearby Hospitals by way of a paved lane for emergency vehicles at all times for the duration of the project. The Contractor shall coordinate with the PI firm to notify the hospital administrator at least 14 days prior to any restrictions and shall restore access as soon as possible.

3.13 CITY PARK ACCESS REQUIREMENTS

The Contractor shall maintain access to nearby parks during park hours. The Contractor shall coordinate with the PI firm to notify the Parks District Supervisor at least 14 days in advance, and full access shall be restored as soon as possible.

3.14 RECREATIONAL TRAIL CROSSING

The Contractor shall maintain access to trail head parking and shall maintain all special trail signs required.

3.15 CANAL AND ACCESS ROAD REQUIREMENTS

Contractor shall maintain access to canal maintenance roads at all times. The Contractor shall coordinate with the PI firm of any work that may affect the access and the PI firm will coordinate with the appropriate Agency contact at least 14 working days in advance.

3.16 SANITATION PICK-UP

The Contractor shall provide sanitation pick-up for affected residents by relocating trash containers, or by providing alternative measures acceptable to the City of Phoenix Public Works Department, Sanitation Division (602) 256-3310.

3.17 SPECIAL EVENTS

There may be special events scheduled to take place during the construction of this project that exists within proximity to the project area(s). The Contractor shall identify and coordinate these events with the construction schedule. No additional compensation for delays associated with special events will be considered.

3.18 SPECIAL SIGN REQUIREMENTS

The Contractor shall provide, install, and maintain advance notification; public informational; and directional access signs (for businesses, churches, hospitals, schools, etc.) that may be required by the Owner. These signs may include but are not limited to VMB, radar/speed sensing trailers and other applicable Intelligent Transportation System type devices. The cost shall be included in the bid item for Traffic Control Devices.

3.19 BUS STOPS

The Contractor shall maintain all existing bus stop locations on this project in a safe manner or provide alternate bus stop locations and related directional signage as required by the Owner. Relocation of bus stops shall be coordinated through the area ROW Management representative and noted within TRACS permits issued through the ROW Management office. Not fulfilling this requirement can lead to civil sanctions.

3.20 FLAGGING OF TRAFFIC

No flagging of traffic will be permitted during the peak traffic hours of 6:00 a.m. to 8:30 a.m. and 4:00 p.m. to 6:30 p.m. weekdays unless otherwise approved by the Owner in writing. If construction requires, intermittent flagging will be allowed from 8:30 a.m. to 4:00 p.m. if approved by the Owner, to facilitate access for heavy construction equipment.

3.21 TRAFFIC CONTROL PLAN

The Contractor shall submit a Traffic Control Plan for approval, showing placement of all traffic control devices, including all conflicting signs to be covered/removed or relocated, or other features that may conflict with the placement of temporary signage. The Traffic Control Plan shall be submitted to the Owner's Representative at the individual area construction meeting(s) or before. The Contractor shall allow the Owner's Representative 10 business days for review.

3.22 TEMPORARY TRAFFIC CONTROL ZONE AND SAFETY

At the Pre-construction meeting for each work area, the Contractor shall designate an employee, other than the Project Superintendent, who is knowledgeable in the principles and methods of proper traffic control and safety. This employee shall be available on the project site during all periods of construction to coordinate and maintain safe, acceptable, and effective temporary barricading whenever construction affects traffic. This person shall be authorized to receive and fulfill instructions from the Owner if necessary and shall supervise and direct traffic control. Instructions and information given by the Owner to this person shall be considered as having been given to the Contractor.

Failure to maintain temporary traffic control devices in accordance with the TBM, the approved Traffic Control Plan, and directives by the Owner may result in suspension of work and/or civil sanctions until deficiencies are corrected to the satisfaction of the Owner.

3.23 SAFETY FENCING REQUIREMENTS FOR TRENCHES AND EXCAVATIONS

The Contractor shall provide safety construction fencing around all open trenches and excavations during all non-working hours.

The Contractor shall provide for the safety and welfare of the general public by adequately fencing all excavations and trenches that are permitted by the Owner to remain open when construction is not in progress.

Fencing shall be securely anchored to approved steel posts located a maximum of six (6) feet on centers, having a minimum height of six (6) feet, and shall consist of wire mesh fabric of sufficient weight and rigidity to adequately span a maximum supporting post separation of six (6) feet.

SECTION 02100
TRAFFIC CONTROL

The fencing, when installed around the periphery of excavations and trenches, shall form an effective barrier against intrusion by the general public into areas of construction. Fencing shall not create sight distance restrictions or visual obstructions. At all times when construction is not in progress, the Contractor shall be responsible for maintaining the fencing in good repair, and upon notification by the Owner or Owner's Representative, shall take immediate action to rectify any deficiency. Prior to the start of any excavating or trenching required for the execution of the proposed work, the Contractor shall submit to the Owner for approval, detailed plans showing types of materials and methods of fabrication for the protective fencing.

There will be no separate measurement or payment for furnishing, installing, or maintaining protective fencing. The cost shall be considered incidental to the cost of other bid items.

3.24 FINAL SIGNING AND STRIPING OF ROADWAY

The Contractor shall notify the Owner or the Owner's Representative and the City of Phoenix Street Transportation Department, Traffic Services Division, (602) 262-4684 or agency having jurisdiction over the area, at least thirty (30) days prior to desired completion of final roadway surfacing repairs. This notification period will allow adequate time for Owner crews to schedule and complete the marking, signing and lane striping task on-time.

**** END OF SECTION ****

SECTION 02145

DIVERSION OF SEWAGE FLOW AND DEWATERING

PART 1 – GENERAL

1.01 DESCRIPTION

A. SCOPE

This section describes the requirements for temporary bypassing and dewatering of the sanitary sewer system including the maintenance of service in adjacent collector pipe connections, during CCTV video, cleaning operations, inspection of the project pipe, and during pipe and manhole rehabilitation. All temporary bypassing shall comply with ADEQ, Maricopa County, and EPA regulations.

The design, installation, and operation of the sewage bypass/control system shall be the responsibility of the Contractor and shall be submitted to the Owner's Representative for review prior to construction. Bypass calculations and plans shall be sealed by a Professional Civil Engineer licensed in the State of Arizona. Owner's Representative review shall only be for general conformance to project objectives. Means and methods of accomplishing the sewage bypassing shall be the responsibility of the Contractor.

Bypass system configuration depicted in Contract Documents are intended for schematic purposes only and depict existing utilities that may be present if the Contractor chooses to utilize the corridor shown. The Contractor shall be responsible for bypass system corridor selection subject to Agency with jurisdiction over the route proposed approval. It shall be the Contractor's responsibility to field verify the presence and location of existing utilities whether shown in the Contract Documents or not, for the proposed bypass force main discharge pipe route, and location of pump suction and discharge pit excavations. Contractor shall be responsible for installation of subsurface force main pipe to maintain traffic according to traffic control plan and/or jurisdictional permit requirements.

B. REQUIREMENTS

1. The Contractor shall provide all coordination, labor, materials, equipment, and supervision to temporarily bypass flow around the Contractor's work in accordance with the Contractor's specific needs to dewater the pipes, cleaning and rehabilitation method being utilized.

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2. The Contractor shall have the entire bypassing system in place and successfully pressure and leak tested with potable water at 1.5 times the maximum operating pressure of the system before bypassing any sanitary sewage.
3. The Contractor shall notify the Owner 48 hours prior to plugging any sanitary sewer pipe for bypass purposes. The operation of bypass equipment and existing water level within the sanitary sewer pipe system shall be continuously monitored.
4. The Contractor shall notify the City of Phoenix Instrumentation and Control 10 business days prior to commencement of bypass pumping operations that may impact the normal flow levels through existing flow meter stations. Prior to bypass operation, the Owner shall temporarily remove meter station equipment to protect it from damage as a result of hydraulic forces if submergence occurs from surcharging the meter station.

Work includes the removal and off-site storage of the ancillary appurtenances, i.e., support bracing system, etc. Contractor shall notify and coordinate with the Owner prior to removing or replacing any ancillary appurtenances from the meter station prior to bypass pumping operations in accordance with Technical Specification Section 02760 – SEWER PIPE AND SEWER STRUCTURE CLEANING.

The Contractor shall be responsible for reinstallation of removed ancillary appurtenances, back to original configuration after bypass pumping operations are complete.

Contractor shall be responsible for all damaged equipment. Equipment damaged shall be replaced in-kind by the Contractor at no additional cost to the Owner. Contractor shall be responsible for low pressure wash cleaning of the interior of the meter station interior following the occurrence of surcharging and channel overflow at no additional cost to the Owner.

5. It is the Contractor's responsibility to arrange all necessary access and temporary construction agreements with all affected parties for the Contractor's proposed sewer bypass system.
6. Contractor is responsible for immediate and proper cleanup as per Technical Specification Section 01560 – ENVIRONMENTAL CONTROLS should any sewage SSO occur. Regardless of amount, the Contractor shall pay for all damages and fines incurred as a result of a spill.

C. EXPERIENCE

The Contractor shall utilize staff and/or a subcontractor that has been directly responsible for completion of a rehabilitation project that required the bypass pumping of sewage flows in excess of 10 million gallons per day (MGD).

1.02 SUBMITTALS

The Contractor shall submit the following according to Technical Specification Section 01300 – SUBMITTALS:

1. Bypass Plan: At the Pre-construction conference the Contractor shall submit drawings and complete design data showing methods and equipment proposed to utilize in sewer bypassing for review by the Owner's Representative. The submittal shall include the following information:
 - a. Drawings shall be prepared indicating the scheme and location of temporary sewer plugs and bypass discharge pipes. The drawings shall also show the method and location for discharging the flow back into the sewer system.
 - b. The Contractor shall submit design calculations verifying adequacy of the capacity of the pumping system and selected equipment.
 - c. Standby power source.
 - d. 24 hours maintenance and monitoring plan including staffing names and contract phone numbers.
2. Bypass System Inspection Log: Provide logbook template for bypass system inspection and monitoring. Log shall be submitted to the Owner's Representative on a weekly basis during bypass system operation.
3. Emergency Flow Release Plan: Contractor shall submit written sequence of actions to release flow in the event water levels in upstream manholes exceed predetermined level. Contractor shall review plan with on-site personnel responsible for flow release implementation.

1.03 EMERGENCY FLOW RELEASE PLAN

The Contractor shall be responsible for developing a written plan for various stages of its proposed construction in the event water levels in the upstream manholes exceed predetermined levels. The Plan shall contain pre-determined water level elevation for various implementation stages of the Plan along with corresponding procedures that are to be undertaken for protection of workers

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and eliminate the potential for sanitary sewer overflow. The Plan shall contain a predetermined maximum water level for immediate release implementation.

The approved emergency release Plan shall be reviewed with all Contractor's on-site field personnel. The Owner and/or Owner's representative shall be present on-site to witness the Plan review prior to the Contractor being authorized to install bypass flow plugs into the sanitary sewer.

1.04 JOB CONDITIONS

A. AVAILABLE FLOW DATA

Estimated peak daily flow data for the project pipes is shown in the table below. The Contractor shall be responsible to field verify and/or obtain additional information as necessary.

Use of the Owner's flow data in no way relieves the Contractor from responsibility for monitoring flows and the design, installation, and operation of an adequately sized and properly functioning sewage bypass system. Any additional monitoring or gathering of flow data is the responsibility of the Contractor.

The Contractor shall be responsible for field verifying the peak flows to be used to determine bypass pumping system design flow requirements. The construction schedule shall be the Contractor's responsibility. Flows present will differ depending on the date construction occurs. The Contractor should also be aware that volumes of flow following a rain event may increase considerably.

Table 1 - Bypass Flow Rates

Manhole	Peak Hour Flow (MGD)
12-10-301	4.79
12-10-303	4.79
12-10-305	0.01
12-11-202	0.23
12-11-203	0.24
12-11-204	4.79
12-11-207	0.01
12-11-303	4.87
12-11-306	4.91
13-10-301	4.47
13-10-302	0.02
13-10-401	0.01
13-10-402	0.01
13-10-404	4.54
13-11-110	0.03
13-11-118	0.01
13-11-212	4.47
13-11-220	4.47
14-10-303	0.06
14-10-406	0.01
14-10-407	4.10
14-10-407	0.06
14-10-408	4.16
14-11-105	0.01
14-11-120	0.31
15-10-324	3.20
15-10-413	3.20
15-10-414	3.21
15-10-415	0.32
15-11-101	0.77
15-11-104	0.01

B. PROTECTION

No bypassing to the ground surface, receiving waters, storm drains, or bypassing which results in soil or groundwater contamination or any potential health hazards shall be permitted.

C. SCHEDULING

The bypassing system shall operate continuously and shall not be shut down between shifts, on holidays or weekends, or during work stoppages without written permission from the Owner. The bypass system shall have attendants present 24 hours a day whose only duty is to monitor and maintain the bypass pumping system until the bypassing of that specific pipe is no longer required.

The Contractor shall have dedicated staff to continuously patrol the discharge pipe alignment 24 hours a day during bypass pump operation to monitor for the presence of any leakage. Tools and appropriate fitting(s) shall be available on-site to make immediate repairs.

D. SERVICE LATERALS

Depending upon the Contractor's proposed bypass system configuration, adjacent sanitary sewer collector pipes to be bypassed may have existing service laterals connected to adjacent users which may not be depicted in the Drawings. The Contractor shall verify the existence and location(s) of existing laterals impacted by proposed construction activities and make appropriate accommodations at no additional cost to the Owner.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. The Contractor shall provide temporary pumps, conduits, and other equipment to bypass sewer flow around the Contractor's work area as required during CCTV video inspection, cleaning, and rehabilitation activities. The Contractor shall furnish all necessary labor and supervision to set up, operate and remove the pumps and bypass system.
- B. The Contractor shall maintain on site, sufficient equipment, and materials to ensure continuous and successful operation of the bypass and dewatering systems. The standby pumps shall be installed and fully operational at all times including all pumps, equipment, and piping being in-place. Standby pumps shall be fueled/powerd and operational at all times. 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.

Sound attenuated pumps shall be provided for the bypass pumping system. The sound attenuated pumps and/or power generators shall be operated at appropriate noise levels in accordance with OSHA, ADOSH, and Phoenix Zoning Ordinance Section 627. Operating noise level shall be maintained 70 decibels or less, measured at a distance of 50 feet or as stated in Phoenix Zoning Ordinance Section 627 depending upon location of work. The Contractor shall be responsible to provide and install sound attenuation devices, methods, and/or systems to maintain noise levels below stated decibels. Sound measurements shall be made and recorded by the Contractor in accordance with ANSI/ASA S12.50-2002.

2.02 BYPASS PIPING

The Contractor shall provide, install, pressure test, operate, monitor, flush, disassemble and remove all bypass piping and appurtenances to divert flow away from or around the area of work. The alignment of the bypass pipe shall be in accordance with Technical Specification Section 02100 – TRAFFIC CONTROL.

2.03 BYPASS CAPACITY

- A. Pumps and bypass piping system shall be of adequate number of pumps and pipes to provide sufficient capacity to handle the existing sanitary sewer flow.
1. Pumping Capacity: The Contractor shall provide adequately sized pump(s) to handle a minimum of 150 percent of the peak daily flow. The Contractor shall determine the required flow capacity.
 2. Pump Redundancy:
 - i. When multiple pumps are required to handle the bypass flows, the Contractor shall provide a minimum of 50 percent redundancy in the number of additional, fully operational, standby pumps.
 - ii. The Contractor shall provide 100 percent redundancy in the number of bypass pumps when only one (1) pump is necessary to accommodate the flow.
 3. Pump Discharge Force Main Capacity: The Contractor shall provide adequately sized pipe(s) in sufficient number to accommodate 150 percent of the peak daily flow.
- B. In no case shall the Contractor allow any sewage to surcharge laterals and backup into homes or businesses, or in any way overflow into the environment. If the bypass pumping capacity is insufficient to prevent surcharge of laterals and/or overflow at any time, the Contractor shall

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remove the pipe plugs to release flow per the Emergency Release Plan, irrespective of the status of the application or rehabilitation process.

- C. The Contractor shall have a professional civil engineer, registered in the State of Arizona, professionally seal bypassing pumping plan and system hydraulic calculations. Hydraulic calculation shall be tailored to proposed equipment and on-site conditions and depict capacities of primary pumps and pipes along with required standby equipment.

2.04 CONTAINMENT

All liquid fuel powered pumps, generators, and other equipment shall be placed in a secondary containment barrier to protect against gasoline, oil, and hydraulic fluid spills.

2.05 SYSTEM MONITORING

The Contractor shall provide full time, 24 hours per day, operator and/or mechanic(s) with full responsibility for the bypass pumping operation. Pumps and force main discharge pipes shall be monitored for proper operation and inspected for any leakage. The Contractor shall address any deficiencies immediately upon discovery. Name, date, and time of inspection along with any maintenance performed shall be logged hourly and submitted to the Owner's Representative on a weekly basis.

The Contractor shall use smart manhole covers on bypass manholes to monitor surcharge levels within the manholes during bypass operations.

PART 3 – EXECUTION

3.01 BYPASS PLAN DISTRIBUTION

- A. A copy of the approved Sewer Bypass Plan shall be submitted to the Owner's Representative prior to start of work.
- B. A copy of the approved Sewer Bypass Plan shall be on-site and available for review at all times work activities are commencing. Failure to have approved Bypass Plan on-site while work is commencing will be grounds for rejection and nonpayment of work being performed.

3.02 FLOWS IN THE PROJECT PIPES

A. FLOW CONDITIONS:

The Contractor is responsible for verifying current flow condition information at the time of construction. The Owner is not responsible for any deviations in quantity of sewage flow at any time during the

construction period. Higher flows may be encountered depending on weather and other upstream conditions.

B. FLOW THROUGH AT MANHOLES

Where work occurs within existing manholes or structures, it is anticipated that flows can be handled without above ground bypass pumping. The Owner may be able to minimize water level in the sanitary sewer pipe through upstream diversion of flow. The Contractor shall be responsible for providing safe working conditions and environment within the manhole if working above live flow conditions.

The Contractor shall schedule and perform work within the interior of manholes or structures for rehabilitation when the flow has been bypassed as part of the pipe rehabilitation process.

C. SERVICE LATERALS

Sewer service to customers must be maintained during the course of the work unless other acceptable arrangements are made by the Contractor with the customer. The Owner's Representative shall provide a PI Representative to accompany the Contractor during customer visits to discuss bypass pumping of services or making alternate arrangements with the customer for service outages. No matter what arrangement is made, the Contractor shall provide the Owner documentation that all affected users have been contacted and arrangements made for continuous service or alternate accommodations. This documentation must be submitted prior to start of work on the section of sanitary sewer pipe affected.

D. NOTIFICATIONS

The Contractor shall cooperate fully in providing the Owner with advance notice and details pertaining to work schedule and individual service arrangements per Technical Specification Section 01400 – PUBLIC AWARENESS. The Public Involvement Firm retained by the Owner's Representative shall perform notification of the work to the public.

3.03 PROTECTION

- A. In areas where flows are bypassed, protection shall be provided per Technical Specification Section 01560 – ENVIRONMENTAL CONTROLS.
- B. The Contractor shall inspect and maintain the entire bypass pumping and piping system for leaks and spills. The Contractor shall also create an inspection log and shall enter the time of the inspections, the condition of the piping and the name of the inspector into the log for review by the

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Owner's Representative. The log shall be submitted weekly to the Owner's Representative.

3.04 DAMAGES

The Contractor shall repair and/or pay for repair, without cost to the Owner, any damage as a result of construction activities and/or damage that may result from the Contractor's negligence, inadequate or improper installation, maintenance, and operation of bypassing system, including mechanical or electrical failures.

****END OF SECTION****

SECTION 02760

SEWER PIPE AND SEWER STRUCTURE CLEANING

PART 1 - GENERAL

1.01 DESCRIPTION

A. SCOPE

This section specifies the requirements for cleaning of sanitary sewer pipe and sewer structures such as, but not limited to manholes, vaults, wet wells prior to condition assessment, inspection, repair and/or rehabilitation.

B. REQUIREMENTS

The work to be accomplished consists of furnishing all labor, materials, and equipment to remove accumulated and/or settled sediments and debris from the pipe or structure interior, removal of deteriorated material down to sound/solid substrate material of the sanitary sewer pipes or sewer structures. If the sanitary sewer is determined not to be adequately cleaned, as required in this section, it shall be re-cleaned and remote visual inspected if applicable, repeated by the Contractor at no additional cost to the Owner.

The Contractor shall remove existing degraded, miscellaneous debris or foreign matter present such as, but not limited to, sediment, debris, rocks, roots, scale, encrustations, grease accumulations and any magnesium hydroxide slurry coatings (if present), deteriorated or loose protective linings, deteriorated concrete and/or previously applied protective coatings, etc. from the sanitary sewer pipes and/or sewer structures to adequately prepare the surface for inspection, repair, or installation of a protective lining/coating per Technical Specification Section 09710 - CONCRETE AND MASONRY COATING.

All loose or foreign materials present and/or dislodged by the Contractor during cleaning activities shall be removed from the sanitary sewer system and delivered to an Owner approved disposal site per paragraph 3.09 - DISPOSAL OF SEDIMENTS. Sediment and/or debris larger than U.S. #8 sieve shall not be deposited downstream into the sewer system. In the event debris is inadvertently released into the sewer system, the Contractor shall be responsible for cleaning the sanitary sewer system downstream for a minimum distance of 1,000 feet, or as directed to remove the sediment(s) at no additional cost to the Owner.

C. EXISTING EQUIPMENT

The Contractor shall schedule and coordinate with the Owner the temporary removal and replacement of existing interior structure and/or inline equipment, along with all structural support systems, hangers, and piping, such as, but not limited to flow meters, odor logger equipment, and/or chemical dosing systems present within structures prior to proceeding with work.

D. RESPONSIBILITY AND LIABILITY

Pipes and/or structures discovered by the Contractor or their Subcontractor to be structurally deteriorated to the extent where cleaning may detrimentally impact the structural integrity or functionality of the existing pipe or structure shall be brought to the attention of the Owner prior to proceeding with cleaning operations.

Once pipe cleaning operations commence, the Contractor shall continuously monitor and record with remote visual means the structural integrity of the pipe for signs of structural degradation. If signs of sewer system component failure appear, the Contractor shall terminate cleaning activities immediately and notify the Owner and Owner's Representative.

In the event of a sewer system component failure as a result of the Contractor's cleaning operation, Contractor accepts all liability and responsibility of damages and pay all costs of repairs including damages to associated public and/or private properties caused as a result of the work if the Contractor failed to adequately monitor structural condition and cease cleaning activities.

1.02 SUBMITTALS

The following submittal shall be provided in accordance with Technical Specification Section 01300 - SUBMITTALS:

1. A letter identifying the methods the Contractor anticipates employing to clean the pipe(s) and structure(s) along with techniques for remove of larger rocks, miscellaneous debris, sediment, grease, scale, encrustations, and roots, loose and/or hanging linings that may be present within the sanitary sewer pipe and/or structures to be repaired/rehabilitated. Contractor shall provide reference names and contact numbers where the Contractor has used the identified cleaning method successfully in the past.
2. The letter identifying the materials and methods the Contractor anticipates employing to prepare the existing surface(s) consistent with

the rehabilitation materials proposed. Letter shall include documentation that proposed surface preparation material(s) and method(s) conform to manufacturer's recommendations for rehabilitation material(s) proposed. Contractor shall provide reference names and contact numbers where the Contractor has previously used the proposed surface preparation/cleaning method successfully in the past.

Contractor shall certify that the preparation method(s) and material(s) proposed will not adversely impact receiving facilities and/or downstream treatment processes prior to use. Contractor shall obtain written authorization from the Owner prior to use of cleaning/surface preparation material(s) and method(s). Contractor shall be responsible to modify and/or substitute alternate cleaning/preparation process(es), methods and/or materials according to Owner request at no additional cost to the Owner.

PART 2 - MATERIALS

2.01 CHEMICAL ADDITIVES

The Contractor may utilize chemical additives to assist in the cleaning process. However, the Contractor shall be thoroughly familiar with all phases of sewer pipe and structure rehabilitation to ensure any chemical cleaning additives proposed do not adversely impact the rehabilitation materials proposed.

No chemicals shall be used without written authorization of the Owner. In no case shall any chemical additive be used which concentrations might be considered hazardous or might be considered detrimental to organisms or equipment of the downstream receiving wastewater treatment facility(ies), or detrimental to downstream old or new pipe materials.

Safety Data Sheet (SDS) shall be posted onsite with a copy supplied to the Owner for all chemicals anticipated to be used in the project or brought on-site.

2.02 HEATED WATER

The Contractor shall obtain written authorization from the Owner prior to using heated water to assist in the surface cleaning/preparation process to ensure it is not detrimental to organisms or equipment in the downstream receiving wastewater treatment facility(ies).

Contractor shall obtain written permission from the Owner authorizing the release of heated water into the waste stream.

PART 3 - EXECUTION

3.01 GENERAL

The Contractor shall conduct work so as to prevent detrimental sewage blockage and minimize adverse surcharging in the sanitary sewer or connecting sewer system. Damage to existing private or public facilities as a result of the Contractor's work shall be promptly repaired in kind at no additional cost to the Owner.

Initial cleaning shall not be performed more than thirty (30) days prior to start of inspection/repair/rehabilitation work. It shall be the responsibility of the Contractor to repeat the cleaning process prior to initiation of rehabilitation work or inspection if tuberculation or detrimental corrosion buildup occurs prior to repairs being performed at no additional cost to the Owner.

Unless otherwise noted, for existing structures or portions of the structure being coated with a previously applied corrosion protective coating system, the Contractor shall entirely remove the existing coating (including any underlayment layers) or provide letter of acceptance of the surface and/or materials present stating that it is compatible with the proposed system and will not adversely impact the performance or warranty of the proposed coating system.

Contractor shall clean all exposed rebar to remove areas of corrosion down to solid steel and concrete removed sufficiently from around the rebar for a distance according to American Concrete Institute (ACI) standards to adequately develop the strength and protection of the steel rebar following repair. Missing reinforcement shall be replaced.

3.02 SEWER DIVERSION AND DEWATERING

Sewer flow shall be temporarily plugged or diverted away from the work area as specified in Technical Specification Section 02145 – DIVERSION OF SEWAGE FLOW AND DEWATERING as necessary to adequately complete the cleaning and surface drying process necessary for the rehabilitation method proposed.

3.03 PIPE CLEANING

Prior to application or repair of the approved protective coating or lining, all portions of the pipe shall be cleaned to provide an unobstructed view of the interior pipe surface and/or removal of all material that may impact the installation adhesion of the proposed protective coating or lining.

The Contractor shall remove all material and debris from the pipe per paragraph 1.01 B.

The Contractor shall utilize one or a combination of the following cleaning techniques during the course of the work.

A. Hydro Jet Cleaning

- a. The Contractor shall use a spinning hydro jet nozzle to ensure the 360-degree circumference of the pipe interior is clean and free from debris unless use is prevented by existing deteriorated structural condition.
- b. It shall be the Contractor's responsibility to determine whether structural condition of the existing pipe will not be detrimentally damaged by use of a spinning nozzle and water pressures utilized. Pipe structural condition may not be consistent throughout the circumference of the pipe. Therefore, Contractor shall be responsible for modifying cleaning equipment and techniques according to the location of the existing pipe structural conditions found so as not to damage the structural integrity of the existing pipe at no additional cost to the Owner.

B. PVC "T-Lock" Lined Pipes

The Contractor shall clean the interior of the PVC lined pipe per paragraph 3.03 A. Hydro-Jet Cleaning in conjunction with the following according to the proposed pipe rehabilitation method proposed:

- a. Rehabilitation Method: Cured-In-Place-Pipe Lining Installation:
The Contractor shall remove existing PVC liner and/or joint material that is loose or hanging that may impact the liner installation process along with any hardened encrustations or protrusions that may impact the final diameter profile of the rehabilitated pipe.

3.04 STRUCTURE CLEANING

The Contractor shall utilize one or a combination of cleaning techniques during the work to rehabilitate structures for assessment or repair.

Prior to application or installation of an approved protective coating or lining, all portions of the structure to be rehabilitated shall be cleaned of all material that may impact the adhesion and/or performance of the protective coating or lining system proposed.

The Contractor shall be aware that structure cleaning and preparation activities may cause damage to certain materials and finishes not included in the Contract Documents for rehabilitation/repair/replacement. The Contractor shall be solely responsible to remove and/or protect those portions of the structure, including appurtenances and attachments not included in the Contract Documents for removal and not slated for cleaning and preparation

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SEWER PIPE AND SEWER STRUCTURE CLEANING

activities. Contractor shall be responsible for repair or replacement of any damages caused by their activities at no additional cost to the Owner.

Contractor shall also be required to protect portions of the structure to which the Contractor has previously applied a corrosion protective system from any subsequent cleaning or rehabilitation activities.

Contractor shall clean all exposed rebar to remove areas of corrosion down to solid steel and remove concrete sufficiently from around the rebar for a distance according to American Concrete Institute (ACI) standards to adequately develop the strength and protection of the steel rebar following repair.

The Contractor shall remove all material and debris from the structure per paragraph 1.01 B.

The Contractor shall utilize one or a combination of the following cleaning techniques during the course of the work.

A. Cleaning Methods

a. Pressure Washing

The Contractor shall wash the interior of the structure utilizing clean water at typical municipal water pressures to remove surface dust and miscellaneous material(s) from the interior surface of the structure and/or adjust pH of the interior surface being prepared for rehabilitation.

b. Hydro Jet Cleaning

The Contractor shall clean the structure interior by hydro-jet cleaning. Hydro jet cleaning shall be performed with equipment capable of a minimum 5,000 psi as measured at a distance of 6-inches, at 4 gpm.

Existing structures suitably prepared for coating shall have all loose, soft or otherwise deteriorated material removed from the interior surface of the structure and have a texture at least as rough as International Concrete Repair Institute (ICRI), Concrete Surface Preparation (CSP-3) or as recommended by the proposed rehabilitation material manufacturer.

c. Abrasive Blast Cleaning

Abrasive blasting equipment shall be rated for a minimum of 90 psi. Abrasive blast cleaning may be either wet or dry. Contractor shall be responsible for control of airborne dust per Technical Specification SECTION 01560 – ENVIRONMENTAL CONTROLS.

Existing structures suitably prepared for coating shall have all loose, soft or otherwise deteriorated material removed from the interior surface of the structure and have a texture at least as rough as International Concrete Repair Institute (ICRI), Concrete Surface Preparation (CSP-3) or as recommended by the proposed rehabilitation material manufacturer.

Abrasive blast cleaning shall be followed by pressure washing per paragraph 3.04 A. a. to clean the porous surface of the concrete of dust or any remaining residue.

d. Other Cleaning Methods

Other cleaning methods may be used as necessary to properly clean and prepare the structure, subject to Owner approval:

- i. Grinding and/or mechanical removal methods,
- ii. Chemical cleaning, detergent cleaning, hot water and acid etching. If chemical cleaning or acid etching are used, the substrate shall be neutralized and washed of any remaining residue. Owner shall be made aware of all chemicals proposed. The Contractor shall obtain written authorization from the Owner prior to use of any chemicals in this project. If Owner has objection of use the Contractor shall substitute chemical and/or cleaning method proposed up to an including changing the proposed coating system at no additional cost to the Owner. Chemical use shall conform to local, state and federal laws and regulations.
- iii. If after cleaning, an existing structure does not meet structure rehabilitation material manufacturer's requirements, the Owner shall have authority to require alternate methods, additional cleaning effort and/or increased blasting pressure as required to adequately prepare the structure. These additional steps and effort shall be at no additional cost to the Owner.

B. Epoxy Coated Structures

The Contractor shall clean the structure surface adequately to ensure proper adhesion of the rehabilitation materials proposed per materials manufacturer's recommendations.

Contractor shall hydro jet clean and/or abrasive blast clean the interior of the structure to remove all loose concrete and coatings previously applied, sediment, rocks, debris, roots, and grease accumulations and obstructions from epoxy lined structures to be rehabilitated. Cleaning of the interior

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surfaces shall remove all material that may impede application, underlayment and/or protective coating adhesion, or long-term performance of the applied coating system. Multiple passes with cleaning equipment may be required at no additional cost to the Owner.

The Contractor shall test the pH of the surface of the structure receiving coating with wetted litmus paper applied to the surface. pH shall be 7 or higher shall be present or adjusted per paragraph 3.06 pH ADJUSTMENT.

For structures or portions of the structure containing a previously applied corrosion protection system, the Contractor shall entirely remove the existing coating, including any underlayment layers, or provide letter of acceptance of the surface and/or materials present stating that it is compatible with the proposed coating materials and will not adversely impact the performance or warrantee of the proposed protective coating system.

C. PVC "T-Lock" Lined Structures:

The Contractor shall remove the existing PVC liner (e.g., T-lock liner), that is loose, hanging, or not strongly embedded into the concrete substrate. If the embedment tees of the T-lock lining material are not strongly embedded in the concrete, the Contractor shall remove both the PVC liner sheet material and embedded tees from the concrete surface.

Strongly embedded shall be defined as incorporated into the concrete sufficiently that when the PVC liner is cut into strips parallel to the tees of the T-lock material at a point midway between each horizontal row of tees, that a pulling force of 100 pounds applied to each strip incrementally along the length is insufficient to dislodge the embedded tee from the concrete substrate. Tees that remain firmly embedded in the concrete following the test pull are judged to be "strongly embedded" shall be cut flush with the concrete surface and left in place. No portion of the embedment tee shall protrude above the surface of the substrate concrete.

Contractor may be able to leave the tees in place in one portion of a structure where the tees are strongly embedded and yet be required to remove them from other areas of the same structure where they are loose or not strongly embedded. It shall be at the Contractor's discretion whether to remove even strongly embedded tees from the concrete provided it is done at no additional cost to the Owner.

Unless otherwise noted, existing PVC lining of pipes that are connecting to or passing through the structure shall be left intact and in-place.

3.05 STEPS

Unless otherwise noted, for existing manholes that have steps installed in them:

- a. The Contractor shall extract, remove steps from the manhole, and properly dispose of them off-site.
- b. If the manhole steps are "strongly embedded" in the concrete (for manhole steps, this is defined as a pulling force of 100 pounds per step being insufficient to dislodge them from the concrete), the Contractor may cut them off flush with the surface of the surrounding manhole wall and leave the embedded portion of the step material in place.

3.06 pH ADJUSTMENT

Contractor shall pressure wash and/or chemically treat the surface of the structure as necessary to adjust pH to limits compatible with coating system proposed. Contractor shall repeat pressure washing and/or chemical treating and re-testing as necessary to adjust pH levels to acceptable levels at no additional cost to the Owner.

3.07 TESTING

The Owner may use one or more of the following observations/tests to determine whether the structure has been properly cleaned and prepared:

- a. Visual Appearance - The prepared substrate shall have the appearance of sound concrete (or brick and/or mortar), free from white, chalky and/or cracked areas.
- b. Aural Observations - When struck with a metal hammer or tool, the prepared substrate shall exhibit the characteristic sound of solid, competent concrete (or brick).
- c. Mechanical Abrasion Testing - The substrate should be competent enough such that it cannot be scraped off with the claw end of a hammer or similar metal scraping tool.
- d. Surface Acidity Testing - Wetted litmus paper applied to the surface shall indicate the pH to be 7 or higher. pH testing is considered mandatory.
- e. Phenolphthalein Testing - Application of phenolphthalein to the prepared surface of the concrete yields a purple color.

The Owner is not obligated to require the Contractor use all the above tests but may do so at the Owner's sole discretion. Often pH, visual, mechanical

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and/or aural observations/tests alone will be adequate, but phenolphthalein test may be used if there is still some uncertainty of concrete soundness.

3.08 INFILTRATION

Any visible water infiltration or seepage through seams or joints in the existing structure wall(s) shall be immediately brought to the attention of the Owner prior to commencement of work. Measures undertaken to eliminate infiltration shall be considered a changed condition and negotiated and paid for separately. Commencement of underlayment application activities demonstrates acceptance of existing conditions by the Contractor.

Water infiltration or seepage shall be eliminated using approved materials compatible with the underlayment material. A letter from the underlayment material manufacturer and finish surface coating material manufacturer stating that the material used to stop the infiltration is compatible with and will adhere to their product is required before any such material can be used.

3.09 DISPOSAL OF SEDIMENTS

The Contractor shall be responsible for transporting and disposing, including all disposal fees, of any sediments and material removed from the sewer or structures per Technical Specification SECTION 01560 – ENVIRONMENTAL CONTROLS.

The Contractor shall properly dispose of all debris resulting from the pipe and structures cleaning and preparation activities at no additional cost to the Owner. Hauling containers shall be watertight. On-site stockpiling of removed material will not be permitted. Said disposal shall be in accordance with all local, state and federal laws and regulations and shall not involve disposal within the sewer system.

The Contractor is responsible for obtaining all necessary permits, fees, and approval from all regulatory agencies required to perform the work, including transport of sediments. Off-site disposal of all material removed from the sewer shall be the Contractor's responsibility. Copies of all disposal receipts shall be submitted to the Owner' Representative per Technical Specification Section 01300 - Submittals.

3.10 EXISTING EQUIPMENT REMOVAL AND REPLACEMENT

A. Flow Meter - The Owner will be responsible for the removal of any existing flow meter equipment and storage while the Contractor rehabilitates a structure. The Contractor shall notify City of Phoenix Instrumentation and Control Department at (602) 495-7127 ten (10) business days in advance of scheduled work in manholes containing flow meter equipment.

If present, existing flow meter equipment shall be decommissioned and removed from the structure prior to rehabilitation work being performed within the structure. The Contractor shall coordinate their work schedule such that only one (1) flow meter is taken out of service at a time or as directed by the Owner.

- B. Odor Loggers - The Owner will be responsible for the removal of any existing odor logger equipment and storage while the Contractor rehabilitates a structure. The Contractor shall notify City of Phoenix Wastewater Collections ten (10) business days in advance of scheduled work in structures containing odor logger equipment.

The Contractor shall be responsible to coordinate the reinstallation of equipment with the City of Phoenix Wastewater Collections once work within the structure is complete and while Contractor's traffic control devices remain in place.

**** END OF SECTION ****

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SEWER PIPE AND SEWER STRUCTURE CLEANING

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SECTION 02761 REMOTE CCTV INSPECTION OF EXISTING AND REHABILITATED SEWERS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This Technical Specification defines the requirements for internal remote closed-circuit television (CCTV) video inspection of the interior of existing sanitary sewer pipe or manhole prior to (pre-CCTV) and after rehabilitation (post-CCTV) construction activities. Post CCTV documentation shall be utilized to assist in determination of work acceptance and final payment.

The Contractor shall inspect the sewer pipe or manhole interior using a camera or process capable of producing a color 360-degree digital video image of the interior for permanent record with documentation of inspection date and location information incorporated into the video title information.

The Contractor shall be responsible for identifying and documenting existing defects present within the pipe that were previously underwater and out of sight during Contract Document development. CCTV video will also be utilized to document the final condition of the rehabilitated pipe or manhole showing the size and location of the repair.

The Contractor shall also document in CCTV video images from the interior pipe perspective, the repair areas of any port holes that may have been cut into the existing interceptor pipe to accommodate bypass pumping operations. The video documentation shall be performed after bypass plugs have been removed and normal flow conditions reinstated into the interceptor pipe.

During remote visual inspections, and continuously until completion of pipe rehabilitation and final documentation inspection, the Contractor shall provide temporary dry conditions in the sewer pipes. The bypassing requirements are provided in Technical Specification Section 02145 – DIVERSION OF SEWAGE FLOW AND DEWATERING.

1.02 QUALIFICATIONS AND EXPERIENCE

The Contractor shall utilize a National Association of Sewer Service Companies (NASSCO) certified technician to operate the CCTV video camera to document the interior sewer pipe or manhole condition and repairs performed.

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1.03 SUBMITTALS

Contractor shall submit the following information for review per Technical Specification Section 01300 – SUBMITTALS:

1. The Contractor shall submit the CCTV video camera operator's name and current NASSCO Pipeline Assessment Certification Program (PACP) certification number and Manhole Assessment Certification Program (MACP) certification number. Any CCTV video operator personnel change will require an updated name and certification number submitted for approval prior to work being completed by that individual.
2. The Contractor shall submit an example of the CCTV video camera operator's work consisting of one remote visual inspection record in digital format of the operator's previous sewer inspection work and inspection log(s). The submitted record shall show sewers that are of the same diameter as the sewers in this project. The record and inspection logs will be reviewed to determine if the quality of the images, technique, and procedures are acceptable and if defect repairs are properly identified and documented. Samples shall be with the same camera, lighting equipment, and data handling procedures proposed for this work.
3. The Owner's Representative will review the records, not for accuracy of content, but to verify that the required information is provided, and the recording is of acceptable quality. If the Owner's Representative determines that the records are defective or not of adequate quality, the Contractor shall repeat the inspection documentation at no additional cost to the Owner.
4. The Contractor shall be responsible for modifications to their equipment and/or inspection procedures to achieve report material of acceptable quality. No pipe rehabilitation installation work shall commence prior to approval of the CCTV video format material by the Owner's Representative. Once accepted, the report material shall serve as a standard for the remaining work.
5. Digital Video Disk (DVD) records or other approved format shall include labels containing project titles, dates, including the Owner and Contractor company names. The video recordings shall be consolidated into subdirectories according to Owner's quarter section number and unique pipe segment numbering system as provided by the Owner. Contractor shall maintain a copy of all inspection documentation (video, databases, and logs) for the duration of the work and warranty period.

6. One (1) pre-CCTV video inspection, showing the existing sewer pipe or manhole after cleaning and interior inspection but prior to repair work being performed to obtain Owner concurrence of repair quantities not previously documented or quantified, along with a final inspection video after manholes and pipes have been rehabilitated shall be submitted to the Owner's Representative.
7. The post video shall be submitted to the Owner's Representative within one (1) working day from the time the video was created.
8. The Owner's Representative will review the post video and if any items are identified to be addressed the Contractor shall submit a final video showing a post-video inspection after the issue(s) have been repaired.
9. Contractor shall obtain approval from Owner's Representative prior to shutting off the bypass pumping.
10. Post-CCTV video documentation of the interior repair of any bypass pumping ports installed in the existing interceptor sewer pipe shall be performed during live flow conditions.
11. The Contractor shall submit written inspection logs and video procedures according to NASSCO PACP for pipes and MACP for manholes inspected and/or rehabilitated.

PART 2 - PRODUCTS

2.01 MATERIALS

A. TELEVISION INSPECTION CAMERA(S)

1. Camera(s) shall be intrinsically safe and shall be operative in 100 percent humidity conditions. Lighting intensity shall be remote controlled and shall be adjusted to minimize reflective glare. Lighting and camera quality shall provide a clear, focused picture of the entire inside periphery of the sewer. Camera shall have 360-degree optics or tilt and zoom capabilities to view 90 degrees to the pipe centerline for the entire 360 degrees of the pipe circumference. Camera and associated equipment shall support the minimum of 768H x 494V pixels and 470H TVL NTSC resolution.
2. The Contractor shall utilize equipment that allows for CCTV video to be performed within conditions noted in the Contract Documents. Contractor's equipment shall be sized to fit within sewer segments. Any

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scrapes or damages to the pipe and manholes resulting from equipment used shall be addressed and corrected at the Contractor's expense.

B. DATA STORAGE DEVICES

Digital Video Disk (DVD) storage or portable thumb drives (external hard drives) shall be compatible with Microsoft Windows - Version 8.1 or Owner approved operating system. Video recording shall be MPEG I and shall comply with ISO/IEC 11172 MPEG I specifications. The inspection image files (pictures) shall have the ability to be exported to Industry Standard Formats, including JPEG, BMP, and TIFF formats, and shall be capable of transfer between DVD, thumb drives, and external hard drive.

C. FOOTAGE COUNTER

A footage counter device, which measures the distance traveled by the camera in the sewer, shall be accurate to plus or minus 2 feet in 1,000 feet. Footage counter record shall be measured and documented from the pipe/manhole interface.

D. VIDEO TITLING

Video equipment software shall include genlocking capabilities to the extent that computer generated data, (i.e., footage, date, size, address, and location, etc.) as determined by the Owner can be overlaid onto video, and both indicated on the television monitor and permanently recorded on the inspection video. Title page of reach recording shall contain the camera operator name and certification number. Absence of the certification number in the recording title page or CCTV video investigation recording completed by a non-certified CCTV video operator shall be grounds for rejection of video documentation recording. Costs to recreate the investigation video documentation by a certified CCTV video operator shall be the responsibility of the Contractor.

PART 3 - EXECUTION

3.01 INSPECTION METHODS

The Contractor shall inspect the sewer interior using a camera or process capable of producing a color image for permanent record and documentation of inspection in digital format (mpeg or jpeg) with location and date information, and data title information.

Pre-CCTV video and post-CCTV video inspections shall be conducted in the same direction along the pipe.

A. SCHEDULE

The Pre-CCTV video remote visual inspection shall be performed after cleaning the sewer to be rehabilitated as specified in Technical Specification Section 02760 – SEWER PIPE AND SEWER STRUCTURE CLEANING and prior to rehabilitation of the pipe. The Contractor shall be responsible for conducting post-CCTV video inspection after the rehabilitation of the sewer pipes has been completed but prior to putting the sewer pipe back into service.

The Contractor shall submit post-CCTV video of segments within one (1) working day from the date of pipe or manhole rehabilitation completion. The Contractor shall also submit a copy of the post-CCTV video inspection logs.

B. ACCESS

The Owner or Owner's Representative shall have full access to observe the monitor and all other operations at all times. The system of cabling employed to transport the camera and transmit its signal shall not obstruct the camera's view.

C. INSPECTION RATE

The camera shall traverse through the sewer from upstream manhole to downstream manhole. Maximum rate of travel shall be 30 feet per minute when recording analog images. Camera advancement shall be stopped at each joint to obtain a 360-degree view and at each repair location.

D. IMAGE PERSPECTIVE

1. Video records shall be collected while the pipe is dewatered. The camera image shall be down the center axis of the pipe when the camera is in motion. The Contractor is required to provide a 360-degree view of the pipe interior. Points of interest shall also be documented and shall include, but not be limited to, defects, encrustations, mineral deposits, debris, sediment, pipe repair any location determined not to be clean or part of proper pipe rehabilitation.
2. Video recording of the pipe interior shall include a 360-degree view of the pipe to manhole connection at each upstream and downstream manhole location.

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E. SEWER IDENTIFICATION

All inspection documentation shall include the sewer location identified by the Owner's quarter section and manhole numbers.

F. QUALITY CONTROL

The Owner will review CCTV video documentation to ensure compliance with the requirements listed in the Contract Documents. If any portion of the rehabilitation work is determined not acceptable, the unacceptable work shall be repaired or replaced, whichever the Owner deems appropriate, and re-inspected and documented at no additional cost to the Owner.

Final CCTV video documentation of the pipe interior following rehabilitation shall be one continuous recording documenting the entire length of the pipe segment, from manhole to manhole. If any portion of the pipe or lateral required additional repair, the entire length of pipe, including laterals (if present) must be recreated to produce a final construction record of the entire pipe length. Each repair location shall be documented in images of the entire circumference of the edge weld strip repair. No additional cost to the Owner will be allowed for video recreation.

Final video documentation of the manhole interior following rehabilitation shall be one continuous recording documenting the entire manhole. If any portion of the manhole required additional repair, the entire manhole must be recreated to produce a final construction record. Each repair location shall be documented in images. No additional cost to the Owner will be allowed for video recreation.

G. AS-BUILT LOG

The Contractor shall document in Microsoft Excel format, the station, clock position location, and size of all PVC repairs made within the pipe per Technical Specification Section 01782 - RECORDS DOCUMENTS. Log spreadsheet shall be submitted to the Owner for permanent record of repairs.

**** END OF SECTION ****

SECTION 02767

CIPP LINING OF EXISTING SEWERS

PART 1- GENERAL

1.01 DESCRIPTION

A. SCOPE

This Technical Specification section specifies the cured-in-place pipe (CIPP) rehabilitation lining of sanitary sewer pipes, sets acceptable material and experience parameters, defines minimum performance requirements for the finished, installed product and details testing requirements for the completed product.

B. REQUIREMENTS

The Contractor shall provide and install a resin impregnated flexible CIPP tube (liner/lining) with an interior plastic-coated wearing surface in pipes identified for CIPP lining in accordance with ASTM International (ASTM) D 5813 - Type II (partially deteriorated), and ASTM F1216 for the inversion installation method. The resin shall be cured through catalyst exposure to heated water or steam. When cured the CIPP lining shall be continuous and tight fitting.

1.02 CLIMATIC CONDITIONS

The Contractor is made aware that the work may occur during the summer months with temperatures exceeding 115 degrees F. The Contractor shall be prepared for these conditions and alter catalyst, installation procedures or provide protection from detrimental exposure to adverse temperature or sunlight consistent with the materials proposed for use.

Severe thunderstorms can also occur that may increase flow rates present within the sewer system. The Contractor shall be prepared for these conditions and alter installation schedule and bypass pumping capabilities accordingly. Contractor shall be responsible for review of the weather forecast prior to commencement of liner installation that restricts or impedes the flow capacity of sewer pipe being rehabilitated. When the anticipated weather conditions are such that the resulting sewer flow may impact the upstream sanitary system storage volume or the capacity of the bypass system or otherwise adversely impact the CIPP liner installation then the Owner's Representative shall be informed, and the installation shall be delayed until favorable weather is forecasted.

1.03 EXPERIENCE RECORD OF CONTRACTOR

The Contractor shall provide to the satisfaction of the Owner, written documentation from the CIPP liner manufacturer that the Contractor's personnel have been adequately instructed and trained in the installation procedures of CIPP liner process proposed. Such written documentation shall describe manufacturer's procedures for installers, safety instructions, training program, identification, and protocol for course of action in the event installation deviates from recommended procedures and, if applicable, licensing policies.

The Contractor shall have successfully managed, in addition to an onsite superintendent possessing a minimum of 5,000 linear feet of CIPP liner installation experience on projects utilizing similar materials, installation techniques and CIPP liner diameter to those proposed on this Project within the previous three (3) years of the bid date for this project.

1.04 QUALITY ASSURANCE

REFERENCES:

This Technical Specification section contains references to the following documents. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

<u>Reference</u>	<u>Title</u>
AASHTO Loading	American Association of State Highway and Transportation Officials - Anticipated external load to be placed on the pipe
ASTM C581	Standard Practice for Determining Chemical Resistance of Thermosetting Resins used in Glass-Fiber Reinforced Structures, Intended for Liquid Service
ASTM D543	Test Method for Resistance of Plastics to Chemical Reagents
ASTM D638	Standard Test Method for Tensile Properties of Plastics
ASTM D790	Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials

ASTM D883	Standard Terminology Relating to Plastics
ASTM D903	Standard Rest Method for Peel or Stripping Strength of Adhesive Bonds
ASTM D1600	Standard Terminology for Abbreviated Terms Relating to Plastics
ASTM D2990	Standard Test Method for Tensile, Compressive and Flexural Creep and Creep-Rupture of Plastics
ASTM D5813	Standard Specification for Cured-in-Place Thermosetting Resin Sewer Piping Systems
ASTM F412	Standard Terminology Relating to Plastic Piping Systems
ASTM F1216	Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube
NASSCO Standard	National Association of Sewer Service Companies

1.05 SUBMITTALS

The following submittals shall be provided in accordance with Technical Specification Section 01300 - SUBMITTALS:

1. Shop drawings which detail short and long-term properties (providing all supporting test data) of all component materials and construction procedural requirements for material handling, storage and sunlight control (if applicable), temperature control (if applicable), and any other CIPP liner handling/installation constraints.
2. Representative sample of cured liner (1-foot in length) for each diameter size of the same resin and CIPP tube components proposed for the project, depicting the final quality of workmanship that can be expected on this project.
3. Structural CIPP liner calculations per the design criteria in paragraph 2.05 shall be provided for each individual liner in the project. CIPP liner calculations shall be stamped by a Professional Civil Engineer licensed in

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CIPP LINING OF EXISTING SEWERS

the state of Arizona.

4. 10,000-hour third party, 50-year Flexural Creep Modulus test data. Test shall be in accordance with ASTM D2990 at 10,000 hours. If results of a 10,000-hour test are not available, Contractor shall use a minimum 50 percent reduction (50 percent retention) of Flexural Modulus of Elasticity (per ASTM F1216) for all formula calculations.
5. Independent laboratory test report(s) of CIPP sample(s) as specified in Technical Specification 02767 paragraph 2.03 and 2.04. Chemical resistance and resin properties testing shall be performed on a previously prepared sample of the finished product proposed for this project. A certified affidavit, signed by an officer of the CIPP liner installation company, shall be provided stating that the resin the tests apply to and the resin submitted for this project are the same.
6. Independent laboratory test report(s) of CIPP sample(s) as collected in paragraph Technical Specification 02767 paragraph 1.06. Testing shall be performed on prepared samples of the finished product for this project. A copy of the completed Chain of Custody form shall be submitted to the Owner's Representative along with the independent laboratory test results.
7. Detailed method(s), locations, and procedures for creating a representative CIPP sample on-site for independent laboratory testing.
8. Certification from the manufacturer that the resin, carrier felt and CIPP tube material(s) supplied complies with ASTM D5813 and meets the intended service condition(s) set forth in this Technical Specification.
9. Manufacturer's recommended installation procedures per ASTM F1216.
 - a. If inversion method is employed per ASTM F1216, provide maximum inversion head (psi for air inversion, or feet of head for water inversion) pressure and proposed method of monitoring/documenting pressures.
10. Cure information from the resin manufacturer for the properties of the materials proposed for use on this project, including recommended method(s) of application of heat, steam or other medium that initiates the resin curing process. Recommended step "cooking" temperatures and hours at each stages including maximum rate of (degrees per hour) of liner heating/cooling, target temperature, duration of target cure temperature, acceptable fluctuation in target temperature with description of remedial actions to be taken if fluctuations occur, and target temperature when the controlled temperature curing process is terminated, and heated water or air is released from the liner interior.

11. Certification showing the Contractor is currently licensed by the appropriate licensor to perform CIPP installation materials and processes proposed. Certification shall be given to the Owner's Representative before any materials are delivered to the job site.
12. A certified affidavit, signed by an officer of the installation Company, stating that the on-site superintendent has received proper training in the manufacturer's recommendations for CIPP liner installation methods and procedures.
13. Proposed method of measuring defects and an outline of specific repair or replacement procedures as recommended by the CIPP tube manufacturer for defects that may occur in the installed liner. Potential defects within the CIPP liner that cannot be repaired in-place shall be clearly defined by the Contractor based on the manufacture's recommendations shall be accompanied by a compensation-in-lieu of repair proposal submitted to the Owner for potential consideration. Acceptance of the proposal shall not be binding on the Owner.
14. Manhole connection (liner termination) detail and material proposed to seal any annular space between the liner and host pipe.
15. Warranty information and certificates.
16. Safety data sheets (SDS) for all hazardous chemicals used or expected to be on-site. At a minimum, sheets for the resin, catalyst, cleaners, and repair agents should be submitted.
17. Proposed equipment and installation methods for fiber optic cable temperature monitoring system cable for documenting the wall temperature during cure along the entire length of the CIPP liner being installed. Contractor shall provide written plan for installation crew use in the event manufacture recommended temperature is not attained in a portion of the liner. Contractor shall provide intended backup method(s) for temperature monitoring in the event of fiber optic system failure.
18. Baseline resin spectrograph for resin material proposed.
19. 72-hour written notification of cure water release.

1.06 INSTALLED CIPP LINER QUALITY CONTROL

A. AFFIDAVIT OF SAMPLE AUTHENTICITY

A certified affidavit, signed by an officer of the installation company, shall be provided stating that the samples collected, and the samples submitted

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CIPP LINING OF EXISTING SEWERS

to the laboratory for testing are the same and apply to the location intended.

B. LABORATORY TEST SAMPLES

1. The Contractor shall prepare samples of the CIPP liner installed as part of this project for subsequent testing of its physical properties. Previous test data will not be acceptable. Samples shall be prepared and tested using the flat plate sampling or clamped mold method in accordance with the procedures of ASTM F1216. The sample will be constructed of the same materials (tube and resin/catalyst) as is used for that given liner installation held in place by a suitable heat sink. The flat plate or molded sample shall be large enough to provide five (5) sample specimens each.

The Contractor shall prepare a redundant sample for potential use in the event primary test samples are lost or damaged during transport. Redundant samples shall be labeled, initialed, and dated by the Owner's Representative, protected, and retained by the Contractor until such time as acceptable liner test results are received by the Owner's Representative. The Contractor shall inform the Owner's Representative in the event redundant samples are to be sent to the testing laboratory. Owner's Representative shall verify redundant samples identification prior to shipment. Contractor shall obtain authorization from the Owner's Representative prior to disposal of redundant samples.

2. The cured sample shall be sent to and tested by an independent testing laboratory, as recommended by the CIPP liner manufacturer, and approved by the Owner's Representative. CIPP liner samples taken shall be sent to an independent laboratory within three (3) days of collection. Samples are to be signed by the Owner's Representative and accompanied by a completed Chain of Custody form. Results of laboratory testing shall be submitted directly to the Owner's Representative within three (3) working days of receipt by the Contractor.

Final payment of CIPP liner installation will not be made until test results are received and approved by the Owner's Representative. The Contractor shall be responsible for any deviation from the specified physical properties and those evaluated through testing. Failure to meet the specified physical properties will result in the CIPP liner being considered defective work which will be handled in accordance with MAG Section 106. The Contractor shall be responsible for all costs associated with the testing of the liner physical properties.

C. TEST SAMPLE FREQUENCY

The above-stated sampling shall be performed for each manufacturing lot of CIPP liner materials (per diameter size). A sample shall be taken every 3,000 linear feet or one semi-trailer load of liner, whichever is less. Owner's Representative reserves the right to request the Contractor perform one (1) additional test for every 3,000 lineal feet or one semi-trailer load of liner whichever is less.

Grounds for rejection of installed CIPP liner include, but not limited to the following:

1. CIPP sample sent to laboratory that is missing Owner's Representative signature.
2. CIPP sample missing the Chain of Custody form.
3. Chain of Custody form missing information or signatures of all those who handled or processed the sample, including the signature of the Owner's Representative and the laboratory Manager responsible for performing the quality control testing.
4. Laboratory test results not meeting minimum Technical Specification requirements.

D. SAMPLE LABELING

The samples shall be identified by: Contractor Name, Date, Project Name, Pipe Diameter, Liner Thickness, Resin Number and Catalyst Number.

1.07 CIPP LINER HANDLING:

Contractor shall exercise adequate care during transportation, handling and installation to ensure the CIPP material is not torn, cut, or otherwise damaged. If any part or parts of the CIPP material becomes torn, cut or otherwise damaged before or during insertion, it shall be repaired or replaced in accordance with the manufacturer's recommendations and approval by the Owner's Representative before proceeding further, and at the Contractor's expense.

1.08 CIPP LINER LABELING

Each liner tube shall be labeled by the liner manufacturer with a permanent unique identification number that is referenced in accompanying documentation. Documentation shall include the following:

1. Liner manufacturer's name

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2. Location of the liner manufacturer
3. Felt supplier
4. Resin supplier
5. Date of resin impregnation into felt liner
6. Unique identification number of liner
7. Resin identification number
8. Resin weight – lbs/ft
9. Manufactured liner length both resin impregnated felt “wet” and dry felt “dry”
10. Liner thickness
11. Liner diameter

1.09 WARRANTY

The work performed under this Project shall be warranted to be free from defects in workmanship and material for a period of **one (1) year** from the date of Final Acceptance by the Owner. If the Owner or Owner’s Representative determines that the process/material/installation has failed during the warranty period, the Contractor shall perform any and all repairs, including ancillary costs associated with performing the repair at no additional cost to the Owner.

The warranty period of any part of the Work repaired or replaced under the provisions of the warranty will be extended for one (1) additional year.

1.10 LINER MANUFACTURE INSPECTION

Manufacturer of liner shall allow access to either the on-site or remote liner wet-out facility to observe the manufacturing process of the CIPP liner to the Owner and/or the Owner’s Representative. The Owner’s Representative, while not acting as quality control agent for the Contractor, shall be allowed to view and document any portion of this contract, including but not limited to verifying type and quantities of resin used at any point during manufacturing or performance of this work.

PART 2 - PRODUCTS

2.01 GENERAL

- A. All materials and installation procedures provided by the Contractor for use in the CIPP installation process shall be equal to or exceed the requirements of ASTM F1216 and ASTM D2990.
- B. Contractor shall be responsible for control of all material and process variables to provide a finished CIPP possessing the minimum properties specified in ASTM F1216 and ASTM 5813 and/or supplemented herein.

2.02 MATERIAL COMPONENT PROPERTIES

A. CARRIER MATERIAL

1. The carrier material shall consist of one or more layers of flexible needled felt or glassed fibers or an equivalent non-woven and/or woven material meeting ASTM F1216 Section 5 and capable of carrying resin, withstanding installation pressures, pulling forces, curing temperatures, and is compatible with the resin system used. The carrier material shall be fabricated to a size that, when installed, will be tight fitting to the internal circumference of the existing sanitary sewer host main. Allowances shall be made for circumferential stretching due to host pipe manufacturing tolerances and/or extent of deterioration of existing pipe walls.
2. The minimum material length shall be that deemed necessary by the Contractor to span the distance effectively and continuously from the inlet interior wall face to the outlet interior wall face of the respective manholes, unless otherwise specified. The Contractor shall verify the lengths in the field before impregnation and installation of the CIPP tube. Individual insertion runs may be made over one or more manhole sections as determined in the field by the Contractor and approved by the Owner's Representative.
3. Prior to insertion, the carrier material shall be free of all visible tears, holes, cuts, foreign materials, and other defects.
4. The Contractor shall provide manufacturer's data on the maximum allowable stresses and allowable elongation of the carrier material. Insertion forces imposed shall not exceed the allowable stress of the material. The overall elongation of the CIPP tube shall be measured after pull-in completion.

B. RESIN

The resin system to be used shall be manufactured by an approved company selected by the cured-in-place-pipe system manufacturer. Only corrosion resistant polyester or vinyl ester resins shall be used.

The resin used shall produce a properly cured-in-place pipe system appropriate for conditions encountered, which will be resistant to abrasion caused by solids, grit, and/or sand. The cured-in-place pipe system shall also be resistant to corrosion due to acids and gases such as sulfuric acid, carbonic acid, hydrogen sulfide, methane, and carbon monoxide. The cured-in-place pipe system utilized shall withstand the corrosive effect of

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the existing residential, commercial, and industrial effluents, liquids and/or gases.

The physical properties quoted in Section 02767, paragraph 2.04 apply to CIPP manufactured polyester or vinyl ester resin. Resin shall be tinted for visibility and provide positive indication of adequate liner wet-out. Contractor shall not change resin manufacturer or type without written approval obtained from the Owner's Representative. Written request shall be accompanied by manufacturer's documentation per Technical Specification Section 01300 – SUBMITTALS for approval prior to use.

C. CIPP LINER TUBE

1. The CIPP tube shall be comprised of a carrier material, resin, and polyurethane, polyethylene, or polypropylene coating(s) on its interior surface to protect the resin from contaminate intrusion or loss of resin through migration. Any temporary interior resin containment coatings or films shall be removed following CIPP tube installation but prior to lateral seal installation (if present) at no additional cost to the Owner.
2. The liner tube shall be fabricated to a diameter size that when installed will fit tightly into the internal circumference of the existing sanitary sewer main without any annular space between liner and walls of host pipe. Allowances shall be made in the CIPP tube diameter sizing to allow for potential circumferential stretching due to host pipe manufacture tolerances and/or deterioration of the host pipe walls.
3. The minimum liner tube length shall be that deemed necessary by the Contractor to span the distance effectively and continuously from the inlet to the outlet of the respective manholes, unless otherwise specified. The Contractor shall verify the lengths in the field before impregnation and installation of the CIPP tube. Individual insertion runs may be made over one or more manhole sections as determined by the Contractor.
4. The Contractor shall measure the overall elongation of the CIPP tube after pull-in completion and report to the Owner's Representative immediately following insertion. Summary of CIPP tube elongation shall be submitted per Technical Specification Section 01300 – SUBMITTALS.
5. Prior to insertion, the CIPP liner tube shall be free of all visible tears, holes, cuts, foreign materials, and other defects. Contractor shall perform necessary repairs according to CIPP tube manufacturer recommendations or replace the tube in its entirety at no additional cost to the Owner.
6. Contractor shall submit according to Technical Specification Section

01300 – SUBMITTALS, the recommended step “cooking” temperatures and hours at each stages including maximum rate of (degrees per hour) of liner heating/cooling, target temperature, duration of target cure temperature, acceptable fluctuation in target temperature with description of remedial actions to be taken if fluctuations occur, and target temperature when the controlled temperature curing process is terminated and heated water or air is released from the liner interior.

D. CIPP TUBE DIMENSIONS

1. Contractor shall make allowances in determining the felt tube length and circumference for stretch during installation and shrinkage during curing. The Contractor shall verify the lengths in the field before the CIPP tube is cut and impregnated. Individual installation runs may include one or more manhole-to-manhole sections as approved by the Owner’s Representative.
2. Contractor shall determine the length of any dry tube, if any, that may be necessary for the installation process proposed. Owner shall not entertain payment for excess CIPP length, including dry tube not impregnated with resin.
3. The diameter of the existing pipes may be larger than the nominal inside diameter due to corrosion of the existing host pipe. It is the Contractor’s responsibility to field measure the diameter of existing host pipe and determine the required diameter of the CIPP tube to produce a close-fit lining.
4. “Minimum Design” thickness shall be the CIPP calculated thickness in accordance with ASTM F1216 and D5813 for **Type II partially deteriorated design** loading, rounded to the next manufacturer’s standard incremental thickness above the minimum calculated design thickness. Calculations of liner thickness shall be submitted to the Owner’s Representative according to Technical Specification Section 01300 – SUBMITTALS prior to installation.

Unless otherwise specified to provide for excess resin migration, the gap thickness of the wetting out equipment shall be sized to allow an excess of 5 to 10 percent (5-10%) resin to pass during impregnation. The measurement of liner thickness, installed and cured, shall be determined at a minimum of three (3) locations cut from a CIPP restrained liner sample, minus the thickness of any plastic coatings or CIPP layers not included in the structural design of the CIPP, using a method of measurement accurate to the nearest 0.005-mm.

5. The nominal wall thickness shall be at least the final design thickness, or the minimum specified, and may be up to fifteen percent (15%)

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greater except where felt layers overlap, in which case it may be in excess of this value.

2.03 CHEMICAL RESISTANCE

The chemical resistance tests should be completed in accordance with Test Method ASTM D543. Exposure should be for a minimum of one (1) month at 73.4 degrees F. During this period, the CIPP test specimens should lose no more than 20 percent (20%) of their initial flexural strength and flexural modulus when tested in accordance with Section 8 of ASTM F1216 when subjected to the following solutions:

Chemical Solution	Concentration (%)
Tap Water (pH 6-9)	100
Nitric Acid	5
Phosphoric Acid	10
Sulfuric Acid	10
Gasoline	100
Vegetable Oil	100
Detergent	0.1
Soap	0.1

The Contractor shall be responsible for all costs associated with the chemical resistance tests. Proof of meeting these requirements shall be provided to the Owner’s Representative for approval at least seven (7) days prior to commencement of work.

2.04 FINISHED AND CURED CIPP LINER PROPERTIES

The physical properties of the cured CIPP shall have minimum initial test values as given in Table 1 of ASTM F1216 (and supplemented below in Table 1) for polyester and vinyl ester resins. Properties for these or any other enhanced resins shall be substantiated with test data.

Table 1: Standard Resin

<u>Test Property</u>	<u>Test Value Felt Tube</u>	<u>Test Value Glass Tube</u>	<u>Test Method</u>
Flexural strength	4,500 psi	6,500 psi	ASTM D790
Flexural modulus	250,000 psi	725,000 psi	ASTM D790
50-year flexural creep modulus	150,000 psi	675,000 psi	ASTM D2990

2.05 DESIGN CRITERIA

- A. The liner shall be designed in accordance with the procedures of ASTM F1216, Appendix XI and these Technical Specifications. All material properties used in design calculations shall be long-term (time-corrected) values. Contractor shall familiarize himself with site conditions when preparing CIPP liner design.
- B. Contractor shall calculate the required minimum CIPP liner thickness for each pipe based on Section 2.02 (D) (4) of these Technical Specifications.
- C. The following parameters shall be assumed for the liner design:
 - 1. Modulus of soil reaction, $E'_s = 1,000$ psi (Type II partially deteriorated host pipe)
 - 2. Unit weight of soil = 140 pcf
 - 3. The minimum ovality for straight runs shall be 2.0 percent
 - 4. Groundwater to half pipe depth
 - 5. AASHTO HS-20 Traffic loads
 - 6. Safety Factor = 2.0
 - 7. Actual invert depth

2.06 PAYMENT PENALTY / REDUCTION

A penalty will be assessed by the Owner to the Contractor for payment on all installed CIPP liners that do not meet or exceed the minimum CIPP wall thickness requirements as stated in Technical Specification Section 02767 - paragraph 2.02 (D) (4). Payment to the Contractor will be reduced on Contractor's unit price per foot payment for the total length of CIPP liner installed as measured between center of upstream manhole to center of downstream manhole. Payment/reduction shall be based on the following Table 2 – Payment Penalty / Reduction:

TABLE 2 - PAYMENT PENALTY / REDUCTION	
Payment Penalty (see Note 1)	Installed Dry Cured Liner Thickness Below Minimum Design (mm)
0%	0% up to and including 5%
10%	Greater than 5% up to and including 10%
20%	Greater than 10% up to and including 20%
Rejected	Greater than 20%
Note 1 – Reduction in payment assessed in Contractor's pay request to Owner	

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2.07 CIPP TERMINATION POINTS

The Contractor shall provide CIPP liner terminations. The Contractor shall provide a watertight seal between the host pipe and the liner pipe at the manhole connections using Sika Hydrotite hydrophilic waterstop or approved equal. The Contractor shall seal the liner/manhole interface with material consisting of a resin mixture compatible with the liner/resin system. The sealing system shall be applied in accordance with manufacturer specifications and approved by the Owner's Representative.

2.08 Not Used

2.09 CURE TEMPERATURE MONITORING

The Contractor shall provide equipment and fiber optic cable for monitoring the wall temperature during cure along the entire length of CIPP liner tube being installed. Sensor technology shall be as manufactured by Vortex Technology Group LLC of Houston, Texas or approved equal.

PART 3 - EXECUTION

3.01 PREPARATORY PROCEDURES

A. SET-UP

Prior to CIPP installation all necessary traffic control measures shall be put into place per Technical Specification Section 02100 – TRAFFIC CONTROL.

B. SEWER MAIN CLEANING

Prior to CIPP tube installation, the Contractor shall clean the existing sewer in accordance with Technical Specification Section 02760 – SEWER PIPE AND SEWER STRUCTURE CLEANING. The Contractor shall clear the existing sewer of obstructions such as solids or collapsed/offset pipe that will prevent or hinder CIPP tube or installation. The Contractor shall utilize a spinning nozzle or other approved means as to ensure that the host pipe is free from any residual sediment, fats-oils-grease (FOG) or accumulated debris prior to CIPP installation. A time lapse no greater than 30 calendar days shall be allowed between initial host pipe cleaning and liner installation.

C. NOT USED

D. SEWER BYPASSING AND DEWATERING

The Contractor shall be responsible for bypassing flow around their work and dewatering of sewer lines in accordance with the requirements of Technical Specification Section 02145 – DIVERSION OF SEWAGE FLOW AND DEWATERING.

E. CCTV INSPECTION

The interior of the sewer shall be carefully inspected in accordance with Technical Specification Section 02761 – REMOTE CCTV INSPECTION OF EXISTING AND REHABILITATED SEWERS to determine the location of conditions, which may prevent proper installation of CIPP.

F. OFFSET PIPE GRADE

The Contractor shall bring to the attention of the Owner's Representative any offset in pipe grade that is greater than five percent (5%) of the internal diameter for authorization to install CIPP liner. Installation of CIPP tube prior to obtaining authorization shall be grounds for CIPP liner rejection and non-payment.

G. DEFECTIVE LINING REMOVAL/VOID REPAIR

Contractor shall remove all deteriorated concrete and/or hanging, loose, or otherwise defective lining/coatings that were previously installed but have failed that would adversely impact the profile of the CIPP liner. Once deteriorated materials are removed, Contractor shall repair host pipe interior profile back to original dimensions with approved material(s) prior to CIPP tube installation. Contractor shall bring to the Owner's attention area for potential repair where evidence of structural strength deterioration has occurred, or voids are observed behind the existing host pipe wall.

H. CIPP LINER DIAMETER VERIFICATION

The internal diameter of the existing host pipe may be larger (or smaller) than their nominal size. It is the Contractor's responsibility to measure the actual inside diameter of the sewer to determine the appropriate size of CIPP liner to use.

I. NOT USED

J. PRE-CONSTRUCTION SITE CONDITION DOCUMENTATION

Contractor shall take pre-construction videos of work areas according to Technical Specification Section 001380 – PHOTOGRAPHS AND VIDEO RECORDING before beginning work. It shall be responsibility of the Contractor to review the video and bring it to the attention of the Owner's Representative any site conditions that are not conducive to liner system

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or operations proposed. Once the contractor has reviewed the video and accepted the existing on-site conditions, it shall be the responsibility of the Contractor to complete the work as proposed.

3.02 INSTALLATION PROCEDURES

A. GENERAL

This section is intended to provide the Contractor with general guidance on the methods to be used to install the sewer pipe using the pipe liner method. Nothing contained herein shall relieve the Contractor from completing the pipe rehabilitation in the most feasible, efficient, and safe manner.

The Contractor shall designate the location where the CIPP felt tube would be impregnated with resin ("wet-out"). Locations shall be subject to approval by the Owner's Representative and applicable local agencies. The Contractor shall allow the Owner and/or Owner's Representative to inspect the materials and "wet-out" procedure.

If the "wet-out" location is not at the project site, the impregnated CIPP tube shall be transported to the site under controlled environmental conditions. Transport vehicles shall include a tamper resistant, sealed temperature-recording device which records the temperature of the CIPP tube at all times after leaving the wet-out site. The Contractor shall decide when to transport the impregnated CIPP tube to the site and when to commence insertion with respect to weather conditions.

The Contractor shall conduct operations in accordance with applicable OSHA standards, including but not limited to those safety requirements involving work on an elevated platform and entry into a confined space. Make suitable precautions to eliminate hazards to personnel near construction activities when pressurized air or hot water is being used.

Contractor is responsible for obtaining construction / fire hydrant meters if necessary and for paying all applicable deposit fees and water usage fees.

B. PRE-INSTALLATION

Prior to installation of the CIPP tube the following activities are required to be completed:

1. Receipt and approval of pre-installation submittals by the Owner's Representative.
2. Verification of pipe condition and any obstructions by video inspection.

3. Verification of existing laterals (if applicable) and location of services by flowing water, dye test, or visually with a pan and tilt head camera or other means.
4. Cleaning of sewer main (recorded on video).
5. Perform required point repairs at pipe locations that would prevent or hinder proper CIPP tube installation. The Contractor shall obtain the approval of the point repairs from the Owner's Representative prior to proceeding with the CIPP tube installation. The Contractor assumes all responsibility of CIPP tube quality and finished pipe grade once installation begins if prior written notification of Contractor's concerns is not received and acknowledged by the Owner's Representative.
6. The Contractor is to ensure CIPP tube is free of all visible tears, holes, cuts, foreign materials, and other defects.

C. HANDLING

The Contractor shall exercise adequate care during transportation, handling, and installation to ensure the CIPP tube material is not torn, cut, or otherwise damaged. If any part or parts of the CIPP tube material become torn, cut or otherwise damaged before or during insertion, it shall be repaired or replaced in accordance with the manufacturer's recommendations and approval by the Owner's Representative before proceeding further, and at the Contractor's expense.

D. INSTALLATION PROCESS

No CIPP installations to be undertaken in weather conditions that could jeopardize the installation of the CIPP or be detrimental to the long-term performance of the CIPP lining. The liner shall be installed by the CIPP tube inversion method as follows:

1. **INVERSION METHOD:** The CIPP tube shall be impregnated with a viscous thermosetting resin and lowered into the insertion pit through an inversion tube. The inversion tube will then be inverted into the existing pipe by the hydraulic weight of a column of water or by air pressure or by a combination of a static head of water and air pressure which will invert and push the tube through the existing sewer pipe inside out, while pressing the resin impregnated side of the CIPP tube firmly against the inside walls of the existing host pipe. The smooth coated side of the CIPP tube shall become the new interior surface of the sewer pipe following inversion. The maximum inversion installation rate shall be thirty (30) feet per minute or as recommended by the CIPP tube manufacturer whichever is less. After the CIPP tube is inverted through the pipe section, the Contractor shall cure the tube by heating the water

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by circulating it through a boiler, where the hot water will cause the resin to chemically react and harden or by introducing steam or a combination of compressed air and steam to initiate the hardening cure process.

E. CURING

The curing process shall be per ASTM F1216, or similar approach recommended by the CIPP tube manufacturer to ensure that the tube design physical properties are attained. Cure temperature shall be monitored exterior to the liner utilizing thermocouple sensors along with fiber optic temperature monitoring system. If heated water is utilized as part of the resin curing process, the temperature of the water shall be cooled down to at least 100 degrees F before releasing the hydrostatic head.

Contractor shall be responsible for notification and obtaining written authorization from the Owner operating the downstream wastewater treatment facility to release heated water into the sewer system.

The rate of temperature rise and fall during heating and cooling shall not exceed 2 degrees F per minute or manufacturer's recommendation. Contractor shall submit per Technical Specification Section 01300 – SUBMITTALS the manufacturer recommendation for temperature control requirements during heat-up, cure, recommended cure temperature, and length of time at recommended cure temperature, maximum rate of cool down of temperature, and temperature when heated water can be safely released from the tube without detrimental shrinkage occurring.

F. CURE TEMPERATURE MONITORING

The Contractor shall monitor the temperature of the CIPP tube wall utilizing a fiber optic temperature monitoring system along the entire length of pipe to verify manufacturer recommended curing temperature have been achieved for pipe 15-inches in diameter and larger. Temperature sensor cable shall be placed between the host pipe and the CIPP tube in the bottom of the host pipe (invert) throughout the reach to record the heating and cooling that takes place on the outside of the CIPP tube. The sensors shall be spaced apart no greater than 10-feet. The monitoring of these sensors shall be by a computer which can record the temperatures at this interface throughout the processing of the CIPP tube utilizing a tamper-proof database.

Prior to installing the CIPP liner in the host pipe, the temperature monitoring system's function shall be confirmed by hooking it up to the computer and seeing that the sensors are reporting ambient temperatures. No more than two sensors in sequence can be found faulty during this test.

If three or more sensors in sequence are discovered faulty, a new sensor array shall be pulled into the host pipe replacing the previously installed array; and the new array shall be again tested for its proper function.

As a secondary backup system, the Contractor shall monitor the temperature of the CIPP tube wall to verify manufacturer recommended curing temperature have been achieved. Temperature sensors shall be placed at the upstream and downstream ends of the reach being lined to monitor the pressurized liner (air or water) temperature during the curing process. Temperature sensors shall be placed between the host pipe and the CIPP tube in the bottom of the host pipe (invert) to record the heating and cooling that takes place on the outside of the CIPP tube. Additionally, sensors shall be strategically placed at points where a significant heat sink is likely to be anticipated. The temperatures at these interfaces shall be monitored by the Contractor throughout the curing of the CIPP tube.

G. RELEASE OF CIPP CURE WATER

Contractor shall provide 72-hour written notification to the Owner when CIPP installation work occurs within one mile of any downstream treatment facility for pipes 24-inches in diameter and larger, prior to the release hot water into the sanitary sewer system. Owner reserves the right, but not limited to requesting the Contractor to restrict the rate of release of hot water into the waste stream so that elevated waste stream temperature does not to detrimentally impact any biological treatment process or equipment.

H. NOT USED

3.03 FINISHED PRODUCT

A. FINISH

The finished CIPP shall be continuous over the entire length of an installation run. Contractor shall be responsible for control of all material and process variables to provide a finished CIPP possessing the minimum properties specified in ASTM F1216 and supplemented herein.

1. Defects such as foreign inclusions, dry spots, pinholes, delamination, seam separation and wrinkling beyond the allowances stated in Technical Specification paragraphs 3.03A.2 and 3.03A.4, or as determined by the Owner's Representative as affecting the integrity or strength of the CIPP, or as adversely affecting the hydraulic capacity of the CIPP, shall be repaired, or replaced at the Contractor's expense.
2. Wrinkles in the finished liner pipe which cause a backwater of one (1) inch or more or reduce the hydraulic capacity of the pipe (wrinkles which

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exceed five percent 5 percent of the pipe diameter) are unacceptable and shall be removed or repaired by the Contractor at no additional cost to the Owner. Wrinkles in the finished liner pipe that reduce the structural stability of the pipe are unacceptable. If a void between the wrinkle and the pipe exists, the Contractor shall repair or replace that section of the pipe at no additional cost to the Owner. Methods of repair shall be proposed by the Contractor and submitted to the Owner's Representative for review.

3. Bumps or wrinkles shall be removed within 10 feet of a manhole termination end to produce a smooth wall surface which allows for a proper seal if a flow control plug installation is necessary in the future.
4. Separations of liner seams in the finished liner pipe are unacceptable and shall be removed or repaired by the Contractor at no additional cost to the Owner. If a separation of a liner seam exists, the Contractor shall repair or replace that section of the CIPP tube at no additional cost to the Owner. Methods of repair shall be proposed by the Contractor and submitted to the Owner's Representative for approval.
5. Longitudinal shrinkage of liner beyond the interior face of the manhole wall shall be repaired. Proposed repair materials and procedures shall be submitted to the Owner's Representative for approval prior to commencement of repairs.

B. NOT USED

C. MANHOLE CONNECTION

The Contractor shall provide a seal at the sewer connection so that no leakage of fluids may infiltrate between the liner and the existing sewer surface/manhole.

After the curing of CIPP liner or coating of manhole (if required) is complete, the existing sewer connections shall be re-established into the manholes. The liner termination ends shall be left uncut in the manholes for a minimum of one day to minimize liner shrinkage. The liner ends should then be reinstated. The cut liner shall have no jagged edges and shall be sanded or brushed smooth.

The Contractor shall remove a maximum 4-inch wide circumferential PVC liner strip at the pipe termination. A watertight seal shall be applied directly to the host pipe from 6- to 12-inches outward from the manhole wall or as per manufacturer requirements.

D. VEHICULAR ACCESS

All hoses/pipes used for introducing water, air, and/or steam shall be ramped during the inversion and curing process to allow for the ease of vehicular and pedestrian traffic per Technical Specification 02100 – TRAFFIC CONTROL.

E. HOSE IDENTIFICATION

All hoses/pipes shall be color-coded for identification to prevent the use of hoses/pipes used for water conveyance are not used for wastewater conveyance or visa-versa. Any hose connected to a public water supply shall be at the discretion of the Owner and be equipped with an approved backflow prevention device.

F. INSPECTION

The Contractor shall inspect the CIPP after installation. The inspection will be performed and recorded using visual television inspection equipment in accordance with Technical Specification Section 02761 – REMOTE CCTV OF EXISTING AND REHABILITATED SEWERS.

G. FIELD TESTING

1. Sampling and testing of materials: ASTM Standards
2. CIPP Testing: ASTM F1216
3. Furnish two (2) samples of liner cut from cured liner in host pipe at manholes or at termination points or flat plate test samples.

H. ACCEPTANCE

1. Inspect CIPP tube by CCTV inspection per Technical Specification Section 02761 – REMOTE CCTV OF EXISTING AND REHABILITATED SEWERS
2. Visual inspection - Infiltration: NONE
3. Not Used
4. Defects: If Owner's Representative deems the following:
 - a. Repairable - repair defect per Technical Specification Section 02767, Paragraph 3.03 (A).
 - b. Not Repairable - remove and replace the CIPP tube at no additional cost to the Owner.

3.04 CLEANUP

Following inspection, the Contractor shall clean up the entire project area. The Contractor shall dispose of all excess material and debris not incorporated into the permanent installation off site.

3.05 WARRANTY

Contractor shall CCTV per Technical Specification Section 02761 – REMOTE CCTV OF EXISTING AND REHABILITATED SEWERS rehabilitated **one (1) year following final completion**. Copy of the CCTV video records shall be submitted to the Owner according to Technical Specification Section 01300 – SUBMITTALS. Procedures for repair of liner defects identified shall be submitted to the Owner for approval prior to authorization to proceed. CCTV video investigation and repair of defects shall be at no additional cost to the Owner.

**** END OF SECTION ****

SECTION 09710

CONCRETE AND MASONRY COATING

PART 1 - GENERAL

1.01 DESCRIPTION

A. SCOPE

This section specifies the coating system used for the rehabilitation of municipal sanitary sewer manholes and structures to provide protection against chemical or gas corrosion. The coating shall yield a hard, durable, chemical resistant coating and provide a water and gas tight seal to concrete and other components within existing sanitary sewer collection system infrastructure.

- 1) All existing epoxy lined manholes shall be repaired with application of a new epoxy lining material unless directed by the Owner to install a new structural insert.
- 2) Repairs to the manhole may be performed during live sanitary sewer flow conditions if environmental condition can be maintained within coating manufacturer's recommendations. However, the Contractor shall coordinate the work schedule so that the sanitary sewer flow can be diverted away to minimize the water level within the manhole channel and allow coating to be installed as far down the channel walls as possible if not entirely to coat the pipe/manhole invert when flow diversion is occurring.
- 3) All manhole frames shall be cleaned with a power wire brush tool to remove rust.

B. DEFINITIONS

- 1) In this Technical Specification, the words "coating" (or "coatings") and "lining" (or "linings" or "liner") are used interchangeably. Similarly, "to coat" is used interchangeably with "to line" (or other variations of these words).
- 2) In this Technical Specification, unless otherwise specifically noted, the word "manhole" shall mean "sewer structure" and shall encompass sewer manholes, sewer structures, sewer vaults, and other structures contained within the sanitary sewer system. It also encompasses sewer pipes (or portions thereof) that are located within the sewer structure

but does not include sewer pipes (or portions thereof) that are located outside of the limits of the structure.

- 3) In this Technical Specification, "existing manholes" shall mean those manholes that are (or were) not constructed as part of this project work. "Rehabilitating" existing manholes and "applying corrosion protective coating" to those manholes shall include the following activities:
- a. Cleaning and preparation of the surface to coating manufacturer's recommended standards and removing corroded/deteriorated materials from the manhole, and otherwise preparing the manhole for one of the approved coating systems.
 - b. Testing of the prepared surface to coating manufacturer's standards prior to applying an approved coating system.
 - c. Applying one of the approved coating systems, as specified herein.
 - d. Testing the finished surface coating, as required herein.
 - e. Other related activities, as noted herein.

Where required by the Contract Documents, existing manholes shall be rehabilitated and an approved, or equal, corrosion protective coating applied to their interior surfaces, as specified herein.

The approved coating system (as specified herein) shall be applied to all exposed brick, concrete, grout, mortar, and cementitious surfaces or portions thereof that are not PVC lined within the manhole including pipe-to-throat transitions, throat, bench, risers, cones, chimney, adjusting rings, etc.

1.02 QUALITY ASSURANCE

A. REFERENCES

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.

<u>Reference</u>	<u>Title</u>
ASTM C109	Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)

ASTM D638	Standard Test Method for Tensile Properties of Plastics
ASTM D2240	Standard Test Method for Rubber Property - Durometer Hardness
ASTM D4138	Standard Practices for Measurement of Dry Film Thickness of Protective Coating Systems by Destructive, Cross-Sectioning Means
ASTM D4258	Standard Practice for Surface Cleaning Concrete for Coating
ASTM D4262	Standard Test Method for pH of Chemically Cleaned or Etched Concrete Surfaces
ASTM D4414	Standard Practice for Measurement of Wet Film Thickness
ASTM D4541	Standard Test Method for Pull-off Strength of Coatings using Portable Adhesion Testers (Metallic Substrate)
ASTM D4787	Standard Practice for Continuity Verification of Liquid or Sheet Linings Applied to Concrete Substrates
ASTM D5162	Standard Practice for Discontinuity (Holiday) Testing of Nonconductive Protective Coating on Metallic Substrates
ASTM D7234	Standard Test Method for Pull-off Adhesion Strength of coatings on Concrete Using Portable Pull-Off Adhesion Testers
OSHA - ADOSH	Occupational Safety and Health Administration - Arizona Division of Occupational Safety and Health (ADOSH)
NACE	National Association of Corrosion Engineers Published Standards
ACI 503.1 -503.4	Four Epoxy Specifications

B. STANDARDIZATION

Materials and supplies provided shall be the standard products of manufacturers. Materials in each coating system shall be the products of a single manufacturer or proven to be compatible.

C. INSPECTION

All work shall be performed in presence of the Owner or Owner's Representative unless the Owner has granted prior approval to perform work in their absence. The Contractor shall provide testing as approved by the Owner. Cost of this testing shall be the responsibility of the Contractor. Inspection by the Owner or waiver of inspection in any portion of work shall not relieve the Contractor of responsibility to perform work in accordance with this Technical Specification.

Scaffolding and/or tri-pod safety equipment shall be erected and moved by the Contractor to locations to facilitate inspection by the Owner or Owner's Representative. The Contractor shall be responsible to provide equipment and conditions according to OSHA safety standards for the Owner or Owner's Representative to enter into confined space for inspection purposes. The Contractor shall provide additional illumination and/or fresh air upon the Owner's requests.

The Contractor shall furnish services of a trained operator in surface pH testing, equipment, and chemicals until acceptance of prepared surface. Surface pH testing shall be performed in the presence of the Owner or Owner's Representative. The Contractor shall perform pH testing on all surfaces prior to application of coating. The Contractor shall be responsible to perform additional surface cleaning/washing per Technical Specification Section 02760 - SEWER PIPE AND SEWER STRUCTURE CLEANING as necessary to obtain pH readings acceptable to coating manufacturer's requirements.

The Contractor shall furnish until final acceptance of coatings, inspection devices in good working condition for the verification of adhesion of any substrate material to the existing concrete. The Contractor shall furnish services of trained operator in pull test devices until final acceptance of coatings. Pull test devices shall be tested in the presence of the Owner or Owner's Representative. The Contractor shall perform pull test in the presence of the Owner or Owner's Representative.

Pull testing and repair of the coating test areas shall be performed prior to spark testing. The Contractor shall be responsible to repair test areas and retest coating as necessary at no additional cost to the Owner.

The Contractor shall conduct thickness measurements of coating retained on the destructive pull strength dolly. Measurements of thickness of applied protective coatings in the presence of the Owner or Owner's Representative. Pull strength dolly shall be submitted to the Owner following thickness measurements as a permanent record of coating thicknesses.

The Contractor shall furnish services of a trained operator in holiday detection devices until final acceptance of coatings. Holiday detection devices shall be tested and operated in the presence of the Owner or Owner's Representative. The Contractor shall perform holiday test on all coated surfaces in the presence of the Owner or Owner's Representative. The Contractor shall be responsible to repair defective areas and retest coating as necessary at no additional cost to the Owner.

D. SUMMARY REPORT

Surface pH, pull strength, and coating thickness measurements shall be documented and reported in a Summary Report produced by the Contractor and submitted to the Owner. The report shall be presented after completion of underlayment, top coating operations, and shall state number of manufacturer's product units used and total square footage of surface area covered. Owner shall have option of requiring the Contractor to document number of units (coating materials) on hand before and after coating of each structure operations to verify actual minimum coating thickness applied. All coating thicknesses not meeting required minimums shall be removed and/or re-coated per manufacturer's recommendations and project Technical Specifications.

E. INSPECTION MILESTONES

The Contractor shall keep Owner informed of his progress on rehabilitation of each structure. At each manhole, the Owner may inspect the work at the completion of each of the milestones listed below before the Contractor shall commence work on the next milestone:

1. Completion of the cleaning and surface preparation activities required by these Technical Specifications.
2. Completion of all void-filling activities and underlayment application, prior to surface coating application, with the associated adhesion testing of the underlayment layer.
3. pH of surface following cleaning and void filling underlayment activities, prior to surface coating application.
4. Completion of the surface coating installation prior to testing.

5. Adhesion/bond testing of the finished coating system as required by these Technical Specifications.
6. Spark testing of the final surface coating as required by these Technical Specifications.
7. Following final clean-up and inspection, the Contractor shall prepare a table in Microsoft Excel format and submit digitally the results of testing that include at a minimum the manhole number, pull test locations with corresponding test results, and spark test pass/fail results.

F. QUALITY CONTROL TESTING

The Contractor shall submit the following test results to the Owner:

1. pH Testing: pH of surface shall be tested per ASTM D4262 and reported.
2. Adhesion Testing: Adhesion of the coating to the concrete substrate shall be tested per ASTM D7234, and the mode of failure shall be such that the substrate fails before the coating separates from the substrate.”
3. Holiday Testing: Holiday “spark” testing shall be employed to identify holidays, defects, and substandard coating thickness.
4. Coating Thickness Test: Coating thickness testing shall be performed by pull test destructive testing methods and direct measurement of coating thickness to verify cured coating meets the minimum dry mil thickness.
5. Surface Hardness Test: Coating Hardness shall be performed per ASTM D2240 and reported.
6. Chemical Resistance Testing: The following chemical resistance tests shall be performed in accordance with the Standard Specifications for Public Works Construction 2018 Edition, Section 210-2.3.3 and ASTM D638. The samples shall be tested for weight change, tensile strength, and elongation after exposure for a period of 28, 56, 84 and 112 days in the following chemical solutions/volume concentration percentage:
 - Sulfuric Acid: 20%
 - Sodium Hydroxide: 5%
 - Ammonium Hydroxide: 5%
 - Nitric Acid: 1%
 - Ferric Chloride: 1%
 - Soap: 0.1%
 - Detergent: 0.1%
 - Bacteriological (BOD): ≥ 700 ppm
 - Bleach: 1%

After exposure to the chemical solutions for the specified days of immersion, specimens shall exhibit zero (0) weight loss, spalling, cracking, or blistering. Any changes to appearance such as color and texture shall be noted. After exposure to the chemical solutions for the specified test intervals, the physical properties to be determined after each test period are tensile strength (psi) and elongation (%) in accordance with ASTM D638. All test specimen tensile strength results shall be greater than or equal to the initial tensile strength prior to any chemical exposure.

1.03 CERTIFIED APPLICATOR

The Contractor applying coating shall be a contractor licensed in the state of the specified project location. The coating system shall be applied by an applicator certified within the prior two (2) years by the coating and underlayment material system manufacturer as properly trained for applying the manufacturer's coating and underlayment products. Underlayment products include repair materials, grouts, fillers, primers, etc. A training outline for the certification program undergone by the applicators shall be submitted to the Owner, for review. The Contractor shall provide evidence that the personnel performing the product application received the manufacturer's training for certification.

The Contractor shall appoint a Quality Assurance Manager who shall take full responsibility for the oversight of the quality of the work. The Quality Assurance Manager shall be fully certified and have a minimum of five (5) years of application experience with the particular coating system.

Applicator(s) shall be fully certified by the product manufacturer and have a minimum of two (2) years of application experience with the particular coating system.

1.04 DELIVERY AND STORAGE

Materials shall be delivered to the job site in their original, unopened containers. Each container shall bear the manufacturer's name, coating type, batch number, date of manufacture, storage life, and special directions.

Materials shall be stored in enclosed structures and shall be protected from weather and excessive heat or cold. Flammable materials shall be stored in accordance with state and local codes. Materials exceeding storage life recommended by the manufacturer or visibly deviate from normal appearance or texture shall not be used, physically marked in orange paint on the container as being REJECTED and physically removed from the project site so as not to be inadvertently incorporated into future work.

1.05 WARRANTY

- A. A non-prorated written (but not bonded) warranty to cover workmanship and materials against coating failure shall be provided for the entire coating system, including all repair material, defect fillers, primers, intermediate (if applicable), and finish coats. The minimum duration of the warranty **shall be five (5) years** following final acceptance of the project. The product and the installation shall both be covered by the Contractor's warranty. The Contractor shall be responsible for administration, performance and all ancillary costs associated with implementation of the warrantee. The warranty shall be delivered to the Owner prior to and as a condition of final acceptance and final payment for this project.
- B. Inspection shall be conducted during the 11 and 59 months (FOR the 12- and 60-MONTH WARRANTY ITEMS) following completion of all coating work. The Contractor and representative of coating manufacturer shall attend inspection. Defective work shall be repaired in accordance with these Technical Specifications and satisfaction of the Owner within one (1) month of written notification. The Owner may, by written notice to the Contractor, reschedule warranty inspection to another date within one-year correction period, or may cancel warranty inspection altogether. If warranty inspection is not held, the Contractor is not relieved of the responsibilities stated under Contract Documents.
- C. This warranty shall state that the coating(s) will not fail for a **minimum period of five (5) years**. Coating failure is defined as blistering, cracking, embrittlement, or softening, or failure to adhere to the substrate. The warranty shall also apply to any repair materials, primers, or other products used in the application. If any repair or replacement is necessary within the warranty period, a **new five (5) year** warranty period shall start at the date that the manhole is placed back into service following repairs.
- D. By executing this contract, the Contractor certifies and agrees that any testing performed during construction (e.g., spark testing, adhesion testing and/or other testing) shall not in any way modify the warranty, nor relieve the Contractor for responding to defects during the warranty period.
- E. The Contractors responsibility to provide the Warranty is considered incidental to the work and is, therefore, a non-pay item.
- F. The Contractor and coating system Manufacturer shall within one (1) month of written notice thereof, repair defects in materials or workmanship that may develop during said warranty period(s).
- G. The costs for ancillary items associated with coating repair includes, but not limited to, permitting costs, bypass pumping, traffic control and third-party

quality control inspection shall be the Contractor's responsibility and are to be included in and incidental to the cost(s) of warrantee repairs.

1.06 SUBMITTALS

A. Before materials are delivered to the job site, the Contractor shall provide the following information in accordance with Technical Specification Section 01300 - SUBMITTALS:

1. Name(s) and qualifications of all proposed applicator(s) per paragraph 1.03, along with Certification of Applicator(s) and outline of training undertaken for the certification program.
2. Schedule identifying sequence and dates the Contractor will be working on each structure. When the Contractor is prepared to start work at a structure, they shall inform the Owner of their schedule of milestone inspection points for that structure. Failure to provide notification of any milestone inspection point is grounds for rejection and non-payment of all work performed within the structure.
3. Current Arizona Contractor's license or equivalent (specifically for the rehabilitation of concrete manholes/structures). If the manhole(s) to be rehabilitated is (are) brick, then the license or equivalent shall state for the rehabilitation of concrete and brick manholes.
4. Safety Data Sheet (SDS) for the grout, filler, primer and finish coating, the Contractor proposes to use.
5. For the filler and finish coating, the Contractor shall provide the manufacturer's technical literature and application instructions, which shall include the following:
 - a. Surface preparation recommendations and limitation(s) of any existing subsurface materials for adherence bonding concerns.
 - b. Primer type, where required.
 - c. Limitations for surface preparation methods and/or products.
 - d. Maximum mil thickness per coat.
 - e. Mixing and proportioning requirements (as applicable).
 - f. Minimum and maximum curing time between coats (if applicable), including atmospheric temperature and humidity limits for each.
 - g. Curing time before submergence in flowing liquid.
 - h. Thinners (if allowed) that are acceptable with coating material.
 - i. Environmental requirements for application and worker safety, including ventilation, humidity, and temperature ranges.
 - j. Allowable application methods.
 - k. Maximum allowable surface moisture content.
 - l. Allowable surface pH range.

- m. Required storage conditions and maximum storage life.
 - n. Sample of finished product showing final color.
6. List of materials proposed to be used under this section and manufacturer's technical literature and data for each material.
 7. A letter or manufacturer's technical literature and product data identifying the procedures recommended for repair of defect(s) that may be found in each proposed material.
 8. Written certification from the materials manufacturer that the surface material is compatible with proposed material, the surface has been prepared to acceptable standards, and the applied coating has been installed according to material manufacturer's recommendations.
 9. Minimum pull force reading that is anticipated for proposed pull test equipment and size of dolly for passing test.
 10. Testing Summary Report per paragraph 1.02 D.
 11. Written warranty per paragraph 1.05.
 12. The Contractor shall provide procedures and products proposed for use to repair deteriorated steel reinforcement bars (if present).
 13. The Contractor shall provide procedures and products proposed for use around utility penetrations (if present).

PART 2 – PRODUCTS

2.01 MANHOLE COATINGS

Materials shall be delivered to the site in factory sealed and labeled containers. Date of manufacture shall be labeled on each container. Materials shall be handled and stored according to the strictest requirements of the manufacturer and in accordance with all local, state, and federal laws and regulations.

1. Coating systems shall be compatible with the preparation methods as specified herein. Any limitations or deviations requested by the manufacturer shall be approved in writing by the Owner, prior to surface preparation. The Contractor shall provide all labor, materials, and equipment as necessary at no additional cost to the Owner for any deviations of surface preparation required by the coating materials manufacturer.

2. Epoxy based coating shall be applied within eight (8) months of their date of manufacture (unless the manufacturer's requirements are more stringent), or otherwise approved in writing by the Owner.
3. Thicknesses specified herein is the minimum dry thickness required and do not include the primer or underlayment thickness, unless otherwise noted. Provide greater thickness where recommended by the product manufacturer.
4. Sealant or Primer, if required, shall be as recommended by the manufacturer for each installation.
5. Defect filler and repair materials shall be as recommended by the manufacturer for each installation. All materials shall be identified.
6. Manhole infiltration control material shall be as recommended by the manufacturer for each installation and shall be covered under the same warranty as the rest of the coating system.

2.02 APPROVED CORROSION PROTECTIVE COATING SYSTEMS FOR EXISTING MANHOLES

Manhole coating materials shall be one of the approved products listed in this paragraph. Manhole coating system proposed shall be compatible with any existing manhole epoxy coating present or removed down to coating manufacturer acceptable substrate at no additional cost to the Owner. The approved corrosion protective coating systems shall be as listed below.

- Sauereisen Sewergard Lining No. 210 with Sauereisen Underlayment No. F-120, as manufactured by Sauereisen Cements, Pittsburgh, PA. The underlayment shall be used to repair and reprofile corroded areas of manhole surfaces. Manhole surfaces shall be cleaned and prepared in accordance with the manufacturer's recommendations and coating system specification sheets (COATSPEC) in Technical Specification Section 3.21 prior to application.
- Sewer Shield 100 topcoat with C120 calcium aluminate cement underlayment as manufactured by Environmental Coatings, Mesa, AZ. The underlayment shall be used to repair and reprofile corroded areas of manhole surfaces. Manhole surfaces shall be cleaned and prepared in accordance with the manufacturer's recommendations and coating system specification sheets (COATSPEC) in Technical Specification Section 3.21 prior to application.
- Raven 405 Epoxy Lining with calcium aluminate cement underlayment, as manufactured by Raven Lining Systems, Tulsa, Oklahoma. The underlayment shall be used to repair and reprofile corroded areas of

manhole surfaces. Manhole surfaces shall be cleaned and prepared in accordance with the manufacturer's recommendations and coating system specification sheets (COATSPEC) in Technical Specification Section 3.21 prior to application.

The underlayment material and the surface coating material installed in any one manhole shall be from the same coating system.

2.03 CORROSION INHIBITOR FOR REINFORCING STEEL

Reinforcing steel, exposed by corrosion or during surface preparation operations, shall be treated with a water-based epoxy resin, anti-corrosion coating and bonding agent such as Armatec 110 EpoCem, manufactured by the Sika Corporation, or approved equal. The Contractor shall be responsible to verify that the corrosion inhibitor product is compatible with proposed coating system materials.

PART 3 - EXECUTION

3.01 HAZARDOUS LOCATIONS

The Owner may wish to enter the manhole under the Contractor's safety program to perform observations and/or perform additional testing. The Contractor shall provide the necessary safety equipment, monitoring, and safe working atmosphere to allow the Owner or Owner's Representative to safely enter the manhole, at no additional cost to the Owner.

The Contractor is responsible for safety of the job site, including the responsibility to enforce and enact the provisions of the Contractor's Confined Space Entry program and the responsibilities to monitor the atmosphere within the structures and provide a safe working atmosphere and environment. These safety measures shall be at no additional cost to the Owner. The Owner shall not be responsible for safety or for safety monitoring of the job site.

3.02 SEWAGE FLOW AND DIVERSION

The Contractor shall be aware that the existing manholes included in this project are active, functioning manholes. The Contractor shall be required to coordinate the minimization of existing sewer flow and corresponding water level within the manhole through upstream diversion as much as possible per Technical Specification Section 02145 – DIVERSION OF SEWAGE FLOW AND DEWATERING when rehabilitating the lower sections of the manhole.

Manholes designated for rehabilitation that are contiguous to pipe rehabilitation activities shall be performed while flow is diverted, and the manhole is dewatered.

3.03 MANHOLE PREPARATION AND CLEANING

Surface preparations for each type of surface shall be in accordance with manufacturer's recommendations or the specific requirements of the coating specification sheet (COATSPEC).

The Contractor shall inspect all surfaces specified to receive a coating system prior to surface preparation. The Contractor shall notify Owner, of any noticeable disparity in the surfaces, which may interfere with the proper preparation, or application of the coating system.

The entire manhole interior including frame, chimney, walls, bench and throat shall be cleaned prior to rehabilitation using abrasive blasting and hydro jet cleaned per Technical Specification Section 02760 – SEWER PIPE AND SEWER STRUCTURE CLEANING. The Contractor shall remove all manhole steps present within the interior or as directed and any voids repaired.

3.04 BONDING COMPOUNDS

All surfaces where new concrete contacts existing concrete shall be coated with a bonding compound as recommended by the manufacturer of the concrete repair material.

3.05 UNDERLAYMENT FOR STRUCTURE WALL REPAIR

Where the manhole wall substrate material is exposed and/or deteriorated, the surface shall be abraded down to solid concrete. Where the abraded material is equal to or greater than 0.25 inches from the original profile, the substrate shall be restored back to original profile.

Manhole wall repair (if necessary) shall be provided for manhole walls for re-profiling back to original manhole dimensions with a product as recommended by underlayment and coating manufacturer. Voids that extend beyond the exterior manhole wall shall be brought to the attention of the Owner for approved repair procedures. Costs for exterior manhole wall repair shall be considered a changed condition with costs for repairs negotiated and agreed upon prior to proceeding with the work. Failure to obtain prior approval of repair costs eliminates any claims by the Contractor for additional compensation for added work to repair the manhole.

3.06 DEFECT REPAIR

A. All surface defects including tie holes, any honeycombing or otherwise defective concrete or brick shall be repaired. All voids, holes, and rough or irregular surfaces shall be filled/repaired.

- B. The Contractor shall use the fill/repair material recommended by the coating manufacturer, to repair or fill all defects. Areas to be patched shall be cleaned. Minor honeycombed or otherwise defective areas shall be removed to solid concrete. The edges of the cut shall be perpendicular to the surface of the concrete. Patches on exposed surfaces shall be finished to match the adjoining surfaces after they have set. Finishes shall be equal in workmanship, texture, and general appearance to that of the adjacent material.
- C. Deteriorated or honeycombed concrete which exposes the reinforcing steel or with defects that affect the structural strength shall be repaired. Any exposed reinforcing steel shall be mechanically cleaned and coated in accordance with paragraph 3.08. The proposed repair method shall be approved by the Owner.
- D. Extend all existing control and expansion joints through any patch or repair area.

3.07 STRUCTURAL REINFORCING REPAIR

Structural repairs shall include splicing new reinforcing steel to existing reinforcing steel and providing additional reinforcing steel to reestablish the original structural integrity and existing loading capacity. Provide 3/8-inch diameter anchor bolts as needed to support reinforcing steel.

3.08 REINFORCING STEEL TREATMENT

Where corrosion or surface preparation activities have exposed reinforcing steel, the following procedure shall be used:

1. If half the diameter of the reinforcing steel, or more, is exposed, chip out behind the reinforcing steel a minimum of 1-inch for placement of grout or polymer concrete.
2. Determine cross sectional area loss of reinforcing steel.
3. Where reinforcing steel cross sectional area loss exceeds 15 percent of the original reinforcing steel, perform structural repair as directed by the Owner.
4. Abrasive blast all exposed reinforcing steel surfaces to remove all contaminants and corrosion products.
5. Clean exposed reinforcing steel with stiff brush or grit blast equipment per Technical Specification Section 02760 – SEWER PIPE AND SEWER STRUCTURE CLEANING.

6. Apply a 20 mil (wet) coat of corrosion inhibitor to all surfaces of the clean, exposed reinforcing steel with a stiff brush or spray equipment. Allow 2 to 3 hours for coating to cure or until surface is tack-free.
7. Apply a second 20 mil (wet) coat of corrosion inhibitor and allow for 2-hour to 3-hour cure prior to placement of polymer mortar, cementitious mortar, or grout.

3.09 REPAIR MANHOLE BENCH AND NON-MAIN CHANNEL(S)

The Contractor shall repair manhole bench and non-main channel(s) with acid-resistant mortar. The grout mortar shall be applied to a depth of at least $\frac{3}{4}$ -inches on the bench. The finish surface shall be hand-troweled smooth to finish the bench and channel. Manhole bench shall be sloped a minimum $\frac{1}{2}$ -inch per foot to the edge of the throat. Minimum mortar thickness shall be $\frac{3}{4}$ -inch.

3.10 CHIMNEY REPAIR

Brick chimneys shall be repaired through re-pointing or replacement as necessary to ensure structural integrity.

3.11 MANHOLE FRAME, COVER, COLLAR, AND ADJUSTING RINGS REPLACEMENT

Manhole frames, covers, collars, and collars shall be replaced as indicated in the Contract Documents. The Contractor shall perform work in accordance with MAG Standard Details 420, 422, and 424 and City of Phoenix Standard Detail P1424. The frames and covers shall have a nominal opening diameter of 30-inches.

Adjusting rings shall be replaced as necessary to raise the lid to surface grade and slope. Concrete adjusting rings shall receive the same corrosion-resistant coating system as the rest of the concrete in the manhole.

3.12 PREPARATION

A. GENERAL

Surfaces to be coated shall be clean and dry according to Technical Specification Section 02760 - SEWER PIPE AND SEWER STRUCTURE CLEANING.

B. DETAILED SURFACE PREPARATION

Surface preparations for each type of surface shall be in accordance with the specific requirements of the coating specification sheet (COATSPEC).

3.13 COATINGS

A. GENERAL

Coating products shall not be used until the Owner or Owner's Representative has inspected the materials and the coating manufacturer's technical representative has instructed the Contractor and Owner or Owner's Representative in the recommended procedures for surface preparation, mixing and application of the coating.

B. COATING SYSTEMS

Field coats shall consist of one or more finish coats to build up the coating to the specified mil thickness. Unless otherwise specified, finish coats shall not be applied until other work in the area is complete and until all previous coats have been inspected.

The Contractor shall employ whatever means necessary (e.g., humidity control, temperature control, additional abrasive blasting, hydro jet cleaning, mechanical surface preparation, etc.) to ensure strong adhesion of the surface coating layer(s), to any underlying and overlying layers and proper curing of the surface coating layer(s). If the surface coating is applied in two or more layers, the time between applications of the various layers shall be controlled to ensure proper bond between layers.

C. COATING REQUIREMENTS

The approved surface coating shall be mixed in a clean, dry mixing container. Compound that has begun to set shall not be recovered by adding additional liquid but shall be discarded.

All items of equipment, or parts and surfaces of equipment, which are immersed when in service, with the exception of pumps shall have all surface preparation and coating work performed in the field.

3.14 COATING APPLICATION

A. WORKMANSHIP

Coated surfaces shall be free from runs, drops, ridges, waves, laps, and trowel marks. Coats shall be applied so as to produce an even film of uniform thickness completely coating corners and crevices.

The Contractor's equipment shall be designed for application of the materials specified. The coating shall be applied using a trowel suitable for obtaining the proper thickness and surface characteristics as recommended by the coating manufacturer.

Each coat shall be applied evenly and sharply cut to line. Care shall be exercised to avoid over-coating or spattering on surfaces not to be coated. All over-coating or spattering shall be removed.

For all coatings, trowel marks and other surface irregularities shall be removed by using a short nap mohair paint roller. The short nap mohair shall be dampened with water. Excess water shall be shaken off prior to use.

B. ATMOSPHERIC CONDITIONS

Coatings shall be applied only to surfaces that are dry, and only under conditions of evaporation rather than condensation. Coatings shall not be applied during rainy, misty weather, or to surfaces upon which there is frost or moisture condensation. During damp weather, when the temperature of the surface to be coated is within 10 degrees Fahrenheit (F) of the dew point, the surfaces shall be heated to prevent moisture condensation thereon. During coating, and for a period of at least eight (8) hours after the coating has been applied, the temperature of the surfaces to be coated, the coated surfaces, and the atmosphere in contact shall be maintained at or above 40 degrees F and 10 degrees F above the dew point. When applied, coating shall be approximately the same temperature as that of the surface on which it is applied, but not greater than the maximum allowable coating installation temperature as specified by the manufacturer. Fans or heaters shall be used inside enclosed areas where conditions causing condensation are present.

Structures shall be continuously ventilated to prevent condensation. The Contractor shall be responsible for providing, installing, maintaining and removal of all safety apparatus safeguarding open structure being ventilated.

Contractor shall confirm ambient temperature and humidity of the manhole interior and the surface temperature and moisture content of the surface, and the temperature of coating materials that is to be applied are within the manufacture's recommended ranges.

C. SURFACE CONDITIONS

The Contractor shall remove excess water from the surface using compressed air equipment with oil-trapping filters, or other means to produce surface-dry conditions, or as recommended by the coating manufacturer. Suitable heaters shall also be used as needed to produce the surface-dry condition. The surface shall be vacuumed to ensure that loose particles are not present. The Contractor shall evaluate the moisture content in accordance with the requirements of ACI 503-1 – 503.4 standard

specification applicable to the application prior to the installation of any coatings.

D. PROTECTION OF COATED SURFACES

Items which have been coated shall not be handled, worked on, or otherwise disturbed, until the coating is completely dry and hard. Do not allow flowing water, chemicals, or other liquids on the approved, applied coating for a minimum of four (4) hours after installation or longer as recommended by the coating manufacturer.

E. THICKNESS AND CONTINUITY

Coating system thickness is the total thickness of protective coats.

The surface area covered for various types of surfaces and thickness per coat shall not exceed those recommended by the manufacturer. Coatings shall be applied as a minimum to the mil thickness specified, in layers, if necessary, as recommended by the coating manufacturer and in accordance with these Technical Specifications and project requirements.

In testing for continuity of coating about welds, projections (such as bolts and nuts,) and crevices, the Owner will determine the minimum conductivity for smooth areas of like coating where the mil thickness has been accepted. This conductivity shall then be taken as the minimum required for these rough or irregular areas. Pinholes and holidays shall be repaired and recoated to the required coverage.

F. SAFETY AND VENTILATION REQUIREMENTS

Requirements for safety and ventilation shall be in accordance with manufacturer's recommendations.

3.15 ADHESION / BOND TESTING

A. GENERAL

1. After proper cure the Contractor shall perform an adhesion test in accordance with ASTM D7234 in accordance with manufacturer's recommended procedures to demonstrate that the specified field coatings adhere to the substrate. Costs associated with adhesion testing are incidental to the unit price cost of coating.
2. Where unacceptable test results are obtained, the Contractor shall be responsible for removing and reapplying the specified coatings at no additional expense to the Owner.

B. FREQUENCY OF TESTING

After the approved coating has been applied to all specified surfaces and has adequately cured (as determined by the manufacturer, but no more than 4 days), the Contractor shall test the finished coating system for adequate adhesion between the underlying substrate and the coating system and between the various layers of the coating system. Said test shall be performed in-place and in accordance with ASTM Standard D-7234 and the requirements as dictated in the remainder of this section.

1. Adhesion testing shall be performed at two different stages of the work:
 - a. Underlayment Adhesion Testing: Underlying substrate shall be tested before the surface coating layer(s) are applied;
 - b. Finish Coating System Adhesion Testing: After the surface coating layer(s) have been applied, the adhesion of all applied layers in the coating system to one another and to the underlying substrate shall be tested. The Contractor shall perform adhesion tests on 30 percent of the manholes coated, or at least one (1) manhole if 30 percent of the manholes coated is equal to less than one (1).
2. Adhesion tests shall be required at a minimum of one (1) underlayment adhesion test and one (1) finished coating system adhesion test per manhole tested.
3. Specific test locations within each manhole shall be selected by the Owner or Owner's Representative. The Owner or Owner's Representative shall be present to observe all adhesion testing.
4. The need to repeat an adhesion test due to an error in the performance of the adhesion testing (e.g., a dolly coming off prematurely) or due to a failure in the coating system before the required full test pressure is applied (i.e., a "not pass" test result) shall not count as an additional test for the purposes of determining compliance with the minimum number of tests required per Item No. 1, but shall rather be denominated a "repeat test".
5. Adhesion testing of the underlayment layer shall conform to the following:
 - a. After the underlayment layer has cured for a minimum of 4 hours but before the surface coating has been applied over the underlayment layer, the Contractor shall test the underlayment layer for proper adhesion to the underlying substrate.

- b. The Contractor shall perform the adhesion testing in-place and in accordance with ASTM Standard D-7234 and the requirements as dictated in the remainder of this section.
6. The adhesion/bond testing is in addition to the spark testing discussed in paragraph 3.14.

C. ADHESION TEST EQUIPMENT

The remaining paragraphs of this section apply to both the adhesion testing of the underlayment layer and the adhesion testing of the finished coating system:

The Contractor shall perform the adhesion testing discussed in this section using a DeFelsko Positest Pull-off Adhesion Tester Model AT-A or AT-M with 50mm dolly accessory kit or Owner Approved Equal, to be provided by the Contractor. The Contractor shall be responsible to purchase and provide enough 50 mm diameter dollies (as sold by DeFelsko) and adhesive for the dollies to perform all of the required tests.

The Contractor shall provide the equipment and tools to core drill around the test dolly location to score the applied coating to a depth of the substrate material that bond strength is being verified as described in paragraph 2.16 - D.

The Contractor shall provide proof that the pull-off adhesion tester has been calibrated within the last twelve (12) months.

D. ADHESION TEST PROCEDURES

Adhesion testing shall be conducted after the coating system has cured per manufacturer instruction and tested in accordance with ASTM D2240 and in accordance with ASTM D-7234 (for concrete). Adhesion shall be completed per ASTM or as described as follows:

1. The Contractor shall first adhere the test dolly to the surface of the manhole at the test location selected by the Owner. The Contractor may lightly sand the coating surface with sandpaper at the test location to improve dolly adhesion. After the adhesive has set, the Contractor shall test the dolly for adhesion to the surface of the manhole by pulling on it by hand. If the dolly comes off, the Contractor shall re-adhere the dolly, using different glue if necessary. After the dolly is properly set, the Contractor shall then score the manhole surface (using a circle-cutting "hole saw" type drill bit that leaves the center of the drill area intact) around the perimeter of the dolly. The drill bit shall penetrate through the layers to be tested but shall not penetrate more than 1/8-inch into the underlying substrate. The diameter of the drilled circle shall match

(1/8-inch +/-) the diameter of the test dolly. Use of a sharp and properly sized cutting instrument is required.

2. The adhesion testing machine shall then be attached to the dolly and each test location shall be tested to a minimum pulling strength of 200 psi (defined herein as the pulling force divided by the test sample cross-sectional area perpendicular to the applied force).
3. If delamination or any other failure occurs between or within any of the coating system layers and/or the underlying concrete substrate prior to the application of the full pulling pressure of 200 psi, the test shall be classified as "not pass". However, if the dolly comes off the surface of the coating and no other delamination or failure occurs between or within any of the coating system layers and/or the underlying concrete substrate, the test will not be classified as a "failure" or "not pass", but the test shall be repeated at no additional cost to the Owner. The loading duration rate up to the full pulling pressure of 200 psi shall be consistently applied such that the test lasts a minimum of 7 seconds.

The test can be discontinued if the testing pressure reaches 200 psi and no delamination or other failure has occurred within or between any of the coating system layers and/or the underlying concrete substrate, which test would be judged a "pass". If delamination or other failure occurs within the underlying substrate, but only when the applied pulling pressure is in excess of 200 psi, the test shall also be judged to be a "pass". To avoid damaging the test equipment, do not continue the test beyond 500 psi.

4. For tests that are classified as "not pass", the Owner will require additional testing. In the event of a "not pass", three (3) additional tests shall be performed. Location of tests shall be at the discretion of the Owner. If any one (1) of the three (3) additional tests is found to be "not pass", the coating shall be determined as defective and remedial action required.

Remedial action will include removal of the entire coating system (or whatever components of it that have been installed in the manhole to that point) from the entire manhole, re-cleaning of the manhole, re-application of the coating system to all required surfaces and re-testing. Said retesting and remedial action shall be at no additional cost to the Owner.

5. After the adhesion tests have been performed, the Contractor shall mechanically grind down the test locations to the underlying substrate and re-apply the underlayment and/or coating system (whatever has been installed up to that point in the manhole) in accordance with these provisions to patch the area. Said repair work shall be at no additional

cost to the Owner. The Contractor shall not use acetone, MEK or other chemicals to dissolve the underlayment or coating system as a substitute for mechanical grinding down of the test area.

3.16 HIGH VOLTAGE SPARK TEST

- A. DEFINITION – HOLIDAY: Holidays are defined as pinholes and voids in non-conductive coating that allow electrical current to pass through the protective coating to the base material.
- B. After the protective coating has set hard to the touch it shall be inspected with high-voltage holiday detection wire brush wand style equipment. Surface shall first be dried, an induced holiday shall then be made on to the coated concrete surface and shall serve to determine the minimum/maximum voltage to be used to test the coating for holidays at that particular area. The spark tester shall be initially set at 100 volts per 1 mil (25 microns) of film thickness applied but may be adjusted as necessary to detect the induced holiday (refer to NACE SPO188-2006 or ASTM D5162).

In testing for continuity of coating about welds, projections (such as bolts and nuts), and crevices, the Owner will determine the minimum conductivity for smooth areas of like coating where the mil thickness has been accepted. This conductivity shall then be taken as the minimum required for these rough or irregular areas. Pinholes and holidays shall be repaired and recoated to the required coverage.

Whereas adhesion testing is required at two (2) stages of the project work in each manhole, spark testing is required only on the fully installed coating system.

1. After the approved coating has been applied to all specified surfaces, the Contractor shall spark test the coated surfaces in accordance with ASTM D4787. The Contractor shall provide all equipment and materials necessary to perform said testing, which equipment and materials shall remain the property of the Contractor.
2. Testing shall be performed with a wire brush-type test wand (the squeegee-type is not acceptable) with a minimum test voltage of 100 volts per mil (where 1 mil = 1/1000-inch) of finished surface coat thickness. For example, a minimum of 12,500 volts shall be used for a surface coat thickness of 1/8-inch (125 mils). The Contractor shall use a grounding rod, or other means to establish ground for the spark testing equipment.
3. As a test of the proper functioning of the spark testing equipment, the Owner may require the Contractor to drill a hole through the coating

system into the underlying concrete substrate and to demonstrate to the Owner that the spark testing equipment can "find" the hole. The Contractor shall then patch and repair the hole at no additional cost to the Owner. At the Owner discretion, one such quality control test may be required for each manhole. Unless otherwise determined by the Owner, any adjustments to the spark testing methodology (e.g., adjusting the grounding method, increasing the test voltage, etc.) required to "find" the known holiday (hole) shall remain in effect for the remainder of the spark testing of that manhole.

4. The entire surface of the manhole shall then be spark tested. Any imperfections found in the coating system shall be ground down and refilled. Use of a chemical solvent such as acetone or MEK in lieu of mechanical grinding down the area shall not be permitted. Repaired areas shall be re-tested. Said testing, repairs and re-testing shall continue until all portions of the manhole pass the spark test as specified herein.
5. The Contractor shall perform repairs and re-testing at no additional cost to the Owner. All detected holidays shall be marked and repaired by abrading the coating surface. After abrading and cleaning, additional protective coating material shall be hand applied to the repair area. All touch-up/repair procedures shall follow the protective coating manufacturer's recommendations.
6. The Owner or Owner's Representative shall be notified and present to observe testing and retesting. In addition, the Contractor shall provide certification for each manhole stating that the coating is free of holes or other imperfections.

3.17 UNDERLAYMENT DEFECT REPAIR

- A. All surface defects in the underlayment including cracks, tie holds, minor honeycombing or otherwise defective concrete, shall be repaired. All voids, holes, rough or irregular concrete shall be cleaned with abrasive blasting and hydro jet cleaning to sound material and filled.
- B. The Contractor shall use the repair and fill material recommended by the coating manufacturer to repair or fill all defects. Areas to be patched shall be cleaned. Minor honeycombed or otherwise defective areas shall be cut out to solid concrete to a depth of at least 1-inch. The edges of the cut shall be perpendicular to the surface of the concrete. Patches on exposed surfaces shall be finished to match the adjoining surfaces after they have set. Finishes shall be equal in workmanship, texture, and general appearance to that of the adjacent concrete. Concrete with honeycombing which exposes the reinforcing steel or with defects, which affect the structural strength, shall be corrected.

3.18 REPAIRS OF COATING SYSTEMS

All pinholes, uncured coating, blisters, surface imperfections and damage to the coating resulting from the adhesion test shall be prepared to a point 1-inch minimum beyond the limits of the damaged area. Pinhole defects shall be primed and recoated with the same coating system to a minimum additional thickness of 30 mils unless otherwise specified by the coating manufacturer and/or Owner.

Blisters, uncured coating and surface imperfections shall be completely removed, and the areas recoated with appropriate coating material to 1-inch minimum beyond the repair area at a minimum dry film thickness of 125 mils or design coating thickness whichever is greater. The damage resulting from the adhesion test shall be repaired by recoating with appropriate lining material to 1-inch beyond the repair area at 150 mils or design coating thickness whichever is greater. Additional spark testing shall be completed after repairs are completed.

3.19 INSPECTIONS

- A. The Contractor shall notify Owner or Owner's Representative of impending completion of surface repairs, re-profiling, and prior to application of epoxy coating.
- B. The notifications shall be given a minimum 24-hours in advance of completion of the surface repairs and re-profiling, and 24-hours in advance of application of the epoxy coating and any testing; including spark testing, adhesion testing, and dry film thickness testing.
- C. Failure to provide notification at these designated times/work stages may prevent the acceptance of the work by the Owner.

3.20 CLEANUP

Upon completion of coating, the Contractor shall remove surplus materials, protective coverings, and accumulated rubbish, and thoroughly clean all surfaces and repair any overspray or other coating-related damage.

Any spilled or over sprayed material must be cleaned-up prior to curing. After curing has occurred, clean-up may be accomplished by chipping hydro jet cleaning and abrasive blasting. All discarded materials shall be disposed of properly. Clean-up and disposal of discarded material shall be at no additional cost to the Owner.

Surfaces damaged by clean-up procedures shall be cleaned, repaired and refurbished to original condition.

3.21 3.21 - A. COATING SYSTEM SPECIFICATION SHEETS (COATSPEC)

Surfaces shall be coated in accordance with the COATSPEC to the system thickness specified.

Coating System
Identification:

Sewer Shield 100

Surface:

Concrete/Masonry

Minimum Surface
Preparation:

Abrasive Blasting and Hydro Blasting

Concrete Surface
Profile Acceptable
Range:

ICRI CSP 3-4

Concrete:

Except as otherwise specified, loose concrete, form oils, surface hardeners, curing compounds, and laitance shall be removed from surfaces by abrasive and hydro blasting. Voids and cracks shall be repaired as specified in Technical Specification Section 09710, paragraph 3.06 and as indicated by the underlayment defect repair paragraph. After grit abrasion blasting, the concrete should be high pressure washed to remove oil, grease, and other contaminants. All active hydrostatic leaks must be stopped by use of a water stop, waterproofing, or urethane grout.

Epoxy Coating
Compatibility:

Except as otherwise specified, any existing coating that is incompatible with proposed epoxy coating as recommended by the proposed coating manufacturer's recommendation for proper bonding purposes, shall be removed from surfaces by abrasive and hydro blasting and chipping if required.

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Underlayment:	C-120 Cement Underlayment and Patching Material shall be used to fill holes and undulations in concrete surface found or created during the cleaning process. Sufficient material shall be used to build the concrete surface back to original dimensions prior to protective coating or lining installation. Holes and any other defects up to 2-inches deep shall be filled with C-120 calcium aluminate cement (manufactured by Environmental Coatings) or approved equal to restore structural integrity. If the defects are larger than 2-inches deep a high-early, cement fill compatible with these Technical Specifications and recommended by the manufacturer shall be used. Loose or splattered underlayment shall be removed by scraping and chipping. The C-120 and high early cement fill shall be applied as recommended by the manufacturer.
Application:	<p>Underlayment shall dry a minimum of 5 hours at 70-degree F in an atmospheric environment with humidity below manufacturer's recommended levels prior to application of the protective coating Sewer Shield 100 or as recommended by the manufacturer.</p> <p>Coating shall be applied as recommended by the manufacturer, provided the coating as applied complies with prevailing air pollution control regulations.</p> <p>Drying time between coats shall be as recommended by coating manufacturer.</p>
Design Coating Thickness:	125 mils dry thickness.
Coatings:	Coats at manufacturer's recommended dry thickness per coat to the specified total system thickness.
Color	ivory white – or approved color

3.21 - B. COATING SYSTEM SPECIFICATION SHEETS (COATSPEC)

Surfaces shall be coated in accordance with the COATSPEC to the system thickness specified.

Coating System Identification: Sauereisen Sewergard Lining No. 210

Surface: Concrete/Masonry

Minimum Surface Preparation: Abrasive Blasting and Hydro Blasting

Concrete Surface Profile Acceptable Range: ICRI CSP 3-4

Concrete: Except as otherwise specified, loose concrete, form oils, surface hardeners, curing compounds, and laitance shall be removed from surfaces by abrasive and hydro blasting. Voids and cracks shall be repaired as specified in Technical Specification Section 09710 paragraph 3.06 and as indicated by the underlayment defect repair paragraph. After grit abrasion blasting, the concrete should be high pressure washed to remove oil, grease, and other contaminants. All active hydrostatic leaks must be stopped by use of a water stop, waterproofing, or urethane grout.

Epoxy Coating Compatibility: Except as otherwise specified, any existing coating that is incompatible with proposed epoxy coating as recommended by the proposed coating manufacturer's recommendation for proper bonding purposes, shall be removed from surfaces by abrasive and hydro blasting and chipping if required.

Underlayment: Sauereisen Restokrete Underlayment No. F-120 shall be used to fill holes and undulations in concrete surface found or created during the cleaning process. Sufficient material shall be used to build the concrete surface back to original dimensions prior to protective coating or lining installation. Holes and any defects up to 2-inches deep shall be filled with as manufactured by Sauereisen Cements, Pittsburgh, PA or approved equal to restore structural integrity. If the defects are larger than 2-

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inches deep a high-early cement fill compatible with these Technical Specifications and recommended by the manufacturer shall be used. Loose or splattered underlayment shall be removed by scraping and chipping. The Sauereisen No. F-120 and high early cement fill shall be applied as recommended by the manufacturer.

Application:

Underlayment shall dry a minimum of 5 hours at 70-degree F in an atmospheric environment with humidity below manufacturer's recommended levels prior to application of the protective coating Sewergard No. 210 or as recommended by the manufacturer. Underlayment must be cured by means of fog spray, wet burlap, or appropriate Sauereisen curing compound. The Contractor shall follow coating manufacturer's requirements for bonding the coating systems to the installed sewer liner.

Coating shall be applied as recommended by the manufacturer, provided the coating as applied complies with prevailing air pollution control regulations. Only one coat should be applied to obtain the system thickness. The Contractor shall follow coating manufacturer's requirements for bonding the coating system to the installed liner.

Drying time between coats shall be as recommended by coating manufacturer.

Design Coating
Thickness:

125 mils dry thickness.

Coatings:

Coats at manufacturer's recommended dry thickness per coat to the specified total system thickness.

Color

Ivory white – or approved color

3.21 – C. COATING SYSTEM SPECIFICATION SHEETS (COATSPEC)

Surfaces shall be coated in accordance with the COATSPEC to the system thickness specified.

Coating System
Identification:

Raven 405 Epoxy Lining

Surface:

Concrete/Masonry

Minimum Surface
Preparation:

Abrasive Blasting and Hydro Blasting

Concrete Surface
Profile Acceptable
Range:

ICRI CSP 3-4

Concrete:

Except as otherwise specified, loose concrete, form oils, surface hardeners, curing compounds, and laitance shall be removed from surfaces by abrasive and hydro blasting. Voids and cracks shall be repaired as specified in Technical Specification Section 09710 paragraph 3.06 and as indicated by the underlayment defect repair paragraph. After grit abrasion blasting, the concrete should be high pressure washed to remove oil, grease, and other contaminants. All active hydrostatic leaks must be stopped by use of a water stop, waterproofing, or urethane grout.

Epoxy Coating
Compatibility:

Except as otherwise specified, any existing coating that is incompatible with proposed epoxy coating as recommended by the proposed coating manufacturer's recommendation for proper bonding purposes, shall be removed from surfaces by abrasive and hydro blasting and chipping if required.

Underlayment: Underlayment with calcium aluminate cement as recommended by Raven 405 manufacturer shall be used to fill holes and undulations in concrete surface found or created during the cleaning process. Sufficient material shall be used to build the concrete surface back to original dimensions prior to protective coating or lining installation. Holes and any other defects up to 2-inches deep shall be filled with calcium aluminate cement (as manufactured by Raven Lining Systems, Tulsa, Oklahoma) or approved equal to restore structural integrity. If the defects are larger than 2-inches deep a high-early cement fill compatible with these Technical Specifications and recommended by the manufacturer shall be used. Loose or splattered underlayment shall be removed by scraping and chipping. The calcium aluminate cement and high early cement fill shall be applied as recommended by the manufacturer.

Application: Underlayment shall dry a minimum of 5 hours at 70-degree Fahrenheit in an atmospheric environment with humidity below manufacturer's recommended levels prior to application of the protective coating Raven 405 or as recommended by the manufacturer.

Coating shall be applied as recommended by the manufacturer, provided the coating as applied complies with prevailing air pollution control regulations. Only one coat should be applied to obtain the system thickness. The Contractor shall follow coating manufacturer's requirements for bonding the coating system to the installed liner.

Design Coating Thickness: 125 mils dry thickness.

Coatings: Coats at manufacturer's recommended dry thickness per coat to the specified total system thickness.

Color ivory white – or approved color

**** END OF SECTION ****

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PART 1 - GENERAL

1.01 DESCRIPTION

A. SCOPE

This section applies to any existing PVC-lined manholes that require rehabilitation with this project. This section specifies the PVC lining system used for the rehabilitation of municipal sanitary sewer manholes and structures to provide protection against chemical or gas corrosion. The lining shall yield a durable, chemical resistant lining and provide a water and gas tight seal to concrete components within existing sanitary sewer collection system infrastructure.

- 1) All existing PVC lined manholes shall be repaired with new PVC lining material unless directed by the Owner to install a new structural insert.
- 2) Repairs to the manhole may be performed during live sanitary sewer flow conditions. However, the Contractor shall coordinate the work schedule so that the sanitary sewer flow can be diverted away to minimize the water level depth within the manhole channel and allow rehabilitation as far down the channel bench as possible. Where flow is diverted entirely, PVC lining shall be extended to include the invert.
- 3) All manhole frames shall be cleaned with a power wire brush tool to remove rust and debris.
- 4) Where existing manhole cone and/or chimney sections contain segments of PVC protective coating, a new epoxy coating system shall be applied between any existing PVC lining system and the metal frame.

B. DEFINITIONS

- 1) In this Technical Specification, the words "lining" (or "linings" or "liner") are used interchangeably. Similarly, "line" is used interchangeably with "to line" (or other variations of these words).
- 2) In this Technical Specification, unless otherwise specifically noted, the word "manhole" shall mean "sewer structure" and shall encompass sewer manholes, sewer structures, sewer vaults, and other structures contained within the sanitary sewer system. It also encompasses sewer

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pipes (or portions thereof) that are located within the sewer structure including sewer pipes (or portions thereof) that are located outside of the limits of the structure.

- 3) In this Technical Specification, "existing manholes" shall mean those manholes that are (or were) not constructed as part of this project work. "Rehabilitating" existing manholes and "applying corrosion protective coating" to those manholes shall include the following activities:
- a. Cleaning and preparation of the surface to PVC lining manufacture's recommended standards and removing loose, corroded, deteriorated, hanging materials from the manhole or pipe per Technical Specification Section 02760 - SEWER PIPE AND SEWER STRUCTURE CLEANING and otherwise preparing the manhole or pipe for liner installation/repair.
 - b. Testing of the prepared surface to lining manufacturer's standards prior to applying an approved lining system.
 - c. Testing the finished surface coating, as required herein.

Where required by the Contract Documents, existing manholes and pipes shall be rehabilitated and an approved corrosion protective PVC lining installed to their interior surfaces, as specified herein.

The approved lining system (as specified herein) shall be installed to all exposed concrete, grout, mortar, and cementitious surfaces or portions thereof within the manhole including pipe-to-throat transitions, throat, bench, risers, cones, and chimney.

1.02 2015 CITY OF PHOENIX SUPPLEMENT TO MAG SPECIFICATIONS

- A. All materials, work and methods relating to the special protective materials installation shall conform to the applicable provisions of the 2015 City of Phoenix Supplement to the MAG Uniform Standard Specifications for Public Works Construction and 2021 City of Phoenix Supplemental Standard Details for Public Works Construction.
- B. Acceptance of the completed work is subject to inspection by the Owner or Owner's Representative. If the overall quality of the materials and installations is found to be unacceptable in the opinion of the Owner or Owner's Representative, repair and retesting will be required.

1.03 INSTALLER QUALIFICATIONS

Applicator of specialized linings shall be certified by the lining material manufacturer.

1.04 SUBMITTALS

The following submittals shall be provided in accordance with Technical Specification Section 01300 – SUBMITTALS.

- 1) Complete shop drawings including description of installation.
 - a. PVC liner spot repair detail.
 - b. PVC weld joint installation detail.
 - c. Large PVC lining patch with mechanical anchors repair detail.
 - d. Filling of voids behind pipe wall and pipe repair detail, (as necessary).
 - e. Epoxy coated manhole/PVC lined pipe interface connection detail.
 - f. PVC lined manhole/PVC lined pipe interface connection detail.
 - g. Repair detail for bypass pump suction and discharge port(s) cut into an existing PVC lined pipe.
- 2) Complete material lists.
- 3) PVC welder/installer certifications from lining material manufacturer.
- 4) Contractor's quality control test procedures and test results.

PART 2 - PRODUCTS

2.01 PVC LINING REPAIR – PLAIN SHEET

- A. "Small" and "medium" sized defects that are present within the existing PVC protective lining, shall be repaired using plain sheet PVC liner material as manufactured by Armorlok Incorporated, 1420 Richardson Street, San Bernadino, CA, or approved equal. The lining material shall be PVC, white in color, compounded of inert synthetic resins, pigments and plasticizers to make it permanently flexible sheets. Liner sheets shall be a nominal 0.065-inch in thickness. Submittal required per Technical Specification Section 01300 – SUBMITTALS.
- B. Joint strips and welding strips shall have the same corrosion resistance as the sheet lining material. Liner sheets joint, corners, and welding strips

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- shall be free of cracks, cleavages, or other defects adversely affecting the protective characteristics of the material. All lining shall have good impact resistance and shall have an elongation sufficient to bridge up to 1/4-inch crack without damage to the lining sheets.
- C. Mechanical anchors shall be 1/4-inch diameter Zamac, or approved equal, nail with mushroom head or approved equal. Minimum anchor length shall be 1¼-inch. Submittal required per Technical Specification Section 01300 – SUBMITTALS.
- D. Installation of “Large Patch” repairs shall be reviewed by the Owner or Owner’s Representative for approval prior to installation.

2.02 PVC PROTECTIVE LINING – NEW SURFACES

- A. Concrete surface/repair shall include a protective lining as detailed in the project Contract Documents. Surfaces shall be protected using Armorlok PVC Shieldlok Mini D-Key liner material as manufactured by Armorlok Incorporated, 1420 Richardson Street, San Bernadino, CA or approved equal. The lining material shall be PVC, white in color, compounded of inert synthetic resins, pigments and plasticizers to make it permanently flexible sheets. Liner sheets shall be a nominal 0.065-inch in thickness. Submittal required per Technical Specification Section 01300 – SUBMITTALS
- B. Shieldlok Mini D-Key PVC protective lining material that is to be placed over new concrete shall be embedded into Shieldlok two-part mastic (Part A / Part B), mixed according to manufactures recommendations. Concrete shall be coated with Shieldlok primer prior to application of two-part mastic. Mini D-Key locking extensions of the same material as that of the liner shall be integrally extruded with the sheet. Locking extensions shall be approximately 2.5 inches apart and shall be at least 0.375 inch high.
- C. Joint strips and welding strips shall have the same corrosion resistance as the sheet lining material but shall not have locking extensions. Liner joints, corners, and welding strips shall be free of cracks, cleavages, or other defects adversely affecting the protective characteristics of the material.

PART 3 - EXECUTION

3.01 HAZARDOUS LOCATIONS

The Owner or Owner’s Representative may wish to enter the manhole under the Contractor’s safety program to perform observations and/or perform additional testing. The Contractor shall provide the necessary safety plan,

safety equipment, monitoring, and safe working atmosphere that allow the Owner or Owner's Representative to safely enter the manhole, at no additional cost to the Owner.

The Contractor is responsible for safety of the job site, including the responsibility to enforce and enact the provisions of the Contractor's Confined Space Entry program and the responsibilities to monitor the atmosphere within the structures and provide a safe working atmosphere and environment. These safety measures shall be at no additional cost to the Owner. The Owner shall not be responsible for safety or for safety monitoring of the job site.

3.02 SEWAGE FLOW AND DIVERSION

The Contractor shall be aware that the existing manholes included in this project are active, functioning manholes. The Contractor shall be required to coordinate the minimization of existing sewer flow and corresponding water level within the manhole through upstream diversion as much as possible per Technical Specification Section 02145 – DIVERSION OF SEWAGE FLOW AND DEWATERING when rehabilitating the lower sections of the manhole.

Manholes designated for rehabilitation that are contiguous to pipe rehabilitation activities shall be performed while flow is diverted, and manhole is dewatered.

3.03 MANHOLE PREPARATION AND CLEANING

Deteriorated or soft substrate concrete shall be removed down to sound concrete with surface profile equivalent to ICRI SCP 3-4, using abrasive blasting or hydro jet cleaned per Technical Specification Section 02760 - SEWER PIPE AND SEWER STRUCTURE CLEANING. Substrate shall be repaired back to original pipe dimensions per Technical Specification Section 09710 - CONCRETE AND MASONRY COATING.

Existing PVC surface preparation shall include a high pressure washed with a minimum water pressure of 1000 psi to remove all grease, oils, or foreign material in accordance with PVC liner material manufacturer's recommendations.

The Contractor shall inspect all surfaces specified to receive the PVC lining system prior to surface preparation. The Contractor shall notify Owner, of any noticeable disparity in the surfaces, which may interfere with the proper preparation or lining system. Remove all loose PVC material back to sound material. Any part of the existing field joint that cannot be caused to lie flat shall be trimmed away and discarded.

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The entire manhole interior including frame, chimney, walls, bench and throat shall be cleaned prior to rehabilitation using high-pressure water blast per Technical Specification Section 02760 – SEWER PIPE AND SEWER STRUCTURE CLEANING.

The Contractor shall use manhole debris shields or other approved method to prevent debris from entering the live sewers. The Contractor shall remove and legally dispose of dislodged debris offsite. Discharge of removed sediment and debris into the interceptor pipe is prohibited. If sediments are inadvertently or intentionally released into the interceptor sewer, the Contractor will be responsible for interceptor pipe cleaning and removal of all sediments from the location of observed release along the entire length of pipe for a minimum distance of one (1) mile downstream of the release location or as directed by the Owner.

Contractor shall notify the Owner or Owner's Representative in the event significant structural degradation of existing concrete has occurred, and sound concrete is not encountered during the cleaning process.

3.04 UNDERLAYMENT DEFECT REPAIR

- A. All defects in the underlayment including deteriorated concrete, cracks, honeycombing or otherwise defective concrete, shall be repaired. All deteriorated concrete, voids, holes, rough or irregular concrete shall be cleaned with abrasive blasting and high-pressure water cleaning to sound material and filled.
- B. The Contractor shall use the repair and fill material to repair or fill all defects. Deteriorated concrete or otherwise defective areas shall be cut out to solid concrete to a depth of at least 1-inch. The edges of the cut shall be perpendicular to the surface of the concrete. Patches shall be finished to match the adjoining surfaces profile. Concrete with honeycombing which exposes the reinforcing steel or with defects, which affect the structural strength, shall be corrected.

3.05 STRUCTURAL REINFORCING REPAIR

Structural repairs shall include splicing new reinforcing steel to existing reinforcing steel and providing additional reinforcing steel to reestablish the original structural integrity and existing loading capacity. Provide 3/8-inch diameter anchor bolts as needed to support reinforcing steel.

3.06 REINFORCING STEEL TREATMENT

Where corrosion or surface preparation activities have exposed reinforcing steel, the following procedure shall be used:

1. If half the diameter of the reinforcing steel, or more, is exposed, chip out behind the reinforcing steel a minimum of 1-inch for placement of grout or polymer concrete.
2. Determine cross sectional area loss of reinforcing steel.
3. Where reinforcing steel cross sectional area loss exceeds 15 percent of the original reinforcing steel, perform structural repair as directed by the Owner.
4. Abrasive blast all exposed reinforcing steel surfaces to remove all contaminants and corrosion products.
5. Clean exposed reinforcing steel with stiff brush or grit blast equipment.
6. Apply a second 20 mil (wet) coat of corrosion inhibitor and allow for 2-hour to 3-hour cure prior to placement of polymer mortar, cementitious mortar, or grout.

3.07 NEW PVC JOINTS OVER EXISTING FIELD JOINTS

- A. Repairs at the pipe joints shall be Armorlok - Detail J-1, with 6-inch-wide joint strip and 1-inch-wide weld strips as depicted in the Contract Documents. Detail J-1 joint shall be centered over the existing PVC joint.
- B. Edge of new 6-inch-wide joint strip shall be heat fuse welded to the existing PVC lining along the circumference of the pipe on both edges of the new joint along with 1-inch-wide weld strips at the edges per Contract Documents and Armorlok Detail J-1 or approved equal.

3.08 TERMINATION OF PVC-LINER TO CONCRETE OR EPOXY COATED SURFACE

Where PVC-liner is to be attached to an existing epoxy coated surface, Armor liner plain sheet PVC lining or approved equal shall be terminated with a PVC turn-back that is mechanically anchored to the existing concrete substrate. The installation of epoxy coating to the manhole shall be performed prior to installation of the PVC lining turn-back. The turn-back shall be sealed to the epoxy surface with Sikaflex 1A sealant, or approved equal, such that the connection of the turn-back to the manhole wall, bench, throat, pipe connection or chimney is gas tight.

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3.09 REPAIR MANHOLE BENCH AND NON-MAIN CHANNEL(S)

The Contractor shall repair manhole bench and non-main channel(s) with acid-resistant mortar per Technical Specification Section 09710 – CONCRETE AND MASONRY COATING. Manhole bench shall be sloped a minimum 1/2-inch per foot to the edge of the throat. Minimum mortar thickness shall be 3/4-inch.

3.10 CHIMNEY REPAIR

Brick chimneys shall be repaired through re-pointing or replacement as necessary per Technical Specification Section 09710 – CONCRETE AND MASONRY COATING to ensure structural integrity.

3.11 MANHOLE FRAME, COVER, COLLAR AND ADJUSTING RINGS REPLACEMENT

Manhole frames, covers, collars, and collars shall be replaced as indicated in the Contract Documents. The Contractor shall perform work in accordance with MAG Standard Details 420, 422, and 424 and City of Phoenix Standard Detail P1424. The frames and covers shall have a nominal opening diameter of 30-inches.

Adjusting rings shall be replaced as necessary to raise the lid to surface grade and slope. Concrete adjusting rings shall receive the same corrosion-resistant coating system as the rest of the concrete in the manhole.

3.12 ADHESION/BOND TESTING

A. GENERAL

1. The Contractor shall perform an adhesion test with a thin bladed chisel after proper heat fuse welding of the PVC material in accordance with manufacturer's recommended procedures. Costs associated with weld testing are incidental to the unit price cost of lining.
2. Where unacceptable test results are obtained, the Contractor shall be responsible for re-welding at no additional expense to the Owner.

B. FREQUENCY OF TESTING

The Contractor shall test the all finished PVC heat fuse welded joints for adequate adhesion.

3.13 HIGH VOLTAGE SPARK TEST

- A. DEFINITION – HOLIDAY: Holidays are defined as pinholes and voids in non-conductive lining that allow electrical current to pass through the protective lining to the base material.

- B. After the protective lining is installed it shall be inspected with high-voltage holiday detection wire brush/squeegee wand style equipment, Tinker and Razor Model AP-W, maximum 35,000 Volts or approved equal. Surface shall first be dried, an induced holiday shall then be made on to the PVC lined surface and shall serve to determine the minimum/maximum voltage to be used to test the lining for holidays at that particular area.
 - 1. The entire surface of the manhole, whether PVC lined, or epoxy coated, shall then be spark tested. Any imperfections found in the lining/epoxy coating system shall be re-welded or ground down and refilled. The Contractor shall perform repairs and re-testing at no additional cost to the Owner.

 - 2. The Owner shall be notified and present to observe testing and retesting. In addition, the Contractor shall provide certification for each manhole stating that the lining and epoxy coating is free of holidays, holes or other imperfections.

3.14 REPAIRS OF PVC LINING SYSTEM

- 1. Pinhole defects shall be cleaned and sealed with a 1-inch-wide heat fused weld strip.

- 2. All blisters, splits and damage to the existing PVC lining shall be prepared to a point 1-inch beyond the limits of the damaged lining area.

- 3. Blisters splits and damage to the existing PVC lining shall be completely removed to a 1-inch minimum beyond the repair area.

- 4. Repairs large than 18-inches in any direction shall be brought to the attention of the Owner or Owner's Representative for review and approval of proposed repair procedure.

3.15 INSPECTIONS

- A. The Contractor shall notify Owner of impending completion of surface cleaning, re-profiling, and prior to PVC lining repair or application of the epoxy coating per Technical Specification Section 09710 – CONCRETE AND MASONRY COATING.

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- B. The notifications shall be given a minimum 24-hours in advance of completion of the surface repairs and re-profiling, and 24-hours in advance of PVC lining repairs or application of the epoxy coating and any testing; including spark testing, and adhesion testing and dry film thickness testing of the epoxy lined areas.
- C. Failure to provide notification at these designated times/work stages may prevent the acceptance of the work by the Owner.

3.16 QUALITY CONTROL INSPECTIONS

- A. The Contractor's quality control inspection, date, repair size and Contractor's inspector signature along with the Owner's Representative acceptance signature of the repair area(s) shall be clearly written in black permanent marker directly on the PVC lining material installed and clearly documented in the post CCTV video. Acceptance of repair shall be subject to review of post CCTV video and the presence of the required signatures.

3.17 CLEANUP

Upon completion of PVC lining, the Contractor shall remove surplus materials, protective coverings, and accumulated rubbish.

**** END OF SECTION ****